ROSTAD RANCH MITIGATION SITE

Project Overview

Watershed: Watershed #10 – Musselshell River Basin

Monitoring Year: 2020

Years Monitored: 8th year of monitoring

Corps Permit Number: NWO-2006-90851-MTB

Monitoring Conducted By: Confluence Consulting Inc.

Dates Monitoring Was Conducted: July 7, 2020

Purpose of the Approved Project:

The site was originally constructed to provide 39.70 acres of compensatory wetland mitigation credits for wetland impacts associated with future transportation project related wetland impacts in Watershed #10 – Musselshell River Basin. The initial project included the filling of drainage ditches, excavating and grading the site to distribute water across the site, and creating open-water areas. Adaptive Management actions were undertaken in 2017 to install several spreader berms to improve water management and distribution of supplemental irrigation water across the site. After discussions with the Corps and the Design Consultant, the overall wetland development goal was reduced to 27.4 acres.

Site Location:

Latitude: 46.462457 **Longitude:** –110.294063

County: Meagher **Nearest Town:** Martinsdale, MT

Map Included: Yes

Mitigation Site Construction Started: 2012 **Construction Ended:** 2012

Adaptive Management: In 2017, several berms were installed to improve overall water management and distribution for increased wetland expansion across the site.

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

Activity: Weed Spraying **Date:** July 2, 2020 **Specific recommendations for any additional corrective actions:** Weed treatment should continue in 2021.

Anticipated Wetland Credit Acres: 27.4

Wetland Credit Acres Generated to Date: 27.99

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

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

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

Performance Standards: A summary of performance standards established for the Rostad site and whether or not they are being achieved is provided in Table 1.

Table 1. Summary of Performance Standards

Performance Standards	Success Criteria	Criteria Achieved Y/N	Discussion
Wetland Characteristics	The three parameter criteria for hydrology, vegetation, and soils are met as outlined in the 1987 Wetland Manual and 2010 GP Regional Supplement.	Y	Wetland habitat areas within the mitigation site meet the three parameter criteria.
Wetland Hydrology	Soil saturation is present for at least 12.5 percent of the growing season.	Y	Irrigation water was turned into the site on May 13th and turned off on July 16th, 2020. All wetlands within the project area were saturated for greater than the minimum 12.5 percent of growing season.
Hydric Soil	Hydric soil conditions are present or appear to be forming.	Y	The constructed wetland complex is beginning to develop hydric soils in areas that were identified as nonhydric prior to construction. Hydric soil characteristics are present in several areas that were identified as wetland prior to construction.
	Soil is sufficiently stable to prevent erosion.	Y	Disturbed soil is stable and does not exhibit signs of erosion.
	Soil is able to support plant cover.	Y	Plant cover has continued to develop across disturbed soils.
Hydrophytic Vegetation	Combined absolute cover of facultative or wetter species is greater than or equal to 70 percent.	Y	Wetland areas within the mitigation site contain greater than 70% absolute cover from hydrophytic vegetation (OBL, FACW, and FAC).
	Noxious weeds do not exceed 5 percent cover.	Y	Noxious weed cover has been steadily decreasing and is now estimated to be less than 5 percent within delineated wetlands.
Woody Plants	Plantings exceed 50 percent survival after 5 years.	Y	Approximately 50 percent of the woody plantings observed were alive in 2020, which meets the 50 percent survival rate.
Herbaceous Plants	At the conclusion of the monitoring period, ocular coverage of desirable hydrophytic vegetation will be at least 80 percent.	Y	Created wetlands exhibited greater than 90 percent vegetation cover during the 2020 monitoring event.
Open-Water Areas	Open water that is established within the designated wetland cells will be considered successful and creditable if open water does not exceed 10 percent of the total wetland acreage.	Y	Small pockets of perennial open water occur towards the center of the site behind the spreader berms that were constructed in 2017, while seasonal open water occurs in the northeast corner of the site. In 2020, less than 10 percent of the total wetland acreage across the site was considered open water.
Upland Buffer	Success will be achieved when noxious weeds do not exceed 5 percent cover within the buffer areas on the site.	Y	Although there was a slight increase in Canada thistle aerial coverage since 2019, noxious weed cover does no exceed 5% within upland buffer areas.
	Any area that was disturbed within creditable buffer zone must have at least 50 percent aerial cover of desirable upland plant species by the end of the monitoring period.	Y	Upland buffers that surround wetland areas within the site exhibited greater than 50 percent aerial cover of non-weed species in 2020.

Performance Standards	Success Criteria	Criteria Achieved Y/N	Discussion
Weed Control	Weed-control measures are implemented to minimize and/or eliminate infestations of state-listed noxious weed species within the site.	Y	State-listed noxious weed species across the site were estimated at 2 percent absolute cover in 2020.
Fencing	Wildlife-friendly fencing is installed along the easement boundaries.	Y	Wildlife-friendly fencing has been installed around the easement boundaries and is in good condition.

Summary Data

Wetland Delineation – The total wetland acreage delineated in 2020 was 28.96 acres, which included preexisting wetlands and open water areas (see maps in Appendix A). This is the same acreage delineated in 2019 (0.01 acre increase), and a 14.06-acre increase since 2016. The adaptive management strategies implemented in 2017 increased the amount of inundation in some places on the site, and caused some areas previously delineated as upland to become wetland. Some of the newly inundated and saturated areas have yet to become dominated by wetland vegetation or hydric soil indicators in spite of being inundated for much of the growing season, but these characteristics are likely to develop in future years.

Vegetation – A total of 78 plant species were identified on the site from 2013 through 2020. Seven new species were identified at the site in 2020. Vegetation communities were identified by plant composition and dominance. The following vegetation community types were identified in 2020:

- Upland Type 8 – *Bromus inermis/Trifolium* spp.
- Upland Type 11 – Elymus trachycaulus/*Pascopyrum smithii*
- Wetland Type 2 – *Juncus balticus/Carex nebrascensis*
- Wetland Type 3 – *Salix exigua*
- Wetland Type 5 – *Glyceria grandis/Typha latifolia*
- Wetland Type 6 – Open Water/Aquatic Macrophytes
- Wetland Type 7 – *Phalaris arundinacea*
- Wetland Type 10 – *Alopecurus pratensis*
- Wetland Type 12 - *Phalaris arundinacea/Eleocharis palustris*

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

Absolute cover of state-listed noxious weed was estimated at 2 percent across the entire site. Canada thistle (*Cirsium aravense*) was observed in six locations with patch sizes ranging from trace to moderate. Spotted knapweed (*Centaurea stoebe*) was also observed on the site in trace amounts in three locations (Figure A-3, Appendix A).

Vegetation cover was measured along four transects in 2020 (Figure A-2, Appendix A). Summaries of the data collected at these transects are presented in Tables 3-6 below, while detailed data for each

transect are provided in the site monitoring form in Appendix B. Photographs of the transect end points are provided in Appendix C.

Table 3 summarizes the data for T-1. T-1 is 422 feet long and intersected upland community types 8 and 11, and wetland community types 2, 5, 7, and 12; 61 percent of the transect crossed wetland habitat, which is a 1 percent decrease since 2019, but a 5 percent increase since 2017. Total vegetative cover has remained constant at 95 percent from 2016 to 2020.

Table 2. Data Summary for T-1 From 2016 Through 2020 at the Rostad Ranch Site

Monitoring Year	2016	2017	2018	2019	2020
Transect Length (feet)	**422**	**422**	**422**	**422**	**422**
Vegetation Community Transitions Along Transect	4	5	5	5	5
Vegetation Communities Along Transect	5	5	5	5	6
Hydrophytic Vegetation Communities Along Transect	4	4	4	4	4
Total Vegetative Species	26	23	26	23	22
Total Hydrophytic Species	10	10	11	10	8
Total Upland Species	16	13	15	13	14
Estimated % Total Vegetative Cover	95	95	95	95	95
Estimated % Unvegetated	5	5	5	5	5
% Transect Length Comprising Hydrophytic Vegetation Communities	59	56	62	62	61
% Transect Length Comprising Upland Vegetation Communities	41	44	38	38	39
% Transect Length Comprising Unvegetated Open Water	0	0	0	0	0
% Transect Length Comprising of Mud Flat	0	0	0	0	0

Data collected on T-2 (Wetland Mitigation Site Monitoring form, Appendix B) are summarized in Table 4. T-2 is 453 feet long and intersects upland community type 8 and wetland community types 2 and 7; 82 percent of the transect crossed wetland habitat in 2020, which is a 4 percent increase from 2019, and a 6 percent increase since 2018. Total vegetative cover has remained constant at 95 percent from 2016 to 2020.

Table 3. Data Summary for T-2 From 2016 Through 2020 at the Rostad Ranch Site

Monitoring Year	2016	2017	2018	2019	2020
Transect Length (feet)	**453**	**453**	**453**	**453**	**453**
Vegetation Community Transitions Along Transect	2	2	3	3	4
Vegetation Communities Along Transect	2	2	3	3	3
Hydrophytic Vegetation Communities Along Transect	1	1	2	2	2
Total Vegetative Species	25	17	16	16	16
Total Hydrophytic Species	7	6	7	9	6
Total Upland Species	18	11	9	7	10
Estimated % Total Vegetative Cover	95	95	95	95	95
Estimated % Unvegetated	5	5	5	5	5
% Transect Length Comprising Hydrophytic Vegetation Communities	70	76	76	78	82
% Transect Length Comprising Upland Vegetation Communities	30	24	24	22	18
% Transect Length Comprising Unvegetated Open Water	0	0	0	0	0
% Transect Length Comprising of Mud Flat	0	0	0	0	0

Data collected on T-3 (Wetland Mitigation Site Monitoring form, Appendix B) are summarized in Table 5. T-3 is 320 feet long and intersects wetland community types 2, 5, and 7; 100 percent of the transect crossed wetland habitat in 2020, as was also the case in 2018 and 2019.

