Exhibit J

Wetlands and Other Jurisdictional Waters

Wagon Trail Solar Project
January 2022

Prepared for

NEXTera ENERGY RESOURCES

Prepared by

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Acronyms and Abbreviations

Applicant	Wheatridge East Wind, LLC c/o NextEra Energy Resources, LLC
Facility	Wagon Trail Solar Project
NHD	National Hydrography Dataset
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OAR	Oregon Administration Rule
ODSL	Oregon Department of State Lands
ORS	Oregon Revised Statutes
USACE	United States Army Corps of Engineers

1.0 Introduction

Wheatridge East Wind, LLC c/o NextEra Energy Resources, LLC (Applicant) proposes to construct and operate the Wagon Trail Solar Project (Facility), a solar energy generation facility and related or supporting facilities in Morrow County, Oregon. This Exhibit J was prepared to meet the submittal requirements in Oregon Administrative Rule (OAR) 345-021-0010(1)(j).

2.0 Analysis Area

The analysis area for wetland and other jurisdictional waters is defined in the Project Order as "the area within the site boundary" (Figure J-1; ODOE 2021). The site boundary is defined in detail in Exhibits B and C, which includes the information required by OAR 345-021-0010(1)(b) and (c).

3.0 Wetlands and Other Jurisdictional Waters

> *OAR 345-021-0010(1)(j) Information based on literature and field study, as appropriate, about waters of this state, as defined under ORS 196.800, including:*
>
> > *(A) A description of all areas within the site boundary that might be waters of this state and a map showing the location of these features.*

OAR 345-021-0010(1)(j)(A) requests that the Applicant provide a description of all areas within the site boundary that might be waters of this state and a map showing the location of these features. A wetland delineation report describing the conditions and features documented on site is presented in Attachment J-1, the Wagon Trail Solar Project Wetland and Waters Report.

There were no potentially jurisdictional Waters of the State determined to be present within the site boundary.

3.1 Definitions

Oregon Revised Statutes (ORS) 196.800(15) defines Waters of the State as:

> *…all natural waterways, tidal and non-tidal bays, intermittent streams, constantly flowing streams, lakes, wetlands, that portion of the Pacific Ocean that is in the boundaries of this state, all other navigable and non-navigable bodies of water in this state and those portions of the ocean shore, as defined in ORS 390.605, where removal or fill activities are regulated under a state-assumed permit program as provided in 33 United States Code 1344(g) of the Federal Water Pollution Control Act, as amended.*

In OAR 141-085-0510 (105), the Oregon Department of State Lands (ODSL) defines wetlands as "[t]hose areas that are inundated or saturated by surface or groundwater at a frequency and

duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

3.2 Jurisdictional Versus Non-Jurisdictional Waters

Not all wetlands and streams are within the jurisdiction of state regulation. For the Facility, several jurisdictional distinctions are important, to estimate impacts only to jurisdictional wetlands and other waters. These include determinations related to the following:

- Ephemeral streams, which generally are not under state jurisdiction, as distinct from perennial and intermittent streams (ODSL 2019); and
- Artificially created roadside and farm ditches, which are considered Waters of the State only if they contain food or game fish and are connected to Waters of the State (OAR 141-085-0515(8)).

Ephemeral streams are defined in the Oregon Streamflow Duration Assessment Method (Nadeau 2015) as streams that flow:

> *…only in direct response to precipitation. Water typically flows only during and shortly after large precipitation events. An ephemeral stream may or may not have a well-defined channel, the stream bed is always above the water table, and stormwater runoff is the primary source of water. An ephemeral stream typically lacks biological, hydrological, and physical characteristics commonly associated with the continuous or intermittent conveyance of water).*

In contrast, intermittent streams are defined by Oregon as "any stream which flows during a portion of every year and which provides spawning, rearing or food-producing areas for food and game fish" (OAR 141-085-0510(49)). Food-producing streams are typically one stream order above a fish-bearing stream.

Wetlands are defined by the State of Oregon as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (OAR 141-085-0510(110)).

This exhibit presents the Applicant's best professional judgment as to which wetland and other water features are jurisdictional under ODSL regulation. While Exhibit J uses the term "jurisdictional waters," the Applicant recognizes that final determination of agency jurisdiction will be made by ODSL, based on the information presented by the Applicant.

3.3 Delineation of Wetlands and Other Water Features

3.3.1 Methods

The Applicant conducted a desktop study of potentially jurisdictional wetlands and other waters to assist in planning for field delineations conducted in July 2020. Site-specific literature and Geographic Information System map layers reviewed as part of the desktop study included:

- National Wetland Inventory (NWI) maps (USFWS 2020);
- Hydric Soils List for Morrow County, Oregon (NRCS 2020a);
- The Natural Resources Conservation Service (NRCS) Soil Surveys of Morrow County in Oregon (NRCS 2020b);
- United States Geological Survey National Hydrography Dataset (NHD) (USGS 2020), which provided the location of potential streams; and
- Google Earth (2020), Morrow County, Oregon.

Field investigations for the delineation of wetlands and other waters were conducted in 2020 and 2021, and included pedestrian surveys within the site boundary. Delineations were conducted utilizing techniques published in the 1987 United States Army Corps of Engineers (USACE) Wetlands Delineation Manual (USACE 1987), the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008), and OARs for wetland delineations (141-090-0005 through 141-090-0055; ODSL 2001).

During the delineation efforts, each waterbody encountered was examined for wetland characteristics consistent with Waters of the State definitions (see Section 3.2), and this evidence was documented using standard field data sheets. The location and extent of each waterbody (regardless of its characteristics) was mapped with Global Positioning System technology. Upland plots were also established at some survey locations with mapped NWI features to confirm that the site did not meet wetland criteria. Streams were characterized as ephemeral using the Oregon Streamflow Duration Assessment Method (Nadeau 2015).

Detailed descriptions of delineation methods for wetlands and other waters are provided in the Wetland and Waters Report (Attachment J-1). The report was submitted to ODSL on January 13, 2022 for written concurrence (ODSL file number 2022-0023).

3.3.2 Results

Based on the results of site investigations conducted, no wetlands and five ephemeral streams were delineated within the site boundary. Appendix A in Attachment J-1 provides additional detail about each of the ephemeral streams. Ephemeral streams that were delineated in the analysis area are presumed not to be state jurisdictional as the state does not regulate ephemeral drainages.

Wetland presence was determined as per methods in the USACE Wetland Delineation Manual and the Arid West Supplement. No wetland indicators were found at any of the low elevation sites on the landscape or within the ephemeral streambeds.

4.0 Effects on Wetlands and Other Jurisdictional Waters of the State

OAR 345-021-0010(1)(j)(B) An analysis of whether construction or operation of the proposed facility would adversely affect any waters of this state.

OAR 345-021-0010(1)(j)(C) A description of the significance of potential adverse impacts to each feature identified in (A), including the nature and amount of material the applicant would remove from or place in the waters analyzed in (B).

OAR 345-021-0010(1)(j)(B) requests an analysis of any adverse effects on Waters of the State from the Facility. The Facility will not adversely affect Waters of the State, as defined under OAR 141-085-0510. There are no Waters of the State within the site boundary. The drainages that do exist are ephemeral and are documented in the attached Wetland and Waters Report (Attachment J-1). The Wetland and Waters Report was submitted to ODSL for concurrence on January 13, 2022 (ODSL file number 2022-0023).

5.0 Information Supporting Lack of Requirement for Removal-Fill Permit

OAR 345-021-0010(1)(j)(D) If the proposed facility would not need a removal-fill authorization, an explanation of why no such authorization is required for the construction and operation of the proposed facility.

Based on the results of the October 2021 wetland delineation (Attachment J-1), the Facility will have no adverse impacts to wetlands or other jurisdictional Waters of the State because none are present within the site boundary. Therefore, the removal-fill authorization is not required.

6.0 Mitigation and Monitoring Program

OAR 345-021-0010(1)(j)(F) A description of proposed actions to mitigate adverse impacts to the features identified in (A) and the applicant's proposed monitoring program, if any, for such impacts.

The Facility will have no adverse impacts to wetlands or other jurisdictional Waters of the State. Therefore, no monitoring or mitigation is proposed.

7.0 Submittal Requirements

7.1 Submittal Requirements

Table J-1. Submittal Requirements Matrix

Requirement	Location
OAR 345-021-0010(1)(j) Information based on literature and field study, as appropriate, about waters of this state, as defined under ORS 196.800 including:	–
(A) A description of all areas within the site boundary that might be waters of this state and a map showing the location of these features.	Section 3.0, Figure J-1, and Attachment J-1
(B) An analysis of whether construction or operation of the proposed facility would adversely affect any waters of this state.	Section 4.0
(C) A description of the significance of potential adverse impacts to each feature identified in (A), including the nature and amount of material the applicant would remove from or place in the waters analyzed in (B).	Section 4.0
(D) If the proposed facility would not need a removal-fill authorization, an explanation of why no such authorization is required for the construction and operation of the proposed facility.	Section 5.0
(E) If the proposed facility would need a removal-fill authorization, information to support a determination by the Council that the Oregon Department of State Lands should issue a removal-fill permit, including information in the form required by the Department of State Lands under OAR chapter 141 Division 85.	N/A
(F) A description of proposed actions to mitigate adverse impacts to the features identified in (A) and the applicant's proposed monitoring program, if any, for such impacts.	N/A

7.2 Approval Standard

OAR 345 Division 22 does not provide an approval standard specific to Exhibit J.

8.0 References

Google Earth Pro. 2020. Historical Aerial Imagery of the Study Area from 2015, 2013, 2012, 2011, 2006, 2005, 2003, 2001, and 1994.

Nadeau, Tracie-Lynn. 2015. Streamflow Duration Assessment Method for the Pacific Northwest. EPA 910-K-14-001, U.S. Environmental Protection Agency, Region 10, Seattle, WA.

NRCS (Natural Resources Conservation Service). 2020a. Hydric Soils National List; All States, July 2020. http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric. Accessed: July 2020.

NRCS. 2020b. Web Soil Survey. http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed: July 2020.

USFWS (U.S. Fish and Wildlife Service). 2020. National Wetlands Inventory. Wetlands Data by State, Oregon. Available at: https://www.fws.gov/wetlands/Data/State-Downloads.html (Downloaded July 2020).

ODOE (Oregon Department of Energy). 2021. Wagon Trail Solar Project. First Amended Project Order. Issued August 17, 2021. Salem, OR. Available online at: https://www.oregon.gov/energy/facilities-safety/facilities/Facilities%20library/2021-08-17-WTS-APP-NOI-Amended-Project-Order.pdf

ODSL (Oregon Department of State Lands). 2001. Administrative Rules for Wetland Delineation Report Requirements and for Jurisdictional Determinations for the Purpose of Regulating Fill and Removal within Waters of the State. Adopted July 1, 2001 and amended January 2013. http://arcweb.sos.state.or.us/pages/rules/oars_100/oar_141/141_090.html

ODSL. 2019. A Guide to the Removal-Fill Permit Process. Available at http://www.oregon.gov/dsl/WW/Documents/Removal_Fill_Guide.pdf. Accessed July 2020.

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USACE. 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2). ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

USGS (U.S. Geological Survey). 2020. The National Hydrography Dataset (NHD); NHD Viewer. Available online at: https://viewer.nationalmap.gov/basic/?basemap=b1&category=nhd&title=NHD%20View. Accessed May 2020.

Figures

Wagon Trail Solar Project

Figure J-1
Overview, NWI, and NHD Map

MORROW COUNTY, OREGON

- Study Area/Site Boundary
- State Highway
- County Boundary

NHD Streams/Rivers

- Intermittent Stream/River
- Perennial Stream/River

NHD Waterbodies

- Intermittent Lake/Pond
- Perennial Lake/Pond

NWI Waterbodies

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

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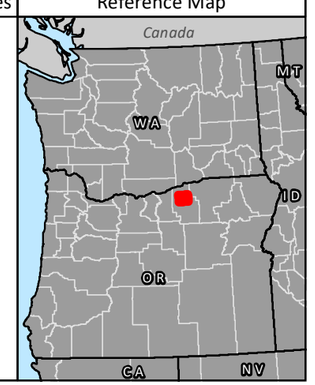
Data Sources	Reference Map
NextEra-Project Infrastructure; USDA-Aerial Imagery; ESRI-County Boundaries	

1:70,000 WGS 1984 UTM Zone 11N

0 1 2 4 6 Miles

NOT FOR CONSTRUCTION

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Attachment J-1. Wetland and Waters Report

Wetland and Waters Report

Wagon Trail Solar Project
October 2021

Prepared for

NEXTera ENERGY RESOURCES

Prepared by

TETRA TECH

Tetra Tech, Inc.

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Acronyms and Abbreviations

Applicant	Wheatridge East Wind, LLC c/o NextEra Energy Resources, LLC
Facility	Wagon Trail Solar Project
GPS	Global Positioning System
NHD	National Hydrography Dataset
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OAR	Oregon Administrative Rule
SDAM	Streamflow Duration Assessment Method
Tetra Tech	Tetra Tech, Inc.
WETS	Climate Analysis for Wetlands Table

1.0 Introduction

Wheatridge East Wind, LLC c/o NextEra Energy Resources, LLC (Applicant) is proposing to construct and operate the Wagon Trail Solar Project (Facility), a photovoltaic solar energy generation facility and supporting facilities in Morrow County, Oregon (Figure 1). Wetland and other waters surveys were completed on July 27 to 30, 2020 with additional photos taken on August 6, 2020 and additional surveys completed on March 8, 2021, April 14, 2021, and September 13, 2021 in preparation for the permitting of this Facility.

2.0 Landscape Setting and Land Use

2.1 Study Area

The Facility study area encompasses approximately 6,269 acres of privately owned land. Figure 2 shows and Table 1 below lists the tax lots crossed by the study area.

Table 1. Tax Lots Mapped in the Facility Study Area

Tax Map Numbers	Tax Lot Numbers
01N25E	100
01N25E	1600
01N25E	1700
01N25E	1900
01N25E	2803
01N25E	2805
01N25E	2900
01N25E	3000
01N25E	3100
01N25E	3200
01N25E	3202
01N25E	3300
01N25E	ROADS
01N26E	1100
01N26E	1102
01N26E	1301
01N26E	3300
01N26E	3400
01N26E	3500
01N26E	3502
01N26E	701
01N26E	ROADS
02N25E	400
02N25E	500
02N25E	ROADS

2.2 Landscape Setting

The Facility is located within the Level III Columbia Plateau Ecoregion, and within the further subdivided Level IV Umatilla Plateau (Thorson et al. 2003). In addition, the Facility is within U.S. Department of Agriculture Land Resource Region B, Northwest Wheat and Range Region (NRCS 2006).

