# SCHRIEBER MEADOWS MITIGATION SITE

## Project Overview

**Watershed:** Watershed #1 – Kootenai River Basin

**Monitoring Year:** 2020

**Years Monitored**: 10th year of monitoring

**Corps Permit Number**: NWO-2004-90280-MTH

**SPA Authorization Number**: MDT-R1-88-2010

**Monitoring Conducted By:** Confluence Consulting Inc.

**Dates Monitoring Was Conducted:** July 16, 2020

**Purpose of the Approved Project:**

The site was constructed to provide 17.25 acres of compensatory wetland mitigation credits and 35,551 stream mitigation credits for wetland and stream impacts associated with the US Highway 2 Swamp Creek – East project and highway impacts associated with future transportation project-related wetland and stream impacts in Watershed #1 – Kootenai River Basin. The project was designed to create new wetlands, restore degraded wetlands, and enhance existing wetlands by restoring natural hydrology in the meadow and constructing a series of shallow excavations. The project restored the Coyote Creek channel and added 3,327 linear feet of stream length.

**Site Location:** The site is approximately 60 acres in size. Lat/Long below is near the middle of the site.

**Latitude:** 48.110423 **Longitude:** –115.41562

**County:** Lincoln **Nearest Town:** Libby, MT

**Map Included:** Yes

**Mitigation Site Construction Started:** Fall/2007 **Construction Ended:** Fall/2011

**Dates of Any Recent Corrective or Maintenance Activities (since previous report):**

**Activity:** Weed Spraying **Date:** May 27-28, 2020

**Specific recommendations for any additional corrective actions:** Weed treatment will continue in 2021. Treatment efforts should focus on the Canada thistle infestations concentrated north of the site's access road.

**Anticipated Wetland Credit Acres:** 17.24

**Wetland Credit Acres Generated to Date:** 26.93

**Stream Credits Generated to Date:** 35,551

**Previous Monitoring Reports:**
https://www.mdt.mt.gov/publications/brochures/wetland_mitigation.shtml

## Requirements (from approved mitigation plan, banking instrument, or Department of Army (DA) permit conditions)

**Monitoring Period:** 5 years from construction completion or until concurrence by US Army Corps of Engineers (USACE).

**Performance Standards:** A summary of performance standards established for the Schrieber Meadows site and whether or not they are meeting the success criteria is provided in Table 1.

**Table 1. Summary of Performance Standards**

| Performance Standards | Success Criteria | Criteria Achieved Y/N | Discussion |
|---|---|---|---|
| Wetland Characteristics | The three parameter criteria for hydrology, vegetation, and soils are met as outlined in the 1987 Wetland Manual and the 2010 Regional Supplement. | Y | Areas that were identified as wetland habitat within the mitigation site meet the three parameter criteria. |
| Wetland Hydrology | Soil saturation is present for at least 12.5 percent of the growing season. | Y | Areas that were identified as wetland habitat within the mitigation site exhibit soil saturation for a minimum 12.5 percent of growing season. |
| Hydric Soil | Hydric soil conditions are present or appear to be forming. | Y | Hydric soil characteristics have developed throughout all constructed wetlands. |
| | Soil is sufficiently stable to prevent erosion. | Y | In 2020, disturbed soil is stable and does not exhibit signs of erosion. |
| | Soil is able to support plant cover. | Y | Plant cover is well established across disturbed soils. |
| Hydrophytic Vegetation | Combined absolute cover of facultative or wetter species is 70 percent or greater. | Y | Areas that were identified as wetland habitat within the mitigation site support a prevalence of hydrophytic vegetation (OBL, FACW, and FAC). |
| | State-listed noxious weeds do not exceed 5 percent absolute cover. | Y | State-listed noxious weeds are estimated below 5 percent absolute cover within wetland areas. |
| Riparian Buffer Success | Woody and riparian vegetation is established. | N | No woody-dominated communities have formed along the riparian areas associated with Coyote Creek due to unanticipated high groundwater across the site. |
| | Noxious weeds do not exceed 10 percent cover within the riparian buffer areas. | Y | State-listed noxious weeds are estimated at 1–3 percent absolute cover within riparian buffer. |
| | Creditable buffer areas must have at least 50 percent aerial cover of non-noxious weed species by the end of the monitoring period. | Y | Non-noxious vegetation consists of nearly 100 percent of the total vegetation cover within the riparian buffer. |
| | Combined aerial cover of riparian and stream bank vegetation communities is 70 percent or greater. | Y | Riparian and stream bank vegetation communities support nearly 100 percent cover. |
| | Planted trees and shrubs will be considered successful when they exhibit 50 percent survival after 5 years. | N | Following planting installation, unanticipated high groundwater elevations drowned a majority of plantings by the end of the second growing season. Approximately 3 percent survival was noted in 2020. No replanting efforts have been completed. |
| Channel-Restoration Success | Revegetation along the new Coyote and Schrieber Creek channel corridors will be considered successful when banks are vegetated with a majority of deep-rooting riparian and wetland herbaceous and woody plant species. | Y | The majority of streambank vegetation along the constructed Coyote and Schrieber Creek channel corridors is dominated by reed canary grass, which has a stability rating of 9. |
| | The intent of stream restoration is to allow the stream to naturally migrate within the floodplain and to give it enough room to move and stabilize itself within the site. | Y | The stream has plenty of space within the floodplain for natural migration. The stream currently appears to be stable with no lateral adjustment observed following construction. |
| Stream Bank Vegetation | Banks are vegetated with a majority of deep-rooting riparian plant species that have root-stability indices of 6 or greater. | Y | Reed canary grass dominates the stream banks. Reed canary grass has a root-stability index of 9. |

| Performance Standards | Success Criteria | Criteria Achieved Y/N | Discussion |
|---|---|---|---|
| Open Water | The project will provide open water during the spring and early summer within excavated depressions. As the growing season progresses and the groundwater levels recede, vegetation is anticipated to germinate within the majority of the depressions. Open water with submerged and/or floating vegetation will, therefore, be considered successful and creditable. | Y | Excavated depressions within the very northern portion of the site experience seasonal drawdown, and rooted hydrophytic vegetation development has been observed. The lower depressions appear to support perennial inundation with an established aquatic macrophyte community. |
| Upland Buffer | Noxious weeds do not exceed 5 percent cover within upland buffer area. | Y | In 2020, noxious weed cover was less than 5 percent within the upland buffer. |
| | Any area disturbed within the creditable buffer zone must have at least 50 percent aerial cover of non-weed species by the end of the monitoring period. | Y | Disturbed areas have established greater than 50 percent cover by non-weed species. |
| Weed Control | Weed control will be based on annual site monitoring to determine weed species and the degree of infestation within the site. Control measures based on the monitoring results will be implemented by MDT to minimize and/or eliminate the intrusion of state-listed noxious weed species within the site. | Y | State-listed noxious weed species across the site have been monitored and mapped during each post-construction monitoring event. MDT administers an ongoing weed-control program. Weeds were sprayed at this site on May 27-28, 2020. |

## Summary Data

***Wetland Delineation*** – The wetland delineations that were conducted in 2004 and 2005, prior to construction of the project, identified four wetland areas that totaled approximately 15.56 acres within the mitigation project area. The pilot project that was constructed in 2007 resulted in an additional 2.38 acres of wetland habitat developing within the project boundary. After the second construction phase was completed, the delineation conducted in 2012 mapped a total of 47.58 acres of wetlands across the 56.95-acre site. A total of 47.52 acres of jurisdictional wetland and waters of the US (WUS) were delineated at the site in 2020 (Table 2; see maps in Appendix A). The total wetland acreage delineated in 2020, was 39.74 acres, which is a decrease of 7.34 acres since 2019. In 2020, the USACE provided guidance on open water, defining it as “areas of open water of any depth with less than 5% rooted emergent vegetation, no vegetation, submerged non-rooted vegetation, and/or submerged vegetation rooted in the substrate that does not extend above the water surface.” In accordance with this recent USACE guidance, open water accounted for 7.44 acres of the mitigation site in 2020 (Table 2). The stream channel represented 0.34 acres in 2020 while uplands accounted for the remaining 9.43 acres of the mitigation site. USACE wetland determination data forms [USACE, 2010a] are provided in Appendix B.

**Table 2. Wetland & Waters of the U.S. (WUS) Acreage Delineated in 2019 and 2020 at the Schrieber Meadows Site**

| Habitat Type | 2019 Acreage | 2020 Acreage |
|---|---|---|
| Wetland[(a)] | 47.08 | 39.74 |
| Stream Channel | 0.34 | 0.34 |
| Open Water | N/A | 7.44 |
| **Total Wetland & WUS[(b)]** | **47.42** | **47.52** |

(a) Wetland acreage includes approximately 8.30 acres of riparian stream buffer

(b) Waters of the U.S. (WUS)

***Vegetation*** – A total of 136 plant species have been identified at the site from 2010 through 2020 (Appendix B). One new native wetland species, arctic burr-reed (*Sparganium natans*), was observed in 2020. Three upland community types and four wetland community types were identified and mapped at the site in 2020 (Figure A-3, Appendix A). Vegetation communities were identified by species composition and dominance. The following three upland and five wetland vegetation community types were identified in 2020:

- Upland Type 8 – *Elymus repens/Pascopyrum smithii*
- Upland Type 9 – *Alopecurus* spp./*Bromus inermis*
- Upland Type 14 – *Agrostis capillaris/Phleum pratense*
- Wetland Type 3 – *Phalaris arundinacea*
- Wetland Type 5 – Aquatic Macrophytes/Open Water
- Wetland Type 6 – *Alopecurus pratensis/Agrostis capillaris*
- Wetland Type 15 – *Typha latifolia/Eleocharis palustris*

The community composition for each community type is provided in full detail on the Wetland Mitigation Site Monitoring form (Appendix B), and the community boundaries are shown on Figure A-3 (Appendix A).

Vegetation cover was measured along three belt transects (T-1, T-2, and T-3) in 2020 (Figure A-2, Appendix A). Photographs of the transect end points are provided in Appendix C. Table 3 summarizes the data for T-1 from 2010 and 2017 through 2020. T-1 is 318 feet long and intersects community types 3 – *Phalaris arundinacea* and 5 – Aquatic Macrophytes/Open Water. Hydrophytic vegetation community type 3 accounted for 34.3 percent of the transect in 2020, an increase of 14.5% since 2019. Open water accounted for 65.7 percent of the transect. In 2020, community type 5 – Aquatic Macrophytes/Open Water met the recent USACE definition of open water. This transect has not intersected an upland vegetation community since 2010.

**Table 3. Data Summary for T-1 From 2010 and 2017 Through 2020 at the Schrieber Meadows Site**

| Monitoring Year | 2010 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|
| **Transect Length (feet)** | **318** | **318** | **318** | **318** | **318** |
| Vegetation Community Transitions Along Transect | 7 | 6 | 6 | 6 | 6 |
| Vegetation Communities Along Transect | 3 | 2 | 2 | 2 | 2 |
| Hydrophytic Vegetation Communities Along Transect | 2 | 2 | 2 | 2 | 1 |
| Total Vegetative Species | 32 | 8 | 8 | 9 | 10 |
| Total Hydrophytic Species | 22 | 8 | 8 | 9 | 10 |
| Total Upland Species | 10 | 0 | 0 | 0 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| Estimated % Total Vegetative Cover | 75 | 75 | 75 | 75 | 45 |
| Estimated % Unvegetated | 25 | 25 | 25 | 25 | 55 |
| % Transect Length Comprising Hydrophytic Vegetation Communities | 62 | 19.8 | 19.8 | 19.8 | 34.3 |
| % Transect Length Comprising Upland Vegetation Communities | 13 | 0 | 0 | 0 | 0 |
| % Transect Length Comprising Open Water With Aquatic Macrophytes | 25 | 80.2 | 80.2 | 80.2 | 65.7 |

Data collected on T-2 (Wetland Mitigation Site Monitoring form, Appendix B) are summarized in Table 4. T-2 is 594 feet long and alternates between wetland community types 3 – *Phalaris arundinacea,* 6 – *Alopecurus pratensis/Agrostis capillaris*, and 14 – *Agrostis capillaris/Phleum pratense,* 15 – *Typha latifolia/Eleocharis palustris*. Hydrophytic vegetation communities comprised 100 percent of the transect during the 2020 survey, an increase of 40% since 2019. A total of 29 species were identified, including 24 hydrophytes and 5 upland species. Community types 5 – Aquatic Macrophytes/Open Water and 13 – *Eleocharis palustris/*Bare Ground were not observed in 2020 and have transitioned along this transect into community type 15. Therefore, Open Water and Mudflat do not represent a percentage of the transect intervals for 2020, as these areas have now shifted into community type 15. The total number of hydrophytic plant species observed along the transect decreased minimally from 2019 to 2020. It is unclear why this occurred number of species decreased in 2020. Annual shifts in species dominance and general presence/absence of species are normal and expected within plant communities. Perhaps the dominant species observed along this transect have outcompeted some of the more infrequently occurring species.

**Table 4. Data Summary for T-2 From 2012 and 2017 Through 2020 at the Schrieber Meadows Site**

| **Monitoring Year** | **2012** | **2017** | **2018** | **2019** | **2020** |
|---|---|---|---|---|---|
| **Transect Length (feet)** | **594** | **594** | **594** | **594** | **594** |
| Vegetation Community Transitions Along Transect | 16 | 15 | 15 | 15 | 8 |
| Vegetation Communities Along Transect | 3 | 4 | 4 | 4 | 4 |
| Hydrophytic Vegetation Communities Along Transect | 3 | 3 | 3 | 3 | 4 |
| Total Vegetative Species | 23 | 35 | 35 | 35 | 29 |
| Total Hydrophytic Species | 17 | 30 | 30 | 30 | 24 |
| Total Upland Species | 9 | 5 | 5 | 5 | 5 |
| Estimated % Total Vegetative Cover | 60 | 70 | 70 | 70 | 65 |
| Estimated % Unvegetated | 40 | 30 | 30 | 30 | 35 |
| % Transect Length Comprising Hydrophytic Vegetation Communities | 59.1 | 58.1 | 58.1 | 60 | 100 |
| % Transect Length Comprising Upland Vegetation Communities | 0 | 0 | 0 | 0 | 0 |
| % Transect Length Comprising Open Water With Aquatic Macrophytes | 40.9 | 7.7 | 18.7 | 23 | 0 |
| % Transect Length Comprising Mudflat | 0 | 34.2 | 23.2 | 17 | 0 |

T-3 begins near constructed wetland Cell 8 along the Middle Coyote Creek reach and extends east 440 feet to the edge of the former Coyote Creek channel along the eastern site boundary. The data recorded on T-3 (Wetland Mitigation Site Monitoring form, Appendix B) are summarized in Table 5. The transect intervals alternated between wetland community types 3 – *Phalaris arundinacea* and 5 – Aquatic macrophytes/Open Water. Hydrophytic vegetation community type 3 accounted for 53.4 percent of the transect in 2020, an increase of 5.4% since 2019. Open water accounted for 46.6 percent of the transect. In 2020, community type 5 – Aquatic Macrophytes/Open Water met the recent USACE definition of open water. Reed canary grass along T-1 and T-3 has aggressively outcompeted most other plant species and is on average 7 feet tall.

**Table 5. Data Summary for T-3 From 2012 and 2017 Through 2020 at the Schrieber Meadows Site**

| Monitoring Year | 2012 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|
| **Transect Length (feet)** | **440** | **440** | **440** | **440** | **440** |
| Vegetation Community Transitions Along Transect | 4 | 4 | 4 | 4 | 4 |
| Vegetation Communities Along Transect | 2 | 2 | 2 | 2 | 2 |
| Hydrophytic Vegetation Communities Along Transect | 2 | 2 | 2 | 2 | 1 |
| Total Vegetative Species | 9 | 11 | 12 | 13 | 13 |
| Total Hydrophytic Species | 7 | 7 | 8 | 9 | 13 |
| Total Upland Species | 2 | 4 | 4 | 4 | 0 |
| Estimated % Total Vegetative Cover | 50 | 75 | 75 | 75 | 50 |
| Estimated % Unvegetated | 50 | 25 | 25 | 25 | 50 |
| % Transect Length Comprising Hydrophytic Vegetation Communities | 53 | 46 | 48 | 48 | 53.4 |
| % Transect Length Comprising Upland Vegetation Communities | 0 | 0 | 0 | 0 | 0 |
| % Transect Length Comprising Open Water With Aquatic Macrophytes | 47 | 54 | 52 | 52 | 46.6 |

During the June 2020 monitoring, 18 small infestations of Canada thistle (*Cirsium arvense*), a Priority 2B noxious weed in Montana, were identified in areas less than 0.1-acre in size and located in both wetland and upland habitat (Figure A-3, Appendix A). The infestations included trace (< 1 percent), low (1–5 percent), moderate (6–25 percent), and high (>25 percent) cover classes. Three infestations of oxeye daisy (*Leucanthemum vulgare*), also a Priority 2B noxious weed, were observed in the northern part of the project area, in areas less than 0.1-acre in size with infestations ranging from trace to moderate. Annual weed spraying efforts have been very effective in reducing infestation size and cover of noxious weed populations across the site. The Montana Department of Transportation (MDT) has an ongoing weed-control program, which included weed spraying by contractors on May 27-28, 2020, prior to the July 2020 monitoring event.

A total of 1,000 speckled alders (*Alnus incana*) were planted along the newly constructed stream channel and wetland cells in the northern third of the site. Fewer than 50 live plants were observed throughout the mitigation site in 2020, which indicates 5 percent survival. Fewer than ten willows (*Salix* spp.) were observed near the spring north of the access road. A few of the alder trees were resprouting from the roots while the aboveground portions of the plants were dead. The remaining live alders and willows were not thriving in 2020 due to the aggressive competition from reed canary grass and perennial deep-water conditions. The persistence of reed canary grass and a high-water table are expected to continue to inhibit shrub development across the site. The excavated depressions on the USFS parcel may provide a suitable environment for woody plant establishment, although only a few willows were observed in 2020 that had been previously recorded along T-2 and around the edges of excavated wetland cells. The three volunteer willow saplings observed in 2020 along T-2 have not matured to date and are subject to browse from ungulate species using the site.

***Hydrology*** – During the 2020 investigation, the average depth of surface water across the site was estimated at 2.5 feet with a range of depths from 0 to 5 feet. The deepest standing water is located within many of the excavated cells and within the creek channels. Approximately 80 percent of the project area was inundated during the 2020 site visit. The surface-water depth at the emergent vegetation and open-water boundary was estimated at 2.5 feet. The southern two-thirds of the site was inundated and/or saturated as a result of the reconstructed channel of Coyote Creek and abundant surface- and groundwater flowing through the valley. The high groundwater elevations observed on site are a result of restoration efforts to plug existing drain ditches and channels, the subsidence of histosol soil elevations over time, and perhaps the beaver dam located at the outlet of Schrieber Lake to the

south of this site. The northern third of the site was drier, but still exhibited surface water throughout. Every excavated wetland cell contained surface water, with the lowest water levels observed near the northern monitoring boundary. The intermittent Coyote Creek was dry in July 2020 north of Coyote Creek spring, located upstream of the site's access road. This spring appears to provide a perennial source of hydrology to the site. Direct precipitation also contributes to wetland hydrology, but the high groundwater table is the primary hydrologic driver and source of water within this site. Precipitation accumulation for this area in 2020 reported 14.82 inches from January through November, which is much lower than accumulation reported for 2019 (17.16 inches), and lower than the historic accumulation average of 14.96 inches [NRCS, 2020a].

***Soils*** – Soil test pits were excavated at four locations to evaluate the extent of hydric soil development across the site in 2020 (Appendices A and B). Soil textures within wetland test pits ranged from muck (i.e., organic) to sandy clay. Hydric soil indicators were observed in both wetland test pits and included histosol, hydrogen sulfide, and depleted matrix. Soil textures within upland test pits ranged from sandy loam to clay loam. No hydric soil indicators were observed in either of the upland test pits. Additional field observations for the four data points are provided in the wetland determination data forms in Appendix B.

***Photographs*** – Ten photo points were initially established within the three constructed cells that were monitored in 2010. A total of 20 photo points were established in 2012 in response to the increased project area size, including the reestablishment of photo point 7 from its original 2010 location. In addition to established photo points, photographs were taken at each surveyed stream cross section, sampled data points, and vegetation transect endpoints. The locations of these photographs are illustrated on Figure A-2 (Appendix A) and the photographs in Appendix C. Please refer to previous years' monitoring reports for all previous annual photographs (https:// www.mdt.mt.gov/publications/ brochures/wetland_mitigation.shtml).

***Functional Assessment*** – The 2008 MDT Montana Wetland Assessment Method (MWAM) functional assessment results for 2020 are summarized in Table 6. Three separate Assessment Areas (AAs) were used to evaluate the site: Creation AA, Enhancement AA, and Restoration AA. Completed functional assessment forms for all three AAs are provided in Appendix B. All wetlands within the Schrieber Meadows site rate as Category I wetlands. Functional scores and ratings have remained nearly constant since 2015. All AAs received high or exceptional ratings for many assessment parameters, including Listed/Proposed Threatened & Endangered Species Habitat due to the documentation of grizzly bears on the site in recent years. Other functions rated as high and/or exceptional include General Wildlife Habitat, Short- and Long-Term Surface-Water Storage, Sediment/Nutrient/Toxicant Removal, Sediment/Shoreline Stabilization, Production Export/Food Chain Support, and Groundwater Discharge/Recharge.

**Table 6. Montana Wetland Assessment Method Summary for Schrieber Meadows Site**

| Function and Value Parameters From the 2008 Montana Wetland Assessment Method | 2020 Enhancement AA | 2020 Creation AA | 2020 Restoration AA |
|---|---|---|---|
| Listed/Proposed Threatened & Endangered (T&E) Species Habitat | High (0.8) | High (0.8) | High (0.8) |
| Montana Natural Heritage Program Species (MTNHP) Habitat | High (0.9) | High (0.9) | High (0.9) |
| General Wildlife Habitat | High (0.9) | High (0.9) | Exc (1.0) |
| General Fish/Aquatic Habitat | Low (0.3) | Mod (0.7) | NA |
| Flood Attenuation | Mod (0.6) | Mod (0.6) | Mod (0.5) |
| Short- and Long-Term, Surface-Water Storage | High (1.0) | High (1.0) | High (0.8) |
| Sediment/Nutrient/Toxicant Removal | High (1.0) | High (1.0) | Mod (0.6) |

| | | | |
|---|---|---|---|
| Sediment/Shoreline Stabilization | High (1.0) | High (1.0) | High (1.0) |
| Production Export/Food Chain Support | Exc (1.0) | Excel (1.0) | Exc (1.0) |
| Groundwater Discharge/Recharge | High (1.0) | High (1.0) | High (1.0) |
| Uniqueness | Low (0.3) | Low (0.3) | Mod (0.4) |
| Recreation/Education Potential (bonus points) | High (0.2) | High (0.2) | High (0.2) |
| **Actual Points/Possible Points** | **8.9/10** | **9.4/11** | **8.2/10** |
| **% of Possible Score Achieved** | **89%** | **85%** | **82%** |
| **Overall Category** | **I** | **I** | **I** |
| **Total Acreage of Assessed Wetlands Within Site Boundaries** | **13.22** | **22.54** | **3.46** |
| **Functional Units (acreage × actual points)** | **117.66** | **211.88** | **28.38** |

***Wildlife*** – Five bird species were identified in 2020. The two bird boxes installed at the site are functional, although neither were in use during the 2020 site visit. In addition to the five bird species, Columbia spotted frogs (*Rana luteiventris*) were also observed within many of the excavated wetland cells (Appendix B). Few moose tracks, two Columbian ground squirrels (*Urocitellus columbianus*), and three white-tailed deer (*Odocoileus virginianus*) were observed across the site.

***Stream Monitoring*** – The survey results for 11 permanent cross sections that were established along the constructed Coyote and Schrieber Creeks (Figure A-2, Appendix A) are shown in Appendix D. The 2020 data was compared to the previous surveys and discussions to assess stream channel stability. In general, the banks of the constructed channels were well-vegetated and exhibited stable conditions. Consequently, no major channel morphological changes have been observed throughout all of the monitoring years.

### *Credit Summary – Stream Credits*

Completely restoring sinuosity and stream length to both Coyote Creek and Schrieber Creek was intended to create a new channel length of approximately 7,756 linear feet, which is an overall increase of 3,327 linear feet from the previously channelized length of 4,429 linear feet. As part of the Montana Stream Mitigation Procedure [USACE, 2010b], riparian and stream credits are added together to calculate the total stream mitigation credits (Table 7).

**Table 7. Determination of Stream Mitigation Credits for the Schrieber Meadows Site**

| Factors | Upper Coyote Creek (USFS) | Coyote Creek Spring Area | Middle Coyote Creek (MDT) | Perennial Spring Channel | Lower Coyote Creek |
|---|---|---|---|---|---|
| Net Improvement | 2.50 | 0.00 | 2.50 | 2.50 | 2.50 |
| Stream Status | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| Type of Protection | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| Mitigation Timing | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| Comparative Stream Order | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| Location | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| Sum of Factors (M) | 3.15 | 0.65 | 3.15 | 3.15 | 3.15 |
| Linear Feet (L) | 1,752 | 190 | 3,179 | 400 | 2,425 |
| **Total Stream Credits (M × L)** | **5,519** | **123** | **10,014** | **1,260** | **7,639** |
| **Total Stream Credits[(a)] = 24,555** | | | | | |

| **Total Mitigation Credits (Riparian + Stream) = 10,996 + 24,555 = 35,551** |
|---|

(a) Credits were calculated using the Montana Stream Mitigation Procedure [USACE, 2010].

### *Credit Summary – Wetland Credits*

The pilot project, constructed in 2007, generated approximately 3.72 mitigation credit acres, including 2.38 credit acres of wetland creation, 0.75 credit acre for restoration (rehabilitation) of existing wetlands (1.12 acres restored), and 0.59 credit acre of upland buffer (2.96 acres maintained) around the wetlands. The pilot project was engulfed by the larger project constructed by MDT in 2011. Table 8 provides the credits generated at the Schrieber Meadows site for the approximately 57-acre, full-scale project and does not differentiate between the pilot and all-compassing Schrieber Meadows project.

A total of 39.74 acres of wetland habitat were delineated at the Schrieber Meadows site in 2020, including 19.11 acres of creation, 3.46 acres of restoration, 9.34 acres of enhancement, and 8.3 acres of riparian buffer (Table 8). A total of 59.96 acres, including 12.39 acres of upland buffer, -0.08-acre project impacts, and 7.44 acres of open water, were used to calculate the mitigation credited acres. After applying the USACE-approved ratios to these values, a total of 26.93 mitigation credit acres have been estimated in 2020, which is 9.69 credit acres more than the targeted 17.24 credit acres originally planned for this site. The decrease in total mitigation acreage from 2019 to 2020 is the result of the recent change for open water habitat at the request of the USACE.

