Exhibit H

Geologic Hazards and Soil Stability

Prepared for

Wheatridge Wind Energy, LLC

Wheatridge Wind Energy Facility

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Prepared by

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Terms and Definitions

Collector Line	An underground or overhead electrical 34.5 kV line transmitting power from the turbines to the Substation(s)
Construction Yard	The temporary area for construction activities and Project equipment storage
GE 1.7-103 Layout	Project turbine layout comprised of 292 GE 1.7MW turbines with 80m hub heights and 103m rotor diameters
GE 2.5-120 Layout	Project turbine layout comprised of 200 GE 2.5MW turbines with 85m hub heights and 120m rotor diameters
Gen-tie Line	230 kV line conveying power from the Project to an interconnection point with the grid; to be permitted/built by UEC or UEC/CB
Intraconnection Corridor	The intraconnection transmission line corridor connecting Wheatridge East with Wheatridge West
Intraconnection Lines	Overhead electrical 230 kV lines connecting the Project Substations in Wheatridge East and Wheatridge West.
Met Tower	Permanent meteorological tower
O&M Building	Permanent operations and maintenance building, including parking
OEM	Original Equipment Manufacturer
Project	Wheatridge Wind Energy Facility
Site Access Road	Private road to be constructed or improved for the purpose of accessing wind turbines and associated Project facilities
Site Boundary	The boundary within which all Project facilities will be constructed, also known as the micrositing corridor
Substation	A facility in which power from the wind turbines is aggregated, stepped up in voltage, and connected into the Intraconnection Lines or the Gen-tie Line
Turbine	A collective term for foundation, tower, nacelle, blades and rotor that comprise a wind turbine generator
Turbine pad	A cleared, graveled area around the base of each turbine encompassing primarily the turbine foundation
Wheatridge	Wheatridge Wind Energy, LLC
Wheatridge East	The eastern group of Project turbines
Wheatridge West	The western group of Project turbines

Acronyms and Abbreviations

BMP	Best Management Practice
CB	Columbia Basin Electric Cooperative
CSZ	Cascadia Subduction Zone
DOGAMI	Department of Geology and Mineral Industries
IBC	International Building Code
kV	kilovolt
MCE	Maximum Considered Earthquake
MCE_R	Risk-Targeted Maximum Considered Earthquake
MPE	Maximum Probable Earthquake
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
OAR	Oregon Administrative Rules
OSSC	Oregon Structural Specialty Code
PGA	Peak Ground Acceleration
PSHA	Probable Seismic Hazard Analysis
SLIDO	Statewide Landslide Inventory Database
UEC	Umatilla Electric Cooperative
USFS	US Forest Service
USGS	US Geological Survey

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1.0 Introduction

Wheatridge Wind Energy, LLC (Wheatridge), proposes to construct the Wheatridge Wind Energy Facility (Project), a wind generation facility with a maximum nominal generating capacity of 500 megawatts (MW) in Morrow and Umatilla counties, Oregon (see Figures C-1 and C-2). The Project is comprised of up to 292 turbines divided into two groups: a western group of turbines (Wheatridge West) and an eastern group of turbines (Wheatridge East). Wheatridge West and Wheatridge East are electrically connected by an 'Intraconnection Corridor' containing up to two parallel overhead 230-kilovolt (kV) transmission lines (Intraconnection Lines), each no longer than 35 miles in length. Other Project components include access roads (Site Access Roads), an electrical collection and control system, the Project's substations (Substations), operations and maintenance buildings (O&M Buildings), and temporary construction yards (Construction Yards). These facilities are all described in greater detail in Exhibit B.

Wheatridge West is located entirely within Morrow County, approximately 5 miles northeast of Lexington, and approximately 7 miles northwest of Heppner. Wheatridge West is bisected by Oregon Highway 207 (OR-207). Wheatridge East is located approximately 16 miles northeast of Heppner and encompasses land in both Morrow and Umatilla counties. The Intraconnection Corridor is located entirely within Morrow County and adjoins to the southeastern portion of Wheatridge West and the southern portion of Wheatridge East.

Exhibit H provides an analysis of geologic hazards and soil stability for the Project as required to meet the structural standard in Oregon Administrative Rule (OAR) 345-022-0020 and the submittal requirements in OAR 345-021-0010(1)(h) paragraphs (A) through (I).

Although OAR 345-021-0010 references the 2009 edition of the International Building Code (IBC), the most up-to-date building and structural codes that apply will be used during the final design and construction of the Project (see Sections 2.3, 2.4, and 4.1). As of July 1, 2014, the Oregon Building Codes Division requires the use of the 2014 Oregon Structural Specialty Code (OSSC). In turn, the 2014 OSSC references the 2012 IBC. The new codes reflect a significant change in the methodology and definition of the ground motions used for seismic design. The requirements from the current OARs and the requirements from OSSC 2014 are both presented in this Exhibit.

This Exhibit demonstrates that the Project can comply with OAR 345-022-0020.

> ***345-022-0020 Structural Standard***
>
> *Except for facilities described in sections (2) and (3), to issue a site certificate, the Council must find that:*
>
> *(a) The applicant, through appropriate site-specific study, has adequately characterized the site as to Maximum Considered Earthquake Ground Motion as shown for the site in the 2009 International Building Code and maximum probable ground motion, taking into account ground failure and amplification for the site specific soil profile under the maximum credible and maximum probable seismic events; and*

(b) The applicant can design, engineer, and construct the facility to avoid dangers to human safety presented by seismic hazards affecting the site that are expected to result from maximum probable ground motion events. As used in this rule "seismic hazard" includes ground shaking, ground failure, landslide, liquefaction, lateral spreading, tsunami inundation, fault displacement, and subsidence;

(c) The applicant, through appropriate site-specific study, has adequately characterized the potential geological and soils hazards of the site and its vicinity that could, in the absence of a seismic event, adversely affect, or be aggravated by, the construction and operation of the proposed facility; and

(d) The applicant can design, engineer and construct the facility to avoid dangers to human safety presented by the hazards identified in subsection (c).

2.0 Methods

Geologic hazards are assessed in two phases. The first is a desktop geologic study, which is used to demonstrate Project feasibility, inform the micrositing of wind turbines, the siting of substations and associated infrastructure, and to develop a scheme for further studies. Any desktop analysis or regional study is generally useful for regional applications, but should not be used as an alternative to site-specific studies in critical areas. This phase of the assessment relied on published data, and was supplemented by preliminary site and field reconnaissance to verify observations and conclusions obtained during the desktop analysis. The preliminary site field reconnaissance consisted of a two day site investigation by a Tetra Tech Senior Geotechnical Engineer. The Geotechnical Engineer traveled to each of the proposed wind turbine string site and observed and photographed the site conditions related to geotechnical issues such as soil types and depth, bedrock type and depth, landslides and similar aspects that will affect design and construction. As noted in Section 2.4, Wheatridge has gathered the data and prepared this exhibit based in consultation with Oregon Department of Geology and Mineral Industries (DOGAMI).

The second phase of geologic hazard assessment is a site-specific geotechnical investigation, which will be used to support design, engineering, and construction specifications, and to avoid or mitigate site-specific geologic hazards. Project design, including selection of turbine locations, is in progress, and there is some flexibility along the alignment and within the Site Boundary to adjust the final location of wind turbines and Intraconnection Line towers to avoid identified landslides and other areas of potential slope instability.

2.1 Analysis Area

In accordance with Section VI of the Project Order, the analysis area for Exhibit H is the Site Boundary. The Site Boundary is defined in OAR 345-001-0010 as "the perimeter of the site of a proposed energy facility, its related or supporting facilities, all temporary laydown and staging areas, and all road and transmission line corridors proposed by the applicant." The Site Boundary is defined in detail in Exhibits B and C, and shown in Figures H-1 and H-2.

2.2 Desktop Geologic Study

Wheatridge carried out a desktop geologic study that presents the regional geologic and tectonic setting, seismic hazards, and non-seismic geologic hazards near the Project area. The desktop study identifies seismic, slope stability, erosion, flood, volcanic, liquefaction, and subsidence hazards. The desktop study was based on review of literature and existing mapping, including:

- DOGAMI geologic, neotectonic, and landslide maps;
- US Geological Survey (USGS) geology, fault, fold, and seismic hazard maps;
- Natural Resources Conservation Service (NRCS) soil maps; and
- The Statewide Landslide Inventory Database for Oregon (SLIDO) mapping, Version 2 (DOGAMI 2011).

The geologic desktop study examined the geology and potential geologic hazards of the Project area. Site-specific geology and geologic hazards are presented in Figures H-1 and H-2.

2.3 Site-Specific Geotechnical Investigation – OAR 345-021-0010(1)(h)(A)(B)(D)

Wheatridge will carry out site-specific geological and geotechnical investigations to characterize the subsurface soil and geologic conditions in compliance with the Energy Facility Siting Council's standards. Geotechnical investigation will emphasize areas that require engineering design[1] and soil hazards identified in the geologic desktop study that include potential for seismicity, slope failure, liquefaction, and subsidence. The site-specific geotechnical investigation will be performed prior to final design and construction, and will provide descriptive and quantitative data for the Project in the following areas essential to Project design:

- Subsurface soil and geologic conditions over the Project area.
- Define and delineate geological or geotechnical hazards and means to mitigate these as necessary.
- Geotechnical design criteria/data for the turbine foundations, foundations of Substations, O&M Buildings, roads and related ancillary facilities.
- Design data for the installation of underground and overhead Collector Lines, and overhead transmission lines.

Conventional exploration and investigation methods will be used to collect the geotechnical data. Borings will be drilled at each turbine and met tower location, at the Substations and O&M Buildings, along the Intraconnection Lines and along the access roads. Representative soil samples will be collected and sent to a laboratory for testing to include but not be limited to: classification tests (particle size, moisture content, in situ density, Atterberg limits, and Proctor), shrink/swell tests, collapse potential tests, consolidation tests, soil resistivity and chemistry and strength tests. Electrical resistivity and seismic geophysical testing will be conducted on-site to support the Project. From

[1] The Project does not include pipelines carrying hazardous substances as described in OAR 345-021-0010(1)(h)(E).

these data and laboratory tests, design recommendations will be developed for use by the electrical, mechanical and civil/structural design engineers.

2.3.1 Geological Setting

The geologic setting of the Project area generally consists of loess and weak sedimentary rock overlying basalt bedrock. In some valley locations, catastrophic flood deposits (gravel and cobble bars overlain by silt) have been deposited by ancient floods. The geologic descriptions below are summarized from a USGS geologic map prepared for the state of Oregon (Walker and MacLeod 1991), and from observations made during the site reconnaissance.

The geologic units within the Site Boundary are shown in Figures H-1 and H-2. The Site Boundary is characterized by few, if any, active faults. A few small landslides are present on steeper slopes in the southern area of the Project on either side of Sand Hill Road. None of these are located at turbine or access road locations and will not impact Project development.

2.3.1.1 Bedrock Geologic Units

Basalt flows mapped in the site vicinity include the Wanapum and Grande Ronde basalt formations. The Grande Ronde Basalt is exposed in the valley walls along Oregon Highway 74 (OR-74), in Blackhorse Canyon, and Bell Canyon. Service Buttes are also made up of the Grande Ronde Basalt formation. It is typically black, aphyric, and dense, with even grain size. The Wanapum Basalt underlies the middle portion of the western site along Juniper and Strawberry Canyons. This unit is described as fine- to coarse-grained basalt with reversed magnetic polarity. The basalt varies from intact to weathered.

Tuffaceous sedimentary rocks and tuff underlie the northern portion of Wheatridge West, primarily along Sand Hollow and Bombing Range Roads. This unit also underlies a northwest portion of Wheatridge East, and is shown in Figures H-1 and H-2. This unit is described as semi-consolidated to well-consolidated lacustrine tuffaceous sandstone, siltstone, mudstone, concretionary claystone, pumicite, diatomite, air-fall and water-deposited vitric ash, palagonitic tuff and tuff breccia, and fluvial sandstone and conglomerate. In the vicinity of the Project, this formation consists of imbricated, basaltic cobble gravel with interbedded tuffaceous sands and silts that are weakly cemented in places. This formation was exposed primarily in in-road cuts and erosional gullies in the vicinity of the Project (see Figures H-1 and H-2).

2.3.1.2 Unconsolidated Geologic Units

Catastrophic flood deposits from the late Pleistocene are located along the northern end of Wheatridge East. These deposits are shown in Figures H-1 and H-2, and were observed during the site visit along County Service Road 1352 just north of Service Buttes. These deposits are primarily coarse, unsorted, poorly bedded basalt gravel and sand. Gravels are partially openwork, and forest beds are common along the southern side of the Columbia River. Layers of sand and silt deposited by receding floodwaters can be observed overlying the gravels in tributary canyons.

Loess deposits mantle the flatter plateau and upland areas. Loess is composed of wind-deposited fine sand and silt, and it mantles much of the Columbia Plateau. The loess is typically 15 to 30 feet thick, but it can be less than 3 feet thick in upland areas. Based on observations made during the site reconnaissance, the thickness of the loess in the northern portion of the site is thin to nonexistent.

2.3.2 230kV Overhead Intraconnection Lines

Wheatridge East and Wheatridge West would be electrically connected by up to two, parallel, 230kV overhead Intraconnection Lines running between the Substations in each area (Figures C-4a/b/c/d). These options enable the Project to connect to a planned Generator tie transmission line (Gen-tie) to be permitted, constructed, and owned by either the Umatilla Electric Cooperative (UEC) or a partnership of UEC and the Columbia Basin Electric Cooperative (CB). The Intraconnection Line(s) include four routing options, described in detail in Exhibit B.

The four Intraconnection Line options cross one major road, Oregon Route 207 (OR-207) and multiple small, local roads, see Table H-1. The site condition at these potential road crossings is stable, relatively flat terrain with no evidence of geological or soil hazards. At all road crossings, a geotechnical investigation will be performed to determine the necessary requirements for Intraconnection Line pole placement and design.

Table H-1. Intraconnection Line Road Crossings by Project Section

Project Section	Road
Wheatridge West	
Option 1 (longest)	Juniper Canyon Road
	Strawberry Lane
	Barak Martin Road
	OR-207
	Kilkenny Road
	Baseline Road
	Cutsforth Road
Option 2	Juniper Canyon Road
	Strawberry Lane
	Barak Martin Road
	OR-207
	Kilkenny Road
	Baseline Road
	Cutsforth Road
Option 3 (shortest)	Cutsforth Road
	Dolyen Road

Table H-1. Intraconnection Line Road Crossings by Project Section	
Project Section	**Road**
Option 4	OR-207
	Kilkenny Road
	Baseline Road
	Cutsforth Road
Wheatridge East	
No existing public road crossings	
Intraconnection Corridor	
Option 1 (longest)	Sand Hollow Road
	Spur Loop
	Little Butter Creek Road
	Big Butter Creek Lane
Option 2	Sand Hollow Road
	Spur Loop
	Little Butter Creek Road
	Big Butter Creek Lane
Option 3 (shortest)	Sand Hollow Road
	Spur Loop
	Little Butter Creek Road
	Big Butter Creek Lane
Option 4	Sand Hollow Road
	Spur Loop
	Little Butter Creek Road
	Big Butter Creek Lane

In the southern portion of Wheatridge West and the western portion of the Intraconnection Corridor, where it adjoins Wheatridge West, are several landslide areas as delineated by the SLIDO dataset. These areas of landslide are all outside of the Site Boundary and would not impact any of the Intraconnection Line route options. A field reconnaissance survey by Tetra Tech did not identify any areas of potential landslide at or near existing roads that were not already delineated by the SLIDO dataset.

Multiple rivers and streams would be crossed by the Intraconnection Line(s), some large enough to have names, and some only identified as intermittent features in the USGS National Hydrography Database (see Table H-2). Many of these rivers and streams are visible from existing roads in the Site Boundary in Wheatridge East and Wheatridge West but approximately half are within the Intraconnection Corridor and were not accessible by Tetra Tech during field reconnaissance. The

terrain within the Intraconnection Corridor is more topographically varied than in Wheatridge East and Wheatridge West, including areas of steep vertical relief. At all stream crossings, a geotechnical investigation will be performed to determine Intraconnection Line pole size and placement, as well as additional construction practices required to ensure stability in pole placement. There are no landslide areas as delineated by SLIDO within the Intraconnection Corridor.

Table H-2. Intraconnection Line River Crossings by Project Section

Project Section	River
Wheatridge West	
Option 1 (longest)	Juniper Canyon
	Unnamed Intermittent Stream #1
	Unnamed Intermittent Stream #2
	Strawberry Canyon
	Unnamed Intermittent Stream #3
	Little Juniper Canyon
	Unnamed Intermittent Stream #5
Option 2	Juniper Canyon
	Unnamed Intermittent Stream #1
	Unnamed Intermittent Stream #2
	Strawberry Canyon
	Unnamed Intermittent Stream #3
	Little Juniper Canyon
	Unnamed Intermittent Stream #4
	Unnamed Intermittent Stream #5
Option 3 (shortest)	Little Juniper Canyon
	Unnamed Intermittent Stream #5
Option 4	Little Juniper Canyon
	Unnamed Intermittent Stream #4
	Unnamed Intermittent Stream #5
Wheatridge East	
Option 1 (longest)	Unnamed Intermittent Stream #7
Option 2	Unnamed Intermittent Stream #7
Option 3 (shortest)	Unnamed Intermittent Stream #7
Option 4	Unnamed Intermittent Stream #7
Intraconnection Corridor	

Table H-2. Intraconnection Line River Crossings by Project Section	
Project Section	**River**
Option 1 (longest)	Sand Hollow
	Unnamed Perennial Tributary of Milk Canyon
	Milk Canyon
	Unnamed Intermittent Stream #6
	Unnamed Intermittent Tributary of Little Butter Creek
	Little Butter Creek
	Morris Canyon
	Unnamed Intermittent Tributary of Ayers Canyon
	Ayers Canyon
	Butter Creek
Option 2	Sand Hollow
	Unnamed Perennial Tributary of Milk Canyon
	Milk Canyon
	Unnamed Intermittent Stream #6
	Unnamed Intermittent Tributary of Little Butter Creek
	Little Butter Creek
	Morris Canyon
	Unnamed Intermittent Tributary of Ayers Canyon
	Ayers Canyon
	Butter Creek
Option 3 (shortest)	Sand Hollow
	Unnamed Perennial Tributary of Milk Canyon
	Milk Canyon
	Unnamed Intermittent Stream #6
	Unnamed Intermittent Tributary of Little Butter Creek
	Little Butter Creek
	Morris Canyon
	Unnamed Intermittent Tributary of Ayers Canyon
	Ayers Canyon
	Butter Creek
Option 42	Sand Hollow
	Unnamed Perennial Tributary of Milk Canyon
	Milk Canyon
	Unnamed Intermittent Stream #6

Table H-2. Intraconnection Line River Crossings by Project Section	
Project Section	**River**
	Unnamed Intermittent Tributary of Little Butter Creek
	Little Butter Creek
	Morris Canyon
	Unnamed Intermittent Tributary of Ayers Canyon
	Ayers Canyon
	Butter Creek

Upon review of existing sources of information on landslides, slope stability, soil cover, and topography, as well as a field reconnaissance by Tetra Tech, it is not anticipated that existing conditions will have an adverse effect on Wheatridge's ability to construction any of the Intraconnection Line options under consideration. As part of the final design process a geotechnical investigation will be performed along the selected Intraconnection Line routes to characterize subsurface conditions to allow for proper design of the Intraconnection Line pole foundations, dead-ends, and corners.

2.4 Consultation with DOGAMI – OAR 345-021-0010(1)(h)(C)

During preparation of this Exhibit, Tetra Tech consulted DOGAMI publications and other guideline documents (OBGE and OBEELS 1996). A Tetra Tech engineer contacted Bill Burns at DOGAMI on October 11, 2013, to discuss the proposed approach for preparing this Exhibit (Attachment H-1). Mr. Burns conveyed that DOGAMI was primarily concerned with how the site construction and geologic hazards would impact local citizens.

Wheatridge will consult with DOGAMI again prior to the site-specific geotechnical exploration, after micrositing has occurred.

3.0 Geologic Hazard Assessment

3.1 Seismic Hazard Assessment– OAR 345-021-0010(1)(h)(F)(i)

Within Exhibit H: OAR 345-022-0020, Structural Standard, and OAR 345-021-0010(1)(h) both reference the 2010 OSSC and the 2009 IBC for defining the seismic ground motions. However, as of July 1, 2014 the Oregon Building Codes Division requires the use of the 2014 OSSC. In turn, the 2014 OSSC references the 2012 IBC. The design ground motions used for the seismic design of the wind project structures will be based on the newer codes. A separate correspondence has requested a modification from the Oregon Department of Energy (ODOE) in accordance with OAR 345-021-0000(5) to base the seismic design on the 2014 OSSC (Attachment H-2). The response of ODOE to this request is included as Attachment H-3.

The methodology and basis for determining the design seismic ground motion have completely changed between the 2009 IBC and 2012 IBC methodologies. The 2009 IBC determined the Maximum Credible Earthquake (MCE) which represents the ground motion that has a 2% probability of exceedance in 50 years thus defining a uniform ground motion hazard. The 2012 IBC determines a "Risk-Targeted Maximum Credible Earthquake (MCE_R) which is defines the ground motion that results in a target risk of structural collapse equal to 1% in 50 years based on a generic structural fragility.

This exhibit presents the seismic ground motions (the MCE) in accordance with the current requirements of OAR 345-022 and OAR 345-021, which reference the 2009 IBC. In addition, the MCE_R ground motions are also provided as required by the current Oregon building codes, which reference the 2012 IBC.

3.1.1 OSSC 2010 and 2009 IBC

The 2009 IBC as amended by the 2010 OSSC defines the design parameters to determine the MCE. The MCE has a 2% probability of exceedance in 50 years (or a 2,475 year return period). The MCE has a peak ground acceleration (PGA) of 0.167g at the bedrock surface. This value of PGA on rock is an average representation of the acceleration most likely to occur at the site for all seismic events (crustal, intraplate, or subduction). The MCE analysis was performed on Wheatridge West because this portion of the Project had slightly higher ground motions due to the proximity to the sources on the west side of the state and would therefore be representative of the greatest potential ground motion. The MCE analysis was only performed for Wheatridge West because the MCE values for the center of the Project or for Wheatridge East would present values lower than for Wheatridge West and as a result, the highest MCE values from Wheatridge West would be used for seismic design criteria for the entire Project. The MCE ground motions are shown in figures H-3 and H-4 for the Soil Class B and Soil Class C within Wheatridge West.

Seismic design parameters were developed in accordance with the 2009 IBC. Using the subsurface information currently available, the Project would be designed for Site Class C (very dense soil and soft rock), according to IBC requirements. Subsurface conditions were ascertained by a review of existing information available (Bela, J.L. 1982; NRCS 2006 AND 2009; USGS 2013) as well through a site reconnaissance by a Tetra Tech Senior Geotechnical Engineer who reconnoitered the Project vicinity to observe soil conditions across the site; these were confirmed to be similar to the published descriptions. Once additional subsurface information is collected, it is likely (based on experience at nearby sites) that Site Class B may apply in certain portions of the Site Boundary. Final site class determination cannot be made until further site exploration is performed, including evaluation of shear wave velocity in rock and drilling at specific turbine sites. The recommended seismic design parameters to define the MCE are summarized in Table H-3.

Table H-3. Seismic Design Parameters – Maximum Considered Earthquake (MCE)			
Site Class	**Peak Horizontal Ground Acceleration on Bedrock**	**Soil Amplification Factor, F_a**	**Peak Horizontal Ground Acceleration at Ground Surface**
S_C	0.167g	1.2	0.20g
g = acceleration from gravity			

The following additional parameters for the Maximum Considered Earthquake may be used for structural design:

- Short period (0.2-second) spectral response acceleration, S_{MS} = 0.47g for Site Class S_C
- 1-second period spectral response acceleration, S_{M1} = 0.21g for Site Class S_C

The design spectral response accelerations, S_{DS}, for both short period and 1-second period are determined by multiplying the Maximum Considered Earthquake spectral response accelerations (S_{MS} and S_{M1}) by a factor of two-thirds.

3.1.2 2014 OSSC and 2012 IBC

In accordance with the OSSC 2014 and 2012 IBC, the ground motions defined by the MCE_R incorporate:

- A target risk of structural collapse equal to 1% in 50 years based upon a generic structural fragility.
- A factor of 1.1 to adjust from a geometric mean to the maximum response regardless of direction.
- Deterministic upper limits imposed near large, active faults which are taken as 1.8 times the estimated median response to the characteristic earthquake for the fault (1.8 is used to represent the 84th percentile response), but not less than 150% g.
- The MCE_R ground motions are shown in Figures H-5 and H-6 for Wheatridge West. The recommended seismic design parameters to define the risk are summarized in Table H-4.

Table H-4. Seismic Design Parameters – Risk Targeted Maximum Considered Earthquake (MCE_R)			
Site Class	**Peak Horizontal Ground Acceleration on Bedrock**	**Soil Amplification Factor, F_a**	**Peak Horizontal Ground Acceleration at Ground Surface**
S_C	0.159g	1.2	0.191g
g = acceleration from gravity			

The following additional parameters for the Risk-Targeted Maximum Considered Earthquake may be used for structural design:

- Short period (0.2-second) spectral response acceleration, S_{MS} = 0.435g for Site Class S_C
- 1-second period spectral response acceleration, S_{M1} = 0.238g for Site Class S_C

The design spectral response accelerations, S_{DS}, for both short period and 1-second period are determined by multiplying the Maximum Considered Earthquake spectral response accelerations (S_{MS} and S_{M1}) by a factor of two-thirds.

3.1.3 Earthquake Sources – OAR 345-021-0010(1)(h)(F)(ii)

Seismicity in northern Oregon is generated from the convergence of the Juan de Fuca plate and the North American plate at the Cascadia Subduction Zone (CSZ). These plates converge at a rate between 1 and 2 inches per year and accumulate large amounts of stress that are released abruptly in earthquake events. The four sources of earthquakes and seismic activity in this region are crustal, intraplate, volcanic, and the CSZ (DOGAMI 2010).

1. Crustal earthquakes in this region are generally shallow (<30 kilometers [18.6 miles] depth) and result from active faulting in the upper North American plate. Crustal earthquakes typically have a maximum magnitude near 7.0, and recurrence intervals are dependent on stress accumulation and release but can range from 10s to 100s of years.
2. Intraplate earthquakes occur deep (50 to 70 kilometers [31 to 43.4 miles] depth) in the CSZ and have a maximum magnitude potential near 7.0. Recurrence intervals for deep intraplate earthquakes are generally between 500 to 600 years. Intraplate earthquake epicenters generally occur beneath the Willamette region between the Cascade Mountains and Oregon Coast Range.
3. Volcanic earthquakes result from the movement and shifting of magma bodies beneath the earth's crust. Magma movement can create earthquake swarms (multiple earthquakes in nearby locations over a relatively short period of time), which can be precursors to volcanic activity. Magnitudes and recurrence intervals of these earthquakes are highly variable and are dependent on magma movement and volcanic activity.
4. Deep subduction zone earthquakes occur near the interface between the Juan de Fuca plate and North American plate off the Oregon coast. The CSZ and similar type plate boundaries are capable of producing 9.0 magnitude subduction zone earthquakes. Recurrence intervals are typically on the order of 300 to 500 years.

Regionally, seismicity has been attributed to crustal deformation resulting from the CSZ and volcanism. Faults are considered active if there has been displacement in the last 10,000 years, and potentially active if there has been movement over the last Quaternary period (1.6 million years). Overall, earthquakes in Oregon are associated with active faults in four regional zones of seismicity: the Cascade seismic zone, Portland Hills (Portland, Oregon-Vancouver, Washington metropolitan area) zone, south-central (Klamath Falls) zone, and northeastern Oregon zone (Niewendorp and Neuhaus, 2003).

The maximum probable earthquake (MPE) is considered to be an earthquake that has a 10% probability of exceedance in 50 years (a nominal 500-year recurrence interval). In addition, a Probabilistic Seismic Hazard Analysis (PSHA) is defined with a nominal 2,500-year recurrence period (a 2% probability of exceedance in 50 years). To provide an estimate of magnitudes for seismic events, the PGA and a Spectral Acceleration at a period of 2.0 seconds were estimated using the 2003 updated USGS PSHA seismic hazard database. These estimates of magnitude, epicentral distance, and PGA are provided in Table H-5.

Table H-5. MPE Source Characterization Parameters (Based on 2003 USGS PSHA Data)			
Earthquake Event	**Mean Moment Magnitude**	**Epicentral Distance (miles)**	**Peak Ground Acceleration (PGA)**
Maximum Probable Earthquake (500 year)	6.2 (crustal) 9.0 (subduction)	40 (crustal) 203 (subduction)	0.077g
Probabilistic Seismic Hazard Analysis (2500 year)	6.0 (mean)	16 (mean)	0.167g
Note: The parameters for both events are for a frequency that corresponds to the PGA. g = acceleration from gravity.			

Figures H-7 and H-8 show the probabilistic seismic hazard deaggregations for the MPE (500 year) and for a PSHA with a 2,475 year return period, respectively.

3.1.4 Recorded Earthquakes – OAR 345-021-0010(1)(h)(F)(iii)

Historically recorded earthquakes greater than a magnitude 3.0 and within 50 miles of the Site Boundary are listed in Table H-6A.

Table H-6A. Significant Historical Earthquakes Within 50 Miles (80 Kilometers) of the Wheatridge Facility						
Year	**Month**	**Day**	**Latitude**	**Longitude**	**Magnitude**	**Intensity**
1893	3	7	45.90	-119.40	--	VII
1922	10	16	45.83	-119.23	--	III
1922	12	12	45.67	-118.75	--	III
1955	8	21	44.5	-120.0	3.0	--
1958	5	7	45.1	-122.0	3.4	--
1959	11	24	46.55	-121.47	3.1	--
1962	11	9	46.13	-121.63	3.2	--
1963	1	17	44.95	-120.8	3.0	--
1963	4	6	44.43	-119.63	3.3	--
1965	8	19	44.6	-118.4	4.4	--
1965	11	7	44.9	-117.0	4.3	--
1967	8	5	44.9	-118.0	3.5	--
1969	4	19	45.78	-119.7	3.2	--
1969	9	27	46.63	-118.08	3.1	--
1969	11	1	46.85	-120.45	3.2	--
1969	11	21	46.62	-118.88	3.6	--
1970	1	1	46.27	-118.35	3.0	--
1970	4	4	46.3	-119.9	3.0	--
1970	4	22	46.3	-120.13	3.0	--

Table H-6A. Significant Historical Earthquakes Within 50 Miles (80 Kilometers) of the Wheatridge Facility						
Year	**Month**	**Day**	**Latitude**	**Longitude**	**Magnitude**	**Intensity**
1970	6	22	46.47	-120.02	3.1	--
1970	9	11	46.63	-120.42	3.5	--
1970	10	2	45.77	-120.56	3.0	--
1970	11	22	46.82	-120.33	3.0	--
1970	11	29	46.2	-120.1	3.0	--
1951	1	7	45.92	-119.23	--	V
1969	4	19	45.78	-119.70	3.2	--
1971	1	4	46.22	-119.35	3.1	--
1975	7	1	45.63	-120.00	3.5	--
1985	2	10	45.86	-119.64	3.7	--
1987	9	8	45.18	-120.09	3.1	--
1987	9	29	45.19	-120.11	2.7	--
1988	7	11	45.25	-120.13	2.9	--
1988	9	29	45.85	-120.26	3.5	--
1989	3	27	45.82	-120.26	3.1	--
1991	4	20	45.35	-120.14	2.8	--
1992	8	7	45.86	-119.59	3.9	--
1993	12	16	45.20	-120.09	3.0	--
1993	12	18	45.25	-120.11	3.1	--
1994	9	22	45.69	-120.16	2.9	--
1994	11	17	45.70	-120.18	2.7	--
1995	11	2	46.15	-119.56	3.1	--
1996	2	13	45.53	-119.61	2.9	--
1997	3	22	45.20	-120.07	2.7	--
1997	3	22	45.19	-120.07	3.9	--
1997	3	23	45.20	-120.07	3.4	--
1997	4	17	45.19	-120.08	3.2	--
1997	8	17	45.65	-120.19	2.8	--
1997	9	10	45.65	-120.20	2.7	--
1998	2	3	45.81	-120.2	3.1	--
1998	4	28	45.26	-120.28	2.7	--
1998	8	12	45.17	-120.03	2.8	--
1998	9	5	45.65	-120.49	2.9	--
1999	8	31	45.19	-120.09	3.2	--
1999	9	4	45.18	-120.08	2.9	--
2000	1	5	45.70	-120.05	2.8	--
2000	1	30	45.20	-120.13	4.1	--
2000	1	30	45.19	-120.10	3.4	--
2000	1	30	45.18	-120.11	2.8	--

Table H-6A. Significant Historical Earthquakes Within 50 Miles (80 Kilometers) of the Wheatridge Facility						
Year	**Month**	**Day**	**Latitude**	**Longitude**	**Magnitude**	**Intensity**
2000	2	1	45.19	-120.11	3.6	--
2000	2	1	45.19	-120.12	2.8	--
2000	7	25	45.34	-121.68	2.8	--
2000	7	28	45.17	-120.14	2.6	--
2000	8	3	45.21	-120.07	2.8	--
2000	8	17	45.31	-120.04	3.2	--
2002	1	31	45.69	-120.17	2.7	--
2002	10	25	45.19	-120.10	2.7	--
2003	6	1	45.19	-120.11	2.8	--
2003	9	12	45.43	-118.86	2.8	--
2004	2	28	46.04	-119.02	3.6	--
2008	5	18	46.16	-119.55	3.7	--
2009	8	16	45.93	-120.10	2.8	--
Sources: Madin 1994; USGS 2013c.						

Historically recorded earthquakes greater than 50 miles from the Site Boundary that may have caused ground shaking at the site more intense than a Modified Mercalli III intensity are listed in Table H-6B.

Table H-6B. Significant Historical Earthquakes Greater than 50 Miles (80 Kilometers) from the Wheatridge Facility						
Year	**Month**	**Day**	**Latitude**	**Longitude**	**Magnitude**	**Distance from site**
1965	4	29	47.288	-122.406	6.7	280 km
1980	4	14	46.209	-122.190	5.3	205 km
1981	2	14	46.351	-122.238	5.1	215 km
1993	3	25	45.035	-122.607	5.6	225 km
2001	2	28	47.149	-122.727	6.8	290 km
Sources: USGS 2013c.						

3.1.5 Ground Response Spectra Assessment – OAR 345-021-0010(1)(F)(iv)

Figure H-9 compares MCE and design response spectra given in the 2009 IBC with the 2010 Oregon Structural Specialty Code with the MPE (500 year) and the PSHA (2500 year) response spectra for Soil Class B (Rock). Figure H-10 shows the comparison of the MCE and design response spectra for Soil Class C (very dense soil and soft rock). On the basis of the current subsurface information

available, it is recommended that the Project be designed for Site Class C. However, the site reconnaissance indicates that shallow basalt rock formations may exist at certain locations, where the Soil Class B response spectra would apply.

Figure H-11 shows the comparison of the 2012 IBC MCE_R design response spectrum with the 2009 IBC MCE design response spectrum for Soil Class C. This shows that the risk-targeted maximum considered earthquake response spectrum is within 10% of the MCE response spectrum. Note that short period spectral accelerations for the MCE_R are slightly less than the MCE and the MCE_R is slightly greater at the 1 sec and longer periods.

3.2 Hazards Resulting from Seismic Events – OAR 345-021-0010(1)(h)(F)(v)

Potential seismic hazards associated with a design seismic event for this Project include seismic shaking or ground motion, fault displacement, instability from landslides or subsurface movement, and adverse effects from groundwater or surface water. These hazard risks are anticipated to be low, as discussed below.

3.2.1 Seismic Shaking or Ground Motion

The design seismic event will have a 2,500 year recurrence interval. The structures will be designed for this unlikely event such that no permanent structural damage will occur. The Project's structures will be designed to withstand the maximum risk based design earthquake ground motions developed for the Project site. The State of Oregon and the Project counties (Umatilla and Morrow) have adopted the IBC 2012 code for structural design. Specifically, this is Section 1613 (Earthquake Loads) of the 2014 OSSC, which is Chapter 16. It should be noted that Building Codes are frequently updated; the IBC specifically is updated every three years. Therefore, it is incumbent on the design engineers to ensure that the designs are in accordance with the current versions of the latest codes as adopted by the State of Oregon at the time of construction.

A wind turbine is not a specifically listed structure in Table 1604.5, Risk Category of Buildings and Other Structures, of the 2014 OSSC. However, it would fall into Risk Category II and "represents a low hazard to human life in the event of a failure."

Based on geotechnical and geological information, a Site Class for the soil/bedrock at the site is assigned. In this case as described previously in Section 3.1.1, a Site Class C (very dense soil to soft rock) is appropriate for the Project. With this information specific seismic design parameters (see Table H-4 in section 3.1.1) are developed for the Project following IBC 2012 codes.

The turbine manufacturer (Original Equipment Manufacturer [OEM]) uses the site specific seismic data to ensure that their turbine equipment exceeds the structural requirements for the Project. These analyses by the OEMs are proprietary and are not public information. Therefore, Wheatridge cannot cite the particular models and versions numbers used by the OEMs and like the Building Codes, the software models and versions are frequently updated or replaced so citing particular models and versions is not prudent at this early stage of project development. However, based on many years of experience and installation of turbines in seismically active areas such as California,

Hawaii, Alaska, Washington and Oregon, the OEMs have developed safe and conservative structural designs. Their reputations and safety for both workers and the public depend on safe designs with a long service life.

Based on site specific analyses, the OEMs provide the structural engineer with site specific foundation loads. The structural engineer then completes the foundation analyses based on the design site specific parameters that have to be met. Generally these include the following loads for foundation design: extreme loads, load cases for lift-off, overturning, sliding, shear failure, tension loads in case of pile foundations, earthquake loads, fatigue loads; connection between tower and foundation; boundary conditions including dynamic stiffness of the foundation, subsoil properties, spring constants, verification procedures; and maximum allowable inclination.

The geotechnical studies and analyses provide site specific parameters including but not necessarily limited to: moisture content and density, soil/bedrock bearing capacity, settlement characteristics, structural backfill characteristics, soil improvement (if required), and dynamic soil/bedrock properties including shear modulus and Poisson's Ratio of the subgrade. - The foundation design engineer uses these parameters to design a foundation suitable for the Project. This suitability takes into account many factors such as the connection between the base of the turbine tower and the foundation or the electrical cabling requirements and related to the structural design, the designer verifies that the foundation/soil interaction meets or exceeds the minimum requirements stated by the OEM for the Project.

3.2.2 Fault Rupture

No potentially active faults that could cause a surface rupture have been mapped within the Site Boundary (Bela J.L. 1982; Burns, Bill, Oregon Department of Geology and Mineral Industries 2013; USGS 2013b; Walker, G.W. and N.S. MacLeod. 1991).

3.2.3 Liquefaction

Liquefaction is a phenomenon in which saturated, cohesionless soils temporarily lose their strength and liquefy when subjected to dynamic forces such as intense and prolonged ground shaking and seismic activity. The soils at the project areas are not saturated and generally cohesive in nature. That, along with the relatively low seismic event potential, indicates that liquefaction of soils within the Site Boundary is considered extremely unlikely.

3.2.4 Seismically Induced Landslides

Seismicity in the region has the potential to trigger landslides and mass wasting processes within the Site Boundary; although the potential is considered low and limited to the steepest canyon areas. Known landslides are shown in Figures H-1 and H-2. More detailed discussion on the location and type of landslides is included in Section 3.3.2.

3.2.5 Subsidence

Subsidence is the sudden sinking or the gradual downward settling of the land surface and is often related to groundwater drawdown, compaction, tectonic movements, mining, or explosive activity. Subsidence due to seismic event is highly unlikely. In most areas bedrock is relatively shallow and as noted above, the overlying soils are not saturated.

3.3 Soil-Related and Geologic Hazards

Oregon is a relatively young landscape on a geologic scale that has been formed and sculpted by volcanic and erosional processes over the last 36 million years. Volcanic activity has been limited to the Cascade Range over the last 1.8 million years, and erosion and depositional processes continue to shape the landscape as it is seen today. This section discusses geologic or soil related hazards that could, even in the absence of a seismic event, affect the Project or could adversely affect or be aggravated by construction of the Project; these include volcanic activity, landslides, flooding, and erosion.

3.3.1 Volcanic Activity

Volcanic activity in the Cascade Range is driven by the subduction of the Juan de Fuca plate beneath the North American plate. There are five active volcanoes in Oregon that have shown signs of unrest or erupted in historic time, three of which have erupted in the last 4,000 years (USGS, 2010b). These volcanoes present hazards that include, but are not limited to, pyroclastic flows, lava flows, debris flows, lahars, tephra ejections, ash fall, and seismic activity. Since the Project is well east of these active volcanoes, volcanic activity, though possible, is extremely unlikely to impact the Project.

3.3.2 Mass Washing and Landslides – OAR 345-021-0010(1)(h)(G)

No active landslides, provided by SLIDO, are within the Site Boundary. However, a few small landslides are shown close to the southern portion of Wheatridge West. These landslides are located on the southeast edge of Swaggart Buttes just west of Sand Hollow Road and north of Bell Canyon Loop.

These landslides were observed during the site reconnaissance, and may be areas of slope instability. These areas are shown in Figures H-1 and H-2. These landslides are formed primarily in the slopes of Bell Canyon and would not underlie Project facilities. Apparent prehistoric landslides were also noted along a tributary canyon to Sand Hollow Creek, located southeast of Wheatridge West. On the basis of site observations and literature review, it is interpreted that these landslides could have been triggered by heavy rain, rapid snow melt, or previous earthquakes in the region. These slides all occurred in areas with moderate to steep slopes.

Although these landslides are not anticipated to be active, soil strength and slope stability can be reduced in areas where landslides have occurred. Therefore, it is recommended that specific areas with the potential for slope instability be identified and siting of turbine strings be determined to avoid this potential hazard (see Section 4.0 for additional description of this recommended measure).

3.3.3 Erosion – OAR 345-021-0010(1)(h)(G)

The erosion factor (K) indicates the susceptibility of a soil to sheet and rill erosion by water. The K-Factor is one of six factors used in the Universal Soil Loss Equation and the Revised Universal Soil Loss Equation to predict the average annual rate of soil loss by sheet and rill erosion in tons-per-acre-per-year. The estimates are based primarily on percentage of silt, sand, and organic matter and also on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water. Data from the NRCS Web Soil Survey (NRCS, 2006) indicate that the soils at the Project have an erodibility (K) that ranges from 0.15 to 0.55. For the range of K at the Project, the soils could be considered moderately to highly erodible and subject to sheet erosion and rill erosion by water.

The Project will comply with the requirements of a National Pollutant Discharge Elimination System (NPDES) Stormwater Construction Permit (Exhibit I, Attachment 2). The NPDES permit requires development of an erosion control plan and implementation of erosion control best management practices (BMPs).

3.3.4 Collapse of Potential Loess – OAR 345-021-0010(1)(h)(G)

Loess has an internal structure that can be susceptible to collapse and/or swelling particularly upon application of load when the soil is at or near saturation. This phenomena can have a detrimental effect on foundations constructed on loess. Project construction will not cause saturation of materials that have not previously experienced saturation. During geotechnical investigations and design the collapse and swell potential of the loess will be further evaluated through laboratory testing and analysis.

4.0 Geologic Hazard Mitigation

Additional mitigation strategies will be developed following completion of geotechnical investigations consistent with the approaches summarized below.

4.1 Seismic Hazard Mitigation – OAR 345-021-0010(1)(h)(H)

Prior to construction, a qualified engineer will assess and review the seismic, geologic, and soil hazards associated with the construction of Project facilities. Construction requirements will be modified, as needed, based on the site-specific characterization of seismic, geologic, and soil hazards. The Project will be designed, engineered, and constructed to adequately avoid potential dangers to human safety presented by seismic hazards. Wind turbines are designed for large wind loads, which for a region of moderate seismicity potential like the Project area, results in ample capacity to resist seismic loads. Wind turbine towers will be designed in accordance with the 2012 IBC, Section 1613 as amended by OSSC and local agencies. Substation structures will be designed in accordance with the 2014 OSSC. Substation equipment will be specified in accordance with the latest version of the

Institute of Electrical and Electronics Engineers 693. The Project facilities will be generally unmanned and located in sparsely populated areas; therefore, the risks to human safety due to seismic hazards would be minimal.

4.2 Soil-Related Hazard Mitigation – OAR 345-021-0010(1)(h)(I)

As discussed in Section 3.3, non-seismic geologic hazards could potentially include landslides, volcanic eruptions, collapsing soils, and soil erosion. Typical mitigation measures for non-seismic hazards include avoidance of potential hazards, creation of detailed geologic hazard maps to aid in laying out facilities, characterization of the subsurface soils to determine soil strength and foundation conditions, and provision of warnings in the event of hazards. Additional discussion of possible mitigation measures for each potential hazard is provided below.

4.2.1 Soil Erosion

Soil Erosion. To reduce the potential for soil erosion, construction of roads and turbine foundations will be regulated by an erosion and sediment control plan as part of a Stormwater Pollution Prevention Plan and NPDES 1200-C Stormwater Construction Permit that will require BMPs to minimize possible impacts from erosion or other impacts to soils. See Exhibit I, Attachment I-3 for the NPDES 1200-C and associated ESCP.

Work on the access roads will include grading and re-graveling of existing roads, and construction of new roads. Erosion control measures will meet local, county, and state erosion control measures, including procedures described in Exhibit V.

General erosion and sediment control measures to be implemented during Project construction include:

- Scheduling to avoid earth disturbing activities during wet weather;
- Work area sediment controls;
- Storm drain inlet protection;
- Non-storm water pollution controls, such as materials use and waste management BMPs;
- Covering or otherwise protecting stockpiles; and
- Runoff and erosion prevention measures for slopes susceptible to erosion.

Specific erosion and sediment control measures and BMPs to be implemented during Project construction and operations include the following:

Avoid Highly Erodible Areas: Initial mitigation measures will include avoiding wherever possible highly erodible areas such as steep slopes, and rerouting impacted drainages to natural drainages to minimize erosion and sedimentation from runoff. Areas impacted by construction will be reseeded and sediment fences, check dams, and other BMPs will remain in place until impacted areas are well vegetated and the risk of erosion has subsided.

Stabilize Road Entrance/Exit: A stabilized construction entrance/exit will be installed at locations where dirt (exposed, disturbed land) or newly constructed roads intersect existing paved roads.

Stabilized entrances will also be installed at the Construction Yards and turbine laydown areas. The stabilized construction entrance/exits will be inspected and maintained for the duration of the Project life.

Preserve/Restore Vegetation: To the extent practicable, existing vegetation will be preserved. In the event that vegetation is destroyed in temporary road locations or laydown areas, stockpiled topsoils will be replaced and recontoured, and vegetation will be reseeded to prevent erosion using an approved seed mixture specified by the NRCS or the US Forest Service (USFS) as being capable of surviving in local conditions (see Revegetation Management Plan attached to Exhibit P).

Control Dust: Dust will be controlled during construction through water application to the disturbed grounds and access roads where necessary. Application of excess water that could lead to erosion or sedimentation will be avoided. Other methods of dust control may include the use of poly sheeting, vegetation, or mulching. Speed limits will be kept to a minimum to prevent pulverization of road substrate.

Install Silt Fencing: Silt fencing or an equivalent control measure will be installed at various locations across the Site Boundary. The fencing will be installed on contour downgradient of excavations, fill areas, or graded areas where necessary. Silt fencing or an equivalent control measure will be installed around the perimeters of material stockpiles, Construction Yards, and turbine laydown areas.

Install Straw Wattles: Straw wattles will be installed to decrease the velocity of sheet flow from stormwater. The wattles will be used along the downgradient edge of access roads adjacent to slopes or sensitive areas.

Apply Gravel and Mulching: Gravel will be used where soil becomes wet or muddy to prevent erosion and working of the soil. Mulch will be provided to immediately stabilize soil exposed as a result of land-disturbing activities. The mulch reduces the potential for wind and raindrop erosion.

Install Stabilization Matting: Jute mesh, straw matting, or turf reinforcement matting will be used to stabilize slopes that could become exposed during installation of access roads, during rainfall events, or to stabilize intermittent streams disturbed during construction of road crossings. Erosion control matting will be combined with revegetation techniques.

Control Concrete Washout Area: Concrete washout will be appropriately managed to prevent concrete washout water from impacting soils, water bodies, or wetlands. Washout procedures will follow the guidelines in Section 3.2.1 of Exhibit V.

Manage Stockpiles: Soils excavated to create footings and foundations for Project facilities will be temporarily stockpiled and used as backfill at the completion of the footing or Project construction. While the material is stockpiled, perimeter controls will be established and the stockpiled material will be covered as necessary with mulch, plastic sheeting, and/or other appropriate means to prevent erosion and sedimentation.

Install Check Dams, Sediment Traps, and Sediment Basins: Check dams and sediment traps will be used during construction near tributaries and existing drainages. The check dams and sediment

traps will minimize downstream disturbances and sedimentation of creeks. A sediment basin is a constructed temporary pond built to capture eroded soils that wash off from larger construction sites during rain storms. The sediment-laden soil settles in the pond before the runoff is discharged.

Soil Erosion by Wind. To mitigate the risk of accelerating soil erosion by wind in areas rated with wind erodibility groups 1 or 2, Wheatridge will implement reseeding efforts, apply mulch, and use water for dust control to minimize potential erosion by wind on disturbed soils during construction and over the long term. Areas that are susceptible to aeolian processes that will be disturbed by construction activities and not permanently covered by aboveground facilities will be vegetated using a seed mixture specified by the NRCS or USFS as being capable of surviving in local conditions, and withstanding burial and deflation from aeolian processes. Disturbed areas susceptible to wind erosion may be hydro-seeded when temperatures and moisture levels are conducive to seed germination.

4.2.2 Collapsing Soils

As noted in Section 3.3.4, loess or other collapsible soil conditions will be identified during the final design and geotechnical investigations, and the collapse potential will be evaluated by laboratory testing. If necessary, collapse potential of loess will be mitigated by construction techniques such as over excavating and replacing with structural fill, wetting and compacting, deep foundations or avoidance.

4.2.3 Landslides

Landslide hazards will be thoroughly evaluated to determine the potential for failure through geotechnical analysis and literature review. Because landslide hazards are not located near populated or heavily used areas, there is no significant threat to human safety. If landslides or slumps are identified in the field, the first step would be to adequately characterize the mass wasting or landslide hazards, after which Project facilities would be designed to meet structural and zoning requirements. Structural requirements will adhere to soil lateral load requirements in the 2014 OSSC (Section 1610). Structures and roads will be constructed with sufficient setback from slopes to mitigate the potential for landslides during construction and operation.

4.2.4 Volcanic Eruptions

A volcanic eruption, even though unlikely, could damage or affect Project structures including the wind turbines. If an event similar to the 1980 Mt. St. Helens eruption were to occur, the turbines will be shut down until safe operating conditions return. If an eruption should occur during construction, a temporary shutdown most likely will be required to protect equipment and human health.

5.0 Conclusions

The risk of seismic and other geologic and soil-based hazards to human safety is low. The Project is located in a sparsely populated region of Oregon where land management and site conditions are expected to prevent residential or industrial development during the life of the Project. In addition, only a few maintenance personnel would be on site at any given time. As a result, the probability of a large seismic, volcanic, or mass wasting event occurring while a Project facility is occupied would be much lower than a building or similar facility in a more populated area of similar seismic activity.

Non-seismic hazards that could affect the Project include volcanic hazards, floods, landslides, and erosion. Volcanic hazards are expected to be low for the Project. Landslides have been identified near to the Site Boundary; these areas will undergo additional geotechnical investigations to ensure that no Project facilities are located on or near unstable land masses.

Land disturbance and construction impacts could increase susceptibility to soil erosion. Best management practices will be implemented through the NPDES 1200-C Stormwater Construction Permit and associated ESCP to mitigate the potential for erosion. Initial mitigation measures will include avoiding highly erodible areas where possible and rerouting impacted drainages to natural drainages so as not to increase water volumes, sedimentation, or erosion. Erosion protection mechanisms will be implemented where possible and any increase in erosion would be temporary. Areas impacted by construction will be reseeded, and sediment fences and check dams will remain in place until impacted areas are well vegetated and the risk of erosion has been minimized.

Wheatridge has demonstrated in accordance with OAR 345-022-0020(1)(b) that the Project can be designed, engineered, and constructed to avoid dangers to human safety in case of a design seismic event by adhering to IBC requirements.