This ecoregion is characterized by a nearly flat to rolling, treeless plateau, underlain by basalt with layers of loess deposits. Glacial features such as patterned ground are common. Thicker loess deposits are farmed for grain and chemically fallowed every other season. Rangeland dominates areas of thin loess deposits and other soils. The climate within this ecoregion is arid due to the rain-shadow effect of the Cascade Mountains. Most of this ecoregion receives less than 15 inches of precipitation a year, with some areas receiving as little as 8 inches (OSU 2010). The low annual precipitation supports semi-arid grassland and sagebrush steppe. Non-native cheatgrass (*Bromus tectorum*) inhabits vast areas of this ecoregion (Franklin and Dyrness 1988).

2.3 Land Use

The study area generally encompasses rural lands. Towns within proximity to the Facility include the cities of Lexington, Ione, and Heppner in Morrow County. Much of the historic native grassland and shrub-steppe habitat within the study area has been converted for agricultural use since European settlement in the mid-1800s.

The study area is almost entirely in a dryland winter wheat/chemical fallow rotation due to the low annual precipitation rate and lack of irrigation water in this region. The remaining land in the study area are small areas where the soils are too shallow for cropping. Those areas have a mix of native and invasive vegetation.

2.4 Mapped Features

Prior to field work, Tetra Tech Inc. (Tetra Tech) reviewed the National Wetlands Inventory (NWI; USFWS 2020), the National Hydrography Dataset (NHD; USGS 2020), hydric soils data from the Natural Resources Conservation Service (NRCS; NRCS 2020a), and aerial photographs (Google Earth Pro 2020) to identify potential wetlands and other waters, as described below. Digital maps used in the field contained the NWI, NHD, and recent aerial photograph overlays.

2.4.1 National Wetlands Inventory and Local Wetland Inventory Data

Desktop review of NWI data showed no wetlands in the study area. There is no Local Wetland Inventory available at this location (ODSL 2019). Figure 3 shows the NWI map layered over the Project study area.

2.4.2 Hydric Soils Data

Fifteen soil map units are mapped in the study area (Figure 4). There are no soils with a hydric component within the study area. Table 2 below summarizes the soil types listed by NRCS within the study area.

Table 2. Soils Mapped in the Study Area

Map Unit Code	Map Unit Name	Acres	Percent of Study Area	Percent Hydric Soil
13D	Gravden very gravelly loam, 5 to 20 percent slopes	0.3	<1%	0%
13E	Gravden very gravelly loam, 20 to 40 percent slopes	90.7	1%	0%
22	Kimberly silt loam, 0 to 3 percent slopes	98.6	2%	0%
28E	Lickskillet very stony loam, 7 to 40 percent slopes	69.5	1%	0%
29F	Lickskillet-Rock outcrop complex, 40 to 70 percent slopes	0.3	<1%	0%
45B	Ritzville silt loam, 2 to 7 percent slopes	2735.1	44%	0%
45C	Ritzville silt loam, 7 to 12 percent slopes	158.0	3%	0%
47E	Ritzville silt loam, 20 to 40 percent south slopes	0.4	<1%	0%
70B	Warden very fine sandy loam, 2 to 5 percent slopes	53.5	1%	0%
71A	Warden silt loam, 0 to 2 percent slopes	501.6	8%	0%
71B	Warden silt loam, 2 to 5 percent slopes	691.1	11%	0%
71C	Warden silt loam, 5 to 12 percent slopes	19.8	<1%	0%
71D	Warden silt loam, 12 to 20 percent slopes	10.6	<1%	0%
75B	Willis silt loam, 2 to 5 percent slopes	996.3	16%	0%
75C	Willis silt loam, 5 to 12 percent slopes	635.0	10%	0%
75D	Willis silt loam, 12 to 20 percent slopes	4.8	<1%	0%
78	Xeric Torriorthents, nearly level	203.1	3%	0%

2.4.3 National Hydrography Dataset

The NHD shows no perennial streams within the study area (USGS 2020). There are intermittent stream lines present on the NHD maps within the study area, and those were used to determine field survey locations.

3.0 Site Alterations

Site alterations are those activities that directly or indirectly impact wetlands and other waters such that the function or area of the feature changes significantly. A significant alteration would be one that renders the feature non-functioning, or one that changes the boundaries. Land use in the study area is generally dominated by wheat farming. Tillage practices are changing across the

region, and the conversion to reduced till and no-till methods of farming have decreased the amount of overland flow and increased the infiltration rates on-site. The alterations associated with these practices may have affected the geographic size and/or the hydroperiod of wetlands and other waters. Some waters that were delineated in the study area are likely to have had historically higher flows due to runoff from the farmed fields that would not be present with the new farming practices.

4.0 Precipitation Data and Analysis

Average historical monthly precipitation data and daily precipitation data for the periods preceding and during field work were obtained from the National Oceanic and Atmospheric Administration's National Weather Service (NOAA n.d.; Tables 3 and 4). The closest geographical location with an NRCS Climate Analysis for Wetlands Table (WETS) is Heppner, Oregon, 36 miles to the east and approximately 500 feet higher in elevation than the study area (NRCS 2020b).

4.1 2020 Field Surveys

Total accumulated precipitation for the water year between October 2019 and July 2020 was 47 percent of average due to below-average precipitation in every month except May. For the 10-day span preceding and during field work from July 27–29, 2020, no precipitation was measured (NOAA n.d.). Based on the precipitation data for the 3 months prior to the site visits and the overall below average precipitation for the water year, it was estimated that groundwater was below what is usually encountered at this time of year (Table 3).

4.2 2021 Field Surveys

Total accumulated precipitation for the water year between October 2020 and September 2021 was 65 percent of average due to below-average precipitation in every month except November, February, and September. For the 10-day span preceding field work on March 8, 2021, 0.70 inch of precipitation was measured, and it rained while the field surveys were being conducted (0.10 inch total) (NOAA n.d.). For the 10-day span preceding field work on April 14, 2021, 0.20 inch of rain fell. For the 10-day span preceding field work on September 13, 2021, 0.44 inch of rain fell, almost all of that the day before surveys were completed.

Based on the precipitation data for the 3 months prior to the site visits and the overall below average precipitation for the water year, it was estimated that groundwater was below what is usually encountered at this time of year (Table 4).

Lower than normal precipitation levels did not affect the delineation of waters as determinations of intermittent versus ephemeral stream were made using indicators described in the Streamflow Duration Assessment Method (SDAM) for the Pacific Northwest (Nadeau 2015).

Table 3. Precipitation Data – Water Year 2019-2020 and Historical (Inches)

Precipitation	Oct 2019	Nov 2019	Dec 2019	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020	Jun 2020	July 2020	Annual Total to Date
Recorded Monthly Precipitation Totals[1] (inches) (Heppner, OR)	0.68	0.27	0.43	1.2	0.8	0.9	0.61	2.48	0.82	0.03	**8.22**
WETS Accumulated Monthly Averages[2] (inches) (Heppner, OR)	1.14	1.51	1.38	1.33	1.12	1.46	1.48	1.65	1.17	0.31	**17.46**
Recorded Precipitation Relative to Average Monthly Precipitation (Heppner, OR)	60%	18%	31%	90%	71%	62%	41%	150%	70%	10%	**47%**
Cumulative Water Year Precipitation (inches) (Heppner, OR)	0.68	0.95	1.38	2.58	3.38	4.28	4.89	7.37	8.19	8.22	**8.22**

1. NOAA n.d.
2. NRCS 2020b

Table 4. Precipitation Data – Water Year 2020-2021 and Historical (Inches)

Precipitation	Oct 2020	Nov 2020	Dec 2020	Jan 2021	Feb 2021	Mar 2021	Apr 2021	May 2021	Jun 2021	Jul 2021	Aug 2021	Sep 2021	Annual Total to Date
Recorded Monthly Precipitation Totals[1] (inches) (Heppner, OR)	0.66	2.07	0.75	0.96	1.7	0.27	0.27	0.54	0.51	0.03	0.09	1.13	**8.98**
WETS Accumulated Monthly Averages[2] (inches) (Heppner, OR)	1.14	1.51	1.38	1.33	1.12	1.46	1.48	1.65	1.17	0.31	0.54	0.69	**13.78**
Recorded Precipitation Relative to Average Monthly Precipitation (Heppner, OR)	58%	137%	54%	72%	152%	18%	18%	33%	44%	10%	17%	164%	**65%**
Cumulative Water Year Precipitation (inches) (Heppner, OR)	0.66	2.73	3.48	4.44	6.14	6.41	6.68	7.22	7.73	7.76	7.85	8.98	**8.98**

1. NOAA n.d.
2. NRCS 2020b

5.0 Methods

5.1 Pre-field Work

In preparation for field work, Tetra Tech reviewed NWI, NHD, hydric soils data, and aerial photographs to identify potential wetlands and other waters (Section 2.4). Tetra Tech prepared digital field maps with these data and uploaded the maps onto data collection tablets to assist field staff in identifying the locations of probable wetlands and non-wetland waters within the study area, or adjacent features that may extend into the study area.

Wetlands and surface water data were obtained from the NWI (USFWS 2020) and the NHD (USGS 2020). Soils data were obtained from the NRCS Web Soil Survey (NRCS 2020b). Tetra Tech used the historical orthoimagery available on Google Earth Pro to look for aerial signatures of wetlands and waters (Google Earth Pro 2020).

The following guidance documents and procedures were reviewed:

- Arid West Supplement (USACE 2008);
- Wetlands Delineation Manual, Technical Report Y-87-1 (Manual; USACE 1987);
- SDAM (Nadeau 2015);
- Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979);
- Oregon Administrative Rule (OAR) 141-090, Administrative Rules for Wetland Delineation Report Requirements and for Jurisdictional Determinations for the Purpose of Regulating Fill and Removal within Waters of the State;
- A Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States (Lichvar and McColley 2008); and
- Streamflow Duration Assessment Method for the Pacific Northwest (Nadeau 2015).

5.2 Field Work

Field investigations for the delineation of wetlands and other waters included pedestrian surveys within the study area. Tetra Tech conducted the field survey and delineation of non-wetland waters on July 27-29, 2020, as well as March 8, April 14, and September 13, 2021. The desktop surface water data were used to focus the non-wetland waters evaluation as necessary. Section 7.0 discusses deviations from the NWI and NHD data.

5.2.1 Wetland Delineations

Wetland presence was determined per methods in the Manual and the Arid West Supplement. No wetland indicators were found at any of the low elevation sites on the landscape nor were they found

within the ephemeral streambeds. Sample sites were taken in three places where there was the most likelihood of finding hydric conditions; data sheets describing those sites are in Appendix A.

5.2.2 Non-wetland Waters Evaluations

Evaluations of non-wetland waters consisted of the following:

- Flow duration for non-wetland waters was determined using SDAM (Nadeau 2015). Details on mapping methods are presented in Section 8.0, and the SDAM sheets are in Appendix A.
- Ordinary High Water Mark was determined based on criteria such as changes in the character of the soil, sediment, litter or debris deposition, changes in vegetation, and scour lines.
- The centerline of non-wetland waters less than 6 feet in width was recorded as a line feature and buffered to the stream width determined in the field.
- Photographs were taken to document streams, ditches, and upland conditions at locations that NHD mapped as streams (Appendix B).

6.0 Description of Wetlands and Other Non-wetland Waters

All features evaluated in the study area are depicted on the Figure 5 map set.

6.1 Wetlands

There are no wetlands within the study area.

6.2 Non-wetland Waters

Five ephemeral streams were delineated within the study area as shown in Table 5.

Table 5. Delineated Non-Wetland Waters

Feature Name	Map Number	OHWL Width (feet)	Flow Duration	Flow Direction	Photo Number
EPH-01	5	4 Feet	Ephemeral	Northeast	30, 31, 49
EPH-02	6	2 Feet	Ephemeral	North	44, 93
EPH-02a	7	3 Feet	Ephemeral	North	82, 83
EPH-02b	6	1 Foot	Ephemeral	Northwest	86, 87,88
EPH-03	7	3 Feet	Ephemeral	South	57, 59, 60, 61
EPH-04	4, 6	6 Feet	Ephemeral	North	75 - 81
EPH-05	6	1 Foot	Ephemeral	North	96

7.0 Deviation from NWI and NHD

The NWI showed no wetlands in the study area. Field surveys confirmed this finding. The field-determined flow duration for three NWI-mapped intermittent streams were determined to be ephemeral, and one NWI-mapped intermittent stream was determined to not have physical characteristics indicative of an intermittent stream (Table 6). NHD mapped streams that were field determined to be not present are listed in Table 6.

Table 6. Deviations from National Wetlands Inventory

Feature Name	Map Number	Photograph Number	NHD Classification	NWI Classification	Reason for Deviation
XBB-01	1	15	Intermittent Stream	None	No bed or banks in active cropland.
XBB-02	1	16	None	None	Orthoimagery showed potential drainage, no bed or banks in active cropland.
XBB-03	1	17	Intermittent Stream	None	No bed or banks in active cropland.
XBB-04	1	19	Intermittent Stream	None	No bed or banks in active cropland.
XBB-05	1	20	Intermittent Stream	None	No bed or banks in area with shallow soils between crop fields.
XBB-06	1	21	Intermittent Stream	None	No bed or banks in area with shallow soils between crop fields.
XBB-07	1	22	Intermittent Stream	None	No bed or banks in area with shallow soils between crop fields.
XBB-08	1	23	Intermittent Stream	None	No bed or banks in area with shallow soils between crop fields.
XBB-09	3	24	Intermittent Stream	None	No bed or banks in active cropland.
XBB-10	3	25	Intermittent Stream	None	No bed or banks in active cropland.
XBB-11	2	12	Intermittent Stream	None	No bed or banks in active cropland.
XBB-12	2	13	Intermittent Stream	None	No bed or banks in active cropland.
XBB-13	2	14	Intermittent Stream	None	No bed or banks in active cropland.
XBB-14	2, 3	26	Intermittent Stream	None	No bed or banks in active cropland.
XBB-15	2, 3	27	Intermittent Stream	None	No bed or banks in active cropland.
XBB-16	2	28	Intermittent Stream	None	No bed or banks in active cropland.
XBB-17	5	47	Intermittent Stream	None	No bed or banks in active cropland.
XBB-18	5	48	Intermittent Stream	None	No bed or banks in active cropland.
XBB-19	5	29	Intermittent Stream	None	No bed or banks in active cropland.
XBB-20	5	31	Intermittent Stream	None	EPH-01 no longer has bed or banks at this point. Active cropland to road edge.
XBB-21	5	32	Intermittent Stream	None	No bed or banks on opposite side of road and downstream from EPH-01.