**Table 8. Summary of Wetland Mitigation Credits at the Schrieber Meadows Site from 2013 and 2017 through 2020**

| Mitigation Type | Total Proposed Acreage | Ratio | Proposed Credit Acres | 2013 Delineated Acreage | 2013 Credit Acres | 2018 Delineated Acreage | 2018 Credit Acres | 2019 Delineated Acreage | 2019 Credit Acres | 2020 Delineated Acreage | 2020 Credit Acres |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Creation – USFS/MDT Property | 8.91 | 1:1 | 8.91 | 22.43 | 22.43 | 21.90 | 21.90 | 21.90 | 21.90 | 19.11 | 19.11 |
| Restoration on USFS/MDT Property | 3.46 | 1.5:1 | 2.31 | 3.46 | 2.31 | 3.46 | 2.31 | 3.46 | 2.31 | 3.46 | 2.31 |
| Enhancement of Wetlands Inside Geotechnical Limits Adjacent to US Highway 2 (MDT/USFS) | 13.22 | 3:1 | 4.41 | 13.22 | 4.41 | 13.22 | 4.41 | 13.22 | 4.41 | 9.34 | 3.11 |
| Riparian Buffer[a] | | – | | 8.30 | (b) | 8.30 | (b) | 8.30 | (b) | 8.30 | (b) |
| Upland Buffer | 8.50 | 5:1 | 1.70 | 12.39[c] | 2.48 | 12.39[c] | 2.48 | 12.39[c] | 2.48 | 12.39[c] | 2.48 |
| Project Impacts | –0.08 | None | –0.08 | –0.08 | –0.08 | –0.08 | –0.08 | –0.08 | –0.08 | –0.08 | –0.08 |
| Open Water | N/A | TBD[d] | N/A | -- | -- | -- | -- | -- | -- | 7.44 | TBD[d] |
| **Total Mitigation Acreage** | **34.01** | | **17.24** | **59.72** | **31.54** | **59.19** | **31.01** | **59.19** | **31.01** | **59.96** | **26.93** |

(a) Riparian buffer areas were used to calculate stream and riparian credits.

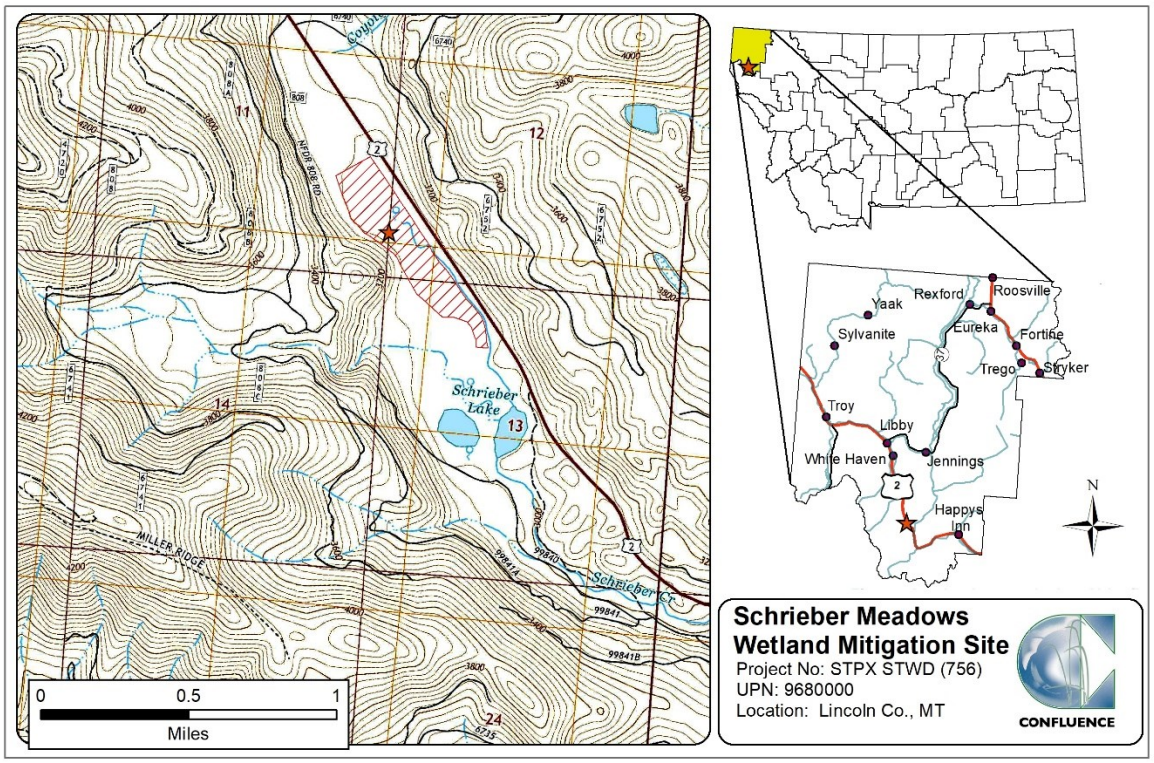
(b) Wetland acreages within riparian buffer were subtracted from wetland credit total; riparian buffer does not include upland buffer acreage.

(c) Acreage includes 50-foot buffer around wetlands within MDT and USFS property and outside of the riparian buffer.

(d) Mitigation ratios and crediting for Open Water are To Be Determined (TBD).

## Maps, Plans, Photos

Site Location Map




**Project Area Maps/Figures:** See Appendix A

**Data Forms:** See Appendix B (Site Monitoring form, USACE data forms, MWAM forms, and plant list)

**Photos:** See Appendix C

**Plans:** See Appendix D of 2012 Monitoring Report
https://www.mdt.mt.gov/other/webdata/external/planning/wetlands/2012/schrieber_meadows_final_2012.pdf

## Conclusions

Based on the results of the tenth year of monitoring, the mitigation site is continuing to develop into a diverse wetland ecosystem. The site is meeting all performance standards except for the following:

1. Riparian Buffer Success: Woody and riparian vegetation is established.
   a. Woody vegetation along the reconstructed stream channels has been slow to develop due to perennial deep-water conditions and aggressive competition from reed canary grass.

2. Planted trees and shrubs will be considered successful when they exhibit 50 percent survival after 5 years.
   a. Woody plantings survival is not trending toward meeting this performance standard.

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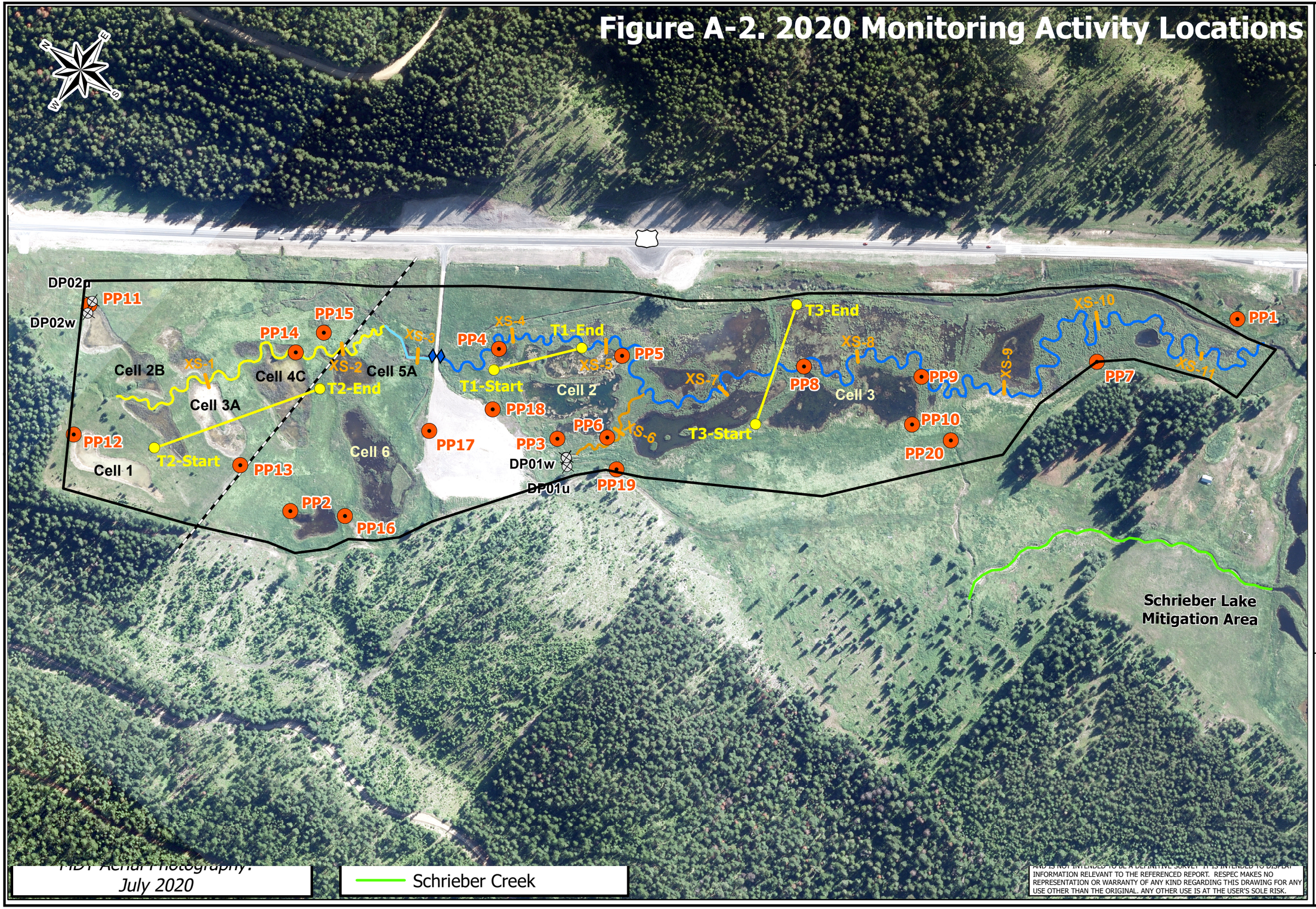
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# APPENDIX A
# PROJECT AREA MAPS

MDT Wetland Mitigation Monitoring
Schrieber Meadows
Lincoln County, Montana

# Figure A-2. 2020 Monitoring Activity Locations





INFORMATION RELEVANT TO THE REFERENCED REPORT. RESPEC MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS DRAWING FOR ANY USE OTHER THAN THE ORIGINAL. ANY OTHER USE IS AT THE USER'S SOLE RISK.


CONFLUENCE
consulting incorporated

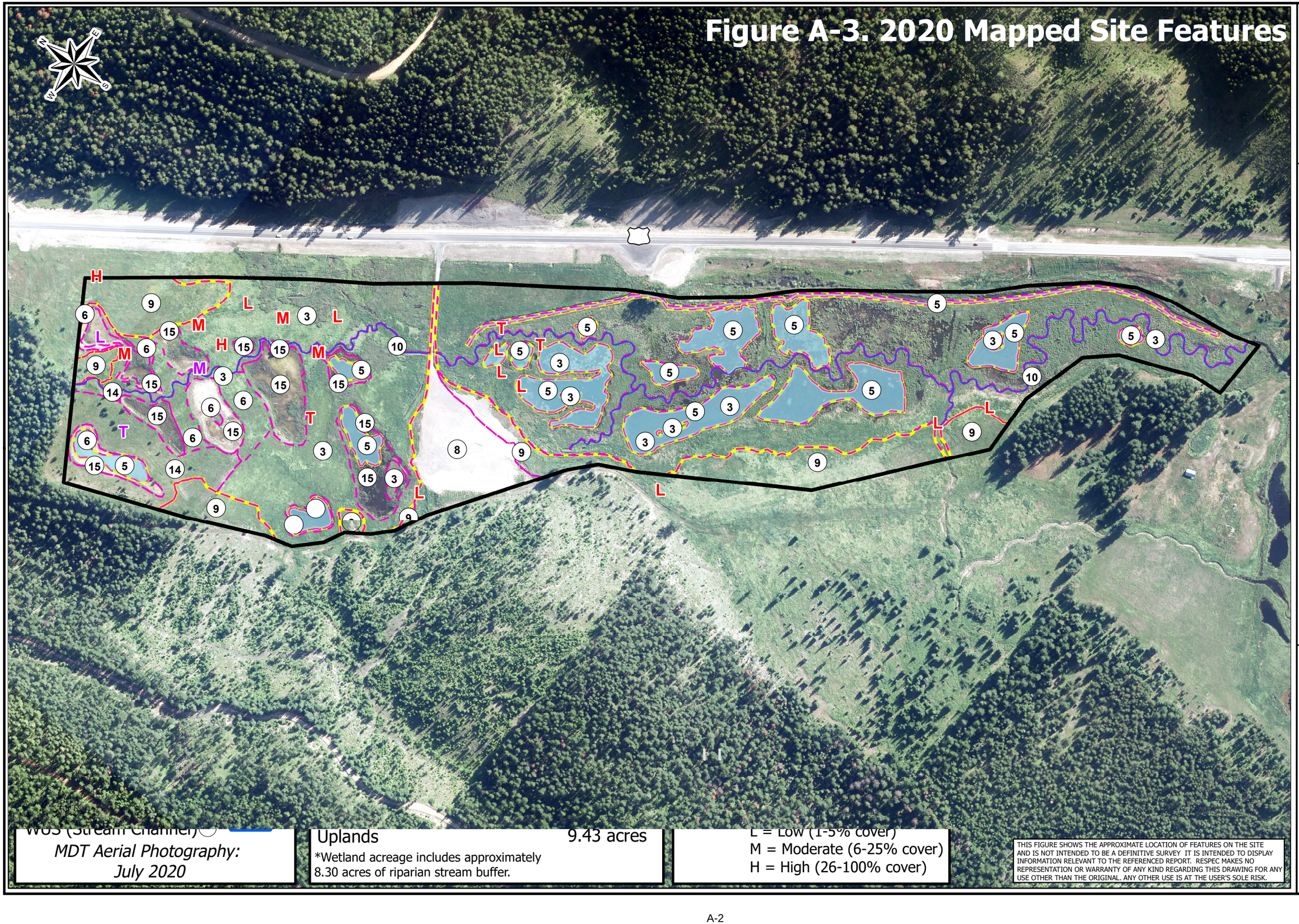
**Schrieber Meadows Mitigation Site**
**2020 Monitoring Activity Locations**

0 125 250 500 750 1,000 1,250 Feet

| | |
|---|---|
| Project: | STPX STWD (756) |
| Location: | Lincoln Co., Montana |
| Date: | October 2020 |
| Project Manager: | R McEldowney |
| Drawn By: | RQ |

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# Figure A-3. 2020 Mapped Site Features




THIS FIGURE SHOWS THE APPROXIMATE LOCATION OF FEATURES ON THE SITE AND IS NOT INTENDED TO BE A DEFINITIVE SURVEY IT IS INTENDED TO DISPLAY INFORMATION RELEVANT TO THE REFERENCED REPORT. RESPEC MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS DRAWING FOR ANY USE OTHER THAN THE ORIGINAL. ANY OTHER USE IS AT THE USER'S SOLE RISK.

CONFLUENCE
consulting incorporated

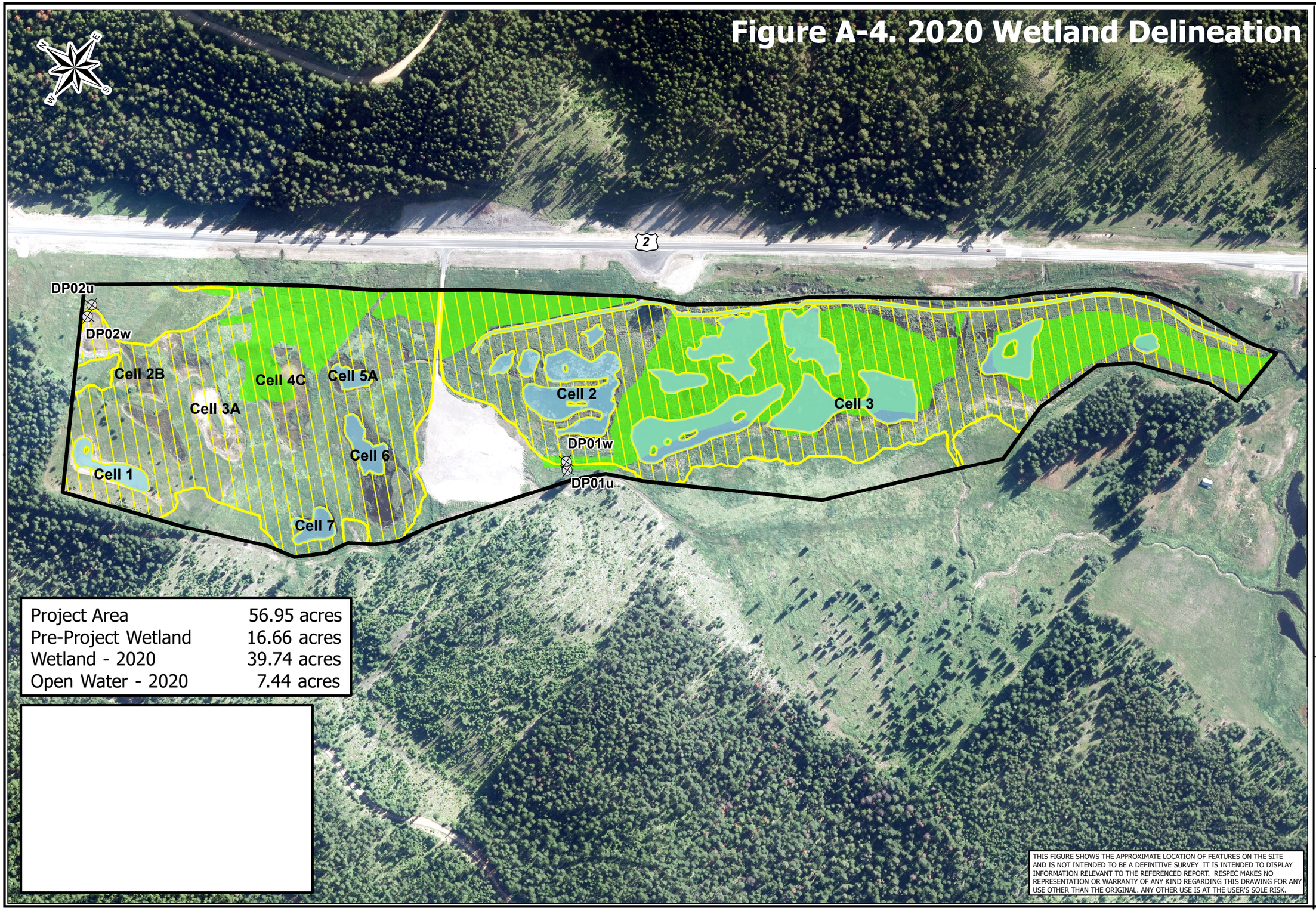
**Schrieber Meadows Mitigation Site**
**2020 Mapped Site Features**

0 125 250 500 750 1,000 1,250 Feet

| | |
|---|---|
| Project: | STPX STWD (756) |
| Location: | Lincoln Co., Montana |
| Date: | October 2020 |
| Project Manager: | R McEldowney |
| Drawn By: | RQ |

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# Figure A-4. 2020 Wetland Delineation




| | |
|---|---|
| Project Area | 56.95 acres |
| Pre-Project Wetland | 16.66 acres |
| Wetland - 2020 | 39.74 acres |
| Open Water - 2020 | 7.44 acres |

THIS FIGURE SHOWS THE APPROXIMATE LOCATION OF FEATURES ON THE SITE AND IS NOT INTENDED TO BE A DEFINITIVE SURVEY IT IS INTENDED TO DISPLAY INFORMATION RELEVANT TO THE REFERENCED REPORT. RESPEC MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND REGARDING THIS DRAWING FOR ANY USE OTHER THAN THE ORIGINAL. ANY OTHER USE IS AT THE USER'S SOLE RISK.

CONFLUENCE
consulting incorporated

**Schrieber Meadows Mitigation Site**
**2020 Wetland Delineation**

0 125 250 500 750 1,000 1,250 Feet

| | |
|---|---|
| Project: | STPX STWD (756) |
| Location: | Lincoln Co., Montana |
| Date: | October 2020 |
| Project Manager: | R McEldowney |
| Drawn By: | RQ |

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# APPENDIX B
# MONITORING FORMS

MDT Wetland Mitigation Monitoring
Schrieber Meadows
Lincoln County, Montana

## MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Schrieber Meadows Assessment Date/Time 7/16/2020

Person(s) conducting the assessment: R Quire, S Weyant, B Trudgeon

Weather: 80 degrees, sunny, clear Location: Highway 2, Swamp Creek East

MDT District: Missoula Milepost: 53.5

Legal Description: T 27N R 30W Section(s) 11, 12, 13

Initial Evaluation Date: 8/29/2010 Monitoring Year: 10 #Visits in Year: 1

Size of Evaluation Area: 57 (acres)

Land use surrounding wetland:

US Highway 2, US Forest Service, forested watershed

### HYDROLOGY

Surface Water Source: Coyote Creek spring, Precipitation, Groundwater

Inundation: ☑ Average Depth: 1.5 **(ft)** Range of Depths: 0-5 **(ft)**

Percent of assessment area under inundation: 80 %

Depth at emergent vegetation-open water boundary: 2.5 **(ft)**

If assessment area is not inundated then are the soils saturated within 12 inches of surface: No

Other evidence of hydrology on the site (ex. – drift lines, erosion, stained vegetation, etc:

Surface water, saturation, high water table, hydrogen sulfide odor, iron deposits, geomorphic position, FAC neutral test, inundation visible on aerials.

#### Groundwater Monitoring Wells

Record depth of water surface below ground surface, in feet.

Additional Activities Checklist:

☐ Map emergent vegetation-open water boundary on aerial photograph.

☐ Observe extent of surface water during each site visit and look for evidence of past surface water elevations (drift lines, erosion, vegetation staining, etc.)

☐ Use GPS to survey groundwater monitoring well locations, if present.

**Hydrology Notes:**

Water depths were deeper on average across the site than what was reported in 2019, especially within excavated depressions, Coyote Creek, and southeast of the access road that bisects the property.

## VEGETATION COMMUNITIES

**Site** Schrieber Meadows

(Cover Class Codes **0** = < 1%, **1** = 1-5%, **2** = 6-10%, **3** = 11-20%, **4** = 21-50% , **5** = >50% )

**Community #** 3 **Community Type:** Phalaris arundinacea / **Acres:** 30.87

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Alnus incana | 0 | Alopecurus arundinaceus | 1 |
| Alopecurus pratensis | 1 | Carex athrostachya | 1 |
| Carex stipata | 1 | Carex utriculata | 1 |
| Cirsium arvense | 1 | Eleocharis palustris | 1 |
| Epilobium ciliatum | 1 | Glyceria grandis | 0 |
| Lemna minor | 1 | Mimulus guttatus | 1 |
| Open Water | 4 | Persicaria amphibia | 1 |
| Phalaris arundinacea | 5 | Scirpus microcarpus | 1 |

**Comments:**

Dominant wetland community type located across the site. Reed canary grass has outcompeted most other species and was observed at an average height of 7ft tall. Many areas within this CT inundated with an average of 3 feet of standing water. Very difficult to move through.

**Community #** 5 **Community Type:** Aquatic macrophytes / Open Water **Acres:** 7.44

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Algae, brown | 2 | Algae, green | 2 |
| Alnus incana | 0 | Aquatic macrophytes | 2 |
| Carex athrostachya | 0 | Carex nebrascensis | 0 |
| Carex utriculata | 0 | Chara sp. | 2 |
| Eleocharis palustris | 0 | Glyceria grandis | 0 |
| Lemna minor | 0 | Mimulus guttatus | 1 |
| Open Water | 5 | Persicaria amphibia | 1 |
| Phalaris arundinacea | 1 | Sparganium natans | 1 |
| Typha latifolia | 1 | | |

**Comments:**

Areas dominated by 2-3 feet of standing water, less than 5% emergent wetland vegetation, and a diversity of submergent/floating aquatic macrophytes.

**Community #** 6 **Community Type:** Alopecurus pratensis / Agrostis capillaris **Acres:** 1.86

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Achillea millefolium | 1 | Agrostis capillaris | 4 |
| Alnus incana | 0 | Alopecurus arundinaceus | 2 |
| Alopecurus pratensis | 4 | Bromus inermis | 2 |
| Carex athrostachya | 1 | Carex lasiocarpa | 0 |
| Carex utriculata | 0 | Eleocharis palustris | 1 |
| Epilobium ciliatum | 1 | Juncus tenuis | 1 |
| Leucanthemum vulgare | 1 | Open Water | 1 |
| Pedicularis groenlandica | 1 | Phalaris arundinacea | 2 |
| Poa pratensis | 1 | Rosa woodsii | 1 |
| Salix bebbiana | 1 | Symphyotrichum spathulatum | 1 |

**Comments:**

Wetland CT northwest of access road that bisects the property.

**Community #** 8 **Community Type:** Elymus repens / Pascopyrum smithii **Acres:** 2.72

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Alopecurus pratensis | 1 | Bare Ground | 4 |
| Bromus inermis | 1 | Elymus repens | 3 |
| Medicago lupulina | 2 | Pascopyrum smithii | 4 |
| Sisymbrium altissimum | 1 | | |

**Comments:**

Upland community type that runs along the access road that bisects the property.

**Community #** 9 **Community Type:** Alopecurus spp. / Bromus inermis **Acres:** 6.77

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Achillea millefolium | 1 | Agrostis capillaris | 1 |
| Alopecurus arundinaceus | 2 | Alopecurus pratensis | 5 |
| Arnica chamissonis | 1 | Bromus inermis | 3 |
| Pascopyrum smithii | 1 | Poa pratensis | 1 |
| Senecio hydrophiloides | 1 | Taraxacum officinale | 1 |

**Comments:**

Upland community type located along the outer edges of the project area, primarily along the W-SW boundary.

**Community # 14 Community Type:** Agrostis capillaris / Phleum pratense **Acres:** 2.52

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Achillea millefolium | 1 | Agrostis capillaris | 4 |
| Agrostis gigantea | 1 | Alopecurus pratensis | 1 |
| Bare Ground | 2 | Bromus inermis | 1 |
| Cirsium arvense | 0 | Fragaria virginiana | 0 |
| Hieracium aurantiacum | 0 | Juncus tenuis | 1 |
| Leucanthemum vulgare | 0 | Phleum pratense | 3 |
| Pinus contorta | 0 | Pinus ponderosa | 0 |
| Pseudotsuga menziesii | 0 | Rosa woodsii | 0 |
| Symphyotrichum spathulatum | 0 | | |

**Comments:**

Wetland community type located in northwest corner of site.

