Montana Department of Transportation Wetland Mitigation Monitoring Report

JTX – TUNNICLIFF RANCH MITIGATION SITE

Project Overview

Watershed: Watershed #14 - Middle Yellowstone

Monitoring Year: 2020

Years Monitored: 5th year of monitoring

Corps Permit Number: NWO-2010-01938-MTH

Monitoring Conducted By: Confluence Consulting Inc Dates Monitoring Was Conducted: June 9-10, 2020

Purpose of the Approved Project:

The site was constructed to provide 29.63 acres of compensatory wetland mitigation credits for wetland impacts associated with future transportation project-related wetland impacts in Watershed #14 – Middle Yellowstone. Construction consisted of excavating a series of 13 cells ranging in size from 0.33 to 1.50 acres. Eight woody plant enclosures, with 1,650 containerized woody plantings, were constructed around the periphery of excavated cells to establish scrub/shrub wetland and riparian habitat.

Site Location:

Latitude: 45.83953 Longitude: -107.59887

County: Big Horn Nearest Town: Hardin, MT

Map Included: Yes

Mitigation Site Construction Started: Fall/2015 Construction Ended: Winter/2016 Dates of Any Recent Corrective or Maintenance Activities (since previous report):

Activity: None Date: N/A Specific recommendations for any additional corrective actions: Noxious weed cover was estimated at less than 1% absolute cover across the site in 2020, therefore MDT will assess the need for weed treatment in 2021. Enclosure fences labeled PE-01 and PE-05 in Figure A-3 in Appendix A have short segments of fence that are sagging from the top and need repairs. Additionally, a fire sparked by lightening occurred within the project area on July 8, 2020 following the June monitoring event, burning approximately 4.54 acers and portions of exclosure fencing within PE-01 and PE-03 (See Figure A-3). Changes in vegetation and any recommendations on corrective actions within these areas will be assessed during the 2021 monitoring event. A portion of the west central boundary fence is down due to a dead tree falling over into the property. MDT will coordinate with MFWP to repair this fence in 2021.

Anticipated Wetland Credit Acres: 29.63

Wetland Credit Acres Generated to Date: 11.31

Previous Monitoring Reports:

https://www.mdt.mt.gov/publications/brochures/wetland mitigation.shtml

<u>Requirements</u> (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 JTX – Tunnicliff Ranch site and whether 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	All 13 excavated cells contain wetlands and meet the three parameter criteria for hydrology, vegetation, and soils. 8.62 acres of wetland has developed at the site at the time of the 2020 monitoring event.
Wetland Hydrology	Soil saturation is present for at least 12.5 percent of the growing season.	Y	All 13 excavated cells were flooded or saturated near the surface during the 2020 monitoring event and soil saturation was present. This metric was met in 2020.
	Hydric soil conditions are present or appear to be forming.	Y	All excavated cells within the recently constructed mitigation site exhibit hydric soil development (e.g., sulfidic odor, depleted matrix, redox dark surface).
Hydric Soil	Soil is sufficiently stable to prevent erosion.	Υ	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. Vegetative cover is estimated as 95% across disturbed upland areas and between 40 and 90% across wetland areas in 2020.
	Wetlands are delineated as hydrophytic by using technical guidelines.	Y	All 13 excavated cells had developed wetlands as of the 2020 monitoring event.
Hydrophytic Vegetation	Noxious weeds do not exceed 5 percent cover.	Y	Noxious weeds were identified in two locations in 2020 across the site but do not exceed 5 percent cover in the excavation areas or the surrounding undisturbed habitat in 2020.
	Hydrophytic vegetation success will include achieving a minimum overall vegetation cover of 80 percent in created wetland areas within 5 years after site construction.	N/Y	Vegetative cover within the excavated cells ranged from 40 to 90 percent in 2020. Cells 1, 2, and 3 were the only cells that didn't meet the 80% cover threshold. This performance measure for all created wetland areas is trending in a positive direction.
Woody Plants	Plantings exceed 50 percent survival after 5 years.	N	Approximately 27 percent of the woody plantings observed appeared alive in 2016; that percentage dropped to 15 percent in 2017, and less than 2 percent in 2018 through 2020, which does not meet the 50 percent survival criteria. Woody plants were water-stressed following planting in the spring of 2016.
Upland Buffer	Noxious weeds do not exceed 5 percent cover within the buffer areas on the site.	Y	Noxious weed cover did not exceed 5 percent cover in the upland buffer in 2020. MDT has implemented a weed-control program and has a contractor who sprayed the site in 2019.
Opianu bunel	Any disturbed area within the creditable buffer zone must have at least 50 percent aerial cover of non-weed species by the end of the monitoring period.	Y	Upland buffers that surround the developing wetland areas within the site exhibited greater than 50 percent aerial cover of non-weed species.

Performance Standards	Success Criteria	Criteria Achieved Y/N	Discussion
Fencing	Wildlife-friendly fencing is installed along the easement boundaries.		Wildlife-friendly fencing has been installed around three sides of the easement boundary and is in good condition. The western boundary has standard barbed wire fencing, and in 2020, a new illegal gate had been installed by the adjacent landowner. This landowner also mowed portions of the western mitigation boundary, adjacent to the fence, without permission. A portion of the fence along the west central boundary is down due to a tree falling over into the site.
	Wildlife-friendly fencing is installed around planting exclosures (PE).	N/Y	Exclosure fences PE-01 and PE-05 have short segments of fence that are sagging from the top and need minimal repair. The July 8, 2020 lightning fire burned portions of exclosure fencing within PE-01 and PE-03

Summary Data

Wetland Delineation — All the excavated wetland cells and graded areas that connect the cells were surveyed for developing wetland habitat. In 2020, a total of 8.62 acres of emergent wetland was delineated within all 13 wetland cells. Wetland Cells 1, 2, 3, and 10 have vegetation communities that are still establishing, are now dominated by primarily hydrophytic species, and an increase in cover and wetland species composition was observed in 2020. All wetland cells, with the exception of cells 3, 4, and 10, contained surface water during the 2020 monitoring event. While wetland cells 3, 4, and 10 lacked surface water, they were saturated to surface during the site visit. In 2020, all 13 wetland cells now have a dominance of wetland vegetation, have developed hydric soil indicators, and exhibited wetland hydrology. Aquatic habitat, including emergent wetland and previously transitional wetland areas, totaled 8.62 acres, which is a 0.27-acre increase since 2019. Additional wetland habitat is expected to develop in low-lying areas between the cells, but this is dependent on seasonally high groundwater.

Before construction, MDT identified two small palustrine emergent wetlands in the southeastern corner of the site and a smaller palustrine emergent wetland along the eastern boundary, which altogether totaled 0.03 acre. These small wetlands were identified and mapped during the 2020 monitoring event, and no changes noted from previous years (Figure A-3, Appendix A).

Functional Assessment – The 2020 results of the functional assessments are summarized in Table 2. Completed Montana Wetland Assessment Method (MWAM) forms for the JTX – Tunnicliff Ranch site are provided in Appendix B. Overall, the site is improving and developing as a Category III wetland that has generated 50.9 Functional Units since establishment.

Table 2. Montana Wetland Assessment Method Summary for the JTX - Tunnicliff Ranch Site

Function and Value Parameters From the 2008 Montana Wetland Assessment Method	2017	2018	2019	2020
Listed/Proposed Threatened & Endangered (T&E) Species Habitat	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)
Montana Natural Heritage Program (MTNHP) Species Habitat	Low (0.1)	Mod (0.6)	Mod (0.6)	Mod (0.6)
General Wildlife Habitat	Mod (0.4)	Mod (0.7)	Mod (0.7)	Mod (0.7)
General Fish/Aquatic Habitat	N/A	N/A	N/A	N/A
Flood Attenuation	Mod (0.5)	Mod (0.6)	Mod (0.6)	Mod (0.6)

Function and Value Parameters From the 2008 Montana Wetland Assessment Method	2017	2018	2019	2020
Short- and Long-Term, Surface-Water Storage	Mod (0.6)	High (0.9)	High (0.9)	High (0.9)
Sediment/Nutrient/Toxicant Removal	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)
Sediment/Shoreline Stabilization	N/A	Mod (0.6)	Mod (0.6)	Mod (0.6)
Production Export/Food Chain Support	Mod (0.4)	Mod (0.5)	Mod (0.5)	Mod (0.5)
Groundwater Discharge/Recharge	Mod (0.7)	Mod (0.7)	Mod (0.7)	Mod (0.7)
Uniqueness	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential (bonus points)	High (0.2)	High (0.2)	High (0.2)	High (0.2)
Actual Points/Possible Points	4.0/9	5.9/10	5.9/10	5.9/10
% of Possible Score Achieved	44%	59%	59%	59%
Overall Category	Ш	III	III	III
Total Acreage of Assessed Wetlands Within Site Boundaries	3.86	8.31	8.38	8.62
Functional Units (acreage × actual points)	15.3	49.1	49.4	50.9

Vegetation – A total of 69 plant species have been identified at the site in the 5 years of monitoring. Two areas containing state-listed Priority 2B noxious weeds were mapped at the JTX – Tunnicliff Ranch site (Figure A-3, Appendix A). Russian knapweed (*Acroptilon repens*) and Houndstongue (*Cynoglossum officinale*) were observed as trace occurrences and are shown on Figure A-3, while field bindweed (*Convolvulus arvensis*) and Canada thistle (*Cirsium arvense*) were observed as isolated occurences and were not mapped.

Four upland community types and two wetland community types were identified and mapped at the site in 2020 (Figure A-3, Appendix A). Three very small wetlands were identified within the monitoring area before site development but are not described below as their own community type because of their small size (total 0.03 acre). Wetland species associated with these small wetland pockets include creeping meadow foxtail (*Alopecurus arundinaceus*), Baltic rush (*Juncus balticus*), and sedges (*Carex* spp.). Dominant plant species that were observed within each community are listed on the Wetland Mitigation Site Monitoring form (Appendix B). Nine of the 13 excavated cells have developed a dominant wetland community (i.e., Wetland Type 9). The other 4 cells (i.e., 1, 2, 3, and 10) have wetland vegetation communities that are still developing. These 4 cells include a species composition and cover in transition (i.e., Transitional Wetland Type 13), differing from 2019 with less upland grasses observed, and were overall dominated by hydrophytic species. Species beginning to establish within Wetland Type 13 include foxtail barley (*Hordeum jubatum*), broad-leaf cat-tail (*Typha latifolia*), Nuttall's alkali grass (*Puccinellia nuttalliana*), and saltmarsh club-rush (*Schoenoplectus maritimus*). The vegetation community types identified on the site in 2020 include the following:

- Upland Type 6 *Pascopyrum smithii/Poa pratensis*
- Upland Type 7 Schedonorus pratensis
- Upland Type 8 *Elymus hispidus*
- Wetland Type 9 Schoenoplectus spp./Typha latifolia
- Upland Type 12 Elaeagnus angustifolia/Elymus hispidus
- Wetland Type 13 –Transitional wetland

Vegetation cover was measured along two transects (T-1 and T-2) in 2020 (Figure A-2, Appendix A). Photographs of the transect end points are provided in Appendix C. Table 3 summarizes the data for T-1.

T-1 is 792 feet long and intersected upland vegetation community Type 8 – *Elymus hispidus* and wetland community Type 9 – *Schoenoplectus* spp./*Typha latifolia*; 58 percent of the transect crossed wetland habitat, which is a 2 percent increase since 2019. Total vegetative cover remained consistent at 95 percent from 2019 to 2020.

Table 3. Data Summary for T-1 From 2016 Through 2020 at the JTX - Tunnicliff Ranch Site

Monitoring Year		2017	2018	2019	2020
Transect Length (feet)	792	792	792	792	792
Vegetation Community Transitions Along Transect	1	6	6	5	5
Vegetation Communities Along Transect	2	2	2	2	2
Hydrophytic Vegetation Communities Along Transect	0	1	1	1	1
Total Vegetative Species	10	21	21	21	26
Total Hydrophytic Species	2	8	9	9	8
Total Upland Species	8	13	12	12	18
Estimated % Total Vegetative Cover	75	60	75	95	95
Estimated % Unvegetated	25	40	25	5	5
% Transect Length Comprising Hydrophytic Vegetation Communities	0	47	53	56	58
% Transect Length Comprising Upland Vegetation Communities	100	53	47	44	42
% Transect Length Comprising Open Water Transitional Wetland	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 900 feet long and intersects upland community Type 8 and wetland community Types 9 and 13; 68 percent of the transect crossed wetland habitat in 2020, which is a 54 percent increase since 2019. The transect no longer contains open water transitional wetland; the transitional wetland habitat (CT 13) is now dominated by hydrophytic plant species and is developing into a more established hydrophytic plant community. Total vegetative cover remained consistent at 85 percent from 2019 to 2020.

Table 4. Data Summary for T-2 From 2016 Through 2020 at the JTX - Tunnicliff Ranch Site

Monitoring Year	2016	2017	2018	2019	2020
Transect Length (feet)	900	900	900	900	900
Vegetation Community Transitions Along Transect	1	6	5	5	5
Vegetation Communities Along Transect	2	3	3	3	3
Hydrophytic Vegetation Communities Along Transect	0	1	2	2	2
Total Vegetative Species	12	11	11	11	21
Total Hydrophytic Species	0	5	6	6	10
Total Upland Species	12	6	5	5	11
Estimated % Total Vegetative Cover	60	60	65	85	85
Estimated % Unvegetated	40	40	35	15	15
% Transect Length Comprising Hydrophytic Vegetation Communities	0	12	14	14	68
% Transect Length Comprising Upland Vegetation Communities	100	88	33	33	32
% Transect Length Comprising Open Water Transitional Wetland	0	0	53	53	0

Eight woody plant enclosures (PE-1 through PE-8) are shown on Figure A-3 (Appendix A) and were monitored for woody plant survival in 2020 by walking and recording live woody stems. A total of 1,650 containerized woody plants were installed in the eight plant enclosures in 2016. Woody species planted at the site include silver buffalo-berry (*Sheperdia argentea*), Douglas hawthorne (*Crataegus douglasii*), silverberry (*Elaeaganus commutata*), common chokecherry (*Prunus virginiana*), plains cottonwood (*Populus deltoids*), box elder (*Acer negundo*), and bur oak (*Quercus macrocarpa*). A total of 20 live planted stems were counted, and the overall survival is estimated at less than 2 percent. Wildlife fencing around each enclosure was effective in keeping wildlife away from plantings as no signs of browse were noted. Despite the weed fabric that was installed around each woody plant, grasses and forbs were outcompeting most of the plantings. The largest number of live planted woody species was observed in PE-6 (16), which included ten planted cottonwoods and six planted silver buffalo-berry. A lack of supplemental watering in Year 1 and competition from grasses are the likely causes of shrub mortality at the site. Wood's rose (*Rosa woodsii*), Russian olive (*Elaeagnus angustifolia*), and chokecherry plants were identified as volunteers in enclosures PE- 4, 5, 6, 7, and 8 during the 2020 site visit.

Hydrology – Groundwater is expected to be the primary hydrologic source for wetland development, with precipitation and periodic overbank flooding from the nearby Bighorn River supplementing hydrology at the site. Groundwater monitoring that was completed by the US Geological Survey (USGS) in 2020 shows groundwater levels 4 to 7 feet below the design wetland cell elevation of 2,835 feet from March through August (Table 5; USGS 2020).

2020 discrete water-level measurements					
Date	Time Mountain Time	Depth to water level, feet below land surface			
3/30/2020	2:16	4.56			
6/16/2020	1:18	5.6			
8/28/2020	12:51	7.0			

Table 5. 2020 USGS Groundwater Well Data for the JTX - Tunnicliff Ranch Site

Surface water was documented in all wetland cells, with the exception of cells 3, 4, and 10. Those cells lacking standing water during the site visit were saturated to the surface, indicating the presence of wetland hydrology in these cells as well. In addition to surface water and saturation hydrologic indicators, ten wetland data points were completed within the excavated wetland cells, which revealed a high water table, salt crust, hydrogen sulfide odor, geomorphic position, and passing the FAC-Neutral test.

Soils – Soil test pits were excavated at 20 locations (Figure A-2 – Appendix A), wetland test pits inside the excavated depressions and upland test pits upslope and just outside the wetland boundary. Soil textures within wetland test pits ranged from sandy clay loam to clay loam. Hydric soil indicators were observed within every wetland test pit and included depleted matrix, redox dark surface, and hydrogen sulfide. Soil textures within upland test pits ranged from sandy loam to clay loam. No hydric soil indicators were observed in any of the upland test pits. Additional field observations for the 20 data points are provided in the wetland determination data forms in Appendix B.

Photographs – Photographs were taken at photo points 1–4 (PP1 to PP4), transect endpoints, and data points and are provided in Appendix C, with comparisons between 2020 and the first year of monitoring. Please refer to previous years' monitoring reports for all previous annual photographs (https://www.mdt.mt.gov/publications/brochures/wetland_mitigation.shtml).

Credit Summary — Total credits for the site in 2020 are 11.31 credit-acres, which is a 0.27 credit-acre increase from 2020. As of June 2020, the JTX — Tunnicliff Ranch site had developed 8.62 acres of emergent wetland within the 13 excavated cells. Credited at 1:1, the site is currently receiving 8.62 acres of credit for wetland development. Wetlands are expected to continue to develop across the site. Planted woody species survival is estimated at less than 2 percent in the 8 PEs across the site as of the June 2020 monitoring event. The original mitigation credit strategy called for the eight woody plant enclosures to be credited at 5:1 if the enclosures were successful in producing scrub/shrub habitat across the site. With less than 2 percent of the woody plants surviving in 2020, this metric is not being met and credits at this time are zero. Additional credits from the site include 0.03 acre for preservation of existing wetlands on the site before construction and 2.66 acres of upland buffer credit. Table 6 summarizes the current estimated wetland credits based on the USACE-approved credit ratios [USACE 2005] and the wetland delineation that was completed in June 2020.

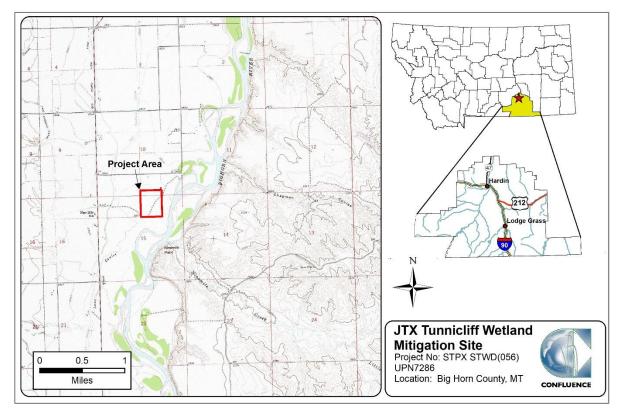
Table 6. Wetland Mitigation Credits Estimated for the JTX - Tunnicliff Ranch Site (2016-2020)

Compensatory Mitigation Type	Mitigation Area Description	Wetland Type ^(a)	Anticipated Mitigation Surface Area (acres)	USACE- Approved Mitigation Ratios	Anticipated Mitigation Credit (acres)	2016 Mitigation Credit (acres)	2017 Mitigation Credit (acres)	2018 Mitigation Credit (acres)	2019 Mitigation Credit (acres)	2020 Mitigation Credit (acres)
Creation (Establishment)	Depressional wetlands	Palustrine emergent and palustrine scrub/shrub	26.85	1:1	26.85	0.0	3.86	8.31	8.35	8.62
Creation (Reestablishment)	Woody plant enclosures	Palustrine scrub/shrub	2.73	5:1	0.55	0.5	0.47	0	0	0
Preservation	Pre-project Wetlands	Palustrine Emergent	0.03	1:1	0.03	0.03	0.03	0.03	0.03	0.03
Upland Buffer	100-foot wide upland perimeter	N/A	10.98	5:1	2.2	0.0	2.66	2.66	2.66	2.66
	Totals		40.6		29.63	0.5	7.02	11.00	11.04	11.31

Wildlife — Nineteen bird species were identified in 2020. Seven of the eight 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) and house wrens (Troglodytes aedon). In addition to the 19 bird species, two white-tailed deer (Odocoileus virginianus), one white-tailed jack rabbit (Lepus townsendii), one eastern fox squirrel (Sciurus niger) were observed at the site. Few racoon (Procyon lotor) tracks and the smell of a striped skunk (Mephitis mephitis) were also noted at the site in 2020 (Appendix B).

Maps, Plans, Photos

Site Location Map



Project Area Maps/Figures: See Appendix A

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

Photos: See Appendix C

Plans: See Appendix D of 2016 Monitoring Report

https://www.mdt.mt.gov/other/webdata/external/planning/wetlands/2016 REPORTS/JTX Tunnicliff.P DF

Conclusions

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

1. Hydrophytic vegetation achieving a minimum overall vegetation cover of 80 percent in monitored wetland areas within 5 years after site construction

Hydrophytic vegetative cover development continues to trend positively toward meeting this performance standard. No remedial actions are recommended at this time.

2. Woody plants exceed 50 percent survival after 5 years.

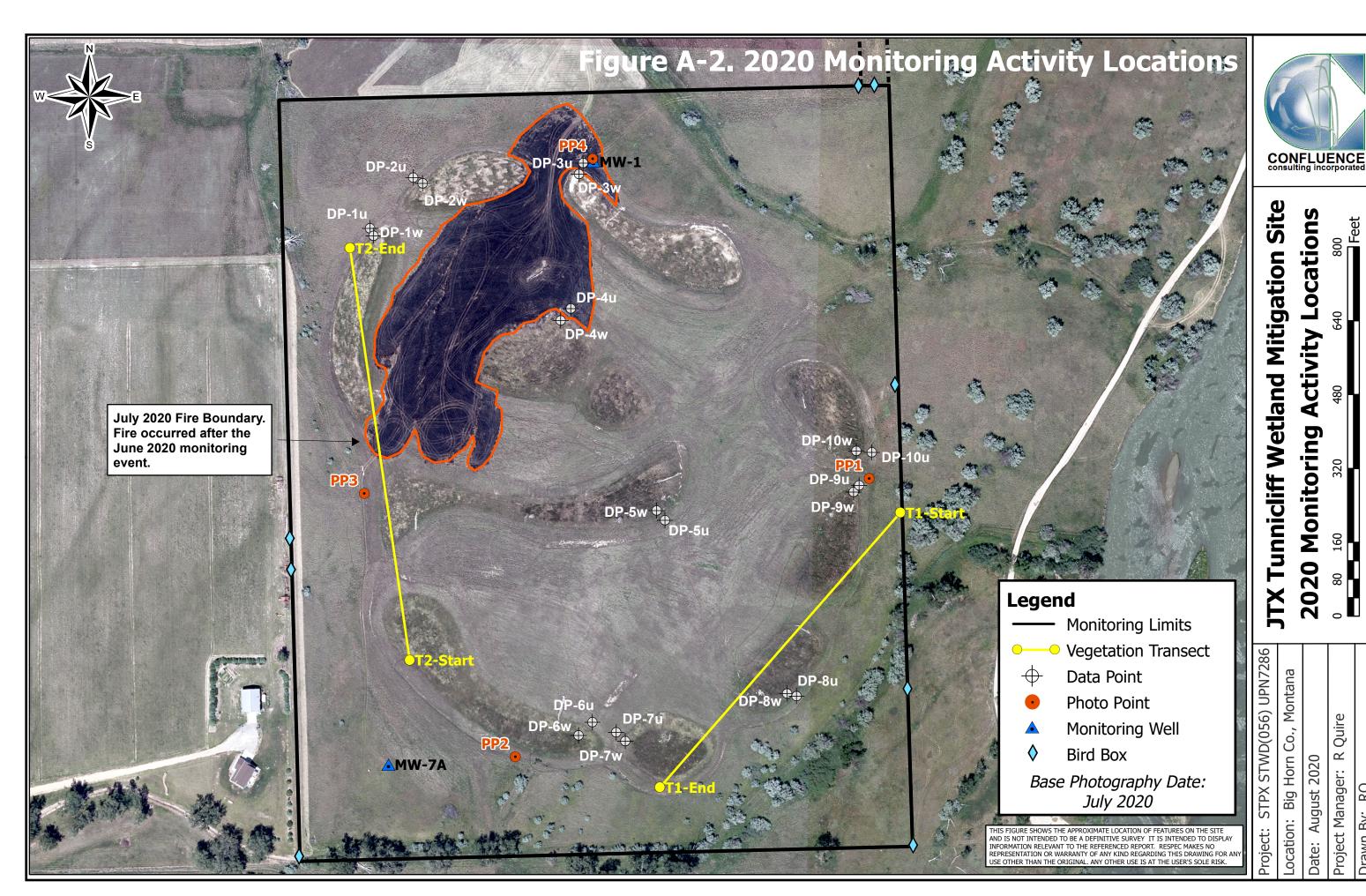
Woody plantings survival is not trending toward meeting this performance standard. MDT's staff botanist will be consulted to determine if remedial action is necessary.

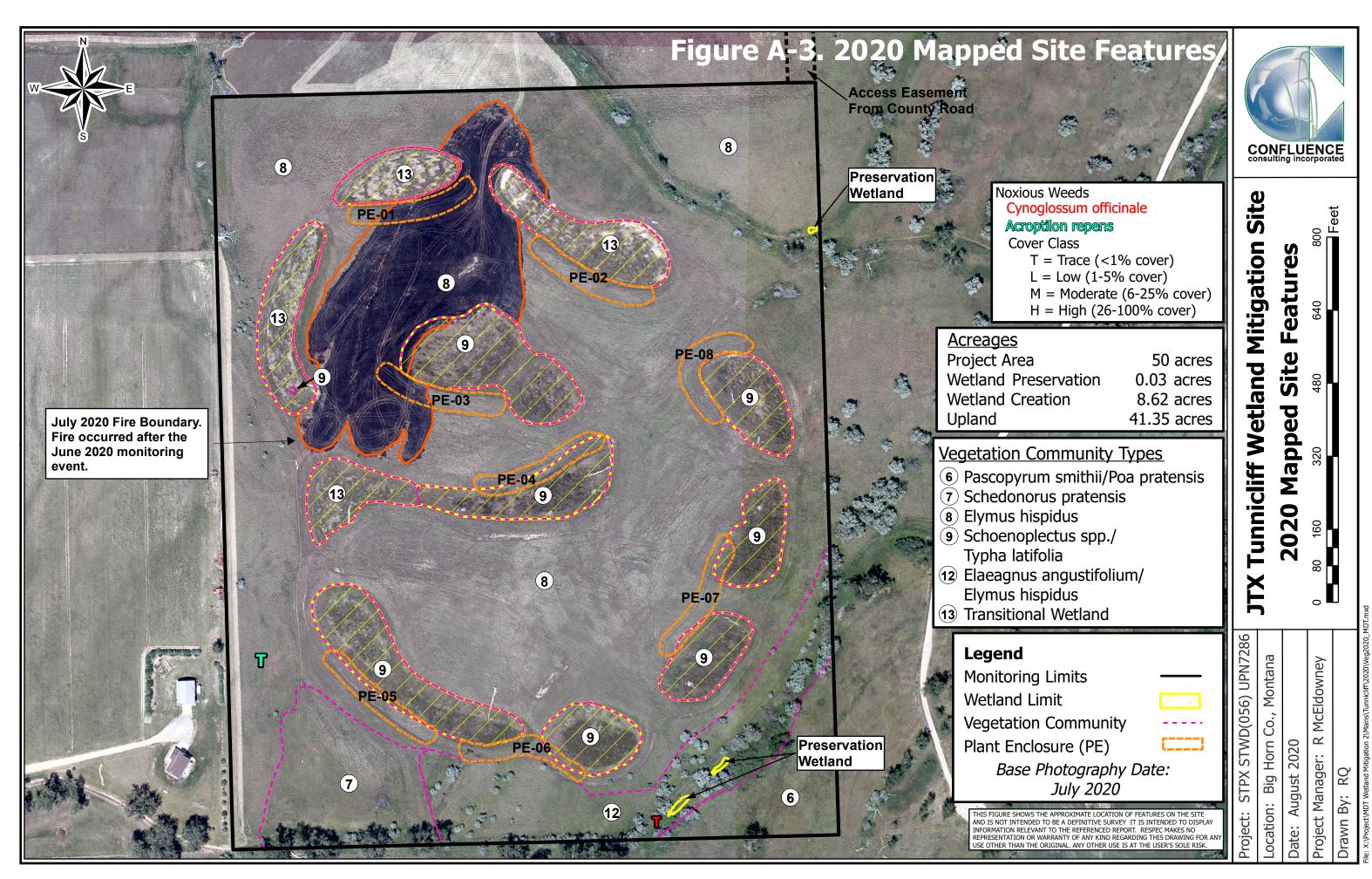
References

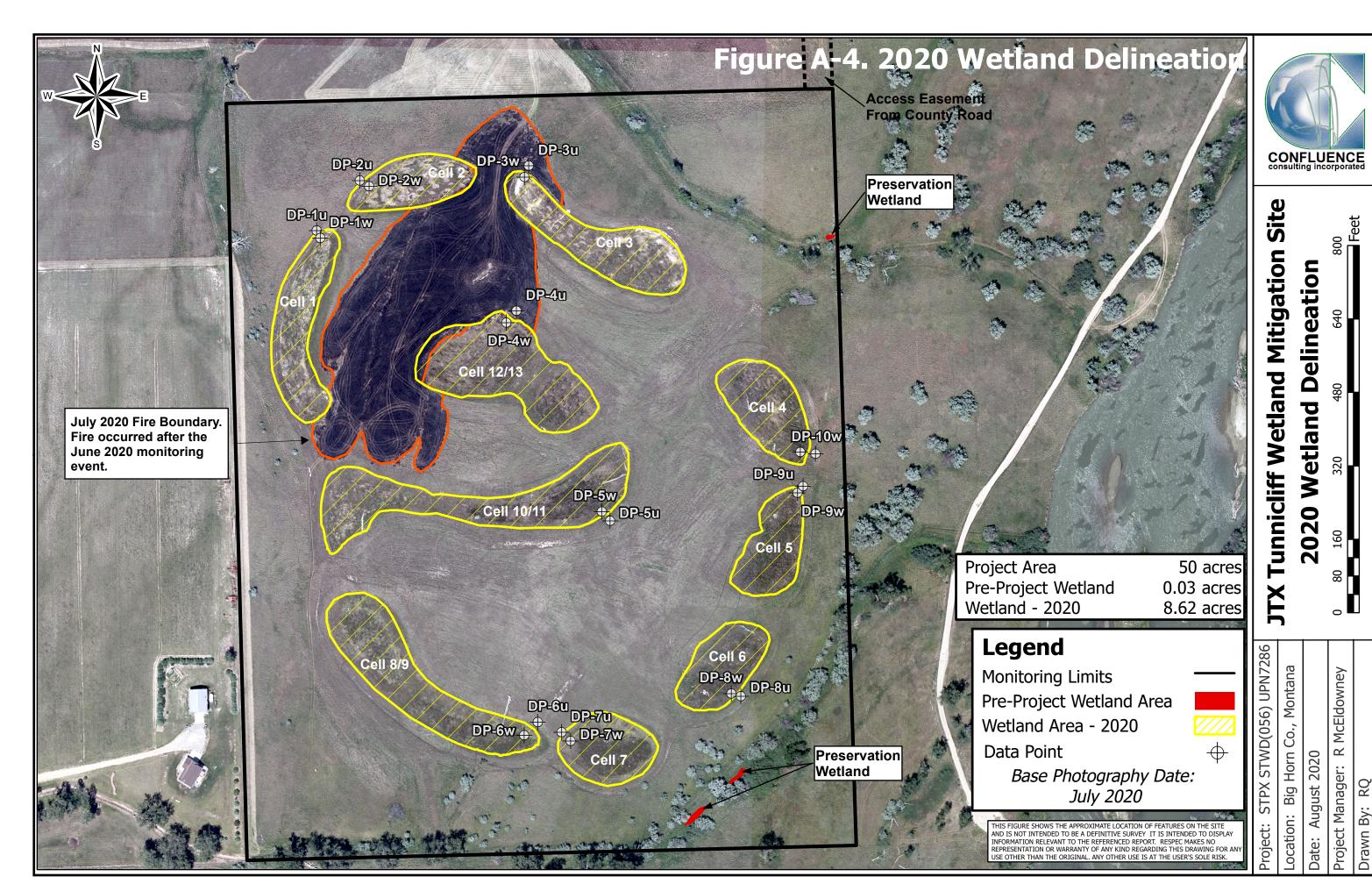
- Berglund, J. and R. McEldowney. 2008. MDT Montana Wetland Assessment Method, PBS&J Project B43072.00, prepared by Post, Buckley, Schuh, & Jernigan, Helena, MT, for the Montana Department of Transportation, Helena, MT.
- **Environmental Laboratory.** 1987. *Corps of Engineers Wetlands Delineation Manual*. U.S. Army Corps of Engineers. Washington, DC.
- **Federal Geographic Data Committee (FGDC).** 2013. *Classification of wetlands and deepwater habitats of the United States*. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC.
- **Lesica, P.** 2012. *Manual of Montana Vascular Plants,* Brit Press, Fort Worth, TX.
- Montana Natural Heritage Program. 2020. Montana Species of Concern Report. Montana Natural Heritage Program. Accessed on 1 October 2020 at http://mtnhp.org/SpeciesOfConcern/?AorP=p
- Natural Resources Conservation Service (NRCS). 2006. Soil Survey (SSURGO) Database for [Big Horn County Area, Montana]. Accessed on 2 August 2020 at http://websoilsurvey.nrcs.usda.gov/
- Natural Resources Conservation Service (NRCS). 2018. Field Indicators of Hydric Soils in the United States, Version 8.2. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils. 55 p.
- Smith, R. D., A. Ammann, C. Bartoldus, and M. M. Brinson. 1995. An Approach for Assessing Wetland Functions Using Hydrogeomorphic Classification, Reference Wetlands, and Functional Indices, prepared by U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, Mississippi, for U.S. Army Corps of Engineers, Washington, DC.
- **US Army Corps of Engineers (USACE).** 2005. *Montana Mitigation Information*. Accessed on 10 October 2016 at http://www.nwo.usace.army.mil/Missions/Regulatory-Program/Montana/Mitigation/
- **U.S. Army Corps of Engineers (USACE).** 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0), prepared by U.S. Army Corps of Engineers, U.S. Army Engineer Research and Development Center, Environmental Laboratory, Vicksburg, MS.
- U.S. Army Corps of Engineers (USACE). 2018. *National Wetland Plant List (Version 3.4),* prepared by U.S. Army Corps of Engineers, U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH.
- **U.S. Fish and Wildlife Service (USFWS).** 2020. *IPaC Resource List*. Environmental Conservation Online System (ECOS). Accessed on 1 October 2020 at https://ecos.fws.gov/ipac/
- **U.S. Geological Survey (USGS).** 2020. Annual Summary of Data Collected at Mitigation Areas, April September 2020. Prepared for Montana Department of Transportation by Sean Lawlor and August Schultz, U.S. Geological Survey, Wyoming-Montana Water Science Center, October 22, 2020.

