Montana Department of Transportation Wetland Mitigation Monitoring Report

SCHRIEBER MEADOWS MITIGATION SITE

Project Overview

MDT Project Number: NH 27 (021) UPN # 1027001

Watershed: Watershed #1 – Kootenai River Basin

Monitoring Year: 2021

Years Monitored: 11th 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 15, 2021

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 depressional wetland cells. The project restored the Coyote Creek channel and added 3,327 linear feet of stream length.

Site Location: The mitigation site includes approximately 60 acres of the 147-acre MDT-owned parcel and a 16-acre easement within the Kootenai National Forest.

Latitude: 48.110423 **Longitude:** –115.41562

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

Map Included: See Figure 1, page 11

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:** June 30-July 1, 2021

Specific recommendations for any additional corrective actions: Weed treatment will continue in 2022. Treatment efforts should focus on the Canada thistle infestations concentrated in the northeast quadrant of the site.

Anticipated Wetland Credit Acres: 17.24

Wetland Credit Acres Generated to Date: 26.35

Stream Credits Generated to Date: 35,551

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

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

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

Performance Standards: A summary of performance standards, associated success criteria, and 2021 achievement status for the Schrieber Meadows site is provided in Table 1.

Table 1. Summary of Performance Standards

Performance Standards	Success Criteria	Criteria Achieved Y/N	Discussion
Wetland Characteristics	Meet the three parameter criteria for hydrology, vegetation, and soils as outlined in the 1987 Wetland Delineation Manual and 2010 Mountains, Valleys, Coast Region.	Y	Areas identified as wetland habitat within the mitigation site meet the three parameter criteria.
Wetland Hydrology	Soil saturation present for at least 12.5 percent of the growing season.	Y	Areas 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 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 2021, disturbed soil was stable and did not exhibit signs of erosion.
	Soil is able to support plant cover.	Y	Plant cover is well established across disturbed soils.
Hydrophytic Vegetation	Achieved where combined absolute cover of facultative or wetter species is ≥70 percent	Y	Areas identified as wetland habitat within the mitigation site support a prevalence of hydrophytic vegetation (OBL, FACW, and FAC).
	Montana 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	Achieved when woody and riparian vegetation becomes established	N	Little to no woody cover is present or anticipated within the riparian areas adjacent to Coyote Creek. Woody plantings installed early on during this site's long history drowned following unanticipated high groundwater elevations.
	Noxious weeds do not exceed 10 percent cover within the riparian buffer areas.	Y	State-listed noxious weeds are estimated between 3 to 5 percent absolute cover within the 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 greater than 70 percent cover, by a near-monoculture of reed canary grass, within riparian buffer areas.
	Achieved where combined aerial cover of riparian and stream bank vegetation communities is ≥70 percent.	Y	Riparian and stream bank vegetation communities support greater than 70 percent cover.
	Planted trees and shrubs will be considered successful where 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 2 percent survival was noted in 2021.
Stream Bank Vegetation	Considered successful when banks are vegetated with a majority of deep-rooting riparian plant species having root stability indexes ≥6.	Y	Reed canary grass dominates the stream banks and has a root stability index of 9.

Performance Standards	Success Criteria	Criteria Achieved Y/N	Discussion
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 stream bank 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 the stream restoration is to allow for 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 stable with no lateral adjustment observed following construction.
Open Water	It is the intent of the project to provide open water during the spring and early summer within excavated depressions. As the growing season progresses and the groundwater levels recede, it is anticipated that vegetation will 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 areas.	Y	In 2021, noxious weed cover was less than 5 percent within the upland buffer.
	Any area disturbed within creditable buffer zone must have at least 50 percent aerial cover of non-weed species by end of monitoring period.	Y	Disturbed areas have established greater than 50 percent cover by non-weed species.
Weed Control	Will be based upon annual monitoring of the site to determine weed species and degree of infestation within the site, and control measures based upon 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 on-going weed-control program. Weeds were sprayed on site in July 2021.

Summary Data

Wetland Delineation – The wetland delineations 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 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 46.47 acres of jurisdictional wetland and waters of the US (WUS) were delineated at the site in 2021 (Table 2; see maps in Appendix A). The total wetland acreage delineated in 2021 was 39.5 acres, representing a decrease of 0.24 acres since 2020. The wetland boundary contracted minimally near the northwest boundary of the site between Cells 1 and 7. Between 2020 and 2021 monitoring events, this area exhibited an increase in cover of upland plant species and no evidence of hydrology or hydric soil indicators.

In 2020, the USACE (N. Green, personal communication, May 6, 2020) 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 6.63 acres of the mitigation site in 2021. Beaver activity, observed at the outlet of Schrieber Lake from 2019 through 2021, has not been observed at Schrieber Meadows, but it is contributing to a shift in wetland development at both sites. The two- to three-year-old beaver dam constructed at the outlet of Schrieber Lake has created perennial inundation levels across the southern two-thirds of the Schrieber Meadows site from 2019 through 2021. The active beaver dam has changed the site's hydrologic regime, resulting in an expansion of perennial deep-water inundation levels observed within wetland vegetation community type 3 in 2021. Notable shifts in species cover and dominance were observed in this wetland community and are expected to continue as open water habitat persists perennially across the site.

The stream channel represented 0.34 acres in 2021 while uplands accounted for the remaining 10.48 acres of the mitigation site.

Table 2. Wetland & Waters of the U.S. (WUS) Acreage Delineated From 2019 Through 2021

Habitat Type	2019 Acreage	2020 Acreage	2021 Acreage
Wetland[(a)]	47.08	39.74	39.50
Stream Channel	0.34	0.34	0.34
Open Water	N/A	7.44	6.63
Total Wetland & WUS[(b)]	**47.42**	**47.52**	**46.47**

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

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

Vegetation – A total of 140 plant species have been identified at the site from 2010 through 2021 (Appendix B), including four new native species in 2021. Three upland and four wetland community types (CT) were identified and mapped at the site in 2021 (Figure A-3, Appendix A). Vegetation communities were identified by species composition and dominance. The community composition for each CT is provided in full detail on the Wetland Mitigation Site Monitoring form (Appendix B), and community boundaries shown on Figure A-3 (Appendix A).

The vegetation CTs identified on site in 2021 include the following:

- 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 / Open Water Type 5 – Aquatic Macrophytes/Open Water
- Wetland Type 6 – *Alopecurus pratensis/Agrostis capillaris*
- Wetland Type 15 – *Typha latifolia/Eleocharis palustris*

A notable beneficial shift in species cover and dominance, due to the active beaver dam and perennial surface water, was observed within wetland CT 3 – *Phalaris arundinacea*. In 2021, inundation levels within wetland CT 3 were lower than observed in 2020, with an average of 2-2.5 feet. While the water depth was slightly lower, perennial surface water increased in cover within this CT since 2020, especially around Coyote Creek, the ditch adjacent to Highway 2, and between the excavated depressions. The

seven-foot-tall aggressive reed canary grass (RCG) still dominates the CT, but large patches of the dense monoculture were absent, observed as dead, dying, or as floating mats. There was an increase in cover by *Carex* spp., bluejoint (*Calamagrostis canadensis*), and perennial surface water observed in areas once dominated by RCG. These shifts in cover by RCG, *Carex* spp., bluejoint, and perennial surface water are a result of more than two years of deep perennial inundation. Numerous scientific studies have evaluated and reported extended periods of flooding as a control strategy for invasive monocultures of RCG, especially flooding during summer when maximum rhizome growth and tillering occur. These studies reported consistent decreases in cover by RCG, seed germination at 0 to 10%, and large reductions in rhizome growth and tiller production, when perennial inundation and flooded conditions were greater than one year (Jenkins et al 2008; WRCGM 2009; Waggy 2010). The beaver activity and subsequent perennial inundation observed over the last few years at Schrieber Lake and Meadows is successfully killing RCG rhizomes, decreasing its viable seed bank and germination, and promoting an increase in native herbaceous hydrophytic species richness and cover within wetland CT 3.

Vegetation cover was measured along three belt transects (T-1, T-2, and T-3) in 2021 (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 2019 through 2021. T-1 is 318 feet long and intersects CT 3 – *Phalaris arundinacea* and 5 – Aquatic Macrophytes/Open Water. Wetland CT 3 and open water CT 5 accounted for 34.3 and 65.7 percent of the transect, respectively, in both 2020 and 2021. In 2021, CT 5 – Aquatic Macrophytes/Open Water met the recent USACE definition of open water. This transect has not intersected an upland CT since 2010.

Table 3. Data Summary for T-1 From 2010 and 2019 Through 2021 at the Schrieber Meadows Site

Monitoring Year	2010	2019	2020	2021
Transect Length (feet)	**318**	**318**	**318**	**318**
Vegetation Community Transitions Along Transect	7	6	6	6
Vegetation Communities Along Transect	3	2	2	2
Hydrophytic Vegetation Communities Along Transect	2	2	1	1
Total Vegetative Species	32	9	10	7
Total Hydrophytic Species	22	9	10	7
Total Upland Species	10	0	0	0
Estimated % Total Vegetative Cover	75	75	45	45
Estimated % Unvegetated	25	25	55	55
% Transect Length Comprising Hydrophytic Vegetation Communities	62	19.8	34.3	34.3
% Transect Length Comprising Upland Vegetation Communities	13	0	0	0
% Transect Length Comprising Open Water With Aquatic Macrophytes	25	80.2	65.7	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 CT 3 – *Phalaris arundinacea,* 6 – *Alopecurus pratensis/Agrostis capillaris*, 14 – *Agrostis capillaris/Phleum pratense,* and 15 – *Typha latifolia/Eleocharis palustris*. In 2020 and 2021, hydrophytic vegetation communities comprised 100 percent of the transect, which is an increase of 40 percent since 2019. A total of 33 species were identified in 2021, including 30 hydrophytes and 3 upland species. The total number of hydrophytic plant species observed along the transect increased by 6 in 2021, following a minimal decrease reported in 2020. Total vegetative cover was estimated at 65 percent, consistent with that observed in 2020.

Table 4. Data Summary for T-2 From 2012 and 2019 Through 2021 at the Schrieber Meadows Site

Monitoring Year	2012	2019	2020	2021
Transect Length (feet)	**594**	**594**	**594**	**594**
Vegetation Community Transitions Along Transect	16	15	8	8
Vegetation Communities Along Transect	3	4	4	4
Hydrophytic Vegetation Communities Along Transect	3	3	4	4
Total Vegetative Species	23	35	29	33
Total Hydrophytic Species	17	30	24	30
Total Upland Species	9	5	5	3
Estimated % Total Vegetative Cover	60	70	65	65
Estimated % Unvegetated	40	30	35	35
% Transect Length Comprising Hydrophytic Vegetation Communities	59.1	60	100	100
% Transect Length Comprising Upland Vegetation Communities	0	0	0	0
% Transect Length Comprising Open Water With Aquatic Macrophytes	40.9	23	0	0
% Transect Length Comprising Mudflat	0	17	0	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 CT 3 – *Phalaris arundinacea* and 5 – Aquatic macrophytes/Open Water. Wetland CT 3 and open water CT 5 accounted for 52.5 and 47.5 percent of the transect, respectively, in 2021. The minimal increase in open water and decrease in total species observed along this transect, from 2020 to 2021, corresponds with the observation of large patches of RCG as dead, dying, or as floating mats. In 2021, CT 5 – Aquatic Macrophytes/Open Water met the recent USACE definition of open water.

Table 5. Data Summary for T-3 From 2012 and 2019 Through 2021 at the Schrieber Meadows Site

Monitoring Year	2012	2019	2020	2021
Transect Length (feet)	**440**	**440**	**440**	**440**
Vegetation Community Transitions Along Transect	4	4	4	4
Vegetation Communities Along Transect	2	2	2	2
Hydrophytic Vegetation Communities Along Transect	2	2	2	2
Total Vegetative Species	9	13	13	9
Total Hydrophytic Species	7	9	13	9
Total Upland Species	2	4	0	0
Estimated % Total Vegetative Cover	50	75	50	50
Estimated % Unvegetated	50	25	50	50
% Transect Length Comprising Hydrophytic Vegetation Communities	53	48	53.4	52.5
% Transect Length Comprising Upland Vegetation Communities	0	0	0	0
% Transect Length Comprising Open Water With Aquatic Macrophytes	47	52	46.6	47.5

During the July 2021 monitoring event, 19 occurrences of Priority 2B noxious weed species were mapped at the site, including Canada thistle (*Cirsium arvense*), houndstongue (*Cynoglossum officinale*), and ox-eye daisy (*Leucanthemum vulgare*). One occurrence of orange hawkweed (*Hieracium*

aurantiacum), a Priority 2A noxious weed in Montana, was also mapped. Noxious weed infestations occurred in areas less than 0.1-acre in size and were present in both wetland and upland habitat (Figure A-3, Appendix A). The infestations of Canada thistle included trace (<1%), low (1-5%), moderate (6-25%) and high (>25%) cover classes, and primarily occurred north of the access road. Two patches of ox-eye daisy were observed at trace and low cover classes, while houndstongue and orange hawkweed each occurred as trace patches. Overall noxious weed cover across the site was estimated below 5% cover in 2021. Annual weed spraying efforts have been effective in reducing infestation size and cover of noxious weed populations across the site to meet the success criteria outlined in the performance standards. The Montana Department of Transportation (MDT) has an ongoing weed-control program, which included weed spraying by contractors on June 30-July 1, 2021, prior to the July 2021 monitoring event.

A total of 1,000 speckled alders (*Alnus incana*) and 750 willows (*Salix* spp.) were planted along the newly constructed stream channel and wetland cells in the northern third of the site. In 2021, a total of 37 live plants were observed across the mitigation site, indicating approximately 2 percent survival. There were no willow (*Salix* spp.) plantings observed during the 2021 monitoring event. The 37 surviving speckled alder plantings appeared stunted and had poor vigor due to aggressive competition from reed canary grass and perennial deep-water conditions. Balsam poplar (*Populus balsamifera*) volunteers were observed growing around the edges of some excavated wetland cells in the project area north of the access road, along with speckled alder and one Bebb's willow (*Salix bebbiana*) volunteer. Minimal shrub development at the site is expected due to the persistence of RCG, a high-water table, perennial surface water, and browse by ungulates.

