Montana Department of Transportation Wetland Mitigation Monitoring Report

JTX - TUNNICLIFF RANCH MITIGATION SITE

Project Overview

MDT Project Number: STPX-STWD (056) UPN# 7286 Watershed: Watershed #14 – Middle Yellowstone

Monitoring Year: 2023

Years Monitored: 8th year of monitoring

Corps Permit Number: NWO-2010-01938-MTH

Monitoring Conducted By: Confluence Consulting Inc Dates Monitoring Was Conducted: June 13-15, 2023

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 projects 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 planting 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: Figure 1

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: MDT will continue to work with the landowner, Montana Fish, Wildlife and Parks (MFWP) on weed control to bring noxious weed cover back below the 5% threshold. MDT is working towards developing adaptive management activities with MFWP to address woody vegetation deficiencies within the site. As reported since 2020, four enclosure fences need repair. Two of the bird boxes on the west fence line, are no longer present at the site and MDT may want to replace them.

Anticipated Wetland Credit Acres: 29.63

Wetland Credit Acres Generated to Date: 13.67

Previous Monitoring Reports: https://www.mdt.mt.gov/publications/brochures/wetland-

mitigation.aspx

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

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

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 Great Plains Regional Supplement.	Y	All 13 excavated cells contain wetlands and meet the wetland hydrology, vegetation, and soil requirements. Wetlands had developed across 9.03 acres of the site in 2023.
Wetland Hydrology	Soil saturation is present for at least 12.5 percent of the growing season.	Y	All 13 excavated cells were saturated near the surface and some contained standing water during the 2023 monitoring event.
	Hydric soil conditions are present or appear to be forming.	Y	All excavated cells within the mitigation site exhibit hydric soil indicators (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.	Υ	Vegetative cover was estimated as 85% across disturbed upland areas and 70-90% across various wetland areas in 2023. Soils on the site are supporting plant cover.
	Wetland plant communities are delineated as hydrophytic by using technical guidelines.	Y	All 13 excavated cells had developed wetland plant communities as of the 2023 monitoring event.
Hydrophytic Vegetation	Hydrophytic vegetation success will include achieving a minimum overall vegetation cover of 70 percent in created wetland areas within 5 years after site construction.	Y	Vegetative cover within the excavated cells ranged from 80-90% and all wetland cells achieved success for this standard in 2023.
Noxious Weeds	Noxious weeds do not exceed 5 percent cover.	N	Noxious weeds were identified in upland locations across the site and noxious weed cover exceeded 5% 2023.
Woody Plants	Plantings exceed 50 percent survival after 5 years.	N	Less than 1 percent of the woody plants installed at the site were alive in 2023.
Open Water	Open water will be considered successful and creditable when wetland vegetation establishes in the form of either emergent, floating and/or submerged species of plants.	Y	Open water seasonally fills the excavated cells which are vegetated with emergent plant communities.
Functional Assessment	The site will be considered fully functional and creditable when it achieves an overall Montana Wetland Assessment Method (MWAM) rating of Category II or better at the end of the compensatory monitoring period.	Y	The site has achieved a Category II rating.

Summary Data

Wetland Delineation — A total of 9.03 emergent wetland acres were delineated within the 13 wetland cells at the JXT Tunnicliff mitigation site during the 2023 monitoring event. Wetland acreage within the site decreased by 2.21 acres between the 2022 and 2023 monitoring events. In the spring of 2022, the site received higher than average precipitation following two years of drought, which resulted in a large increase in wetland area during that monitoring year. This trend did not continue in 2023 as the wetland boundaries had contracted. Additionally, the degree of inundation observed during the 2023 site visit meant that some areas delineated as open water which may have been delineated as wetland after the water levels receded. Regardless of the reduction in wetland acreage delineated in 2023, the acreage still remained greater than the acreage documented in 2021 and 2020.

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 preserved during construction and were identified and mapped during the 2023 monitoring event. No changes were noted from previous years (Figure A-3, Appendix A).

Functional Assessment – The JTX Tunnicliff mitigation site has developed into a Montana Wetland Assessment Method (MWAM) Category II wetland (Table 2; Appendix B).

Table 2. MWAM Summary for the JTX - Tunnicliff Ranch Site

MWAM Function and Value Parameters	2017	2021	2022	2023
Listed/Proposed T&E Species Habitat	Low (0.0)	Low (0.0)	Low (0.1)	Low (0.1)
MTNHP Species Habitat	Low (0.1)	Mod (0.6)	Mod (0.6)	High (0.9)
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)
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)	High (1)	High (1)	High (1)
Sediment/Shoreline Stabilization	N/A	N/A	N/A	N/A
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	High (0.2)	High (0.2)	High (0.2)	High (0.2)
Actual Points/Possible Points	4.0/9	5.6/9	5.7/9	6.0/9
% of Possible Score Achieved	44%	62%	63%	67%
Overall Category	III	III	111	II

Vegetation - All desirable vegetation communities observed within the mitigation site appeared healthy in 2023, and the effects of the previous drought were less noticeable, though cattails (*Typha* spp.) are still less dominant than before the drought. Wetland plant communities exhibited increased coverage from obligate and FAC-wet species, and the upland plant communities were healthy even though the intermediate wheatgrass (*Thinopyrum intermedium*) appeared less dense than in previous years. A total

of 72 plant species have been identified at the site over the last 8 years; with no additional species observed in 2023 (Table B-1; Appendix B).

Four upland community types and two wetland community types were identified and mapped at the site in 2023 (Figure A-3, Appendix A). Dominant plant species observed within each community are listed on the Wetland Mitigation Site Monitoring forms (Appendix B). The majority of the excavated cells have developed wetland communities dominated by *Schoenoplectus* spp./*Typha latifolia* (i.e. Wetland Type 9). For the past few years, the wetland plant communities in cells 1, 2, 3, and 10 were still becoming established and thus the community type named "transitional wetland". In 2021, the transitional vegetation in this community changed and the community type renamed as Wetland Type 13 (*Hordeum jubatum/Elymus repens*), which reflected the increase in hydrophytic vegetation that has been observed between 2019 and 2021. In 2022 and 2023, the amount of cover from FAC-wet and obligate species increased throughout Wetland Type 13 (Appendix B), though *Elymus repens* still remains dominant. Additionally, portions of wetland cells 1 and 10/11 transitioned from Wetland Type 13 to Wetland Type 9 between the 2022 and 2023 monitoring events (Figure A-3, Appendix A).

The vegetation community types identified on the site in 2023 are as follows:

- Upland Type 6 Pascopyrum smithii/Poa pratensis
- Upland Type 7 Schedonorus pratensis
- Upland Type 8 *Thinopyrum intermedium*
- Upland Type 12 Elaeagnus angustifolia/Thinopyrum intermedium
- Wetland Type 9 Schoenoplectus spp./Typha latifolia
- Wetland Type 13 –Hordeum jubatum/Elymus repens

Vegetation cover was measured along two transects (T-1 and T-2) in 2023 (Figure A-2, Appendix A). T-1 is 792 feet long and intersects plant communities consisting of Upland Type 8 – *Thinopyrum intermedium* and Wetland Type 9 – *Schoenoplectus* spp./*Typha latifolia*. Fifty-nine percent of the transect crossed wetland habitat, which is an 18 percent decrease since 2022. Total vegetative cover increased by 3% since 2022 (Table 3).

Table 3. Data Summary for T-1 from 2016 Through 2023 at the JTX - Tunnicliff Ranch Site.

Monitoring Year	2016	2017	2018	2019	2020	2021	2022	2023
Vegetation Community Transitions Along Transect	1	6	6	5	5	6	4	6
Vegetation Communities Along Transect	2	2	2	2	2	2	2	2
Hydrophytic Vegetation Communities Along Transect	0	1	1	1	1	1	1	1
Total Vegetative Species	10	21	21	21	26	21	27	33
Total Hydrophytic Species	2	8	9	9	8	9	12	15
Total Upland Species	8	13	12	12	18	12	15	18
Estimated % Total Vegetative Cover	75	60	75	95	95	95	90	93
Estimated % Unvegetated	25	40	25	5	5	5	10	7
% Transect Length Comprising Hydrophytic Vegetation Communities	0	47	53	56	58	57	77	59
% Transect Length Comprising Upland Vegetation Communities	100	53	47	44	42	43	23	41
% Transect Length Comprising Open Water Transitional Wetland	0	0	0	0	0	0	0	0

T-2 is 900 feet long and intersects Upland Type 8 and Wetland Types 9 and 13. Forty-eight percent of the transect crossed wetland habitat in 2023, which is a 36% decrease since 2022, owing to the wetland contraction observed during the 2023 field visit. Vegetative cover increased by 7% since 2022, due to increased wetland plant density and reduced amounts of open water patches within the wetland cells (Table 4).

The three small preservation wetlands identified within the monitoring area before site development were not assigned a 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.).

Table 4. Data Summary for T-2 from 2016 Through 2023 at the JTX – Tunnicliff Ranch Site.

Monitoring Year	2016	2017	2018	2019	2020	2021	2022	2023
Vegetation Community Transitions Along Transect	1	6	5	5	5	7	8	7
Vegetation Communities Along Transect	2	3	3	3	3	3	3	3
Hydrophytic Vegetation Communities Along Transect	0	1	2	2	2	2	2	2
Total Vegetative Species	12	11	11	11	21	20	21	30
Total Hydrophytic Species	0	5	6	6	10	11	11	15
Total Upland Species	12	6	5	5	11	9	10	15
Estimated % Total Vegetative Cover	60	60	65	85	85	85	80	87
Estimated % Unvegetated	40	40	35	15	15	15	20	13
% Transect Length Comprising Hydrophytic Vegetation Communities	0	12	14	14	68	54	84	48
% Transect Length Comprising Upland Vegetation Communities	100	88	33	33	32	46	16	52
% Transect Length Comprising Open Water Transitional Wetland	0	0	53	53	0	0	0	0

Weed infestations containing state-listed Priority 2B noxious weeds were mapped at the JTX – Tunnicliff mitigation site in 2023. The majority of the noxious weed infestations were located in the upland buffer areas, however one new population of Russian knapweed (*Acroptilon repens*) is encroaching on the southern end of wetland cell 2 (Figure A-3, Appendix A). Russian knapweed infestations were observed and assigned "trace" and "low" cover classes (less than 1% and 1-5% cover respectively), "low" cover occurrences of gypsy-flower (*Cynoglossum officinale*), and a "low" cover occurrence of field bindweed (*Convolvulus arvensis*) were also observed (Figure A-3, Appendix A). Although one "trace" population of Canada thistle (*Cirsium arvense*) in wetland cell 7 was eradicated in 2023, another patch in the southeast corner of the site increased from "low" to "moderate" cover (6-25% cover). New Canada thistle occurrences were mapped in 2023: a "low" cover class patch located in planting exclosure PE-05 and a "moderate" cover class patch near the northeast corner of the site, and a "low" cover class patch on the east side of wetland cell 7. Trace occurrences of salt-cedar (*Tamarisk chinensis*), which was not observed at this site in 2022, were recorded in 2023 in wetland cells 1 and 3. Leafy spurge (*Euphorbia esula*), a species that was also not present in 2022, was observed in one moderate cover patch within planting exclosure PE-01.

Noxious weed cover was estimated at 6% across the site, which is above the performance standard threshold. This minor increase in noxious weed cover is likely a result of a wet winter and spring, that allowed weeds having not been treated in 2022 to sprout and grow. The site was treated in the fall of 2023 by weed contractors for MDT. MDT's ongoing weed control program at the JTX Tunnicliff site

continues to be effective at reducing noxious weed infestations in cooperation with Montana Fish Wildlife and Parks (MFWP) to prevent increases in noxious weed cover.

Eight woody plant enclosures (PE-1 through PE-8) were monitored for woody plant survival in 2023 by walking and recording live woody stems (Figure A-3 Appendix A). 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 (*Shepherdia argentea*), Douglas' Hawthorne (*Crataegus douglasii*), silverberry (*Elaeagnus commutata*), common chokecherry (*Prunus virginiana*), plains cottonwood (*Populus deltoides*), box elder (*Acer negundo*), and bur oak (*Quercus macrocarpa*). Planted woody vegetation survival was estimated at 1% in 2023, with a total of 13 live individuals observed, all contained within PE-6. In July 2020, a lightning sparked grassfire burned approximately 4.5 acres, including approximately half of PE-01 and three quarters of PE-03 (Figure A-3, Appendix A). Any live woody vegetation remaining within PE-01 and PE-03 were destroyed by the fire. Within PE-06, PE-07, and PE-08, numerous volunteer Russian Olive (*Elaeagnus angustifolia*) were observed. Intact wildlife fencing around enclosures was effective in keeping wildlife away from plantings, as no signs of browse were noted in those enclosures containing surviving woody plantings.

Hydrology – Groundwater is the primary hydrologic source for wetland development at the JTX-Tunnicliff site, with precipitation and overbank flooding from the adjacent Bighorn River serving as secondary hydrologic sources. In 2023, aerial photographs showed overbank flooding from the Bighorn River which caused much of the eastern portion to be inundated with turbid water. Small pools of shallow surface water were observed at the site during the 2023 site visit, but all contained emergent vegetation and thus were not mapped as open water. Three groundwater monitoring wells are located within the site, and two of the wells are regularly monitored by the US Geologic Survey (USGS well #455029107355601 and #455016107360402). The 2023 data for these wells indicates that groundwater depths ranged from approximately 0.4-5.6 feet below the ground surface elevation of 2,835.4 feet between May and September. These wells are located in upland areas, where the ground surface elevation is approximately 3.4 and 5.6 feet above the wetland cell design elevation of 2832.0 feet, for MW-1 and MW-7A respectively. Therefore, the groundwater depths recorded in the monitoring wells likely correspond with groundwater depths ranging from approximately 3.02 feet above ground surface elevation to 1.14 feet below the ground surface elevation within the excavated wetland cells (Table 5; USGS 2023a, USGS 2023b). While the groundwater table was very high in late June through July, groundwater depths observed earlier in the growing season were similar to those that have been observed in previous years. Conversely, the site was flooded in late June and July following some large precipitation events and groundwater levels were atypically high. This flooding can be observed in the background imagery in the site Figures (Appendix A).

Hydrologic indicators encountered within excavated wetland cells across the site included iron deposits, hydrogen sulfide odor, geomorphic position, a positive FAC-neutral test, near surface soil saturation, oxidized rhizospheres on living roots, and a high-water table.

Table 5. 2023 USGS Groundwater Well Data for the JTX - Tunnicliff Ranch Site.

Date	Mountain Time	Depth to water level, feet below land surface	Approximate depth to groundwater relative to wetland cell design elevation
2023 di	screte water-leve	el measurements for \	Well #1
5/2/2023	2:25 pm	4.27	0.87
5/30/2023	12:39 pm	4.54	1.14
6/27/2023	1:53 pm	0.38	+3.02

7/27/2023	11:28 am	1.90	+1.5				
9/8/2023	11:39 am	4.16	0.76				
2023 dis	2023 discrete water-level measurements for Well #7A						
5/1/2023	2:25 pm	4.82	+0.78				
6/27/2023	1:39 pm	5.15	+0.45				
7/27/2023	8:39 am	3.44	+2.16				
9/8/2023	9:39 am	5.61	0.01				

Soils – Soil pits were excavated at paired sample plots for all 10 wetland cells (Figure A-2 – Appendix A). Wetland soil pits were located inside the excavated depressions and upland soil pits were located upslope of and outside of the wetland boundaries. Soil textures within the wetland soil pits ranged from loamy sand to clay loam. The depleted matrix (F3) hydric soil indicator was observed within every wetland soil pit, with the exception of one instance where the redox dark surface indicator (F6) was observed. Soil textures within upland soil pits ranged from loamy sand to clay. No hydric soil indicators were observed in nine out of ten of the upland soil pits. In one pit, DP04u, a depleted matrix was observed, although no evidence of wetland hydrology was observed, and an upland vegetation community was present. Additional field observations for the 20 sample plots 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 2023 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.aspx).

Credit Summary

Functional Unit Credits – The 2023 functional unit credits are summarized in Table 6. A total of 54.36 functional unit credits were generated at the JTX – Tunnicliff Ranch Mitigation site after applying the appropriate mitigation ratios to the 2023 wetland acreage and multiplying that value by the points generated from the 2023 MWAM Assessment.

Table 6. Functional Unit Credit Summary for JTX – Tunnicliff Ranch Mitigation Site in 2023.

Mitigation Type	2023 Delineated Acreage	Ratio	2023 Mitigation Credit Acres	MWAM Actual Points ^a	Functional Unit Credits
Creation (Establishment)	9.03	1:1	9.03	6.00	54.18
Creation (Reestablishment)	0.0	5:1	0	6.00	TBD
Preservation	0.03	1:1	0.03	6.00	0.18
Functional Unit Credits (Mitigation Credit Acres × Actual Points)					54.36

^a Montana Wetland Assessment Method (MWAM) forms can be found in Appendix B

Wetland Mitigation Credits— As of June 2023, the JTX — Tunnicliff Ranch site had developed 13.67 mitigation credit acres (Table 7). The site received 9.03 credit-acres for wetland development, which is a 2.21 credit-acre decrease from 2022.

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 1

percent of the woody plants surviving in 2023, the woody planting credit metric is not being met and no credits have been achieved for these areas. Additional credits from the site include 0.03 acre for preservation of existing wetlands on the site before construction and 4.61 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 2022.

Wildlife – Fourteen bird species were identified at the site in 2023. Five of the eight bird boxes installed at the site are functional and were full of nesting material. Three birdboxes were absent from the site. Two deer and several deer beds were observed at the site, as well as a garter snake and a bull snake.

Table 7. Wetland Mitigation Credits Estimated for the JTX – Tunnicliff Ranch Site (2016–2023)

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)	2021 Mitigation Credit (acres)	2022 Mitigation Credit (acres)	2023 Mitigation Credit (acres)
Creation (Establishment)	Depressional wetlands	Palustrine emergent and palustrine scrub/shrub	26.85	1:1	26.85	0	8.18	11.24	9.03
Creation (Reestablishment)	Woody plant enclosures	Palustrine scrub/shrub	2.73	5:1	0.55	0.5	0	0	0
Preservation	Pre-project Wetlands	Palustrine Emergent	0.03	1:1	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	2.66*	4.51	4.61
	Totals		40.6		29.63	0.5	10.87	15.78	13.67

^{*} Upland buffer credits for 2017-2021 were based on the expected number of credits and not calculated based on actual acreages.

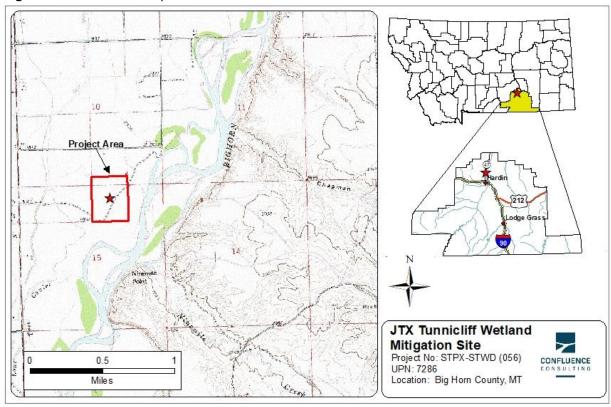
Conclusions

In the eighth year of monitoring, the JTX-Tunnicliff mitigation site met all but two of the established performance standards. Overall, vegetation communities have high amounts of cover, and the wetland areas are becoming well developed. Wetland development is expected to continue without any active management. The wetlands need to expand by an additional 15.96 acres to meet the anticipated wetland acreage for the project. Under normal climatic circumstances, the wetlands will likely continue to expand across the site.

However, active management will be required to achieve success for the performance standards which are failing. Noxious weed cover increased between 2022 and 2023 with several new infestations observed and higher cover in a couple pre-existing patches. Total noxious weed cover is now greater than 5% across the site and no longer meets the performance standards. It is recommended that MDT continues noxious weed management in subsequent years. The standard which requires that woody plant survival exceeds 50 percent after 5 years was not met in 2023 and will require adaptive management considerations in cooperation with the landowner MFWP, and the Corps.

Maps, Plans, Photos

Figure 1. Site Location Map



Project Area Maps/Figures: See Appendix A (Monitoring Activity Locations; Mapped Site Features; and Wetland Delineation)

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

Photos: See Appendix C (Photo Points, Paired Sampling Point Photos, and Transect Photos)

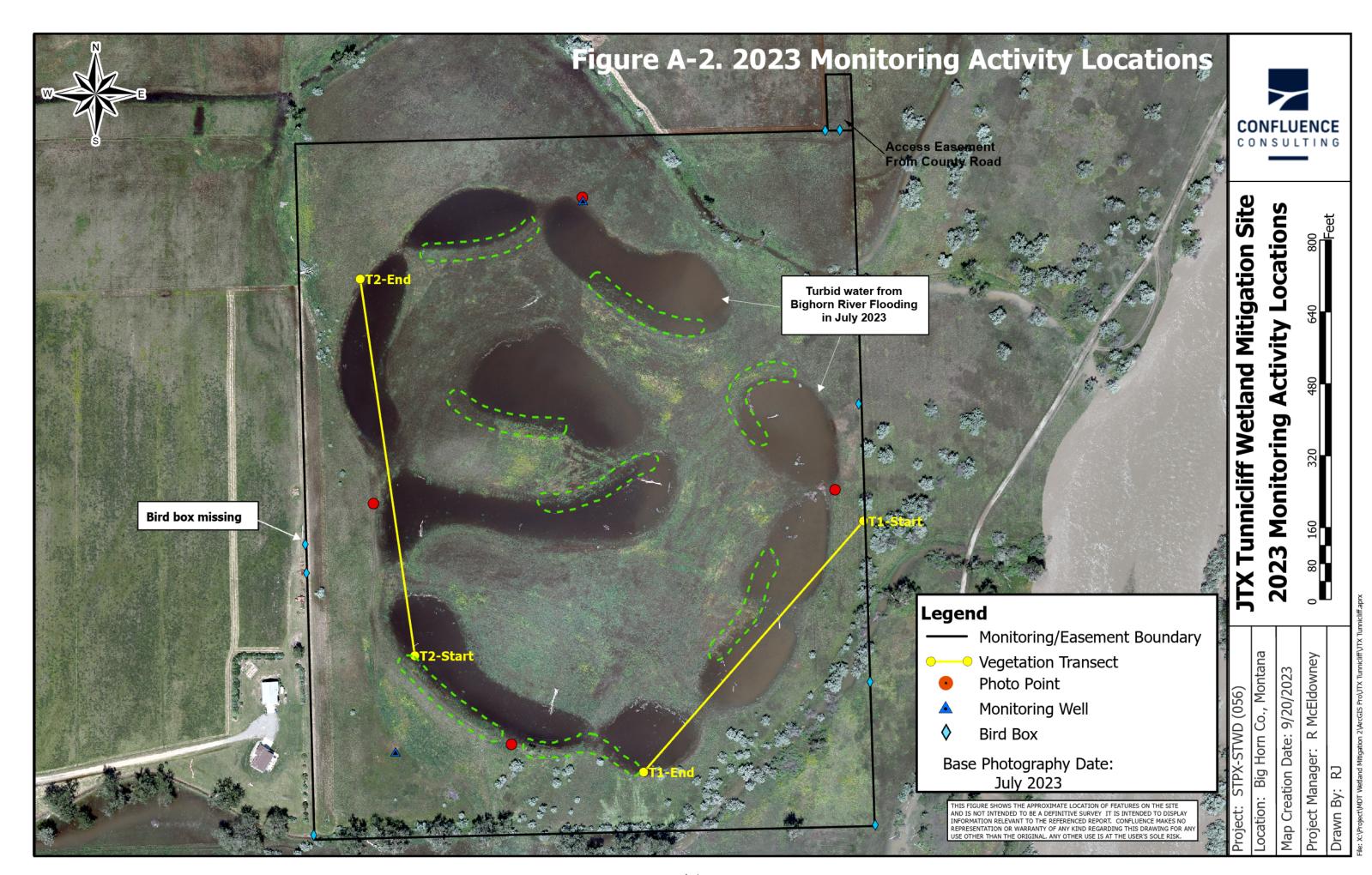
Plans: See Appendix D of 2016 JTX-Tunnicliff Wetland Monitoring Report

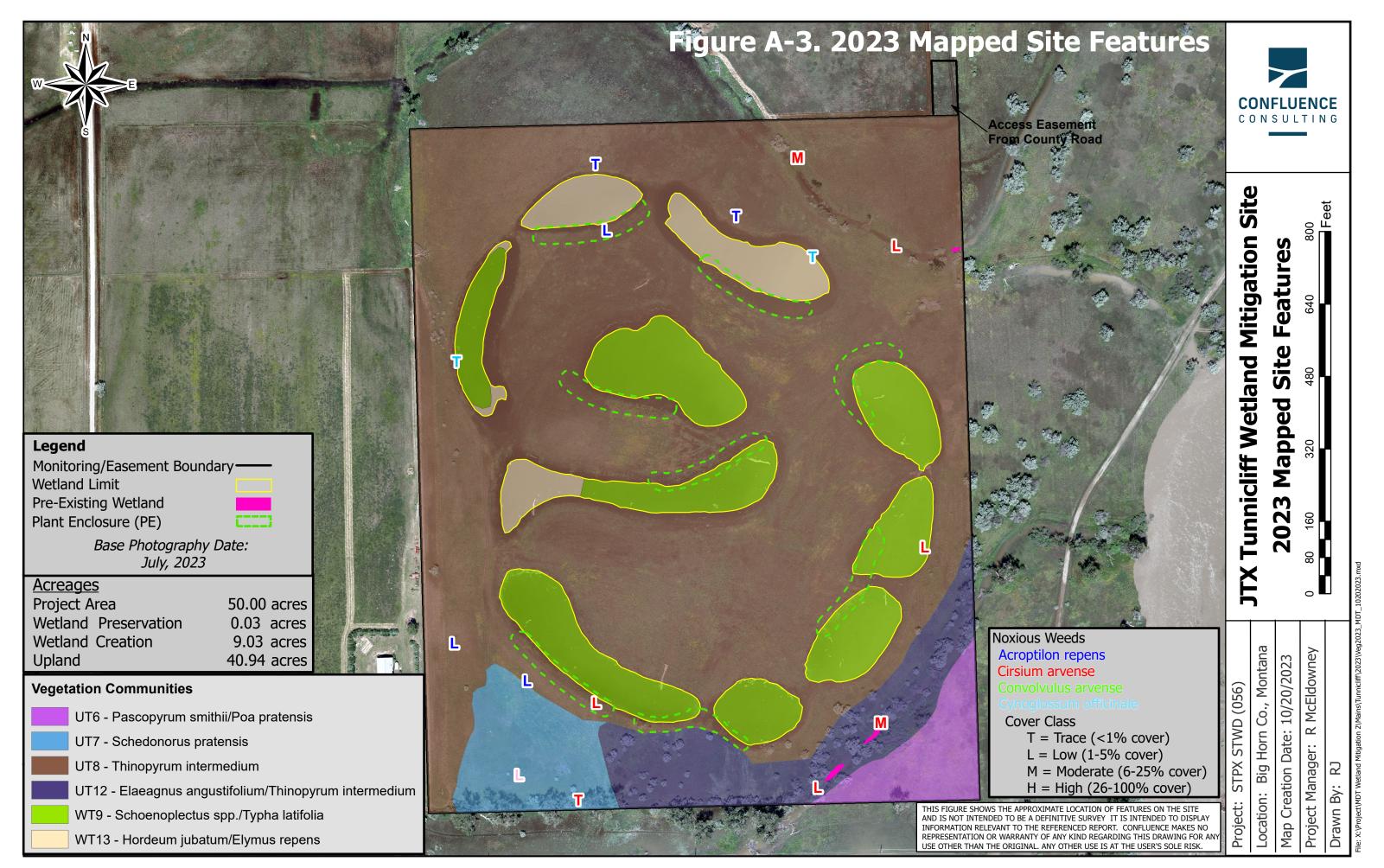
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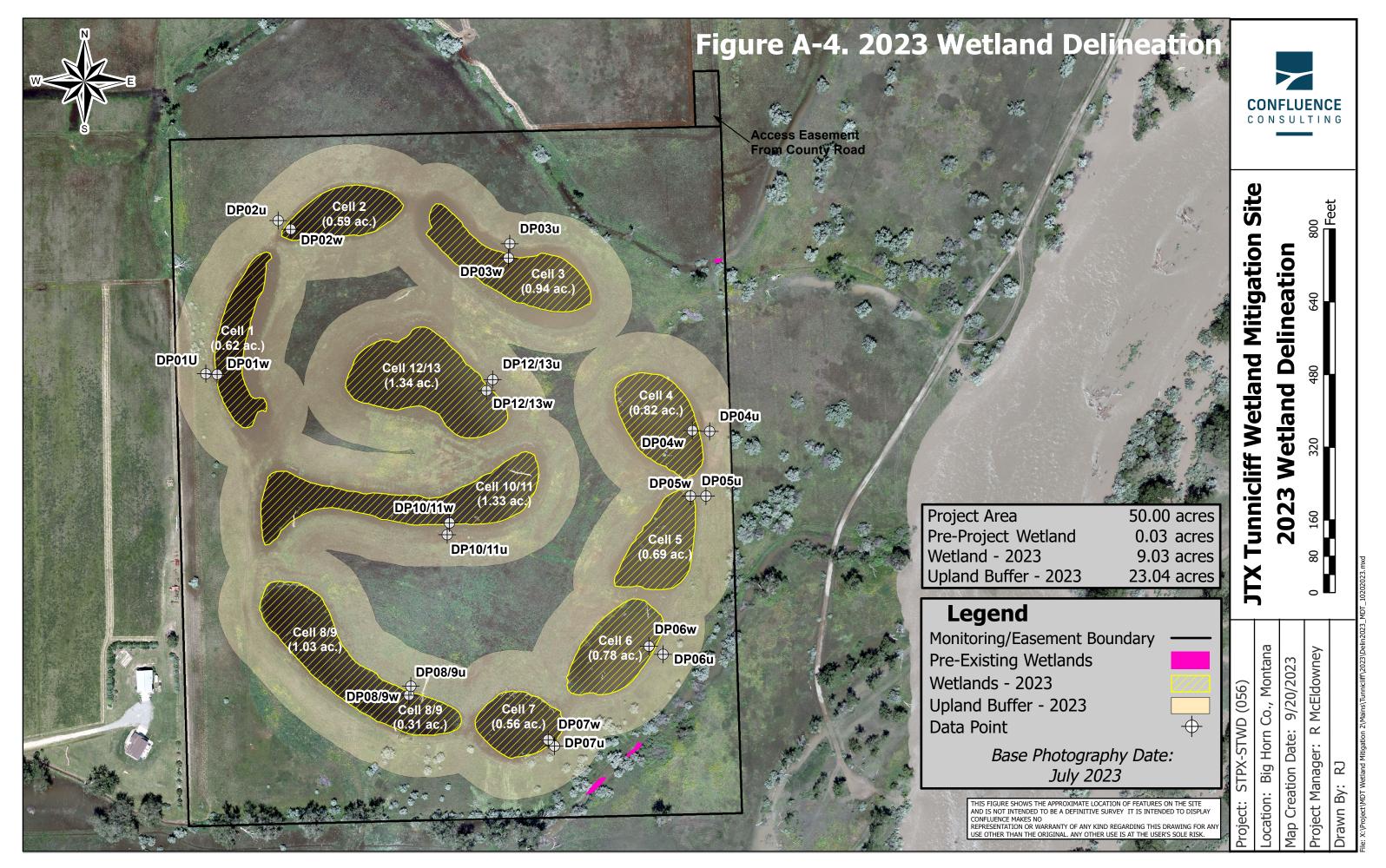
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APPENDIX A PROJECT AREA MAPS