**Community # 15 Community Type:** Typha latifolia / Eleocharis palustris **Acres:** 4.48

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Agrostis capillaris | 1 | Alopecurus arundinaceus | 1 |
| Alopecurus pratensis | 1 | Bare Ground | 1 |
| Beckmannia syzigachne | 0 | Carex athrostachya | 1 |
| Carex pellita | 1 | Carex stipata | 1 |
| Chara sp. | 1 | Eleocharis palustris | 3 |
| Epilobium ciliatum | 1 | Glyceria grandis | 1 |
| Glyceria striata | 1 | Juncus bufonius | 0 |
| Juncus tenuis | 0 | Leucanthemum vulgare | 1 |
| Mentha arvensis | 1 | Open Water | 4 |
| Persicaria amphibia | 1 | Phalaris arundinacea | 1 |
| Salix bebbiana | 0 | Scirpus microcarpus | 1 |
| Suaeda calceoliformis | 0 | Trifolium pratense | 1 |
| Typha latifolia | 4 | | |

**Comments:**

New wetland community type in 2020, replaced CT 13 and portions of CT 5 as a result of an increase in Typha latifolia. Located northwest of access road that bisects the property.

***Total Vegetation Community Acreage*** **56.66**

***(Note: some area within the project bounds may be open water or other non-vegetative ground cover.)***

## VEGETATION TRANSECTS

**Site:** Schrieber Meadows Date: 7/16/2020

**Transect Number:** 1 **Compass Direction from Start:** 112 °

**Interval Data:**

**Ending Station** 20 **Community Type:** Phalaris arundinacea /

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Phalaris arundinacea | 5 | | |

**Ending Station** 55 **Community Type:** Aquatic macrophytes / Open Water

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Algae, green | 4 | Alnus incana | 0 |
| Chara sp. | 2 | Lemna minor | 2 |
| Mimulus guttatus | 1 | Open Water | 5 |
| Persicaria amphibia | 1 | Phalaris arundinacea | 1 |

**Ending Station** 80 **Community Type:** Phalaris arundinacea /

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Cirsium arvense | 1 | Mimulus guttatus | 1 |
| Open Water | 4 | Phalaris arundinacea | 5 |

**Ending Station** 155 **Community Type:** Aquatic macrophytes / Open Water

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Algae, green | 3 | Aquatic macrophytes | 4 |
| Lemna minor | 1 | Open Water | 5 |
| Persicaria amphibia | 1 | | |

**Ending Station** 181 **Community Type:** Phalaris arundinacea /

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Alnus incana | 0 | Open Water | 3 |
| Persicaria amphibia | 1 | Phalaris arundinacea | 5 |

**Ending Station** 280 **Community Type:** Aquatic macrophytes / Open Water

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Algae, brown | 2 | Algae, green | 1 |
| Aquatic macrophytes | 2 | Open Water | 5 |
| Persicaria amphibia | 1 | Phalaris arundinacea | 1 |

**Ending Station** 318 **Community Type:** Phalaris arundinacea /

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Glyceria grandis | 1 | Open Water | 2 |
| Phalaris arundinacea | 5 | | |

Transect Notes:

More open water observed along transect than observed in 2019. Very difficult to move through. Reed canary grass greater than 7ft tall, water at times greater than 4ft deep, monitoring this transect was hazardous and extreme caution taken by crew. A kayak was necessary for the crew member completing the cross section survey.

**Transect Number:** 2 **Compass Direction from Start:** 100 °

**Interval Data:**

**Ending Station** 35 **Community Type:** Agrostis capillaris / Phleum pratense

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Achillea millefolium | 0 | Agrostis capillaris | 4 |
| Agrostis gigantea | 2 | Bare Ground | 3 |
| Bromus inermis | 1 | Juncus tenuis | 0 |
| Leucanthemum vulgare | 1 | Phleum pratense | 1 |

**Ending Station** 105 **Community Type:** Typha latifolia / Eleocharis palustris

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Bare Ground | 1 | Carex pellita | 3 |
| Carex stipata | 1 | Eleocharis palustris | 2 |
| Glyceria grandis | 1 | Juncus bufonius | 0 |
| Juncus tenuis | 1 | Open Water | 3 |
| Phalaris arundinacea | 1 | Scirpus microcarpus | 1 |
| Typha latifolia | 4 | | |

**Ending Station** 168 **Community Type:** Alopecurus pratensis / Agrostis capillaris

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Agrostis capillaris | 3 | Alnus incana | 0 |
| Alopecurus pratensis | 3 | Bromus inermis | 0 |
| Carex lasiocarpa | 4 | Eleocharis palustris | 1 |
| Epilobium ciliatum | 0 | Juncus tenuis | 0 |
| Phalaris arundinacea | 1 | Salix bebbiana | 0 |

**Ending Station** 219 **Community Type:** Typha latifolia / Eleocharis palustris

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Agrostis capillaris | 1 | Bare Ground | 3 |
| Beckmannia syzigachne | 1 | Eleocharis palustris | 3 |
| Epilobium ciliatum | 0 | Juncus tenuis | 1 |
| Open Water | 2 | Phalaris arundinacea | 1 |
| Trifolium pratense | 1 | Typha latifolia | 4 |

**Ending Station** 250 **Community Type:** Alopecurus pratensis / Agrostis capillaris

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Achillea millefolium | 2 | Agrostis capillaris | 2 |
| Alopecurus pratensis | 3 | Bromus inermis | 4 |
| Symphyotrichum spathulatum | 0 | | |

**Ending Station** 295 **Community Type:** Typha latifolia / Eleocharis palustris

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Agrostis capillaris | 0 | Bare Ground | 3 |
| Beckmannia syzigachne | 0 | Eleocharis palustris | 3 |
| Epilobium ciliatum | 1 | Glyceria grandis | 1 |
| Juncus tenuis | 1 | Leucanthemum vulgare | 1 |
| Open Water | 2 | Phalaris arundinacea | 1 |
| Salix bebbiana | 0 | Typha latifolia | 3 |

**Ending Station** 410 **Community Type:** Alopecurus pratensis / Agrostis capillaris

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Agrostis capillaris | 1 | Alopecurus pratensis | 5 |
| Bromus inermis | 3 | Leucanthemum vulgare | 1 |
| Pedicularis groenlandica | 0 | Rosa woodsii | 1 |

**Ending Station** 555 **Community Type:** Typha latifolia / Eleocharis palustris

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Alopecurus pratensis | 0 | Carex athrostachya | 0 |
| Carex pellita | 1 | Chara sp. | 1 |
| Eleocharis palustris | 3 | Juncus tenuis | 1 |
| Mentha arvensis | 0 | Open Water | 4 |
| Persicaria amphibia | 1 | Phalaris arundinacea | 1 |
| Scirpus microcarpus | 1 | Typha latifolia | 4 |

**Ending Station** 594 **Community Type:** Phalaris arundinacea /

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Alopecurus pratensis | 2 | Carex athrostachya | 0 |
| Carex utriculata | 1 | Phalaris arundinacea | 5 |
| Scirpus microcarpus | 1 | | |

Transect Notes:

CT 15, a new community observed in 2020, replaced CT 5 and CT 13 along transect, as more open water and Typha latifolia were observed in 2020.

**Transect Number:** 3 **Compass Direction from Start:** 45 °

**Interval Data:**

**Ending Station** 60 **Community Type:** Phalaris arundinacea /

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Lemna minor | 1 | Open Water | 1 |
| Persicaria amphibia | 1 | Phalaris arundinacea | 5 |

**Ending Station** 137 **Community Type:** Aquatic macrophytes / Open Water

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Algae, green | 1 | Aquatic macrophytes | 3 |
| Chara sp. | 4 | Lemna minor | 1 |
| Open Water | 5 | Phalaris arundinacea | 1 |
| Sparganium natans | 1 | | |

**Ending Station** 288 **Community Type:** Phalaris arundinacea /

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Carex utriculata | 1 | Eleocharis palustris | 0 |
| Epilobium ciliatum | 1 | Glyceria grandis | 0 |
| Lemna minor | 2 | Open Water | 4 |
| Persicaria amphibia | 3 | Phalaris arundinacea | 5 |

**Ending Station** 416 **Community Type:** Aquatic macrophytes / Open Water

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Algae, brown | 3 | Carex nebrascensis | 1 |
| Carex utriculata | 1 | Chara sp. | 2 |
| Lemna minor | 2 | Open Water | 5 |
| Persicaria amphibia | 1 | Phalaris arundinacea | 1 |
| Typha latifolia | 1 | | |

**Ending Station** 440 **Community Type:** Phalaris arundinacea /

| Species | Cover class | Species | Cover class |
|---|---|---|---|
| Lemna minor | 2 | Open Water | 3 |
| Phalaris arundinacea | 5 | | |

Transect Notes:

More open water observed along transect than observed in 2019. Very difficult to move through. Reed canary grass greater than 7ft tall, water at times greater than 4ft deep, monitoring this transect was hazardous and extreme caution taken by crew. A kayak was necessary for the crew member completing the cross section survey.

## PLANTED WOODY VEGETATION SURVIVAL

Schrieber Meadows

| Planting Type | #Planted | #Alive | Notes |
|---|---|---|---|
| Alnus incana | 1000 | 50 | obs <50 - too wet and out-competed by reed canary gras |
| Salix sp. | 750 | 10 | too wet and out-competed by reed canary grass |

### Comments

Planted shrubs are difficult to see at the site due to the dense cover of 7ft tall reed canary grass. It is thought that the majority of woody plantings have died because of perennial deep water conditions and being out competed by reed canary grass.

Schrieber Meadows

## WILDLIFE

### Birds

Were man-made nesting structures installed? Yes

If yes, type of structure: Bird boxes

How many? 2

Are the nesting structures being used? No

Do the nesting structures need repairs? No

Nesting Structure Comments:

| Species | #Observed | Behavior | Habitat |
|---|---|---|---|
| Great Blue Heron | 1 | FO | |
| Killdeer | 3 | | |
| Red-winged Blackbird | 5 | F, FO, L | |
| Sparrow sp. | 3 | FO, L | |
| Tree Swallow | 10 | FO, L | |

**Bird Comments**

**BEHAVIOR CODES**

**BP** = One of a breeding pair **BD** = Breeding display **F** = Foraging **FO** = Flyover **L** = Loafing **N** = Nesting

**HABITAT CODES**

**AB** = Aquatic bed **SS** = Scrub/Shrub **FO** = Forested **UP** = Upland buffer **I** = Island

**WM** = Wet meadow **MA** = Marsh **US** = Unconsolidated shore **MF** = Mud Flat **OW** = Open Water

**Mammals and Herptiles**

| Species | # Observed | Tracks | Scat | Burrows | Comments |
|---|---|---|---|---|---|
| Columbia Spotted Frog | 20 | No | No | No | |
| Ground Squirrel | 2 | No | No | No | |
| Moose | | Yes | No | No | |
| White-tailed Deer | 3 | No | No | No | |

**Wildlife Comments:**

Many small Columbia spotted frogs observed across the site.

Schrieber Meadows

## PHOTOGRAPHS

Take photographs of the following permanent reference points listed in the check list below. Record the direction of the photograph using a compass. When at the site for the first time, establish a permanent reference point by setting a ½ inch rebar or fencepost extending 2-3 feet above ground. Survey the location with a resource grade GPS and mark the location on the aerial photograph.

**Photograph Checklist:**

☐ One photograph for each of the four cardinal directions surrounding the wetland.

☐ At least one photograph showing upland use surrounding the wetland. If more than one upland exists then take additional photographs.

☐ At least one photograph showing the buffer surrounding the wetland.

☐ One photograph from each end of the vegetation transect, showing the transect.

| Photo # | Latitude | Longitude | Bearing | Description |
|---|---|---|---|---|
| DP-1U | 48.111984 | -115.417667 | | |
| DP-1W | 48.112044 | -115.417579 | | |
| DP-2U | 48.116341 | -115.420054 | | |
| DP-2W | 48.116304 | -115.420218 | | |
| PP01 | 48.10804 | -115.410172 | 270 | Photo Point 1 (Pano): |
| PP02 | 48.113735 | -115.420509 | 150 | Photo Point 2: |
| PP03 | 48.112183 | -115.417503 | 90 | Photo Point 3 (Pano): |
| PP04 | 48.113213 | -115.416832 | 180 | Photo Point 4 (Pano): |
| PP05 | 48.112614 | -115.415977 | 300 | Photo Point 5 (Pano): |
| PP06 | 48.11904 | -115.417023 | 0 | Photo Point 6 (Pano): |
| PP07 | 48.108813 | -115.411923 | 0 | Photo Point 7 (Pano): |
| PP08 | 48.11121 | -115.414238 | 190 | Photo Point 8 (Pano): |
| PP09 | 48.109997 | -115.413765 | 280 | Photo Point 9 (Pano): |
| PP10 | 48.109737 | -115.414024 | 0 | Photo Point 10 (Pano): |
| PP11 | 48.116409 | -115.420021 | 190 | Photo Point 11 (Pano): |
| PP12 | 48.115673 | -115.421562 | 180 | Photo Point 12 (Pano): |
| PP13 | 48.11422 | -115.420403 | 280 | Photo Point 13 (Pano): |
| PP14 | 48.114655 | -115.41893 | 230 | Photo Point 14 (Pano): |
| PP15 | 48.114323 | -115.418449 | 180 | Photo Point 15 (Pano): |
| PP16 | 48.113403 | -115.420128 | 70 | Photo Point 16 (Pano): |
| PP17 | 48.112938 | -115.418388 | 270 | Photo Point 17 (Pano): |
| PP18 | 48.1129 | -115.417618 | 90 | Photo Point 18: |
| PP19 | 48.111553 | -115.417084 | 10 | Photo Point 19, Photo 1: |
| PP-19 | 48.111553 | -115.417084 | 100 | Photo Point 19, Photo 2: |
| PP-20 | 48.109493 | -115.413918 | 100 | Photo Point 20: |

| | | | | |
|---|---|---|---|---|
| T-1 end | 48.112663 | -115.41642 | 295 | Transect 1 end: |
| T-1 start | 48.115204 | -115.417503 | 115 | Transect 1 start: |
| T-2 end | 48.114197 | -115.418991 | 280 | Transect 2 end: |
| T-2 start | 48.115204 | -115.421013 | 100 | Transect 2 start: |
| T-3 end | 48.111187 | -115.413849 | 225 | Transect 3 end: |
| T-3 start | 48.111134 | -115.415642 | 45 | Transect 3 start: |

**Comments:**

Schrieber Meadows

## ADDITIONAL ITEMS CHECKLIST

### Hydrology

☐ Map emergent vegetation/open water boundary on aerial photos.
☐ Observe extent of surface water. Look for evidence of past surface water elevations (e.g. drift lines, vegetation staining, erosion, etc).

### Photos

☐ One photo from the wetland toward each of the four cardinal directions
☐ One photo showing upland use surrounding the wetland.
☐ One photo showing the buffer around the wetland
☐ One photo from each end of each vegetation transect, toward the transect

### Vegetation

☑ Map vegetation community boundaries

☑ Complete Vegetation Transects

### Soils

☑ Assess soils

### Wetland Delineations

☑ Delineate wetlands according to applicable USACE protocol (1987 form or Supplement)
☑ Delineate wetland – upland boundary onto aerial photograph.

Wetland Delineation Comments

A total of 47.52 acres of jurisdictional wetland and waters of the US (WUS) were delineated at the Schrieber Meadows site in 2020. The total wetland acreage delineated in 2020, was 39.74 acres, which is a decrease of 7.34 acres since 2019. WUS (Open Water) was 7.44 acres in 2020 and WUS (Stream Channel) was 0.34 acres. The decrease in total wetland acreage in 2020 is the result of the recent change for open water habitat at the request of the USACE.

### Functional Assessments

☑ Complete and attach full MDT Montana Wetland Assessment Method field forms.

Functional Assessment Comments:

All 3 AA's Category I wetlands.

### Maintenance

Were man-made nesting structures installed at this site? Yes

If yes, do they need to be reaired? No

If yes, describe the problems below and indicate if any actions were taken to remedy the problems.

Were man-made structures built or installed to impound water or control waterflow into or out of the wetland? No

If yes, are the structures in need of repair

Water level across the site is very high and reed canary grass very dense and over 7ft tall, making this site hazardous and many areas nearly inaccessible for crew to conduct monitoring activities.

## WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Schrieber Meadows City/County: Lincoln Sampling Date: 7/16/2020

Applicant/Owner: MDT State: Montana Sampling Point: DP01u

Investigator(s): R Quire, S Weyant Section, Township, Range: S 11 T 27N R 30W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): undulating Slope (%): 10

Subregion (LRR): LRR E Lat: 48.111984 Long: -115.417667 Datum: NAD 83

Soil Map Unit Name: aquic adfluvents, poorly drained NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes ☑ No ☐ | **Is the Sampled Area within a Wetland?** Yes ☐ No ☑ |
| Hydric Soil Present? | Yes ☐ No ☑ | |
| Wetland Hydrology Present? | Yes ☐ No ☑ | |

Remarks:
Upland sample point, located upslope of DP01w and wetland boundary.

### VEGETATION - Use scientific names of plants

**Tree Stratum** Plot size (30 Foot Radius) — Absolute % Cover: | Domiant Species? | Indicator Status

**Sapling/Shrub Stratum** Plot size (15 Foot Radius)

**Herbaceous Stratum** Plot size ( 5 Foot Radius)

| | | | |
|---|---|---|---|
| Alopecurus pratensis | 25 | ☑ | FAC |
| Elymus repens | 45 | ☑ | FAC |
| Pascopyrum smithii | 15 | ☐ | FACU |

**Woody Vine Stratum** Plot size ( 30 Foot Radius)

**Percent Bare Ground** 15

**Dominance Test worksheet**

Number of Dominant Species that are OBL, FACW or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 % (A/B)

**Prevalence Index worksheet**

| Total % Cover of: | | | Multiply by: |
|---|---|---|---|
| OBL species | 0 | X 1 | 0 |
| FACW species | 0 | X 2 | 0 |
| FAC species | 70 | X 3 | 210 |
| FACU species | 15 | X 4 | 60 |
| UPL species | 0 | X 5 | 0 |
| Column Totals | 85 (A) | | 270 (B) |

**Prevalence Index = B/A = 3.17647**

**Hydrophytic Vegetation Indicators**

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is <= 3.0
- ☐ 4 - Morphological Adaptations (Provide supporting data in remarks or on separate sheet.
- ☐ 5 - Wetland Non-Vascular Plants
- ☐ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric sil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.

**Hydrophytic Vegetation Present?** Yes ☑ NO ☐

**Remarks:**
BG/litter=15%. Dominated by non-native, invasive, facultative graminoids, that are opportunistic species occurring approximately 50% of the time in wetlands and 50% in uplands in this MVC region. Data point delineated as upland.

## SOIL

Sampling Point: DP01u

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 13+ | | | | | | | Cobbles | **Cobble bottom** |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ☐ No ☐

Remarks:

No hydric soil indicators observed during site visit.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

**Wetland Hydrology Present?** Yes ☐ No ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed during site visit.

## WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Schrieber Meadows City/County: Lincoln Sampling Date: 7/16/2020

Applicant/Owner: MDT State: Montana Sampling Point: DP01w

Investigator(s): R Quire, S Weyant Section, Township, Range: S 11 T 27N R 30W

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): LRR E Lat: 48.112044 Long: -115.417579 Datum: NAD 83

Soil Map Unit Name: aquic adfluvents, poorly drained NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes ☑ No ☐ | **Is the Sampled Area within a Wetland?** Yes ☑ No ☐ |
| Hydric Soil Present? | Yes ☑ No ☐ | |
| Wetland Hydrology Present? | Yes ☑ No ☐ | |

Remarks:
PEM depressional wetland located near west-central project boundary.

### VEGETATION - Use scientific names of plants

**Tree Stratum** Plot size (30 Foot Radius)

| | Absolute % Cover: | Domiant Species? | Indicator Status |
|---|---|---|---|

**Sapling/Shrub Stratum** Plot size (15 Foot Radius)

**Herbaceous Stratum** Plot size ( 5 Foot Radius)

| | | | |
|---|---|---|---|
| Phalaris arundinacea | 60 | ☑ | FACW |

**Woody Vine Stratum** Plot size ( 30 Foot Radius)

**Percent Bare Ground** 40

**Dominance Test worksheet**

Number of Dominant Species that are OBL, FACW or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 % (A/B)

**Prevalence Index worksheet**

| Total % Cover of: | | Multiply by: |
|---|---|---|
| OBL species | 0 X 1 | 0 |
| FACW species | 60 X 2 | 120 |
| FAC species | 0 X 3 | 0 |
| FACU species | 0 X 4 | 0 |
| UPL species | 0 X 5 | 0 |
| Column Totals | 60 (A) | 120 (B) |

**Prevalence Index = B/A = 2**

**Hydrophytic Vegetation Indicators**

- ☑ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is <= 3.0
- ☐ 4 - Morphological Adaptations (Provide supporting data in remarks or on separate sheet.
- ☐ 5 - Wetland Non-Vascular Plants
- ☐ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric sil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.

**Hydrophytic Vegetation Present?** Yes ☑ NO ☐

**Remarks:**
BG/litter/shallow ponded water=40%

## SOIL

Sampling Point: DP01w

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ☐ No ☐

Remarks:

Dark (10YR 2/2), greasy, highly decomposed plant material from 0 to 16 inches indicated the presence of a histosol. Hydrogen sulfide odor also observed during site visit.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☑ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☑ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present? Yes ☑ No ☐ Depth (inches): 2

Water Table Present? Yes ☑ No ☐ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 0

**Wetland Hydrology Present?** Yes ☑ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

2in surface water, sulfidic odor, and iron deposits observed at soil pit.

## WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Schrieber Meadows City/County: Lincoln Sampling Date: 7/16/2020

Applicant/Owner: MDT State: Montana Sampling Point: DP02u

Investigator(s): R Quire, S Weyant Section, Township, Range: S 11 T 27N R 30W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): undulating Slope (%): 0

Subregion (LRR): LRR E Lat: 48.116341 Long: -115.420054 Datum: NAD 83

Soil Map Unit Name: aquic adfluvents, poorly drained NWI classification: Not Mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes ☐ No ☑ | **Is the Sampled Area within a Wetland?** Yes ☐ No ☑ |
| Hydric Soil Present? | Yes ☐ No ☑ | |
| Wetland Hydrology Present? | Yes ☐ No ☑ | |

Remarks:
Upland data point, located just upslope of wetland boundary and DP02w.

### VEGETATION - Use scientific names of plants

**Tree Stratum** Plot size (30 Foot Radius)

| | Absolute % Cover: | Domiant Species? | Indicator Status |
|---|---|---|---|

**Sapling/Shrub Stratum** Plot size (15 Foot Radius)

**Herbaceous Stratum** Plot size ( 5 Foot Radius)

| | | | |
|---|---|---|---|
| Alopecurus pratensis | 25 | ☑ | FAC |
| Bromus inermis | 50 | ☑ | UPL |
| Poa pratensis | 5 | ☐ | FAC |

**Woody Vine Stratum** Plot size ( 30 Foot Radius)

**Percent Bare Ground** 20

**Dominance Test worksheet**

Number of Dominant Species that are OBL, FACW or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 % (A/B)

**Prevalence Index worksheet**

| Total % Cover of: | | | Multiply by: |
|---|---|---|---|
| OBL species | 0 | X 1 | 0 |
| FACW species | 0 | X 2 | 0 |
| FAC species | 30 | X 3 | 90 |
| FACU species | 0 | X 4 | 0 |
| UPL species | 50 | X 5 | 250 |
| Column Totals | 80 | (A) | 340 (B) |

**Prevalence Index = B/A = 4.25**

**Hydrophytic Vegetation Indicators**

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is <= 3.0
- ☐ 4 - Morphological Adaptations (Provide supporting data in remarks or on separate sheet.
- ☐ 5 - Wetland Non-Vascular Plants
- ☐ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric sil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.

**Hydrophytic Vegetation Present?** Yes ☐ NO ☑

**Remarks:**
BG/litter=20%

## SOIL

Sampling Point: DP02u

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 10-15 | 10YR 4/2 | 99 | 7.5YR 4/6 | 1 | C | M | Clay Loam | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ☐ No ☐

Remarks:

No hydric soil indicators observed during site visit.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

**Wetland Hydrology Present?** Yes ☐ No ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed during site visit. Soil dry.

## WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Schrieber Meadows City/County: Lincoln Sampling Date: 7/16/2020

Applicant/Owner: MDT State: Montana Sampling Point: DP02w

Investigator(s): R Quire, S Weyant Section, Township, Range: S 11 T 27N R 30W

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): LRR E Lat: 48.116304 Long: -115.420218 Datum: NAD 83

Soil Map Unit Name: aquic adfluvents, poorly drained NWI classification: Not Mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes ☑ No ☐ | **Is the Sampled Area within a Wetland?** Yes ☑ No ☐ |
| Hydric Soil Present? | Yes ☑ No ☐ | |
| Wetland Hydrology Present? | Yes ☑ No ☐ | |

Remarks:
PEM depressional wetland located near the northwest project boundary.

### VEGETATION - Use scientific names of plants

**Tree Stratum** Plot size (30 Foot Radius) — Absolute % Cover: — Domiant Species? — Indicator Status

**Sapling/Shrub Stratum** Plot size (15 Foot Radius)

**Herbaceous Stratum** Plot size ( 5 Foot Radius)

| | | | |
|---|---|---|---|
| Beckmannia syzigachne | 3 | ☐ | OBL |
| Carex nebrascensis | 1 | ☐ | OBL |
| Eleocharis palustris | 15 | ☑ | OBL |
| Juncus tenuis | 3 | ☐ | FAC |
| Phalaris arundinacea | 3 | ☐ | FACW |
| Typha latifolia | 35 | ☑ | OBL |

**Woody Vine Stratum** Plot size ( 30 Foot Radius)

**Percent Bare Ground** 40

**Dominance Test worksheet**

Number of Dominant Species that are OBL, FACW or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 % (A/B)

**Prevalence Index worksheet**

| Total % Cover of: | | | Multiply by: |
|---|---|---|---|
| OBL species | 54 | X 1 | 54 |
| FACW species | 3 | X 2 | 6 |
| FAC species | 3 | X 3 | 9 |
| FACU species | 0 | X 4 | 0 |
| UPL species | 0 | X 5 | 0 |
| Column Totals | 60 (A) | | 69 (B) |

**Prevalence Index = B/A = 1.15**

**Hydrophytic Vegetation Indicators**

- ☑ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is <= 3.0
- ☐ 4 - Morphological Adaptations (Provide supporting data in remarks or on separate sheet.
- ☐ 5 - Wetland Non-Vascular Plants
- ☐ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric sil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.

**Hydrophytic Vegetation Present?** Yes ☑ NO ☐

**Remarks:**
BG/litter/shallow ponded water=40%. Obligate rooted hydryophytic species dominate sample point.

## SOIL

Sampling Point: DP02w

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14 | 10YR 6/2 | 92 | N 6/0 | 5 | D | M | Sandy Clay | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils[3]:**

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ☐ No ☐

Remarks:

Prominent redoximorphic features common within the depleted matrix.

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☑ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☑ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present? Yes ☑ No ☐ Depth (inches): 3

Water Table Present? Yes ☑ No ☐ Depth (inches): 12

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 0

**Wetland Hydrology Present?** Yes ☑ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

3in of surface water present at soil pit, high water table at 12in within soil pit after 5 minutes, soil saturated to surface.