Hydrology – During the 2021 investigation, the average depth of surface water across the site was estimated at 1.5 feet with a range of depths from 0 to 5 feet. Approximately 70 percent of the project area was inundated during the 2021 site visit. The deepest standing water is located within excavated cells south of the access road, within Coyote Creek, and the former Coyote Creek channel along the east project boundary. The surface-water depth at the emergent vegetation and open-water boundary was estimated at 2 feet, a decrease of 0.5 feet compared to 2020. The southern two-thirds of the site was inundated and/or saturated as a result of the reconstructed Coyote Creek channel, abundant surface-water from beaver activity, and groundwater flowing through the valley. The high surface water 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 the beaver dam located at the outlet of Schrieber Lake just south of this site. The area north of the access road was drier than the southern portion of the site, with notably less surface water than observed in 2020. All excavated wetland cells contained surface water or were saturated to the soil surface. The intermittent Coyote Creek channel was dry in July 2021, typical for this location, above the Coyote Creek spring, just upstream of the site's access road. The spring provides the primary perennial source of hydrology to Coyote Creek downstream of this location. Direct precipitation also contributes to wetland hydrology, but the high groundwater table is the primary source of water across the site. Precipitation accumulation for this area in 2021 reported 13.27 inches from January through October, which is higher than the accumulation reported for the same period in 2020 (11.92 inches), much lower than that reported for the same period in 2019 (16.62 inches), and nearly equivalent with the historic average of 13.30 inches [NRCS, 2021a].

Soils – Soil test pits were excavated at four locations to evaluate the extent of hydric soil development across the site in 2021 (Appendices A and B). Soil textures within wetland test pits ranged from peat (i.e., organic) to silty clay. Hydric soil indicators were observed in both wetland test pits and included histic epipedon, hydrogen sulfide, and depleted matrix. Soil textures within upland test pits included silty 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 established within the pilot project that included three constructed cells, initially monitored in 2010. A total of 20 photo points were established in 2012 in response to the increased project area scope and 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 2021 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	2021 Enhancement AA	2021 Creation AA	2021 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	Exc (1.0)	Exc (1.0)	Exc (1.0)
General Fish/Aquatic Habitat	Low (0.3)	Mod (0.6)	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	High (0.9)	Excel (1.0)	Exc (1.0)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)
Uniqueness	Mod (0.4)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential (bonus points)	High (0.2)	High (0.2)	High (0.2)
Actual Points/Possible Points	**9.1/10**	**9.5/11**	**8.2/10**
% of Possible Score Achieved	**91%**	**86%**	**82%**
Overall Category	**I**	**I**	**I**
Total Acreage of Assessed Wetlands Within Site Boundaries	**13.22**	**22.48**	**3.46**
Functional Units (acreage × actual points)	**120.30**	**213.57**	**28.37**

Wildlife – Fifteen bird species were identified in 2021. The two bird boxes installed at the site are functional, although neither were in use during the 2021 site visit. In addition to the fifteen bird species, Columbia spotted frogs (*Rana luteiventris*) were also observed within many of the excavated wetland

cells, as well as one garter snake (*Thamnophis sirtalis*), and two shells of painted turtles (*Chrysemys picta*). Mammal observations at the site included four Columbian ground squirrels (*Urocitellus columbianus*), two yellow-bellied marmots (*Marmota flaviventris*) and one white-tailed deer (*Odocoileus virginianus*) (see Mitigation Monitoring form in Appendix B).

Stream Monitoring – The survey results for 11 permanent cross sections established along the constructed Coyote Creek (Figure A-2, Appendix A) are shown in Appendix D. The 2021 data was compared to the previous surveys and discussions to assess stream channel stability. In general, the banks of the constructed channel were well-vegetated and exhibited stable conditions. Consequently, no major channel morphological changes have been observed throughout any of the monitoring years.

Credit Summary – Stream Credits

Completely restoring sinuosity and stream length to Coyote 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 integrated into the larger Schrieber Meadows mitigation project constructed 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 the larger Schrieber Meadows mitigation project.

A total of 39.50 acres of wetland habitat were delineated at the Schrieber Meadows site in 2021, including 18.53 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 58.57 acres, including 12.39 acres of upland buffer, -0.08-acre project impacts, and 6.63 acres of open water, were used to calculate the mitigation credit acres. In accordance

with the USACE-approved performance standard for this site, open water areas with submerged and/or floating vegetation will be considered successful and creditable. The open water areas at the site are considered successful and creditable as they exhibited less than 5% emergent vegetation and a diversity of submerged and floating aquatic macrophytes. .After applying the USACE-approved ratios to these values, a total of 26.35 mitigation credit acres have been estimated in 2021, which is 9.11 credit acres more than the targeted 17.24 credit acres originally planned for this site. The decrease in total mitigation acreage in 2020 (26.93 credit acres) and 2021 (26.35 credit acres) as compared to 2019 (31.01 credit acres) 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 2019 through 2021

Mitigation Type	Total Proposed Acreage	Ratio	Proposed Credit Acres	2013 Delineated Acreage	2013 Credit Acres	2019 Delineated Acreage	2019 Credit Acres	2020 Delineated Acreage	2020 Credit Acres	2021 Delineated Acreage	2021 Credit Acres
Creation – USFS/MDT Property	8.91	1:1	8.91	22.43	22.43	21.9	21.9	19.11	19.11	18.53	18.53
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	9.34	3.11	9.34	3.11
Riparian Buffer[(a)]		–		8.3	(b)	8.3	(b)	8.3	(b)	8.3	(b)
Upland Buffer	8.5	5:1	1.7	12.39©	2.48	12.39©	2.48	12.39©	2.48	12.39©	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)]	6.63	TBD[(d)]
Total Mitigation Acreage	**34.01**		**17.24**	**59.72**	**31.54**	**59.19**	**31.01**	**59.96**	**26.93**	**58.57**	**26.35**

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

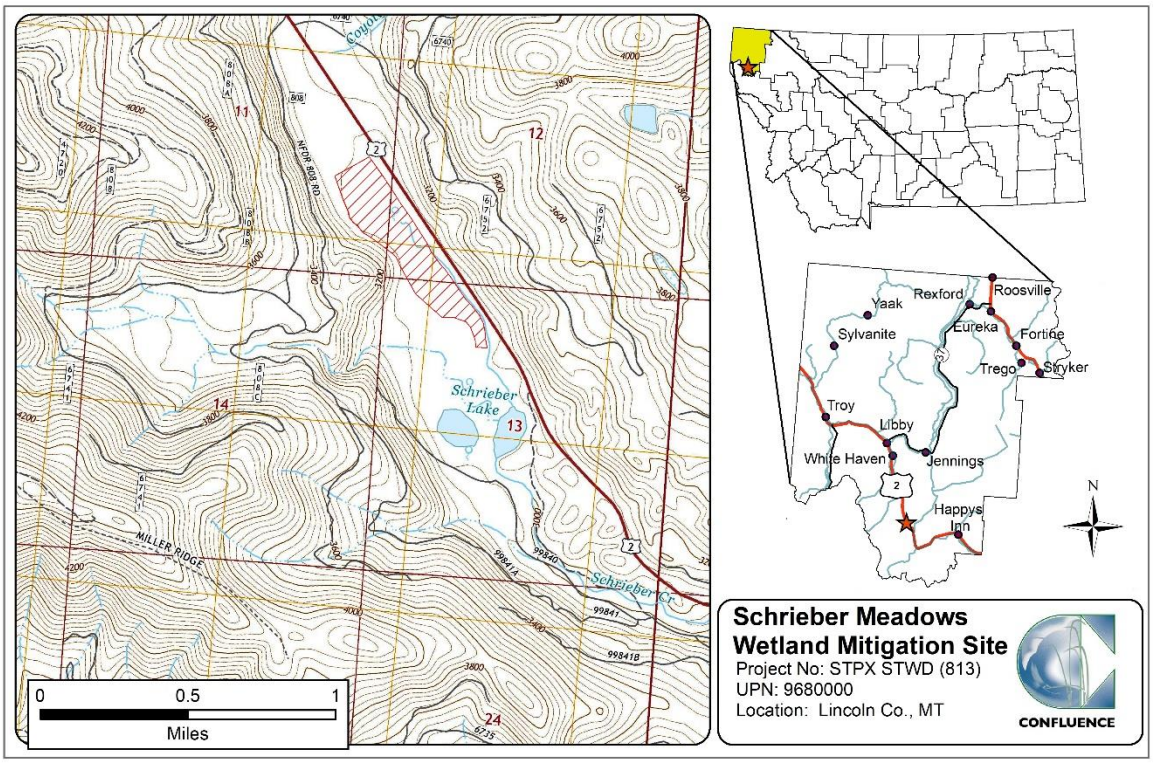
(b) Wetland acreages within riparian buffer were subtracted from wetland credit total; riparian buffer does not include upland buffer acreage.

© 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) – see USACE approved performance standard for Open Water (Table 1).

Maps, Plans, Photos

Figure 1. Site Location Map



Project Area Maps/Figures: See Appendix A (Figure A-2 – 2021 Monitoring Activity Locations; Figure A-3 – 2021 Mapped Site Features; Figure A-4 – 2021 Wetland Delineation)

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/otherwebdata/external/planning/wetlands/2012/schrieber_meadows_final_2012.pdf

Conclusions

Based on the results of the eleventh 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 RCG.

2. Planted trees and shrubs will be considered successful when they exhibit 50 percent survival after 5 years.
   a. Woody plant survival is not expected to meet this performance standard.

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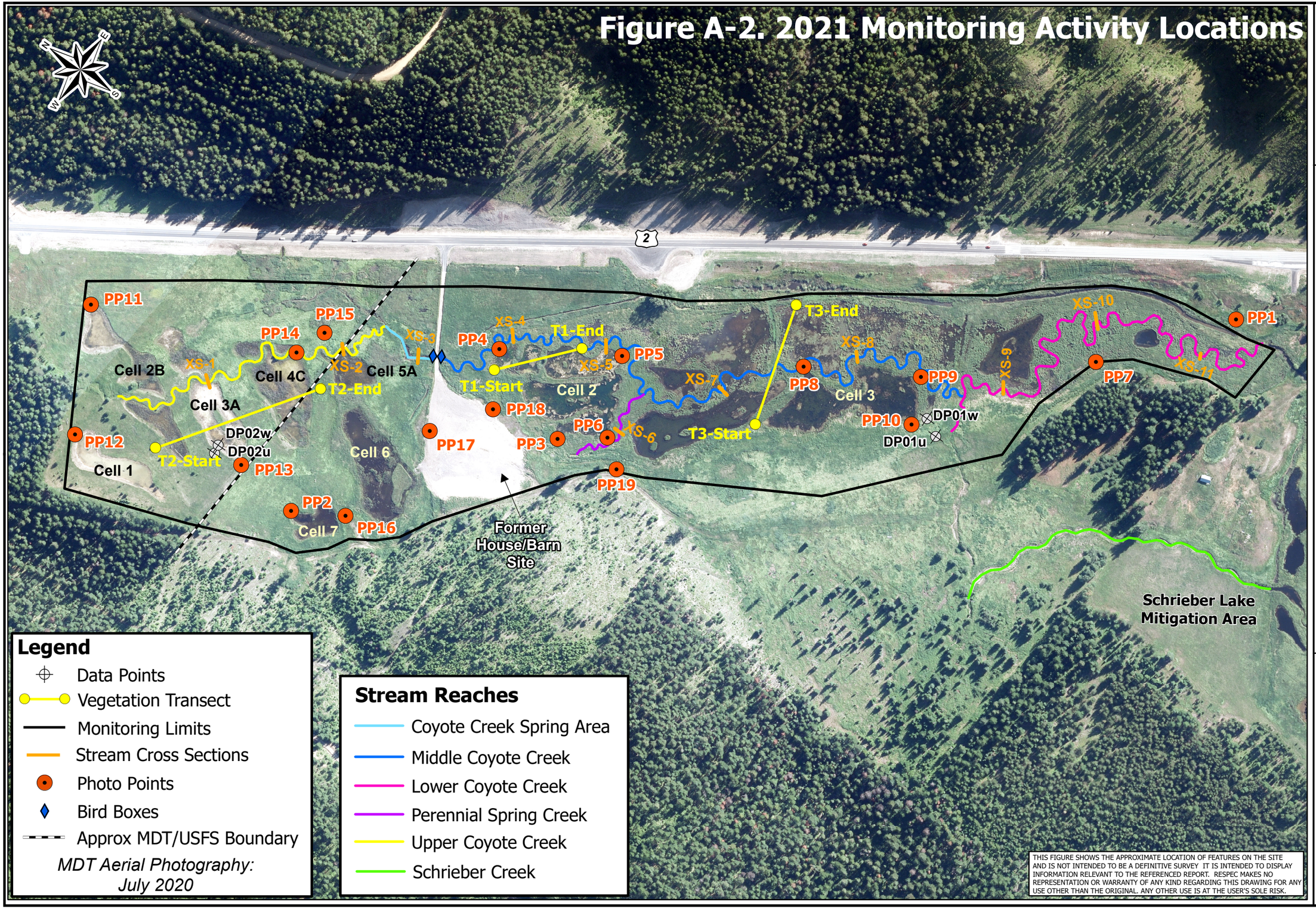
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APPENDIX A
PROJECT AREA MAPS

MDT Wetland Mitigation Monitoring
Schrieber Meadows
Lincoln County, Montana

Figure A-2. 2021 Monitoring Activity Locations



Legend

- Data Points
- Vegetation Transect
- Monitoring Limits
- Stream Cross Sections
- Photo Points
- Bird Boxes
- Approx MDT/USFS Boundary

MDT Aerial Photography: July 2020

Stream Reaches

- Coyote Creek Spring Area
- Middle Coyote Creek
- Lower Coyote Creek
- Perennial Spring Creek
- Upper Coyote Creek
- Schrieber Creek