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

Person(s) conducting the assessment: R Jones, K Kane Weather: Sunny, light wind, 85 degrees Location: Hardin MDT District: Billings Milepost: Legal Description: T 1N R 33E Section(s) 15
MDT District: BillingsMilepost:
Legal Description: T <u>1N</u> R <u>33E</u> Section(s) <u>15</u>
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Initial Evaluation Date: 6/15/2016 Monitoring Year: 8_#Visits in Year: 1
Size of Evaluation Area: 50 (acres)
Land use surrounding wetland: Rural home sites, wildlife refuge.
HYDROLOGY
Surface Water Source: Groundwater, occasional flooding from the Big Horn River
Inundation: Average Depth: 0.5 (ft) Range of Depths: (ft)
Percent of assessment area under inundation:5 %
Depth at emergent vegetation-open water boundary:0 (ft)
If assessment area is not inundated then are the soils saturated within 12 inches of surface: Yes
Other evidence of hydrology on the site (ex. – drift lines, erosion, stained vegetation, etc <u>:</u>
All standing water areas contained emergent vegetation and none qualified as "open water". Project area flooded after monitoring event occurred (see aerial photos).
Groundwater Monitoring Wells
Record depth of water surface below ground surface, in feet.
Well ID Water Surface Depth (ft)
MW-1 4.4
MW-7A 5.15
Additional Activities Checklist:
Map emergent vegetation-open water boundary on aerial photograph.
Observe extent of surface water during each site visit and look for evidence of past surface water
elevations (drift lines, erosion, vegetation staining, etc.)
Use GPS to survey groundwater monitoring well locations, if present. Hydrology Notes:
rydrology Notes.
Well readings listed above are from USGS readings on 6/10/2022. Both depths are Below Land Surface (BLS).

VEGETATION COMMUNITIES

Site _JTX-Tunnicliff

(Cover Class Codes $\mathbf{0} = < 1\%$, $\mathbf{1} = 1.5\%$, $\mathbf{2} = 6.10\%$, $\mathbf{3} = 11.20\%$, $\mathbf{4} = 21.50\%$, $\mathbf{5} = >50\%$)

Community # 6 Community Type: Pascopyrum smithii / Poa pratensis Acres: 1.44

Species	Cover class	Species	Cover class
Acroptilon repens	0	Bromus inermis	3
Bromus japonicus	0	Elymus repens	1
Galium aparine	3	Lepidium perfoliatum	0
Pascopyrum smithii	3	Poa pratensis	4
Sisymbrium altissimum	4	Thinopyrum intermedium	3

Comments:

Galium aparine continued to expand within this community type in 2023.

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

Species	Cover class	Species	Cover class
Acroptilon repens	0	Alopecurus pratensis	0
Arctium lappa	0	Asclepias sp.	0
Bromus inermis	1	Bromus japonicus	1
Cirsium arvense	0	Convolvulus arvensis	0
Cynoglossum officinale	0	Dactylis glomerata	1
Elaeagnus angustifolia	0	Hordeum jubatum	0
Iva axillaris	0	Poa pratensis	2
Ribes aureum	0	Rosa woodsii	0
Schedonorus pratensis	3	Sisymbrium altissimum	1
Symphoricarpos albus	0	Thinopyrum intermedium	2
Thlaspi arvense	1	Tragopogon dubius	0
Comments:			

Comments:

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

Community # 8 Community Type: Thinopyrum intermedium / Acres: 34.02

Species	Cover class	Species	Cover class
Acroptilon repens	0	Alopecurus arundinaceus	0
Asclepias speciosa	0	Atriplex argentea	0
Bare Ground	1	Bassia scoparia	0
Bromus arvensis	0	Bromus inermis	1
Bromus japonicus	1	Bromus riparius	0
Bromus tectorum	1	Chenopodium album	1
Cirsium arvense	0	Convolvulus arvensis	1
Descurainia sophia	0	Elaeagnus angustifolia	0
Elymus repens	2	Equisetum arvense	0
Galium aparine	1	Glycyrrhiza lepidota	1
Grindelia squarrosa	0	Hordeum jubatum	0
Iva axillaris	1	Juncus balticus	0
Lactuca serriola	0	Lepidium perfoliatum	1
Medicago sativa	0	Melilotus officinalis	0
Open Water	0	Pascopyrum smithii	0
Poa pratensis	1	Poa secunda	0
Schedonorus pratensis	2	Sisymbrium altissimum	1
Sporobolus airoides	0	Taraxacum officinale	1
Thinopyrum intermedium	0	Thinopyrum intermedium	5
Thlaspi arvense	0	Tragopogon dubius	0
Xanthium strumarium	0		

Comments:

Upland plant community observed throughout the majority of the mitigation site. Acreage increased in 2023 due to wetland contraction.

Community # 12 Community Type: Elaeagnus angustifolia / Thinopyrum intermedium Acres: 3.46

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

Comments:

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

Community #	13	Community Type:	Hordeum jubatum / Elymus repens	Acres:	2.02
-------------	----	------------------------	---------------------------------	--------	------

Alopecurus arundinaceus 1 Bare Ground 3 Chenopodium album 0 Chenopodium rubrum 0 Distichlis spicata 2 Elaeagnus angustifolia 0 Elymus repens 3 Hordeum jubatum 2 Juncus balticus 0 Juncus torreyi 1 Puccipellia puttalliana 2 Schoepoplectus acutus 1	Species	Cover class	Species	Cover class
Distichlis spicata 2 Elaeagnus angustifolia 0 Elymus repens 3 Hordeum jubatum 2 Juncus balticus 0 Juncus torreyi 1	Alopecurus arundinaceus	1	Bare Ground	3
Elymus repens 3 Hordeum jubatum 2 Juncus balticus 0 Juncus torreyi 1	Chenopodium album	0	Chenopodium rubrum	0
Juncus balticus 0 Juncus torreyi 1	Distichlis spicata	2	Elaeagnus angustifolia	0
· · · · · · · · · · · · · · · · · · ·	Elymus repens	3	Hordeum jubatum	2
Puccipellia puttalliana 2 Schoepoplectus acutus 1	Juncus balticus	0	Juncus torreyi	1
	Puccinellia nuttalliana	2	Schoenoplectus acutus	1
Schoenoplectus maritimus 2 Schoenoplectus pungens 1	Schoenoplectus maritimus	2	Schoenoplectus pungens	1
Thinopyrum intermedium 1 Typha angustifolia 1	Thinopyrum intermedium	1	Typha angustifolia	1
Typha latifolia 0	Typha latifolia	0		

Comments:

Community continues to trend toward becoming more hydrophytic and salt tolerant. A few areas previously classified at this community type have been reclassified to CT9.

Community #	14	Community Type:	Schoenoplectus spp. / Typha angustifolia	Acres:	7
Community #	14	Community Type:	Schoenopiectus spp. / Typna angustifolia	Acres:	

Species	Cover class	Species	Cover class
Alopecurus arundinaceus	1	Alopecurus pratensis	0
Asclepias speciosa	0	Bare Ground	2
Beckmannia syzigachne	0	Bromus arvensis	0
Chenopodium album	0	Chenopodium rubrum	0
Cirsium arvense	0	Distichlis spicata	1
Elaeagnus angustifolia	0	Eleocharis palustris	0
Elymus repens	1	Glycyrrhiza lepidota	0
Hordeum jubatum	1	lva axillaris	0
Juncus balticus	2	Juncus torreyi	2
Open Water	2	Puccinellia nuttalliana	2
Rumex crispus	0	Schoenoplectus acutus	1
Schoenoplectus americanus	0	Schoenoplectus maritimus	2
Schoenoplectus pungens	1	Thinopyrum intermedium	0
Typha angustifolia	2	Typha latifolia	0
Xanthium strumarium	0		

Comments:

This community type number and name were changed in 2023 to reflect the reduced dominance of Typha latifolia and increase in Typha angustifolia.

Total Vegetation Community Acreage

50.13

VEGETATION TRANSECTS

JTX-Tunnicliff		Da	ate: 6/14/2023	
Transect Number	: <u>1</u>	Compa	ss Direction from Sta	rt: <u>200</u>
Interval Data:				
Ending Station	149	Community Type:	Thinopyrum intermedium /	
Species		Cover class	Species	Cover cla
Atriplex argentea		0	Bare Ground	
Bromus inermis		1	Chenopodium album	
Cirsium arvense		1	Convolvulus arvensis	
Descurainia sophia		1	Equisetum arvense	
Galium aparine		0	lva axillaris	
Lepidium perfoliatum		0	Melilotus officinalis	
Poa pratensis		1	Schedonorus pratensis	
Taraxacum officinale		2	Thinopyrum intermedium	
Ending Station	240	Community Type:	Schoenoplectus spp. / Typha	a latifolia
Species		Cover class	Species	Cover cla
Alopecurus arundinaceus	;	3	Asclepias speciosa	
Bare Ground		2	Chenopodium rubrum	
Cirsium arvense		0	Hordeum jubatum	
Juncus balticus		2	Juncus torreyi	
Open Water		1	Schoenoplectus acutus	
Schoenoplectus maritimu	s	1	Thinopyrum intermedium	
Typha angustifolia		1	Typha latifolia	
Xanthium strumarium		0		
Ending Station	320	Community Type:	Thinopyrum intermedium /	
Species		Cover class	Species	Cover cla
Alopecurus arundinaceus	;	1	Atriplex argentea	
		2	Galium aparine	
Bare Ground		2	Gallulli aparille	
Bare Ground Lactuca serriola		0	Lepidium perfoliatum	

Ending Station	554	Community Type:	Schoenoplectus spp. / Typha	latifolia
Species		Cover class	Species	Cover class
Alopecurus arundinaceus		4	Asclepias speciosa	0
Bare Ground		2	Chenopodium album	2
Chenopodium rubrum		1	Cirsium arvense	1
Hordeum jubatum		1	Juncus balticus	3
Juncus torreyi		1	Open Water	1
Schoenoplectus acutus		2	Schoenoplectus maritimus	0
Thinopyrum intermedium		0	Typha angustifolia	2
Typha latifolia		1	Xanthium strumarium	1
Ending Station	642	Community Type:	Thinopyrum intermedium /	
Species		Cover class	Species	Cover class
Bare Ground		1	Bromus inermis	0
Elaeagnus angustifolia		1	Elymus repens	1
Iva axillaris		0	Lepidium perfoliatum	1
Poa pratensis		1	Sisymbrium altissimum	0
Taraxacum officinale		0	Thinopyrum intermedium	5
Xanthium strumarium		0		
Ending Station	784	Community Type:	Schoenoplectus spp. / Typha	latifolia
Species		Cover class	Species	Cover class
Alopecurus arundinaceus		1	Bare Ground	1
Chenopodium album		1	Elaeagnus angustifolia	0
Elymus repens		1	Glycyrrhiza lepidota	0
Hordeum jubatum		1	Juncus balticus	1
Juncus torreyi		1	Open Water	2
Schoenoplectus acutus		2	Schoenoplectus maritimus	0
Schoenoplectus pungens		1	Typha angustifolia	2
Typha latifolia		0		
Ending Station	792	Community Type:	Thinopyrum intermedium /	
Species		Cover class	Species	Cover class
Bare Ground		2	Cirsium arvense	1
Elymus repens		0	lva axillaris	0
Juncus balticus		0	Poa secunda	0
Schedonorus pratensis		1	Thinopyrum intermedium	4

Transect Notes:

Wetland area decreased between 2022 and 2023. Increased cover from Cirsium arvense and Juncus torreyi along transect in upland and wetland areas respectively.

Interval Data: Ending Station Schoenoplectus spp. / Typha latifolia 125 Community Type: Cover class **Cover class Species Species** 2 Bare Ground 2 Alopecurus arundinaceus Chenopodium album 1 Chenopodium rubrum 0 Distichlis spicata 0 Eleocharis palustris 0 1 0 Elymus repens Glycyrrhiza lepidota 2 Iva axillaris 0 Hordeum jubatum Juncus balticus 0 Juncus torrevi 0 0 Puccinellia nuttalliana Rumex crispus Schoenoplectus acutus 0 2 Schoenoplectus maritimus Typha angustifolia Typha latifolia 0 **Ending Station** 254 Community Type: Thinopyrum intermedium / **Species** Cover class **Species** Cover class Bare Ground Bromus arvensis 0 Chenopodium album Descurainia sophia Glycyrrhiza lepidota 0 Hordeum jubatum 1 Sisvmbrium altissimum 2 Thinopyrum intermedium 5 Thlaspi arvense 2 354 Community Type: **Ending Station** Hordeum jubatum / Elymus repens **Species** Cover class **Species** Cover class Alopecurus arundinaceus 1 Bare Ground 2 Distichlis spicata 0 Elymus repens 3 Hordeum jubatum 1 Juncus balticus 1 Juncus torrevi Puccinellia nuttalliana 0 Schoenoplectus acutus 1 Schoenoplectus pungens 0 Thinopyrum intermedium 2 **Ending Station** 546 Community Type: Thinopyrum intermedium / Cover class **Species** Cover class **Species** Chenopodium album 2 Descurainia sophia Elymus repens 4 Lactuca serriola 0 2 0 Lepidium perfoliatum Pascopyrum smithii 0 Schedonorus pratensis Sisymbrium altissimum 0 2 Thinopyrum intermedium Thlaspi arvense Tragopogon dubius 0

Compass Direction from Start:

Transect Number:

330

Ending Station	608	Community Type:	Hordeum jubatum / Elymus r	epens
Species		Cover class	Species	Cover class
Alopecurus arundinaceus		3	Bare ground	3
Distichlis spicata		4	Elymus hispidus	1
Elymus repens		3	Hordeum jubatum	1
Ending Station	726	Community Type:	Thinopyrum intermedium /	
Species		Cover class	Species	Cover class
Bare Ground		2	Chenopodium album	2
Descurainia sophia		2	Elymus repens	4
Open Water		0	Thinopyrum intermedium	4
Thlaspi arvense		1		
Ending Station	870	Community Type:	Schoenoplectus spp. / Typha	latifolia
Species		Cover class	Species	Cover class
•				
Alopecurus pratensis		2	Bare Ground	3
•		2 1	Bare Ground Distichlis spicata	3 1
Alopecurus pratensis				
Alopecurus pratensis Chenopodium album		1	Distichlis spicata	1
Alopecurus pratensis Chenopodium album Elymus repens		1 2	Distichlis spicata Hordeum jubatum	1 3
Alopecurus pratensis Chenopodium album Elymus repens Juncus torreyi		1 2 1	Distichlis spicata Hordeum jubatum Puccinellia nuttalliana	1 3 1
Alopecurus pratensis Chenopodium album Elymus repens Juncus torreyi Schoenoplectus acutus	900	1 2 1 1	Distichlis spicata Hordeum jubatum Puccinellia nuttalliana	1 3 1
Alopecurus pratensis Chenopodium album Elymus repens Juncus torreyi Schoenoplectus acutus Typha angustifolia	900	1 2 1 1 2	Distichlis spicata Hordeum jubatum Puccinellia nuttalliana Schoenoplectus maritimus	1 3 1
Alopecurus pratensis Chenopodium album Elymus repens Juncus torreyi Schoenoplectus acutus Typha angustifolia Ending Station	900	1 2 1 1 2 Community Type:	Distichlis spicata Hordeum jubatum Puccinellia nuttalliana Schoenoplectus maritimus Thinopyrum intermedium /	1 3 1 2
Alopecurus pratensis Chenopodium album Elymus repens Juncus torreyi Schoenoplectus acutus Typha angustifolia Ending Station Species	900	1 2 1 1 2 Community Type:	Distichlis spicata Hordeum jubatum Puccinellia nuttalliana Schoenoplectus maritimus Thinopyrum intermedium / Species	1 3 1 2 2 Cover class
Alopecurus pratensis Chenopodium album Elymus repens Juncus torreyi Schoenoplectus acutus Typha angustifolia Ending Station Species Bare Ground	900	1 2 1 2 2 Community Type: Cover class 3	Distichlis spicata Hordeum jubatum Puccinellia nuttalliana Schoenoplectus maritimus Thinopyrum intermedium / Species Bromus japonicus	1 3 1 2 Cover class 1
Alopecurus pratensis Chenopodium album Elymus repens Juncus torreyi Schoenoplectus acutus Typha angustifolia Ending Station Species Bare Ground Chenopodium album	900	1 2 1 2 Community Type: Cover class 3 0	Distichlis spicata Hordeum jubatum Puccinellia nuttalliana Schoenoplectus maritimus Thinopyrum intermedium / Species Bromus japonicus Elymus repens	1 3 1 2 Cover class 1 2

Transect Notes:

Wetland area decreased between 2022 and 2023.

PLANTED WOODY VEGETATION SURVIVAL

JTX-Tunnicliff

Planting Type	#Planted	#Alive Notes
PE-1	0	0 3/4 burned in July 2020. No survival of planted woody vegetation observed
PE-2	0	 Heavy grass and weedy forb competition has elminated woody vegetation
PE-3	0	0 1/3 burned in 2020, no survival of planted woody vegetation observed
PE-4	0	0 No survival of planted woody vegetation observed
PE-5	0	0 No survival of planted woody vegetation observed
PE-6	13	13 13 plains cottonwood, ~45 volunteer Russian Olives
PE-7	0	0 1 volunteer Russian Olive
PE-8	0	 No survival of planted woody vegetation observed, 24 volunteer Russian Olive
Total Live	13	13 1% Survival (of original 1650 planted)

Comments

1,650 containerized woody plants were installed in 8 planting areas. All plantings were in 1 gallon containers except for cottonwood which were in 5 gallon containers. Very little survivorship of woody species plantings has been observed over the years. Some woody species have volunteered at the site but woody coverage is still quite low.

JTX-Tunnicliff

WILDLIFE

Were man-made nesting structures installed?	Yes	
If yes, type of structure: Bird boxes		
How many?8		
Are the nesting structures being used?	Yes	
Do the nesting structures need repairs?	Yes	

Nesting Structure Comments:

Six of the 8 nesting boxes on site were full of nesting material and a wren was observed in one box . One Bird box at the west fence line was was absent from the site in 2022.

Species	#Observed	Behavior	Habitat
Bald Eagle	1	FO	
Grouse	2	L, F	
House Wren	2	L	
Mourning Dove	4	L	
Nighthawk	1	FO	
Pelican	2	F	
Pheasant	7	L, F	
Red-winged Blackbird	5	L, F, BP BP,	
Bird Comments			

Four empty ground nests were observed with egg shell fragments.

BEHAVIOR CODES

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

HABITAT CODES

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

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

Mammals and Herptiles

Species	# Observed Tracks Scat Burrows Comme	nts

Bull Snake	1	No	No	No	
0 1 0 1					

Garter Snake 1 No No Observed a skin too

White-tailed Deer 2 No No No

Wildlife Comments:

Deer beds common

PHOTOGRAPHS

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

Photograph Checklist:

✓	One photograph for each of the four cardinal directions surrounding the wetland.						
	At least one photograph showing upland use surrounding the wetland. If more than one upland						
exists	then take additional photographs.						
	At least one photograph showing the buffer surrounding the wetland.						
✓	One photograph from each end of the vegetation transect, showing the transect.						

Photo #	Latitude	Longitude	Bearing	Description
DP01u				
DP01w				
DP02u				
DP02w				
DP03u				
DP03w				
DP04u				
DP04w				
DP05u				
DP05w				
DP06u				
DP06w				
DP07u				
DP07w				
DP08u				
DP08w				
DP09u				
DP09w				
DP10u				
DP10w				
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	

Comments:

ADDITIONAL ITEMS CHECKLIST

Hydrology	
 □ Map emergent vegetation/open water boundary on aerial photos. ☑ Observe extent of surface water. Look for evidence of past surface water elevations (e.g. drift lines, vegetation staining, erosion, etc). 	
Photos	
 ✓ One photo from the wetland toward each of the four cardinal directions ☐ One photo showing upland use surrounding the wetland. ☐ One photo showing the buffer around the wetland ✓ One photo from each end of each vegetation transect, toward the transect 	
Vegetation	
✓ Map vegetation community boundaries	
✓ Complete Vegetation Transects	
Soils	
✓ Assess soils	
Wetland Delineations	
✓ Delineate wetlands according to applicable USACE protocol (1987 form or Supplement)	
Delineate wetland – upland boundary onto aerial photograph.	
Wetland Delineation Comments	
Wetland boundaries were mapped in the field, not from aerial imagery	
Functional Assessments	
☑ Complete and attach full MDT Montana Wetland Assessment Method field forms.	
Functional Assessment Comments:	
Category III wetland.	

Maintenance

Were man-made nesting structure installed at this site? Yes
If yes, do they need to be repaired? Yes
If yes, describe the problems below and indicate if any actions were taken to remedy the problems
Were man-made structures built or installed to impound water or control water flow
into or out of the wetland? No
If yes, are the structures in need of repair?
If yes, describe the problems below.
See planted veg and bird box comments for repairs needed.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: JTX Tunnicliff	(City/Co	ounty:	Hardin/E	Big Horn County	Sampling [oate: 202	23-06-15
Applicant/Owner: MDT		-	-		State: Montana			
Investigator(s): R. Jones					nge: S14 T1S R33E			
Landform (hillslope, terrace, etc.): Flood-Plain Landform	s	Local	relief	(concave,	convex, none): Linear		_ Slope (%): <u>0</u>
Subregion (LRR): G 58A	Lat: 45.	8402	4		Long: -107.601269		Datum:	NAD 83
Soil Map Unit Name: Ks - Kyle silty clay, 0 to 2 perce					NWI classific			
Are climatic / hydrologic conditions on the site typical for this	time of yea							
Are Vegetation, Soil, or Hydrology si	gnificantly	disturb	ed?	Are "	Normal Circumstances" p	present? Ye	es 🗸	No
Are Vegetation, Soil, or Hydrology na					eded, explain any answe			
SUMMARY OF FINDINGS – Attach site map s					ocations, transects	, importa	nt featu	ıres, etc.
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No Remarks:	, /			e Sampled in a Wetlar		No	<u> </u>	
Upland sample point adjacent to DP-		nd w	etla	and cel	l 1.			
VEGETATION – Use scientific names of plant	Absolute	Dom	inant	Indicator	Dominance Test work	rohooti		
Tree Stratum (Plot size: 30 ft r) 1 2	% Cover	Spec	ies?	Status	Number of Dominant S That Are OBL, FACW, (excluding FAC-):	pecies	ı	(A)
3					Total Number of Domir Species Across All Stra	_		(B)
Sapling/Shrub Stratum (Plot size: 15 ft r)					Percent of Dominant S That Are OBL, FACW,		.00	(A/B)
1 2					Prevalence Index wor	ksheet:		
3.					Total % Cover of:			
4.						x 1 =		
5.					FACW species 0			
		= Tota	al Cov	er	FAC species 5 FACU species 15			
Herb Stratum (Plot size: 5 ft r 1. Thinopyrum intermedium	70	v	,	UPL	UPL species 70		350	
2. Elymus repens	15			FACU	Column Totals: 90		425	(B)
3. Iva axillaris	5			FAC				(=)
4.					Prevalence Index	·		
5					Hydrophytic Vegetation 1 - Rapid Test for I			•
6					2 - Dominance Tes		vegetatio	II.
7					3 - Prevalence Inde			
8					4 - Morphological A		(Provide	supporting
9					data in Remark	s or on a sep	parate she	eet)
10	~~		1.0		Problematic Hydro	phytic Veget	ation¹ (Ex	plain)
Woody Vine Stratum (Plot size: 30 ft r) 1		= Tota			¹ Indicators of hydric so be present, unless distr			gy must
2					Hydrophytic			
W Bara Crawed in Uset Ottature 10		= Tota	al Cov	er	Vegetation Present? Ye	es	No 🗸	
% Bare Ground in Herb Stratum 10 Remarks:								-
This point is dominated by upland ve indicators.	getatio	n aı	nd d	does no	ot meet Hydropl	nytic ve	getati	on

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SOIL Sampling Point: DP01u

	•	to the depth				or confir	m the absence of ind	icators.)
Depth (inches)	Matrix Color (moist)	%	Color (moist)	ox Feature: %	s Type ¹	Loc ²	Texture	Remarks
0 - 9	10YR 3/2	100	Soloi (IIIOlat)		· ype		Sandy Clay Loam	nomano
9 - 18	10YR 4/2	100					· 	
9-10	101K 4/2	100		cix, CS=Covered or Coated Sand Grains. cix, C				
							· <u></u>	
							·	
-							·	
-								
-						_		
¹Type: C=C	oncentration D=Der	oletion RM=R	Reduced Matrix C	S=Covered	d or Coate	ed Sand G	Grains ² Location:	PI =Pore Lining M=Matrix
						ou ound c		
Histosol								•
Histic E	pipedon (A2)							
	istic (A3)			`	,			
	en Sulfide (A4)	- \		-	, ,		-	
	d Layers (A5) (LRR l uck (A9) (LRR F, G,	-	Gleyed Ma ed Matrix (I			(LRR H o Reduced Ver	,	
	d Below Dark Surfac		Dark Surfa	,		Red Parent N		
	ark Surface (A12)	, ,		ed Dark Su	. ,)		Dark Surface (TF12)
-	Mucky Mineral (S1)			Depression	. ,			n in Remarks)
	Mucky Peat or Peat (ains Depre			·	rophytic vegetation and	
5 cm ivit	ucky Peat or Peat (S	(IVIL	.RA 72 & 7	73 OT LKK	(H)	-	ology must be present, bed or problematic.	
Restrictive	Layer (if present):						diffeed distant	odd of problematic.
_	, , ,							
Depth (in	ches):		<u> </u>				Hydric Soil Prese	nt? Yes No_
Remarks:	·							
No bydr	ic soil indica	tore wer	a mat ar ah	corvo	4			
ino riyur	ic soil illuica	lois wei	e met or or	SEI VE	J.			
HYDROLO	GY							
	drology Indicators:							
_	cators (minimum of		check all that app	lv)			Secondary Indi	cators (minimum of two required)
-	Water (A1)	ono roquirou,	Salt Crust	•			<u> </u>	pil Cracks (B6)
	ater Table (A2)		Aquatic Ir		s (B13)			egetated Concave Surface (B8)
Saturation	, ,		Hydrogen				Drainage F	
Water M			Dry-Seas)	=	Rhizospheres on Living Roots (C3)
Sedimer	nt Deposits (B2)		Oxidized	Rhizosphe	res on Liv	ing Roots	(C3) (where t	illed)
Drift Dep	posits (B3)		(where	not tilled)			Crayfish B	urrows (C8)
	at or Crust (B4)		Presence		•	4)		Visible on Aerial Imagery (C9)
Iron Dep			Thin Mucl					ic Position (D2)
	on Vis ble on Aerial	Imagery (B7)	Other (Ex	plain in Re	emarks)		FAC-Neutr	
	tained Leaves (B9)						Frost-Heav	ve Hummocks (D7) (LRR F)
Field Obser		/ Ni	- V Dandh (in	-h\:				
Surface Wat			Depth (ir			l l		
Water Table			Depth (ir				land Hudrala Dr	ent? Yes No
Saturation P (includes car		res No	Depth (ir	icnes):		wet	land Hydrology Pres	ent? res No
	corded Data (stream	n gauge, mon	itoring well, aerial	photos, pr	evious ins	spections)	, if available:	
Domortos								
Remarks:								
No wetla	and hydrolog	gy indica	tors were r	net.				
·								