# MDT Montana Wetland Assessment Form (revised March 2008)

**1. Project name** Schrieber Meadows **2. MDT project#** STPP STWD (756) **Control#** 9680000

**3. Evaluation Date** 7/16/2020 **4. Evaluators** R Quire, S Weyant, B Trudgeon **5. Wetland/Site# (s)** Creation

**6. Wetland Location(s):** **T** 27N **R** 30W **Sec1** 11,12,13 **T** **R** **Sec2**

**Approx Stationing or Mileposts** Approximately Milepost 53.5

**Watershed** 1 - Kootenai **Watershed/County** Lincoln

**7. Evaluating Agency** CCI for MDT

**8. Wetland size acres** 22.54

**How assessed:** Measured e.g. by GPS

**Purpose of Evaluation**

- ☐ **Wetlands potentially affected by MDT project**
- ☐ **Mitigation Wetlands: pre-construction**
- ☑ **Mitigation Wetlands: post construction**
- ☐ **Other**

**9. Assesssment area (AA) size (acres)** 22.54

**How assessed:** Measured e.g. by GPS

**10. Classification of Wetland and Aquatic Habitats in AA**

| HGM Class (Brinson) | Class (Cowardin) | Modifier (Cowardin) | Water Regime | % of AA |
|---|---|---|---|---|
| Depressional | Emergent Wetland | Excavated | Permanent/Perennial | 35 |
| Depressional | Aquatic Bed | Excavated | Permanent/Perennial | 10 |
| Slope | Emergent Wetland | | Seasonal/Intermittent | 25 |
| Slope | Emergent Wetland | | Permanent/Perennial | 30 |
| | | | | |
| | | | | |

**11. Estimated Relative Abundance** Common

**12. General Condition of AA**

**i. Disturbance:** (use matrix below to determine [circle] appropriate response – see instructions for Montana-listed noxious weed and aquatic nuisance vegetation species (**ANVS**) lists)

| *Conditions within AA* | *Predominant conditions adjacent to (within 500 feet of) AA* | | |
|---|---|---|---|
| | Managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings; and noxious weed or ANVS cover is <=15%. | Land not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to minor clearing; contains few roads or buildings; noxious weed or ANVS cover is <=30%. | Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >=30%. |
| AA occurs and is managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings; and noxious weed or ANVS cover is <=15%. | low disturbance | low disturbance | moderate disturbance |
| AA not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads or buildings; noxious weed or ANVS cover is <=30%. | moderate disturbance | moderate disturbance | high disturbance |
| AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >=30%. | high disturbance | high disturbance | high disturbance |

**Comments: (types of disturbance, intensity, season, etc)**

AA includes excavated depressions and adjacent undisturbed wetland habitat created as a result of higher water table. Highway 2 which was under construction in 2019, is adjacent to the AA.

**ii. Prominent noxious, aquatic nuisance, other exotic species:**

Cirsium arvense and Leucanthemum vulgare

**iii. Provide brief descriptive summary of AA and surrounding land use/habitat**

AA includes constructed wetland depressions and adjacent wetland habitat that has been created by the plugging of existing ditches and channels, creation of a new stream channel and subsidence of the histosol soil elevations over time. The surrounding land is currently managed in a natural state. USFS land surrounds the majority of the site.

**13. Structural Diversity:** (based on number of "Cowardin" ***vegetated*** classes present [do not include unvegetated classes], see #10 above)

| Existing # of "Cowardin" Vegetated Classes in AA | Initial Rating | Is current management preventing (passive) existence of additional vegetated classes? | | Modified Rating |
|---|---|---|---|---|
| >=3 (or 2 if 1 is forested) classes | H | NA | NA | NA |
| 2 (or 1 if forested) classes | M | NA | NA | NA |
| 1 class, but not a monoculture | M | <NO | YES> | L |
| 1 class, monoculture (1 species comprises>=90% of total cover) | L | NA | NA | NA |

**Comments:** Emergent and aquatic bed classes are present

## SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

**14A. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals:**

**i. AA is Documented (D) or Suspected (S) to contain (check one based on definitions contained in instructions):**

| | | |
|---|---|---|
| **Primary or critical habitat (list species)** | ○ D ○ S | |
| **Secondary habitat (list Species)** | ◉ D ○ S | Grizzly bear |
| **Incidental habitat (list species)** | ○ D ○ S | |
| **No usable habitat** | ☐ S | |

**ii. Rating** (use the conclusions from i above and the matrix below to arrive at [check] the functional points and rating)

| *Highest Habitat Level* | doc/primary | sus/primary | doc/secondary | sus/secondary | doc/incidental | sus/incidental | None |
|---|---|---|---|---|---|---|---|
| *Functional Points and Rating* | 1H | .9H | .8H | .7M | .3L | .1L | 0L |

**Sources for documented use:** USFWS database, MNHP database shows site is within year-round range of grizzly bear, reports from FWP, USFWS, and FS on use.

**14B. Habitat for plant or animals rated S1, S2, or S3 by the Montana Natural Heritage Program: (not including species listed in14A above)**

**i. AA is Documented (D) or Suspected (S) to contain (check one based on definitions contained in instructions):**

| | | |
|---|---|---|
| **Primary or critical habitat (list species)** | ◉ D ○ S | Western toad (S2) |
| **Secondary habitat (list Species)** | ○ D ○ S | |
| **Incidental habitat (list species)** | ○ D ○ S | |
| **No usable habitat** | ☐ S | |

**ii. Rating** (use the conclusions from i above and the matrix below to arrive at [check] the functional points and rating)

| *Highest Habitat Level* | doc/primary | sus/primary | doc/secondary | sus/secondary | doc/incidental | sus/incidental | None |
|---|---|---|---|---|---|---|---|
| ***S1 Species:*** *Functional Points and Rating* | 1H | .8H | .7M | .6M | .2L | .1L | 0L |
| ***S2 and S3 Species:*** *Functional Points and Rating* | .9H | .7M | .6M | .5M | .2L | .1L | 0L |

**Sources for documented use:** MTNHP and documented breeding on site by MDT and USFS personnel.

**14C. General Wildlife Habitat Rating:**

**i. Evidence of overall wildlife use in the AA (check substantial, moderate, or low based on supporting evidence):**

Substantial

***Substantial*** (based on any of the following [check]):

- [x] observations of abundant wildlife #s or high species diversity (during any period)
- [x] abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- [ ] presence of extremely limiting habitat features not available in the surrounding area
- [ ] interviews with local biologists with knowledge of the AA

***Minimal*** (based on any of the following [check]):

- [ ] few or no wildlife observations during peak use periods
- [ ] little to no wildlife sign
- [ ] sparse adjacent upland food sources
- [ ] interviews with local biologists with knowledge of the AA

***Moderate*** (based on any of the following [check]):

- [ ] observations of scattered wildlife groups or individuals or relatively few species during peak periods
- [ ] common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- [ ] adequate adjacent upland food sources
- [ ] interviews with local biologists with knowledge of the AA

**ii. Wildlife** habitat features (Working from top to bottom, check appropriate AA attributes in matrix to arrive at rating. Structural diversity is from #13. For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percent composition of the AA (see #10). Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent [see instructions for further definitions of these terms])

| *Structural diversity (see #13)* | High | | | | | | | | Moderate | | | | | | | | Low | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Class cover distribution (all vegetated classes)* | Even | | | | Uneven | | | | Even | | | | Uneven | | | | Even | | | |
| *Duration of surface water in ≥ 10% of AA* | P/P | S/I | T/E | | | S/I | T/E | A | P/P | S/I | T/E | A | P/P | S/I | T/E | A | P/P | S/I | T/E | A |
| **Low** disturbance at AA (see #12i) | E | | | | E | | | | E | | | M | E | | | M | E | | M | |
| **Moderate** disturbance at AA (see #12i) | H | H | | H | H | H | | M | H | H | M | M | H | M | M | L | H | M | L | L |
| **High** disturbance at AA (see #12i) | M | M | | L | M | M | | L | M | M | | L | M | L | L | L | L | L | L | L |

**iii. Rating** (use the conclusions from i and ii above and the matrix below to arrive at [check] the functional points and rating)

| *Evidence of wildlife use (i)* | *Wildlife habitat features rating (ii)* | | | |
|---|---|---|---|---|
| | Exceptional | High | Moderate | Low |
| **Substantial** | 1E | .9H | .8H | .7M |
| **Moderate** | .9H | .7M | .5M | |
| **Minimal** | .6M | .4M | .2L | .1L |

**Comments** Observed waterfowl and wildlife tracks.

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**14D. General Fish Habitat Rating:** (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then check ☐ **NA** here and proceed to 14E.) Cold Water

| *Duration of surface water in AA* | Permanent / Perennial | | | | | | Seasonal / Intermittent | | | | | | Temporary / Ephemeral | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Aquatic hiding / resting / escape cover* | Optimal | | Adequate | | Poor | | Optimal | | Adequate | | Poor | | Optimal | | Adequate | | Poor | |
| *Thermal cover optimal / suboptimal* | | | | | | | O | S | O | S | O | S | | | | | | |
| **FWP Tier I** fish species | 1E | .9H | .8H | .7M | .6M | .5M | .9H | .8H | .7M | .6M | .5M | .4M | .7M | .6M | .5M | .4M | .3L | .3L |
| **FWP Tier II or Native Game** fish species | .9H | .8H | .7M | .6M | .5M | .5M | .8H | .7M | .6M | .5M | .4M | .4M | .6M | .5M | .4M | .3L | .2L | .2L |
| **FWP Tier III or Introduced Game** fish | .8H | .7M | .6M | .5M | .5M | .4M | .7M | .6M | .5M | .4M | .4M | .3L | .5M | .4M | .3L | .2L | .2L | .1L |
| **FWP Non-Game Tier IV or No** fish species | .5M | .5M | .5M | .4M | .4M | .3L | .4M | .4M | .4M | .3L | .3L | .2L | .2L | .2L | .2L | .1L | .1L | .1L |

*Sources used for identifying fish sp. potentially found in AA:*

**ii. Modified Rating** (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)
*a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity* ***or*** *is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support,* ***or*** *do aquatic nuisance plant or animal species (see* ***Appendix E****) occur in fish habitat?* **Y** ◯ **N** ◉ *If yes, reduce score in* ***i*** *above by 0.1:* **Modified Rating** .6M

*b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish?* ◉ **Y** ◯ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
**Modifed Rating** .7M

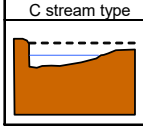
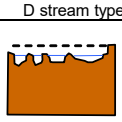
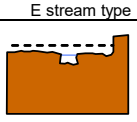
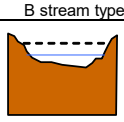
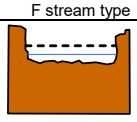
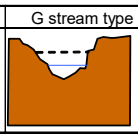
**iii. Final Score and Rating:** .7 M **Comments:** An upwelling area is located adjacent to Coyote Creek in the north 1/3 of the site. Pumpkinseed and brook trout observed by MDT and monitoring crews in open water in 2019 and previous years.

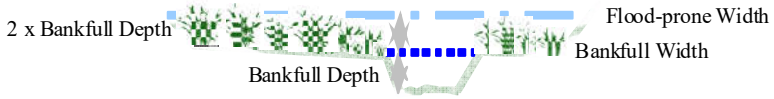
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**14E. Flood Attenuation:** (Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, click ☐ **NA** here and proceed to 14F.)

**i. Rating** (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating)

| *Estimated or Calculated Entrenchment (Rosgen 1994, 1996)* | Slightly entrenched - C, D, E stream types | | | Moderately entrenched – B stream type | | | Entrenched-A, F, G stream types | | |
|---|---|---|---|---|---|---|---|---|---|
| *% of flooded wetland classified as forested and/or scrub/shrub* | 75% | 25-75% | <25% | 75% | 25-75% | <25% | 75% | 25-75% | <25% |
| AA contains **no outlet or restricted outlet** | 1H | .9H | .6M | .8H | .7M | .5M | .4M | .3L | .2L |
| AA contains **unrestricted outlet** | .9H | .8H | .5M | .7M | .6M | .4M | .3L | .2L | .1L |

| **Slightly Entrenched ER = >2.2** | | | **Moderately Entrenched ER = 1.41 – 2.2** | **Entrenched ER = 1.0 – 1.4** | | |
|---|---|---|---|---|---|---|
| C stream type | D stream type | E stream type | B stream type | A stream type | F stream type | G stream type |
|  |  |  |  |  |  |  |




**Floodprone width** 35 / **Bankfull width** 5 = **Entrenchment ratio** 7

**ii.** Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (check)? **Y** ◯ **N** ◉

**Comments:** Highway adjacent to the site, minimal trees or shrubs present.

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**14F. Short and Long Term Surface Water Storage:** (Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, click ☐ **NA** here and proceed to 14G.)

**i. Rating** (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see instructions for further definitions of these terms].)

| *Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding* | >5 acre feet | | | 1.1 to 5 acre feet | | | ≤1 acre foot | | |
|---|---|---|---|---|---|---|---|---|---|
| *Duration of surface water at wetlands within the AA* | P/P | S/I | T/E | P/P | S/I | T/E | P/P | S/I | T/E |
| Wetlands in AA flood or pond **≥ 5 out of 10 years** | 1H | .9H | .8H | .8H | .6M | .5M | .4M | .3L | .2L |
| Wetlands in AA flood or pond **< 5 out of 10 years** | .9H | .8H | .7M | .7M | .5M | .4M | .3L | .2L | .1L |

**Comments:** Extensive areas of perennial inundation greater than 2 feet deep were observed in 2013-2020.

**14G. Sediment/Nutrient/Toxicant Retention and Removal:** (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are subject to such input, click ☐ **NA** here and proceed to 14H.)

**i. Rating** (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating [H = high, M = moderate, or L = low])

| *Sediment, nutrient, and toxicant input levels within AA* | AA receives or surrounding land use with potential to deliver levels of sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present. | | | | Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants **or** AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present. | | | |
|---|---|---|---|---|---|---|---|---|
| *% cover of wetland vegetation in AA* | ≥ 70% | | < 70% | | ≥ 70% | | < 70% | |
| *Evidence of flooding / ponding in AA* | Yes | No | Yes | No | Yes | No | Yes | No |
| AA contains **no or restricted outlet** | 1H | .8H | .7M | .5M | .5M | .4M | .3L | .2L |
| AA contains **unrestricted outlet** | .9H | .7M | .6M | .4M | .4M | .3L | .2L | .1L |

**Comments:** Wetlands adjacent to excavated cells are 100% vegetated with reed canarygrass and very minimal Carex spp. Depressions with no outlet.

**14H Sediment/Shoreline Stabilization:** (Applies only if AA occurs on or within the banks or a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14H does not apply, click ☐ **NA** here and proceed to 14I.)

**i. Rating** (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating)

| *% Cover of **wetland** streambank or shoreline by species with stability ratings of ≥6 (see **Appendix F**).* | *Duration of surface water adjacent to rooted vegetation* | | |
|---|---|---|---|
| | Permanent / Perennial | Seasonal / Intermittent | Temporary / Ephemeral |
| **≥ 65%** | 1H | .9H | .7M |
| **35-64%** | .7M | .6M | .5M |
| **< 35%** | .3L | .2L | .1L |

**Comments:** Perennial hydrologic regime in estimated 75% of the AA. Species with high stability ratings are established on the perimeters of excavated areas.

**14I. Production Export/Food Chain Support:**

**i. Level of Biological Activity** (synthesis of wildlife and fish habitat ratings [check])

| **General Fish Habitat Rating (14D.iii.)** | **General Wildlife Habitat Rating (14C.iii.)** | | |
|---|---|---|---|
| | E/H | M | L |
| E/H | H | H | M |
| M | H | M | M |
| L | M | M | L |
| N/A | H | M | L |

**ii. Rating** (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14I.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as previously defined, and A = "absent" [see instructions for further definitions of these terms].)

| *A* | Vegetated component >5 acres | | | | | | Vegetated component 1-5 acres | | | | | | Vegetated component <1 acre | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *B* | High | | Moderate | | Low | | High | | Moderate | | Low | | High | | Moderate | | Low | |
| *C* | | | | | | No | Yes | No | Yes | No | Yes | No | Yes | | Yes | No | Yes | |
| **P/P** | | | | .5M | .6M | .4M | | .6M | | | | .3L | | .6M | .6M | | .3L | |
| **S/I** | .9H | | | .4M | .5M | | | .5M | | | | .2L | | .5M | .5M | | .3L | |
| **T/E/A** | .8H | .5M | .6M | .3L | .4M | .2L | | .4M | | .2L | | | .6M | .4M | .4M | .2L | .2L | .1L |

**iii. Modified Rating** (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.) **Vegetated Upland Buffer (VUB)**: Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

*a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference?* **Y** ◉ **N** ○ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** 1 E

**Comments:** High level of biological activity, veg component > 5 ac, perennial, has surface and subsurface outlets

**14J. Groundwater Discharge/Recharge:** (check the appropriate indicators in i & ii below)

**i. Discharge Indicators**

- ☐ The AA is a slope wetland
- ☑ Springs or seeps are known or observed
- ☐ Vegetation growing during dormant season/drought
- ☐ Wetland occurs at the toe of a natural slope
- ☐ Seeps are present at the wetland edge
- ☑ AA permanently flooded during drought periods
- ☐ Wetland contains an outlet, but no inlet
- ☑ Shallow water table and the site is saturated to the surface
- ☑ Other: large spring located near the middle of the AA

**ii. Recharge Indicators**

- ☐ Permeable substrate present without underlying impeding layer
- ☐ Wetland contains inlet but no outlet
- ☐ Stream is a known 'losing' stream; discharge volume decreases
- ☐ Other:

**iii. Rating** (use the information from i and ii above and the table below to arrive at [check] the functional points and rating)

| | **Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM*** | | | |
|---|---|---|---|---|
| *Criteria* | P/P | S/I | T | None |
| **Groundwater Discharge or Recharge** | 1H | .7M | .4M | .1L |
| **Insufficient Data/Information** | N/A | | | |

**Comments:** AA with perennial inundation/saturation to the surface.

**14K. Uniqueness:**

**i. Rating** (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating)

| *Replacement potential* | AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland **or** plant association listed as "S1" by the MTNHP | | | AA does not contain previously cited rare types **and** structural diversity (#13) is high **or** contains plant association listed as "S2" by the MTNHP | | | AA does not contain previously cited rare types or associations **and** structural diversity (#13) is low-moderate | | |
|---|---|---|---|---|---|---|---|---|---|
| *Estimated relative abundance (#11)* | rare | common | abundant | rare | common | abundant | rare | common | abundant |
| **Low** disturbance at AA (#12i) | 1H | .9H | .8H | .8H | .6M | .5M | .5M | .4M | .3L |
| **Moderate** disturbance at AA (#12i) | .9H | .8H | .7M | .7M | .5M | .4M | .4M | .3L | .2L |
| **High** disturbance at AA (#12i) | .8H | .7H | .6M | .6M | .4M | .3L | .3L | .2L | .1L |

**Comments:** Structural diversity not expected to increase with present perennial water regime and high water depth (3ft). Shrub/tree diversity will not thrive in these conditions.

**14L. Recreation/Education Potential:** (affords "bonus" points if AA provides recreation or education opportunity)

**i. Is the AA a known or potential rec./ed. site:** (check) **Y** ◉ **N** ○ (if 'Yes' continue with the evaluation; if 'No' then click ☐ **NA** here and proceed to the overall summary and rating page)

**ii. Check categories that apply to the AA:** ☑ Educational/scientific study; ☑ Consumptive rec.; ☐ Non-consumptive rec.; ☐ Other

**iii. Rating** (use the matrix below to arrive at [check] the functional points and rating)

| *Known or Potential Recreation or Education Area* | Known | Potential |
|---|---|---|
| **Public ownership or public easement with general public access (no permission required)** | .2H | .15H |
| **Private ownership with general public access (no permission required)** | .15H | .1M |
| **Private or public ownership without general public access, or requiring permission for public access** | .1M | .05L |

**Comments:**

Known recreation site

**General Site Notes**

**FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S):** Creation

| Function & Value Variables | Rating | Actual Functional Points | Possible Functional Points | Functional Units: (Actual Points x Estimated AA Acreage) | Indicate the four most prominent functions with an asterisk (*) |
|---|---|---|---|---|---|
| A. Listed/Proposed T&E Species Habitat | H | .8 | 1 | 18.03 | ☐ |
| B. MT Natural Heritage Program Species Habitat | H | .9 | 1 | 20.29 | ☐ |
| C. General Wildlife Habitat | H | .9 | 1 | 20.29 | ☑ |
| D. General Fish Habitat | M | .7 | 1 | 15.78 | ☐ |
| E. Flood Attenuation | M | .6 | 1 | 13.52 | ☐ |
| F. Short and Long Term Surface Water Storage | H | 1 | 1 | 22.54 | ☑ |
| G. Sediment/Nutrient/Toxicant Removal | H | 1 | 1 | 22.54 | ☐ |
| H. Sediment/Shoreline Stabilization | H | 1 | 1 | 22.54 | ☐ |
| I. Production Export/Food Chain Support | E | 1 | 1 | 22.54 | ☑ |
| J. Groundwater Discharge/Recharge | H | 1 | 1 | 22.54 | ☑ |
| K. Uniqueness | L | .3 | 1 | 6.76 | ☐ |
| L. Recreation/Education Potential (bonus points) | H | .2 | NA | 4.51 | ☐ |
| Totals: | | 9.4 | 11 | 211.88 | |
| Percent of Possible Score | | | **85.45** % | | |

**Category I Wetland:** (must satisfy **one** of the following criteria; otherwise go to Category II)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☑ Percent of possible score > 80% (round to nearest whole #).

**Category II Wetland:** (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)
- ☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☐ Percent of possible score > 65% (round to nearest whole #).

**Category III Wetland:** (Criteria for Categories I, II, or IV not satisfied)

☐

**Category IV Wetland:** (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

## OVERALL ANALYSIS AREA RATING:
## (check appropriate category based on the criteria outlined above)

| I | II | III | IV |
|---|---|---|---|

# MDT Montana Wetland Assessment Form (revised March 2008)

**1. Project name** Schrieber Meadows **2. MDT project#** STPP STWD (756) **Control#** 9680000

**3. Evaluation Date** 7/16/2020 **4. Evaluators** R Quire, S Weyant, B Trudgeon **5. Wetland/Site# (s)** Enhancement

**6. Wetland Location(s):** **T** 27N **R** 30W **Sec1** 11,12,13 **T** **R** **Sec2**

**Approx Stationing or Mileposts** Approximately Milepost 53.5

**Watershed** 1 - Kootenai **Watershed/County** Lincoln

**7. Evaluating Agency** CCI for MDT

**8. Wetland size acres** 13.22

**Purpose of Evaluation**

**How assessed:** Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

**9. Assesssment area (AA) size (acres)** 13.22

☐ **Mitigation Wetlands: pre-construction**

**How assessed:** Measured e.g. by GPS

☐ **Mitigation Wetlands: post construction**

☐ **Other**

**10. Classification of Wetland and Aquatic Habitats in AA**

| HGM Class (Brinson) | Class (Cowardin) | Modifier (Cowardin) | Water Regime | % of AA |
|---|---|---|---|---|
| Slope | Emergent Wetland | | Permanent/Perennial | 60 |
| Slope | Emergent Wetland | | Seasonal/Intermittent | 30 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

**11. Estimated Relative Abundance** Common

**12. General Condition of AA**

**i. Disturbance:** (use matrix below to determine [circle] appropriate response – see instructions for Montana-listed noxious weed and aquatic nuisance vegetation species (**ANVS**) lists)

| *Conditions within AA* | *Predominant conditions adjacent to (within 500 feet of) AA* | | |
|---|---|---|---|
| | Managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings; and noxious weed or ANVS cover is <=15%. | Land not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to minor clearing; contains few roads or buildings; noxious weed or ANVS cover is <=30%. | Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >=30%. |
| AA occurs and is managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings; and noxious weed or ANVS cover is <=15%. | low disturbance | low disturbance | moderate disturbance |
| AA not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads or buildings; noxious weed or ANVS cover is <=30%. | moderate disturbance | moderate disturbance | high disturbance |
| AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >=30%. | high disturbance | high disturbance | high disturbance |

**Comments: (types of disturbance, intensity, season, etc)**

Disturbance due to recent road fill between the AA and Hwy 2

**ii. Prominent noxious, aquatic nuisance, other exotic species:**

Cirsium arvense and Leucanthemum vulgare

**iii. Provide brief descriptive summary of AA and surrounding land use/habitat**

AA includes existing wetlands located between stream mitigation area and US Hwy 2. The wetland is dominated by reed canarygrass and meadow foxtail. Restoration efforts have resulted in increased inundation. Adjacent land use is forest and the highway. Highway 2 under construction during summer of 2020.

**13. Structural Diversity:** (based on number of "Cowardin" ***vegetated*** classes present [do not include unvegetated classes], see #10 above)

| Existing # of "Cowardin" Vegetated Classes in AA | Initial Rating | Is current management preventing (passive) existence of additional vegetated classes? | | Modified Rating |
|---|---|---|---|---|
| >=3 (or 2 if 1 is forested) classes | H | NA | NA | NA |
| 2 (or 1 if forested) classes | M | NA | NA | NA |
| 1 class, but not a monoculture | M | <NO | YES> | L |
| 1 class, monoculture (1 species comprises>=90% of total cover) | L | NA | NA | NA |

**Comments:** Emergent wetland dominated by primarily reed canary grass, with some cover from meadow foxtail and minimal cover from Carex spp.

## SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

**14A. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals:**

**i. AA is Documented (D) or Suspected (S) to contain (check one based on definitions contained in instructions):**

| | | |
|---|---|---|
| **Primary or critical habitat (list species)** | ○ D ○ S | |
| **Secondary habitat (list Species)** | ◉ D ○ S | Grizzly bear |
| **Incidental habitat (list species)** | ○ D ○ S | |
| **No usable habitat** | ☐ S | |

**ii. Rating** (use the conclusions from i above and the matrix below to arrive at [check] the functional points and rating)

| *Highest Habitat Level* | doc/primary | sus/primary | doc/secondary | sus/secondary | doc/incidental | sus/incidental | None |
|---|---|---|---|---|---|---|---|
| *Functional Points and Rating* | 1H | .9H | .8H | .7M | .3L | .1L | 0L |

**Sources for documented use** USFWS database, MNHP database shows site is within year-round range of grizzly bear, reports of use from FWP, USFS, and USFWS.

**14B. Habitat for plant or animals rated S1, S2, or S3 by the Montana Natural Heritage Program: (not including species listed in14A above)**

**i. AA is Documented (D) or Suspected (S) to contain (check one based on definitions contained in instructions):**

| | | |
|---|---|---|
| **Primary or critical habitat (list species)** | ◉ D ○ S | Western toad (S2) |
| **Secondary habitat (list Species)** | ○ D ○ S | |
| **Incidental habitat (list species)** | ○ D ○ S | |
| **No usable habitat** | ☐ S | |

**ii. Rating** (use the conclusions from i above and the matrix below to arrive at [check] the functional points and rating)

| *Highest Habitat Level* | doc/primary | sus/primary | doc/secondary | sus/secondary | doc/incidental | sus/incidental | None |
|---|---|---|---|---|---|---|---|
| ***S1 Species:*** *Functional Points and Rating* | 1H | .8H | .7M | .6M | .2L | .1L | 0L |
| ***S2 and S3 Species:*** *Functional Points and Rating* | .9H | .7M | .6M | .5M | .2L | .1L | 0L |

**Sources for documented use** MTNHP and documented breeding on site by MDT and USFS personnel. Great Blue Heron (S3) observed on site.