Table 4. Data Summary for T-3 From 2016 Through 2020 at the Rostad Ranch Site

Monitoring Year	2016	2017	2018	2019	2020
Transect Length (feet)	**320**	**320**	**320**	**320**	**320**
Vegetation Community Transitions Along Transect	4	3	3	3	3
Vegetation Communities Along Transect	4	3	3	3	3
Hydrophytic Vegetation Communities Along Transect	3	2	3	3	3
Total Vegetative Species	30	23	23	21	22
Total Hydrophytic Species	16	15	16	16	16
Total Upland Species	14	8	7	5	6
Estimated % Total Vegetative Cover	90	80	85	85	90
Estimated % Unvegetated	10	20	15	15	10
% Transect Length Comprising Hydrophytic Vegetation Communities	93	91	100	100	100
% Transect Length Comprising Upland Vegetation Communities	7	9	0	0	0
% Transect Length Comprising Unvegetated Open Water	0	0	0	0	0
% Transect Length Comprising of Mud Flat	0	0	0	0	0

Data collected on T-4 (Wetland Mitigation Site Monitoring form, Appendix B) are summarized in Table 6. T-4 was established in 2017 following adaptive management actions at the site and is 412 feet long. T-4 intersects upland community types 8 and 11 and wetland community type 7; 20 percent of the transect crossed wetland habitat in 2020, which is a decrease of 1 percent since 2019.

Table 5. Data Summary for T-4 From 2016 Through 2020 at the Rostad Ranch Site

Monitoring Year	2017	2018	2019	2020
Transect Length (feet)	**412**	**412**	**412**	**412**
Vegetation Community Transitions Along Transect	4	3	3	4
Vegetation Communities Along Transect	3	2	2	3
Hydrophytic Vegetation Communities Along Transect	1	1	1	1
Total Vegetative Species	10	16	14	17
Total Hydrophytic Species	1	3	5	4
Total Upland Species	10	13	9	13
Estimated % Total Vegetative Cover	70	80	80	80
Estimated % Unvegetated	30	20	20	20
% Transect Length Comprising Hydrophytic Vegetation Communities	12	12	21	20
% Transect Length Comprising Upland Vegetation Communities	88	88	79	80
% Transect Length Comprising Unvegetated Open Water	0	0	0	0
% Transect Length Comprising of Mud Flat	0	0	0	0

Approximately 2,000 willow cuttings were planted throughout the excavated areas. An estimated 50 percent of the willow cuttings survived through 2020. The cuttings appeared healthy and vigorous with some sign of browse. A total of 100 black cottonwoods (*Populus balsamifera*) and 100 quaking aspens (*Populus tremuloides*) were installed around the perimeter of the proposed open-water areas in 2012. Survival of these containerized, 5-gallon plant materials was also estimated at 50 percent in 2020. Willow dominance has increased in the southern portion of the site, which is reflected by a larger mapped area of Community Type 3 – *Salix exigua*.

Hydrology – The hydrology for the site is supplied from multiple sources, including a shallow seasonal groundwater table, groundwater that emerges from a natural spring located near the narrow-leaf willow (*Salix exigua*) stand in the southern portion of the site, direct precipitation, surface runoff, and surface-water diversion out of an adjacent irrigation canal. Irrigation water was diverted onto the site on May 13, 2020, and was turned off on July 16th, 2020. Adaptive management in the spring of 2017 installed a series of berms at strategic locations within the site to assist in storing and distributing water to other areas of the mitigation site to improve the development of wetland habitat (See Figure A-2 for berm locations). Overall, inundation increased from approximately 15 acres in 2016 to more than 25 acres across the site in 2017 and nearly 29 acres in 2018, 2019, and 2020. One groundwater monitoring well remains at the site and is monitored monthly by the US Geological Survey (USGS). Groundwater elevations at this well were relatively constant at 4.0–4.5 feet below land surface from July through September.

Photographs – Photographs taken in 2020 at photo points 1–10 (PP1 to PP10), transect endpoints, and data points are provided in Appendix C along with photographs from the first year of monitoring. Please refer to previous years' monitoring reports for photographs from all other years (https://www.mdt.mt.gov/publications/brochures/wetland_mitigation.shtml).

Soils – Soil test pits were excavated at six locations, and five of these pits (DP01w, DP01u, DP02w, DP02u, and DP03u) were located within a soil unit mapped by the Natural resources Conservation Service (NRCS) as the Delpoint variant-Marmarth-Cabbart loam soil series (NRCS 2020). DP03w was located in a soil unit originally mapped by NRSC as Martinsdaile-Meagher cobbly loam series (Figure A-2, Appendix A). DP01w, DP02w and DP03w all contained hydric soil indicators.

The soil at DP01w, which is located at the edge of a PEM wetland, consisted of 11 inches of dark brown (7.5YR 3/2) sandy clay loam with 1% black (2.5/N) redoximorphic depletions and 1% reddish-yellow (7.5YR 6/6) redoximorphic concentrations in the matrix, over a pale brown depleted matrix (10YR 6/3). This soil met the criteria for depleted matrix (F3) and classification as a hydric soil. DP01u, which is located upslope from DP01w, contained 14 inches of very dark grayish-brown (10YR 3/2) sandy loam and did not display any hydric soil indicators.

The soil profile at DP02w, contained a 10 inch surface horizon of very dark grayish-brown (10YR 3/2) sandy clay loam with 5% reddish-yellow (7.5YR 6/6), redoximorphic concentrations, and 15% black gleyed depletions (2.5/N). Below 10 inches was a depleted, gray (10YR 6/1), sandy loam that was observed to a depth of 16 inches. The soil met the criteria for depleted matrix (F3) as a hydric soil indicator. DP02u, which is located upslope from DP02w, exhibited a very dark grayish-brown (10YR 3/2) sandy loam and did not display any hydric soil indicators.

The soil profile at DP03w, revealed a 5-inch layer of very dark grey (10YR 3/1) sapric, organic material on top of 10 inches of depleted sandy clays. Two sandy clay horizons were observed. The first was observed from 5-13 inches and was greyish brown (10YR 5/2) with 2% reddish yellow (7.5YR 6/8) redoximorphic concentrations in the matrix. The second horizon, observed from 13-15 inches, was grey and contained 5% reddish yellow (7.5YR 6/8) redoximorphic concentrations in the matrix. This soil met the criteria for depleted matrix (F3) as a hydric soil indicator. DP03u, which is located upslope from DP03w, exhibited a brown (10YR 4/3) sandy loam and did not display any hydric soil indicators.

Wildlife – Four bird species were observed at the site during monitoring in 2020, and 39 have been reported historically. Six of the seven bird boxes installed at the site are functional and all appeared to be used in 2020 by a variety of species including Tree Swallows (*Tachycineta bicolor*). In addition to the bird species, deer (Odocoileus sp.) and raccoon (*Procyon lotor*) tracks were noted across the site.

Functional Assessment – The 2020 results of the functional assessments are summarized in the Table 2. Completed Montana Wetland Assessment Method (MWAM) forms for the Rostad Ranch Site are provided in Appendix B. Overall, the site rates as a Category II wetland and has generated 171.03 Functional Units.

Table 6. Montana Wetland Assessment Method Summary for the Rostad Ranch Site

Function and Value Parameters From the 2008 Montana Wetland Assessment Method	2016	2017	2018	2019	2020
Listed/Proposed Threatened & Endangered (T&E) Species Habitat	Low (0)	Low (0)	Low (0)	Low (0)	Low (0)
Montana Natural Heritage Program (MTNHP) Species Habitat	High (0.9)	High (0.9)	High (0.9)	High (0.9)	High (0.9)
General Wildlife Habitat	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.5)	Mod (0.5)
General Fish/Aquatic Habitat	N/A	N/A	N/A	N/A	N/A
Flood Attenuation	N/A	N/A	N/A	N/A	N/A
Short- and Long-Term, Surface-Water Storage	Mod (0.6)	High (0.9)	High (0.9)	High (0.9)	High (0.9)
Sediment/Nutrient/Toxicant Removal	High (1.0)	High (1.0)	High (1.0)	High (1.0)	High (1.0)
Sediment/Shoreline Stabilization	High (0.9)	High (0.9)	High (0.9)	High (0.9)	High (0.9)
Production Export/Food Chain Support	High (0.8)	High (0.8)	High (0.8)	High (0.8)	High (0.8)
Groundwater Discharge/Recharge	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)
Uniqueness	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.3)
Recreation/Education Potential (bonus points)	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.05)	Low (0.05)
Actual Points/Possible Points	**5.75/9**	**6.05/9**	**6.05/9**	**6.05/9**	**6.05/9**
% of Possible Score Achieved	**63.9%**	**67%**	**67%**	**67%**	**67%**
Overall Category	**III**	**II**	**II**	**II**	**II**
Total Acreage of Assessed Wetlands Within Site Boundaries	**14.96**	**26.42**	**28.86**	**28.86**	**28.96**
Functional Units (acreage × actual points)	**86.02**	**159.85**	**174.60**	**174.60**	**175.21**

Credit Summary – Table 7 summarizes the estimated wetland credits based on the USACE-approved credit ratios and the wetland delineations completed in 2017-2020. Proposed mitigation credits from the *Rostad Ranch Mitigation Plan, Meagher County, Montana* (Montana Department of Transportation, 2007) included reestablishing 27.11 wetland acres, rehabilitating 2.63 wetland acres, creating 9.84 wetland acres, preserving 0.25 wetland acres, and maintaining 6.76 acres of upland buffer. The wetland acreages that were delineated in 2020 included 18.46 acres of reestablished wetlands, 2.06 acres of rehabilitated wetland, 7.5 acres of created wetland, 0.25 acre of preservation wetland (community Type 3 – *Salix exigua*) and 0.69 acres of open water. Adaptive management activities on the site in 2017 resulted in a shift of crediting, which increased rehabilitated and reestablished wetland acreage and decreased created wetland acreage. The total mitigation credits estimated in 2020, totaled 27.99 credit acres, which is decrease of 1.35 acres since 2019. This value does not account for any credit that will be given for open water areas , as the mitigation ratios for these areas have not yet been determined.