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

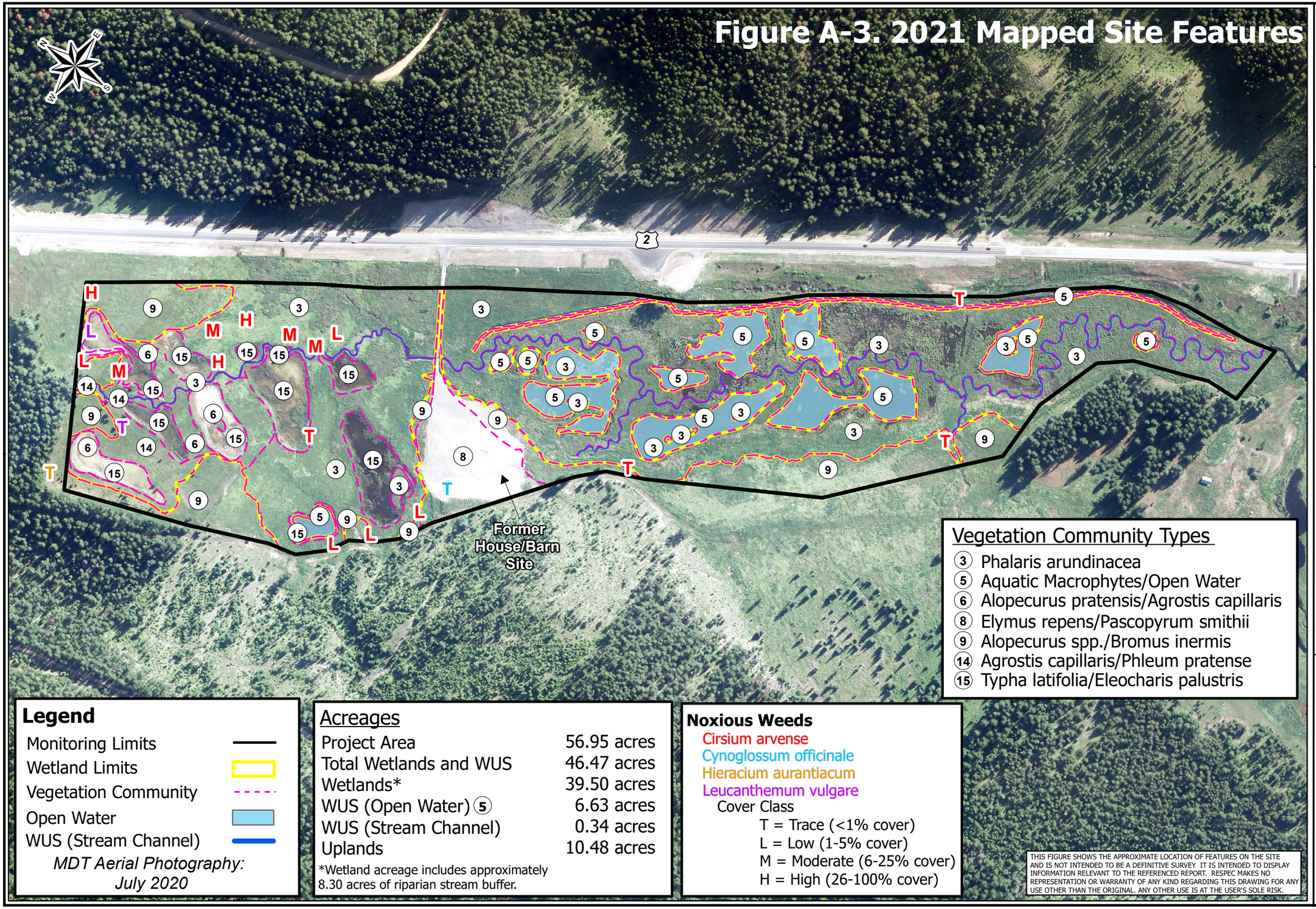
Schrieber Meadows Mitigation Site
2021 Monitoring Activity Locations

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

Project:	NH 27 (021)
Location:	Lincoln Co., Montana
Date:	October 2021
Project Manager:	R McEldowney
Drawn By:	RQ

File: X:\Project\MDT Wetland Mitigation 2\Mains\Schrieber Meadows\2021\Monitor2021_MDT.mxd

Figure A-3. 2021 Mapped Site Features



Vegetation Community Types

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

Legend

- Monitoring Limits
- Wetland Limits
- Vegetation Community
- Open Water
- WUS (Stream Channel)

MDT Aerial Photography: July 2020

Acreages

Project Area	56.95 acres
Total Wetlands and WUS	46.47 acres
Wetlands*	39.50 acres
WUS (Open Water) (5)	6.63 acres
WUS (Stream Channel)	0.34 acres
Uplands	10.48 acres

*Wetland acreage includes approximately 8.30 acres of riparian stream buffer.

Noxious Weeds

Cirsium arvense
Cynoglossum officinale
Hieracium aurantiacum
Leucanthemum vulgare

Cover Class

- T = Trace (<1% cover)
- L = Low (1-5% cover)
- M = Moderate (6-25% cover)
- H = High (26-100% cover)

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

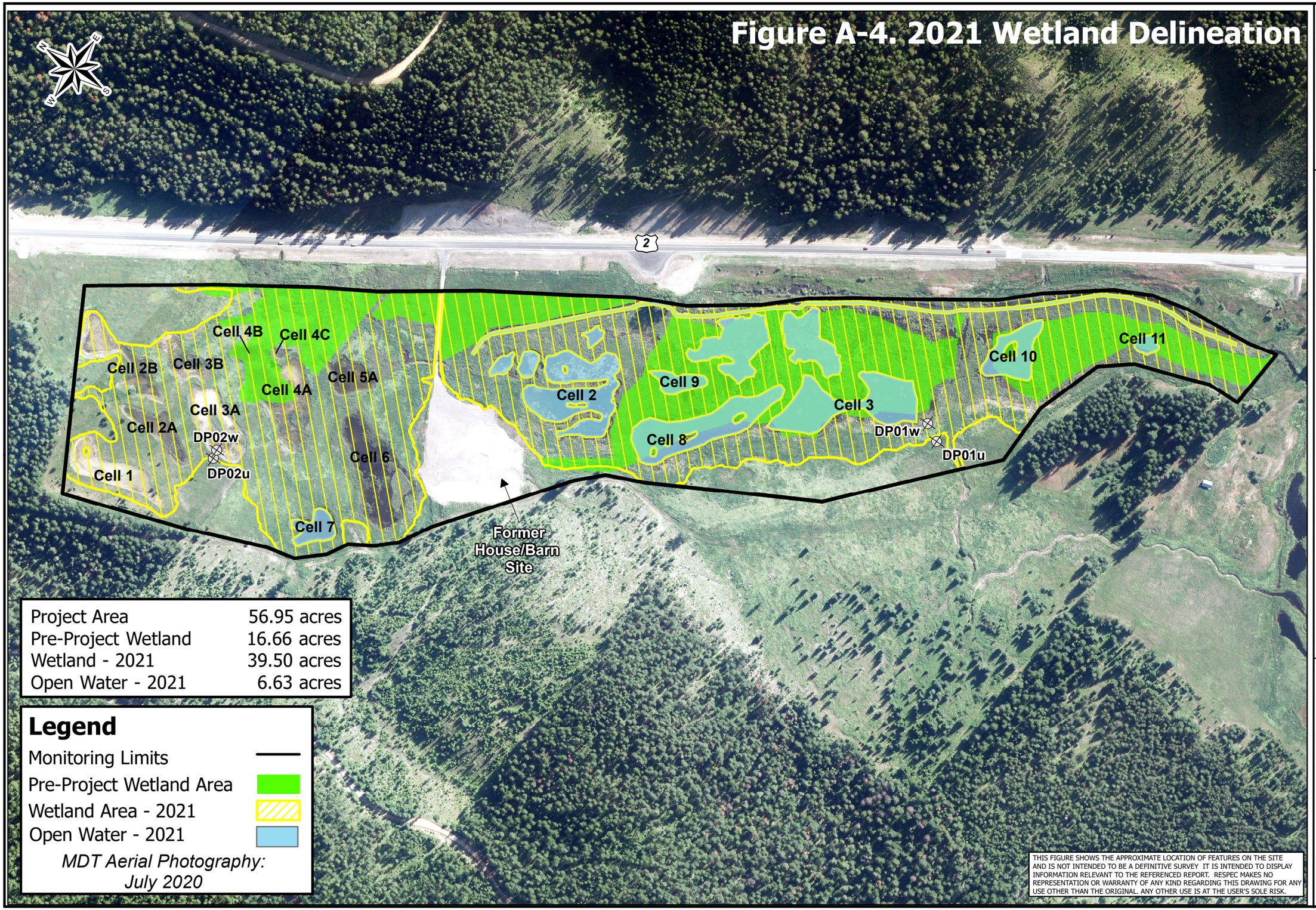
Schrieber Meadows Mitigation Site
2021 Mapped Site Features

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

Project: NH 27 (021)
Location: Lincoln Co., Montana
Date: October 2021
Project Manager: R McEldowney
Drawn By: RQ

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Figure A-4. 2021 Wetland Delineation



Project Area	56.95 acres
Pre-Project Wetland	16.66 acres
Wetland - 2021	39.50 acres
Open Water - 2021	6.63 acres

Legend

- Monitoring Limits
- Pre-Project Wetland Area
- Wetland Area - 2021
- Open Water - 2021

MDT Aerial Photography: July 2020

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
2021 Wetland Delineation

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

Project: NH 27 (021)
Location: Lincoln Co., Montana
Date: October 2021
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 7/15/2021

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: 11 #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: 70 %

Depth at emergent vegetation-open water boundary: 2 **(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 ~0.5-1ft lower on average across most of the site as compared to 2020. Coyote Creek and the ditch along the eastern boundary had water depths of at least 5 feet in some areas. Excavated depressions and surrounding area in the southern 2/3 of the site had water depths ranging from 2-3ft, while those in the northern 1/3 of the site had depths ranging from 0 to 1.5 feet.

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:** 30.69

Species	Cover class	Species	Cover class
Alnus incana	0	Alopecurus arundinaceus	1
Alopecurus pratensis	1	Bare Ground	0
Calamagrostis canadensis	1	Carex athrostachya	1
Carex nebrascensis	1	Carex stipata	1
Carex utriculata	1	Cirsium arvense	1
Eleocharis palustris	1	Epilobium brachycarpum	0
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 observed across the site. In 2021, inundation levels within this CT were lower than observed in 2020, with an average of 2-2.5 feet. While the water depth was lower, open water areas have increased within this CT since 2020, especially around Coyote Creek, the ditch along the eastern project boundary, and between the excavated depressions in southern 2/3 of the site. 7ft tall reed canary grass still dominates the CT, but large patches of the dense monoculture were absent, observed as dead, dying, or as floating mats. Increase in cover by Carex spp. and open water observed in areas once dominated by reed canary grass. These shifts in cover by reed canary grass, Carex spp., and perennial surface water are likely a result of more than 2 years of deep perennial inundation. Numerous scientific studies have evaluated and reported extended periods of flooding as a control strategy for reed canary grass, especially flooding during summer when maximum rhizome growth and tillering occur. These studies reported consistent decreases in cover by reed canary grass, seed germination at 0 to 10%, and large reductions in rhizome growth and tiller production, when perennial inundation and flooded conditions were greater than one year. In 2021, reed canary grass had also been heavily grazed in many areas by Canada geese and we suspect moose. Difficult to move through this CT.

Community # 5 Community Type: Aquatic macrophytes / Open Water **Acres:** 6.63

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	0
Open Water	5	Persicaria amphibia	1
Phalaris arundinacea	1	Sparganium natans	0
Typha latifolia	1		

Comments:

Areas dominated by an average of 2-3 feet of standing water, less than 5% emergent wetland vegetation, and a diversity of submergent/floating aquatic macrophytes. Open water acreage decreased within the northern 1/3 of the site in 2021.

Community # 6 Community Type: Alopecurus pratensis / Agrostis capillaris **Acres:** 1.87

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agrostis capillaris	4
Agrostis stolonifera	0	Alnus incana	0
Alopecurus arundinaceus	2	Alopecurus pratensis	4
Bare Ground	2	Bromus inermis	2
Carex athrostachya	1	Carex lasiocarpa	0
Carex pellita	1	Carex utriculata	0
Eleocharis palustris	1	Epilobium ciliatum	1
Juncus confusus	1	Juncus tenuis	1
Leucanthemum vulgare	1	Penstemon confertus	1
Phalaris arundinacea	2	Phleum pratense	1
Poa pratensis	1	Potentilla gracilis	0
Rosa woodsii	0	Salix bebbiana	0
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	5
Bromus briziformis	1	Bromus inermis	1
Bromus tectorum	2	Descurainia pinnata	1
Elymus repens	3	Medicago lupulina	2
Pascopyrum smithii	3	Sisymbrium altissimum	1
Verbascum thapsus	1		

Comments:

Upland community type that runs along the access road that bisects the property. Composed of high bare ground and non-native weedy species, with the exception of Pascopyrum smithii.

Community # 9 **Community Type:** Alopecurus spp. / Bromus inermis **Acres:** 8.11

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agrostis capillaris	1
Alopecurus arundinaceus	2	Alopecurus pratensis	4
Arnica chamissonis	1	Bare Ground	2
Bromus inermis	3	Cirsium arvense	1
Elymus repens	2	Pascopyrum smithii	1
Phalaris arundinacea	2	Phleum pratense	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. In 2021, this CT acreage expanded, replacing a portion of wetland CT 14. This area exhibiteda decrease in wetland acreage and shift from a dominance of Agrostis capillaris/Phleum pratense to a dominance of Alopecurus spp/Bromus inermis.

Community # 14 **Community Type:** Agrostis capillaris / Phleum pratense **Acres:** 1.38

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agrostis capillaris	4
Agrostis stolonifera	1	Alopecurus pratensis	1
Bare Ground	2	Bromus inermis	3
Cirsium arvense	0	Fragaria virginiana	0
Hieracium aurantiacum	0	Juncus confusus	1
Juncus tenuis	1	Leucanthemum vulgare	1
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. In 2021, this area was drier than previous years. Species composition and cover had shifted in some areas to include more cover by upland species such as Bromus inermis. Wetland acreage decreased within this CT in 2021.