**14C. General Wildlife Habitat Rating:**

**i. Evidence of overall wildlife use in the AA (check substantial, moderate, or low based on supporting evidence):** Substantial

***Substantial*** (based on any of the following [check]):

- [x] observations of abundant wildlife #s or high species diversity (during any period)
- [x] abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- [ ] presence of extremely limiting habitat features not available in the surrounding area
- [ ] interviews with local biologists with knowledge of the AA

***Minimal*** (based on any of the following [check]):

- [ ] few or no wildlife observations during peak use periods
- [ ] little to no wildlife sign
- [ ] sparse adjacent upland food sources
- [ ] interviews with local biologists with knowledge of the AA

***Moderate*** (based on any of the following [check]):

- [ ] observations of scattered wildlife groups or individuals or relatively few species during peak periods
- [ ] common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- [ ] adequate adjacent upland food sources
- [ ] interviews with local biologists with knowledge of the AA

**ii. Wildlife** habitat features (Working from top to bottom, check appropriate AA attributes in matrix to arrive at rating. Structural diversity is from #13. For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percent composition of the AA (see #10). Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent [see instructions for further definitions of these terms])

| *Structural diversity (see #13)* | High | | | | | | | | Moderate | | | | | | | | Low | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Class cover distribution (all vegetated classes)* | Even | | | | Uneven | | | | Even | | | | Uneven | | | | Even | | | |
| *Duration of surface water in ≥ 10% of AA* | P/P | S/I | T/E | A | P/P | S/I | T/E | A | P/P | S/I | T/E | A | P/P | S/I | T/E | A | P/P | S/I | T/E | A |
| **Low** disturbance at AA (see #12i) | E | E | E | H | E | E | H | H | E | H | H | M | E | H | M | M | E | H | M | M |
| **Moderate** disturbance at AA (see #12i) | H | H | H | H | H | H | H | M | H | H | M | M | H | M | M | L | H | M | L | L |
| **High** disturbance at AA (see #12i) | M | M | M | L | M | M | L | L | M | M | L | L | M | L | L | L | L | L | L | L |

**iii. Rating** (use the conclusions from i and ii above and the matrix below to arrive at [check] the functional points and rating)

| *Evidence of wildlife use (i)* | *Wildlife habitat features rating (ii)* | | | |
|---|---|---|---|---|
| | Exceptional | High | Moderate | Low |
| **Substantial** | 1E | .9H | .8H | .7M |
| **Moderate** | .9H | .7M | .5M | .3L |
| **Minimal** | .6M | .4M | .2L | .1L |

**Comments** Substantial wildlife use within the AA; however there is moderate traffic use during the day adjacent to the site on the northeast side.

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**14D. General Fish Habitat Rating:** (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then check ☐ **NA** here and proceed to 14E.) Cold Water

**i. Habitat Quality and Known / Suspected Fish Species in AA** (use matrix to arrive at [check the functional points and rating)

| *Duration of surface water in AA* | Permanent / Perennial | | | | | | Seasonal / Intermittent | | | | | | Temporary / Ephemeral | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Aquatic hiding / resting / escape cover* | Optimal | | Adequate | | Poor | | Optimal | | Adequate | | Poor | | Optimal | | Adequate | | Poor | |
| *Thermal cover optimal / suboptimal* | O | S | O | S | O | S | O | S | O | S | O | S | O | S | O | S | O | S |
| **FWP Tier I** fish species | 1E | .9H | .8H | .7M | .6M | .5M | .9H | .8H | .7M | .6M | .5M | .4M | .7M | .6M | .5M | .4M | .3L | .3L |
| **FWP Tier II or Native Game** fish species | .9H | .8H | .7M | .6M | .5M | .5M | .8H | .7M | .6M | .5M | .4M | .4M | .6M | .5M | .4M | .3L | .2L | .2L |
| **FWP Tier III or Introduced Game** fish | .8H | .7M | .6M | .5M | .5M | .4M | .7M | .6M | .5M | .4M | .4M | .3L | .5M | .4M | .3L | .2L | .2L | .1L |
| **FWP Non-Game Tier IV or No** fish species | .5M | .5M | .5M | .4M | .4M | .3L | .4M | .4M | .4M | .3L | .3L | .2L | .2L | .2L | .2L | .1L | .1L | .1L |

*Sources used for identifying fish sp. potentially found in AA:*

**ii. Modified Rating** (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)
*a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity* ***or*** *is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support,* ***or*** *do aquatic nuisance plant or animal species (see* ***Appendix E****) occur in fish habitat?* **Y** ◯ **N** ◉ *If yes, reduce score in* ***i*** *above by 0.1:* **Modified Rating** .3L

*b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish?* ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
**Modifed Rating** .3L

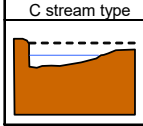
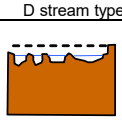
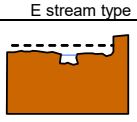
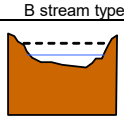
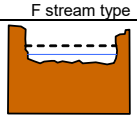
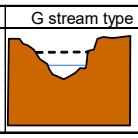
**iii. Final Score and Rating:** .3 L **Comments:** Minimal fish habitat present, no fish have been observed in AA.

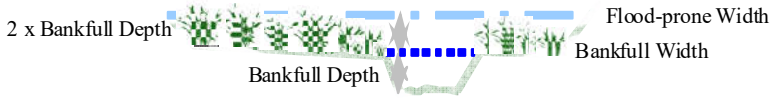
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**14E. Flood Attenuation:** (Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, click ☐ **NA** here and proceed to 14F.)

**i. Rating** (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating)

| *Estimated or Calculated Entrenchment (Rosgen 1994, 1996)* | Slightly entrenched - C, D, E stream types | | | Moderately entrenched – B stream type | | | Entrenched-A, F, G stream types | | |
|---|---|---|---|---|---|---|---|---|---|
| *% of flooded wetland classified as forested and/or scrub/shrub* | 75% | 25-75% | <25% | 75% | 25-75% | <25% | 75% | 25-75% | <25% |
| AA contains **no outlet or restricted outlet** | 1H | .9H | .6M | .8H | .7M | .5M | .4M | .3L | .2L |
| AA contains **unrestricted outlet** | .9H | .8H | .5M | .7M | .6M | .4M | .3L | .2L | .1L |

| **Slightly Entrenched ER = >2.2** | | | **Moderately Entrenched ER = 1.41 – 2.2** | **Entrenched ER = 1.0 – 1.4** | | |
|---|---|---|---|---|---|---|
| C stream type | D stream type | E stream type | B stream type | A stream type | F stream type | G stream type |
|  |  |  |  |  |  |  |




**Floodprone width** 35 / **Bankfull width** 5 = **Entrenchment ratio** 7

**ii.** Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (check)? **Y** ◯ **N** ◉

**Comments:** AA inundated from restricted outlet, minimal trees or shrubs present.

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**14F. Short and Long Term Surface Water Storage:** (Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, click ☐ **NA** here and proceed to 14G.)

**i. Rating** (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see instructions for further definitions of these terms].)

| *Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding* | >5 acre feet | | | 1.1 to 5 acre feet | | | ≤1 acre foot | | |
|---|---|---|---|---|---|---|---|---|---|
| *Duration of surface water at wetlands within the AA* | P/P | S/I | T/E | P/P | S/I | T/E | P/P | S/I | T/E |
| Wetlands in AA flood or pond **≥ 5 out of 10 years** | 1H | .9H | .8H | .8H | .6M | .5M | .4M | .3L | .2L |
| Wetlands in AA flood or pond **< 5 out of 10 years** | .9H | .8H | .7M | .7M | .5M | .4M | .3L | .2L | .1L |

**Comments:** AA includes constructed wetland depressions and adjacent wetland habitat that has been created by inundation from restoration efforts. These efforts include plugging of existing ditches and channels and creation of a new stream channel.

**14G. Sediment/Nutrient/Toxicant Retention and Removal:** (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are subject to such input, click ☐ **NA** here and proceed to 14H.)

**i. Rating** (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating [H = high, M = moderate, or L = low])

| *Sediment, nutrient, and toxicant input levels within AA* | AA receives or surrounding land use with potential to deliver levels of sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present. | | | | Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants **or** AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present. | | | |
|---|---|---|---|---|---|---|---|---|
| *% cover of wetland vegetation in AA* | ≥ 70% | | < 70% | | ≥ 70% | | < 70% | |
| *Evidence of flooding / ponding in AA* | Yes | No | Yes | No | Yes | No | Yes | No |
| AA contains **no or restricted outlet** | 1H | .8H | .7M | .5M | .5M | .4M | .3L | .2L |
| AA contains **unrestricted outlet** | .9H | .7M | .6M | .4M | .4M | .3L | .2L | .1L |

**Comments:** AA nearly 100% vegetated with reed canarygrass, presence of flooding/ponding, restricted outlet.

**14H Sediment/Shoreline Stabilization:** (Applies only if AA occurs on or within the banks or a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14H does not apply, click ☐ **NA** here and proceed to 14I.)

**i. Rating** (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating)

| *% Cover of **wetland** streambank or shoreline by species with stability ratings of ≥6 (see **Appendix F**).* | *Duration of surface water adjacent to rooted vegetation* | | |
|---|---|---|---|
| | Permanent / Perennial | Seasonal / Intermittent | Temporary / Ephemeral |
| **≥ 65%** | 1H | .9H | .7M |
| **35-64%** | .7M | .6M | .5M |
| **< 35%** | .3L | .2L | .1L |

**Comments:** Open water areas subject to wave action, well vegetated with near monoculture of 7ft tall reed canarygrass

**14I. Production Export/Food Chain Support:**

**i. Level of Biological Activity** (synthesis of wildlife and fish habitat ratings [check])

| **General Fish Habitat Rating (14D.iii.)** | **General Wildlife Habitat Rating (14C.iii.)** | | |
|---|---|---|---|
| | E/H | M | L |
| E/H | H | H | M |
| M | H | M | M |
| L | M | M | L |
| N/A | H | M | L |

**ii. Rating** (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14I.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as previously defined, and A = "absent" [see instructions for further definitions of these terms].)

| *A* | Vegetated component >5 acres | | | | | | Vegetated component 1-5 acres | | | | | | Vegetated component <1 acre | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *B* | High | | Moderate | | Low | | High | | Moderate | | Low | | High | | Moderate | | Low | |
| *C* | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No |
| **P/P** | 1E | .7H | .8H | .5M | .6M | .4M | .9H | .6M | .7H | .4M | .5M | .3L | .8H | .6M | .6M | .4M | .3L | .2L |
| **S/I** | .9H | .6M | .7H | .4M | .5M | .3L | .8H | .5M | .6M | .3L | .4M | .2L | .7H | .5M | .5M | .3L | .3L | .2L |
| **T/E/A** | .8H | .5M | .6M | .3L | .4M | .2L | .7H | .4M | .5M | .2L | .3L | .1L | .6M | .4M | .4M | .2L | .2L | .1L |

**iii. Modified Rating** (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.) **Vegetated Upland Buffer (VUB)**: Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

*a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference?* **Y** ◉ **N** ○ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** .9H

**Comments:** Low fish habitat rating, vegetation component >5 ac, moderate biological activity, perennial hydrology with restricted outlet

**14J. Groundwater Discharge/Recharge:** (check the appropriate indicators in i & ii below)

**i. Discharge Indicators**

- ☐ The AA is a slope wetland
- ☐ Springs or seeps are known or observed
- ☐ Vegetation growing during dormant season/drought
- ☐ Wetland occurs at the toe of a natural slope
- ☑ Seeps are present at the wetland edge
- ☐ AA permanently flooded during drought periods
- ☐ Wetland contains an outlet, but no inlet
- ☑ Shallow water table and the site is saturated to the surface
- ☐ Other:

**ii. Recharge Indicators**

- ☐ Permeable substrate present without underlying impeding layer
- ☐ Wetland contains inlet but no outlet
- ☐ Stream is a known 'losing' stream; discharge volume decreases
- ☐ Other:

**iii. Rating** (use the information from i and ii above and the table below to arrive at [check] the functional points and rating)

| | **Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM*** | | | |
|---|---|---|---|---|
| *Criteria* | P/P | S/I | T | None |
| **Groundwater Discharge or Recharge** | 1H | .7M | .4M | .1L .1L |
| **Insufficient Data/Information** | NA N/A | | | |

**Comments:** AA with shallow water table and surface water

**14K. Uniqueness:**

**i. Rating** (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating)

| *Replacement potential* | AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland **or** plant association listed as "S1" by the MTNHP | | | AA does not contain previously cited rare types **and** structural diversity (#13) is high **or** contains plant association listed as "S2" by the MTNHP | | | AA does not contain previously cited rare types or associations **and** structural diversity (#13) is low-moderate | | |
|---|---|---|---|---|---|---|---|---|---|
| *Estimated relative abundance (#11)* | rare | common | abundant | rare | common | abundant | rare | common | abundant |
| **Low** disturbance at AA (#12i) | 1H | .9H | .8H | .8H | .6M | .5M | .5M | .4M | .3L |
| **Moderate** disturbance at AA (#12i) | .9H | .8H | .7M | .7M | .5M | .4M | .4M | .3L | .2L |
| **High** disturbance at AA (#12i) | .8H | .7H | .6M | .6M | .4M | .3L | .3L | .2L | .1L |

**Comments:** AA with common relative abundance and moderate disturbance due to adjacent road.

**14L. Recreation/Education Potential:** (affords "bonus" points if AA provides recreation or education opportunity)

**i. Is the AA a known or potential rec./ed. site:** (check) **Y** ◉ **N** ○ (if 'Yes' continue with the evaluation; if 'No' then click ☐ **NA** here and proceed to the overall summary and rating page)

**ii. Check categories that apply to the AA:** ☑ Educational/scientific study; ☑ Consumptive rec.; ☐ Non-consumptive rec.; ☐ Other

**iii. Rating** (use the matrix below to arrive at [check] the functional points and rating)

| *Known or Potential Recreation or Education Area* | Known | Potential |
|---|---|---|
| **Public ownership or public easement with general public access (no permission required)** | .2H | .15H |
| **Private ownership with general public access (no permission required)** | .15H | .1M |
| **Private or public ownership without general public access, or requiring permission for public access** | .1M | .05L |

**Comments:**

Known recreation at site.

**General Site Notes**

**FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S):** Enhancement

| Function & Value Variables | Rating | Actual Functional Points | Possible Functional Points | Functional Units: (Actual Points x Estimated AA Acreage) | Indicate the four most prominent functions with an asterisk (*) |
|---|---|---|---|---|---|
| A. Listed/Proposed T&E Species Habitat | H | .8 | 1 | 10.58 | ☑ |
| B. MT Natural Heritage Program Species Habitat | H | .9 | 1 | 11.90 | ☐ |
| C. General Wildlife Habitat | H | .9 | 1 | 11.90 | ☐ |
| D. General Fish Habitat | L | .3 | 0 | 3.97 | ☐ |
| E. Flood Attenuation | M | .6 | 1 | 7.93 | ☐ |
| F. Short and Long Term Surface Water Storage | H | 1 | 1 | 13.22 | ☑ |
| G. Sediment/Nutrient/Toxicant Removal | H | 1 | 1 | 13.22 | ☑ |
| H. Sediment/Shoreline Stabilization | H | 1 | 1 | 13.22 | ☐ |
| I. Production Export/Food Chain Support | H | .9 | 1 | 11.90 | ☑ |
| J. Groundwater Discharge/Recharge | H | 1 | 1 | 13.22 | ☐ |
| K. Uniqueness | L | .3 | 1 | 3.97 | ☐ |
| L. Recreation/Education Potential (bonus points) | H | .2 | NA | 2.64 | ☐ |
| Totals: | | 8.9 | 10 | 117.66 | |
| Percent of Possible Score | | | **89** % | | |

**Category I Wetland:** (must satisfy **one** of the following criteria; otherwise go to Category II)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☑ Percent of possible score > 80% (round to nearest whole #).

**Category II Wetland:** (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)
- ☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☐ Percent of possible score > 65% (round to nearest whole #).

**Category III Wetland:** (Criteria for Categories I, II, or IV not satisfied)

☐

**Category IV Wetland:** (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

## OVERALL ANALYSIS AREA RATING:
## (check appropriate category based on the criteria outlined above)

**I** **II** **III** **IV**

# MDT Montana Wetland Assessment Form (revised March 2008)

**1. Project name** Schrieber Meadows **2. MDT project#** STPP STWD (756) **Control#** 9680000

**3. Evaluation Date** 7/16/2020 **4. Evaluators** R Quire, S Weyant, B Trudgeon **5. Wetland/Site# (s)** Restoration

**6. Wetland Location(s): T** 27N **R** 30W **Sec1** 11,12,13 **T** **R** **Sec2**

**Approx Stationing or Mileposts** Approximately Milepost 53.5

**Watershed** 1 - Kootenai **Watershed/County** Lincoln

**7. Evaluating Agency** CCI for MDT

**8. Wetland size acres** 3.46

**Purpose of Evaluation**

**How assessed:** Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

**9. Assesssment area (AA) size (acres)** 3.46

☐ **Mitigation Wetlands: pre-construction**

**How assessed:** Measured e.g. by GPS

☑ **Mitigation Wetlands: post construction**

☐ **Other**

**10. Classification of Wetland and Aquatic Habitats in AA**

| HGM Class (Brinson) | Class (Cowardin) | Modifier (Cowardin) | Water Regime | % of AA |
|---|---|---|---|---|
| Depressional | Aquatic Bed | Excavated | Permanent/Perennial | 35 |
| Depressional | Emergent Wetland | Excavated | Seasonal/Intermittent | 30 |
| Depressional | Emergent Wetland | Excavated | Permanent/Perennial | 35 |
| | | | | |
| | | | | |
| | | | | |

**11. Estimated Relative Abundance** Common

**12. General Condition of AA**

**i. Disturbance:** (use matrix below to determine [circle] appropriate response – see instructions for Montana-listed noxious weed and aquatic nuisance vegetation species (**ANVS**) lists)

| *Conditions within AA* | *Predominant conditions adjacent to (within 500 feet of) AA* | | |
|---|---|---|---|
| | Managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings; and noxious weed or ANVS cover is <=15%. | Land not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to minor clearing; contains few roads or buildings; noxious weed or ANVS cover is <=30%. | Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >=30%. |
| AA occurs and is managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings; and noxious weed or ANVS cover is <=15%. | low disturbance | low disturbance | moderate disturbance |
| AA not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads or buildings; noxious weed or ANVS cover is <=30%. | moderate disturbance | moderate disturbance | high disturbance |
| AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >=30%. | high disturbance | high disturbance | high disturbance |

**Comments: (types of disturbance, intensity, season, etc)**

The adjacent Creation AA encompasses the excavated depressions constructed in 2007 and 2011. Highway 2, under construction in 2019, is close to the AA.

**ii. Prominent noxious, aquatic nuisance, other exotic species:**

Cirsium arvense, Leucanthemum vulgare, isolated Hieracium aurantiacum

**iii. Provide brief descriptive summary of AA and surrounding land use/habitat**

The AA includes pre-existing wetlands identified within the project area that were modified by excavation to increase the groundwater availability and provide a greater diversity of wetland habitat and hydrophytes.

**13. Structural Diversity:** (based on number of "Cowardin" ***vegetated*** classes present [do not include unvegetated classes], see #10 above)

| Existing # of "Cowardin" Vegetated Classes in AA | Initial Rating | Is current management preventing (passive) existence of additional vegetated classes? | | Modified Rating |
|---|---|---|---|---|
| >=3 (or 2 if 1 is forested) classes | H | NA | NA | NA |
| 2 (or 1 if forested) classes | M | NA | NA | NA |
| 1 class, but not a monoculture | M | <NO | YES> | L |
| 1 class, monoculture (1 species comprises>=90% of total cover) | L | NA | NA | NA |

**Comments:** Emergent and aquatic bed

## SECTION PERTAINING to FUNCTIONS VALUES ASSESSMENT

**14A. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals:**

**i. AA is Documented (D) or Suspected (S) to contain (check one based on definitions contained in instructions):**

| | | |
|---|---|---|
| **Primary or critical habitat (list species)** | ○ D ○ S | |
| **Secondary habitat (list Species)** | ◉ D ○ S | Grizzly bear |
| **Incidental habitat (list species)** | ○ D ○ S | |
| **No usable habitat** | ☐ S | |

**ii. Rating** (use the conclusions from i above and the matrix below to arrive at [check] the functional points and rating)

| *Highest Habitat Level* | doc/primary | sus/primary | doc/secondary | sus/secondary | doc/incidental | sus/incidental | None |
|---|---|---|---|---|---|---|---|
| *Functional Points and Rating* | 1H | .9H | .8H | .7M | .3L | .1L | 0L |

**Sources for documented use** USFWS database, MNHP database shows site is within year-round range of grizzly bear, reports of use from FWP, USFS, and USFWS.

**14B. Habitat for plant or animals rated S1, S2, or S3 by the Montana Natural Heritage Program: (not including species listed in14A above)**

**i. AA is Documented (D) or Suspected (S) to contain (check one based on definitions contained in instructions):**

| | | |
|---|---|---|
| **Primary or critical habitat (list species)** | ◉ D ○ S | Western toad (S2) |
| **Secondary habitat (list Species)** | ○ D ○ S | |
| **Incidental habitat (list species)** | ○ D ○ S | |
| **No usable habitat** | ☐ S | |

**ii. Rating** (use the conclusions from i above and the matrix below to arrive at [check] the functional points and rating)

| *Highest Habitat Level* | doc/primary | sus/primary | doc/secondary | sus/secondary | doc/incidental | sus/incidental | None |
|---|---|---|---|---|---|---|---|
| ***S1 Species:*** *Functional Points and Rating* | 1H | .8H | .7M | .6M | .2L | .1L | 0L |
| ***S2 and S3 Species:*** *Functional Points and Rating* | .9H | .7M | .6M | .5M | .2L | .1L | 0L |

**Sources for documented use** MTNHP and documented breeding on site by MDT and USFS personnel

**14C. General Wildlife Habitat Rating:**

**i. Evidence of overall wildlife use in the AA (check substantial, moderate, or low based on supporting evidence):** Substantial

***Substantial*** (based on any of the following [check]):

- [x] observations of abundant wildlife #s or high species diversity (during any period)
- [x] abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- [ ] presence of extremely limiting habitat features not available in the surrounding area
- [ ] interviews with local biologists with knowledge of the AA

***Minimal*** (based on any of the following [check]):

- [ ] few or no wildlife observations during peak use periods
- [ ] little to no wildlife sign
- [ ] sparse adjacent upland food sources
- [ ] interviews with local biologists with knowledge of the AA

***Moderate*** (based on any of the following [check]):

- [ ] observations of scattered wildlife groups or individuals or relatively few species during peak periods
- [ ] common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- [ ] adequate adjacent upland food sources
- [ ] interviews with local biologists with knowledge of the AA

**ii. Wildlife** habitat features (Working from top to bottom, check appropriate AA attributes in matrix to arrive at rating. Structural diversity is from #13. For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percent composition of the AA (see #10). Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent [see instructions for further definitions of these terms])

| *Structural diversity (see #13)* | High | | | | | | | | Moderate | | | | | | | | Low | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Class cover distribution (all vegetated classes)* | Even | | | | Uneven | | | | Even | | | | Uneven | | | | Even | | | |
| *Duration of surface water in ≥ 10% of AA* | P/P | S/I | T/E | A | P/P | S/I | T/E | A | P/P | S/I | T/E | A | P/P | S/I | T/E | A | P/P | S/I | T/E | A |
| **Low** disturbance at AA (see #12i) | E | E | E | H | E | E | H | H | E | H | H | M | E | H | M | M | E | H | M | M |
| **Moderate** disturbance at AA (see #12i) | H | H | H | H | H | H | H | M | H | H | M | M | H | M | M | L | H | M | L | L |
| **High** disturbance at AA (see #12i) | M | M | M | L | M | M | L | L | M | M | L | L | M | L | L | L | L | L | L | L |

**iii. Rating** (use the conclusions from i and ii above and the matrix below to arrive at [check] the functional points and rating)

| *Evidence of wildlife use (i)* | *Wildlife habitat features rating (ii)* | | | |
|---|---|---|---|---|
| | Exceptional | High | Moderate | Low |
| **Substantial** | 1E | .9H | .8H | .7M |
| **Moderate** | .9H | .7M | .5M | .3L |
| **Minimal** | .6M | .4M | .2L | .1L |

**Comments** Good habitat diversity with substantial wildlife evidence.

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**14D. General Fish Habitat Rating:** (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective [such as fish entrapped in a canal], then check [x] **NA** here and proceed to 14E.)

**i. Habitat Quality and Known / Suspected Fish Species in AA** (use matrix to arrive at [check the functional points and rating)

| *Duration of surface water in AA* | Permanent / Perennial | | | | | | Seasonal / Intermittent | | | | | | Temporary / Ephemeral | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Aquatic hiding / resting / escape cover* | Optimal | | Adequate | | Poor | | Optimal | | Adequate | | Poor | | Optimal | | Adequate | | Poor | |
| *Thermal cover optimal / suboptimal* | O | S | O | S | O | S | O | S | O | S | O | S | O | S | O | S | O | S |
| **FWP Tier I** fish species | 1E | .9H | .8H | .7M | .6M | .5M | .9H | .8H | .7M | .6M | .5M | .4M | .7M | .6M | .5M | .4M | .3L | .3L |
| **FWP Tier II or Native Game** fish species | .9H | .8H | .7M | .6M | .5M | .5M | .8H | .7M | .6M | .5M | .4M | .4M | .6M | .5M | .4M | .3L | .2L | .2L |
| **FWP Tier III or Introduced Game** fish | .8H | .7M | .6M | .5M | .5M | .4M | .7M | .6M | .5M | .4M | .4M | .3L | .5M | .4M | .3L | .2L | .2L | .1L |
| **FWP Non-Game Tier IV or No** fish species | .5M | .5M | .5M | .4M | .4M | .3L | .4M | .4M | .4M | .3L | .3L | .2L | .2L | .2L | .2L | .1L | .1L | .1L |

*Sources used for identifying fish sp. potentially found in AA:*

**ii. Modified Rating** (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)
*a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity* ***or*** *is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support,* ***or*** *do aquatic nuisance plant or animal species (see* ***Appendix E****) occur in fish habitat?* **Y** ◯ **N** ◉ *If yes, reduce score in* ***i*** *above by 0.1:* **Modified Rating**

*b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish?* ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
**Modifed Rating**

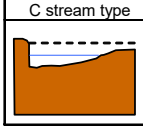
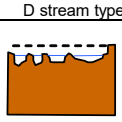
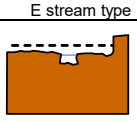
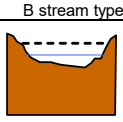
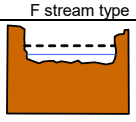
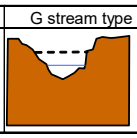
**iii. Final Score and Rating:** 0 NA **Comments:** No fish habitat identified within restoration AA

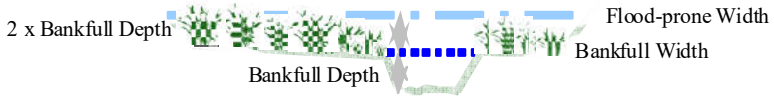
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**14E. Flood Attenuation:** (Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, click ☐ **NA** here and proceed to 14F.)