Feature Name	Map Number	Photograph Number	NHD Classification	NWI Classification	Reason for Deviation
XBB-22	5	50	Intermittent Stream	None	No bed or banks on opposite side of road and downstream from EPH-01.
XBB-23	5	34	Intermittent Stream	Riverine	No bed or banks in sagebrush filled low point in rangeland (cattle present).
XBB-24	5	51	Intermittent Stream	Riverine	No bed or banks in sagebrush filled low point in rangeland (cattle present).
XBB-25	5	52	Intermittent Stream	None	No bed or banks in active rangeland.
XBB-26	5	53	Intermittent Stream	None	No bed or banks in active rangeland.
XBB-27	7	55	Intermittent Stream	None	No bed or banks in active cropland.
XBB-28	5	37	Intermittent Stream	None	No bed or banks in active cropland.
XBB-29	7	38	Intermittent Stream	None	No bed or banks in active cropland.
XBB-30	7	39	Intermittent Stream	None	No bed or banks in active cropland.
XBB-31	7	40	Intermittent Stream	None	No bed or banks in active cropland.
XBB-32	5	41	Intermittent Stream	None	No bed or banks in active cropland.
XBB-33	6	45	Intermittent Stream	None	No bed or banks in active cropland.
XBB-34	6	46	Intermittent Stream	None	No bed or banks in shallow soils adjacent to cropland.
XBB-35	5	36	Intermittent Stream	Riverine	No bed or banks in sagebrush filled low point in rangeland (cattle present).
XBB-36	7	56	Intermittent Stream	None	No bed or banks in active cropland.
XBB-37	7	57	Intermittent Stream	None	EPH-03 does not have bed or banks uphill of this point.
XBB-38	7	58	Intermittent Stream	None	No bed or banks in active cropland.
XBB-39	7	62	Intermittent Stream	Riverine	No bed or banks in active cropland.
XBB-40	6	63	Intermittent Stream	None	No bed or banks in active cropland.
XBB-41	6	43	Intermittent Stream	None	No bed or banks in active cropland.
XBB-42	6	65	Intermittent Stream	None	No bed or banks in active cropland.
XBB-43	6	66	Intermittent Stream	None	No bed or banks in active cropland.
XBB-44	6	68	Intermittent Stream	None	No bed or banks in active cropland.
XBB-45	4	70	Intermittent Stream	None	No bed or banks in area with shallow soils between crop fields.
XBB-46	4	69	Intermittent Stream	None	No bed or banks in area with shallow soils between crop fields.
XBB-47	4	71	Intermittent Stream	None	No bed or banks in area with shallow soils between crop fields.
XBB-48	4	72	Intermittent Stream	None	No bed or banks in active cropland.
XBB-49	7	84	Intermittent Stream	None	No bed or banks in active cropland.

Feature Name	Map Number	Photograph Number	NHD Classification	NWI Classification	Reason for Deviation
XBB-50	6	85	Intermittent Stream	None	No bed or banks in active cropland.
XBB-51	6	95	Intermittent Stream	None	No bed or banks.
XBB-52	6	97	Intermittent Stream	None	No bed or banks.

8.0 Mapping Methods

Water centerlines and photograph locations were recorded using a Juniper Geode series Global Positioning System (GPS) unit, configured to differentially correct positions in real-time using the Satellite Based Augmentation System, which typically results in positional error of less than 1 meter (Juniper Systems 2018). Water centerlines were recorded as line features using GPS units set to collect vertices every 2 seconds. Field staff walked the centerline of the ephemeral streams with the GPS unit in hand, at a pace consistent with creating an accurate representation of the water feature.

9.0 Results and Conclusions

Using methods recommended in the Manual and Arid West Supplement, no wetlands were found in the study area (Table 7). Five ephemeral streams were delineated.

Table 7. Summary of Wetlands, Other Water Features, and Roadside Drainage Ditches

Feature	Number of Features	Acres
Wetlands	0	N/A
Ephemeral Stream	5	5.462

10.0 Disclaimer

This disclaimer is included according to OAR 141-090-0035(12)(j):

> *This report documents the investigation, best professional judgment, and conclusions of the investigator. It is correct and complete to the best of my knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been reviewed and approved in writing by the Oregon Department of State Lands in accordance with OAR 141-090-0005 through 141-090-0055.*

11.0 References

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Figures

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Wagon Trail Solar Project

Figure 1
Facility Location

MORROW COUNTY, OREGON

- Study Area
- City/Town
- Interstate Highway
- Secondary Highway
- Secondary Road
- County Boundary
- State Boundary

Alderdale
Boardman
Hermiston
Stanfield
Echo
Nolin
Arlington
Cecil
Olex
Ione
Lexington
Heppner

Klickitat County
Gilliam County
Morrow County
Benton County
Umatilla County

Boardman Bombing Range
Umatilla Ordnance Depot
Cold Springs Nat'l Wildlife Refuge
HURLBURT FLATS
FINLEY BUTTES
JUNIPER CANYON
SOCIAL RIDGE
ALDER RIDGE

Willow Creek
Hinton Creek
Little Butter Creek
Butter Creek

1973 ft
2894 ft

14 730 930 662 84 82 1198 395 320 19 74 207 578 206

1:250,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

NOT FOR CONSTRUCTION

TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources	Reference Map
NextEra-Project Infrastructure; ESRI-Roads	

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Wagon Trail Solar Project

Figure 2
Tax Lot Index Map

MORROW COUNTY, OREGON

Figure 2.1

Figure 2.2

Figure 2.3

Figure 2.4

Bombing Range Rd

Juniper Rd

Little Juniper Ln

Ione-Boardman Rd

207

Sand Hollow Rd

578

Baseline Rd

Sandhollow Rd

Map Grid

Study Area

Secondary Road

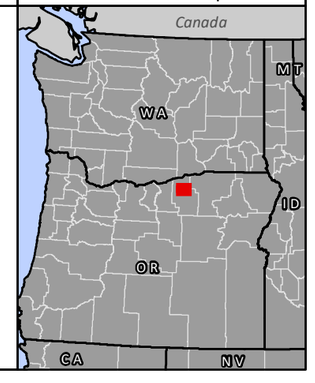
TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources

NextEra-Project Infrastructure; ESRI-Roads, USDA-Aerial Imagery

Reference Map



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Wagon Trail Solar Project

Figure 2.1
Tax Lot Map

MORROW COUNTY, OREGON

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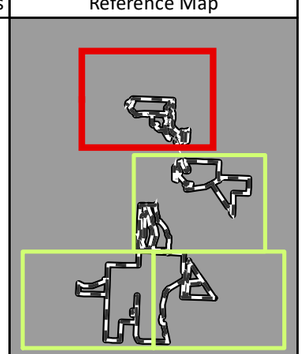
0 0.5 1 2 Miles

NOT FOR CONSTRUCTION

Study Area
Tax Lot

TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources	Reference Map
NextEra-Project Infrastructure, Taxlots; ESRI-Roads; USDA-Aerial Imagery	

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Wagon Trail Solar Project

Figure 2.2
Tax Lot Map

MORROW COUNTY, OREGON

02N25E000000500
02N25E0000ROADS
02N25E000000400
02N26E000001700
02N26E000001200
02N26E0000ROADS
02N26E000001900
02N26E000001200
01N25E000000503
01N25E000000302
01N25E000000200
01N25E000000100
01N25E000000400
01N25E000000502
01N25E000000300
01N26E000000600
Little Juniper Ln
01N26E000001100
01N25E000000400
01N25E000000502
01N25E000000301
01N25E000000100
01N25E000000100
01N26E000001101
01N26E000000701
01N26E000000700
01N26E000000800
01N25E000000501
01N26E000001100
01N25E000000100
01N25E0000ROADS
01N25E000001500
01N25E000001500
01N26E000001102
01N25E000001700
Bombing Range Rd
01N26E000001700
01N26E000001301
01N25E000001401
01N26E000001300
01N26E000000400
01N25E000001700
01N26E000001200
01N25E000001600
01N25E000001800
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01N26E000002700
01N26E000002805
01N25E000001600
01N26E000002900
01N26E000002804
01N26E000003200
01N26E000002900
01N25E000001900
01N25E000002900
01N25E000003100
01N26E000003202
01N26E000003201
01N26E000003000

1:20,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 Miles

NOT FOR CONSTRUCTION

Study Area
Tax Lot
Secondary Road

TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources

NextEra-Project Infrastructure, Taxlots; ESRI-Roads; USDA-Aerial Imagery

Reference Map

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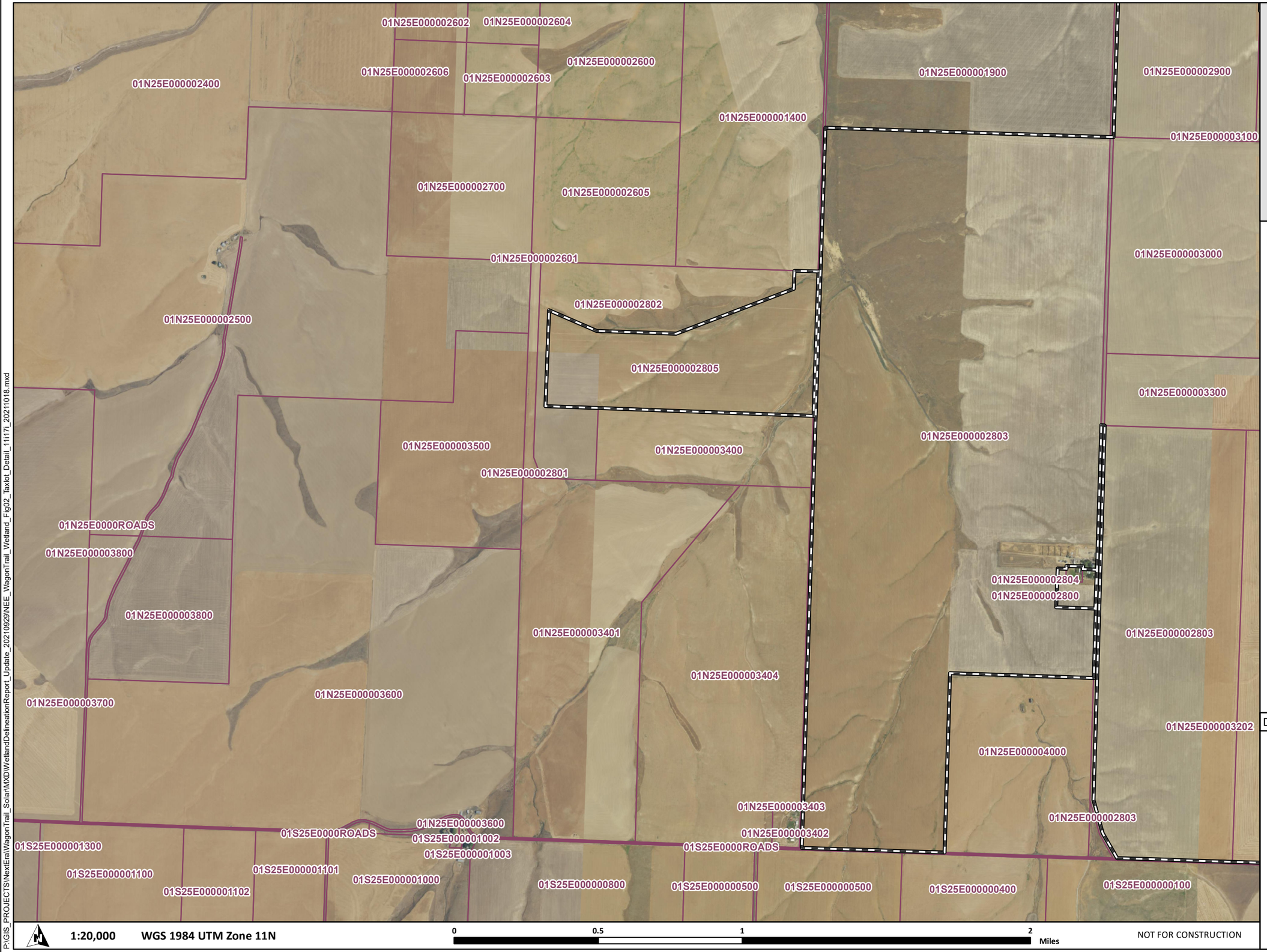
Wagon Trail Solar Project

Figure 2.3
Tax Lot Map

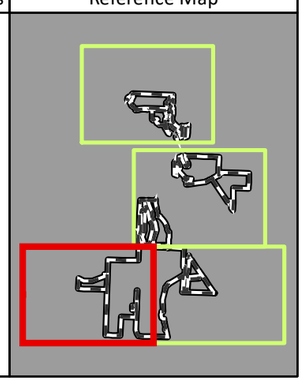
MORROW COUNTY, OREGON



Study Area
Tax Lot

TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources	Reference Map
NextEra-Project Infrastructure, Taxlots; ESRI-Roads; USDA-Aerial Imagery	