6.0 Submittal Requirements and Approval Standards

6.1 Submittal Requirements

Table H-7. Submittal Requirements Matrix

Requirement	Location
OAR 345-021-0010(1)(h) Information from reasonably available sources regarding the geological and soil stability within the analysis area, providing evidence to support findings by the Council as required by OAR 345-022-0020, including:	
OAR 345-021-0010(1)(h)(A) A geologic report meeting the guidance in Oregon Department of Geology and Mineral Industries open file report 00-04 "Guidelines for Engineering Geologic reports and Site-Specific Seismic Hazard Reports."	Section 2.3
OAR 345-021-0010(1)(h)(B) A description and schedule of site-specific geotechnical work that will be performed before construction for inclusion in the site certificate as conditions.	Section 2.3

Table H-7. Submittal Requirements Matrix	
Requirement	**Location**
OAR 345-021-0010(1)(h)(C) Evidence of consultation with the Oregon Department of Geology and Mineral Industries regarding the appropriate site specific geotechnical work that must be performed before submitting the application for the Department to determine that the application is complete.	Section 2.4
OAR 345-021-0010(1)(h)(D) For all transmission lines, a description of locations along the proposed route where the applicant proposes to perform site specific geotechnical work, including but not limited to railroad crossings, major road crossings, river crossings, dead ends, corners, and portions of the proposed route where geologic reconnaissance and other site specific studies provide evidence of existing landslides or marginally stable slopes that could be made unstable by the planned construction.	Section 2.3
OAR 345-021-0010(1)(h)(E) For all pipelines that would carry explosive, flammable or hazardous materials, a description of locations along the proposed route where the applicant proposes to perform site specific geotechnical work, including but not limited to railroad crossings, major road crossings, river crossings and portions of the proposed alignment where geologic reconnaissance and other site specific studies provide evidence of existing landslides or marginally stable slopes that could be made unstable by the planned construction.	N/A
OAR 345-021-0010(1)(h)(F) An assessment of seismic hazards. For the purposes of this assessment, the maximum probable earthquake (MPE) is the maximum earthquake that could occur under the known tectonic framework with a 10% chance of being exceeded in a 50 year period. If seismic sources are not mapped sufficiently to identify the ground motions above, the applicant shall provide a probabilistic seismic hazard analysis to identify the peak ground accelerations expected at the site for a 500 year recurrence interval and a 2500 year recurrence interval. In the assessment, the applicant shall include:	Sections 3.1.3, 3.2
(i) Identification of the Maximum Considered Earthquake Ground Motion as shown for the site under the 2009 International Building Code.	Section 3.2.1, Table H-1
(ii) Identification and characterization of all earthquake sources capable of generating median peak ground accelerations greater than 0.05g on rock at the site. For each earthquake source, the applicant shall assess the magnitude and minimum epicentral distance of the maximum credible earthquake (MCE).	Section 3.1.3
(iii) A description of any recorded earthquakes within 50 miles of the site and of recorded earthquakes greater than 50 miles from the site that caused ground shaking at the site more intense than the Modified Mercalli III intensity. The applicant shall include the date of occurrence and a description of the earthquake that includes its magnitude and highest intensity and its epicenter location or region of highest intensity.	Section 3.1.4, Table H-6
OAR 345-021-0010(1)(h)(G) An assessment of soil-related hazards such as landslides, flooding and erosion which could, in the absence of a seismic event, adversely affect or be aggravated by the construction or operation of the facility.	Sections 3.3.2, 3.3.3, 3.3.4
OAR 345-021-0010(1)(h)(H) An explanation of how the applicant will design, engineer and construct the facility to avoid dangers to human safety from the seismic hazards identified in paragraph (F). The applicant shall include proposed design and engineering features, applicable construction codes, and any monitoring for seismic hazards.	Section 4.1
OAR 345-021-0010(1)(h)(I) An explanation of how the applicant will design, engineer and construct the facility to adequately avoid dangers to human safety presented by the hazards identified in paragraph (G).	Section 4.2

Table H-7. Submittal Requirements Matrix	
Requirement	**Location**
Project Order Comments	**Location**
Exhibit H should include written evidence of consultation with DOGAMI regarding the level of geologic and geotechnical investigation determined to be practical for the application submittal.	Section 2.4, Attachment 1
Any geotechnical reports included in Exhibit H as supporting evidence that the proposed facility will meet the Council's structural standard should follow the guidelines of DOGAMI's "Open File Report 00-04 "Guidelines for Engineering Geologic Reports and Site Specific Seismic Hazard Reports."	Section 2.3
Note that OAR 345-021-0010(1)(h), paragraphs (A), (F)(i), and (F)(iv) contain references to outdated guidelines and codes. Until such time that the Council rules can be revised to reflect current standards, the Department requests that applicants consult directly with DOGAMI, determine the most current structural standards that apply to its facility, then use those codes to prepare Exhibit H. The application should clearly note which codes and guidelines were used to prepare the information in Exhibit H.	Section 2.4
Exhibit H should also provide evidence that the current codes are equivalent to or more stringent than those cited in the Council's rules.	Section 1.0
Exhibit H should also provide evidence that the applicant agrees to construct the facility in accordance with the current codes and guidelines.	Sections 1.0, 2.4 and 4.1

6.2 Approval Standard

Table H-8. Approval Standard	
Requirement	**Location**
OAR 345-022-0020 Structural Standard To issue the requested Site Certificate, the Council must find that: (a) The applicant, through appropriate site-specific study, has adequately characterized the site as to the Maximum Considered Earthquake Ground Motion as shown for the site in the 2009 International Building Code (and maximum probable ground motion, taking into account ground failure and amplification for the site specific soil profile under the maximum credible and maximum probable seismic events; and	Section 3.1.1
(b) The applicant can design, engineer, and construct the facility to avoid dangers to human safety presented by seismic hazards affecting the site that are expected to result from maximum probable ground motion events. As used in this rule "seismic hazard" includes ground shaking, ground failure, landslide, liquefaction, lateral spreading, tsunami inundation, fault displacement, and subsidence;	Section 4.1
(c) The applicant, through appropriate site-specific study, has adequately characterized the potential geological and soils hazards of the site and its vicinity that could, in the absence of a seismic event, adversely affect, or be aggravated by, the construction and operation of the proposed facility; and	Sections 3.2 and 3.3
(d) The applicant can design, engineer and construct the facility to avoid dangers to human safety presented by the hazards identified in subsection (c).	Section 4.0

7.0 References

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Figures

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Attachments

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Attachment H-1:

Copy of letter with Bill Burns at DOGAMI

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Attachment H-2:

Copy of Correspondence with the Oregon Department of Energy Requesting a Modification in Accordance with OAR 345-021-0000(5)

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Attachment H-3:

Copy of Oregon Department of Energy Approval of the Wheatridge Request for a Modification in Accordance with OAR 345-021-0000(5)

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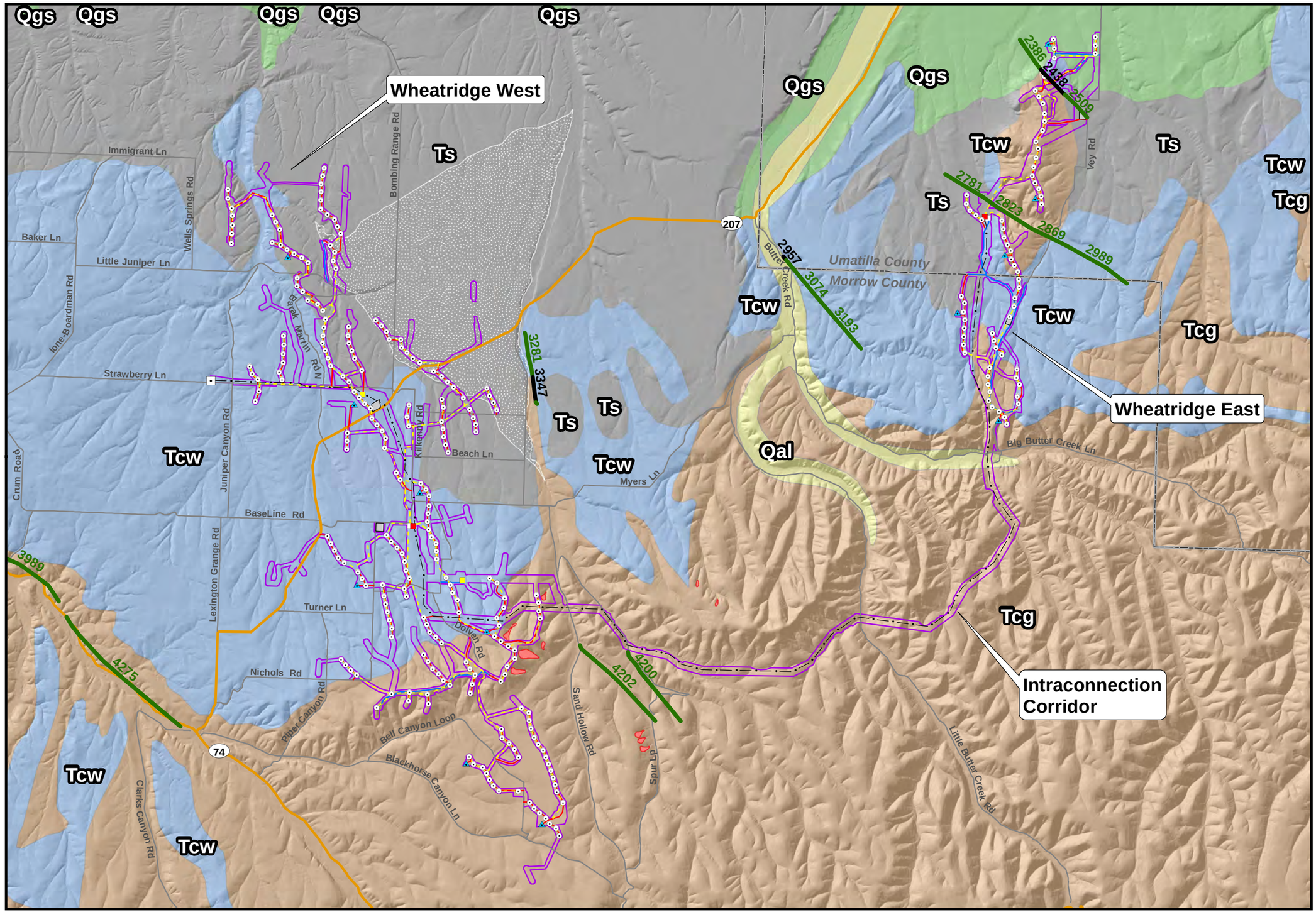
Figures



1:135,000 WGS84 UTM 11

0 1 2 4 6 8 10 12 14 16 18 20 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USGS: surface geology, fault lines / OR Dept. Geology and Mineral Industries: landslide, fan

Figure H-1

Wheatridge Wind Energy Facility

Oregon Geology Map

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- State Highway
- Local Road
- Proposed Strawberry Substation *
- Fan
- Landslide

Fault Line
- Yes
- No

Surface Geology
- Qal — Alluvial Deposits
- Qgs — Glaciofluvial, Lacustrine, and Pediment Sedimentary Deposits (Pleistocene)
- Tcg — Grande Ronde Basalt (Middle and Lower Miocene)
- Tcw — Wanapum Basalt (Middle Miocene)
- Ts — Tuffaceous Sedimentary Rocks and Tuff (Pliocene and Miocene)

Proposed Project Facilities
- Turbine
- Met Tower
- Intraconnection Lines (Option 1)
- Turbine Collector Line

Access Road
- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation
- Primary
- Alternate

* To be constructed and owned by the Umatilla Electric Cooperative or the Umatilla Electric Cooperative with the Columbia Basin Electric Cooperative.

TETRA TECH

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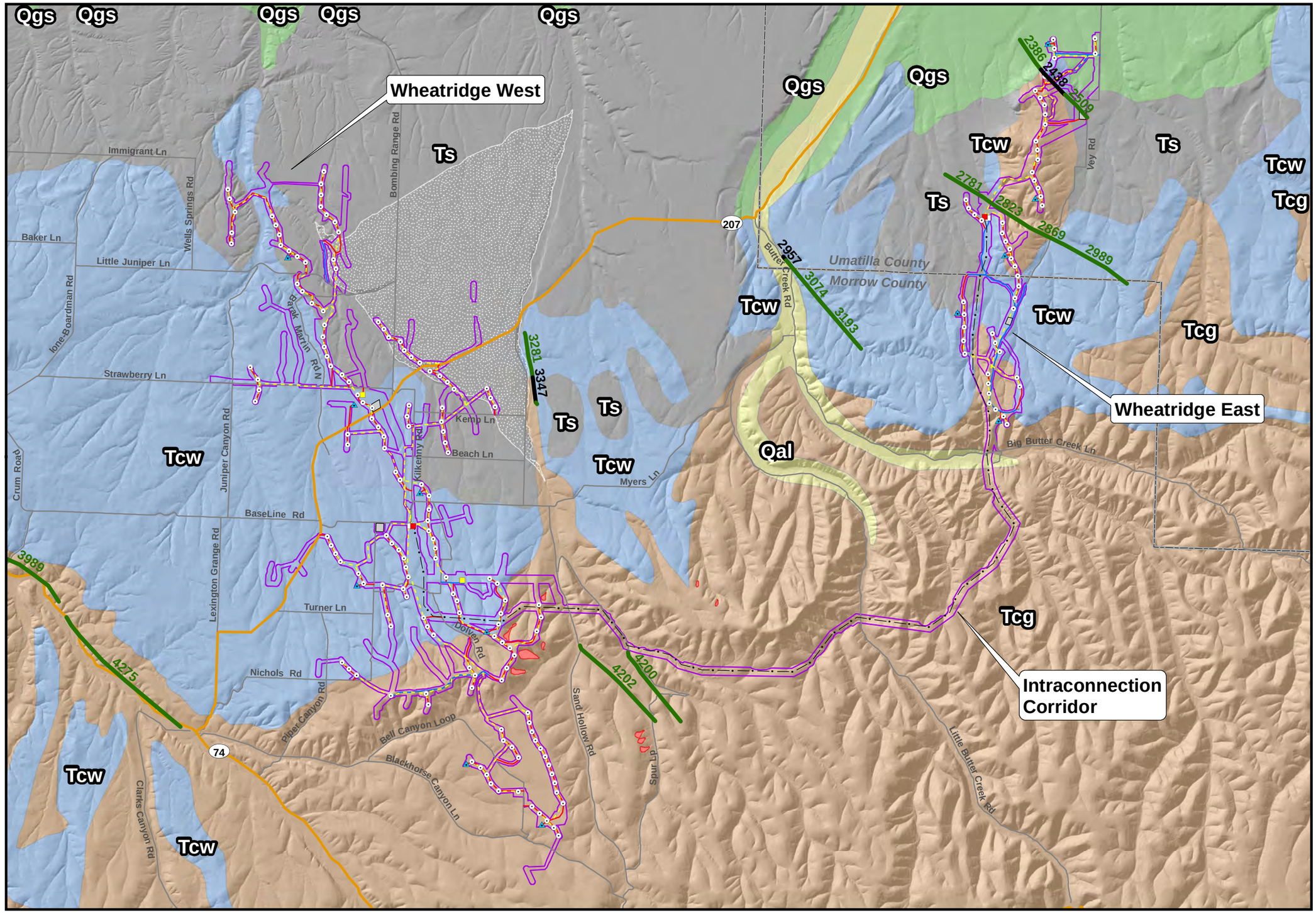

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0 1 2 4 6 8 10 12 14 16 18 20 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USGS: surface geology, fault lines / OR Dept. Geology and Mineral Industries: landslide, fan

Figure H-2

Wheatridge Wind Energy Facility

Oregon Geology Map

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- State Highway
- Local Road
- Fan
- Landslide

Fault Line
- Yes
- No

Surface Geology
- Qal — Alluvial Deposits
- Qgs — Glaciofluvial, Lacustrine, and Pediment Sedimentary Deposits (Pleistocene)
- Tcg — Grande Ronde Basalt (Middle and Lower Miocene)
- Tcw — Wanapum Basalt (Middle Miocene)
- Ts — Tuffaceous Sedimentary Rocks and Tuff (Pliocene and Miocene)

Proposed Project Facilities
- Turbine
- Met Tower
- Intraconnection Lines (Option 3)
- Turbine Collector Line

Access Road
- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation
- Primary
- Alternate

TETRA TECH

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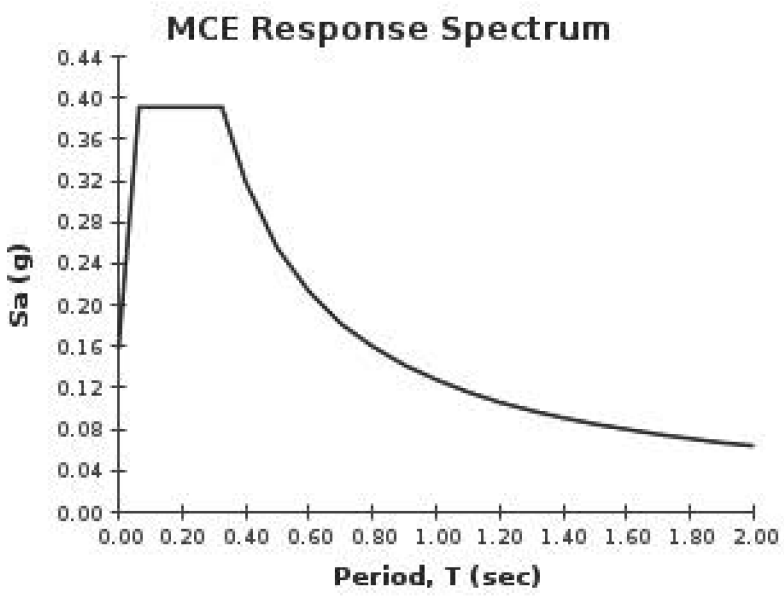
USGS Design Maps Summary Report

User-Specified Input

Report Title	Wheatridge Wind Farm Mon August 25, 2014 10:21:49 UTC
Building Code Reference Document	2006/2009 International Building Code (which utilizes USGS hazard data available in 2002)
Site Coordinates	45.517°N, 119.593°W
Site Soil Classification	Site Class B – "Rock"
Occupancy Category	I/II/III

USGS-Provided Output

S_S =	0.391 g	S_{MS} =	0.391 g	S_{DS} =	0.261 g
S_1 =	0.128 g	S_{M1} =	0.128 g	S_{D1} =	0.085 g



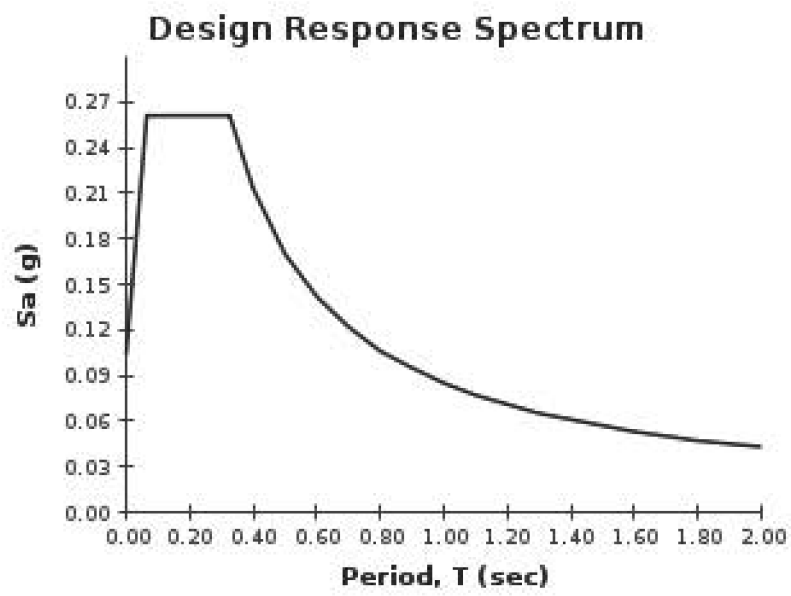


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Figure H-3

Wheatridge Wind Energy Facility

MCE Response Spectrum
2006/2009 International Building Code
Site Class B
(Rock)

Morrow and Umatilla Counties, OR
December 2014

Data Sources U.S. Geological Survey (USGS). 2013c. National Earthquake Information Center, Earthquake Search Web Page. Available online at: http://earthquake.usgs.gov/earthquakes/search.html. Accessed October 2013.

TETRA TECH

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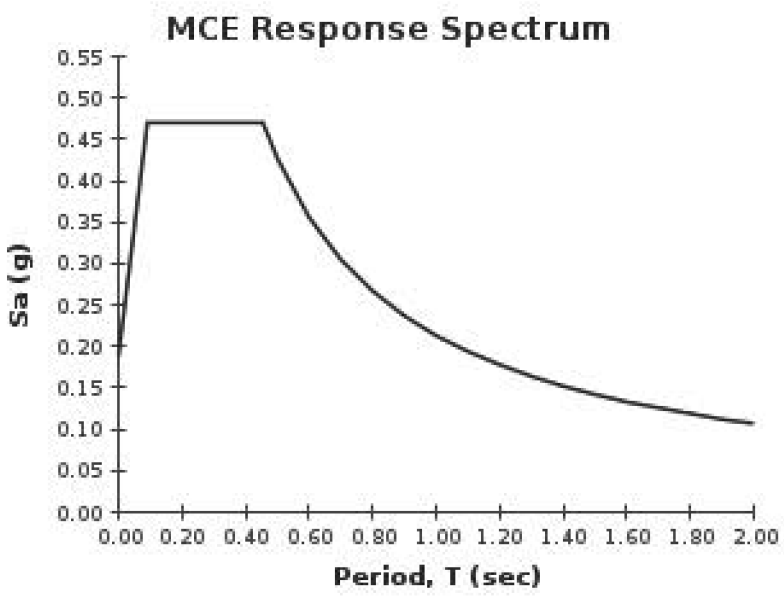
USGS Design Maps Summary Report

User-Specified Input

Report Title	Wheatridge Wind Farm Mon August 25, 2014 10:29:01 UTC
Building Code Reference Document	2006/2009 International Building Code (which utilizes USGS hazard data available in 2002)
Site Coordinates	45.517°N, 119.593°W
Site Soil Classification	Site Class C – "Very Dense Soil and Soft Rock"
Occupancy Category	I/II/III

USGS-Provided Output

S_S =	0.391 g	S_{MS} =	0.470 g	S_{DS} =	0.313 g
S_1 =	0.128 g	S_{M1} =	0.213 g	S_{D1} =	0.142 g



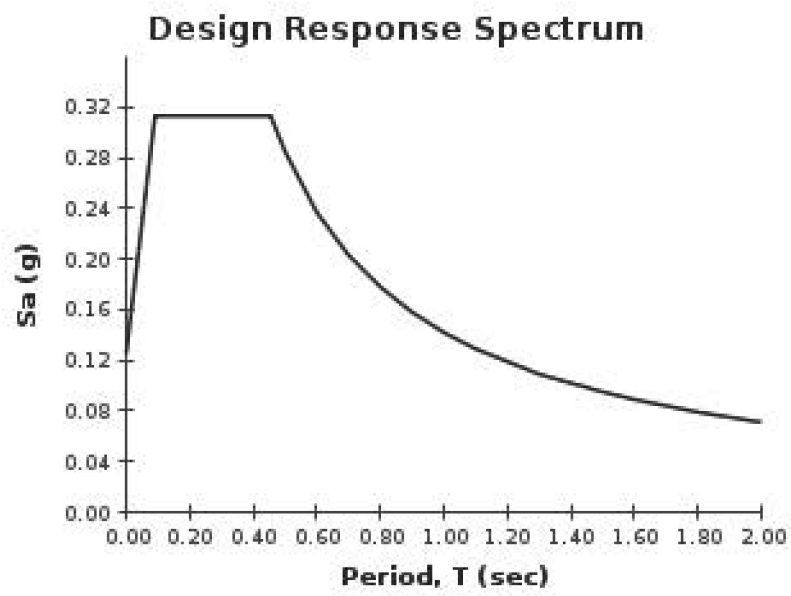


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Figure H-4

Wheatridge Wind Energy Facility

MCE Response Spectrum
2006/2009 International Building Code
Site Class C
(Very Dense Soil and Soft Rock)

Morrow and Umatilla Counties, OR
December 2014

Data Sources U.S. Geological Survey (USGS). 2013c. National Earthquake Information Center, Earthquake Search Web Page. Available online at: http://earthquake.usgs.gov/earthquakes/search.html. Accessed October 2013.

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USGS Design Maps Summary Report

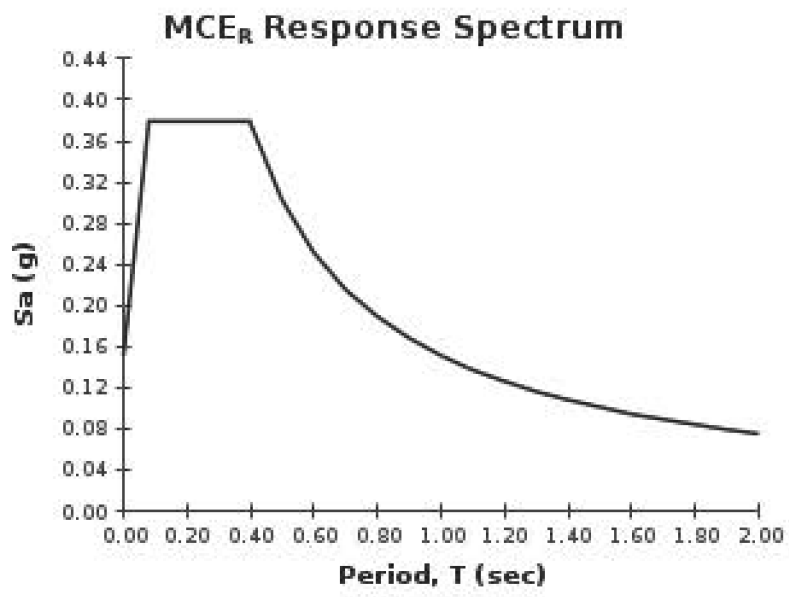
User-Specified Input

Report Title	Wheatridge Wind Farm (West) Mon August 25, 2014 17:56:09 UTC
Building Code Reference Document	2012 International Building Code (which utilizes USGS hazard data available in 2008)
Site Coordinates	45.517°N, 119.593°W
Site Soil Classification	Site Class B – "Rock"
Risk Category	I/II/III

USGS-Provided Output

S_S =	0.379 g	S_{MS} =	0.379 g	S_{DS} =	0.252 g
S_1 =	0.151 g	S_{M1} =	0.151 g	S_{D1} =	0.101 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.



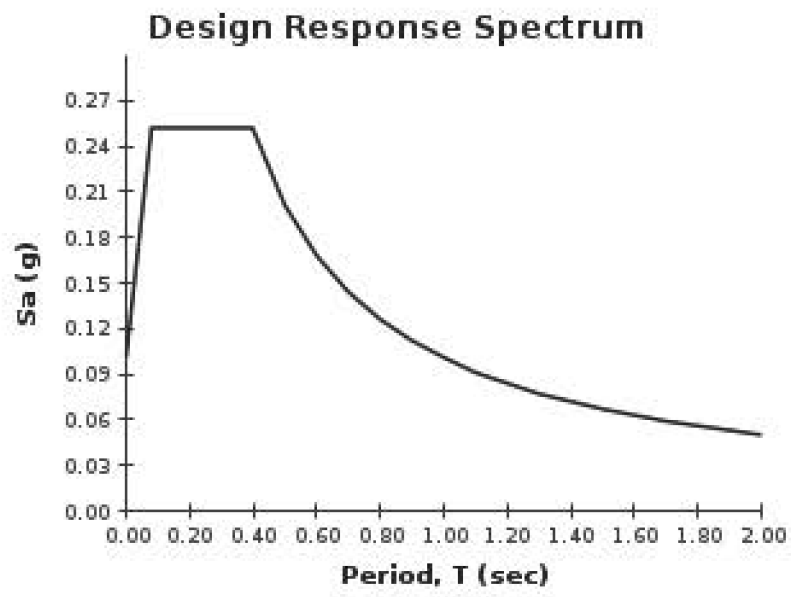


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Figure H-5

Wheatridge Wind Energy Facility

MCE$_R$ Response Spectrum
2012 International Building Code
Site Class B
(Rock)

Morrow and Umatilla Counties, OR
December 2014

Data Sources U.S. Geological Survey (USGS). 2013c. National Earthquake Information Center, Earthquake Search Web Page. Available online at: http://earthquake.usgs.gov/earthquakes/search.html. Accessed October 2013.

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USGS Design Maps Summary Report

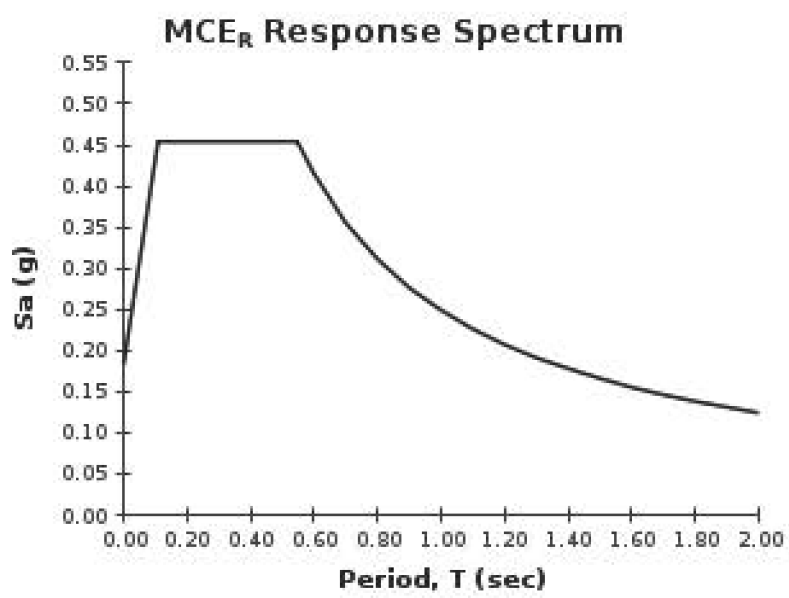
User-Specified Input

Report Title	Wheatridge Wind Farm (West) Mon August 25, 2014 17:59:03 UTC
Building Code Reference Document	2012 International Building Code (which utilizes USGS hazard data available in 2008)
Site Coordinates	45.517°N, 119.593°W
Site Soil Classification	Site Class C – "Very Dense Soil and Soft Rock"
Risk Category	I/II/III

USGS-Provided Output

S_S =	0.379 g	S_{MS} =	0.454 g	S_{DS} =	0.303 g
S_1 =	0.151 g	S_{M1} =	0.249 g	S_{D1} =	0.166 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.



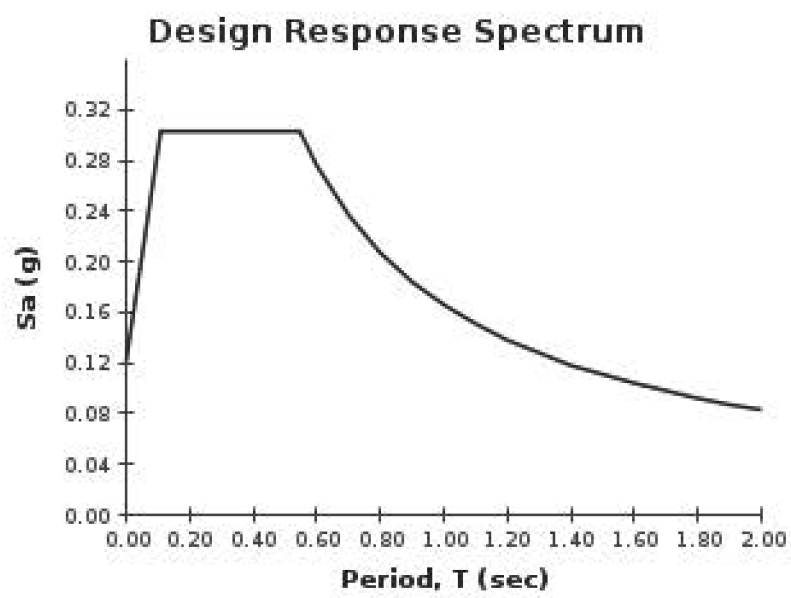


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Figure H-6

Wheatridge Wind Energy Facility

MCE$_R$ Response Spectrum
2012 International Building Code
Site Class C
(Very Dense Soil and Soft Rock)

Morrow and Umatilla Counties, OR
December 2014

Data Sources U.S. Geological Survey (USGS). 2013c. National Earthquake Information Center, Earthquake Search Web Page. Available online at: http://earthquake.usgs.gov/earthquakes/search.html. Accessed October 2013.

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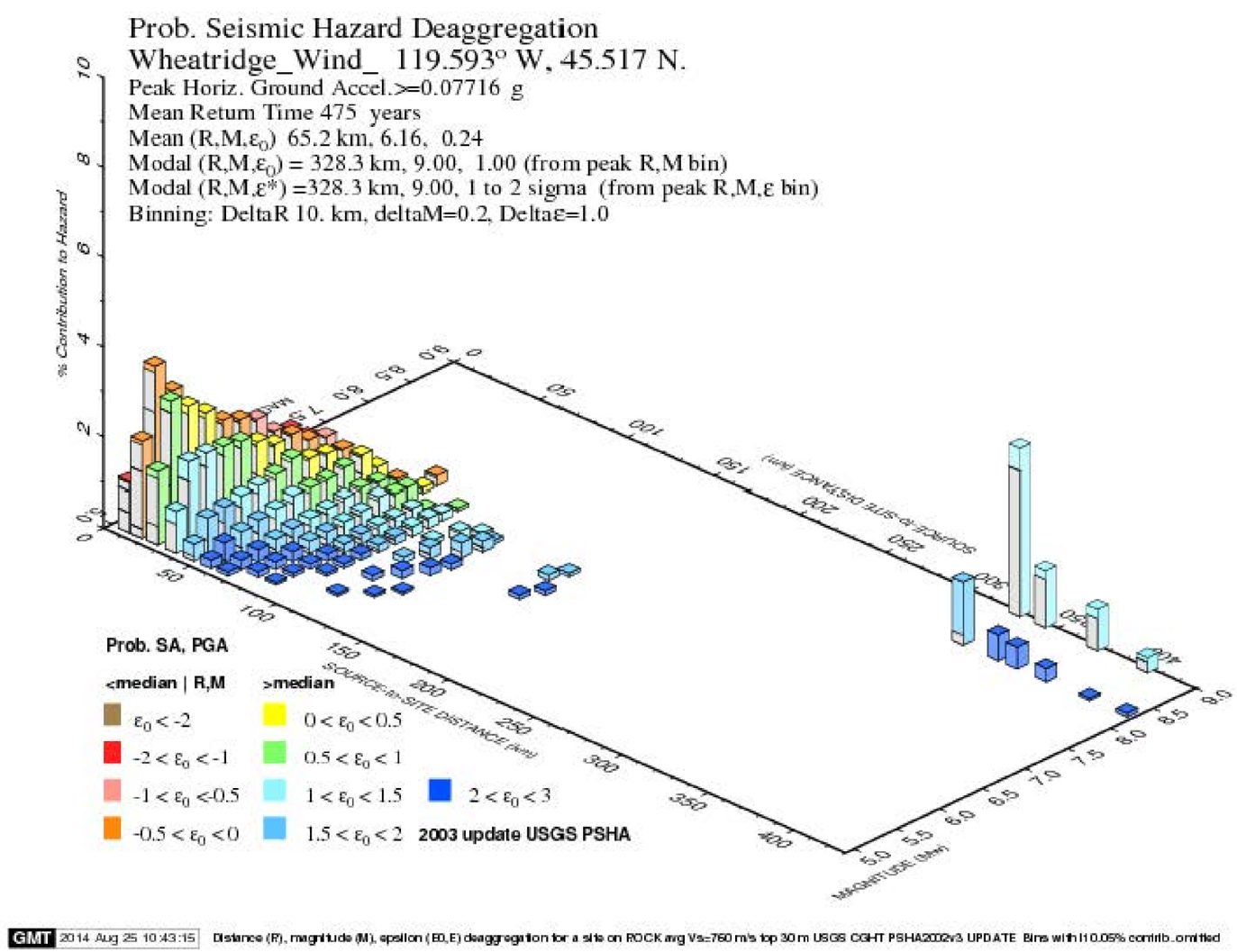

Figure H-7

Wheatridge Wind Energy Facility

Probabilistic Seismic Hazard Deaggregation
475 Year Return Period

Morrow and Umatilla Counties, OR
December 2014

Data Sources U.S. Geological Survey (USGS). 2013c. National Earthquake Information Center, Earthquake Search Web Page. Available online at: http://earthquake.usgs.gov/earthquakes/search.html. Accessed October 2013.

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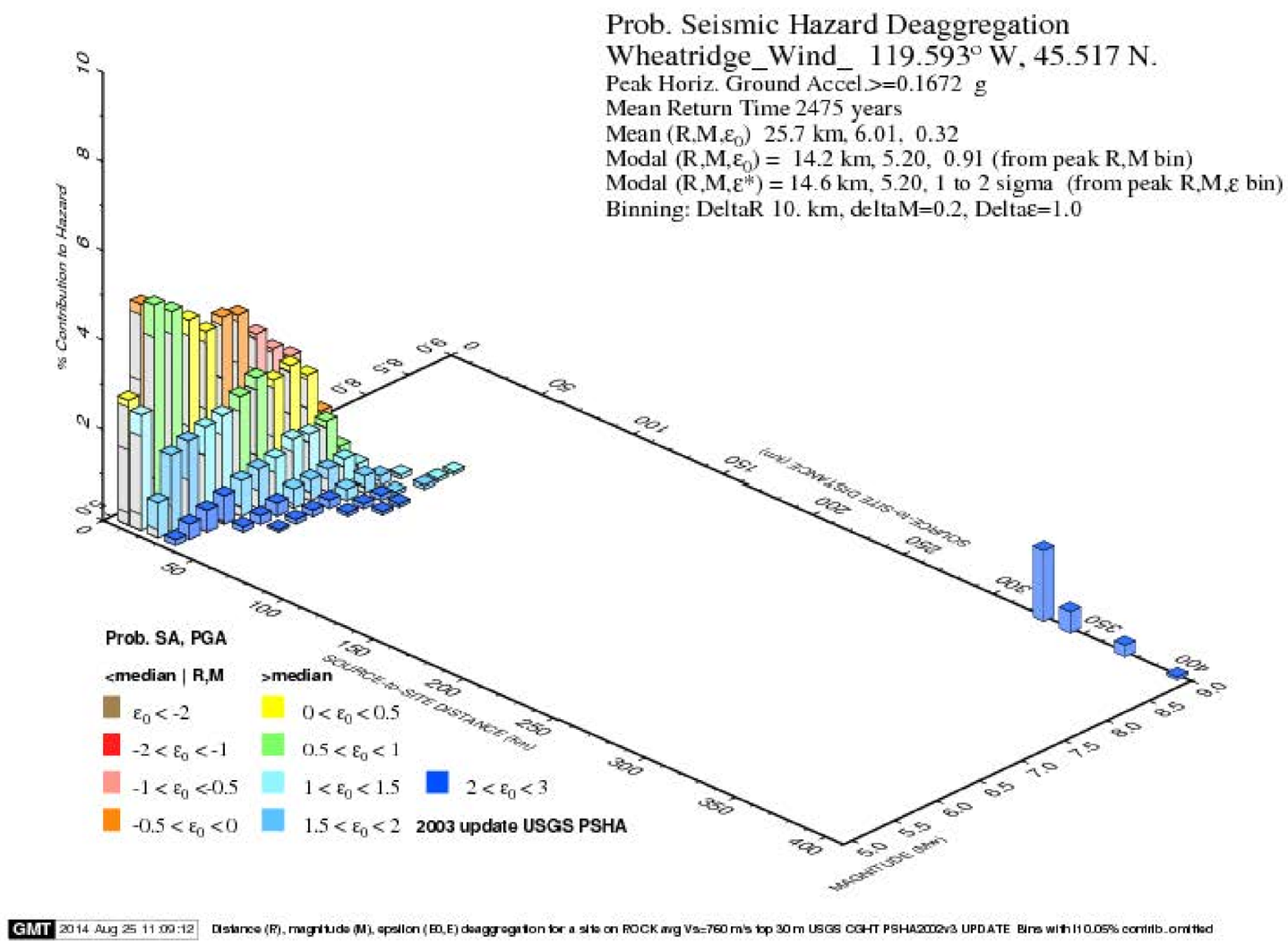

Figure H-8

Wheatridge Wind Energy Facility

Probabilistic Seismic Hazard Deaggregation
2,475 Year Return Period

Morrow and Umatilla Counties, OR
December 2014

Data Sources U.S. Geological Survey (USGS). 2013c. National Earthquake Information Center, Earthquake Search Web Page. Available online at: http://earthquake.usgs.gov/earthquakes/search.html. Accessed October 2013.

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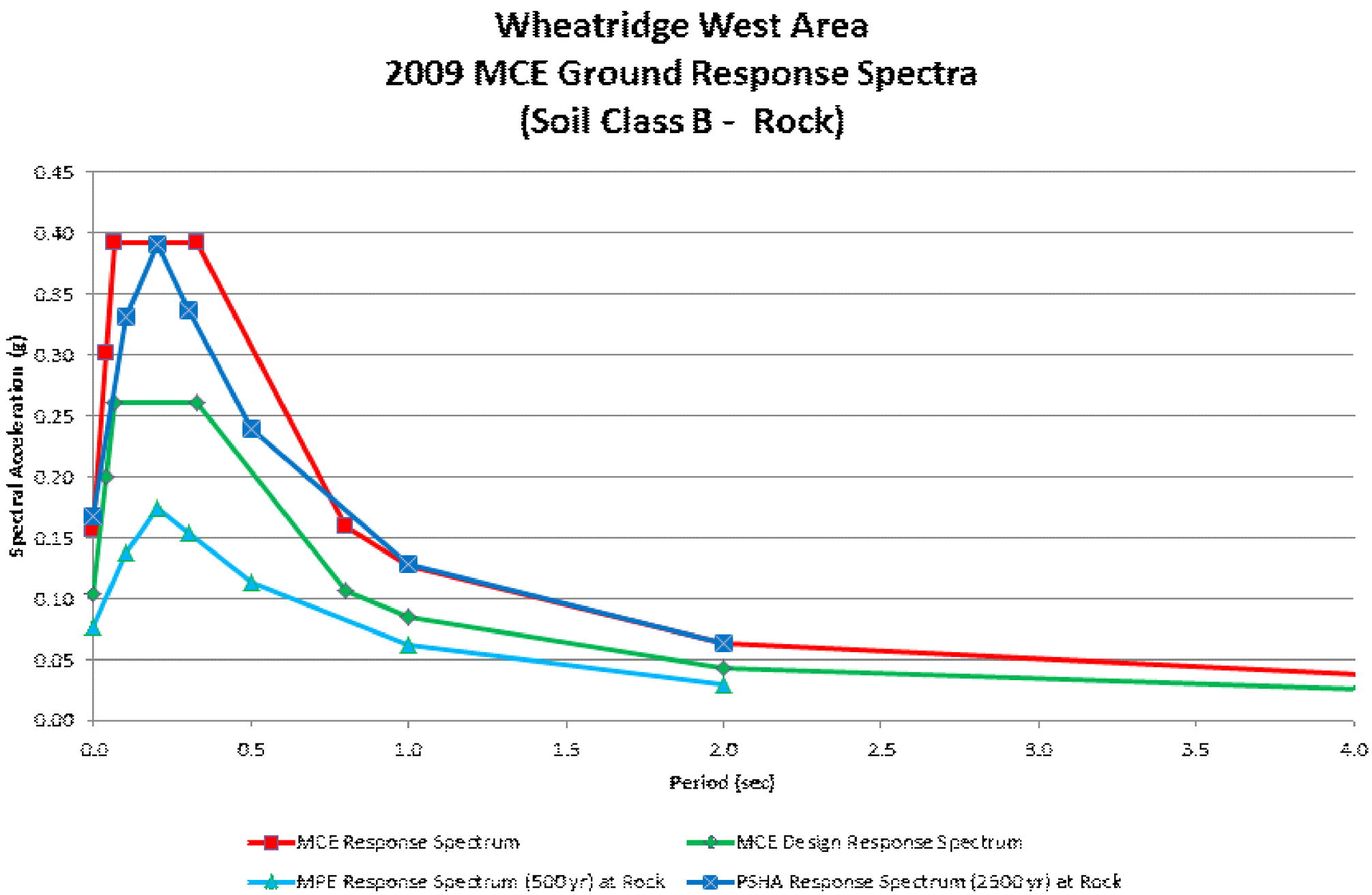

Figure H-9

Wheatridge Wind Energy Facility

MCE Ground Response Spectra
Site Class B
(Rock)

Morrow and Umatilla Counties, OR
December 2014

Data Sources U.S. Geological Survey (USGS). 2013c. National Earthquake Information Center, Earthquake Search Web Page. Available online at: http://earthquake.usgs.gov/earthquakes/search.html. Accessed October 2013.

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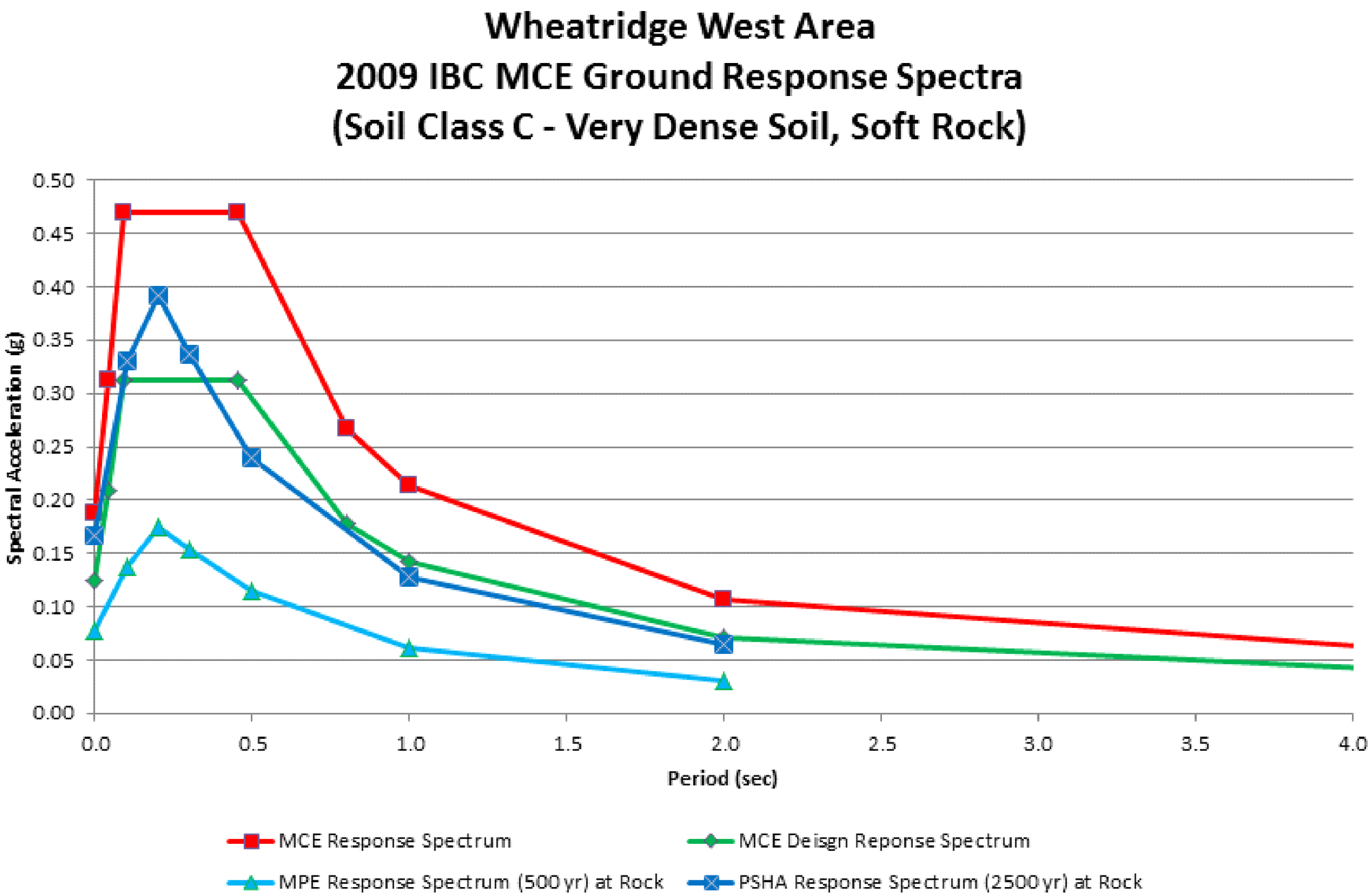

Figure H-10

Wheatridge Wind Energy Facility

MCE Ground Response Spectra
Site Class C
(Very Dense Soil and Soft Rock)

Morrow and Umatilla Counties, OR
December 2014

Data Sources U.S. Geological Survey (USGS). 2013c. National Earthquake Information Center, Earthquake Search Web Page. Available online at: http://earthquake.usgs.gov/earthquakes/search.html. Accessed October 2013.

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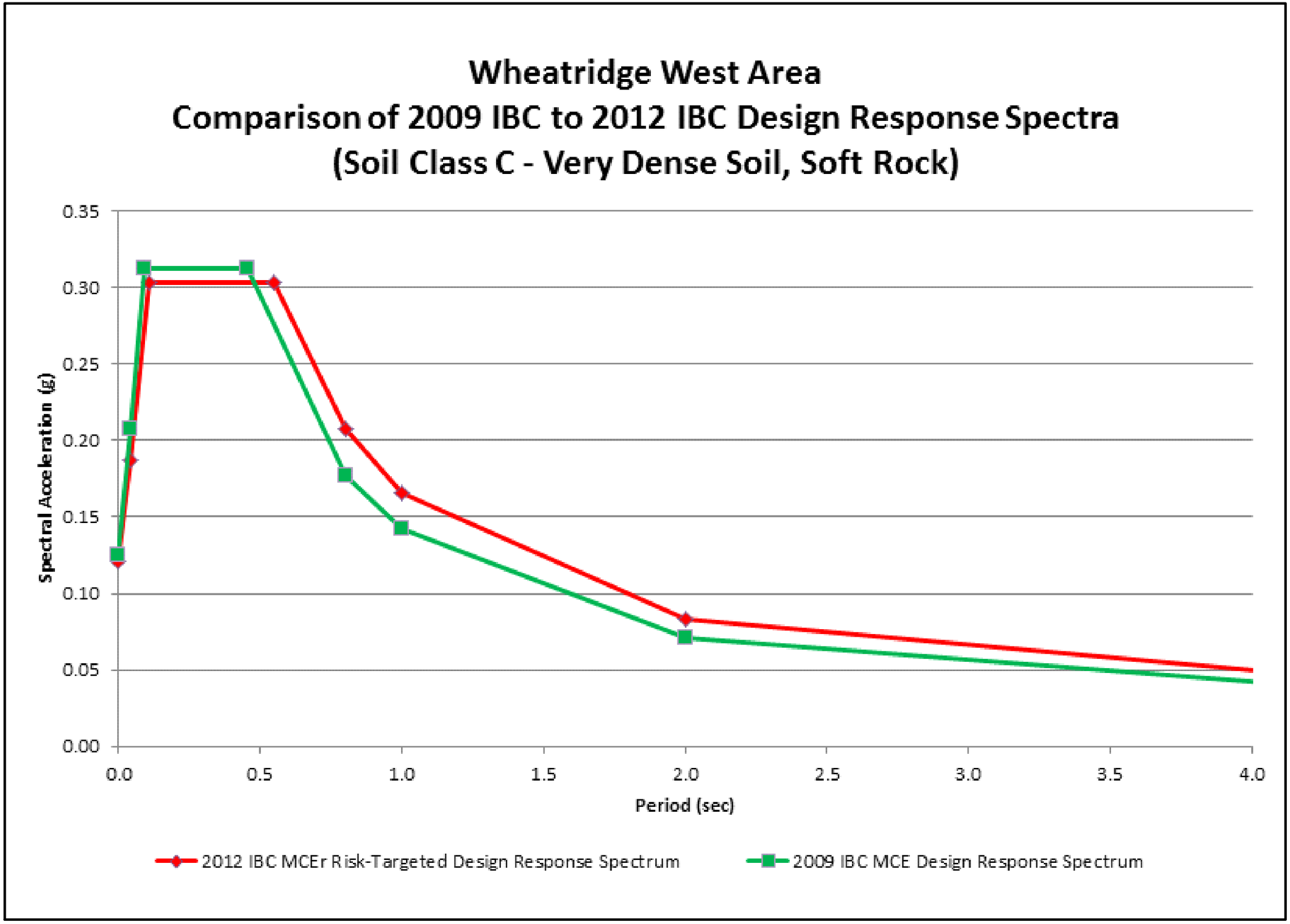

Figure H-11

Wheatridge Wind Energy Facility

Design Response Spectra Comparison of 2009 and 2012 International Building Codes Site Class C (Very Dense Soil and Soft Rock)

Morrow and Umatilla Counties, OR
December 2014

Data Sources U.S. Geological Survey (USGS). 2013c. National Earthquake Information Center, Earthquake Search Web Page. Available online at: http://earthquake.usgs.gov/earthquakes/search.html. Accessed October 2013.

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P:\GIS_PROJECTS\Wheatridge_Wind_Energy_LLC\WheatridgeMXDs\PASC\exH\WWE_Wheatridge_PASC_Fig_H11_MCEGroundResponseSpectraComparison_SiteClassC_17i11i_20141120.mxd - Last Saved 11/20/2014

Attachments

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Attachment H-1:

Copy of letter with Bill Burns at DOGAMI

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Friedel, Robert

From: Bill Burns <bill.burns@dogami.state.or.us>
Sent: Friday, October 11, 2013 10:41 AM
To: Patton, Perry
Cc: Versaw, Ron; Friedel, Robert; Andrea.goodwin@state.or.us
Subject: RE: Wheatridge Wind Farm - OAR 345-021-0010(1)(h)(C)

Your welcome. Like we discussed the landslide and seismic hazards are likely the two that will need the most attention at this site. I've cc Andrea Goodwin on this email. She is the ODOE contact on this project. Bill

Bill Burns, MS, CEG
Engineering Geologist
Oregon Department of Geology and Mineral Industries
800 NE Oregon Street, Portland, OR 97232
(971) 673-1538
bill.burns@dogami.state.or.us
http://www.oregongeology.org/

From: Patton, Perry [mailto:Perry.Patton@tetratech.com]
Sent: Friday, October 11, 2013 10:16 AM
To: Bill Burns
Cc: Versaw, Ron; Friedel, Robert
Subject: RE: Wheatridge Wind Farm - OAR 345-021-0010(1)(h)(C)

Bill,

Thanks for speaking with Ron and me about the geotechnical requirements for permitting our prospective Wind Farm (Wheatridge Facility) in Morrow and Umatilla Counties, Oregon. We assume that this meets the requirements for OAR 345-021-0010(1)(h)C), and will use your advice in preparing our "Exhibit H – Geology and Soil Stability" portion of our overall permit. We are interested in having you review the draft "Exhibit H" before it is submitted to the DOE, and appreciate your assistance.

Regards,
Perry

J. Perry Patton , ,P.E. | Project Civil Engineer
Direct **+1 (303) 980-3549** | Fax **+1 (303)980-3539** | perry.patton@tetratech.com

Tetra Tech | Complex World, Clear Solutions™
143 Union Blvd., Lakewood, CO 80228-1829 | tetratech.com

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From: Bill Burns [mailto:bill.burns@dogami.state.or.us]
Sent: Friday, October 11, 2013 10:46 AM

From: Patton, Perry [mailto:Perry.Patton@tetratech.com]
Sent: Monday, October 07, 2013 1:45 PM
To: Bill Burns
Cc: Versaw, Ron
Subject: Wheatridge Wind Farm - OAR 345-021-0010(1)(h)(C)

Mr. Burns,

As a part of our application process (OAR 345-022-0020) for a potential Wind Farm in northern Morrow and Umatilla counties, we are required to contact the Oregon Department of Geology and Mineral Industries regarding the appropriate site-specific geotechnical work that must be performed prior to the submittal of our application for permitting this wind Facility. We would like to discuss our research of the DOGAMI website and our site visit for this project area with you at your earliest convenience. Please let me know when would be a good time to call you this week (Wednesday through Friday), if possible.

Thank you,
Perry Patton

J. Perry Patton , ,P.E. | Project Civil Engineer
Direct **+1 (303) 980-3549** | Fax **+1 (303)980-3539** | perry.patton@tetratech.com

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Attachment H-2:

Copy of Correspondence with the Oregon Department of Energy Requesting a Modification in Accordance with OAR 345-021-0000(5)

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TETRA TECH

September 8, 2014

TTCES-PTLD-2014-139

Andrea Goodwin
Siting Analyst
Oregon Department of Energy
625 Marion St, NE
Salem, OR 97301

Subject: Request for a modification from the requirements of OAR 345-022-0020 and OAR 345-021-0010(1)h)

Dear Ms. Goodwin:

This letter is in regard to Wheatridge Wind Energy LLC's (Wheatridge) pending application for a Site Certificate with the Oregon Energy Facility Siting Council (EFSC) for the Wheatridge Wind Energy Facility (Project) in Morrow and Umatilla counties, Oregon. Wheatridge would like to request a modification from the requirements of OAR 345-022-0020 and OAR 345-021-0010(1)(h) in accordance with OAR 345-021-0000(5) as the requirements of these regulations have been superseded by changes to the requirements of the Oregon Building Codes Division.