**i. Rating** (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating)

| *Estimated or Calculated Entrenchment (Rosgen 1994, 1996)* | Slightly entrenched - C, D, E stream types | | | Moderately entrenched – B stream type | | | Entrenched-A, F, G stream types | | |
|---|---|---|---|---|---|---|---|---|---|
| *% of flooded wetland classified as forested and/or scrub/shrub* | 75% | 25-75% | <25% | 75% | 25-75% | <25% | 75% | 25-75% | <25% |
| AA contains **no outlet or restricted outlet** | 1H | .9H | .6M | .8H | .7M | .5M | .4M | .3L | .2L |
| AA contains **unrestricted outlet** | .9H | .8H | .5M | .7M | .6M | .4M | .3L | .2L | .1L |

| **Slightly Entrenched ER = >2.2** | | | **Moderately Entrenched ER = 1.41 – 2.2** | **Entrenched ER = 1.0 – 1.4** | | |
|---|---|---|---|---|---|---|
| C stream type | D stream type | E stream type | B stream type | A stream type | F stream type | G stream type |
|  |  |  |  |  |  |  |




**Floodprone width** 35 / **Bankfull width** 5 = **Entrenchment ratio** 7

**ii.** Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (check)? **Y** ◯ **N** ◉

**Comments:** All wetland cells subject to flooding from Coyote Creek.

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**14F. Short and Long Term Surface Water Storage:** (Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, click ☐ **NA** here and proceed to 14G.)

**i. Rating** (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see instructions for further definitions of these terms].)

| *Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding* | >5 acre feet | | | 1.1 to 5 acre feet | | | ≤1 acre foot | | |
|---|---|---|---|---|---|---|---|---|---|
| *Duration of surface water at wetlands within the AA* | P/P | S/I | T/E | P/P | S/I | T/E | P/P | S/I | T/E |
| Wetlands in AA flood or pond **≥ 5 out of 10 years** | 1H | .9H | .8H | .8H | .6M | .5M | .4M | .3L | .2L |
| Wetlands in AA flood or pond **< 5 out of 10 years** | .9H | .8H | .7M | .7M | .5M | .4M | .3L | .2L | .1L |

**Comments:** AA with evidence of frequent flooding.

**14G. Sediment/Nutrient/Toxicant Retention and Removal:** (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are subject to such input, click ☐ **NA** here and proceed to 14H.)

**i. Rating** (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating [H = high, M = moderate, or L = low])

| *Sediment, nutrient, and toxicant input levels within AA* | AA receives or surrounding land use with potential to deliver levels of sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present. | | | | Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants **or** AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present. | | | |
|---|---|---|---|---|---|---|---|---|
| *% cover of wetland vegetation in AA* | ≥ 70% | | < 70% | | ≥ 70% | | < 70% | |
| *Evidence of flooding / ponding in AA* | Yes | No | Yes | No | Yes | No | Yes | No |
| AA contains **no or restricted outlet** | 1H | .8H | .7M | .5M | .5M | .4M | .3L | .2L |
| AA contains **unrestricted outlet** | .9H | .7M | .6M | .4M | .4M | .3L | .2L | .1L |

**Comments:** AA receives periodic overflow from Coyote Creek

**14H Sediment/Shoreline Stabilization:** (Applies only if AA occurs on or within the banks or a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14H does not apply, click ☐ **NA** here and proceed to 14I.)

**i. Rating** (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating)

| *% Cover of **wetland** streambank or shoreline by species with stability ratings of ≥6 (see **Appendix F**).* | *Duration of surface water adjacent to rooted vegetation* | | |
|---|---|---|---|
| | Permanent / Perennial | Seasonal / Intermittent | Temporary / Ephemeral |
| **≥ 65%** | 1H | .9H | .7M |
| **35-64%** | .7M | .6M | .5M |
| **< 35%** | .3L | .2L | .1L |

**Comments:** Vegetation has filled in around excavated areas

**14I. Production Export/Food Chain Support:**

**i. Level of Biological Activity** (synthesis of wildlife and fish habitat ratings [check])

| **General Fish Habitat Rating (14D.iii.)** | **General Wildlife Habitat Rating (14C.iii.)** | | |
|---|---|---|---|
| | E/H | M | L |
| E/H | H | H | M |
| M | H | M | M |
| L | M | M | L |
| N/A | H | M | L |

**ii. Rating** (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14I.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as previously defined, and A = "absent" [see instructions for further definitions of these terms].)

| *A* | Vegetated component 1-5 acres | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *B* | | | | | | | High | | Moderate | | Low | | | | | | | |
| *C* | | | | | | | Yes | No | Yes | No | Yes | No | | | | | | |
| **P/P** | | | | .5M | .6M | .4M | | .6M | | | | .3L | | .6M | .6M | | .3L | |
| **S/I** | .9H | | | .4M | .5M | | | .5M | | | | .2L | | .5M | .5M | | .3L | |
| **T/E/A** | | .5M | .6M | .3L | .4M | | | .4M | | .2L | | | .6M | .4M | .4M | .2L | .2L | .1L |

**iii. Modified Rating** (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.) **Vegetated Upland Buffer (VUB)**: Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

*a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference?* **Y** ◉ **N** ○ *If yes, add 0.1 to the score in **ii** above and adjust rating accordingly:* **Modified Rating** 1 E

**Comments:** No fish habitat, high biological activity, well-vegetated buffer, unrestricted outlet to creek.

**14J. Groundwater Discharge/Recharge:** (check the appropriate indicators in i & ii below)

**i. Discharge Indicators**

- ☐ The AA is a slope wetland
- ☐ Springs or seeps are known or observed
- ☐ Vegetation growing during dormant season/drought
- ☐ Wetland occurs at the toe of a natural slope
- ☑ Seeps are present at the wetland edge
- ☐ AA permanently flooded during drought periods
- ☐ Wetland contains an outlet, but no inlet
- ☑ Shallow water table and the site is saturated to the surface
- ☐ Other:

**ii. Recharge Indicators**

- ☐ Permeable substrate present without underlying impeding layer
- ☐ Wetland contains inlet but no outlet
- ☐ Stream is a known 'losing' stream; discharge volume decreases
- ☐ Other:

**iii. Rating** (use the information from i and ii above and the table below to arrive at [check] the functional points and rating)

| | **Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM*** | | | |
|---|---|---|---|---|
| *Criteria* | P/P | S/I | T | None |
| **Groundwater Discharge or Recharge** | 1H | .7M | .4M | .1L .1L |
| **Insufficient Data/Information** | | | NA N/A | |

**Comments:** Perennial spring located near AA

**14K. Uniqueness:**

**i. Rating** (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating)

| *Replacement potential* | AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland **or** plant association listed as "S1" by the MTNHP | | | AA does not contain previously cited rare types **and** structural diversity (#13) is high **or** contains plant association listed as "S2" by the MTNHP | | | AA does not contain previously cited rare types or associations **and** structural diversity (#13) is low-moderate | | |
|---|---|---|---|---|---|---|---|---|---|
| *Estimated relative abundance (#11)* | rare | common | abundant | rare | common | abundant | rare | common | abundant |
| **Low** disturbance at AA (#12i) | 1H | .9H | .8H | .8H | .6M | .5M | .5M | .4M | .3L |
| **Moderate** disturbance at AA (#12i) | .9H | .8H | .7M | .7M | .5M | .4M | .4M | .3L | .2L |
| **High** disturbance at AA (#12i) | .8H | .7H | .6M | .6M | .4M | .3L | .3L | .2L | .1L |

**Comments:** Site was moderately disturbed before and after construction but has low disturbance at this time.

**14L. Recreation/Education Potential:** (affords "bonus" points if AA provides recreation or education opportunity)

**i. Is the AA a known or potential rec./ed. site:** (check) **Y** ◉ **N** ○ (if 'Yes' continue with the evaluation; if 'No' then click ☐ **NA** here and proceed to the overall summary and rating page)

**ii. Check categories that apply to the AA:** ☑ Educational/scientific study; ☐ Consumptive rec.; ☐ Non-consumptive rec.; ☐ Other

**iii. Rating** (use the matrix below to arrive at [check] the functional points and rating)

| *Known or Potential Recreation or Education Area* | Known | Potential |
|---|---|---|
| **Public ownership or public easement with general public access (no permission required)** | .2H | .15H |
| **Private ownership with general public access (no permission required)** | .15H | .1M |
| **Private or public ownership without general public access, or requiring permission for public access** | .1M | .05L |

**Comments:**

Known recreation site.

**General Site Notes**

**FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S):** Restoration

| Function & Value Variables | Rating | Actual Functional Points | Possible Functional Points | Functional Units: (Actual Points x Estimated AA Acreage) | Indicate the four most prominent functions with an asterisk (*) |
|---|---|---|---|---|---|
| A. Listed/Proposed T&E Species Habitat | H | .8 | 1 | 2.77 | ☐ |
| B. MT Natural Heritage Program Species Habitat | H | .9 | 1 | 3.11 | ☐ |
| C. General Wildlife Habitat | E | 1 | 1 | 3.46 | ☑ |
| D. General Fish Habitat | NA | 0 | 0 | 0.00 | ☐ |
| E. Flood Attenuation | M | .5 | 1 | 1.73 | ☐ |
| F. Short and Long Term Surface Water Storage | H | .8 | 1 | 2.77 | ☐ |
| G. Sediment/Nutrient/Toxicant Removal | M | .6 | 1 | 2.08 | ☐ |
| H. Sediment/Shoreline Stabilization | H | 1 | 1 | 3.46 | ☑ |
| I. Production Export/Food Chain Support | E | 1 | 1 | 3.46 | ☑ |
| J. Groundwater Discharge/Recharge | H | 1 | 1 | 3.46 | ☑ |
| K. Uniqueness | M | .4 | 1 | 1.38 | ☐ |
| L. Recreation/Education Potential (bonus points) | H | .2 | NA | 0.69 | ☐ |
| Totals: | | 8.2 | 10 | 28.37 | |
| Percent of Possible Score | | | **82** % | | |

**Category I Wetland:** (must satisfy **one** of the following criteria; otherwise go to Category II)
- ☐ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
- ☐ Score of 1 functional point for Uniqueness; **or**
- ☐ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
- ☑ Percent of possible score > 80% (round to nearest whole #).

**Category II Wetland:** (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)
- ☐ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
- ☐ Score of .9 or 1 functional point for General Fish Habitat; **or**
- ☐ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
- ☐ Score of .9 functional point for Uniqueness; **or**
- ☐ Percent of possible score > 65% (round to nearest whole #).

**Category III Wetland:** (Criteria for Categories I, II, or IV not satisfied)

☐

**Category IV Wetland:** (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III)
- ☐ "Low" rating for Uniqueness; **and**
- ☐ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
- ☐ Percent of possible score < 35% (round to nearest whole #).

## OVERALL ANALYSIS AREA RATING:
## (check appropriate category based on the criteria outlined above)

| I | II | III | IV |
|---|---|---|---|

**Schrieber Meadows Wetland Mitigation Site – 2015 – 2020 Vegetation Species List**

| Scientific Names | Common Names | WMVC Indicator Status[(a)] |
|---|---|---|
| *Achillea millefolium* | Common Yarrow | FACU |
| *Achnatherum nelsonii* | Nelson's Rice Grass | UPL |
| *Agastache urticifolia* | Nettle-Leaf Giant-Hyssop | FACU |
| *Agropyron cristatum* | Crested Wheatgrass | UPL |
| *Agropyron* sp. | Wheatgrass | N/A |
| *Agrostis capillaris* | Colonial Bent | FAC |
| *Agrostis gigantea* | Black Bent | FAC |
| *Agrostis scabra* | Rough Bent | FAC |
| *Agrostis stolonifera* | Spreading Bent | FACW |
| Algae, brown | Algae, brown | N/A |
| Algae, green | Algae, green | N/A |
| *Alisma triviale* | Northern Water-Plantain | OBL |
| *Alnus incana* | Speckled Alder | FACW |
| *Alopecurus aequalis* | Short-Awn Meadow-Foxtail | OBL |
| *Alopecurus arundinaceus* | Creeping Meadow-Foxtail | FAC |
| *Alopecurus pratensis* | Field Meadow-Foxtail | FAC |
| *Arctium minus* | Lesser Burrdock | UPL |
| *Arnica chamissonis* | Leafy Leopardbane | FACW |
| *Aster* sp. | Aster | N/A |
| *Beckmannia syzigachne* | American Slough Grass | OBL |
| *Bromus carinatus* | California Brome | UPL |
| *Bromus inermis* | Smooth Brome | FAC |
| *Carex aquatilis* | Leafy Tussock Sedge | OBL |
| *Carex athrostachya* | Slender-Beak Sedge | FACW |
| *Carex bebbii* | Bebb's Sedge | OBL |
| *Carex lasiocarpa* | Woolly-Fruit Sedge | OBL |
| *Carex microptera* | Small-Wing Sedge | FACU |
| *Carex nebrascensis* | Nebraska Sedge | OBL |
| *Carex pachystachya* | Thick-Head Sedge | FAC |
| *Carex pellita* | Woolly Sedge | OBL |
| *Carex scoparia* | Pointed Broom Sedge | FACW |
| *Carex* sp. | Sedge | N/A |
| *Carex stipata* | Stalk-Grain Sedge | OBL |
| *Carex utriculata* | Northwest Territory Sedge | OBL |
| *Centaurea stoebe* | Spotted Knapweed | UPL |
| *Cerastium arvense* | Field Mouse-Ear Chickweed | FACU |
| *Cerastium fontanum* | Common Mouse-Ear Chickweed | FACU |
| *Ceratophyllum demersum* | Coon's-Tail | OBL |

**Schrieber Meadows Wetland Mitigation Site – 2015 – 2020 Vegetation Species List**

| Scientific Names | Common Names | WMVC Indicator Status[(a)] |
|---|---|---|
| *Chara* sp. | Muskgrass | N/A |
| *Cirsium arvense* | Canadian Thistle | FAC |
| *Cirsium vulgare* | Bull Thistle | FACU |
| *Collomia linearis* | Narrow-Leaf Mountain-Trumpet | FACU |
| *Cynoglossum officinale* | Gypsy-Flower | FACU |
| *Deschampsia cespitosa* | Tufted Hairgrass | FACW |
| *Eleocharis flavescens* | Yellow Spike-Rush | OBL |
| *Eleocharis palustris* | Common Spike-Rush | OBL |
| *Eleocharis quinqueflora* | Few-Flower Spike-Rush | OBL |
| *Elymus repens* | Creeping Wild Rye | FAC |
| *Elymus trachycaulus* | Slender Wild Rye | FAC |
| *Epilobium ciliatum* | Fringed Willowherb | FACW |
| *Epilobium* sp. | Willowherb | N/A |
| *Equisetum arvense* | Field Horsetail | FAC |
| *Equisetum hyemale* | Tall Scouring-Rush | FACW |
| *Erysimum cheiranthoides* | Worm-Seed Wallflower | FACU |
| *Festuca* sp. | Fescue | N/A |
| *Fragaria virginiana* | Virginia Strawberry | FACU |
| *Galium mexicanum* | Mexican Bedstraw | FAC |
| *Galium trifidum* | Three-Petal Bedstraw | FACW |
| *Geum macrophyllum* | Large-Leaf Avens | FAC |
| *Glyceria elata* | Tall Manna Grass | FACW |
| *Glyceria grandis* | American Manna Grass | OBL |
| *Glyceria* sp. | Manna Grass | N/A |
| *Glyceria striata* | Fowl Manna Grass | OBL |
| *Gnaphalium palustre* | Western Marsh Cudweed | FACW |
| *Hieracium aurantiacum* | Orange Hawkweed | UPL |
| *Hippuris vulgaris* | Common Mare's-Tail | OBL |
| *Juncus articulatus* | Joint-Leaf Rush | OBL |
| *Juncus bufonius* | Toad Rush | FACW |
| *Juncus confusus* | Colorado Rush | FAC |
| *Juncus ensifolius* | Dagger-Leaf Rush | FACW |
| *Juncus nodosus* | Knotted Rush | OBL |
| *Juncus tenuis* | Lesser Poverty Rush | FAC |
| *Lemna minor* | Common Duckweed | OBL |
| *Lepidium* sp. | Pepperwort | N/A |
| *Leucanthemum vulgare* | Ox-Eye Daisy | FACU |
| *Marsilea vestita* | Hairy Water-Clover | OBL |

| Scientific Names | Common Names | WMVC Indicator Status[(a)] |
|---|---|---|
| *Matricaria discoidea* | Pineapple-Weed | FACU |
| *Medicago lupulina* | Black Medick | FACU |
| *Mentha arvensis* | American Wild Mint | FACW |
| *Mimulus guttatus* | Seep Monkey-Flower | OBL |
| *Pascopyrum smithii* | Western-Wheat Grass | FACU |
| *Pedicularis groenlandica* | Bull Elephant-Head | OBL |
| *Peritoma serrulata* | Rocky Mountain Bee Plant | FACU |
| *Persicaria amphibia* | Water Smartweed | OBL |
| *Persicaria lapathifolia* | Dock-Leaf Smartweed | FACW |
| *Persicaria maculosa* | Spotted Lady's-Thumb | FACW |
| *Phalaris arundinacea* | Reed Canary Grass | FACW |
| *Phleum pratense* | Common Timothy | FACU |
| *Pinus contorta* | Lodgepole Pine | FAC |
| *Pinus ponderosa* | Ponderosa Pine | FACU |
| *Plantago major* | Great Plantain | FAC |
| *Poa palustris* | Fowl Blue Grass | FAC |
| *Poa pratensis* | Kentucky Blue Grass | FAC |
| *Poa* sp. | Blue Grass | N/A |
| *Polygonum douglasii* | Douglas' Knotweed | FACU |
| *Polypogon monspeliensis* | Annual Rabbit's-Foot Grass | FACW |
| *Populus balsamifera* | Balsam Poplar | FAC |
| *Potamogeton foliosus* | Leafy Pondweed | OBL |
| *Potamogeton natans* | Broad-Leaf Pondweed | OBL |
| *Potentilla gracilis* | Graceful Cinquefoil | FAC |
| *Potentilla norvegica* | Norwegian Cinquefoil | FAC |
| *Prunella vulgaris* | Common Selfheal | FACU |
| *Pseudotsuga menziesii* | Douglas-Fir | FACU |
| *Ranunculus aquatilis* | Whitewater Crowfoot | OBL |
| *Ranunculus sceleratus* | Cursed Buttercup | OBL |
| *Rosa woodsii* | Woods' Rose | FACU |
| *Rumex acetosella* | Common Sheep Sorrel | FACU |
| *Rumex crispus* | Curly Dock | FAC |
| *Salix bebbiana* | Gray Willow | FACW |
| *Salix candida* | Sage Willow | OBL |
| *Salix drummondiana* | Drummond's Willow | FACW |
| *Scirpus cyperinus* | Cottongrass Bulrush | OBL |
| *Scirpus microcarpus* | Red-Tinge Bulrush | OBL |
| *Senecio hydrophiloides* | Stout Meadow Ragwort | FACW |

| Scientific Names | Common Names | WMVC Indicator Status[(a)] |
|---|---|---|
| *Sisymbrium altissimum* | Tall Hedge-Mustard | FACU |
| *Solidago canadensis* | Canadian Goldenrod | FACU |
| *Sparganium emersum* | European Burr-Reed | OBL |
| ***Sparganium natans*** | **Arctic Burr-Reed** | **OBL** |
| *Spiranthes romanzoffiana* | Hooded Ladies'-Tresses | FACW |
| *Stuckenia pectinata* | Sago False Pondweed | OBL |
| *Suaeda calceoliformis* | Paiuteweed | FACW |
| *Symphoricarpos albus* | Common Snowberry | FACU |
| *Symphyotrichum spathulatum* | Mountain American-Aster | FAC |
| *Taraxacum officinale* | Common Dandelion | FACU |
| *Thlaspi arvense* | Field Pennycress | UPL |
| *Trifolium arvense* | Rabbit-foot Clover | UPL |
| *Trifolium hybridum* | Alsike Clover | FAC |
| *Trifolium pratense* | Red Clover | FACU |
| *Trifolium repens* | White Clover | FAC |
| *Triglochin maritima* | Seaside Arrow-Grass | OBL |
| *Typha latifolia* | Broad-Leaf Cat-Tail | OBL |
| *Verbascum thapsus* | Great Mullein | FACU |
| *Veronica americana* | American-Brooklime | OBL |
| *Veronica anagallis-aquatica* | Blue Water Speedwell | OBL |
| *Veronica peregrina* | Neckweed | OBL |
| *Veronica serpyllifolia* | Thyme-Leaf Speedwell | FAC |

[1] 2018 NWPL (USACE 2018)

New species identified in 2020 are **bolded**.

# APPENDIX C
# PROJECT AREA PHOTOGRAPHS

MDT Wetland Mitigation Monitoring
Schrieber Meadows
Lincoln County, Montana

# Schrieber Meadows: Photo Point Photographs



**Photo Point 1 – Panorama; Location: SW Corner of site; Bearing 270 degrees; Year 2012**



**Photo Point 1 – Panorama; Location: SW Corner of site; Bearing 270 degrees; Year 2020**



**Photo Point 3; Location: Cell 2 (Constructed in 2007); Bearing 90 degrees; Year 2010**



**Photo Point 3; Location: Cell 2 (Constructed in 2007); Bearing 90 degrees; Year 2020**

# Schrieber Meadows: Photo Point Photographs



**Photo Point 4; Location: Cell 2 (Constructed in 2007); Bearing 180 degrees; Year 2010**



**Photo Point 4; Location: Cell 2 (Constructed in 2007); Bearing 180 degrees; Year 2020**



**Photo Point 5; Location: Cell 2 (Constructed in 2007); Bearing 300 degrees; Year 2010**



**Photo Point 5; Location: Cell 2 (Constructed in 2007); Bearing 300 degrees; Year 2020**

# Schrieber Meadows: Photo Point Photographs



**Photo Point 6; Location: Cell 2 (Constructed in 2007); Bearing 40 degrees; Year 2010**



**Photo Point 6; Location: Cell 2 (Constructed in 2007); Bearing 40 degrees; Year 2020**



**Photo Point 7; Location: Lower Reach of merged Coyote/Schrieber Creek; Bearing 0 degrees; Year 2012**



**Photo Point 7; Location: Lower Reach of merged Coyote/Schrieber Creek; Bearing 0 degrees; Year 2020**

## Schrieber Meadows: Photo Point Photographs



**Photo Point 10; Location: Cell 3; Bearing 0 degrees; Year 2010**



**Photo Point 10; Location: Cell 3; Bearing 0 degrees; Year 2020**



**Photo Point 11; Location: Cell 2B; Bearing 190 degrees; Year 2012**



**Photo Point 11; Location: Cell 2B; Bearing 190 degrees; Year 2020**

# Schrieber Meadows: Photo Point Photographs



**Photo Point 12; Location: Cell 1 (Constructed in 2011); Bearing 180 degrees; Year 2012**



**Photo Point 12; Location: Cell 1 (Constructed in 2011); Bearing 180 degrees; Year 2020**



**Photo Point 13; Cell 3A (Constructed in 2011); Bearing 280 degrees; Year 2012**



**Photo Point 13; Cell 3A (Constructed in 2011); Bearing 280 degrees; Year 2020**

## Schrieber Meadows: Photo Point Photographs



**Photo Point 14; Location: Cell 4C (Constructed in 2011); Bearing 230 degrees; Year 2012**



**Photo Point 14; Location: Cell 4C (Constructed in 2011); Bearing 230 degrees; Year 2020**



**Photo Point 15; Location: Cell 5A (Constructed in 2011); Bearing 180 degrees; Year 2012**



**Photo Point 15; Location: Cell 5A (Constructed in 2011); Bearing 180 degrees; Year 2020**

## Schrieber Meadows: Photo Point Photographs



**Photo Point 16; Cell 6 (Constructed in 2011); Bearing 70 degrees; Year 2012**



**Photo Point 16; Cell 6 (Constructed in 2011); Bearing 70 degrees; Year 2020**



**Photo Point 17; Location: Cell 6 (Constructed in 2011); Bearing 270 degrees; Year 2012**



**Photo Point 17; Location: Cell 6 (Constructed in 2011); Bearing 270 degrees; Year 2020**

## Schrieber Meadows: Photo Point Photographs



**Photo Point 2** **Location**: Cell 7 (Created in 2007)
**Bearing:** 150 degrees **Year**: 2010



**Photo Point 2** **Location:** Cell 7 (Created in 2007)
**Bearing:** 150 degrees **Year:** 2020



**Photo Point 8** **Location:** Cell 3 (Constructed in 2007)
**Bearing:** 190 degrees **Year**: 2010



**Photo Point 8** **Location:** Cell 3 (Constructed in 2007)
**Bearing:** 190 degrees **Year:** 2020



**Photo Point 9** **Location:** Cell 3
**Bearing:** 280 degrees **Year:** 2010



**Photo Point 9** **Location:** Cell 3
**Bearing:** 280 degrees **Year:** 2020

## Schrieber Meadows: Photo Point Photographs



**Photo Point 16** **Location:** Cell 5A
**Bearing:** 290 degrees **Year:** 2010



**Photo Point 16** **Location:** Cell 5A
**Bearing:** 290 degrees **Year:** 2020



**Photo Point 18** **Location:** Cell 3 (Constructed 2007)
**Bearing:** 90 degrees **Year:** 2012



**Photo Point 18** **Location:** Cell 3 (Constructed 2007)
**Bearing:** 90 degrees **Year:** 2020



**Photo Point 19** **Location:** West Boundary
**Bearing:** 10 degrees **Year:** 2012



**Photo Point 19** **Location:** West Boundary
**Bearing:** 10 degrees **Year:** 2020

## Schrieber Meadows: Photo Point Photographs



**Photo Point 19** **Location:** West Boundary
**Bearing:** 100 degrees **Year:** 2012

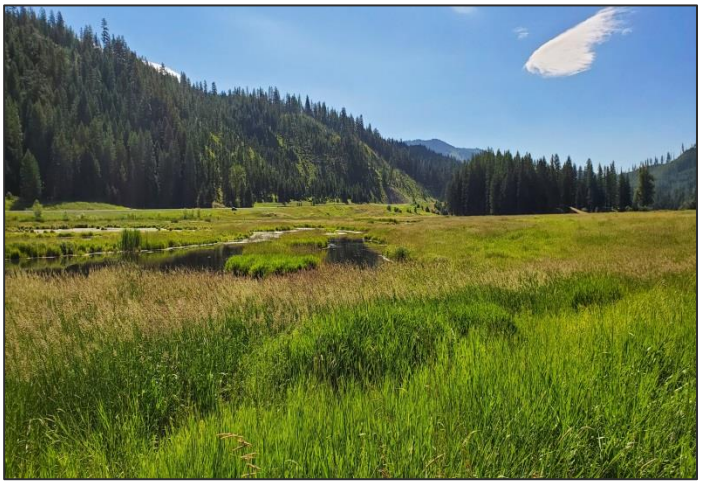


**Photo Point 19** **Location:** West Boundary
**Bearing:** 100 degrees **Year:** 2020



**Photo Point 20** **Location:** Schrieber Creek
**Bearing:** 100 degrees **Year:** 2012



**Photo Point 20** **Location:** Schrieber Creek
**Bearing:** 100 degrees **Year:** 2020

## Schrieber Meadows: Vegetation Transect Photographs



**Transect 1: Start** **Location:** T-1
**Bearing:** 115 degrees **Year:** 2010



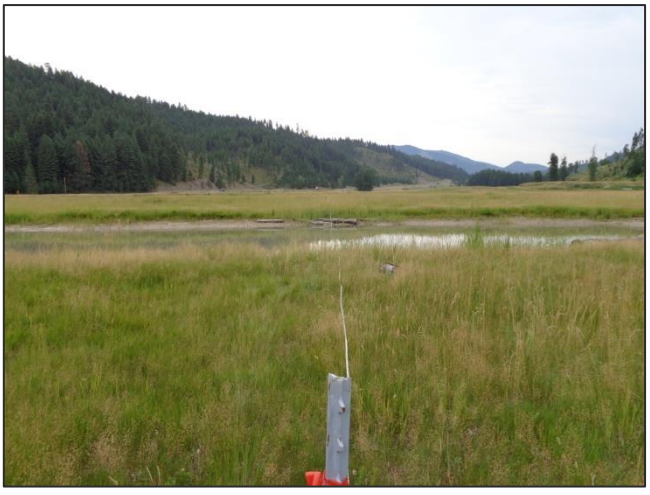
**Transect 1: Start** **Location:** T-1
**Bearing:** 115 degrees **Year:** 2020