APPENDIX A PROJECT AREA MAPS

MDT Wetland Mitigation Monitoring JTX – Tunnicliff Ranch Big Horn County, Montana







APPENDIX B MONITORING FORMS

MDT Wetland Mitigation Monitoring JTX – Tunnicliff Ranch Big Horn County, Montana

MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: <u>J</u>	TX-Tunnicliff	Assessment Date/Time	6/9/2020
Person(s) cond	lucting the assessment: R C	Quire, S Weyant	
Weather: Sunn	ıy, breezy, 70 degrees	Location: Hardin	
MDT District: E	Billings	_Milepost:	
Legal Descripti	on: T <u>1N</u> R <u>33E</u> Section	n(s) 15	
Initial Evaluatio	on Date <u>: 6/15/2016</u> Mor	nitoring Year: <u>5_</u> #Visits in Year: <u>1</u>	
Size of Evaluat	tion Area:50 (acres)		
	unding wetland:		
Rural agricultu	ıral, residential, Grant Mars	sh Wildlife Management Area, and Big I	Horn River Floodplain.
	Н	IYDROLOGY	
Surface Water Sou	rce: Groundwater		
Inundation: 🔽	Average Depth: _	0.1 (ft) Range of Depths: 0.1-0.3	(ft)
Percent of assessm	nent area under inundation:	<u>5 %</u>	
Depth at emergent	vegetation-open water boun	ndary: <u>0.1 (ft)</u>	
If assessment area	is not inundated then are the	e soils saturated within 12 inches of surface	ce: Yes
Other evidence of h	nydrology on the site (ex. – d	drift lines, erosion, stained vegetation, etc <u>:</u>	
Very shallow stan	ding water observed in mo	st of the excavated wetland cells, althou ace observed in all excavated wetland c	•
Groundwater M	lonitoring Wells		
Record depth of	water surface below grour	nd surface, in feet.	
Well ID	Water Surface Depth (ft)		
1	5.6		
7A	5.94		
Additional Activities Che	ecklist:		
	egetation-open water boundary on a	aerial photograph.	
	_	it and look for evidence of past surface water	
•	rosion, vegetation staining, etc.)	ations if present	
Hydrology Notes:	⁄ey groundwater monitoring well loca	ations, ii present.	
monitoring event. shallow standing	Both depths are Below La	readings on 6/16/2020 which was five da and Surface (BLS). This groundwater levex excavated wetland cells and saturation to water.	el equated to

VEGETATION COMMUNITIES

Site _JTX-Tunnicliff

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

Species	Cover class	Species	Cover class	
Community #	o Community Type:	Pascopyrum smilim / Poa praterisis	Acres:	1.44

Species	Cover class	Species	Cover class	
Acroptilon repens	0	Bromus inermis	3	
Bromus japonicus	1	Elymus hispidus	1	
Galium aparine	1	Pascopyrum smithii	4	
Poa pratensis	4	Sisymbrium altissimum	0	
Comments:				

Grass dominated upland plant community observed in the SE corner of the site.

Community # 7 Community Type: Schedonorus pratensis / Acres: 2.19

Species	Cover class	Species	Cover class
Arctium lappa	0	Bromus inermis	1
Bromus japonicus	1	Dactylis glomerata	1
Elaeagnus angustifolia	0	Elymus hispidus	1
Glycyrrhiza lepidota	0	Medicago sativa	0
Melilotus officinalis	0	Poa pratensis	1
Schedonorus pratensis	5	Sisymbrium altissimum	1
Comments:			

Grass dominated upland plant community observed in the SW portion of the site.

Community # 8 Community Type: Elymus hispidus / Acres: 34.43

Species	Cover class	Species	Cover class
Acroptilon repens	0	Asclepias speciosa	0
Bare Ground	0	Bromus inermis	1
Bromus japonicus	1	Bromus tectorum	1
Chenopodium album	1	Convolvulus arvensis	1
Elymus hispidus	5	Elymus repens	1
Galium aparine	1	Glycyrrhiza lepidota	1
Hordeum jubatum	0	lva axillaris	1
Lepidium perfoliatum	1	Medicago lupulina	1
Medicago sativa	1	Melilotus officinalis	0
Poa pratensis	1	Schedonorus pratensis	1
Sisymbrium altissimum	1	Sporobolus airoides	0
Taraxacum officinale	1	Thinopyrum ponticum	2
Comments:			
Upland plant community ob	served throughout the m	ajority of the mitigation site.	

Community #	9	Community Type:	Schoenoplectus spp. / Typha latifolia	Acres:	5.77
-------------	---	-----------------	---------------------------------------	--------	------

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	1	Bare Ground	1
Beckmannia syzigachne	0	Chenopodium album	0
Chenopodium rubrum	0	Cirsium arvense	0
Distichlis spicata	1	Eleocharis palustris	0
Elymus hispidus	0	Elymus repens	1
Hordeum jubatum	1	Juncus balticus	1
Open Water	2	Rumex crispus	0
Schoenoplectus acutus	1	Schoenoplectus americanus	0
Schoenoplectus maritimus	2	Schoenoplectus pungens	1
Typha angustifolia	3	Typha latifolia	4
Xanthium strumarium	0		
Comments:			

Comments:

CT-9 is a PEM wetland community.

Community # 12 Community Type: Elaeagnus angustifolia / Elymus hispidus Acres: 3.46

Species	Cover class	Species	Cover class
Acroptilon repens	0	Alopecurus arundinaceus	2
Bromus inermis	2	Carex sp.	1
Cynoglossum officinale	1	Echinocystis lobata	1
Elaeagnus angustifolia	3	Elymus hispidus	4
Fraxinus pennsylvanica	1	Salix fragilis	0
Shepherdia argentea	2	Symphoricarpos albus	1
Thinopyrum ponticum	1		

Comments:

Upland plant community located in the southern portion of project area; species and cover consistent with 2019

Community # 13 Community Type: Transitional Wetland / Acres: 2.85

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	1	Bare Ground	3
Distichlis spicata	1	Elymus repens	2
Hordeum jubatum	3	Open Water	2
Puccinellia nuttalliana	2	Rumex crispus	0
Schoenoplectus acutus	1	Schoenoplectus maritimus	1
Schoenoplectus pungens	1	Typha angustifolia	1
Typha latifolia	1		

Comments:

Species composition and cover are in transition and differ from 2019, wetland vegetation community is still developing, with less upland grasses observed, and overall dominated by hydrophytic species. PEM wetland community.

Total Vegetation Community Acreage

50.14

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

VEGETATION TRANSECTS

JTX-Tunnicliff		Da	te:	6/9/2020
Transect Number: 1		_ Compass D	irection from Start: 20	<u>00</u> °
Interval Data:				
Ending Station	150	Community Type:	Elymus hispidus /	
Species		Cover class	Species	Cover class
Bare Ground		0	Bromus inermis	1
Convolvulus arvensis		0	Elymus hispidus	5
Galium aparine		0	Melilotus officinalis	1
Poa pratensis		2	Schedonorus pratensis	1
Sisymbrium altissimum		0	Taraxacum officinale	0
Thinopyrum ponticum		1		
Ending Station	234	Community Type:	Schoenoplectus spp. / Typha	a latifolia
Species		Cover class	Species	Cover class
Alopecurus arundinaceus		1	Bare Ground	1
Cirsium arvense		0	Eleocharis palustris	0
Hordeum jubatum		1	Juncus balticus	1
Schoenoplectus maritimus	3	1	Typha angustifolia	1
Typha latifolia		5		
Ending Station	325	Community Type:	Elymus hispidus /	
Species		Cover class	Species	Cover class
Bromus japonicus		0	Elymus hispidus	5
Medicago sativa		0	Melilotus officinalis	0
Poa pratensis		0	Schedonorus pratensis	1
Thinopyrum ponticum		2		
Ending Station	549	Community Type:	Schoenoplectus spp. / Typha	a latifolia
Species		Cover class	Species	Cover class
Alopecurus arundinaceus		1	Bare Ground	1
Chenopodium rubrum		0	Elymus hispidus	0
Hordeum jubatum		1	Juncus balticus	0
Schoenoplectus acutus		3	Schoenoplectus maritimus	3
Typha angustifolia		1	Typha latifolia	4
Xanthium strumarium		0		

Ending Station	638 Community Type:	Elymus hispidus /

Species	Cover class	Species	Cover class
Bare Ground	1	Bromus inermis	0
Elymus hispidus	4	Hordeum jubatum	1
Medicago lupulina	0	Melilotus officinalis	0
Poa pratensis	0	Schedonorus pratensis	1
Sisymbrium altissimum	0	Taraxacum officinale	0
Thinopyrum ponticum	4		

Ending Station 792 Community Type: Schoenoplectus spp. / Typha latifolia

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	1	Bare Ground	1
Elymus repens	0	Hordeum jubatum	3
Juncus balticus	1	Schoenoplectus acutus	1
Schoenoplectus maritimus	5	Typha angustifolia	1
Typha latifolia	1		

Transect Notes:

Total vegetation cover remained consistent at 95% cover from 2019 to 2020.

Interval Data: 130 Community Type: Schoenoplectus spp. / Typha latifolia **Ending Station Cover class Cover class Species Species** Alopecurus arundinaceus 1 1 Bare Ground Chenopodium rubrum 0 1 Elymus repens 3 0 Hordeum jubatum Open Water 0 1 Rumex crispus Schoenoplectus acutus Schoenoplectus maritimus 4 Typha angustifolia 1 Typha latifolia 3 255 Community Type: Elymus hispidus / **Ending Station Species** Cover class **Species** Cover class Bare Ground 1 Bromus arvensis Elymus hispidus 5 Hordeum jubatum 1 Sisymbrium altissimum O Thinopyrum ponticum 2 400 Community Type: Transitional Wetland / **Ending Station Species Cover class Species Cover class** Alopecurus arundinaceus 1 Bare Ground 3 2 Elymus repens Hordeum jubatum 4 Open Water 0 Puccinellia nuttalliana 1 Schoenoplectus acutus 1 Schoenoplectus maritimus 0 Schoenoplectus pungens 535 Community Type: Elymus hispidus / **Ending Station Species** Cover class Cover class **Species** Bare Ground 1 Chenopodium album 0 5 Elymus hispidus Elymus repens 1 2 Thinopyrum ponticum **Ending Station** Transitional Wetland / 875 Community Type: **Species** Cover class Cover class **Species** Bare Ground 1 Distichlis spicata 1 Hordeum jubatum 3 Elymus repens 1 1 Open Water 1 Puccinellia nuttalliana 0 Schoenoplectus maritimus 3 Rumex crispus 1 Schoenoplectus pungens 1 Typha angustifolia 3 Typha latifolia

Compass Direction from Start: 330°

Transect Number: 2

Ending Station 900 Community Type: Elymus hispidus /

Species	Cover class	Species	Cover class			
Bare Ground	1	Bromus japonicus	1			
Chenopodium album	0	Elymus hispidus	5			
Lepidium perfoliatum	0	Sisymbrium altissimum	0			
Thinopyrum ponticum	2					

Transect Notes:

The transect no longer contains open water transitional wetland; the transitional wetland habitat (CT 13) is now dominated by hydrophytic plant species and is developing into a more established hydrophytic plant community. Eleven new species observed along transect in 2020.

PLANTED WOODY VEGETATION SURVIVAL

JTX-Tunnicliff

Planting Type	#Planted	#Alive Notes
PA-1	0	Whole PA: grass and weedy forb competition and lack of woody veg
PA-2	0	0 Whole PA: grass and weedy forb competition and lack of woody veg
PA-3	0	0 Whole PA: grass and weedy forb competition and lack of woody veg
PA-4	1	8 1 planted and 6 volunteer silver buffalo berry . 1 voluntee Wood's rose
PA-5	0	16 3 volunteer russian olive, 12 volunteer chokecherry
PA-6	16	75 10 planted cottonwood, 6 planted/ 6 vol silver buffalo berry, 14 vol chokecherry, 3 vol wood's rose, ~36 vol russian olive
PA-7	0	1 1 vol russian olive
PA-8	3	9 2 planted silver buffalo berry, 1 planted chokecherry, 6 volunteer Russian olive
Total Live	20	109 <2% Survival (of original 1650 planted)

Comments

1,650 containerized woody plants were installed in the 8 planting areas. All plantings were in 1 gallon containers except for cottonwood which were in 5 gallon containers. Grasses out-competed virtually all plantings. Volunteer Russian olives are showing up across the site, including several in PE-6. In PE-6, many woody shrubs are emerging - this planting area is more diverses than indicated in previous years. Fencing at PE-1 east of the entrance gate is sagging and needs to be fixed. Fence on NW end of PE-5 is sagging and appears to have been cut through and needs replaced.

JTX-Tunnicliff

WILDLIFE

Birds					
Were man-ma	ade nesting st	tructures install	ed? Yes		
If yes, type of	structure: Bir	d boxes			
How many?	8	_			

Are the nesting structures being used? Yes

Do the nesting structures need repairs? Yes

Nesting Structure Comments:

One box was observed in use by a tree swallow. Seven boxes were full of material that may b in use, or are from previous years. One box on the west fenceline that was noted as damaged in 2019 was absent from the site in 2020.

Species	#Observed	Behavior	Habitat
American Robin	1	L	
Black-capped Chickade	ee		
Brewer's Blackbird			
Brown Thrasher			
Grasshopper Sparrow			
House Wren			
Killdeer	3	F, FO, N	
Mallard	2	BP	
Marsh Wren			
Meadowlark	5	L	
Northern Flicker			
Red-winged Blackbird	50	F, FO, L	MA, OW, UP, WM
Ring-necked Pheasant	3	F	
Say's Phoebe			
Song Sparrow			
Spotted Towhee			
Starling			
Tree Swallow	1	N	
Yellow Warbler	1	FO	
Bird Comments			
MDT supplemented bird list	t during their site	visit on 6/09/20.	

B-9

BEHAVIOR CODES

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

HABITAT CODES

 ${f AB}$ = Aquatic bed ${f SS}$ = Scrub/Shrub ${f FO}$ = Forested ${f UP}$ = Upland buffer ${f I}$ = Island

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

Mammals and Herptiles

Species	# Observed	Tracks	Scat	Burrows	Comments
Eastern Fox Squirrel	1	No	No	No No	
Raccoon		Yes	No	No No	
Striped Skunk		No	No	No No	Smelled.
White-tailed Deer	2	Yes	Yes	No No	
White-tailed Jack Rabbit	1	No	No	No No	
Wildlife Comments:					

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
PP 1, Photo 2:	45.83945617	-107.5966157	270	PP-1
PP 1, Photo 3:	45.83945617	-107.5966157	220	PP-1
PP 2, Photo 1:	45.83785325	-107.5996803	315	PP-2
PP 2, Photo 2:	45.83785325	-107.5996803	0	PP-2
PP 2, Photo 3:	45.83785325	-107.5996803	45	PP-2
PP 3, Photo 1:	45.83943906	-107.6009084	140	PP-3
PP 3, Photo 2:	45.83943906	-107.6009084	100	PP-3
PP 3, Photo 3:	45.83943906	-107.6009084	45	PP-3
PP 4, Photo 1:	45.84139478	-107.5988983	105	PP-4
PP 4, Photo 2	45.84139478	-107.5988983	160	PP-4
PP 4, Photo 3	45.84139478	-107.5988983	240	PP-4
PP1, Photo 1:	45.83945617	-107.5966157	320	PP-1
Transect 1 end	45.83765226	-107.5984577	50	T-1 end
Transect 1 start	:: 45.8392488	-107.5963573	200	T-1 start
Transect 2 end	45.84089981	-107.6009804	160	T-2 end
Transect 2 start	:: 45.83844422	-107.6005579	330	T-2 start
Upland pit #1:	45.841015	-107.600806		DP-1u
Upland pit #10	45.839612	-107.596589		DP-10u
Upland pit #2:	45.841309	-107.600427		DP-2u
Upland pit #3	45.841372	-107.598981		DP-3u
Upland pit #4	45.840508	-107.599115		DP-4u
Upland pit #5	45.839239	-107.598359		DP-5u
Upland pit #6	45.838049	-107.599017		DP-6u
Upland pit #7	45.837984	-107.598817		DP-7u
Upland pit #8	45.838173	-107.597277	B-12	DP-8u 2

Upland pit #9	45.839419	-107.596701	DP-9u
Wetland pit #1:	45.84097	-107.600776	DP-1w
Wetland pit #10	45.839622	-107.596719	DP-10w
Wetland pit #2:	45.841273	-107.600349	DP-2w
Wetland pit #3	45.841307	-107.599018	DP-3w
Wetland pit #4	45.840439	-107.599205	DP-4w
Wetland pit #5	45.839297	-107.598427	DP-5w
Wetland pit #6	45.837972	-107.599137	DP-6w
Wetland pit #7	45.837932	-107.598741	DP-7w
Wetland pit #8	45.838191	-107.597357	DP-8w
Wetland pit #9	45.839379	-107.596751	DP-9w

Comments:

ADDITIONAL ITEMS CHECKLIST

Hydrology Map emergent vegetation/open water boundary on aerial photos. **V** Observe extent of surface water. Look for evidence of past surface water elevations (e.g. drift lines, vegetation staining, erosion, etc). **Photos V** One photo from the wetland toward each of the four cardinal directions **V** 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 Wetland boundaries for the excavated wetland cells correlate with the vegetation community boundaries. **Functional Assessments** Complete and attach full MDT Montana Wetland Assessment Method field forms. **Functional Assessment Comments:** Category III wetland, 50.9 functional units

Maintenance

Were man-made nesting structures installed at this site?

Yes

If yes, do they need to be reaired?

If yes,	describe the pro	blems below ar	nd indicate if any	/ actions were	taken to remed	dy the problems.
---------	------------------	----------------	--------------------	----------------	----------------	------------------

Were man-made structures built or installed to impound water or control waterflow into or out of the wetland? $$_{\rm No}$$

If yes, are the structures in need of repair

See 2020 notes on fence and bird box repairs needed.	

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: JTX Tunnicliff	City/County: Big Horn		Sampling Date:	6/10/2	2020
Applicant/Owner: MDT		_ _{State:} <u>Montana</u>	Sampling Point	.: DP01u	
Investigator(s): R Quire, S Robbins	Section, Township, Range:	34 7N	391	E	
Landform (hillslope, terrace, etc.): Depression					5
Subregion (LRR): LRR G Lat: Lat: Soil Map Unit Name: Hh: Haverson and Lohmiller soils, wet		NWI classific	ation: Not Map	ped	
Are climatic / hydrologic conditions on the site typical for this time of y	ear? Yes 🗸 No 🗌	(If no explain in R	emarks)		
Are Vegetation, Soil, or Hydrology significantl				✓ No	
Are Vegetation, Soil, or Hydrology naturally p	roblematic? (If needed	A evolain any answe	re in Remarke)	110 _	
SUMMARY OF FINDINGS – Attach site map showin				features,	etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Remarks: Upland sample point upslope of DP-1w and at edge	within a Wetland?	Yes] No_ ☑		
VEGETATION - Use scientific names of plants					
Tree Stratum Plot size (30 Foot Radius) Absolute Domial		ominance Test wor	ksheet		
Tree Stratum Plot size (30 Foot Radius) % Cover: Specie	N	umber of Dominant s at are OBL, FACW o		0 (A)	
		otal Number of Domi pecies Across All Str		2 (B)	
Sapling/Shrub Stratum Plot size (15 Foot Radius)		ercent of Dominant S hat Are OBL, FACW		0.0 % (A/E	B)
,	P	revalence Index wo			
	-	Total % Cover of BL species	f: <u>N</u> 0 X1	Multiply by: 0	_
		ACW species	0 X 1 0 X 2	0	1
		AC species	0 X3	0	j
Herbaceous Stratum Plot size (5 Foot Radius)		ACU species	0 X4	0	
Bromus inermis 5	UPL	PL species	85 X5	425	
Elymus hispidus 50 🔽	UPL C	olumn Totals 8	35 (A)	425	(B)
Thinopyrum ponticum 30 🔽	UPL	Prevalence Index	c = B/A =	5.00)
	Н	ydrophytic Vegetati	ion Indicators		
		1 - Rapid Test	for Hydrophytic	Vegetation	
		2 - Dominance	Test is >50%		
		3 - Prevalence	Index is <= 3.0		
			cal Adaptations a in remarks or o	`	;
			on-Vascular Plan	nte	
					-:-\
Woody Vine Stratum Plot size (30 Foot Radius)		□ Problematic ну icators of hydric sil a sent, unless disturbe		ology must l	be
Percent Bare Ground 15	н	ydrophytic Vegetati resent?		_	<u>√</u>
Remarks:	<u> `</u>				
BG/litter=15%. Upland grass community.					

SOIL Sampling Point: DP01u

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist) % Type ¹	Loc ²	Texture	Remarks
0-15	_10YR3/2	100_		Sandy	Clay Loam	1 _
		<u> </u>				
						
		·				
Type: C=C	oncentration D=Den	letion RM=Re	duced Matrix, CS=Covered or Coated	Sand Grain	ns ² l oc	cation: PL=Pore Lining, M=Matrix.
			Rs, unless otherwise noted.)	Touria Oraii		for Problematic Hydric Soils ³ :
Histosol			Sandy Gleyed Matrix (S4)			/luck (A9) (LRR I, J)
_	pipedon (A2)		Sandy Redox (S5)			Prairie Redox (A16) (LRR F, G, H)
	istic (A3)		Stripped Matrix (S6)			Surface (S7) (LRR G)
Hydroge	en Sulfide (A4)		Loamy Mucky Mineral (F1)		High P	lains Depressions (F16)
Stratifie	d Layers (A5) (LRR F	=)	Loamy Gleyed Matrix (F2)		(LR	RR H outside of MLRA 72 & 73)
_	uck (A9) (LRR F, G, I	-	Depleted Matrix (F3)			ed Vertic (F18)
_	d Below Dark Surfac	e (A11)	Redox Dark Surface (F6)			arent Material (TF2)
	ark Surface (A12)		Depleted Dark Surface (F7)			hallow Dark Surface (TF12)
	Mucky Mineral (S1) Mucky Peat or Peat (92) /I DD G H	Redox Depressions (F8) High Plains Depressions (F10)	6)		(Explain in Remarks) of hydrophytic vegetation and
	ucky Peat or Peat (S		(MLRA 72 & 73 of LRR I			d hydrology must be present,
	acity i cut of i cut (ct	s) (_ 1,	(11111111111111111111111111111111111111	••)		disturbed or problematic.
Restrictive	Layer (if present):					
	,					
Depth (in			-		Hydric Soil	Present? Yes No
	o hydric soil indica	toro observa	d during aita viait			
rtomanto. N	o flydio soli ilidica	ilors observe	d during site visit.			
YDROLO)GY					
Wetland Hy	drology Indicators:					
Primary Indi	cators (minimum of o	ne required; ch	neck all that apply)		Seconda	ary Indicators (minimum of two required)
Surface	Water (A1)		Salt Crust (B11)		Surf	ace Soil Cracks (B6)
High Wa	ater Table (A2)		Aquatic Invertebrates (B13)		Spa	rsely Vegetated Concave Surface (B8)
Saturati	on (A3)		Hydrogen Sulfide Odor (C1)		Drai	nage Patterns (B10)
Water M	larks (B1)		Dry-Season Water Table (C2)		Oxio	dized Rhizospheres on Living Roots (C3
Sedime	nt Deposits (B2)		Oxidized Rhizospheres on Livin	ng Roots (C	3) (w	here tilled)
Drift De	posits (B3)		(where not tilled)		Cray	yfish Burrows (C8)
🗌 Algal Ma	at or Crust (B4)		Presence of Reduced Iron (C4)		Satu	uration Visible on Aerial Imagery (C9)
🔃 Iron De	oosits (B5)		Thin Muck Surface (C7)		Geo	morphic Position (D2)
Inundati	ion Visible on Aerial I	magery (B7)	Other (Explain in Remarks)		FAC	C-Neutral Test (D5)
Water-S	Stained Leaves (B9)				Fros	st-Heave Hummocks (D7) (LRR F)
ield Obser	vations:					
Surface Wat	ter Present? Y	es 🖳 No 🏻	Depth (inches):	_		
<i>N</i> ater Table	Present? Y	es 🔲 No	✓ Depth (inches):			
Saturation P			✓ Depth (inches):	_ Wetlan	d Hydrolog	y Present? Yes No
	pillary fringe) corded Data (stream	gauge, monito	ring well, aerial photos, previous insp	ections), if a	available:	
	· · · · · · · · · · · · · · · · · · ·	5 5 ,	, , , , , , , , , , , , , , , , , , , ,	/,		
Remarks:	- Invaluate 1 1 1 1	4 l.	1 4			
Volliains. M	o nyarologic indica	tors observed	d during site visit. Soil slightly moi	ISť.		

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: JTX Tunnicliff	City/County: Big Horn		Sampling D	_{ate} . 6/10/2020
Applicant/Owner: MDT				
Investigator(s): R Quire, S Robbins				39E
Landform (hillslope, terrace, etc.): Depression				Slone (%):
Subregion (LRR): LRR G Lat:				
	40.04001 E0116			
Are climatic / hydrologic conditions on the site typical for this time of ye				<u>appou</u>
Are Vegetation, Soil, or Hydrology significantly	disturbed? Are "Norma			s No
Are Vegetation, Soil, or Hydrology naturally pro	blematic? (If needed,	explain any ar	nswers in Remark	s.)
SUMMARY OF FINDINGS – Attach site map showing	sampling point locati	ons, transe	ects, importar	nt features, etc.
Hydrophytic Vegetation Present? Yes ✓ No Hydric Soil Present? Yes ✓ No ✓	Is the Sampled Area			٦
Wetland Hydrology Present? Yes ✓ No □	within a Wetland?	Yes_	✓ No _	<u></u>
Remarks: PEM depressional wetland in Cell 1.				
·				
VEGETATION - Use scientific names of plants				
Trac Strature Plat size (20 Feet Padius) Absolute Domiant	1 100	minance Test	worksheet	
<u>Iree Stratum</u> Plot Size (30 Pool Radius) % Cover: Species	Nui	mber of Domin t are OBL, FA0	nant Species CW or FAC:	2 _(A)
		al Number of I		2 _(B)
Continue/Observe Chrotises Districts (45 Foot Positive)		rcent of Domin at Are OBL, FA		100.0 % (A/B)
Sapling/Shrub Stratum Plot size (15 Foot Radius)	Pre	evalence Inde	x worksheet	
	_	Total % Cov		Multiply by:
		L species	15 X 1	15
		CW species C species	20 X2 5 X3	40
		C species CU species	5 X 4	15 20
Herbaceous Stratum Plot size (5 Foot Radius)	UP	L species	0 X5	0
Chenopodium glaucum 5	FAC	lumn Totals	45 (A)	90 (B)
Elymus repens 5 ☐ Hordeum jubatum 20 ✔	FACU Col	_		
Puccinellia nuttalliana 2	OBI		ndex = B/A =	2.00
Schoenoplectus pungens 3	Пус		petation Indicator Test for Hydrophy	
Typha angustifolia 10 ✓	OBI	_		
			ance Test is >50%	
		✓ 3 - Preval	ence Index is <= 3	3.0
			ological Adaptatio g data in remarks	
			nd Non-Vascular F	Plants
Woody Vine Stratum Plot size (30 Foot Radius)				egetation (Explain)
	Indic pres	ators of hydric ent, unless dis	sil and wetland h turbed or problem	ydrology must be atic for #3, 4, 5.
Percent Bare Ground 55		drophytic Veg esent?	etation Yes	✓ NO
Remarks:				
BG/litter=55%. Dominance of hydrophytic species.				

SOIL Sampling Point: DP01w

Profile Description: (Describe to the depth ne	Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)					
Depth Matrix	Redox Features					
	olor (moist) % Type ¹ Loc ²	Texture Remarks				
.0-11 _10YR4/2 95_ 7.5Y	R _4/6 5CPL, San	dy Clay Loam _				
-11+		cobbles -				
1		2 21				
¹ Type: C=Concentration, D=Depletion, RM=Red Hydric Soil Indicators: (Applicable to all LRR:		rains. ² Location: PL=Pore Lining, M=Matrix. Indicators for Problematic Hydric Soils ³ :				
Histosol (A1)	Sandy Gleyed Matrix (S4)	1 cm Muck (A9) (LRR I, J)				
Histic Epipedon (A2)	Sandy Gleyed Matrix (34) Sandy Redox (S5)	Coast Prairie Redox (A16) (LRR F, G, H)				
Black Histic (A3)	Stripped Matrix (S6)	Dark Surface (S7) (LRR G)				
✓ Hydrogen Sulfide (A4)	Loamy Mucky Mineral (F1)	High Plains Depressions (F16)				
Stratified Layers (A5) (LRR F)	Loamy Gleyed Matrix (F2)	(LRR H outside of MLRA 72 & 73)				
1 cm Muck (A9) (LRR F, G, H)	Depleted Matrix (F3)	Reduced Vertic (F18)				
Depleted Below Dark Surface (A11)	Redox Dark Surface (F6)	Red Parent Material (TF2)				
☐ Thick Dark Surface (A12)☐ Sandy Mucky Mineral (S1)	Depleted Dark Surface (F7)☐ Redox Depressions (F8)	✓ Very Shallow Dark Surface (TF12)✓ Other (Explain in Remarks)				
2.5 cm Mucky Peat or Peat (S2) (LRR G, H)		³ Indicators of hydrophytic vegetation and				
5 cm Mucky Peat or Peat (S3) (LRR F)	(MLRA 72 & 73 of LRR H)	wetland hydrology must be present,				
		unless disturbed or problematic.				
Restrictive Layer (if present):						
Туре:						
Depth (inches):		Hydric Soil Present? Yes <u>✓</u> No <u></u>				
Remarks: Prominent redoximorphic concent	rations common within the depleted mat	rix.				
HYDROLOGY						
Wetland Hydrology Indicators:						
Primary Indicators (minimum of one required; che	eck all that apply)	Secondary Indicators (minimum of two required)				
Surface Water (A1)	Salt Crust (B11)	Surface Soil Cracks (B6)				
High Water Table (A2)	Aquatic Invertebrates (B13)	Sparsely Vegetated Concave Surface (B8)				
Saturation (A3)	✓ Hydrogen Sulfide Odor (C1)	Drainage Patterns (B10)				
Water Marks (B1)	Dry-Season Water Table (C2)	Oxidized Rhizospheres on Living Roots (C3)				
Sediment Deposits (B2)	Oxidized Rhizospheres on Living Roots	(C3) (where tilled)				
Drift Deposits (B3)	(where not tilled)	Crayfish Burrows (C8)				
Algal Mat or Crust (B4)	Presence of Reduced Iron (C4)	Saturation Visible on Aerial Imagery (C9)				
Iron Deposits (B5)	Thin Muck Surface (C7)	✓ Geomorphic Position (D2)				
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	FAC-Neutral Test (D5)				
Water-Stained Leaves (B9)		Frost-Heave Hummocks (D7) (LRR F)				
Field Observations:	Ponth (inches):					
	Depth (inches):					
	Depth (inches):					
Saturation Present? Yes Ves No (includes capillary fringe)	Depth (inches): 0 Wetl	and Hydrology Present? Yes No				
Describe Recorded Data (stream gauge, monitor	ing well, aerial photos, previous inspections),	if available:				
Remarks: Hydrogen sulfide odor observed ar	nd soil pit was very saturated to surface.					
, J 220. 220. 700 di	, and a summer to summer.					