The approach and methodology for defining the seismic ground motions have changed with the implementation of the 2012 International Building Codes (IBC). Currently, OAR 345-022-0020 (Structural Standard) and OAR 345-021-0010(1)(h) both reference the 2010 Oregon Structural Specialty Code (OSSC), which is itself based on the 2009 IBC. As of July 1, 2014 the Oregon Building Codes Division requires the use of the 2014 OSSC, which is based on the 2012 IBC.

In its application for a Site Certificate, Wheatridge requests that the approval standard for OAR 345-022-0020 and OAR 345-021-0010(1)(h) be modified to reflect changes to the Oregon Building Codes since the OARs were last updated and that Wheatridge be held to the 2012 IBC standards, as required by the Oregon Building Codes Division 2014 OSSC.

Sincerely,

Robert Friedel
Project Manager – Tetra Tech, Inc.
1750 SW Harbor Way, Suite 400
Portland, Oregon 97201

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Attachment H-3:

Copy of Oregon Department of Energy Approval of the Wheatridge Request for a Modification in Accordance with OAR 345-021-0000(5)

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Oregon
John A. Kitzhaber, MD, Governor

OREGON DEPARTMENT OF ENERGY
625 Marion St. NE
Salem, OR 97301-3737
Phone: (503) 378-4040
Toll Free: 1-800-221-8035
FAX: (503) 373-7806
www.Oregon.gov/ENERGY

September 22, 2014

Robert Friedel
Wheatridge Wind Energy Facility, Project Manager
Tetra Tech, Inc.
1750 SW Harbor Way, Suite 400
Portland, Oregon 97201

Subject: Request for a modification from the requirements of OAR 345-022-0020 and OAR 345-021-0010(1)(h)

Dear Mr. Friedel,

On September 15, 2014 the Oregon Department of Energy (the "Department") received Wheatridge Wind Energy LLC's request for a modification of the requirements of Oregon Administrative Rule (OAR) 345-022-0010(1)(h) and OAR 345-022-0020, pursuant to OAR 345-021-0000(5), as specific codes referenced in those provisions have since been superseded.

OAR 345-021-0000(5) provides: "[i]f the applicant submits a written request for a waiver or modification of requirements in OAR 345-021-0010 to the Department, the Department may waive or modify those requirements that the Department determines are not applicable to the proposed facility." Under this provision, should an applicant submit a written request, the Department may waive or modify the requirements contained within OAR 345-021-0010, provided the Department determines that those provisions are not applicable to the proposed facility. Nonetheless, OAR 345-021-0000(5) does not allow the Department to waive or modify the Energy Facility Siting Council's (the "Council") standards contained within Division 22. Consequently, as related to the present request, the Department may modify the requirement of OAR 345-021-0010(1)(h) if the Department determines that provision inapplicable to the proposed facility; however, the Department may not use OAR 345-021-0000(5) to modify OAR 345-022-0020.

Concerning OAR 345-021-0010(1)(h), this specific provision requires the submission of information relating to geological and soil stability to support findings by the Council as required under OAR 345-022-0020, the Structural Standard. As stated in your letter, OAR 345-021-0010(1)(h) references the 2010 Oregon Structural Specialty Code (OSSC), that is itself based on the 2009 International Building Code (IBC), which is also referenced in the Division 21 requirement and the Division 22 standard. However, as explained, beginning July 1, 2014, the Oregon Building Codes Division requires the use of the 2014 OSSC, which is based on the 2012 IBC, and the implementation of the 2012 IBC changes the approach and methodology for defining seismic ground motions.

Thus, in consideration of the information presented, the Department acknowledges that the use of the 2010 OSSC and 2009 IBC requirements is not appropriate as those codes are outdated and have since been superseded. Therefore, it is the Department's determination that the listed requirement is not applicable to the proposed facility. Accordingly, the department modifies the requirement specified in OAR 345-021-0010(1)(h), for purposes of the Wheatridge Wind Energy Facility application for site certificate and instead of complying with OAR 345-021-0010(1)(h) Wheatridge must demonstrate compliance with the 2012 IBC, as required by the Oregon Building Codes Division 2014 OSSC.

Regarding OAR 345-022-0020, as explained above, OAR 345-021-0000(5) may not be used to modify the requirements contained therein. However, pursuant to subsection (2) of OAR 345-022-0020, the Council may issue a site certificate for a facility that would produce power from wind without making the findings required under subsection (1), and it is subsection (1) which includes reference to the outdated 2009 IBC. Therefore, because

Wheatridge is a proposed wind power facility, the Council may issue a site certificate without making those findings contained in subsection (1), and, a modification is not required in this instance. Please note, however, that the department may recommend conditions to the Council based upon the modified OAR 345-021-0010(1)(h) requirement and as otherwise consistent with the subsection (1) findings.

If you have any questions, please do not hesitate to contact me by phone at (503)373-0076 or by email at andrea.goodwin@state.or.us.

Sincerely,

Andrea Goodwin
Siting Analyst, Energy Facility Siting Division
Oregon Department of Energy

Exhibit I

Soil Protection

Prepared for

Wheatridge Wind Energy, LLC

Wheatridge Wind Energy Facility

July 2015

Prepared by

Tetra Tech, Inc.

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Figure I-2. Soil Survey - Maximum Impact: GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines Details Maps

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Figure I-4. Soil Survey - Minimum Impact: GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines Details Maps

Figure I-5. High Value Farmland Present within the Analysis Area

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Attachment I-1. Tables

Attachment I-2. Correspondence with Oregon Department of Environmental Quality on NPDES/ESCP Submission

Attachment I-3. NPDES-1200 C Permit Application and Erosion and Sediment Control Plan

Terms and Definitions

Collector Line	An underground or overhead electrical 34.5 kV line transmitting power from the turbines to a Substation
Construction Yard	The temporary area for construction activities and Project component storage prior to installation
GE 1.7-103 Layout	Project turbine layout comprised of 292 GE 1.7MW turbines with 80m hub heights and 103m rotor diameters
GE 2.5-120 Layout	Project turbine layout comprised of 200 GE 2.5MW turbines with 85m hub heights and 120m rotor diameters
Gen-tie Line(s)	One or two 230 kV transmission line(s) conveying power from the Project to an interconnection point with the grid, which will be permitted and built by UEC or UEC/CB
Intraconnection Corridor	The intraconnection transmission line corridor connecting Wheatridge East with Wheatridge West
Intraconnection Line(s)	One or two overhead electrical 230 kV lines connecting the Project Substations in Wheatridge East and Wheatridge West.
Met Tower	Permanent meteorological tower
O&M Buildings	Permanent operations and maintenance buildings, including parking
Project	Wheatridge Wind Energy Facility
Site Access Road	Private road to be constructed or improved for the purpose of accessing turbines and associated Project facilities
Site Boundary	The boundary within which all Project facilities will be constructed, also known as the micrositing corridor
Substation	A facility in which electric power from the turbines is aggregated, stepped up in voltage, and connected to the Intraconnection Line(s) or the Gen-tie Line(s)
Turbine	A collective term for the foundation, tower, nacelle, blades and rotor that comprise a wind turbine generator in the Project
Turbine Pad	A cleared, graveled area around the base of each turbine encompassing primarily the turbine's foundation
Wheatridge	Wheatridge Wind Energy, LLC
Wheatridge East	The eastern group of turbines
Wheatridge West	The western group of turbines

Acronyms and Abbreviations

BMP	Best Management Practice
ESCP	Erosion and Sediment Control Plan
kV	Kilovolt
MW	Megawatts
NPDES	National Pollutant Discharge Elimination Permit
NRCS	Natural Resources Conservation Service
OAR	Oregon Administrative Rules
ODEQ	Oregon Department of Environmental Quality
OR-##	Oregon State Highway ##
SSURGO	Soil Survey Geographic Database
USDA	US Department of Agriculture

1.0 Introduction

Wheatridge Wind Energy, LLC (Wheatridge), proposes to construct the Wheatridge Wind Energy Facility (Project), a wind generation facility with a maximum nominal generating capacity of 500 megawatts (MW) in Morrow and Umatilla counties, Oregon (see Figures C-1 and C-2). The Project is comprised of up to 292 turbines divided into two groups: a western group of turbines (Wheatridge West) and an eastern group of turbines (Wheatridge East). Wheatridge West and Wheatridge East are electrically connected by an 'Intraconnection Corridor' containing up to two parallel overhead 230-kilovolt (kV) transmission lines (Intraconnection Lines), each no longer than 35 miles in length. Other Project components include access roads (Site Access Roads), an electrical collection and control system, the Project's substations (Substations), operations and maintenance buildings (O&M Buildings), and temporary construction yards (Construction Yards). These facilities are all described in greater detail in Exhibit B.

Wheatridge West is located entirely within Morrow County, approximately 5 miles northeast of Lexington, and approximately 7 miles northwest of Heppner. Wheatridge West is bisected by Oregon Highway 207 (OR-207). Wheatridge East is located approximately 16 miles northeast of Heppner and encompasses land in both Morrow and Umatilla counties. The Intraconnection Corridor is located entirely within Morrow County and adjoins to the southeastern portion of Wheatridge West and the southern portion of Wheatridge East.

Exhibit I identifies soil conditions and land uses dependent on soil condition in compliance with the soil standard found in Oregon Administrative Rule (OAR) 345-022-0022 and follows the submittal requirements in OAR 345-021-0010 (1)(i) paragraphs (A) through (E). This Exhibit demonstrates that the Project can comply with OAR 345-022-0022:

> ***345-022-0022 Soil Protection***
>
> *To issue a site certificate, the Council must find that the design, construction and operation of the facility, taking into account mitigation, are not likely to result in a significant adverse impact to soils including, but not limited to, erosion and chemical factors such as salt deposition from cooling towers, land application of liquid effluent, and chemical spills."*

2.0 Analysis Area

The Project Order defines the analysis area for soil resources as "the area within the Site Boundary." The Site Boundary is defined in detail in Exhibits B and C and is shown on Figures I-1 and I-2 for the GE 1.7-103 layout and Figures I-3 and I-4 for the GE 2.3-120 layout.

3.0 Identification and Description of Soil Types

The near-surface soils in the analysis area were identified using the Soil Survey Geographic Database (SSURGO) for Morrow and Umatilla counties, Oregon (NRCS 2014). The SSURGO database is a compilation of county soil surveys performed with a mapping resolution scale of approximately 1:24,000. The analysis area includes 57 soil units (mostly silt loams with areas of fine sandy loam to very stony loam and rock outcrop; see in Attachment I-1).

3.1 Dominant Soil Types in the Analysis Area

Figures I-1 and I-2.1 through I-2.17 show the soil survey units with the GE 1.7-103 turbine layout. Figures I-3 and I-4.1 through I-4.17 show the soil survey units with the GE 2.5-120 turbine layout. The majority of the Project components (approximately two-thirds of both the temporary and permanent impact areas) are located on five major soil units: the Burke Silt Loam, Valby Silt Loam, Ritzville Silt Loam, Warden Silt Loam, and Willis Silt Loam. The major soil units typically share similar properties across subseries. Each of these soil units consist of moderately to very deep, well-drained, silt loams with moderate permeability (above cemented subsurface horizons where they occur). These soils do not frequently experience flooding or ponding. Available water capacity ranges from about 5.2 to 11.6 inches. Individual soil properties are described below.

Burke Silt Loam — This soil unit consists of moderately deep silt loam from the surface to a subsurface cemented layer (duripan). These soils formed in loess (silty windblown sediment) and glaciolacustrine deposits (sediments deposited in glacial lakes). The surface layer is a light brownish gray silt loam about 4 inches thick. The subsoil is a pale to dark brown silt loam about 18 inches thick and, like the surface soil is soft, very friable, slightly sticky and slightly plastic. Below a depth of about 30 inches the soil includes a cemented subsurface horizon (indurated lime-silica duripan). The duripan is 6 inches to several feet thick and overlies weakly consolidated alluvium, lake sediments, loess, gravelly alluvial deposits, or basalt. Effective rooting depth is to the duripan. Runoff is very slow for slopes less than 7 percent and medium for slopes 7 to 20 percent. The hazard of water erosion is high. The hazard of wind erosion is low to moderate. Slopes are primarily 1 to 12% in the analysis area.

Valby Silt Loam — This soil unit consists of soils on upland slopes that formed in loess mixed with some ash, overlying basalt. The surface layer is very dark grayish brown silt loam about 14 inches thick. The subsoil is a dark brown heavy silt loam about 16 inches thick. At depth this subsoil layer is hard, friable (easily broken or crumbled), slightly sticky and slightly plastic. At an approximate depth of 30 inches or more there is a transition to fractured basalt. Runoff is slow for slopes less than 7%, medium for slopes 7 to 20%, and rapid for slopes greater than 20%. The hazard of water erosion is moderate to high. The hazard of wind erosion is low to moderate. Slopes are primarily 1 to 20% in the analysis area.

Ritzville Silt Loam— This soil unit consists of soils formed in loess on summit plateaus within the analysis area. Typically, the surface layer and subsoil are each brown very fine sandy loam, about 13 inches thick, respectively. The substratum is a brown silt loam to a depth of 70 inches or more.

Effective rooting depth is 60 inches or more. Runoff is slow for slopes less than 7%, medium for slopes 7 to 20%, and rapid for slopes greater than 20%. The hazard of water erosion is moderate to high. The hazard of wind erosion is moderate. Slopes are primarily 2 to 12% in the analysis area.

Warden Silt Loam— This soil unit is located on upland terraces within the analysis area, and consists of soils formed in loess and the underlying calcareous, lacustrine silts (lake sediments). The surface layer is dark brown silt loam about 5 inches thick. The subsoil is dark brown to brown very fine sandy loam about 15 inches thick. The substratum is a brown to grayish brown, partially calcareous silt loam and stratified very fine sandy loam to a depth of 60 inches or more. Effective rooting depth is 60 inches or more. Runoff is medium for slopes less than 20%, and rapid for slopes greater than 20%. The hazard of water erosion is high. The hazard of wind erosion is moderate. Slopes are primarily 0 to 5% in the analysis area.

Willis Silt Loam— This soil unit consists of soils formed in loess on summit plateaus within the analysis area. The surface layer is dark brown silt loam about 12 inches thick. The subsoil is dark brown silt loam about 15 inches thick. The substratum is a dark brown silt loam to a depth of approximately 35 inches, and the soil is underlain by cemented alluvium. Effective rooting depth is 20 to 40 inches. Runoff is medium. The hazard of water erosion is high. The hazard of wind erosion is low to moderate. Slopes are primarily 2 to 12% in the analysis area.

3.2 Soils Sensitive to Disturbance

Some soils in the analysis area have physical properties that make them sensitive to disturbance during Project construction. Soils sensitive to disturbance include those especially susceptible to erosion or compaction, soils with physical or chemical properties that present difficulties for revegetation and restoration, hydric soils that are typically associated with wetlands, or soils that are particularly productive as farmland.

Soils sensitive to disturbance are described below by hazard category. Summaries of all soils and their properties can be found in Attachment I-1.

3.2.1 Soils Prone to Erosion by Water

Erosion is a continuing natural process that can be accelerated by human disturbances. Factors that influence soil erosion include soil texture, structure, length and percent of slope, vegetative cover, and rainfall or wind intensity. Soils most susceptible to erosion by wind or water are typified by bare or sparse vegetative cover, non-cohesive soil particles with low infiltration rates, and moderate to steep slopes. The potential for soil erosion in the analysis area varies based on the erosion mechanism and the soil characteristics. The erosion hazard rating for the soil types in the analysis area for each Project area (Wheatridge West, Wheatridge East Morrow County, Wheatridge East Umatilla County, and the Intraconnection Corridor) can be seen in Attachment I-1. Approximately 4.4% of the soils within the analysis area have a severe or very severe erosion hazard rating.

3.2.2 Soils Prone to Erosion by Wind

The potential for soil erosion by wind was evaluated using the Natural Resources Conservation Service (NRCS) wind erodibility group data, which are based on the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion. Wind erodibility groups 1 (extreme) and 2 (high) are most susceptible to wind erosion. The wind erodibility group rating for each soil type in the analysis area can be found for each Project area (Wheatridge West, Wheatridge East Morrow County, Wheatridge East Umatilla County, and Intraconnection Corridor) in Attachment I-1. Approximately 11.8% of the soils within the analysis area have a high or extreme wind erodibility hazard rating.

3.2.3 Soils Prone to Compaction

Soil compaction is the process where soil pore air space is reduced in size because of physical pressure exerted on the soil surface. Compaction results in soil conditions that reduce infiltration, permeability, and gaseous and nutrient exchange rates of the soil. Physical resistance to root growth can occur with high soil bulk densities. Soil compaction changes the soil structure by reducing the porosity and increasing the bearing strength of the soil. As a result, the ability to receive water is reduced, leading to an overall reduction in the moisture-holding capacity of the soil. Compaction decreases infiltration and thus increases runoff and the hazard of water erosion. Fine-textured soils with poor internal drainage are the most susceptible to compaction. Sandy loam, loam, and sandy clay loam soils compact more easily than silt, silt loam, silty clay loam, silty clay, or clay soils (NRCS 1996). Soil types most susceptible to compaction have a Soil Rutting Hazard rating of severe. The soil rutting hazard ratings for each soil type in the analysis area can be found for each Project area (Wheatridge West, Wheatridge East Morrow County, Wheatridge East Umatilla County, and Intraconnection Corridor) in Attachment I-1. Approximately 71.2% of the soils within the analysis area have a severe soil rutting hazard rating.

3.2.4 Soils with Limited Revegetation Potential

Some soil types exhibit physical or chemical characteristics that make revegetation difficult to achieve following disturbance or vegetation clearing. A soil characteristic that could impede the success of post-construction revegetation is considered a "soil limitation." Soil limitations include restrictive layers, excessively well drained soils, saline or sodic soils, stony soils, or a high water table, as described below:

- Restrictive Layers. Soils that are rated as having a restrictive layer are shallow soils that have a lithic, paralithic, or other restrictive soil layer within 60 inches of the soil surface. The Site Boundary includes soils with a restrictive layer. These soils have thin profiles, restrictive root zones, and hold less available water for plant growth, which can restrict plant growth and delay revegetation. One form of restrictive layer, shallow and hard

bedrock, can also restrict trenching, requiring special equipment (rock hammers/saws) or blasting in some areas to efficiently excavate foundations to required design depths.

- Droughty Soils. Droughty soils are well drained with relatively coarse textures. Soils in the Site Boundary with sandy loam or coarser texture and drainage class of moderately to excessively well drained were identified as droughty. Due to their low water-holding capacity, droughty soils may not hold enough water within the root zone to support plant life, making revegetation difficult.
- Saline/Sodic Soils. These sensitive soils have an electrical conductivity of 8 millimhos (a scale used to measure salt levels) per centimeter or greater, or a sodium adsorption ratio of 13 or greater. This property was evaluated because saline/sodic soils can be difficult to revegetate and generally require special seed mixes. No saline or sodic soils are mapped within the Site Boundary.
- Large Stones. Soils with more than 25 percent cobbles and stones in the soil profile can present significant problems with surface reclamation because they hold less available water for plant growth and generally require broadcast seeding methods.
- High Water Table. Soils that have a high water table have a saturated zone in the soil profile within 60 inches of the surface in most years. (A saturated zone that lasts for less than a month is not considered a water table [NRCS 2005]). Such soils are difficult to revegetate due to saturated root zones. These NRCS data are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, i.e., grayish colors (redoximorphic features) in the soil. Foundation installation in these areas may require dewatering.

3.2.5 Hydric Soils

Hydric soils are defined as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Soils that are artificially drained or protected from flooding (e.g., by levees) are still considered hydric if the soil in its undisturbed state would meet the definition of a hydric soil. These soils are typically associated with jurisdictional wetlands. Construction activities have the potential to result in structural damage to wet soils and soils with poor drainage. The one area of hydric soils within the analysis area (approximately 147 acres, or 1.1% of the analysis area) is located in Wheatridge East in Umatilla County.

3.2.6 Soils Mapped as Prime and Unique Farmlands

Prime and Unique Farmlands and Farmlands of Statewide Importance are designations assigned by the US Department of Agriculture (USDA) as described in 7 CFR 657. NRCS defines “Prime Farmland” as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion as mapped by USDA following the procedure detailed in 7 CFR 657 (NRCS 2005). Prime Farmland can include land that

possesses these characteristics but is being used currently to raise livestock and harvest timber. Urbanized land and open water are excluded from Prime Farmland. Prime Farmland typically contains few or no rocks, is permeable to water and air, is not excessively erodible or saturated with water for long periods, and is not subject to frequent, prolonged flooding during the growing season. Soils that do not meet the above criteria may be considered Prime Farmland if the limiting factor is mitigated (e.g., using artificial drainage or irrigation).

Unique Farmland is defined in 7 CFR 657 as land other than Prime Farmland that is used for the production of specific high-value food and fiber crops. No Unique Farmlands are mapped within the analysis area.

'Additional Farmland of Statewide Importance' is defined in 7 CFR 657 as land, in addition to Prime and Unique Farmlands, that is of statewide importance for the production of food, feed, fiber, forage, and oil seed crops. Generally, Farmlands of Statewide Importance include those that are nearly Prime Farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some may produce as high a yield as Prime Farmlands if conditions are favorable.

It is NRCS policy to make and keep current an inventory of the prime and Unique Farmland of the United States. This inventory is carried out in cooperation with other interested agencies at the federal, state, and local levels of government. The objective of the inventory is to identify the extent and location of important rural lands needed to produce food, feed, fiber, forage, and oilseed crops. NRCS inventories of prime and Unique Farmland do not constitute a designation of any land area to a specific land use. Such designations are the responsibility of appropriate local and state officials. The Oregon Department of Land Conservation and Development regulates Prime and Unique Farmland s as described in Exhibit K.

Attachment I-1 identifies soils classified as Prime Farmland or Farmland of Statewide importance within the analysis area, for Wheatridge West, Wheatridge East Morrow County, Wheatridge East Umatilla County, and the Intraconnection Corridor. Approximately 20% of the soils within the Site Boundary are classified as Farmland of Statewide Importance.

Approximately 52% of the soils within the Site Boundary are classified as Prime Farmland if irrigated. Irrigation is present in a few select areas within the Site Boundary and it is only within those irrigated areas where soils can be considered Prime Farmlands. Approximately 22 acres in Wheatridge West and 28 acres in the Intraconnection Corridor, totaling approximately 0.3% of the Site Boundary, are both irrigated and classified as Prime Farmland if irrigated.

The land uses within the analysis area consist of private agricultural land generally used for dryland wheat production or rangeland. Small areas of irrigated agriculture also occur, Land use within the analysis area is zoned Exclusive Farm Use by both Morrow and Umatilla counties (see Exhibit K). The analysis area also contains approximately 655 acres of soils defined as High Value Farmland (Figure I-5).

Within the analysis area, most of the Burke soils are used for small grain-fallow cropping (Johnson and Makinson 1988). A few areas of Burke soils are used for irrigated crops such as corn, alfalfa

hay, small grain, and Irish potatoes. Areas not cropped are used as rangeland. Valby soils are used for wheat and barley in a crop-fallow system, or for range and wildlife habitat (Hosler 1983). Where the Valby occurs intermixed with Rhea, this soil unit is used almost entirely for wheat and barley in a crop-fallow system. Most of the Ritzville unit is used for small grain-fallow cropping (Johnson and Makinson 1988). A few areas are used for irrigated crops such as corn, alfalfa hay, small grain, and potatoes. Areas not cropped are used as rangeland. The Warden soil unit is used for dry-farmed small grain, range, and wildlife habitat (Hosler 1983) where irrigated, small grain, hay, and potatoes are grown. The Willis soils are used mainly for wheat and barley in a grain-summer fallow system (Hosler 1983). Areas too steep for cultivation are used for range. A few irrigated areas produce wheat and beans.

4.0 Project Soil Impacts

The following sections describe the potential soil impacts that could result from Project construction, operation, and facility retirement. A majority of the potential soil impacts would occur during Project construction with few impacts during operation or retirement.

4.1 Soil Impacts During Project Construction

Construction of the Project will require a variety of activities with the potential for adversely impacting soils. Activities that may result in potential adverse soil impacts include the following:

- Clearing and grubbing of vegetation in temporary construction areas, turbine pads, and new access roads;
- Grading and widening of existing access roads;
- Construction of new access roads;
- Heavy equipment and haul truck traffic for the delivery of aggregates, concrete, water, turbine components, cranes, and similar construction supplies;
- Fueling or maintenance of construction equipment or vehicles.

Up to approximately 171 acres would be permanently impacted by the Project footprint. Project construction would temporarily disturb a total of 1,198 acres of soil. As discussed in the following subsections, other types of soil impacts, such as erosion, resulting from construction, operation, and retirement activities would be limited through avoidance of sensitive soil areas to the extent practicable, the implementation of Best Management Practices (BMPs) to control erosion, and the implementation of appropriate site restoration practices following construction. These measures are described in the following subsections.

4.1.1 Erosion

The potential impacts from erosion would be minimal and are addressed through the implementation of erosion control measures required by the Project's National Pollutant Discharge Elimination System (NPDES) 1200-C construction permit. Wheatridge has prepared a NPDES

permit application, included as Attachment I-2; the NPDES 1200-C application also includes an Erosion and Sedimentation Control Plan (ESCP). Erosion and sediment control measures will meet local, county, state, and federal requirements. Oregon Department of Environmental Quality (ODEQ) guidelines are described in the Erosion and Sediment Control Manual (ODEQ 2005). The manual was prepared primarily to support development of stormwater BMPs for construction sites requiring compliance with the 1200-C General Permit.

Soil erosion potential is described in Sections 3.2.1 and 3.2.2. Vegetation removal, grading, excavation, and stockpiling of excavated soils would potentially expose soils to accelerated water and wind erosion if left unmitigated. BMPs described in the NPDES permit application would minimize the potential for wind or water erosion and sedimentation of soils disturbed by Project construction. Typical measures include, but are not limited to: putting sedimentation control measures in place prior to or concurrently with the initiation of construction in any given location to prevent uncontrolled soil exposure and potential erosion; water spraying on exposed soils and short-term soil stockpiles; covering longer-term soil stockpiles; placing gravel surfacing where appropriate immediately following clearing and grading to limit the time soils are exposed to wind or water erosion; and revegetating disturbed areas as soon as practicable following construction. These and other measures are discussed in Section 6.0 (below) and in Attachment I-2.

Depending on the specific time of construction, dewatering may be required for foundation installation in areas with shallow saturated soil zones. Water associated with dewatering will be pumped according to the BMPs described in the ESCP (in Attachment I-2), such that it would not cause additional soil erosion or sedimentation.

4.1.2 Compaction

Construction will require the use of heavy equipment and vehicles that could cause localized soil compaction which, if left unmitigated, could result in loss of agricultural productivity, increased erosion, or increased difficulty in revegetation. During Project construction Wheatridge would minimize soil compaction, rutting, and structural damage to wet soils and soils with poor drainage by scheduling the majority of the clearing and construction activities during the dry season, as feasible. Mechanized clearing and maintenance will occur in late summer and early fall months, as possible.

The hazards associated with soil compaction will be mitigated following construction through restoration of temporary disturbance areas including the construction yards and the portions of the access roads not needed for Project operations. Restoration of these areas would involve removal of gravel surfacing, regrading to appropriate contours, and scarification to loosen compacted soils prior to replacement of stockpiled topsoil and revegetation (see Exhibit P). If necessary in agricultural areas, deep decompaction to loosen soils down to approximately 6 feet may be performed. These actions would fully mitigate for any soil compaction that would occur during construction, in areas that would not be permanently occupied by Project facilities.

4.1.3 Restoration and Revegetation

All areas temporarily disturbed during construction activities would be restored and revegetated following completion of Project construction. These activities carry a risk of increased erosion and loss of soil productivity if done improperly.

BMPs to control erosion and sedimentation would be maintained during site restoration, or replaced with permanent measures as appropriate. Areas undergoing restoration, such as the additional temporary width of access roads, would be sprayed down as needed while soils are exposed to prevent wind erosion. Excavated soils would be stockpiled by soil horizon, so that they can be replaced in proper order with the topsoil on the surface, preventing mixing of topsoil and subsoils and maintaining soil productivity. Scarification and decompaction will serve to maintain soil productivity as well as reduce the potential for erosion on compacted soils. Final grading will incorporate appropriate contours to manage stormwater runoff and minimize erosion and sedimentation.

Areas disturbed by construction and restoration activities would be revegetated as soon as practicable, to limit the exposure time for wind or water erosion to occur. As described in the Revegetation Plan (Exhibit P, Attachment 2), disturbed areas would be revegetated using a seed mix appropriate to the specific location. Mulching, hydroseeding, temporary irrigation or other methods as described in the Restoration Plan could be used in some areas where soil limitations may inhibit revegetation. Restoration of soils with shallow restrictive layers in most cases requires adaptive seed mixtures and implementation of revegetation practices (i.e., fertilization, mulching, monitoring) to enhance revegetation success. Revegetation of areas with rock outcrop may not be possible. Droughty soils may not hold enough water within the root zone to support plant life, making revegetation difficult. In areas of droughty soils, the soil surfaces will be mulched and stabilized as feasible to minimize wind erosion and to conserve soil moisture. As possible, large stones excavated during foundation work will be kept separate from topsoil during construction and during surface preparation as part of restoration. The rock removed during construction will be moved to designated on-site locations.

4.1.4 Soil Contamination

An additional category of potential hazards to soils is contamination by chemicals. Because substantial quantities of oils, fuels, and other potential contaminants are not expected to be stored on-site during construction or operation, the potential for soil contamination is limited. The greatest risk of soil contamination would occur during fueling or maintenance of construction equipment. To the extent practicable, fueling and maintenance activities would occur in designated areas located far from streams and wetlands. Observance of appropriate materials handling procedures and safety standards are likely to fully prevent any soil contamination. In the unlikely event of a spill, the contaminated soil would be removed for off-site remediation, and replaced with clean soil from elsewhere on the Project.

4.1.5 Productive Agricultural Soils

Except for those areas removed from potential agricultural production by permanent Project facilities, the Project would not adversely impact soils on which agriculture is dependent. BMPs to control erosion and sedimentation would conserve productive agricultural soils as well as non-agricultural soils. Existing vegetation will be preserved, to the extent practicable. Topsoil would be stripped and stockpiled separately from subsoils, and replaced on the surface as a final stage of site restoration. Silt fence would be installed prior to any soil disturbing activities and used as a perimeter control on the contour down gradient of excavations and around stockpiles to control sedimentation. Appropriate soil stockpiling and replacement of soils during site restoration, along with decompaction of temporarily disturbed areas, would maintain soil productivity even in areas disturbed by construction activities. Temporary revegetation would be used during construction when necessary and permanent revegetation would take place as soon as practicable following land disturbing activities. Fuels would be the only hazardous material that may be stored in substantial quantities on-site during construction; Wheatridge anticipates that up to 1000 gallons of diesel fuel and 500 gallons of gasoline may be kept on-site for fueling of construction equipment. These would both be stored in temporary above-ground tanks in the construction yard(s), within an area that provides for secondary containment. Fuels would be delivered to the construction yard by a licensed specialized tanker vehicle. There would be no substantial quantities of lubricating oils, hydraulic fluid for construction equipment, or other hazardous materials maintained on-site during construction. Lubricating oil or hydraulic fluids for construction equipment will not be stored in substantial quantities on-site, but would instead be delivered on an as-needed basis using a specialized vehicle by a licensed contractor. Construction vehicles would be fueled and maintained to the extent practicable in dedicated areas with secondary containment, and away from streams or wetlands. In addition, spill kits containing items such as absorbent pads will be located on equipment and in on-site temporary storage to ensure a quick response to spills. With the use of secondary containment for fuel storage areas, other potential hazardous materials being present only in small quantities, and a requirement to keep spill response kits on-hand during fuel or oil transfers, should any spill occur it would be limited in size such that it would not affect soil productivity beyond the spill area. The contaminated soil would be removed for off-site remediation and replaced with clean soil from elsewhere on the Project. Exhibit G provides additional details regarding spill prevention and response; specific measures to be implemented will be incorporated into a Spill Prevention, Control and Countermeasures (SPCC) Plan to be developed by the Applicant and the construction contractor prior to beginning construction of the Project.

4.2 Soil Impacts During Project Operation

Project operations would have no impact on soil erosion. Operations will be confined to gravel-surfaced areas including the apron constructed around each turbine, the Site Access Roads, Substations, and O&M Buildings. No additional ground disturbance is anticipated to occur during Project operations. The potential for soil contamination would be limited by not maintaining substantial supplies of oil, fuel, pesticides or other hazardous materials on-site, and by observing

appropriate safety measures during maintenance procedures such as oil changes for the turbine gearboxes. As during construction, if a spill were to occur, the impact area would be limited, and the spill remediated immediately so as to prevent further impacts to soils.

4.3 Soil Impacts During Project Decommissioning

In the event of decommissioning, potential erosion hazards would be similar to those occurring during Project construction. During decommissioning activities, soil would be exposed to accelerated erosion because of lack of vegetation during the removal of turbine pads, underground cables, and roadways. Similar measures employed during construction will be used during decommissioning to prevent and control erosion, to rectify for soil compaction, to prevent spills, and to revegetate disturbed areas.

5.0 Mitigation Measures

5.1 Avoidance

The Project has been designed to avoid impacts to sensitive soils to the extent practicable. For example, impacts to soils on which agriculture is dependent have been minimized through the use of existing roads to the extent possible. The Project would avoid impacts to hydric soils.

5.2 Minimization and Best Management Practices

BMPs will be utilized throughout the construction, operation, decommissioning (if necessary) phases of the Project. The following BMPs will be implemented to minimize impacts:

- Stabilized Construction Entrance/Exit – A stabilized construction entrance/exit will be installed at locations where construction vehicles will access newly constructed roads and/or disturbed areas from paved roads. The stabilized construction entrance/exits will be inspected and maintained for the duration of Project life.
- Preserve Existing Vegetation – to the extent practicable, existing vegetation will be preserved. Where vegetation clearing is necessary, root systems would be conserved if possible.
- Silt Fencing – Silt fencing will be installed throughout the Project as a perimeter control, material stockpile perimeter control, and on the contour down gradient of excavations, O&M Buildings, and Substations.
- Straw Wattles – Straw wattles may be used to decrease the velocity of sheet flow stormwater to prevent erosion. Wattles will be used along the downgradient edge of access roads adjacent to slopes or sensitive areas.
- Mulching – Mulch will be used to immediately stabilized areas of soil disturbance and during reseeding efforts.
- Stabilization Matting: Jute matting, straw matting, or turf reinforcement matting may be used in conjunction with mulching to stabilize steep slopes that were exposed during access road installation.

- Soil Binders and Tackifiers: Soil binders and tackifiers may be used on exposed slopes to stabilize them until vegetation is established.
- Concrete Washout Area – Concrete chutes and trucks will be washed out in dedicated areas near the turbine foundation construction location. This will prevent concrete washout water from leaving a localized area. Soil excavated for the concrete washout area will be used as backfill for the completed footing to ensure that the surface soils maintain infiltration capacity.
- Stockpile Management – to facilitate installation of the turbine footings, large excavations will be created. Soil from these excavations will be temporarily stockpiled and used as backfill for the completed footing. Silt fence will be installed around the stockpile material as a perimeter control. Mulch or plastic sheeting will be used to cover the stockpiled material. Soils will be stockpiled and reused by Wheatridge, in order to prevent mixing of productive topsoils with deeper subsoils.
- Revegetation - At the completion of land disturbing construction activities, the site will be revegetated with an approved seed mix. When required, the seed will be applied in conjunction with mulch and/or stabilization matting to protect the seeds as the grass establishes. Revegetation would take place as soon as practicable following construction.
- Check Dams and Sediment Traps – Check dams and sediment traps will be used during the construction of low-impact ford crossings or culvert installations. The check dams and sediment traps will minimize downstream sedimentation during construction of the stream crossings.
- Pollutant Management – During construction, source control measures will be implemented to reduce the potential of chemical pollution to surface water or groundwater during construction. Chemical pollution could occur as a release of diesel fuel or lubricating oils, or from improper debris and waste handling. Small quantities of fuels and oils may be maintained on-site during construction and operation, and will be stored in a dedicated area, and construction vehicles will be fueled and maintained only in dedicated areas. Spills would be cleaned up immediately.
- Construction Timing – To the extent practicable, construction activities would be scheduled to occur in the dry season, when soils are less susceptible to compaction. Similarly, soil disturbance should be postponed when soils are excessively wet such as following a precipitation event.

6.0 Monitoring Program

Impact to soils from Project construction and operation will be limited because of the mitigation efforts required by an erosion control plan and NPDES 1200-C construction permit. Accordingly, a formal monitoring program is not merited. Visual observation will be made during Project construction and operation. If problem areas are observed, mitigation and reclamation measures will be implemented and a formal monitoring program established in the problem areas.

The Project will implement a Revegetation Plan described in Exhibit P.

7.0 Conclusions

The potential for soil erosion and contamination during Project construction will be minimized by avoiding problematic areas to the extent practical and then by adherence to the ESCP. Specific construction and site restoration practices will be implemented to mitigate construction impacts on soil productivity. The Project will not adversely impact productive farmland soils except where permanent impacts are proposed. Taking into account the implementation of avoidance measures, BMPs, and post-construction restoration, Wheatridge concludes that the design, construction and operation of the Project are not likely to result in a significant adverse impact to soils.

8.0 Submittal Requirements and Approval Standards

8.1 Submittal Requirements

Table I-1. Submittal Requirements Matrix	
Requirement	**Location**
OAR 345-021-0010(1)(i) Information from reasonably available sources regarding soil conditions and uses of the site and vicinity, providing evidence to support findings by the Council as required by OAR 345-022-0022.	Sections 3.0 and 4.0
OAR 345-021-0010(1)(i)(A) Identification and description of the major soil types in the analysis area.	Section 3.0, Figures I-1, I-2, I-3, I-4. and Attachment I-1
OAR 345-021-0010(1)(i)(B) Identification and description of current land uses in the analysis area, such as growing crops, that require or depend on productive soils.	Section 3.0
OAR 345-021-0010(1)(i)(C) Identification and assessment of significant potential adverse impact to soils from construction, operation and retirement of the facility, including, but not limited to, erosion and chemical factors such as salt deposition from cooling towers, land application of liquid effluent, and chemical spills.	Section 4.0
OAR 345-021-0010(1)(i)(D) A description of any measures the applicant proposes to avoid or mitigate adverse impact to soils.	Sections 5.0
OAR 345-021-0010(1)(i)(E) The applicant's proposed monitoring program, if any, for adverse impact to soils during construction and operation.	Section 6.0
Project Order Comments	**Location**
The application should include information describing the impact of construction and operation of the proposed facility on soil productivity.	Section 4.0
The Applicant should include information describing all soil types, land uses and measures proposed to maintain soil productivity during construction and operation, including a detailed discussion of proposed erosion control. A draft erosion and sediment control plan must be provided for review unless incorporated into the federally-delegated NDPES 1200-C permit application. The NPDES permit application should be included as an attachment.	Sections 3.0, 4.0, 6.0, Figures I-1, I-2, I-3, I-4, Attachment I-1, Attachment I-2
The Applicant should consult with local farmers, landowners and soil conservation districts regarding mitigation of impacts to farmland. The application should include a description of accepted farm practices on surrounding lands devoted to farm use.	Section 3.2.6 Exhibit K Sections 2.1.3 and 2.2.1

8.2 Approval Standard

Table I-2. Approval Standard	
Requirement	**Location**
OAR 345-022-0022 Soil Protection To issue a site certificate, the Council must find that the design, construction and operation of the facility, taking into account mitigation, are not likely to result in a significant adverse impact to soils including, but not limited to, erosion and chemical factors such as salt deposition from cooling towers, land application of liquid effluent, and chemical spills.	Sections 4.0, 5.0, 6.0

9.0 References

Hosler, Richard E. 1983. Soil Survey of Morrow County Area. United States Department of Agriculture, Soil Conservation Service, in cooperation with the Oregon Agricultural Experiment Station.

Johnson, David R. and Makinson, Allen J. 1988. Soil Survey of Umatilla County Area. United States Department of Agriculture, Soil Conservation Service In cooperation with United States Department of the Interior, Bureau of Indian Affairs, and Oregon Agricultural Experiment Station.

NRCS (Natural Resources Conservation Service). 1996. Soil Quality Resource Concerns: Compaction. Soil Quality Information Sheet. April. Accessed at: http://soils.usda.gov/sqi/publications/files/sq_nin_1.pdf.

NRCS. 2005. National Soil Survey Handbook, title 430-VI. U.S. Department of Agriculture. Accessed at: http://soils.usda.gov/technical/handbook/.

NRCS. 2014. United States Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) Database for Oregon. Accessed at: http://soildatamart.nrcs.usda.gov.

ODEQ (Oregon Department of Environmental Quality). 2005. Erosion and Sediment Control Manual. Accessed at: http://www.cicacenter.org/pdf/ORESCManual.pdf

Figures

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Attachment I-1:

Tables

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Attachment I-2:

Correspondence with Oregon Department of Environmental Quality on NPDES/ESCP Submission

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Attachment I-3:

NPDES-1200 C Permit Application and Erosion and Sediment Control Plan

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Figures

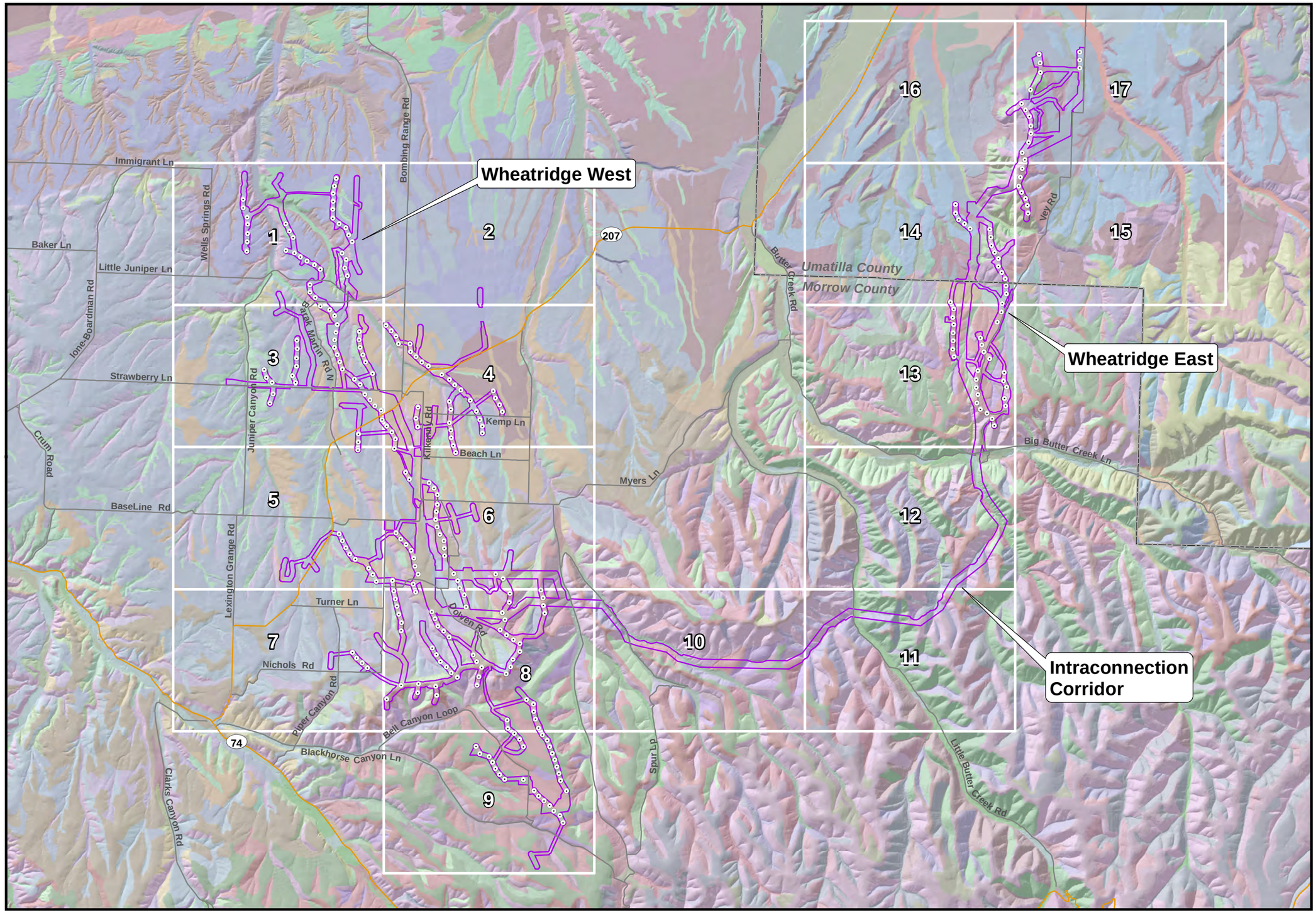

Figure I-1

Wheatridge Wind Energy Facility

Soil Survey

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- Soil Series *
- Map Grid
- County Boundary
- State Highway
- Local Road

Proposed Project Facilities

- Turbine

1:140,000 WGS84 UTM 11

0 1 2 4 6 8 10 12 14 16 18 20 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NRSC Soil Survey: soils

* Soil unit descriptions can be seen in details maps I-2.1 - I-2.17 and full soil unit descriptions are available in Exhibit I, Attachment 1

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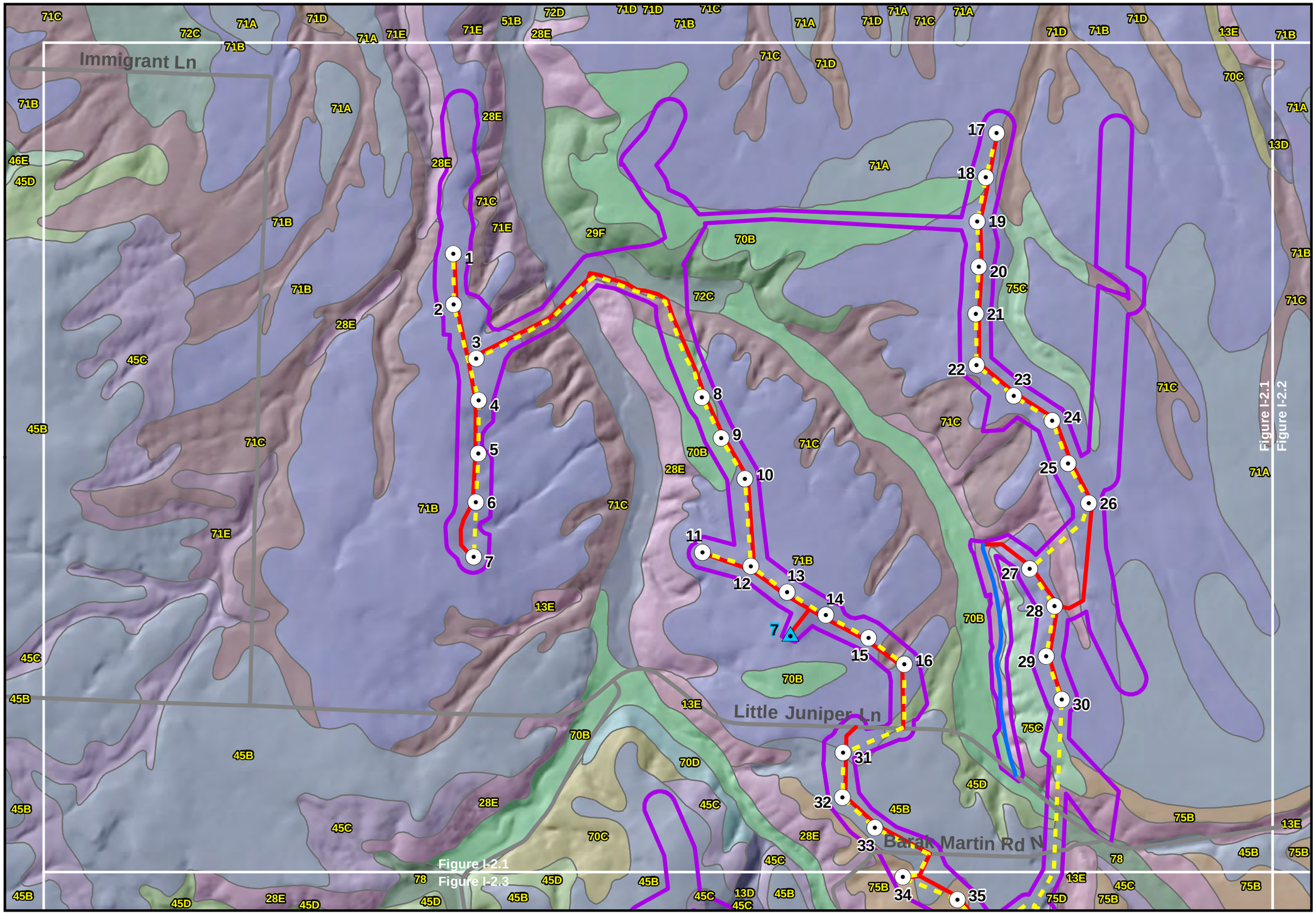

Figure I-2.1

Wheatridge Wind Energy Facility

Soil Survey

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road
- Proposed Strawberry Substation **

Proposed Project Facilities

- Turbine
- Met Tower
- Intraconnection Lines (Option 1)
- Electrical Collector Line

Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate

1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

* Soil unit descriptions can be found in Exhibit I, Attachment 1
** To be constructed and owned by the Umatilla Electric Cooperative or the Umatilla Electric Cooperative with the Columbia Basin Electric Cooperative

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Figure I-2.2

Wheatridge Wind Energy Facility

Soil Survey

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road
- Proposed Strawberry Substation **

Proposed Project Facilities

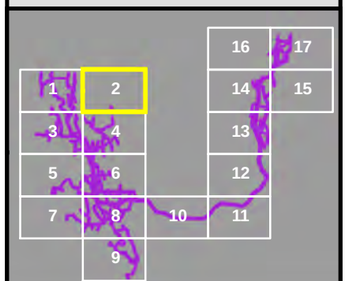
- Turbine
- Met Tower
- Intraconnection Lines (Option 1)
- Electrical Collector Line

Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate



1:24,000 | 1 inch = 2,000 feet | WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

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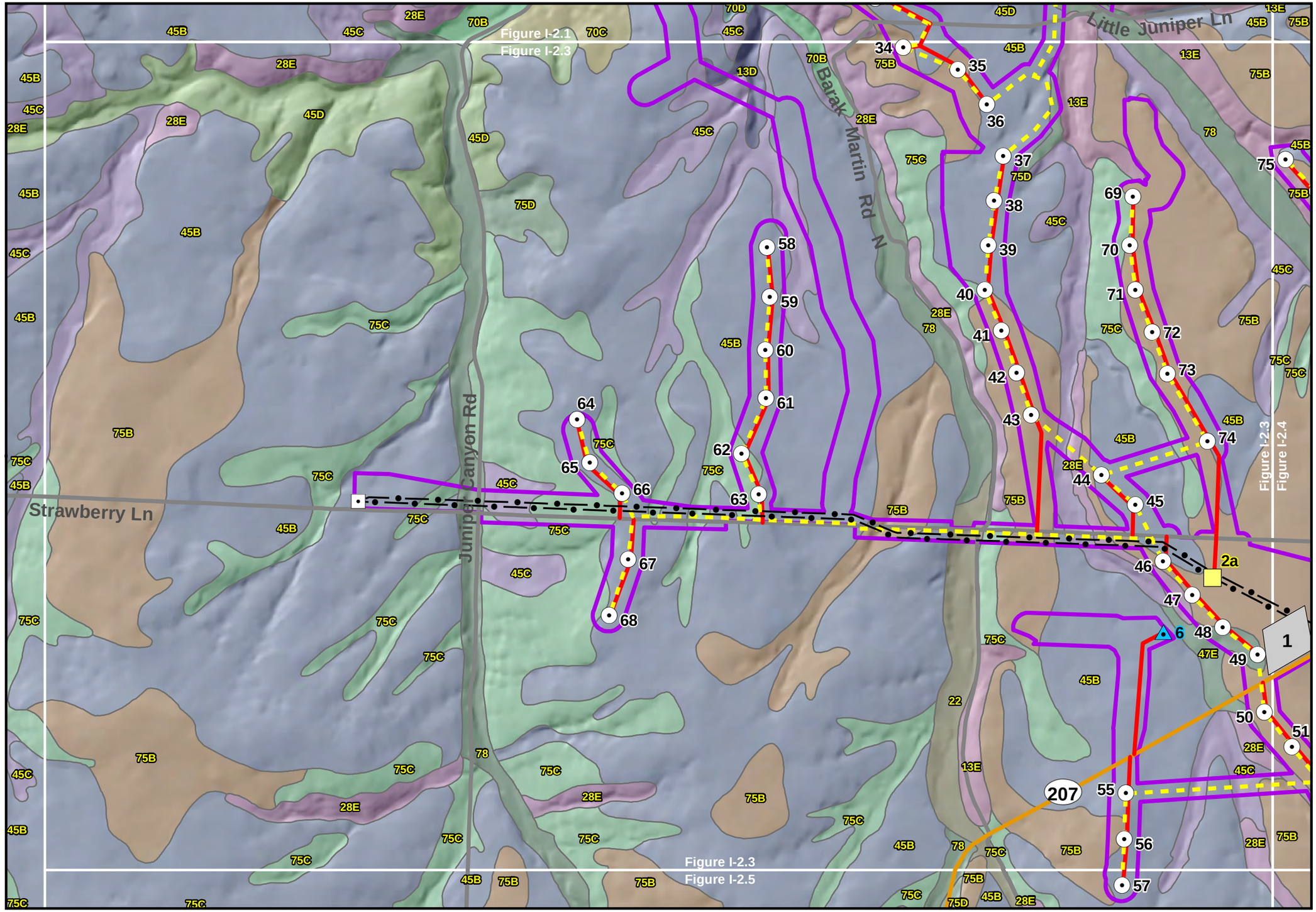


Figure I-2.3

Wheatridge Wind Energy Facility

Soil Survey

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road
- Proposed Strawberry Substation **

Proposed Project Facilities

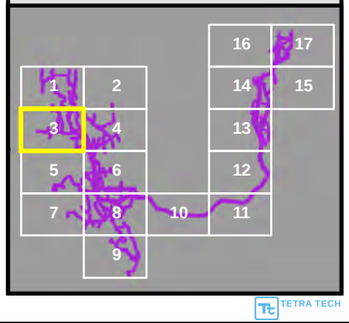
- Turbine
- Met Tower
- Intraconnection Lines (Option 1)
- Electrical Collector Line

Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate



1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

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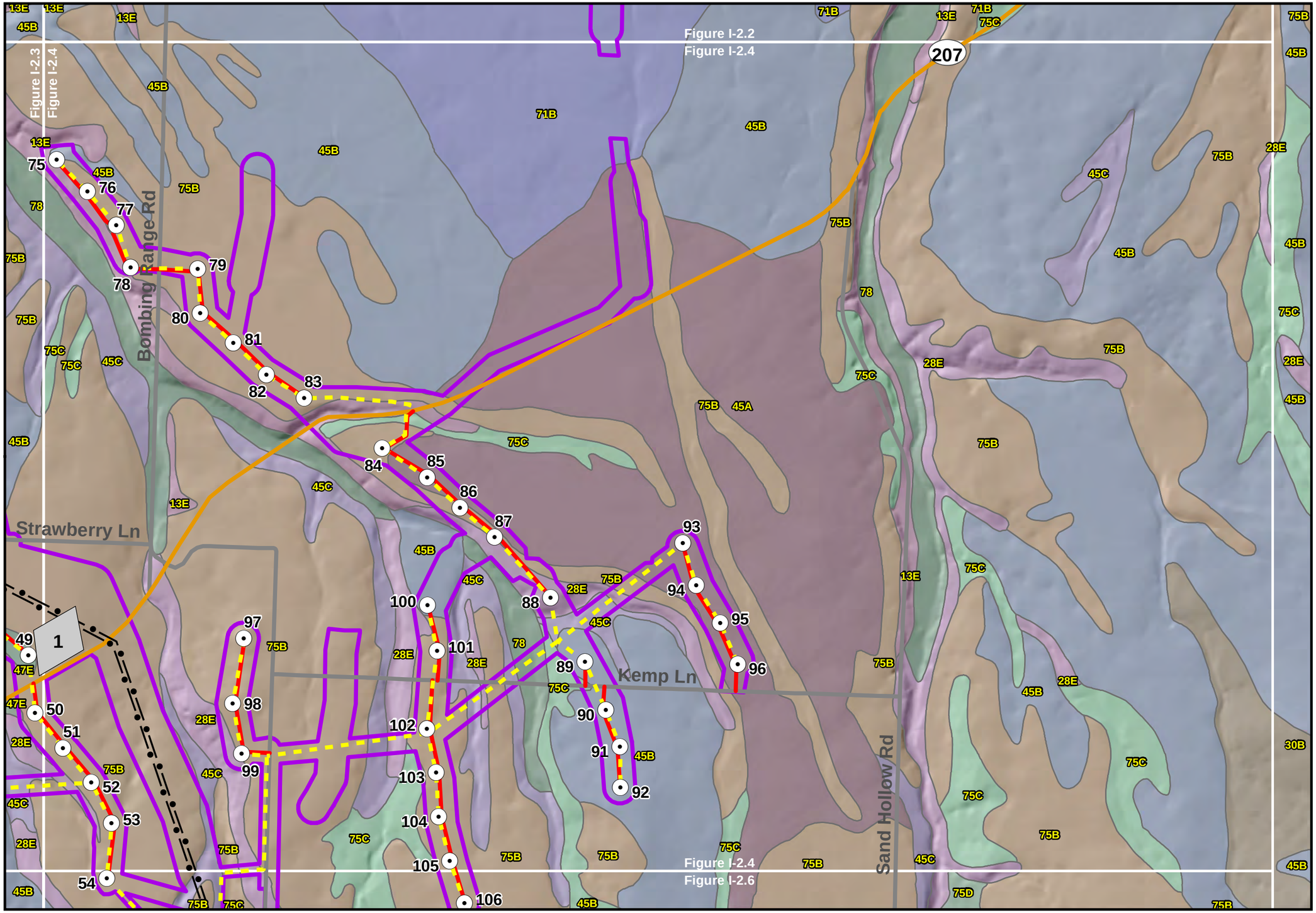


Figure I-2.4

Wheatridge Wind Energy Facility

Soil Survey

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road
- Proposed Strawberry Substation **

Proposed Project Facilities

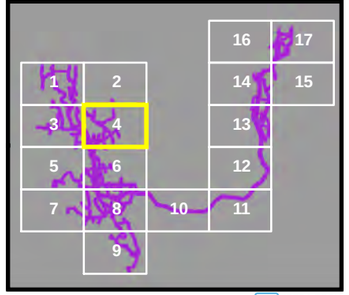
- Turbine
- Met Tower
- Intraconnection Lines (Option 1)
- Electrical Collector Line

Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate



1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

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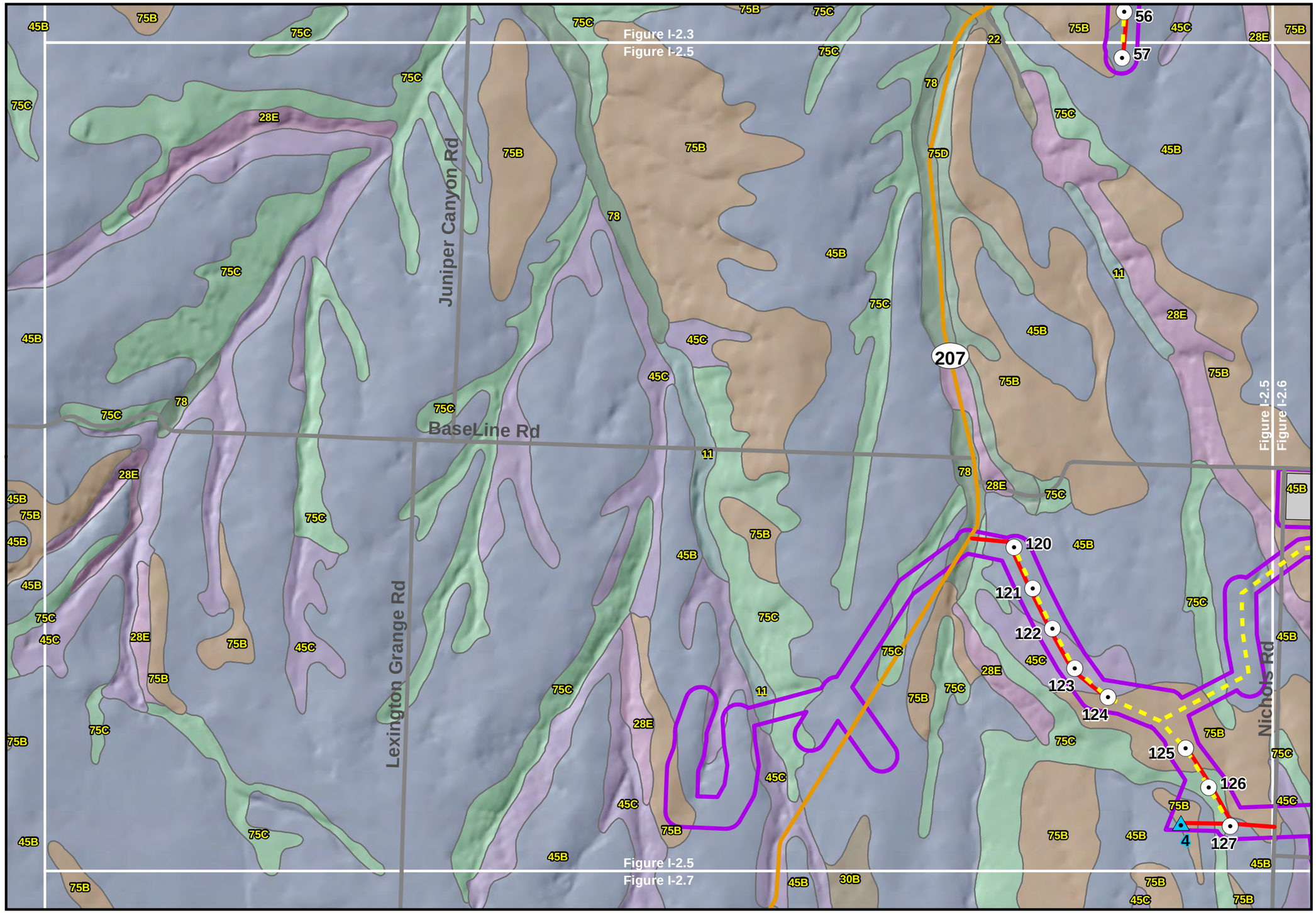

Figure I-2.5

Wheatridge Wind Energy Facility

Soil Survey

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road
- Proposed Strawberry Substation **

Proposed Project Facilities

- Turbine
- Met Tower
- Intraconnection Lines (Option 1)
- Electrical Collector Line

Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate

1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

* Soil unit descriptions can be found in Exhibit I, Attachment 1
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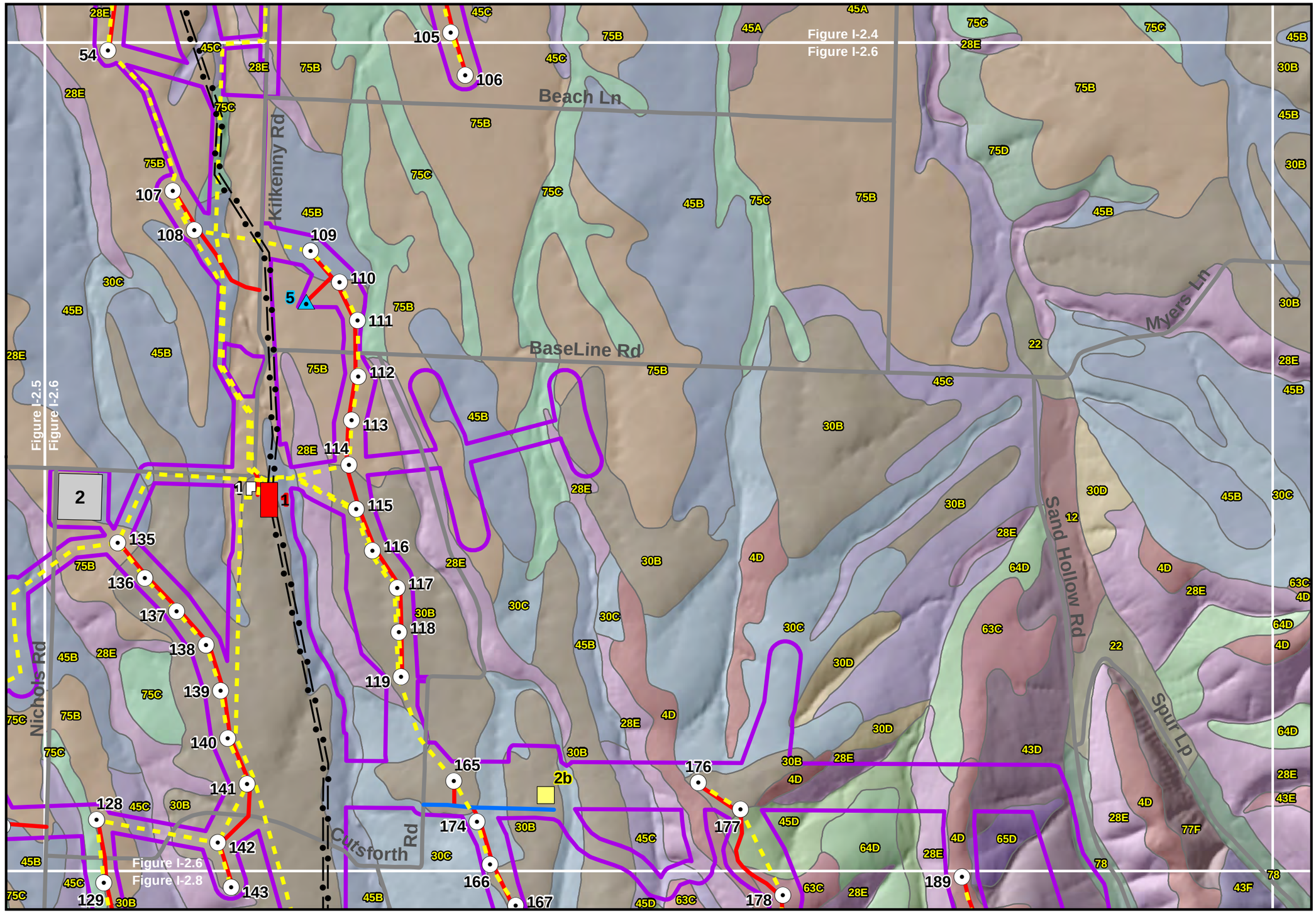


Figure I-2.6

Wheatridge Wind Energy Facility

Soil Survey

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road
- Proposed Strawberry Substation **

Proposed Project Facilities

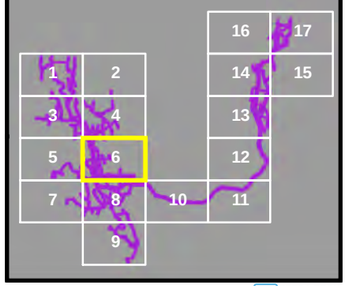
- Turbine
- Met Tower
- Intraconnection Lines (Option 1)
- Electrical Collector Line

Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate



1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

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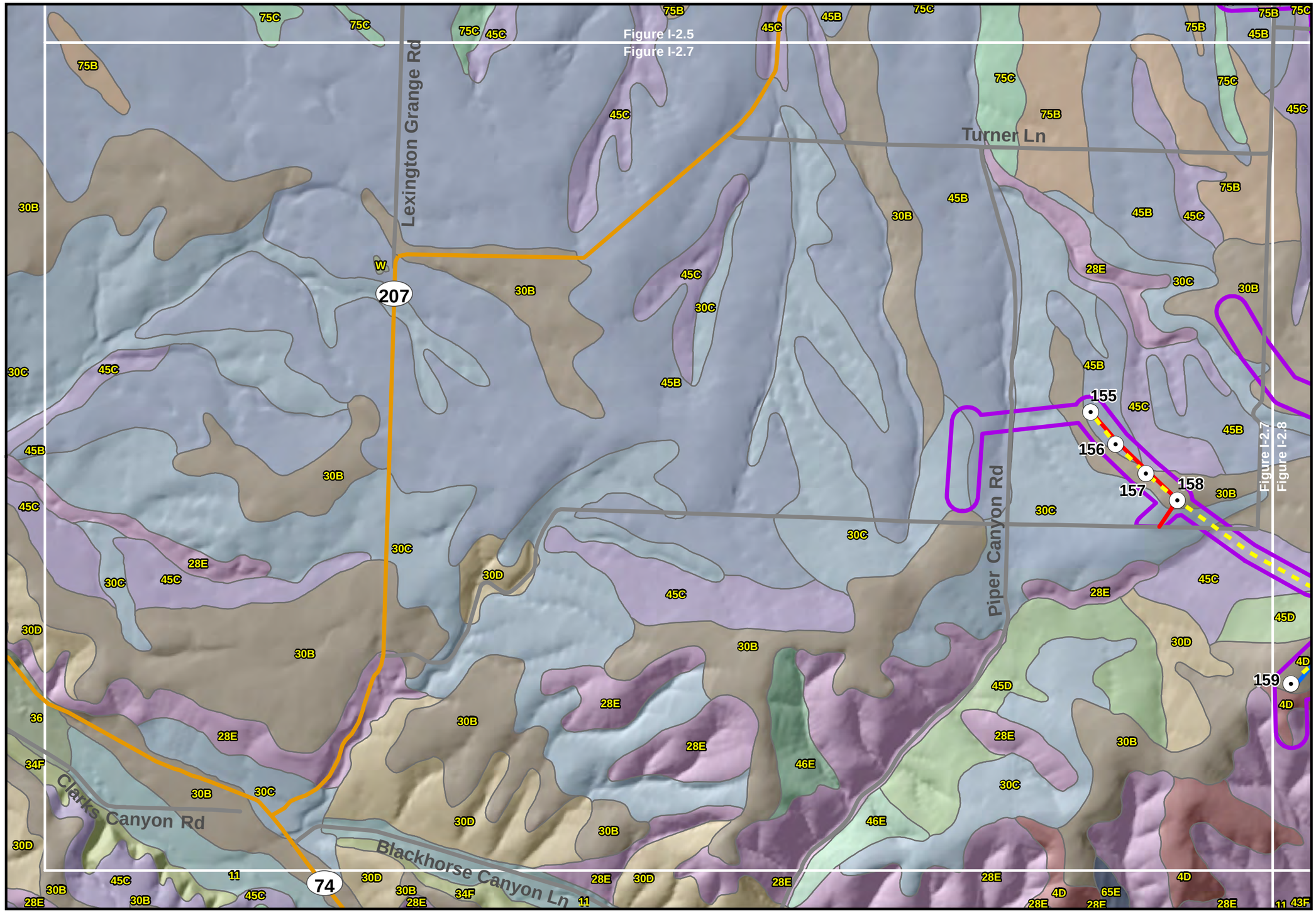

Figure I-2.7

Wheatridge Wind Energy Facility

Soil Survey

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road
- Proposed Strawberry Substation **

Proposed Project Facilities

- Turbine
- Met Tower
- Intraconnection Lines (Option 1)
- Electrical Collector Line

Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate

1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

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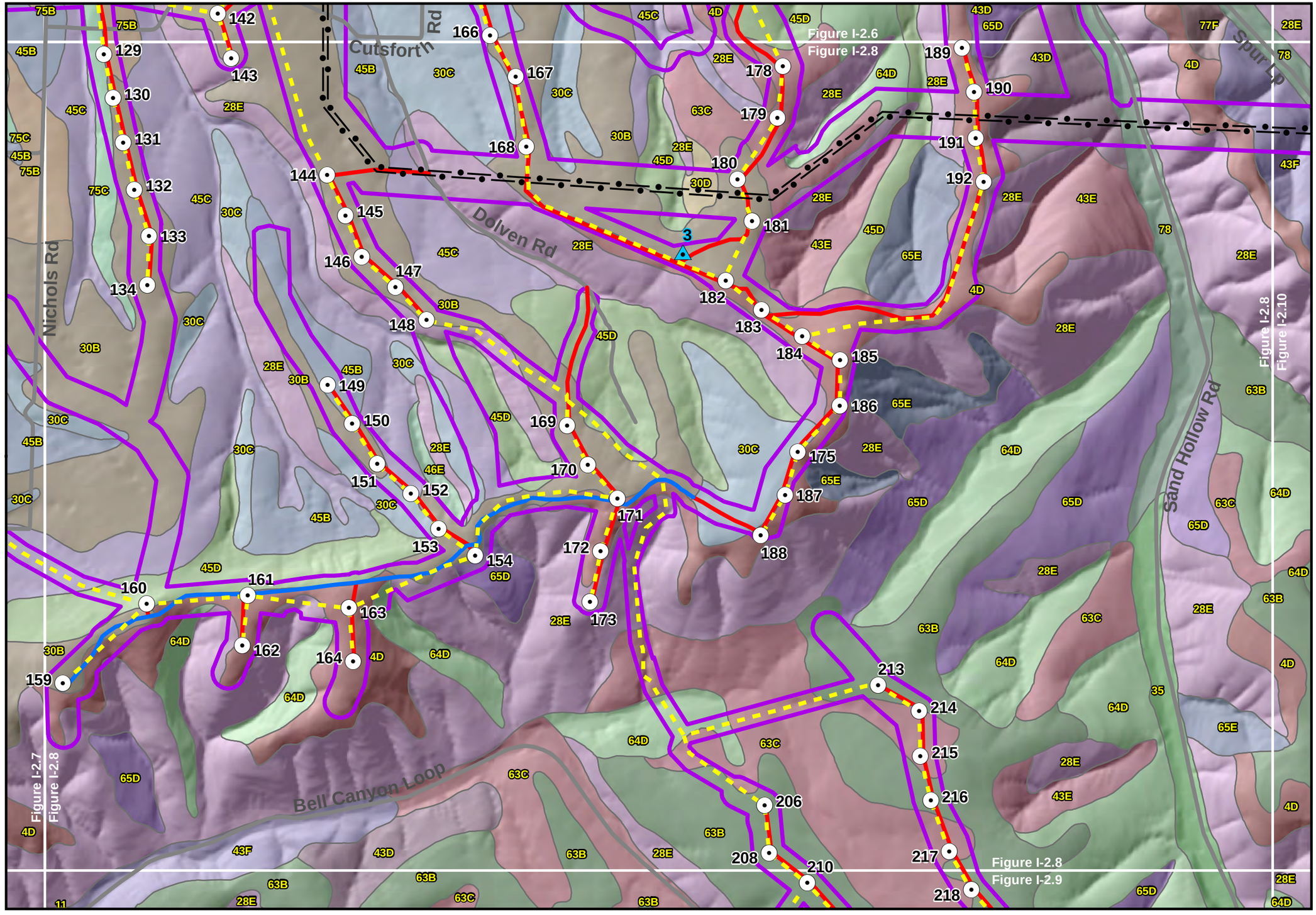

Figure I-2.8

Wheatridge Wind Energy Facility

Soil Survey

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road
- Proposed Strawberry Substation **

Proposed Project Facilities

- Turbine
- Met Tower
- Intraconnection Lines (Option 1)
- Electrical Collector Line

Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate

1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

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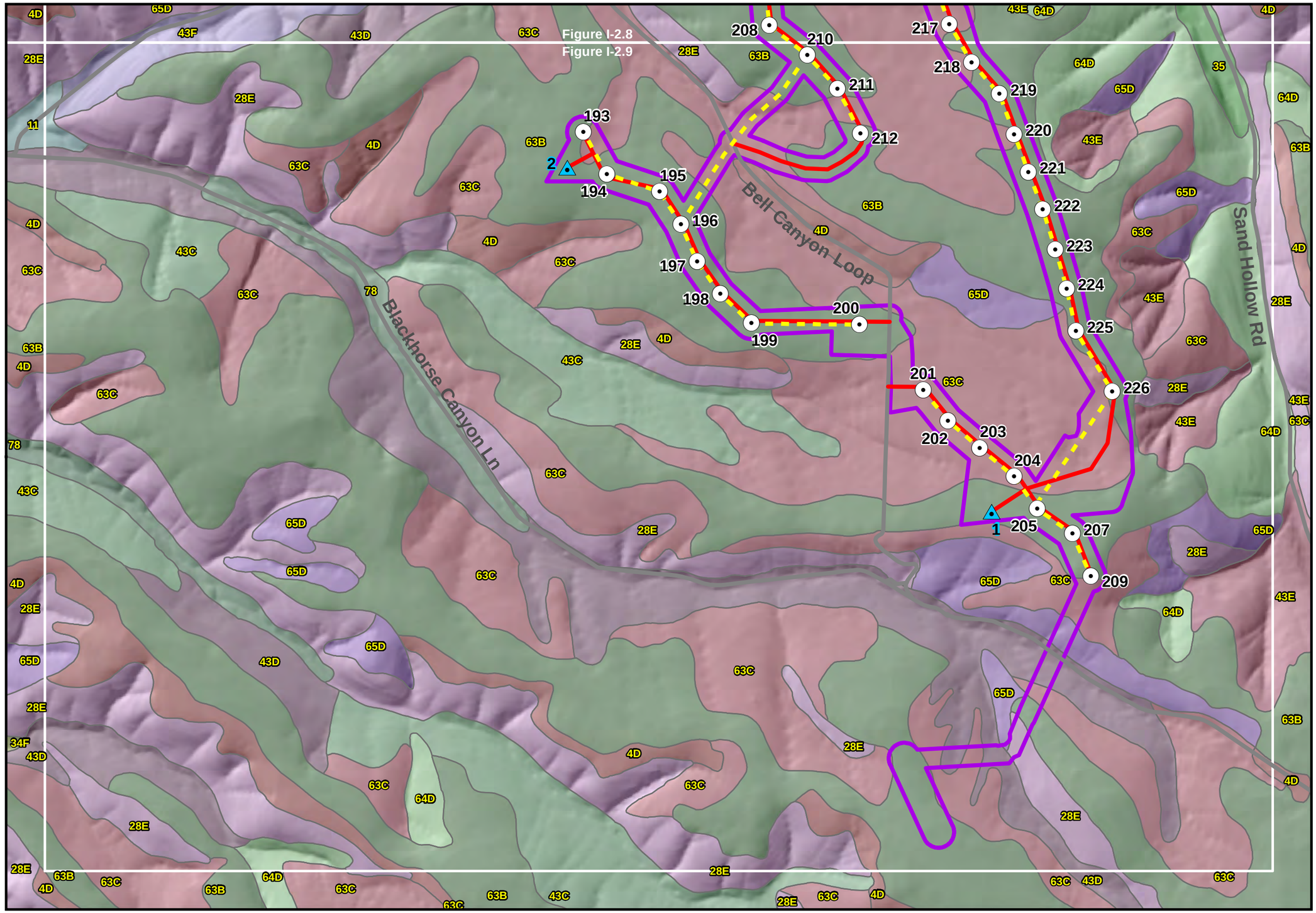


Figure I-2.9

Wheatridge Wind Energy Facility

Soil Survey

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road
- Proposed Strawberry Substation **

Proposed Project Facilities

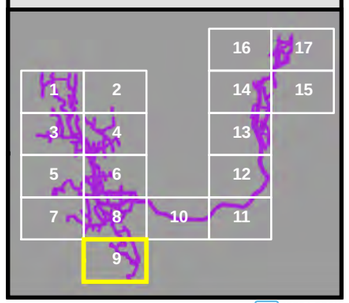
- Turbine
- Met Tower
- Intraconnection Lines (Option 1)
- Electrical Collector Line

Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate



1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

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Figure I-2.10

Wheatridge Wind Energy Facility

Soil Survey

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road
- Proposed Strawberry Substation **

Proposed Project Facilities

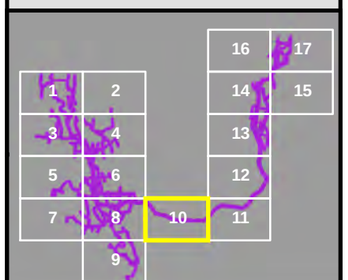
- Turbine
- Met Tower
- Intraconnection Lines (Option 1)
- Electrical Collector Line

Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate



1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

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Figure I-2.11

Wheatridge Wind Energy Facility

Soil Survey

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road
- Proposed Strawberry Substation **

Proposed Project Facilities

- Turbine
- Met Tower
- Intraconnection Lines (Option 1)
- Electrical Collector Line

Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate

N 1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

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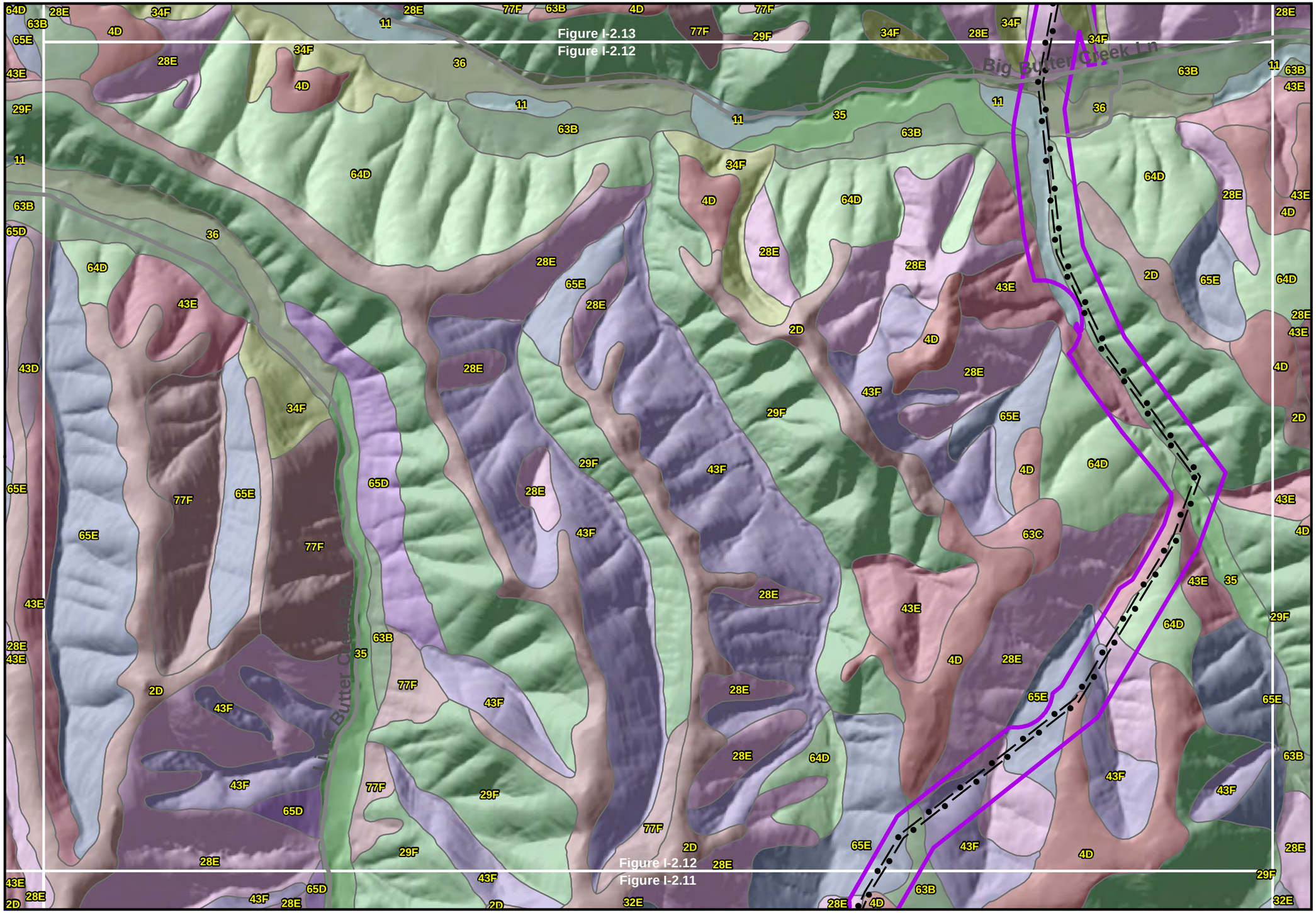


Figure I-2.12

Wheatridge Wind Energy Facility

Soil Survey

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road
- Proposed Strawberry Substation **

Proposed Project Facilities

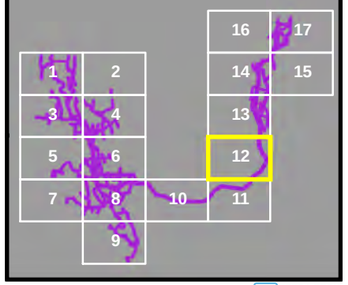
- Turbine
- Met Tower
- Intraconnection Lines (Option 1)
- Electrical Collector Line

Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate



1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

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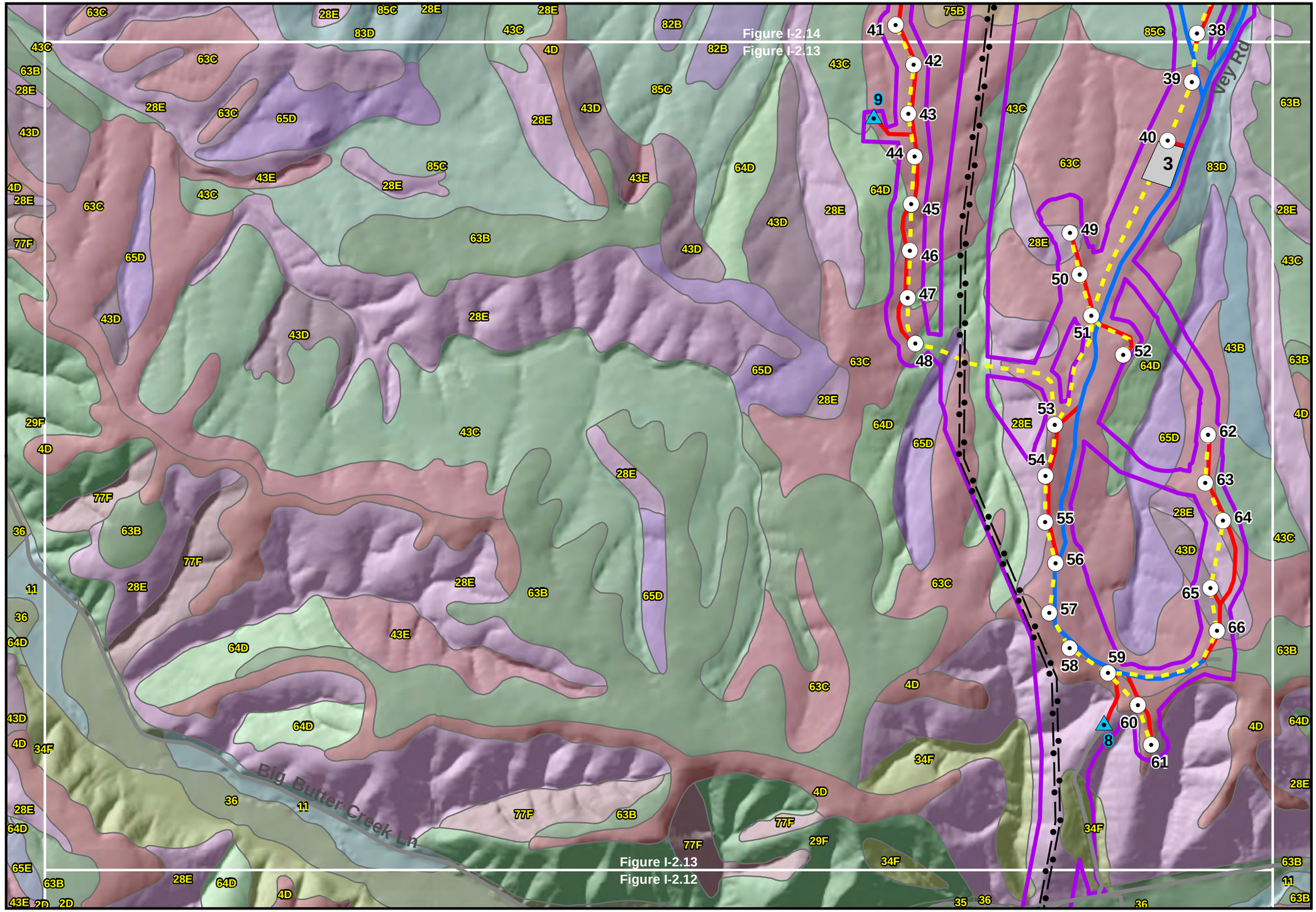


Figure I-2.13

Wheatridge Wind Energy Facility

Soil Survey

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR

December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road
- Proposed Strawberry Substation **

Proposed Project Facilities

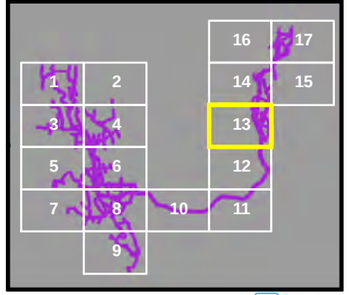
- Turbine
- Met Tower
- Intraconnection Lines (Option 1)
- Electrical Collector Line

Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate



1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

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Figure I-2.14

Wheatridge Wind Energy Facility

Soil Survey

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road
- Proposed Strawberry Substation **

Proposed Project Facilities

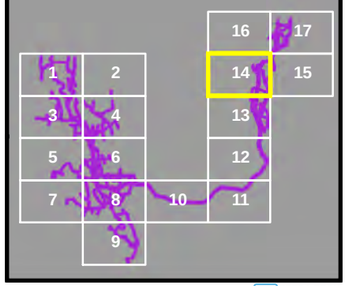
- Turbine
- Met Tower
- Intraconnection Lines (Option 1)
- Electrical Collector Line

Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate



1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

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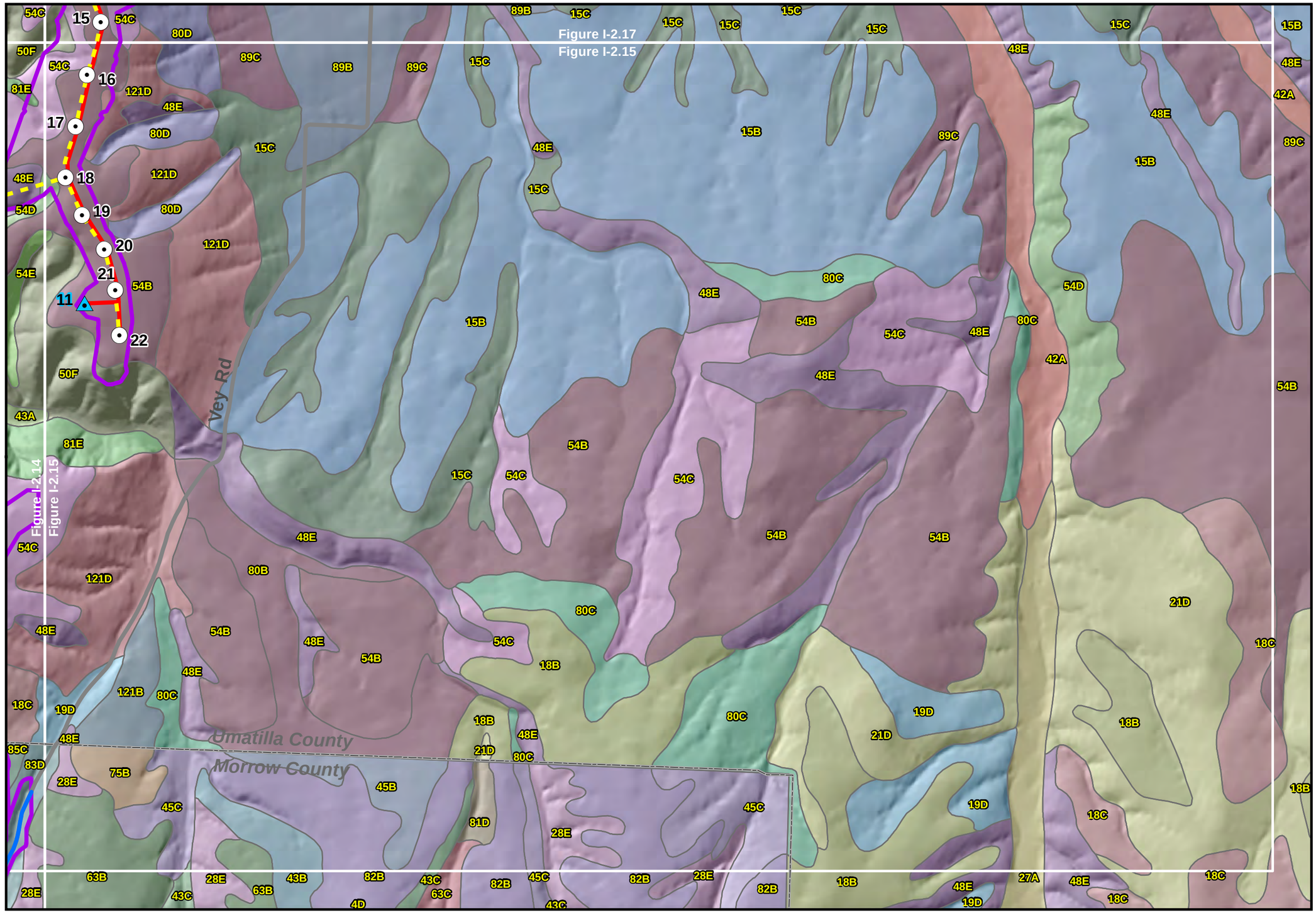


Figure I-2.15
Wheatridge Wind Energy Facility
Soil Survey
- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines
Details Map
Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road
- Proposed Strawberry Substation **

Proposed Project Facilities

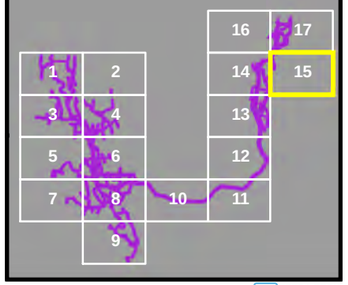
- Turbine
- Met Tower
- Intraconnection Lines (Option 1)
- Electrical Collector Line

Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate



N 1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

* Soil unit descriptions can be found in Exhibit I, Attachment 1
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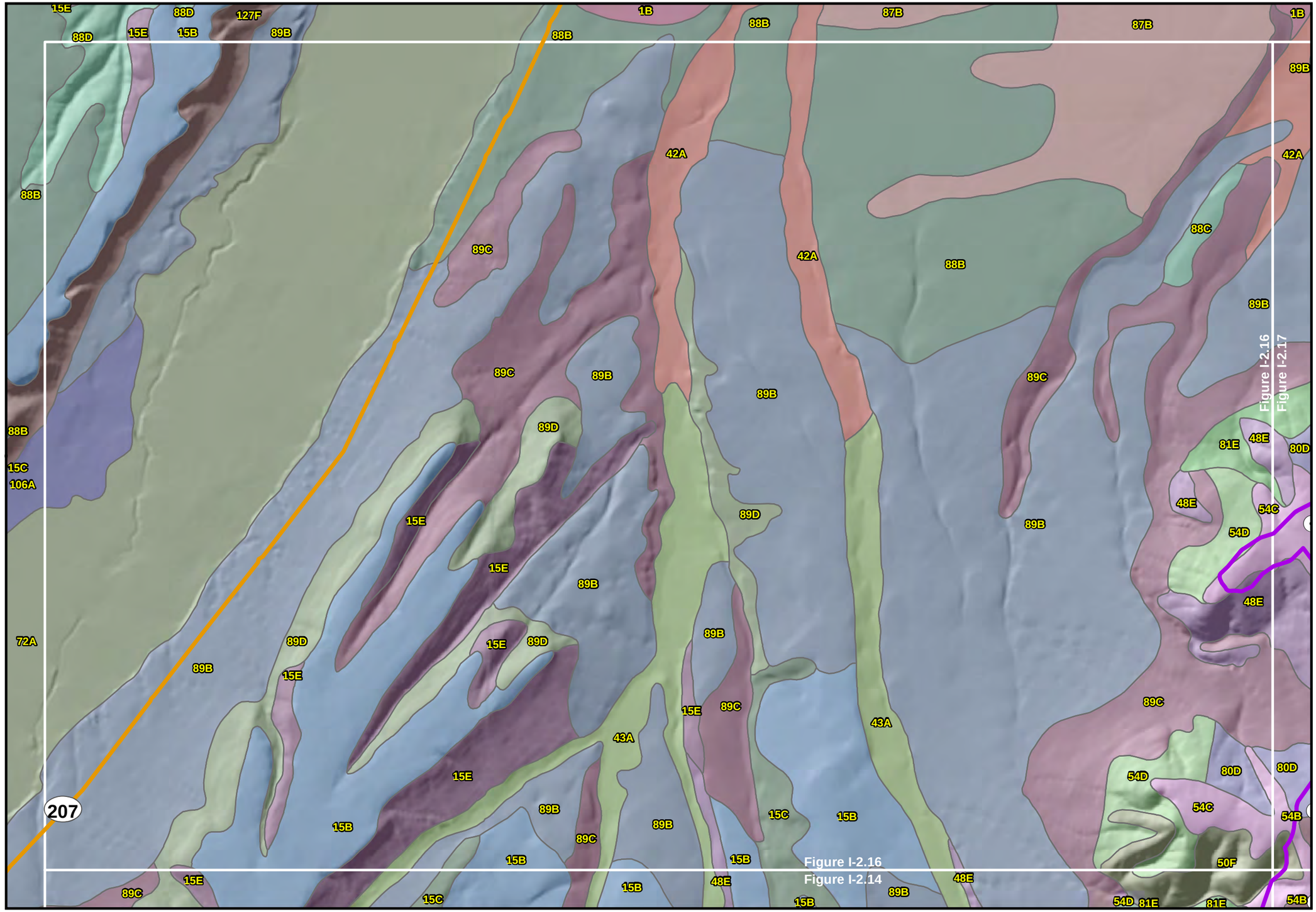

Figure I-2.16

Wheatridge Wind Energy Facility

Soil Survey

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road
- Proposed Strawberry Substation **

Proposed Project Facilities

- Turbine
- Met Tower
- Intraconnection Lines (Option 1)
- Electrical Collector Line

Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate

1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

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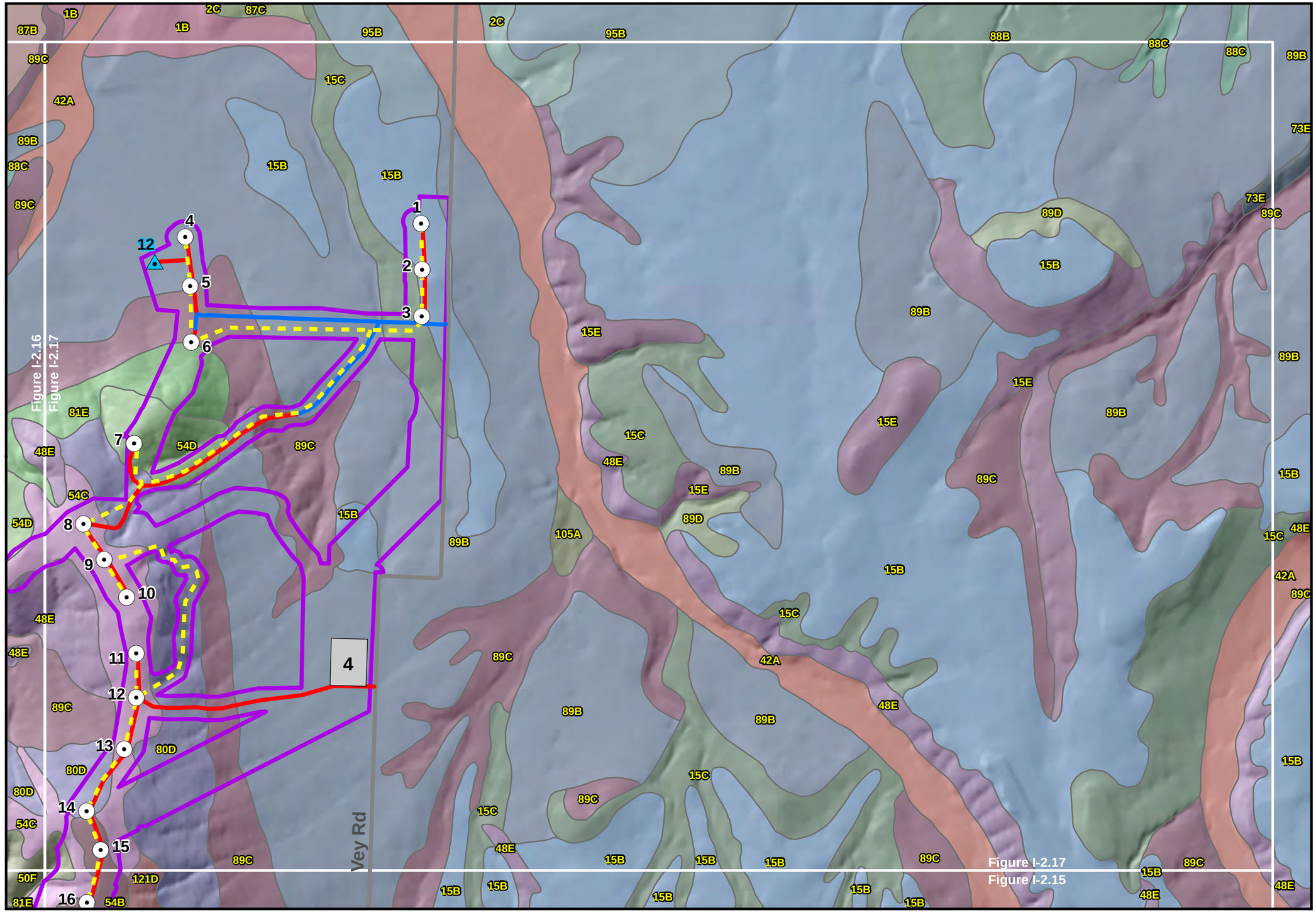

Figure I-2.17

Wheatridge Wind Energy Facility

Soil Survey

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road
- Proposed Strawberry Substation **

Proposed Project Facilities

- Turbine
- Met Tower
- Intraconnection Lines (Option 1)
- Electrical Collector Line

Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate

1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

* Soil unit descriptions can be found in Exhibit I, Attachment 1
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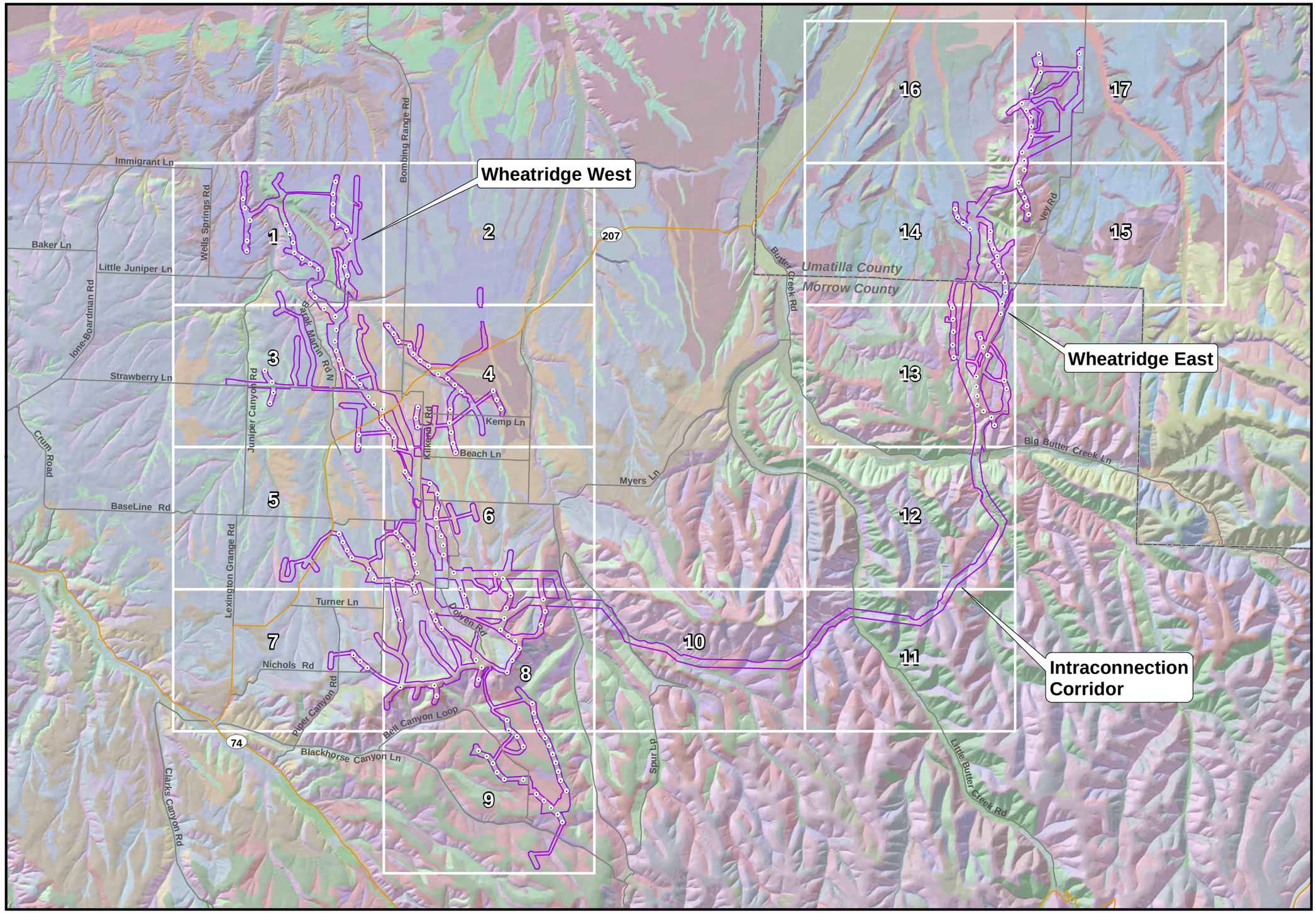

Figure I-3

Wheatridge Wind Energy Facility

Soil Survey

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- Soil Series *
- Map Grid
- County Boundary
- State Highway
- Local Road

Proposed Project Facilities

- Turbine

1:140,000 WGS84 UTM 11

0 1 2 4 6 8 10 12 14 16 18 20 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NRSC Soil Survey: soils

* Soil unit descriptions can be seen in index maps I-4.1 - I-4.17 and full soil unit descriptions are available in Exhibit I, Attachment 1

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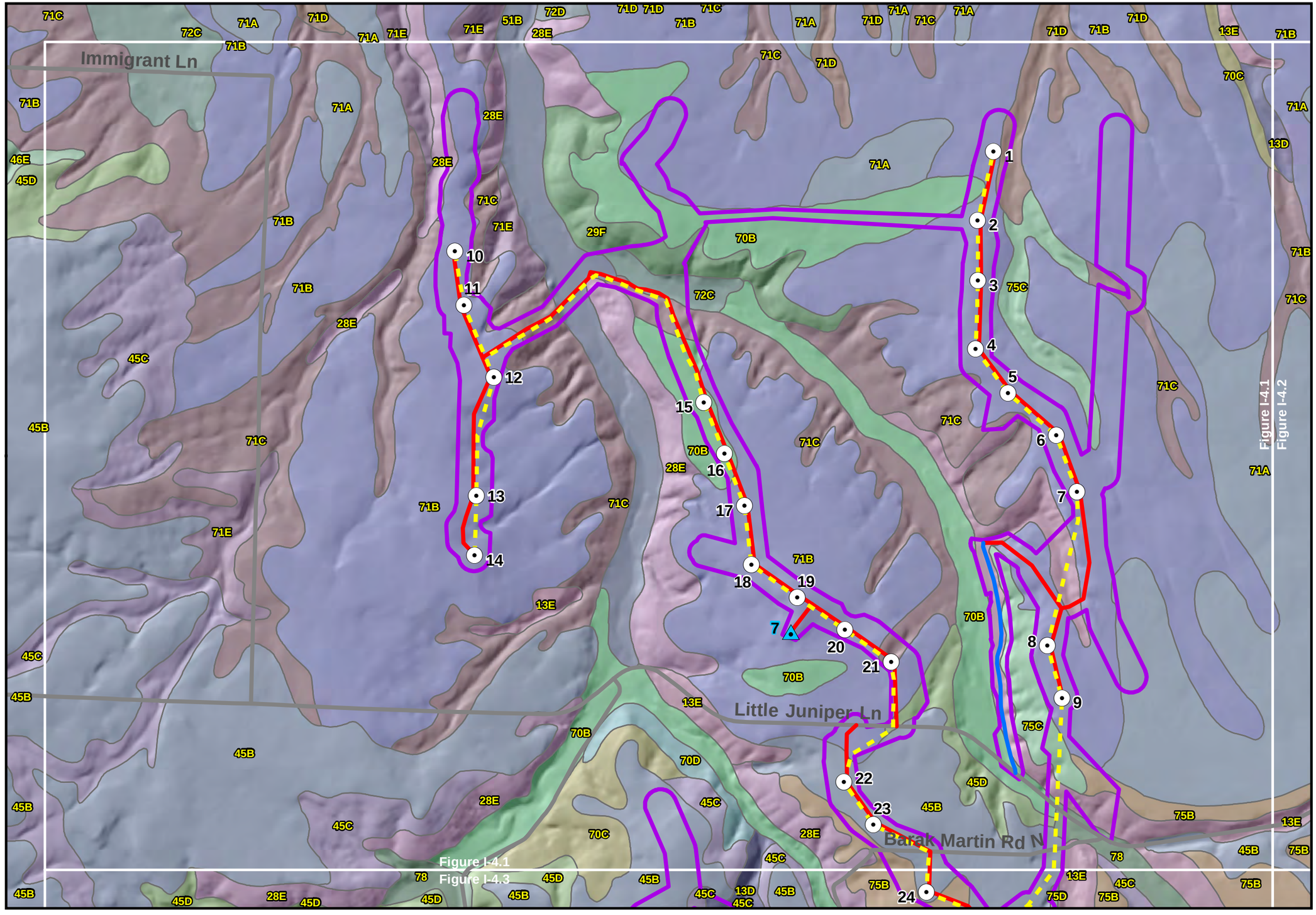