**Transect 1: End** **Location:** T-1
**Bearing:** 295 degrees **Year:** 2010



**Transect 1: End** **Location:** T-1
**Bearing:** 295 degrees **Year:** 2020

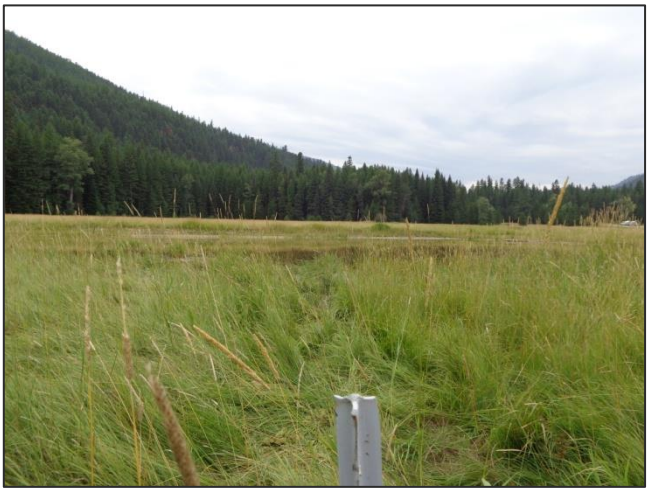


**Transect 2: Start** **Location:** T-2
**Bearing:** 100 degrees **Year:** 2013

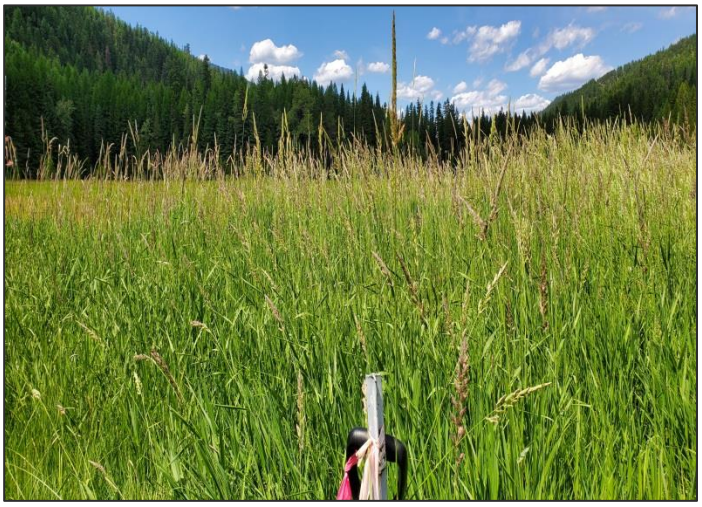


**Transect 2: Start** **Location:** T-2
**Bearing:** 100 degrees **Year:** 2020

## Schrieber Meadows: Vegetation Transect Photographs



**Transect 2: End** **Location:** T-2
**Bearing 280:** degrees **Year:** 2013



**Transect 2: End** **Location:** T-2
**Bearing 280:** degrees **Year:** 2020



**Transect 3: Start** **Location:** T-3
**Bearing:** 45 degrees **Year:** 2012



**Transect 3: Start** **Location:** T-3
**Bearing:** 45 degrees **Year:** 2020



**Transect 3: End** **Location:** T-3
**Bearing:** 225 degrees **Year:** 2012



**Transect 3: End** **Location:** T-3
**Bearing:** 225 degrees **Year:** 2020

## Schrieber Meadows: Data Point Photographs



**Data Point:** DP01w **Location:** Veg Com 3
**Year:** 2020



**Data Point:** DP01u **Location:** Vg Com 9
**Year:** 2020



**Data Point:** DP02w **Location:** Veg Com 3
**Year:** 2020



**Data Point:** DP02u **Location:** Vg Com 9
**Year:** 2020

## Schrieber Meadows: Cross-Section Photographs



**Cross-Section: XS-1** **Location:** Upper Coyote Creek
**Bearing:** 280 degrees **Year:** 2012



**Cross-Section: XS-1** **Location:** Upper Coyote Creek
**Bearing:** 280 degrees **Year:** 2020



**Cross-Section: XS-2** **Location:** Upper Coyote Creek
**Bearing:** 320 degrees **Year:** 2012



**Cross-Section: XS-2** **Location:** Upper Coyote Creek
**Bearing:** 320 degrees **Year:** 2020



**Cross-Section: XS-3** **Location:** Coyote Creek Spring Area
**Bearing:** 320 degrees **Year:** 2012



**Cross-Section: XS-3** **Location:** Coyote Creek Spring Area
**Bearing:** 320 degrees **Year:** 2020

## Schrieber Meadows: Cross-Section Photographs



**Cross-Section: XS-4** **Location:** Middle Coyote Creek
**Bearing:** 290 degrees **Year:** 2012



**Cross-Section: XS-4** **Location:** Middle Coyote Creek
**Bearing:** 290 degrees **Year:** 2020



**Cross-Section: XS-5** **Location:** Middle Coyote Creek
**Bearing:** 150 degrees **Year:** 2012



**Cross-Section: XS-5** **Location:** Middle Coyote Creek
**Bearing:** 150 degrees **Year:** 2020



**Cross-Section: XS-6** **Location:** Perennial Spring Creek
**Bearing:** 90 degrees **Year**: 2012



**Cross-Section: XS-6** **Location:** Perennial Spring Creek
**Bearing:** 90 degrees **Year:** 2020

## Schrieber Meadows: Cross-Section Photographs



**Cross-Section: XS-7** **Location:** Middle Coyote Creek
**Bearing:** 90 degrees **Year:** 2012



**Cross-Section: XS-7** **Location:** Middle Coyote Creek
**Bearing:** 220 degrees **Year:** 2020



**Cross-Section: XS-8** **Location:** Middle Coyote Creek
**Bearing:** 170 degrees **Year:** 2012



**Cross-Section: XS-8** **Location:** Middle Coyote Creek
**Bearing:** 170 degrees **Year:** 2020



**Cross-Section: XS-9** **Location:** Coyote/Schrieber Creeks
**Bearing:** 130 degrees **Year:** 2012



**Cross-Section: XS-9** **Location:** Coyote/Schrieber Creeks
**Bearing:** 130 degrees **Year:** 2020

## Schrieber Meadows: Cross-Section Photographs



**Cross-Section: XS-10 Location:** Coyote/Schrieber Creeks
**Bearing:** 140 degrees **Year:** 2012



**Cross-Section: XS-10 Location:** Coyote/Schrieber Creeks
**Bearing:** 270 degrees **Year:** 2020



**Cross-Section: XS-11 Location:** Coyote/Schrieber Creeks
**Bearing:** 100 degrees **Year:** 2012

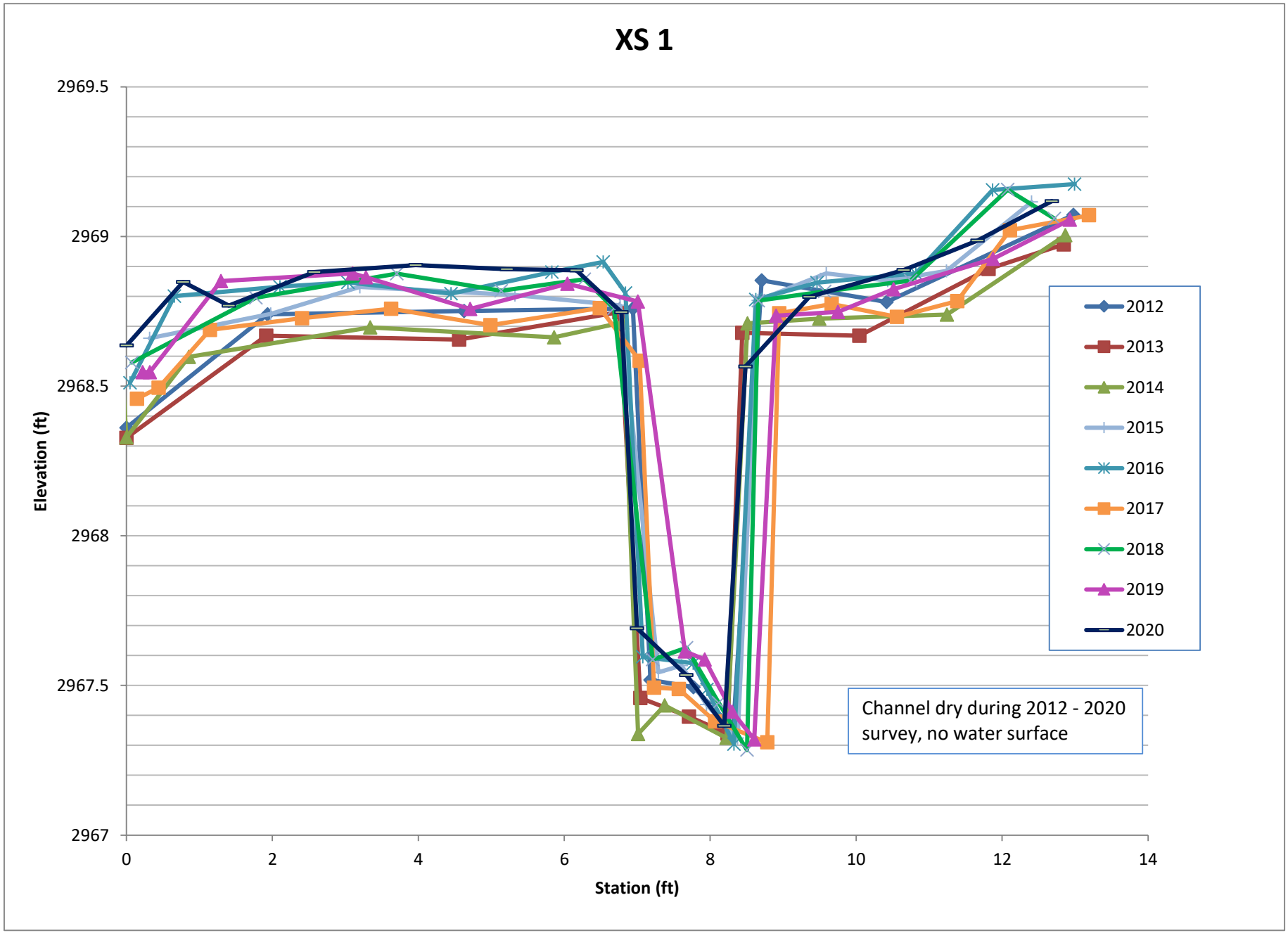


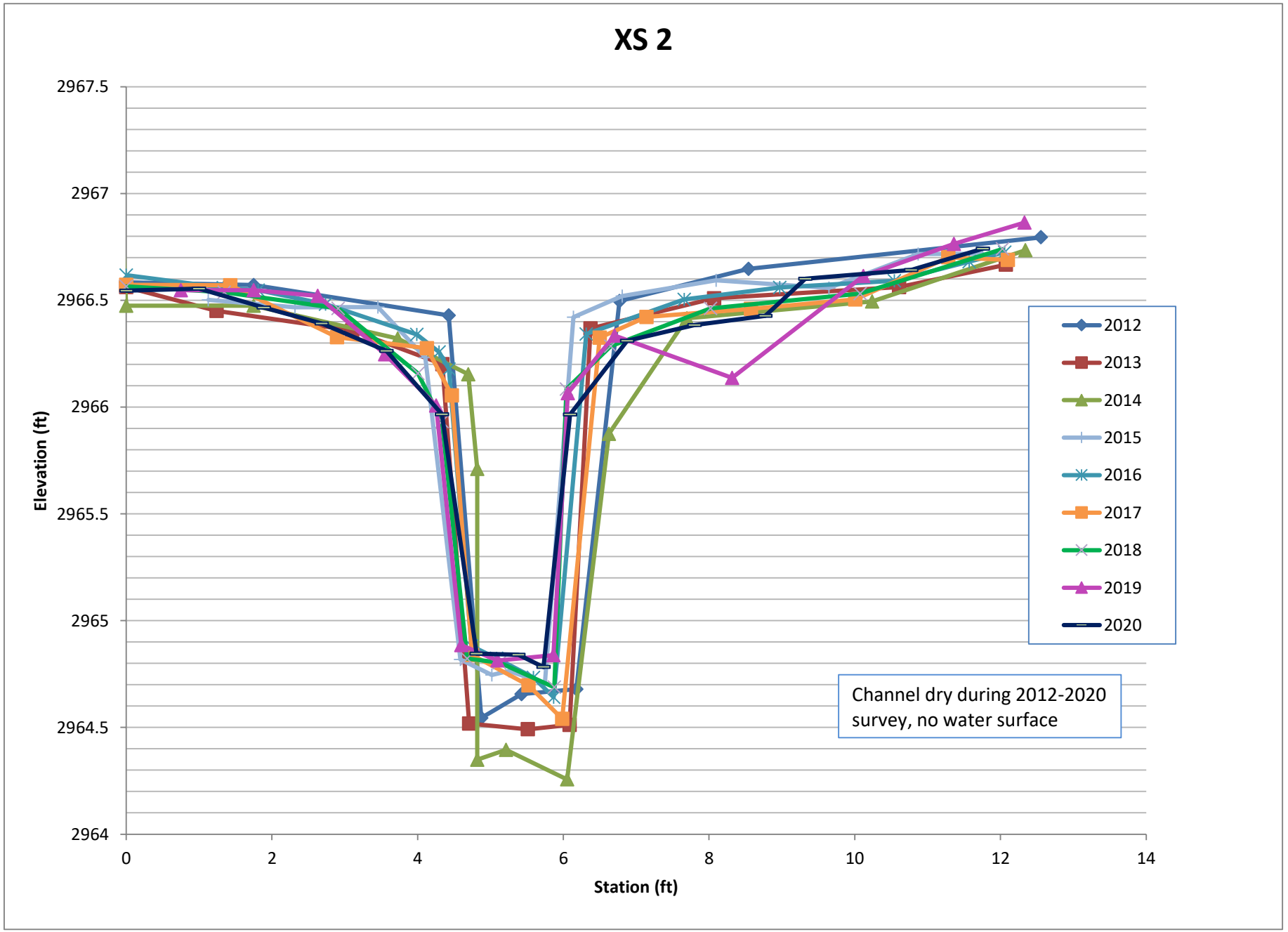
**Cross-Section: XS-11 Location:** Coyote/Schrieber Creeks
**Bearing:** 100 degrees **Year:** 2020

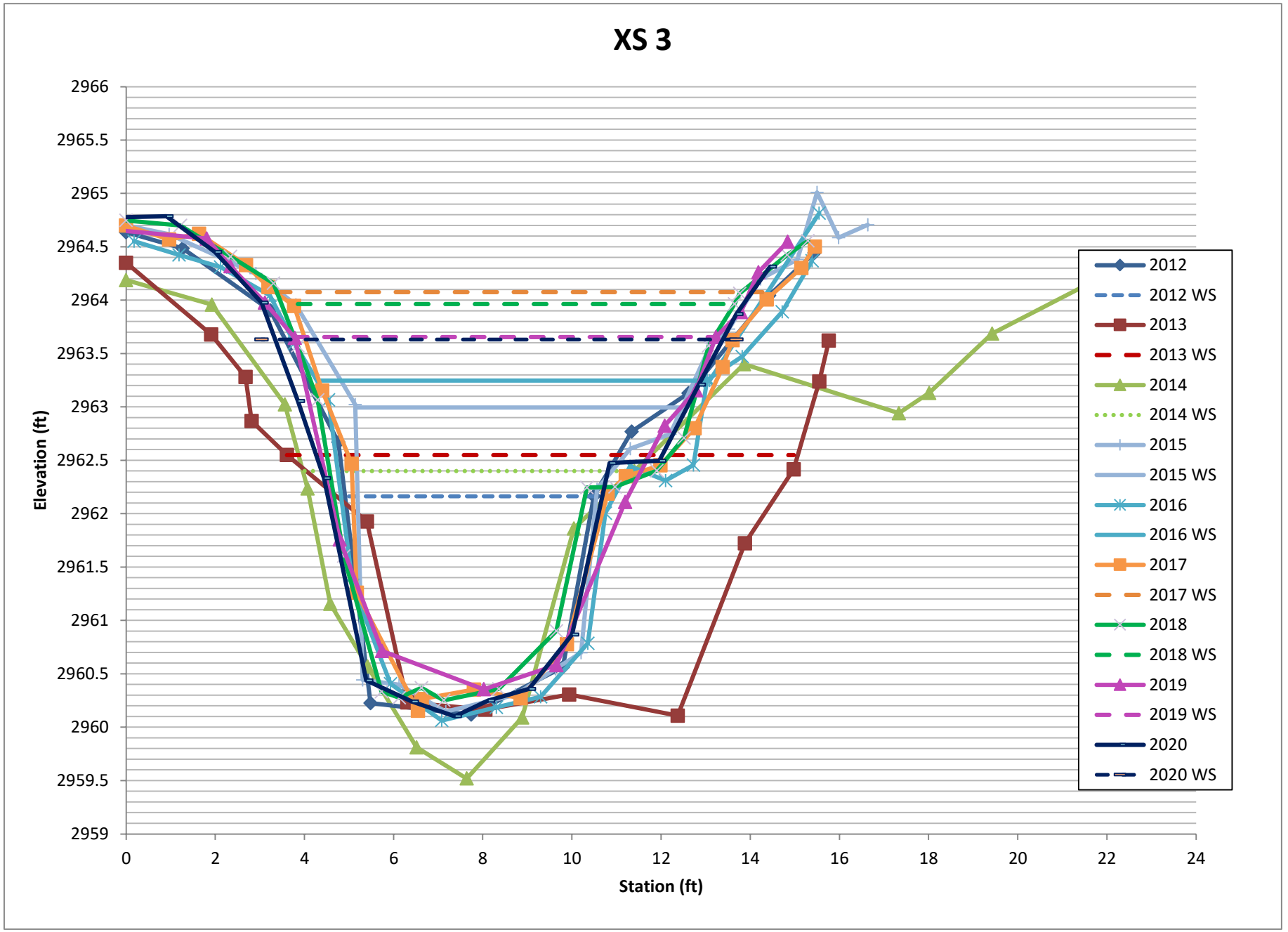
# APPENDIX D

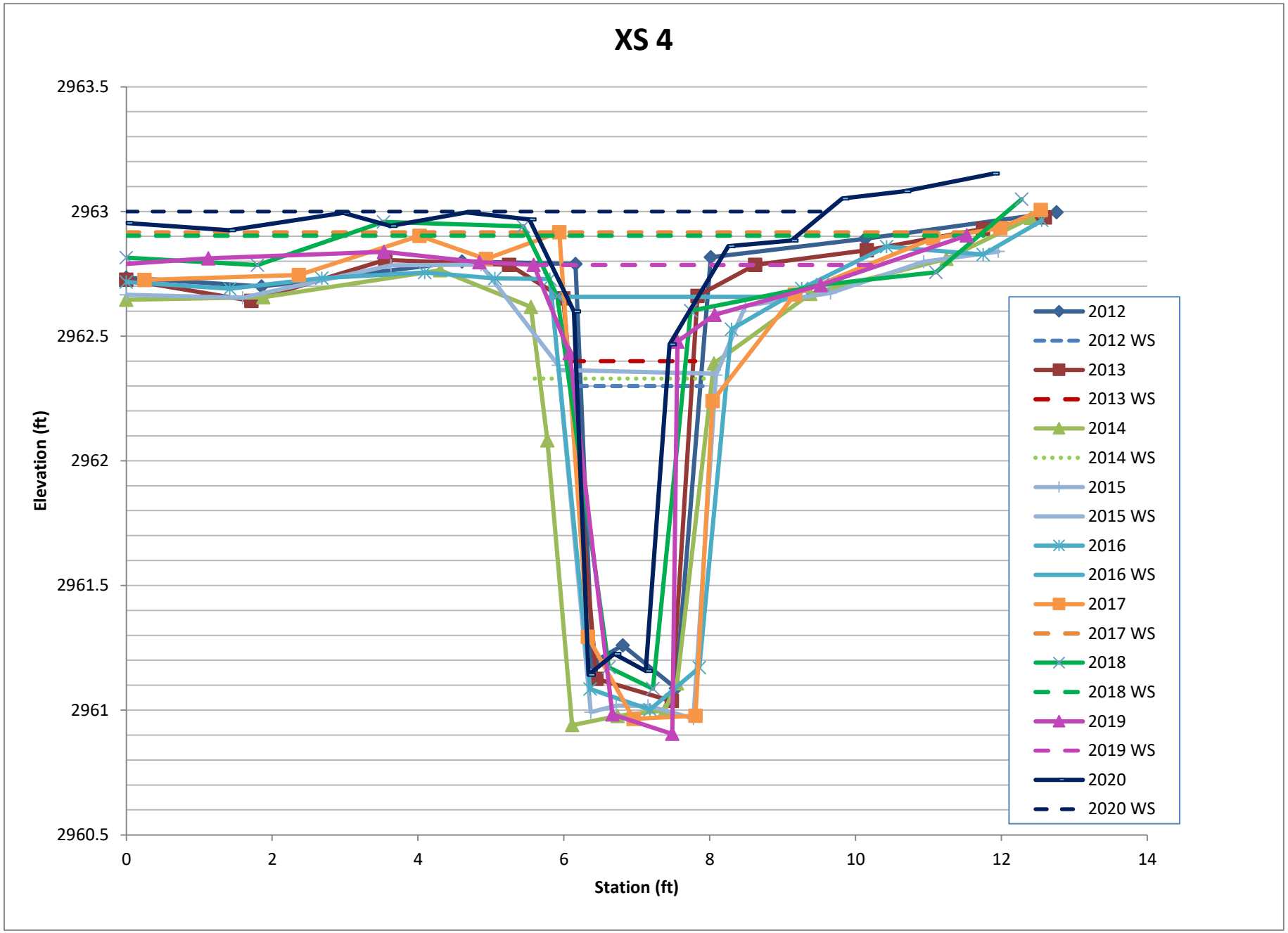
# Surveyed Stream Cross Sections

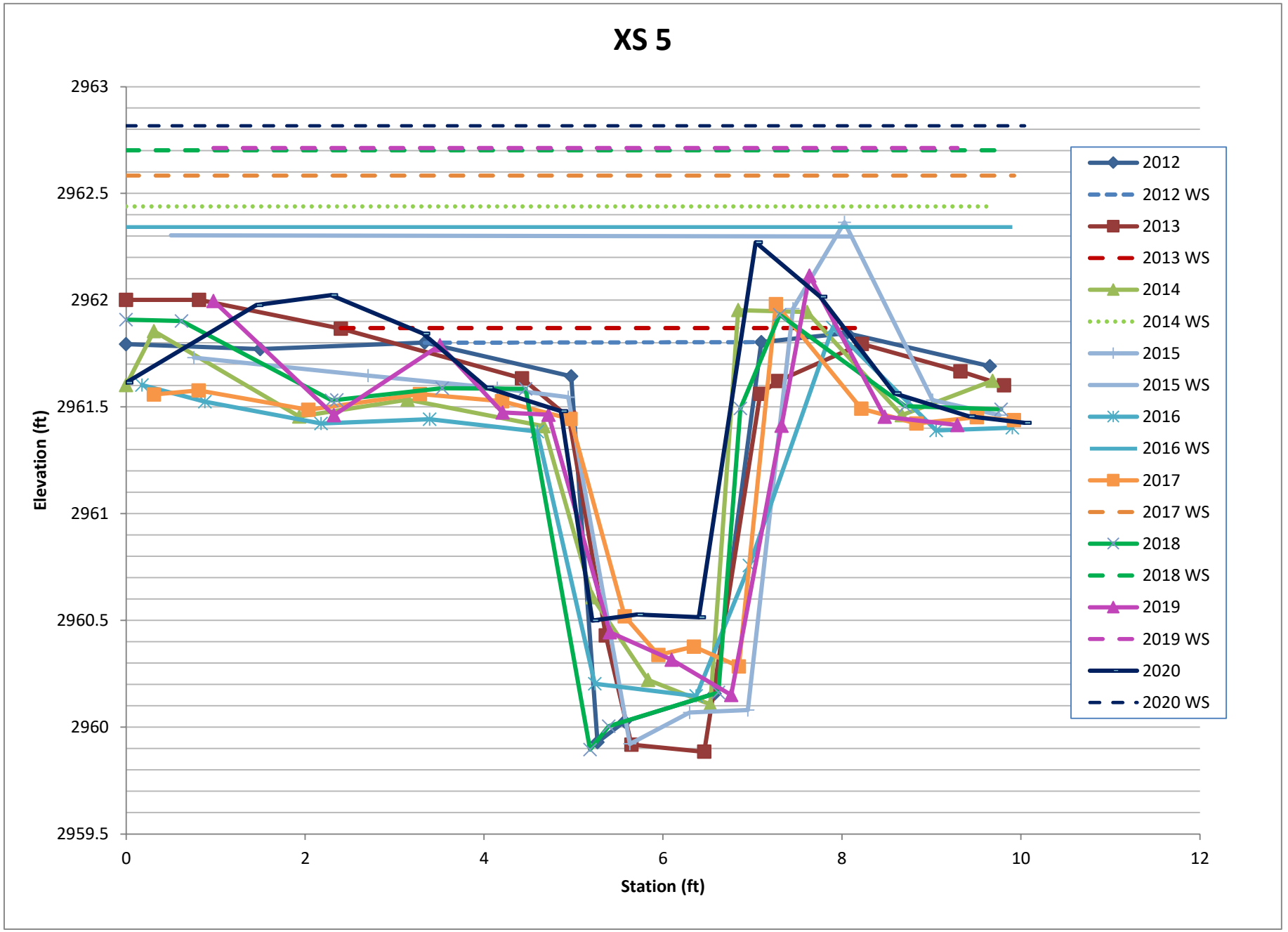
MDT Wetland Mitigation Monitoring
Schrieber Meadows
Lincoln County, Montana