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: JTX Tunnicliff	City/Co	unty: Big Hor	n	Sampling Date:	6/10/2020
Applicant/Owner: MDT			State: Montana		
Investigator(s): R Quire, S Robbins	Section	, Township, R	ange: 34 7N	39E	
Landform (hillslope, terrace, etc.): Terrace	Local r	elief (concave	convex, none):flat	Slo	pe (%):
Subregion (LRR): LRR G	 Lat:	45.8413	09 Long: -107	 7.600427 _{Datu}	m: NAD 83
Soil Map Unit Name: Hh: Haverson and Lohmiller soils, w			NWI classifica		
Are climatic / hydrologic conditions on the site typical for this til		s 🗸 No	(If no, explain in Re	marks.)	
Are Vegetation, Soil, or Hydrology sign					No 🗆
Are Vegetation, Soil, or Hydrology natu	rally problemati	ic? (If n	seeded evolain any answers	s in Remarks)	110
					-4
SUMMARY OF FINDINGS – Attach site map sh	owing samp	oling point	iocations, transects,	important re	eatures, etc
Hydrophytic Vegetation Present? Yes No _		ls the Sample	d Area		
Hydric Soil Present? Yes No _	<u> </u>		ınd? Yes	No 🔽	_
Wetland Hydrology Present? Yes No_					_
Remarks: Upland sample point upslope of wetland bour	ndary and Cell	2.			
VEGETATION - Use scientific names of plants					
Tree Stratum Plot size (30 Foot Radius) Absolute % Cover:		icator tus	Dominance Test work	sheet	
	•		Number of Dominant S that are OBL, FACW or		0 (A)
			Total Number of Domin Species Across All Stra		1 (B)
Sapling/Shrub Stratum Plot size (15 Foot Radius)			Percent of Dominant Sport That Are OBL, FACW,		.0 % (A/B)
			Prevalence Index wor		
			Total % Cover of: OBL species	0 X 1	ultiply by:
			FACW species	0 X 1	0
			· ·	0 X3	0
Herbaceous Stratum Plot size (5 Foot Radius)			FACU species	0 X4	0
Bromus japonicus 5	□ UPL		UPL species 7	70 X5	350
Bromus tectorum 10	☐ UPL		Column Totals 70	0 (A)	350 (B)
Elymus hispidus 45	✓ UPL		Prevalence Index	= B/A =	5.00
Thinopyrum ponticum 10	UPL		Hydrophytic Vegetation		
			1 1 7 — 1 7	or Hydrophytic V	egetation
			2 - Dominance	Test is >50%	
			3 - Prevalence I		
				al Adaptations (F	Dravida
				in remarks or or	
			sheet.		
			5 - Wetland Nor	n-Vascular Plants	3
			Problematic Hyd	drophytic Vegeta	tion (Explain)
Woody Vine Stratum Plot size (30 Foot Radius)			Indicators of hydric sil an present, unless disturbed		
Percent Bare Ground 30			Hydrophytic Vegetation Present?	Yes 🗌	NO 🗹
Remarks:			1		
BG/litter=30%					

SOIL Sampling Point: DP02u

Profile Des	cription: (Describe	to the depth	needed to document the indicator or	confirm the absence	of indicators.)
Depth (inches)	Matrix Color (moist)	<u></u> %	Redox Features Color (moist) % Type ¹	Loc ² Texture	Remarks
0-16		100_		Clay Loam	
.0 10	_101110/1	100_		Oldy Louin	-
	- ·				
	- <u> </u>				
¹Tvpe: C=C	Concentration, D=De	pletion. RM=Re	educed Matrix, CS=Covered or Coated S	Sand Grains. ² Loc	ation: PL=Pore Lining, M=Matrix.
			Rs, unless otherwise noted.)		for Problematic Hydric Soils ³ :
Histoso	ol (A1)		Sandy Gleyed Matrix (S4)	1 cm M	uck (A9) (LRR I, J)
Histic E	pipedon (A2)		Sandy Redox (S5)	Coast F	Prairie Redox (A16) (LRR F, G, H)
$\overline{}$	listic (A3)		Stripped Matrix (S6)		urface (S7) (LRR G)
	en Sulfide (A4)		Loamy Mucky Mineral (F1)		ains Depressions (F16)
	ed Layers (A5) (LRR	•	Loamy Gleyed Matrix (F2)		R H outside of MLRA 72 & 73) ed Vertic (F18)
	uck (A9) (LRR F, G, ed Below Dark Surfa	-	Depleted Matrix (F3)Redox Dark Surface (F6)	=	rent Material (TF2)
	oark Surface (A12)	(/ /	Depleted Dark Surface (F7)		nallow Dark Surface (TF12)
=	Mucky Mineral (S1)		Redox Depressions (F8)		Explain in Remarks)
_	Mucky Peat or Peat		· — · · · · ·		of hydrophytic vegetation and
5 cm M	ucky Peat or Peat (S	33) (LRR F)	(MLRA 72 & 73 of LRR H)		hydrology must be present,
Postrictivo	Layer (if present):			uniess	disturbed or problematic.
Depth (in	aches):		_	Hydria Sail	Present? Yes No
				Tiyane con	103 105
Nemans. N	no nyaric soli inalc	ators observe	ed during site visit.		
HYDROLC	OGY				
Wetland Hy	drology Indicators	:			
Primary Indi	icators (minimum of	one required; c	heck all that apply)	<u>Seconda</u>	ry Indicators (minimum of two required)
Surface	Water (A1)		Salt Crust (B11)	Surfa	ace Soil Cracks (B6)
High W	ater Table (A2)		Aquatic Invertebrates (B13)	Spar	sely Vegetated Concave Surface (B8)
Saturat	ion (A3)		Hydrogen Sulfide Odor (C1)	Drair	nage Patterns (B10)
_	Marks (B1)		Dry-Season Water Table (C2)		ized Rhizospheres on Living Roots (C3)
	ent Deposits (B2)		Oxidized Rhizospheres on Living		here tilled)
	eposits (B3)		(where not tilled)		fish Burrows (C8)
	lat or Crust (B4)		Presence of Reduced Iron (C4)		ration Visible on Aerial Imagery (C9)
	posits (B5)	Images (D7)	Thin Muck Surface (C7)		morphic Position (D2)
	tion Visible on Aerial Stained Leaves (B9)	iiiagery (B7)	Other (Explain in Remarks)		-Neutral Test (D5) t-Heave Hummocks (D7) (LRR F)
Field Obser	,			<u>1103</u>	Pricave Hummocks (D7) (ERRT)
		Yes □ No	Depth (inches):		
Water Table			Depth (inches):		
Saturation F			Depth (inches):	Wetland Hydrology	Present? Yes No
(includes ca	pillary fringe)				11036Ht: 165 1NU
Describe Re	ecorded Data (strear	n gauge, monit	oring well, aerial photos, previous inspe	ctions), if available:	
Remarks: N	o hydrologic indica	ators observe	d during site visit.		

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: JTX Tunnicliff	City/C	county: Big Horn		Sampling F	_{)ate} . 6/10/2020
Applicant/Owner: MDT					
Investigator(s): R Quire, S Robbins					
Landform (hillslope, terrace, etc.): Depression					
Subregion (LRR): LRR G					
Soil Map Unit Name: Hh: Haverson and Lohmiller soils, w					
Are climatic / hydrologic conditions on the site typical for this t					
Are Vegetation, Soil, or Hydrology sig					s V No 🗆
Are Vegetation, Soil, or Hydrology nat	turally problem	atic? (If needed		nswers in Remark	
SUMMARY OF FINDINGS – Attach site map sl					,
		Is the Sampled Area within a Wetland?		<u>✓</u> No_	<u> </u>
VEGETATION - Use scientific names of plants					
Tree Streeture Plet size (00 Feet Rediive) Absolute	Domiant Ir	ndicator	ominance Test	worksheet	
riot size (30 Poot Radius) % Cover:	Species? S	tatus N	umber of Domin at are OBL, FA0	ant Species	2 (A)
			otal Number of D pecies Across A		2 (B)
Sapling/Shrub Stratum Plot size (15 Foot Radius)		ercent of Domin nat Are OBL, FA		100.0 % (A/B)	
Sapining Giracon Statem.			Prevalence Index worksheet		
		\ -	Total % Cov BL species	ver of: 0 X 1	Multiply by:
			ACW species	60 X2	120
			AC species	2 X3	6
Herbaceous Stratum Plot size (5 Foot Radius)			ACU species	13 X4	52
Alopecurus arundinaceus 25	✓ FAC	CW	PL species	0 X5	0
Chenopodium album 3	FAG	CU	olumn Totals	75 (A)	178 (B)
Chenopodium glaucum 2	FAG	<u> </u>	Prevalence I	ndex = B/A =	2.37
Elymus repens 10	☐ FA		ydrophytic Veg	jetation Indicato	rs
Hordeum jubatum 35	✓ FA(<u>CW</u>	✓ 1 - Rapid	Test for Hydroph	ytic Vegetation
			✓ 2 - Domin	ance Test is >50	%
			✓ 3 - Prevale	ence Index is <=	3.0
				ological Adaptatio g data in remarks	
			5 - Wetland Non-Vascular Plants		
			☐ Problemat	tic Hydrophytic V	egetation (Explain)
Woody Vine Stratum Plot size (30 Foot Radius)			cators of hydric		nydrology must be
Percent Bare Ground 25		H	ydrophytic Veg resent?	otation	NO
Remarks:					
BG/litter=25%					

SOIL Sampling Point: DP02w

Depth	Matrix	0/	Redox Features	Typo ¹ L = - ²	Toytura	Domanica
	olor (moist)	<u>%</u>	Color (moist) %	Type ¹ Loc ²	Texture	Remarks
.0-08 _10\	/R3/1	95_ 7	.5YR _4/6 5_ ₋	_CPL, Sand	dy Clay Loam _	
·08-11 -10\	∕R —3/1	100—		- — Cobbl	y Sandy Loam-	
11+				<u> </u>	Cobbles -	
·						
						
			· · ·			
1Type: C=Concen	tration D-Der	letion PM-	Reduced Matrix, CS=Covered	or Coated Sand Gr	rains ² l ocation:	PL=Pore Lining, M=Matrix.
			RRs, unless otherwise noted			roblematic Hydric Soils ³ :
Histosol (A1)	,		Sandy Gleyed Matr			49) (LRR I, J)
Histic Epipedo	n (A2)		Sandy Redox (S5)	, ,		Redox (A16) (LRR F, G, H)
Black Histic (A	,		Stripped Matrix (S6	•		e (S7) (LRR G)
Hydrogen Sulf			Loamy Mucky Mine		-	Depressions (F16)
Stratified Layer	` , `	•	Loamy Gleyed Mat			utside of MLRA 72 & 73)
1 cm Muck (A			Depleted Matrix (F3		Reduced Ve	-
Depleted Belo Thick Dark Su		e (ATT)	✓ Redox Dark SurfacDepleted Dark Surf	. ,		Material (TF2) / Dark Surface (TF12)
Sandy Mucky	, ,		Redox Depressions			in in Remarks)
2.5 cm Mucky		(S2) (LRR G				rophytic vegetation and
5 cm Mucky P			(MLRA 72 & 73		•	ology must be present,
					unless distur	bed or problematic.
Restrictive Layer	-					
Type:						
Depth (inches):						ent? Yes V No
	om rodoxime	5. p. 110 00110	entrations common within t		ong pere minige.	
HYDROLOGY						
	gy Indicators:	1				
Wetland Hydrolog			check all that apply)		Secondary Ind	icators (minimum of two required
Wetland Hydrolog	(minimum of c		check all that apply) ✓ Salt Crust (B11)		•	icators (minimum of two required
Wetland Hydrolog Primary Indicators	(minimum of c			(B13)	Surface S	•
Wetland Hydrolog Primary Indicators Surface Water	(minimum of c (A1) able (A2)		✓ Salt Crust (B11)	` '	Surface S Sparsely \	oil Cracks (B6)
Wetland Hydrolog Primary Indicators Surface Water High Water Ta	(minimum of control (A1) able (A2)		Salt Crust (B11) Aquatic Invertebrates	or (C1)	Surface S Sparsely \ Drainage	oil Cracks (B6) /egetated Concave Surface (B8)
Wetland Hydrolog Primary Indicators Surface Water High Water Ta Saturation (A3	(minimum of control (Minimum of control (M1)) able (A2) b) B1)		✓ Salt Crust (B11) ☐ Aquatic Invertebrates ☐ Hydrogen Sulfide Odd	or (C1) ble (C2)	Surface S Sparsely V Drainage Oxidized F	oil Cracks (B6) /egetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (C3
Wetland Hydrolog Primary Indicators ☐ Surface Water ☐ High Water Ta ☑ Saturation (A3 ☐ Water Marks ((minimum of continum of contin		✓ Salt Crust (B11) ☐ Aquatic Invertebrates ☐ Hydrogen Sulfide Odd ☐ Dry-Season Water Ta	or (C1) ble (C2)	Surface S Sparsely \ Drainage Oxidized F (C3) (where	oil Cracks (B6) /egetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (C3
Wetland Hydrolog Primary Indicators Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep	(minimum of control (minim		Salt Crust (B11) Aquatic Invertebrates Hydrogen Sulfide Odd Dry-Season Water Ta Oxidized Rhizosphere (where not tilled) Presence of Reduced	or (C1) ble (C2) as on Living Roots (Iron (C4)	Surface S Sparsely \ Drainage Oxidized F (C3) (where \ Crayfish E	oil Cracks (B6) /egetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (C3 tilled) urrows (C8) Visible on Aerial Imagery (C9)
Wetland Hydrolog Primary Indicators ☐ Surface Water ☐ High Water Ta ☑ Saturation (A3 ☐ Water Marks (☐ Sediment Dep ☐ Drift Deposits ☐ Algal Mat or C☐ ☐ Iron Deposits	(minimum of control of	one required,	Salt Crust (B11) Aquatic Invertebrates Hydrogen Sulfide Odd Dry-Season Water Ta Oxidized Rhizosphere (where not tilled) Presence of Reduced Thin Muck Surface (C	or (C1) ble (C2) as on Living Roots (Iron (C4)	Surface S Sparsely \ Drainage Oxidized F (C3) (where \ Crayfish E	oil Cracks (B6) /egetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (C3 tilled) urrows (C8)
Wetland Hydrolog Primary Indicators Surface Water High Water Ta ✓ Saturation (A3 Water Marks (Sediment Dep Drift Deposits Algal Mat or C Iron Deposits Inundation Vis	(minimum of control (minim	one required,	Salt Crust (B11) Aquatic Invertebrates Hydrogen Sulfide Odd Dry-Season Water Ta Oxidized Rhizosphere (where not tilled) Presence of Reduced Thin Muck Surface (C	or (C1) ble (C2) is on Living Roots (Iron (C4) 7)	Surface S Sparsely \ Drainage Oxidized F Crayfish E Saturation Geomorph FAC-Neut	poil Cracks (B6) /egetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (C3 tilled) urrows (C8) Visible on Aerial Imagery (C9) nic Position (D2) ral Test (D5)
Wetland Hydrolog Primary Indicators Surface Water High Water Ta ✓ Saturation (A3 Water Marks (Sediment Dep Drift Deposits Algal Mat or C Iron Deposits Inundation Vis Water-Stained	(minimum of control of	one required,	Salt Crust (B11) Aquatic Invertebrates Hydrogen Sulfide Odd Dry-Season Water Ta Oxidized Rhizosphere (where not tilled) Presence of Reduced Thin Muck Surface (C	or (C1) ble (C2) is on Living Roots (Iron (C4) 7)	Surface S Sparsely \ Drainage Oxidized F Crayfish E Saturation Geomorph FAC-Neut	pil Cracks (B6) /egetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (C3 tilled) urrows (C8) Visible on Aerial Imagery (C9) nic Position (D2)
Wetland Hydrolog Primary Indicators Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep Drift Deposits Algal Mat or C Iron Deposits Inundation Vis Water-Stained	(minimum of control of	one required	Salt Crust (B11) Aquatic Invertebrates Hydrogen Sulfide Odd Dry-Season Water Ta Oxidized Rhizosphere (where not tilled) Presence of Reduced Thin Muck Surface (C) Other (Explain in Rem	or (C1) ble (C2) s on Living Roots (Iron (C4) 7) narks)	Surface S Sparsely \ Drainage Oxidized F Crayfish E Saturation Geomorph FAC-Neut	poil Cracks (B6) /egetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (C3 tilled) urrows (C8) Visible on Aerial Imagery (C9) nic Position (D2) ral Test (D5)
Wetland Hydrolog Primary Indicators Surface Water High Water Ta ✓ Saturation (A3 Water Marks (Sediment Dep Drift Deposits Algal Mat or C Iron Deposits Inundation Vis Water-Stained	(minimum of control of	Imagery (B7	Salt Crust (B11) Aquatic Invertebrates Hydrogen Sulfide Odd Dry-Season Water Ta Oxidized Rhizosphere (where not tilled) Presence of Reduced Thin Muck Surface (C) Other (Explain in Rem	or (C1) ble (C2) s on Living Roots (Iron (C4) 7) narks)	Surface S Sparsely \ Drainage Oxidized F Crayfish E Saturation Geomorph FAC-Neut	poil Cracks (B6) /egetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (C3 tilled) urrows (C8) Visible on Aerial Imagery (C9) nic Position (D2) ral Test (D5)
Wetland Hydrolog Primary Indicators Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep Drift Deposits Algal Mat or C Iron Deposits Inundation Vis Water-Stained	(minimum of control of	Imagery (B7	Salt Crust (B11) Aquatic Invertebrates Hydrogen Sulfide Odd Dry-Season Water Ta Oxidized Rhizosphere (where not tilled) Presence of Reduced Thin Muck Surface (C) Other (Explain in Rem	or (C1) ble (C2) s on Living Roots (Iron (C4) 7) narks)	Surface S Sparsely \ Drainage Oxidized F Ca) Crayfish E Saturation ✓ Geomorph ✓ FAC-Neut Frost-Hea	poil Cracks (B6) /egetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (C3 tilled) urrows (C8) Visible on Aerial Imagery (C9) nic Position (D2) ral Test (D5) ve Hummocks (D7) (LRR F)
Wetland Hydrolog Primary Indicators ☐ Surface Water ☐ High Water Ta ☑ Saturation (A3 ☐ Water Marks (☐ Sediment Dep ☐ Drift Deposits ☐ Algal Mat or C☐ Iron Deposits ☐ Inundation Vis ☐ Water-Stained Field Observation Surface Water Pre Water Table Present (includes capillary	(minimum of control of	Imagery (B7) Yes	Salt Crust (B11) Aquatic Invertebrates Hydrogen Sulfide Odd Dry-Season Water Ta Oxidized Rhizosphere (where not tilled) Presence of Reduced Thin Muck Surface (C) Other (Explain in Rem Depth (inches): Depth (inches):	or (C1) ble (C2) s on Living Roots (Iron (C4) 7) narks) 0 Wetla	Surface S Sparsely \ Drainage Oxidized F C(C3) (where Section Section Section Section FAC-Neuts Frost-Hear	poil Cracks (B6) /egetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (C3 tilled) urrows (C8) Visible on Aerial Imagery (C9) nic Position (D2) ral Test (D5) ve Hummocks (D7) (LRR F)
Primary Indicators Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep Drift Deposits Algal Mat or C Iron Deposits Inundation Vis Water-Stained Field Observation Surface Water Pre Water Table Present (includes capillary	(minimum of control of	Imagery (B7) Yes	Salt Crust (B11) Aquatic Invertebrates Hydrogen Sulfide Odd Dry-Season Water Ta Oxidized Rhizosphere (where not tilled) Presence of Reduced Thin Muck Surface (C) Other (Explain in Rem	or (C1) ble (C2) s on Living Roots (Iron (C4) 7) narks) 0 Wetla	Surface S Sparsely \ Drainage Oxidized F C(C3) (where Section Section Section Section FAC-Neuts Frost-Hear	poil Cracks (B6) /egetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (C3 tilled) urrows (C8) Visible on Aerial Imagery (C9) nic Position (D2) ral Test (D5) ve Hummocks (D7) (LRR F)
Primary Indicators ☐ Surface Water ☐ High Water Ta ☐ Water Marks (☐ Sediment Dep ☐ Drift Deposits ☐ Algal Mat or C ☐ Iron Deposits ☐ Inundation Vis ☐ Water-Stained Field Observation Surface Water Pre Water Table Prese	(minimum of control of	Imagery (B7) Yes N Yes N Yes N To gauge, more	Salt Crust (B11) Aquatic Invertebrates Hydrogen Sulfide Odd Dry-Season Water Ta Oxidized Rhizosphere (where not tilled) Presence of Reduced Thin Muck Surface (C) Other (Explain in Rem Depth (inches): Depth (inches):	or (C1) ble (C2) s on Living Roots (Iron (C4) 7) narks) 0 Wetla	Surface S Sparsely \ Drainage Oxidized F C(C3) (where Section Section Section Section FAC-Neuts Frost-Hear	poil Cracks (B6) /egetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (C3 tilled) urrows (C8) Visible on Aerial Imagery (C9) nic Position (D2) ral Test (D5) ve Hummocks (D7) (LRR F)
Primary Indicators ☐ Surface Water ☐ High Water Ta ☐ Saturation (A3 ☐ Water Marks (☐ Sediment Dep ☐ Drift Deposits ☐ Algal Mat or C☐ Iron Deposits ☐ Inundation Vis ☐ Water-Stained Field Observation Surface Water Pre Water Table Present (includes capillary	(minimum of control of	Imagery (B7) Yes N Yes N Yes N To gauge, more	Salt Crust (B11) Aquatic Invertebrates Hydrogen Sulfide Odd Dry-Season Water Ta Oxidized Rhizosphere (where not tilled) Presence of Reduced Thin Muck Surface (C) Other (Explain in Rem Depth (inches): Depth (inches):	or (C1) ble (C2) s on Living Roots (Iron (C4) 7) narks) 0 Wetla	Surface S Sparsely \ Drainage Oxidized F C(C3) (where Section Section Section Section FAC-Neuts Frost-Hear	poil Cracks (B6) /egetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (C3 tilled) urrows (C8) Visible on Aerial Imagery (C9) nic Position (D2) ral Test (D5) ve Hummocks (D7) (LRR F)
Primary Indicators Surface Water High Water Ta Saturation (A3 Water Marks (Sediment Dep Drift Deposits Algal Mat or C Iron Deposits Inundation Vis Water-Stained Field Observation Surface Water Pre Water Table Prese Saturation Present (includes capillary Describe Recorded	(minimum of control of	Imagery (B7) Yes N Yes N Yes N To gauge, more	Salt Crust (B11) Aquatic Invertebrates Hydrogen Sulfide Odd Dry-Season Water Ta Oxidized Rhizosphere (where not tilled) Presence of Reduced Thin Muck Surface (C) Other (Explain in Rem Depth (inches): Depth (inches):	or (C1) ble (C2) s on Living Roots (Iron (C4) 7) narks) 0 Wetla	Surface S Sparsely \ Drainage Oxidized F C(C3) (where Section Section Section Section FAC-Neuts Frost-Hear	poil Cracks (B6) /egetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (C3 tilled) urrows (C8) Visible on Aerial Imagery (C9) nic Position (D2) ral Test (D5) ve Hummocks (D7) (LRR F)

Project/Site: JTX Tunnicliff	City/County: Big Horn		_ Sampling Date	e:6/10/	/2020
Applicant/Owner: MDT		_{State:} Montana	_ Sampling Poin	t: DP03u	
Investigator(s): R Quire, S Robbins	Section, Township, Range	: <u>34 7N</u>	N 39)E	
Landform (hillslope, terrace, etc.): Terrace	Local relief (concave, con-	vex, none):flat	s	Slope (%): _	3
Subregion (LRR): LRR G Lat:	45.841372 Lo	ong:1	07.598981 _{Da}	atum: NAD	83 (
Subregion (LRR): LRR G Lat: Lat: Soil Map Unit Name: Hh: Haverson and Lohmiller soils, wet		NWI classifi	 _{cation:} Not Map	ped	
Are climatic / hydrologic conditions on the site typical for this time of ye	ar? Yes ✔ No □	(If no, explain in F	Remarks.)		
Are Vegetation, Soil, or Hydrology significantly				✓ No	
Are Vegetation, Soil, or Hydrology naturally pro	blematic? (If needs	ed explain any answe	ers in Remarks)		
SUMMARY OF FINDINGS – Attach site map showing					, etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Remarks: Upland sample point.	Is the Sampled Are within a Wetland?	Г	No	_	
VEGETATION - Use scientific names of plants					
Tree Stratum Plot size (30 Foot Radius) Absolute Domiant		Dominance Test wo	rksheet		
Iree Stratum Plot size (30 Foot Radius) % Cover: Species	1	Number of Dominant that are OBL, FACW		0 (A)	
		Total Number of Dom Species Across All Si		2 (B)	
Sapling/Shrub Stratum Plot size (15 Foot Radius)		Percent of Dominant That Are OBL, FACW		0.0 % (A	√B)
, ,	Т	Prevalence Index w			
	-	Total % Cover of OBL species	of: 0 X 1	Multiply by: 0	<u>:</u>
		FACW species	0 X 1 0 X 2	0	-
		FAC species	0 X3	0	
Herbaceous Stratum Plot size (5 Foot Radius)		FACU species	0 X4	0	
,	JPL	UPL species	65 X 5	325	
Thinopyrum ponticum 15 🔽 l	JPL	Column Totals	65 (A)	325	(B)
		Prevalence Inde	x = B/A =	5.00	0
		Hydrophytic Vegeta	tion Indicators		
		1 - Rapid Tes	t for Hydrophytic	: Vegetatior	n
		2 - Dominance	e Test is >50%		
		3 - Prevalence	e Index is <= 3.0	1	
			gical Adaptations ta in remarks or	`	te
			lon-Vascular Plai	nts	
		☐ Problematic F	lydrophytic Vege	etation (Exp	olain)
Woody Vine Stratum Plot size (30 Foot Radius)		dicators of hydric sil a	and wetland hydr	rology must	t be
Percent Bare Ground 35	Ī	Hydrophytic Vegeta Present?		NO	✓
Remarks:					
BG/litter=35%					

SOIL Sampling Point: DP03u

Profile Desc	ription: (Describe	to the depth nee	eded to documen	t the indicator	or confirm	the absence	of indicat	ors.)
Depth	Matrix		Redox Fe	1				
(inches)	Color (moist)	%Cc	olor (moist)	% Type ¹	Loc ²	Texture		Remarks
0-15	_10YR3/2	_ 100				Loam	_	
							•	
							-	
	-						,	
1Type: C=C	oncentration, D=Dep	letion PM-Pedu	sed Matrix CS-C	overed or Coate	d Sand Gr	rains ² l o	cation: DI-	=Pore Lining, M=Matrix.
	Indicators: (Applic				u Sanu Gi			ematic Hydric Soils ³ :
Histosol				ed Matrix (S4)			Muck (A9) (<u>-</u>
_	oipedon (A2)		Sandy Red	` ,				dox (A16) (LRR F, G, H)
Black Hi			Stripped Ma	` ,		=	Surface (S7	. , ,
U Hydroge	en Sulfide (A4)		Loamy Muc	ky Mineral (F1)			•	essions (F16)
Stratified	d Layers (A5) (LRR F	-)		ved Matrix (F2)				de of MLRA 72 & 73)
	ıck (A9) (LRR F, G, I		Depleted M			_	ed Vertic (I	150
	d Below Dark Surfac	e (A11)	=	Surface (F6)			arent Mate	` '
	ark Surface (A12)			ark Surface (F7)				k Surface (TF12)
	Mucky Mineral (S1) Mucky Peat or Peat (S2) / BB C U)		ressions (F8) Depressions (F	16)		(Explain in	Remarks) lytic vegetation and
	ucky Peat of Peat (S			72 & 73 of LRR				y must be present,
0 cm we	icky i cat of i cat (or) (LIKIT)	(WEIGH	72 & 75 OI EI	•••		-	or problematic.
Restrictive I	Layer (if present):					T		
Type:	, , ,							
Depth (inc						Hydric Soil	Present?	Yes No _ 🗸
. ,	o hydric soil indica	tora observed	during oits visit			,		
Nomano. M	o riyuric son maica	tors observed	during site visit.					
HYDROLO	GY							
Wetland Hy	drology Indicators:							
Primary Indic	cators (minimum of o	ne required; che	ck all that apply)			Second	ary Indicato	ors (minimum of two required)
Surface	Water (A1)]	Salt Crust (B1	1)		Sur	face Soil C	racks (B6)
High Wa	ater Table (A2)]	Aquatic Inverte	ebrates (B13)		Spa	rsely Vege	tated Concave Surface (B8)
Saturation	on (A3)]	Hydrogen Sulf	ide Odor (C1)		Dra	inage Patte	erns (B10)
Water M	larks (B1)]	Dry-Season W	/ater Table (C2)		☐ Oxi	dized Rhizo	ospheres on Living Roots (C3)
Sedimer	nt Deposits (B2)	[Oxidized Rhize	ospheres on Livi	ng Roots ((C3) (v	vhere tilled	I)
Drift Dep	oosits (B3)		(where not	tilled)		Cra	yfish Burro	ws (C8)
Algal Ma	at or Crust (B4)]	Presence of R	educed Iron (C4)	☐ Sat	uration Visi	ble on Aerial Imagery (C9)
Iron Dep	oosits (B5)]	Thin Muck Sur	face (C7)		☐ Ged	omorphic P	osition (D2)
Inundati	on Visible on Aerial I	magery (B7)	Other (Explain	in Remarks)		☐ FAC	C-Neutral T	est (D5)
☐ Water-S	tained Leaves (B9)					Fro	st-Heave H	ummocks (D7) (LRR F)
Field Obser	vations:							
Surface Water	er Present? Y	es <u> </u>	Depth (inches	s):	_			
Water Table	Present? Y		✓ Depth (inchest					
Saturation P	resent? Y	es	✓ Depth (inches	s):	Wetla	and Hydrolog	y Present?	? Yes No
(includes cap	oillary fringe)						-	
Describe Re	corded Data (stream	gauge, monitorir	ng well, aerial phot	os, previous ins	pections),	ıt available:		
Remarks: No	hydrologic indica	tors observed o	during site visit.	Soil slightly mo	oist			
	•			-				