Community # 15 **Community Type:** Typha latifolia / Eleocharis palustris **Acres:** 5.29

Species	Cover class	Species	Cover class
Achillea millefolium	0	Agrostis capillaris	1
Alisma triviale	1	Alnus incana	0
Alopecurus arundinaceus	1	Alopecurus pratensis	1
Bare Ground	1	Beckmannia syzigachne	0
Carex aquatilis	1	Carex athrostachya	1
Carex bebbii	0	Carex nebrascensis	0
Carex pellita	1	Carex stipata	0
Chara sp.	1	Eleocharis palustris	3
Epilobium ciliatum	1	Glyceria grandis	1
Glyceria striata	1	Juncus bufonius	0
Juncus confusus	1	Juncus nodosus	0
Juncus tenuis	0	Leucanthemum vulgare	1
Mentha arvensis	1	Open Water	3
Persicaria amphibia	1	Phalaris arundinacea	1
Polypogon monspeliensis	0	Populus balsamifera	1
Potamogeton natans	1	Salix bebbiana	0
Scirpus cyperinus	0	Scirpus microcarpus	1
Trifolium pratense	1	Typha latifolia	4
Veronica scutellata	1		

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 in excavated depressions. In 2021, less open water was observed and surface water depths were lower than 2020. Surface water depths ranged from 0-1.5 feet. Volunteer Populus balsamifera and Alnus incana seedlings observed around margins of depressions and this CT.

Total Vegetation Community Acreage **57.0**

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

VEGETATION TRANSECTS

Site: Schrieber Meadows Date: 7/15/2021

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	3
Phalaris arundinacea	5		

Transect Notes:

Open water covered more surface area in 2021, but depths were 0.5-1 foot lower than 2020. Reed canary grass cover has decreased in general since 2020 as a result of the 2+ years of perennial inundation. Difficult and slow to move through. Reed canary grass greater than 7ft tall, water at times greater than 3ft deep, monitoring this transect was hazardous and 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
Agrostis capillaris	5	Agrostis stolonifera	1
Bare Ground	2	Bromus inermis	1
Juncus confusus	1	Juncus tenuis	2
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	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	2	Agrostis stolonifera	2
Alopecurus pratensis	3	Bromus inermis	1
Carex pellita	4	Eleocharis palustris	1
Epilobium ciliatum	0	Juncus tenuis	0
Phalaris arundinacea	1		

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

Species	Cover class	Species	Cover class
Achillea millefolium	0	Agrostis capillaris	1
Bare Ground	3	Beckmannia syzigachne	1
Eleocharis palustris	3	Epilobium ciliatum	0
Juncus tenuis	1	Leucanthemum vulgare	0
Phalaris arundinacea	1	Polypogon monspeliensis	0
Populus balsamifera	0	Trifolium pratense	1
Typha latifolia	4	Veronica scutellata	2

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

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agrostis capillaris	2
Alopecurus pratensis	3	Bare Ground	2
Bromus inermis	4	Penstemon confertus	1
Symphyotrichum spathulat	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	0
Juncus tenuis	1	Leucanthemum vulgare	0
Phalaris arundinacea	1	Populus balsamifera	1
Typha latifolia	4		

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

Species	Cover class	Species	Cover class
Agrostis capillaris	1	Alopecurus pratensis	5
Bare Ground	1	Bromus inermis	3
Leucanthemum vulgare	0	Potentilla gracilis	1

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

Species	Cover class	Species	Cover class
Alnus incana	0	Alopecurus pratensis	0
Carex athrostachya	0	Carex bebbii	1
Carex nebrascensis	0	Chara sp.	1
Eleocharis palustris	3	Juncus confusus	0
Juncus nodosus	0	Juncus tenuis	1
Mentha arvensis	0	Open Water	2
Persicaria amphibia	1	Phalaris arundinacea	1
Salix bebbiana	0	Scirpus microcarpus	1
Typha latifolia	4		

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

Species	Cover class	Species	Cover class
Alopecurus pratensis	2	Bare Ground	1
Carex athrostachya	0	Carex utriculata	0
Cirsium arvense	1	Phalaris arundinacea	5
Scirpus microcarpus	2		

Transect Notes:

CT 15, a new community observed in 2020, replaced CT 5 and CT 13 along transect. In 2021, less open water was observed and depths of surface water were ~0.5-1 foot lower in excavated depressions along transect. Populus balsamifera volunteer seedlings observed growing around margins of CT 15 along transect.

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	4
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	Lemna minor	2
Open Water	4	Persicaria amphibia	2
Phalaris arundinacea	5		

Ending Station 420 **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
Epilobium ciliatum	1	Lemna minor	2
Open Water	3	Phalaris arundinacea	5

Transect Notes:

Open water covered more surface area in 2021, but depths were 0.5-1 foot lower than 2020. End of transect adjacent to ditch along eastern boundary had water depths that were 5+ feet deep. Reed canary grass cover has decreased in general since 2020 as a result of the 2+ years of perennial inundation. Difficult and slow to move through. Reed canary grass greater than 7ft tall, water at times greater than 3ft deep along transect, therefore monitoring was hazardous and 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	37	too wet, stunted, poor vigor, out-competed by reed canary grass
Salix sp.	750	0	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 tall reed canary grass. It is thought that the majority of woody plantings have died because of perennial deep water conditions and aggressive competition from reed canary grass. Volunteer Populus balsamifera and Alnus incana seedlings observed around margins of excavated depressions in northern 1/3 of site. One volunteer Beb's Willow was observed in 2021.

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:
The observed nesting structures do not appear to be in use.

Species	#Observed	Behavior	Habitat
American Crow	2	FO, L	
American Robin	1	L	
Canada Goose	45	FO, L	
Common Nighthawk	2	FO	
Common Yellowthroat	3	L	
Eastern Kingbird	6	FO, L	
Killdeer	2	FO, L	
Mallard	1	L	
Red-winged Blackbird	28	FO, L	
Sparrow Sp.	20		
Spotted Sandpiper	1	F	
Swainson's Thrush	6	L	
Swainson's Warbler	2	L	
Willow Flycatcher	6	FO, L, N	
Wilson's Snipe	4	FO, L	

Bird Comments

A diversity of bird species were observed at the site in 2021.

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	3	No	No	No	
Garter Snake	1	No	No	No	
Ground Squirrel	4	No	No	Yes	
Painted Turtle	2	No	No	No	Shells/dead.
White-tailed Deer	1	Yes	Yes	Yes	
Yellow-bellied Marmot	2	No	No	No	

Wildlife Comments:

Observed 2 turtle shells around excavated depressions.

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
DP01u	48.109522	-115.414121		
DP01w	48.109689	-115.414007		
DP02u	48.114583	-115.420615		
DP02w	48.114607	-115.420497		
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 46.47 acres of jurisdictional wetland and waters of the US (WUS) were delineated at the Schrieber Meadows site in 2021. The total wetland acreage delineated in 2021, was 39.50 acres, which is a decrease of 0.24 acres since 2020. WUS (Open Water) was 6.63 acres in 2021, a decrease of 0.81 acres since 2020. WUS (Stream Channel) was 0.34 acres in 2021 and has remained unchanged since 2012.

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 structure installed at this site? Yes

If yes, do they need to be repaired? 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 water flow

into or out of the wetland? No

If yes, are the structures in need of repair?

If yes, describe the problems below.

Water level across the site is lower than 2020, but still greater than 3 feet in many areas. Reed canary grass remains very dense, over 7ft tall, making this site hazardous and caution required by field crew.

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

Project/Site: Schrieber Meadows City/County: Lincoln Sampling Date: 7/15/2021

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

Investigator(s): R Quire, S Weyant Section, Township, Range: S 13 T 27N R 30W

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): rolling Slope (%): 2

Subregion (LRR): LRR E Lat: 48.109522 Long: -115.414121 Datum: NAD 83

Soil Map Unit Name: 105: Aquic Udifluvents, poorly drained, 0-5% slopes 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 sample point, upslope of DP01w and wetland boundary.

VEGETATION - Use scientific names of plant

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	15	☐	FAC
Bromus inermis	60	☑	UPL
Elymus repens	5	☐	FAC
Poa pratensis	5	☐	FAC

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: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 % (A/B)

Prevalence Index worksheet

Total % Cover of:			Multiply by:
OBL species	0	X 1	0
FACW species	0	X 2	0
FAC species	25	X 3	75
FACU species	0	X 4	0
UPL species	60	X 5	300
Column Totals	85 (A)		375 (B)

Prevalence Index = B/A = 4.41176

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%. Data point is dominated by upland vegetation.

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
0-15	10YR 2/2	100					Silty 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 evidence of hydric soil indicators observed.

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 evidence of wetlandy hydrology observed. Soil dry.

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

Project/Site: Schrieber Meadows City/County: Lincoln Sampling Date: 7/15/2021

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

Investigator(s): R Quire, S Weyant Section, Township, Range: S 13 T 27N R 30W

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): LRR E Lat: 48.109689 Long: -115.414007 Datum: NAD 83

Soil Map Unit Name: 105: Aquic Udifluvents, poorly drained, 0-5% slopes NWI classification: PEM1C: Freshwater E

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 riverine/slope wetland.

VEGETATION - Use scientific names of plant

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)

Carex utriculata	35	☑	OBL
Epilobium brachycarpum	1	☐	NL
Glyceria grandis	4	☐	OBL
Phalaris arundinacea	35	☑	FACW

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 25

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	39	X 1	39
FACW species	35	X 2	70
FAC species	0	X 3	0
FACU species	0	X 4	0
UPL species	1	X 5	5
Column Totals	75 (A)		114 (B)

Prevalence Index = B/A = 1.52

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=25%. Evidence of hydrophytic vegetation includes passing the rapid test, passing the dominance test, and a prevalence index less than or equal to 3.0.

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
0-02	10YR 2/2	100					Roots	
02-16	10YR 2/2	100					Peat	

[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:

Hydric soil indicators include a histic epipedon and sulfidic odor.

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): 0.5

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:

Evidence of wetland hydrology includes surface water, high water table, soil saturated to surface, sulfidic odor, geomorphic position, and a positive FAC-Neutral test.

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

Project/Site: Schrieber Meadows City/County: Lincoln Sampling Date: 7/15/2021

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

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

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): flat Slope (%): 2

Subregion (LRR): LRR E Lat: 48.114583 Long: -115.420615 Datum: NAD 83

Soil Map Unit Name: 105: Aquic Udifluvents, poorly drained, 0-5% slopes 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 sample point on terrace upslope of excavated depression and upslope of wetland boundary.

VEGETATION - Use scientific names of plant

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)

Agrostis capillaris	15	☑	FAC
Alopecurus pratensis	10	☐	FAC
Bromus inermis	40	☑	UPL

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 35

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	25 X 3	75
FACU species	0 X 4	0
UPL species	40 X 5	200
Column Totals	65 (A)	275 (B)

Prevalence Index = B/A = 4.23077

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=35%. Data point is dominated by upland vegetation.

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
0-13	10YR 2/2	100					Silty Clay Loam	
13-16	10YR 2/2	99	7.5YR 4/6	1	C	M	Silty 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:

Although 1% redoximorphic concentrations were observed in the matrix of the second soil horizon, there were no hydric soil or hydrologic indicators obeserved, soils were dry, and the data point the was dominated by the upland species, smooth brome.

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 evidence of wetland hydrology observed. Soil dry.

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

Project/Site: Schrieber Meadows City/County: Lincoln Sampling Date: 7/15/2021

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 (%): 4

Subregion (LRR): LRR E Lat: 48.114607 Long: -115.420497 Datum: NAD 83

Soil Map Unit Name: 105: Aquic Udifluvents, poorly drained, 0-5% slopes 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.

VEGETATION - Use scientific names of plant

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Dominant Species?	Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Populus balsamifera	5	☑	FAC

Herbaceous Stratum Plot size (5 Foot Radius)

Eleocharis palustris	30	☑	OBL
Phalaris arundinacea	4	☐	FACW
Typha latifolia	5	☐	OBL
Veronica scutellata	1	☐	OBL

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 55

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	36	X 1	36
FACW species	4	X 2	8
FAC species	5	X 3	15
FACU species	0	X 4	0
UPL species	0	X 5	0
Column Totals	45 (A)		59 (B)

Prevalence Index = B/A = 1.31111

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=55%. Populus balsamifera volunteer seedlings observed around perimeter of depression. Evidence of hydrophytic vegetation includes passing the dominance test and a prevalence index less than or equal to 3.0.

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
0-05	10YR 4/2	85	N 6/0	5	D	M	Silty Clay	
0-05			7.5YR 4/6	10	C	M		
05-16	10YR 4/2	60	2.5YR 3/6	5	C	M	Silty Clay	
05-16			7.5YR 4/6	35	C	M		

[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:

Redoximorphic concentrations and depletions many 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): _____

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

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:

Evidence of wetland hydrology includes soils saturated to surface, surface soil cracks, saturation on aerials, geomorphic position, and a positive FAC-Neutral test.

MDT Montana Wetland Assessment Form (revised March 2008

1. Project name Schrieber Meadows **2. MDT project#** NH 27 (021) **Control#** 1027001

3. Evaluation Date 10/8/2021 **4. Evaluators** R Quire **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 22.48

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 22.48

☐ **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	Emergent Wetland	Excavated	Permanent/Perennial	35
Depressional	Aquatic Bed	Excavated	Permanent/Perennial	10
Slope	Emergent Wetland		Seasonal/Intermittent	20
Slope	Emergent Wetland		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)

Highway 2 and USFS roads are adjacent to the AA, land is not cultivated, minimal noxious weeds, and low disturbance.

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

Cirsium arvense and Centaurea stoebe

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, MTNHP 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	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 Observed waterfowl, wildlife, and wildlife tracks/scat during the 2021 site visit.

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** .6M

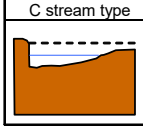
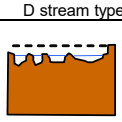
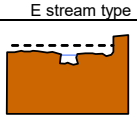
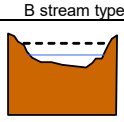
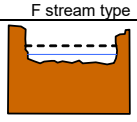
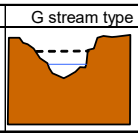
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating .6M

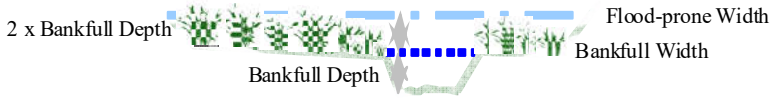
iii. Final Score and Rating: .6 M **Comments:** Pumpkinseed and brook trout observed by MDT and monitoring crews in open water in 2019 and previous years.

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.

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 2013-2021.