Project/Site: JTX Tunnicliff	(City/Co	ounty:	Hardin/E	Big Horn County	Sampling	Date: 4	2023-0	06-15
Applicant/Owner: MDT		-	-		State: Montana				
Investigator(s): R. Jones					nge: S14 T1S R33E				
Landform (hillslope, terrace, etc.): Flood-Plain Landform					-	е	Slop	pe (%):	5
Subregion (LRR): G 58A				•					
Soil Map Unit Name: Ks - Kyle silty clay, 0 to 2 perce									
Are climatic / hydrologic conditions on the site typical for this									
Are Vegetation, Soil, or Hydrologysi	-				Normal Circumstances" p		∕es •	, No)
Are Vegetation, Soil, or Hydrologyn					eded, explain any answe				
SUMMARY OF FINDINGS – Attach site map								atures	s, etc.
)) 		with	e Sampled in a Wetlar	nd? Yes <u></u>	No _		-	
VEGETATION – Use scientific names of plant		1.							
VEGETATION USE SCIENCING HAINES OF Plant	Absolute	Domi	inant	Indicator	Dominance Test work	sheet:			
Tree Stratum (Plot size: 30 ft r) 1 2	% Cover	Spec	ies?	Status	Number of Dominant S That Are OBL, FACW, of (excluding FAC-):	pecies or FAC	2		(A)
3					Total Number of Domin Species Across All Stra		2		(B)
Sapling/Shrub Stratum (Plot size: 15 ft r)					Percent of Dominant Sp That Are OBL, FACW, o		100.00)	(A/B)
1 2					Prevalence Index wor	ksheet:			
3.					Total % Cover of:			y by:	_
4						x 1			_
5.					FACW species 17				_
- 4		= Tota	al Cov	er	FAC species 20				-
Herb Stratum (Plot size: 5 ft r	0.5		,	OPI	FACU species 23				-
1. Puccinellia nuttalliana	25 20			OBL	UPL species 0		= 0		- (D)
2. Bromus riparius 3. Hordeum jubatum	15			FACW	Column Totals: 85	(A)	211		_ (B)
4. Bassia scoparia	15			FACU	Prevalence Index	= B/A =	2.48		_
5. Elymus repens	5			FACU	Hydrophytic Vegetation	on Indicate	ors:		
6. Elymus trachycaulus	3			FACU	1 - Rapid Test for H	Hydrophytic	: Vegeta	ation	
7. Alopecurus arundinaceus	2			FACW	✓ 2 - Dominance Tes	t is >50%			
8.					✓ 3 - Prevalence Inde				
9.					4 - Morphological A data in Remarks	Adaptations	3 ¹ (Provi	ide supp	orting
10.					Problematic Hydro		•	,	۵)
Woody Vine Stratum (Plot size: 30 ft r	85	= Tota			¹ Indicators of hydric soi be present, unless distu	il and wetla	ınd hydr	rology m	
1 2					Hydrophytic				
				er	Vegetation	.,			
% Bare Ground in Herb Stratum 15 Remarks:		. 5.0			Present? Ye	s	No		
A positive dominance test and a preversence of a hydrophytic vegetation				below t	three provide ev	/idence	e for	the	

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SOIL Sampling Point: DP01w

0 - 5	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
	10YR 4/2	80	7.5YR 3/4	20 C M Silt Loam Covered or Coated Sand Grains. Coation: PL=Pore Lining, M=Matrix				
5 - 13	10YR 5/2	90	7.5YR 4/6	10	С	М	Silt Loam	
						-	· ·	
					- ·		· ·	
-								
-								
-								
-								
	noontration D=Dor	lotion DM	=Boducod Matrix, CS	Covere	d or Coat	nd Sand O	traina ² l aa	ation: DI =Doro Lining M=Matrix
• • • • • • • • • • • • • • • • • • • •			LRRs, unless other			d Sand G		
_ Histosol		abic to an						•
_	oipedon (A2)			-				
_ Black His								
	n Sulfide (A4)							
	Layers (A5) (LRR	F)		-			_	R H outside of MLRA 72 & 73)
1 cm Mu	ck (A9) (LRR F, G ,	H)	<u>✓</u> Deplete	d Matrix	(F3)		Reduce	ed Vertic (F18)
_ Depleted	Below Dark Surfac	e (A11)	Redox [Dark Surf	ace (F6)		Red Pa	arent Material (TF2)
_ Thick Da	ark Surface (A12)		Deplete	d Dark S	urface (F7)		hallow Dark Surface (TF12)
	lucky Mineral (S1)			Depression				Explain in Remarks)
	lucky Peat or Peat		-		essions (F			of hydrophytic vegetation and
_ 5 cm Mu	cky Peat or Peat (S	3) (LRR F)	(ML	RA 72 &	73 of LRF	R H)		hydrology must be present,
							uniess	disturbed or problematic.
	/:f						1	'
	ayer (if present):							'
Type: co	bble layer							
Type: <u>co</u> Depth (inc	bble layer						Hydric Soil	
Type: <u>co</u> Depth (inc	bble layer							
Type: <u>CO</u> Depth (inc emarks:	bble layer ches): 13	oncentr	ations common	within	the dep	leted m	Hydric Soil	
Type: <u>co</u> Depth (incemarks: stinct re	bble layer ches): 13 edoximorphic c		ations common				Hydric Soil	Present? Yes V No No
Type: <u>co</u> Depth (incemarks: stinct reprizon pr	bble layer thes): 13 edoximorphic cominent redox						Hydric Soil	Present? Yes V No No
Type: <u>co</u> Depth (incemarks: stinct reprizon pr	bble layer ches): 13 edoximorphic cominent redox	imorphi					Hydric Soil	Present? Yes V No No
Type: CO Depth (incemarks: stinct reprizon pr DROLO etland Hyde	ches): 13 cdoximorphic cominent redox GY	imorphi	c concentration	s comr			Hydric Soil natrix for the depleted ma	Present? Yes V No
Type: CO Depth (incernarks: stinct reprizon pr DROLO etland Hydi	edoximorphic cominent redox GY drology Indicators: eators (minimum of cominems)	imorphi	c concentration	s comr			Hydric Soil natrix for the depleted ma	Present? Yes No e first horizon. In the second atrix. ry Indicators (minimum of two required)
Depth (incommarks: stinct reprizon pr DROLO etland Hydimary Indic Surface	ches): 13 cdoximorphic cominent redox GY drology Indicators: cators (minimum of cominent (A1)	imorphi	c concentration d; check all that appl Salt Crust	y) (B11)	mon wit		Hydric Soil natrix for the depleted ma	Present? Yes No e first horizon. In the second atrix. ry Indicators (minimum of two required) ace Soil Cracks (B6)
Type: CO Depth (incemarks: stinct reprizon pr DROLO etland Hydimary Indice County Surface High Wa	ches): 13 cdoximorphic cominent redox GY drology Indicators: cators (minimum of cominent (A1)) ter Table (A2)	imorphi	c concentration d; check all that appl Salt Crust Aquatic In	y) (B11) vertebrate	mon with		Hydric Soil natrix for the depleted ma Seconda Surfa Surfa	Present? Yes No e first horizon. In the second atrix. ry Indicators (minimum of two required) ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8)
Type: CO Depth (incomarks: stinct reprizon pr DROLO etland Hyd imary Indic ' Surface High Wa ' Saturatio	edoximorphic cominent redox GY drology Indicators: eators (minimum of cominent (A1)) ter Table (A2) on (A3)	imorphi	d; check all that appl Salt Crust Aquatic In Hydrogen	y) (B11) vertebrate Sulfide C	es (B13)	nin the o	Hydric Soil natrix for the depleted ma Seconda Surfa Spar Drair	Present? Yes No e first horizon. In the second atrix. ry Indicators (minimum of two required) ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) mage Patterns (B10)
Type: CO Depth (incernarks: stinct responsible or izon proposition	edoximorphic comment redox GY drology Indicators: eators (minimum of of Water (A1) ter Table (A2) on (A3) arks (B1)	imorphi	d; check all that appl Salt Crust Aquatic In Hydrogen Dry-Seaso	y) (B11) vertebrate Sulfide Con Water	es (B13) Odor (C1) Table (C2)	nin the o	Hydric Soil natrix for the depleted ma Seconda Surfa Spar Drair Oxid	Present? Yes No
Type: CO Depth (incernarks: stinct responsible prizon pri	edoximorphic comment redox GY drology Indicators: eators (minimum of comment (A2) on (A3) arks (B1) of Deposits (B2)	imorphi	c concentration d; check all that appl Salt Crust Aquatic In: Hydrogen Dry-Seaso	y) (B11) vertebrate Sulfide Con Water	es (B13) Odor (C1) Table (C2) eres on Liv	nin the o	Hydric Soil natrix for the depleted ma Seconda Surfa Spar Drain Oxid (C3) (w	Present? Yes No e first horizon. In the second atrix. ry Indicators (minimum of two required) ace Soil Cracks (B6) resely Vegetated Concave Surface (B8) mage Patterns (B10) lized Rhizospheres on Living Roots (C3 here tilled)
Depth (incommarks: Stinct reprizon pr DROLO etland Hydimary Indicommary Ind	ches): 13 cdoximorphic cominent redox GY drology Indicators: cators (minimum of cominent (A2) on (A3) arks (B1) on the Deposits (B2) on the Cominent (B2)	imorphi	d; check all that appl Salt Crust Aquatic In: Hydrogen Dry-Seasc V Oxidized F	y) (B11) vertebrate Sulfide Con Water Rhizosphe	es (B13) Odor (C1) Table (C2) eres on Liv	nin the o	Hydric Soil natrix for the depleted ma Seconda Surfa Spar Drair Oxid (C3) (w Cray	Present? Yes No e first horizon. In the second atrix. ry Indicators (minimum of two required) ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) mage Patterns (B10) lized Rhizospheres on Living Roots (C3 here tilled) rfish Burrows (C8)
Type: CO Depth (incemarks: Stinct reprizon propertion of the contemprizon propertion of the contemprizon propertion of the contemprizon propertion of the contemprizon of the contemprize of the contemprit	ches): 13 cdoximorphic comment redox GY drology Indicators: cators (minimum of comment (A1) ter Table (A2) on (A3) carks (B1) on the Deposits (B2) cosits (B3) on the Crust (B4)	imorphi	d; check all that appl Salt Crust Aquatic In: Hydrogen Dry-Seaso Oxidized F (where i	y) (B11) vertebrate Sulfide Con Water Rhizosphonot tilled of Reduc	es (B13) Odor (C1) Table (C2) eres on Liv) ed Iron (C-	nin the o	Hydric Soil natrix for the depleted ma Seconda Surfa Spar Drain Oxid (C3) (w Cray Satu	Present? Yes No e first horizon. In the second atrix. ry Indicators (minimum of two required) ace Soil Cracks (B6) rsely Vegetated Concave Surface (B8) nage Patterns (B10) lized Rhizospheres on Living Roots (C3 here tilled) rfish Burrows (C8) rration Visible on Aerial Imagery (C9)
Type: CO Depth (incemarks: Stinct reprizon profession p	ches): 13 cdoximorphic comment redox GY drology Indicators: cators (minimum of comment (A1)) ter Table (A2) on (A3) arks (B1) arks (B1) art Deposits (B2) osits (B3) at or Crust (B4) osits (B5)	imorphi	d; check all that appl Salt Crust Aquatic In Hydrogen Dry-Seaso V Oxidized F (where in Thin Muck	y) (B11) vertebrate Sulfide Con Water Rhizosphot tilled of Reduc	es (B13) Odor (C1) Table (C2) eres on Liv) ed Iron (C-(C7)	nin the o	Hydric Soil natrix for the depleted ma Seconda Surfa Spar Drain Oxid (C3) (w Cray Satu	Present? Yes No e first horizon. In the second atrix. Ty Indicators (minimum of two required) ace Soil Cracks (B6) resely Vegetated Concave Surface (B8) mage Patterns (B10) lized Rhizospheres on Living Roots (C3 here tilled) fish Burrows (C8) reation Visible on Aerial Imagery (C9) morphic Position (D2)
Type: CO Depth (incomarks: stinct responsible of the control of th	ches): 13 cdoximorphic cominent redox GY drology Indicators: cators (minimum of cominent (A1) ter Table (A2) on (A3) arks (B1) at Deposits (B2) cosits (B3) at or Crust (B4) cosits (B5) on Vis ble on Aerial	imorphi	d; check all that appl Salt Crust Aquatic In Hydrogen Dry-Seaso V Oxidized F (where in Thin Muck	y) (B11) vertebrate Sulfide Con Water Rhizosphot tilled of Reduc	es (B13) Odor (C1) Table (C2) eres on Liv) ed Iron (C-(C7)	nin the o	Hydric Soil natrix for the depleted ma Seconda Surfa Spar Drain Oxid (C3) (w Cray Satu Geory FAC	e first horizon. In the second atrix. Ty Indicators (minimum of two required) ace Soil Cracks (B6) asely Vegetated Concave Surface (B8) anage Patterns (B10) alized Rhizospheres on Living Roots (C3 here tilled) aration Visible on Aerial Imagery (C9) amorphic Position (D2) aration (D5)
Type: CO Depth (incemarks: Stinct reprizon propertion propertion) Etland Hydrimary Indice Surface High Water M Sedimer Drift Dep Algal Ma Iron Dep Inundation Water-Si	ches): 13 cdoximorphic cominent redox GY drology Indicators: cators (minimum of or Water (A1) ter Table (A2) on (A3) arks (B1) arks (B1) ot Deposits (B2) oosits (B3) at or Crust (B4) oosits (B5) on Vis ble on Aerial tained Leaves (B9)	imorphi	d; check all that appl Salt Crust Aquatic In Hydrogen Dry-Seaso V Oxidized F (where in Thin Muck	y) (B11) vertebrate Sulfide Con Water Rhizosphot tilled of Reduc	es (B13) Odor (C1) Table (C2) eres on Liv) ed Iron (C-(C7)	nin the o	Hydric Soil natrix for the depleted ma Seconda Surfa Spar Drain Oxid (C3) (w Cray Satu Geory FAC	Present? Yes No e first horizon. In the second atrix. Ty Indicators (minimum of two required) ace Soil Cracks (B6) Trestly Vegetated Concave Surface (B8) mage Patterns (B10) Trized Rhizospheres on Living Roots (C3 here tilled) Trish Burrows (C8) Tration Visible on Aerial Imagery (C9) Tration Position (D2)
Type: CO Depth (incommarks: Stinct reprizon propertion of the properties of the prop	ches): 13 cdoximorphic comment redox GY drology Indicators: cators (minimum of comment (A2) comment (A3) carks (B1) comment (B2) comment (B4) com	one require	c concentration d; check all that appl Salt Crust Aquatic In: Hydrogen Dry-Seaso Oxidized F (where in the content of the con	y) (B11) vertebrate Sulfide Con Water Rhizosphot tilled of Reduce Surface	es (B13) Odor (C1) Table (C2) eres on Liv) ed Iron (C-(C7)	nin the o	Hydric Soil natrix for the depleted ma Seconda Surfa Spar Drain Oxid (C3) (w Cray Satu Geory FAC	e first horizon. In the second atrix. Ty Indicators (minimum of two required) ace Soil Cracks (B6) resely Vegetated Concave Surface (B8) rage Patterns (B10) lized Rhizospheres on Living Roots (C3 here tilled) rfish Burrows (C8) ration Visible on Aerial Imagery (C9) morphic Position (D2) -Neutral Test (D5)
Type: CO Depth (inc emarks: istinct re prizon pr DROLO detland Hyd mary Indic Surface High Wa Sedimer Drift Dep Algal Ma Iron Dep Inundatio Water-Si eld Observariace Water	ches): 13 cdoximorphic comment redox GY drology Indicators: cators (minimum of comment (A1) ter (A3) carks (B1) cators (B2) consits (B3) cators (B3) cators (B4) cosits (B5) cators (B4) cators (B4) cosits (B4) cosits (B5) cators (B4) cosits (B5) cators (B4) cosits (B5) cators (B4) cators (B4) cosits (B5) cators (B4) cators (B4) cosits (B5) cators (B4) cators (B4	Imagery (B	d; check all that appl Salt Crust Aquatic In Hydrogen Dry-Seaso V Oxidized F (where in Presence Thin Muck Other (Exp	y) (B11) vertebrate Sulfide Con Water Rhizosphe not tilled of Reduce Surface Sulain in R	es (B13) Odor (C1) Table (C2) eres on Liv) ed Iron (C- (C7) emarks)	nin the o	Hydric Soil natrix for the depleted ma Seconda Surfa Spar Drain Oxid (C3) (w Cray Satu Geory FAC	e first horizon. In the second atrix. Ty Indicators (minimum of two required) ace Soil Cracks (B6) resely Vegetated Concave Surface (B8) rage Patterns (B10) lized Rhizospheres on Living Roots (C3 here tilled) rfish Burrows (C8) ration Visible on Aerial Imagery (C9) morphic Position (D2) -Neutral Test (D5)
Type: CO Depth (incemarks: Stinct reprizon propertion of the properties of the propertion of the properties of the prope	ches): 13 cdoximorphic comment redox GY drology Indicators: cators (minimum of comment (A1) ter (A3) carks (B1) cators (B2) consits (B3) cators (B3) cators (B4) cosits (B5) cators (B4) cators (B4) cosits (B4) cosits (B5) cators (B4) cosits (B5) cators (B4) cosits (B5) cators (B4) cators (B4) cosits (B5) cators (B4) cators (B4) cosits (B5) cators (B4) cators (B4	Imagery (B	c concentration d; check all that appl Salt Crust Aquatic In: Hydrogen Dry-Seaso Oxidized F (where in the content of the con	y) (B11) vertebrate Sulfide Con Water Rhizospho not tilled of Reduce Surface plain in R	es (B13) Odor (C1) Table (C2) eres on Liv) ed Iron (C- (C7) emarks)	ring Roots	Hydric Soil natrix for the depleted ma Seconda Surfa Spar Drain Oxid (C3) (w Cray Satu Geo FAC Fros	e first horizon. In the second atrix. Ty Indicators (minimum of two required) ace Soil Cracks (B6) resely Vegetated Concave Surface (B8) rage Patterns (B10) lized Rhizospheres on Living Roots (C3 here tilled) rfish Burrows (C8) ration Visible on Aerial Imagery (C9) morphic Position (D2) -Neutral Test (D5)

Surface water 20 inches away from hole. Evidence of wetland hydrology is visible in soil saturation, high water table, surface water, iron deposits, oxidized

rhizospheres along living roots, inundation visible on aerial imagery, geomorphic position, and a positive FAC-neutral test.

Project/Site: JTX Tunnicliff	(City/Co	ounty	Hardin/E	Big Horn County	Sampling	Date:	2023-	06-15
Applicant/Owner: MDT		•			State: Montana	Sampling	Point:	DP02ı	J
Investigator(s): R. Jones					nge: S14 T1S R33E		_		
Landform (hillslope, terrace, etc.): Flood-Plain Landform					-		Slo	pe (%):	0
Subregion (LRR): G 58A	Lat: 45.	8412	37		Long: -107.600553		Datu	m: NA	D 83
Soil Map Unit Name: Ks - Kyle silty clay, 0 to 2 perce									
Are climatic / hydrologic conditions on the site typical for this	time of yea	ar? Ye	es	✓ No	(If no, explain in F	Remarks.)			
Are Vegetation, Soil, or Hydrology si	gnificantly	disturb	ed?	Are "	Normal Circumstances"	present? Y	es	N	0
Are Vegetation, Soil, or Hydrologyn					eded, explain any answe				
SUMMARY OF FINDINGS – Attach site map					ocations, transects	s, importa	ant fe	ature	s, etc.
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No Remarks:	, /			e Sampled in a Wetlar		No _	<i>\</i>	-	
Upland sample point adjacent to DP-		nd w	vetl	and cel	l 2.				
VEGETATION – Use scientific names of plant		D		la dia atau	Daminana Taat want				
Tree Stratum (Plot size: 30 ft r) 1 2		Spec	cies?	Status	Dominance Test work Number of Dominant S That Are OBL, FACW, (excluding FAC-):	pecies or FAC	0		(A)
3. 4.					Total Number of Domir Species Across All Stra		<u> 1 </u>		(B)
Sapling/Shrub Stratum (Plot size: 15 ft r)					Percent of Dominant S That Are OBL, FACW,		0.00		(A/B)
1					Prevalence Index wor	ksheet:			
3.					Total % Cover of:				
4.						x 1			
5					FACW species 0				
5 ft r		= Tota	al Cov	er	FAC species 0 FACU species 18				_
Herb Stratum (Plot size: 5 ft r 1 Thinopyrum intermedium	70	·	,	UPL	UPL species 70		= <u>72</u> = 350		_
2. Descurainia sophia	7			FACU	Column Totals: 88		422		— (B)
3. Bassia scoparia	5	-		FACU					_ (=)
4. Chenopodium album	5			FACU	Prevalence Index				_
5. Bromus arvensis	1			FACU	Hydrophytic Vegetati				
6					1 - Rapid Test for		Vegeta	ation	
7					2 - Dominance Tes				
8					3 - Prevalence Ind 4 - Morphological /		1 (Prov	ido cun	norting
9					data in Remark	s or on a se	parate	sheet)	porting
10	~~				Problematic Hydro	phytic Vege	tation1	(Explai	in)
Woody Vine Stratum (Plot size: 30 ft r) 1		= Tota			¹ Indicators of hydric so be present, unless dist				nust
2.					Hydrophytic				
					Vegetation	es	No	~	
% Bare Ground in Herb Stratum 10 Remarks:					. 1000				
This point is dominated by upland ve community observed.	getatio	n. N	10 е	videnc	e for a hydroph	ytic ve	geta	tion	

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SOIL Sampling Point: DP02u

		to the depth				or confirr	n the absence of indicato	ors.)
Depth (inches)	Matrix Color (moist)	%	Redo Color (moist)	x Feature:	s Type ¹	Loc ²	Texture	Remarks
0 - 9	10YR 4/2	100	COICI (IIIOIOI)		. ,,,,,		Clay Loam	. tomanto
9 - 16	10YR 5/2	100					Sandy Loam	_
3 10	1011 3/2	_ 100 _		atrix, CS=Covered or Coated Sand Grains. 2Location: PL=Pore Lining, M=N ss otherwise noted.) Indicators for Problematic Hydric So Sandy Gleyed Matrix (S4) — 1 cm Muck (A9) (LRR I, J) Sandy Redox (S5) — Coast Prairie Redox (A16) (LRR F,				
				- ——				
-								
-								
¹Type: C=Ce	oncentration, D=Der	oletion, RM=F	Reduced Matrix, C	S=Covered	d or Coate	ed Sand G	rains. ² Location: PL=	Pore Lining, M=Matrix.
Histosol	(A1)						1 cm Muck (A9) (L	.RR I, J)
-	oipedon (A2)			•	•			
Black Hi	` '			d Matrix (S	,		Dark Surface (S7)	•
	en Sulfide (A4) d Layers (A5) (LRR l	E)		Mucky Mir Gleyed Ma	. ,		High Plains Depre	e of MLRA 72 & 73)
	ick (A9) (LRR F, G,		d Matrix (I			Reduced Vertic (F	,	
	d Below Dark Surfac		Dark Surfa	,		Red Parent Materi	,	
	ark Surface (A12)			d Dark Su)	Very Shallow Dark	
	Mucky Mineral (S1)		Depression	. ,	1.0	Other (Explain in F		
	Mucky Peat or Peat (ucky Peat or Peat (S		ains Depre .RA 72 & 7			³ Indicators of hydrophy wetland hydrology	=	
3 cm wic	icky i eat of i eat (S	(IVIL	.NA 12 Q 1	3 OI LIKIK	. 11)	unless disturbed o		
Restrictive I	Layer (if present):							
Type:								
Depth (in	ches):		<u></u>				Hydric Soil Present?	Yes No
Remarks:							1	
No hydr	ic soil indica	tors obs	erved					
			J. 7 J. 1					
HYDROLO	GY							
Wetland Hy	drology Indicators:							
_	cators (minimum of o		check all that app	y)			Secondary Indicator	s (minimum of two required)
Surface	Water (A1)		Salt Crust	(B11)			Surface Soil Cra	acks (B6)
High Wa	ater Table (A2)		Aquatic In	vertebrate	s (B13)			ated Concave Surface (B8)
Saturation	on (A3)		Hydrogen	Sulfide O	dor (C1)		Drainage Patter	ns (B10)
Water M	larks (B1)		Dry-Seaso	on Water T	able (C2)		Oxidized Rhizos	spheres on Living Roots (C3)
	nt Deposits (B2)		Oxidized I	•		ing Roots	, , , , , , , , , , , , , , , , , , , ,	
Drift Dep			•	not tilled)			Crayfish Burrow	, ,
	at or Crust (B4)		Presence		•	1)		le on Aerial Imagery (C9)
Iron Dep		Imagany (P7)	Thin Muck		,		Geomorphic Po	
	on Vis ble on Aerial tained Leaves (B9)	iiiageiy (b <i>i)</i>	Other (Ex	Jiaiii iii Re	illaiks)		FAC-Neutral Te	immocks (D7) (LRR F)
Field Obser							1103t-11cave 11c	(LITT)
Surface Wat		′es N	o <u> </u>	ches).				
Water Table			o V Depth (in					
Saturation P			o V Depth (in				land Hydrology Present?	Yes No
(includes car	oillary fringe)							
Describe Re	corded Data (stream	n gauge, mon	itoring well, aerial	photos, pr	evious ins	pections),	if available:	
Remarks:								
No evide	ence of wetla	and hyd	rology obse	rved.				
1								

Project/Site: JTX Tunnicliff	(City/Co	unty:	Hardin/E	Big Horn County	Sampling D	ate: 2023-	-06-15
					State: Montana			
Investigator(s): R. Jones	Ç	Section	, Tow	nship, Rar	nge: S14 T1S R33E	, -		
Landform (hillslope, terrace, etc.): Flood-Plain Landforms						е	Slope (%):	0
Subregion (LRR): G 58A			,		,			
Soil Map Unit Name: Ks - Kyle silty clay, 0 to 2 percer								
Are climatic / hydrologic conditions on the site typical for this				_				
Are Vegetation, Soil, or Hydrology signature.	gnificantly of	disturbe	ed?	Are "	Normal Circumstances" p	oresent? Yes	sN	.o
Are Vegetation, Soil, or Hydrology na					eded, explain any answe			
SUMMARY OF FINDINGS – Attach site map s	howing	samp	oling	point lo	ocations, transects	, importar	nt feature	s, etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Yes V No No Remarks:				Sampled a Wetlan		No		
Sample point located within wetland	cell 2.							
VEGETATION – Use scientific names of plant	S.							
<u>Tree Stratum</u> (Plot size: <u>30 ft r</u>) 1 2		Specie	es?		Dominance Test work Number of Dominant S That Are OBL, FACW, (excluding FAC-):	pecies		(A)
3					Total Number of Domin Species Across All Stra			(B)
Sapling/Shrub Stratum (Plot size: 15 ft r) 1				er	Percent of Dominant Sp That Are OBL, FACW,		00.00	(A/B)
2					Prevalence Index wor			
3.					Total % Cover of:			_
4					· ·	x 1 =		_
5					FACW species 50 FAC species 0	x 2 = x 3 =		
Herb Stratum (Plot size: 5 ft r		= Total	Cove	er	FACU species 5			_
1 Hordeum jubatum	50	~		FACW	UPL species 0			_
2. Bromus riparius	15				Column Totals: 70		405	(B)
3. Chenopodium rubrum	10			OBL		1 (33	
4. Elymus repens	5			FACU	Prevalence Index			_
5. Puccinellia nuttalliana	5			OBL	Hydrophytic Vegetation 1 - Rapid Test for H			
6					✓ 1 - Rapid Test for T		egetation	
7					✓ 3 - Prevalence Inde			
8					4 - Morphological A		Provide sur	porting
9					data in Remarks	s or on a sep	arate sheet)	, pog
10	0.5				Problematic Hydro	phytic Vegeta	ation¹ (Expla	in)
Woody Vine Stratum (Plot size: 30 ft r) 1		= Total			¹ Indicators of hydric soi be present, unless distu			must
2					Hydrophytic			
% Bare Ground in Herb Stratum 15		= Total	Cove	er	Vegetation Present? Ye	sN	lo	
Remarks: Evidence of hydrophytic vegetation is	nclude	san	osi	tive do	ominance test in	ositive	rapid te	st
and a prevalence index below three.		- - P						1