Table 7. Wetland Mitigation Credits Estimated for the Rostad Ranch Site (2017–2020)

Compensatory Mitigation Type	Wetland Type[a]	Approved Mitigation Ratio[b]	Anticipated Mitigation Area (acres)	Anticipated Mitigation Credit (acres)	2017 Delineated Mitigation Areas (acres)	2017 Estimated Mitigation Credit (acres)	2018 Delineated Mitigation Areas (acres)	2018 Estimated Mitigation Credit (acres)	2019 Delineated Mitigation Areas (acres)	2019 Estimated Mitigation Credit (acres)	2020 Delineated Mitigation Areas (acres)	2020 Estimated Mitigation Credit (acres)
Restoration (Reestablishment)	Palustrine emergent	1:1	27.11	27.11	14.62	14.62	14.62	14.62	14.62	14.62	18.46	18.46
Creation (Establishment)	Palustrine emergent	1:1	9.84	9.84	10.74	10.74	13.18	13.18	13.18	13.18	7.50	7.50
Restoration (Rehabilitation)	Palustrine emergent	1.5:1	2.63	1.75	0.81	0.54	0.81	0.54	0.81	0.54	2.06	1.73
Preservation	Palustrine, scrub/shrub	4:1	0.25	0.06	0.25	0.06	0.25	0.06	0.25	0.06	0.25	0.06
Upland Buffer	N/A	5:1	6.76	1.35	6.76	1.35	6.76	1.35	6.76	1.35	6.76	1.35
Permanent Wetland Impact	N/A	1:1	N/A	–0.41	N/A	–0.41	N/A	–0.41	N/A	–0.41	N/A	-0.41
Open Water*	Palustrine aquatic bed	TBD	TBD	TBD	-	-	-	-	-	-	0.96	TBD
Totals			**46.59**	**39.70**	**33.18**	**26.90**	**35.62**	**29.34**	**35.62**	**29.34**	**35.72**	**27.99**

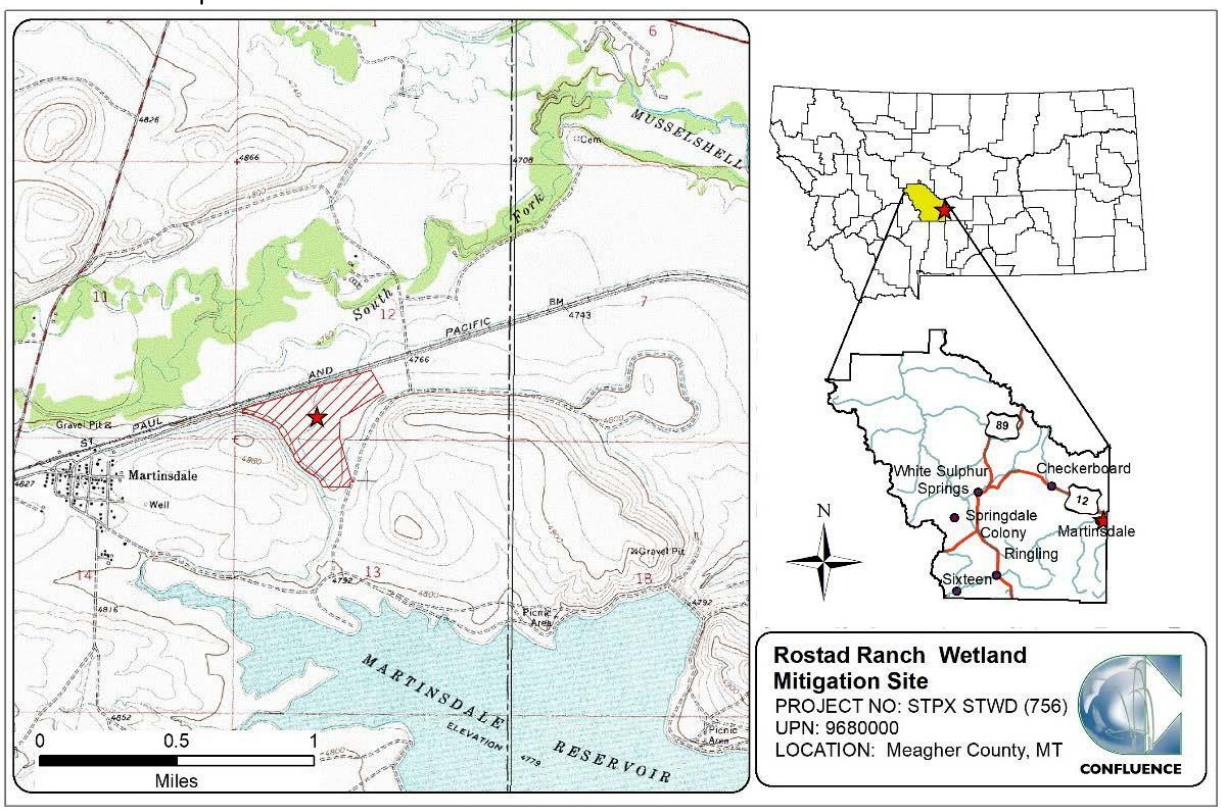
(a) Cowardin et al. [1979].

(b) The mitigation credit ratios that were used are from the Montana Corps Regulatory Programs 2005 Wetland Credit Ratios [USACE, 2005].

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

Maps, Plans, Photos

Site Location Map



Project Area Maps/Figures: See Appendix A.

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

Photos: See Appendix C.

Plans: See Appendix D of 2018 Monitoring Report
https://www.mdt.mt.gov/other/webdata/external/planning/wetlands/2018-REPORTS/2018-FINAL-Rostad-Ranch.PDF

Conclusions

Based on the results of the seventh year of monitoring, the Rostad Ranch mitigation site is continuing to develop into a diverse wetland ecosystem. Since adaptive management actions were implemented to spread hydrology across the site in 2017, the site is meeting all of the project's performance standards. A total of 27.99 wetland credit acres have developed across the Rostad Ranch site, which exceeds the number of target acres by 0.54 acres. This site may provide additional credits in the future as it is wetlands are still developing in some areas.

References

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APPENDIX A
PROJECT AREA MAPS

MDT Wetland Mitigation Monitoring
Rostad Ranch
Meagher County, Montana

Figure A-2. 2020 Monitoring Activity Locations

N
W
E
S

Spreader Berm #4
MW-1
Outlet Structure
PP-1
T1-End
T1-Start
DP03w
DP03u
Spreader Berm #1
T4-End
T2-Start
T2-End
PP-10
T4-Start
Lateral Ditch
PP-2
PP-7
PP-8
PP-9
Spreader Berm #2
PP-3
Spreader Berm #3
PP-6
T3-End
T3-Start
DP01w
DP01u
DP02w
DP02u
Diversion Ditch
PP-5
PP-4

Legend

- Monitoring Limits
- Vegetation Transect
- Data Points
- Photo Points
- Monitoring Well
- Blue Bird Box

Base Photography Date: 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

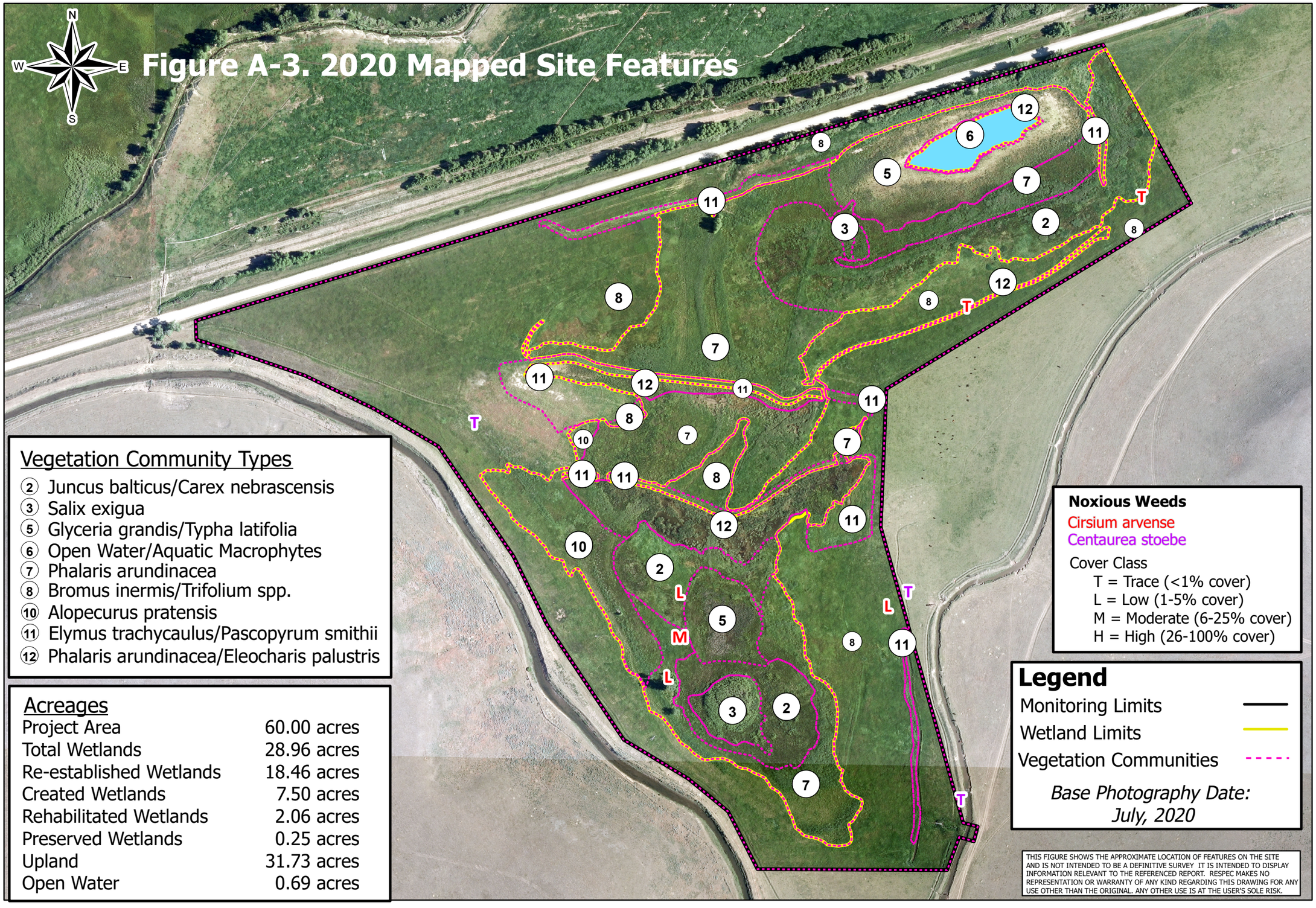
Rostad Ranch Wetland Mitigation Site
2020 Monitoring Activity Locations

0 100 200 400 600 800 1,000 Feet

Project:	STPX STWD (756)
Location:	Meagher Co., Montana
Date:	October 2020
Project Manager:	R. McEldowney
Drawn By:	RCJ

File: X:\Project\MDT Wetland Mitigation 2\Mains\Rostad\2020\Monitor2020_MDT.mxd

Figure A-3. 2020 Mapped Site Features



Vegetation Community Types

2. Juncus balticus/Carex nebrascensis
3. Salix exigua
5. Glyceria grandis/Typha latifolia
6. Open Water/Aquatic Macrophytes
7. Phalaris arundinacea
8. Bromus inermis/Trifolium spp.
10. Alopecurus pratensis
11. Elymus trachycaulus/Pascopyrum smithii
12. Phalaris arundinacea/Eleocharis palustris

Acreages

Project Area	60.00 acres
Total Wetlands	28.96 acres
Re-established Wetlands	18.46 acres
Created Wetlands	7.50 acres
Rehabilitated Wetlands	2.06 acres
Preserved Wetlands	0.25 acres
Upland	31.73 acres
Open Water	0.69 acres

Noxious Weeds

Cirsium arvense
Centaurea stoebe

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

Legend

- Monitoring Limits
- Wetland Limits
- Vegetation Communities

Base Photography Date: 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.