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 dominated by >70% reed canarygrass, presence of flooding/ponding, 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 80% 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	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** 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		NA		

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 (2-3ft). Shrub/tree dive

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	17.98	☐
B. MT Natural Heritage Program Species Habitat	H	.9	1	20.23	☐
C. General Wildlife Habitat	E	1	1	22.48	☑
D. General Fish Habitat	M	.6	1	13.49	☐
E. Flood Attenuation	M	.6	1	13.49	☐
F. Short and Long Term Surface Water Storage	H	1	1	22.48	☑
G. Sediment/Nutrient/Toxicant Removal	H	1	1	22.48	☐
H. Sediment/Shoreline Stabilization	H	1	1	22.48	☐
I. Production Export/Food Chain Support	E	1	1	22.48	☑
J. Groundwater Discharge/Recharge	H	1	1	22.48	☑
K. Uniqueness	M	.4	1	8.99	☐
L. Recreation/Education Potential (bonus points)	H	.2	NA	4.50	☐
Totals:		9.5	11	213.56	
Percent of Possible Score			**86.36** %		

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

I	II	III	IV

MDT Montana Wetland Assessment Form (revised March 2008

1. Project name Schrieber Meadows **2. MDT project#** NH 27 (021) **Control#** 1027001

3. Evaluation Date 10/8/2021 **4. Evaluators** R Quire **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	58
Slope	Emergent Wetland		Seasonal/Intermittent	20
Slope	Aquatic Bed		Permanent/Perennial	22

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)

Highway 2 and USFS roads are adjacent to the AA, land is not cultivated, minimal noxious weeds, and low disturbance.

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

Cirsium arvense and Centaurea stoebe

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 emergent wetland is dominated by reed canarygrass and Alopecurus spp. Restoration efforts and beaver activity south of Schrieber Lake have resulted in increased inundation, resulting in some of the emergent wetland transitioning to aquatic bed. Adjacent land use is forest and the highway. Recent Highway 2 construction was complete during 2021 site visit.

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: Aquatic bed, and emergent wetland dominated by primarily reed canary grass.

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, MTNHP 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.

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

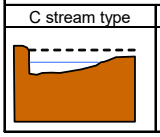
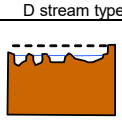
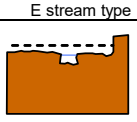
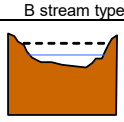
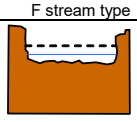
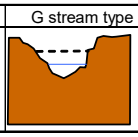
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating .3L

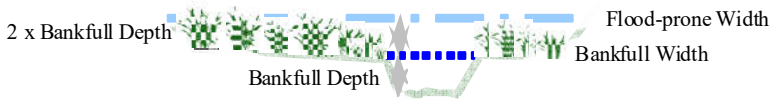
iii. Final Score and Rating: .3 L **Comments:** Minimal fish habitat present, no fish have been observed in AA.

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.

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
Insufficient Data/Information		NA		

Comments: AA with shallow water table and perennial surface water (2-3 feet)

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	E	1	1	13.22	☐
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	M	.4	1	5.29	☐
L. Recreation/Education Potential (bonus points)	H	.2	NA	2.64	☐
Totals:		9.1	10	120.30	
Percent of Possible Score			**91** %		

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

I	II	III	IV

MDT Montana Wetland Assessment Form (revised March 2008

1. Project name Schrieber Meadows **2. MDT project#** NH 27 (021) **Control#** 1027001

3. Evaluation Date 10/8/2021 **4. Evaluators** R Quire **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)

Highway 2 and USFS roads are adjacent to the AA, land is not cultivated, minimal noxious weeds, and low disturbance.

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 classes

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, MTNHP 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.

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**

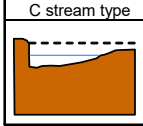
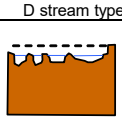
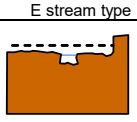
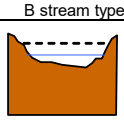
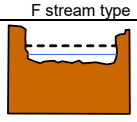
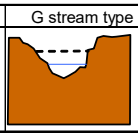
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

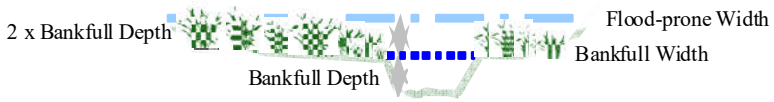
iii. Final Score and Rating: 0 NA **Comments:** No fish habitat identified within restoration AA

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.

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 >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** 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
Insufficient Data/Information		NA		

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 a 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

I	II	III	IV

Table B-1. Schrieber Meadows Wetland Mitigation Site. Comprehensive Vegetation Species List 2015-2021

Scientific Names	Common Names	WMVC Indicator Status[(1)]
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 graminem	**Narrow-Leaf Water-Plaintain**	**OBL**
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
Calamagrostis canadensis	**Bluejoint**	**FACW**
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

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Scientific Names	Common Names	WMVC Indicator Status[(1)]
Cerastium fontanum	Common Mouse-Ear Chickweed	FACU
Ceratophyllum demersum	Coon's-Tail	OBL
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

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Scientific Names	Common Names	WMVC Indicator Status[(1)]
Leucanthemum vulgare	Ox-Eye Daisy	FACU
Marsilea vestita	Hairy Water-Clover	OBL
Matricaria discoidea	Pineapple-Weed	FACU
Medicago lupulina	Black Medick	FACU
Mentha arvensis	American Wild Mint	FACW
Mimulus guttatus	Seep Monkey-Flower	OBL
Myriophyllum sibiricum	**Siberian Water-Milfoil**	**OBL**
Pascopyrum smithii	Western-Wheat Grass	FACU
Pedicularis groenlandica	Bull Elephant-Head	OBL
Penstemon confertus	**Yellow Beardtongue**	**UPL**
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

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Scientific Names	Common Names	WMVC Indicator Status[(1)]
Salix drummondiana	Drummond's Willow	FACW
Scirpus cyperinus	Cottongrass Bulrush	OBL
Scirpus microcarpus	Red-Tinge Bulrush	OBL
Senecio hydrophiloides	Stout Meadow Ragwort	FACW
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 2021 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

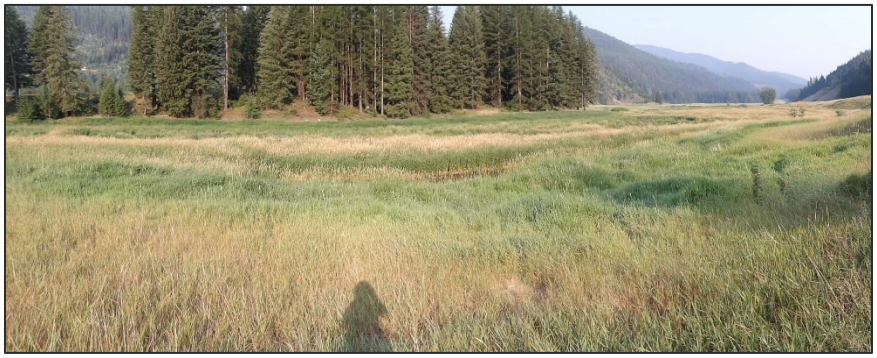


Photo Point 1 – Panorama; Location: SW Corner of site; Bearing 270 degrees; Year 2021



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 2021

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 2021



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 2021

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 2021



Photo Point 7; Location: Lower Coyote Creek; Bearing 0 degrees; Year 2012



Photo Point 7; Location: Lower Coyote Creek; Bearing 0 degrees; Year 2021

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 2021



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



Photo Point 11; Location: Cell 2B; Bearing 190 degrees; Year 2021

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 2021



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 2021

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 2021



Photo Point 15; Location: Cell 5A (Constructed in2011); Bearing 180 degrees; Year 2012



Photo Point 15; Location: Cell 5A (Constructed in2011); Bearing 180 degrees; Year 2021

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 2021



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 2021

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:** 2021



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:** 2021



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



Photo Point 9 **Location:** Cell 3
Bearing: 280 degrees **Year:** 2021

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:** 2021



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:** 2021



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



Photo Point 19 **Location:** West Boundary
Bearing: 10 degrees **Year:** 2021

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:** 2021

Schrieber Meadows: Vegetation Transect Photographs



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



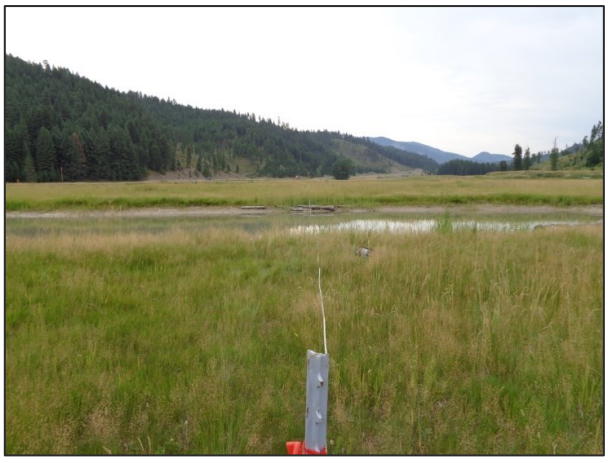
Transect 1: Start **Location:** T-1
Bearing: 115 degrees **Year:** 2021



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



Transect 1: End **Location:** T-1
Bearing: 295 degrees **Year:** 2021

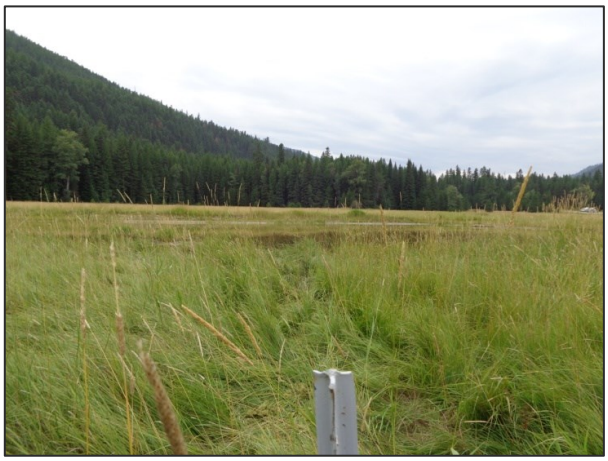


Transect 2: Start **Location:** T-2
Bearing: 100 degrees **Year:** 2013



Transect 2: Start **Location:** T-2
Bearing: 100 degrees **Year:** 2021

Schrieber Meadows: Vegetation Transect Photographs



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



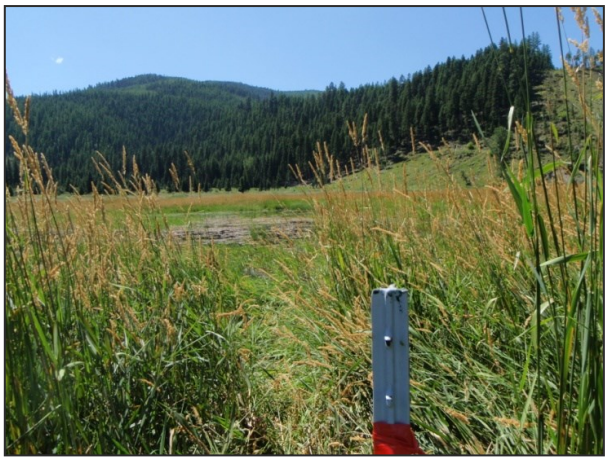
Transect 2: End **Location:** T-2
Bearing 280: degrees **Year:** 2021



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



Transect 3: Start **Location:** T-3
Bearing: 45 degrees **Year:** 2021



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



Transect 3: End **Location:** T-3
Bearing: 225 degrees **Year:** 2021

Schrieber Meadows: Data Point Photographs



Data Point: DP01w **Location:** Veg Com 3
Year: 2021



Data Point: DP01u **Location:** Veg Com 9
Year: 2021



Data Point: DP02w **Location:** Veg Com 15
Year: 2021



Data Point: DP02u **Location:** Veg Com 14
Year: 2021

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:** 2021



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:** 2021



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:** 2021

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:** 2021



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:** 2021



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:** 2021

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:** 2021



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:** 2021



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



Cross-Section: XS-9 **Location:** Middle Coyote Crk/Schrieber Crks **Bearing:** 130 degrees **Year:** 2021

Schrieber Meadows: Cross-Section Photographs



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



Cross-Section: XS-10 Location: Middle Coyote Crk/Schrieber Crks **Bearing:** 270 degrees **Year:** 2021