Applicant/Owner: MDT Investigator(s): R Quire, S Robbins Section, Township, Range: 34 7N 39E Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): Subregion (LRR): LRR G Lat: 45.841307 Long: -107.599018 Datum: NAD 83 Soil Map Unit Name: Hh: Haverson and Lohmiller soils, wet 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 , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)	Project/Site: JTX Tunnicliff		City/Co	ounty: Big Horn		Sampling Da	ite:6/10/202
Investigator(s): R Quire, S Robbins Section, Township, Range: 34 N 39E Landform (illistope, terrace, etc.) Depression Local relef (concave, connex, none); concave Slope (%): Subregion (IRR): LRG Lat 45.841307 Long: -107.599018 Datum, NAD 83 Soil Map Unit Name; Hh: Haverson and Lohmiller soils, wet NM classification: Not Mapped Are climatic i hydrologic conditions on the site byical for this time of year? Yes No (fine-ded, explain in Remarks). Are vegetation Soil or Hydrology naturally problematic? (fine-ded, explain any answers in Remarks). Are vegetation Soil or Hydrology naturally problematic? (fine-ded, explain any answers in Remarks). Are vegetation Soil or Hydrology naturally problematic? (fine-ded, explain any answers in Remarks). Are vegetation Soil Or Hydrology No Is the Sampled Area within a Wettand? Ves No Wettand Hydrology Present? Ves							
Landform (hilislope, terrace, etc.): Depression Lotal Indied (concave, convex, none): Concave Slope (%): Subregion (LRR): LRR G							
Subregion (LRR): LRR G					•		Slone (%):
Note							
Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (fino, explain in Remarks.) Are Vegetation Soi or Hydrology significantly disturbed? Are Normal Circumstances' present? Yes No Are Vegetation	Call Man Linit Name: Hh: Haverson and Lo						
Are Vegetation				✓ No.	INVVI Ciass	Demonite)	ippou
Summarks Soil							
SUMMARY OF FINDINGS — Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vegetation Present?							
Hydrophytic Vegetation Present? Yes No Wettand Hydrology must be present. Yes No Wettand? Yes No Wettand Hydrology must be present. Yes No Wettand? Yes No	Are Vegetation, Soil, or Hydro	ا logy <u> </u>	problema	tic? (If nee	eded, explain any ans	wers in Remarks	.)
Hydric Soil Present? Yes V No within a Wetland? Yes No No Wetland Hydrology Present? Yes V No within a Wetland? Yes No No Wetland Hydrology Present? Yes V No Wetland Hydrology Present? Yes V No No Wetland Hydrology Present? Yes V No	SUMMARY OF FINDINGS – Attacl	n site map showir	ng sam	pling point lo	cations, transec	ts, importan	t features, et
VEGETATION - Use scientific names of plants Absolute Domiant Indicator Species? Status	Hydric Soil Present? You Wetland Hydrology Present? You	es				<u>✓</u> No	
Sapling/Shrub Stratum	VEGETATION - Use scientific nar	nes of plants					
Number of Dominant Species that are OBL, FACW or FAC: 1 (A)	Tree Stratum Plot size (30 Foot Radiu	~\			Dominance Test w	orksheet	
Sapling/Shrub Stratum Plot size (15 Foot Radius) Herbaceous Stratum Plot size (5 Foot Radius) Herbaceous Stratum Plot size (5 Foot Radius) Chenopodium rubrum Liymus repens Liymus re		% Cover. Specia	95? Ju	atus			1 (A)
Plot size (15 Foot Radius) Plot size (15 Foot Radius) Prevalence Index worksheet Total % Cover of: Multiply by: OBL species 6 X 1 6 FACW species 25 X 2 50 FAC species 0 X 3 0 FACU species 10 X 4 40 UPL species 10 X 4 40 UPL species 10 X 5 0 UPL species 10 X 5 0 UPL species 10 X 5 0 UPL species 10 X 6 UPL species 10 X 7 UPL species 10 X 7 UPL species 10 X 8 UPL species 10 X 8 UPL species 10 X 9 UPL species 10 X							2 (B)
Prevalence Index worksheet Total % Cover of:	Sapling/Shrub Stratum Plot size (15	Foot Radius)					50.0 % (A/B)
Herbaceous Stratum Plot size (5 Foot Radius) Chenopodium rubrum 1 OBL Elymus repens 10		,			Total % Cove	r of:	
Herbaceous Stratum Plot size (5 Foot Radius) Chenopodium rubrum							
Herbaceous Stratum Plot size (5 Foot Radius) Chenopodium rubrum 1 □ OBL Elymus repens 10 ☑ FACU Hordeum jubatum 25 ☑ FACW Puccinellia nuttalliana 5 □ OBL Hydrophytic Vegetation Indicators □ 1 - Rapid Test for Hydrophytic Vegetation □ 2 - Dominance Test is >50% ☑ 3 - Prevalence Index = 8/A = 2.34 Hydrophytic Vegetation Indicators □ 1 - Rapid Test for Hydrophytic Vegetation □ 2 - Dominance Test is >50% ☑ 3 - Prevalence Index = 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 Percent Bare Ground 60 Remarks:					FACW species	25 ⊼∠ n x3	
Plot size (5 Foot Radius) Chenopodium rubrum	5, , , , ,	,					
Elymus repens 10							
Hordeum jubatum Puccinellia nuttalliana 5	<u>'</u>				Column Totals	41 (A)	96 (B
Puccinellia nuttalliana 5 OBL 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) 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:	 						
# 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							
□ 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) Percent Bare Ground 60 Present? Pr	1 domond rattamana	<u> </u>		•			
Woody Vine Stratum Plot size (30 Foot Radius) Percent Bare Ground 60 ■ 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:							•
A - Morphological Adaptations (Provide supporting data in remarks or on separate sheet. 5 - Wetland Non-Vascular Plants Problematic Hydrophytic Vegetation (Explain) 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 NO							
supporting data in remarks or on separate sheet. 5 - Wetland Non-Vascular Plants							
Problematic Hydrophytic Vegetation (Explain) Moody Vine Stratum					supporting of		
Problematic Hydrophytic Vegetation (Explain) Moody Vine Stratum					☐ 5 - Wetland	Non-Vascular P	lants
Plot size (30 Foot Radius) Indicators of hydric sil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5. Hydrophytic Vegetation Present? Percent Bare Ground 60 Remarks:							
Percent Bare Ground 60 Remarks: Hydrophytic Vegetation Present? Yes ✓ NO □	Woody Vine Stratum Plot size (30	Foot Radius)			Indicators of hydric si	il and wetland hy	drology must be
Remarks:	Paracrt Para Cround 60				Hydrophytic Veget	tation	
					• • • • • • • • • • • • • • • • • • • •		
		increase in cover by	y hydrop	hytic species.			

SOIL Sampling Point: DP03w

Profile Des	cription: (Describe Matrix	to the depth ne		ment the indicator or x Features	confirm the abs	ence of indicators.)
(inches)	Color (moist)	%C	olor (moist)		Loc ² Textu	re Remarks
0-14	_10YR3/2	90 7.5Y	R 4/6	10CM	Sandy Clay L	_oam
					. , ,	_
	-					
		· — —				
¹ Type: C=C	concentration, D=Dep	letion, RM=Red	uced Matrix, CS	S=Covered or Coated \$	Sand Grains.	² Location: PL=Pore Lining, M=Matrix.
	Indicators: (Applic					ators for Problematic Hydric Soils ³ :
Histoso	I (A1)		☐ Sandy (Gleyed Matrix (S4)	1	cm Muck (A9) (LRR I, J)
	pipedon (A2)			Redox (S5)		Coast Prairie Redox (A16) (LRR F, G, H)
$\overline{}$	listic (A3)			d Matrix (S6)	_	Dark Surface (S7) (LRR G)
	en Sulfide (A4) d Layers (A5) (LRR f	=\		Mucky Mineral (F1) Gleyed Matrix (F2)	<u> </u>	ligh Plains Depressions (F16) (LRR H outside of MLRA 72 & 73)
\equiv	uck (A9) (LRR F, G, I	•	_	d Matrix (F3)	Пв	Reduced Vertic (F18)
	ed Below Dark Surfac			Dark Surface (F6)	=	Reduced Vertic (F16) Red Parent Material (TF2)
	ark Surface (A12)	- v ··· · ·)		d Dark Surface (F7)		'ery Shallow Dark Surface (TF12)
Sandy M	Mucky Mineral (S1)			Depressions (F8)		Other (Explain in Remarks)
_	Mucky Peat or Peat (ains Depressions (F16		ators of hydrophytic vegetation and
5 cm M	ucky Peat or Peat (S	3) (LRR F)	(ML	RA 72 & 73 of LRR H		retland hydrology must be present,
Doctrictivo	Layer (if present):				u	nless disturbed or problematic.
Depth (in	nches):				Lydria	: Soil Present? Yes No
						. 3011 FTESEIIL! TES NO
Remarks. P	rominent redoximo	orphic concent	rations comm	on within the matrix.		
HYDROLC	OGY					
Wetland Hy	drology Indicators:					
Primary Indi	cators (minimum of o	ne required; che	eck all that appl	y)	<u>Sec</u>	condary Indicators (minimum of two required)
Surface	· Water (A1)		✓ Salt Crust	(B11)		Surface Soil Cracks (B6)
High Wa	ater Table (A2)		Aquatic In	vertebrates (B13)		Sparsely Vegetated Concave Surface (B8)
✓ Saturati	ion (A3)			Sulfide Odor (C1)		Drainage Patterns (B10)
Water N	Marks (B1)		Dry-Seaso	on Water Table (C2)		Oxidized Rhizospheres on Living Roots (C3)
	nt Deposits (B2)			Rhizospheres on Living	Roots (C3)	(where tilled)
=	posits (B3)			not tilled)		Crayfish Burrows (C8)
	at or Crust (B4)			of Reduced Iron (C4)		Saturation Visible on Aerial Imagery (C9)
	posits (B5)	(DZ)		Surface (C7)	<u> </u>	Geomorphic Position (D2)
	ion Visible on Aerial I Stained Leaves (B9)	magery (B7)	Other (Exp	olain in Remarks)		FAC-Neutral Test (D5) Frost-Heave Hummocks (D7) (LRR F)
Field Obser	, ,				<u> </u>	110St-Heave Hullimocks (DT) (LRK F)
Surface Wat		es No	✓ Depth (in	ches).		
Water Table				ches):		
Saturation P		es No _ es _ v No _		_	Wetland Lud	rology Present? Yes No
	pillary fringe)	N∩	Debiii (iii		vvenanu nyur	ology rieselit: Tes NO
		gauge, monitor	ing well, aerial	photos, previous inspe	ctions), if availab	le:
Remarks: Sa	aturation and salt o	rust observed	•			

Project/Site: JTX Tunnicliff	City/County: Big Horn		Sampling Date	6/10)/2020
Applicant/Owner: MDT		_{State:} <u>Montana</u>	Sampling Point	. DP04u	
Investigator(s): R Quire, S Robbins	Section, Township, Range	34 7N	39	E	
Landform (hillslope, terrace, etc.): Depression	Local relief (concave, con	/ex, none):concave	S	lope (%): _	5
Subregion (LRR): LRR G Lat:	45.840508 Lo	ong:10)7.599115 Dat	tum: NAE) 83
Subregion (LRR): LRR G Lat: Soil Map Unit Name: Hh: Haverson and Lohmiller soils, wet		NWI classific	cation: Not Map	ped	
Are climatic / hydrologic conditions on the site typical for this time of ye	ear? Yes 🔽 No 🔼	(If no, explain in R	temarks.)		
Are Vegetation, Soil, or Hydrology significantly	disturbed? Are "Nor	mal Circumstances" p	oresent? Yes _	✓ No	,
Are Vegetation, Soil, or Hydrology naturally pr	oblematic? (If neede	d, explain any answe	rs in Remarks.)		
SUMMARY OF FINDINGS – Attach site map showing	g sampling point loca	itions, transects	, important f	features	s, etc.
Hydrophytic Vegetation Present? Yes No W Hydric Soil Present? Yes No W Wetland Hydrology Present? Yes No W Remarks: Upland sample point, upslope of wetland boundary	within a Wetland?	Yes	No_ <u>✓</u>	_	
VEGETATION - Use scientific names of plants					
Tree Stratum Plot size (30 Foot Radius) Absolute Domian		Dominance Test wor	ksheet		
Tree Stratum Plot size (30 Foot Radius) % Cover: Species	s? Status	Number of Dominant that are OBL, FACW of	Species	0 _(A)	
		Total Number of Domi Species Across All St		2 _(B)	
Sapling/Shrub Stratum Plot size (15 Foot Radius)		Percent of Dominant S That Are OBL, FACW		0.0 % (A	√B)
,	1	Prevalence Index wo			
	-	Total % Cover o OBL species	0 X 1	<u>Multiply by</u> 0	<u>: </u>
		FACW species	0 X 1	0	-
		AC species	0 X3	0	
Herbaceous Stratum Plot size (5 Foot Radius)		ACU species	0 X4	0	
Elymus hispidus 50	UPL	JPL species	70 X5	350	
Thinopyrum ponticum 20 🔽	UPL	Column Totals	70 (A)	350	(B)
		Prevalence Index	κ = B/A =	5.0	0
		lydrophytic Vegetat			
			for Hydrophytic	Vegetatio	n
		2 - Dominance			
		_	e Index is <= 3.0		
			ical Adaptations a in remarks or o	`	te
		5 - Wetland No	on-Vascular Plan	nts	
		☐ Problematic H	ydrophytic Veget	tation (Exp	plain)
Woody Vine Stratum Plot size (30 Foot Radius)		dicators of hydric sil a esent, unless disturbe			
Percent Bare Ground 30		Hydrophytic Vegetat Present?	ion Yes] NO	V
Remarks: BG/litter=30%					

SOIL Sampling Point: DP04u

Depth (inches)	Matrix Color (moist)	<u></u> %	Redox Features Color (moist) % Type	e ¹ Loc ²	Texture	Remarks
)-15		100			andy Loam	
		-			,	<u>-</u>
	-					
			educed Matrix, CS=Covered or Co	oated Sand Gr		ation: PL=Pore Lining, M=Matrix.
		able to all LF	RRs, unless otherwise noted.)	4)		for Problematic Hydric Soils ³ :
Histosol	(A1) pipedon (A2)		☐ Sandy Gleyed Matrix (S☐ Sandy Redox (S5)	4)		uck (A9) (LRR I, J) Prairie Redox (A16) (LRR F, G, H)
_	stic (A3)		Stripped Matrix (S6)			urface (S7) (LRR G)
	n Sulfide (A4)		Loamy Mucky Mineral (F	=1)		ains Depressions (F16)
	d Layers (A5) (LRR I	F)	Loamy Gleyed Matrix (F			R H outside of MLRA 72 & 73)
	ıck (A9) (LRR F, G,		Depleted Matrix (F3)		Reduce	d Vertic (F18)
	d Below Dark Surfac	e (A11)	Redox Dark Surface (F6	•	_	rent Material (TF2)
_	ark Surface (A12)		Depleted Dark Surface (= '	nallow Dark Surface (TF12)
_	Mucky Mineral (S1)	(CO) /I DD C	☐ Redox Depressions (F8)☐ High Plains Depressions	•		Explain in Remarks) of hydrophytic vegetation and
_	Mucky Peat or Peat (icky Peat or Peat (S		(MLRA 72 & 73 of L			hydrology must be present,
0 0111 1010	icky i cat of i cat (o	o) (Litter)	(MEIXA 12 & 10 OI E	-IXIX II)		disturbed or problematic.
estrictive	Layer (if present):					
estrictive Type:	Layer (if present):		_			
			_		Hydric Soil I	Present? Yes No
Type: Depth (in	ches):	ators observ	— — ed during site visit.		Hydric Soil I	Present? Yes No
Type: Depth (in	ches):	ators observe	 ed during site visit.		Hydric Soil I	Present? Yes No
Type: Depth (in	ches):	ators observ	ed during site visit.		Hydric Soil I	Present? Yes No
Type: Depth (in emarks: Ŋ	ches): o hydric soil indica	ators observe	 ed during site visit.		Hydric Soil I	Present? Yes No
Type: Depth (in emarks: N	ches):o hydric soil indica		ed during site visit.		Hydric Soil I	Present? Yes No
Type: Depth (in emarks: N /DROLO	ches):o hydric soil indica					
Type: Depth (in emarks: N /DROLO /etland Hy rimary Indic	ches): o hydric soil indica GY drology Indicators: cators (minimum of c	one required; o	check all that apply)		Secondar	y Indicators (minimum of two required
Type: Depth (in emarks: N DROLO Vetland Hy rimary Indic	GY drology Indicators: cators (minimum of c	one required; o	Check all that apply)		Secondal	y Indicators (minimum of two required nce Soil Cracks (B6)
Type: Depth (in emarks: N 'DROLO 'etland Hy rimary India] Surface] High Wa	GY drology Indicators: eators (minimum of c	one required; o	check all that apply) Salt Crust (B11) Aquatic Invertebrates (B13	•	Secondar	y Indicators (minimum of two required ace Soil Cracks (B6) sely Vegetated Concave Surface (B8)
Type: Depth (in emarks: N TDROLO Tetland Hy imary India Surface High Wa Saturatia	GY drology Indicators: eators (minimum of county) Water (A1) ster Table (A2) on (A3)	one required; o	check all that apply) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C	1)	Secondal Surfa	y Indicators (minimum of two required ice Soil Cracks (B6) sely Vegetated Concave Surface (B8) iage Patterns (B10)
Type: Depth (in emarks: N TDROLO Tetland Hy imary India Surface High Wa Saturati Water M	GY drology Indicators: eators (minimum of cology (A2) butter Table (A2) but (A3) larks (B1)	one required; o	check all that apply) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C	1) C2)	Secondar Surfa Spar Drair Oxidi	y Indicators (minimum of two required lice Soil Cracks (B6) sely Vegetated Concave Surface (B8) lage Patterns (B10) zed Rhizospheres on Living Roots (C
Type: Depth (in emarks: N TDROLO Tetland Hy rimary India Surface High Wa Saturatia Water M Sedimen	GY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) on (A3) larks (B1) at Deposits (B2)	one required; o	check all that apply) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (Components) Dry-Season Water Table (Components)	1) C2)	Secondal Surfa Spar Drair Oxidi	y Indicators (minimum of two required ice Soil Cracks (B6) sely Vegetated Concave Surface (B8) iage Patterns (B10)
Type: Depth (in emarks: N DROLO etland Hy rimary India Surface High Wa Saturatia Water M Sedimer Drift Dep	GY drology Indicators: eators (minimum of control (Ma) later Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3)	one required; o	check all that apply) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C) (C2) Living Roots (Secondal Surfa Spar Drair Oxidi (C3) (wI	y Indicators (minimum of two required ace Soil Cracks (B6) sely Vegetated Concave Surface (B8) age Patterns (B10) zed Rhizospheres on Living Roots (C nere tilled)
Type:	GY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) on (A3) larks (B1) at Deposits (B2)	one required; o	check all that apply) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C) Dry-Season Water Table (c) Oxidized Rhizospheres on (where not tilled)) (C2) Living Roots (Secondal Surfa Spar Drair Oxidi (C3) (wI	y Indicators (minimum of two required ace Soil Cracks (B6) sely Vegetated Concave Surface (B8) age Patterns (B10) zed Rhizospheres on Living Roots (Ca nere tilled) fish Burrows (C8)
Type: Depth (in emarks: N **TOROLO** **TOROLO**	GY drology Indicators: cators (minimum of colors) water (A1) ster Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4)	one required; (Check all that apply) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (Cooperation of the Cooperation of th	1) C2) Living Roots (Secondar Surfa Spar Drair Coxidi Ca) Cray Satur	y Indicators (minimum of two required ace Soil Cracks (B6) sely Vegetated Concave Surface (B8) age Patterns (B10) zed Rhizospheres on Living Roots (Conere tilled) fish Burrows (C8) ration Visible on Aerial Imagery (C9)
Type: Depth (in emarks: N /DROLO /etland Hy rimary India _ Surface _ High Wa _ Saturatia _ Water N _ Sedimen _ Drift Dep _ Algal Ma _ Iron Dep _ Inundati	GY drology Indicators: cators (minimum of company) water (A1) ater Table (A2) on (A3) larks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5)	one required; (Check all that apply) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (Compression Water Table (Compression Water Table (Compression Water Table (Compression Water Not tilled) Presence of Reduced Iron	1) C2) Living Roots (Secondal Surfa Spar Spar Oxidi (C3) (wI Cray Satul Geor	y Indicators (minimum of two required toce Soil Cracks (B6) sely Vegetated Concave Surface (B8) tage Patterns (B10) zed Rhizospheres on Living Roots (Cinere tilled) fish Burrows (C8) ration Visible on Aerial Imagery (C9) morphic Position (D2)
Type:	GY drology Indicators: cators (minimum of company) ater Table (A2) on (A3) larks (B1) at Deposits (B2) cosits (B3) at or Crust (B4) cosits (B5) on Visible on Aerial I	one required; (check all that apply) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C) Dry-Season Water Table (c) Oxidized Rhizospheres on (where not tilled) Presence of Reduced Iron Thin Muck Surface (C7) Other (Explain in Remarks	1) C2) Living Roots (Secondal Surfa Spar Spar Oxidi (C3) (wI Cray Satul Geor	y Indicators (minimum of two required toe Soil Cracks (B6) sely Vegetated Concave Surface (B8) tage Patterns (B10) zed Rhizospheres on Living Roots (Conere tilled) fish Burrows (C8) ration Visible on Aerial Imagery (C9) morphic Position (D2)
Type:	GY drology Indicators: cators (minimum of company) water (A1) ater Table (A2) on (A3) larks (B1) at Deposits (B2) cosits (B3) at or Crust (B4) cosits (B5) on Visible on Aerial Intained Leaves (B9) wations:	one required; (Check all that apply) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (Composite of the composite of the	1) C2) Living Roots ((C4)	Secondal Surfa Spar Spar Oxidi (C3) (wI Cray Satul Geor	y Indicators (minimum of two required toe Soil Cracks (B6) sely Vegetated Concave Surface (B8) tage Patterns (B10) zed Rhizospheres on Living Roots (Conere tilled) fish Burrows (C8) ration Visible on Aerial Imagery (C9) morphic Position (D2)
Type:	GY drology Indicators: cators (minimum of company) arter (A1) arter Table (A2) on (A3) larks (B1) art Deposits (B2) cosits (B3) art or Crust (B4) cosits (B5) on Visible on Aerial Intained Leaves (B9) vations: er Present?	one required; of	Check all that apply) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (Compression Water Table (Compr	1) C2) Living Roots ((C4)	Secondal Surfa Spar Spar Oxidi (C3) (wI Cray Satul Geor	y Indicators (minimum of two required toe Soil Cracks (B6) sely Vegetated Concave Surface (B8) tage Patterns (B10) zed Rhizospheres on Living Roots (Cinere tilled) fish Burrows (C8) ration Visible on Aerial Imagery (C9) morphic Position (D2) -Neutral Test (D5) -Heave Hummocks (D7) (LRR F)
Type:	ches):	magery (B7)	Check all that apply) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (Compression Water Table (Compr	1) C2) Living Roots ((C4)	Secondal Surfa Spar Spar Oxidi (C3) (wl Satu	y Indicators (minimum of two required toe Soil Cracks (B6) sely Vegetated Concave Surface (B8) tage Patterns (B10) zed Rhizospheres on Living Roots (Conere tilled) fish Burrows (C8) ration Visible on Aerial Imagery (C9) morphic Position (D2)
Type:	GY drology Indicators: cators (minimum of company of co	Imagery (B7) Yes No Yes No Yes No	Check all that apply) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (Compression Water Table (Compression Water Table (Compression Water Addition Presence of Reduced Iron Thin Muck Surface (C7) Other (Explain in Remarks Depth (inches):	1) C2) Living Roots ((C4)) Wetla	Secondal Surfa Spar Spar Oxidi (C3) (wl Satur Satur FAC- Frost	y Indicators (minimum of two required toe Soil Cracks (B6) sely Vegetated Concave Surface (B8) tage Patterns (B10) zed Rhizospheres on Living Roots (Cinere tilled) fish Burrows (C8) ration Visible on Aerial Imagery (C9) morphic Position (D2) -Neutral Test (D5) -Heave Hummocks (D7) (LRR F)
Type:	GY drology Indicators: cators (minimum of company (Mater (A1)) ater Table (A2) on (A3) larks (B1) at or Crust (B4) cosits (B3) at or Crust (B4) cosits (B5) on Visible on Aerial II tained Leaves (B9) vations: er Present? Present? Y Present? Y Present? Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y	Imagery (B7) Yes No Yes No Yes No	Check all that apply) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (Compression Water Table (Compr	1) C2) Living Roots ((C4)) Wetla	Secondal Surfa Spar Spar Oxidi (C3) (wl Satur Satur FAC- Frost	y Indicators (minimum of two required toe Soil Cracks (B6) sely Vegetated Concave Surface (B8) tage Patterns (B10) zed Rhizospheres on Living Roots (Cinere tilled) fish Burrows (C8) ration Visible on Aerial Imagery (C9) morphic Position (D2) -Neutral Test (D5) -Heave Hummocks (D7) (LRR F)
Type:	GY drology Indicators: cators (minimum of control of c	Imagery (B7) Yes No	Check all that apply) Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (Compression Water Table (Compr	1) C2) Living Roots ((C4)) Wetla	Secondal Surfa Spar Spar Oxidi (C3) (wl Satur Secondal	y Indicators (minimum of two required toe Soil Cracks (B6) sely Vegetated Concave Surface (B8) tage Patterns (B10) zed Rhizospheres on Living Roots (Cinere tilled) fish Burrows (C8) ration Visible on Aerial Imagery (C9) morphic Position (D2) -Neutral Test (D5) -Heave Hummocks (D7) (LRR F)

Project/Site: JTX Tunnicliff	City/County: Big Horn		Sampling Da	ate: 6/10/202
Applicant/Owner: MDT		_{State:} Monta	na Sampling Po	oint: DP04w
Investigator(s): R Quire, S Robbins	Section, Township, Range	e:34	7N	39E
Landform (hillslope, terrace, etc.): Depression	Local relief (concave, cor	nvex, none): conc	ave	Slope (%):
Subregion (LRR): LRR G	45.840439 L	ong:	-107.599205	Datum: NAD 83
Soil Map Unit Name: Hh: Haverson and Lohmiller soils, wet		NWI cla	ssification: Not M	apped
Are climatic / hydrologic conditions on the site typical for this time of ye				
Are Vegetation, Soil, or Hydrology significantly		rmal Circumstanc	es" present? Yes	s 🔽 No 🗀
Are Vegetation, Soil, or Hydrology naturally pro	blematic? (If need	led, explain any ar	swers in Remark	s.)
SUMMARY OF FINDINGS – Attach site map showing	sampling point loc	ations, transe	ects, importar	nt features, etc
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Yes No No No No Remarks: PEM depressional wetland in Cell 12/13.	Is the Sampled Alwithin a Wetland?		✓ No _]
VEGETATION - Use scientific names of plants				
_ Absolute Domiant		Dominance Test	worksheet	
<u>Tree Stratum</u> Plot size (30 Foot Radius) % Cover: Species		Number of Domin	ant Species	3 (A)
		Total Number of I Species Across A		3 (B)
Sapling/Shrub Stratum Plot size (15 Foot Radius)		Percent of Domin That Are OBL, FA		100.0 % (A/B)
<u>Japhing/Jill ab Stratum</u> 1 lot 3/26 (13 1 Sot Nadius)		Prevalence Inde		
		Total % Cov	ver of: 40 X 1	Multiply by:
		FACW species		30
		FAC species	0 X3	0
Herbaceous Stratum Plot size (5 Foot Radius)		FACU species	5 X4	20
Distichlis spicata 15	FACW	UPL species	0 X5	0
Elymus repens 5	FACU	Column Totals	60 (A)	90 (B)
Schoenoplectus maritimus 25	OBL	Prevalence I	ndex = B/A =	1.50
Typha angustifolia 15 ✓	OBL	Hydrophytic Veg		
		•	Test for Hydrophy	· ·
		✓ 2 - Domin	ance Test is >50%	6
		✓ 3 - Preval	ence Index is <= 3	3.0
			ological Adaptatio g data in remarks	
		5 - Wetlan	ıd Non-Vascular P	Plants
		☐ Problemat	ic Hydrophytic Ve	egetation (Explain)
Woody Vine Stratum Plot size (30 Foot Radius)		ndicators of hydric resent, unless dis	sil and wetland hy	ydrology must be
Percent Bare Ground 40		Hydrophytic Veg Present?		
Remarks:	L			
BG/litter=40%				