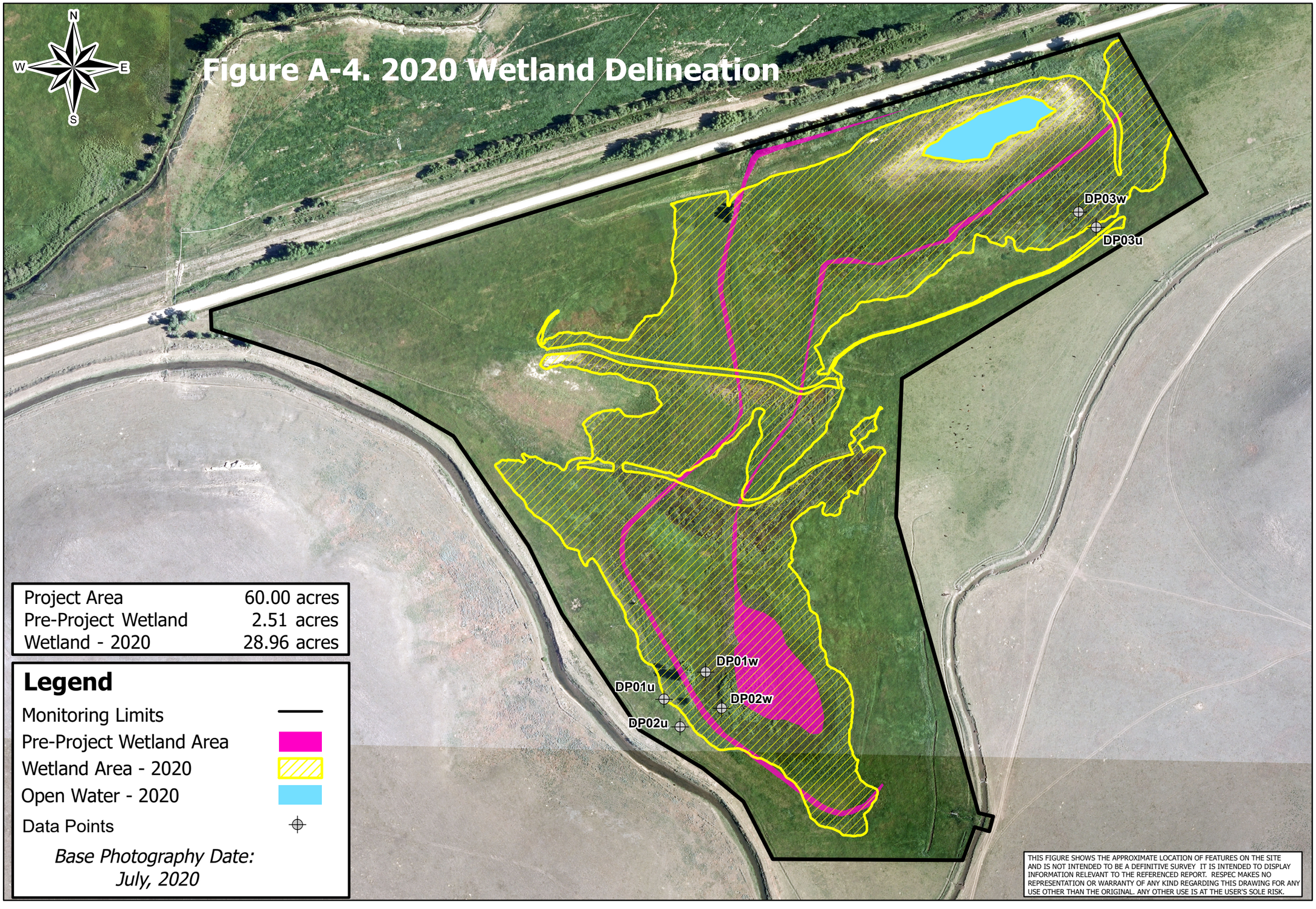
CONFLUENCE
consulting incorporated

Rostad Ranch Wetland Mitigation Site
2020 Mapped Site Features

0 100 200 400 600 800 1,000 Feet

Project: STPX STWD (756)
Location: Meagher Co., Montana
Date: October 2020
Project Manager: R. McEldowney
Drawn By: RCJ

Figure A-4. 2020 Wetland Delineation



Project Area	60.00 acres
Pre-Project Wetland	2.51 acres
Wetland - 2020	28.96 acres

Legend

- Monitoring Limits
- Pre-Project Wetland Area
- Wetland Area - 2020
- Open Water - 2020
- Data Points

Base Photography Date: 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

Rostad Ranch Wetland Mitigation Site
2020 Wetland Delineation

0 100 200 400 600 800 1,000 Feet

Project:	STPX STWD (756)
Location:	Meagher Co., Montana
Date:	October 2020
Project Manager:	R. McEldowney
Drawn By:	RCJ

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APPENDIX B
MONITORING FORMS

MDT Wetland Mitigation Monitoring
Rostad Ranch
Meagher County, Montana

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Rostad Ranch Assessment Date/Time 8/11/2020

Person(s) conducting the assessment: R Jones, S Weyant

Weather: Sunny, Breezy, 90 degrees Location: Martinsdale, MT

MDT District: Billings Milepost:

Legal Description: T 8N R 11E Section(s) 12 and 13

Initial Evaluation Date: 8/21/2013 Monitoring Year: 8 #Visits in Year: 1

Size of Evaluation Area: 60 (acres)

Land use surrounding wetland:

Agriculture

HYDROLOGY

Surface Water Source: Groundwater, supplemental hydrology from ditch/headgate, surface runoff

Inundation: ☑ Average Depth: 1 **(ft)** Range of Depths: .25-2 **(ft)**

Percent of assessment area under inundation: 25 %

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: Yes

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

Drainage patterns, soil saturation, water marks, drift deposits, oxidized rhizospheres on living roots, geomorphic position, FAC-nuetral test

Groundwater Monitoring Wells

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

Well ID	Water Surface Depth (ft)
MW-1	5.56

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:

Groundwater well measured 9/04/2020 by USGS.

VEGETATION COMMUNITIES

Site Rostad Ranch

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

Community # 2 **Community Type:** Juncus balticus / Carex nebrascensis **Acres:** 7.1

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Alopecurus pratensis	1
Beckmannia syzigachne	3	Carex nebrascensis	4
Carex stipata	1	Cirsium arvense	0
Deschampsia caespitosa	1	Eleocharis palustris	1
Epilobium ciliatum	1	Hordeum jubatum	2
Juncus balticus	4	Juncus bufonius	1
Mentha arvensis	1	Open Water	1
Pascopyrum smithii	1	Phalaris arundinacea	2
Phleum pratense	1	Poa palustris	1
Poa pratensis	1	Rumex crispus	1
Salix exigua	1	Sonchus arvensis	1
Trifolium pratense	1	Typha latifolia	1

Comments:

Wet meadow, revegetation successful since 2013.

Community # 3 **Community Type:** Salix exigua / **Acres:** 0.8

Species	Cover class	Species	Cover class
Agrostis gigantea	0	Alopecurus pratensis	1
Beckmannia syzigachne	1	Carex nebrascensis	1
Carex utriculata	1	Deschampsia caespitosa	2
Eleocharis palustris	1	Poa palustris	2
Salix exigua	5	Typha latifolia	0
Veronica peregrina	0		

Comments:

Undisturbed Salix community near southern extent of monitoring boundary.

Community # 5 Community Type: Glyceria grandis / Typha latifolia **Acres:** 3.9

Species	Cover class	Species	Cover class
Alopecurus pratensis	1	Beckmannia syzigachne	2
Carex pellita	1	Eleocharis palustris	3
Elymus trachycaulus	1	Glyceria grandis	4
Hippuris vulgaris	1	Open Water	3
Phalaris arundinacea	1	Rumex crispus	0
Salix exigua	1	Typha latifolia	3

Comments:

Wetland community type found in some of the lower areas of the site. This CT contained large areas of standing water.

Community # 6 Community Type: Open Water / Aquatic macrophytes **Acres:** 0.7

Species	Cover class	Species	Cover class
Carex nebrascensis	0	Eleocharis palustris	0
Glyceria grandis	0	Open Water	5
Phalaris arundinacea	0	Typha latifolia	0

Comments:

Composition of this community type was changed to reflect an open water community. No aquatic macrophytes observed.

Community # 7 Community Type: Phalaris arundinacea / **Acres:** 11.5

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Alopecurus arundinaceus	1
Amaranthus retroflexus	1	Bromus inermis	1
Carex nebrascensis	1	Carex praegracilis	1
Cirsium arvense	0	Eleocharis palustris	1
Elymus repens	1	Elymus trachycaulus	3
Medicago sativa	0	Phalaris arundinacea	5
Phleum pratense	1	Poa palustris	1
Poa pratensis	1	Populus angustifolia	1
Rumex crispus	0	Thlaspi arvense	1
Trifolium pratense	1	Typha latifolia	1

Comments:

This community has expanded since 2019.

Community # 8 **Community Type:** Bromus inermis / Trifolium sp. **Acres:** 28

Species	Cover class	Species	Cover class
Achillea millefolium	1	Agrostis gigantea	1
Bromus inermis	5	Carum carvi	1
Centaurea stoebe	1	Cirsium arvense	0
Elymus repens	2	Elymus trachycaulus	1
Juncus balticus	1	Medicago sativa	1
Melilotus officinalis	2	Pascopyrum smithii	1
Phalaris arundinacea	1	Phleum pratense	3
Poa palustris	1	Poa pratensis	1
Populus angustifolia	1	Schedonorus pratensis	2
Symphyotrichum ascendens	1	Taraxacum officinale	1
Trifolium pratense	1	Trifolium repens	3

Comments:

Previously recorded as community Type 1 with a prevalence of Phleum pratense. Upland communities across the site are dominated by Bromus inermis.