Figure I-4.1

Wheatridge Wind Energy Facility

Soil Survey

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road

Proposed Project Facilities

- Turbine
- Met Tower
- Intraconnection Lines (Option 3)
- Electrical Collector Line

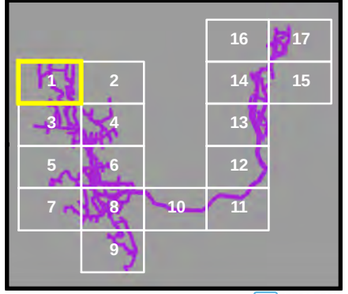
Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate

* Soil unit descriptions can be found in Exhibit I, Attachment 1



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1:24,000 **1 inch = 2,000 feet** **WGS84 UTM 11**

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

TETRA TECH

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1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

Figure I-4.2

Wheatridge Wind Energy Facility

Soil Survey

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road

Proposed Project Facilities
- Turbine
- Met Tower
- Intraconnection Lines (Option 3)
- Electrical Collector Line

Access Road
- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation
- Primary
- Alternate

* Soil unit descriptions can be found in Exhibit I, Attachment 1

TETRA TECH

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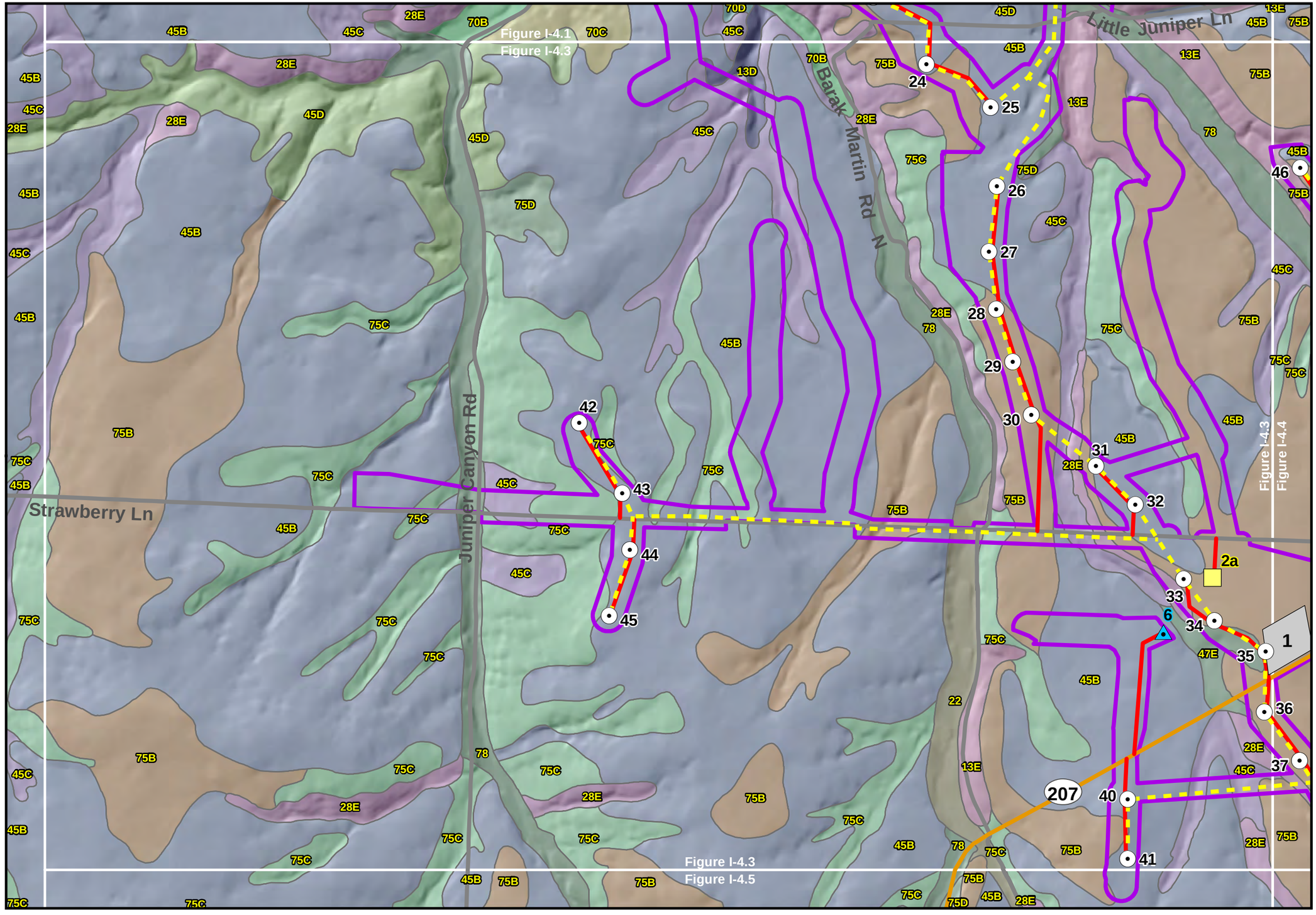


Figure I-4.3

Wheatridge Wind Energy Facility

Soil Survey

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road

Proposed Project Facilities

- Turbine
- Met Tower
- Intraconnection Lines (Option 3)
- Electrical Collector Line

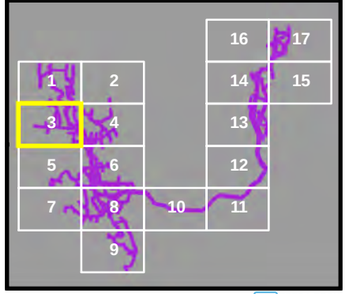
Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate

* Soil unit descriptions can be found in Exhibit I, Attachment 1



1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

TETRA TECH

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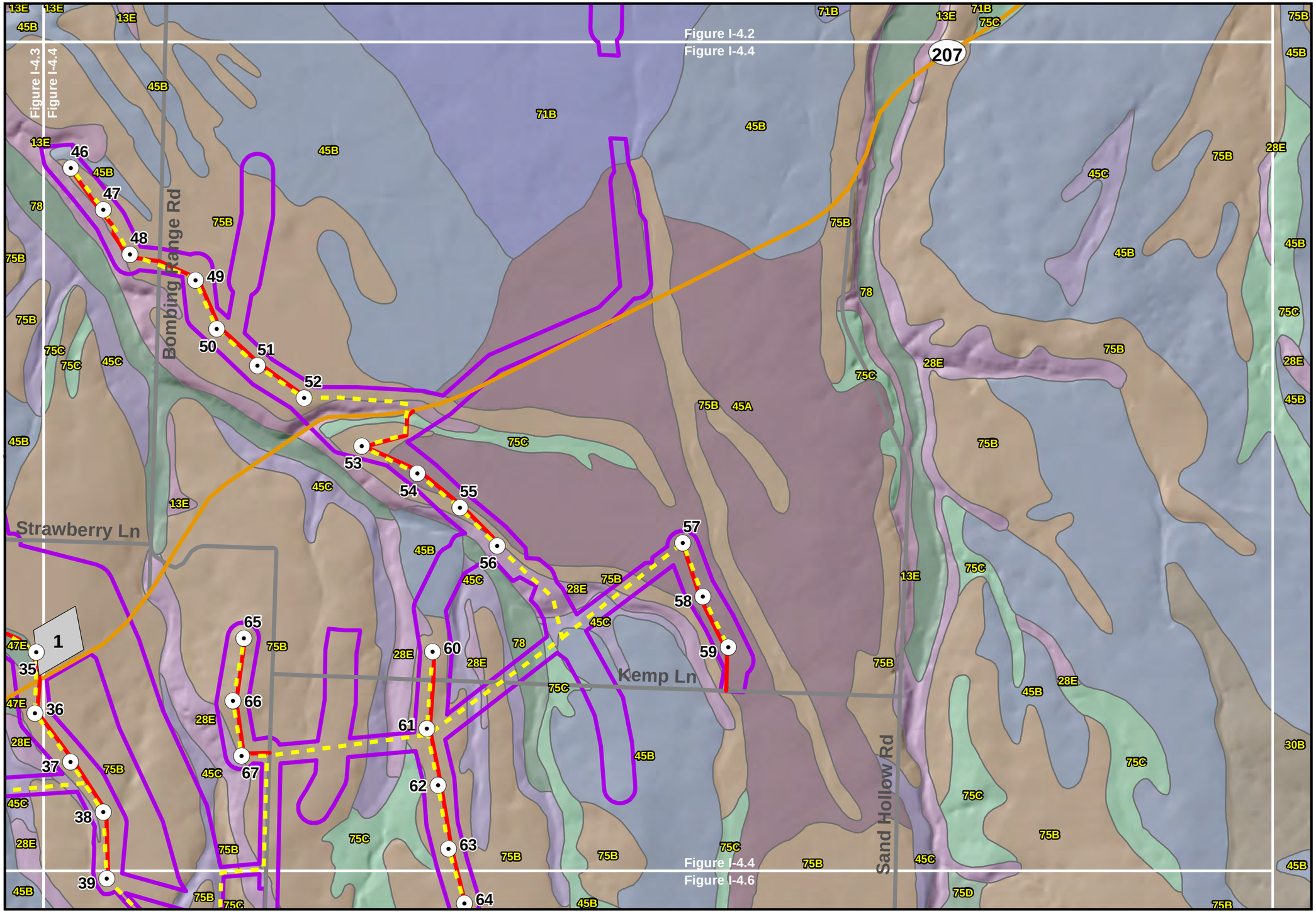


Figure I-4.4

Wheatridge Wind Energy Facility

Soil Survey

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road

Proposed Project Facilities

- Turbine
- Met Tower
- Intraconnection Lines (Option 3)
- Electrical Collector Line

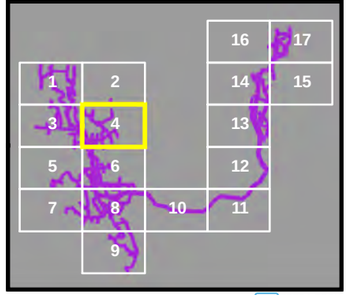
Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate

* Soil unit descriptions can be found in Exhibit I, Attachment 1



1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

TETRA TECH

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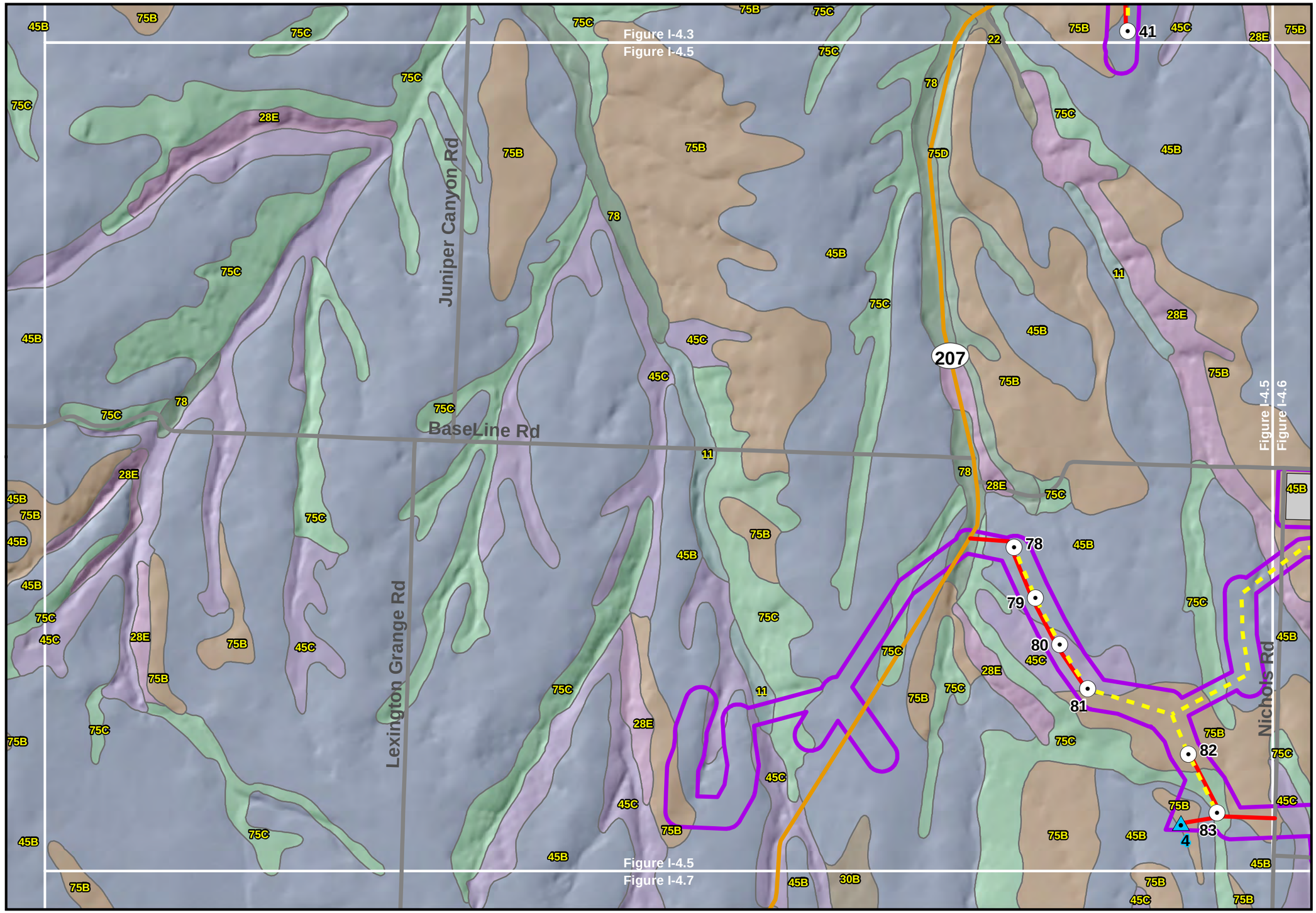


Figure I-4.5

Wheatridge Wind Energy Facility

Soil Survey

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road

Proposed Project Facilities

- Turbine
- Met Tower
- Intraconnection Lines (Option 3)
- Electrical Collector Line

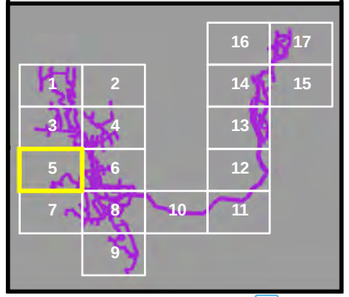
Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate

* Soil unit descriptions can be found in Exhibit I, Attachment 1



1:24,000 **1 inch = 2,000 feet** **WGS84 UTM 11**

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

TETRA TECH

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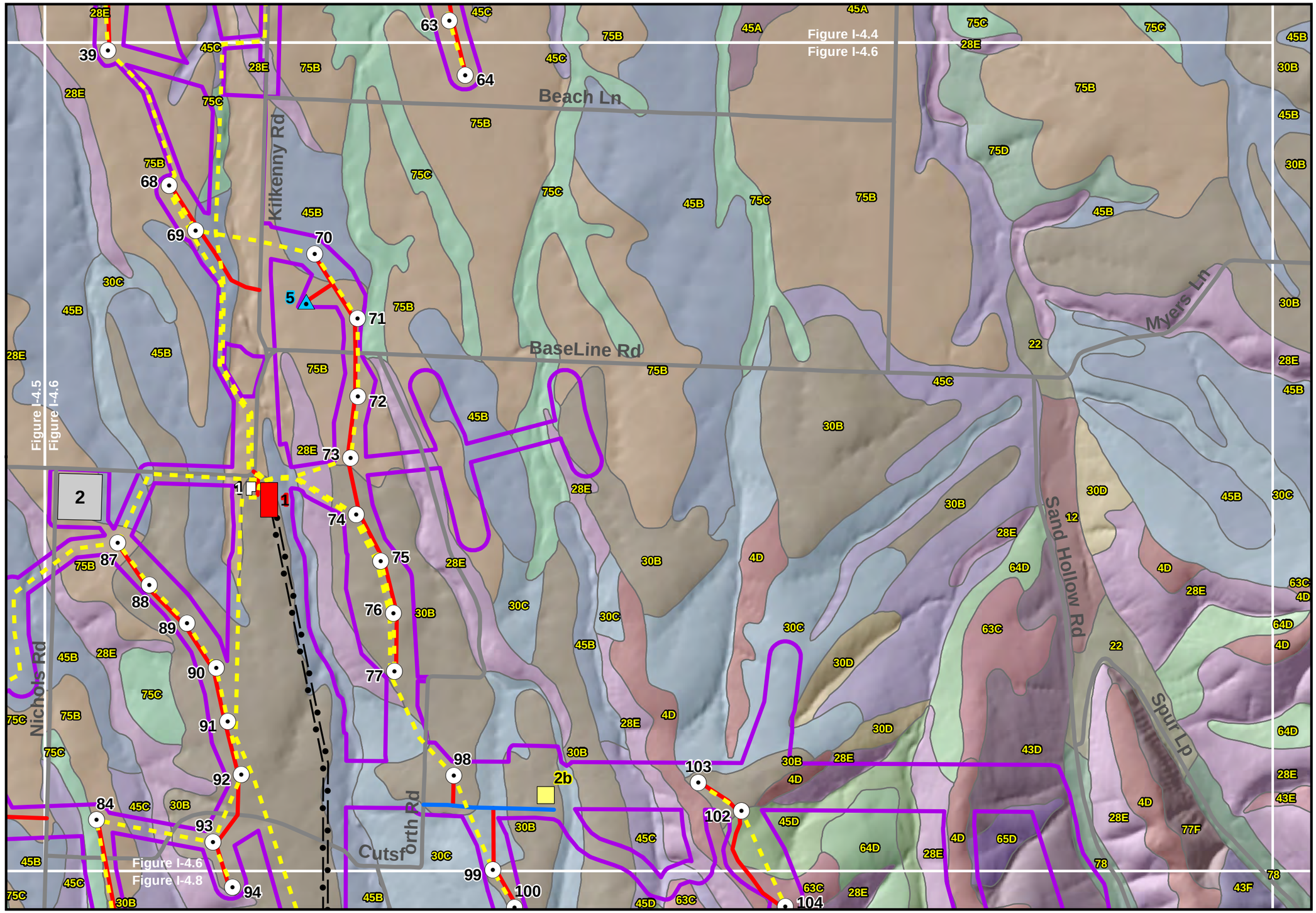


1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

Figure I-4.6

Wheatridge Wind Energy Facility

Soil Survey

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

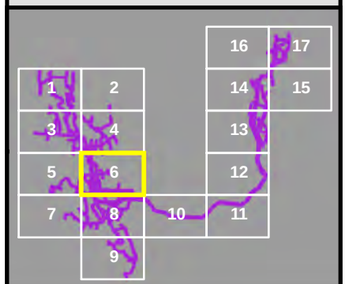
- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road

Proposed Project Facilities
- Turbine
- Met Tower
- Intraconnection Lines (Option 3)
- Electrical Collector Line

Access Road
- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation
- Primary
- Alternate

* Soil unit descriptions can be found in Exhibit I, Attachment 1



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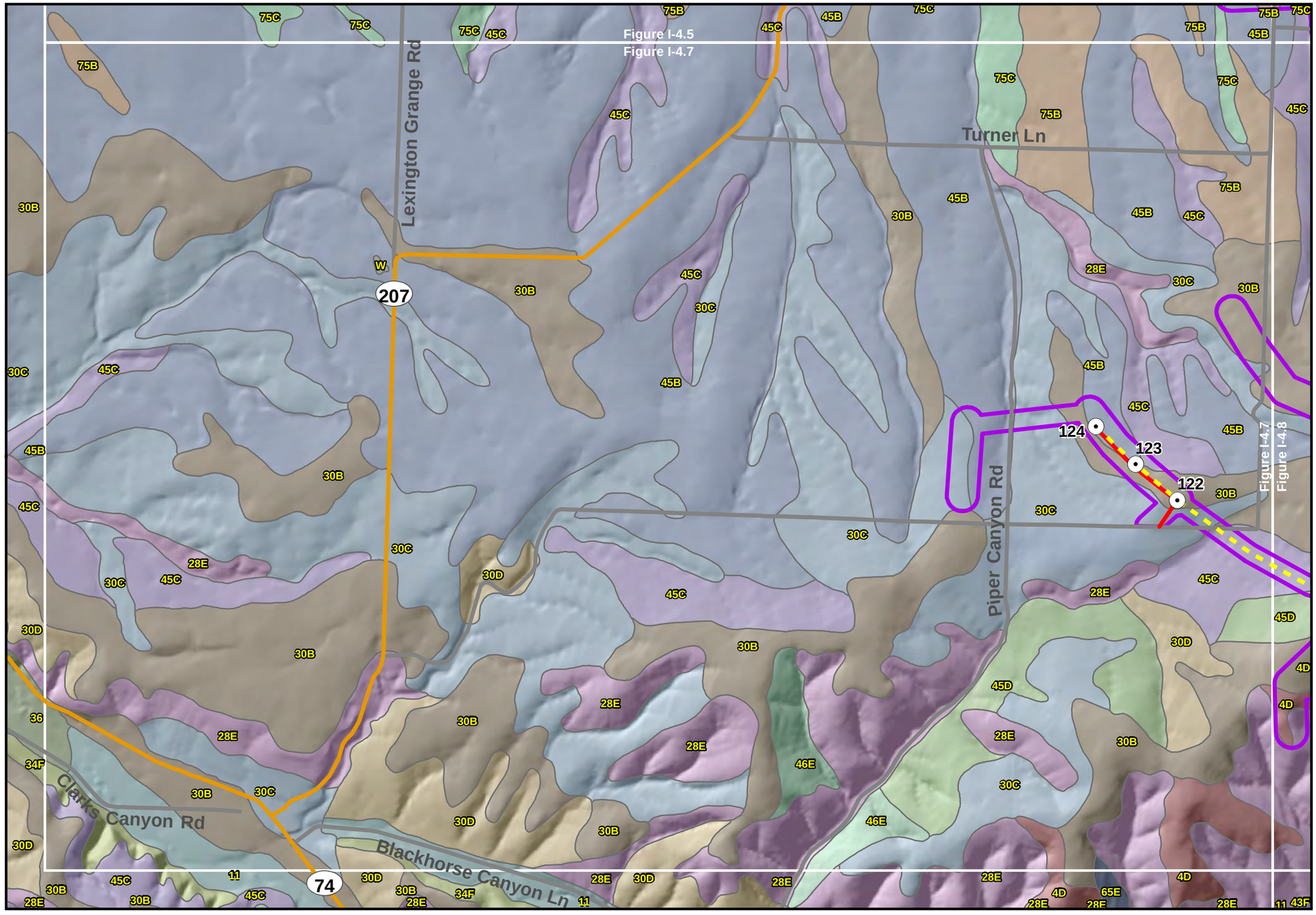


1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

Figure I-4.7

Wheatridge Wind Energy Facility

Soil Survey

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

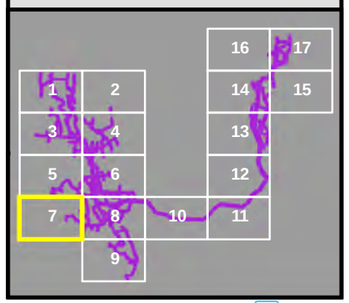
- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road

Proposed Project Facilities
- Turbine
- Met Tower
- Intraconnection Lines (Option 3)
- Electrical Collector Line

Access Road
- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation
- Primary
- Alternate

* Soil unit descriptions can be found in Exhibit I, Attachment 1



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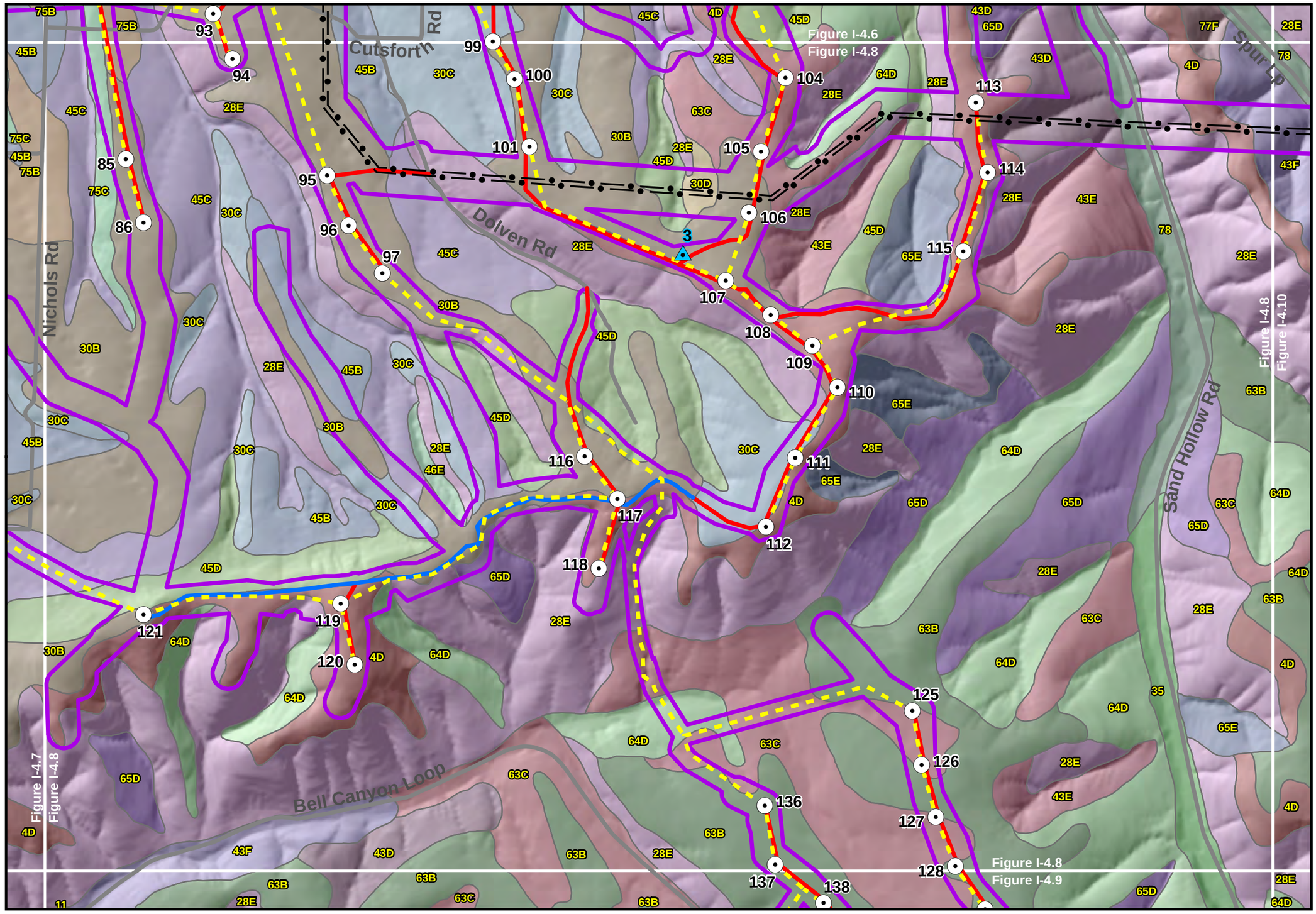

1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

Figure I-4.8

Wheatridge Wind Energy Facility

Soil Survey

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road

Proposed Project Facilities

- Turbine
- Met Tower
- Intraconnection Lines (Option 3)
- Electrical Collector Line

Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate

* Soil unit descriptions can be found in Exhibit I, Attachment 1

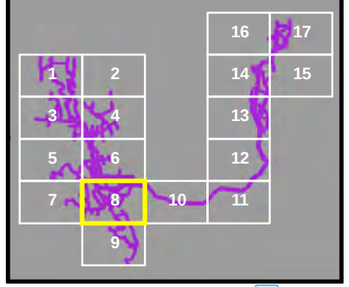

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Figure I-4.9

Wheatridge Wind Energy Facility

Soil Survey

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road

Proposed Project Facilities

- Turbine
- Met Tower
- Intraconnection Lines (Option 3)
- Electrical Collector Line

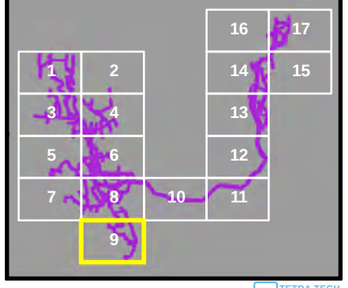
Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate

* Soil unit descriptions can be found in Exhibit I, Attachment 1



1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

TETRA TECH

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Figure I-4.10

Wheatridge Wind Energy Facility

Soil Survey

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road

Proposed Project Facilities

- Turbine
- Met Tower
- Intraconnection Lines (Option 3)
- Electrical Collector Line

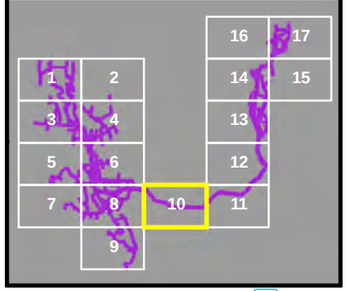
Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate

* Soil unit descriptions can be found in Exhibit I, Attachment 1



1:24,000 **1 inch = 2,000 feet** **WGS84 UTM 11**

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

TETRA TECH

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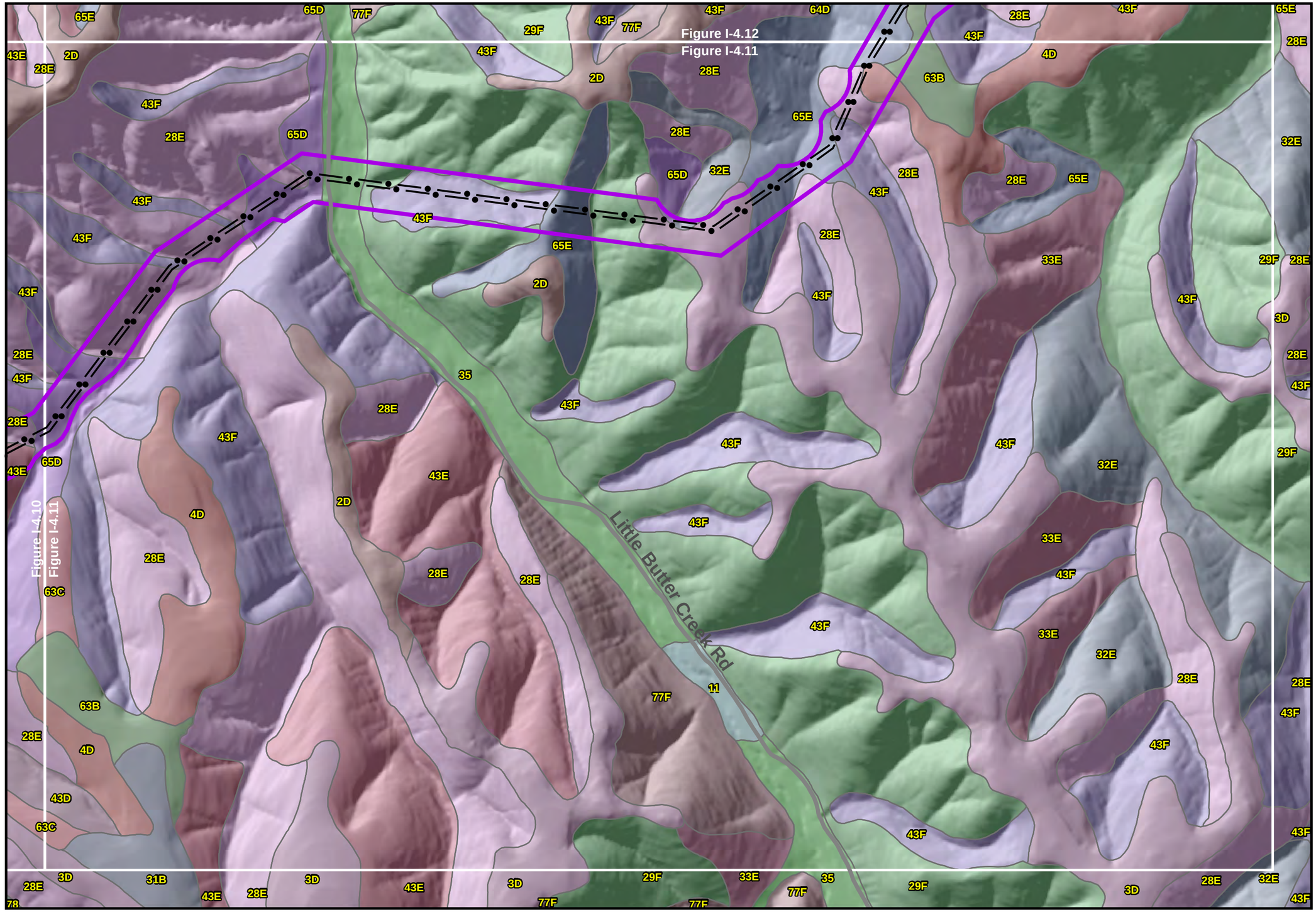


1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

Figure I-4.11

Wheatridge Wind Energy Facility

Soil Survey

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road

Proposed Project Facilities

- Turbine
- Met Tower
- Intraconnection Lines (Option 3)
- Electrical Collector Line

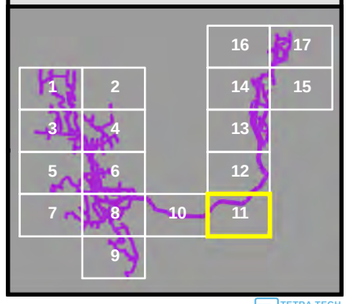
Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate

* Soil unit descriptions can be found in Exhibit I, Attachment 1



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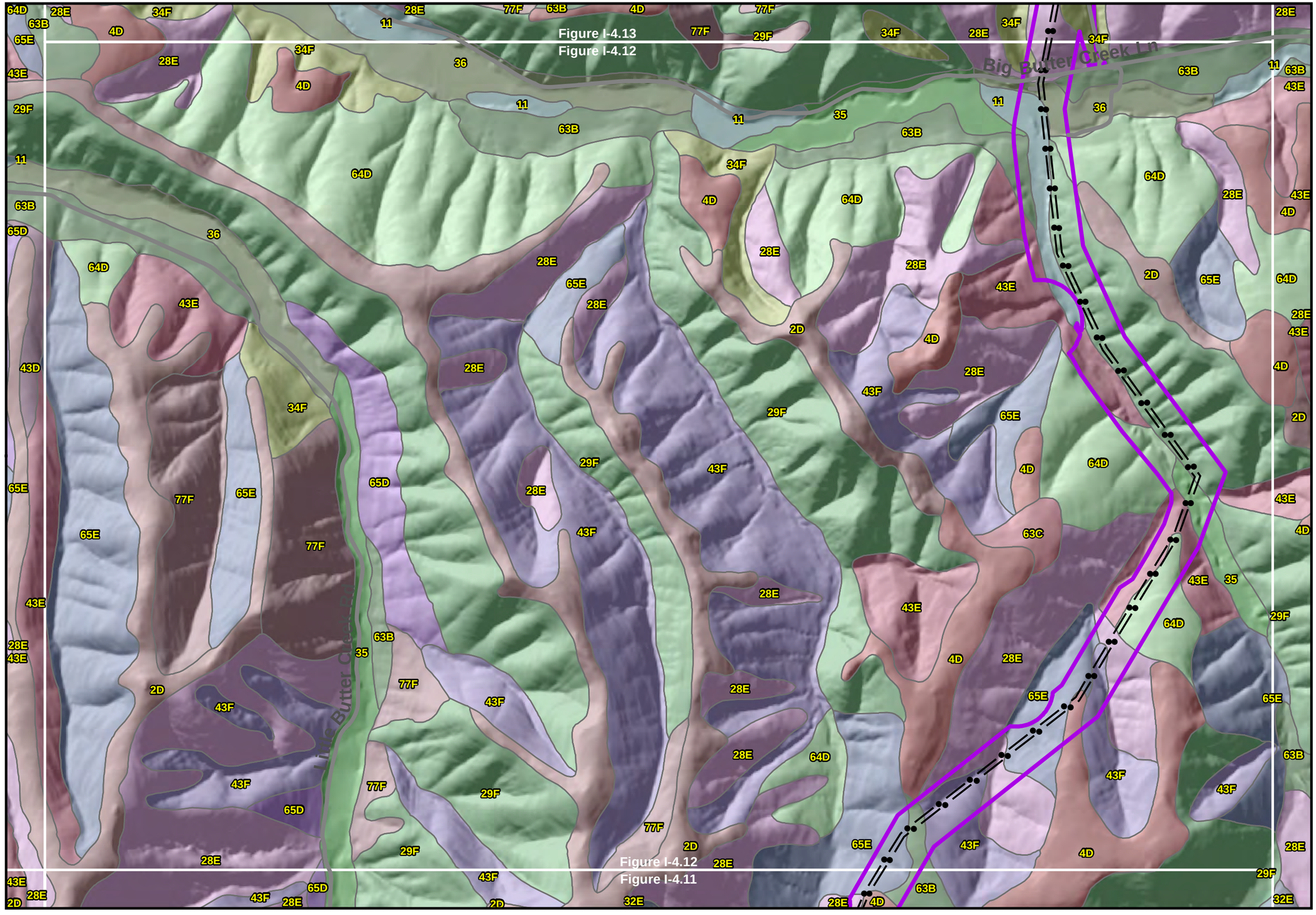


Figure I-4.12

Wheatridge Wind Energy Facility

Soil Survey

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road

Proposed Project Facilities

- Turbine
- Met Tower
- Intraconnection Lines (Option 3)
- Electrical Collector Line

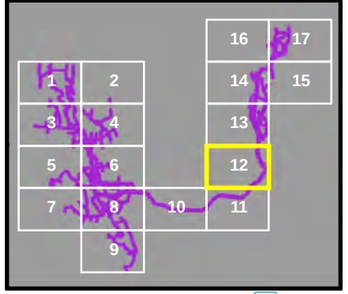
Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate

* Soil unit descriptions can be found in Exhibit I, Attachment 1



1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

TETRA TECH

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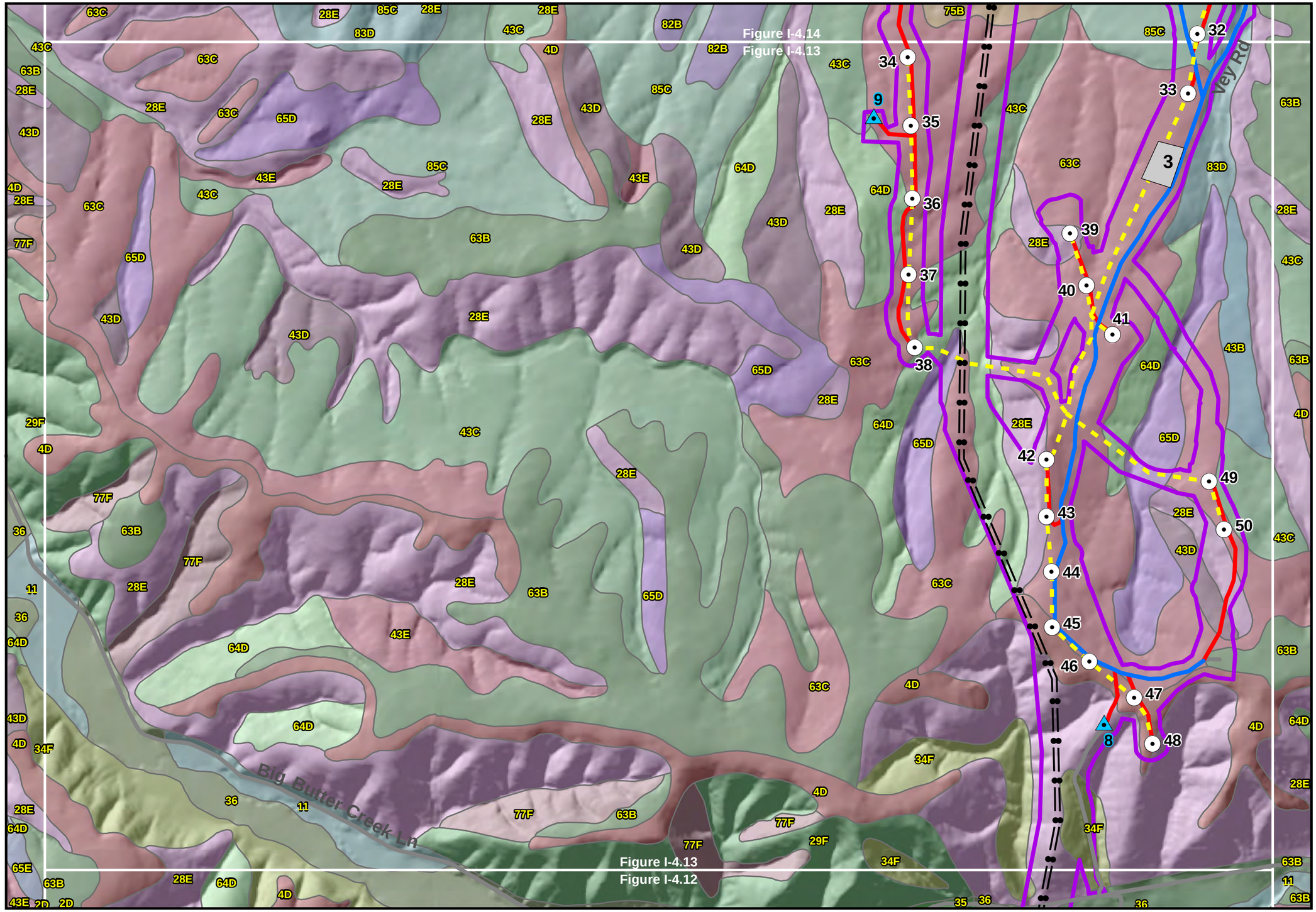


Figure I-4.13

Wheatridge Wind Energy Facility

Soil Survey

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road

Proposed Project Facilities

- Turbine
- Met Tower
- Intraconnection Lines (Option 3)
- Electrical Collector Line

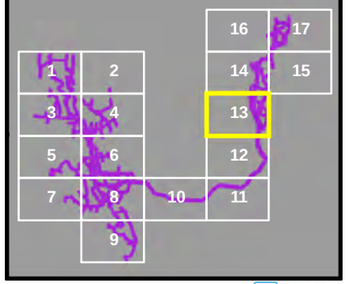
Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate

* Soil unit descriptions can be found in Exhibit I, Attachment 1



1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

TETRA TECH

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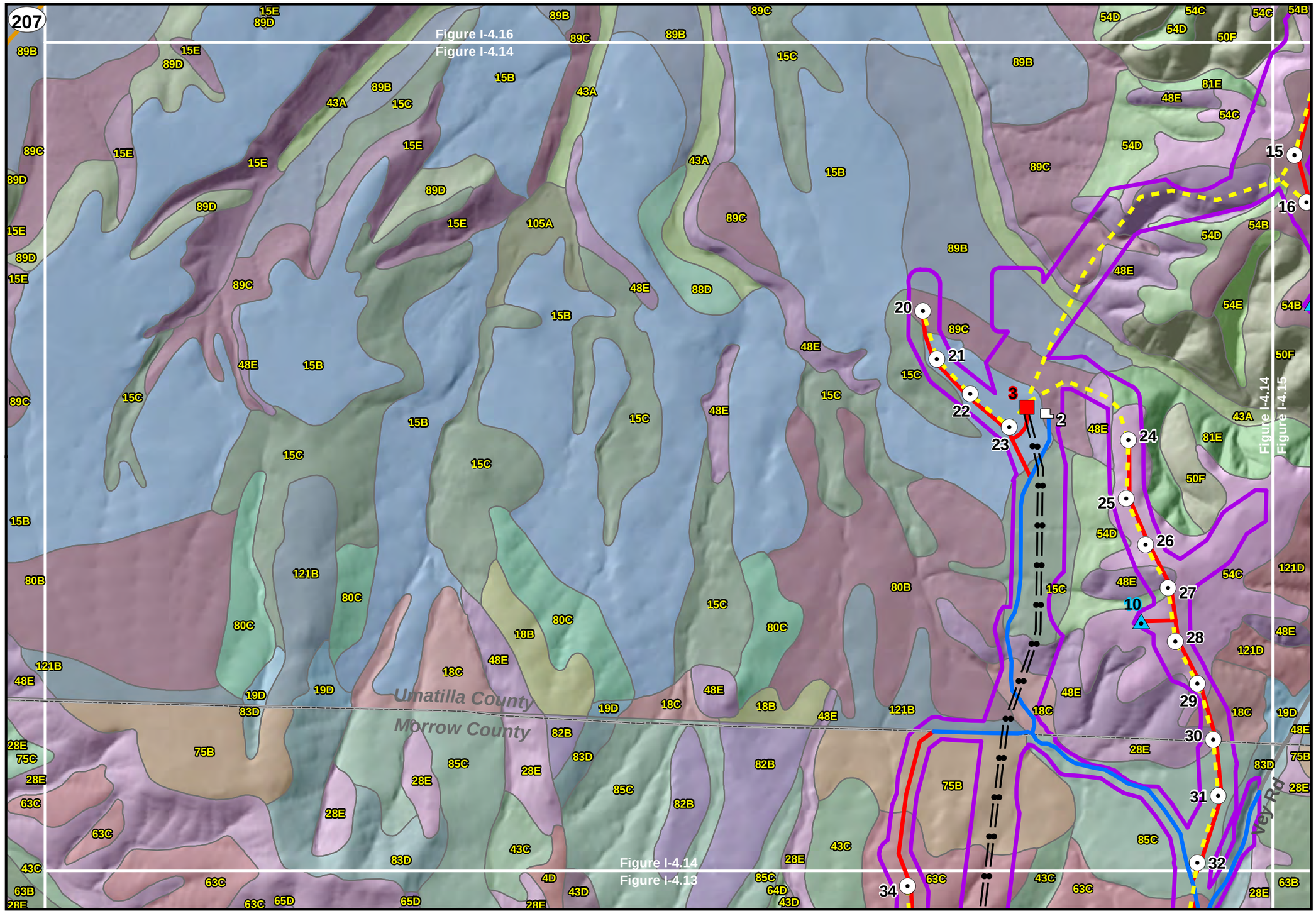


Figure I-4.14

Wheatridge Wind Energy Facility

Soil Survey

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road

Proposed Project Facilities

- Turbine
- Met Tower
- Intraconnection Lines (Option 3)
- Electrical Collector Line

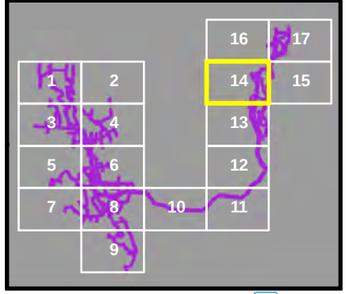
Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate

* Soil unit descriptions can be found in Exhibit I, Attachment 1



1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

TETRA TECH

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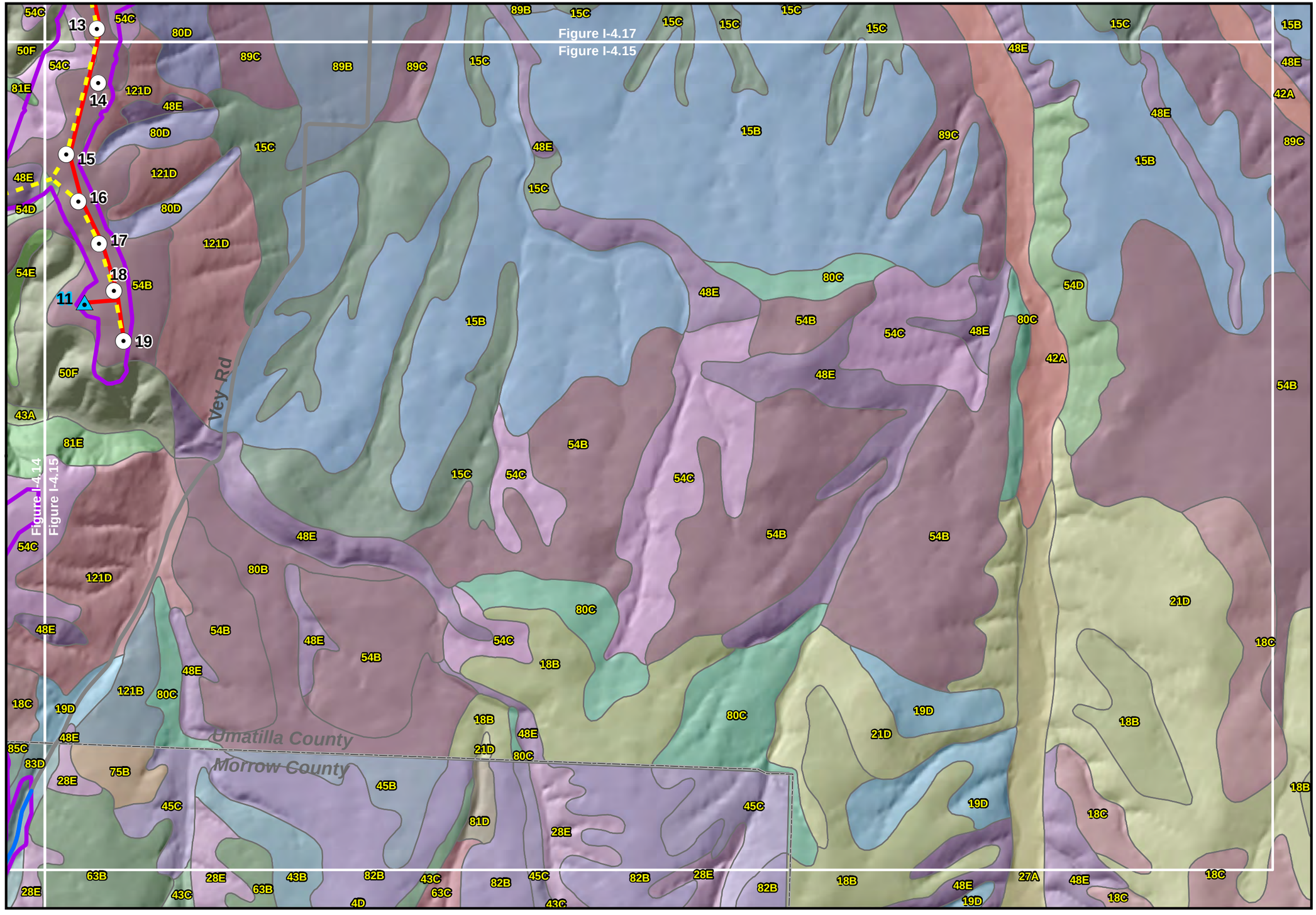

1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

Figure I-4.15

Wheatridge Wind Energy Facility

Soil Survey

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road

Proposed Project Facilities

- Turbine
- Met Tower
- Intraconnection Lines (Option 3)
- Electrical Collector Line

Access Road

- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation

- Primary
- Alternate

* Soil unit descriptions can be found in Exhibit I, Attachment 1

TETRA TECH

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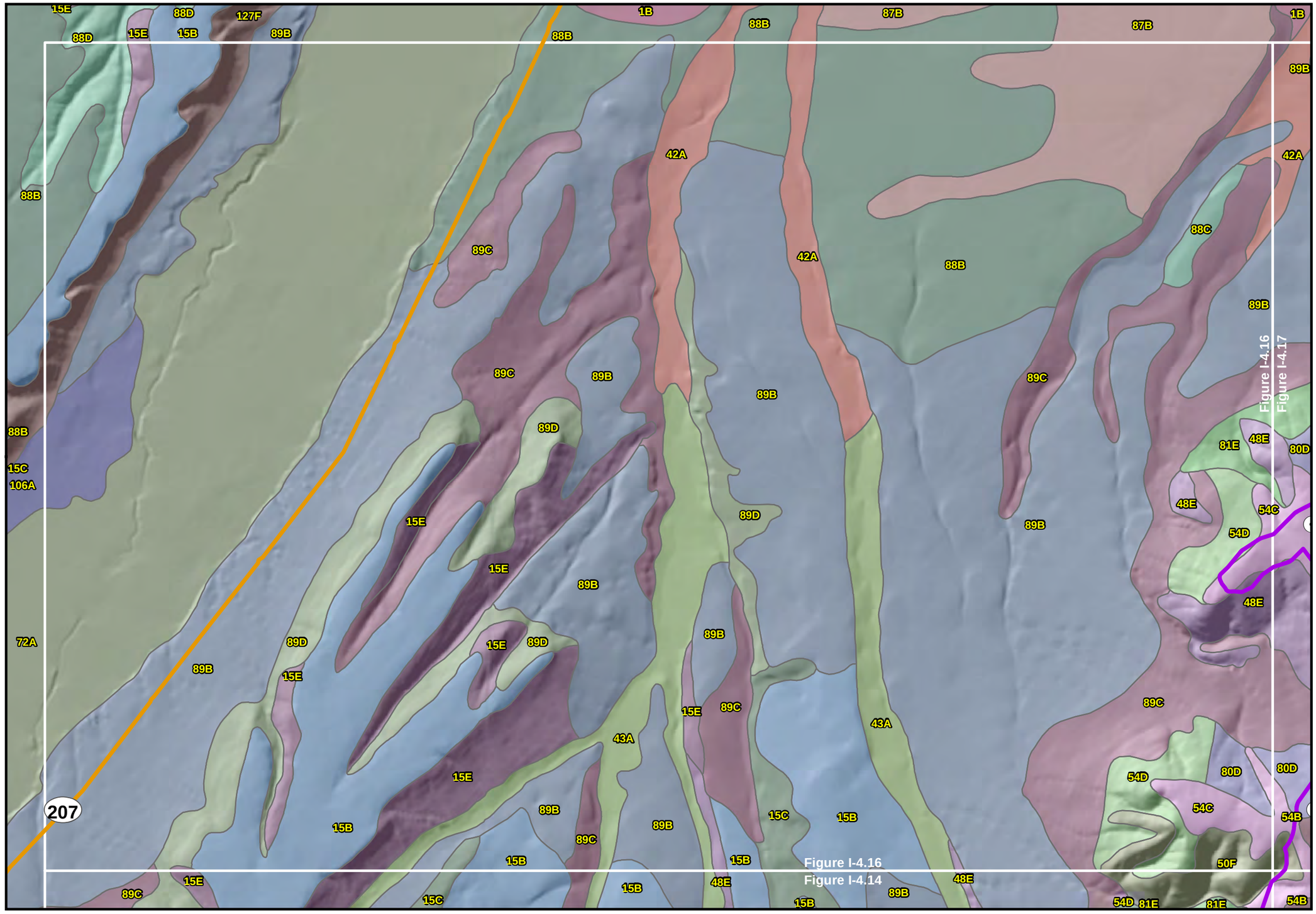