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SOIL Sampling Point: DP02w

Profile Desc	ription: (Describe	to the dep	th needed to docui	ment the	indicator	or confirm	the absence	of indicators.)	
Depth	Matrix		Redo	x Feature	s				
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
0 - 9	10YR 4/2	92	7.5YR 4/6	7	С	PL / M	Silty Clay	1% N 2.5/0 concentrations	
9 - 16	10YR 4/2	100					Clay	cobble bottom, very wet, very gravely	
					·				
				_					
-									
¹Type: C=Co	ncentration D=Der	letion RM=	Reduced Matrix, C	S=Covere	d or Coate	ed Sand Gr	rains ² Loc	cation: PL=Pore Lining, M=Matrix.	
			LRRs, unless othe			o Garia Gi		for Problematic Hydric Soils ³ :	
Histosol			Sandy (Muck (A9) (LRR I, J)	
	ipedon (A2)		Sandy I	-	. ,			Prairie Redox (A16) (LRR F, G, H)	
Black His			-	d Matrix (S				Surface (S7) (LRR G)	
Hydroge	n Sulfide (A4)		Loamy	Mucky Mi	neral (F1)		High P	lains Depressions (F16)	
	Layers (A5) (LRR			Gleyed M			`	R H outside of MLRA 72 & 73)	
	ck (A9) (LRR F, G ,			d Matrix (ed Vertic (F18)	
	Below Dark Surface	æ (A11)		Dark Surfa	` ,	١		arent Material (TF2) hallow Dark Surface (TF12)	
Thick Dark Surface (A12) Depleted Dark Surface (F7) Sandy Mucky Mineral (S1) Redox Depressions (F8)								(Explain in Remarks)	
2.5 cm Mucky Peat or Peat (S2) (LRR G, H) High Plains Depressions (F1								of hydrophytic vegetation and	
	cky Peat or Peat (S		-		73 of LRF			d hydrology must be present,	
							unless	disturbed or problematic.	
Restrictive L	ayer (if present):								
Type:									
Depth (inc	ches):						Hydric Soil	Present? Yes V No No	
Remarks:							•		
Dromine	nt redovimo	rnhic co	oncentration	e com	mon w	ıithin tl	ha danlat	ad matrix	
1 TOTTILL	iit i caoxiiiio	i princ co		3 00111	111011 v	, i (i i i i i i i i i i i i i i i i i	ile depict	ed matrix.	
	cv								
HYDROLO									
-	drology Indicators:								
	•	one required	l; check all that appl	•				ary Indicators (minimum of two required)	
	Water (A1)		Salt Crust					ace Soil Cracks (B6)	
_	ter Table (A2)		Aquatic In		, ,			rsely Vegetated Concave Surface (B8)	
<u>✓</u> Saturatio			Hydrogen					nage Patterns (B10)	
	arks (B1)		Dry-Seaso					dized Rhizospheres on Living Roots (C3)	
	t Deposits (B2)		Oxidized F			ing Roots		where tilled)	
-	osits (B3)		•	not tilled)		4)		yfish Burrows (C8)	
_	t or Crust (B4)		Presence			4)		uration Visible on Aerial Imagery (C9) morphic Position (D2)	
	osits (B5) on Vis ble on Aerial	Imagon/ (P7	Thin Muck Other (Ex					C-Neutral Test (D5)	
	tained Leaves (B9)	iiiiageiy (b <i>i</i>	Other (LX)	Jiaiii iii ik	ziliaiks)			st-Heave Hummocks (D7) (LRR F)	
Field Observ	<u> </u>							Serieuve Hummooks (DF) (ERRT)	
Surface Water		/es 1	No <u> </u>	ches).					
Water Table			No Depth (in			_			
							and Hudrala	y Present? Yes V No No	
	Saturation Present? Yes Ves No Depth (inches): 0 Wetland Hydrology Present? Yes No								
	escribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:								
Remarks:									
Evidence o	f wetland hydrol	logy visibl	e in soil saturation	on, a hiq	h water	table at a	a depth of 7	inches, inundation visible on aerial	
	=		g living roots, ge				=		
,,		•		•	-	•	-		

Project/Site: JTX Tunnicliff	(City/Count	_{tv:} Hardin/E	Big Horn County	Sampling Date: 2023-06-15
Applicant/Owner: MDT					Sampling Point: DP03u
Investigator(s): R. Jones				nge: S14 T1S R33E	
Landform (hillslope, terrace, etc.): Floodplain				=	Slope (%): 2
Subregion (LRR): G 58A	Lat: 45.	841048		Long: -107.598379	Datum: NAD 83
Soil Map Unit Name: Ks - Kyle silty clay, 0 to 2 perce					
Are climatic / hydrologic conditions on the site typical for this	time of yea	ar? Yes _	✓ No_	(If no, explain in R	emarks.)
Are Vegetation, Soil, or Hydrologys	ignificantly of	disturbed?	? Are "	Normal Circumstances" p	present? Yes No
Are Vegetation, Soil, or Hydrologyn	aturally pro	blematic?	(If ne	eded, explain any answe	rs in Remarks.)
SUMMARY OF FINDINGS – Attach site map	showing	sampli	ng point l	ocations, transects	, important features, etc.
Hydrophytic Vegetation Present? Yes No	o 🗸		the Sampled thin a Wetlar		No
Upland sample point adjacent to DP-	·03w ar	nd wet	tland cel	II 3.	
VEGETATION – Use scientific names of plant	ts.				
Tree Stratum (Plot size: 30 ft r	Absolute % Cover		nt Indicator ? Status	Dominance Test work	
1		-		Number of Dominant S That Are OBL, FACW,	or FAC
2				(excluding FAC-):	<u>0</u> (A)
3				Total Number of Domin	
4				Species Across All Stra	、,
Sapling/Shrub Stratum (Plot size: 15 ft r) 1			over	Percent of Dominant Sp That Are OBL, FACW,	
2.				Prevalence Index wor	
3.					Multiply by:
4					x 1 = 0 x 2 = 0
5					$x = \frac{x}{0}$
Herb Stratum (Plot size: 5 ft r)		= Total Co	over	FACU species 0	
1. Thinopyrum intermedium	60	~	UPL	UPL species 85	
2. Lepedium perforatum	15		UPL	Column Totals: 85	
3. Descurainia sophia	10		UPL	Prevalence Index	$= R/\Delta = 5.00$
4				Hydrophytic Vegetation	
5				1 - Rapid Test for H	
6				2 - Dominance Tes	
7				3 - Prevalence Inde	ex is ≤3.0 ¹
8					Adaptations ¹ (Provide supporting
10.					s or on a separate sheet) phytic Vegetation¹ (Explain)
Woody Vine Stratum (Plot size: 30 ft r	85	= Total Co		<u> </u>	il and wetland hydrology must
1				Hydrophytic Vegetation	s No
No evidence of hydrophytic vegetati	on com	ımunit	y observ	ved.	

SOIL Sampling Point: DP03u

Profile Desc	cription: (Describe	to the depth r	needed to docu	ment the i	ndicator	or confirn	m the absence of indicators.)	
Depth	Matrix		Redo	x Feature	S			
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type ¹	Loc ²	<u>Texture</u> Remarks	
0 - 8	10YR 3/2	100					Clay Loam	
8 - 16	10YR 5/2	100					Sandy Loam	
				-				
		 		- -			·	
							· - 	
-								
	oncentration, D=Dep					d Sand G		
Hydric Soil	Indicators: (Applic	able to all LR	Rs, unless othe	rwise not	ed.)		Indicators for Problematic Hydric Soils ³ :	
Histosol	(A1)		Sandy	-			1 cm Muck (A9) (LRR I, J)	
	pipedon (A2)			Redox (S5			Coast Prairie Redox (A16) (LRR F, G, H)	
l —	istic (A3)			d Matrix (S			Dark Surface (S7) (LRR G)	
	en Sulfide (A4)	_,		Mucky Mir	. ,		High Plains Depressions (F16)	
	d Layers (A5) (LRR	•		Gleyed Ma			(LRR H outside of MLRA 72 & 73)	
	uck (A9) (LRR F, G,			ed Matrix (I Dark Surfa			Reduced Vertic (F18)	
-	d Below Dark Surfac ark Surface (A12)	ce (ATT)			ice (F6) irface (F7)		Red Parent Material (TF2) Very Shallow Dark Surface (TF12)	
_	Aucky Mineral (S1)			Depressio			Other (Explain in Remarks)	
. —	Mucky Peat or Peat	(S2) (LRR G. H			essions (F	16)	³ Indicators of hydrophytic vegetation and	
	ucky Peat or Peat (S				73 of LRR		wetland hydrology must be present,	
	•		•			ŕ	unless disturbed or problematic.	
Restrictive	Layer (if present):							
Type:								
Depth (in	ches):						Hydric Soil Present? Yes No	•
Remarks:	, . <u>-</u>							
			_					
No hydr	ic soil indica	tors obse	rved.					
HYDROLO	GY							
Wetland Hy	drology Indicators							
1	cators (minimum of		heck all that app	v)			Secondary Indicators (minimum of two requi	red)
	Water (A1)		Salt Crust				Surface Soil Cracks (B6)	
	ater Table (A2)		Aquatic Ir		s (B13)		Sparsely Vegetated Concave Surface (E	38)
Saturation			Hydrogen				Drainage Patterns (B10)	50)
Water M			Dry-Seas				Oxidized Rhizospheres on Living Roots	(C3)
	nt Deposits (B2)		Oxidized					(00)
Drift Dep	. , ,		· · · · · · · · · · · · · · · · · · ·	not tilled)		ing receio	Crayfish Burrows (C8)	
1	at or Crust (B4)		Presence	,		.)	Saturation Visible on Aerial Imagery (C9	9)
Iron Dep	` '		Thin Mucl			')	Geomorphic Position (D2)	,,
-	on Vis ble on Aerial	Imagery (R7)	Other (Ex				FAC-Neutral Test (D5)	
	stained Leaves (B9)	imagery (D7)	Outer (Ex	piaiii iii ixc	inanc)		Frost-Heave Hummocks (D7) (LRR F)	
Field Obser								
		/oo No	✓ Donth (in	abaa\:				
Surface Wat			Depth (ir					
Water Table			Depth (ir					,
Saturation P		res No	Depth (ir	ches):		_ Wetl	tland Hydrology Present? Yes No 	
(includes cap Describe Re	corded Data (strean	n gauge, monito	oring well, aerial	photos, pr	evious ins	pections).	. if available:	
	2 2 2 2 2 3 3 3 4 1	J J,	5 - 2 , 40 41	,, p.		, , ,	,	
Remarks:								
racillaiks.								
No evide	ence of wetl	and hydro	ology obse	rved.				
		-						
<u></u>								

Project/Site: JTX Tunnicliff	(City/Coun	_{ity:} Hardin/E	Big Horn County	Sampling Date: 2023-06-15
					Sampling Point: DP03w
• •				nge: S14 T1S R33E	
Landform (hillslope, terrace, etc.): Flood-Plain Landform					e Slope (%): 1
Subregion (LRR): G 58A					
Soil Map Unit Name: Ks - Kyle silty clay, 0 to 2 perce					
Are climatic / hydrologic conditions on the site typical for this					
Are Vegetation, Soil, or Hydrologysi					
Are Vegetation, Soil, or Hydrologyna					
SUMMARY OF FINDINGS – Attach site map s					
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Remarks: Sample point located within wetland)		the Sampled thin a Wetlar		No
VEGETATION – Use scientific names of plant					
VEGETATION OSC SCICILITIE HAInes of plant		Domina	nt Indicator	Dominance Test work	sheet:
Tree Stratum (Plot size: 30 ft r			? Status	Number of Dominant Sp	
1				That Are OBL, FACW, (excluding FAC-):	or FAC (A)
2				,	
3		-		Total Number of Domin Species Across All Stra	_
		= Total C	over		
Sapling/Shrub Stratum (Plot size: 15 ft r)				Percent of Dominant Sp That Are OBL, FACW, o	
1. 2.				Prevalence Index work	ksheet:
3.					Multiply by:
4.					x 1 = 0
5					x 2 = 80
F.4		= Total C	over		x 3 = 0
Herb Stratum (Plot size: 5 ft r 1. Hordeum jubatum	40	~	FACW	FACU species 30 UPL species 10	x 4 = 120
2. Elymus repens	25		FACU	Column Totals: 80	
3. Thinopyrum intermedium	10		UPL	Column Totals. 22	(A) <u>200</u> (B)
4 Chenopodium album	5	-	FACU	Prevalence Index	= B/A = 3.13
5		-		Hydrophytic Vegetation	
6.				1 - Rapid Test for H	
7				2 - Dominance Tes	
8				3 - Prevalence Inde	
9				data in Remarks	Adaptations ¹ (Provide supporting s or on a separate sheet)
10					phytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size: 30 ft r	80	= Total C	over		I and wetland hydrology must
1				be present, unless distu	пред ог ргоріеталіс.
2				Hydrophytic Vegetation	
% Bare Ground in Herb Stratum 20		= Total C	over	Present? Yes	s No
Remarks:				l	
Problematic vegetation present at sa	•		•	gressive invasiv	e plants, and the

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SOIL Sampling Point: DP03w

Profile Des	cription: (Describe	to the de	pth needed to docun	nent the	indicator	or confir	m the absence of	of indicators.)
Depth	Matrix			x Featur			•	
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	<u>Texture</u>	Remarks
0 - 5	7.5YR 3/2	93	7.5YR 4/3	7	<u> </u>		Silty Clay	
5 - 16	2.5Y 4/2	80	10YR 4/6	10	С	М	Loamy Sand	
5 - 16			7.5YR 5/8	5	CS			
-								
		_						
							<u> </u>	
							<u> </u>	
			· -		_			
			1=Reduced Matrix, CS			ed Sand G		ation: PL=Pore Lining, M=Matrix.
-		cable to al	I LRRs, unless other					or Problematic Hydric Soils ³ :
Histoso					latrix (S4)			uck (A9) (LRR I, J)
	pipedon (A2)		<u>✓</u> Sandy F					rairie Redox (A16) (LRR F, G, H)
	listic (A3)			d Matrix (Irface (S7) (LRR G)
	en Sulfide (A4)	E)		-	lineral (F1) ⁄latrix (F2)		_	ains Depressions (F16) R H outside of MLRA 72 & 73)
	d Layers (A5) (LRR uck (A9) (LRR F, G,		Loamy (•	d Vertic (F18)
	ed Below Dark Surface				face (F6)			rent Material (TF2)
	ark Surface (A12)	,			Surface (F7)		allow Dark Surface (TF12)
Sandy N	Mucky Mineral (S1)				ons (F8)		Other (E	Explain in Remarks)
	Mucky Peat or Peat		·					f hydrophytic vegetation and
5 cm M	ucky Peat or Peat (S	3) (LRR F) (ML	RA 72 &	73 of LRF	H)		hydrology must be present,
5 (1)							unless o	disturbed or problematic.
	Layer (if present):							
Type:							1	
	nches):						Hydric Soil F	Present? Yes V No No
Remarks:								
Faint red	oximorphic con	centrati	ons common wit	thin th	e sandy	matrix	within the fir	st horizon. The second
horizon, p	prominent redo	ximorph	ic concentration	ns com	mon wit	hin the	depleted ma	atrix.
HYDROLO	GY							
Wetland Hy	drology Indicators	:						
Primary Indi	cators (minimum of	one require	ed; check all that apply	y)			Secondar	y Indicators (minimum of two required)
Surface	Water (A1)		Salt Crust	(B11)			Surfa	ce Soil Cracks (B6)
✓ High Wa	ater Table (A2)		Aquatic Inv	vertebrat	es (B13)		Spars	sely Vegetated Concave Surface (B8)
✓ Saturati			Hydrogen					age Patterns (B10)
Water N	//arks (B1)		Dry-Seaso	n Water	Table (C2)		Oxidi	zed Rhizospheres on Living Roots (C3)
Sedime	nt Deposits (B2)		Oxidized F	Rhizosph	eres on Liv	ing Roots	s (C3) (wh	nere tilled)
Drift De	posits (B3)		(where r	not tilled	I)		Crayf	ish Burrows (C8)
Algal M	at or Crust (B4)		Presence	of Reduc	ced Iron (C	4)	Satur	ation Visible on Aerial Imagery (C9)
Iron De	posits (B5)		Thin Muck	Surface	(C7)		✓ Geon	norphic Position (D2)
Inundat	ion Vis ble on Aerial	Imagery (I	B7) Other (Exp	olain in R	temarks)		FAC-	Neutral Test (D5)
Water-S	Stained Leaves (B9)						Frost	-Heave Hummocks (D7) (LRR F)
Field Obser	rvations:							
Surface Wat	ter Present?	/es	No Depth (inc	ches):				
Water Table	Present?	res 🔽	No Depth (inc	ches): <u>5</u>		_		
Saturation F	Present?	_	No Depth (inc			Wet	land Hydrology	Present? Yes No
	pillary fringe) ecorded Data (strean	n gauge m	nonitoring well, aerial p	ohotos r	revious ins	pections)	. if available	
2000/100 / (0	Julia Data (ottodii	. gaago, II	.ctorning won, dorlar p	σ. 10 ισο, μ	541500 1110	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	, available.	
Remarks:								
	-						=	visible on aerial imagery, a
high wate	er table at a dep	oth of 5	inches, and the	geomo	orphic po	osition (of the point.	

Project/Site: JTX Tunnicliff	(Citv/C	County: Big Horn County Sampling Date: 2023-06-				-06-14	
Applicant/Owner: MDT		-	-		State: Montana	-	_	
	;				nge: S15 T1N R33E		,	
					convex, none): Linear		Slope (%)): 0
Subregion (LRR): G 58A								
Soil Map Unit Name: Kw - Kyle clay, saline					NWI classific			
Are climatic / hydrologic conditions on the site typical for thi	s time of yea	ar? Y		_				
Are Vegetation, Soil, or Hydrologys	-				Normal Circumstances" p		Yes N	10
Are Vegetation, Soil, or Hydrology r				(If ne	eded, explain any answe	rs in Rema	arks.)	
SUMMARY OF FINDINGS – Attach site map				g point le	ocations, transects	, impor	tant feature	es, etc.
Livedness to Versetation Present?	- V							
Hydrophytic Vegetation Present? Hydric Soil Present? Yes Yes N				e Sampled			4	
Hydric Soil Present? Yes N Wetland Hydrology Present? Yes N	lo 🔽		withi	n a Wetlan	nd? Yes	No		
Remarks:		J						
Hydric soil indicators observed in soil pit, h	owever n	eith	er ind	dicators	of wetland hydrolo	gy nor	a hydrophy	ytic .
plant community were observed.					•			
VEGETATION – Use scientific names of plan	its.							
7 2 4 7 7 1 2 0 ft r	Absolute				Dominance Test work	sheet:		
Tree Stratum (Plot size: 30 ft r)	% Cover				Number of Dominant S			
1					That Are OBL, FACW, (excluding FAC-):	or FAC	0	(A)
2					Total Number of Domin	ant		
4					Species Across All Stra		1	_ (B)
				er	Percent of Dominant Sp			
Sapling/Shrub Stratum (Plot size: 15 ft r					That Are OBL, FACW,	or FAC:	0.00	(A/B)
1 2					Prevalence Index wor	ksheet:		
3					Total % Cover of:		Multiply by:	
4.							1 = 0	
5.					FACW species 0			_
- 0		= Tota	al Cov	er		x 3		_
Herb Stratum (Plot size: 5 ft r	E0		,	FACU			4 = 200	_
1. Bromus arvensis 2. unk forb	<u>50</u> 10			FACO	UPL species 5 Column Totals: 55	x 5		— (D)
Thinopyrum intermedium	5			UPL	Column rotals. <u>33</u>	(A)		(B)
4				<u> </u>	Prevalence Index	= B/A =	4.09	_
5					Hydrophytic Vegetation			
6.					1 - Rapid Test for I		_	
7.					2 - Dominance Tes			
8					3 - Prevalence Inde			
9					4 - Morphological A data in Remarks			
10					Problematic Hydro		•	,
Wester Charles (District 30 ft r	65	= Tota	al Cov	er	-			,
Woody Vine Stratum (Plot size: 30 ft r) 1					¹ Indicators of hydric soi be present, unless distu			must
2					Hydrophytic			
			al Cov	er	Vegetation	_	No	
% Bare Ground in Herb Stratum 35					Present? Ye	s	NO	
Remarks:								
Upland vegetation community domin	nated by	y Br	omu	us arve	nsis			

SOIL Sampling Point: DP04u

Profile Desc	ription: (Describe	to the dept	th needed to docum	ent the	indicator	or confirm	n the absence	of indicators.)
Depth	Matrix		Redox	(Feature	es			
(inches)	Color (moist)	<u></u> %	Color (moist)	<u>%</u>	Type ¹	Loc ²	Texture	Remarks
0 - 6	10YR 4/2	98	7.5YR 4/6	2	<u>C</u>	PL / M	Sandy Clay Loam	Faint redox concentrations in the matrix
6 - 14	10YR 4/2	98	7.5YR 4/6	2	CS	М	Loamy Sand	dry soil
-								
-								
			Reduced Matrix, CS			ed Sand Gr		cation: PL=Pore Lining, M=Matrix.
_		able to all	LRRs, unless other					for Problematic Hydric Soils ³ :
Histosol	` '			-	atrix (S4)			Muck (A9) (LRR I, J)
	nipedon (A2)		Sandy R	•	•			Prairie Redox (A16) (LRR F, G, H)
Black His	n Sulfide (A4)		Stripped		ineral (F1)			Surface (S7) (LRR G) Plains Depressions (F16)
	I Layers (A5) (LRR l	F)		-	latrix (F2)		_	RR H outside of MLRA 72 & 73)
	ck (A9) (LRR F, G ,		✓ Depleted					ed Vertic (F18)
	l Below Dark Surfac		Redox D		` ,			arent Material (TF2)
Thick Da	rk Surface (A12)				urface (F7)	-	hallow Dark Surface (TF12)
	lucky Mineral (S1)		Redox D					(Explain in Remarks)
	lucky Peat or Peat (-		ressions (F			of hydrophytic vegetation and
5 cm Mu	cky Peat or Peat (S	3) (LRR F)	(MLF	RA 72 &	73 of LRR	(H)		d hydrology must be present, disturbed or problematic.
Restrictive L	_ayer (if present):						unicss	disturbed of problematic.
Type: CO								
Depth (inc							Hydric Soil	Present? Yes V No
Remarks:	,						1 1	
Pit denth	14" could not a	dia furthe	er due to sand c	ollans	ina into	the nit	Faint redox	kimorphic concentrations
-	•	•	this soil problen	-	ing into	the pit.	i dilit i cuo	amorphic concentrations
	•	IX IIIake	ino son problem	iatio.				
HYDROLO								
-	drology Indicators:							
	•	one required	I; check all that apply					ary Indicators (minimum of two required)
	Water (A1)		Salt Crust ((0.40)			face Soil Cracks (B6)
_	ter Table (A2)		Aquatic Inv					rsely Vegetated Concave Surface (B8)
Saturatio	` ,		Hydrogen S				' <u></u> '	inage Patterns (B10)
	arks (B1)		Dry-Season					dized Rhizospheres on Living Roots (C3)
	nt Deposits (B2) posits (B3)		Oxidized R			ing Roots		/here tilled)
	it or Crust (B4)		(where n			4)		yfish Burrows (C8)
_ •	osits (B5)		Presence of Thin Muck		,	+)		uration Visible on Aerial Imagery (C9) morphic Position (D2)
	on Vis ble on Aerial	Imagory (P7					' <u></u> '	C-Neutral Test (D5)
	tained Leaves (B9)	iiiageiy (b <i>i</i>) Other (Exp	iaiii iii iX	ciliaiks)			st-Heave Hummocks (D7) (LRR F)
Field Observ								St-reave riuminous (D1) (ERRT)
Surface Water		es l	No Depth (inc	hes).				
Water Table			No Depth (inc					
Saturation Pr			No Depth (inc				and Hydrolog	y Present? Yes No
(includes cap	oillary fringe)							,
Describe Red	corded Data (stream	n gauge, mo	nitoring well, aerial p	hotos, p	revious ins	spections),	if available:	
Remarks:								
No evide	ence of wetla	and hyd	Irology obsei	ved.				
		-	- -					

Project/Site: JTX Tunnicliff	(Citv/Co	ountv:	Big Horr	n County	Sampling	Date: 20	23-06-14
Applicant/Owner: MDT		-	-		State: Montana			
• •					nge: S15 T1N R33E	. 0		
Landform (hillslope, terrace, etc.): Floodplain						.	Slope ((%): 5
Subregion (LRR): G 58A								
Soil Map Unit Name: Kw - Kyle clay, saline					NWI classific			
Are climatic / hydrologic conditions on the site typical for this				_				
Are Vegetation, Soil, or Hydrologysi	-				Normal Circumstances" p		voc V	No
Are Vegetation, Soil, or Hydrology n					eded, explain any answer			_ 140
SUMMARY OF FINDINGS – Attach site map							,	ıres. etc.
				9 P • · · · · · ·	,			,
Hydrophytic Vegetation Present? Yes No No No No No No No No No N			Is the	e Sampled				
Wetland Hydrology Present? Yes V)		withi	n a Wetlan	nd? Yes	No		
Remarks:	<u> </u>							
Sample point located within wetland	call 1							
Sample point located within wetland	C C II 4.							
VEGETATION – Use scientific names of plant	ts.							
	Absolute	Dom	inant	Indicator	Dominance Test work	sheet:		
Tree Stratum (Plot size: 30 ft r)	% Cover	Spec	cies?	Status	Number of Dominant Sp			
1					That Are OBL, FACW, (excluding FAC-):	or FAC	1	(A)
2					, , ,	=		(//)
3					Total Number of Domina Species Across All Stra		2	(B)
4								(5)
Sapling/Shrub Stratum (Plot size: 15 ft r					Percent of Dominant Sp That Are OBL, FACW, of		50.00	(A/B)
1					Prevalence Index worl	sheet:		
2					Total % Cover of:		Multiply by	/ :
3					OBL species 5	x 1	= 5	
4 5.					FACW species 40	x 2	2 = 80	
		= Tota	al Cov	er		x 3		
Herb Stratum (Plot size: 5 ft r)		1010	JI 001		FACU species 30			
1. Elymus repens	25			FACU	UPL species 0		5 = 0	
2. Juncus balticus	20		_	FACW	Column Totals: 75	(A)	205	(B)
3. Hordeum jubatum	10			FACW	Prevalence Index	= B/A =	2.73	
4. Alopecurus arundinaceus	5			FACW	Hydrophytic Vegetation			
5. Chenopodium rubrum 6. Distichlis spicata	5 5			OBL	1 - Rapid Test for H			n
7. Polygonum douglasii	5			FACU FACU	2 - Dominance Tes			
-				17100	✓ 3 - Prevalence Inde	x is ≤3.0 ¹		
8					4 - Morphological A	daptation	s ¹ (Provide	supporting
10.					data in Remarks		•	,
10.	75	= Tota	al Cov	er	Problematic Hydrop	inytic Veg	etation (E)	(plain)
Woody Vine Stratum (Plot size: 30 ft r) 1					¹ Indicators of hydric soil be present, unless distu			gy must
2					Hydrophytic			
			al Cov	er	Vegetation	J		
% Bare Ground in Herb Stratum 25			•		Present? Yes	s	No	_
Remarks:								
PEM plant community. Evidence of h	ydroph	ytic	ve	getatio	n includes a pre	valenc	e inde	X
below three.	- •	-	`	=	·			

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SOIL Sampling Point: DP04w

Profile Desc	ription: (Describe	to the depth	needed to docum	nent the	indicator	or confirn	n the absence	of indicators.)
Depth	Matrix		Redox	k Feature	s			
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0 - 9	10YR 3/2	90 7	.5YR 3/4	10	С	PL	Sandy Clay Loam	
9 - 16	10YR 3/3	100					Loamy Sand	very gravely
	-							
			_		· ——			
		· —— —		-				
				-				
-								
		·			·			
¹ Type: C=Co	oncentration, D=Dep	letion RM=R	educed Matrix CS	=Covere	d or Coate	d Sand G	rains ² l oc	cation: PL=Pore Lining, M=Matrix.
	Indicators: (Applic					a cana c		for Problematic Hydric Soils ³ :
Histosol					atrix (S4)			fluck (A9) (LRR I, J)
	pipedon (A2)			Redox (S5	. ,			Prairie Redox (A16) (LRR F, G, H)
Black Hi			-	Matrix (S			Dark S	Surface (S7) (LRR G)
Hydroge	n Sulfide (A4)		Loamy N	Aucky Mi	neral (F1)		High P	lains Depressions (F16)
Stratified	l Layers (A5) (LRR F	=)		-	atrix (F2)		(LR	R H outside of MLRA 72 & 73)
	ck (A9) (LRR F, G, I			d Matrix (,			ed Vertic (F18)
	Below Dark Surface	e (A11)	<u>✓</u> Redox D					arent Material (TF2)
	ark Surface (A12)			d Dark St Depressio	urface (F7)			hallow Dark Surface (TF12) (Explain in Remarks)
-	lucky Mineral (S1) /lucky Peat or Peat (S2) (I RR G I		•	essions (F	16)		of hydrophytic vegetation and
	cky Peat or Peat (S				73 of LRR	•		d hydrology must be present,
	,	-, (=::::,	(,		disturbed or problematic.
	_ayer (if present):							
Type: due	e to high water table an	d hole collapsir	<u>ng</u>					
Depth (inc	ches): <u>16</u>		<u> </u>				Hydric Soil	Present? Yes V No No
Remarks:							I	
Distinct	redovimornh	ic conce	entrations c	ommo	nn alon	a nore	lininas w	vithin the upper 9 inches.
Distillet	redeximerpi		indiadions o	01111110	on alon	ig porc	, mmgs v	vicini the apper o mones.
HYDROLO	GY							
	drology Indicators:							
_	ators (minimum of o		check all that apply	/)			Seconda	ary Indicators (minimum of two required)
-	Water (A1)		Salt Crust					ace Soil Cracks (B6)
	iter Table (A2)		Aquatic Inv		es (B13)			rsely Vegetated Concave Surface (B8)
✓ Saturation			Hydrogen					nage Patterns (B10)
	arks (B1)		Dry-Seaso					dized Rhizospheres on Living Roots (C3)
	nt Deposits (B2)		Oxidized R		, ,			where tilled)
	posits (B3)		(where n	•		9		yfish Burrows (C8)
-	it or Crust (B4)		Presence of			1)		uration Visible on Aerial Imagery (C9)
_	osits (B5)		Thin Muck			,		emorphic Position (D2)
	on Vis ble on Aerial I	magery (B7)	Other (Exp					C-Neutral Test (D5)
	tained Leaves (B9)	5 , (,	` ` '		,		·	st-Heave Hummocks (D7) (LRR F)
Field Observ								. , , , , , , , , , , , , , , , , , , ,
Surface Water	er Present? Y	es No	Depth (inc	ches):				
Water Table	Present? Y	es 🗸 No	Depth (inc	thes): 12				
Saturation Pr			Depth (inc			Wetl	and Hydrolog	y Present? Yes No
(includes cap	oillary fringe)							,
Describe Red	corded Data (stream	gauge, monit	oring well, aerial p	notos, pr	evious ins	pections),	ıt available:	
Remarks:								
	=					-		at a depth of 12 inches, inundation
visible on a	ierial imagery, ox	idized rhizo	ospheres along	living r	oots, ged	omorphic	c position, ar	nd a positive FAC-neutral test.