Community # 10 **Community Type:** Alopecurus pratensis / **Acres:** 2.1

Species	Cover class	Species	Cover class
Agrostis gigantea	2	Alopecurus pratensis	4
Hordeum jubatum	1	Juncus balticus	2
Phalaris arundinacea	3		

Comments:

The lower (esatern) edge of this community type may transition into CT 2 or 12 in future years due to increased inundatation.

Community # 11 **Community Type:** Elymus trachycaulus / Pascopyrum smithii **Acres:** 2.7

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Bare Ground	2
Bromus inermis	1	Chenopodium sp.	2
Cirsium arvense	0	Elymus repens	1
Elymus trachycaulus	3	Melilotus officinalis	3
Pascopyrum smithii	3	Phalaris arundinacea	1
Sinapis arvensis	3	Symphyotrichum ascendens	1
Symphyotrichum ericoides	1	Trifolium hybridum	3

Comments:

This community type is found in some areas that were revegetated following the 2017 constuction. In 2020, constructed berms had ~80% vegetative cover and were dominated by seeded species, volunteer grasses, and forbs.

Community # 12 **Community Type:** Phalaris arundinacea / Eleocharis palustris **Acres:** 2.9

Species	Cover class	Species	Cover class
Bare Ground	1	Beckmannia syzigachne	1
Carex nebrascensis	1	Eleocharis palustris	3
Glyceria grandis	2	Open Water	3
Phalaris arundinacea	3	Rumex crispus	0
Schoenoplectus maritimus	1	Typha latifolia	1

Comments:

New community type created in 2020 to document wetland fringe around open water.

Total Vegetation Community Acreage **59.7**

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

VEGETATION TRANSECTS

Site: Rostad Ranch Date: 8/11/2020

Transect Number: 1 **Compass Direction from Start:** 290 °

Interval Data:

Ending Station 146 **Community Type:** Bromus inermis / Trifolium sp.

Species	Cover class	Species	Cover class
Bromus inermis	4	Carum carvi	1
Cirsium arvense	1	Juncus balticus	1
Medicago sativa	0	Phleum pratense	2
Poa palustris	1	Poa pratensis	1
Symphyotrichum ascenden	1	Taraxacum officinale	1
Trifolium pratense	0		

Ending Station 267 **Community Type:** Juncus balticus / Carex nebrascensis

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Alopecurus pratensis	2
Carex nebrascensis	2	Juncus balticus	3
Phalaris arundinacea	4	Poa palustris	3

Ending Station 286 **Community Type:** Elymus trachycaulus / Pascopyrum smithii

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Bare Ground	2
Elymus trachycaulus	4	Pascopyrum smithii	2
Phalaris arundinacea	4		

Ending Station 358 **Community Type:** Phalaris arundinacea /

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Carex nebrascensis	2
Cirsium arvense	0	Elymus trachycaulus	1
Phalaris arundinacea	5	Phleum pratense	0
Rumex crispus	1		

Ending Station 393 **Community Type:** Glyceria grandis / Typha latifolia

Species	Cover class	Species	Cover class
Eleocharis palustris	3	Elymus trachycaulus	1
Glyceria grandis	2	Phalaris arundinacea	3
Rumex crispus	2	Typha latifolia	1

Ending Station 422 **Community Type:** Phalaris arundinacea / Eleocharis palustris

Species	Cover class	Species	Cover class
Bare Ground	3	Beckmannia syzigachne	2
Eleocharis palustris	4	Glyceria grandis	2
Phalaris arundinacea	2	Rumex Crispus	0
Typha latifolia	1		

Transect Notes:

Upland community type 8 at end station 146 has decreased 6 feet in length since 2019. Wetland community types 2 and 7 at end stations 267 and 358 have increased by 1 and 6 feet, respecitvely.

Transect Number: 2 **Compass Direction from Start:** 120 °

Interval Data:

Ending Station 39 **Community Type:** Bromus inermis / Trifolium sp.

Species	Cover class	Species	Cover class
Bromus inermis	1	Elymus repens	1
Juncus balticus	1	Phalaris arundinacea	5
Poa palustris	3	Populus angustifolia	2
Trifolium pratense	1		

Ending Station 109 **Community Type:** Phalaris arundinacea /

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Phalaris arundinacea	5
Phleum pratense	2		

Ending Station 300 **Community Type:** Juncus balticus / Carex nebrascensis

Species	Cover class	Species	Cover class
Agrostis gigantea	2	Alopecurus pratensis	3
Carex nebrascensis	4	Carex stipata	1
Juncus balticus	4	Pascopyrum smithii	0
Phalaris arundinacea	4	Phleum pratense	1
Poa pratensis	2	Trifolium pratense	1
Typha latifolia	1		

Ending Station 409 **Community Type:** Phalaris arundinacea /

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Phalaris arundinacea	5
Phleum pratense	2		

Ending Station 453 **Community Type:** Bromus inermis / Trifolium sp.

Species	Cover class	Species	Cover class
Bromus inermis	3	Elymus repens	1
Elymus trachycaulus	1	Pascopyrum smithii	2
Phalaris arundinacea	0	Phleum pratense	2
Poa pratensis	4	Trifolium pratense	0

Transect Notes:

Slight increase in cover provided by hydrophytic species from 2019.

Transect Number: 3 **Compass Direction from Start:** 30 °

Interval Data:

Ending Station 18 **Community Type:** Phalaris arundinacea /

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Amaranthus retroflexus	1
Elymus repens	2	Phalaris arundinacea	4
Phleum pratense	1	Populus angustifolia	4

Ending Station 129 **Community Type:** Juncus balticus / Carex nebrascensis

Species	Cover class	Species	Cover class
Agrostis gigantea	4	Alopecurus pratensis	2
Carex nebrascensis	1	Cirsium arvense	1
Deschampsia caespitosa	1	Eleocharis palustris	4
Epilobium ciliatum	0	Juncus balticus	4
Juncus bufonius	1	Mentha arvensis	1
Phalaris arundinacea	2	Salix exigua	2
Sonchus arvensis	1		

Ending Station 313 **Community Type:** Glyceria grandis / Typha latifolia

Species	Cover class	Species	Cover class
Alopecurus pratensis	1	Beckmannia syzigachne	0
Carex pellita	0	Eleocharis palustris	4
Glyceria grandis	3	Hippuris vulgaris	1
Open Water	1	Salix exigua	2
Typha latifolia	5		

Ending Station 320 **Community Type:** Juncus balticus / Carex nebrascensis

Species	Cover class	Species	Cover class
Agrostis gigantea	1	Alopecurus pratensis	1
Beckmannia syzigachne	0	Carex nebrascensis	1
Eleocharis palustris	4	Juncus balticus	4
Phalaris arundinacea	4	Salix exigua	1

Transect Notes:

Transect composed entirely of wetland community types.

Transect Number: 4 **Compass Direction from Start:** 0 °

Interval Data:

Ending Station 18 **Community Type:** Elymus trachycaulus / Pascopyrum smithii

Species	Cover class	Species	Cover class
Bromus inermis	1	Cirsium arvense	0
Elymus trachycaulus	3	Pascopyrum smithii	3
Phalaris arundinacea	5	Trifolium hybridum	0

Ending Station 100 **Community Type:** Phalaris arundinacea /

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	2	Bromus inermis	1
Carex praegracilis	1	Eleocharis palustris	4
Phalaris arundinacea	1	Phleum pratense	1
Poa palustris	4	Poa pratensis	1
Typha latifolia	0		

Ending Station 292 **Community Type:** Bromus inermis / Trifolium sp.

Species	Cover class	Species	Cover class
Bromus inermis	5	Elymus repens	2
Elymus trachycaulus	3	Phleum pratense	1
Poa palustris	3	Poa pratensis	2
Symphyotrichum ascenden	1	Trifolium pratense	0

Ending Station 312 **Community Type:** Elymus trachycaulus / Pascopyrum smithii

Species	Cover class	Species	Cover class
Bromus inermis	5	Elymus repens	1
Elymus trachycaulus	2	Pascopyrum smithii	2
Symphyotrichum ascenden	1	Symphyotrichum ericoides	1

Ending Station 412 **Community Type:** Bromus inermis / Trifolium sp.

Species	Cover class	Species	Cover class
Bromus inermis	5	Poa pratensis	2
Symphyotrichum ascenden	1		

Transect Notes:

Upland community type 11 encroached 5 feet in length at end station 18 into wetland community type 7.

PLANTED WOODY VEGETATION SURVIVAL

Rostad Ranch

Planting Type	#Planted	#Alive	Notes
Populus balsamifera	100		Estimated 50% survival
Populus tremuloides	100		Estimated 50% survival
Salix sp.	2000		Estimated 50% survival

Comments

Willow stakes were planted in spring 2013. Due to tall herbaceous vegetation, locating all plantings was difficult during the site visit, especially locating stems that had died. Some dead stems were present in the open water portion of the NE wetland cell. Live plants observed looked healthy with minor browsing. Survival in 2020 was estimated at 50% based on the number of live stems observed. Willows are naturally expanding around vegetation community 3 in the southern area of the site.

Rostad Ranch

WILDLIFE

Birds

Were man-made nesting structures installed? Yes

If yes, type of structure: _____

How many? 7

Are the nesting structures being used? No

Do the nesting structures need repairs? No

Nesting Structure Comments:

One bird box originally located near the start of Transect T-1 in the NE corner of the site is missing. All other boxes are in good condition, but empty and not in use.