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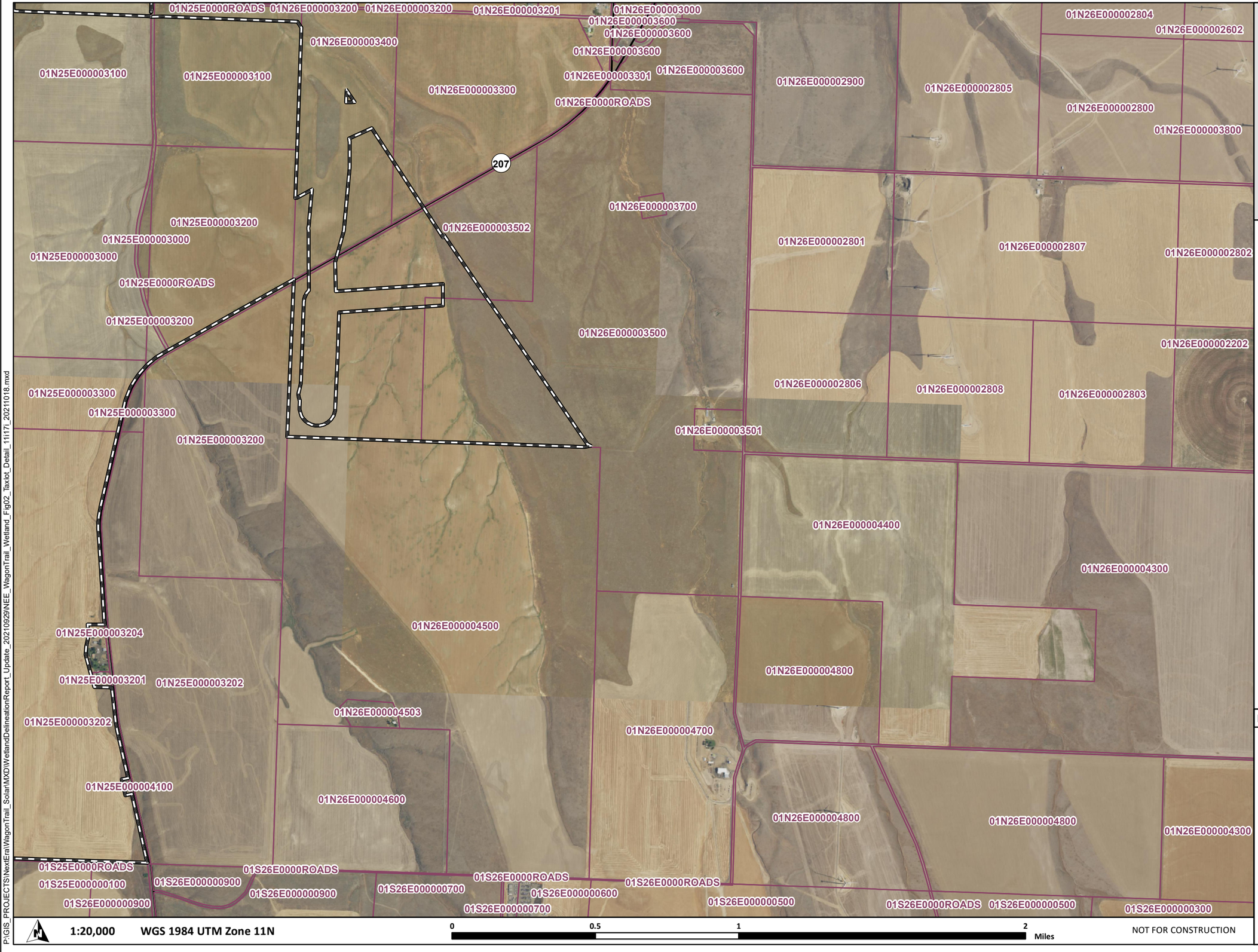
Wagon Trail Solar Project

Figure 2.4
Tax Lot Map

MORROW COUNTY, OREGON



Study Area
Tax Lot
Secondary Road

1:20,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 Miles

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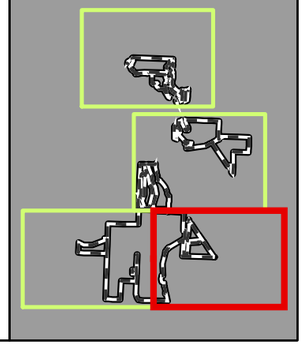
TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources	Reference Map
NextEra-Project Infrastructure, Taxlots; ESRI-Roads; USDA-Aerial Imagery	

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Wagon Trail Solar Project

Figure 3
National Wetlands Inventory
Index Map

MORROW COUNTY, OREGON

Figure 3.1

Figure 3.2

Figure 3.3

Figure 3.4

Map Grid
Study Area
Secondary Road

TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources	Reference Map
NextEra-Project Infrastructure; ESRI-Roads	

1:65,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

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Wagon Trail Solar Project

Figure 3.1
National Wetlands Inventory Map

MORROW COUNTY, OREGON

Study Area

Stream

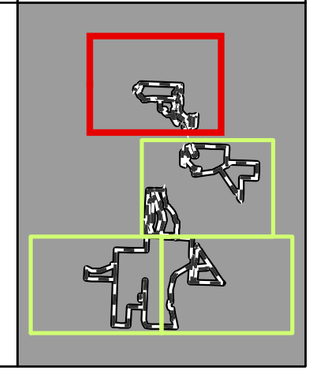
- Intermittent
- Perennial

Wetland

- Riverine

TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources	Reference Map
NextEra-Project Infrastructure; ESRI-Roads; USGS-NHD; USFWS-NWI	

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0 0.5 1 2 Miles

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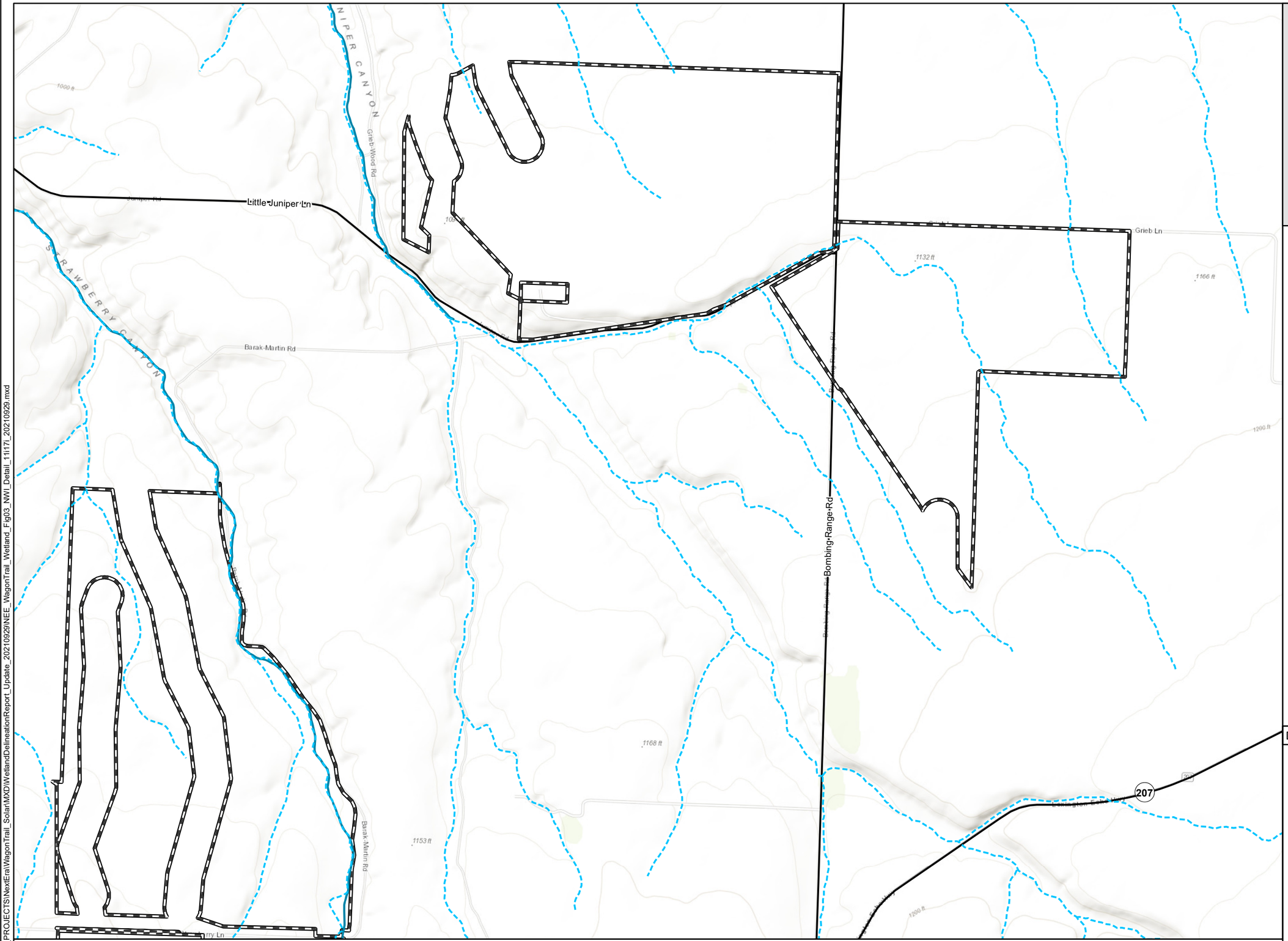
Wagon Trail Solar Project

Figure 3.2
National Wetlands Inventory Map

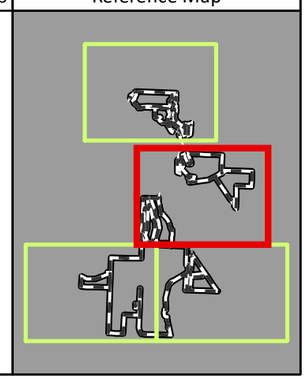
MORROW COUNTY, OREGON



Study Area
Secondary Road
Stream
Intermittent
Wetland
Riverine

TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources	Reference Map
NextEra-Project Infrastructure; ESRI-Roads; USGS-NHD; USFWS-NWI	

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Wagon Trail Solar Project

Figure 3.3
National Wetlands Inventory Map

MORROW COUNTY, OREGON

Study Area

Stream

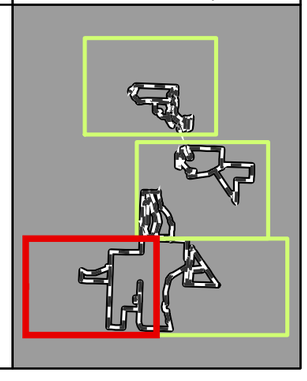
Intermittent

Wetland

Riverine

TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources	Reference Map
NextEra-Project Infrastructure; ESRI-Roads; USGS-NHD; USFWS-NWI	

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0 0.5 1 2 Miles

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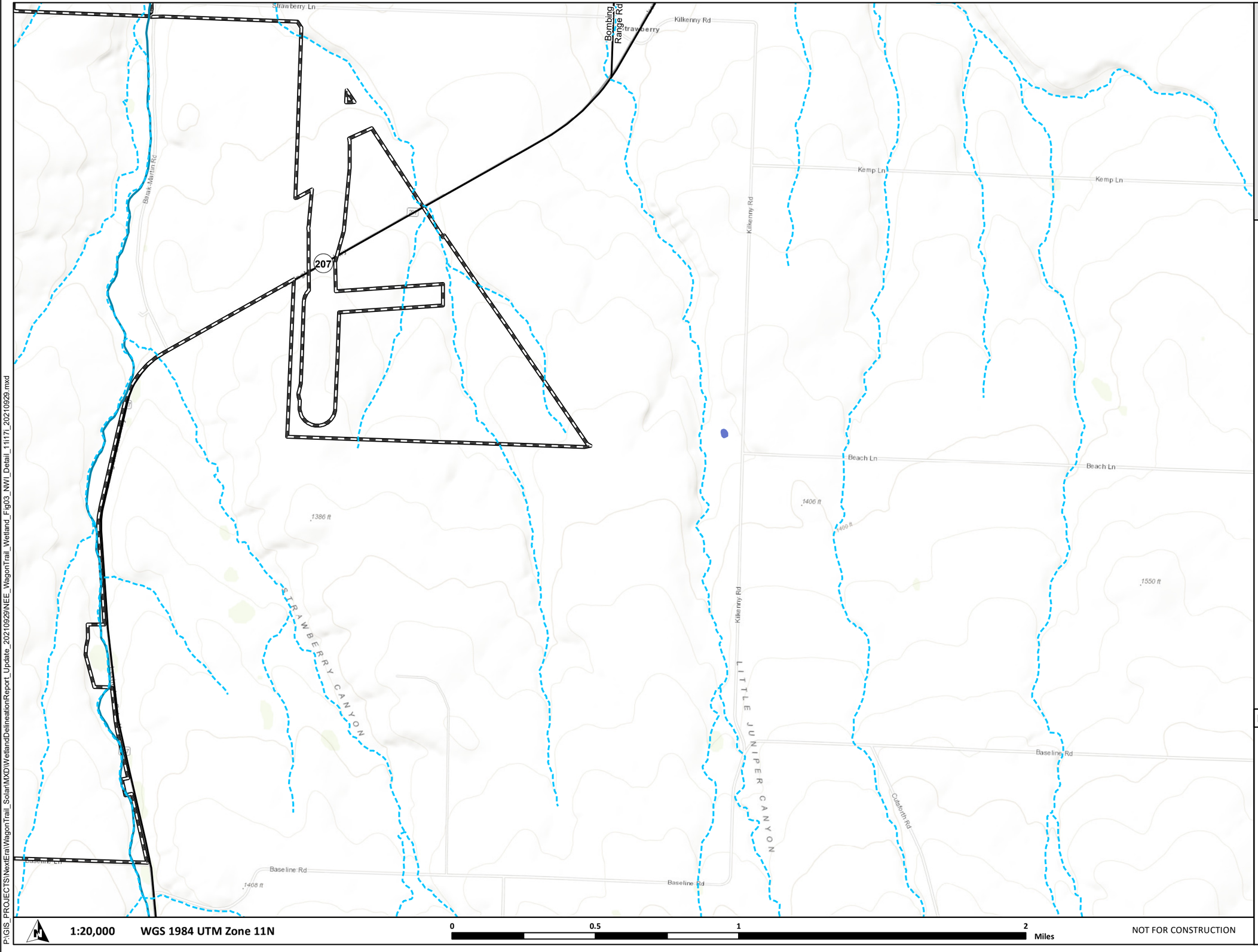
Wagon Trail Solar Project

Figure 3.4
National Wetlands Inventory Map

MORROW COUNTY, OREGON



Study Area
Secondary Road

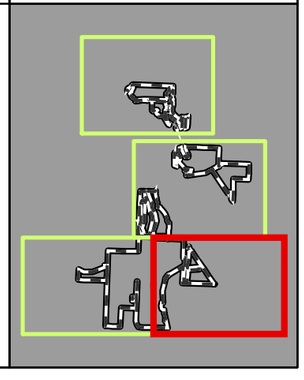
Stream
- Intermittent

Wetland
- Freshwater Pond
- Riverine

Lake/Pond
- Intermittent

TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources	Reference Map
NextEra-Project Infrastructure; ESRI-Roads; USGS-NHD; USFWS-NWI	