Project/Site: JTX Tunnicliff	(Citv/Count	tv: Big Horr	n County	Sampling Date: 2023-06-14
Applicant/Owner: MDT		-	-		Sampling Point: DP05u
Investigator(s): R. Jones				nge: S15 T1N R33E	
Landform (hillslope, terrace, etc.): Floodplain					Slope (%): 0
, ,			,		Datum: NAD 83
Soil Map Unit Name: Hh - Haverson and Lohmiller so				NWI classific	
Are climatic / hydrologic conditions on the site typical for this			_		
Are Vegetation, Soil, or Hydrologys	-				oresent? Yes No
Are Vegetation, Soil, or Hydrology n	-			eeded, explain any answe	
SUMMARY OF FINDINGS – Attach site map				ocations, transects	, important features, etc.
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No Remarks:	o 🗸		the Sampled thin a Wetlan		No
Upland sample point up gradient from	m DP-0	5w an	d wetlar	nd cell 5.	
VEGETATION – Use scientific names of plan	ts.				
Tree Stratum (Plot size: 30 ft r	Absolute % Cover		nt Indicator	Dominance Test work	
1				Number of Dominant S That Are OBL, FACW, 6	
2.				(excluding FAC-):	<u>0</u> (A)
3				Total Number of Domin	
4				Species Across All Stra	ata: <u>1</u> (B)
Sapling/Shrub Stratum (Plot size: 15 ft r			over	Percent of Dominant Sp That Are OBL, FACW, o	
1				Prevalence Index wor	ksheet:
3.				Total % Cover of:	Multiply by:
4					x 1 = 0
5.					x 2 = 0
- 6		= Total Co	over		x 3 = 0
Herb Stratum (Plot size: 5 ft r)	60		UPL	FACU species 25	
1. Thinopyrum intermedium 2. Cirsium arvense	60 15		FACU	UPL species 65	
Poa pratensis	10	-	FACU	Column Totals: 90	(A) <u>425</u> (B)
Convolvulus arvensis	5		UPL	Prevalence Index	= B/A = 4.72
5		•		Hydrophytic Vegetation	on Indicators:
6				1 - Rapid Test for H	
7				2 - Dominance Tes	
8.				3 - Prevalence Inde	
9					Adaptations ¹ (Provide supporting s or on a separate sheet)
10					phytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size: 30 ft r) 1		= Total Co		<u> </u>	il and wetland hydrology must
% Bare Ground in Herb Stratum 10				Hydrophytic Vegetation Present? Ye	s No_ <u>'</u> _
Remarks: No evidence for a hydrophytic veget	ation c	ommu	nity obs	erved.	

SOIL Sampling Point: DP05u

Profile Desc	ription: (Describe	to the depth n	eeded to docu	nent the i	ndicator	or confirr	n the absence	of indicators.)	
Depth	Matrix		Redo	x Feature:	S				
(inches)	Color (moist)	%	Color (moist)	%	_Type ¹	Loc ²	<u>Texture</u>	Remark	(S
0 - 9	10YR 3/2	100					Sandy Clay Loam		
9 - 16	10YR 4/2	100			_ _	_ _	Sandy Loam	dry	
	-								
	-								 -
-									
							-	-	
	-								
	oncentration, D=Dep					d Sand G		cation: PL=Pore Lining	
Hydric Soil	Indicators: (Applic	able to all LRF	Rs, unless othe	rwise note	ed.)		Indicators	for Problematic Hyd	ric Soils³:
Histosol	` '		Sandy	-				Muck (A9) (LRR I, J)	
-	pipedon (A2)			Redox (S5				Prairie Redox (A16) (L	.RR F, G, H)
Black Hi	` '			d Matrix (S				Surface (S7) (LRR G)	•
	n Sulfide (A4)	- \		Mucky Mir			_	Plains Depressions (F1	
	d Layers (A5) (LRR	•	-	Gleyed Ma			•	RR H outside of MLRA	A 12 & 13)
	ick (A9) (LRR F, G, d Below Dark Surfac			d Matrix (I Dark Surfa				ced Vertic (F18) Parent Material (TF2)	
-	ark Surface (A12)	~ (ATT)		ed Dark Suna	` '			Shallow Dark Surface (*	TF12)
_	fucky Mineral (S1)			Depressio:			-	(Explain in Remarks)	· · · · - /
-	/lucky Peat or Peat ((S2) (LRR G , H		ains Depre	. ,	16)		of hydrophytic vegetat	ion and
	icky Peat or Peat (S			.RA 72 & 7	73 of LRR	H)		nd hydrology must be pr	
							unless	s disturbed or problema	itic.
Restrictive I	_ayer (if present):								
Type:			=						
Depth (inc	ches):		_				Hydric Soi	I Present? Yes	No
Remarks:									
No nyar	ic soil indica	tors obse	rvea.						
HYDROLO	GY								
Wetland Hyd	drology Indicators:	:							
Primary India	cators (minimum of o	one required; ch	neck all that app	V)			Second	ary Indicators (minimur	n of two required)
	Water (A1)	•	Salt Crust	•				face Soil Cracks (B6)	
	iter Table (A2)		Aquatic In		s (B13)			arsely Vegetated Conca	ave Surface (B8)
Saturation			Hydrogen					inage Patterns (B10)	(= 0,
Water M			Dry-Seaso				<u> </u>	dized Rhizospheres on	Living Roots (C3)
	nt Deposits (B2)		Oxidized I					where tilled)	g . tooto (00)
Drift Dep	. , ,			not tilled)		9		yfish Burrows (C8)	
-	at or Crust (B4)		Presence	,		1)	·	uration Visible on Aeria	l Imagery (C9)
Iron Dep	• •		Thin Muck			• /	·	omorphic Position (D2)	a magary (aa)
	on Vis ble on Aerial	Imagery (B7)	Other (Ex	,	,			C-Neutral Test (D5)	
	tained Leaves (B9)	magary (B7)	01101 (EX		marko)			st-Heave Hummocks (I	07) (I RR F)
Field Obser								ot Houve Hammoone (I	37) (L IIII)
Surface Water		/es No	Depth (in	chee).					
			Depth (in						
Water Table							land Deed	D	N . V
Saturation Pi		res No _	Depth (in	cnes):		_ wet	iand Hydrolog	y Present? Yes	No
	corded Data (stream	n gauge, monito	ring well, aerial	photos, pr	evious ins	pections).	, if available:		
		-	-	•		,			
Remarks:									
	_		_						
No indic	ators of wet	land hydr	ology obs	erved.					

Project/Site: JTX Tunnicliff	(Citv/Cou	_{untv:} Big Hor	n County	Sampling Date: 2023-06-14
Applicant/Owner: MDT		-	-		Sampling Point: DP05w
				nge: S15 T1N R33E	
Landform (hillslope, terrace, etc.): Floodplain					e Slone (%): 2
					Datum: NAD 83
Soil Map Unit Name: <u>Hh - Haverson and Lohmiller so</u>					
Are climatic / hydrologic conditions on the site typical for this					
Are Vegetation, Soil, or Hydrologys	•		· ·		oresent? Yes <u> </u>
Are Vegetation, Soil, or Hydrology n				eeded, explain any answe	,
SUMMARY OF FINDINGS – Attach site map	showing	samp	oling point I	ocations, transects	, important features, etc.
	0 0 0		s the Sampled within a Wetla		No
Sample point located within wetland VEGETATION – Use scientific names of plan					
VEGETATION - Ose scientific flames of plan	Absolute	Domin	nant Indicator	Dominance Test work	shoot:
Tree Stratum (Plot size: 30 ft r)	% Cover	Specie	es? Status	Number of Dominant S That Are OBL, FACW, (excluding FAC-):	pecies
2				Total Number of Domin Species Across All Stra	ant
Sapling/Shrub Stratum (Plot size: 15 ft r)				Percent of Dominant Sp That Are OBL, FACW,	
1. 2.				Prevalence Index wor	ksheet:
3.					Multiply by:
4.					x 1 = <u>12</u>
5					x 2 = 120
Eftr		= Total	Cover	FAC species 0 FACU species 26	x 3 = 0
Herb Stratum (Plot size: 5 ft r Alopecurus arundinaceus	45	~	FACW	UPL species 2	
2. Chenopodium album	15		FACU	Column Totals: 100	(A) 246 (B)
3. Elymus repens	10		FACU		
4. Hordeum jubatum	10		FACW	Prevalence Index	
5. Schoenoplectus acutus	5		OBL	Hydrophytic Vegetation	
_{6.} Typha angustifolia	5		OBL	1 - Rapid Test for H	• • •
7. Juncus balticus	5		FACW	2 - Dominance Tes	
8. Schoenoplectus maritimus	2		OBL		Adaptations ¹ (Provide supporting
9. Trifolium arvense	2		<u>UPL</u>		s or on a separate sheet)
10. Polygonum douglasii	1		FACU	Problematic Hydro	phytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size: 30 ft r) 1.		= Total		¹ Indicators of hydric soi be present, unless distu	l and wetland hydrology must urbed or problematic.
2				Hydrophytic Vegetation Present? Ye	s No
Evidence of hydrophytic vegetation	include	s a p	revalenc	e index below th	iree.

SOIL Sampling Point: DP05w

Profile Desc	ription: (Describe	to the de	oth needed to docun	ent the	indicator	or confirn	n the absence of inc	dicators.)
Depth	Matrix		Redox	(Feature				
(inches)	Color (moist)		Color (moist)	<u>%</u>	Type ¹	Loc ²	<u>Texture</u>	Remarks
0 - 13	10YR 4/2	75	7.5YR 3/4	15	_ <u>C</u>		Clay Loam	
13 - 16	10YR 4/2	95	7.5YR 3/4	5	<u>C</u>		Sandy Clay Loam	
-								
-								
					-			
			I=Reduced Matrix, CS			d Sand G		PL=Pore Lining, M=Matrix.
-		cable to al	I LRRs, unless other					roblematic Hydric Soils ³ :
Histosol	(AT) ipedon (A2)		Sandy G Sandy R	-	, ,		1 cm Muck (e Redox (A16) (LRR F, G, H)
Black His			Stripped				Dark Surface	
	n Sulfide (A4)			,	ineral (F1)			Depressions (F16)
	Layers (A5) (LRR	F)			latrix (F2)		-	outside of MLRA 72 & 73)
	ck (A9) (LRR F, G ,		<u>✓</u> Depleted				Reduced Ve	rtic (F18)
Depleted	Below Dark Surfac	ce (A11)			ace (F6)		Red Parent I	Material (TF2)
	rk Surface (A12)				urface (F7)		-	v Dark Surface (TF12)
	ucky Mineral (S1)		Redox D	•	. ,			in in Remarks)
·	lucky Peat or Peat	. , .			ressions (F		-	drophytic vegetation and
5 cm iviu	cky Peat or Peat (S	53) (LRR F) (MLI	KA /2 &	73 of LRR	H)	•	ology must be present, bed or problematic.
Restrictive L	.ayer (if present):						uriless distai	bed of problematic.
Type:	, (p							
,. <u>—</u>	ches):						Hydric Soil Prese	ent? Yes 🗸 No
Remarks:	,							
Distinct	ا دس م موند و ام	hia aa.			ما النام ما	مطاح من	d = 10 10 10 10 10 10 10 10 10 10 10 10 10	
DISTILICE	redoximorpi	nic con	centrations c	OHIIII	on with	ını tne	depieted ma	uix.
LIVERGLO								
HYDROLO								
•	Irology Indicators							
-		one require	ed; check all that apply					licators (minimum of two required)
	Water (A1)		Salt Crust		(D40)			oil Cracks (B6)
High wa <u>✓</u> Saturation	ter Table (A2)		Aquatic Inv Hydrogen \$					Vegetated Concave Surface (B8) Patterns (B10)
	arks (B1)		Prydrogen Dry-Seaso					Rhizospheres on Living Roots (C3)
	t Deposits (B2)		Oxidized R			ing Poots	(C3) (where	
·	osits (B3)		(where n			ing ixoots		Burrows (C8)
-	t or Crust (B4)		Presence of			1)		Notified on Visible on Aerial Imagery (C9)
	osits (B5)		Thin Muck		,	')		nic Position (D2)
	on Vis ble on Aerial	Imagery (F					FAC-Neut	
	ained Leaves (B9)	inagery (E	77) Other (Exp		ciriaino)			ve Hummocks (D7) (LRR F)
Field Observ	, ,						<u> </u>	, , , ,
Surface Water	er Present? `	Yes	No Depth (inc	hes):				
Water Table			No Pepth (inc					
Saturation Pr			No Depth (inc			l l	and Hydrology Pres	sent? Yes 🗸 No
(includes cap	illary fringe)							
Describe Red	corded Data (strean	n gauge, m	onitoring well, aerial p	notos, p	revious ins	pections),	ıt avaılable:	
Remarks:								
Evidence	of wetland hyd	drology v	isible in soil sat	uration	n to the s	surface,	, inundation visi	ble on aerial imagery,
oxidized r	hizospheres a	long livir	ng roots, geomo	phic p	osition,	and a p	ositive FAC-ne	utral test.

Project/Site: JTX Tunnicliff	(Citv/Co	ountv:	Big Horn	n County	Sampling	Date: 2023-	06-14
Applicant/Owner: MDT		-	-		State: Montana			
	•				nge: S15 T1N R33E			
Landform (hillslope, terrace, etc.): Flood-Plain Landforms							Slope (%):	0
Subregion (LRR): G 58A								
Soil Map Unit Name: Hh - Haverson and Lohmiller soi					NWI classific			
Are climatic / hydrologic conditions on the site typical for this								
Are Vegetation, Soil, or Hydrology sig	•				Normal Circumstances" p	•	os V N	0
Are Vegetation, Soil, or Hydrology na					eded, explain any answe			<i></i>
SUMMARY OF FINDINGS – Attach site map s				•			•	s. etc.
			,	,		,		
Hydrophytic Vegetation Present? Yes No	✓		Is the	e Sampled	Area			
Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No			withi	n a Wetlan	d? Yes	No _		
Remarks:								
Upland sample point adjacent to and upgrad	lient of C	ח_ח	6W	Samnla	noint located appr	ovimatal	ly 1 feet his	aher
in elevation than wetland sample point.	ient or L)F -U	OVV.	Sample	point located appro	JAIIIIatei	y 4 reet m	311CI
VEGETATION – Use scientific names of plant								
<u> </u>	Absolute	Dom	inant	Indicator	Dominance Test work	shoot:		
	% Cover				Number of Dominant Sp			
1					That Are OBL, FACW, o	or FAC	0	
2					(excluding FAC-):	_	0	(A)
3					Total Number of Domin		1	
4					Species Across All Stra	ta: _	1	(B)
Sapling/Shrub Stratum (Plot size: 15 ft r)	:	= Tota	al Cov	er	Percent of Dominant Sp That Are OBL, FACW, of		0.00	(A/B)
1								(,,,,,
2					Prevalence Index work			
3					Total % Cover of:			
4					OBL species 0 FACW species 0		= 0	
5						x 2		_
Herb Stratum (Plot size: 5 ft r)		= Tota	al Cov	er	FACU species 70			_
1. Bromus arvensis	60	v	/	FACU	· ·	x 5		_
2. Elymus repens	10			FACU	Column Totals: 75			(B)
3. Grindelia squarrosa	5	_	,	UPL			4.07	_ , ,
4					Prevalence Index			
5					Hydrophytic Vegetatio			
6					1 - Rapid Test for F 2 - Dominance Tes		vegetation	
7					3 - Prevalence Inde			
8					4 - Morphological A		.1 (Provide sun	norting
9					data in Remarks			
10	75				Problematic Hydro	ohytic Vege	etation¹ (Explai	in)
Woody Vine Stratum (Plot size: 30 ft r		= Tota			¹ Indicators of hydric soi be present, unless distu			nust
1					•	·		
2			al Cov		Hydrophytic Vegetation		_	
% Bare Ground in Herb Stratum 25		- 1012	ai COV	Ci	Present? Yes	s	No	
Remarks:					•			
No evidence for a hydrophytic vegeta	ation c	omr	nun	ity obs	erved.			
, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,								

SOIL Sampling Point: DP06u

		to the depth				or confir	n the absence of ind	icators.)
Depth (inches)	Matrix Color (moist)	<u></u> %	Redo Color (moist)	x Feature: %	s Type ¹	Loc ²	Texture	Remarks
0 - 7	10YR 4/2	100	Joiot (moist)	//	· ypc		Sandy Clay Loam	Nomano
0 - 16	10YR 4/2	100 _					Sandy Loam	
0 - 10	1011 4/2	100					Januy Ludin	
							. <u></u>	
-								
-								
¹Type: C=Ce	oncentration, D=Dep	oletion, RM=R	Reduced Matrix, C	S=Covered	d or Coate	ed Sand G	Frains. ² Location:	PL=Pore Lining, M=Matrix.
Hydric Soil	Indicators: (Applic	able to all Li	RRs, unless othe	rwise not	ed.)			oblematic Hydric Soils ³ :
Histosol	(A1)		Sandy				1 cm Muck (A	
-	oipedon (A2)		Sandy	•	•			Redox (A16) (LRR F, G, H)
	istic (A3) en Sulfide (A4)			d Matrix (S Mucky Mir	,		Dark Surface	(S7) (LRR G) Depressions (F16)
	d Layers (A5) (LRR l	F)		Gleyed Ma	. ,		-	utside of MLRA 72 & 73)
	uck (A9) (LRR F, G ,		-	ed Matrix (I			Reduced Ver	,
	d Below Dark Surfac		Redox	Dark Surfa	ace (F6)		Red Parent N	, ,
	ark Surface (A12)			ed Dark Su)	·	Dark Surface (TF12)
	/lucky Mineral (S1) /lucky Peat or Peat ((S2) (I PP G		Depression ains Depre	. ,	16)		in in Remarks) rophytic vegetation and
	ucky Peat or Peat (S			.RA 72 & 7				plogy must be present,
	,,	- / (`			,		bed or problematic.
Restrictive I	Layer (if present):							
Type:			<u> </u>					_
Depth (in	ches):						Hydric Soil Prese	ent? Yes No
Remarks:								
No hydr	ic soil indicat	tors obs	erved.					
HYDROLO	GY							
Wetland Hy	drology Indicators:							
	cators (minimum of o	ne required;						icators (minimum of two required)
	Water (A1)		Salt Crust					oil Cracks (B6)
	ater Table (A2)		Aquatic In		, ,			/egetated Concave Surface (B8)
Saturation			Hydrogen				Drainage F	
Water M			Dry-Seaso					Rhizospheres on Living Roots (C3)
Sedimer	nt Deposits (B2)		Oxidized I	rnizospne not tilled)		ing Roots	, ,	urrows (C8)
	at or Crust (B4)		Presence			1)		Visible on Aerial Imagery (C9)
Iron Dep	• •		Thin Mucl			.,		ic Position (D2)
-	on Vis ble on Aerial	Imagery (B7)					FAC-Neuti	
	tained Leaves (B9)							ve Hummocks (D7) (LRR F)
Field Obser	vations:							
Surface Wat	er Present? Y	'es No	Depth (in	ches):				
Water Table	Present?	'es No	Depth (in	ches):				
Saturation P		es No	Depth (in	ches):		Wet	land Hydrology Pres	ent? Yes No
(includes cap Describe Re	corded Data (stream	gauge, moni	itoring well, aerial	photos, pr	evious ins	pections)	, if available:	
Remarks:								
No wetla	and hydrolog	ıv obser	ved.					
		,, 5.5501						
<u> </u>								

Project/Site: JTX Tunnicliff		City/Co	ounty:	Big Horr	n County	Sampling	Date:	2023-	06-14
Applicant/Owner: MDT		-	-		State: Montana				
Investigator(s): R. Jones		Sectio	n, To	wnship, Ra	nge: S15 T1N R33E				
Landform (hillslope, terrace, etc.): Floodplain					-	е	Slo	pe (%):	2
Subregion (LRR): G 58A	Lat: 45.	8383	376		Long: -107.59716		Datu	ım: NA	D 83
Soil Map Unit Name: Hh - Haverson and Lohmiller so					NWI classific				
Are climatic / hydrologic conditions on the site typical for this									
Are Vegetation, Soil, or Hydrologys	ignificantly	disturb	ed?	Are "	Normal Circumstances" p	resent?	Yes	N	0
Are Vegetation, Soil, or Hydrologyn	aturally pro	blema	tic?		eded, explain any answe				
SUMMARY OF FINDINGS – Attach site map					ocations, transects	, impor	tant fe	ature	s, etc.
Wetland Hydrology Present? Yes No Remarks:	o o			e Sampled in a Wetlar		No		-	
Sample point located within wetland VEGETATION – Use scientific names of plan									
	Absolute	Dom	inant	Indicator	Dominance Test work	sheet:			
Tree Stratum (Plot size: 30 ft r) 1 2	% Cover	Spec	cies?	Status	Number of Dominant S That Are OBL, FACW, of (excluding FAC-):	pecies	3		(A)
3. 4.	<u> </u>				Total Number of Domin Species Across All Stra		3		(B)
Sapling/Shrub Stratum (Plot size: 15 ft r)					Percent of Dominant Sp That Are OBL, FACW,		100.00	0	(A/B)
2.					Prevalence Index wor				
3.					Total % Cover of:			-	_
4						x 1			_
5					FACW species 40 FAC species 0				_
Herb Stratum (Plot size: 5 ft r)		= Tota	al Cov	er	FACU species 5				_
1. Alopecurus arundinaceus	30	·	,	FACW	UPL species 0		5 = 0		_
2. Typha angustifolia	15			OBL	Column Totals: 80		135		(B)
3. Chenopodium rubrum	15	-	_	OBL			1.60		_ , ,
4. Juncus balticus	10			FACW	Prevalence Index				
5. Elymus repens	5			FACU	Hydrophytic Vegetatio			tation	
6. Schoenoplectus pungens	5			OBL	✓ 1 - Rapid Test for F✓ 2 - Dominance Tes		_	.auon	
7					3 - Prevalence Inde				
8	<u> </u>				4 - Morphological A			<i>i</i> ide sun	norting
9					data in Remarks	s or on a s	eparate	sheet)	porting
10	00				Problematic Hydro	phytic Veg	jetation¹	¹ (Explai	in)
Woody Vine Stratum (Plot size: 30 ft r) 1		= Tota			¹ Indicators of hydric soi be present, unless distu				nust
2					Hydrophytic				
% Bare Ground in Herb Stratum 20		= Tota	al Cov	er	Vegetation Present? Yes	s	No _		
Evidence of hydrophytic vegetation and a prevalence index below three.		s a	pos	itive do	ominance test, p	ositiv	e rap	id te	st,

US Army Corps of Engineers

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Great Plains – Version 2.0

SOIL Sampling Point: DP06w

Profile Desc	ription: (Describe	to the dep	th needed to docun	nent the	indicator	or confir	m the absence	of indicators.)
Depth	Matrix		Redo	x Feature	es			•
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
.5 - 12	10YR 4/1	90	N 2.5/0	5	<u>C</u>	М	Silty Clay Loam	
.5 - 12			7.5YR 4/6	5	С		·	
12 - 16	10YR 4/1	90	10YR 3/6	10	С	М	Sandy Loam	
05	N 3/0						Muck	
-							Muck	muck
-								
				-			·	
					_		· ———	
¹Type: C=Co	ncentration D=Den	letion RM	=Reduced Matrix, CS	=Covere	ed or Coate	ed Sand G	Grains ² Loc	cation: PL=Pore Lining, M=Matrix.
•			LRRs, unless other			ou ouriu o		for Problematic Hydric Soils ³ :
Histosol			Sandy G					Muck (A9) (LRR I, J)
	oipedon (A2)		Sandy F	-	. ,			Prairie Redox (A16) (LRR F, G, H)
Black Hi			Stripped					Surface (S7) (LRR G)
✓ Hydroge	en Sulfide (A4)		Loamy N	Mucky M	ineral (F1)			Plains Depressions (F16)
Stratified	d Layers (A5) (LRR I	F)	Loamy (Gleyed M	latrix (F2)		-	RR H outside of MLRA 72 & 73)
	ıck (A9) (LRR F, G ,		Deplete	d Matrix	(F3)		Reduc	ed Vertic (F18)
Depleted	d Below Dark Surfac	e (A11)	Redox D	Oark Surf	ace (F6)		Red P	arent Material (TF2)
Thick Da	ark Surface (A12)		Deplete	d Dark S	urface (F7)		Shallow Dark Surface (TF12)
	lucky Mineral (S1)		Redox [, ,			(Explain in Remarks)
	Mucky Peat or Peat (ressions (F			of hydrophytic vegetation and
5 cm Mu	icky Peat or Peat (S	3) (LRR F)	(ML	RA 72 &	73 of LRF	R H)		d hydrology must be present,
Destrictive I	over /if present).						unless	disturbed or problematic.
	Layer (if present):							
	choc):						Hydric Soil	Present? Yes V No No No
	ches):						nyuric 3011	Fresent: res No
Remarks:								
	•			on with	nin the d	lepleted	d matrix. 1 c	m of muck and a sulfidic odor
indicate h	ydric soils in th	is profile	e					
HYDROLO	GY							
Wetland Hy	drology Indicators:							
Primary India	cators (minimum of c	ne require	d; check all that apply	y)			Seconda	ary Indicators (minimum of two required)
Surface	Water (A1)		Salt Crust				Surf	face Soil Cracks (B6)
High Wa	iter Table (A2)		Aquatic Inv	ertebrat	es (B13)		Spa	rsely Vegetated Concave Surface (B8)
✓ Saturation	on (A3)		✓ Hydrogen :	Sulfide C	Odor (C1)		Drai	inage Patterns (B10)
Water M	larks (B1)		Dry-Seaso	n Water	Table (C2))	Oxid	dized Rhizospheres on Living Roots (C3)
Sedimer	nt Deposits (B2)		Oxidized R	Rhizosph	eres on Liv	ing Roots	(C3) (w	vhere tilled)
Drift Dep	oosits (B3)		(where r	ot tilled)		Cra	yfish Burrows (C8)
Algal Ma	at or Crust (B4)		Presence	of Reduc	ed Iron (C	4)	Satı	uration Visible on Aerial Imagery (C9)
Iron Dep	osits (B5)		Thin Muck	Surface	(C7)		<u>✔</u> Geo	omorphic Position (D2)
Inundation	on Vis ble on Aerial	lmagery (B	7) Other (Exp	lain in R	emarks)		<u></u> ✓ FAC	C-Neutral Test (D5)
Water-S	tained Leaves (B9)						Fros	st-Heave Hummocks (D7) (LRR F)
Field Obser	vations:		_					
Surface Water			No Depth (inc					
Water Table	Present? Y	'es	No Depth (inc	ches):				
Saturation P		es 🔽	No Depth (inc	ches): 0		Wet	land Hydrolog	y Present? Yes No
(includes cap		001100 ===	onitoring wall seriel	hotos :	rovious !=	noctions.	if available:	
Describe Re	corded Data (stream	gauge, m	onitoring well, aerial p	niotos, p	revious ins	pections)	, ii avallable:	
Domortes								
Remarks:	£		ta ta a su u e e e e e e e e e e e e e e e e e					4
	=						_	dor, inundation visible on aerial
imagery d	eomorphic positi	on, and a	positive FAC-ne	utrai te	st indica	te wetlai	nd hydrology	at this sample point.