Species	#Observed	Behavior	Habitat
Brewer's Blackbird	12	FO, L	
Sandhill Crane	2	FO	
Sparrow Sp.	3	FO	
Wilson's Snipe	3	FO, L	

Bird Comments

BEHAVIOR CODES

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

HABITAT CODES

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

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

Mammals and Herptiles

Species	# Observed	Tracks	Scat	Burrows	Comments
White-tailed Deer	1	Yes	Yes	No	

Wildlife Comments:

Rostad Ranch

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
DP01-u	46.459174	-110.297057		
DP01-w	46.45938	-110.29661		
DP02-u	46.458966	-110.296879		
DP02-w	46.45911	-110.296431		
DP03-u	46.462741	-110.292423		
DP03-w	46.462853	-110.292616		
Photo point 1	46.463894	-110.292697		
Photo point 10	46.461759	-110.298593		
Photo point 2	46.461612	-110.294535		
Photo point 3	46.460573	-110.294591		
Photo point 4	46.458259	-110.293701		
Photo point 5	46.458417	-110.296185		
Photo point 6	46.459813	-110.298179		
Photo point 7	46.461119	-110.299371		
Photo point 8	46.460987	-110.298118		
Photo point 9	46.461106	-110.294579		
Transect 1 End	46.463576102426	-110.2927263717		
Transect 1 Start	46.463029103021	-110.291276		
Transect 2 End	46.461978946056	-110.295094		
Transect 2 Start	46.462875830304	-110.29637		
Transect 3 End	46.459923761462	-110.2958697392		
Transect 3 Start	46.459397471592	-110.296821		
Transect 4 End	46.4629	-110.297851		
Transect 4 Start	46.461803077753	-110.297953		

Comments:

Rostad Ranch

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

27.99 wetland acres delineated.

Functional Assessments

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

Functional Assessment Comments:

Category 2 wetland.

Maintenance

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

If yes, do they need to be reaired? No

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

Were man-made structures built or installed to impound water or control waterflow into or out of the wetland? Yes

If yes, are the structures in need of repair No

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Rostad Ranch City/County: Meagher Sampling Date: 8/11/2020

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

Investigator(s): R. Jones, S Weyant Section, Township, Range: 13 8N 11E

Landform (hillslope, terrace, etc.): Valley bottom Local relief (concave, convex, none): undulating Slope (%): 8.7

Subregion (LRR): LRR F Lat: 46.459174 Long: -110.297057 Datum: NAD 83

Soil Map Unit Name: 86C: Delpoint variant-Marmath-Cabbart loams, 2-8 % 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 adjacent to DP01w.

VEGETATION - Use scientific names of plants

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Bromus inermis	60	☑	UPL
Elymus trachycaulus	5	☐	FACU
Pascopyrum smithii	10	☐	FACU
Phalaris arundinacea	5	☐	FACW
Poa palustris	5	☐	FACW
Poa pratensis	10	☐	FACU

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 5

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: 0.0 % (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:	
OBL species	0	X 1	0
FACW species	10	X 2	20
FAC species	0	X 3	0
FACU species	25	X 4	100
UPL species	60	X 5	300
Column Totals	95 (A)		420 (B)

Prevalence Index = B/A = 4.42

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=5%

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
0-14	10YR 3/2	100					Sandy 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)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☑

Remarks: No hydric soil indicators observed.

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)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

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.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Rostad Ranch City/County: Meagher Sampling Date: 8/11/2020

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

Investigator(s): R. Jones, S Weyant Section, Township, Range: 13 8N 11E

Landform (hillslope, terrace, etc.): Valley bottom Local relief (concave, convex, none): flat Slope (%): 5.25

Subregion (LRR): LRR F Lat: 46.45938 Long: -110.29661 Datum: NAD 83

Soil Map Unit Name: 86C: Delpoint variant-Marmath-Cabbart loams, 2-8 % 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 plants

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Agrostis stolonifera	10	☐	FACW
Carex nebrascensis	2	☐	OBL
Eleocharis palustris	8	☐	OBL
Juncus balticus	70	☑	FACW
Juncus bufonius	2	☐	OBL
Mentha arvensis	1	☐	FACW
Phalaris arundinacea	2	☐	FACW

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 5

Dominance Test worksheet

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:	
OBL species	12	X 1	12
FACW species	83	X 2	166
FAC species	0	X 3	0
FACU species	0	X 4	0
UPL species	0	X 5	0
Column Totals	95 (A)		178 (B)

Prevalence Index = B/A = 1.87

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=5%

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
0-11	7.5YR 3/2	98	N 2.5/0	1	D	M	Sandy Clay Loam	**Depletions.**
0-11	7.5YR 3/2	98	7.5YR 5/6	1	C	M	Sandy Clay Loam	**Concentrations.**
11-13	10YR 6/3	98	N 2.5/0	2	D	M	Loamy Sand	**Depletions.**

[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)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ 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: Distinct concentrations and depletions few within the 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)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

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

Water Table Present? Yes ☑ No ☐ Depth (inches): 4

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: 4" depth to water in hole after 5 min.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Rostad Ranch City/County: Meagher Sampling Date: 8/11/2020

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

Investigator(s): R Jones, S Weyant Section, Township, Range: 13 8N 11E

Landform (hillslope, terrace, etc.): Valley bottom Local relief (concave, convex, none): undulating Slope (%): 2.25

Subregion (LRR): LRR F Lat: 46.458966 Long: -110.296879 Datum: NAD 83

Soil Map Unit Name: 86C: Delpoint variant-Marmath-Cabbart loams, 2-8 % 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 adjacent to DP02w.

VEGETATION - Use scientific names of plants

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Bromus inermis	75	☑	UPL
Elymus trachycaulus	10	☐	FACU
Poa pratensis	5	☐	FACU

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 10

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: 0.0 % (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:	
OBL species	0	X 1	0
FACW species	0	X 2	0
FAC species	0	X 3	0
FACU species	15	X 4	60
UPL species	75	X 5	375
Column Totals	90 (A)		435 (B)

Prevalence Index = B/A = 4.83

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:

Upland species dominated community.

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 3/2	100					Sandy 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)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☑

Remarks: No hydric soil indicators observed.

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)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

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.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Rostad Ranch | City/County: Meagher | Sampling Date: 8/11/2020

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

Investigator(s): R. Jones, S Weyant | Section, Township, Range: 13 8N 11E

Landform (hillslope, terrace, etc.): Valley bottom | Local relief (concave, convex, none): flat | Slope (%): 3.5

Subregion (LRR): LRR F | Lat: 46.45911 | Long: -110.296431 | Datum: NAD 83

Soil Map Unit Name: 86C: Delpoint variant-Marmath-Cabbart loams, 2-8 % 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: PSS, DEPRESSIONAL wetland that is conitguous with PSS wetalnd (represented by DP01w).

VEGETATION - Use scientific names of plants

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

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

Salix exigua	60	☑	FACW

Herbaceous Stratum (Plot size (5 Foot Radius))

Agrostis gigantea	10	☑	FACW
Alopecurus pratensis	10	☑	FACW
Carex utriculata	5	☐	OBL
Eleocharis palustris	10	☑	OBL
Juncus balticus	10	☑	FACW
Juncus bufonius	2	☐	OBL
Mentha arvensis	1	☐	FACW
Phalaris arundinacea	10	☑	FACW

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

Percent Bare Ground 2

Dominance Test worksheet

Number of Dominant Species that are OBL, FACW or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet

Total % Cover of:			Multiply by:
OBL species	17	X 1	17
FACW species	142	X 2	284
FAC species	0	X 3	0
FACU species	0	X 4	0
UPL species	0	X 5	0
Column Totals	159 (A)		301 (B)

Prevalence Index = B/A = 1.89

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:

The entire vegetative community composed of FACW and OBL species.

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
0-10	10YR 3/2	80	7.5YR 6/6	5	C	M	Sandy Clay Loam	
0-10	10YR 3/2	80	N 2.5/0	15	D	M	Sandy Clay Loam	**Depletions.**
10-16	10YR 6/1	98	10YR 7/8	2	C	M	Sandy 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)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ 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: 1 inch of moss on soil surface. Distinct redoximorphic depletions and concentrations common within the 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)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☑ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

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

Water Table Present? Yes ☑ No ☐ Depth (inches): 10

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: 10" depth to water in hole after 15 min.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Rostad Ranch City/County: Meagher Sampling Date: 8/11/2020

Applicant/Owner: MDT State: Montana Sampling Point: DP03u

Investigator(s): R Jones, S Weyant Section, Township, Range: 12 8N 11E

Landform (hillslope, terrace, etc.): Valley bottom Local relief (concave, convex, none): undulating Slope (%): 8.7

Subregion (LRR): LRR F Lat: 46.462741 Long: -110.292423 Datum: NAD 83

Soil Map Unit Name: 86C: Delpoint variant-Marmath-Cabbart loams, 2-8 % 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 adjacent to DP03w.

VEGETATION - Use scientific names of plants

Tree Stratum Plot size (30 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

Alopecurus pratensis	5	☐	FACW
Dactylis glomerata	5	☐	FACU
Elymus trachycaulus	50	☑	FACU
Phleum pratense	20	☑	FACU
Poa pratensis	10	☐	FACU
Schedonorus pratensis	5	☐	FACU

Woody Vine Stratum Plot size (30 Foot Radius)

Percent Bare Ground 5

Dominance Test worksheet

Number of Dominant Species that are OBL, FACW or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:	
OBL species	0	X 1	0
FACW species	5	X 2	10
FAC species	0	X 3	0
FACU species	85	X 4	340
UPL species	5	X 5	25
Column Totals	95 (A)		375 (B)

Prevalence Index = B/A = 3.95

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=5%

SOIL

Sampling Point: DP03u

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 4/3	100					Sandy Clay	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☑

Remarks: No hydric soil indicators observed.

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)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

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.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Rostad Ranch City/County: Meagher Sampling Date: 8/11/2020

Applicant/Owner: MDT State: Montana Sampling Point: DP03w

Investigator(s): R Jones, S Weyant Section, Township, Range: 12 8N 11E

Landform (hillslope, terrace, etc.): Valley bottom Local relief (concave, convex, none): undulating Slope (%): 8.7

Subregion (LRR): LRR F Lat: 46.462853 Long: -110.292616 Datum: NAD 83

Soil Map Unit Name: 854B: Martinsdaile-Meagher cobbly loams, dry, 2-4 % 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 ☐	
Hydric Soil Present?	Yes ☑	No ☐	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐
Wetland Hydrology Present?	Yes ☑	No ☐	

Remarks: PEM, SLOPE/DEPRESSIONAL wetland.