SOIL Sampling Point: DP04w

Type: C=Conc Hydric Soil Ind Histosol (A' Histic Epipe Black Histic Hydrogen S Stratified La 1 cm Muck Depleted Ba Thick Dark Sandy Muc 2.5 cm Muck Strictive Lay Type: Depth (inche	entration, D=Depletion, RN icators: (Applicable to a l) edon (A2) (A3) sulfide (A4) ayers (A5) (LRR F) (A9) (LRR F, G, H) elow Dark Surface (A11) Surface (A12) ky Mineral (S1) ky Peat or Peat (S2) (LRR F) Peat or Peat (S3) (LRR F) er (if present):	(MLRA 72 & 73 of LRR F	Sand Grains. 2 Location: PL=Pore Lining, M=Matrix. Indicators for Problematic Hydric Soils³: 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
Type: C=Conc Hydric Soil Ind Histosol (A' Histic Epipe Black Histic Hydrogen S Stratified La 1 cm Muck Depleted Bo Thick Dark Sandy Muc 2.5 cm Muck 5 cm Mucky Restrictive Lay Type: Depth (inche	entration, D=Depletion, RN icators: (Applicable to a l) edon (A2) (A3) sulfide (A4) ayers (A5) (LRR F) (A9) (LRR F, G, H) elow Dark Surface (A11) Surface (A12) ky Mineral (S1) ky Peat or Peat (S2) (LRR F) Peat or Peat (S3) (LRR F) er (if present):	M=Reduced Matrix, CS=Covered or Coated II LRRs, unless otherwise noted.) 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) RG, H) High Plains Depressions (F16) (MLRA 72 & 73 of LRR F	Sand Grains. 2Location: PL=Pore Lining, M=Matrix. Indicators for Problematic Hydric Soils³: 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) 3Indicators of hydrophytic vegetation and wetland hydrology must be present,
Hydric Soil Ind Histosol (A' Histic Epipe Black Histic Hydrogen S Stratified La 1 cm Muck Depleted Bo Thick Dark Sandy Muc 2.5 cm Muck 5 cm Mucky Restrictive Lay Type: Depth (inche	icators: (Applicable to a i) idon (A2) idon (A2) idon (A3) idifide (A4) identified (A4) identified (A5) identified (A	Il LRRs, unless otherwise noted.) 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) G G, H) High Plains Depressions (F16) (MLRA 72 & 73 of LRR F	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) 3Indicators of hydrophytic vegetation and wetland hydrology must be present,
Hydric Soil Ind Histosol (A' Histic Epipe Black Histic Hydrogen S Stratified La 1 cm Muck Depleted Bo Thick Dark Sandy Muc 2.5 cm Muck 5 cm Mucky Restrictive Lay Type: Depth (inche	icators: (Applicable to a i) idon (A2) idon (A2) idon (A3) idifide (A4) identified (A4) identified (A5) identified (A	Il LRRs, unless otherwise noted.) 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) G G, H) High Plains Depressions (F16) (MLRA 72 & 73 of LRR F	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) 3Indicators of hydrophytic vegetation and wetland hydrology must be present,
Hydric Soil Ind Histosol (A' Histic Epipe Black Histic Hydrogen S Stratified La 1 cm Muck Depleted Bo Thick Dark Sandy Muc 2.5 cm Muck 5 cm Mucky Restrictive Lay Type: Depth (inche	icators: (Applicable to a i) idon (A2) idon (A2) idon (A3) idifide (A4) identified (A4) identified (A5) identified (A	Il LRRs, unless otherwise noted.) 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) G G, H) High Plains Depressions (F16) (MLRA 72 & 73 of LRR F	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) 3Indicators of hydrophytic vegetation and wetland hydrology must be present,
Hydric Soil Ind Histosol (A' Histic Epipe Black Histic Hydrogen S Stratified La 1 cm Muck Depleted Bo Thick Dark Sandy Muc 2.5 cm Muck 5 cm Mucky Restrictive Lay Type: Depth (inche	icators: (Applicable to a i) idon (A2) idon (A2) idon (A3) idifide (A4) identified (A4) identified (A5) identified (A	Il LRRs, unless otherwise noted.) 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) G G, H) High Plains Depressions (F16) (MLRA 72 & 73 of LRR F	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) 3Indicators of hydrophytic vegetation and wetland hydrology must be present,
Hydric Soil Ind Histosol (A' Histic Epipe Black Histic Hydrogen S Stratified La 1 cm Muck Depleted Bo Thick Dark Sandy Muc 2.5 cm Muck 5 cm Mucky Restrictive Lay Type: Depth (inche	icators: (Applicable to a i) idon (A2) idon (A2) idon (A3) idifide (A4) identified (A4) identified (A5) identified (A	Il LRRs, unless otherwise noted.) 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) G G, H) High Plains Depressions (F16) (MLRA 72 & 73 of LRR F	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) 3Indicators of hydrophytic vegetation and wetland hydrology must be present,
Hydric Soil Ind Histosol (A' Histic Epipe Black Histic Hydrogen S Stratified La 1 cm Muck Depleted Bo Thick Dark Sandy Muc 2.5 cm Muck 5 cm Mucky Restrictive Lay Type: Depth (inche	icators: (Applicable to a i) idon (A2) idon (A2) idon (A3) idifide (A4) identified (A4) identified (A5) identified (A	Il LRRs, unless otherwise noted.) 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) G G, H) High Plains Depressions (F16) (MLRA 72 & 73 of LRR F	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) 3Indicators of hydrophytic vegetation and wetland hydrology must be present,
Hydric Soil Ind Histosol (A' Histic Epipe Black Histic Hydrogen S Stratified La 1 cm Muck Depleted Bo Thick Dark Sandy Muc 2.5 cm Muck 5 cm Mucky Restrictive Lay Type: Depth (inche	icators: (Applicable to a i) idon (A2) idon (A2) idon (A3) idifide (A4) identified (A4) identified (A5) identified (A5) identified (A6) identified (A	Il LRRs, unless otherwise noted.) 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) G G, H) High Plains Depressions (F16) (MLRA 72 & 73 of LRR F	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) 3Indicators of hydrophytic vegetation and wetland hydrology must be present,
Hydric Soil Ind Histosol (A' Histic Epipe Black Histic Hydrogen S Stratified La 1 cm Muck Depleted Bo Thick Dark Sandy Muc 2.5 cm Muck 5 cm Mucky Restrictive Lay Type: Depth (inche	icators: (Applicable to a i) idon (A2) idon (A2) idon (A3) idifide (A4) identified (A4) identified (A5) identified (A5) identified (A6) identified (A	Il LRRs, unless otherwise noted.) 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) G G, H) High Plains Depressions (F16) (MLRA 72 & 73 of LRR F	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) 3Indicators of hydrophytic vegetation and wetland hydrology must be present,
Histosol (A' Histic Epipe Black Histic Hydrogen S Stratified La 1 cm Muck Depleted Br Thick Dark Sandy Muc 2.5 cm Muck 5 cm Mucky Restrictive Lay Type: Depth (inche	don (A2) don (A2) don (A2) dulfide (A4) dulfide (A4) dulfide (A5) (LRR F) (A9) (LRR F, G, H) delow Dark Surface (A11) Surface (A12) dulfide (A12) dulfide (A12) dulfide (A13) dulfide (A14) dulfide (A15) dulfide (A15) dulfide (A16) dulfide (A	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) GG, H) High Plains Depressions (F16) (MLRA 72 & 73 of LRR F	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) Jindicators of hydrophytic vegetation and wetland hydrology must be present,
Histic Epipe Black Histic Hydrogen S Stratified La 1 cm Muck Depleted B Thick Dark Sandy Muc 2.5 cm Muck 5 cm Mucky Restrictive Lay Type: Depth (inche	idon (A2) (A3) (Ida) (Id	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 F	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) Indicators of hydrophytic vegetation and wetland hydrology must be present,
Black Histic Hydrogen S Stratified La 1 cm Muck Depleted Ba Thick Dark Sandy Muc 2.5 cm Muck 5 cm Mucky Restrictive Lay Type: Depth (inche	(A3) sulfide (A4) ayers (A5) (LRR F) (A9) (LRR F, G, H) elow Dark Surface (A11) Surface (A12) ky Mineral (S1) ky Peat or Peat (S2) (LRR Peat or Peat (S3) (LRR F	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 F	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) Indicators of hydrophytic vegetation and wetland hydrology must be present,
Hydrogen S Stratified La 1 cm Muck Depleted Ba Thick Dark Sandy Muc 2.5 cm Muck 5 cm Mucky Restrictive Lay Type: Depth (inche	Sulfide (A4) Ayers (A5) (LRR F) (A9) (LRR F, G, H) Below Dark Surface (A11) Surface (A12) By Mineral (S1) By Peat or Peat (S2) (LRR F) For (if present):	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 F	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) Indicators of hydrophytic vegetation and wetland hydrology must be present,
Stratified La 1 cm Muck Depleted Be Thick Dark Sandy Muc 2.5 cm Mucky Festrictive Lay Type: Depth (inche	ayers (A5) (LRR F) (A9) (LRR F, G, H) elow Dark Surface (A11) Surface (A12) ky Mineral (S1) ky Peat or Peat (S2) (LRR r Peat or Peat (S3) (LRR F	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 F	(LRR H outside of MLRA 72 & 73) Reduced Vertic (F18) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Indicators of hydrophytic vegetation and wetland hydrology must be present,
1 cm Muck Depleted Both Thick Dark Sandy Muc 2.5 cm Muck To cm Mucky Restrictive Lay Type: Depth (inche)	(A9) (LRR F, G, H) elow Dark Surface (A11) Surface (A12) ky Mineral (S1) ky Peat or Peat (S2) (LRR r Peat or Peat (S3) (LRR F	Depleted Matrix (F3) Redox Dark Surface (F6) Depleted Dark Surface (F7) Redox Depressions (F8) High Plains Depressions (F16) (MLRA 72 & 73 of LRR F	Reduced Vertic (F18) Red Parent Material (TF2) Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Indicators of hydrophytic vegetation and wetland hydrology must be present,
Thick Dark Sandy Muc 2.5 cm Muck 5 cm Mucky Restrictive Lay Type: Depth (inche	Surface (A12) ky Mineral (S1) ky Peat or Peat (S2) (LRR v Peat or Peat (S3) (LRR F	Depleted Dark Surface (F7) Redox Depressions (F8) High Plains Depressions (F16) (MLRA 72 & 73 of LRR F	Very Shallow Dark Surface (TF12) Other (Explain in Remarks) Indicators of hydrophytic vegetation and wetland hydrology must be present,
Sandy Muc 2.5 cm Muc 5 cm Mucky Restrictive Lay Type: Depth (inche	ky Mineral (S1) ky Peat or Peat (S2) (LRR r Peat or Peat (S3) (LRR F	Redox Depressions (F8) R G, H) High Plains Depressions (F16) (MLRA 72 & 73 of LRR F	Other (Explain in Remarks) 3 Indicators of hydrophytic vegetation and wetland hydrology must be present,
2.5 cm Mucky 5 cm Mucky Restrictive Lay Type: Depth (inche	ky Peat or Peat (S2) (LRR Peat or Peat (S3) (LRR Feer (if present):	R G, H) High Plains Depressions (F16) (MLRA 72 & 73 of LRR F	6) ³ Indicators of hydrophytic vegetation and H) wetland hydrology must be present,
5 cm Mucky Restrictive Lay Type: Depth (inche	Peat or Peat (S3) (LRR Fer (if present):	(MLRA 72 & 73 of LRR F	wetland hydrology must be present,
Restrictive Lay Type: Depth (inche	er (if present):	, , , , , , , , , , , , , , , , , , ,	
Type: Depth (inche			
Depth (inche			
. `	-1.		
Remarks: Pron	s):		Hydric Soil Present? Yes No
	ninent redoximorphic co	oncentrations common within the deplet	ted matrix.
IYDROLOGY	,		
	logy Indicators:		
-	ors (minimum of one requir	red: check all that apply)	Secondary Indicators (minimum of two required
Surface Wa		Salt Crust (B11)	Surface Soil Cracks (B6)
✓ High Water		Aguatic Invertebrates (B13)	Sparsely Vegetated Concave Surface (B8)
✓ Saturation (` '	Hydrogen Sulfide Odor (C1)	Drainage Patterns (B10)
Water Mark	s (B1)	Dry-Season Water Table (C2)	Oxidized Rhizospheres on Living Roots (C
Sediment D	eposits (B2)	Oxidized Rhizospheres on Living	g Roots (C3) (where tilled)
Drift Depos	its (B3)	(where not tilled)	Crayfish Burrows (C8)
Algal Mat o	r Crust (B4)	Presence of Reduced Iron (C4)	Saturation Visible on Aerial Imagery (C9)
Iron Deposi	,	Thin Muck Surface (C7)	✓ Geomorphic Position (D2)
Inundation `	√isible on Aerial Imagery (B7)	FAC-Neutral Test (D5)
	ed Leaves (B9)		Frost-Heave Hummocks (D7) (LRR F)
Field Observati		. ✓	
Surface Water F		No Depth (inches):	-
Water Table Pre		No Depth (inches): 12	-
Saturation Prese (includes capilla		No Depth (inches): 0	_ Wetland Hydrology Present? Yes No
		nonitoring well, aerial photos, previous inspe	ections), if available:
		·	
Remarks: HWT	observed in soil pit at 1	12in after 10 min.	
Remarks: HWT	observed in soil pit at 1	12in after 10 min.	

Project/Site: JTX Tunnicliff	City/County: Big Horn		Sampling Date:6/10/2020
		State: Montana	
Investigator(s): R Quire, S Robbins	Section, Township, Rai	nge: 34 7N	39E
Landform (hillslope, terrace, etc.): Terrace			
Subregion (LRR): LRR G Lat:			
Soil Map Unit Name: Hh: Haverson and Lohmiller soils, wet		NWI classifica	ation: Not Mapped
Are climatic / hydrologic conditions on the site typical for this time of ye	ear? Yes 🔽 No _	[[] (If no, explain in Re	emarks.)
Are Vegetation, Soil, or Hydrology significantly	y disturbed? Are "	Normal Circumstances" pr	resent? Yes 🔽 No 🔲
Are Vegetation, Soil, or Hydrology naturally pr	oblematic? (If ne	eded, explain any answer	s in Remarks.)
SUMMARY OF FINDINGS - Attach site map showing	g sampling point le	ocations, transects,	important features, etc
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Remarks: Upland sample point.	Is the Sampled within a Wetlan	Area d? Yes	No
VEGETATION - Use scientific names of plants			
Tree Stratum Plot size (30 Foot Radius) Absolute Domian		Dominance Test work	sheet
Iree Stratum Piot size (30 Foot Radius) % Cover: Species	s? Status	Number of Dominant S that are OBL, FACW or	
		Total Number of Domir Species Across All Stra	3
Sapling/Shrub Stratum Plot size (15 Foot Radius)		Percent of Dominant S That Are OBL, FACW,	
		Prevalence Index wor	
		Total % Cover of: OBL species	. <u>Multiply by:</u> 0 X 1 0
		FACW species	0 X 2 0
		FAC species	0 X3 0
Herbaceous Stratum Plot size (5 Foot Radius)		· ·	0 X4 0
Elymus hispidus 55 🔽 l	JPL	UPL species	70 X 5 350
Thinopyrum ponticum 15 🔽 l	JPL	Column Totals 7	0 (A) 350 (B)
		Prevalence Index	= B/A = 5.00
		Hydrophytic Vegetation	
			for Hydrophytic Vegetation
		2 - Dominance	
		3 - Prevalence	
			cal Adaptations (Provide a in remarks or on separate
		5 - Wetland Nor	n-Vascular Plants
		☐ Problematic Hy	drophytic Vegetation (Explain)
Woody Vine Stratum Plot size (30 Foot Radius)			nd wetland hydrology must be d or problematic for #3, 4, 5.
Percent Bare Ground 30		Hydrophytic Vegetation Present?	on Yes NO
Remarks:	_	•	
BG/litter=30%			

SOIL Sampling Point: <u>DP05u</u>

Profile Desc	ription: (Describe	to the depth ne	eded to docume	ent the indicator	or confirm the absence of indicators.)
Depth	Matrix			Features	
(inches)	Color (moist)	% Co	olor (moist)	% Type ¹	<u>Loc² Texture</u> Remarks
0-16	_10YR3/2	_ 100			Sandy Clay Loam _
	-		·		
					·
	oncentration, D=Dep				
	Indicators: (Applica	able to all LRRS			Indicators for Problematic Hydric Soils ³ :
Histosol	, ,			eyed Matrix (S4)	1 cm Muck (A9) (LRR I, J)
	oipedon (A2)		☐ Sandy Re		Coast Prairie Redox (A16) (LRR F, G, H)
=	istic (A3)		=	Matrix (S6)	Dark Surface (S7) (LRR G)
	en Sulfide (A4)	=\		ucky Mineral (F1)	
	d Layers (A5) (LRR F uck (A9) (LRR F, G, F		_	eyed Matrix (F2) Matrix (F3)	(LRR H outside of MLRA 72 & 73) Reduced Vertic (F18)
	d Below Dark Surface			ark Surface (F6)	Reduced Vertic (F16) Red Parent Material (TF2)
	ark Surface (A12)	- (/ \ I)		Dark Surface (F7)	
	Mucky Mineral (S1)			epressions (F8)	Other (Explain in Remarks)
	Mucky Peat or Peat (S2) (LRR G, H)		ns Depressions (F	
	ıcky Peat or Peat (S	, , , , , , ,		A 72 & 73 of LRR	, , , , , , , , , , , , , , , , , , , ,
					unless disturbed or problematic.
Restrictive	Layer (if present):				
Type:					
Depth (in	ches):				Hydric Soil Present? Yes No
Remarks: N	o hydric soil indica	tore observed	durina eite viei	<u> </u>	
110	o riyuric son mulca	tors observed	during site visi	ι.	
HYDROLO	GY				
Wetland Hy	drology Indicators:				
Primary India	cators (minimum of o	ne required; che	ck all that apply)		Secondary Indicators (minimum of two require
	Water (A1)	•	Salt Crust (E		Surface Soil Cracks (B6)
	ater Table (A2)			ertebrates (B13)	Sparsely Vegetated Concave Surface (B8
Saturation	` ,			ulfide Odor (C1)	Drainage Patterns (B10)
_	larks (B1)			Water Table (C2)	
	nt Deposits (B2)	I		izospheres on Livi	
	posits (B3)		Oxidized itili (where no		Crayfish Burrows (C8)
	at or Crust (B4)			Reduced Iron (C4	
	oosits (B5)	ļ	Thin Muck S	•	Geomorphic Position (D2)
	on Visible on Aerial I	magery (R7)	_	ain in Remarks)	FAC-Neutral Test (D5)
	tained Leaves (B9)	inagery (D7)	Other (Expla	alli ili ivelilarks)	Frost-Heave Hummocks (D7) (LRR F)
Field Obser					1105t-fleave fluffilliocks (D7) (ERR F)
		os Na	✓ Donth (in -!-	nes):	
Surface Wat					
Water Table				ies):	
Saturation P		es <u> </u>	✓ Depth (inch	ies):	Wetland Hydrology Present? Yes No
(includes car Describe Re		gauge, monitorii	ng well, aerial nh	otos, previous ins	 spections), if available:
2000.100110		3ge, 111011110111	, aonai pi		
Demarka					
Remarks: No	hydrologic indicat	tors observed	during site visit	. Soil moist	

Project/Site: JTX Tunnicliff		Citv/Co	_{untv:} Big Horn		Sampling	Date: 6/10/2020
Investigator(s): R Quire, S Robbins						"
Landform (hillslope, terrace, etc.): Depression						
Subregion (LRR): LRR G						Z Datum: NAD 83
Soil Map Unit Name: Hh: Haverson and Lohm						
Are climatic / hydrologic conditions on the site typ						
Are Vegetation, Soil, or Hydrology						∕es <u></u> No _ □
Are Vegetation, Soil, or Hydrology	, naturally r	rohlemati	c? (If neede		answers in Rema	
SUMMARY OF FINDINGS – Attach si						
Hydrophytic Vegetation Present? Yes _ Hydric Soil Present? Yes _ Wetland Hydrology Present? Yes _ Remarks: PEM depressional wetland in Cel	No		s the Sampled Are		✓ No	
VEGETATION - Use scientific names						
Tree Stratum Plot size (25 Foot Radius)	Absolute Domia		cator	ominance Tes	t worksheet	
Tiee Stratum Tiot size (25 Toot Nadius)	% Cover: Specie	es? Sta	N	lumber of Dom nat are OBL, FA		2 (A)
				otal Number of pecies Across		2 (B)
Sapling/Shrub Stratum Plot size (15 Foo	nt Radius)			ercent of Domi hat Are OBL, F	inant Species FACW, or FAC:	100.0 % (A/B)
Outping/Onrab Otracam 1 lot 9/20 (15 1 oc	r radius)		P	revalence Ind		
			-	Total % Co OBL species		Multiply by:
				ACW species	35 X 1 30 X 2	35 60
				AC species	0 X3	0
Herbaceous Stratum Plot size (5 Foo	ot Radius)			ACU species	15 X4	60
Elymus repens	15 🗆	FACL	J	IPL species	0 X5	0
Hordeum jubatum	25	FACV	N C	Column Totals	80 (A)) 155 (B)
Juncus balticus	5	FACV	V	Prevalence	Index = B/A =	1.94
Schoenoplectus maritimus	5	OBL	<u> </u>	ydrophytic Ve	getation Indicat	ors
Typha angustifolia	30 🗸	OBL		✓ 1 - Rapid	d Test for Hydrop	hytic Vegetation
				✓ 2 - Domi	inance Test is >5	0%
				✓ 3 - Preva	alence Index is <=	= 3.0
					hological Adaptat ng data in remark	`
				5 - Wetla	and Non-Vascular	r Plants
				Problem	atic Hydrophytic \	Vegetation (Explain)
Woody Vine Stratum Plot size (30 Foo	ot Radius)			licators of hydri	ic sil and wetland	hydrology must be ematic for #3, 4, 5.
Percent Bare Ground 20			F	lydrophytic Ve resent?	actation	es 🗸 NO
Remarks:						
BG/litter=20%						

SOIL Sampling Point: DP05w

Depth Marix Golor (molet) % Color (molet) % Type Loc Texture Remarks
Type: C=Concentration. D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. **Location: PL=Pore Lining, M=Matrix, Lindicators: (Applicable to all LRRs, unless otherwise noted.) Histics of (A1)
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)
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) □ Depleted Below Dark Surface (A12) □ Thick Dark Surface (A12) □ Sandy Mucky Mineral (S1) □ Redox Depressions (F8) □ Sandy Mucky Mineral (S1) □ Redox Depressions (F8) □ Storm Mucky Peat or Peat (S2) (LRR G, H) □ Storm Mucky Peat or Peat (S3) (LRR F) □ Mucky Peat or Peat (S2) (LRR F) □ Mucky Peat or Peat (S3) (LR F) □
Depleted Below Dark Surface (A11)
Thick Dark Surface (A12)
Sandy Mucky Mineral (S1)
□ 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) □ High Plains Depressions (F16) wetland hydrology must be present, unless disturbed or problematic. Sem Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 of LRR H) wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if present):
□ 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 of LRR H) wetland hydrology must be present, unless disturbed or problematic. Restrictive Layer (if present): Type: □ Depth (inches): □ Hydric Soil Present? Yes ☑ No □ Remarks: Prominent redoximorphic concentrations common within the depleted matrix. IYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) □ Secondary Indicators (minimum of two required) □ Surface Water (A1) □ Surface Water (A1) □ Surface Water (A1) □ Surface Water (A1) □ Sparsely Vegetated Concave Surface (B8) □ High Water Table (A2) □ Aquatic Invertebrates (B13) □ Drainage Patterns (B10) □ Water Marks (B1) □ Dry-Season Water Table (C2) □ Oxidized Rhizospheres on Living Roots (C3) □ Drift Deposits (B2) □ Oxidized Rhizospheres on Living Roots (C3) □ Drift Deposits (B3) □ Algal Mat or Crust (B4) □ Presence of Reduced Iron (C4) □ Saturation Visible on Aerial Imagery (C9)
Restrictive Layer (if present): Type: Depth (inches):
Restrictive Layer (if present): Type:
Type:
Depth (inches):
Prominent redoximorphic concentrations common within the depleted matrix.
Surface Water (A1)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Surface Water (A1) High Water Table (A2) Aquatic Invertebrates (B13) Saturation (A3) Hydrogen Sulfide Odor (C1) Water Marks (B1) Dry-Season Water Table (C2) Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Mere not tilled) Algal Mat or Crust (B4) Secondary Indicators (minimum of two required) Secondary Indicators (minimum of two required) Surface Soil Cracks (B6) Sparsely Vegetated Concave Surface (B8) Prainage Patterns (B10) Oxidized Rhizospheres on Living Roots (C3) (where tilled) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Surface Water (A1) High Water Table (A2) Aquatic Invertebrates (B13) Saturation (A3) Hydrogen Sulfide Odor (C1) Water Marks (B1) Dry-Season Water Table (C2) Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Secondary Indicators (minimum of two required) 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)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Surface Water (A1) High Water Table (A2) Aquatic Invertebrates (B13) Saturation (A3) Hydrogen Sulfide Odor (C1) Water Marks (B1) Dry-Season Water Table (C2) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) 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)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; check all that apply) Surface Water (A1) High Water Table (A2) Aquatic Invertebrates (B13) Saturation (A3) Hydrogen Sulfide Odor (C1) Water Marks (B1) Dry-Season Water Table (C2) Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Secondary Indicators (minimum of two required) 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)
Primary Indicators (minimum of one required; check all that apply) Surface Water (A1) High Water Table (A2) Aquatic Invertebrates (B13) Water Marks (B1) Dry-Season Water Table (C2) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) 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)
Surface Water (A1) High Water Table (A2) Aquatic Invertebrates (B13) Saturation (A3) Hydrogen Sulfide Odor (C1) Water Marks (B1) Dry-Season Water Table (C2) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Salt Crust (B11) Aquatic Invertebrates (B13) Aquatic Invertebrates (B13) Dry-Season Water Table (C2) Oxidized Rhizospheres on Living Roots (C3) (where tilled) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9)
High Water Table (A2) Aquatic Invertebrates (B13) Sparsely Vegetated Concave Surface (B8) ✓ Saturation (A3) Hydrogen Sulfide Odor (C1) Drainage Patterns (B10) Water Marks (B1) Dry-Season Water Table (C2) Sediment Deposits (B2) Drift Deposits (B3) (where not tilled) Algal Mat or Crust (B4) Aquatic Invertebrates (B13) Dry-Season Water Table (C2) Oxidized Rhizospheres on Living Roots (C3) (where tilled) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9)
✓ Saturation (A3) ☐ Hydrogen Sulfide Odor (C1) ☐ Drainage Patterns (B10) ✓ Water Marks (B1) ☐ Dry-Season Water Table (C2) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Sediment Deposits (B2) ☐ Oxidized Rhizospheres on Living Roots (C3) (where tilled) ☐ Drift Deposits (B3) (where not tilled) ☐ Crayfish Burrows (C8) ☐ Algal Mat or Crust (B4) ☐ Presence of Reduced Iron (C4) ☐ Saturation Visible on Aerial Imagery (C9)
Water Marks (B1) Dry-Season Water Table (C2) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Dry-Season Water Table (C2) Oxidized Rhizospheres on Living Roots (C3) (where not tilled) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9)
Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Oxidized Rhizospheres on Living Roots (C3) (where tilled) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9)
Drift Deposits (B3) (where not tilled) Crayfish Burrows (C8) Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5) Thin Muck Surface (C7) Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7) Uther (Explain in Remarks) FAC-Neutral Test (D5)
Water-Stained Leaves (B9) Frost-Heave Hummocks (D7) (LRR F)
Field Observations:
Surface Water Present? Yes Unches Depth (inches):
Water Table Present? Yes ☐ No ☑ Depth (inches):
Saturation Present? Yes 🔽 No 🔲 Depth (inches): 0 Wetland Hydrology Present? Yes 🔽 No 🛄
(includes capillary fringe)
riescribe Recorded Hata (stream dailde, monitoring Meir aetal photos, previous preventions), it available.
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Remarks: 3 inches of surface water observed near sample point in center of Cell 11.

Project/Site: JTX Tunnicliff	City/County: Big Horn	Samp	ling Date: 6/10/2020
		_{State:} Montana _{Samp}	
Investigator(s): R Quire, S Robbins			
Landform (hillslope, terrace, etc.): Terrace			
Subregion (LRR): LRR G Lat: Lat: Soil Map Unit Name: Hh: Haverson and Lohmiller soils, wet	_	NWI classification:	Not Mapped
Are climatic / hydrologic conditions on the site typical for this time of ye	ar? Yes 🔽 No 🔼	(If no, explain in Remarks	s.)
Are Vegetation, Soil, or Hydrology significantly	disturbed? Are "N	ormal Circumstances" present	? Yes 🔽 No 🔲
Are Vegetation, Soil, or Hydrology naturally pro	blematic? (If nee	ded, explain any answers in Re	emarks.)
SUMMARY OF FINDINGS - Attach site map showing	sampling point lo	cations, transects, imp	ortant features, etc
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Yes No V No V	Is the Sampled A		Vo_ <u>✓</u>
Remarks: Upland sample point. VEGETATION - Use scientific names of plants			
Tree Street up Plet size (20 Feet Rediive) Absolute Domiant	Indicator	Dominance Test worksheet	 t
Tree Stratum Plot size (30 Foot Radius) % Cover: Species	? Status	Number of Dominant Species that are OBL, FACW or FAC	s
		Total Number of Dominant Species Across All Strata:	2 (B)
Sapling/Shrub Stratum Plot size (15 Foot Radius)		Percent of Dominant Species That Are OBL, FACW, or FA	
		Prevalence Index workshee	
		Total % Cover of: OBL species 0 X	Multiply by: 1 0
		FACW species 0 X	
		FAC species 0 X	3 0
Herbaceous Stratum Plot size (5 Foot Radius)		FACU species 0 X UPL species 80 X	
	JPL	·	
Thinopyrum ponticum 50 ✓ U	JPL	Column Totals 80	(A) 400 (B)
		Prevalence Index = B/A	\ = 5.00
		Hydrophytic Vegetation Ind	
			
		3 - Prevalence Index	
		 4 - Morphological Ada supporting data in rer sheet. 	
		5 - Wetland Non-Vaso	cular Plants
		Problematic Hydrophy	ytic Vegetation (Explain)
Woody Vine Stratum Plot size (30 Foot Radius)		Indicators of hydric sil and wetl present, unless disturbed or pr	
Percent Bare Ground 20		Hydrophytic Vegetation Present?	Yes NO
Remarks:			
BG/litter=20%			

SOIL Sampling Point: DP06u

(inches)	Matrix Color (moist)	——————————————————————————————————————	Redox Featur Color (moist) %		.oc² Textu	ire Remarks
0-16	<u> </u>	100_			Sandy Loa	
		· · · · · ·			. ,	-
						
						
			luced Matrix, CS=Cover			² Location: PL=Pore Lining, M=Matrix.
yarıc son Histosol		able to all LKK	s, unless otherwise no			ators for Problematic Hydric Soils ³ :
	pipedon (A2)					cm Muck (A9) (LRR I, J) Coast Prairie Redox (A16) (LRR F, G, H)
	istic (A3)		Stripped Matrix			Dark Surface (S7) (LRR G)
_	en Sulfide (A4)		Loamy Mucky M			ligh Plains Depressions (F16)
Stratified	d Layers (A5) (LRR F	=)	Loamy Gleyed N	latrix (F2)	_	(LRR H outside of MLRA 72 & 73)
_	uck (A9) (LRR F, G, I		Depleted Matrix	` '	_	Reduced Vertic (F18)
_	d Below Dark Surfac	e (A11)	Redox Dark Sur		_	Red Parent Material (TF2)
_	ark Surface (A12)		☐ Depleted Dark S☐ Redox Depressi	, ,	=	/ery Shallow Dark Surface (TF12)
_	/lucky Mineral (S1) Mucky Peat or Peat (S2) (I RR G H)	:			Other (Explain in Remarks) cators of hydrophytic vegetation and
_	ucky Peat or Peat (S			73 of LRR H)		etland hydrology must be present,
_	,	, (====,	(,		inless disturbed or problematic.
estrictive l	Layer (if present):					
Туре:						
Depth (in	ches):		-		Hydrid	c Soil Present? Yes No
/DROLO	GY .					
	drology Indicators:					
•	cators (minimum of o		eck all that apply)		Se	condary Indicators (minimum of two required
	Water (A1)	•	Salt Crust (B11)			Surface Soil Cracks (B6)
_	ater Table (A2)		Aquatic Invertebrat	es (B13)		Sparsely Vegetated Concave Surface (B8)
Saturatio			Hydrogen Sulfide (` ,		Drainage Patterns (B10)
_ _ Water M	larks (B1)		Dry-Season Water	Table (C2)		Oxidized Rhizospheres on Living Roots (C
Sedimer	nt Deposits (B2)		Oxidized Rhizosph	eres on Living	Roots (C3)	(where tilled)
Drift Der	posits (B3)		(where not tilled)		Crayfish Burrows (C8)
] Algal Ma	at or Crust (B4)		Presence of Reduc	ed Iron (C4)		Saturation Visible on Aerial Imagery (C9)
☐ Iron Dep	oosits (B5)		Thin Muck Surface	(C7)		Geomorphic Position (D2)
	on Visible on Aerial I	magery (B7)	Other (Explain in R	emarks)		FAC-Neutral Test (D5)
7 186 6 0	tained Leaves (B9)					Frost-Heave Hummocks (D7) (LRR F)
	vations:		V 5			
ield Obser	- D		Depth (inches):			
ield Obser urface Wat		es U No _				
ield Obser aurface Wat Vater Table	Present? Y	es 🔲 No _	✓ Depth (inches): _		Motlemel Heat	rology Brosont2 Vac Na V
i eld Obser Surface Wat Vater Table Saturation P	Present? Y	es 🔲 No _			Wetland Hyd	rology Present? Yes No
Field Obser Surface Wate Vater Table Saturation P ncludes cap	Present? Y resent? Y pillary fringe)	es No No	✓ Depth (inches): _		_	
ield Obser urface Wat /ater Table aturation P ncludes cap escribe Re	Present? Y resent? Y pillary fringe) corded Data (stream	es No es No gauge, monito	Depth (inches): Depth (inches): ing well, aerial photos, p	revious inspec	_	
ield Obser urface Wat /ater Table aturation P noludes cap escribe Re	Present? Y resent? Y pillary fringe) corded Data (stream	es No es No gauge, monito	Depth (inches): Depth (inches):	revious inspec	_	
ield Obser urface Wat /ater Table aturation P noludes cap escribe Re	Present? Y resent? Y pillary fringe) corded Data (stream	es No es No gauge, monito	Depth (inches): Depth (inches): ing well, aerial photos, p	revious inspec	_	

Project/Site: JTX Tunnicliff	City/County: Bio	g Horn		Sampling [Date: 6/10/2020
Applicant/Owner: MDT	only/ odding/			ana Sampling F	
Investigator(s): R Quire, S Robbins	Section Towns				
Landform (hillslope, terrace, etc.): Depression					
Subregion (LRR): LRR G					Datum: NAD 83
Soil Map Unit Name: Hh: Haverson and Lohmiller soils, w					
Are climatic / hydrologic conditions on the site typical for this til					
Are Vegetation, Soil, or Hydrology sign					es 🔽 No 🔲
Are Vegetation, Soil, or Hydrology natu	rally problematic?	(If needed e		answers in Remark	
SUMMARY OF FINDINGS – Attach site map sh					
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Remarks: PEM depressional wetland in Cells 8/9.	within a	ampled Area Wetland?	Yes	No	
VEGETATION - Use scientific names of plants					
Trac Strature Plot size (20 Feet Redine) Absolute	Domiant Indicator	Dom	inance Tes	st worksheet	
Tree Stratum Piot Size (30 Poot Radius) % Cover:	Species? Status	Num	ber of Dom	inant Species ACW or FAC:	3 (A)
			Number of cies Across		3 (B)
Sapling/Shrub Stratum Plot size (15 Foot Radius)				nant Species ACW, or FAC:	100.0 % (A/B)
Sapinigistrius Stratum 1 fot size (15 1 oot Nadius)		Prev	alence Ind	ex worksheet	
			Total % Co		Multiply by:
			species W species	50 X 1 15 X 2	30
			species	5 X3	15
Hartana and Otration Plateins (5 Feet Padius)			U species	10 X4	40
Herbaceous Stratum Plot size (5 Foot Radius) Chenopodium glaucum 5	☐ FAC	UPL	species	0 X5	0
Elymus repens 10	FACU	Colu	mn Totals	80 (A)	135 (B)
Hordeum jubatum 15	✓ FACW		Prevalence	Index = B/A =	1.69
Schoenoplectus maritimus 35	✓ OBL			getation Indicate	ors
Typha latifolia 15	✓ OBL			d Test for Hydroph	
			🖸 2 - Domi	nance Test is >50)%
			3 - Preva	alence Index is <=	3.0
			supporti	hological Adaptati ng data in remarks	
			sheet.		5
			7	and Non-Vascular	
Woody Vine Stratum Plot size (30 Foot Radius)			□ Problem	atic Hydrophytic V	egetation (Explain)
Woody vine Stratum Fiot size (50 Foot Nadius)				c sil and wetland l sturbed or probler	hydrology must be matic for #3, 4, 5.
Percent Bare Ground 20			ophytic Ve ent?	getation Yes	s V NO
Remarks: BG/litter=20%					