Project/Site: JTX Tunnicliff	(City/Coun	_{tv:} Big Horr	n County	Sampling Date: 2023-06-14
Applicant/Owner: MDT		-	-		Sampling Point: DP07u
Investigator(s): R. Jones				nge: S10 T1N R33E	
Landform (hillslope, terrace, etc.): Floodplain					Slope (%): 10
, ,			,		Datum: NAD 83
Soil Map Unit Name: Hff - Haverson silty clay, thick s				NWI classific	
Are climatic / hydrologic conditions on the site typical for this					
Are Vegetation, Soil, or Hydrologys	•				oresent? Yes No
Are Vegetation, Soil, or Hydrology n	-			eeded, explain any answe	
SUMMARY OF FINDINGS – Attach site map				ocations, transects	, important features, etc.
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No Remarks:	。 /		the Sampled thin a Wetlan		No
Upland sample point adjacent to DP-	-07w ar	nd wet	tland cel	17.	
VEGETATION – Use scientific names of plan	ts.				
Tree Stratum (Plot size: 30 ft r			nt Indicator ? Status	Dominance Test work	
1				Number of Dominant S That Are OBL, FACW, 6	or FAC
2.				(excluding FAC-):	<u>0</u> (A)
3				Total Number of Domin	
4				Species Across All Stra	ata: <u>1</u> (B)
Sapling/Shrub Stratum (Plot size: 15 ft r				Percent of Dominant Sp That Are OBL, FACW, o	
1				Prevalence Index wor	ksheet:
3.					Multiply by:
4.					x 1 = 0
5		·			x 2 = 0
5.0		= Total C	over		x 3 = 0
Herb Stratum (Plot size: 5 ft r)	45	~	UPL	FACU species 20 UPL species 53	
1. Thinopyrum intermedium 2. Elymus repens	10		FACU	Column Totals: 73	
3. Schedonorus pratensis	10		FACU	Column Totals. 70	(A) <u>345</u> (B)
4 Unidentified forb	10		1700	Prevalence Index	= B/A = <u>4.73</u>
5 Trifolium arvense	8		UPL	Hydrophytic Vegetation	
6				1 - Rapid Test for H	
7				2 - Dominance Tes	
8				3 - Prevalence Inde	
9					Adaptations ¹ (Provide supporting s or on a separate sheet)
10					phytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size: 30 ft r) 1		= Total C		¹ Indicators of hydric soi be present, unless distu	il and wetland hydrology must urbed or problematic.
2 % Bare Ground in Herb Stratum 17				Hydrophytic Vegetation Present? Yes	s No
Remarks: No evidence for a hydrophytic veget	ation c	ommu	inity obs	erved.	

SOIL Sampling Point: DP07u

	-					or confirm	n the absence of indicate	ors.)
Depth (inches)	Matrix Color (moist)	<u></u> %	Color (moist)	x Features %	Type ¹	Loc ²	Texture	Remarks
0 - 7	10YR 4/2	100	COICI (IIIOIOI)		. 100		Silty Clay Loam	romano
7 - 17	10YR 4/2	100					Sandy Loam	
	1011(4/2						Januy Loani	
	-							
	-							
	_							
-								
-								
¹Tvpe: C=C	oncentration, D=Dep	oletion. RM=F	Reduced Matrix. C	S=Covered	or Coate	d Sand G	rains. ² Location: PL=	Pore Lining, M=Matrix.
	Indicators: (Applic						Indicators for Proble	
Histosol	(A1)		Sandy	Gleyed Mat	rix (S4)		1 cm Muck (A9) (LRR I, J)
	pipedon (A2)			Redox (S5)				lox (A16) (LRR F, G, H)
	istic (A3)			d Matrix (S6	,		Dark Surface (S7	, , , , , , , , , , , , , , , , , , , ,
	en Sulfide (A4) d Layers (A5) (LRR	E)		Mucky Mine Gleyed Mat	. ,		High Plains Depre	de of MLRA 72 & 73)
	uck (A9) (LRR F, G,			ed Matrix (F			Reduced Vertic (I	,
	d Below Dark Surfac			Dark Surfac	,		Red Parent Mate	,
	ark Surface (A12)			ed Dark Sur			Very Shallow Dar	
	Mucky Mineral (S1)	(00) (I DD 0		Depression	. ,	40)	Other (Explain in	
2.5 cm Mucky Peat or Peat (S2) (LRR G, H) High Plains Depressions 5 cm Mucky Peat or Peat (S3) (LRR F) (MLRA 72 & 73 of LR							³ Indicators of hydroph	ytic vegetation and must be present,
3 cm wit	ucky real or real (o	(LIXIX I)	(IAIT	.NA 12 & 1.	J OI LININ	. 11)	unless disturbed	
Restrictive	Layer (if present):							<u>'</u>
Type:								
Depth (in	ches):						Hydric Soil Present?	Yes No
Remarks:							1	
No hydr	ic soil indica	tors obs	erved					
110 119 011								
HYDROLO	GY							
Wetland Hy	drology Indicators	<u> </u>						
_	cators (minimum of		check all that app	y)			Secondary Indicato	rs (minimum of two required)
Surface	Water (A1)		Salt Crust	(B11)			Surface Soil C	acks (B6)
High Wa	ater Table (A2)		Aquatic Ir	vertebrates	(B13)			tated Concave Surface (B8)
Saturation	on (A3)		Hydrogen	Sulfide Ode	or (C1)		Drainage Patte	rns (B10)
Water M	larks (B1)		Dry-Seas	on Water Ta	able (C2)		Oxidized Rhizo	spheres on Living Roots (C3)
	nt Deposits (B2)		Oxidized	•	es on Liv	ing Roots	• •	,
	posits (B3)		,	not tilled)			Crayfish Burro	, ,
Algal Ma	at or Crust (B4)		Presence		•	1)		ble on Aerial Imagery (C9)
	't- (D.E.)		The bar N Accord					DSITION (D2)
Iron Dep		Imagani (DZ)	Thin Mucl	•	,		Geomorphic Po	
Iron Dep	ion Vis ble on Aerial	Imagery (B7)		•	,		FAC-Neutral T	est (D5)
Iron Dep Inundati Water-S	on Vis ble on Aerial Stained Leaves (B9)	Imagery (B7)		•	,		FAC-Neutral T	
Iron Dep Inundati Water-S Field Obser	on Vis ble on Aerial stained Leaves (B9) vations:		Other (Ex	plain in Ren	marks)		FAC-Neutral T	est (D5)
Iron Dep Inundati Water-S Field Obser Surface Wat	on Vis ble on Aerial stained Leaves (B9) vations: ter Present?	∕es N	Other (Ex	plain in Ren	narks)		FAC-Neutral T	est (D5)
Iron Dep Inundati Water-S Field Obser Surface Wat Water Table	on Vis ble on Aerial Stained Leaves (B9) vations: er Present?	/es N /es N	Other (Ex	ches):	narks)	_	FAC-Neutral T Frost-Heave H	est (D5) ummocks (D7) (LRR F)
Iron Dep Inundati Water-S Field Obser Surface Wat Water Table Saturation P (includes cap	con Vis ble on Aerial Stained Leaves (B9) vations: ter Present? Present? versent? pillary fringe)	/es N /es N /es N	Other (Ex	ches): ches):	narks)	Wetl	FAC-Neutral T Frost-Heave H And Hydrology Present?	est (D5) ummocks (D7) (LRR F)
Iron Dep Inundati Water-S Field Obser Surface Wat Water Table Saturation P (includes cap	on Vis ble on Aerial Stained Leaves (B9) vations: ter Present? Present?	/es N /es N /es N	Other (Ex	ches): ches):	narks)	Wetl	FAC-Neutral T Frost-Heave H And Hydrology Present?	est (D5) ummocks (D7) (LRR F)
Iron Dep Inundati Water-S Field Obser Surface Wat Water Table Saturation P (includes cap Describe Re	con Vis ble on Aerial Stained Leaves (B9) vations: ter Present? Present? versent? pillary fringe)	/es N /es N /es N	Other (Ex	ches): ches):	narks)	Wetl	FAC-Neutral T Frost-Heave H And Hydrology Present?	est (D5) ummocks (D7) (LRR F)
Iron Dep Inundati Water-S Field Obser Surface Wat Water Table Saturation P (includes cap Describe Re	con Vis ble on Aerial Stained Leaves (B9) vations: der Present? Present? veresent? pillary fringe) corded Data (stream	/es N /es N /es N n gauge, mor	Other (Ex	ches): ches): ches): photos, pre	narks)	Wetl	FAC-Neutral T Frost-Heave H And Hydrology Present?	est (D5) ummocks (D7) (LRR F)
Iron Dep Inundati Water-S Field Obser Surface Wat Water Table Saturation P (includes cap Describe Re	con Vis ble on Aerial Stained Leaves (B9) vations: ter Present? Present? versent? pillary fringe)	/es N /es N /es N n gauge, mor	Other (Ex	ches): ches): ches): photos, pre	narks)	Wetl	FAC-Neutral T Frost-Heave H And Hydrology Present?	est (D5) ummocks (D7) (LRR F)

Project/Site: JTX Tunnicliff	(Citv/Cour	ntv: Big Hori	n County	Sampling Date: 2023-06-14		
Applicant/Owner: MDT		-	-	State: Montana Sampling Point: DP07w			
		Section, Township, Range: S33 T1N R33E					
Landform (hillslope, terrace, etc.): Depression					e Slone (%): 5		
					Datum: NAD 83		
Soil Map Unit Name: Hff - Haverson silty clay, thick s				NWI classific			
Are climatic / hydrologic conditions on the site typical for this							
Are Vegetation, Soil, or Hydrologys	•	-		·	oresent? Yes <u> </u>		
Are Vegetation, Soil, or Hydrology n				eeded, explain any answe	,		
SUMMARY OF FINDINGS – Attach site map	snowing	sampi	ing point i	ocations, transects	, important features, etc.		
	o o		the Sampled		No		
Sample point located within wetland VEGETATION – Use scientific names of plan							
VEGETATION - Ose scientific flames of plant	Absolute	Domina	ınt Indicator	Dominance Test work	sheet:		
Tree Stratum (Plot size:) 1	% Cover	Species	Status	Number of Dominant S That Are OBL, FACW, (excluding FAC-):	pecies		
2				Total Number of Domin Species Across All Stra	ant		
Sapling/Shrub Stratum (Plot size:) 1.			Cover	Percent of Dominant Sp That Are OBL, FACW,			
2.			<u> </u>	Prevalence Index wor	ksheet:		
3.					Multiply by:		
4.					x 1 = 3		
5					x 2 = 74		
Harl Obstance (Districts		= Total C	Cover	FAC species 0 FACU species 37	x 3 = 0		
Herb Stratum (Plot size:) 1. Alopecurus arundinaceus	25	/	FACW	UPL species 0			
2. Elymus repens	20		FACU	Column Totals: 77			
3. Cirsium arvense	15		FACU				
4. Alopecurus pratensis	5		FACW	Prevalence Index			
_{5.} Juncus balticus	5		FACW	Hydrophytic Vegetation			
6. Schoenoplectus pungens	3		OBL	1 - Rapid Test for F 2 - Dominance Tes			
7. Phalaris arundinacea	2		FACW	✓ 3 - Prevalence Inde			
8. Helianthus annuus	2		FACU_		Adaptations ¹ (Provide supporting		
9				data in Remarks	s or on a separate sheet)		
10				Problematic Hydro	phytic Vegetation ¹ (Explain)		
Woody Vine Stratum (Plot size:) 1		= Total C		¹ Indicators of hydric soi be present, unless distu	l and wetland hydrology must urbed or problematic.		
2 % Bare Ground in Herb Stratum 23				Hydrophytic Vegetation Present? Ye	s No		
Remarks: Evidence of hydrophytic vegetation	include	s a pr	evalence	e index below th	iree.		

SOIL Sampling Point: DP07w

Profile Desc	ription: (Describe	to the de	pth needed to docui	ment the	indicator	or confirm	n the absence of in	ndicators.)		
Depth	Matrix		Redo	x Feature	es					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	<u>Texture</u>	Remarks		
0 - 10	10YR 4/2	85	7.5R 3/4	15	<u>C</u>		Sandy Clay Loam			
10 - 16	2.5YR 4/2	95	7.5YR 5/8	5	С	М	Loamy Sand			
-										
				_	_					
	-					· ———				
				_						
			I=Reduced Matrix, CS			ed Sand G		n: PL=Pore Lining, M=Matrix.		
Hydric Soil I	ndicators: (Appli	cable to al	I LRRs, unless othe	rwise no	ted.)		Indicators for F	Problematic Hydric Soils ³ :		
Histosol	` '		Sandy (-	. ,			(A9) (LRR I, J)		
-	pipedon (A2)		Sandy I					ie Redox (A16) (LRR F, G, H)		
Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1)								ce (S7) (LRR G)		
	n Sulfide (A4)			-			_	Depressions (F16)		
	Layers (A5) (LRR				latrix (F2)		`	outside of MLRA 72 & 73)		
	ick (A9) (LRR F, G, d Below Dark Surfa			d Matrix Dark Surf	. ,		Reduced V	ertic (F18) : Material (TF2)		
	ark Surface (A12)	CC (ATT)			urface (F7	')		w Dark Surface (TF12)		
	lucky Mineral (S1)			Depression		,		ain in Remarks)		
	lucky Peat or Peat	(S2) (LRR			essions (F	- 16)		drophytic vegetation and		
	cky Peat or Peat (S				73 of LRF			Irology must be present,		
							unless distu	urbed or problematic.		
Restrictive L	ayer (if present):									
Type:										
Depth (inc	ches):						Hydric Soil Pres	sent? Yes 🔽 No		
Remarks:							<u>'</u>			
Dromine	nt redovimo	rnhic c	oncentration	e com	mon v	vithin t	ha danlatad	matriy		
1 TOTTITIC	iit redoxiiiio	i priic c	oncentiation	3 COII	iiiioii v	VICIIIII C	ile depleted	matrix.		
	CV									
HYDROLO										
-	drology Indicators									
-		one require	ed; check all that appl	-				dicators (minimum of two required)		
<u>✓</u> Surface			Salt Crust					Soil Cracks (B6)		
_	iter Table (A2)		Aquatic In				Sparsely Vegetated Concave Surface (B8)			
<u>✓</u> Saturatio			Hydrogen				=	e Patterns (B10)		
	arks (B1)		Dry-Seaso					Rhizospheres on Living Roots (C3)		
	nt Deposits (B2)		Oxidized F			ing Roots	, ,	e tilled)		
-	oosits (B3)			not tilled				Burrows (C8)		
_	it or Crust (B4)		Presence		•	4)		on Visible on Aerial Imagery (C9)		
	osits (B5)		Thin Muck		' '			phic Position (D2)		
mundand	on Vis ble on Aerial	Imagery (E	37) Other (Exp	olain in R	emarks)			utral Test (D5)		
	tained Leaves (B9)						Frost-He	ave Hummocks (D7) (LRR F)		
Field Observ			N 5 11 11							
Surface Water			No Depth (in							
Water Table			No Depth (in			— I				
Saturation Pr (includes cap		Yes	No Depth (in	ches): <u>9</u>		Wet	land Hydrology Pre	esent? Yes V No No		
		n gauge, m	onitoring well, aerial	photos, p	revious ins	spections),	, if available:			
	•	-	-			,				
Remarks:										
Evidence of w	etland hydrology vis	ible in soil s	aturation to 9 inches,	surface w	ater preser	nt in the plo	ot, inundation visible o	on aerial imagery, Dry-season water		
			, and the geomorphic		-	-				

Project/Site: JTX Tunnicliff	(Citv/Coun	tv: Big Hori	n County	Sampling Date: 2023-06-14
Applicant/Owner: MDT		-	-		Sampling Point: DP08/09u
• •				nge: S16 T1N R33E	
Landform (hillslope, terrace, etc.): Floodplain					Slope (%): 3
					Datum: NAD 83
Soil Map Unit Name: Hff - Haverson silty clay, thick:				NWI classific	
Are climatic / hydrologic conditions on the site typical for this					
Are Vegetation, Soil, or Hydrologys	-				oresent? Yes <u> </u>
Are Vegetation, Soil, or Hydrology n				eeded, explain any answe	
SUMMARY OF FINDINGS – Attach site map	showing	sampli	ng point l	ocations, transects	, important features, etc.
Hydrophytic Vegetation Present? Yes N. Hydric Soil Present? Yes N. Wetland Hydrology Present? Yes N. Remarks:	o <u> </u>		the Sampled		No
Upland sample point adjacent to DP- VEGETATION – Use scientific names of plan		w and	wetland	l cell 8/9.	
VEGETATION OSC SCIONANIO NAMICS OF Plan	Absolute	Dominar	nt Indicator	Dominance Test work	sheet:
Tree Stratum (Plot size: 30 ft r) 1	% Cover	Species'	? Status	Number of Dominant S That Are OBL, FACW, (excluding FAC-):	pecies
2				Total Number of Domin Species Across All Stra	ant
4			over	·	
Sapling/Shrub Stratum (Plot size: 15 ft r)			Ovei	Percent of Dominant Sport Are OBL, FACW,	
2.				Prevalence Index wor	
3.					Multiply by:
4					x 1 = 0
5	-			-	x 2 = 0 x 3 = 0
Herb Stratum (Plot size: 5 ft r)		= Total Co	over	FAC species 0 22	
1. Thinopyrum intermedium	55	~	UPL	UPL species 55	$x = \frac{1}{275}$
2. Schedonorus pratensis	10		FACU	Column Totals: 77	(A) 363 (B)
3. Chenopodium album	5		FACU		(, (,,,,,,,,
4. Taraxacum officinale	5	-	FACU	Prevalence Index	
5. Bromus arvensis	1		FACU	Hydrophytic Vegetation	
6. Sisymbrium altissimum 7.	1		FACU	1 - Rapid Test for I	et is >50%
8.				3 - Prevalence Inde	
9.				4 - Morphological A	Adaptations ¹ (Provide supporting s or on a separate sheet)
10					phytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size: 30 ft r)		= Total Co		<u> </u>	l and wetland hydrology must
2 % Bare Ground in Herb Stratum 23				Hydrophytic Vegetation Present? Ye	s No
No evidence of a hydrophytic vegeta	ation co	mmur	nity pres	ent.	

SOIL Sampling Point: DP08/09u

	ription: (Describe	to the depth n	eeded to document the indicator or o	confirm the abs	ence of indicators.)
Depth (inches)	Matrix Color (moist)	<u></u> % (Redox Features Color (moist) % Type ¹ I	Loc ² Textu	re Remarks
(inches) 0 - 1	10YR 5/2	100	ouoi (muist) <u>76 Type T</u>	Loc rextu Loam	Tellidiks
1 - 10	10 YR 4/2	100		Clay Lo	
1 10	101R 4/2	100		Clay LC	DdIII
-					
-					
¹Type: C=Co	ncentration D=Den	letion RM=Red	duced Matrix, CS=Covered or Coated S	Sand Grains	² Location: PL=Pore Lining, M=Matrix.
			Rs, unless otherwise noted.)		ators for Problematic Hydric Soils ³ :
Histosol			Sandy Gleyed Matrix (S4)		cm Muck (A9) (LRR I, J)
	ipedon (A2)		Sandy Redox (S5)		Coast Prairie Redox (A16) (LRR F, G, H)
Black His			Stripped Matrix (S6)		Park Surface (S7) (LRR G)
	n Sulfide (A4)		Loamy Mucky Mineral (F1)	H	ligh Plains Depressions (F16)
	Layers (A5) (LRR I	•	Loamy Gleyed Matrix (F2)	-	(LRR H outside of MLRA 72 & 73)
	ck (A9) (LRR F, G, l l Below Dark Surfac		Depleted Matrix (F3)Redox Dark Surface (F6)		Reduced Vertic (F18) Red Parent Material (TF2)
	rk Surface (A12)	0 (/ 11 1)	Depleted Dark Surface (F7)		ery Shallow Dark Surface (TF12)
	ucky Mineral (S1)		Redox Depressions (F8)		Other (Explain in Remarks)
	lucky Peat or Peat (ators of hydrophytic vegetation and
5 cm Mu	cky Peat or Peat (S	3) (LRR F)	(MLRA 72 & 73 of LRR H)		etland hydrology must be present,
Postrictive I	.ayer (if present):			u I	nless disturbed or problematic.
	ayer (ii present).				
Depth (inc			-	Hydric	Soil Present? Yes No
Remarks:			-	Tiyani	NO NO
No evide	ence of a hyd	iric soil pi	esent.		
HYDROLO	GY				
Wetland Hyd	Irology Indicators:				
Primary Indic	ators (minimum of c	ne required; ch	eck all that apply)	<u>Sec</u>	condary Indicators (minimum of two required)
Surface	Water (A1)		Salt Crust (B11)		Surface Soil Cracks (B6)
<u> </u>	ter Table (A2)		Aquatic Invertebrates (B13)		Sparsely Vegetated Concave Surface (B8)
Saturatio			Hydrogen Sulfide Odor (C1)		Drainage Patterns (B10)
Water M			Dry-Season Water Table (C2)		Oxidized Rhizospheres on Living Roots (C3)
	t Deposits (B2)		Oxidized Rhizospheres on Living	Roots (C3)	(where tilled)
	osits (B3) t or Crust (B4)		(where not tilled) Presence of Reduced Iron (C4)		Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9)
_	osits (B5)		Thin Muck Surface (C7)	·	Geomorphic Position (D2)
	on Vis ble on Aerial I	magery (B7)	Other (Explain in Remarks)	~	FAC-Neutral Test (D5)
	ained Leaves (B9)				Frost-Heave Hummocks (D7) (LRR F)
Field Observ	<u> </u>				. , , , ,
Surface Water	er Present? Y	es No _	Depth (inches):		
Water Table			Depth (inches):		
Saturation Pr	esent? Y	es No _	Depth (inches):	Wetland Hydr	ology Present? Yes No
		gauge, monito	ring well, aerial photos, previous inspec	ctions), if availab	le:
Dame - di					
Remarks:					
No evide	ence of wetla	and hydro	logy observed.		

Project/Site: JTX Tunnicliff		City/C	ounty:	Big Horr	n County	Sampling	Date:	2023-	06-14
Applicant/Owner: MDT					State: Montana	Sampling	Point:	DP08/	09w
Investigator(s): R. Jones		Sectio	n, To	wnship, Ra	nge: S33 T1N R33E				
Landform (hillslope, terrace, etc.): Floodplain		Local	relief	(concave,	convex, none): Concav	е	Slor	pe (%):	2
Subregion (LRR): G 58A	_ Lat: 45.	8380	92		Long: -107.599431		Datur	m: NAI	D 83
Soil Map Unit Name: Ks - Kyle silty clay, 0 to 2 perce	nt slopes	;			NWI classific	ation: No	t mapp	oed	
Are climatic / hydrologic conditions on the site typical for this	s time of yea	ar? Y	es'	✓ No	(If no, explain in R	emarks.)			
Are Vegetation, Soil, or Hydrologys	ignificantly	disturt	ed?	Are "	Normal Circumstances" p	resent?	Yes	No)
Are Vegetation, Soil, or Hydrologyn	aturally pro	blema	tic?	(If ne	eded, explain any answe	rs in Rema	arks.)		
SUMMARY OF FINDINGS – Attach site map	showing	sam	plin	g point le	ocations, transects	, import	tant fe	atures	s, etc.
	0		with	e Sampled in a Wetlar	nd? Yes	No		-	
Sample point located within wetland		9.							
VEGETATION – Use scientific names of plant									
<u>Tree Stratum</u> (Plot size: <u>30 ft r</u>) 1 2		Spec	cies?	Status	Number of Dominant S That Are OBL, FACW, (excluding FAC-):	pecies or FAC	2		(A)
3. 4.	<u> </u>				Total Number of Domir Species Across All Stra		3		(B)
Sapling/Shrub Stratum (Plot size: 15 ft r) 1					Percent of Dominant S That Are OBL, FACW,		66.67		(A/B)
2.					Prevalence Index wor	ksheet:			
3.					Total % Cover of:				_
4						x 1			
5					FACW species 65 FAC species 0				
Herb Stratum (Plot size: 5 ft r)		= Tota	al Cov	er	FAC species 0 23				_
1. Alopecurus arundinaceus	35	·	,	FACW	UPL species 0		5 = 0		_
2. Alopecurus pratensis	20	-	/	FACW	Column Totals: 88				– (B)
3. Elymus repens	20		/	FACU			<u></u>		_
4. Juncus torreyi	10			FACW	Prevalence Index				
5. Polygonum douglasii	3			FACU	Hydrophytic Vegetation			otion	
6					1 - Rapid Test for I ✓ 2 - Dominance Tes		c vegeta	ation	
7					✓ 3 - Prevalence Inde				
8	<u> </u>				4 - Morphological A			ide sunr	oorting
9					data in Remark	s or on a s	eparate	sheet)	701 til 19
10	~~				Problematic Hydro	phytic Veg	jetation ¹	(Explain	n)
Woody Vine Stratum (Plot size: 30 ft r) 1		= Tota			¹ Indicators of hydric so be present, unless dist				ıust
2					Hydrophytic				
% Bare Ground in Herb Stratum 12		= Tota	al Cov	rer	Vegetation Present? Ye	s	No		
Evidence of hydrophytic vegetation index below three.	include	s a	pos	itive do	ominance test a	nd a pı	revale	ence	

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SOIL Sampling Point: DP08/09w