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

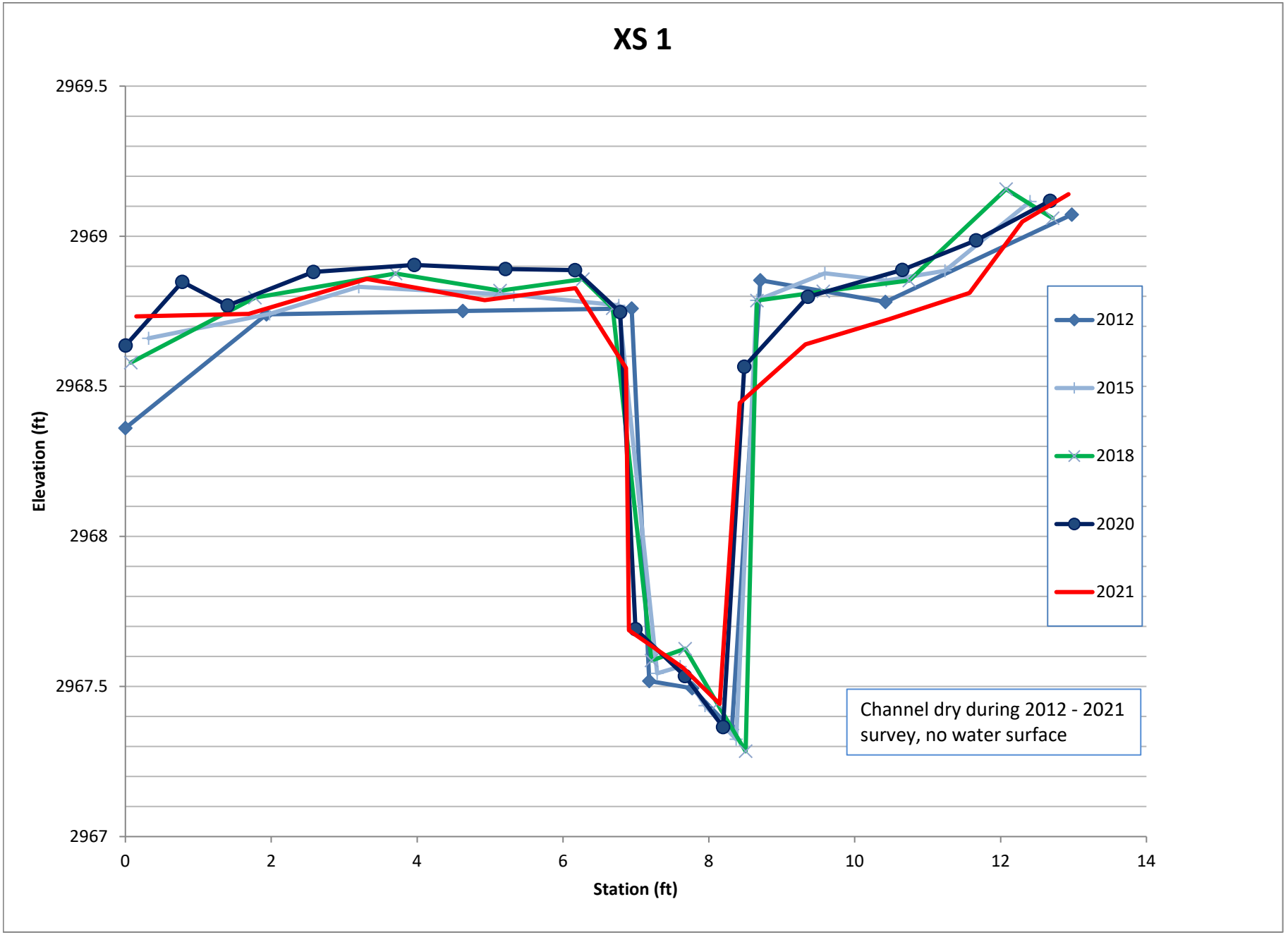


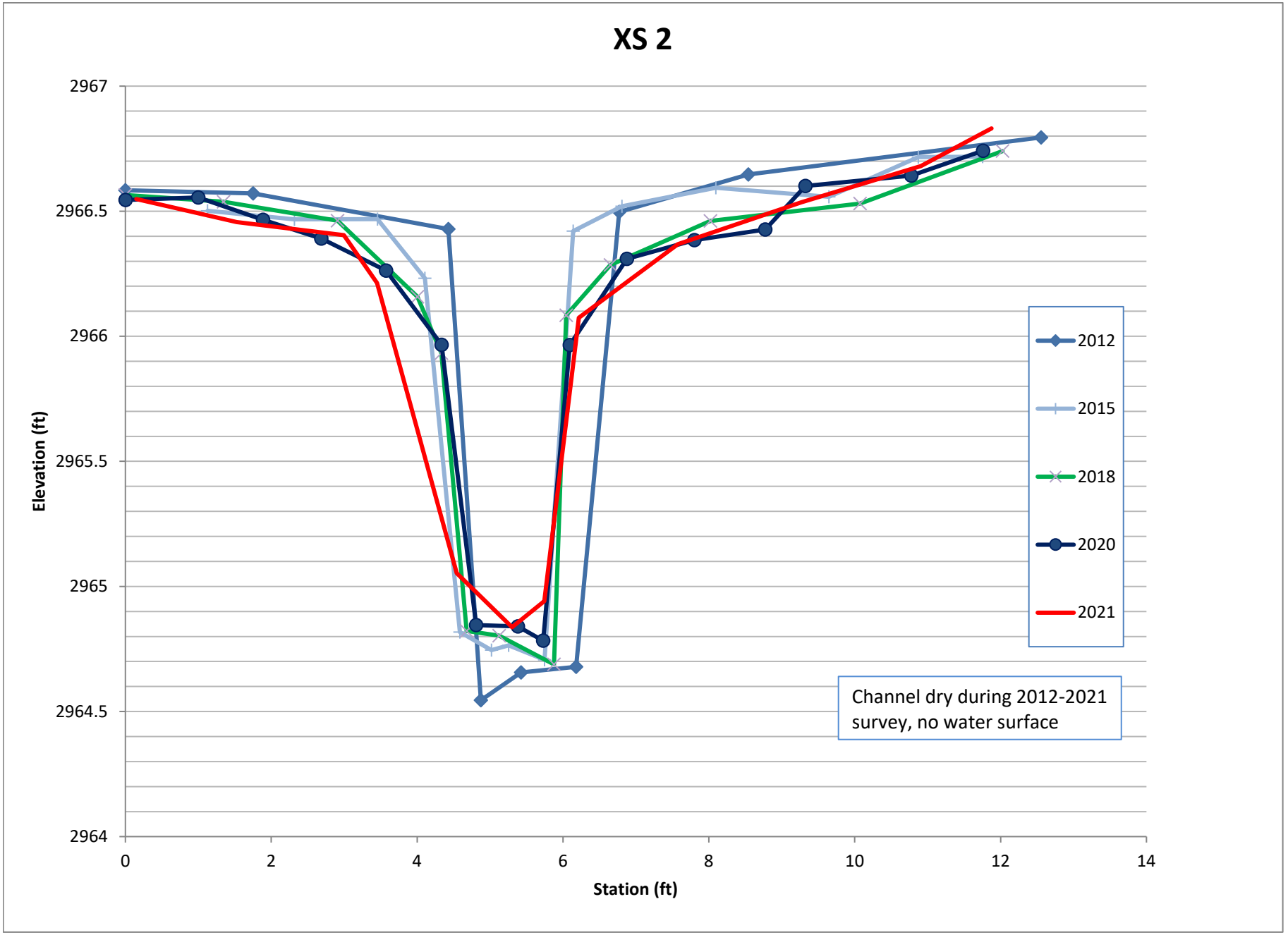
Cross-Section: XS-11 Location: Middle Coyote Crk/Schrieber Crks **Bearing:** 100 degrees **Year:** 2021