1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

Figure I-4.16

Wheatridge Wind Energy Facility

Soil Survey

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

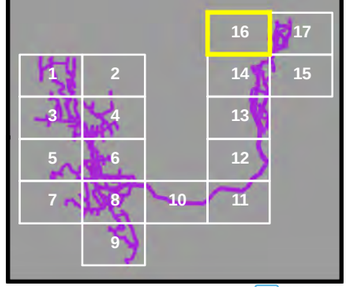
- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road

Proposed Project Facilities
- Turbine
- Met Tower
- Intraconnection Lines (Option 3)
- Electrical Collector Line

Access Road
- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation
- Primary
- Alternate

* Soil unit descriptions can be found in Exhibit I, Attachment 1



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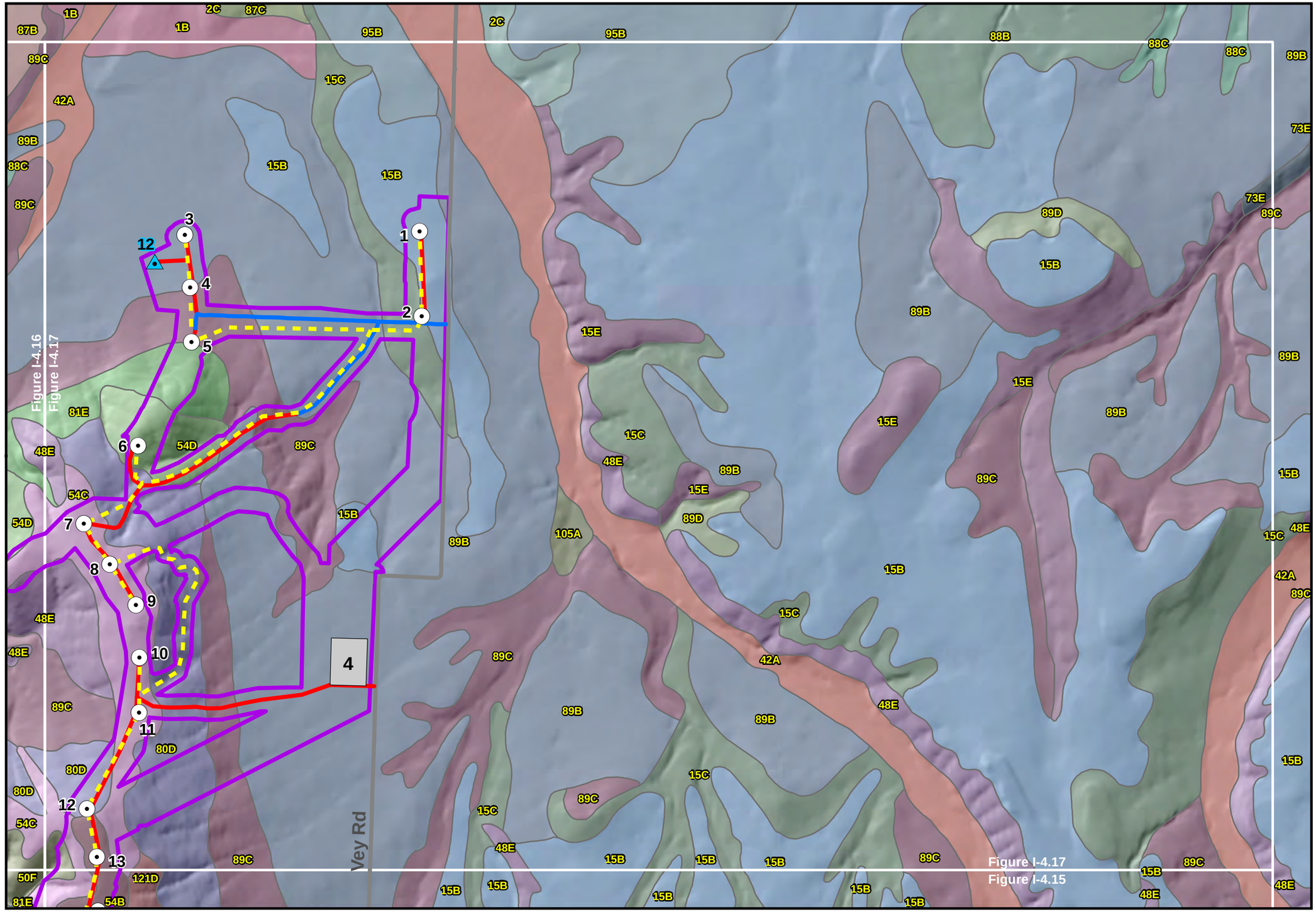


1:24,000 1 inch = 2,000 feet WGS84 UTM 11

0 0.25 0.5 1 1.5 2 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / USDA NRSC Soil Survey: soils

Figure I-4.17

Wheatridge Wind Energy Facility

Soil Survey

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Details Map

Morrow and Umatilla Counties, OR
December 2014

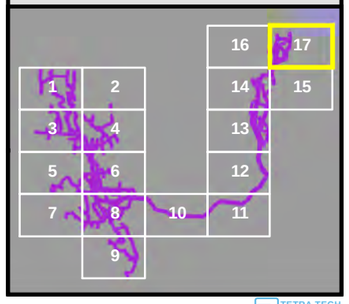
- Site Boundary
- County Boundary
- Map Grid
- Soil Unit *
- State Highway
- Local Road

Proposed Project Facilities
- Turbine
- Met Tower
- Intraconnection Lines (Option 3)
- Electrical Collector Line

Access Road
- New Road To Be Constructed
- Private Road To Be Improved
- O&M Facility
- Construction Yard

Substation
- Primary
- Alternate

* Soil unit descriptions can be found in Exhibit I, Attachment 1



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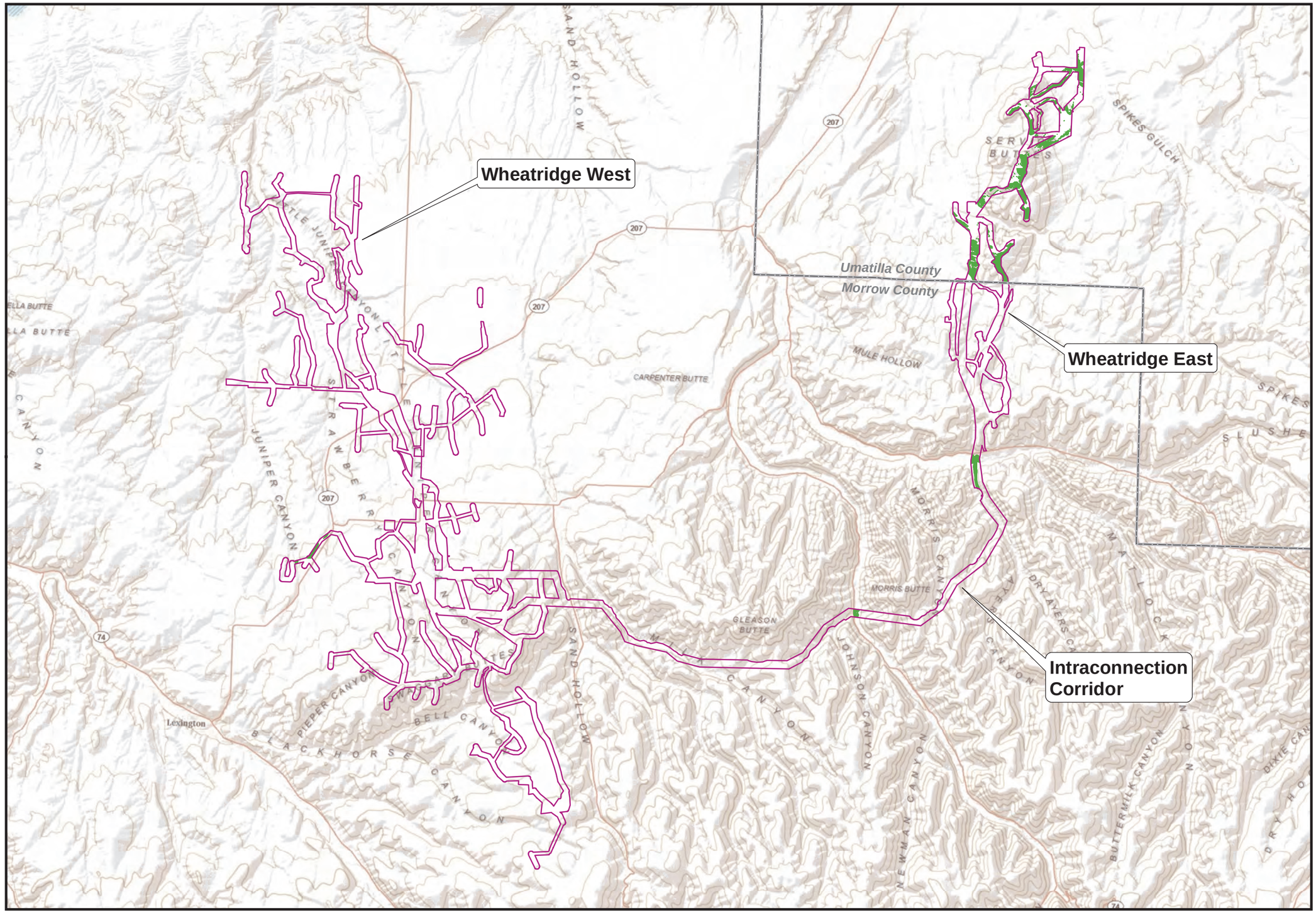

Figure I-5

Wheatridge Wind Energy Facility

High Value Farmland Within the Analysis Area

Morrow and Umatilla Counties, OR
April 2015

- Site Boundary
- County Boundary
- High Value Farmland

1:140,000 **WGS84 UTM 11**

0 1 2 4 6 8 10 12 14 16 18 20 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / Tetra Tech: high value farmland

TETRA TECH

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Attachments

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Attachment I-1:

Tables

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Table 1: Wheatridge West

Map Unit ID	Map Unit Name	Erosion Hazard Offroad-Offtrail	Irrigated Capability Class	Non-irrigated Capability Class	Parent Material Name	Farmland Classification	Flooding Frequency Class	Surface Texture	T-Factor	Wind Erodibility Group	Representative Slope	Drainage Class	Soil Rutting Hazard	Hydric Rating	Hydrologic Soil Group	Depth to Any Soil Restrictive Layer	Depth to Water Table	Percent of Site Boundary	Percent of Wheatridge West	Acres
11	Endersby fine sandy loam	Slight	1	2	alluvium from loess and volcanic ash	Prime farmland if irrigated	Rare	Fine sandy loam	5	3	2	Somewhat excessively drained	Moderate	0	A	201	201	0.0	0.0	3.4
13D	Gravden very gravelly loam, 5 to 20 percent slopes	Slight	No Value	7	gravelly alluvium and colluvium	Not prime farmland	None	Very gravelly loam	1	7	13	Well drained	Slight	0	D	36	201	0.1	0.1	6.6
13E	Gravden very gravelly loam, 20 to 40 percent slopes	Moderate	No Value	7	gravelly alluvium and colluvium	Not prime farmland	None	Very gravelly loam	1	7	30	Well drained	Slight	0	D	36	201	0.9	1.3	112.4
22	Kimberly fine sandy loam	Slight	2	3	mixed alluvium	Prime farmland if irrigated	Rare	Fine sandy loam	5	3	2	Well drained	Moderate	0	A	201	201	0.0	0.1	5.2
28E	Lickskillet very stony loam, 7 to 40 percent slopes	Moderate	No Value	7	loess mixed with colluvium from basalt	Not prime farmland	None	Very stony loam	1	7	24	Well drained	Severe	0	D	43	201	2.7	4.2	357.1
29F	Lickskillet-Rock outcrop complex, 40 to 70 percent slopes	Very severe	No Value	7	loess mixed with colluvium from basalt	Not prime farmland	None	Extremely stony loam	1	7	55	Well drained	Severe	0	D	43	201	0.1	0.2	16.9
30B	Mikkalo silt loam, 2 to 7 percent slopes	Slight	3	3	loess	Prime farmland if irrigated	None	Silt loam	2	5	4	Well drained	Severe	0	C	89	201	11.0	16.9	1437.1
30C	Mikkalo silt loam, 7 to 12 percent slopes	Moderate	3	3	loess	Farmland of statewide importance	None	Silt loam	2	5	10	Well drained	Severe	0	C	89	201	1.9	3.0	251.9
30D	Mikkalo silt loam, 12 to 20 percent slopes	Moderate	4	4	loess	Farmland of statewide importance	None	Silt loam	2	5	16	Well drained	Severe	0	C	89	201	0.1	0.2	13.8
43D	Rhea silt loam, 12 to 20 percent slopes	Moderate	No Value	3	loess mixed with small amounts of volcanic ash	Farmland of statewide importance	None	Silt loam	5	6	16	Well drained	Severe	0	B	201	201	1.2	1.8	155.0
43E	Rhea silt loam, 20 to 35 percent slopes	Severe	No Value	4	loess mixed with small amounts of volcanic ash	Farmland of statewide importance	None	Silt loam	5	6	28	Well drained	Severe	0	B	201	201	0.0	0.0	3.3

Table 1: Wheatridge West

Map Unit ID	Map Unit Name	Erosion Hazard Offroad-Offtrail	Irrigated Capability Class	Non-irrigated Capability Class	Parent Material Name	Farmland Classification	Flooding Frequency Class	Surface Texture	T-Factor	Wind Erodibility Group	Representative Slope	Drainage Class	Soil Rutting Hazard	Hydric Rating	Hydrologic Soil Group	Depth to Any Soil Restrictive Layer	Depth to Water Table	Percent of Site Boundary	Percent of Wheatridge West	Acres
45A	Ritzville silt loam, 0 to 2 percent slopes	Slight	1	3	loess mixed with small amounts of volcanic ash	Prime farmland if irrigated	None	Silt loam	5	5	1	Well drained	Severe	0	B	201	201	1.2	1.9	159.4
45B	Ritzville silt loam, 2 to 7 percent slopes	Slight	2	3	loess mixed with small amounts of volcanic ash	Prime farmland if irrigated	None	Silt loam	5	5	4	Well drained	Severe	0	B	201	201	10.5	16.2	1376.5
45C	Ritzville silt loam, 7 to 12 percent slopes	Moderate	3	3	loess mixed with small amounts of volcanic ash	Farmland of statewide importance	None	Silt loam	5	5	10	Well drained	Severe	0	B	201	201	2.2	3.4	291.1
45D	Ritzville silt loam, 12 to 20 percent slopes	Moderate	6	4	loess mixed with small amounts of volcanic ash	Farmland of statewide importance	None	Silt loam	5	5	16	Well drained	Severe	0	B	201	201	1.4	2.1	177.0
46E	Ritzville silt loam, 20 to 40 percent north slopes	Severe	6	6	loess and volcanic ash mixed with colluvium from basalt	Farmland of statewide importance	None	Silt loam	5	5	30	Well drained	Severe	0	B	201	201	0.0	0.0	0.6
47E	Ritzville silt loam, 20 to 40 percent south slopes	Severe	6	6	loess mixed with small amounts of volcanic ash	Farmland of statewide importance	None	Silt loam	5	5	30	Well drained	Severe	0	B	201	201	0.1	0.2	15.3
4D	Bakeoven-Valby complex, 2 to 20 percent slopes	Slight	No Value	7	loess mixed with residuum weathered from basalt	Not prime farmland	None	Very cobbly loam	1	8	11	Well drained	Slight	0	D	18	201	3.1	4.8	406.3
51B	Royal loamy fine sand, 2 to 5 percent slopes	Slight	3	7	alluvium and glaciofluvial deposits reworked by wind	Not prime farmland	None	Loamy fine sand	5	2	4	Well drained	Moderate	0	A	201	201	0.1	0.2	18.1
63B	Valby silt loam, 1 to 7 percent slopes	Slight	No Value	3	loess over basalt	Prime farmland if irrigated	None	Silt loam	2	5	4	Well drained	Severe	0	C	76	201	4.0	6.2	524.9
63C	Valby silt loam, 7 to 12 percent slopes	Moderate	No Value	3	loess over basalt	Farmland of statewide importance	None	Silt loam	2	5	10	Well drained	Severe	0	C	76	201	2.9	4.5	384.8
64D	Valby silt loam, 12 to 20 percent north slopes	Moderate	No Value	3	loess	Farmland of statewide importance	None	Silt loam	2	6	16	Well drained	Severe	0	C	76	201	0.4	0.7	55.7

Table 1: Wheatridge West

Map Unit ID	Map Unit Name	Erosion Hazard Offroad-Offtrail	Irrigated Capability Class	Non-irrigated Capability Class	Parent Material Name	Farmland Classification	Flooding Frequency Class	Surface Texture	T-Factor	Wind Erodibility Group	Representative Slope	Drainage Class	Soil Rutting Hazard	Hydric Rating	Hydrologic Soil Group	Depth to Any Soil Restrictive Layer	Depth to Water Table	Percent of Site Boundary	Percent of Wheatridge West	Acres
65D	Valby silt loam, 12 to 20 percent south slopes	Moderate	No Value	4	loess over basalt	Farmland of statewide importance	None	Silt loam	2	5	16	Well drained	Severe	0	C	76	201	0.2	0.3	24.4
65E	Valby silt loam, 20 to 30 percent south slopes	Moderate	No Value	4	loess over basalt	Farmland of statewide importance	None	Silt loam	2	5	25	Well drained	Severe	0	C	76	201	0.0	0.1	4.8
70B	Warden very fine sandy loam, 2 to 5 percent slopes	Slight	2	4	loess over calcareous lacustrine deposits	Prime farmland if irrigated	None	Very fine sandy loam	5	3	3	Well drained	Severe	0	B	201	201	0.7	1.0	88.1
71A	Warden silt loam, 0 to 2 percent slopes	Slight	1	4	very gravelly alluvium mixed with volcanic ash	Prime farmland if irrigated	None	Silt loam	5	7	1	Well drained	Severe	0	B	201	201	0.1	0.2	14.6
71B	Warden silt loam, 2 to 5 percent slopes	Slight	2	4	loess over calcareous lacustrine deposits	Prime farmland if irrigated	None	Silt loam	5	3	3	Well drained	Severe	0	B	201	201	5.6	8.6	733.4
71C	Warden silt loam, 5 to 12 percent slopes	Slight	3	4	loess over calcareous lacustrine deposits	Farmland of statewide importance	None	Silt loam	5	3	9	Well drained	Severe	0	B	201	201	0.4	0.5	46.8
71D	Warden silt loam, 12 to 20 percent slopes	Moderate	6	4	loess over calcareous lacustrine deposits	Farmland of statewide importance	None	Silt loam	5	3	16	Well drained	Severe	0	B	201	201	0.1	0.1	6.6
71E	Warden silt loam, 20 to 40 percent slopes	Severe	No Value	6	loess over calcareous lacustrine deposits	Farmland of statewide importance	None	Silt loam	5	3	30	Well drained	Severe	0	B	201	201	0.0	0.0	0.1
72C	Warden silt loam, 3 to 12 percent slopes, eroded	Slight	3	4	loess over calcareous lacustrine deposits	Farmland of statewide importance	None	Silt loam	5	3	8	Well drained	Severe	0	B	201	201	0.2	0.2	20.5
75B	Willis silt loam, 2 to 5 percent slopes	Slight	3	3	eolian sands	Prime farmland if irrigated	None	Silt loam	2	2	3	Well drained	Severe	0	C	89	201	11.7	18.1	1538.9
75C	Willis silt loam, 5 to 12 percent slopes	Slight	3	3	loess over cemented alluvium	Farmland of statewide importance	None	Silt loam	2	5	9	Well drained	Severe	0	C	89	201	1.7	2.6	224.9
75D	Willis silt loam, 12 to 20 percent slopes	Moderate	6	4	loess over cemented alluvium	Farmland of statewide importance	None	Silt loam	2	5	16	Well drained	Severe	0	C	89	201	0.0	0.0	3.3

Table 1: Wheatridge West

Map Unit ID	Map Unit Name	Erosion Hazard Offroad-Offtrail	Irrigated Capability Class	Non-irrigated Capability Class	Parent Material Name	Farmland Classification	Flooding Frequency Class	Surface Texture	T-Factor	Wind Erodibility Group	Representative Slope	Drainage Class	Soil Rutting Hazard	Hydric Rating	Hydrologic Soil Group	Depth to Any Soil Restrictive Layer	Depth to Water Table	Percent of Site Boundary	Percent of Wheatridge West	Acres
78	Xeric Torriorthents, nearly level	Slight	3	6	eolian sands and alluvium	Farmland of statewide importance	None	Sandy loam	4	3	1	Somewhat excessively drained	Moderate	0	A	201	201	0.3	0.4	35.9

Table 2: Wheatridge East (Morrow County)

Map Unit ID	Map Unit Name	Erosion Hazard Offroad-Offtrail	Irrigated Capability Class	Non-irrigated Capability Class	Parent Material Name	Farmland Classification	Flooding Frequency Class	Surface Texture	T-Factor	Wind Erodibility Group	Representative Slope	Drainage Class	Soil Rutting Hazard	Hydric Rating	Hydrologic Soil Group	Depth to Any Soil Restrictive Layer	Depth to Water Table	Percent of Site Boundary	Percent of Wheatridge East (Morrow County)	Acres
121B	Willis silt loam, 2 to 7 percent slopes	Slight	3	3	loess over cemented alluvium	Prime farmland if irrigated	None	Silt loam	2	5	4	Well drained	Severe	0	C	84	201	0.0	0.0	0.0
18C	Condon silt loam, 7 to 12 percent slopes	Moderate	3	3	loess	Farmland of statewide importance	None	Silt loam	2	6	10	Well drained	Severe	0	C	76	201	0.0	0.0	0.1
28E	Lickskillet very stony loam, 7 to 40 percent slopes	Moderate	No Value	7	loess mixed with colluvium from basalt	Not prime farmland	None	Very stony loam	1	7	24	Well drained	Severe	0	D	43	201	1.2	5.2	152.6
34F	Nansene silt loam, 35 to 70 percent slopes	Very severe	No Value	7	loess mixed with residuum and colluvium from basalt	Not prime farmland	None	Silt loam	3	7	53	Well drained	Severe	0	B	114	201	0.0	0.0	0.3
43C	Rhea silt loam, 7 to 12 percent slopes	Moderate	No Value	3	loess mixed with small amounts of volcanic ash	Farmland of statewide importance	None	Silt loam	5	6	10	Well drained	Severe	0	B	201	201	0.2	1.0	28.7
43D	Rhea silt loam, 12 to 20 percent slopes	Moderate	No Value	3	loess mixed with small amounts of volcanic ash	Farmland of statewide importance	None	Silt loam	5	6	16	Well drained	Severe	0	B	201	201	0.1	0.5	15.9
48E	Lickskillet very stony loam, 7 to 40 percent slopes	Moderate	No Value	7	loess mixed with colluvium from basalt	Not prime farmland	None	Very stony loam	1	7	24	Well drained	Severe	0	D	46	201	0.0	0.0	0.0
4D	Bakeoven-Valby complex, 2 to 20 percent slopes	Slight	No Value	7	loess mixed with residuum weathered from basalt	Not prime farmland	None	Very cobbly loam	1	8	11	Well drained	Slight	0	D	18	201	0.4	2.0	57.8
63B	Valby silt loam, 1 to 7 percent slopes	Slight	No Value	3	loess over basalt	Prime farmland if irrigated	None	Silt loam	2	5	4	Well drained	Severe	0	C	76	201	0.0	0.2	5.7
63C	Valby silt loam, 7 to 12 percent slopes	Moderate	No Value	3	loess over basalt	Farmland of statewide importance	None	Silt loam	2	5	10	Well drained	Severe	0	C	76	201	4.9	21.6	637.7
64D	Valby silt loam, 12 to 20 percent north slopes	Moderate	No Value	3	loess	Farmland of statewide importance	None	Silt loam	2	6	16	Well drained	Severe	0	C	76	201	1.1	4.9	144.1

Table 2: Wheatridge East (Morrow County)

Map Unit ID	Map Unit Name	Erosion Hazard Offroad-Offtrail	Irrigated Capability Class	Non-irrigated Capability Class	Parent Material Name	Farmland Classification	Flooding Frequency Class	Surface Texture	T-Factor	Wind Erodibility Group	Representative Slope	Drainage Class	Soil Rutting Hazard	Hydric Rating	Hydrologic Soil Group	Depth to Any Soil Restrictive Layer	Depth to Water Table	Percent of Site Boundary	Percent of Wheatridge East (Morrow County)	Acres
65D	Valby silt loam, 12 to 20 percent south slopes	Moderate	No Value	4	loess over basalt	Farmland of statewide importance	None	Silt loam	2	5	16	Well drained	Severe	0	C	76	201	0.2	0.8	22.2
75B	Willis silt loam, 2 to 5 percent slopes	Slight	3	3	eolian sands	Prime farmland if irrigated	None	Silt loam	2	2	3	Well drained	Severe	0	C	89	201	0.6	2.6	76.1
83D	Condon silt loam, 12 to 20 percent north slopes	Moderate	No Value	3	loess	Farmland of statewide importance	None	Silt loam	2	6	16	Well drained	Severe	0	C	76	201	0.2	0.9	25.9
85C	Condon silt loam, 7 to 12 percent slopes	Moderate	3	3	loess	Farmland of statewide importance	None	Silt loam	2	6	10	Well drained	Severe	0	C	76	201	0.7	3.0	87.8

Table 3: Wheatridge East (Umatilla County)

Map Unit ID	Map Unit Name	Erosion Hazard Offroad-Offtrail	Irrigated Capability Class	Non-irrigated Capability Class	Parent Material Name	Farmland Classification	Flooding Frequency Class	Surface Texture	T-Factor	Wind Erodibility Group	Representative Slope	Drainage Class	Soil Rutting Hazard	Hydric Rating	Hydrologic Soil Group	Depth to Any Soil Restrictive Layer	Depth to Water Table	Percent of Site Boundary	Percent of Wheatridge East (Umatilla County)	Acres
121B	Willis silt loam, 2 to 7 percent slopes	Slight	3	3	loess over cemented alluvium	Prime farmland if irrigated	None	Silt loam	2	5	4	Well drained	Severe	0	C	84	201	0.1	0.4	12.5
121D	Willis silt loam, 12 to 30 percent slopes	Moderate	6	4	loess over cemented alluvium	Farmland of statewide importance	None	Silt loam	2	5	21	Well drained	Severe	0	C	84	201	0.0	0.1	3.5
15B	Burke silt loam, 1 to 7 percent slopes	Slight	4	4	loess over strongly cemented alluvium	Prime farmland if irrigated	None	Silt loam	2	5	3	Well drained	Severe	0	C	66	201	1.0	4.5	132.3
15C	Burke silt loam, 7 to 12 percent slopes	Moderate	4	4	loess over strongly cemented alluvium	Farmland of statewide importance	None	Silt loam	2	5	10	Well drained	Severe	0	C	66	201	1.1	4.7	139.4
18C	Condon silt loam, 7 to 12 percent slopes	Moderate	3	3	loess	Farmland of statewide importance	None	Silt loam	2	6	10	Well drained	Severe	0	C	76	201	0.3	1.2	35.3
43A	Kimberly silt loam, 0 to 3 percent slopes	Slight	2	3	mixed alluvium	Prime farmland if irrigated	Rare	Silt loam	5	5	2	Well drained	Severe	0	A	201	201	0.1	0.3	10.0
48E	Lickskillet very stony loam, 7 to 40 percent slopes	Moderate	No Value	7	loess mixed with colluvium from basalt	Not prime farmland	None	Very stony loam	1	7	24	Well drained	Severe	0	D	46	201	0.8	3.7	109.2
50F	Lickskillet-Rock outcrop complex, 40 to 70 percent slopes	Very severe	No Value	7	loess mixed with colluvium from basalt	Not prime farmland	None	Extremely stony loam	1	8	55	Well drained	Moderate	0	D	46	201	0.1	0.4	11.0
54B	Sagehill fine sandy loam, 2 to 5 percent slopes	Slight	2	4	loess	Prime farmland if irrigated	None	Fine sandy loam	5	5	4	Well drained	Severe	0	B	201	201	1.1	4.8	141.9
54C	Sagehill fine sandy loam, 5 to 12 percent slopes	Slight	3	4	loess	Farmland of statewide importance	None	Fine sandy loam	5	5	9	Well drained	Severe	0	B	201	201	2.4	10.5	309.0

Table 3: Wheatridge East (Umatilla County)

Map Unit ID	Map Unit Name	Erosion Hazard Offroad-Offtrail	Irrigated Capability Class	Non-irrigated Capability Class	Parent Material Name	Farmland Classification	Flooding Frequency Class	Surface Texture	T-Factor	Wind Erodibility Group	Representative Slope	Drainage Class	Soil Rutting Hazard	Hydric Rating	Hydrologic Soil Group	Depth to Any Soil Restrictive Layer	Depth to Water Table	Percent of Site Boundary	Percent of Wheatridge East (Umatilla County)	Acres
54D	Sagehill fine sandy loam, 12 to 20 percent slopes	Moderate	6	4	loess	Farmland of statewide importance	None	Fine sandy loam	5	5	16	Well drained	Severe	0	B	201	201	0.4	1.8	51.7
75B	Willis silt loam, 2 to 5 percent slopes	Slight	3	3	eolian sands	Prime farmland if irrigated	None	Silt loam	2	2	3	Well drained	Severe	0	C	89	201	0.0	0.0	0.5
80B	Ritzville silt loam, 2 to 7 percent slopes	Slight	2	3	loess mixed with small amounts of volcanic ash	Prime farmland if irrigated	None	Silt loam	5	3	4	Well drained	Severe	0	B	201	201	0.1	0.3	7.7
80D	Ritzville silt loam, 12 to 25 percent slopes	Moderate	6	4	loess mixed with small amounts of volcanic ash	Farmland of statewide importance	None	Silt loam	5	3	19	Well drained	Severe	1	B	201	201	1.1	5.0	147.4
81E	Ritzville silt loam, 25 to 40 percent north slopes	Severe	6	6	loess mixed with small amounts of volcanic ash	Farmland of statewide importance	None	Silt loam	5	3	33	Well drained	Severe	0	B	201	201	0.2	1.1	31.6
85C	Condon silt loam, 7 to 12 percent slopes	Moderate	3	3	loess	Farmland of statewide importance	None	Silt loam	2	6	10	Well drained	Severe	0	C	76	201	0.0	0.0	0.0
89B	Shano silt loam, 2 to 7 percent slopes	Slight	2	4	loess over calcareous, lacustrine deposits	Prime farmland if irrigated	None	Silt loam	5	5	4	Well drained	Severe	0	B	201	201	3.0	13.2	388.9
89C	Shano silt loam, 7 to 12 percent slopes	Moderate	3	4	loess over calcareous, lacustrine deposits	Farmland of statewide importance	None	Silt loam	5	5	10	Well drained	Severe	0	B	201	201	1.3	5.7	169.0

Table 4: Intraconnection Corridor

Map Unit ID	Map Unit Name	Erosion Hazard Offroad-Offtrail	Irrigated Capability Class	Non-irrigated Capability Class	Parent Material Name	Farmland Classification	Flooding Frequency Class	Surface Texture	T-Factor	Wind Erodibility Group	Representative Slope	Drainage Class	Soil Rutting Hazard	Hydric Rating	Hydrologic Soil Group	Depth to Any Soil Restrictive Layer	Depth to Water Table	Percent of Site Boundary	Percent of Intraconnection Corridor	Acres
11	Endersby fine sandy loam	Slight	1	2	alluvium from loess and volcanic ash	Prime farmland if irrigated	Rare	Fine sandy loam	5	3	2	Somewhat excessively drained	Moderate	0	A	201	201	0.3	2.4	38.5
28E	Lickskillet very stony loam, 7 to 40 percent slopes	Moderate	No Value	7	loess mixed with colluvium from basalt	Not prime farmland	None	Very stony loam	1	7	24	Well drained	Severe	0	D	43	201	2.1	17.1	277.6
29F	Lickskillet-Rock outcrop complex, 40 to 70 percent slopes	Very severe	No Value	7	loess mixed with colluvium from basalt	Not prime farmland	None	Extremely stony loam	1	7	55	Well drained	Severe	0	D	43	201	1.2	9.8	159.1
32E	Morrow silt loam, 20 to 35 percent north slopes	Severe	No Value	4	loess mixed with a small amount of volcanic ash over residuum weathered from basalt	Farmland of statewide importance	None	Silt loam	2	6	28	Well drained	Severe	0	C	66	201	0.0	0.1	2.1
34F	Nansene silt loam, 35 to 70 percent slopes	Very severe	No Value	7	loess mixed with residuum and colluvium from basalt	Not prime farmland	None	Silt loam	3	7	53	Well drained	Severe	0	B	114	201	0.2	1.9	31.0
35	Onyx silt loam	Slight	1	3	silty alluvium	Prime farmland if irrigated	Rare	Silt loam	5	5	2	Well drained	Severe	0	B	201	201	0.3	2.1	34.3
36	Pedigo silt loam	Slight	2	3	silty alluvium mixed with volcanic ash	Prime farmland if irrigated	Rare	Silt loam	5	5	2	Somewhat poorly drained	Severe	0	C	201	92	0.1	0.8	13.4
3D	Bakeoven-Morrow complex, 2 to 20 percent slopes	Slight	No Value	7	loess mixed with residuum weathered from basalt	Not prime farmland	None	Very cobbly loam	1	8	11	Well drained	Slight	0	D	18	201	0.3	2.5	41.1
43D	Rhea silt loam, 12 to 20 percent slopes	Moderate	No Value	3	loess mixed with small amounts of volcanic ash	Farmland of statewide importance	None	Silt loam	5	6	16	Well drained	Severe	0	B	201	201	0.3	2.4	39.6
43E	Rhea silt loam, 20 to 35 percent slopes	Severe	No Value	4	loess mixed with small amounts of volcanic ash	Farmland of statewide importance	None	Silt loam	5	6	28	Well drained	Severe	0	B	201	201	1.0	8.4	136.9
43F	Rhea silt loam, 35 to 50 percent slopes	Very severe	No Value	6	loess mixed with small amounts of volcanic ash	Farmland of statewide importance	None	Silt loam	5	6	43	Well drained	Severe	0	B	201	201	1.7	13.4	217.8

Table 4: Intraconnection Corridor

Map Unit ID	Map Unit Name	Erosion Hazard Offroad-Offtrail	Irrigated Capability Class	Non-irrigated Capability Class	Parent Material Name	Farmland Classification	Flooding Frequency Class	Surface Texture	T-Factor	Wind Erodibility Group	Representative Slope	Drainage Class	Soil Rutting Hazard	Hydric Rating	Hydrologic Soil Group	Depth to Any Soil Restrictive Layer	Depth to Water Table	Percent of Site Boundary	Percent of Intraconnection Corridor	Acres
4D	Bakeoven-Valby complex, 2 to 20 percent slopes	Slight	No Value	7	loess mixed with residuum weathered from basalt	Not prime farmland	None	Very cobbly loam	1	8	11	Well drained	Slight	0	D	18	201	0.3	2.3	36.7
63B	Valby silt loam, 1 to 7 percent slopes	Slight	No Value	3	loess over basalt	Prime farmland if irrigated	None	Silt loam	2	5	4	Well drained	Severe	0	C	76	201	0.5	3.9	64.2
63C	Valby silt loam, 7 to 12 percent slopes	Moderate	No Value	3	loess over basalt	Farmland of statewide importance	None	Silt loam	2	5	10	Well drained	Severe	0	C	76	201	1.0	7.7	124.5
64D	Valby silt loam, 12 to 20 percent north slopes	Moderate	No Value	3	loess	Farmland of statewide importance	None	Silt loam	2	6	16	Well drained	Severe	0	C	76	201	0.5	3.7	60.6
65D	Valby silt loam, 12 to 20 percent south slopes	Moderate	No Value	4	loess over basalt	Farmland of statewide importance	None	Silt loam	2	5	16	Well drained	Severe	0	C	76	201	0.9	7.0	114.4
65E	Valby silt loam, 20 to 30 percent south slopes	Moderate	No Value	4	loess over basalt	Farmland of statewide importance	None	Silt loam	2	5	25	Well drained	Severe	0	C	76	201	0.9	7.6	123.3
78	Xeric Torriorthents, nearly level	Slight	3	6	eolian sands and alluvium	Farmland of statewide importance	None	Sandy loam	4	3	1	Somewhat excessively drained	Moderate	0	A	201	201	0.9	6.9	111.5

Attachment I-2:

Correspondence with Oregon Department of Environmental Quality on NPDES/ESCP Submission

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Friedel, Robert

From: RAY Jackie <RAY.Jackie@deq.state.or.us>
Sent: Tuesday, December 09, 2014 10:10 AM
To: Friedel, Robert
Subject: RE: Wheatridge: NPDES/ESCP permit application

Hi Rob,
I received the application. I am hoping to get it logged in this week and sent on to Krista for review and the letter.

Thanks
Jackie

From: Friedel, Robert [mailto:Robert.Friedel@tetratech.com]
Sent: Tuesday, December 09, 2014 9:05 AM
To: RAY Jackie
Subject: Wheatridge: NPDES/ESCP permit application

Good morning Jackie,

Hope you had a good weekend free from ice and snow. Just wanted to check in with you that you guys received the NPDES/ESCP package I Fed-ex'd out to you Friday afternoon. It 'should' have reached you yesterday. Thanks much.

Rob

Robert Friedel - GISP
GIS Coordinator / Project Manager
direct: 503.721.7216 | cell: 541.231.9990
robert.friedel@tetratech.com

Tetra Tech, Inc.
1750 SW Harbor Way, Suite 400
Portland OR, 97201
Main: 503-221-8636
Fax: 503-227-1287
www.tetratech.com

Friedel, Robert

From: RAY Jackie <RAY.Jackie@deq.state.or.us>
Sent: Friday, December 05, 2014 7:12 AM
To: Friedel, Robert
Subject: RE: Wheatridge: NPDES 1200-C permit submittal

Hi Rob,
Our address has been changed to 800 SE Emigrant Ave., Suite 330. The fee amount $1,725 is correct.

Sorry for the slow response, our office was closed yesterday due to freezing rain.

Thanks
Jackie Ray
Water Quality Permit Coordinator
DEQ
(541) 278-4605

From: Friedel, Robert [mailto:Robert.Friedel@tetratech.com]
Sent: Thursday, December 04, 2014 9:41 AM
To: RAY Jackie
Subject: Wheatridge: NPDES 1200-C permit submittal

Good morning Jackie,

Well we upgraded to Office 2013 yesterday and all of my emails are now lost to the either. I'm about to send our NPDES 1200-C/ESCP your way and just wanted to confirm the address, something I can't do because all my archived emails are now gone.

I've got the NPDES package, a check to Oregon DEQ for $1,725, and I'm sending it to you at

700 SE Emigrant Ave #330
Pendleton, OR 977801.

And you will then send it to Krista Ratliff who will review and provide to me the letter of acceptance for my pASC to ODOE.

I am correct on all this right? Thanks again for your help, I appreciate it. Twice…

Rob

Robert Friedel - GISP
GIS Coordinator / Project Manager
direct: 503.721.7216 | cell: 541.231.9990
robert.friedel@tetratech.com

Tetra Tech, Inc.
1750 SW Harbor Way, Suite 400
Portland OR, 97201

Main: 503-221-8636
Fax: 503-227-1287
www.tetratech.com

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Attachment I-3:

NPDES-1200 C Permit Application and Erosion and Sediment Control Plan

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NPDES Permit Application

Prepared for

Wheatridge Wind Energy, LLC

Wheatridge Wind Energy Facility

December 2014

Prepared by

Tetra Tech, Inc.

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DEQ USE ONLY
File #:
Application #:
LLID/RM:
River Mile:
Legal Name Confirmed: ☐
Notes:

DEPARTMENT OF ENVIRONMENTAL QUALITY
APPLICATION FOR NEW
NPDES GENERAL PERMIT 1200-C

For stormwater discharges to surface waters from construction activities disturbing one acre or more that do not meet automatic coverage requirements.*

DEQ USE ONLY
Date Received:
Amount: $
Check Name:
Check #:
Deposit #:
Receipt #:
Notes:

*A project *may* be eligible for "automatic coverage" under NPDES general permit 1200-CN if stormwater *does not* discharge to a water body with a TMDL or 303(d) listing for sediment or turbidity *and* it meets one of the following criteria (see 1200-CN at http://www.deq.state.or.us/wq/wqpermit/docs/general/npdes1200cn/1200CNPermit.pdf):

1) Disturbs less than one acre and is located in Gresham, Troutdale, or Wood Village.
2) Disturbs less than five acres and is located in Albany, Corvallis, Eugene, Milwaukie, Multnomah Co. (unincorporated areas), Springfield, West Linn, or Wilsonville.
3) Disturbs less than five acres and is within the jurisdictions of Clackamas Co. Water Environment Services [Gladstone, areas within Clackamas Co. Service Dist. #1 (excluding Happy Valley), and areas within the Surface Water Management Agency of Clackamas Co. (including Rivergrove)], Clean Water Services (Banks, Beaverton, Cornelius, Durham, Forest Grove, Hillsboro, King City, North Plains, Sherwood, Tigard, Tualatin, and Washington Co. within Urban Growth Boundary), or Rogue Valley Sewer Services (Central Point, Phoenix, Talent, and portions of Jackson Co. in NPDES MS4 permit area).

Please answer all questions.

A. PROJECT INFORMATION

1. Wheatridge Wind Energy, LLC
Applicant (entity legally responsible for permit)

Andrew O'Connell
Contact Name (if different from applicant)

245 W. Main Street / Suite 200
Address

Ione | Oregon | 97843
City | State | Zip

(541) 422- 7552 | andrew@diversifiedwinds.com
Telephone | E-Mail Address

2. Invoicing information (person or entity legally responsible for payment of annual fee invoice; not a third party independent of the applicant)

Invoice Contact Name (if different from applicant)

Address

City | State | Zip

Telephone | E-Mail Address

3. Tetra Tech, Inc.
Architect/Engineering Firm (Erosion & Sediment Control Plan)

Robert Friedel
Project Manager

(503) 721 - 7216 | robert.friedel@tetratech.com
Telephone | E-Mail Address

4. Perry Patton
Applicant's Designated Erosion and Sediment Control Inspector

Tetra Tech, Inc.
Company Name

303-980-3549 | perry.patton@tetratech.com
Telephone | E-Mail Address

5. Wheatridge Wind Energy Facility
Name of Project

7 miles northeast of Lexington, OR
Address or Cross Street

Lexington	Oregon	97839
City	State	Zip

Morrow and Umatilla
County

6. Nature of Construction Activity
- ☐ Single Family (SIC Code 1521)
- ☐ Multi-Family Residential (SIC Code 1522)
- ☐ Commercial (SIC Code 1542)
- ☐ Industrial (SIC Code 1541)
- ☐ Highway (SIC Code 1611)
- ☒ Utilities (SIC Code 1623): Transmission line
- ☒ Other (include SIC Code): Wind energy facility (turbines and supporting facilities)

7. Approximate location of center of site:

Latitude: 45d 29' 55.0"

Longitude: -119d 33' 57.9"

For assistance: DEQ Location Tool at http://deqgisweb.deq.state.or.us/llid/llid.html

8. Project Size:

Total Site Acreage (acres): 13,100

Total Disturbed Area (acres): Permanent: 170 Temporary: 1200

9. Stormwater runoff during construction will flow to:
- ☐ Infiltration device(s)
- ☒ Creek/Stream (provide name): Sand Hollow and Little Butter Creek; also Strawberry and Little Juniper Canyons
- ☐ Ditch (provide name of receiving stream for ditch):
- ☐ Municipal storm sewer or drainage system (provide name of receiving stream for system):
- ☒ Other: overland flow into adjacent pasture or agricultural land

10. Stormwater runoff during construction discharges directly to or through a storm sewer or drainage system that discharges to a water body with a Total Maximum Daily Load (TMDL) or 303(d) listing for turbidity or sedimentation? ☐ YES ☒ NO

For assistance: DEQ Lookup Tool at http://deq12.deq.state.or.us/tmdl/default.aspx or DEQ Map/Table at http://deq12.deq.state.or.us/tmdl/default.aspx

B. LAND USE COMPATIBILITY STATEMENT

Submit a DEQ Land Use Compatibility Statement (LUCS) form that has been completed by the local land use authority with this application. Attach the *original* LUCS and, if applicable, written findings by the local authority. DEQ will not process the application unless the local land use authority indicates on the LUCS form that the project is compatible with the local acknowledged comprehensive plan and land use regulations.

A copy of this form may be found at http://www.deq.state.or.us/pubs/permithandbook/generallucs.pdf

C. SIGNATURE OF LEGALLY AUTHORIZED REPRESENTATIVE

The legally authorized representative *must* sign the application.

I hereby certify that the information contained in this application is true and correct to the best of my knowledge and belief. In addition, I agree to pay all permit fees required by Oregon Administrative Rules 340-045. This includes a compliance determination fee invoiced annually by DEQ to maintain the permit.

Andrew O'Connell
Name of Legally Authorized Representative (Type or Print)

President: Wheatridge Wind Energy, LLC
Title

Signature of Legally Authorized Representative

11/26/14
Date

APPLICATION AND FEE SUBMITTAL

To authorize permit registration, the following must be completed and submitted to the appropriate DEQ regional office or DEQ Agent (see list of offices in application instructions, pp. 3-4):

- ☐ DEQ application form signed by the Legally Authorized Representative and meeting the signature requirements below.
- ☐ DEQ LUCS by local land use authority indicating the activity is compatible with local acknowledged comprehensive plan and land use regulations. Include the Findings if so stated on the LUCS.
- ☐ Stormwater Erosion and Sediment Control Plan Narrative, if applicable.
- ☐ Stormwater Erosion and Sediment Control Plan Drawings; full-sized hard copy and electronic PDF files.
- ☐ Effective 11/1/12, the fee for a new application is $1,629 payable to Oregon DEQ and you must submit it with this application. Please note that DEQ will also invoice you for an annual fee of $826 if your project needs permit coverage for more than a year. These fees are subject to change; please visit http://www.deq.state.or.us/wq/wqpermit/stminfo.htm for current fees. If you are sending your application to a DEQ Agent, check with the DEQ Agent for appropriate fees and make check payable to the DEQ Agent.

Application Instructions

A. PROJECT INFORMATION

1. Enter the legal name of the applicant. Permit coverage will be issued to this entity. This is the person, business, public organization, or other entity responsible for ensuring that erosion and sediment controls are in place and in working order through the life of the project.
   - The name must be a legal, active name registered with the Oregon Department of Commerce, Corporation Division in Salem at 503-378-4752 or http://egov.sos.state.or.us/br/pkg_web_name_srch_inq.login, unless otherwise exempted by their rules. If the name of the applicant is not registered with the Corporation Division and the applicant is a business entity, attach legal documents that verify the entity's existence with the application. The applicant may not use an assumed business name.
   - Permit coverage may be transferred from one party to another. For example, a developer may apply for a permit and then transfer the permit to a contractor. Transfer forms are available from DEQ or at http://www.deq.state.or.us/wq/stormwater/constappl.htm.
2. Provide invoice contact information for billing of DEQ annual permit fee if different from the applicant in #1 above. This is the person or entity legally responsible for payment of the annual fee invoice, not a third party independent of the applicant.
3. Provide contact information for the Architect or Consulting Engineer who designed the Erosion and Sediment Control Plan (ESCP).
4. Provide information on the Erosion and Sediment Control Inspector. This is not a DEQ or DEQ Agent inspector; this is an inspector employed by the applicant. If the inspector has not been selected yet, please provide the name of consultant who prepared the ESCP and their ESC certification. When the inspector is selected, submit to DEQ or to the DEQ Agent, the name, contact information, training and experience (see condition A.12.b.iii of the 1200-C).
5. Provide the common name of the project (for example, the name of the subdivision), the location of the site with respect to crossroads in the area, and, if available, a street address.
6. Check the box that best describes the nature of the construction activity. If "other" is selected, describe the use and include a Standard Industrial Classification Code (visit http://www.osha.gov/pls/imis/sicsearch.html for codes).
7. Enter latitude and longitude for the approximate center of the site (DEQ Location Tool at http://deqgisweb.deq.state.or.us/llid/llid.html or at http://deqapp1/website/lit/data.asp).
8. Provide information on the project size as indicated (based on the total project and not just a single phase).
9. Indicate where stormwater runoff during construction will flow. Use your best judgment to determine the name of the receiving water body.
10. Indicate whether stormwater runoff during construction will discharge directly to or through a storm sewer or drainage system that discharges to a Total Maximum Daily Load (TMDL) or 303(d) listed water body for turbidity or sedimentation. To make this determination, the following tools are available on DEQ's website:
    - Map and table: http://www.deq.state.or.us/WQ/TMDLs/basinmap.htm
    - Lookup tool: http://deq12.deq.state.or.us/tmdl/default.aspx

B. LAND USE COMPATIBILITY STATEMENT

Complete as indicated.

C. SIGNATURE OF LEGALLY AUTHORIZED REPRESENTATIVE

DEFINITION OF LEGALLY AUTHORIZED REPRESENTATIVE:

Please also provide the information requested in brackets *[ ]*

- **Corporation** - president, secretary, treasurer, vice-president, or any person who performs principal business functions; or a manager of one or more facilities that is authorized in accordance to corporate procedure to sign such documents.
- **Partnership** - General partner *[list of general partners, their addresses, and telephone numbers]*.
- **Sole Proprietorship** - Owner(s) *[each owner must sign the application]*.
- **City, County, State, Federal, or other Public Facility** - Principal executive officer or ranking elected official.
- **Limited Liability Company** - Member *[articles of organization]*.
- **Trusts –** Acting trustee *[list of trustees, their addresses, and telephone numbers]*.

(please see 40 CFR §122.22 for more detail, if needed)

APPLICATION AND FEE SUBMITTAL

Submit this application, Narrative Parts I, II & III (if applicable), LUCS, Erosion and Sediment Control Plan(2 full-sized hard copies and 1 PDF copy), and the applicable fee to the appropriate DEQ regional office or DEQ Agent listed below. Contact the appropriate DEQ regional office or DEQ Agent for the best way to submit the electronic version of the ESCP.

- If you are in an area serviced by a DEQ Agent, check with the DEQ Agent for appropriate fees and make check payable to the DEQ Agent.
- If you are sending your application to DEQ, the fee for a new application is $1,629 payable to the Oregon DEQ. Please note that DEQ will also invoice you for an annual fee of $826 if your project needs permit coverage for more than a year. These fees are subject to change; visit http://www.deq.state.or.us/wq/wqpermit/stminfo.htm for current fees.

DEQ Northwest Region 2020 SW 4th Avenue, Suite 400 Portland, OR 97201-4987 503-229-5438 or 1-800-452-4011	**DEQ Western Region** 165 East 7th Avenue, Suite 100 Eugene, OR 97401 541-687-7326 or 1-800-452-4011	**DEQ Eastern Region** 700 SE Emigrant Avenue, Suite 330 Pendleton, OR 97801 541-278-4605 or 1-800-452-4011
City of Eugene 99 W. 10th Avenue Eugene, OR 97401 541-722-5519	**City of Hermiston** 215 Gladys Avenue Hermiston, OR 97838 541-667-5025	**City of Troutdale** 342 SW 4th Street Troutdale, OR 97060 503-674-7270
Clean Water Services 2550 SW Hillsboro Highway Hillsboro, OR 97123 503-681-5101 *Includes Banks, Beaverton, Cornelius, Durham, Forest Grove, Gaston, Hillsboro, King City, North Plains, Sherwood, Tigard, Tualatin, and portions of Washington Co.*	**Rogue Valley Sewer Services** 138 West Vilas Road, PO Box 3130 Central Point, OR 97502 541-353-4594 *Includes Central Point, Phoenix, Talent, White City and portions of Jackson Co.*	**Clack Co. Water Environmental Services** 150 Beavercreek Road, Suite 430 Oregon City, OR 97045 503-742-4567 *Unincorporated Clackamas County and areas within the Cities of Rivergrove and Gladstone*

Part I: ESCP Narrative Form

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ESCP PARTS I THROUGH III - FORMS AND SET OF EXAMPLE DRAWINGS

The information that is required in the ***Part I, and Part II ESCP Narrative Forms*** could be included on the required ***ESCP Drawings*** instead of submittal of the ***Narrative Forms.*** The ***Narrative Part III*** is only a checklist for use in making sure that all of the required information is provided in the submittal documents and as such does not need to be submitted to DEQ.

Required ESCP Drawing Standard Notes must be included on the ***ESCP Drawings***. The set of ***Example Construction Plan Drawings*** (examples to be used as an alternative to the Narrative Forms) are provided at: http://www.deq.state.or.us/wq/stormwater/constappl.htm.

If an applicant only submits the ***ESCP Drawings***, all information in Parts I – II must be included on the drawings.

PART 1: ESCP NARRATIVE FORM

1. Permit Registration Information

Date: August 1, 2014

Project Name: Wheatridge Wind Energy Facility

Prepared By: J. Perry Patton, PE

Company Name: Tetra Tech, Inc.

E-mail Address: perry.patton@tetratech.com

Please answer the following questions as indicated. If needed, additional space is provided for you at the end of this form. You may also attach any information you feel is pertinent to the project.

2. Oregon Professional Certification Information

Is your Erosion and Sediment Control Plan (ESCP) for an activity that covers 20 acres or more of disturbed land (Schedule A.12.a.i)

☒ Yes ☐ No

Does your Erosion and Sediment Control Plan require engineered facilities such as settling basins and/or diversion structures? (Schedule A.12.a.ii)

☐ Yes ☒ No

If you answered "Yes" to question #1, the ESCP must be prepared and stamped by an Oregon Registered Profession Engineer, Oregon Registered Landscape Architect, Oregon Certified Engineering Geologist, or Certified Professional in Erosion and Sediment Control (Soil and Water Conservation Society). If you answered "Yes" to question #2, the ESCP must be prepared and stamped by an Oregon Registered Professional Engineer. Please provide the following information and use the space provided to imprint your seal.

Name: Senda Ozkan, PE

Address: 19803 N. Creek Parkway

Bothell, WA 98011

Telephone: (425) 482-7600

REGISTERED PROFESSIONAL ENGINEER
76918PE
Senda Ozkan
07/31/2014
OREGON
SEPTEMBER 13, 2005
SENDA OZKAN

EXPIRATION DATE: 12/31/2014

3. Inspector Qualification Information

Provide the following information on the Erosion and Sediment Control Inspector. This is a person that works for the applicant and not a government employee. The consultant, general contractor, project manager, or person who prepared the ESCP may be designated with their agreement as the initial or final ESC Inspector. Upon designating an inspector(s), submit to DEQ or Agent their name(s), and contact information. All designated ESC Inspectors must be qualified through certification, training, and/or experience in erosion and sediment control. Please provide the number of hours of training, days, months, and/or years of experience in erosion and sediment control design, installation, maintenance, and/or inspection (specify which or all). (NPDES 1200-C Permit Schedule A.12.b.iii).