VEGETATION - Use scientific names of plants

Tree Stratum Plot size (30 Foot Radius)

Sapling/Shrub Stratum Plot size (15 Foot Radius)

Herbaceous Stratum Plot size (5 Foot Radius)

	Absolute % Cover:	Domiant Species?	Indicator Status
Carex nebrascensis	70	☑	OBL
Cirsium arvense	1	☐	FACU
Juncus balticus	10	☐	FACW
Phleum pratense	1	☐	FACU
Poa palustris	3	☐	FACW

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: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:	
OBL species	70	X 1	70
FACW species	13	X 2	26
FAC species	0	X 3	0
FACU species	2	X 4	8
UPL species	0	X 5	0
Column Totals	85 (A)		104 (B)

Prevalence Index = B/A = 1.22

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%

SOIL

Sampling Point: DP03w

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
0-5	10YR 3/1	100					Muck	Sapric, organic horizon.
05-13	10YR 5/2	98	7.5YR 6/8	2	C	M	Sandy Clay	-
13-15	10YR 5/1	95	7.5YR 6/8	5	C	M	Sandy Clay	-

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☑ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ 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: Distinct redoximorphic depletions and concentrations common within the 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)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)
- ☑ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

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

Water Table Present? Yes ☑ No ☐ Depth (inches): 10

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: 10" depth to water in hole after 10 min.

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Rostad Ranch **2. MDT project#** STPX STWD (756) **Control#** 9680000

3. Evaluation Date 8/11/2020 **4. Evaluators** R Jones, S Weyant **5. Wetland/Site# (s)** Rostad Mitigation Site

6. Wetland Location(s): T 8 N **R** 11 E **Sec1** 12 **T** 8 N **R** 11 E **Sec2** 13

Approx Stationing or Mileposts

Watershed 10 - Musselshell **Watershed/County** Meagher

7. Evaluating Agency CCI for MDT

8. Wetland size acres 28.96

Purpose of Evaluation

How assessed: Measured e.g. by GPS

☐ **Wetlands potentially affected by MDT project**

9. Assesssment area (AA) size (acres) 28.96

☐ **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	Excavated	Seasonal/Intermittent	77
Slope	Scrub-Shrub Wetland		Seasonal/Intermittent	3
Depressional	Unconsolidated Bottom	Excavated	Seasonal/Intermittent	6
Depressional	Emergent Wetland	Excavated	Seasonal/Intermittent	14

11. Estimated Relative Abundance Common

12. General Condition of AA

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

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

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

The wetland mitigation site was constructed in Fall 2012/Spring 2013 with adaptive management features added to the site in spring 2017. Extensive excavation occurred during site construction to create depressional areas and distribute water across the site. Rangeland surrounding site to the West, South, and East was heavily grazed in 2020.

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

Spotted knapweed, Canada thistle

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

The AA is a historically drained wetland area/meadow that was heavily grazed by cattle. A drainage ditch bisected the property prior to wetland mitigation construction. Existing wetlands were expanded through construction activities with emergent and scrub-shrub wetland communities present. Surrounding land use includes transportation (county road, historic railroad berm), agriculture (hay production and cattle grazing). The South Fork of the Musselshell River is located to the north of the mitigation 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 scrub-shrub vegetation 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

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 list for Meagher County; no habitat specifications present for species or documented occurences.

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 Downingia laeta (S2S3)

Secondary habitat (list Species) ◉ D ○ S Long-billed curlew (S3B); Mountain plover (S2B)

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 Observations of Downingia laeta in wetland during 2013-2015 site visits; long-billed curlews, upland sandpipers, and bobolinks continue to use the site and were observed by MDT staff in the spring of 2019.

14C. General Wildlife Habitat Rating:

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

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

- ☐ observations of abundant wildlife #s or high species diversity (during any period)
- ☐ 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 Site is likely being use by white-tailed deer and bird species. Active Sandhill Crane nesting observed in wetlands in 2016, 2018, and 2019 (observed by MDT).

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.)

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**

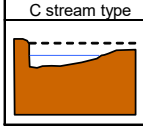
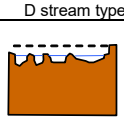
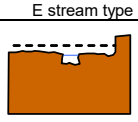
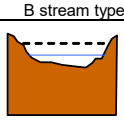
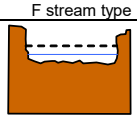
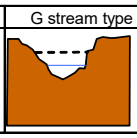
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc.- specify in comments) for native fish or introduced game fish? ◯ **Y** ◉ **N** *If yes, add 0.1 to the adjusted score in* ***i*** *or* ***iia*** *above:*
Modifed Rating

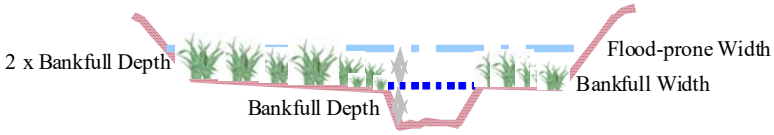
iii. Final Score and Rating: 0 NA **Comments:** No perennially flowing water within AA for fish habitat.

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 / **Bankfull width** = **Entrenchment ratio**

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: No flooding occurs via in-channel or overbank flow.

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: Depressional area and portions of slope wetlands maintain water seasonally/intermittently. Adaptive management in 2017 resulted in an increased score for this function.

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: More than 80 percent of the non-open water area is covered with wetland vegetation. A restricted outlet is located on the depressional area as a constructed overflow channel.

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: AA supports open water areas subject to wave action. Vegetetation surrounding the pond is innundated and transitioning from FAC to more OBL and FACWet species.

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** .8H

Comments: Moderate biologial activity; no fish habitat; vegetative component >5 acres with a upland buffer.

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

i. Discharge Indicators

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

ii. Recharge Indicators

- [x] Permeable substrate present without underlying impeding layer
- [x] 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: Seasonal water regime within AA. Standing water present in many areas of the site at time of monitoring.

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: PEM & PSS wetlands are common in the area. Structural diversity is not high and there are no bogs, fens, or forested wetlands

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:

Currently no recreation/education occurs at the site.

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): Rostad Mitigation Site

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	L	0	1	0.00	☐
B. MT Natural Heritage Program Species Habitat	H	.9	1	26.06	☑
C. General Wildlife Habitat	M	.5	1	14.48	☑
D. General Fish Habitat	NA	0	0	0.00	☐
E. Flood Attenuation	NA	0	0	0.00	☐
F. Short and Long Term Surface Water Storage	H	.9	1	26.06	☑
G. Sediment/Nutrient/Toxicant Removal	H	1	1	28.96	☐
H. Sediment/Shoreline Stabilization	H	.9	1	26.06	☐
I. Production Export/Food Chain Support	H	.8	1	23.17	☐
J. Groundwater Discharge/Recharge	M	.7	1	20.27	☑
K. Uniqueness	L	.3	1	8.69	☐
L. Recreation/Education Potential (bonus points)	L	.05	NA	1.45	☐
Totals:		6.05	9	175.21	
Percent of Possible Score			**67.22** %		

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

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

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

☐

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

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

I	II	III	IV

Scientific Names	Common Names	GP Indicator Status[(1)]
Achillea millefolium	Common Yarrow	FACU
Agropyron cristatum	Crested Wheatgrass	UPL
Agrostis gigantea	Black Bent	FACW
Algae, green	Algae, green	NL
Alopecurus arundinaceus	Creeping-Meadow Foxtail	FACW
Alopecurus pratensis	Field Meadow-Foxtail	FACW
Amaranthus retroflexus	Red-Root	FACU
Ambrosia acanthicarpa	Flat-spine Ragweed	UPL
Aster sp.	Aster	UPL
Bassia scoparia	Mexican-Fireweed	FACU
Beckmannia syzigachne	American Slough Grass	OBL
Berteroa incana	Hoary False-alyssum	UPL
Bromus arvensis	Field Brome	FACU
Bromus carinatus	California Brome	UPL
Bromus inermis	Smooth Brome	UPL
Cardaria draba	Whitetop	UPL
Carex nebrascensis	Nebraska Sedge	OBL
Carex pellita	**Woolly Sedge**	**OBL**
Carex praegracilis	**Clustered Field Sedge**	**FACW**
Carex stipata	Stalk-Grain Sedge	OBL
Carex utriculata	Northwest Territory Sedge	OBL
Carum carvi	**Caraway**	**UPL**
Centaurea stoebe	Spotted Knapweed	UPL
Chenopodium album	Lamb's-Quarters	FACU
Chenopodium sp.	Goosefoot	UPL
Cirsium arvense	Canadian Thistle	FACU
Convolvulus arvensis	Field Bindweed	UPL
Cynoglossum officinale	Gypsy-Flower	FACU
Cyrtorhyncha cymbalaria	Alkali Buttercup	OBL
Deschampsia caespitosa	Tufted Hair Grass	FACW
Descurainia sophia	Herb Sophia	UPL
Downingia laeta	Great Basin Calico-Flower	OBL
Eleocharis palustris	Common Spike-Rush	OBL
Elymus repens	Creeping Wild Rye	FACU
Elymus trachycaulus	Slender Wild Rye	FACU
Epilobium ciliatum	Fringed Willowherb	FACW
Glyceria grandis	American Manna Grass	OBL
Glycyrrhiza lepidota	American Licorice	FACU
Helianthus annuus	Common Sunflower	FACU

Scientific Names	Common Names	GP Indicator Status[(1)]
Hippuris vulgaris	**Common Mare's-Tail**	**OBL**
Hordeum jubatum	Fox-Tail Barley	FACW
Juncus articulatus	Joint-Leaf Rush	OBL
Juncus balticus	Baltic Rush	FACW
Juncus bufonius	Toad Rush	OBL
Lactuca serriola	Prickly Lettuce	FAC
Lepidium densiflorum	Miner's Pepperwort	FAC
Medicago sativa	Alfalfa	UPL
Melilotus albus	White Sweetclover	UPL
Melilotus officinalis	Yellow Sweet-Clover	FACU
Mentha arvensis	American Wild Mint	FACW
Pascopyrum smithii	Western-Wheat Grass	FACU
Phalaris arundinacea	Reed Canary Grass	FACW
Phleum pratense	Common Timothy	FACU
Poa palustris	Fowl Blue Grass	FACW
Poa pratensis	Kentucky Blue Grass	FACU
Polypogon monspeliensis	Annual Rabbit's-Foot Grass	FACW
Populus angustifolia	Narrow-Leaf Cottonwood	FACW
Populus balsamifera	Balsam Poplar	FACW
Populus tremuloides	Quaking Aspen	FAC
Potentilla gracilis	Graceful Cinquefoil	FAC
Rumex crispus	Curly Dock	FAC
Rumex occidentalis	Western Dock	OBL
Salix exigua	Narrow-Leaf Willow	FACW
Schedonorus pratensis	Meadow False Rye Grass	FACU
Sinapis arvensis	Wild Mustard	UPL
Sonchus arvensis	Field Sow-Thistle	FAC
Symphyotrichum ascendens	**Western American-Aster**	**FACU**
Symphyotrichum ericoides	**White Heath American-Aster**	**FACU**
Tanacetum vulgare	Common Tansy	FACU
Taraxacum officinale	Common Dandelion	FACU
Thlaspi arvense	Field Pennycress	FACU
Tragopogon dubius	Meadow Goat's-beard	UPL
Trifolium arvense	Rabbit-foot Clover	UPL
Trifolium hybridum	**Alsike Clover**	**FACU**
Trifolium pratense	Red Clover	FACU
Trifolium repens	White Clover	FACU