SOIL Sampling Point: DP06w

Profile Description: (Describe to the depth	needed to document the indicator or o	confirm the absence of indicators.)
Depth	Redox Features	
(inches) Color (moist) %	Color (moist) % Type ¹ L	<u>_oc² Texture Remarks</u>
_0-10 _10YR4/1 9510	YR _4/6 5CPL,	Sandy Clay Loam _
10.		a chhla a
-10+		cobbles -
1		2
Type: C=Concentration, D=Depletion, RM=Re Hydric Soil Indicators: (Applicable to all LR		and Grains. ² Location: PL=Pore Lining, M=Matrix. Indicators for Problematic Hydric Soils ³ :
Histosol (A1)	Sandy Gleyed Matrix (S4) Sandy Redox (S5)	1 cm Muck (A9) (LRR I, J) Coast Prairie Redox (A16) (LRR F, G, H)
Histic Epipedon (A2) Black Histic (A3)	Stripped Matrix (S6)	Dark Surface (S7) (LRR G)
Hydrogen Sulfide (A4)	Loamy Mucky Mineral (F1)	High Plains Depressions (F16)
Stratified Layers (A5) (LRR F)	Loamy Gleyed Matrix (F2)	(LRR H outside of MLRA 72 & 73)
1 cm Muck (A9) (LRR F, G, H)	Depleted Matrix (F3)	Reduced Vertic (F18)
Depleted Below Dark Surface (A11)	Redox Dark Surface (F6)	Red Parent Material (TF2)
Thick Dark Surface (A12)	Depleted Dark Surface (F7)	☐ Very Shallow Dark Surface (TF12)
Sandy Mucky Mineral (S1)	Redox Depressions (F8)	Other (Explain in Remarks)
2.5 cm Mucky Peat or Peat (S2) (LRR G, I	H) 🔲 High Plains Depressions (F16)	
5 cm Mucky Peat or Peat (S3) (LRR F)	(MLRA 72 & 73 of LRR H)	
		unless disturbed or problematic.
Restrictive Layer (if present):		
Type:		
Depth (inches):	_	Hydric Soil Present? Yes No
Remarks: Prominent redoximorphic concer	ntrations common within the deplete	ed matrix.
HYDROLOGY		
Wetland Hydrology Indicators:		Occasional and and an experience of the constitution of the consti
Primary Indicators (minimum of one required; o		Secondary Indicators (minimum of two required)
Surface Water (A1)	✓ Salt Crust (B11)	Surface Soil Cracks (B6)
High Water Table (A2)	Aquatic Invertebrates (B13)	Sparsely Vegetated Concave Surface (B8)
✓ Saturation (A3)	Hydrogen Sulfide Odor (C1)	Drainage Patterns (B10)
Water Marks (B1)	Dry-Season Water Table (C2)	Oxidized Rhizospheres on Living Roots (C3)
Sediment Deposits (B2)	Oxidized Rhizospheres on Living	·
Drift Deposits (B3)	(where not tilled)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Presence of Reduced Iron (C4)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)	Thin Muck Surface (C7)	✓ Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	FAC-Neutral Test (D5)
Water-Stained Leaves (B9)		Frost-Heave Hummocks (D7) (LRR F)
Field Observations:		
	Depth (inches):	
	Depth (inches):	
	Depth (inches):0	Wetland Hydrology Present? Yes No
(includes capillary fringe) Describe Recorded Data (stream gauge, monit	oring well serial photos, previous inspec	
Bessine Necorded Data (Stream gauge, Monte	oning well, dendi photos, previous ilispec	onons, ii avallabio.
Pomorko: a		
Remarks: Salt crust and saturation present		

Project/Site: JTX Tunnicliff	City/County: Big Horn		Sampling Date: _	6/10/2020
Investigator(s): R Quire, S Robbins	Section, Township, Rang	ge: 34 7N	39E	
Landform (hillslope, terrace, etc.): Terrace	Local relief (concave, co			
Subregion (LRR): LRR G Lat:	45.837984	Long: -10	7.598817 _{Datu}	m: NAD 83
Soil Map Unit Name: Hh: Haverson and Lohmiller soils, wet		NWI classific	 _{ation:} Not Mappe	
Are climatic / hydrologic conditions on the site typical for this time of year Are Vegetation, Soil, or Hydrology significantly	disturbed? Are "N	ormal Circumstances" p	resent? Yes 🔽	
Are Vegetation, Soil, or Hydrology naturally pro	oblematic? (If nee	ded, explain any answe	rs in Remarks.)	
SUMMARY OF FINDINGS - Attach site map showing	sampling point lo	cations, transects	, important fe	atures, etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Remarks: Upland sample point.	Is the Sampled A	Area I? Yes] No <u></u> ✓	-
VEGETATION - Use scientific names of plants				
Absolute Domiant		Dominance Test wor	 ksheet	
Tree Stratum Plot size (30 Foot Radius) % Cover: Species	? Status	Number of Dominant S that are OBL, FACW of	Species	0 _(A)
		Total Number of Domi Species Across All Str		1 (B)
Sapling/Shrub Stratum Plot size (15 Foot Radius)		Percent of Dominant S That Are OBL, FACW,		.0 % (A/B)
		Prevalence Index wo Total % Cover of OBL species FACW species	f: Mu 0 X 1 0 X 2	ultiply by:
		FAC species FACU species	0 X3 10 X4	40
Herbaceous Stratum Plot size (5 Foot Radius)	LIBI	•	70 X 5	350
Elymus hispidus 60 Poa pratensis 10 ☐	UPL FACU	Column Totals 8	30 (A)	390 (B)
Thinopyrum ponticum 10	UPL			4.88
Thinopyrum ponticum	OI L	Prevalence Index		4.00
		2 - Dominance 3 - Prevalence 4 - Morphologic supporting data sheet. 5 - Wetland No	for Hydrophytic V	Provide n separate
Woody Vine Stratum Plot size (30 Foot Radius)		Indicators of hydric sil a present, unless disturbe	nd wetland hydrol	ogy must be
Percent Bare Ground 20		Hydrophytic Vegetati Present?	on Yes	NO 🗸
Remarks: BG/litter=20%				

SOIL Sampling Point: DP07u

Profile Desc	ription: (Describe	to the depth nee	eded to document	the indicator	or confirm	1 the absence of indicators.)
Depth	Matrix		Redox Fe	atures		
(inches)	Color (moist)	% Co	olor (moist)	<u>% Type¹</u>	Loc ²	
0-15	_10YR4/3	_ 100_				Clay Loam _
		·				
		· ———				
		· 				
						
	oncentration, D=Dep				ed Sand Gr	
_	Indicators: (Applic	able to all LRRs				Indicators for Problematic Hydric Soils ³ :
Histosol	• •			ed Matrix (S4)		1 cm Muck (A9) (LRR I, J)
	oipedon (A2)		Sandy Redo			Coast Prairie Redox (A16) (LRR F, G, H)
Black Hi	, ,		Stripped Mat	, ,		Dark Surface (S7) (LRR G)
_	en Sulfide (A4)	- ,	_ ·	y Mineral (F1)		High Plains Depressions (F16)
	d Layers (A5) (LRR F	•	_ · ·	ed Matrix (F2)		(LRR H outside of MLRA 72 & 73)
	ick (A9) (LRR F, G, I d Below Dark Surfac		_ Depleted Ma ☐ Redox Dark			☐ Reduced Vertic (F18) ☐ Red Parent Material (TF2)
	ark Surface (A12)	(\(\)\)	=	rk Surface (F6)	١	☐ Very Shallow Dark Surface (TF12)
	flucky Mineral (S1)		Redox Depre		'	Other (Explain in Remarks)
= -	Mucky Peat or Peat (S2) (LRR G. H)		Depressions (F	16)	³ Indicators of hydrophytic vegetation and
	icky Peat or Peat (S			2 & 73 of LRR		wetland hydrology must be present,
		,	•		,	unless disturbed or problematic.
Restrictive I	Layer (if present):					
Туре:						
Depth (inc	ches):					Hydric Soil Present? Yes No
Remarks: N/	o hydric soil indica	tore observed	during eite vieit			
rtomanto. [40	o riyuric son mulca	itors observed	during site visit.			
HYDROLO	GY					
Wetland Hyd	drology Indicators:					
Primary India	cators (minimum of o	ne required: che	ck all that apply)			Secondary Indicators (minimum of two required)
	Water (A1)	[Salt Crust (B11)		Surface Soil Cracks (B6)
	iter Table (A2)	Ĺ	Aquatic Inverte			Sparsely Vegetated Concave Surface (B8)
Saturation	` ,	L	Hydrogen Sulfic	` ,		Drainage Patterns (B10)
_	larks (B1)	Ĺ	Dry-Season Wa			Oxidized Rhizospheres on Living Roots (C3)
_	nt Deposits (B2)	L F	Oxidized Rhizo			
	n Deposits (B2)	L	Oxidized R11120 (where not ti	-	ווואַ ועטטנא (Crayfish Burrows (C8)
_		Г	Presence of Re	•	1)	Saturation Visible on Aerial Imagery (C9)
	at or Crust (B4)	L		•	†)	
	oosits (B5)		Thin Muck Surf	, ,		Geomorphic Position (D2)
_	on Visible on Aerial I	magery (b/)	Other (Explain	in Remarks)		FAC-Neutral Test (D5)
	tained Leaves (B9)					Frost-Heave Hummocks (D7) (LRR F)
Field Observ			V Denth // to - y	۸.		
Surface Water			Depth (inches)			
Water Table			✓ Depth (inches)			
Saturation Pr		es No	✓ Depth (inches)):	_ Wetla	and Hydrology Present? Yes No
(includes cap Describe Red	oillary fringe) corded Data (stream	gauge monitorin	ng well, aerial photo	s previous ins	nections)	if available:
2000 ING 1/60	oo. aoa bala (sii caiii	gaago, momon	.5 won, acriai prioto	, provious ilis	, , , , , , , , , , , , , , , , , , ,	. Grandelo.
Donardia						
remarks: No	hydrologic indica	tors observed o	during site visit. S	oil slightly m	oist	

Project/Site: JTX Tunnicliff	Citv/C	county: Big Horn		Sampling	Date: 6/10/2020
Applicant/Owner: MDT					
Investigator(s): R Quire, S Robbins					
Landform (hillslope, terrace, etc.): Depression					
Subregion (LRR): LRR G					
Soil Map Unit Name: Hh: Haverson and Lohmiller soils, we		10.001 002 [0]			
Are climatic / hydrologic conditions on the site typical for this tir					
Are Vegetation, Soil, or Hydrology sign Are Vegetation, Soil, or Hydrology natu	ificantly distur	bed? Are "Norm			
Are Vegetation, Soil, or Hydrology natu	arally problema	atic? (If needed	, explain any a	answers in Remar	ks.)
SUMMARY OF FINDINGS – Attach site map sh	owing san	npling point locat	ions, trans	ects, importa	ant features, etc
Hydrophytic Vegetation Present? Yes V No _ Hydric Soil Present? Yes V No _ Wetland Hydrology Present? Yes V No _ Remarks: PEM depressional wetland in Cell 7.		Is the Sampled Area within a Wetland?		No _	
VEGETATION - Use scientific names of plants					
Tree Street up. Plot size (20 Feet Redive) Absolute I	Domiant Ir	ndicator	ominance Tes	t worksheet	
Tree Stratum Plot size (30 Foot Radius) % Cover: 5	Species? S	tatus N	umber of Domi at are OBL, FA	inant Species	4 (A)
			otal Number of pecies Across		4 (B)
Sapling/Shrub Stratum Plot size (15 Foot Radius)			ercent of Domi nat Are OBL, F	nant Species ACW, or FAC:	100.0 % (A/B)
Saping/Strub Stratum 1 fot size (15 1 out reading)		Pi	revalence Inde	ex worksheet	-
		-	Total % Co		Multiply by:
			BL species	25 X 1 35 X 2	25
			ACW species AC species	0 X3	70
B			ACU species	•	20
Herbaceous Stratum Plot size (5 Foot Radius)	✓ FAC	U	PL species	0 X5	0
Alopecurus arundinaceus 15 Distichlis spicata 5	FAC		olumn Totals	65 (A)	115 (B)
Elymus repens 5	☐ FAC		L		1.77
Hordeum jubatum 10	✓ FAC	`\\/		Index = B/A =	
Juncus balticus 5	☐ FAC	CW H		getation Indicated Test for Hydropl	
Schoenoplectus pungens 15	✓ OBI	L		nance Test is >50	
Typha angustifolia 10	✓ OBI	L		alence Index is <=	
				hological Adaptat ng data in remark	`
			5 - Wetla	and Non-Vascular	· Plants
			Problem:	atic Hydronhytic \	√egetation (Explain)
Woody Vine Stratum Plot size (30 Foot Radius)			cators of hydri	c sil and wetland	hydrology must be matic for #3, 4, 5.
		H	ydrophytic Veresent?	actation	s V NO
Percent Bare Ground 30			esent?		
Remarks: BG/litter=30%					

SOIL Sampling Point: DP07w

		to the dept		nent the indicator or	confirm the absence	of indicators.)
Depth (inches)	Matrix Color (moist)	%	Redox Color (moist)	x Features %Type ¹	Loc ² Texture	Remarks
0-10	_10YR4/2	95_ 1	0YR _4/6 _	_ 5CPL	, Sandy Clay Loan	1 _
-10+					cobbles	-
-						
¹Type: C=C	Concentration, D=De	pletion, RM=	Reduced Matrix, CS	=Covered or Coated §	Sand Grains. ² Lo	cation: PL=Pore Lining, M=Matrix.
	Indicators: (Appli					for Problematic Hydric Soils ³ :
Histoso			Sandy G	Bleyed Matrix (S4)		Muck (A9) (LRR I, J)
	pipedon (A2)			tedox (S5)		Prairie Redox (A16) (LRR F, G, H)
$\overline{}$	listic (A3)			Matrix (S6)		Surface (S7) (LRR G)
	en Sulfide (A4) ed Layers (A5) (LRR	E)		Mucky Mineral (F1) Gleyed Matrix (F2)		Plains Depressions (F16) RR H outside of MLRA 72 & 73)
$\overline{}$	uck (A9) (LRR F, G	,		d Matrix (F3)	`	ed Vertic (F18)
	ed Below Dark Surfa		_	Park Surface (F6)	=	arent Material (TF2)
Thick D	ark Surface (A12)		Depleted	d Dark Surface (F7)	☐ Very S	Shallow Dark Surface (TF12)
_	Mucky Mineral (S1)			epressions (F8)		(Explain in Remarks)
_	Mucky Peat or Peat	` ' '		ins Depressions (F16)		of hydrophytic vegetation and
5 CIT IVI	ucky Peat or Peat (\$	55) (LRR F)	(IVILI	RA 72 & 73 of LRR H)		d hydrology must be present, disturbed or problematic.
Restrictive	Layer (if present):					, distance of presidentalis.
Type:						
Depth (ir	nches):				Hydric Soil	Present? Yes No
Remarks: F	rominent redoxim	orphic cond	centrations commo	on within the deplete	ed matrix.	
HYDROLO	OGY					
Wetland Hy	drology Indicators	:				
Primary Ind	icators (minimum of	one required	; check all that apply	/)	Seconda	ary Indicators (minimum of two required)
Surface	e Water (A1)		Salt Crust	(B11)	Sur	face Soil Cracks (B6)
High W	ater Table (A2)		Aquatic Inv	rertebrates (B13)	Spa	rsely Vegetated Concave Surface (B8)
✓ Saturat	ion (A3)			Sulfide Odor (C1)	Dra	inage Patterns (B10)
_	Marks (B1)			n Water Table (C2)		dized Rhizospheres on Living Roots (C3)
	ent Deposits (B2)			hizospheres on Living		vhere tilled)
=	eposits (B3)			of Reduced Iron (C4)	=	yfish Burrows (C8)
	lat or Crust (B4) posits (B5)			of Reduced Iron (C4) Surface (C7)		uration Visible on Aerial Imagery (C9) omorphic Position (D2)
	tion Visible on Aerial	Imagery (B7		lain in Remarks)		C-Neutral Test (D5)
	Stained Leaves (B9)) <u> </u>	iam in Romano,		st-Heave Hummocks (D7) (LRR F)
Field Obse	,					(, (,
Surface Wa	ter Present?	Yes 🔲 📗	lo <u> </u>	ches):		
Water Table	e Present?		lo 🔽 Depth (inc			
Saturation F	Present? apillary fringe)		lo Depth (inc	_	Wetland Hydrolog	y Present? Yes No
		n gauge, mo	nitoring well, aerial p	hotos, previous inspe	ctions), if available:	
Remarks: 1	in of surface wate	r observed	in cell 7, near san	nple point.		
			•	•		

Project/Site: JTX Tunnicliff		_ City/Co	ounty: Big Horn		Sampling D	oate:6/1	0/2020
Applicant/Owner: MDT				State: Monta	ına_ Sampling P	oint: DP08ı	J.
Investigator(s): R Quire, S Robbins		Section	n, Township, Range	: 34	7N	39E	
Landform (hillslope, terrace, etc.): Terrace							: 1
Subregion (LRR): LRR G	Lat:		45.838173 L	ong:	-107.597277	Datum: NA	D 83
Subregion (LRR): LRR G Soil Map Unit Name: Hh: Haverson and Lc	ohmiller soils, wet			NWI cla	ssification: Not M	lapped	
Are climatic / hydrologic conditions on the site	e typical for this time of	vear? Ye	es 🗸 No 🗆	(If no explain	in Remarks)		
Are Vegetation, Soil, or Hydro						s 🗸 N	ıo 🗆
Are Vegetation, Soil, or Hydro	ology significant	oroblemat	tic? (If need	ad evolain any ar	newers in Remark	· · · · · · · · · · · · · · · · · · ·	·
SUMMARY OF FINDINGS - Attack							s, etc.
Hydric Soil Present?	es		Is the Sampled Ar within a Wetland?		No_ <u>▼</u>	<u> </u>	
VEGETATION - Use scientific nar	•						
Tree Stratum Plot size (30 Foot Radiu	(s) Absolute Domia		dicator atus	Dominance Test	worksheet		
	- '			Number of Domir that are OBL, FA		0 (A)	
				Total Number of I Species Across <i>A</i>		2 (B)	
Sapling/Shrub Stratum Plot size (15	Foot Radius)			Percent of Domin That Are OBL, F <i>I</i>		0.0 % ((A/B)
	, , , , , , , , , , , , , , , , , , , ,			Prevalence Inde			
				Total % Cor OBL species	ver of: 0 X 1	Multiply b	y:
				FACW species	0 X 1 0 X 2	0	-
				FAC species	0 X3	0	
Herbaceous Stratum Plot size (5	Foot Radius)			FACU species	29 X4	116	
Convolvulus arvensis	1 🗆	UPL		UPL species	36 X5	180	
Elymus hispidus	35	UPL		Column Totals	65 (A)	296	(B)
Schedonorus pratensis	25	FAC	U	Prevalence I	Index = B/A =	4.	.55
Sisymbrium altissimum	1 🗌	FAC		Hydrophytic Veg	getation Indicato	rs	
Taraxacum officinale	3	FAC	U		Test for Hydrophy		on
				2 - Domin	ance Test is >50°	%	
				3 - Preval	ence Index is <=	3.0	
					ological Adaptatic g data in remarks		
				sheet. 5 - Wetlar	nd Non-Vascular F	Plants	
				Problema	tic Hydrophytic Ve	egetation (F	vnlain)
Woody Vine Stratum Plot size (30	Foot Radius)			dicators of hydric	sil and wetland h	ydrology mu	ust be
Percent Bare Ground 35				Hydrophytic Veg Present?			<u>√</u>
Remarks:							
BG/litter=35%							

SOIL Sampling Point: DP08u

Depth (inches)	Matrix Color (moist)	%	Redox Feature Color (moist) %	Type ¹	Loc ²	Texture	Remarks
0-16	_10YR4/3	100				Loam	
	_						
 Гуре: C=C	oncentration, D=Dep	oletion, RM=Re	educed Matrix, CS=Cover	ed or Coated	d Sand G	rains. ² Loc	cation: PL=Pore Lining, M=Matrix.
			Rs, unless otherwise no				for Problematic Hydric Soils ³ :
Histosol	(A1)		Sandy Gleyed I	latrix (S4)		1 cm M	luck (A9) (LRR I, J)
_	pipedon (A2)		Sandy Redox (S				Prairie Redox (A16) (LRR F, G, H)
_	istic (A3)		Stripped Matrix				urface (S7) (LRR G)
	en Sulfide (A4)	E \	Loamy Mucky N				lains Depressions (F16) R H outside of MLRA 72 & 73)
7	d Layers (A5) (LRR I uck (A9) (LRR F, G, l		Loamy Gleyed I Depleted Matrix				ed Vertic (F18)
_	d Below Dark Surfac		Redox Dark Sui			_	arent Material (TF2)
	ark Surface (A12)	,	Depleted Dark S	. ,		_	hallow Dark Surface (TF12)
] Sandy N	lucky Mineral (S1)		Redox Depress				(Explain in Remarks)
	Mucky Peat or Peat (of hydrophytic vegetation and
5 cm Mu	ucky Peat or Peat (S	3) (LRR F)	(MLRA 72 8	73 of LRR	H)		d hydrology must be present,
estrictive	Layer (if present):					uniess	disturbed or problematic.
	Layer (ii present).						
Type:	ches):		_			Hydric Soil	Present? Ves No V
Depth (in			_ _ 			Hydric Soil	Present? Yes No
Depth (in		ators observe	ed during site visit.			Hydric Soil	Present? Yes No V
Depth (in		ators observe	ed during site visit.			Hydric Soil	Present? Yes No V
Depth (in		ators observe	ed during site visit.			Hydric Soil	Present? Yes No V
Depth (in emarks: N	o hydric soil indica	ators observe	ed during site visit.			Hydric Soil	Present? Yes No V
Depth (in emarks: N	o hydric soil indica		ed during site visit.			Hydric Soil	Present? Yes No
Depth (in emarks: N	o hydric soil indica						Present? Yes No
Depth (in emarks: N	o hydric soil indica GY drology Indicators:	one required; c	check all that apply)			Seconda	
Depth (in emarks: N	o hydric soil indica GY drology Indicators: cators (minimum of c	one required; c	check all that apply)	tes (B13)		Seconda	ury Indicators (minimum of two required face Soil Cracks (B6)
Depth (in emarks: N	o hydric soil indica GY drology Indicators: cators (minimum of c Water (A1) ater Table (A2)	one required; c	check all that apply)	, ,		Seconda Surf	ury Indicators (minimum of two required face Soil Cracks (B6)
Depth (in emarks: N DROLO Vetland Hy rimary India Surface High Wa Saturati	o hydric soil indica GY drology Indicators: cators (minimum of c Water (A1) ater Table (A2)	one required; c	check all that apply) Salt Crust (B11) Aquatic Invertebra	Odor (C1)		Seconda Surf Surf Drai	ary Indicators (minimum of two required ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10)
Depth (in emarks: N DROLO Vetland Hy rimary India Surface High Wa Saturati Water M	GY drology Indicators: cators (minimum of c Water (A1) ater Table (A2) on (A3)	one required; c	check all that apply) Salt Crust (B11) Aquatic Invertebra Hydrogen Sulfide	Odor (C1) Table (C2)	ng Roots	Seconda Surf Spai Drai Oxio	ary Indicators (minimum of two required ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10)
Depth (in emarks: N DROLO Vetland Hy rimary India Surface High Wa Saturati Water M Sedimen	o hydric soil indicators: cators (minimum of compared (A2) on (A3) larks (B1)	one required; c	check all that apply) Salt Crust (B11) Aquatic Invertebra Hydrogen Sulfide	Odor (C1) Table (C2) eres on Livi	ng Roots	Seconda Surf Span Drai Oxic (C3) (w	ary Indicators (minimum of two required ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) dized Rhizospheres on Living Roots (C
Depth (in emarks: N Depth (in	drology Indicators: cators (minimum of cators (Mini	one required; c	check all that apply) Salt Crust (B11) Aquatic Invertebra Hydrogen Sulfide Dry-Season Water Oxidized Rhizosph (where not tilled	Odor (C1) Table (C2) Teres on Livid Code (C4)		Seconda Surf Spa Drai Oxic (C3) (w	ary Indicators (minimum of two required ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) dized Rhizospheres on Living Roots (Car
Depth (in emarks: N /DROLO /etland Hy rimary India Surface High Wa Saturati Water N Sedimee Drift Dep Algal Ma Iron Dep	GY drology Indicators: cators (minimum of company) ater (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5)	one required; o	check all that apply) Salt Crust (B11) Aquatic Invertebra Hydrogen Sulfide of Dry-Season Water Oxidized Rhizosph (where not tilled Presence of Redu	Odor (C1) Table (C2) Table (C3) Table (C4) Table (C4) Table (C7)		Seconda Surfi Span Drai Oxic (C3) (w Cray Satu	ary Indicators (minimum of two required ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) dized Rhizospheres on Living Roots (Carbere tilled) rfish Burrows (C8) uration Visible on Aerial Imagery (C9) morphic Position (D2)
Depth (in emarks: N /DROLO /etland Hy rimary India Surface High Wa Saturatia Water N Sedimenatia Drift Depenation Iron Depenation Inundatia	o hydric soil indicators: cators (minimum of compared to the cators) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aerial	one required; o	check all that apply) Salt Crust (B11) Aquatic Invertebra Hydrogen Sulfide Dry-Season Water Oxidized Rhizosph (where not tilled	Odor (C1) Table (C2) Table (C3) Table (C4) Table (C4) Table (C7)		Seconda Surf Spai Drai Oxic (C3) (w Cray Satu Geo	ary Indicators (minimum of two required ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) dized Rhizospheres on Living Roots (C3 chere tilled) rfish Burrows (C8) uration Visible on Aerial Imagery (C9) morphic Position (D2)
Depth (in emarks: N DROLO Vetland Hy rimary India Surface High Wa Saturati Water M Sedimea Drift De Algal Ma Iron Dep Inundati Water-S	drology Indicators: cators (minimum of company) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aerial I	one required; o	check all that apply) Salt Crust (B11) Aquatic Invertebra Hydrogen Sulfide of Dry-Season Water Oxidized Rhizosph (where not tilled Presence of Redu	Odor (C1) Table (C2) Table (C3) Table (C4) Table (C4) Table (C7)		Seconda Surf Spai Drai Oxic (C3) (w Cray Satu Geo	ary Indicators (minimum of two required ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) dized Rhizospheres on Living Roots (Carbere tilled) rfish Burrows (C8) uration Visible on Aerial Imagery (C9) morphic Position (D2)
Depth (in emarks: N Depth (in	drology Indicators: cators (minimum of control (Mater (A1)) ater Table (A2) on (A3) darks (B1) ant Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aerial I	one required; o	Sheck all that apply) Salt Crust (B11) Aquatic Invertebra Hydrogen Sulfide Dry-Season Watel Oxidized Rhizosph (where not tiller Presence of Redu Thin Muck Surface Other (Explain in F	Odor (C1) Table (C2) Peres on Living Cod Iron (C4) Cod (C7) Remarks))	Seconda Surf Spai Drai Oxic (C3) (w Cray Satu Geo	ary Indicators (minimum of two required ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) dized Rhizospheres on Living Roots (Carlet tilled) rfish Burrows (C8) uration Visible on Aerial Imagery (C9) morphic Position (D2)
Depth (in emarks: N POROLO Vetland Hy rimary India Surface High Wa Saturati Water N Sedimee Drift Dep Algal Ma Iron Dep Inundati Water-S ield Obser	GY drology Indicators: cators (minimum of company) ater (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aerial Indicators: cators (minimum of company) ater (A2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aerial Indicators aterial Indicators	Imagery (B7)	Sheck all that apply) Salt Crust (B11) Aquatic Invertebra Hydrogen Sulfide of Dry-Season Water Oxidized Rhizosph (where not tilled of Presence of Redured Thin Muck Surface Other (Explain in Full of Explain in Full of E	Odor (C1) Table (C2) eres on Livid (I) Ced Iron (C4) (C7) Remarks))	Seconda Surf Spai Drai Oxic (C3) (w Cray Satu Geo	ary Indicators (minimum of two required ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) dized Rhizospheres on Living Roots (Carlete tilled) rfish Burrows (C8) uration Visible on Aerial Imagery (C9) morphic Position (D2)
Depth (in lemarks: Note that the lemarks: Not	o hydric soil indicators: cators (minimum of compared to the cators (minimum of cator	Imagery (B7)	check all that apply) Salt Crust (B11) Aquatic Invertebra Hydrogen Sulfide of Dry-Season Water Oxidized Rhizosph (where not tilled Presence of Redu Thin Muck Surface Other (Explain in F	Odor (C1) Table (C2) Table (C2) Table (C2) Table (C2) Table (C2) Table (C7) Table (C7) Table (C7) Table (C7)) 	Seconda Surf Spai Drai Oxic (C3) (w Cray Satu Geo FAC	ary Indicators (minimum of two required ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) dized Rhizospheres on Living Roots (Cirhere tilled) rfish Burrows (C8) aration Visible on Aerial Imagery (C9) morphic Position (D2) E-Neutral Test (D5) tt-Heave Hummocks (D7) (LRR F)
Depth (in Depth	o hydric soil indicators: cators (minimum of compared to the cators (minimum of cator	Imagery (B7)	Sheck all that apply) Salt Crust (B11) Aquatic Invertebra Hydrogen Sulfide of Dry-Season Water Oxidized Rhizosph (where not tilled of Presence of Redured Thin Muck Surface Other (Explain in Full of Explain in Full of E	Odor (C1) Table (C2) Table (C2) Table (C2) Table (C2) Table (C2) Table (C7) Table (C7) Table (C7) Table (C7)) 	Seconda Surf Spai Drai Oxic (C3) (w Cray Satu Geo FAC	ary Indicators (minimum of two required ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) dized Rhizospheres on Living Roots (Carlet tilled) rfish Burrows (C8) uration Visible on Aerial Imagery (C9) morphic Position (D2)
Depth (in Depth	o hydric soil indical GY drology Indicators: cators (minimum of company) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aerial I drained Leaves (B9) vations: er Present? Present? Y resent? Y resent? Y	Imagery (B7) Yes No Yes No Yes No	check all that apply) Salt Crust (B11) Aquatic Invertebra Hydrogen Sulfide of Dry-Season Water Oxidized Rhizosph (where not tilled Presence of Redu Thin Muck Surface Other (Explain in F	Odor (C1) Table (C2) Table (C2) Table (C2) Table (C2) Table (C2) Table (C7) Table (C7) Table (C7) Table (C7)		Seconda Surf Spai Spai Oxio (C3) (w Cray Satu Geo FAC Fros	ary Indicators (minimum of two required ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) dized Rhizospheres on Living Roots (Cirhere tilled) rfish Burrows (C8) aration Visible on Aerial Imagery (C9) morphic Position (D2) E-Neutral Test (D5) tt-Heave Hummocks (D7) (LRR F)
Depth (in Depth	o hydric soil indical GY drology Indicators: cators (minimum of company) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aerial I drained Leaves (B9) vations: er Present? Present? Y resent? Y resent? Y	Imagery (B7) Yes No Yes No Yes No	check all that apply) Salt Crust (B11) Aquatic Invertebra Hydrogen Sulfide of Dry-Season Water Oxidized Rhizosph (where not tilled of Presence of Redured Thin Muck Surface Other (Explain in Full Depth (inches): Depth (inches): Depth (inches):	Odor (C1) Table (C2) Table (C2) Table (C2) Table (C2) Table (C2) Table (C7) Table (C7) Table (C7) Table (C7)		Seconda Surf Spai Spai Oxio (C3) (w Cray Satu Geo FAC Fros	ary Indicators (minimum of two required ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) dized Rhizospheres on Living Roots (Cirhere tilled) rfish Burrows (C8) aration Visible on Aerial Imagery (C9) morphic Position (D2) E-Neutral Test (D5) tt-Heave Hummocks (D7) (LRR F)
Depth (in emarks: N /DROLO /etland Hy rimary India Surface High Wa Saturati Water N Sedimed Drift Del Algal Ma Iron Dep Inundati Water-S ield Obser urface Wat /ater Table aturation P ncludes cal escribe Re	o hydric soil indicators: cators (minimum of company of	Imagery (B7) Yes No Yes No Yes No The gauge, monit	Sheck all that apply) Salt Crust (B11) Aquatic Invertebra Hydrogen Sulfide Dry-Season Water Oxidized Rhizosph (where not tiller Presence of Redu Thin Muck Surface Other (Explain in F	Odor (C1) Table (C2) Peres on Living Ced Iron (C4) C(C7) Remarks)		Seconda Surf Spai Spai Oxio (C3) (w Cray Satu Geo FAC Fros	ary Indicators (minimum of two required ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) dized Rhizospheres on Living Roots (Carlete tilled) rfish Burrows (C8) aration Visible on Aerial Imagery (C9) morphic Position (D2) Selection (D5) telection Hummocks (D7) (LRR F)
Depth (in emarks: N /DROLO /etland Hy rimary India Surface High Wa Saturati Water N Sedimed Orift Del Algal Ma Iron Dep Inundati Water-S ield Obser urface Wat /ater Table aturation P ncludes cal escribe Re	o hydric soil indicators: cators (minimum of company of	Imagery (B7) Yes No Yes No Yes No The gauge, monit	check all that apply) Salt Crust (B11) Aquatic Invertebra Hydrogen Sulfide of Dry-Season Water Oxidized Rhizosph (where not tilled of Presence of Redured Thin Muck Surface Other (Explain in Full Depth (inches): Depth (inches): Depth (inches):	Odor (C1) Table (C2) Peres on Living Ced Iron (C4) C(C7) Remarks)		Seconda Surf Spai Spai Oxio (C3) (w Cray Satu Geo FAC Fros	ary Indicators (minimum of two required ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) dized Rhizospheres on Living Roots (Cirhere tilled) rfish Burrows (C8) aration Visible on Aerial Imagery (C9) morphic Position (D2) E-Neutral Test (D5) tt-Heave Hummocks (D7) (LRR F)