1:20,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 Miles

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Wagon Trail Solar Project

Figure 4
Soils Index Map

MORROW COUNTY, OREGON

Figure 4.1

Figure 4.2

Figure 4.3

Figure 4.4

Bombing Range Rd

Juniper Rd

Little Juniper Ln

Ione-Boardman Rd

207

Sand Hollow Rd

578

Baseline Rd

Sandhollow Rd

Map Grid
Study Area
Secondary Road

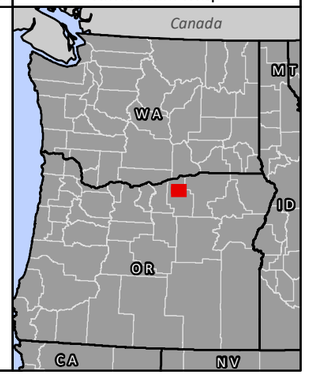
TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources

NextEra-Project Infrastructure; ESRI-Roads; USDA-Aerial Imagery

Reference Map



1:65,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

NOT FOR CONSTRUCTION

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Wagon Trail Solar Project

Figure 4.1
Soils Map

MORROW COUNTY, OREGON

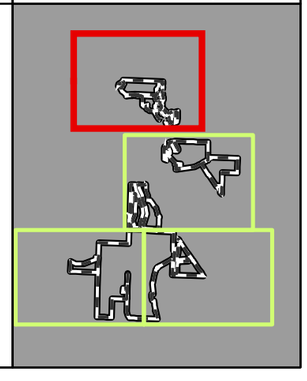
Study Area

Hydric Rating

Nonhydric

TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources	Reference Map
NextEra-Project Infrastructure; ESRI-Roads; USDA-Aerial Imagery; Soils-NRCS	

1:20,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 Miles

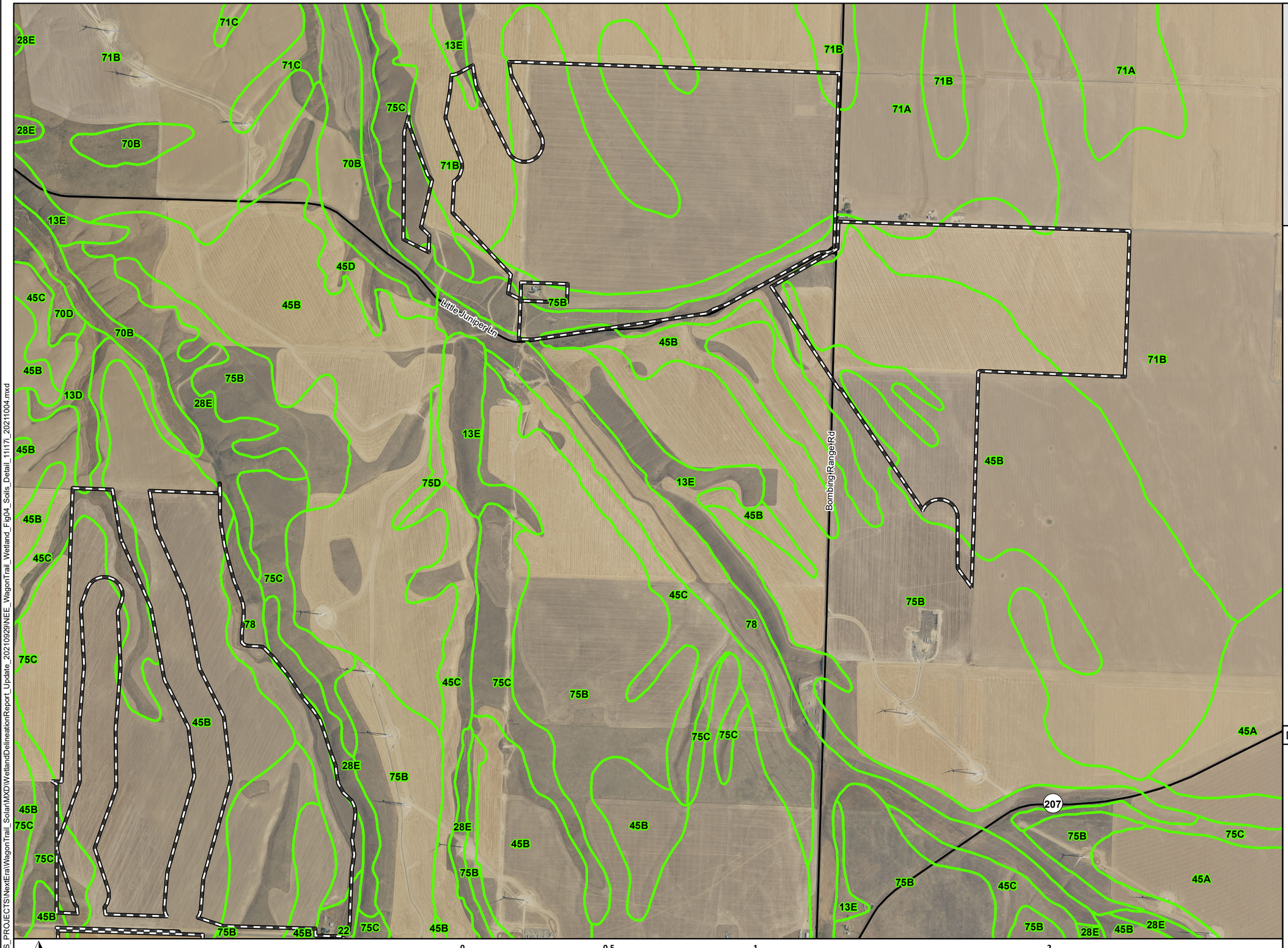
NOT FOR CONSTRUCTION

P:\GIS_PROJECTS\NextEra\WagonTrail_Solar\MXD\WetlandDelineationReport_Update_20210929\NEE_WagonTrail_Wetland_Fig04_Soils_Detail_11i17_20211004.mxd

Wagon Trail Solar Project

Figure 4.2
Soils Map

MORROW COUNTY, OREGON



1:20,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 Miles

NOT FOR CONSTRUCTION

Study Area

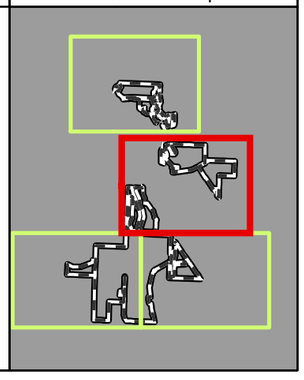
Secondary Road

Hydric Rating

Nonhydric

TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources	Reference Map
NextEra-Project Infrastructure; ESRI-Roads; USDA-Aerial Imagery; Soils-NRCS	

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Wagon Trail Solar Project

Figure 4.3
Soils Map

MORROW COUNTY, OREGON

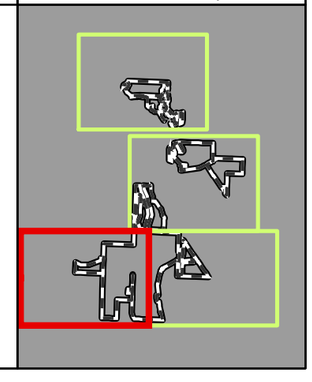
Study Area

Hydric Rating

Nonhydric

TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources	Reference Map
NextEra-Project Infrastructure; ESRI-Roads; USDA-Aerial Imagery; Soils-NRCS	

1:20,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 Miles

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Wagon Trail Solar Project

Figure 4.4
Soils Map

MORROW COUNTY, OREGON

Study Area
Secondary Road
Hydric Rating
Nonhydric

Bombing Range Rd
207
22

45B 75B 45B 75C 75B 45B 45C 28E 78 45C 45B 45A 75B 28E 75B 45C 47E 28E 78 75B 13E 45B 75C 28E 75B 28E 45C 45C 45C 75B 75B 45B 75C 75B 28E 45B 75C 45B 11 28E 78 75C 45B 45B 75B 30C 75B 75B 45B 45B 75B 30B 28E 28E 45B 30B 30B 45B 28E 45B 78 28E 75D 75C 75C 45B 75C 45B 45B

1:20,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 Miles

NOT FOR CONSTRUCTION

TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources

NextEra-Project Infrastructure; ESRI-Roads; USDA-Aerial Imagery; Soils-NRCS

Reference Map

P:\GIS_PROJECTS\NextEra\WagonTrail_Solar\MXD\WetlandDelineationReport_Update_20210929\NEE_WagonTrail_Wetland_Fig04_Soils_Detail_11i17i_20211004.mxd

Wagon Trail Solar Project

Figure 5
Wetland and Waters Delineation Index Map

MORROW COUNTY, OREGON

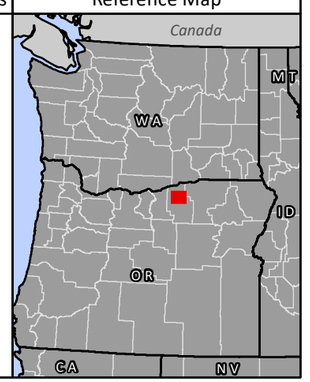
Figure 5.1
Figure 5.2
Figure 5.3
Figure 5.4
Figure 5.5
Figure 5.6
Figure 5.7

207
578

Map Grid
Study Area
Secondary Road

TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources	Reference Map
NextEra-Project Infrastructure; ESRI-Roads; USDA-Aerial Imagery	

1:65,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

NOT FOR CONSTRUCTION

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Wagon Trail Solar Project

Figure 5.1
Wetland and Waters Delineation Map

MORROW COUNTY, OREGON

XBB-03 (#17)
XBB-02 (#16)
XBB-01 (#15)
(#2)
(#4)
(#3)
(#1)
XBB-05 (#20)
XBB-06 (#21)
XBB-07 (#22)
(#18)
XBB-08 (#23)
XBB-04 (#19)
(#7)
(#6)
(#5)

02N25E000000200
02N26E000000500
02N25E000000500
02N25E000000400
02N26E000001200
02N25E000001700
02N25E0000ROADS
02N26E0000ROADS
02N26E000001600

Study Area
Tax Lot
Photo Point (# Photo Number)

TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources	Reference Map
NextEra-Project Infrastructure, Taxlots; ESRI-Roads; USDA-Aerial Imagery	

1:10,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 Miles

NOT FOR CONSTRUCTION

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Wagon Trail Solar Project

Figure 5.2
Wetland and Waters Delineation Map

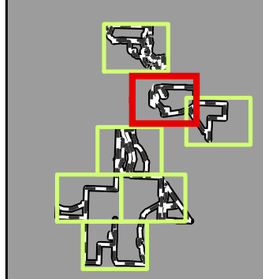
MORROW COUNTY, OREGON

02N25E0000ROADS
02N25E000000500
02N25E000000400
02N25E000000400
02N26E000001700
02N26E000001200
02N26E0000ROADS
02N26E000001900
XBB-12 (#13)
XBB-11 (#12)
01N25E000000302
01N25E000000100
01N25E000000200
XBB-13 (#14)
01N26E000000600
01N25E000000300
01N25E000000100
(#10)
01N26E000001100
XBB-14 (#26)
XBB-15 (#27)
01N25E000000301
01N25E000000100
XBB-16 (#28)
Little Juniper Ln
01N26E000001101
01N26E000000701
(#8)
01N26E0000ROADS
01N26E000001100
Bombing Range Rd
01N25E000001500
01N25E0000ROADS
01N25E000000100
01N25E000001700
01N25E000001600
01N26E000001102
01N26E000001301
01N25E000001500

- Study Area
- Secondary Road
- Tax Lot
- Photo Point (# Photo Number)

TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources	Reference Map
NextEra-Project Infrastructure, Taxlots; ESRI-Roads; USDA-Aerial Imagery	

1:10,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 Miles

NOT FOR CONSTRUCTION

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Wagon Trail Solar Project

Figure 5.3
Wetland and Waters Delineation Map

MORROW COUNTY, OREGON

01N26E000001100
01N26E000000600
01N26E000000701
01N26E000000700
01N26E000000800
01N26E000001102
01N26E0000ROADS
01N26E000001301
01N26E000001300
01N26E000001700
01N26E000000400
01N26E000001200

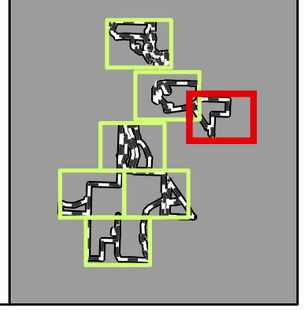
XBB-14 (#26)
XBB-15 (#27)
XBB-10 (#25)
XBB-09 (#24)
(#11)

Little Juniper Ln
Bombing Range Rd

- Study Area
- Secondary Road
- Tax Lot
- Photo Point (# Photo Number)

TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources	Reference Map
NextEra-Project Infrastructure, Taxlots; ESRI-Roads; USDA-Aerial Imagery	