The inspector is a person with training and experience in erosion prevention and sediment controls and best management practices and should have one of the following levels of skill. A copy of a certification, training, or level/hours of experience should be provided to DEQ or Agent in the form below:

Acceptable Certification:
a. Certified Professional in Erosion and Sediment Control (CPESC); or
b. Washington Department of Ecology's Certified Erosion and Sediment Control Lead (CESCL) Certification; or

Acceptable Training:
a. Certification/training program designed for persons involved in any phase of erosion and sediment control work. Areas covered must include information on soils, the erosion process, sedimentation process, standards and specifications for vegetative and structural erosion control practices, laws, regulations, construction inspection and field investigation; or

b. Attendance at a seminar or training class in Erosion and Sediment Control Best Management Practices (BMPs).

Qualified Experience:

a. Designing Erosion and Sediment Control Plans and/or

b. Installation of erosion and sediment controls and/or

c. Maintenance of erosion and sediment controls and/or

d. Inspection of erosion and sediment controls

Name: J. Perry Patton, PE

Telephone: (303) 980-3549

Address: Tetra Tech, Inc.; 145 Union Blvd./Suite 1010
Lakewood, CO 80228

E-mail: perry.patton@tetratech.com

Certification: ---

Training: NPDES Storm Water Permit Compliance, ASCE, 1997

Experience: 20 years of experience in the civil design of ESCPs and erosion control features, and both the inspection and maintenance of erosion and sediment controls in the field on construction projects.

4. Local Government Requirements

The ESCP must include any procedures necessary to meet applicable local government erosion and sediment control or stormwater management requirements and should include updates to the ESCP as necessary to reflect any revisions to applicable local requirements for soil and erosion control.(Schedule A.12.b.ii)

Is the project located within a city, town, county or service district that has a local erosion and sediment control or stormwater ordinance or development standards that require the development of and implementation of an erosion and sediment control plan? The ESCP preparer may need to check with the local government agency in order to ensure that this requirement is met.

☒ Yes ☐ No

5. Narrative Site Description

a. Describe the nature of the construction activity and the final use of the site, that is, what will the site be used for at the completion of the construction. (Schedule A.12.b.iv):

Wheatridge Wind Energy, LLC proposes to construct the Wheatridge Wind Energy Facility (Project) in Morrow and Umatilla Counties, with generating capacity of up to 500 megawatts. The Project will consist of no more than 292 turbines located at the site (depending on the final turbine size and vendor), newly constructed roads, at least two operations and maintenance facilities, an underground 34.5-kilovolt collection system, up to two, parallel, overhead 230-kilovolt transmission lines, and up to four new substations.

[See Attachment "A." for further description.]

b. Describe the origin and nature of fill material to be used and of the existing soils (Schedule A.12.b.iv.4):

The site will be designed as a cut and fill operation with fill material primarily coming from on-site. If additional fill is required it will come from a suitable local source. Gravel for the road improvements and tower pads will be purchased by the road construction contractor from existing local gravel facilities.

[See Attachment "A." for further description.]

6. Water Quality Requirements for TMDL and 303(d) Listed Waterbodies (skip if not applicable)

If there is a potential for discharge of stormwater to a portion of a waterbody that is listed for turbidity or sedimentation or that has an established Total Maximum Daily Load (TMDL) for sedimentation or turbidity (available at http://www.deq.state.or.us/wq/tmdls/basinmap.htm) from the construction site, then one or more of the BMPs listed below must be implemented. Identify the selected BMP(s) in the ESCP as one that addresses this condition of the permit, and provide the rationale for choosing the selected BMP(s). (Schedule A.11.) The 303 (d) list can be found at: http://www.deq.state.or.us/wq/assessment/rpt2010/search.asp.

Will implement on or more of the following BMPs to control and treat sediment and turbidity:

i. Compost berms, compost blankets, or compost socks;
ii. Erosion control mats;
iii. Tackifiers used in combination with perimeter sediment control BMPs;
iv. Established vegetated buffers sized at 50 feet perpendicular to the slope plus an additional 25 feet perpendicular to the slope per 5 degrees of slope full width of the disturbed slope
v. Water treatment by electro-coagulation, flocculation, filtration; or
vi. Other substantially equivalent sediment or turbidity BMP approved by DEQ or Agent.

BMP	Rationale
N/A	N/A

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ATTACHMENT A: NARRATIVE SITE DESCRIPTION

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ATTACHMENT A

ESCP Narrative Form – Wheatridge Wind Energy Facility

5. (a.) Describe the nature of the construction activity and the final use of the site, that is, what will the site be used for at the completion of the construction. (Schedule A.12.b.iv):

Wheatridge Wind Energy, LLC (Wheatridge), proposes to construct a wind generation facility (i.e., the Project) with a maximum nominal generating capacity of 500 megawatts (MW) in Morrow and Umatilla counties, Oregon. The Project is comprised of up to 292 wind turbines divided into two groups: the 'Wheatridge West' wind turbine group and the 'Wheatridge East' wind turbine group. Wheatridge West and Wheatridge East are electrically connected by an 'Intraconnection Corridor' containing up to two, parallel, overhead 230-kilovolt (kV) transmission lines (Intraconnection Lines), each no longer than 35 miles in length. Other Project components include on-site access roads, an electrical collection and control system, substations, operations and maintenance (O&M) buildings, and temporary construction yards.

Wheatridge West is located entirely within Morrow County, approximately 5 miles northeast of Lexington, and approximately 7 miles northwest of Heppner. Wheatridge West is bisected by Oregon Highway 207 (OR-207). Wheatridge East is located approximately 16 miles northeast of Heppner and encompasses land in both Morrow and Umatilla counties. The Intraconnection Corridor is located entirely within Morrow County and adjoins to the southeastern portion of Wheatridge West and the southern portion of Wheatridge East.

Existing roads will be used as much as possible by Project construction and maintenance personnel to minimize the need for construction of new roads. New gravel access roads will be constructed to accommodate construction equipment and later maintenance vehicles for the wind towers. During construction, Wheatridge would establish up to four temporary construction yards within the Site Boundary, to facilitate the delivery and assembly of material and equipment. Up to two construction yards would be utilized in Wheatridge West, and up to two in Wheatridge East. The construction yards would contain field construction offices, be used to store construction equipment when not in use, be used for storage of construction supplies and materials, contain temporary concrete batch plants, and may be used for the assembly of some Project components.

The phases of major construction are described below:

- Improve existing roads and construct new gravel access roads;
- Install dust and erosion controls;
- Excavate for turbine transformer foundations, and level areas for setting the erection crane;
- Place reinforced concrete foundations for wind turbines and meteorological towers;
- Trench for underground utilities;
- Place underground electrical and communications cables in trenches;
- Transport wind tower sections, nacelles and rotor blades to the site;
- Erect the wind turbine tower sections with large cranes;
- Install the nacelle and rotor assembly on the wind turbine towers;
- Construct the site substations and O&M buildings;

- Commission and test the wind turbines; and
- Conduct the final road grading, final erosion control and site cleanup.

5. (b.) Describe the origin and nature of fill material to be used and of the existing soils (Schedule A.12.b.iv.4):

The site will be designed as a cut and fill operation with fill material primarily coming from on-site. If additional fill is required it will come from a suitable local source. Gravel for the road improvements and tower pads will be purchased by the road construction contractor from existing local gravel facilities.

The Project will occupy an area in Morrow and Umatilla counties that contains 18 major soil units. Burke Silt Loam, Ritzville Silt Loam, Valby Silt Loam, Warden Silt Loam and the Willis Silt Loam are the most widespread soil types and would underlie the majority of the Project.

Burke Silt Loam – This soil unit consists of moderately deep silt loam to duripan, well drained soils formed in loess and glaciolacustrine deposits over a duripan on uplands. The surface layer is a light brownish gray silt loam about 4 inches thick. The subsoil is a pale to dark brown silt loam about 18 inches thick and like the surface soil is soft, very friable, slightly sticky and slightly plastic. Below a depth of about 30 inches is indurated lime-silica duripan. The duripan is 6 inches to several feet thick and overlies weakly consolidated alluvium, lake sediments, loess, gravelly alluvial deposits, or basalt. Permeability of the Burke soil is moderate above the duripan. Available water capacity is about 5.2 inches. Effective rooting depth is to the duripan. No preponderance for flooding or ponding. Runoff is very slow for slopes less than 7% and medium for slopes 7% to 20%. The hazard of water erosion is high. The hazard of wind erosion is low to moderate. Slopes are primarily 1% to 12% in the Project area.

Valby Silt Loam -- This soil unit consists of moderately deep, well drained soils that formed in loess mixed with some ash, overlying basalt and are located on upland slopes. The surface layer is very dark grayish brown silt loam about 14 inches thick. The subsoil is a dark brown heavy silt loam about 16 inches thick. At depth this subsoil layer is hard, friable, slightly sticky and slightly plastic. At an approximate depth of 30 inches or more there is a transition to fractured basalt. Permeability of the Valby soil is moderate. Available water capacity is about 6 inches. No preponderance for flooding or ponding. Runoff is slow for slopes less than 7%, medium for slopes 7% to 20%, and rapid for slopes greater than 20%. The hazard of water erosion is moderate to high. The hazard of wind erosion is low to moderate. Slopes are primarily 1% to 20% in the Project area.

Ritzville Silt Loam – This soil unit consists of deep, well-drained soils formed in loess, on summit plateaus within the Project area. Typically, the surface layer and subsoil are each brown very fine sandy loam, about 13 inches thick, respectively. The substratum is a brown silt loam to a depth of 70 inches or more. Permeability of the Ritzville soil is moderate. Available water capacity is about 11.6 inches. Effective rooting depth is 60 inches or more. No preponderance for flooding or ponding. Runoff is slow for slopes less than 7%, medium for slopes 7% to 20%, and rapid for slopes greater than 20%. The hazard of water erosion is moderate to high. The hazard of wind erosion is moderate. Slopes are primarily 2% to 12% in the Project area.

Warden Silt Loam – This soil unit is located on upland terraces within the Project area, and consists of very deep, well drained soils formed in loess and the underlying calcareous, lacustrine silts. The surface layer is dark brown silt loam about 5 inches thick. The subsoil is dark brown to brown very fine sandy loam about 15 inches thick. The substratum is a brown to grayish brown, partially calcareous silt loam and stratified very fine sandy loam to a depth of 60 inches or more. Permeability of the Warden soil is moderate. Available water capacity is about 11.5 inches. Effective rooting depth is 60 inches or more. No preponderance for flooding or ponding. Runoff is medium for slopes less than 20%, and rapid for slopes greater than 20%. The hazard of water erosion is high. The hazard of wind erosion is moderate. Slopes are primarily 0 to 5%in the Project area.

Willis Silt Loam – This soil unit consists of well-drained soils formed in loess, on summit plateaus within the Project area. The surface layer is dark brown silt loam about 12 inches thick. The subsoil is dark brown silt loam about 15 inches thick. The substratum is a dark brown silt loam to a depth of approximately 35 inches, and the soil is underlain by cemented alluvium. Permeability of the Warden soil is moderate. Available water capacity is about 6.8 inches. Effective rooting depth is 20 to 40 inches. No preponderance for flooding or ponding. Runoff is medium. The hazard of water erosion is high. The hazard of wind erosion is low to moderate. Slopes are primarily 2% to 12% in the Project area.

The hazard of water erosion is high for these five soil types, while the potential for wind erosion is low to moderate.

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Part II: BMPs with ESCP Implementation Schedule Form

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PART II: BMPS WITH ESCP IMPLEMENTATION SCHEDULE FORM

The following controls and practices (BMPs), if appropriate for the site, are required in the ESCP and on the Part III ESCP Drawings and must be implemented according to the schedule in the ESCP.

BMPs	Year	2016			2017												2018			
	Months#:	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
Before Construction																				
Identify & Protect critical areas vegetation to be preserved		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Identify buffer zones		X																		
Pre-construction meeting		X																		
Stabilize entrances, roads & parking areas		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Wheel wash		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Install perimeter controls and inlet protection			X																	
Establish concrete wash area			X																	
Establish non-stormwater controls			X																	
Stabilize stream banks	N/A																			
Construct primary runoff control measures			X																	
During Construction*																				
Pipe slope drains	N/A																			
Temporary diversion dikes, run-on diversion	N/A																			
Check dams				X																
Temporary Seeding and Planting					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Permanent Seeding and Planting								X	X	X	X	X	X	X	X	X	X	X	X	X
Mycorrhizae/biofertilizers	N/A																			
Mulches (specify type) - straw / hay					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Compost blankets	N/A																			
Compost socks	N/A																			
Compost berm	N/A																			
Soil tackifiers -- binders						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sodding vegetative buffer strips	N/A																			
Sediment fencing		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Erosion Control Blankets and Mats (specify type)	N/A																			

BMPs	Year:	2016			2017												2018			
	Months#:	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
Earth Dikes (stabilized)	N/A																			
Drainage swales, grass-lined channels			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Rock outlet protection & other energy dissipaters			X	X	X															
Sediment trap			X	X	X	X	X													
Straw Wattles (loose compaction rice straw)			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Storm drain inlet protection	N/A																			
Temporary or Permanent Sedimentation Basins	N/A																			
Unpaved roads graveled or other BMP on the			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Dewatering (treatment location, schematic, and Sampling plan required)	N/A																			
Paving operations controls	N/A																			
Concrete truck washout				X	X	X	X	X	X											
Plastic Sheeting				X	X	X	X	X												
Stockpile sediment fencing				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Stabilize soils at end of shift & before weekends & holidays		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Trucking saturated soils off site must be water-tight or loads drained on site	N/A																			
Re-vegetate areas as construction completed							X	X	X	X	X	X	X	X	X	X	X	X	X	X
No illicit connection	N/A																			
No illegal discharge	Acknowledged	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Final Stabilization																				
Provide permanent erosion prevention measures											X	X	X	X	X	X	X	X	X	X
Remove sediment, waste, and construction materials					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Remove temporary control measures																				X
Dust Control		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

* Site construction will be scheduled so as to minimize active grading work during the wet season (Nov. - April).

Part III: Checklist of Required Elements of ESCP Drawings

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PART III: CHECKLIST OF REQUIRED ELEMENTS OF ESCP DRAWINGS

1. Information Required on ESCP Drawings

The following items must be depected on ESCP drawings, as applicable:	Yes	No	N/A*
a. Total property boundary including surface area of the development; (Sch. A.12.b.v.3.a)	X		
b. Areas of soil disturbance (including, but not limited to, showing cut and fill areas and pre- and post-development elevation contours); (Sch. A.12.b.v.3.b)	X		
c. Drainage patterns before and after finish grading; (Sch. A.12.b.v.3.c)	X		
d. Discharge points; (Sch. A.12.b.v.3.d)			X
e. Areas used for the storage of soils or wastes; (Sch. A.12.b.v.3.e)	X		
f. Areas where vegetative practices are to be implemented; (Sch. A.12.b.v.3.f)	X		
g. All erosion and sediment control measures or structures; (Sch. A.12.b.v.3.g)	X		
h. Identify the type of seed mix (percentages of the various seeds of annuals, perennials and clover) and other plantings. (Sch. A.7.b.iii.3)	X		
i. Sediment fences, vegetative buffer strips, sediment traps, rock filters, compost berms/compost socks, fiber rolls/ loose non-compacted straw wattles, storm drain inlet protection, and temporary or permanent sedimentation basins (Sch. A.7.d.i)	X		
j. Diversion of uncontaminated flows around stockpiles, use of cover over stockpiles, and installation of sediment fences (or other barriers that will prevent the discharge of sediment or turbidity) around stockpiles. (Sch. A.7.e.ii.(3))	X		
k. Stabilized site entrances and access roads including, but not limited to construction entrances, roadways and equipment parking areas (for example, using geotextile fabric underlay). (Sch. A.8.c.i.(4))	X		
l. Perimeter sediment control, including storm drain inlet protection as well as all sediment basins, traps, and barriers. (Sch. A.8.c.i.(5))			X
m. Concrete truck and other concrete equipment washout areas. (Sch. A.8.c.i.(6))	X		
n. Impervious structures after construction is completed (including buildings, roads, parking lots and outdoor storage areas); (Sch. A.12.b.v.3.h)	X		
o. Springs, wetlands and other surface waters on site or adjacent to the site; (Sch. A.12.b.v.3.i)	X		
p. Temporary and permanent stormwater conveyance systems; (Sch. A.12.b.v.3.j)	X		
q. Onsite water disposal locations (for example, for dewatering); (Sch. A.12.b.v.3.k)			X
r. Storm drain catch basins depicting inlet protection, and a description of the type of catch basins used (for example, field inlet, curb inlet, grated drain and combination); (Sch. A.12.b.v.3.l)			X
s. Septic drain fields; (Sch. A.12.b.v.3.m)			X
t. Existing or proposed drywells or other UICs; (Sch. A.12.b.v.3.n)			X
u. Drinking water wells on site or adjacent to the site (Sch. A.12.b.v.3.o)	X		
v. Planters; (Sch. A.12.b.v.3.p)			X
w. Sediment and erosion controls including installation techniques; (Sch. A.12.b.v.3.q)	X		
x. Detention ponds, storm drain piping, inflow and outflow details (Sch. a.12.b.v.3.r)			X

2. Required ESCP Drawing Standard Notes

When submitting an ESCP as drawings only, include the following notes (including the inspection table):

Site Condition	Minimum Frequency
1. Active period	Daily when stormwater runoff, including runoff from snowmelt, is occurring At least once every two (2) weeks, regardless of whether stormwater runoff is occurring
2. Prior to the site becoming inactive or in anticipation of site inaccessibility.	Once to ensure that erosion and sediment control measures are in working order. Any necessary maintenance and repair must be made prior to leaving the site
3. Inactive periods greater than seven (7) consecutive calendar days	Once every two (2) weeks
4. Periods during which the site is inaccessible due to inclement weather	If practical, inspections must occur daily at a relevant and accessible discharge point or downstream location

1. Hold a pre-construction meeting of project construction personnel that includes the inspector to discuss erosion and sediment control measures and construction limits. (Schedule A.8.c.i.(3))
2. All permit registrants must implement the ESCP. Failure to implement any of the control measures or practices described in the ESCP is a violation of the permit. (Schedule A 8.a)
3. Retain a copy of the ESCP and all revisions on site and make it available on request to DEQ, Agent, or the local municipality. During inactive periods of greater than seven (7) consecutive calendar days, retain the ESCP at the construction site or at another location. (Schedule B.2.a)
4. The ESCP measures shown on this plan are minimum requirements for anticipated site conditions. During the construction period, upgrade these measures as needed to comply with all applicable local, state, and federal erosion and sediment control regulations. (Schedule A.8.c.ii.(1)(c))
5. Submission of all ESCP revisions is not required. Submittal of the ESCP revisions is only under specific conditions. (Schedule A.12.c.iii)
6. Phase clearing and grading to the maximum extent practical to prevent exposed inactive areas from becoming a source of erosion. (Schedule A 8.c.ii.(1)(d))
7. Identify, mark, and protect (by fencing off or other means) critical riparian areas and vegetation including important trees and associated rooting zones, and vegetation areas to be preserved. Identify vegetative buffer zones between the site and sensitive areas (e.g., wetlands), and other areas to be preserved, especially in perimeter areas. (Schedule A.8.c.i.(1) & (2))
8. Preserve existing vegetation and re-vegetate open areas when practicable before and after grading or construction. (Schedule A.7.b.iii.(1))
9. Erosion and sediment control measures including perimeter sediment control must be in place before vegetation is disturbed and must remain in place and be maintained, repaired, and promptly implemented following procedures established for the duration of construction, including protection for active storm drain inlets and catch basins and appropriate non-stormwater pollution controls. (Schedule A.7.d.i and A.8.c)
10. Establish concrete truck and other concrete equipment washout areas before beginning concrete work. (Schedule A.8.c.i.(6))
11. Apply temporary and/or permanent soil stabilization measures immediately on all disturbed areas as grading progresses and for all roadways including gravel roadways. (Schedule A.8.c.ii.(2))
12. Establish material and waste storage areas, and other non-stormwater controls. (Schedule A.8.c.i.(7))
13. Prevent tracking of sediment onto public or private roads using BMPs such as: graveled (or paved) exits and parking areas, gravel all unpaved roads located onsite, or use an exit tire wash. These BMPs must be in place prior to land-disturbing activities. (Schedule A 7.d.ii.(1) and A.8.c.i(4))
14. When trucking saturated soils from the site, either use water-tight trucks or drain loads on site. (Schedule A.7.d.ii.(3))
15. Use BMPs to prevent or minimize stormwater exposure to pollutants from spills; vehicle and equipment fueling, maintenance, and storage; other cleaning and maintenance activities; and waste handling activities. These pollutants include fuel, hydraulic fluid, and other oils from vehicles and machinery, as well as debris, leftover paints, solvents, and glues from construction operations. (Schedule A.7.e.i.(2))
16. Water or use a soil-binding agent or other dust control technique as needed to avoid wind-blown soil. (Schedule A 7.b.iii)

17. The application rate of fertilizers used to reestablish vegetation must follow manufacturer's recommendations to minimize nutrient releases to surface waters. Exercise caution when using time-release fertilizers within any waterway riparian zone. (Schedule A.9.b.iii)
18. If a stormwater treatment system (for example, electro-coagulation, flocculation, filtration, etc.) for sediment or other pollutant removal is employed, submit an operation and maintenance plan (including system schematic, location of system, location of inlet, location of discharge, discharge dispersion device design, and a sampling plan and frequency) before operating the treatment system. Obtain plan approval before operating the treatment system. Operate and maintain the treatment system according to manufacturer's specifications. (Schedule A.9.d)
19. Temporarily stabilize soils at the end of the shift before holidays and weekends, if needed. The registrant is responsible for ensuring that soils are stable during rain events at all times of the year. (Schedule A 7.b)
20. Construction activities must avoid or minimize excavation and creation of bare ground during wet weather. (Schedule A.7.a.i)
21. Sediment fence: remove trapped sediment before it reaches one third of the above ground fence height and before fence removal. (Schedule A.9.c.i)
22. Other sediment barriers (such as biobags): remove sediment before it reaches two inches depth above ground height. and before BMP removal. (Schedule A.9.c.ii)
23. Sediment basins and sediment traps: remove trapped sediments before design capacity has been reduced by fifty percent and at completion of project. (Schedule A.9.c.iii & iv)
24. Within 24 hours, significant sediment that has left the construction site, must be remediated. Investigate the cause of the sediment release and implement steps to prevent a recurrence of the discharge within the same 24 hours. Any in-stream clean up of sediment shall be performed according to the Oregon Division of State Lands required timeframe. (Schedule A.9.b.i)
25. The intentional washing of sediment into storm sewers or drainage ways must not occur. Vacuuming or dry sweeping and material pickup must be used to cleanup released sediments. (Schedule A.9.b.ii)
26. The entire site must be temporarily stabilized using vegetation or a heavy mulch layer, temporary seeding, or other method should all construction activities cease for 30 days or more. (Schedule A.7.f.i)
27. Provide temporary stabilization for that portion of the site where construction activities cease for 14 days or more with a covering of blown straw and a tackifier, loose straw, or an adequate covering of compost mulch until work resumes on that portion of the site. (Schedule A.7.f.ii)
28. The designated erosion and sediment control inspector must perform daily inspections of the BMPs and discharge outfalls when rainfall and runoff occur. Record the inspections and observations in a log that is on site. (Schedule B.1.b(1))
29. All ESCP controls and practices must be inspected visually once to ensure that BMPs are in working order prior to the site becoming inactive or in anticipation of site inaccessibility and must be inspected visually once every two (2) weeks during inactive periods greater than seven (7) consecutive calendar days. (Schedule B.1.b.(2) & (3))
30. If practical, inspections must occur daily at a relevant and accessible discharge point or downstream location during periods in which the site is inaccessible due to inclement weather. (Schedule B.1.b.(4))
31. Do not remove temporary sediment control practices until permanent vegetation or other cover of exposed areas is established. Identify the type of vegetative seed mix used. (Schedule A 7.b.iii)
32. Provide permanent erosion control measures on all exposed areas. Remove all temporary erosion control measures as exposed areas become stabilized, unless doing so conflicts with local requirements. Properly dispose of construction materials and waste, including sediment retained by temporary BMPs. (Schedule A.8.c.iii)

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Part IV: ESCP Drawings

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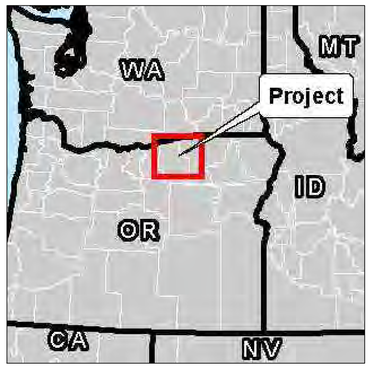
WHEATRIDGE WIND ENERGY FACILITY
LEXINGTON, OREGON
EROSION AND SEDIMENT CONTROL PLAN
DECEMBER 2014



FACILITY LOCATION

THE DISTANCE FROM THE CITY OF LEXINGTON TO THE PRIMARY SUBSTATION OF THE WEST PORTION OF THE FACILITY SITE BOUNDARY IS APPROXIMATELY 7 MILES. THE DISTANCE FROM THE CITY OF LEXINGTON TO THE SITE BOUNDARY WITH THE NEAREST FACILITY TURBINE IS APPROXIMATELY 2.5 MILES.

LAT 45°29'55.0"
LONG –119°33'57.9"

DEVELOPER

WHEATRIDGE WIND ENERGY
CONTACT: ANDREW O'CONNELL
245 W. MAIN STREET, SUITE 200
IONE, OREGON, 97843
TELEPHONE: 541–422–7552
EMAIL: ANDREW@DIVERSIFIEDWINDS.COM

DESIGNER

TETRA TECH, INC.
CONTACT: ROBERT FRIEDEL
1750 SW HARBOR WAY, SUITE 400
PORTLAND, OREGON 97201
TELEPHONE: 503–221–8636
EMAIL: ROBERT.FRIEDEL@TETRATECH.COM

NARRATIVE DESCRIPTION – EXISTING SITE CONDITIONS

WHEATRIDGE WIND ENERGY, LLC PROPOSES TO CONSTRUCT THE WHEATRIDGE WIND ENERGY FACILITY IN MORROW AND UMATILLA COUNTIES, WITH GENERATING CAPACITY OF UP TO 500 MEGAWATTS. THE FACILITY WILL CONSIST OF NO MORE THAN 292 TURBINES LOCATED AT THE SITE (DEPENDING ON THE FINAL TURBINE SIZE AND VENDOR), NEWLY CONSTRUCTED ROADS, TWO OPERATIONS AND MAINTENANCE FACILITIES, A 34.5–KILOVOLT COLLECTION SYSTEM, UP TO TWO, OVERHEAD, 230–KILOVOLT TRANSMISSION LINES, AND UP TO THREE NEW SUBSTATIONS.

TOTAL AREA DISTURBED

1,115 ACRES TEMPORARILY (EST., MAX.)
165 ACRES PERMANENTLY (EST., MAX.)

RECEIVING WATERBODIES

RUNOFF FROM THE SITE IS OVERLAND FLOW TO NUMEROUS EPHEMERAL STREAMS, BUTTER CREEK, AND ULTIMATELY TO THE COLUMBIA RIVER.

PERMITTEE'S SITE INSPECTOR

TBD

LOCAL AGENCY–SPECIFIC EROSION CONTROL REQUIREMENTS:

(HHH) COMMERCIAL WIND POWER GENERATION FACILITY

THE FOLLOWING INFORMATION SHALL BE PROVIDED AS PART OF THE APPLICATION, OR SUBJECT TO THE COUNTY'S DISCRETIONARY AUTHORITY, BE REQUIRED PRIOR TO THE CONSTRUCTION OR OPERATION OF THE WIND POWER GENERATION FACILITY THROUGH A CONDITION OF APPROVAL:

A RE–VEGETATION AND EROSION CONTROL PLAN, DEVELOPED IN CONSULTATION WITH THE UMATILLA COUNTY PUBLIC WORKS DEPARTMENT, SOIL AND WATER CONSERVATION DISTRICT, AND APPROPRIATE WATERSHED COUNCIL. AT A MINIMUM, THE PLAN SHALL INCLUDE THE SEEDING OF ALL ROAD CUTS OR RELATED BARE ROAD AREAS AS A RESULT OF ALL CONSTRUCTION, DEMOLITION AND RESTORATION WITH AN APPROPRIATE MIX OF NATIVE VEGETATION OR VEGETATION SUITED TO THE AREA. THE PLAN SHALL ALSO ADDRESS MONITORING DURING AND POST CONSTRUCTION.

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ESC–2 EROSION CONTROL – GENERAL NOTES
ESC–3 EROSION CONTROL – NOTES
ESC–4 EROSION CONTROL – OVERALL SITE PLAN
ESC–5 EROSION CONTROL – MAXIMUM PROJECT IMPACT, GE 1.7–103 PROJECT FACILITIES AND 230 KV INTRACONNECTION LINES OPTION 1 SITE PLAN (SHEET 1 OF 5)
ESC–6 EROSION CONTROL – MAXIMUM PROJECT IMPACT, GE 1.7–103 PROJECT FACILITIES AND 230 KV INTRACONNECTION LINES OPTION 1 SITE PLAN (SHEET 2 OF 5)
ESC–7 EROSION CONTROL – MAXIMUM PROJECT IMPACT, GE 1.7–103 PROJECT FACILITIES AND 230 KV INTRACONNECTION LINES OPTION 1 SITE PLAN (SHEET 3 OF 5)
ESC–8 EROSION CONTROL – MAXIMUM PROJECT IMPACT, GE 1.7–103 PROJECT FACILITIES AND 230 KV INTRACONNECTION LINES OPTION 1 SITE PLAN (SHEET 4 OF 5)
ESC–9 EROSION CONTROL – MAXIMUM PROJECT IMPACT, GE 1.7–103 PROJECT FACILITIES AND 230 KV INTRACONNECTION LINES OPTION 1 SITE PLAN (SHEET 5 OF 5)
ESC–10 EROSION CONTROL – MINIMUM PROJECT IMPACT, GE 2.5–120 PROJECT FACILITIES AND 230 KV INTRACONNECTION LINES OPTION 3 SITE PLAN (SHEET 1 OF 5)
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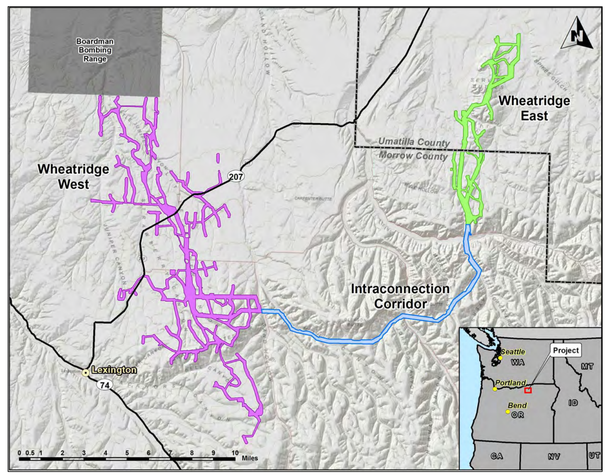
ESC–12 EROSION CONTROL – MINIMUM PROJECT IMPACT, GE 2.5–120 PROJECT FACILITIES AND 230 KV INTRACONNECTION LINES OPTION 3 SITE PLAN (SHEET 3 OF 5)
ESC–13 EROSION CONTROL – MINIMUM PROJECT IMPACT, GE 2.5–120 PROJECT FACILITIES AND 230 KV INTRACONNECTION LINES OPTION 3 SITE PLAN (SHEET 4 OF 5)
ESC–14 EROSION CONTROL – MINIMUM PROJECT IMPACT, GE 2.5–120 PROJECT FACILITIES AND 230 KV INTRACONNECTION LINES OPTION 3 SITE PLAN (SHEET 5 OF 5)
ESC–15 EROSION AND SEDIMENT CONTROL CONSTRUCTION DETAILS (SHEET 1 OF 3)
ESC–16 EROSION AND SEDIMENT CONTROL CONSTRUCTION DETAILS (SHEET 2 OF 3)
ESC–17 EROSION AND SEDIMENT CONTROL CONSTRUCTION DETAILS (SHEET 3 OF 3)



LOCATION MAP

REV	REVISION DESCRIPTION	DSG BY/DATE	DWN BY/DATE	CHK BY/DATE	APPVD/DATE
0	FINAL	JPP/11–21–14	AML/11–21–14	REV/11–21–14	SO/11–21–14

REGISTERED PROFESSIONAL ENGINEER
76918PE
OREGON
SEPTEMBER 13, 2005
SENDA OZKAN

EXPIRES: 12/31/2014

WHEATRIDGE WIND ENERGY FACILITY
EROSION AND SEDIMENT CONTROL PLAN

WHEATRIDGE WIND ENERGY FACILITY
LEXINGTON, OREGON

EROSION AND SEDIMENT CONTROL
COVER SHEET AND DRAWING INDEX

THE ORIGINAL DRAWING AND SUBSEQUENT REVISIONS THEREOF WITH APPROVAL NAMES, INITIALS AND PE SEAL, IF APPLICABLE, ARE MAINTAINED IN THE FILES OF TETRA TECH, INC.

SIZE	CONTRACT NO.	DRAWING NO.	REV
DI		ESC–1	0

SCALE:

FILE NAME: P:\WHEATRIDGE WIND\ENGINEERING\DRAWINGS\20141120 WHEATRIDGE WIND ESCP.DWG

NATURE OF CONSTRUCTION ACTIVITY AND ESTIMATED TIME TABLE

SEE ESCP PART II NARRATIVE FORM.

INSPECTION FREQUENCY

SITE CONDITION	MINIMUM FREQUENCY
ACTIVE PERIOD.	DAILY WHEN STORMWATER RUNOFF, INCLUDING RUNOFF FROM SNOWMELT, IS OCCURRING. AT LEAST ONCE EVERY TWO (2) WEEKS, REGARDLESS OF WHETHER STORMWATER RUNOFF IS OCCURRING.
PRIOR TO THE SITE BECOMING INACTIVE OR IN ANTICIPATION OF INACTIVITY.	ONCE TO ENSURE THAT EROSION AND SEDIMENT CONTROL MEASURES ARE IN WORKING ORDER. ANY NECESSARY MAINTENANCE AND REPAIR MUST BE MADE PRIOR TO LEAVING THE SITE.
INACTIVE PERIODS GREATER THAN SEVEN (7) CONSECUTIVE CALENDAR DAYS.	ONCE EVERY TWO (2) WEEKS.
PERIODS DURING WHICH THE SITE IS INACCESSIBLE DUE TO INCLEMENT WEATHER.	IF PRACTICAL, INSPECTIONS MUST OCCUR DAILY AT A RELEVANT AND ACCESSIBLE DISCHARGE POINT OR DOWNSTREAM LOCATION.

HOLD A PRECONSTRUCTION MEETING WITH PROJECT CONSTRUCTION PERSONNEL THAT INCLUDES THE ESC INSPECTOR. ALL INSPECTIONS MUST BE MADE IN ACCORDANCE WITH DEQ 1200-C PERMIT REQUIREMENTS.

SOIL TYPES

THE FACILITY WILL OCCUPY AN AREA IN MORROW AND UMATILLA COUNTIES THAT CONTAINS 18 MAJOR SOIL UNITS. BURKE SILT LOAM, RITZVILLE SILT LOAM, VALBY SILT LOAM, WARDEN SILT LOAM AND THE WILLIS SILT LOAM ARE THE MOST WIDESPREAD SOIL TYPES AND WOULD UNDERLIE THE MAJORITY OF THE FACILITY ON THE WESTERN AND EASTERN PORTIONS.

BURKE SILT LOAM - THIS SOIL UNIT CONSISTS OF MODERATELY DEEP SILT LOAM TO DURIPAN, WELL DRAINED SOILS FORMED IN LOESS AND GLACIOLACUSTRINE DEPOSITS OVER A DURIPAN ON UPLANDS. THE SURFACE LAYER IS A LIGHT BROWNISH GRAY SILT LOAM ABOUT 4 INCHES THICK. THE SUBSOIL IS A PALE TO DARK BROWN SILT LOAM ABOUT 18 INCHES THICK AND LIKE THE SURFACE SOIL IS SOFT, VERY FRIABLE, SLIGHTLY STICKY AND SLIGHTLY PLASTIC. BELOW A DEPTH OF ABOUT 30 INCHES IS INDURATED LIME-SILICA DURIPAN. THE DURIPAN IS 6 INCHES TO SEVERAL FEET THICK AND OVERLIES WEAKLY CONSOLIDATED ALLUVIUM, LAKE SEDIMENTS, LOESS, GRAVELLY ALLUVIAL DEPOSITS, OR BASALT. PERMEABILITY OF THE BURKE SOIL IS MODERATE ABOVE THE DURIPAN. AVAILABLE WATER CAPACITY IS ABOUT 5.2 INCHES. EFFECTIVE ROOTING DEPTH IS TO THE DURIPAN. NO PREPONDERANCE FOR FLOODING OR PONDING. RUNOFF IS VERY SLOW FOR SLOPES LESS THAN 7 PERCENT AND MEDIUM FOR SLOPES 7 TO 20 PERCENT. THE HAZARD OF WATER EROSION IS HIGH. THE HAZARD OF WIND EROSION IS LOW TO MODERATE. SLOPES ARE PRIMARILY 1 TO 12 PERCENT IN THE FACILITY AREA.

VALBY SILT LOAM - THIS SOIL UNIT CONSISTS OF MODERATELY DEEP, WELL DRAINED SOILS THAT FORMED IN LOESS MIXED WITH SOME ASH, OVERLYING BASALT AND ARE LOCATED ON UPLAND SLOPES. THE SURFACE LAYER IS VERY DARK GRAYISH BROWN SILT LOAM ABOUT 14 INCHES THICK. THE SUBSOIL IS A DARK BROWN HEAVY SILT LOAM ABOUT 16 INCHES THICK. AT DEPTH THIS SUBSOIL LAYER IS HARD, FRIABLE, SLIGHTLY STICKY AND SLIGHTLY PLASTIC. AT AN APPROXIMATE DEPTH OF 30 INCHES OR MORE THERE IS A TRANSITION TO FRACTURED BASALT. PERMEABILITY OF THE VALBY SOIL IS MODERATE. AVAILABLE WATER CAPACITY IS ABOUT 6 INCHES. NO PREPONDERANCE FOR FLOODING OR PONDING. RUNOFF IS SLOW FOR SLOPES LESS THAN 7 PERCENT, MEDIUM FOR SLOPES 7 TO 20 PERCENT, AND RAPID FOR SLOPES GREATER THAN 20 PERCENT. THE HAZARD OF WATER EROSION IS MODERATE TO HIGH. THE HAZARD OF WIND EROSION IS LOW TO MODERATE. SLOPES ARE PRIMARILY 1 TO 20 PERCENT IN THE FACILITY AREA.

RITZVILLE SILT LOAM - THIS SOIL UNIT CONSISTS OF DEEP, WELL-DRAINED SOILS FORMED IN LOESS, ON SUMMIT PLATEAUS WITHIN THE FACILITY AREA. TYPICALLY, THE SURFACE LAYER AND SUBSOIL ARE EACH BROWN VERY FINE SANDY LOAM, ABOUT 13 INCHES THICK, RESPECTIVELY. THE SUBSTRATUM IS A BROWN SILT LOAM TO A DEPTH OF 70 INCHES OR MORE. PERMEABILITY OF THE RITZVILLE SOIL IS MODERATE. AVAILABLE WATER CAPACITY IS ABOUT 11.6 INCHES. EFFECTIVE ROOTING DEPTH IS 60 INCHES OR MORE. NO PREPONDERANCE FOR FLOODING OR PONDING. RUNOFF IS SLOW FOR SLOPES LESS THAN 7 PERCENT, MEDIUM FOR SLOPES 7 TO 20 PERCENT, AND RAPID FOR SLOPES GREATER THAN 20 PERCENT. THE HAZARD OF WATER EROSION IS MODERATE TO HIGH. THE HAZARD OF WIND EROSION IS MODERATE. SLOPES ARE PRIMARILY 2 TO 12 PERCENT IN THE FACILITY AREA.

WARDEN SILT LOAM - THIS SOIL UNIT IS LOCATED ON UPLAND TERRACES WITHIN THE FACILITY AREA, AND CONSISTS OF VERY DEEP, WELL DRAINED SOILS FORMED IN LOESS AND THE UNDERLYING CALCAREOUS, LACUSTRINE SILTS. THE SURFACE LAYER IS DARK BROWN SILT LOAM ABOUT 5 INCHES THICK. THE SUBSOIL IS DARK BROWN TO BROWN VERY FINE SANDY LOAM ABOUT 15 INCHES THICK. THE SUBSTRATUM IS A BROWN TO GRAYISH BROWN, PARTIALLY CALCAREOUS SILT LOAM AND STRATIFIED VERY FINE SANDY LOAM TO A DEPTH OF 60 INCHES OR MORE. PERMEABILITY OF THE WARDEN SOIL IS MODERATE. AVAILABLE WATER CAPACITY IS ABOUT 11.5 INCHES. EFFECTIVE ROOTING DEPTH IS 60 INCHES OR MORE. NO PREPONDERANCE FOR FLOODING OR PONDING. RUNOFF IS MEDIUM FOR SLOPES LESS THAN 20 PERCENT, AND RAPID FOR SLOPES GREATER THAN 20 PERCENT. THE HAZARD OF WATER EROSION IS HIGH. THE HAZARD OF WIND EROSION IS MODERATE. SLOPES ARE PRIMARILY 0 TO 5 PERCENT IN THE FACILITY AREA.

WILLIS SILT LOAM - THIS SOIL UNIT CONSISTS OF WELL-DRAINED SOILS FORMED IN LOESS, ON SUMMIT PLATEAUS WITHIN THE FACILITY AREA. THE SURFACE LAYER IS DARK BROWN SILT LOAM ABOUT 12 INCHES THICK. THE SUBSOIL IS DARK BROWN SILT LOAM ABOUT 15 INCHES THICK. THE SUBSTRATUM IS A DARK BROWN SILT LOAM TO A DEPTH OF APPROXIMATELY 35 INCHES, AND THE SOIL IS UNDERLAIN BY CEMENTED ALLUVIUM. PERMEABILITY OF THE WARDEN SOIL IS MODERATE. AVAILABLE WATER CAPACITY IS ABOUT 6.8 INCHES. EFFECTIVE ROOTING DEPTH IS 20 TO 40 INCHES. NO PREPONDERANCE FOR FLOODING OR PONDING. RUNOFF IS MEDIUM. THE HAZARD OF WATER EROSION IS HIGH. THE HAZARD OF WIND EROSION IS LOW TO MODERATE. SLOPES ARE PRIMARILY 2 TO 12 PERCENT IN THE FACILITY AREA.

STANDARD EROSION AND SEDIMENT CONTROL PLAN DRAWING NOTES

1. HOLD A PRE-CONSTRUCTION MEETING OF PROJECT CONSTRUCTION PERSONNEL THAT INCLUDES THE INSPECTOR TO DISCUSS EROSION AND SEDIMENT CONTROL MEASURES AND CONSTRUCTION LIMITS. (SCHEDULE A.8.c.i.(3))
2. ALL PERMIT REGISTRANTS MUST IMPLEMENT THE ESCP. FAILURE TO IMPLEMENT ANY OF THE CONTROL MEASURES OR PRACTICES DESCRIBED IN THE ESCP IS A VIOLATION OF THE PERMIT. (SCHEDULE A 8.a)
3. RETAIN A COPY OF THE ESCP AND ALL REVISIONS ON SITE AND MAKE IT AVAILABLE ON REQUEST TO DEQ, AGENT, OR THE LOCAL MUNICIPALITY. DURING INACTIVE PERIODS OF GREATER THAN SEVEN (7) CONSECUTIVE CALENDAR DAYS, RETAIN THE ESCP AT THE CONSTRUCTION SITE OR AT ANOTHER LOCATION. (SCHEDULE B.2.a)
4. THE ESCP MEASURES SHOWN ON THIS PLAN ARE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, UPGRADE THESE MEASURES AS NEEDED TO COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL EROSION AND SEDIMENT CONTROL REGULATIONS. (SCHEDULE A.8.c.ii.(1)(c))
5. SUBMISSION OF ALL ESCP REVISIONS IS NOT REQUIRED. SUBMITTAL OF THE ESCP REVISIONS IS ONLY UNDER SPECIFIC CONDITIONS. (SCHEDULE A.12.c.iii)
6. PHASE CLEARING AND GRADING TO THE MAXIMUM EXTENT PRACTICAL TO PREVENT EXPOSED INACTIVE AREAS FROM BECOMING A SOURCE OF EROSION. (SCHEDULE A 8.c.ii.(1)(d))
7. IDENTIFY, MARK, AND PROTECT (BY FENCING OFF OR OTHER MEANS) CRITICAL RIPARIAN AREAS AND VEGETATION INCLUDING IMPORTANT TREES AND ASSOCIATED ROOTING ZONES, AND VEGETATION AREAS TO BE PRESERVED. IDENTIFY VEGETATIVE BUFFER ZONES BETWEEN THE SITE AND SENSITIVE AREAS (E.G., WETLANDS), AND OTHER AREAS TO BE PRESERVED, ESPECIALLY IN PERIMETER AREAS. (SCHEDULE A.8.c.i.(1) & (2))
8. PRESERVE EXISTING VEGETATION AND RE-VEGETATE OPEN AREAS WHEN PRACTICABLE BEFORE AND AFTER GRADING OR CONSTRUCTION. (SCHEDULE A.7.b.iii.(1))
9. EROSION AND SEDIMENT CONTROL MEASURES INCLUDING PERIMETER SEDIMENT CONTROL MUST BE IN PLACE BEFORE VEGETATION IS DISTURBED AND MUST REMAIN IN PLACE AND BE MAINTAINED, REPAIRED, AND PROMPTLY IMPLEMENTED FOLLOWING PROCEDURES ESTABLISHED FOR THE DURATION OF CONSTRUCTION, INCLUDING PROTECTION FOR ACTIVE STORM DRAIN INLETS AND CATCH BASINS AND APPROPRIATE NON-STORMWATER POLLUTION CONTROLS. (SCHEDULE A.7.d.i and A.8.c)
10. ESTABLISH CONCRETE TRUCK AND OTHER CONCRETE EQUIPMENT WASHOUT AREAS BEFORE BEGINNING CONCRETE WORK. (SCHEDULE A.8.c.i.(6))
11. APPLY TEMPORARY AND/OR PERMANENT SOIL STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS AS GRADING PROGRESSES AND FOR ALL ROADWAYS INCLUDING GRAVEL ROADWAYS. (SCHEDULE A.8.c.ii.(2))
12. ESTABLISH MATERIAL AND WASTE STORAGE AREAS, AND OTHER NON-STORMWATER CONTROLS. (SCHEDULE A.8.c.i.(7))
13. PREVENT TRACKING OF SEDIMENT ONTO PUBLIC OR PRIVATE ROADS USING BMPS SUCH AS: GRAVELED (OR PAVED) EXITS AND PARKING AREAS, GRAVEL ALL UNPAVED ROADS LOCATED ONSITE, OR USE AN EXIT TIRE WASH. THESE BMPS MUST BE IN PLACE PRIOR TO LAND-DISTURBING ACTIVITIES. (SCHEDULE A 7.d.ii.(1) and A.8.c.i(4))
14. WHEN TRUCKING SATURATED SOILS FROM THE SITE, EITHER USE WATER-TIGHT TRUCKS OR DRAIN LOADS ON SITE. (SCHEDULE A.7.d.ii. (3))
15. USE BMPS TO PREVENT OR MINIMIZE STORMWATER EXPOSURE TO POLLUTANTS FROM SPILLS; VEHICLE AND EQUIPMENT FUELING, MAINTENANCE, AND STORAGE; OTHER CLEANING AND MAINTENANCE ACTIVITIES; AND WASTE HANDLING ACTIVITIES. THESE POLLUTANTS INCLUDE FUEL, HYDRAULIC FLUID, AND OTHER OILS FROM VEHICLES AND MACHINERY, AS WELL AS DEBRIS, LEFTOVER PAINTS, SOLVENTS, AND GLUES FROM CONSTRUCTION OPERATIONS. (SCHEDULE A.7.e.i.(2))
16. WATER OR USE A SOIL-BINDING AGENT OR OTHER DUST CONTROL TECHNIQUE AS NEEDED TO AVOID WIND-BLOWN SOIL. (SCHEDULE A 7.b.iii)
17. THE APPLICATION RATE OF FERTILIZERS USED TO REESTABLISH VEGETATION MUST FOLLOW MANUFACTURER□S RECOMMENDATIONS TO MINIMIZE NUTRIENT RELEASES TO SURFACE WATERS. EXERCISE CAUTION WHEN USING TIME-RELEASE FERTILIZERS WITHIN ANY WATERWAY RIPARIAN ZONE. (SCHEDULE A.9.b.iii)
18. IF A STORMWATER TREATMENT SYSTEM (FOR EXAMPLE, ELECTRO-COAGULATION, FLOCCULATION, FILTRATION, ETC.) FOR SEDIMENT OR OTHER POLLUTANT REMOVAL IS EMPLOYED, SUBMIT AN OPERATION AND MAINTENANCE PLAN (INCLUDING SYSTEM SCHEMATIC, LOCATION OF SYSTEM, LOCATION OF INLET, LOCATION OF DISCHARGE, DISCHARGE DISPERSION DEVICE DESIGN, AND A SAMPLING PLAN AND FREQUENCY) BEFORE OPERATING THE TREATMENT SYSTEM. OBTAIN PLAN APPROVAL BEFORE OPERATING THE TREATMENT SYSTEM. OPERATE AND MAINTAIN THE TREATMENT SYSTEM ACCORDING TO MANUFACTURER□S SPECIFICATIONS. (SCHEDULE A.9.d)
19. TEMPORARILY STABILIZE SOILS AT THE END OF THE SHIFT BEFORE HOLIDAYS AND WEEKENDS, IF NEEDED. THE REGISTRANT IS RESPONSIBLE FOR ENSURING THAT SOILS ARE STABLE DURING RAIN EVENTS AT ALL TIMES OF THE YEAR. (SCHEDULE A 7.b)
20. CONSTRUCTION ACTIVITIES MUST AVOID OR MINIMIZE EXCAVATION AND CREATION OF BARE GROUND DURING WET WEATHER. (SCHEDULE A.7.a.i)
21. SEDIMENT FENCE: REMOVE TRAPPED SEDIMENT BEFORE IT REACHES ONE THIRD OF THE ABOVE GROUND FENCE HEIGHT AND BEFORE FENCE REMOVAL. (SCHEDULE A.9.c.i)
22. OTHER SEDIMENT BARRIERS (SUCH AS BIOBAGS): REMOVE SEDIMENT BEFORE IT REACHES TWO INCHES DEPTH ABOVE GROUND HEIGHT. AND BEFORE BMP REMOVAL. (SCHEDULE A.9.c.ii)
23. SEDIMENT BASINS AND SEDIMENT TRAPS: REMOVE TRAPPED SEDIMENTS BEFORE DESIGN CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT AND AT COMPLETION OF PROJECT. (SCHEDULE A.9.c.iii & iv)
24. WITHIN 24 HOURS, SIGNIFICANT SEDIMENT THAT HAS LEFT THE CONSTRUCTION SITE, MUST BE REMEDIATED. INVESTIGATE THE CAUSE OF THE SEDIMENT RELEASE AND IMPLEMENT STEPS TO PREVENT A RECURRENCE OF THE DISCHARGE WITHIN THE SAME 24 HOURS. ANY IN-STREAM CLEAN UP OF SEDIMENT SHALL BE PERFORMED ACCORDING TO THE OREGON DIVISION OF STATE LANDS REQUIRED TIMEFRAME. (SCHEDULE A.9.b.i)
25. THE INTENTIONAL WASHING OF SEDIMENT INTO STORM SEWERS OR DRAINAGE WAYS MUST NOT OCCUR. VACUUMING OR DRY SWEEPING AND MATERIAL PICKUP MUST BE USED TO CLEANUP RELEASED SEDIMENTS. (SCHEDULE A.9.b.ii)
26. THE ENTIRE SITE MUST BE TEMPORARILY STABILIZED USING VEGETATION OR A HEAVY MULCH LAYER, TEMPORARY SEEDING, OR OTHER METHOD SHOULD ALL CONSTRUCTION ACTIVITIES CEASE FOR 30 DAYS OR MORE. (SCHEDULE A.7.f.i)
27. PROVIDE TEMPORARY STABILIZATION FOR THAT PORTION OF THE SITE WHERE CONSTRUCTION ACTIVITIES CEASE FOR 14 DAYS OR MORE WITH A COVERING OF BLOWN STRAW AND A TACKIFIER, LOOSE STRAW, OR AN ADEQUATE COVERING OF COMPOST MULCH UNTIL WORK RESUMES ON THAT PORTION OF THE SITE. (SCHEDULE A.7.f.ii)
28. THE DESIGNATED EROSION AND SEDIMENT CONTROL INSPECTOR MUST PERFORM DAILY INSPECTIONS OF THE BMPS AND DISCHARGE OUTFALLS WHEN RAINFALL AND RUNOFF OCCUR. RECORD THE INSPECTIONS AND OBSERVATIONS IN A LOG THAT IS ON SITE. (SCHEDULE B.1.b(1))
29. ALL ESCP CONTROLS AND PRACTICES MUST BE INSPECTED VISUALLY ONCE TO ENSURE THAT BMPS ARE IN WORKING ORDER PRIOR TO THE SITE BECOMING INACTIVE OR IN ANTICIPATION OF SITE INACCESSIBILITY AND MUST BE INSPECTED VISUALLY ONCE EVERY TWO (2) WEEKS DURING INACTIVE PERIODS GREATER THAN SEVEN (7) CONSECUTIVE CALENDAR DAYS. (SCHEDULE B.1.b.(2) & (3))
30. IF PRACTICAL, INSPECTIONS MUST OCCUR DAILY AT A RELEVANT AND ACCESSIBLE DISCHARGE POINT OR DOWNSTREAM LOCATION DURING PERIODS IN WHICH THE SITE IS INACCESSIBLE DUE TO INCLEMENT WEATHER. (SCHEDULE B.1.b.(4))
31. DO NOT REMOVE TEMPORARY SEDIMENT CONTROL PRACTICES UNTIL PERMANENT VEGETATION OR OTHER COVER OF EXPOSED AREAS IS ESTABLISHED. IDENTIFY THE TYPE OF VEGETATIVE SEED MIX USED. (SCHEDULE A 7.b.iii)
32. PROVIDE PERMANENT EROSION CONTROL MEASURES ON ALL EXPOSED AREAS. REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AS EXPOSED AREAS BECOME STABILIZED, UNLESS DOING SO CONFLICTS WITH LOCAL REQUIREMENTS. PROPERLY DISPOSE OF CONSTRUCTION MATERIALS AND WASTE, INCLUDING SEDIMENT RETAINED BY TEMPORARY BMPS. (SCHEDULE A.8.c.iii)

RATIONALE STATEMENT

A COMPREHENSIVE LIST OF AVAILABLE BEST MANAGEMENT PRACTICES (BMP) OPTIONS BASED ON DEQ's GUIDANCE MANUAL HAS BEEN REVIEWED TO COMPLETE THIS EROSION AND SEDIMENT CONTROL PLAN. SOME OF THE ABOVE LISTED BMP's WERE NOT CHOSEN BECAUSE THEY WERE DETERMINED TO NOT EFFECTIVELY MANAGE EROSION PREVENTION AND SEDIMENT CONTROL FOR THIS PROJECT BASED ON SPECIFIC SITE CONDITIONS, INCLUDING SOIL CONDITIONS TOPOGRAPHIC CONSTRAINTS, ACCESSIBILITY TO THE SITE, AND OTHER RELATED CONDITIONS, AS THE PROJECT PROGRESSES AND THERE IS A NEED TO REVISE THE ESC PLAN, AN ACTION PLAN WILL BE SUBMITTED.