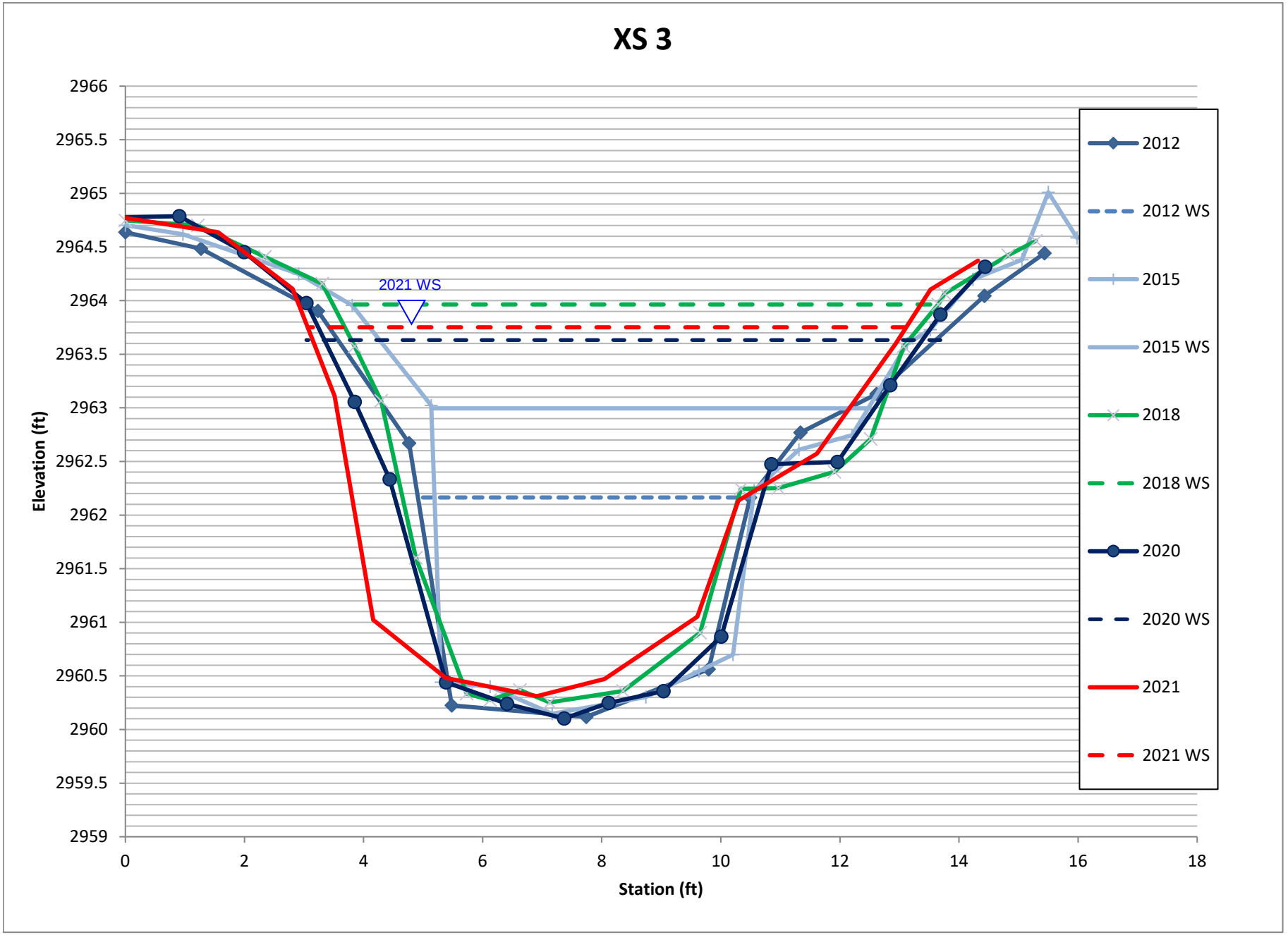
APPENDIX D

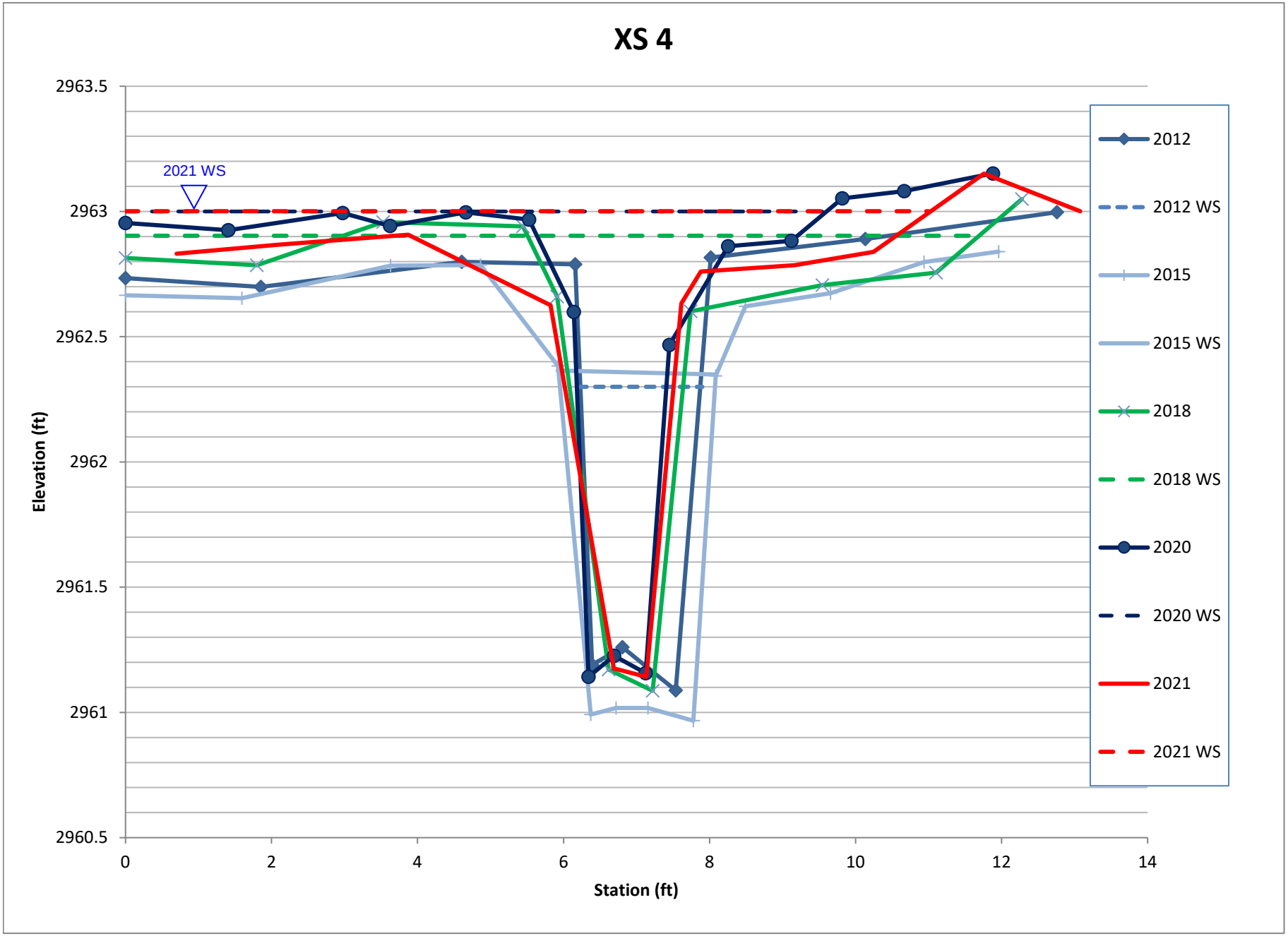
Surveyed Stream Cross Sections

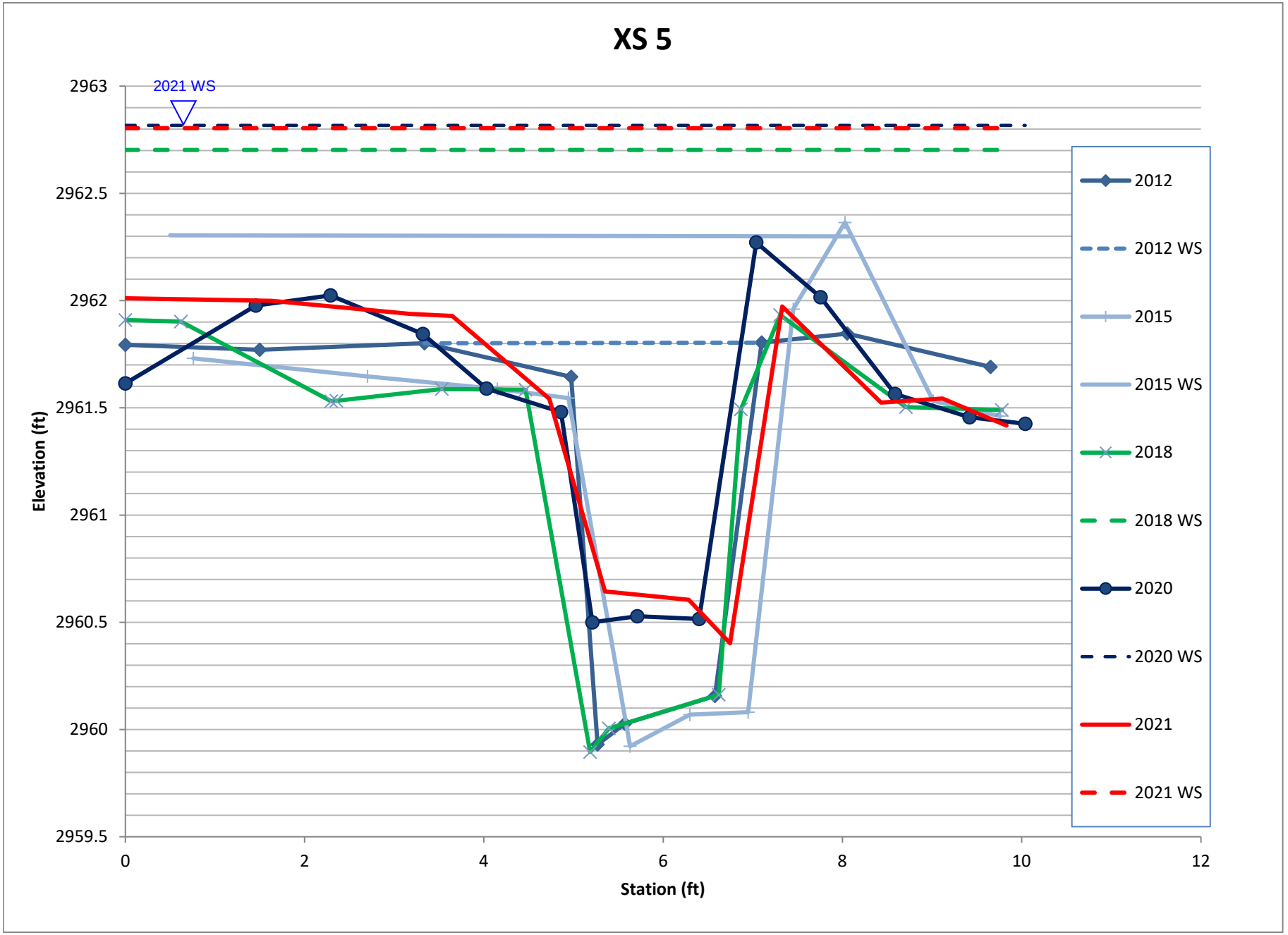
MDT Wetland Mitigation Monitoring
Schrieber Meadows
Lincoln County, Montana

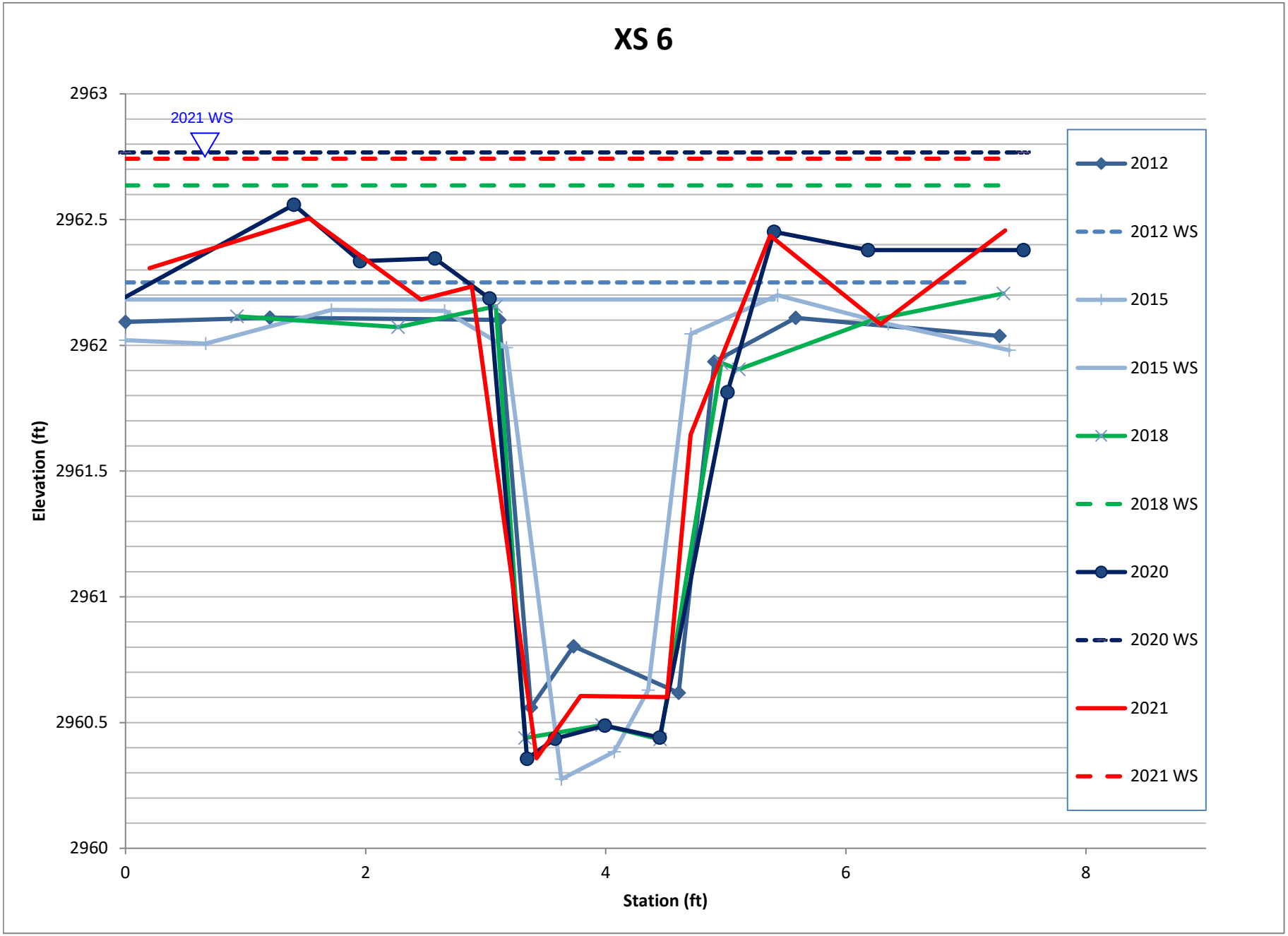

XS 1
2969.5
2969
2968.5
2968
2967.5
2967
Elevation (ft)
0
2
4
6
8
10
12
14
Station (ft)
2012
2015
2018
2020
2021
Channel dry during 2012 - 2021 survey, no water surface

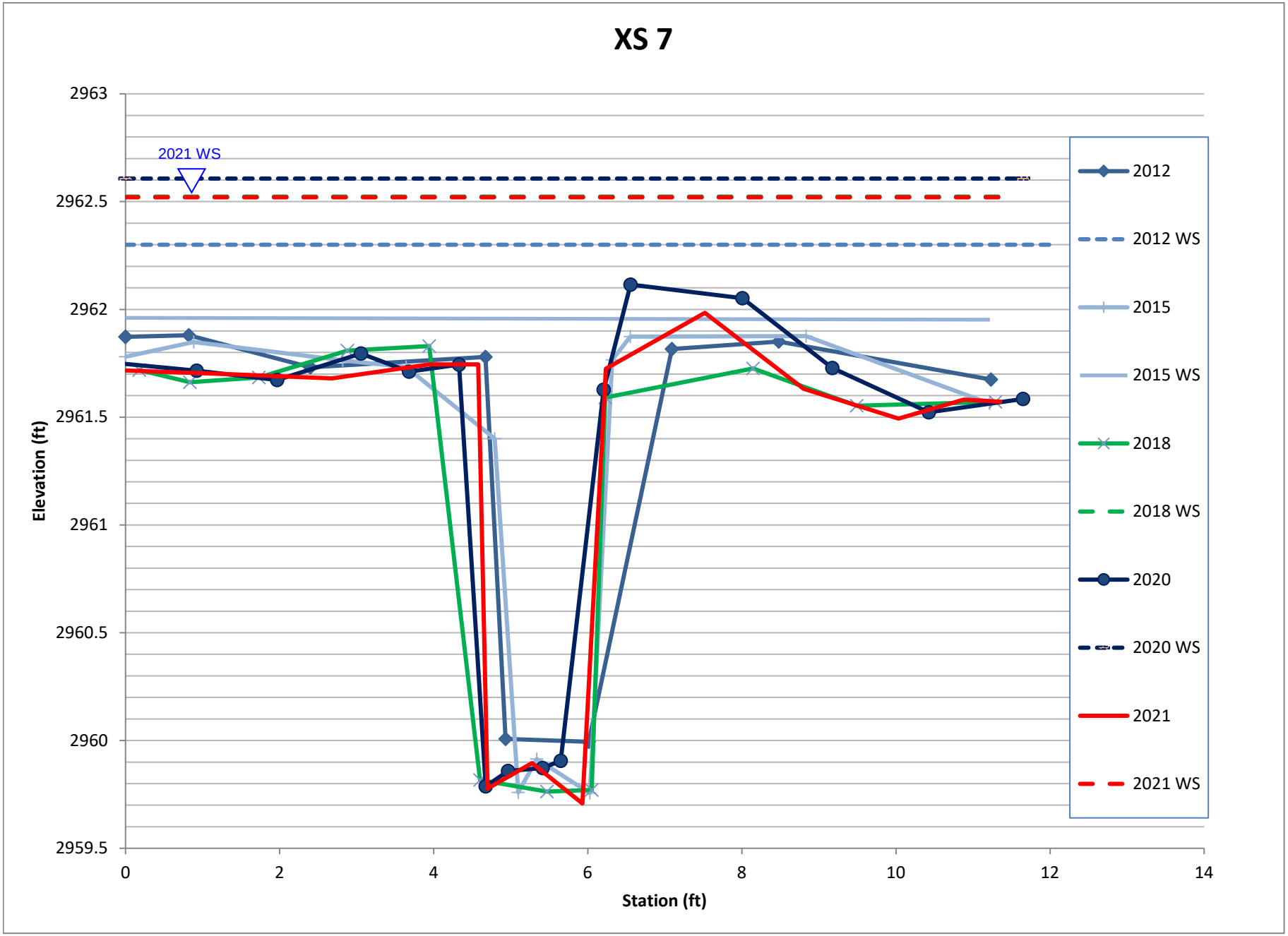

XS 2
2967
2966.5
2966
2965.5
2965
2964.5
2964
Elevation (ft)
0
2
4
6
8
10
12
14
Station (ft)
2012
2015
2018
2020
2021
Channel dry during 2012-2021 survey, no water surface

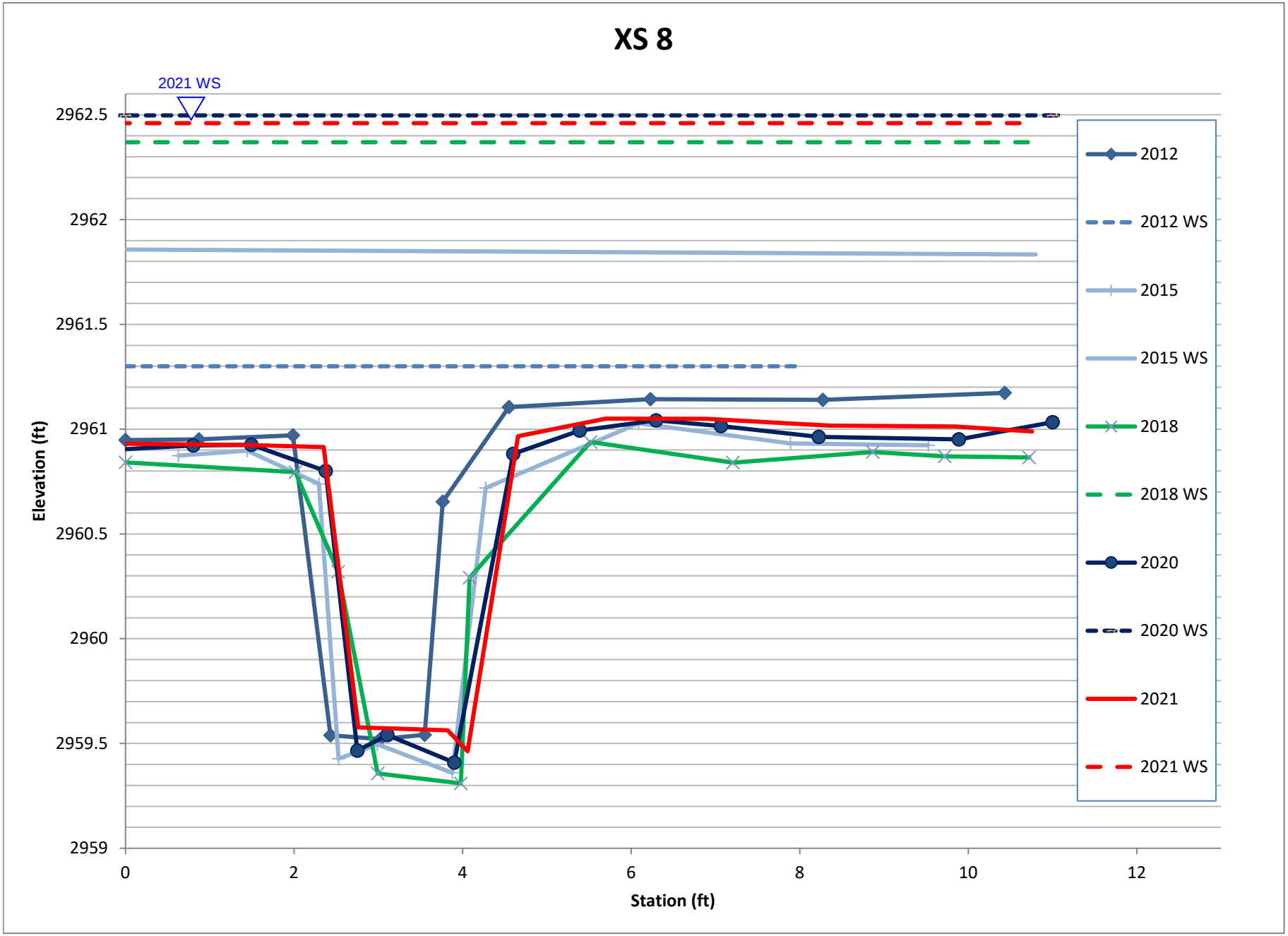

XS 3
2966
2965.5
2965
2964.5
2964
2963.5
2963
2962.5
2962
2961.5
2961
2960.5
2960
2959.5
2959
Elevation (ft)
2021 WS
0
2
4
6
8
10
12
14
16
18
Station (ft)
2012
2012 WS
2015
2015 WS
2018
2018 WS
2020
2020 WS
2021
2021 WS