1:10,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 Miles

NOT FOR CONSTRUCTION

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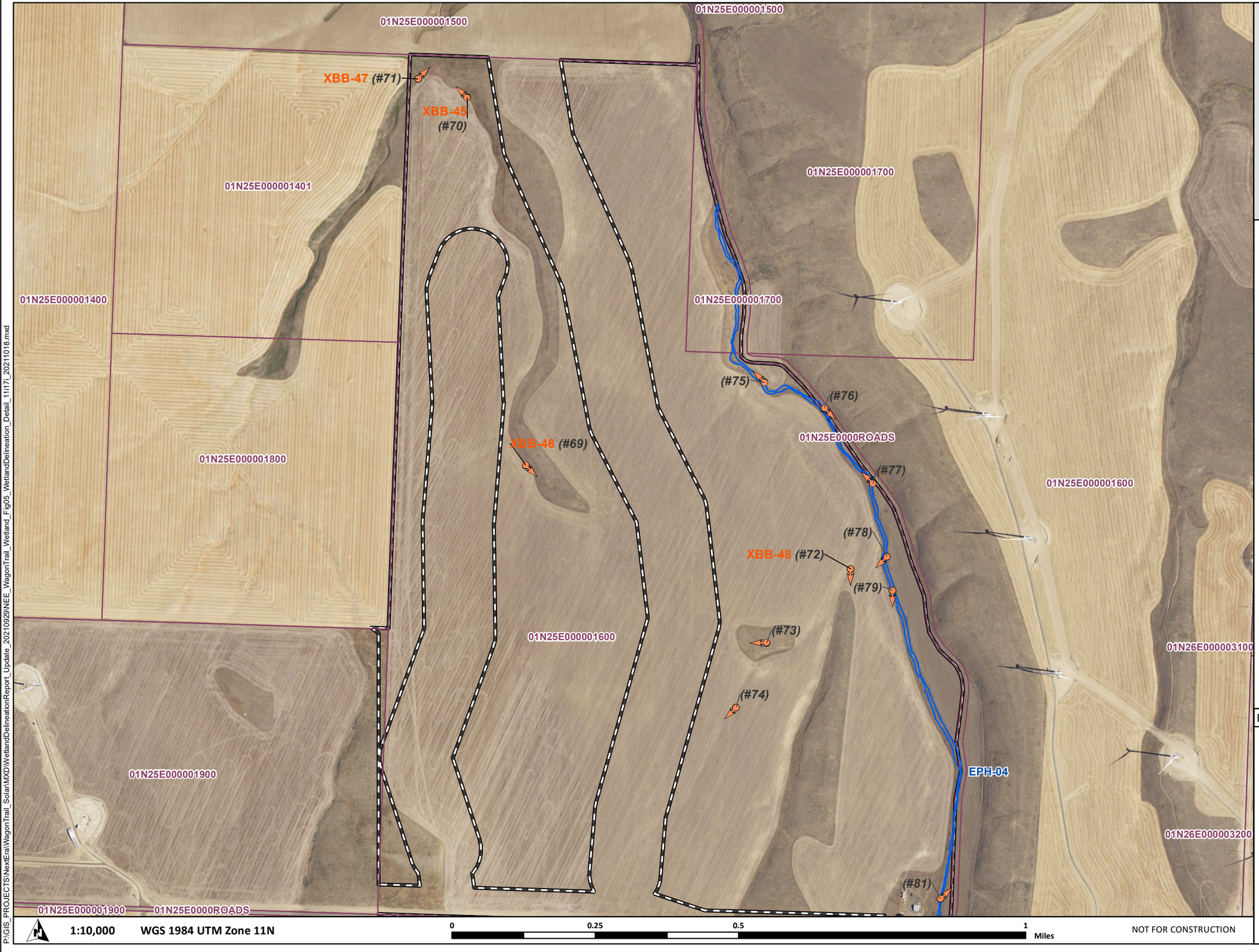
Wagon Trail Solar Project

Figure 5.4
Wetland and Waters Delineation Map

MORROW COUNTY, OREGON



Study Area
Tax Lot
Surveyed Water (Maximum OHWL Width)
Photo Point (# Photo Number)

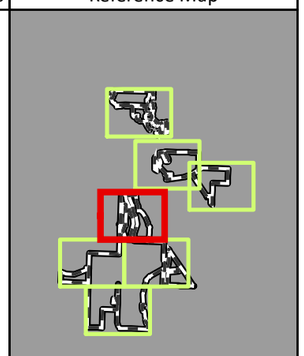
1:10,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 Miles

NOT FOR CONSTRUCTION

TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources	Reference Map
NextEra-Project Infrastructure, Taxlots; ESRI-Roads; USDA-Aerial Imagery	

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Wagon Trail Solar Project

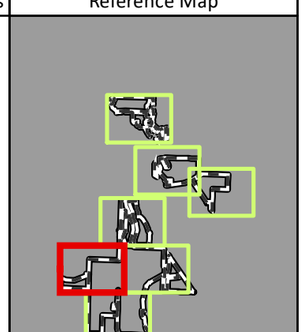
Figure 5.5
Wetland and Waters Delineation Map

MORROW COUNTY, OREGON

- Study Area
- Tax Lot
- Surveyed Water (Maximum OHWL Width)
- Photo Point (# Photo Number)
- Sample Plots

TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources	Reference Map
NextEra-Project Infrastructure, Taxlots; ESRI-Roads; USDA-Aerial Imagery	

1:10,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 Miles

NOT FOR CONSTRUCTION

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Wagon Trail Solar Project

Figure 5.6
Wetland and Waters Delineation Map

MORROW COUNTY, OREGON

01N25E000001600
01N25E000002900
01N25E000003100
01N25E000003000
01N25E000003200
01N25E000003300
01N25E000002803
01N25E000003202
01N26E000003200
01N26E000003202
01N26E0000ROADS
01N26E000003201
01N26E000003300
01N26E000003400
01N26E000003502
01N26E000003500
01N26E000004500
01N25E0000ROADS

EPH-04
EPH-02
EPH-02B
EPH-05

XBB-34 (#46)
XBB-33 (#45)
XBB-41 (#43)
XBB-50 (#85)
XBB-40 (#63)
XBB-42 (#65)
XBB-43 (#66)
XBB-51 (#95)
XBB-44 (#68)
XBB-52 (#97)

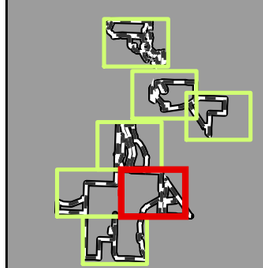
(#80) (#89) (#44) SS-03 (#90) (#91) (#86) (#88) (#87) (#93) (#67) (#64) (#96)

207

- Study Area
- Secondary Road
- Tax Lot
- Surveyed Water (Maximum OHWL Width)
- Photo Point (# Photo Number)
- Sample Plots

TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources	Reference Map
NextEra-Project Infrastructure, Taxlots; ESRI-Roads; USDA-Aerial Imagery	

1:10,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 Miles

NOT FOR CONSTRUCTION

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Wagon Trail Solar Project

Figure 5.7
Wetland and Waters Delineation Map

MORROW COUNTY, OREGON

- Study Area
- Secondary Road
- Tax Lot
- Surveyed Water (Maximum OHWL Width)
- Photo Point (# Photo Number)

TETRA TECH

NEXTera ENERGY RESOURCES

Data Sources	Reference Map
NextEra-Project Infrastructure, Taxlots; ESRI-Roads; USDA-Aerial Imagery	

01N25E000003400
01N25E000003404
01N25E000003200
01N25E000002804
01N25E000002800
01N25E000002803
01N25E000003202
01N25E0000ROADS
01N25E000003204
01N25E000003201
01N25E000004000
01N25E000004100
01N25E000003403
01N25E000003402
01S25E0000ROADS
01S25E000000500
01S25E000000400
01S25E000000100
01S26E000000900
01S26E0000ROADS

XBB-31 (#40)
XBB-30 (#39)
XBB-29 (#38)
XBB-38 (#58)
XBB-37 (#57)
XBB-39 (#62)
XBB-27 (#55)
XBB-36 (#56)
XBB-49 (#84)

EPH-02
EPH-03
EPH-02A

(#92)
(#94)
(#59)
(#60)
(#61)
(#54)
(#83)
(#82)

207

1:10,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 Miles

NOT FOR CONSTRUCTION

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Appendix A. Datasheets

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U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Wagon Trail City/County: Umatilla Sampling Date: 7/28/20

Applicant/Owner: NextEra State: OR Sampling Point: SS-01

Investigator(s): Jess Taylor/Sara Frank Section, Township, Range: Section 27, T01N, R25E

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

Subregion (LRR): LRR B Lat: 45.538689 Long: -119.677413 Datum: NAD83

Soil Map Unit Name: 75C Willis Silt Loam, 5 to 12 percent slopes NWI classification: R4SBC

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

Are Vegetation X , Soil ____ , or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

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

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

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
NWI shows riverine wetland in drainage. Drainage is ephemeral with shallow soils. No vegetation was present in drainage and adjacent cropfields had recently been harvested (winter wheat).

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ =Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ =Total Cover		
Herb Stratum (Plot size: 5 ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	____ =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ =Total Cover		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:

SOIL

Sampling Point: SS-01

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

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

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Bedrock

Depth (inches): 4

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Wagon Trail | City/County: Umatilla | Sampling Date: 7/28/20
Applicant/Owner: NextEra | State: OR | Sampling Point: SS-02
Investigator(s): Jess Taylor/Sara Frank | Section, Township, Range: Section 27, T01N, R25E
Landform (hillside, terrace, etc.): Drainage | Local relief (concave, convex, none): concave | Slope (%): 1
Subregion (LRR): LRR B | Lat: 45.544614 | Long: -119.672187 | Datum: NAD83
Soil Map Unit Name: 78 Xeric Torriorthents, nearly level | NWI classification: R4SBC
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ___ No X
Hydric Soil Present? Yes ___ No X
Wetland Hydrology Present? Yes ___ No X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:
NWI shows a riverine wetland within a drainage. Drainage is not present, no hydric properties were found at site.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Artemisia tridentata*	20	Yes	UPL
2.			
3.			
4.			
5.			
	20 =Total Cover		
Herb Stratum (Plot size: 15 ft)			
1. *Secale cereale*	20	Yes	UPL
2. *Salsola tragus*	10	No	FACU
3. *Poa balbosa*	20	Yes	UPL
4. *Bromus tectorum*	40	Yes	UPL
5.			
6.			
7.			
8.			
	90 =Total Cover		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust ___

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	10	x 4 =	40
UPL species	100	x 5 =	500
Column Totals:	110 (A)		540 (B)

Prevalence Index = B/A = 4.91

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks:

SOIL

Sampling Point: SS-02

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/3	100					Silt Loam	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Wagon Trail | City/County: Umatilla | Sampling Date: 7/28/20
Applicant/Owner: NextEra | State: OR | Sampling Point: SS-03
Investigator(s): Jess Taylor/Sara Frank | Section, Township, Range: Section 24, T01N, R25E
Landform (hillside, terrace, etc.): Drainage | Local relief (concave, convex, none): concave | Slope (%): 3
Subregion (LRR): LRR B | Lat: 45.552870 | Long: -119.633957 | Datum: NAD83
Soil Map Unit Name: 22 Kimberly fine sandy loam | NWI classification: R4SBC
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
NWI shows a riverine wetland within a drainage. Drainage is ephemeral and soils are very sandy so do not support hydric conditions.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ =Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ =Total Cover		
Herb Stratum (Plot size: 15 ft)			
1. *Secale cereale*	20	Yes	UPL
2. *Salsola tragus*	30	Yes	FACU
3. *Poa balbosa*	40	Yes	UPL
4.			
5.			
6.			
7.			
8.			
	90 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ =Total Cover		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	30	x 4 =	120
UPL species	60	x 5 =	300
Column Totals:	90 (A)		420 (B)

Prevalence Index = B/A = 4.67

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:

SOIL

Sampling Point: SS-03

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/3	100					Sandy Loam	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks:

Appendix B: Streamflow Duration Field Assessment Form

Project # / Name Wagon Trail		Assessor Jessica Taylor	
Address Rural Morrow County		Date 7/28/20	
Waterway Name N/A		Coordinates at downstream end (ddd.mm.ss)	Lat. N
Reach Boundaries			Long. W
Precipitation w/in 48 hours (cm) 0	Channel Width (m) 1.3	☑ Disturbed Site / Difficult Situation (Describe in "Notes")	

Observed Hydrology

% of reach w/observed surface flow 0

% of reach w/any flow (surface or hyporheic) 0

# of pools observed 0

Observations

Observed Wetland Plants (and indicator status):

No wetland plants were observed

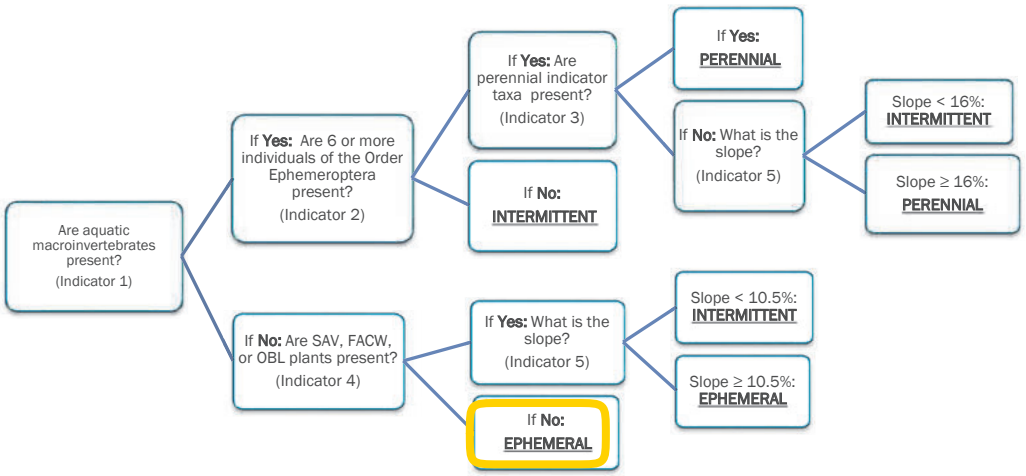
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals

Indicators

1. Are aquatic macroinvertebrates present?	☐ Yes	☑ No
2. Are 6 or more individuals of the Order Ephemeroptera present?	☐ Yes	☑ No
3. Are perennial indicator taxa present? (refer to Table 1)	☐ Yes	☑ No
4. Are FACW, OBL, or SAV plants present? (Within ½ channel width)	☐ Yes	☑ No
5. What is the slope? (In percent, measured for the valley, not the stream)	5 %	

Conclusions



Single Indicators:

☐ Fish

☐ Amphibians

Finding:

☑ Ephemeral

☐ Intermittent

☐ Perennial

Notes: (explanation of any single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

Difficult Situation:

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

Land is actively being used for cropping wheat

- ☐ Prolonged Abnormal Rainfall / Snowpack
  - ☐ Below Average
  - ☐ Above Average
- ☑ Natural or Anthropogenic Disturbance
- ☐ Other: _____

Additional Notes: (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

Ancillary Information:

- ☐ Riparian Corridor
- ☐ Erosion and Deposition
- ☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed

Appendix B: Streamflow Duration Field Assessment Form

Project # / Name Wagon Trail		Assessor Jessica Taylor	
Address Rural Morrow County			Date 7/28/20
Waterway Name EPH-02		Coordinates at downstream end (ddd.mm.ss)	Lat. N
Reach Boundaries			Long. W
Precipitation w/in 48 hours (cm) 0	Channel Width (m) 1	☑ Disturbed Site / Difficult Situation (Describe in "Notes")	

Observed Hydrology

% of reach w/observed surface flow 0

% of reach w/any flow (surface or hyporheic) 0

# of pools observed 0

Observations

Observed Wetland Plants (and indicator status):