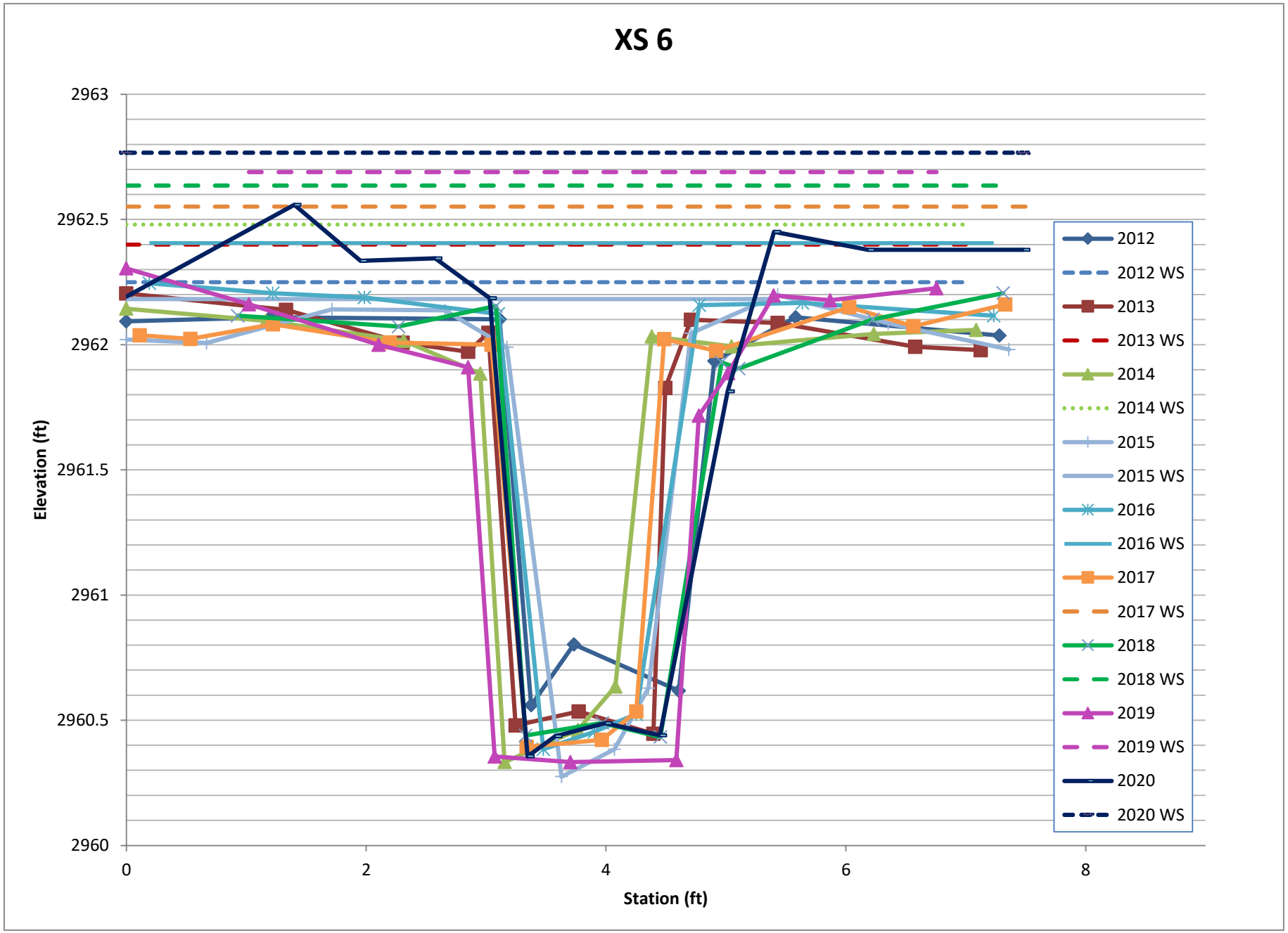

XS 1
2969.5
2969
2968.5
2968
2967.5
2967
Elevation (ft)
0
2
4
6
8
10
12
14
Station (ft)
2012
2013
2014
2015
2016
2017
2018
2019
2020
Channel dry during 2012 - 2020 survey, no water surface

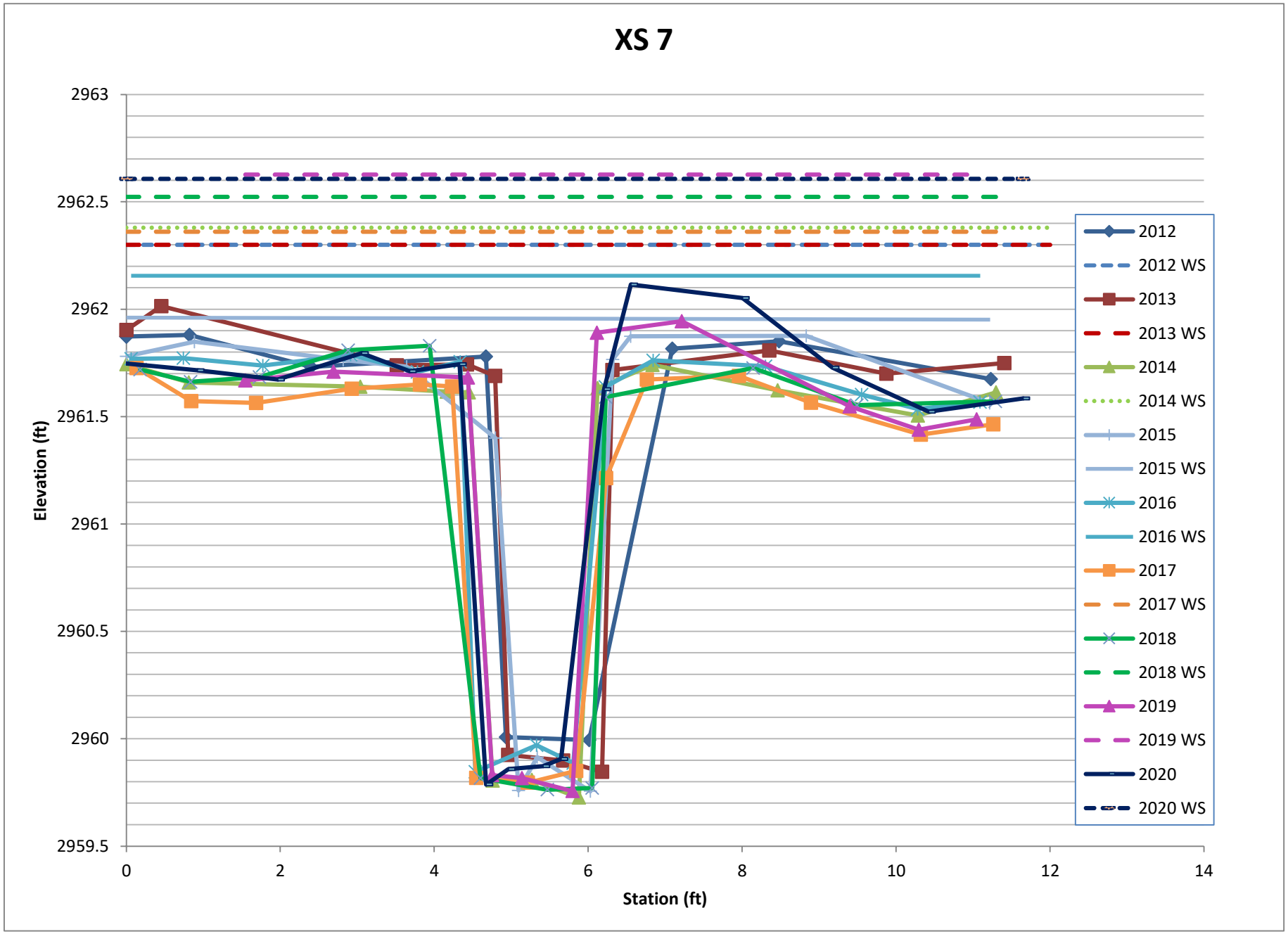

XS 2
2967.5
2967
2966.5
2966
2965.5
2965
2964.5
2964
Elevation (ft)
0
2
4
6
8
10
12
14
Station (ft)
2012
2013
2014
2015
2016
2017
2018
2019
2020
Channel dry during 2012-2020 survey, no water surface

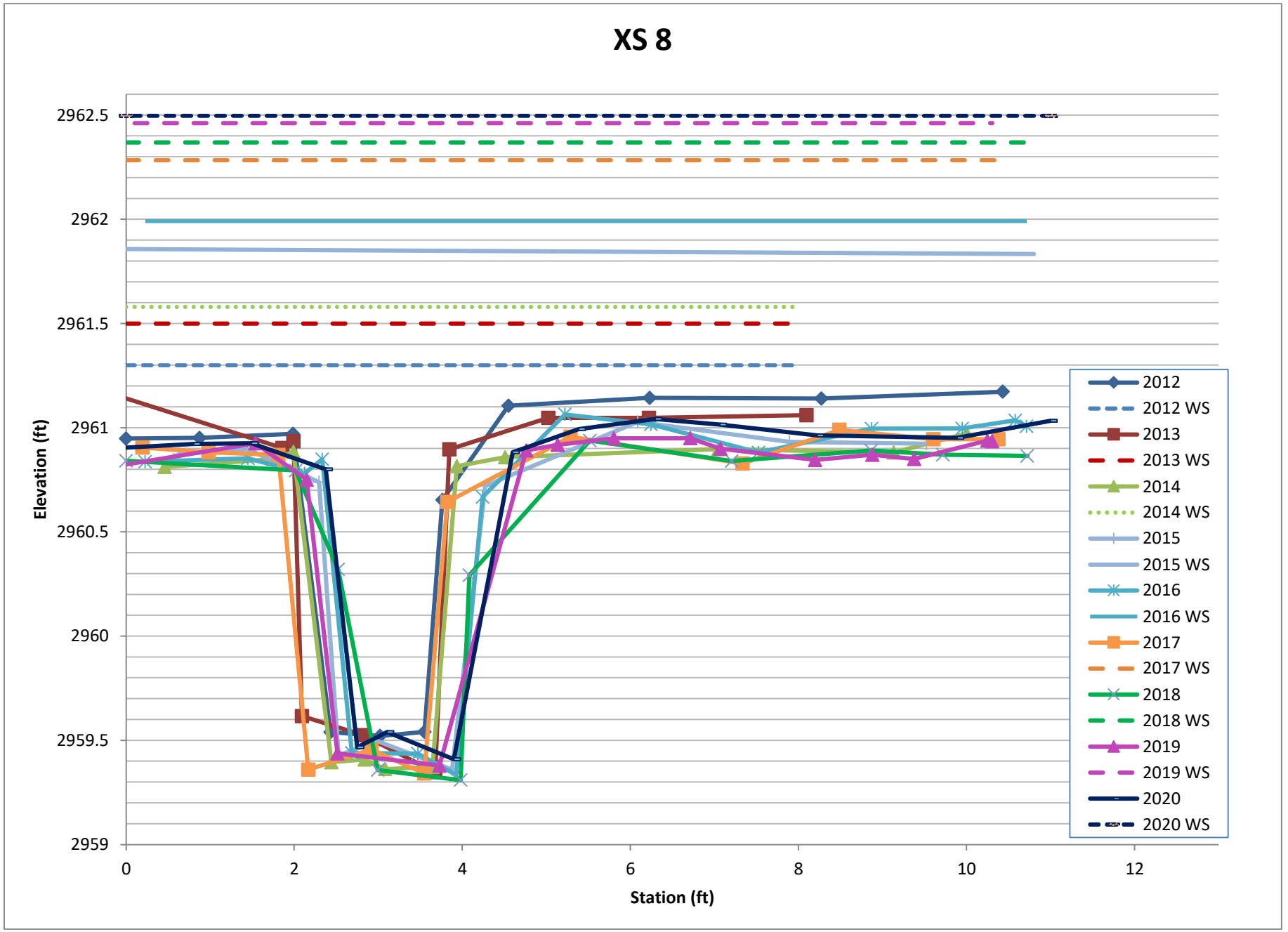

XS 3
Elevation (ft)
Station (ft)
2966
2965.5
2965
2964.5
2964
2963.5
2963
2962.5
2962
2961.5
2961
2960.5
2960
2959.5
2959
0
2
4
6
8
10
12
14
16
18
20
22
24
2012
2012 WS
2013
2013 WS
2014
2014 WS
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS
2020
2020 WS

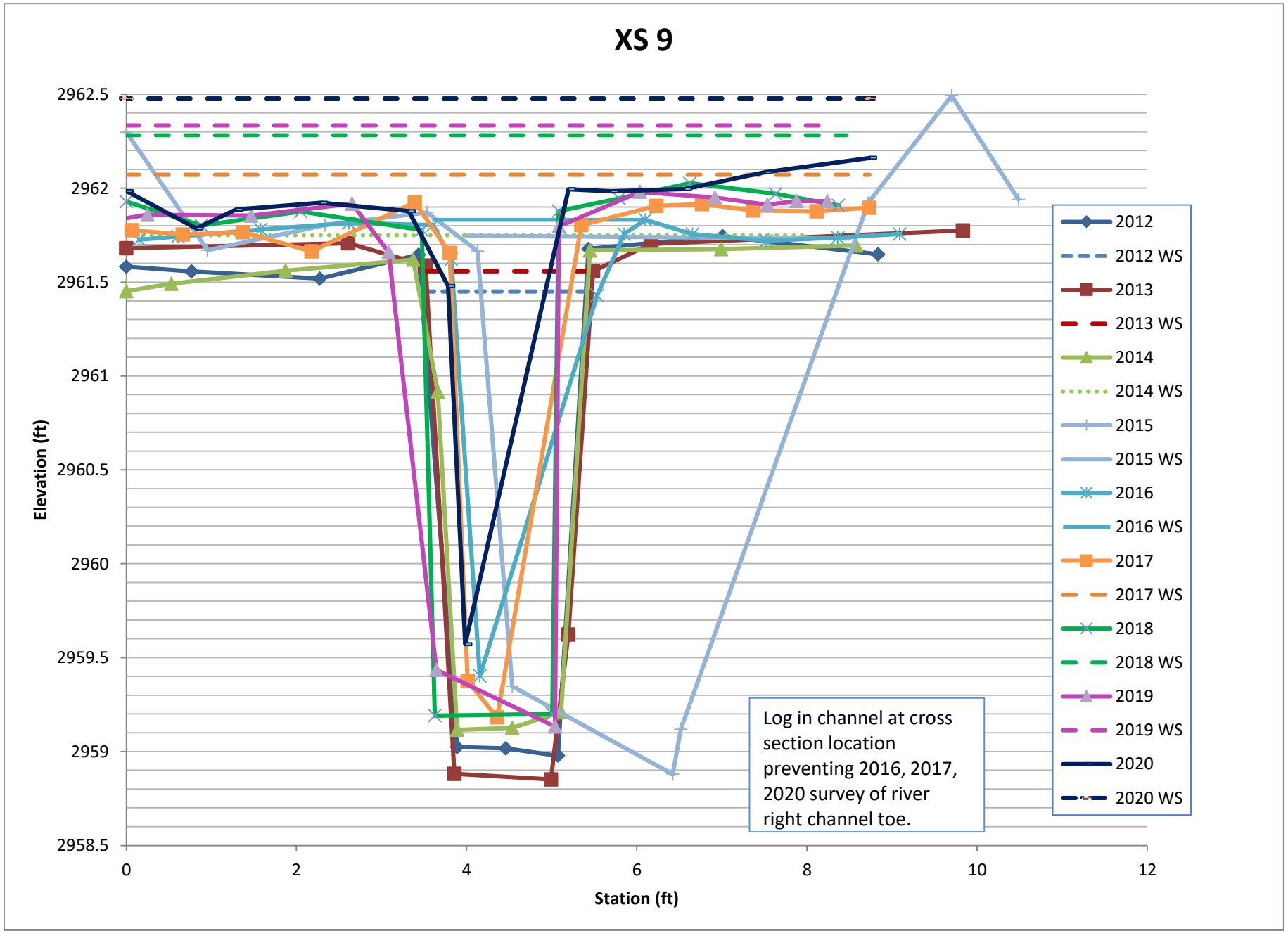

XS 4
2963.5
2963
2962.5
2962
2961.5
2961
2960.5
Elevation (ft)
0
2
4
6
8
10
12
14
Station (ft)
2012
2012 WS
2013
2013 WS
2014
2014 WS
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS
2020
2020 WS

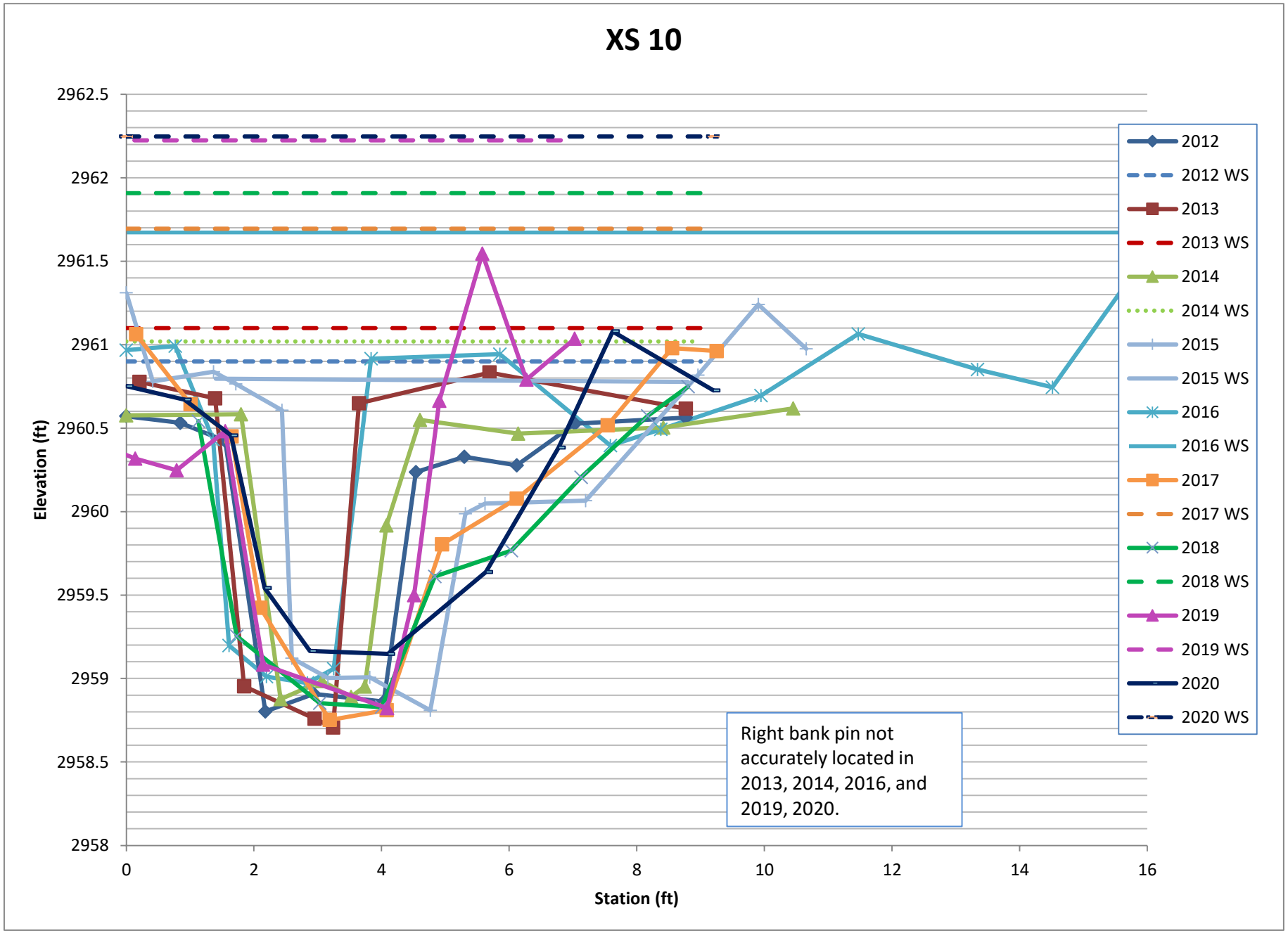

XS 5
2963
2962.5
2962
2961.5
2961
2960.5
2960
2959.5
Elevation (ft)
0
2
4
6
8
10
12
Station (ft)
2012
2012 WS
2013
2013 WS
2014
2014 WS
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS
2020
2020 WS

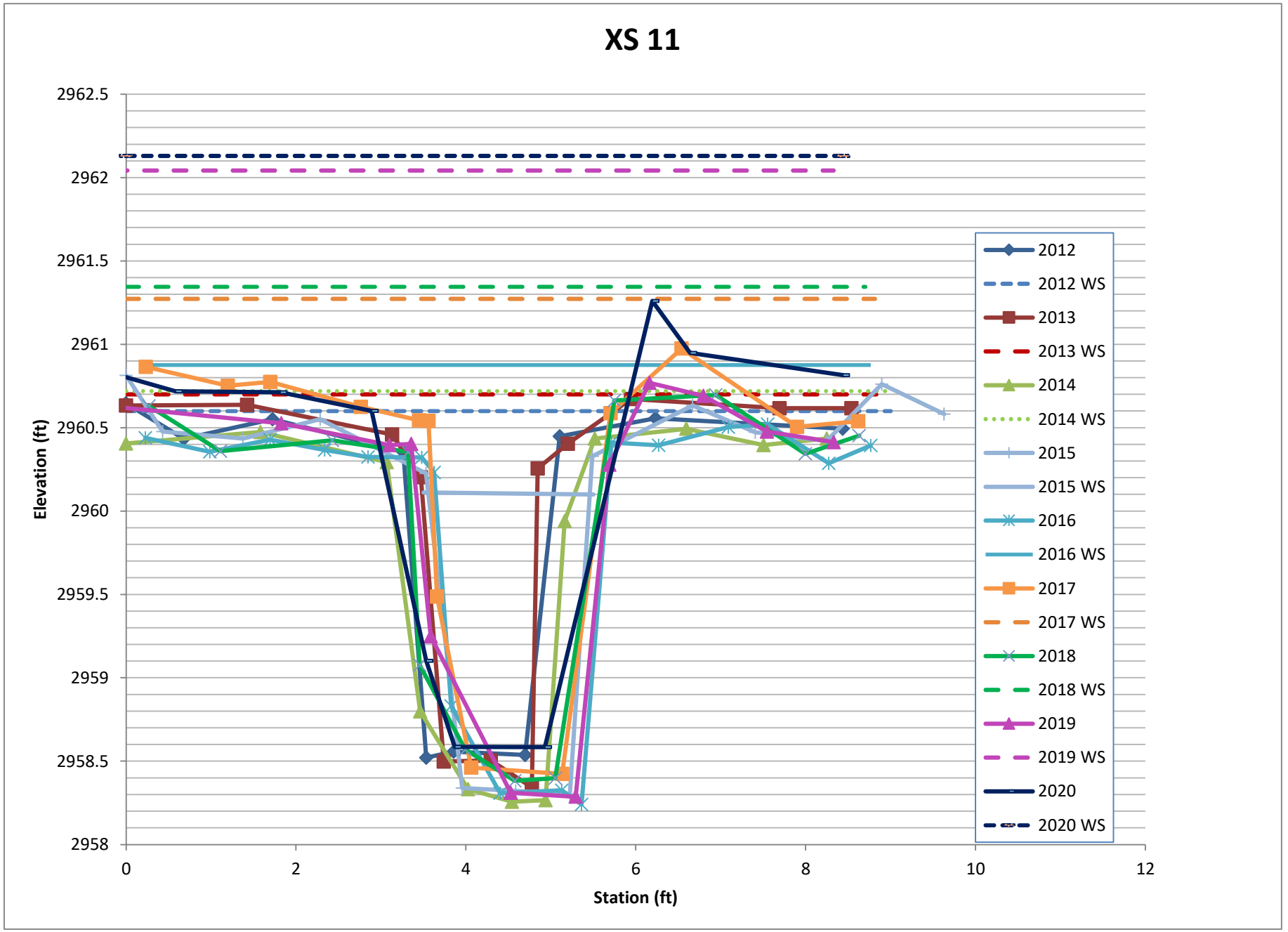

XS 6
2963
2962.5
2962
2961.5
2961
2960.5
2960
Elevation (ft)
0
2
4
6
8
Station (ft)
2012
2012 WS
2013
2013 WS
2014
2014 WS
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS
2020
2020 WS


XS 7
Elevation (ft)
2963
2962.5
2962
2961.5
2961
2960.5
2960
2959.5
0
2
4
6
8
10
12
14
Station (ft)
2012
2012 WS
2013
2013 WS
2014
2014 WS
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS
2020
2020 WS


XS 8
2962.5
2962
2961.5
2961
2960.5
2960
2959.5
2959
Elevation (ft)
0
2
4
6
8
10
12
Station (ft)
2012
2012 WS
2013
2013 WS
2014
2014 WS
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS
2020
2020 WS


XS 9
Elevation (ft)
2962.5
2962
2961.5
2961
2960.5
2960
2959.5
2959
2958.5
0
2
4
6
8
10
12
Station (ft)
2012
2012 WS
2013
2013 WS
2014
2014 WS
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS
2020
2020 WS
Log in channel at cross section location preventing 2016, 2017, 2020 survey of river right channel toe.


XS 10
2962.5
2962
2961.5
2961
2960.5
2960
2959.5
2959
2958.5
2958
Elevation (ft)
0
2
4
6
8
10
12
14
16
Station (ft)
2012
2012 WS
2013
2013 WS
2014
2014 WS
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS
2020
2020 WS
Right bank pin not accurately located in 2013, 2014, 2016, and 2019, 2020.


XS 11
2962.5
2962
2961.5
2961
2960.5
2960
2959.5
2959
2958.5
2958
Elevation (ft)
0
2
4
6
8
10
12
Station (ft)
2012
2012 WS
2013
2013 WS
2014
2014 WS
2015
2015 WS
2016
2016 WS
2017
2017 WS
2018
2018 WS
2019
2019 WS
2020
2020 WS