Project/Site: JTX Tunnicliff	City/County: Big Horn		Sampling D	_{ate} . 6/10/2020
Applicant/Owner: MDT	• •			•
Investigator(s): R Quire, S Robbins				39E
Landform (hillslope, terrace, etc.): Depression				Slone (%): 3
Subregion (LRR): LRR G Lat:			-107.597357	
	+0.00013 <u>1</u> 1 E011			
Are climatic / hydrologic conditions on the site typical for this time of y				арроч
Are Vegetation, Soil, or Hydrology significantly	/ disturbed? Are "Norm			
Are Vegetation, Soil, or Hydrology naturally pr	oblematic? (If needed	explain any a	inswers in Remark	s.)
SUMMARY OF FINDINGS – Attach site map showing	g sampling point locat	ions, trans	ects, importai	nt features, etc.
Hydrophytic Vegetation Present? Yes No No No No No No No No No N	Is the Sampled Area within a Wetland?		No]
VEGETATION - Use scientific names of plants				
Tree Stratum Plot size (30 Foot Radius) Absolute Domiar	1 120	minance Tes	t worksheet	
<u>Iree Stratum</u> Flot size (30 Foot Radius) % Cover: Species	Nu	mber of Domi	nant Species ACW or FAC:	3 (A)
		tal Number of ecies Across		3 (B)
Sapling/Shrub Stratum Plot size (15 Foot Radius)		rcent of Domi at Are OBL, F	nant Species ACW, or FAC:	100.0 % (A/B)
Capring/On as Citatum 1 for size (15 1 out Madias)	Pr	evalence Inde	ex worksheet	Multiply by:
	OE	BL species	55 X 1	55
	FA	CW species	15 X2	30
		C species	0 X3	0
Herbaceous Stratum Plot size (5 Foot Radius)		CU species	0 X4	0
Alopecurus arundinaceus 5	FACW	L species	0 X 5	0
Hordeum jubatum 5	171011	lumn Totals	70 (A)	85 (B)
Juncus balticus 5	FACW	Prevalence	Index = B/A =	1.21
Schoenoplectus maritimus 5	OBL Hy		getation Indicato	
Schoenoplectus pungens 15	OBL	✓ 1 - Rapid	Test for Hydrophy	tic Vegetation
Typha angustifolia 20 ✓ Typha latifolia 15 ✓	OBL OBL	✓ 2 - Domi	nance Test is >50°	%
Typna iatiiolia	OBL	✓ 3 - Preva	lence Index is <=	3.0
			nological Adaptation ng data in remarks	
		5 - Wetla	nd Non-Vascular F	Plants
		Problema	atic Hydrophytic Ve	egetation (Explain)
Woody Vine Stratum Plot size (30 Foot Radius)		cators of hydri	c sil and wetland h sturbed or problem	ydrology must be
Percent Bare Ground 30	Ну	drophytic Ve		
Remarks:	I			
BG/litter=30%				

SOIL Sampling Point: DP08w

Profile Desc	cription: (Describe	to the depth ne	eded to docum	ent the indicator	or confi	irm the absence of indicators.)
Depth	Matrix			Features		_
(inches)	Color (moist)	% Co	olor (moist)	<u>%</u> Type ¹	Loc ²	Texture Remarks
.0-10	_10YR4/2	_ 95_ 7.5YF	R _4/6 _	_ 5C	PL,	Clay Loam _
-10-16	-10YR —4/2	- 100—				Loamy Sand -
			_			
¹ Type: C=C	oncentration, D=Dep	letion, RM=Redu	ced Matrix, CS=	=Covered or Coate	ed Sand	Grains. ² Location: PL=Pore Lining, M=Matrix.
	Indicators: (Applic					Indicators for Problematic Hydric Soils ³ :
Histosol	I (A1)		Sandy GI	leyed Matrix (S4)		☐ 1 cm Muck (A9) (LRR I, J)
Histic E	pipedon (A2)		☐ Sandy Re	edox (S5)		Coast Prairie Redox (A16) (LRR F, G, H)
	istic (A3)		Stripped	Matrix (S6)		☐ Dark Surface (S7) (LRR G)
_	en Sulfide (A4)			lucky Mineral (F1)		High Plains Depressions (F16)
	d Layers (A5) (LRR F	•	= -	leyed Matrix (F2)		(LRR H outside of MLRA 72 & 73)
	uck (A9) (LRR F, G, I	-		Matrix (F3)		Reduced Vertic (F18)
	d Below Dark Surfac	e (A11)	=	ark Surface (F6)		Red Parent Material (TF2)
	ark Surface (A12)			Dark Surface (F7)	☐ Very Shallow Dark Surface (TF12)
	Mucky Mineral (S1) Mucky Peat or Peat (S2) / BB C U)		epressions (F8) ns Depressions (F	16)	☐ Other (Explain in Remarks) 3Indicators of hydrophytic vegetation and
	ucky Peat or Peat (S			A 72 & 73 of LRF		wetland hydrology must be present,
0 0111 1110	doky r cut or r cut (or) (LICIT)	(MEI	A / Z G / O OI EIG	(11)	unless disturbed or problematic.
Restrictive	Layer (if present):					
_						
	ches):					Hydric Soil Present? Yes No
	rominent redoximo		otiono commo	n within the den	loted m	
rtomanto. Pi	rominent redoximo	ipilic concenti	ations commo	n within the dep	ieteu III	iauix.
HYDROLO	GY					
Wetland Hy	drology Indicators:					
Primary India	cators (minimum of o	ne required; che	ck all that apply))		Secondary Indicators (minimum of two required
Surface	Water (A1)	[✔ Salt Crust (I	B11)		Surface Soil Cracks (B6)
High Wa	ater Table (A2)		Aquatic Inve	ertebrates (B13)		Sparsely Vegetated Concave Surface (B8)
✓ Saturation	on (A3)	[Hydrogen S	ulfide Odor (C1)		☐ Drainage Patterns (B10)
Water M	larks (B1)	[Dry-Season	Water Table (C2))	Oxidized Rhizospheres on Living Roots (C
Sedimer	nt Deposits (B2)	[Oxidized Rh	nizospheres on Liv	ing Root	its (C3) (where tilled)
Drift De	posits (B3)		(where no	ot tilled)		Crayfish Burrows (C8)
Algal Ma	at or Crust (B4)	[Presence of	f Reduced Iron (C	4)	Saturation Visible on Aerial Imagery (C9)
Iron Dep	oosits (B5)	[Thin Muck S	Surface (C7)		Geomorphic Position (D2)
Inundati	ion Visible on Aerial I	magery (B7)	Other (Expl	ain in Remarks)		✓ FAC-Neutral Test (D5)
Water-S	Stained Leaves (B9)					Frost-Heave Hummocks (D7) (LRR F)
Field Obser	vations:					
Surface Wat	ter Present? Y	es <u> </u>	Depth (incl	nes):		
Water Table	Present? Y	es 🔲 No	✓ Depth (inch	nes):	_	
Saturation P		es 🔽 No	Depth (incl	nes):0	We	etland Hydrology Present? Yes 🖳 No 🛄
	pillary fringe)					
Describe Re	corded Data (stream	gauge, monitorii	ig weii, aeriai pr	iotos, previous ins	spections	s), ii avallable:
Remarks: Hi	gh water table obs	erved in soil pi	t at 14 in after	10 min.		

Project/Site: JTX Tunnicliff	City/County: Big Horn		Sampling Date:	6/10/:	2020
Applicant/Owner: MDT		_ State: Montana_	Sampling Point:	DP09u	
Investigator(s): R Quire, S Robbins	Section, Township, Range:	34 7N	39E	Ξ	
Landform (hillslope, terrace, etc.): Terrace	_ Local relief (concave, conve	ex, none):flat	Slo	ope (%): _	(
Subregion (LRR): LRR G	45.839419 Lor	ng: -10	7.596701 _{Datı}	um: NAD	83
Subregion (LRR): LRR G Lat: Lat: Soil Map Unit Name: Hh: Haverson and Lohmiller soils, wet	_	NWI classifica	 _{ation:} Not Mapp	ed	
Are climatic / hydrologic conditions on the site typical for this time of y	ear? Yes 🗹 No 🗌	(If no. explain in Rε	emarks.)		
Are Vegetation, Soil, or Hydrology significantl				∠ No	
Are Vegetation, Soil, or Hydrology naturally p	roblematic? (If needed	l evolain any answer	s in Remarks)		
SUMMARY OF FINDINGS – Attach site map showin				eatures,	, etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Remarks: Upland sample point.	Is the Sampled Area within a Wetland?		No <u> </u>		
VEGETATION - Use scientific names of plants					
Tree Stratum Plot size (30 Foot Radius) Absolute Domiar		ominance Test work	sheet		
Iree Stratum Piot size (30 Foot Radius) % Cover: Specie	N	umber of Dominant S at are OBL, FACW or		0 (A)	
		otal Number of Domin pecies Across All Stra		2 _(B)	
Sapling/Shrub Stratum Plot size (15 Foot Radius)		ercent of Dominant Sp nat Are OBL, FACW,		0.0 % (A/I	В)
,	P	revalence Index wor			
	<u> </u>	Total % Cover of: BL species	0 X 1	lultiply by:	_
		ACW species	0 X 1	0	1
		AC species	1 X3	3	Ī
Herbaceous Stratum Plot size (5 Foot Radius)		•	0 X4	0	
Elymus hispidus 60	UPL	PL species 7	75 X 5	375	
Lactuca serriola 1	FAC	olumn Totals 70	6 (A)	378	(B)
Thinopyrum ponticum 15	UPL	Prevalence Index	= B/A =	4.97	7
	H	ydrophytic Vegetatio	on Indicators		
		1 - Rapid Test f	or Hydrophytic \	/egetation	ı
		2 - Dominance	Test is >50%		
		3 - Prevalence I	Index is <= 3.0		
		supporting data	al Adaptations (l in remarks or o		€
		sheet.	n-Vascular Plant	to	
Woody Vine Stratum Plot size (30 Foot Radius)		☐ Problematic Hydicators of hydric sil an sent, unless disturbed		ology must	be
Percent Perc Ground 25	H	ydrophytic Vegetation			J. ✓
Percent Bare Ground 25 Remarks:	1 • ·				
BG/litter=25%					

SOIL Sampling Point: DP09u

Profile Desc	ription: (Describe	to the depth nee	eded to document	the indicator	or confirn	n the absence of indicators.)
Depth	Matrix		Redox Fea	atures		
(inches)	Color (moist)	% Co	olor (moist)	<u>% Type¹</u>	Loc ²	
0-16	_10YR3/2	_ 100_			. (Clay Loam _
		·				
	-					
	oncentration, D=Dep				ed Sand Gr	
Hydric Soil	Indicators: (Applic	able to all LRRs	, unless otherwise	noted.)		Indicators for Problematic Hydric Soils ³ :
Histosol	, ,			d Matrix (S4)		☐ 1 cm Muck (A9) (LRR I, J)
	oipedon (A2)		Sandy Redox			Coast Prairie Redox (A16) (LRR F, G, H)
\equiv	istic (A3)		Stripped Mat	, ,		☐ Dark Surface (S7) (LRR G)
	en Sulfide (A4)		_	y Mineral (F1)		High Plains Depressions (F16)
	d Layers (A5) (LRR F	•		ed Matrix (F2)		(LRR H outside of MLRA 72 & 73)
	ıck (A9) (LRR F, G, I		Depleted Ma			Reduced Vertic (F18)
	d Below Dark Surfac	e (ATT)	Redox Dark			Red Parent Material (TF2)
	ark Surface (A12) Nucky Mineral (S1)		Redox Depre	rk Surface (F7))	✓ Very Shallow Dark Surface (TF12)✓ Other (Explain in Remarks)
= -	Mucky Millerar (61) Mucky Peat or Peat (S2) (I RR G H)		Depressions (F	16)	³ Indicators of hydrophytic vegetation and
	ucky Peat or Peat (S			2 & 73 of LRF		wetland hydrology must be present,
0 0	uong round, round	, (=)	(,	unless disturbed or problematic.
Restrictive I	Layer (if present):					
Type:						
Depth (inc						Hydric Soil Present? Yes No V
						100 100
Kemarks. Me	o hydric soil indica	tors observed	during site visit.			
HYDROLO	GY					
	drology Indicators:					
-	cators (minimum of o		ck all that apply)			Secondary Indicators (minimum of two required)
	Water (A1)	ne required, che	,	`		
	* *	Ĺ	Salt Crust (B11			Surface Soil Cracks (B6)
•	ater Table (A2)	Ĺ	Aquatic Inverte	, ,		Sparsely Vegetated Concave Surface (B8)
Saturation	` ,	Ĺ	Hydrogen Sulfid			Drainage Patterns (B10)
	larks (B1)	L	Dry-Season Wa			Oxidized Rhizospheres on Living Roots (C3)
_	nt Deposits (B2)	L	Oxidized Rhizo		ing Roots	· · · · <u>_</u> · · · · · · · · · · · · · · · · · · ·
_	posits (B3)	г	(where not ti	,		Crayfish Burrows (C8)
	at or Crust (B4)	Ĺ	Presence of Re		7)	Saturation Visible on Aerial Imagery (C9)
	posits (B5)		Thin Muck Surf	, ,		Geomorphic Position (D2)
_	on Visible on Aerial I	magery (B7)	Other (Explain	n Remarks)		FAC-Neutral Test (D5)
	tained Leaves (B9)					Frost-Heave Hummocks (D7) (LRR F)
Field Obser						
Surface Water	er Present? Y		Depth (inches)			
Water Table	Present? Y	es 🔲 No	Depth (inches)	:		
Saturation P		es No	✓ Depth (inches)	:	Wetl	and Hydrology Present? Yes No
(includes cap						
Describe Re	corded Data (stream	gauge, monitorir	ng well, aerial photo	s, previous ins	spections),	ır avallable:
Remarks: No	hydrologic indica	tors observed o	during site visit. S	oil moist.		

Project/Site: JTX Tunnicliff	City/County: Big Ho	orn Sampling D) _{ate:} 6/10/2020
		State: Montana Sampling P	
Investigator(s): R Quire, S Robbins			-
Landform (hillslope, terrace, etc.): Depression			
		379 Long: -107.596751	
Soil Map Unit Name: Hh: Haverson and Lohmiller soils, wet		NWI classification: Not N	
Are climatic / hydrologic conditions on the site typical for this time			
Are Vegetation, Soil, or Hydrology signific			. V N. D
Are Vegetation, Soil, or Hydrology significed and set of the set of th	antiy disturbed? Ai		
		f needed, explain any answers in Remark	,
SUMMARY OF FINDINGS – Attach site map show	ving sampling poin	t locations, transects, importa	nt features, etc
Hydrophytic Vegetation Present? Yes No	ls the Samp	led Area	
Hydric Soil Present? Yes <u>✓</u> No _	within a Wet		<u></u>
Wetland Hydrology Present? Yes V No	<u> </u>		
Remarks: PEM depressional wetland in Cell 5.			
VEGETATION - Use scientific names of plants			
Tues Chustrum Districts (OO Foot Dedition)	miant Indicator ecies? Status	Dominance Test worksheet	
		Number of Dominant Species that are OBL, FACW or FAC:	3 (A)
		Total Number of Dominant Species Across All Strata:	3 (B)
Sapling/Shrub Stratum Plot size (15 Foot Radius)		Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0 % (A/B)
Sapring/Sirub Stratum Flot Size (15 Foot Radius)		Prevalence Index worksheet	
		Total % Cover of:	Multiply by:
		OBL species 50 X 1	50
		FACW species 30 X 2 FAC species 0 X 3	60
		FACU species 6 X 4	24
Herbaceous Stratum Plot size (5 Foot Radius)		UPL species 0 X 5	0
	✓ FACW	Column Totals 86 (A)	134 (B)
Ambrosia artemisiifolia 1 [Elymus repens 5	FACU FACU		
Hordeum jubatum 5	FACW	Prevalence Index = B/A =	1.56
	✓ OBL	Hydrophytic Vegetation Indicato	
	✓ OBL	1 - Rapid Test for Hydroph	
		✓ 2 - Dominance Test is >50	
		✓ 3 - Prevalence Index is <=	3.0
		4 - Morphological Adaptatic supporting data in remarks sheet.	
		5 - Wetland Non-Vascular	Dlanta
Woody Vine Stratum Plot size (30 Foot Radius)		Problematic Hydrophytic V	egetation (Explain)
Woody vine Stratum 1 lot size (30 1 oot readiles)		Indicators of hydric sil and wetland h present, unless disturbed or problen	
Percent Bare Ground 20		Hydrophytic Vegetation Yes	NO 🗆
Remarks:			
BG/litter=20			

SOIL Sampling Point: DP09w

Profile Des Depth	cription: (Describe Matrix	to the depth ne		ment the indicator or ex Features	confirm the absenc	e of indicators.)
(inches)	Color (moist)		olor (moist)	<u>% Type¹</u>	_oc ² Texture	Remarks
0-14	_10YR4/2	90 7.5YI	R 4/6	10CM	Sandv Clav Loai	m
-					. , ,	
-						
	-					
		-				
	<u> </u>					
	<u> </u>					
¹ Type: C=C	Concentration, D=Dep	letion, RM=Redu	uced Matrix, C	S=Covered or Coated S		ocation: PL=Pore Lining, M=Matrix.
	Indicators: (Applic	able to all LRRs		•	Indicator	s for Problematic Hydric Soils ³ :
Histoso				Gleyed Matrix (S4)		Muck (A9) (LRR I, J)
	pipedon (A2)			Redox (S5)		t Prairie Redox (A16) (LRR F, G, H)
_	listic (A3) en Sulfide (A4)			d Matrix (S6) Mucky Mineral (F1)		Surface (S7) (LRR G) Plains Depressions (F16)
	ed Layers (A5) (LRR I	=)		Gleyed Matrix (F2)		RR H outside of MLRA 72 & 73)
	uck (A9) (LRR F, G ,			ed Matrix (F3)		iced Vertic (F18)
	ed Below Dark Surfac			Dark Surface (F6)	Red I	Parent Material (TF2)
	ark Surface (A12)			d Dark Surface (F7)		Shallow Dark Surface (TF12)
= -	Mucky Mineral (S1)			Depressions (F8)		r (Explain in Remarks)
_	Mucky Peat or Peat (ains Depressions (F16)		s of hydrophytic vegetation and
5 CITI IVI	ucky Peat or Peat (S	3) (LRR F)	(IVIL	.RA 72 & 73 of LRR H)		nd hydrology must be present, s disturbed or problematic.
Restrictive	Layer (if present):				411100	o distance of problematic.
Depth (in	nches):				Hydric So	il Present? Yes <u> </u>
Remarks: p	Prominent redoximo	orphic concentr	ations comm	on within the deplete	ed matrix	
				шо доргом		
HYDROLO)GY					
	/drology Indicators:					
-	icators (minimum of c		ak all that ann	\.\a	Sagan	dan Indicators (minimum of two required)
	e Water (A1)	•	<u>✓</u> Salt Crust	**		dary Indicators (minimum of two required) rface Soil Cracks (B6)
	ater (AT) ater Table (A2)			vertebrates (B13)	=	arsely Vegetated Concave Surface (B8)
Saturat	` ,			Sulfide Odor (C1)		ainage Patterns (B10)
	Marks (B1)			on Water Table (C2)	=	kidized Rhizospheres on Living Roots (C3)
_	ent Deposits (B2)			Rhizospheres on Living		where tilled)
	eposits (B3)			not tilled)		ayfish Burrows (C8)
	lat or Crust (B4)			of Reduced Iron (C4)	=	turation Visible on Aerial Imagery (C9)
	posits (B5)			Surface (C7)		eomorphic Position (D2)
Inundat	tion Visible on Aerial	magery (B7)	Other (Ex	olain in Remarks)	✓ FA	.C-Neutral Test (D5)
Water-S	Stained Leaves (B9)				Fro	ost-Heave Hummocks (D7) (LRR F)
Field Obse						
Surface Wa	ter Present? Y		Depth (in			
Water Table				ches):		
Saturation F		es 🔽 No _	Depth (in	ches):0	Wetland Hydrolog	gy Present? Yes No
	ipillary fringe) ecorded Data (stream	gauge, monitori	ng well, aerial	photos, previous inspe		
20001100110	July Data (Stream	. 54490, 11101111011		F. 15 to 6, provious mape	January, ii avallabio.	
Remarks	ydrogen sulfide od	or and salt a	at abasmisi'			
. vernance. H	yurogen sumae oa	oi and sait crus	si observed.			

Project/Site: JTX Tunnicliff	City/County: Big Horn	n Sampling Date:6/10/2020
		State: Montana Sampling Point: DP10u
Investigator(s): R Quire, S Robbins		
Landform (hillslope, terrace, etc.): Terrace		
Subregion (LRR): LRR G	45.8396	12 Long: -107.596589 Datum: NAD 83
Subregion (LRR): LRR G Soil Map Unit Name: Hh: Haverson and Lohmiller soils, wet		NIVA/ classification: Not Mapped
Are climatic / hydrologic conditions on the site typical for this time	of year? Vac V	(If no explain in Demarks)
Are Vegetation, Soil, or Hydrology signific		
Are Vegetation, Soil, or Hydrology signific Are Vegetation, Soil, or Hydrology natural	antly disturbed? Are	"Normal Circumstances" present? Yes Vo Vo
SUMMARY OF FINDINGS – Attach site map show	ving sampling point	locations, transects, important features, etc
Hydrophytic Vegetation Present? Yes No		d Area
Hydric Soil Present? Yes No V	within a Wotla	
Wetland Hydrology Present? Yes No V		
Remarks: Upland sample point.		
VEGETATION - Use scientific names of plants		
	niant Indicator ccies? Status	Dominance Test worksheet
·		Number of Dominant Species that are OBL, FACW or FAC:
		Total Number of Dominant Species Across All Strata: 4 (B)
Sapling/Shrub Stratum Plot size (15 Foot Radius)		Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)
Elaeagnus angustifolia 5	FACU	Prevalence Index worksheet
		Total % Cover of: Multiply by:
		OBL species 0 X 1 0
		FACW species 0 X 2 0
		FACU species 15 X 4 60
Herbaceous Stratum Plot size (5 Foot Radius)	- LIDI	UPL species 60 X 5 300
Alyssum desertorum 1 Bromus inermis 13	UPL UPL	Column Totals 75 (A) 360 (B)
Bromus japonicus 15		4.00
Bromus tectorum 5	UPL	1 Tevalence mack - B/A -
Convolvulus arvensis 5	UPL	Hydrophytic Vegetation Indicators
Elymus hispidus 20		1 - Rapid Test for Hydrophytic Vegetation
Lappula occidentalis 1	UPL	2 - Dominance Test is >50%
Schedonorus pratensis 10	FACU	3 - Prevalence Index is <= 3.0
		4 - Morphological Adaptations (Provide supporting data in remarks or on separate sheet.
		5 - Wetland Non-Vascular Plants
Woody Vine Stratum Plot size (30 Foot Radius)		Problematic Hydrophytic Vegetation (Explain)
(33)		Indicators of hydric sil and wetland hydrology must be present, unless disturbed or problematic for #3, 4, 5.
Percent Bare Ground 30		Hydrophytic Vegetation Yes NO
Remarks:		1
BG/litter=30%		

SOIL Sampling Point: <u>DP10u</u>

Profile Desc	ription: (Describe	to the depth nee	eded to documen	t the indicator	or confirm	the absence	of indicate	ors.)
Depth	Matrix		Redox Fe	4				
(inches)	Color (moist)	%Cc	olor (moist)	% Type ¹	_Loc ²	Texture		Remarks
0-16	_2.5Y4/3	100		—		Loam	_	
							•	
	-							
	-							
1Typo: C=C	oncentration, D=Dep	lotion PM-Podu	and Matrix, CS=C	avered or Coate	d Sand Gr	rains ² l o	cation: DI =	Pore Lining, M=Matrix.
	Indicators: (Applic				u Sanu Gi			matic Hydric Soils ³ :
Histosol		able to all Little		ed Matrix (S4)			Muck (A9) (I	<u>-</u>
$\overline{}$	oipedon (A2)		Sandy Redo	` ,				lox (A16) (LRR F, G, H)
Black Hi			Stripped Ma	` '		=	Surface (S7)	. , ,
_	n Sulfide (A4)			ky Mineral (F1)		_	, ,	essions (F16)
_	d Layers (A5) (LRR l	F)		red Matrix (F2)		(LF	RR H outsid	de of MLRA 72 & 73)
1 cm Mu	ıck (A9) (LRR F, G,	H)	Depleted Ma			Reduc	ed Vertic (F	⁻ 18)
	d Below Dark Surfac	e (A11)	=	Surface (F6)			arent Mater	
	ark Surface (A12)			ark Surface (F7)		= -		k Surface (TF12)
	Mucky Mineral (S1)	(CO) (LDD C LI)		ressions (F8)	10)		(Explain in	
	Mucky Peat or Peat (ucky Peat or Peat (S			Depressions (F 72 & 73 of LRR	,			ytic vegetation and must be present,
S CITI WILL	icky real of real (S	3) (LKK F)	(WILKA	12 & 13 OI LKK	П)			or problematic.
Restrictive I	Layer (if present):					1	alstarbea (or problematic.
Type:	, (
	ches):					Hydric Soil	Present?	Yes No _ ✓
. ,						i i y unio o o ii		
Nemans. M	o hydric soil indica	ators observed	during site visit.					
HYDROLO	GY							
Wetland Hyd	drology Indicators:							
_	cators (minimum of o		ck all that apply)			Second	ary Indicato	rs (minimum of two required)
	Water (A1)	[Salt Crust (B1	1)			face Soil Cr	
	iter Table (A2)	[Aquatic Inverte	*		=		tated Concave Surface (B8)
Saturation	` '		Hydrogen Sulf				inage Patte	
	larks (B1)	[/ater Table (C2)			•	spheres on Living Roots (C3)
	nt Deposits (B2)	Ī		ospheres on Livi	ng Roots (vhere tilled	. ,
	posits (B3)	L	(where not t	•	- \	`	yfish Burrov	,
Algal Ma	at or Crust (B4)			educed Iron (C4)		•	ole on Aerial Imagery (C9)
	oosits (B5)		 Thin Muck Sur	•		_	omorphic Po	
Inundation	on Visible on Aerial	Imagery (B7)	Other (Explain	in Remarks)		FAC	C-Neutral Te	est (D5)
☐ Water-S	tained Leaves (B9)					Fro	st-Heave H	ummocks (D7) (LRR F)
Field Observ	vations:							
Surface Wate	er Present? Y	′es	Depth (inches	s):				
Water Table			Depth (inches					
Saturation P			✓ Depth (inches			and Hydrolog	v Present?	Yes No
(includes cap	oillary fringe)							
Describe Red	corded Data (stream	n gauge, monitorir	ng well, aerial phot	os, previous ins	pections),	if available:		
Remarks: No	hydrologic indica	itors observed o	during site visit. S	Soil dry				
	, ,		.	,				

Project/Site: JTX Tunnicliff	City/County: Big Horn	Samp	ing Date:6/10/202
		State: Montana_ Sampl	
Investigator(s): R Quire, S Robbins	Section, Township, Ran	ge: 34 7N	39E
Landform (hillslope, terrace, etc.): Depression	Local relief (concave, c	onvex, none): concave	Slope (%):
Subregion (LRR): LRR G Lat:			
		NWI classification:	
Are climatic / hydrologic conditions on the site typical for this time of ye	ar? Yes 🔽 No	 (If no. explain in Remarks	
Are Vegetation, Soil, or Hydrology significantly			
Are Vegetation, Soil, or Hydrology naturally pro	oblematic? (If nee	eded explain any answers in Re	emarks)
SUMMARY OF FINDINGS – Attach site map showing			
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Remarks: PEM depressional wetland in Cell 4.	Is the Sampled within a Wetland	Area d? Yes <u>V</u> N	lo <u> </u>
VEGETATION - Use scientific names of plants			
Absolute Domian		Dominance Test worksheet	
Tree Stratum Plot size (30 Foot Radius) % Cover: Species	? Status	Number of Dominant Species that are OBL, FACW or FAC:	3 (A)
		Total Number of Dominant Species Across All Strata:	3 (B)
Sapling/Shrub Stratum Plot size (15 Foot Radius)		Percent of Dominant Species That Are OBL, FACW, or FAC	
		Prevalence Index workshee	
		Total % Cover of: OBL species 30 X	Multiply by: 1 30
		FACW species 45 X	
		FAC species 0 X	
Herbaceous Stratum Plot size (5 Foot Radius)		FACU species 5 X	
Elymus repens 5	FACU	UPL species 0 X	5 0
Hordeum jubatum 20 ✓	FACW	Column Totals 80	(A) 140 (B
Juncus balticus 25 ✓	FACW	Prevalence Index = B/A	= 1.75
Typha angustifolia 30 ✓	OBL	Hydrophytic Vegetation Ind 1 - Rapid Test for Hyd	
		✓ 2 - Dominance Test is	s >50%
		✓ 3 - Prevalence Index i	s <= 3.0
		4 - Morphological Ada supporting data in ren	
		sheet. 5 - Wetland Non-Vasc	
			rtic Vegetation (Explain)
Woody Vine Stratum Plot size (30 Foot Radius)		Indicators of hydric sil and wetl present, unless disturbed or pre	and hydrology must be
Percent Perc Ground 20		Hydrophytic Vegetation Present?	Yes ✓ NO
Percent Bare Ground 20 Remarks:			
BG/litter=20%			

SOIL Sampling Point: <u>DP10w</u>

Profile Description: (Describe to the depth nee	eded to document the indicator or confir	m the absence of indicators.)
Depth <u>Matrix</u>	Redox Features	_
(inches) Color (moist) % Co	olor (moist) % Type ¹ Loc ²	Remarks
.0-13 _10YR4/1 90_ 7.5YF	R _4/6	ndy Clay Loam _
-13+		cobbles -
¹ Type: C=Concentration, D=Depletion, RM=Redu		
Hydric Soil Indicators: (Applicable to all LRRs	, unless otherwise noted.)	Indicators for Problematic Hydric Soils ³ :
Histosol (A1)	Sandy Gleyed Matrix (S4)	1 cm Muck (A9) (LRR I, J)
Histic Epipedon (A2)	Sandy Redox (S5)	Coast Prairie Redox (A16) (LRR F, G, H)
Black Histic (A3)	Stripped Matrix (S6)	☐ Dark Surface (S7) (LRR G)
☐ Hydrogen Sulfide (A4)☐ Stratified Layers (A5) (LRR F)	Loamy Mucky Mineral (F1) Loamy Gleyed Matrix (F2)	☐ High Plains Depressions (F16) (LRR H outside of MLRA 72 & 73)
1 cm Muck (A9) (LRR F, G, H)	✓ Depleted Matrix (F3)	Reduced Vertic (F18)
Depleted Below Dark Surface (A11)	Redox Dark Surface (F6)	Red Parent Material (TF2)
Thick Dark Surface (A12)	Depleted Dark Surface (F7)	☐ Very Shallow Dark Surface (TF12)
Sandy Mucky Mineral (S1)	Redox Depressions (F8)	Other (Explain in Remarks)
2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	High Plains Depressions (F16)	³ Indicators of hydrophytic vegetation and
5 cm Mucky Peat or Peat (S3) (LRR F)	(MLRA 72 & 73 of LRR H)	wetland hydrology must be present,
		unless disturbed or problematic.
Restrictive Layer (if present):		
Type:		
Depth (inches):		Hydric Soil Present? Yes No
Remarks: Prominent redoximorphic concentr	ations common within the depleted ma	atrix.
HYDROLOGY		
Wetland Hydrology Indicators:		
Primary Indicators (minimum of one required; che	ck all that apply)	Secondary Indicators (minimum of two required)
		Surface Soil Cracks (B6)
☐ Surface Water (A1) ☐ High Water Table (A2)	Salt Crust (B11) Aquatic Invertebrates (B13)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Hydrogen Sulfide Odor (C1)	Drainage Patterns (B10)
Water Marks (B1)	Trydrogen dulide Cdor (C1) Dry-Season Water Table (C2)	Oxidized Rhizospheres on Living Roots (C3)
Sediment Deposits (B2)	Oxidized Rhizospheres on Living Roots	
Drift Deposits (B3)	(where not tilled)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Presence of Reduced Iron (C4)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)	Thin Muck Surface (C7)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	FAC-Neutral Test (D5)
Water-Stained Leaves (B9)		Frost-Heave Hummocks (D7) (LRR F)
Field Observations:		
Surface Water Present? Yes No	Depth (inches):	
	Depth (inches):	
		tland Hydrology Present? Yes No
(includes capillary fringe)		
Describe Recorded Data (stream gauge, monitorio	ng well, aerial photos, previous inspections), if available:
Remarks: Soil very saturated.		
•		

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name JTX-T	unnicliff		2. MDT project# STPP STWD (756)					Control# 968000		
3. Evaluation Date 6/10/2	2020 4. Evaluators	R Quire	e 5	. Wet	land/Site# (s)	Tunnicliff	:			
6. Wetland Location(s): T	1N R 3	3E	Sec1 10	Т	1N R	33E	Sec2	15		
Approx Stationing or Milepo	osts NA									
Watershed 14 - Middle	Yellowstone Wa	tershe	ed/County Big H	orn						
7. Evaluating Agency	CCI for MDT				8. Wetland	size acres			8.62	
Purpose of Evaluation					How assess	ed:	Measure	ed e.g.	by GPS	
☐ Wetlands potentially aff	fected by MDT project				9. Assesssr				8.62	
☐ Mitigation Wetlands: pr	re-construction				(AA) size (ac	•	Measure	d e.a.	by GPS	
✓ Mitigation Wetlands: po	ost construction								.,	
Other										
10. Classification of Wetlar	nd and Aquatic Habitats	in AA								
HGM Class (Brinson)	Class (Cowardin)		Modifier (Coward	din)	Water Re	egime		% of A	AA	
Depressional	Emergent Wetland		Excavated		Seasonal/In	termittent		100		
]									
	I []							
] [
12. General Condition of A. i. Disturbance: (use matrix aquatic nuisance vegetation	below to determine [circle] a		<u> </u>	dominant	ns for Montana-l t conditions adjacen d not cultivated, but	t to (within 500	feet of) AA		r heavily grazed	
Conditions wil	ithin AA	natura hayed conver roads	I state; is not grazed, , logged, or otherwise rted; does not contain or buildings; and noxious or ANVS cover is <=15%.	mod sele subj few	lerately grazed or hactively logged; or hact to minor clearing roads or buildings; d or ANVS cover is	ayed or as been g; contains noxious	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 predomi grazed, hayed, logged, or otherwise or roads or occupied buildings; and noxic <=15%.	onverted; does not contain	lo	w disturbance		low disturba	ance	mode	erate (disturbance	
AA not cultivated, but may be moderat selectively logged; or has been subjec placement, or hydrological alteration; or noxious weed or ANVS cover is <=30%	ct to relatively minor clearing, fill contains few roads or buildings;		moderate disturbance	m	oderate distu	ırbance	hiç	gh dis	turbance	
AA cultivated or heavily grazed or logg substantial fill placement, grading, clet high road or building density; or noxio >=30%.	aring, or hydrological alteration;	hig	gh disturbance		high disturbance			gh dis	turbance	
Comments: (types of disturb AA vegetation recovering from construction is zero except for	n construction disturbance	e; distu		vetland	d					
ii. Prominent noxious, aquat	tic nuisance, other exot	ic spe	cies:							
All noxious weeds have decre										
iii. Provide brief descriptive FAS, large parcel homesites, r		rround	ding land use/hab	itat						
i Ao, iaige paicei nomesiles, l	ranomiy.									