Depth	Matrix		pth needed to docu Redo	ox Feature				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0 - 9	10YR 4/2	80	7.5YR 4/6	20	<u>C</u>		Clay Loam	
9 - 18	10YR 4/2	90	7.5YR 4/6	10	С		Sandy Clay Loam	
9 - 18			N 2.5/0	1		М		
_						-	-	
			-				·	
	-						- <u> </u>	
-								
-								
-						-	<u> </u>	
Type: C=C	oncentration, D=De	pletion, RN	M=Reduced Matrix, C	S=Covere	ed or Coate	d Sand G		: PL=Pore Lining, M=Matrix.
lydric Soil	Indicators: (Applie	cable to a	II LRRs, unless othe	rwise no	ted.)		Indicators for F	Problematic Hydric Soils ³ :
Histoso	` '		Sandy				1 cm Muck	
	pipedon (A2)		Sandy					e Redox (A16) (LRR F, G, H)
	istic (A3)		Strippe	,	,			ce (S7) (LRR G)
	en Sulfide (A4)	-\			ineral (F1)		_	Depressions (F16)
	d Layers (A5) (LRR				fatrix (F2)		`	outside of MLRA 72 & 73)
	uck (A9) (LRR F, G, d Below Dark Surfac		<u>✓</u> Deplete	ed Matrix Dark Surl	` ,		Reduced Ve	ertic (F18) Material (TF2)
	ark Surface (A12)	CE (AII)	_		urface (F6)			w Dark Surface (TF12)
	Mucky Mineral (S1)			Depressi	•	1		ain in Remarks)
	Mucky Peat or Peat	(S2) (LRR				16)		drophytic vegetation and
	ucky Peat or Peat (S				73 of LRR		•	rology must be present,
	, , , , , , , , , , , , , , , , , , , ,	- / (,			,		irbed or problematic.
Restrictive	Layer (if present):							
Type:								
	iches):		<u></u>				Hydric Soil Pres	sent? Yes <u> </u>
							Hydric Soil Pres	sent? Yes <u> </u>
Depth (in Remarks:	iches):			ommoi	a within	the de		
Depth (in Remarks:	iches):			ommoi	n within	the de		for all horizons.
Depth (in Remarks: Promine	nt redoximorp			ommoi	n within	the de		
Depth (in Remarks: Promine	nt redoximorp	ohic coi		ommoi	n within	the de		
Depth (in Remarks: Promine YDROLO Vetland Hy	nt redoximorp OGY drology Indicators	ohic coi	ncentrations co		n within	the de	epleted matrix	for all horizons.
Depth (in Remarks: Promine YDROLC Vetland Hy	nt redoximorp OGY rdrology Indicators cators (minimum of	ohic coi	ncentrations co	oly)	n within	the de	epleted matrix	for all horizons.
Depth (in Remarks: Promine YDROLO Vetland Hy Primary Indi ✓ Surface	nt redoximorp OGY drology Indicators cators (minimum of	ohic coi	ed; check all that app	oly) t (B11)		the de	epleted matrix Secondary In Surface S	for all horizons. dicators (minimum of two required Soil Cracks (B6)
Depth (in Remarks: Promine YDROLO Vetland Hy Primary Indi Surface High W.	nt redoximorp OGY rdrology Indicators cators (minimum of a Water (A1) ater Table (A2)	ohic coi	ed; check all that app Salt Crust	oly) t (B11) nvertebrat	es (B13)	the de	Secondary In Surface S Sparsely	for all horizons. dicators (minimum of two required Soil Cracks (B6) Vegetated Concave Surface (B8)
Depth (in Remarks: Promine YDROLC Vetland Hy Primary Indi Y Surface High W Saturati	nt redoximorp OGY rdrology Indicators cators (minimum of a Water (A1) ater Table (A2) ion (A3)	ohic coi	ed; check all that app Salt Crust Aquatic Ir Hydrogen	oly) t (B11) nvertebrat i Sulfide C	es (B13) Odor (C1)		Secondary In Surface S Sparsely Drainage	dicators (minimum of two required Soil Cracks (B6) Vegetated Concave Surface (B8) Patterns (B10)
Depth (in Remarks: Promine YDROLC Wetland Hy Primary Indi Surface High W. Saturati Water N	nt redoximorp OGY Idrology Indicators cators (minimum of a Water (A1) ater Table (A2) ion (A3) Marks (B1)	ohic coi	ed; check all that app Salt Crust Aquatic Ir Hydrogen Dry-Sease	oly) t (B11) nvertebrat i Sulfide C on Water	es (B13) Odor (C1) Table (C2)		Secondary In Surface S Sparsely Drainage Oxidized	dicators (minimum of two required Soil Cracks (B6) Vegetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (C
Depth (in Remarks: Promine YDROLO Wetland Hy Primary Indi Surface High W. Saturati Water M. Sedime	nt redoximorp OGY Idrology Indicators cators (minimum of all Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2)	ohic coi	ed; check all that app Salt Crust Aquatic Ir Hydrogen Dry-Sease Oxidized	oly) t (B11) nvertebrat n Sulfide C on Water Rhizosph	es (B13) Odor (C1) Table (C2) eres on Liv		Secondary In Surface S Sparsely Drainage Oxidized S (C3) (where	for all horizons. dicators (minimum of two required Soil Cracks (B6) Vegetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (Cotilled)
Depth (in Remarks: Promine YDROLO Wetland Hy Primary Indi Surface High W. Saturati Water M. Sedime Drift De	nt redoximorp OGY Indicators Cators (minimum of all Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3)	ohic coi	ed; check all that app Salt Crust Aquatic Ir Hydrogen Dry-Sease V Oxidized (where	oly) t (B11) nvertebrat n Sulfide C on Water Rhizosph not tilled	es (B13) Odor (C1) Table (C2) eres on Liv	ing Roots	Secondary In Surface S Sparsely Drainage Oxidized S (C3) (where	for all horizons. dicators (minimum of two required Soil Cracks (B6) Vegetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (Cetilled) Burrows (C8)
Depth (in Remarks: Promine YDROLO Wetland Hy V Surface High W. V Saturati Water N Sedime Drift De Algal M	nt redoximorp OGY redrology Indicators cators (minimum of an	ohic coi	ed; check all that app Salt Crust Aquatic Ir Hydrogen Dry-Sease V Oxidized (where Presence	oly) t (B11) nvertebrat s Sulfide C on Water Rhizosph not tilled	es (B13) Odor (C1) Table (C2) eres on Liv I) eed Iron (C4	ing Roots	Secondary In Surface S Sparsely Drainage Oxidized (where Crayfish Saturatio	dicators (minimum of two required Soil Cracks (B6) Vegetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (Cotilled) Burrows (C8) n Visible on Aerial Imagery (C9)
Depth (in Remarks: Promine YDROLO Wetland Hy Primary Indi Surface High W. Saturati Water N Sedime Drift De Algal M Iron De	nt redoximorp OGY Ordrology Indicators cators (minimum of ordrology Indicators) Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5)	ohic con	ed; check all that app Salt Crust Aquatic Ir Hydrogen Dry-Sease Oxidized (where Presence Thin Mucl	t (B11) nvertebrat n Sulfide Con Water Rhizosph not tilled of Reduce	es (B13) Odor (C1) Table (C2) eres on Liv Ode (C4)	ing Roots	Secondary In Surface S Sparsely Drainage Oxidized (where Crayfish Saturatio	dicators (minimum of two required Soil Cracks (B6) Vegetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (Cetilled) Burrows (C8) In Visible on Aerial Imagery (C9) Shic Position (D2)
Depth (in Remarks: Promine YDROLC Wetland Hy Primary Indi Surface High W. Saturati Water N Sedime Drift De Algal M Iron De Inundat	nt redoximorp OGY rdrology Indicators cators (minimum of a Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Vis ble on Aerial	ohic con	ed; check all that app Salt Crust Aquatic Ir Hydrogen Dry-Sease Oxidized (where Presence Thin Mucl	t (B11) nvertebrat n Sulfide Con Water Rhizosph not tilled of Reduce	es (B13) Odor (C1) Table (C2) eres on Liv Ode (C4)	ing Roots	Secondary In Surface S Sparsely Drainage Oxidized (where Crayfish Saturation FAC-Neu	dicators (minimum of two required Soil Cracks (B6) Vegetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (Catilled) Burrows (C8) In Visible on Aerial Imagery (C9) In Visible on CD2) Intral Test (D5)
Depth (in Remarks: Promine YDROLC Wetland Hy Primary Indi Surface High W. Saturati Water N Sedime Drift De Algal M Iron De Inundat Water-S	nt redoximorp OGY Idrology Indicators Cators (minimum of experiment) Water (A1) Idrology Indicators Water (A2) Idrology Indicators Water (A1) Idrology Indicators Water (A1) Idrology Indicators Experiment Idrology Indicators Cators (minimum of experiment) Idrology Indicators Experiment Idrology Indicators Cators (Minimum of experiment) Idrology Indicators Idrology Indica	ohic con	ed; check all that app Salt Crust Aquatic Ir Hydrogen Dry-Sease Oxidized (where Presence Thin Mucl	t (B11) nvertebrat n Sulfide Con Water Rhizosph not tilled of Reduce	es (B13) Odor (C1) Table (C2) eres on Liv Ode (C4)	ing Roots	Secondary In Surface S Sparsely Drainage Oxidized (where Crayfish Saturation FAC-Neu	dicators (minimum of two required Soil Cracks (B6) Vegetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (C3 tilled) Burrows (C8) n Visible on Aerial Imagery (C9) ohic Position (D2)
Depth (in Remarks: Promine YDROLO Wetland Hy Visurface High Wi Visurface Sedime Drift De Algal M Iron De Vinundat Water-S Field Observing	nt redoximorp OGY Idrology Indicators cators (minimum of a Water (A1) ater Table (A2) ion (A3) Marks (B1) int Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Vis ble on Aerial Stained Leaves (B9) rvations:	chic cor	ed; check all that app Salt Crust Aquatic Ir Hydrogen Dry-Sease V Oxidized (where Presence Thin Mucl	oly) t (B11) nvertebrat Sulfide C on Water Rhizosph not tilled of Reduct k Surface cplain in R	es (B13) Ddor (C1) Table (C2) eres on Liv Ddor (C4 (C7) emarks)	ing Roots	Secondary In Surface S Sparsely Drainage Oxidized (where Crayfish Saturation FAC-Neu	dicators (minimum of two required Soil Cracks (B6) Vegetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (Catilled) Burrows (C8) In Visible on Aerial Imagery (C9) In Visible on (D2) Intral Test (D5)
Depth (in Remarks: Promine YDROLC Wetland Hy Primary Indi Surface High W. Saturati Water N Sedime Drift De Algal M Iron De Inundat Water-S Field Obsel	nt redoximorp OGY redrology Indicators cators (minimum of an	ehic con	ed; check all that app Salt Crust Aquatic Ir Hydrogen Dry-Sease V Oxidized (where Presence Thin Mucl	oly) t (B11) nvertebrat s Sulfide C on Water Rhizosph not tilled of Reduc k Surface splain in R	es (B13) Odor (C1) Table (C2) eres on Liv I) ed Iron (C4 (C7) emarks)	ing Roots	Secondary In Surface S Sparsely Drainage Oxidized (where Crayfish Saturation FAC-Neu	dicators (minimum of two required Soil Cracks (B6) Vegetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (Catilled) Burrows (C8) In Visible on Aerial Imagery (C9) In Visible on CD2) Intral Test (D5)
Depth (in Remarks: Promine YDROLC Wetland Hy Primary Indi Surface High W. Saturati Water N Sedime Drift De Algal M Iron De Inundat Water-S Field Obser Water Table	nt redoximorp OGY Indicators Cators (minimum of a water (A1) Indicator (A2) Indicator (B2) Indicator (B2) Indicator (B2) Indicator (B2) Indicator (B2) Indicator (B2) Indicator (B3) Indicator (B4) Indicator (B4	Imagery (ed; check all that app Salt Crust Aquatic Ir Hydrogen Dry-Sease V Oxidized (where Presence Thin Mucl B7) No Depth (ir	t (B11) nvertebrat Sulfide Con Water Rhizosph not tilled of Reduce k Surface cplain in R	es (B13) Odor (C1) Table (C2) eres on Liv I) ed Iron (C4 (C7) emarks)	ing Roots	Secondary In Surface S Sparsely Drainage Oxidized Crayfish Saturatio FAC-Neu Frost-He	dicators (minimum of two required Soil Cracks (B6) Vegetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (Cetilled) Burrows (C8) In Visible on Aerial Imagery (C9) In Position (D2) Intral Test (D5) Intral Te
Depth (in Remarks: Promine YDROLC Wetland Hy Primary Indi Surface High W. Saturati Water N Sedime Drift De Algal M Iron De Inundat Water-S Field Obset Surface Water Table Saturation F	nt redoximorp OGY rdrology Indicators cators (minimum of a water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Vis ble on Aerial Stained Leaves (B9) rvations: ter Present? Present?	Imagery (ed; check all that app Salt Crust Aquatic Ir Hydrogen Dry-Sease V Oxidized (where Presence Thin Mucl	t (B11) nvertebrat Sulfide Con Water Rhizosph not tilled of Reduce k Surface cplain in R	es (B13) Odor (C1) Table (C2) eres on Liv I) ed Iron (C4 (C7) emarks)	ing Roots	Secondary In Surface S Sparsely Drainage Oxidized (where Crayfish Saturation FAC-Neu	dicators (minimum of two required Soil Cracks (B6) Vegetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (Catilled) Burrows (C8) In Visible on Aerial Imagery (C9) In Position (D2) Intral Test (D5) Intral Te
Depth (in Remarks: Promine YDROLC Wetland Hy Primary Indi Surface High W. Saturati Water N Sedime Drift De Algal M Iron De Inundat Water-S Field Obsel Saturation Fincludes ca	nt redoximorp OGY Orology Indicators cators (minimum of orology Indicators) Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Vis ble on Aerial Stained Leaves (B9) rvations: ter Present? Present? Present?	Imagery (ed; check all that app Salt Crust Aquatic Ir Hydrogen Dry-Sease Oxidized (where Presence Thin Mucl B7) Other (Ex	t (B11) nvertebrate Sulfide Con Water Rhizosph not tilled of Reduce k Surface cplain in R	es (B13) Odor (C1) Table (C2) eres on Liv I) eed Iron (C4 (C7) emarks)	ing Roots	Secondary In Surface S Sparsely Drainage Oxidized Crayfish Saturatio FAC-Neu Frost-He	dicators (minimum of two required Soil Cracks (B6) Vegetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (Cetilled) Burrows (C8) In Visible on Aerial Imagery (C9) In Position (D2) Intral Test (D5) Intral Te
Depth (in Remarks: Promine Pro	nt redoximorp OGY Orology Indicators cators (minimum of orology Indicators) Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Vis ble on Aerial Stained Leaves (B9) rvations: ter Present? Present? Present?	Imagery (ed; check all that app Salt Crust Aquatic Ir Hydrogen Dry-Sease V Oxidized (where Presence Thin Mucl B7) No Depth (ir	t (B11) nvertebrate Sulfide Con Water Rhizosph not tilled of Reduce k Surface cplain in R	es (B13) Odor (C1) Table (C2) eres on Liv I) eed Iron (C4 (C7) emarks)	ing Roots	Secondary In Surface S Sparsely Drainage Oxidized Crayfish Saturatio FAC-Neu Frost-He	dicators (minimum of two required Soil Cracks (B6) Vegetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (Cetilled) Burrows (C8) In Visible on Aerial Imagery (C9) In Position (D2) Intral Test (D5) Intral Te
Depth (in Remarks: Promine Pro	nt redoximorp OGY Orology Indicators cators (minimum of orology Indicators) Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Vis ble on Aerial Stained Leaves (B9) rvations: ter Present? Present? Present?	Imagery (ed; check all that app Salt Crust Aquatic Ir Hydrogen Dry-Sease Oxidized (where Presence Thin Mucl B7) Other (Ex	t (B11) nvertebrate Sulfide Con Water Rhizosph not tilled of Reduce k Surface cplain in R	es (B13) Odor (C1) Table (C2) eres on Liv I) eed Iron (C4 (C7) emarks)	ing Roots	Secondary In Surface S Sparsely Drainage Oxidized Crayfish Saturatio FAC-Neu Frost-He	dicators (minimum of two required Soil Cracks (B6) Vegetated Concave Surface (B8) Patterns (B10) Rhizospheres on Living Roots (Cetilled) Burrows (C8) In Visible on Aerial Imagery (C9) In Position (D2) Intral Test (D5) Intral Te

Project/Site: JTX Tunnicliff	(City/Count	y: Big Horr	n County	Sampling Date: 2023-06-14
		-	-		Sampling Point: DP10/11u
Investigator(s): R. Jones	;	Section, T	ownship, Rai	nge: S28 T1N R33E	. •
					Slope (%): 0
					Datum: NAD 83
Soil Map Unit Name: Hfc - Haverson loam, saline				NWI classific	
Are climatic / hydrologic conditions on the site typical for this					
Are Vegetation, Soil, or Hydrologys	-				oresent? Yes No
Are Vegetation, Soil, or Hydrologyn				eded, explain any answe	rs in Remarks.)
SUMMARY OF FINDINGS – Attach site map	showing	samplii	ng point le	ocations, transects	, important features, etc.
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No Remarks:	o <u> </u>		he Sampled hin a Wetlar		No
Upland sample point adjacent to DP-	-10/11w	and w	vetland (cell 10/11.	
VEGETATION – Use scientific names of plan	ts.				
Tree Stratum (Plot size: 30 ft r	Absolute % Cover		nt Indicator Status	Dominance Test work Number of Dominant S	
1				That Are OBL, FACW, (excluding FAC-):	
3	<u> </u>			Total Number of Domin Species Across All Stra	
		= Total Co	over	Percent of Dominant Sp	
Sapling/Shrub Stratum (Plot size: 15 ft r) 1				That Are OBL, FACW,	
2.				Prevalence Index wor	
3					Multiply by:
4					x 1 = 0
5					x 2 = 0
E 64		= Total Co	over		x 3 = 0
Herb Stratum (Plot size: 5 ft r 1. Thinopyrum intermedium	65	~	UPL	UPL species 65	x 4 = 20
2 Taraxacum officinale	4		FACU	Column Totals: 70	(A) 345 (B)
3. Chenopodium album	1		FACU		
4				Prevalence Index	
5				Hydrophytic Vegetation	
6.				1 - Rapid Test for F	
7				2 - Dominance Tes	
8		-		3 - Prevalence Inde	
9				data in Remarks	Adaptations ¹ (Provide supporting s or on a separate sheet)
10				Problematic Hydro	phytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size: 30 ft r)		= Total Co		¹ Indicators of hydric soi be present, unless distu	l and wetland hydrology must
1		= Total Co		Hydrophytic Vegetation	s No
Remarks: No hydrophytic vegetation indicators					

SOIL Sampling Point: DP10/11u

	ription: (Describe	to the depth				oi contiffi	n the absence (or muicators.)
Depth (inches)	Matrix Color (moist)	<u></u> %	Color (moist)	x Features %	Type ¹	Loc ²	Texture	Remarks
0 - 14	10YR 4/2	100	20.0. (1110101)		.,,,,		Silty Clay Loam	· torrida
	10111 4/2							
-								
	-							
¹ Type: C=Co	ncentration, D=Dep	oletion, RM=R	educed Matrix, C	S=Covered	d or Coate	d Sand G	rains. ² Loca	ation: PL=Pore Lining, M=Matrix.
	ndicators: (Applic							for Problematic Hydric Soils ³ :
Histosol	(A1)		Sandy	Gleyed Ma	trix (S4)		1 cm M	uck (A9) (LRR I, J)
Histic Ep	ipedon (A2)			Redox (S5)				Prairie Redox (A16) (LRR F, G, H)
Black His	stic (A3)		Strippe	d Matrix (S	66)		Dark Sι	urface (S7) (LRR G)
	n Sulfide (A4)		-	Mucky Min			High Pla	ains Depressions (F16)
	Layers (A5) (LRR	•		Gleyed Ma	, ,		,	R H outside of MLRA 72 & 73)
	ck (A9) (LRR F, G ,			d Matrix (F	,			ed Vertic (F18)
	l Below Dark Surfac rk Surface (A12)	e (A11)		Dark Surfa	. ,			rent Material (TF2)
	ucky Mineral (S1)			d Dark Su Depressior	, ,		-	nallow Dark Surface (TF12) Explain in Remarks)
	lucky Peat or Peat ((S2) (LRR G .		ains Depre		16)		of hydrophytic vegetation and
	cky Peat or Peat (S			.RA 72 & 7				hydrology must be present,
	,	, ,	`			,		disturbed or problematic.
Restrictive L	ayer (if present):							•
Type: Co	bbles		<u></u>					
Depth (inc	thes): 14		<u></u>				Hydric Soil I	Present? Yes No
Remarks:	,							
No indica	ators of hyd	ric soil o	bserved.					
HYDROLO	GY							
Wetland Hyd	Irology Indicators:	<u> </u>						
	ators (minimum of o		check all that ann	v)			Secondar	ry Indicators (minimum of two required)
	Water (A1)	one required,	Salt Crust	•				ace Soil Cracks (B6)
	ter Table (A2)		Aguatic In	` '	c (D13)		<u> </u>	sely Vegetated Concave Surface (B8)
Saturatio	, ,		Hydrogen		` ,			nage Patterns (B10)
	arks (B1)		Dry-Seaso					ized Rhizospheres on Living Roots (C3)
	t Deposits (B2)		Oxidized F			ing Poots		here tilled)
	osits (B3)			not tilled)	ICS OII LIVI	ing ixoots		fish Burrows (C8)
	t or Crust (B4)		Presence		d Iron (C4	1)		ration Visible on Aerial Imagery (C9)
	osits (B5)		Thin Muck			')		morphic Position (D2)
	on Vis ble on Aerial	Imagery (R7)	Other (Ex					Neutral Test (D5)
	ained Leaves (B9)	illiagery (D1)	Other (LX	Jiaiii iii ixe	marks)			t-Heave Hummocks (D7) (LRR F)
Field Observ							11000	Tricave Hammooks (B7) (ERRT)
Surface Water		/os No	Depth (in	choc):				
			Depth (in					
Water Table							and Usedneless	Present? Yes No
Saturation Pr (includes cap		res No	Depth (in	cnes):		_ weti	and Hydrology	Present? Yes No
	corded Data (stream	n gauge, moni	toring well, aerial	photos, pre	evious ins	pections),	if available:	
Remarks:								
No evide	ence of wetla	and hydr	ology obse	rved.				

Project/Site: JTX Tunnicliff	(City/Count	_{ty:} Big Hori	n County	Sampling Date: 2023-06-14
Applicant/Owner: MDT		-	-		Sampling Point: DP10/11w
• •				nge: S33 T1N R33E	. 0
Landform (hillslope, terrace, etc.): Floodplain					e Slope (%): 1
					Datum: NAD 83
Soil Map Unit Name: Nm - Nunn silty clay loam, 0 to					
Are climatic / hydrologic conditions on the site typical for this					
Are Vegetation, Soil, or Hydrologys	-				present? Yes No
Are Vegetation, Soil, or Hydrologyn				eeded, explain any answe	
SUMMARY OF FINDINGS – Attach site map				ocations, transects	, important features, etc.
	o o o		he Sampled hin a Wetlar		No
Sample point located within wetland		/11.			
VEGETATION – Use scientific names of plan				,	
<u>Tree Stratum</u> (Plot size: <u>30 ft r</u>) 1 2		Species?		Number of Dominant S That Are OBL, FACW, (excluding FAC-):	pecies
3				Total Number of Domin Species Across All Stra	ant
Sapling/Shrub Stratum (Plot size: 15 ft r)			over	Percent of Dominant St That Are OBL, FACW,	
2.				Prevalence Index wor	
3.					Multiply by:
4					x 1 = 5 x 2 = 110
5					x 3 = 0
Herb Stratum (Plot size: 5 ft r)		= Total Co	over	FACU species 20	
1. Alopecurus arundinaceus	40		FACW	UPL species 0	
2. Elymus repens	20	~	FACU	Column Totals: 80	
3. Juncus torreyi	10		FACW	Prevalence Index	- P/A - 2.44
4. Schoenoplectus pungens	5		OBL	Hydrophytic Vegetation	
5. Juncus balticus 6				1 - Rapid Test for F	Hydrophytic Vegetation
7				✓ 3 - Prevalence Inde	
8 9				4 - Morphological A	Adaptations ¹ (Provide supporting
10					s or on a separate sheet) phytic Vegetation¹ (Explain)
Woody Vine Stratum (Plot size: 30 ft r) 1.	80	= Total Co	over	<u> </u>	I and wetland hydrology must
2 % Bare Ground in Herb Stratum 20				Hydrophytic Vegetation Present? Ye	s No
Evidence of hydrophytic vegetation	include	s a pre	evalence	e index below th	iree.

SOIL Sampling Point: DP10/11w

Profile Desc	cription: (Describe	to the dept	h needed to docur	nent the	indicator	or confirm	n the absence	of indicators.)		
Depth	Matrix		Redo	x Feature	es					
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks		
0 - 10	10YR 4/2	93	7.5YR 3/4	7	<u>C</u>	PL / M	Clay Loam			
10 - 17	10YR 4/2	97	10YR 3/4	3	С	М	Sandy Clay Loam			
-		- · <u></u>								
		· —— ·								
		 -			_					
					_					
		- <u> </u>			_					
-										
¹Tvpe: C=C	oncentration, D=Dep	letion. RM=	Reduced Matrix. CS	S=Covere	ed or Coate	ed Sand G	rains. ² Loc	ation: PL=Pore Lining, M=Matrix.		
	Indicators: (Applic							for Problematic Hydric Soils ³ :		
Histosol	(A1)		Sandy (Gleyed M	atrix (S4)		1 cm M	luck (A9) (LRR I, J)		
	oipedon (A2)			Redox (S	, ,			Prairie Redox (A16) (LRR F, G, H)		
Black Hi	stic (A3)		Stripped	d Matrix (S6)			urface (S7) (LRR G)		
Hydroge	en Sulfide (A4)			-	ineral (F1)			lains Depressions (F16)		
	d Layers (A5) (LRR I		-	-	latrix (F2)		`	R H outside of MLRA 72 & 73)		
	ick (A9) (LRR F, G,		<u>✓</u> Deplete					ed Vertic (F18)		
-	d Below Dark Surfac ark Surface (A12)	e (A11)		Dark Surf	ace (F6) urface (F7	`		arent Material (TF2) hallow Dark Surface (TF12)		
	Mucky Mineral (S1)			Depression)	-	Explain in Remarks)		
-	Mucky Peat or Peat (S2) (LRR G			essions (F	16)		of hydrophytic vegetation and		
	ıcky Peat or Peat (S		· ·		73 of LRF		wetland hydrology must be present,			
							unless	disturbed or problematic.		
	Layer (if present):									
Type: Co								,		
Depth (in	ches): <u>17</u>		<u></u> -				Hydric Soil	Present? Yes V No No		
Remarks:										
Distinct	redoximorph	nic cond	entrations o	ommo	on with	nin the	depleted	matrix.		
							<u> </u>			
HYDROLO	GY									
Wetland Hy	drology Indicators:									
Primary India	cators (minimum of o	ne required	; check all that appl	y)			Seconda	ry Indicators (minimum of two required)		
Surface	Water (A1)	•	Salt Crust	(B11)			Surfa	ace Soil Cracks (B6)		
	ater Table (A2)		Aquatic In		es (B13)			rsely Vegetated Concave Surface (B8)		
✓ Saturation			Hydrogen					nage Patterns (B10)		
Water M	larks (B1)		Dry-Seaso	n Water	Table (C2))		lized Rhizospheres on Living Roots (C3)		
Sedimer	nt Deposits (B2)		Oxidized F	Rhizosphe	eres on Liv	ing Roots	(C3) (w	here tilled)		
Drift Dep	posits (B3)		(where i	not tilled)		Cray	rfish Burrows (C8)		
Algal Ma	at or Crust (B4)		Presence	of Reduc	ed Iron (C	4)	Satu	ration Visible on Aerial Imagery (C9)		
Iron Dep	oosits (B5)		Thin Muck	Surface	(C7)		<u></u> ✓ Geo	morphic Position (D2)		
<u></u> Inundati	on Vis ble on Aerial	lmagery (B7) Other (Exp	olain in R	emarks)		FAC	-Neutral Test (D5)		
Water-S	tained Leaves (B9)						Fros	t-Heave Hummocks (D7) (LRR F)		
Field Obser	vations:									
Surface Wat	er Present? Y	'es N	lo <u> </u>	ches):						
Water Table	Present? Y	'es N	lo <u> </u>	ches):						
Saturation P	resent? Y		lo Depth (in				land Hydrology	Present? Yes V No No		
(includes cap	oillary fringe) corded Data (stream	naline mo	nitoring well agricly	nhotos n	revious inc	enections)	if available:			
Describe Ke	corded Data (Streath	i gauge, iilo	moning well, acidi	ριισισό, μ	i Gvious ilis	, pecuoi13),	ii avaliabic.			
Remarks:										
	-£		-9-1-1 9 -			-1		allele en east 12		
	•						undation vis	sible on aerial imagery,		
oxidized r	hizospheres al	ong living	g roots, and ge	omorp	nıc posi	tion.				