No wetland plants were observed

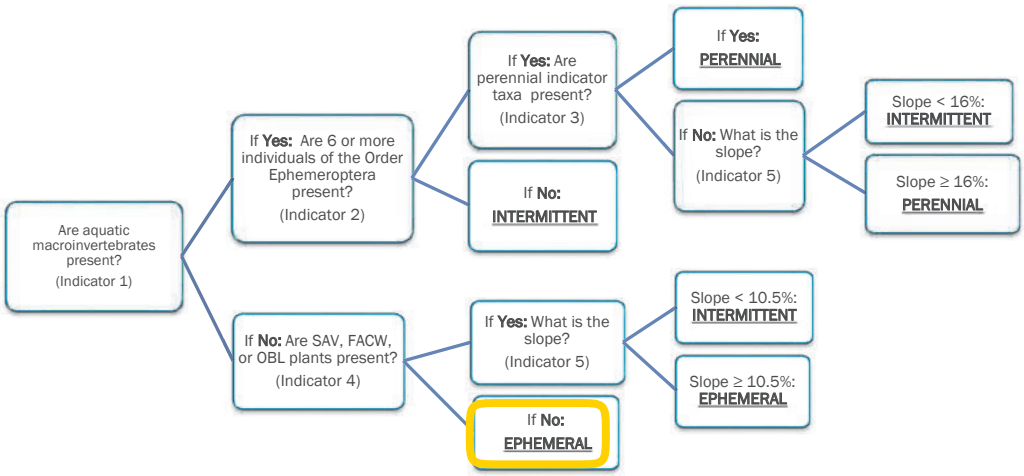
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals

Indicators

1. Are aquatic macroinvertebrates present?	☐ Yes	☑ No
2. Are 6 or more individuals of the Order Ephemeroptera present?	☐ Yes	☑ No
3. Are perennial indicator taxa present? (refer to Table 1)	☐ Yes	☑ No
4. Are FACW, OBL, or SAV plants present? (Within ½ channel width)	☐ Yes	☑ No
5. What is the slope? (In percent, measured for the valley, not the stream)	5 %	

Conclusions



Single Indicators:

☐ Fish

☐ Amphibians

Finding:

☑ Ephemeral

☐ Intermittent

☐ Perennial

Notes: (explanation of any single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

Difficult Situation:

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

Land is actively being used for cropping wheat and is most likely sprayed

- ☐ Prolonged Abnormal Rainfall / Snowpack
  - ☐ Below Average
  - ☐ Above Average
- ☑ Natural or Anthropogenic Disturbance
- ☐ Other: _____

Additional Notes: (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

Ancillary Information:

- ☐ Riparian Corridor
- ☐ Erosion and Deposition
- ☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed

Appendix B: Streamflow Duration Field Assessment Form

Project # / Name	Wagon Trail Solar	Assessor	Sara Frank, Jess Taylor
Address	Morrow County	Date	7/28/2020
Waterway Name	EPH-03	Coordinates at downstream end (ddd.mm.ss)	Lat. N
Reach Boundaries			Long. W
Precipitation w/in 48 hours (cm)		Channel Width (m) 1	☑ Disturbed Site / Difficult Situation (Describe in "Notes")

Observed Hydrology

% of reach w/observed surface flow 0

% of reach w/any flow (surface or hyporheic) 0

# of pools observed 0

Observations

Observed Wetland Plants (and indicator status): None

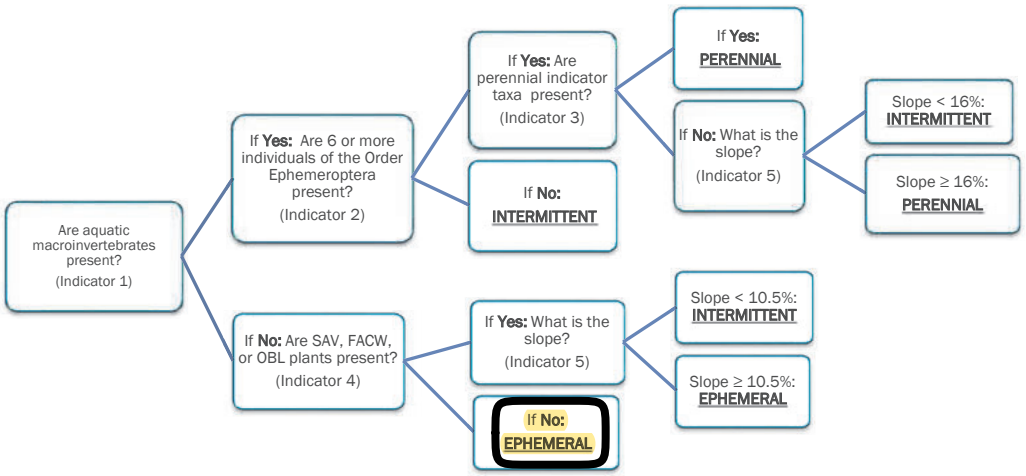
Observed Macroinvertebrates: None

Taxon	Indicator Status	Ephemer-optera?	# of Individuals

Indicators

1. Are aquatic macroinvertebrates present?	☐ Yes	☑ No
2. Are 6 or more individuals of the Order Ephemeroptera present?	☐ Yes	☑ No
3. Are perennial indicator taxa present? (refer to Table 1)	☐ Yes	☑ No
4. Are FACW, OBL, or SAV plants present? (Within ½ channel width)	☐ Yes	☑ No
5. What is the slope? (In percent, measured for the valley, not the stream)	_____ %	

Conclusions



Single Indicators:
☐ Fish
☐ Amphibians

Finding:
☑ Ephemeral
☐ Intermittent
☐ Perennial

Notes: (explanation of any single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

Difficult Situation:

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

☐ Prolonged Abnormal Rainfall / Snowpack

☐ Below Average

☐ Above Average

☑ Natural or Anthropogenic Disturbance

Currently in the middle of ag field, trash strewn throughout drainage.

☐ Other: _____

Additional Notes: (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

EPH-03

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed

Appendix B: Streamflow Duration Field Assessment Form

Project # / Name	Wagon Trail Solar	Assessor	Sara Frank, Jess Taylor
Address	Morrow County	Date	7/29/2020
Waterway Name	EPH-04	Coordinates at downstream end (ddd.mm.ss)	Lat. N
Reach Boundaries			Long. W
Precipitation w/in 48 hours (cm)		Channel Width (m) 1	☑ Disturbed Site / Difficult Situation (Describe in "Notes")

Observed Hydrology

% of reach w/observed surface flow 0

% of reach w/any flow (surface or hyporheic) 0

# of pools observed 0

Observations

Observed Wetland Plants (and indicator status): None

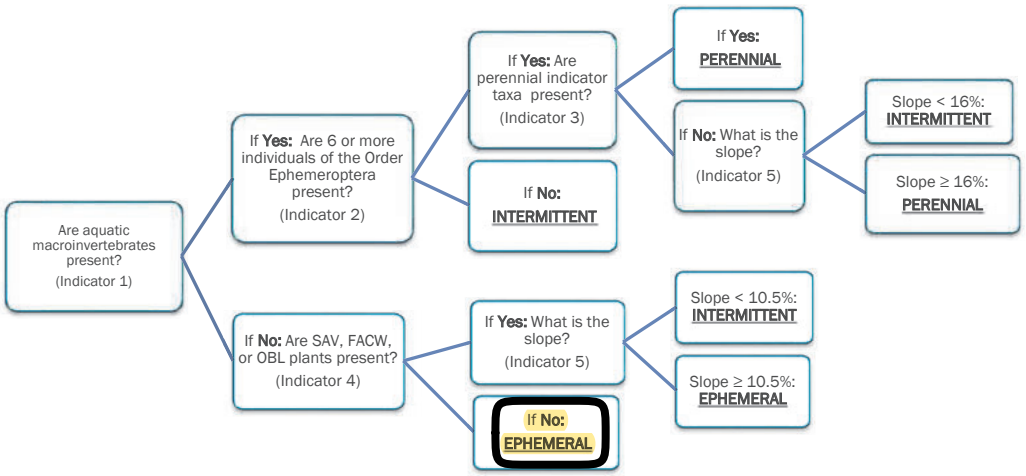
Observed Macroinvertebrates: None

Taxon	Indicator Status	Ephemer-optera?	# of Individuals

Indicators

1. Are aquatic macroinvertebrates present?	☐ Yes	☑ No
2. Are 6 or more individuals of the Order Ephemeroptera present?	☐ Yes	☑ No
3. Are perennial indicator taxa present? (refer to Table 1)	☐ Yes	☑ No
4. Are FACW, OBL, or SAV plants present? (Within ½ channel width)	☐ Yes	☑ No
5. What is the slope? (In percent, measured for the valley, not the stream)	_____ %	

Conclusions



Single Indicators:
☐ Fish
☐ Amphibians

Finding:
☑ Ephemeral
☐ Intermittent
☐ Perennial

Notes: (explanation of any single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

Difficult Situation:

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

☐ Prolonged Abnormal Rainfall / Snowpack

☐ Below Average

☐ Above Average

☑ Natural or Anthropogenic Disturbance

Currently in the middle of ag field, trash strewn throughout drainage.

☐ Other: _____

Additional Notes: (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

EPH-03

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed

Appendix B: Streamflow Duration Field Assessment Form

Project # / Name	Wagon Trail Solar	Assessor	Sara Frank, Jess Taylor
Address	Morrow County	Date	09/2021
Waterway Name	EPH-05	Coordinates at downstream end (ddd.mm.ss)	Lat. N
Reach Boundaries			Long. W
Precipitation w/in 48 hours (cm)		Channel Width (m) 1	☑ Disturbed Site / Difficult Situation (Describe in "Notes")

Observed Hydrology

% of reach w/observed surface flow 0

% of reach w/any flow (surface or hyporheic) 0

# of pools observed 0

Observations

Observed Wetland Plants (and indicator status): None

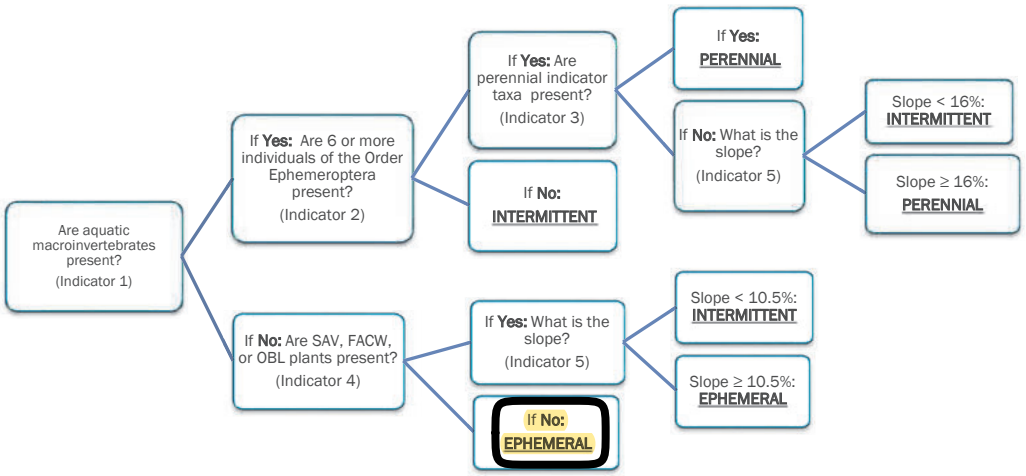
Observed Macroinvertebrates: None

Taxon	Indicator Status	Ephemer-optera?	# of Individuals

Indicators

1. Are aquatic macroinvertebrates present?	☐ Yes	☑ No
2. Are 6 or more individuals of the Order Ephemeroptera present?	☐ Yes	☑ No
3. Are perennial indicator taxa present? (refer to Table 1)	☐ Yes	☑ No
4. Are FACW, OBL, or SAV plants present? (Within ½ channel width)	☐ Yes	☑ No
5. What is the slope? (In percent, measured for the valley, not the stream)	_____ %	

Conclusions



Single Indicators:
☐ Fish
☐ Amphibians

Finding:
☑ Ephemeral
☐ Intermittent
☐ Perennial

Notes: (explanation of any single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

Difficult Situation:

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

☐ Prolonged Abnormal Rainfall / Snowpack

☐ Below Average

☐ Above Average

☑ Natural or Anthropogenic Disturbance

Currently in the middle of ag field, trash strewn throughout drainage.

☐ Other: _____

Additional Notes: (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

EPH-05

Ancillary Information:

☐ Riparian Corridor

☐ Erosion and Deposition

☐ Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed

Appendix B. Photolog

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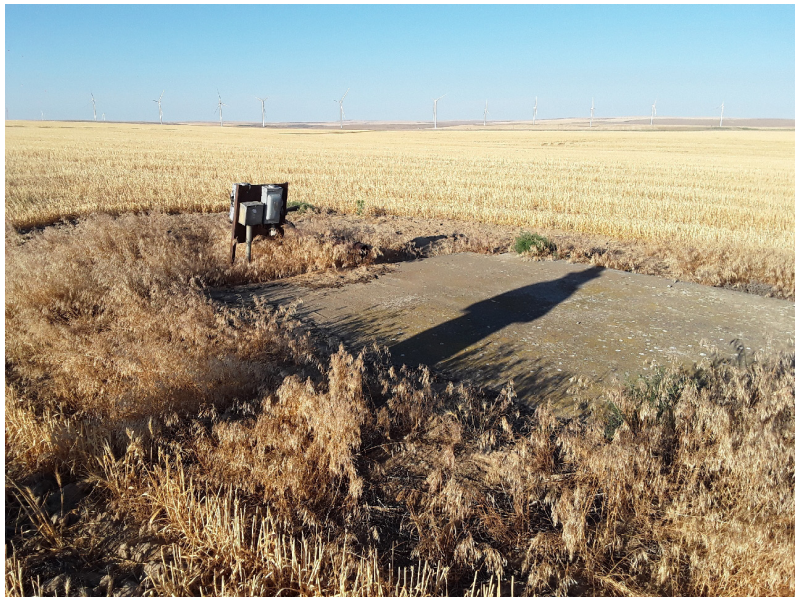

Photo 1. Abandoned pipeline shows as visible dark spot in some orthoimagery. Looking SW. 7/27/2020.

Photo 2. Small patch of Russian thistle shows as visible dark spot in some orthoimagery. Looking W. 7/27/2020.

Photo 3. Abandoned pipeline shows as visible dark spot in some orthoimagery. Looking S. 7/27/2020.

Photo 4. Abandoned pipeline shows as visible dark spot in some orthoimagery. Looking SW. 7/27/2020.

Photo 5. Abandoned pipeline shows as visible dark spot in some orthoimagery. Looking E. 7/27/2020.