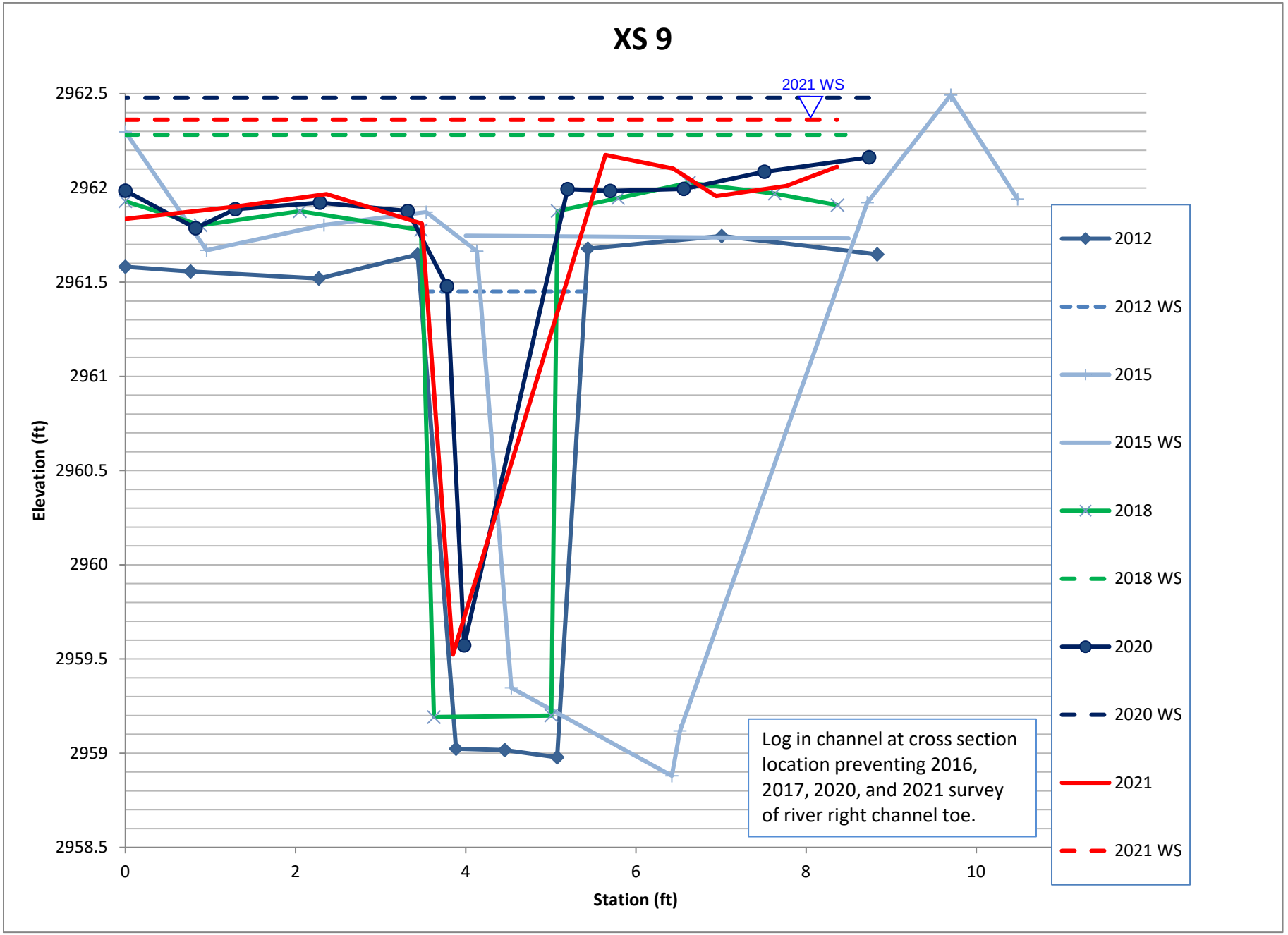

XS 4
2963.5
2963
2962.5
2962
2961.5
2961
2960.5
Elevation (ft)
2021 WS
0
2
4
6
8
10
12
14
Station (ft)
2012
2012 WS
2015
2015 WS
2018
2018 WS
2020
2020 WS
2021
2021 WS

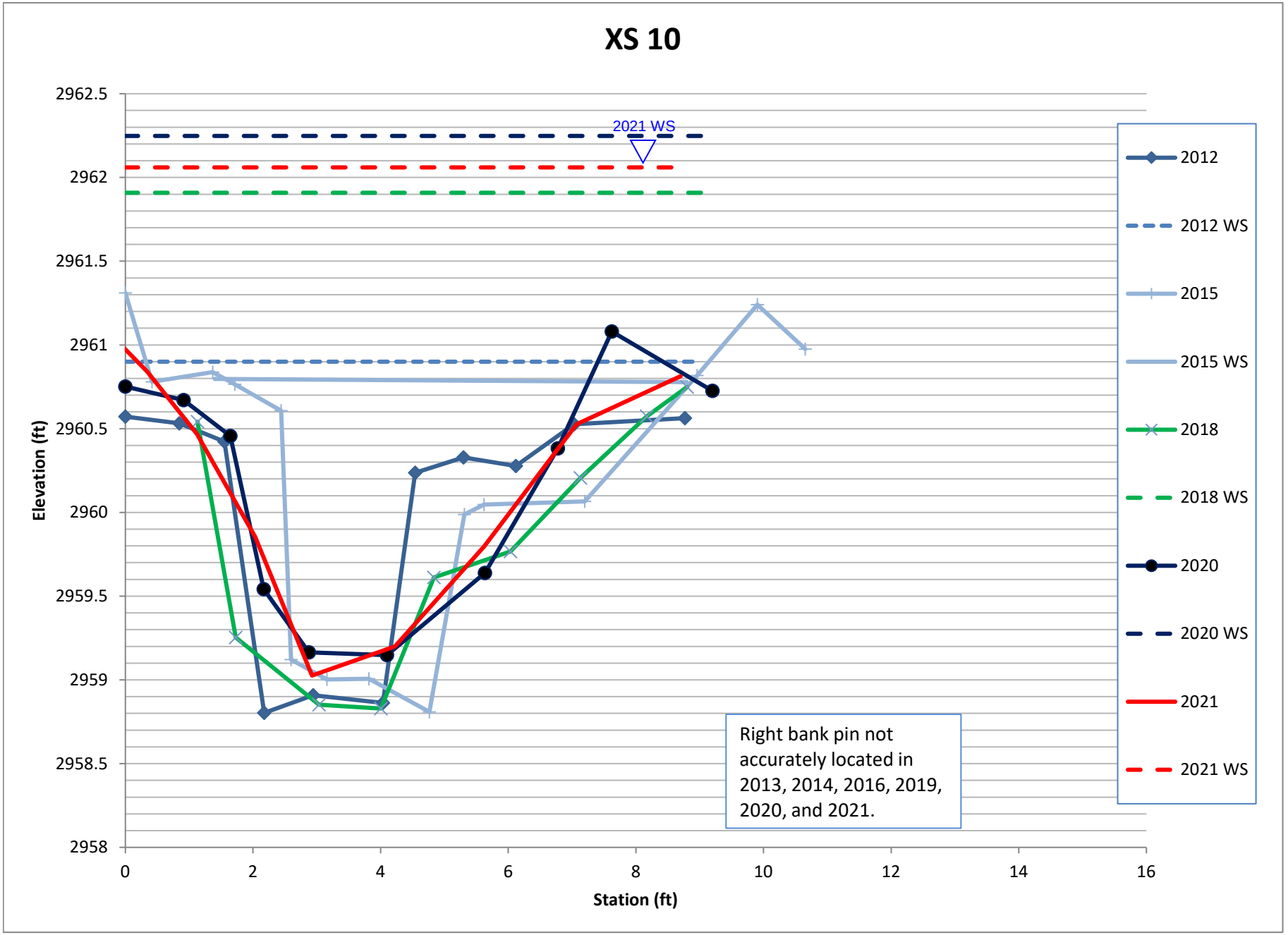

XS 5
2021 WS
2963
2962.5
2962
2961.5
2961
2960.5
2960
2959.5
Elevation (ft)
0
2
4
6
8
10
12
Station (ft)
2012
2012 WS
2015
2015 WS
2018
2018 WS
2020
2020 WS
2021
2021 WS

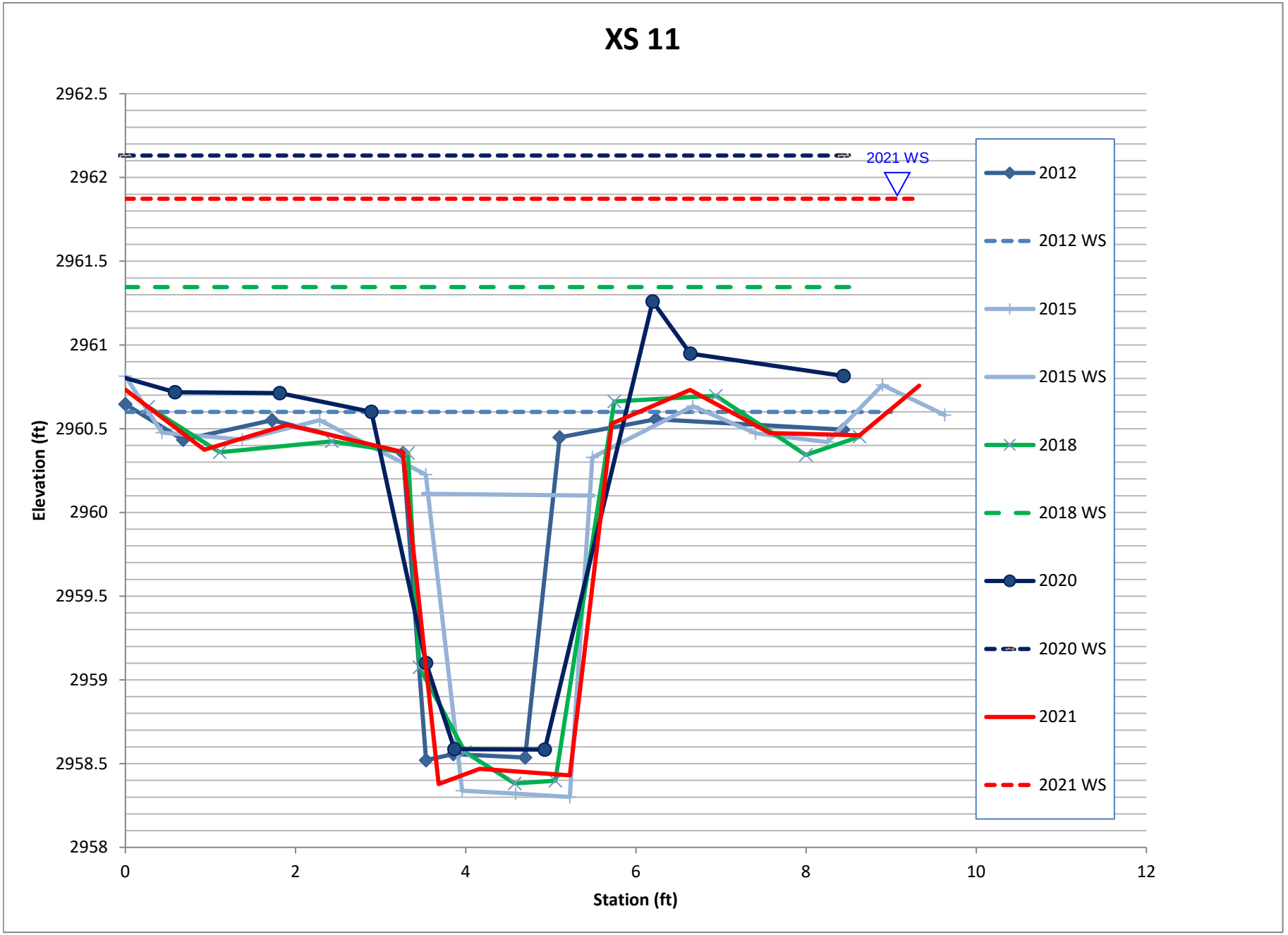

XS 6
2021 WS
2963
2962.5
2962
2961.5
2961
2960.5
2960
Elevation (ft)
0
2
4
6
8
Station (ft)
2012
2012 WS
2015
2015 WS
2018
2018 WS
2020
2020 WS
2021
2021 WS


XS 7
2021 WS
2963
2962.5
2962
2961.5
2961
2960.5
2960
2959.5
Elevation (ft)
0
2
4
6
8
10
12
14
Station (ft)
2012
2012 WS
2015
2015 WS
2018
2018 WS
2020
2020 WS
2021
2021 WS


XS 8
2021 WS
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
2015
2015 WS
2018
2018 WS
2020
2020 WS
2021
2021 WS


XS 9
2021 WS
2962.5
2962
2961.5
2961
2960.5
2960
2959.5
2959
2958.5
Elevation (ft)
0
2
4
6
8
10
Station (ft)
2012
2012 WS
2015
2015 WS
2018
2018 WS
2020
2020 WS
2021
2021 WS
Log in channel at cross section location preventing 2016, 2017, 2020, and 2021 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)
2021 WS
2012
2012 WS
2015
2015 WS
2018
2018 WS
2020
2020 WS
2021
2021 WS
Right bank pin not accurately located in 2013, 2014, 2016, 2019, 2020, and 2021.


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)
2021 WS
2012
2012 WS
2015
2015 WS
2018
2018 WS
2020
2020 WS
2021
2021 WS