Project/Site: JTX Tunnicliff	(City/Coun	_{ity:} Big Horr	n County	Sampling Date: 2023-06-14
Applicant/Owner: MDT		-	-		Sampling Point: DP12/13u
Investigator(s): R. Jones	;	Section, 7	Γownship, Ra	nge: S28 T1N R33E	
					Slope (%): 1
Subregion (LRR): G 58A	Lat: 45.	840156	,	Long: -107.598571	Datum: NAD 83
Soil Map Unit Name: Hfc - Haverson loam, saline				NWI classific	
Are climatic / hydrologic conditions on the site typical for this					
Are Vegetation, Soil, or Hydrologys	-				oresent? Yes No
Are Vegetation, Soil, or Hydrology n				eeded, explain any answe	
SUMMARY OF FINDINGS – Attach site map					
Hydrophytic Vegetation Present? Yes No	o <u> </u>		the Sampled thin a Wetlar		No
Upland sample point adjacent to DP-	-12/13w	and v	wetland	cell 12/13.	
VEGETATION – Use scientific names of plan	ts.				
Tree Stratum (Plot size: 30 ft r) 1	% Cover	Species		Dominance Test work Number of Dominant S That Are OBL, FACW, (excluding FAC-):	pecies
2	<u> </u>			Total Number of Domin	ant
4				Species Across All Stra	
Sapling/Shrub Stratum (Plot size: 15 ft r) 1				Percent of Dominant Sp That Are OBL, FACW,	
2				Prevalence Index wor	
3				•	Multiply by:
4					x 1 = 0
5					x 2 = 0 x 3 = 0
Herb Stratum (Plot size: 5 ft r)		= Total C	over	FACU species 2	
1. Thinopyrum intermedium	68	~	UPL	UPL species 68	
2. Taraxacum officinale	2		FACU	Column Totals: 70	(A) 348 (B)
3. 4.				Prevalence Index	= B/A = <u>4.97</u>
5				Hydrophytic Vegetation	on Indicators:
6.				1 - Rapid Test for I	
7				2 - Dominance Tes	
8				3 - Prevalence Inde	
9	<u> </u>			data in Remarks	Adaptations ¹ (Provide supporting s or on a separate sheet)
10	70			Problematic Hydro	phytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size: 30 ft r) 1		= Total C		¹ Indicators of hydric soi be present, unless distu	l and wetland hydrology must urbed or problematic.
2		= Total C		Hydrophytic Vegetation Present? Ye	s No_ <u>'</u> _
No hydrophytic vegetation indicators					

SOIL Sampling Point: DP12/13u

	ription: (Describe	to the depth				or commun	i tile absence c	niuicators.)
Depth (inches)	Matrix Color (moist)	<u></u> %	Color (moist)	x Features %	Type ¹	Loc ²	Texture	Remarks
0 - 7	10YR 4/2	100		·			Sandy Clay Loam	
7 - 16	10YR 5/2	100					Sandy Loam	
	1011(3/2						Sandy Loani	
				· ——			-	
-								
							-	
1		-letter DM D	and the second Marketine Of			1010	21	diana Di Dana Linina M Matria
	ncentration, D=Dep					d Sand Gi		or Problematic Hydric Soils ³ :
Histosol		able to all Liv		Sleyed Ma				uck (A9) (LRR I, J)
· 	ipedon (A2)			Redox (S5)				rairie Redox (A16) (LRR F, G, H)
Black His			-	Matrix (S				irface (S7) (LRR G)
Hydroge	n Sulfide (A4)			Mucky Min				ains Depressions (F16)
Stratified	Layers (A5) (LRR	F)	Loamy	Gleyed Ma	trix (F2)		(LRF	R H outside of MLRA 72 & 73)
	ck (A9) (LRR F, G,			d Matrix (F	,			d Vertic (F18)
	Below Dark Surfac	ce (A11)		Dark Surfa	, ,			rent Material (TF2)
	rk Surface (A12)			d Dark Sui	, ,		-	allow Dark Surface (TF12)
	ucky Mineral (S1) lucky Peat or Peat	(S2) (I RR G . I		Depressior ains Depre		16)		Explain in Remarks) If hydrophytic vegetation and
	cky Peat or Peat (S			RA 72 & 7				hydrology must be present,
	, , , , , , , , , , , , , , , , , , , ,	-,(,	,			,		disturbed or problematic.
Restrictive L	ayer (if present):							
Type:								
Depth (inc	ches):		<u></u>				Hydric Soil F	Present? Yes No
Remarks:								
No bydri	e coil indica	tore proc	ont					
NO HYUH	c soil indica	tors pres	ent.					
HYDROLO								
	Irology Indicators							
Primary Indic	ators (minimum of o	one required; o						y Indicators (minimum of two required)
	Water (A1)		Salt Crust	` '				ce Soil Cracks (B6)
	ter Table (A2)		Aquatic In		` '			sely Vegetated Concave Surface (B8)
Saturatio	` '		Hydrogen				·	age Patterns (B10)
	arks (B1)		Dry-Seaso			_		zed Rhizospheres on Living Roots (C3)
	t Deposits (B2)		Oxidized F		es on Livi	ng Roots		nere tilled)
	osits (B3)			not tilled)		,		ish Burrows (C8)
	t or Crust (B4)		Presence			.)		ration Visible on Aerial Imagery (C9)
	osits (B5)	l	Thin Muck					norphic Position (D2)
	on Vis ble on Aerial	imagery (B7)	Other (Exp	olain in Rei	marks)			Neutral Test (D5)
	ained Leaves (B9)						Frost	-Heave Hummocks (D7) (LRR F)
Field Observ		/00 N=	V Danish (in	ahaa):				
Surface Water			Depth (in					
Water Table			Depth (in					- · · · · · · · · · · · · · · · · · · ·
Saturation Pr (includes cap		res No	Depth (in	ches):		_ Wetl	and Hydrology	Present? Yes No
	corded Data (stream	n gauge, monit	toring well, aerial	ohotos, pre	evious ins	pections),	if available:	
Remarks:								
No ovida	noo of woth	and bud-	alagy abas	rvod				
ino evide	ence of wetla	and nydr	ology obse	ivea.				

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: JTX Tunnicliff	(Citv/Cour	ntv: Big Hori	n County	Sampling Date: 2023-06-14
Applicant/Owner: MDT		-			Sampling Point: DP12/13w
				nge: S02 T1S R33E	
Landform (hillslope, terrace, etc.): Depression					e Slone (%): 3
, ,			•	•	Datum: NAD 83
Soil Map Unit Name: Kw - Kyle clay, saline				NWI classific	
Are climatic / hydrologic conditions on the site typical for this					
Are Vegetation, Soil, or Hydrologys	-				oresent? Yes 🔽 No
Are Vegetation, Soil, or Hydrology n				eeded, explain any answe	•
SUMMARY OF FINDINGS – Attach site map	snowing	sampli	ing point i	ocations, transects	, important features, etc.
	o o		the Sampled		No
Sample point located within wetland VEGETATION – Use scientific names of plan		/13.			
VEGETATION - Ose scientific flames of plan	Absolute	Domina	nt Indicator	Dominance Test work	sheet:
Tree Stratum (Plot size: 30 ft r)	·	Species	? Status	Number of Dominant S That Are OBL, FACW,	or FAC
2				(excluding FAC-):	<u>1</u> (A)
3				Total Number of Domin Species Across All Stra	_
4					
Sapling/Shrub Stratum (Plot size: 15 ft r) 1.			over	Percent of Dominant Sport That Are OBL, FACW,	
2.				Prevalence Index wor	
3.					Multiply by:
4					x 1 = 12
5				FACW species 35 FAC species 0	$\begin{array}{c} x 2 = 70 \\ x 3 = 0 \end{array}$
Herb Stratum (Plot size: 5 ft r)		= Total C	Cover	FACU species 35	
1. Distichlis spicata	25	~	FACW	UPL species 0	
2. Chenopodium album	20		FACU	Column Totals: 82	
3. Elymus repens	15		FACU		
4. Typha angustifolia	10		OBL	Prevalence Index	
_{5.} Juncus balticus	5		FACW	Hydrophytic Vegetation	
6. Juncus torreyi	5		FACW	1 - Rapid Test for I	
7. Schoenoplectus pungens	2		OBL	✓ 3 - Prevalence Inde	
8					Adaptations ¹ (Provide supporting
9				data in Remarks	s or on a separate sheet)
10	00			Problematic Hydro	phytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size: 30 ft r) 1.		= Total C		¹ Indicators of hydric soi be present, unless dist	l and wetland hydrology must urbed or problematic.
2 % Bare Ground in Herb Stratum				Hydrophytic Vegetation Present? Ye	s No
Evidence of hydrophytic vegetation	include	s a pr	evalence	e index below th	iree.

SOIL Sampling Point: DP12/13w

Profile Desc	ription: (Describe	to the de	pth needed to docui	ment the	indicator	or confirr	n the absence of i	indicators.)
Depth	Matrix			x Feature	1			
(inches)	Color (moist)		Color (moist)		Type'	Loc ²	<u>Texture</u>	Remarks
0 - 8	10YR 4/2	90	7.5YR 3/4	10	<u> </u>	PL / M	Silty Clay Loam	
8 - 18	10YR 4/3	95	10YR 4/6	5	<u>C</u>	M	Loamy Sand	
-								
-								
			-					
1-								
			I=Reduced Matrix, CS I LRRs, unless othe			ed Sand G		on: PL=Pore Lining, M=Matrix. Problematic Hydric Soils ³ :
Histosol		Cable to al	Sandy (k (A9) (LRR I, J)
l —	oipedon (A2)			Redox (S				irie Redox (A16) (LRR F, G, H)
Black Hi			-	d Matrix (·	ace (S7) (LRR G)
Hydroge	en Sulfide (A4)				ineral (F1)			s Depressions (F16)
	d Layers (A5) (LRR				latrix (F2)		•	l outside of MLRA 72 & 73)
	ick (A9) (LRR F, G,		<u>✓</u> Deplete					Vertic (F18)
· — ·	d Below Dark Surfa ark Surface (A12)	ce (ATT)		Dark Surf	urface (F7)	١		nt Material (TF2) low Dark Surface (TF12)
	Mucky Mineral (S1)			Depression		,		plain in Remarks)
2.5 cm N	Mucky Peat or Peat	(S2) (LRR			ressions (F	16)	³ Indicators of h	nydrophytic vegetation and
5 cm Mu	icky Peat or Peat (S	3) (LRR F) (ML	.RA 72 &	73 of LRR	? H)	-	drology must be present,
Destrictive	(if						unless dis	turbed or problematic.
_	Layer (if present):							
, , <u> </u>	ches):						Hydric Soil Pre	esent? Yes V No
Remarks:	Ciles).						Hydric 30ii Fre	ssent: 165NO
			+:	: 414 :	مدمام مطاح			
Distinct re	eaoximorpnic d	concenti	ations common	within	tne dep	ietea m	iatrix for the tv	wo sampled horizons.
HYDROLO								
-	drology Indicators							
	•	one require	ed; check all that appl					ndicators (minimum of two required)
	Water (A1)		Salt Crust					Soil Cracks (B6)
_	ater Table (A2)		Aquatic In					y Vegetated Concave Surface (B8)
✓ Saturation			Hydrogen					ge Patterns (B10)
	larks (B1) nt Deposits (B2)		Dry-Seaso Oxidized F					d Rhizospheres on Living Roots (C3) re tilled)
	posits (B3)			not tilled		ing roots		n Burrows (C8)
	at or Crust (B4)		Presence			4)		ion Visible on Aerial Imagery (C9)
	oosits (B5)		Thin Muck			,		rphic Position (D2)
<u>✓</u> Inundati	on Vis ble on Aerial	Imagery (E	37) Other (Ex	olain in R	emarks)		FAC-Ne	eutral Test (D5)
Water-S	tained Leaves (B9)						Frost-H	eave Hummocks (D7) (LRR F)
Field Obser								
Surface Wat			No Depth (in					
Water Table			No Depth (in			_		
Saturation P		Yes	No Depth (in	ches): <u>8</u>		Wet	land Hydrology Pı	resent? Yes No
(includes cap Describe Re		n gauge, m	onitoring well, aerial	photos, p	revious ins	pections).	, if available:	
	(5 5-,	5 , 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	, F		//		
Remarks:								
	of wetland by	drology	vicible in coil cat	uration	to Q in	shae in	undation visib	le on aerial imagery, a high
	-							ie on aenai illiagery, a nigh
water tab	ie at a deptii 0	i i i iiich	es, and the geo	morpiil	c positio	וט ווע ווע	e point.	

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project Name: JTX Tunnicliff 2. MDT Project #: STPP STWD (056) Control #: 9680000

3. Evaluation Date: 06/18/2021 4. Evaluator(s): R Jones, K. Kane 5. Wetlands/Site #(s): JTX Tunnicliff

6. Wetland Location(s): i. Legal: T1N,R33E,10 ;T1N,R33E,15 Latitude/Longitude: 45.839728, -107.598974 : Center of AA

ii. Approx. Stationing or Mileposts: NA

iii. Watershed: 14

Watershed Name, County: Middle Yellowstone, Big Horn

7. a. Evaluating Agency: CCI for MDT

b. Purpose of Evaluation:

1. Wetlands potentially affected by MDT project

2. Mitigation wetlands; pre-construction

3. X Mitigation wetlands; post-construction

4. Other:

10. Classification of Wetland and Aquatic Habitats in AA

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
D	EM	E	SI	100.00

8. Wetland size:

9.030 acres (measured)

9. Assessment area (AA):

9.030 acres (measured)

Abbreviations: (see manual for definitions)

HGM Classes: Riverine (R), Depressional (D), Slope (S), Mineral Soil Flats (MSF), Organic Soil Flats (OSF), Lacustrine Fringe (LF); Cowardin Classes: Rock Bottom (RB), Unconsolidated bottom (UB), Aquatic Bed (AB), Unconsolidated Shore (US), Moss-lichen Wetland (ML), Emergent Wetland (EM), Scrub-Shrub Wetland (SS), Forested Wetland (FO)

Modifiers: Excavated (E), Impounded (I), Diked (D), Partly Drained (PD), Farmed (F), Artificial (A)

Water Regimes: Permanent / Perennial (PP), Seasonal / Intermittent (SI), Temporary / Ephemeral (TE)

11. Estimated relative abundance: (of similarly classified sites within the same Major Montana Watershed Basin, see definitions)

COMMON

12. General condition of AA:

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

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

Comments: (types of disturbance, intensity, season, etc.): Vegetation in AA well established. Burn area from 2020 is nearly undetectable.

ii. Prominent noxious, aquatic nuisance, & other exotic vegetation species: Convolvulus arvensis, Cynoglossum officinale, Cirsium arvense, and Acroptilon repens.

iii. Provide brief descriptive summary of AA and surrounding land use/habitat: Fishing Access Site, large parcel homesites, ranching.

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

Existing # of "Cowardin" Vegetated Classes in AA	Initial Rating	Is current management existence of additiona		Modified Rating
>= 3 (or 2 if 1 is forested) classes	Н	NA	NA	NA
2 (or 1 if forested) classes	М	NA	NA	NA
1 class, but not a monoculture		< NO	YES>	L
1 class, monoculture (1 species comprises >= 90% of total cover)	Ĺ	NA	NA	NA

Comments: Site contains multiple PEM wetlands.

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 (circle one based on definitions contained in instructions):

Primary or critical habitat (list species)

Secondary habitat (list species)

Incidental habitat (list species)

Black-footed ferret(S)

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

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

Sources for documented use (e.g. observations, records, etc): USFWS T&E list for Big Horn County

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 (circle one based on definitions contained in instructions):

Primary or critical habitat (list species)
Merriam's shrew(D) - S2S3
Preble's shrew(D) - S2S3

Secondary habitat (list species) Bur oak (2017)(D) - S2S3 Greater Sage-Grouse(D) - S2S3 spiny softshell(S) - S2S3 Incidental habitat (list species)
Great Blue Heron(S) - S2S3
Snapping turtle(S) - S2S3
Plains hog-nosed snake(S) - S2S3

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

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

Sources for documented use (e.g. observations, records, etc): Suitable great blue heron habitat

14C. General Wildlife Habitat Rating:

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

Substantial (based on any of the following [check]):	Minimal (based on any of the following [check]):
observations of abundant wildlife #s or high species diversity (during any period) abundant wildlife sign such as scat, tracks, nest structures, game trails, etc. presence of extremely limiting habitat features not available in the surrounding area interviews with local biologists with knowledge of the AA	few or no wildlife observations during peak use periods little to no wildlife sign sparse adjacent upland food sources interviews with local biologists with knowledge of the AA
Moderate (based on any of the following [check]):	
observations of scattered wildlife groups or individuals or relatively few species during	peak periods
X common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, e	etc.
X adequate adjacent upland food sources	
interviews with local biologists with knowledge of the AA	
_	

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

Structural diversity (see #13)		Hig				gh			Moderate						Low					
Class cover distribution (all vegetated classes)		Even			Uneven			Even			Uneven				Even					
Duration of surface water in >=10% of AA	P/P	S/I	T/E	А	P/P	S/I	T/E	Α	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)	E	Е	Е	Н	Е	Е	Н	Н	Е	н	Н	М	E	Н	М	М	Е	Н	М	М
Moderate 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 at AA (see #12i)	М	М	М	L	М	М	L	L	М	М	L	L	М	L	L	L	L	L	L	L

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

in realing (about the contolacions from	Ti i dila ii abovo ana tilo mati	is bolow to allive at [oliolo] t	no ranodonal pointo ana radi	<u>'97</u>								
Evidence of wildlife use (i)		Wildlife habitat features rating (ii)										
Evidence of wildlife use (i)	Exceptional	High	Moderate	Moderate								
Substantial	1E	.9H	.8H	.7M								
Moderate	.9H	.7M	.5M	.3L								
Minimal	.6M	.4M	.2L	.1L								

Comments: Several deer beds observed in 2023.

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

Type of Fishery: Cold Water (CW) ___ Warm Water (WW) __ Use the CW or WW guidelines in the user manual to complete the matrix

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

Duration of surface water in AA		Permanent / Peren			nnial		Seasonal / Intermittent						Temporary / Ephemeral					
Aquatic hiding / resting / escape cover	Optimal		Adequate		Poor		Optimal		Adequate		Poor		Optimal		Adequate		Poor	
Thermal cover optimal / suboptimal	0	0 S		S	0	S	0	S	0	S	0	S	0	S	0	S	0	s
FWP Tier I fish species	1E	.9H	.8H	.7M	.6M	.5M	.9H	.8H	.7M	.6M	.5M	.4M	.7M	.6M	.5M	.4M	.3L	.2L
FWP Tier II or Native Game fish species	.9H	.8H	.7M	.6M	.5M	.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M	.3L	.2L	.2L
FWP Tier III or Introduced Game fish	.8H	.8H .7M		.5M	.5M	.4M	.7M	.6M	.5M	.4M	.4M	.3L	.5M	.4M	.3L	.2L	.2L	.1L
FWP Non-Game Tier IV or No fish species	.5M	.5M	.5M	.4M	.4M	.3L	.4M	.4M	.4M	.3L	.3L	.2L	.2L	.2L	.2L	.1L	.1L	.1L

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

ii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support, or do aquatic nuisance plant or animal species (see Appendix E) occur in fish habitat?

If yes, reduce score in i above by 0.1.

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? If yes, add 0.1 to the adjusted score in i or iia.

iii. Final Score and Rating: NA Comments: No fish habitat within AA.

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

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

Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	0 ,	entrenche stream typ			ely entrend tream type		Entrench	ned-A, F, C types	3 stream
% of flooded wetland classified as forested and/or scrub/shrub	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains no outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

Entrenchment ratio (ER) estimation – see User's Manual for additional guidance. Entrenchment ratio = (flood-prone width)/(bankfull width) Flood-prone width = estimated horizontal projection of where 2 x maximum bankfull depth elevation intersects the floodplain on each side of the stream.

 700 /
 250 =
 2.80

 Flood-prone width
 Bankfull build bu



SI	ightly Entrenche ER = >2.2	d	Moderately Entrenched ER = 1.41 - 2.2		Entrenched ER = 1.0 – 1.4	
C stream type	D stream type	E stream type	B stream type	A stream type	F stream type	G stream type
						—

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

Comments: AA was flooded by the Bighorn River in 2023 (shown on aerial imagery).

Entrenchment ratio estimated from aerial photo interpretation and not measured in field. River is C-Type.

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- **14F. Short and Long Term Surface Water Storage:** (Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, **NA** and proceed to 14G.)
- i. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see instructions for further definitions of these terms].)

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	>5 acre feet		1.11	to 5 acre	feet	<=1 acre foot			
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond >= 5 out of 10 years	1H	.9H	.8H	.8H	.6M	.5M	.4M	.3L	.2L
Wetlands in AA flood or pond < 5 out of 10 years	.9H	.8H	.7M	.7M	.5M	.4M	.3L	.2L	.1L

Comments: Due to the depth of the excavated cells relative to the surrounding uplands, this site is capable of providing a large amount of surface water storage.

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

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

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver levels of sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.					
% cover of wetland vegetation in AA	>= 7	70%	< 7	0%	>= 70%		< 70%			
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No		
AA contains no or restricted outlet	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L		
AA contains unrestricted outlet	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L		

Comments: AA has potential to receive sediment/nutrients/toxicants from surface or groundwater.

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

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

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

Comments: Small amounts of surface water present in 2022, but not enough to create wave action.

14I. Production Export/Food Chain Support:

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

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

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14l.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].)

Α		Vegetat	ed com	onent >	5 acres		Vegetated component 1-5 acres				Vegetated component < 1 acre							
В	Hi	gh	Mod	erate	Lo)W	Hi	gh	Mode	erate	Lo)W	Hi	gh	Mode	erate	Lo	w
С	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
P/P	1H	.7M	.8H	.5M	.6M	.4M	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	.3L	.2L
T/E/A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

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

a) Is there an average >= 50 foot-wide vegetated upland buffer around >= 75% of the AA circumference?

X If yes, add 0.1 to the score in ii above.

iv. Final Score and Rating: 0.50M

Comments: Adjacent upland buffer with greater than 30% plant cover and less than 5% noxious weed cover.

i. Discharge Indicators				ii	i. Recharge	Indicators					
The AA is a slope wetland					3 ,,						
Springs or seeps are known	or observe	d			Vetland conta						
X Vegetation growing during do	ormant sea	son/drought		§	Stream is a kr	nown 'losing'	stream; disc	harge volume	e decrease		
Wetland occurs at the toe of	a natural sl	ope			Other:						
AA permanently flooded duri	ng drought	periods									
Wetland contains an outlet, b	out no inlet										
X Shallow water table and the	site is satur	ated to the sur	face								
Other:											
i Pating (use the information from i	and ii ahaw	and the table	holow to arr	ivo at [airala]	the functions	l nointe and	roting)				
i. Rating (use the information from i	and II above				tlands FRON	•		1			
					R THAT IS RE						
					ER SYSTEM						
Criteria	ŀ	P/P		S/I	Т		None	1			
Groundwater Discharge or Recha	rne	1H		.7M	.4M		.1L	1			
Insufficient Data/Information	ge			N/A				1			
comments: The site was designed t	o have exc	avated wetland	d cells that ut	ilize a high q	roundwater ta	able as the p	rimary hydro	」 logic source.			
4K. Uniqueness: Rating (working from top to bottom,	use the ma	atrix below to a	rrive at [circle	 			Γ				
	AA contai	ns fen, bog, w	arm springs		ot contain prevaled and structure			ot contain pre			
Replacement potential		re (>80 yr-old)			high or conta		71	es or associat			
.,		etland or plant association listed as "S1" by the MTNHP			on listed as "S		structura	I diversity (#1 moderate	13) IS IOW-		
	as	OT by the lift	11111		MTNHP			moderate			
Estimated relative abundance (#11)	rare	common	abundant	rare	common	abundant	rare	common	abundar		
Low disturbance at AA (#12i)	1H	.9H	.8H	.8H	.6M	.5M	.5M	.4M	.3L		
Moderate disturbance at AA (#12i)	.9H	.8H	.7M	.7M	.5M	.4M	.4M	.3L	.2L		
High disturbance at AA (#12i)	.8H	.7M	.6M	.6M	.4M	.3L	.3L	.2L	.1L		
4L. Recreation/Education Potential Is the AA a known or potential rec	I: (affords "	bonus" points i	if AA provide				rk NA a	nd proceed to	o the		
overall summary and rating pa	• ,					v					
. Check categories that apply to the	ne AA:	_Educational/s	scientific stud	ay; X Con	sumptive rec.	;Non-c	onsumptive	rec.;			
	_	_Other :									
i. Rating:									_		
Known or Potential Recreation or Ed							Known	Potential	╛		
Public ownership or public easement with general public access (no permission required)							.2H	.15H	_		
Private ownership with general public access (no permission required)								.1M	_		
					on for public	access	.1M	.05L			
Private or public ownership witho											
comments: Site owned by MFWP a	nd part of la	arger Grant Ma	ırsh WMA pro	operty.							
	nd part of la	arger Grant Ma	ersh WMA pro	орепу.							

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

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Wetland Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0.10	1	0.90	
B. MT Natural Heritage Program Species Habitat	Н	0.90	1	8.13	
C. General Wildlife Habitat	М	0.70	1	6.32	*
D. General Fish Habitat	NA				
E. Flood Attenuation	М	0.60	1	5.42	
F. Short and Long Term Surface Water Storage	Н	0.90	1	8.13	*
G. Sediment/Nutrient/Toxicant Removal	Н	1.00	1	9.03	*
H. Sediment/Shoreline Stabilization	NA				
I. Production Export/Food Chain Support	М	0.50	1	4.52	
J. Groundwater Discharge/Recharge	М	0.70	1	6.32	*
K. Uniqueness	М	0.40	1	3.61	
L. Recreation/Education Potential (bonus points)	Н	0.20	1	1.81	
Totals: Percent of Possible Score		6.00	9.00 67%	54.19	

Score of 1 functional point for	y one of the following criteria; otherwise go to Category II) or Listed/Proposed Threatened or Endangered Species; or
· ·	or Uniqueness; or or Flood Attenuation and answer to Question 14E.ii is "yes"; or 80% (round to nearest whole #).
Score of 1 functional point for Score of .9 or 1 functional point for Score of .9 or 1 functional point for "High" to "Exceptional" rating Score of .9 functional point for score of .9 functional poi	Category I not satisfied and meets any one of the following criteria; otherwise go to Category IV) or MT Natural Heritage Program Species Habitat; or oint for General Wildlife Habitat; or oint for General Fish Habitat; or gs for both General Wildlife Habitat and General Fish/Aquatic Habitat; or for Uniqueness; or 65% (round to nearest whole #).
Category III Wetland: (Criteria fo	r Categories I, II, or IV not satisfied)
Category IV Wetland: (Criteria for Category III)	or Categories I or II are not satisfied and all of the following criteria are met; otherwise go to
·	ent 1 acre (do not include upland vegetated buffer); and 5% (round to nearest whole #).

OVERALL ANALYSIS AREA RATING: II

Summary Comments: AA provides valuable functions and services within the Big Horn River floodplain.

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
Atriplex argentea	Silverscale Saltbush	UPL
Bassia scoparia	Mexican-Fireweed	FACU
Beckmannia syzigachne	American Slough Grass	OBL
Brassica sp.	Mustard sp.	NA
Bromus arvensis (japonicus)	Field Brome	FACU
Bromus ciliatus	Fringed Brome	FAC
Bromus inermis	Smooth Brome	UPL
Carex sp.	Sedge	NA
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
Descurania sophia	Herb Sophia	UPL
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
Juncus torreyi	Torrey's Rush	FACW
Lepidium perfoliatum	Clasping Pepperwort	FAC
Leymus cinereus	Great Basin Lyme Grass	UPL
Medicago lupulina	Black Medick	FACU
Medicago sativa	Alfalfa	UPL

Scientific Names	Common Names	GP Indicator Status ^(a)
Melilotis albus	White Sweet-Clover	UPL
Melilotis officinalis	Yellow Sweet-Clover	FACU
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 NWPL (USACE 2018)

New species identified in 2023 are **bolded**.

APPENDIX C PROJECT AREA PHOTOGRAPHS

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



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

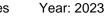




Photo Point: 1 Location: Looking east across property Year: 2016 Bearing: 270 degrees



Photo Point: 1 Location: Looking east across property Bearing: 270 degrees Year: 2023



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: 2023



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: 2023



Photo Point: 2 Bearing: 0 degrees Year: 2016

Location: Looking North at Cell 8/9



Photo Point: 2 Bearing: 0 degrees

Location: Looking North at Cell 8/9

Year: 2023



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

Year: 2023



Photo Point: 3 Bearing: 140 degrees

Location: Looking SE at Cell 13 Year: 2016



Photo Point: 3 Location: Looking SE at Cell 13 Bearing: 140 degrees Year: 2023



Photo Point: 3 Location: Looking E. at Cell 13 Bearing: 100 degrees Year: 2016



Photo Point: 3 Location: Looking East at Cell 13 Bearing: 100 degrees Year: 2023



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



Photo Point: 3 Location: W side of property Looking NE Bearing: 45 degrees Year: 2023



Photo Point: 4 Bearing: 105 degrees

Location: Looking E at Cell 3 Year: 2016



Photo Point: 4 Bearing: 105 degrees

Location: Looking East at Cell 3 Year: 2023



Photo Point: 4 Bearing: 160 degrees

Location: Looking South at Cell 3 S Year: 2016



Bearing: 160 degrees Year: 2023



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

ees Year: 2023

JTX Tunnicliff: 2023 Transect Photographs



Transect 1: Start Bearing: 230 degrees

Location: SE corner of property Year: 2016



Transect 1: End Bearing: 50 degrees

Location: SE corner of property Year: 2016



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: 2023



Transect 1: End Bearing: 50 degrees

Location: SE corner of property Year: 2023



Transect 2: Start

Location: West side of property

Bearing: 350 degrees Year: 2023



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: 2023



Data Point: DP01w Year: 2023

Location: Cell 1



Data Point: DP01u Year: 2023

Location: Cell 1



Data Point: DP02w Year: 2023

Location: Cell 2



Data Point: DP02u

Location: Cell 2

Location: Cell 3

Location: Cell 4



Data Point: DP03w Year: 2023



Data Point: DP03u Year: 2023

Location: Cell 3



Data Point: DP04w Year: 2023



Data Point: DP04u Year: 2023

Location: Cell 4



Data Point: DP05w Year: 2023



Location: Cell 5



Data Point: DP05u

Location: Cell 5



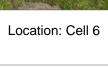
Data Point: DP06w Year: 2023



Location: Cell 6



Data Point: D06u



Year: 2023



Data Point: DP07w Year: 2023



Location: Cell 7

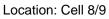


Data Point: DP07u Year: 2023

Location: Cell 7



Data Point: DP08w Year: 2023





Data Point: DP08u

Year: 2023

Location: Cell 8/9



Data Point: DP09w Year: 2023



Data Point: DP09u Year: 2023

Location: Cell 10/11



Data Point: DP10w Year: 2023

Location: Cell 12/13

Location: Cell 10/11



Data Point: DP10u Year: 2023

Location: Cell 12/13