13. Structural Diversity: (based on number of "Cowardin" vegetated classes present [do not include unvegetated classes], see #10 Initial Modified Is current management preventing (passive) existence of additional vegetated classes? Existing # of "Cowardin" Vegetated Classes in AA Ratino Rating >= 3 (or 2 if 1 is forested) classes NA NΑ NA Н 2 (or 1 if forested) classes NA NΑ NA Μ 1 dass, but not a monoculture Μ <NO YES> L 1 class, monoculture (1 species comprises>=90% of total cover) NA NΑ NA L Comments: Site contains PEM wetland. 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 D S Secondary habitat (list Species) Incidental habitat (list species) D S **√** S No usable habitat ii. Rating (use the condusions 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 1H .9H .8H .7M .3L .1L 0L Rating USFWS T&E list for Big Horn County Sources for documented use 14B. Habitat for plant or animals rated S1, S2, or S3 by the Montana Natural Heritage Program: (not including species listed in14A above) i. AA is Documented (D) or Suspected (S) to contain (check one based on definitions contained in instructions): Primary or critical habitat (list species) D S Bur oak (S2) documented on site in 2017. Great Blue Heron (S3) Secondary habitat (list Species) ● D ○ S Incidental habitat (list species) D S S No usable habitat ii. Rating (use the conclusions from i above and the matrix below to arrive at [check] the functional points and rating) sus/primary Highest Habitat Level doc/primary doc/secondary sus/secondary doc/incidental sus/incidental None S1 Species: Functional Points and .7M .2L 0L 1H .8H .6M .1L Rating S2 and S3 Species: Functional Points and .9H .7M .6M .5M .2L .1L 0L Rating

Suitable great blue heron habitat

Sources for documented use

<i>Substantial</i> (base	d on an	of the f	ollowin	ıg [che	ck]):						Minin	n al (b	ased o	n any of	the follo	wing	[check]):					
observations	of abun	dant wild	llife #s	or high	ı specie	es dive	rsity (du	ring ar	ny period	d)	fe	w or n	o wildli	fe obser	vations	during	peak ι	use peri	iods				
abundant wild	dlife sigr	such as	s scat,	tracks,	nest st	ructure	es, game	e trails	, etc.		litt	le to r	no wildl	ife sign									
presence of e	extremel	y limiting	ا habita	at featu	res not	availal	ble in th	e surro	ounding	area	sp	arse a	adjacer	nt upland	food so	ources	3						
interviews wit	h local b	iologists	s with k	nowled	dge of t	he AA					int	terviev	vs with	local bio	ologists	with k	nowled	ge of th	e AA				
oderate (based	on any c	f the foll	lowing	[check]):																		
observations	of scatte	red wild	llife gro	oups or	individ	uals or	relative	ly few	species	during	peak pe	riods											
common occi	urrence	of wildlif	e sign :	such a	s scat, f	tracks,	nest str	ucture	s, game	trails, e	etc.												
adequate adj																							
interviews wit	h local b	iologists	s with k	inowled	dge of t	he AA																	
ii. Wildlife hab	itat fea	tures (Worki [,]	ng fro	m top	to bot	tom, cl	neck a	approp	riate A	A attrib	utes	in mat	trix to a	rrive a	ratir	ıg. Str	uctura	l divers	sity is			
from #13. For	class c	over to	be co	onside	red ev	enly c	distribu	ted, tl	he mos	t and l	east pr	evale	nt ve ç	getated	class	es mi	ust be	within	20% o	-			
other in terms of permanent/per		•					•	,												of these	е		
terms])								<u> </u>	, ·								1						
Structural diversity (see				Hig	jh							Mode	erate					Lo	ow				
#13) Class cover																							
distribution (all vegetated		Eve	ภ			Une	even		Even				Uneven					Ev	en				
classes) Duration of																							
surface water in ≥ 10% of AA	P/P	S/I	T/E	Α	P/P	S/I	T/E	А	P/P	S/I	T/E	Α	P/P	S/I	T/E	Α	P/P	S/I	T/E	Α			
Low disturbance at AA (see #12i)	Е	Е	Е	н	Е	Е	н	Н	Е		Н	м	Е	Н	М	м	Е	н	М	м			
Moderate							-	<u> </u>	-	Н		IVI			IVI	IVI		-	IVI	IVI			
disturbance at AA (see #12i)	Н	н	Н	н	Н	н	н	М	н	н	М	М	Н	М	М	L	Н	М	L	L			
High disturbance	М	М	М		М	М		i i	М	М	L		М		L	L				L			
at AA (see #12i)								Ë															
iii. Rating (use th	e conc	lusio	ns fro	m i a	nd ii a	above	and	the ma	atrix be	elow to	arri	ve at	[check	() the	funct	tional	points	s and r	ating)			
Evidence of v	vil dlife	use (i)							И	/ildlife	habi	itat fe	atures	rating	1 (ii)							╗
Substantial			+	E	xcept	ional		H		High	- 1		+		Mod	lerat	e ı		-	-	Low	1	4
					1E					.91	1				-	8H					.7M		
Moderate					.9⊢	1				.71	М	.5М							.3L				
Minimal					.6N	1				.41	и					2L					.1L		ヿ゙
								_												_			_
omments				r, ea	stern	fox so	quirrel	, and	white	-tailed	jack r	abbi	t obs	erved (on site	in 2	020. I	Evide	nce of	water	fowl an	d	
	mam	ımal u	se.																				
																							_
4D General	Fish H	ahitat	Rati	na. (Asses	s this	s func	tion it	f the A	ιι εί Δ	sed hy	/ fich	or th	e exid	ina si	hıafi	on is "	orre	ctable'	' such	that th	$\triangle AA$	
				•							-	,			_							e AA	
4D. General could be used estorable due	by fish to hat	i [i.e., to	fish u onstra	ise is ints,	preclu	uded	by pe	rche	d culve	ert or c	ther b	arrie	r, etc	.]. If th	ne AA	is no	t use	d by f	ish, fis	h use	is not		
ould be used	by fish to hat	i [i.e., to	fish u onstra	ise is ints,	preclu	uded	by pe	rche	d culve	ert or c	ther b	arrie	r, etc	.]. If th	ne AA	is no	t use	d by f	ish, fis	h use	is not		
ould be used estorable due NA here	by fish to hat and pi	i [i.e., toitat co roceed	fish u onstra I to 14	ise is ints, 4E.)	preclu or is r	uded not de	by peresired	rche of from	d culve a mai	ert or c	other b	arrie erspe	r, etc ective	.]. If th [such	ne AA as fis	is no h ent	ot used trappe	d by f ed in a	ish, fis	h use	is not		
ould be used estorable due	by fish to hat and po	i [i.e., toitat co roceed	fish u onstra I to 14	ise is ints, 4E.)	preclu or is r	uded not de	by peresired	rche of from	d culve a mai	ert or c	other b	arrie erspe	r, etc ective	.]. If th [such	ne AA as fis	is no h ent	ot used trappe	d by f ed in a	ish, fis	h use	is not		
ould be used estorable due NA here Habitat Qu Duration of surfacin AA	by fish to hat and po ality au	i [i.e., toitat co roceed	fish u onstra I to 14	ise is ints, 4E.)	preclu or is r	uded not de	by peresired	rche of from	d culve a mai	ert or c	other b	arrie erspe	r, etc ective heckt	.]. If th [such	ne AA as fis	is no h ent	ot used trappe	d by f ed in a	ish, fis a cana	h use I], ther	is not		
ould be used storable due NA here Habitat Qu Duration of surfacin AA Aquatic hiding / re	by fish to hat and po ality au	i [i.e., toitat co roceed	fish u onstra I to 14	ise is lints, 4E.)	or is r	uded not de	by peresired	rche of from	d culve a mai	ert or on agem	other b	arrie erspe	r, etc ective heckt	.]. If the [such	ne AA as fis	is no h ent	ot used trappe	d by f ed in a	ish, fis a cana Tem	h use I], ther	is not n check	al	oor _
ould be used storable due NA here Habitat Qu Duration of surfaction AA Aquatic hiding / resease cover	by fish to hak and pu ality and e water esting /	i [i.e., toitat co roceed	fish upnstra I to 14 wn / S	ise is lints, 4E.)	or is r	uded not de	by peresired	rched from in AA	d culve a mai	ert or on agem	other be	arrie erspe	r, etc ective heckt	.]. If the [such	ne AA as fis	is no h ent points	ot used trappe	dbyfoedina	ish, fis a cana Tem	h use I], ther	is not n check	al	ï
Duld be used estorable due NA here NA here Habitat Qu Duration of surfacin AA Aquatic hiding / reescape cover Thermal cover opsuboptimal	by fish to hak and pi ality and ee water esting /	i [i.e., for items of	onstra to 14 wn / S	use is nints, the second secon	or is r	uded not de ish Sp	by peresired	in AA	a mai	ert or conagement or conagement of the conagemen	other beent per arrive	arrie erspe	r, etc ective heckt onal/li	.]. If the function of the fun	ne AA as fis	is no	ot used trapped	d by fled in a	ish, fis a cana Tem	h use], ther 	Epheme	al Po	S
ould be used estorable due NA here Habitat Qu Duration of surfact in AA Aquatic hiding / re escape cover Thermal cover op suboptimal FWP Tier I fish FWP Tier II or	by fish to hak and pi ality a e water esting / timal/ species Native	n [i.e., the control of the control	fish uponstra	se is aints, 4E.) Suspe	precluor is r cted F cted F	uded not de	pecies ennial e s	in AA	a mai	natrix to	other bearing arrive	arrie	heck to Adeq	.]. If the such the function in termitte such the such that the such tha	ne AA as fis	points	and ra	d by fed in a ating) Optin O	Temnal	porary/ Adec	Epheme	Po O .3L	.3I
ould be used estorable due NA here Habitat Qu Duration of surfactin AA Aquatic hiding / reescape cover Thermal cover op suboptimal FWP Tier I fish FWP Tier II or Game fish sp	by fish to hak and pi ality ar e water esting / timal/ species Native ecies	n [i.e., the initial correction of the initi	fish upnstra	Suspe	cted F cted F A O .8H	uded not de	by persection by pecies ennial e	in AA	a mai	nagem	other bearing arrive	arrie	heckt	i.]. If the such such such such such such such such	ne AA as fis tional point .5M .4M	is not hend sooints	ot used trapped	d by feed in a set ing) Optin O .7M	Tem	h use I], ther porary/ Adec	is not n check	Po O .3L .2L	.3I
ould be used estorable due NA here Habitat Qu Duration of surfact in AA Aquatic hiding / re escape cover Thermal cover op suboptimal FWP Tier I fish FWP Tier II or	by fish to hak and pi ality ar e water esting / timal/ species Native ecies I or me fish	i [i.e., fi ii.e., fi iii.e., fii	fish upnstra	se is aints, 4E.) Suspe	precluor is r cted F cted F	uded not de	pecies ennial e s	in AA	a mai	natrix to	other bearing arrive	arrie erspe	heck to Adeq	.]. If the such the function in termitte such the such that the such tha	ne AA as fis	is not hend sooints	and ra	d by fed in a ating) Optin O	Temnal	porary/ Adec	Epheme	Po O .3L	3L .1L

Sources used for identifying fish sp. potentially	found in A	4 <i>A:</i>										
ii. Modified Rating (NOTE: Modified score of a) Is fish use of the AA significantly reduced by current final MDEQ list of waterbodies in need of fishery or aquatic life support, or do aquatic nuryes, reduce score in i above by 0.1: Modified	a culvert, of TMDL of sance pla	, dike deve ant oi	e, or other r lopment wit	man-made s th listed "Pr	obable Imp	aired (Úses" incl	udir	ng cold or wa		e If	
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	Comn	nent	s: No fish	habitat v	vithin AA							
14E. Flood Attenuation: (Applies only to we channel or overbank flow, click NA he			to flooding d to 14F.)	via in-chan	nel or overl	oank fl	ow. If we	tlan	ds in AA are	not floode	d from in-	
i. Rating (working from top to bottom, use the Estimated or Calculated Entrenchment (Rosqu			to arrive at entrenched				and ratin trenched -	_	Entrench	ed-A, F, G	stream	
1994, 1996) % of flooded wetland classified as forested	9	•	stream type			tream				types		
and/or scrub/shrub	75	%	25-75%	<25%	75%	25-7	75% <2	25%	75%	25-75%	<25%	
AA contains no outlet or restricted outlet	_11	Н	.9H	.6M	.8H	.7	M .5	5M	.4M	.3L	.2L	
AA contains unrestricted outlet	.9	н	.8H	.5M	.7M	.6	M .4	łМ	.3L	.2L	.1L	
Slightly Entrenched			Moderately	Entrenched				E	Intrenched			7
ER = >2.2	m type	+		.41 - 2.2 am type	A	stream	type	E	R = 1.0 - 1.4 F stream type	G	stream type	_
			7			~						
2 x Bankfull Depth Bankfull Depth Bankfull Depth												
Floodprone 70		ankfu idth	ıll			250	= Ent		chment	2.8		
ii. Are ≥10 acres of wetland in the AA subject within 0.5 mile downstream of the AA (check)?		AN	D are man-	made featu	res which r	nay be			damaged by	floods loca	ated	
AA subject to periodic flooding from Bighorn River, although flows in the river are controlled by a dam. Entrenchment ratio estimated from aerial photo interpretation and not measured in field. River is C-Type.												
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, dick NA here and proceed to 14G.)												
 i. Rating (Working from top to bottom, water durations are as follows: P/P = per further definitions of these terms].) 	use the r manent/	natr pere	ix below to nnial; S/I	o arrive at = seasona	[check] th I/intermitt	e func ent; a	ctional po nd T/E =	oint: ter	s and ratinon mporary/ep	g. Abbrevi hemeral [s	ations for s see instruc	surface tions for
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 foo			≤1 acre foot								
Duration of surface water at wetlands within the AA	P/P		S/I	T/E	P/F		S/I		T/E	P/P	S/I	T/E
Wetlands in AA flood or pond ≥ 5 out of 10 years	1H		.9Н	.8H	.81	1	.6M		.5M	.4M	.3L	.2L
Wetlands in AA flood or pond < 5 out of 10 years	.9H		.8H	.7M	.71	и	.5M		.4M	.3L	.2L	.1L

Comments: 8.62 acres of wetlands have developed as of 2020.

14G. Sediment/Nutrient/Toxicant through influx of surface or ground to 14H.)						
i. Rating (working from top to bott = low])	om, use the matrix below	to arrive at [check] the fun	nctional points and rating [H	= high, M = moderate, or L		
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 outrophication 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 Evidence of flooding / ponding in AA	≥ 70%	< 70%	≥ 70%	< 70%		
AA contains no or restricted outlet		Yes No	Yes No	Yes No		
AA contains unrestricted outlet		7M .5M	.5M .4M	.3L .2L		
		6M .4M	.4M .3L	.2L .1L		
Comments: AA has potential to re	eceive sediment/nutrients	/toxicants from surface or	groundwater.			
14H Sediment/Shoreline Stabilization drainage, or on the shoreline of a standi proceed to 14I.) i. Rating (working from top to bottom,	ing water body which is subje	ect to wave action. If 14H doe e at [check] the functional poin	es not apply, click			
% Cover of wetland streambank or shoreline by species with stability ratings	Durat Permanent / Perennial	tion of surface water adjacent to ro	oted vegetation Temporary / Epheme	ral		
of ≥6 (see Appendix F). ≥ 65%	1H	.9H	.7М			
35-64%	.7M	.6M	.5M			
< 35%	.3L	.2L	.1L			
14I. Production Export/Food Chair i. Level of Biological Activity (synthesis)	n Support:	tat ratings [check])	c plant species with high sta	, ,		
Rating (14D.iii.) E/H	M M	L				
E/H H	н	M				
M H	M M	M				
L M 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 (141.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 > 5 acres Vegetated component > 1 acre						
B High Moderate C Yes No Yes No	Low High Yes No Yes No	Moderate Low				
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	1 .6M .3L .4M	.2L .7H .5M .5M	.3L .3L .2L		
T/E/A .8H .5M .6M .3L	.4M .2L .7H .4N	.5M .2L .3L	.1L .6M .4M .4M	.2L .2L .1L		
ii. 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 or the score in ii above and adjust rating accordingly: Modified Rating Comments: Adjacent upland buffer with greater than 30% plant cover and less than 15% noxious weed cover.						

14J. Groundwater Discharge/Recharge: (check the appropriate indicators in i & ii below) i. Discharge Indicators ii. Recharge Indicators The AA is a slope wetland Permeable substrate present without underlying impeding layer Springs or seeps are known or observed Wetland contains inlet but no outlet Vegetation growing during domant season/drought Stream is a known 'losing' stream; discharge volume decreases Wetland occurs at the toe of a natural slope Other Seeps are present at the wetland edge AA permanently flooded during drought periods Wetland contains an outlet, but no inlet Shallow water table and the site is saturated to the surface Other: 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 <u>FROM GROUNDWATER</u> <u>DISCHARGE OR WITH WATER</u> THAT IS RECHARGING THE GROUNDWATER SYSTEM Criteria P/P S/I None Groundwater Discharge or Recharge 1H .4M .1L .7M Insufficient Data/Information Comments: The site was designed to have shallow excavations that utilize a high groundwater table as the primary source of wetland 14K. Uniqueness: i. Rating (working from top to bottom, use the matrix below to arrive at [check] the functional points and rating) AA does not contain previously AA contains fen, bog, warm springs cited rare types and structural AA does not contain previously Replacement potential or mature (>80 yr-old) forested diversity (#13) is high or contains cited rare types or associations wetland or plant association listed plant association listed as "S2" by and structural diversity (#13) is as "S1" by the MTNHP the MTNHP low-moderate Estimated relative commo abundant abundant common abundant rare rare common rare abundance (#11) Low disturbance at AA 1H .9H .8H .8H .6M .5M .5M .4M .3L (#12i) Moderate disturbance at .9H H8. .7M .7M .5M .4M .4M .3L .2L AA (#12i) High disturbance at AA .8H .7H .3L .2L .6M .6M .4M .3L .1L (#12i) Comments: Wetland type is common in the Bighorn River floodplain. 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 $\mathsf{N}\bigcirc$ (if 'Yes' continue with the evaluation; if 'No' then click NA here and proceed to the overall summary and rating page) 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) 15H .2H 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: Site owned by MFWP and part of larger Grant Marsh WMA property. **General Site Notes**

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

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	М	.6	1	5.17	
C. General Wildlife Habitat	М	.7	1	6.03	✓
D. General Fish Habitat	NA	0	0	0.00	
E. Flood Attenuation	М	.6	1	5.17	
F. Short and Long Term Surface Water Storage	Н	.9	1	7.76	✓
G. Sediment/Nutrient/Toxicant Removal	М	.7	1	6.03	✓
H. Sediment/Shoreline Stabilization	М	.6	1	5.17	
Production Export/Food Chain Support	М	.5	1	4.31	
J. Groundwater Discharge/Recharge	М	.7	1	6.03	✓
K. Uniqueness	М	.4	1	3.45	
L. Recreation/Education Potential (bonus points)	Н	.2	NA	1.72	
Totals:		5.9	10	50.86	
Percent of Possible Score			59 %		

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

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

1 11 111	IV
----------	----

JTX Tunnicliff Wetland Mitigation Site – 2016 – 2020 Vegetation Species List

Scientific Names	Common Names	GP Indicator Status ^(a)
Acer negundo	Box Elder	FAC
Acroptilon repens	Russian Knapweed	UPL
Agropyron cristatum	Crested Wheatgrass	UPL
Alopecurus arundinaceus	Creeping Meadow-Foxtail	FACW
Arctium lappa	Greater Burdock	UPL
Asclepias speciosa	Showy Milkweed	FAC
Bassia scoparia	Mexican-Fireweed	FACU
Beckmannia syzigachne	American Slough Grass	OBL
Brassica sp.	Mustard sp.	N/A
Bromus arvensis (japonicus)	Field Brome	FACU
Bromus ciliatus	Fringed Brome	FAC
Bromus inermis	Smooth Brome	UPL
Carex sp.	Sedge	N/A
Chenopodium album	Lamb's-Quarters	FACU
Chenopodium glaucum	Oak-Leaf Goosefoot	FAC
Chenopodium rubrum	Red Goosefoot	OBL
Cirsium arvense	Canadian Thistle	FACU
Convolvulus arvensis	Field Bindweed	UPL
Crataegus douglasii	Douglas Hawthorne	FAC
Cynoglossum officinale	Gypsy-Flower	FACU
Dactylis glomerata	Orchardgrass	FACU
Distichlis spicata	Coastal Salt Grass	FACW
Echinocystis lobata	Wild Cucumber	FAC
Elaeagnus angustifolia	Russian-Olive	FACU
Elaeagnus commutata	Silverberry	UPL
Eleocharis palustris	Common Spike-Rush	OBL
Elymus hispidus	Intermediate Wheatgrass	UPL
Elymus repens	Creeping Wild Rye	FACU
Elymus trachycaulus	Slender Wild Rye	FACU
Equisetum arvense	Field Horsetail	FAC
Fraxinus pennsylvanica	Green Ash	FAC
Galium aparine	Sticky-Willy	FACU
Glycyrrhiza lepidota	American Licorice	FACU
Hordeum jubatum	Fox-Tail Barley	FACW
Iva axillaris	Deer-root	FAC
Juncus balticus	Baltic rush	FACW
Lepidium perfoliatum	Clasping Pepperwort	FAC
Leymus cinereus	Great Basin Lyme Grass	UPL
Medicago lupulina	Black Medick	FACU
Medicago sativa	Alfalfa	UPL
Melilotis albus	White Sweet-Clover	UPL
Melilotis officinalis	Yellow Sweet-Clover	FACU

JTX Tunnicliff Wetland Mitigation Site – 2016 – 2020 Vegetation Species List

Pascopyrum smithii	Western Wheatgrass	FACU
Poa pratensis	Kentucky Blue Grass	FACU
Poa secunda	Curly Blue Grass	FACU
Populus deltoides	Eastern Cottonwood	FAC
Prunus virginiana	Common Chokecherry	FACU
Puccinellia nuttaliana	Nutall's Alkali Grass	OBL
Quercus macrocarpa	Bur Oak	FACU
Rosa woodsii	Wood's Rose	FACU
Rumex crispus	Curly Dock	FAC
Salix fragilis	Crack Willow	FAC
Schedonorus pratensis	False Meadow Rye	FACU
Shepherdia argentea	Silver Buffalo-Berry	UPL
Schoenoplectus acutus	Hard-Stem Club-Rush	OBL
Schoenoplectus americanus	Chairmaker's Club-rush	OBL
Schoenoplectus maritimus	Saltmarsh Club-rush	OBL
Schoenoplectus pungens	Three-Square	OBL
Sisymbrium altissimum	Tall Hedge-Mustard	FACU
Sporobolus airoides	Alkali-sacaton	FAC
Symphoricarpos albus	Common Snowberry	UPL
Taraxacum officinale	Common Dandelion	FACU
Thinopyrum ponticum	Tall Wheatgrass	UPL
Tragopogon dubius	Meadow Goat's-beard	UPL
Trifolium fragiferum	Strawberry-head Clover	FAC
Trifolium repens	White Clover	FACU
Typha angustifolia	Narrow-leaf Cat-tail	OBL
Typha latifolia	Broad-leaf Cat-tail	OBL
Xanthium strumarium	Rough Cockleburr	FAC

⁽a) 2018 National Wetland Plant List (USACE 2018)

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

APPENDIX C PROJECT AREA PHOTOGRAPHS

MDT Wetland Mitigation Monitoring JTX – Tunnicliff Ranch Big Horn County, Montana

JTX Tunnicliff: 2020 Photo Point Photographs



Photo Point: 1 Bearing: 320 degrees

Location: Looking NW at Cell 4 Year: 2016



Photo Point: 1 Bearing: 320 degrees

Location: Looking NW at Cell 4 Year: 2020



Photo Point: 1 Location: Looking east across property Bearing: 270 degrees Year: 2016



Photo Point: 1 Location: Looking east across property Bearing: 270 degrees Year: 2020



Photo Point: 1 Bearing: 220 degrees

Location: Looking SW at Cell 5 Year: 2016



Photo Point: 1 Bearing: 220 degrees

Location: Looking SW at Cell 5 Year: 2020

JTX Tunnicliff: 2020 Photo Point Photographs



Photo Point: 2 Bearing: 315 degrees

Location: Looking NW at Cell 9

Year: 2016



Photo Point: 2 Bearing: 315 degrees

Location: Looking NW at Cell 9

Year: 2020



Photo Point: 2 Bearing: 0 degrees

Location: Looking North at Cell 8/9

Year: 2016



Photo Point: 2 Bearing: 0 degrees

Location: Looking North at Cell 8/9

Year: 2020



Photo Point: 2 Bearing: 45 degrees

Location: Looking NE at Cell 8

Year: 2016



Photo Point: 2 Bearing: 45 degrees

Location: Looking NE at Cell 8

JTX Tunnicliff: Photo Point Photographs



Photo Point: 3 Bearing: 140 degrees

Location: Looking SE at Cell 13 Year: 2016



Photo Point: 3 Bearing: 140 degrees

Location: Looking SE at Cell 13 Year: 2020



Photo Point: 3 Bearing: 100 degrees

Location: Looking East at Cell 13 Year: 2016



Photo Point: 3 Bearing: 100 degrees

Location: Looking East at Cell 13 Year: 2020



Photo Point: 3 Location: West side of property Looking NE Bearing: 45 degrees Year: 2016



Photo Point: 3 Location: West side of property Looking NE Bearing: 45 degrees Year: 2020

JTX Tunnicliff: 2020 Photo Point Photographs



Photo Point: 4 Bearing: 105 degrees

Location: Looking East at Cell 3 Year: 2016

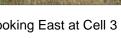




Photo Point: 4 Bearing: 105 degrees

Location: Looking East at Cell 3 Year: 2020



Photo Point: 4 Bearing: 160 degrees

Location: Looking South at Cell 3 Year: 2016



Photo Point: 4 Bearing: 160 degrees



Location: Looking South at Cell 3 Year: 2020



Photo Point: 4 Bearing: 240 degrees

Location: Looking West at Cell 2

Year: 2016



Photo Point: 4 Bearing: 240 degrees

Location: Looking West at Cell 2

JTX Tunnicliff: 2020 Transect Photographs



Transect 1: Start Bearing: 230 degrees

Location: SE corner of property Year: 2016

Location: SE corner of property



Transect 1: End Bearing: 50 degrees

Transect 2: Start Bearing: 350 degrees

Location: West side of property Year: 2016



Transect 1: Start Bearing: 230 degrees

Location: SE corner of property Year: 2020



Transect 1: End Bearing: 50 degrees

Location: SE corner of property Year: 2020



Transect 2: Start Bearing: 350 degrees

Location: West side of property Year: 2020



Transect 2: End Bearing: 170 degrees

Location: West side of property Year: 2016



Transect 2: End Bearing: 170 degrees

Location: West side of property Year: 2020



Data Point: DP-1W Year: 2020



Location: Cell 1



Data Point: DP-1U Year: 2020

Location: Cell 1



Data Point: DP-2W Year: 2020

Location: Cell 2



Data Point: DP-2U

Location: Cell 2



Data Point: DP-3W Year: 2020



Data Point: DP-3U Year: 2020

Location: Cell 3



Data Point: DP-4W Year: 2020



Location: Cell 12

Location: Cell 3



Data Point: DP-4U Year: 2020

Location: Cell 12



Data Point: DP-5W Year: 2020

Location: Cell 10



Data Point: DP-5U

Location: Cell 10



Data Point: DP-6W Year: 2020

Location: Cell 8



Data Point: DP-6U

Location: Cell 8

Year: 2020



Data Point: DP-7W Year: 2020

Location: Cell 7

Data Point: DP-7U

Location: Cell 7

Year: 2020



Data Point: DP-8W Year: 2020

Location: Cell 6



Data Point: DP-8U

Location: Cell 6



Data Point: DP-9W Year: 2020

Location: Cell 5



Data Point: DP-9U Year: 2020





Data Point: DP-10W Year: 2020

Location: Cell 4

Data Point: DP-10U

Location: Cell 4