Photo 6. Abandoned pipeline infrastructure shows as visible dark spot in some orthoimagery. Looking SE. 7/27/2020.

Photo 7. Overgrown Russian thistle, cement platform show as darks spot in some orthoimagery. Looking NW. 7/27/2020.

Photo 8. Sagebrush on hillside shows as dark spot in some orthoimagery. Looking W. 7/27/2020.

Photo 9. Sagebrush on hillside shows as dark spot in some orthoimagery. Looking W. 7/27/2020.

Photo 10. Crested wheatgrass and salsify. Looking NW. 7/27/2020.

Photo 11. Abandoned pipeline shows as visible dark spot in some orthoimagery. Looking NE. 7/27/2020.

Photo 12. No bed or banks in active cropland. Looking SE. 7/27/2020.

Photo 13. No bed or banks in active cropland. Looking S. 7/27/2020.

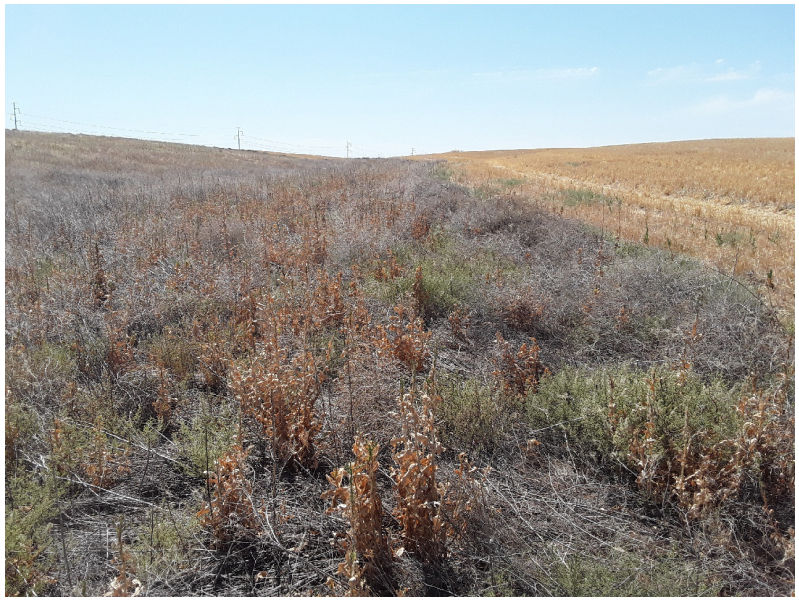

Photo 14. No bed or banks in weedy area between two cropfields. Looking NW. 7/27/2020.

Photo 15. Swale on NHD line, no bed or banks. Looking NW. 7/27/2020.

Photo 16. Swale on what looks like drainage on orthoimagery, no bed or banks. Looking S. 7/27/2020.

Photo 17. Swale on NHD line. No bed or banks. Looking S. 7/27/2020.

Photo 18. Dark spot on orthoimage. Looking SW. 7/27/2020.

Photo 19. NHD line, no bed or banks. Looking W. 7/27/2020.

Photo 20. NHD line, no bed or banks. Looking SE. 7/27/2020.

Photo 21. NHD line, no bed or banks. Looking SE. 7/27/2020.

Photo 22. NHD line, no bed or banks. Looking SE. 7/27/2020.

Photo 23. NHD line, no bed or banks. Looking S. 7/27/2020.

Photo 24. NHD line, no bed or banks. Looking SE. 7/27/2020.

Photo 25. NHD line, no bed or banks. Looking E. 7/27/2020.

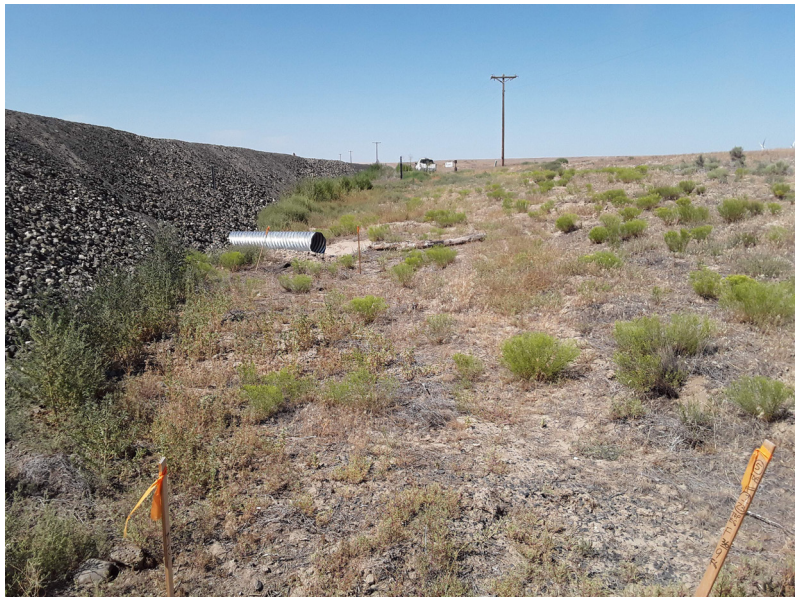

Photo 26. Newly installed culvert, no bed or banks. Looking W. 7/27/2020.

Photo 27. NHD line, no bed or banks. Looking SW. 7/27/2020.

Photo 28. NHD line, no bed or banks. Looking NE. 7/27/2020.

Photo 29. No drainage on NHD; land is active cropland. Looking W. 7/28/2020.

Photo 30. EPH01, 4 feet wide, no macros or hydric vegetation. Looking NE. 7/28/2020.

Photo 31. EPH-01 no longer has channel. Looking NE. 7/28/2020.

Photo 32. No bed or banks on NHD line. Looking NE. 7/28/2020.

Photo 34. No bed or banks on NHD line. Looking NE. 7/28/2020.

Photo 35. No sign of water in this section. Looking SW. 7/28/2020.

Photo 36. Cow trails, but no bed or banks on NHD. Looking SW. 7/28/2020.

Photo 37. No bed or banks on NHD. Looking W. 7/28/2020.

Photo 38. No bed or banks on NHD. Looking E. 7/28/2020.

Photo 39. No bed or banks on NHD. Looking W. 7/28/2020.

Photo 40. No bed or banks on NHD line. Looking NW. 7/28/2020.

Photo 40. No bed or banks on NHD line. Looking NW. 7/28/2020.

Photo 41. No bed or banks on NHD. Looking W. 7/28/2020.

Photo 42. Shallow soils, no hydric conditions on slope. Looking N. 7/28/2020.

Photo 43. No bed or banks on NHD. Looking N. 7/28/2020.

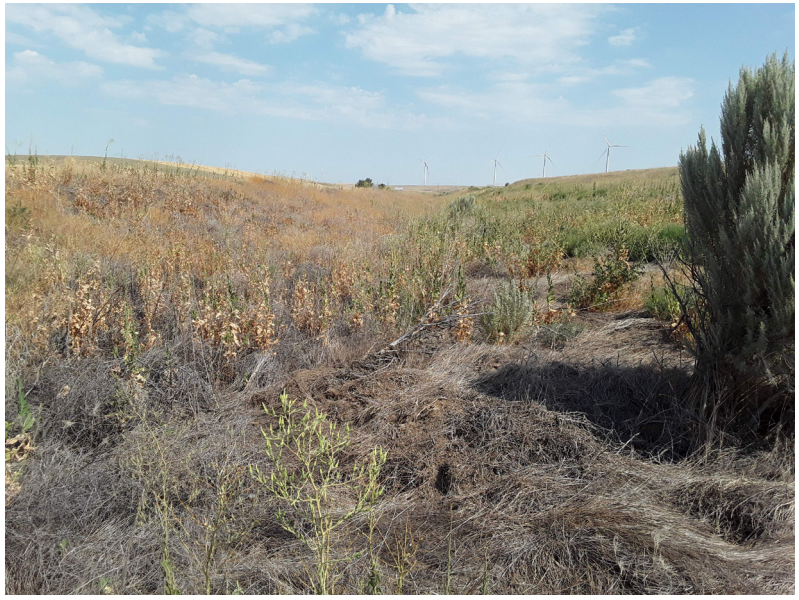

Photo 44. Barely discernible EPH02, less than 1 foot wide. Looking N. 7/28/2020.

Photo 45. NHD line, no bed or banks. Looking S. 7/28/2020.

Photo 46. No bed or banks on NHD line. Looking S. 7/28/2020.

Photo 47. No bed or banks on NHD line. Looking SW. 7/28/2020.

Photo 48. No bed or banks at confluence of NHD lines. Looking NE. 7/28/2020.

Photo 49. Sample site (S-01) in low spot in ephemeral stream bed (EPH-01). Looking NE. 7/28/2020.

Photo 50. No bed or banks on NHD line. Looking E. 7/28/2020.

Photo 51. No bed or banks on NHD line. Looking NW. 7/28/2020.

Photo 52. No bed or banks on NHD line. Looking NE. 7/28/2020.

Photo 53. No bed or banks on NHD line. Looking NE. 7/28/2020.

Photo 54. Possible old two-track. Looking NE. 7/28/2020.

Photo 55. No bed or banks on NHD line. Looking NE. 7/28/2020.

Photo 56. No bed or banks on NHD line. Looking NW. 7/28/2020.

Photo 57. Above origin point of EPH-03, no bed or banks on this section of NHD line. Looking N. 7/28/2020.

Photo 58. No bed or banks on NHD line. Looking SE. 7/28/2020.

Photo 59. Ephemeral drainage (EPH-03), less than 2 feet wide. Looking NE. 7/28/2020.

Photo 60. EPH-03 becomes barely discernible at this point. Looking S. 7/28/2020.

Photo 61. Tumblemustard and russian thistle in EPH-03. Looking S. 7/28/2020.

Photo 62. No bed or banks on NHD line. Looking NW. 7/28/2020.

Photo 63. No bed or banks on NHD line. Looking N. 7/28/2020.

Photo 64. No bed or banks. Looking W. 7/28/2020.

Photo 65. No bed or banks on NHD line. Looking S. 7/28/2020.

Photo 66. No bed or banks. Looking S. 7/28/2020.

Photo 67. No bed or banks. Looking S. 7/28/2020.

Photo 68. No bed or banks on NHD line. Photo taken from hillside. Looking SE. 7/28/2020.

Photo 69. No bed or banks on NHD line. Looking SE. 7/29/2020.

Photo 70. No bed or banks on NHD line. Looking NW. 7/29/2020.

Photo 71. No bed or banks on NHD line. Looking NE. 7/29/2020.

Photo 72. No bed or banks on NHD line. Looking S. 7/29/2020.

Photo 73. No bed or banks. Looking W. 7/29/2020.

Photo 74. No bed or banks. Looking SW. 7/29/2020.

Photo 75. Ephemeral drainage (EPH-04) general conditions. Looking NW. 8/6/2020.

Photo 76. Ephemeral drainage (EPH-04) general conditions. Looking SE. 8/6/2020.

Photo 77. Ephemeral drainage (EPH-04) general conditions. Looking NW. 8/6/2020.

Photo 78. Ephemeral drainage (EPH-04) general conditions. Looking SW. 8/6/2020.

Photo 79. Ephemeral drainage (EPH-04) general conditions. Looking S. 8/6/2020.

Photo 80. Ephemeral drainage (EPH-04) general conditions. Looking NE. 8/6/2020.

Photo 81. Ephemeral drainage (EPH-04) general conditions. Looking NE. 8/6/2020.

Photo 82. Channel less than 1 foot wide, sandy substrate over cobble EPH-02A. Looking N. 3/8/2021.

Photo 83. EPH-02A. Looking NE. 3/8/2021.

Photo 84. XBB-49. No stream on NHD line. Looking N. 3/8/2021.

Photo 85. XBB-50. No bed or banks on NHD line. Looking SE. 3/8/2021.

Photo 86. EPH-02 typical conditions in this reach. Looking NW. 3/8/2021.

Photo 87. Culvert on EPH-02B. Looking SE. 3/8/2021.

Photo 88. Less than 1 foot wide, bare channel. EPH-02B. Looking NW. 3/8/2021.

Photo 89. Dark spot in orthoimage is scabland. Looking W. 4/14/2021.

Photo 90. No bed or banks on what looks like drainage in orthoimage. Looking S. 4/14/2021.

Photo 91. Dark spot on orthoimage is scabland hill. Looking SW. 4/14/2021.

Photo 92. EPH-02. Looking NW. 4/14/2021.

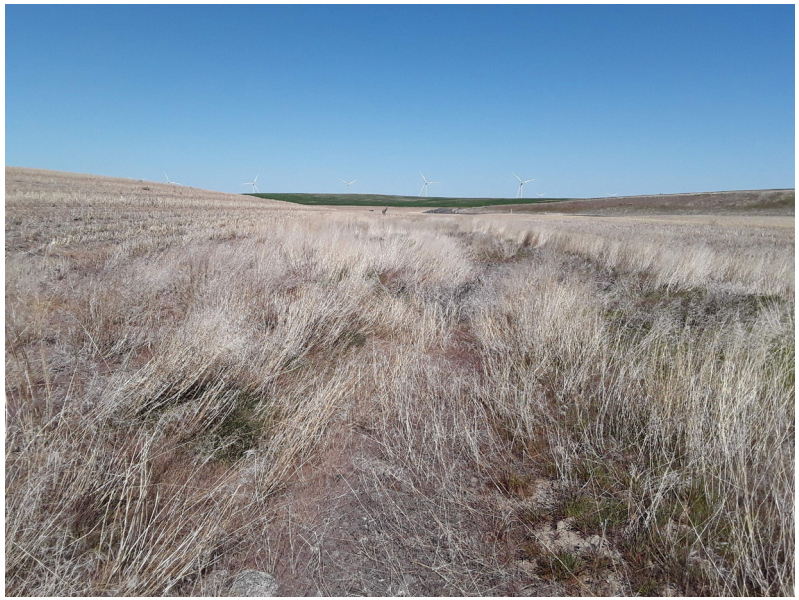

Photo 93. EPH-02. Looking NE. 4/14/2021.

Photo 94. No bed or banks on NHD line. Looking SW. 4/14/2021.

Photo 95. No bed or banks on NHD/NWI. Looking NW. 9/13/2021.

Photo 96. Ephemeral stream drainage (EPH-05). Bed and banks buried under Russian thistle. 1 foot wide. Looking N. 9/13/2021.

Photo 97. EPH-05 ends here, terrain changes to uphill and bed and banks disappear. Looking NW. 9/13/2021.