Rostad Ranch Wetland Mitigation Site - 2013 - 2020 Vegetation Species List

Scientific Names	Common Names	GP Indicator Status[(1)]
Typha latifolia	Broad-Leaf Cat-Tail	OBL
Veronica peregrina	Neckweed	FACW

[1] 2018 National Wetland Plant List (USACE 2018)

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

APPENDIX C
PROJECT AREA PHOTOGRAPHS

MDT Wetland Mitigation Monitoring
Rostad Ranch
Meagher County, Montana

Rostad Ranch: Photo Point Photographs



Photo Point 1 – Panorama; Location: Northeast Corner; Bearing 200 degrees; Year 2013



Photo Point 1 – Panorama; Location: Northeast Corner; Bearing 200 degrees; Year 2020



Photo Point 2 – Panorama; Location: East Fence Corner; Bearing 125 degrees; Year 2013



Photo Point 2 – Panorama; Location: East Fence Corner; Bearing 125 degrees; Year 2020

Rostad Ranch: Photo Point Photographs



Photo Point 3 – Panorama; Location: East Fence Line; Bearing 280 degrees; Year 2013



Photo Point 3 – Panorama; Location: East Fence Line; Bearing 280 degrees; Year 2020



Photo Point 4 – Panorama; Location: SE Fence Corner; Bearing 240 degrees; Year 2013



Photo Point 4 – Panorama; Location: SE Fence Corner; Bearing 240 degrees; Year 2020

Rostad Ranch: Photo Point Photographs



Photo Point 5 – Panorama; Location: SW Fence Corner; Bearing 200 degrees; Year 2013



Photo Point 5 – Panorama; Location: SW Fence Corner; Bearing 200 degrees; Year 2020



Photo Point 7 – Panorama; Location: West Fence Corner; Bearing 90 degrees; Year 2013



Photo Point 7 – Panorama; Location: West Fence Corner; Bearing 90 degrees; Year 2020

Rostad Ranch: Photo Point Photographs



Photo Point 6 **Location**: West Fence Line
Bearing: 30 degrees **Year**: 2013



Photo Point 6 **Location**: West Fence Line
Bearing: 30 degrees **Year:** 2020



Photo Point 6 **Location:** West Fence Line
Bearing: 100 degrees **Year**: 2013



Photo Point 6 **Location**: West Fence Line
Bearing: 100 degrees **Year**: 2020



Photo Point 8 **Location:** West Central
Bearing: 90 degrees **Year**: 2017



Photo Point 8 **Location:** West Central
Bearing: 90 degrees **Year**: 2020

Rostad Ranch: Photo Point Photographs



Photo Point 9 **Location:** East Fence Line
Bearing: 240 degrees **Year**: 2017



Photo Point 9 **Location:** East Fence Line
Bearing: 240 degrees **Year**: 2020



Photo Point 10 **Location**: West Central
Bearing: 80 degrees **Year**: 2017



Photo Point 10 **Location**: West Central
Bearing: 80 degrees **Year**: 2020

Rostad Ranch: Transect Photographs



Transect 1: Start
Bearing: 290 degrees
Location: NE Branch of site
Year: 2013



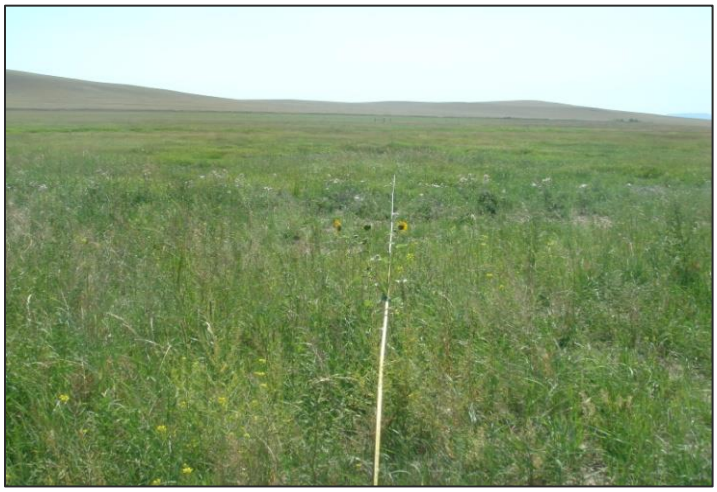
Transect 1: Start
Bearing: 290 degrees
Location: NE Branch of site
Year: 2020



Transect 1: End
Bearing: 110 degrees
Location: NE Branch of site
Year: 2013



Transect 1: End
Bearing: 110 degrees
Location: NE Branch of site
Year: 2020



Transect 2: Start
Bearing: 130 degrees
Location: North Central
Year: 2013



Transect 2: Start
Bearing: 130 degrees
Location: North Central
Year: 2020

Rostad Ranch: Transect Photographs



Transect 2: End **Location:** North Central
Bearing: 310 degrees **Year**: 2013



Transect 2: End **Location:** North Central
Bearing: 310 degrees **Year:** 2020



Transect 3: Start **Location:** South Portion of site
Bearing: 30 degrees **Year:** 2013



Transect 3: Start **Location:** South Portion of site
Bearing: 30 degrees **Year:** 2020



Transect 3: End **Location:** South Portion of site
Bearing 30: degrees **Year:** 2013



Transect 3: End **Location:** South Portion of site
Bearing: 30: degrees **Year:** 2020

Rostad Ranch: Transect Photographs



Transect 4: Start **Location:** Northwest Portion
Bearing: 0 degrees **Year:** 2017



Transect 4: Start **Location:** Northwest Portion
Bearing: 0 degrees **Year:** 2020

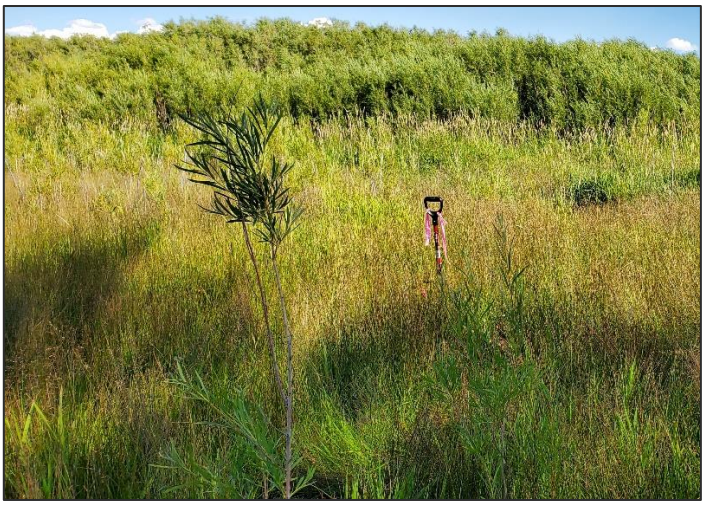


Transect 4: End **Location:** Northwest Portion
Bearing: 180 degrees **Year:** 2017



Transect 4: End **Location:** Northwest Portion
Bearing: 180 degrees **Year:** 2020

Rostad Ranch: Data Point Photographs



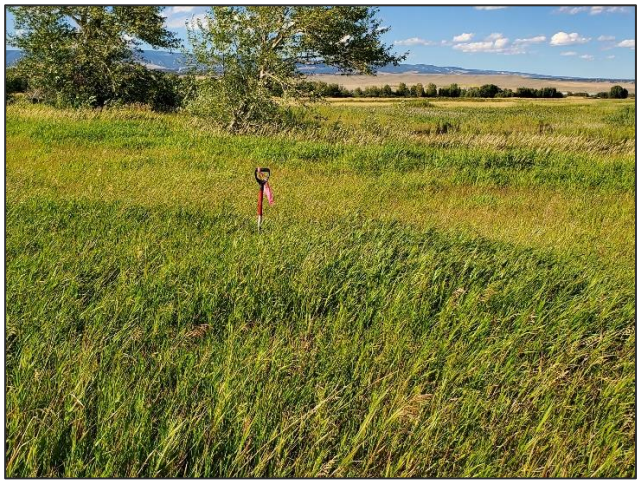
Data Point: DP01w **Location:** Southwest corner of site. **Year:** 2020



Data Point: DP01u **Location:** West across wetland boundary from DP01w in SW corner of site. **Year:** 2020



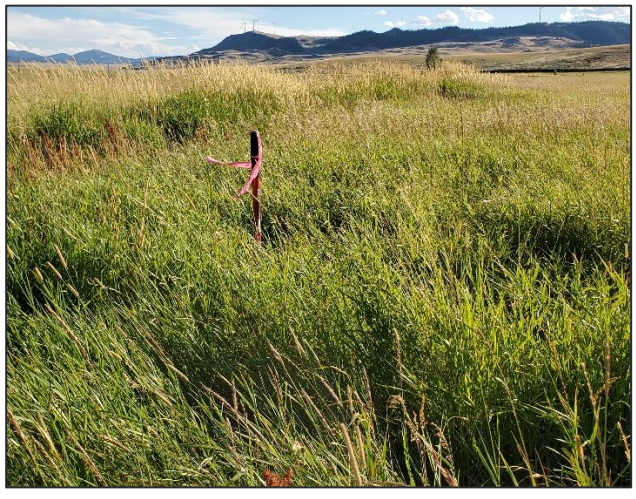
Data Point: DP02w **Location:** Southwest corner of site, south of DP01w. **Year:** 2020



Data Point: DP02u **Location:** West across wetland boundary from DP02w in SW corner of site. **Year:** 2020



Data Point: DP03w **Location:** Near southern boundary in northwest corner of site. **Year:** 2020



Data Point: DP03u **Location:** Across wetland boundary from DP03w in NW corner of site. **Year:** 2020