THE SITE SPECIFIC EROSION NOTES ARE THE BMPS THAT WERE CHOSEN FOR THE SITE, AND REPRESENT THE BMPS THAT SHOULD BE FOLLOWED

_____ INITIAL

LOCAL AGENCY-SPECIFIC EROSION CONTROL NOTES

MORROW AND UMATILLA COUNTIES HAVE NO SPECIFIC EROSION CONTROL REQUIREMENTS BEYOND THOSE ALREADY LISTED.

ATTENTION EXCAVATORS

OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0010 THROUGH OAR 962-001-0090. YOU MAY OBTAIN COPIES OF THESE RULES FROM THE CENTER BY CALLING 503-232-1987. IF YOU HAVE ANY QUESTIONS ABOUT THESE RULES, YOU MAY CONTACT THE CENTER. YOU MUST NOTIFY THE CENTER AT LEAST TWO BUSINESS DAYS BEFORE COMMENDING AN EXCAVATION. CALL 503-246-6699.

REV	REVISION DESCRIPTION	DSG BY/DATE	DWN BY/DATE	CHK BY/DATE	APPVD/DATE
0	FINAL	JPP/11-21-14	AML/11-21-14	REV/11-21-14	SO/11-21-14

REGISTERED PROFESSIONAL ENGINEER
76918PE
OREGON
SEPTEMBER 13, 2005
SENDA OZKAN
EXPIRES: 12/31/2014

WHEATRIDGE WIND ENERGY FACILITY
EROSION AND SEDIMENT CONTROL PLAN

WHEATRIDGE WIND ENERGY FACILITY
LEXINGTON, OREGON

EROSION AND SEDIMENT CONTROL
GENERAL NOTES

THE ORIGINAL DRAWING AND SUBSEQUENT REVISIONS THEREOF WITH APPROVAL NAMES, INITIALS AND PE SEAL, IF APPLICABLE, ARE MAINTAINED IN THE FILES OF TETRA TECH, INC.

SIZE	CONTRACT NO.	DRAWING NO.	REV
DI		ESC-2	0

SCALE:

FILE NAME: P:\WHEATRIDGE WIND\ENGINEERING\DRAWINGS\20141120 WHEATRIDGE WIND ESCP.DWG

EROSION CONTROL NOTES

GENERAL NOTES

1. THE PREDOMINANT SOIL TYPES IN THIS AREA ARE PRONE TO BOTH WIND AND WATER EROSION. THEREFORE, THE IMPLEMENTATION OF EROSION CONTROL PRACTICES MUST BE AN INTEGRAL PART OF ALL PHASES OF CONSTRUCTION.

2. THE IMPLEMENTATION OF THESE EROSION CONTROL PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED, APPROVED AND VEGEATION/LANDSCAPING IS ESTABLISHED.

3. THE EROSION CONTROL FACILITIES SHOWN ON THESE PLANS MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES AND IN SUCH A MANNER AS TO INSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM OR ROADWAYS OUTSIDE OF PROJECT LIMITS, AND VIOLATE APPLICABLE WATER STANDARDS.

4. THE EROSION CONTROL FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE FACILITIES SHALL BE MAINTAINED AND UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO INSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT LEAVE THE SITE.

5. TEMPORARILY STABILIZE EXISTING BARE SOIL AREAS BY SPREADING STRAW MULCH AND CRIMPING IT IN TO THE GROUND WITH A DISC OR WITH A HYDROSEEDER. THE APPLICATION RATE FOR STRAW MULCH IS 2500 LBS/ACRE AS NEEDED. A SOIL BINDER OR TACKIFIER MAY BE INCORPORATED INTO STRAW OR MULCH. IN THE FALL, WHEN SOIL MOISTURE IS ADEQUATE, SEED ALL IMPACTED AREAS WITH THE FOLLOWING SEED MIXES.

SPECIFIC SEED MIX		MINIMUM LBS/AC PURE LIVE SEED (PLS)
COMMON NAME	SCIENTIFIC NAME	
SEAR BLUE BUNCH WHEAT GRASS		5
SHERMAN BIG BLUEGRASS		2
CRITANA THICKSPIKE WHEATGRASS		2.5
WHITMAR BEARDLESS WHEATGRASS		5
ALFALFA		0.5

6. THE CONSTRUCTION MANAGER IS RESPONSIBLE FOR LOCATING ANY NECESSARY DISPOSAL SITES. TO CONTROL THE RELEASE OF SEDIMENT FROM THE SITES, SEDIMENT FENCE SHALL BE INSTALLED ON THE DOWNSLOPE SIDE OF ALL DISPOSAL AREAS ON CONTOUR. SEE DETAIL ON DRAWING ESC-16. IF ADDITIONAL SEDIMENT OR EROSION CONTROL MEASURES ARE DETERMINED TO BE NECESSARY TO CONTROL THE RELEASE OF SEDIMENT FROM THE DISPOSAL SITES, THE CONSTRUCTION MANAGER SHALL BE RESPONSIBLE FOR IMPLEMENTING ADDITIONAL MEASURES.

7. PRIOR TO ANY LAND DISTURBING ACTIVITIES EACH SITE MUST HAVE GRAVELED, PAVED, OR CONSTRUCTED ENTRANCES, EXITS AND PARKING AREAS TO REDUCE THE TRACKING OF SEDIMENT ONTO PUBLIC OR PRIVATE ROADS.

8. TEMPORARY STABILIZATION MEASURES WILL BE TAKEN TO ENSURE THAT SEDIMENT-LADEN STORMWATER DOES NOT IMPACT WATER QUALITY STANDARDS OF RECEIVING WATER BODIES. TEMPORARY STABILIZATION WILL INCLUDE MULCHING AND SEEDING OF DISTURBED AREAS, APPLICATION OF SOIL BINDERS AND TACKIFIERS, PERIMETER CONTROL OF STOCKPILE AREAS, AND COVERING TEMPORARY STOCKPILES WITH PLASTIC OR STABILIZING TEMPORARY STOCKPILES WITH STRAW MULCH.

KEYED NOTES

1. TOWER ACCESS ROADS TO TURBINES TO BE GRADED AND CONSTRUCTED APPROXIMATELY LEVEL WITH EXISTING GROUND SO RUNOFF FROM UPSLOPE SHEET FLOW, FLOWS ACROSS ROAD. FOR IMPACTED AREAS ADJACENT TO THE ROADWAY, SURFACE ROUGHENING TECHNIQUES WILL BE EMPLOYED PRIOR TO APPLICATION OF MULCH AND SEEDING PER GENERAL NOTES. SEE DETAIL ON DRAWING ESC-15.

2. TOWER AREAS: FOR IMPACTED AREAS ADJACENT TO THE PADS, SPREAD MULCH AND SEED ACCORDING TO GENERAL NOTE 5. EXCAVATION MATERIALS TO BE STORED ADJACENT TO PADS FOR 14-28 DAYS WHILE CONCRETE CURES, PRIOR TO BACKFILL. INSTALL SEDIMENT FENCE ON DOWNSLOPE SIDE OF SOIL STOCKPILES. PROMPTLY DISPOSE OF EXCESS EXCAVATION SPOILS IN DESIGNATED LOCATIONS. SEE DETAIL ON DRAWING ESC-15.

3. INSTALL SEDIMENT FENCE ON CONTOUR ON THE DOWNSLOPE SIDE OF THE STAGING AREA. SEE DETAIL ON DRAWING ESC-16 FOR TYPICAL INSTALLATION.

4. INSTALL SEDIMENT FENCE ON CONTOUR ON THE DOWNSLOPE SIDE OF AREA CLEARED FOR CONSTRUCTION OF O&M BUILDING AND PROJECT SUBSTATION. REMOVE WASTE MATERIAL PROMPTLY AFTER CONSTRUCTION. SPREAD EXCESS SOIL ON SITE. SPREAD MULCH AND SEED ACCORDING TO GENERAL NOTE 5.

5. INSTALL SILT FENCE BETWEEN REGRADED ROAD AND INTERMITTENT STREAM WHERE ROAD IS ADJACENT TO STREAM CHANNEL.

6. TRENCHES WILL BE 3 TO 5 FEET DEEP. AFTER CABLES ARE INSTALLED, TRENCHES WILL BE BACK FILLED WITH EXCAVATED MATERIAL, AND TOP SOIL WILL BE PLACED ON TOP. SPREAD MULCH AND SEED ACCORDING TO GENERAL NOTE 5.

7. FINAL CLEANUP AND RESTORATION TO OCCUR IMMEDIATELY FOLLOWING CONSTRUCTION OF OVERHEAD TRANSMISSION LINES AND UNDERGROUND COLLECTOR SYSTEM. WASTE MATERIALS (BRUSH, ROCK, CONSTRUCTION MATERIALS) TO BE REMOVED FROM AREA AND EITHER RECYCLED OR DISPOSED AT APPROVED FACILITIES. EXCESS TOPSOIL WILL BE COMPACTED AROUND POLES OR SPREAD ON RIGHT OF WAY. SPREAD MULCH AND SEED ACCORDING TO GENERAL NOTE 5.

8. INSTALL STABILIZED CONSTRUCTION ENTRANCE AT ACCESS POINT TO PAVED ROADS. ADDITIONAL BMPs MAY BE NEEDED IF TRACKING IS OBSERVED. THESE BMPs WOULD INCLUDE SWEEPING, WASHING, OR VACUUMING.

9. PROTECT WETLANDS WITHIN CONSTRUCTION AREA WITH HIGHLY VISIBLE FENCE PRIOR TO CONSTRUCTION.

10. WASH CONCRETE OUT OF THE CONCRETE TRUCK CHUTES INTO THE DEDICATED CONCRETE WASHOUT AREA LOCATED AT EACH COMPLETE TURBINE FOUNDATION. THE CONCRETE WASHOUT AREA WILL BE CONSTRUCTED WITHIN A CORNER OF THE FOUNDATION EXCAVATION. THE BOTTOM WILL CONSIST OF THE COMPACTED FOUNDATION SUBGRADE AND THE SIDES WILL CONSIST OF THE EXCAVATION SIDE CUT, HARDENED CONCRETE FOUNDATION, AND SOIL BERMS AT EACH END TO CONSTRUCT A CONFINED AREA. THE SOIL USED TO CONSTRUCT THE WASHOUT AREA BERMS (ALONG WITH ANY CONCRETE SOLIDS) WILL BE BURIED AS PART OF THE TURBINE FOUNDATION BACKFILL. SEE DETAIL ON DRAWING ESC-16. CONCRETE WASHOUTS ARE DESIGNED TO PROMOTE EVAPORATION - VACUUM AND DISPOSE OF LIQUIDS IN AN APPROVED MANNER AS NEEDED.

11. INSTALL CHECK DAM AND ROAD FORD OR CULVERT CROSSINGS AS SHOWN ON ESC-15 AND ESC-17. THE CHECK DAM WILL BE INSTALLED IN CONJUNCTION WITH LOW IMPACT FORD ROAD CROSSINGS OR CULVERTS TO MINIMIZE SEDIMENTATION IN EPHEMERAL OR SEASONAL STREAMS OR WETLANDS. INSTALL CHECK DAM DOWNSTREAM OF ELECTRICAL TRENCH CROSSINGS. INSTALL OUTLET PROTECTION/RIPRAP BASINS AT THE END OF CULVERTS WHERE APPROPRIATE. SEE DETAIL ON DRAWING ESC-15.

BMP MATRIX FOR CONSTRUCTION PHASES

	CLEARING	MASS GRADING	UTILITY INSTALLATION	ROAD CONSTRUCTION	FINAL STABILIZATION	WET WEATHER (NOV. - APRIL)
EROSION PREVENTION						
PRESERVE NATURAL VEGETATION	** X	X	X	X	X	X
PLASTIC SHEETING	X	X	X	X		X
DUST CONTROL	X	X	X	X		X
TEMPORARY/ PERMANENT SEEDING	X	X	X	X	X	X
MULCH	X	X	X	X	X	X
OTHER:						
SEDIMENT CONTROL						
SEDIMENT FENCE (PERIMETER)	** X	X	X	X	X	X
SEDIMENT FENCE (INTERIOR)			X	X	X	X
STRAW WATTLES			X	X	X	X
FILTER BERM	X	X	X	X		
SEDIMENT TRAP	X	X	X	X		
OTHER: SOIL BINDER AND TACKIFIER					X	X
RUN OFF CONTROL						
CONSTRUCTION ENTRANCE	** X	X	X	X	X	
OUTLET PROTECTION	X	X	X	X	X	
SURFACE ROUGHENING					X	
CHECK DAMS	** X	X	X	X	X	
OTHER:						
POLLUTION PREVENTION						
PROPER SIGNAGE	X	X	X	X	X	X
HAZ WASTE MGMT	X	X	X	X	X	X
SPILL KIT ON-SITE	X	X	X	X	X	X
CONCRETE WASHOUT AREA	X	X	X	X	X	X
OTHER:						

** - SIGNIFIES BMP WILL BE INSTALLED PRIOR TO ANY GROUND DISTURBING ACTIVITY.

REV	REVISION DESCRIPTION	DSG BY/DATE	DWN BY/DATE	CHK BY/DATE	APPVD/DATE
0	FINAL	JPP/11-21-14	AML/11-21-14	REV/11-21-14	SO/11-21-14

REGISTERED PROFESSIONAL ENGINEER
76918PE
OREGON
SEPTEMBER 13, 2005
SENDA OZKAN

EXPIRES: 12/31/2014

WHEATRIDGE WIND ENERGY FACILITY
EROSION AND SEDIMENT CONTROL PLAN

WHEATRIDGE WIND ENERGY FACILITY
LEXINGTON, OREGON

EROSION AND SEDIMENT CONTROL
EROSION CONTROL NOTES

THE ORIGINAL DRAWING AND SUBSEQUENT REVISIONS THEREOF WITH APPROVAL NAMES, INITIALS AND PE SEAL, IF APPLICABLE, ARE MAINTAINED IN THE FILES OF TETRA TECH, INC.

SIZE	CONTRACT NO.	DRAWING NO.	REV
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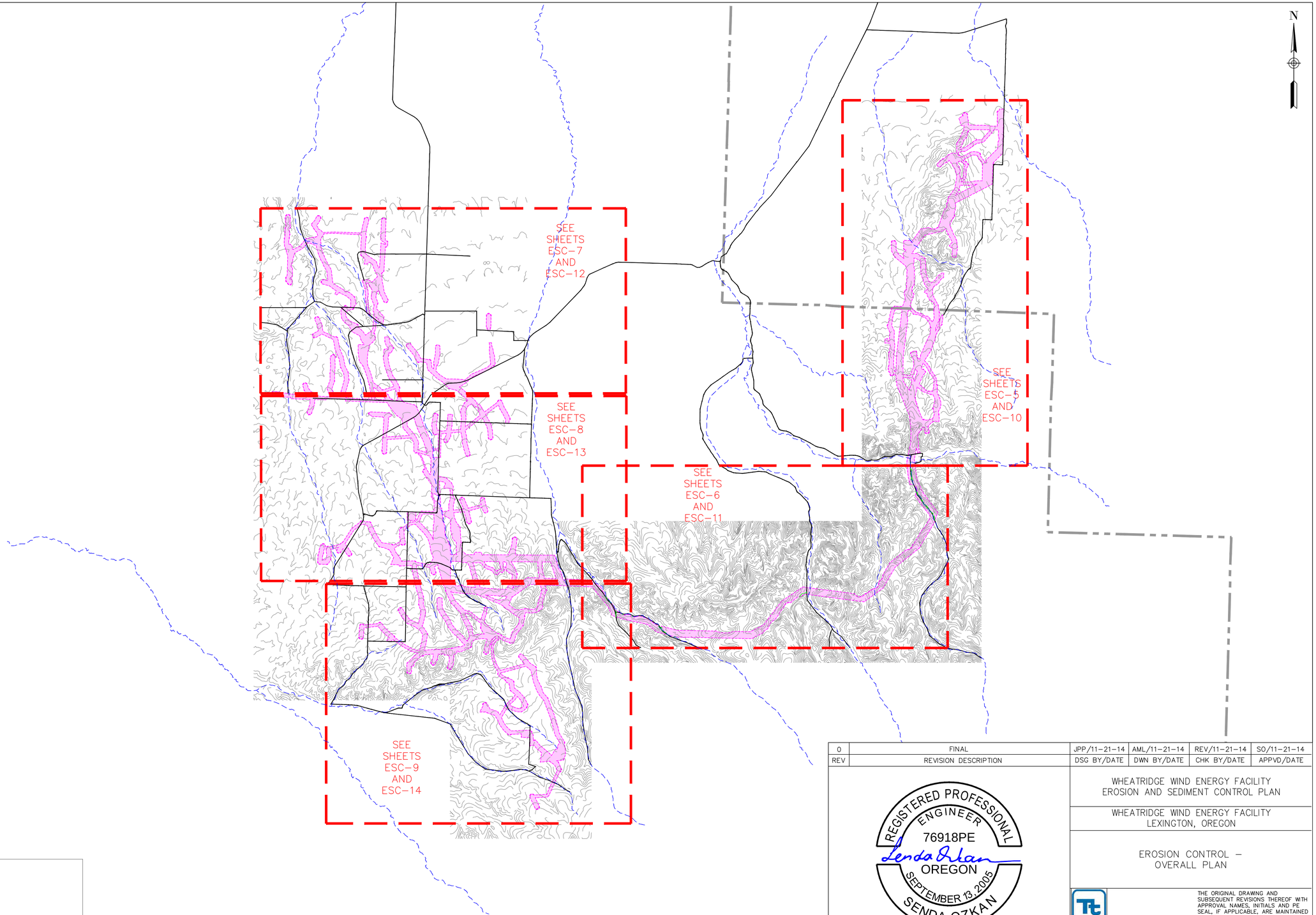

LEGEND:

- SITE BOUNDARY
- EXISTING ROAD
- WETLANDS

REV	REVISION DESCRIPTION	DSG BY/DATE	DWN BY/DATE	CHK BY/DATE	APPVD/DATE
0	FINAL	JPP/11-21-14	AML/11-21-14	REV/11-21-14	SO/11-21-14

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SEPTEMBER 13, 2005
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WHEATRIDGE WIND ENERGY FACILITY
EROSION AND SEDIMENT CONTROL PLAN

WHEATRIDGE WIND ENERGY FACILITY
LEXINGTON, OREGON

EROSION CONTROL –
OVERALL PLAN

THE ORIGINAL DRAWING AND SUBSEQUENT REVISIONS THEREOF WITH APPROVAL NAMES, INITIALS AND PE SEAL, IF APPLICABLE, ARE MAINTAINED IN THE FILES OF TETRA TECH, INC.

SIZE	CONTRACT NO.	DRAWING NO.	REV
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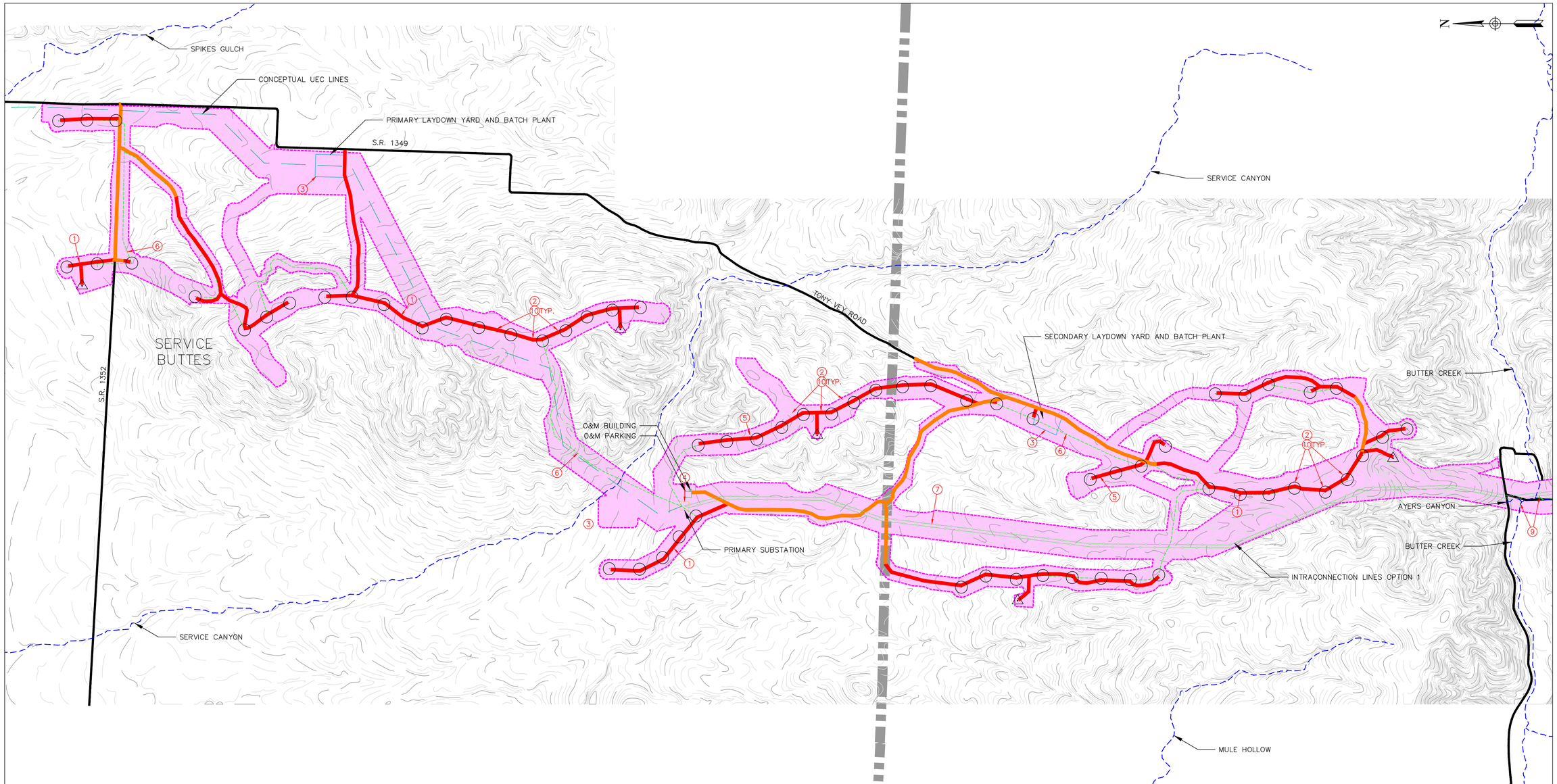

LEGEND:

- SITE BOUNDARY
- TURBINE
- MET TOWER
- EXISTING ROAD
- EXISTING PRIVATE ROAD TO BE IMPROVED
- NEW ROAD TO BE CONSTRUCTED
- OVERHEAD INTRACONNECTION LINES
- ELECTRICAL COLLECTOR LINE
- SUBSTATION
- WETLANDS
- STREAM

NOTES:

1. SEE DRAWING ESC-3 FOR KEYED EROSION CONTROL NOTES.

0 500 1000 FEET

REV	REVISION DESCRIPTION	DSG BY/DATE	DWN BY/DATE	CHK BY/DATE	APPVD/DATE
0	FINAL	JPP/11-21-14	AML/11-21-14	REV/11-21-14	SO/11-21-14

REGISTERED PROFESSIONAL ENGINEER
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OREGON
SEPTEMBER 13, 2005
SENDA OZKAN

EXPIRES: 12/31/2014

WHEATRIDGE WIND ENERGY FACILITY
EROSION AND SEDIMENT CONTROL PLAN

WHEATRIDGE WIND ENERGY FACILITY
LEXINGTON, OREGON

EROSION CONTROL – MAXIMUM PROJECT IMPACT
GE 1.7-103 PROJECT FACILITIES AND 230 KV
INTRACONNECTION LINES OPTION 1 SITE PLAN
(SHEET 1 OF 5)

THE ORIGINAL DRAWING AND SUBSEQUENT REVISIONS THEREOF WITH APPROVAL NAMES, INITIALS AND PE SEAL, IF APPLICABLE, ARE MAINTAINED IN THE FILES OF TETRA TECH, INC.

SIZE	CONTRACT NO.	DRAWING NO.	REV
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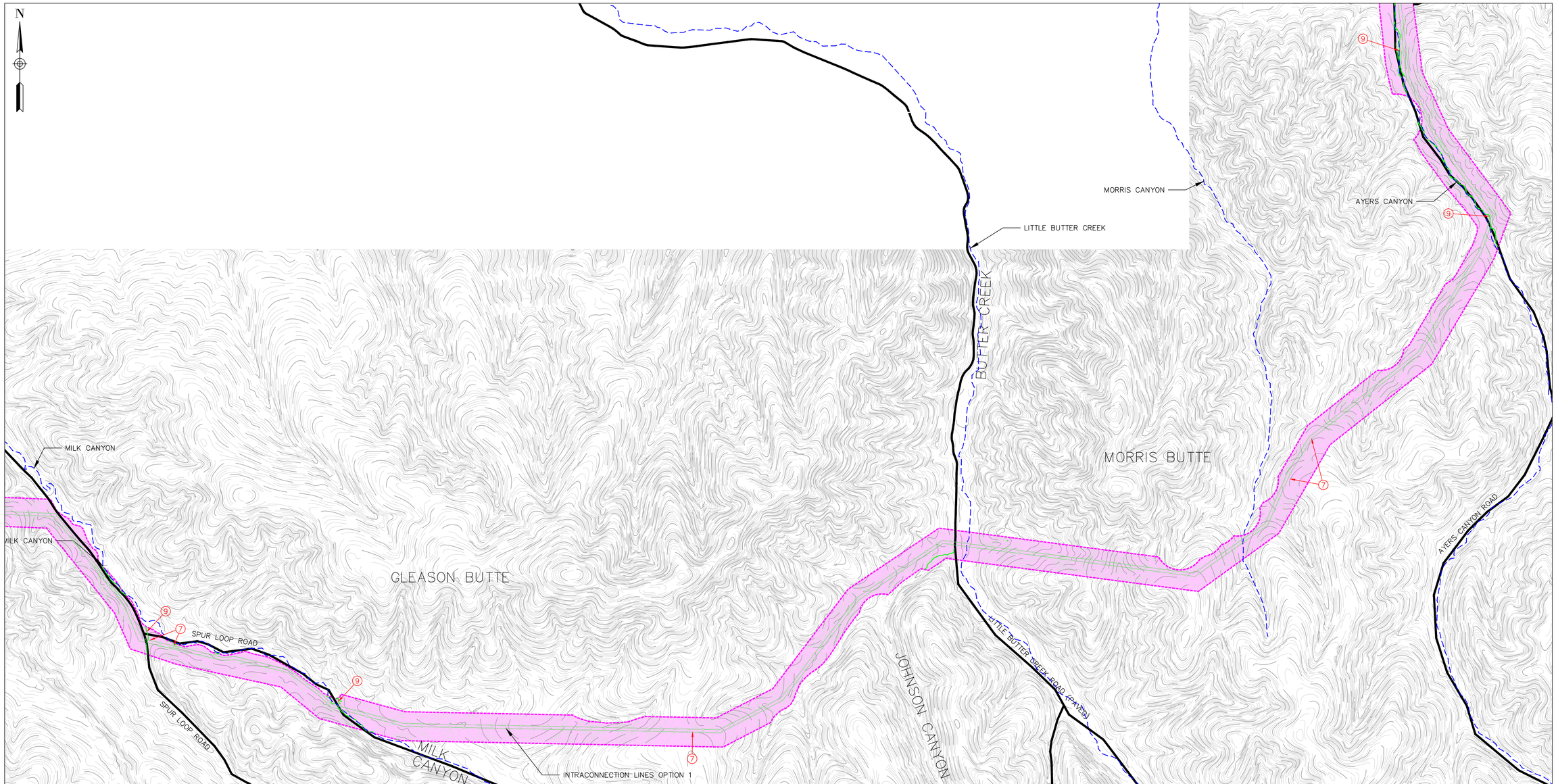

LEGEND:

- SITE BOUNDARY
- TURBINE
- MET TOWER
- EXISTING ROAD
- EXISTING PRIVATE ROAD TO BE IMPROVED
- NEW ROAD TO BE CONSTRUCTED
- OVERHEAD INTRACONNECTION LINES
- ELECTRICAL COLLECTOR LINE
- SUBSTATION
- WETLANDS
- STREAM

NOTES:

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0 500 1000 FEET

REV	REVISION DESCRIPTION	DSG BY/DATE	DWN BY/DATE	CHK BY/DATE	APPVD/DATE
0	FINAL	JPP/11-21-14	AML/11-21-14	REV/11-21-14	SO/11-21-14

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SENDA OZKAN

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WHEATRIDGE WIND ENERGY FACILITY
EROSION AND SEDIMENT CONTROL PLAN

WHEATRIDGE WIND ENERGY FACILITY
LEXINGTON, OREGON

EROSION CONTROL – MAXIMUM PROJECT IMPACT
GE 1.7-103 PROJECT FACILITIES AND 230 KV
INTRACONNECTION LINES OPTION 1 SITE PLAN
(SHEET 2 OF 5)

THE ORIGINAL DRAWING AND SUBSEQUENT REVISIONS THEREOF WITH APPROVAL NAMES, INITIALS AND PE SEAL, IF APPLICABLE, ARE MAINTAINED IN THE FILES OF TETRA TECH, INC.

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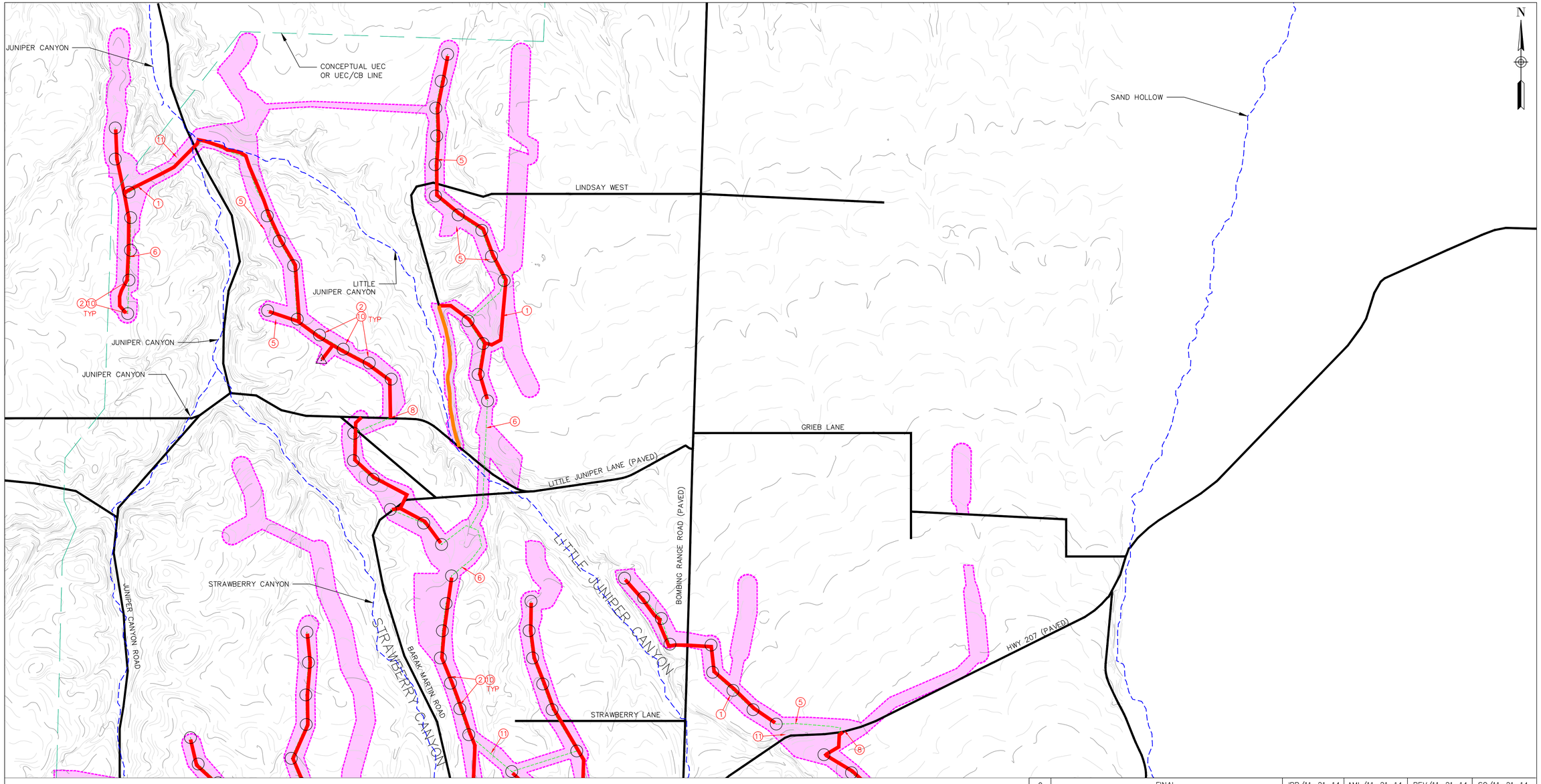

LEGEND:

- SITE BOUNDARY
- TURBINE
- MET TOWER
- EXISTING ROAD
- EXISTING PRIVATE ROAD TO BE IMPROVED
- NEW ROAD TO BE CONSTRUCTED
- OVERHEAD INTRACONNECTION LINES
- ELECTRICAL COLLECTOR LINE
- SUBSTATION
- WETLANDS
- STREAM

NOTES:

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0 500 1000 FEET

REV	REVISION DESCRIPTION	DSG BY/DATE	DWN BY/DATE	CHK BY/DATE	APPVD/DATE
0	FINAL	JPP/11-21-14	AML/11-21-14	REV/11-21-14	SO/11-21-14

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SENDA OZKAN
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WHEATRIDGE WIND ENERGY FACILITY
EROSION AND SEDIMENT CONTROL PLAN

WHEATRIDGE WIND ENERGY FACILITY
LEXINGTON, OREGON

EROSION CONTROL – MAXIMUM PROJECT IMPACT GE 1.7-103 PROJECT FACILITIES AND 230 KV INTRACONNECTION LINES OPTION 1 SITE PLAN (SHEET 3 OF 5)

THE ORIGINAL DRAWING AND SUBSEQUENT REVISIONS THEREOF WITH APPROVAL NAMES, INITIALS AND PE SEAL, IF APPLICABLE, ARE MAINTAINED IN THE FILES OF TETRA TECH, INC.

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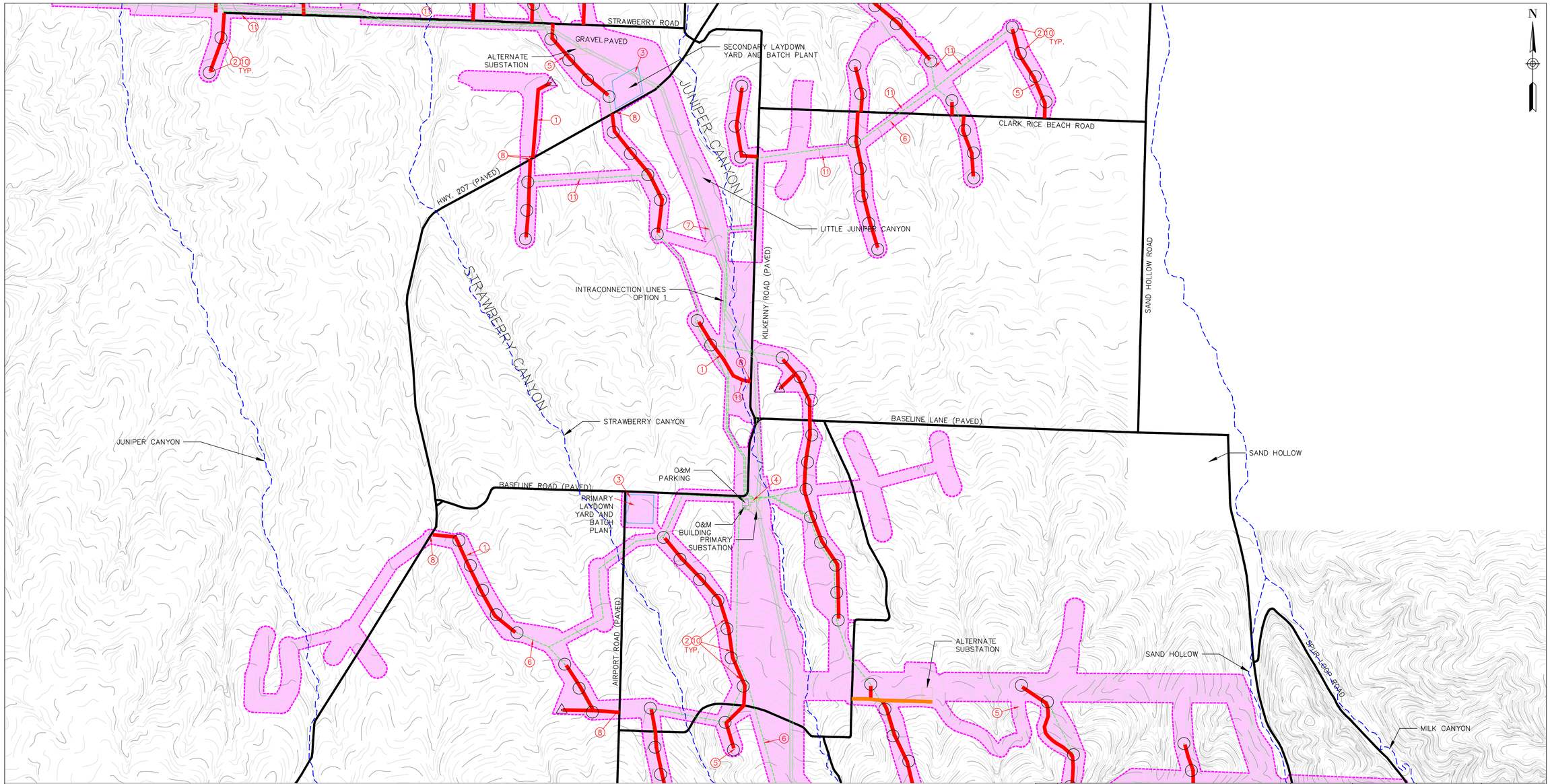

LEGEND:

- SITE BOUNDARY
- TURBINE
- MET TOWER
- EXISTING ROAD
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- SUBSTATION
- WETLANDS
- STREAM

NOTES:

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0 500 1000 FEET

REV	REVISION DESCRIPTION	DSG BY/DATE	DWN BY/DATE	CHK BY/DATE	APPVD/DATE
0	FINAL	JPP/11-21-14	AML/11-21-14	REV/11-21-14	SO/11-21-14

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WHEATRIDGE WIND ENERGY FACILITY
EROSION AND SEDIMENT CONTROL PLAN

WHEATRIDGE WIND ENERGY FACILITY
LEXINGTON, OREGON

EROSION CONTROL – MAXIMUM PROJECT IMPACT
GE 1.7-103 PROJECT FACILITIES AND 230 KV
INTRACONNECTION LINES OPTION 1 SITE PLAN
(SHEET 4 OF 5)

THE ORIGINAL DRAWING AND SUBSEQUENT REVISIONS THEREOF WITH APPROVAL NAMES, INITIALS AND PE SEAL, IF APPLICABLE, ARE MAINTAINED IN THE FILES OF TETRA TECH, INC.

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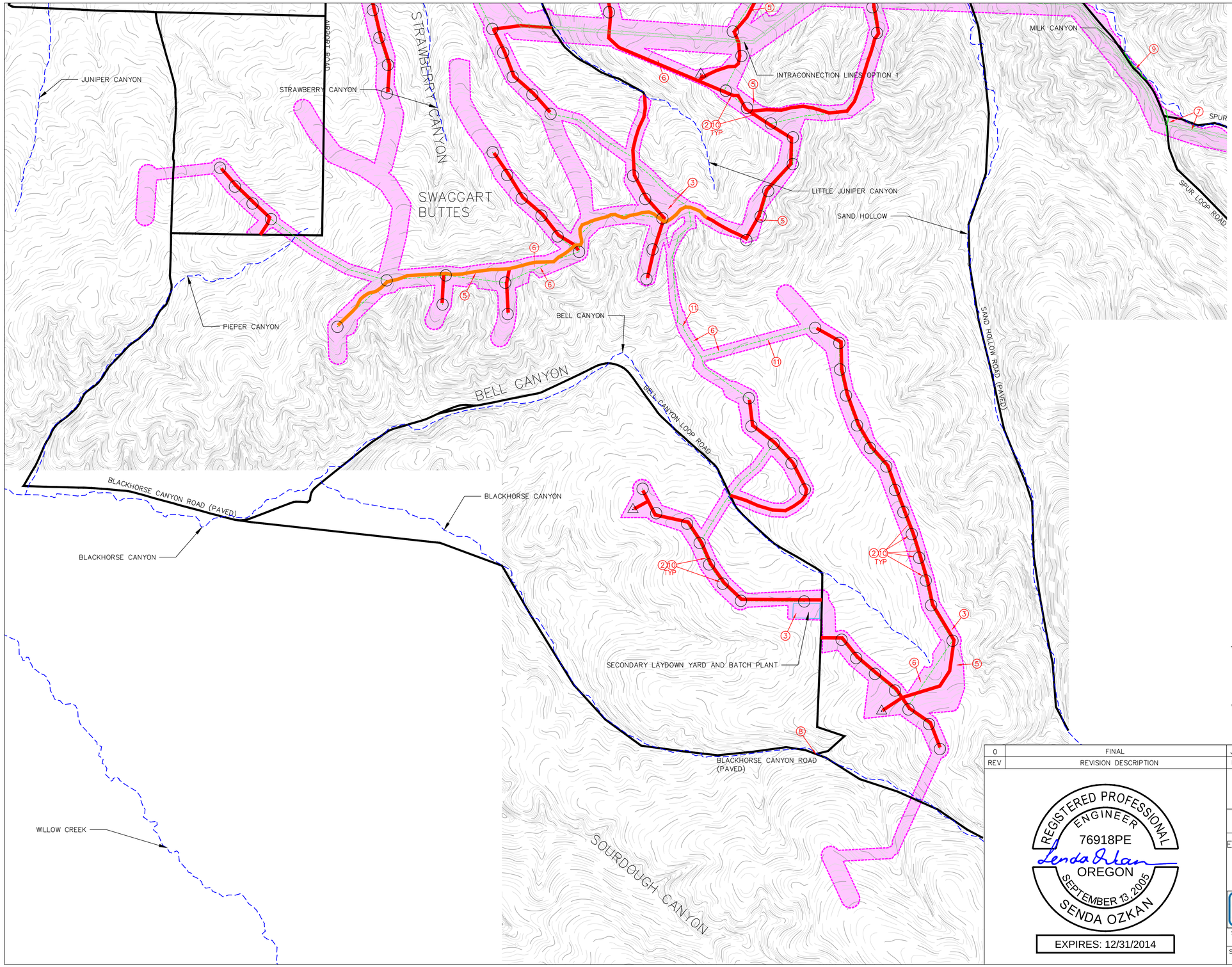

LEGEND:

- SITE BOUNDARY
- TURBINE
- MET TOWER
- EXISTING ROAD
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NOTES:

1. SEE DRAWING ESC-3 FOR KEYED EROSION CONTROL NOTES.

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0	FINAL	JPP/11-21-14	AML/11-21-14	REV/11-21-14	SO/11-21-14

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WHEATRIDGE WIND ENERGY FACILITY
EROSION AND SEDIMENT CONTROL PLAN

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LEXINGTON, OREGON

EROSION CONTROL – MAXIMUM PROJECT IMPACT
GE 1.7-103 PROJECT FACILITIES AND 230 KV
INTRACONNECTION LINES OPTION 1 SITE PLAN
(SHEET 5 OF 5)

THE ORIGINAL DRAWING AND SUBSEQUENT REVISIONS THEREOF WITH APPROVAL NAMES, INITIALS AND PE SEAL, IF APPLICABLE, ARE MAINTAINED IN THE FILES OF TETRA TECH, INC.

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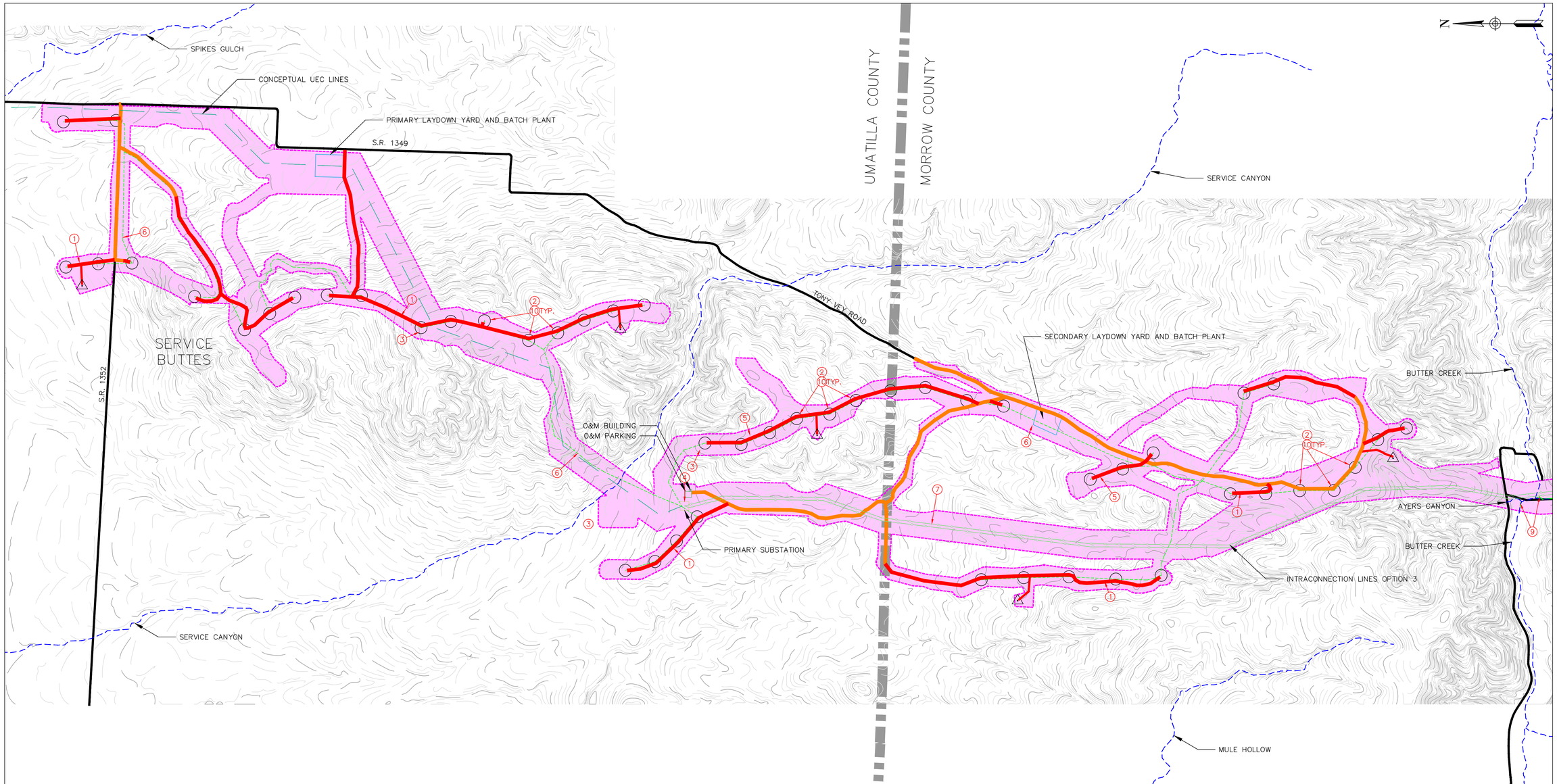

LEGEND:

- SITE BOUNDARY
- TURBINE
- MET TOWER
- EXISTING ROAD
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- NEW ROAD TO BE CONSTRUCTED
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- ELECTRICAL COLLECTOR LINE
- SUBSTATION
- WETLANDS
- STREAM

NOTES:

1. SEE DRAWING ESC-3 FOR KEYED EROSION CONTROL NOTES.

0 500 1000 FEET

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0	FINAL	JPP/11-21-14	AML/11-21-14	REV/11-21-14	SO/11-21-14

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WHEATRIDGE WIND ENERGY FACILITY
EROSION AND SEDIMENT CONTROL PLAN

WHEATRIDGE WIND ENERGY FACILITY
LEXINGTON, OREGON

EROSION CONTROL – MINIMUM PROJECT IMPACT
GE 2.5-120 PROJECT FACILITIES AND 230 KV
INTRACONNECTION LINES OPTION 3 SITE PLAN
(SHEET 1 OF 5)

THE ORIGINAL DRAWING AND SUBSEQUENT REVISIONS THEREOF WITH APPROVAL NAMES, INITIALS AND PE SEAL, IF APPLICABLE, ARE MAINTAINED IN THE FILES OF TETRA TECH, INC.

SIZE	CONTRACT NO.	DRAWING NO.	REV
DI		ESC-10	0

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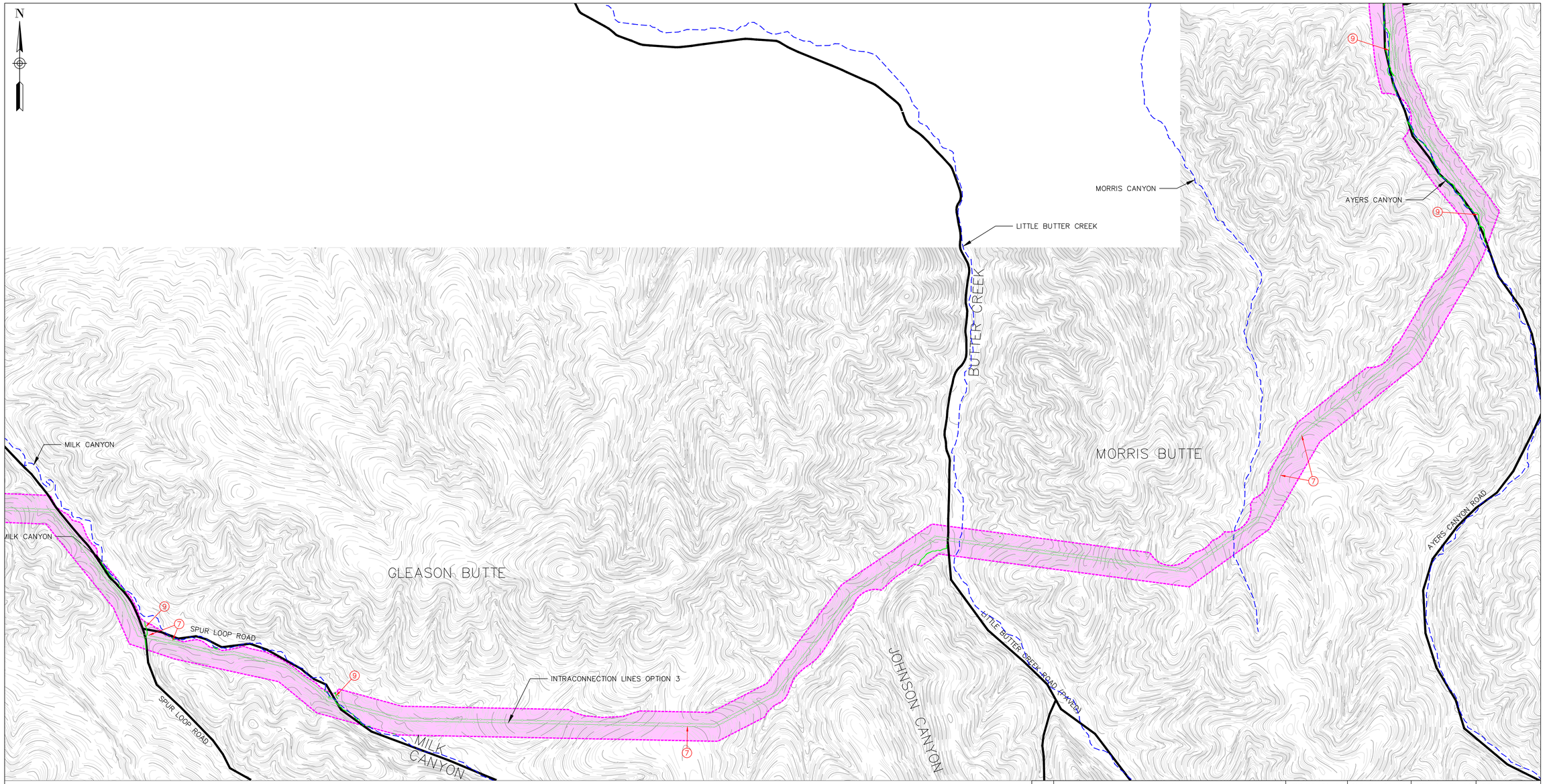

LEGEND:

- SITE BOUNDARY
- TURBINE
- MET TOWER
- EXISTING ROAD
- EXISTING PRIVATE ROAD TO BE IMPROVED
- NEW ROAD TO BE CONSTRUCTED
- OVERHEAD INTRACONNECTION LINES
- ELECTRICAL COLLECTOR LINE
- SUBSTATION
- WETLANDS
- STREAM

NOTES:

1. SEE DRAWING ESC-3 FOR KEYED EROSION CONTROL NOTES.

0 500 1000 FEET

REV	REVISION DESCRIPTION	DSG BY/DATE	DWN BY/DATE	CHK BY/DATE	APPVD/DATE
0	FINAL	JPP/11-21-14	AML/11-21-14	REV/11-21-14	SO/11-21-14

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OREGON
SEPTEMBER 13, 2005
SENDA OZKAN

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WHEATRIDGE WIND ENERGY FACILITY
EROSION AND SEDIMENT CONTROL PLAN

WHEATRIDGE WIND ENERGY FACILITY
LEXINGTON, OREGON

EROSION CONTROL – MINIMUM PROJECT IMPACT
GE 2.5-120 PROJECT FACILITIES AND 230 KV
INTRACONNECTION LINES OPTION 3 SITE PLAN
(SHEET 2 OF 5)

THE ORIGINAL DRAWING AND SUBSEQUENT REVISIONS THEREOF WITH APPROVAL NAMES, INITIALS AND PE SEAL, IF APPLICABLE, ARE MAINTAINED IN THE FILES OF TETRA TECH, INC.

SIZE	CONTRACT NO.	DRAWING NO.	REV
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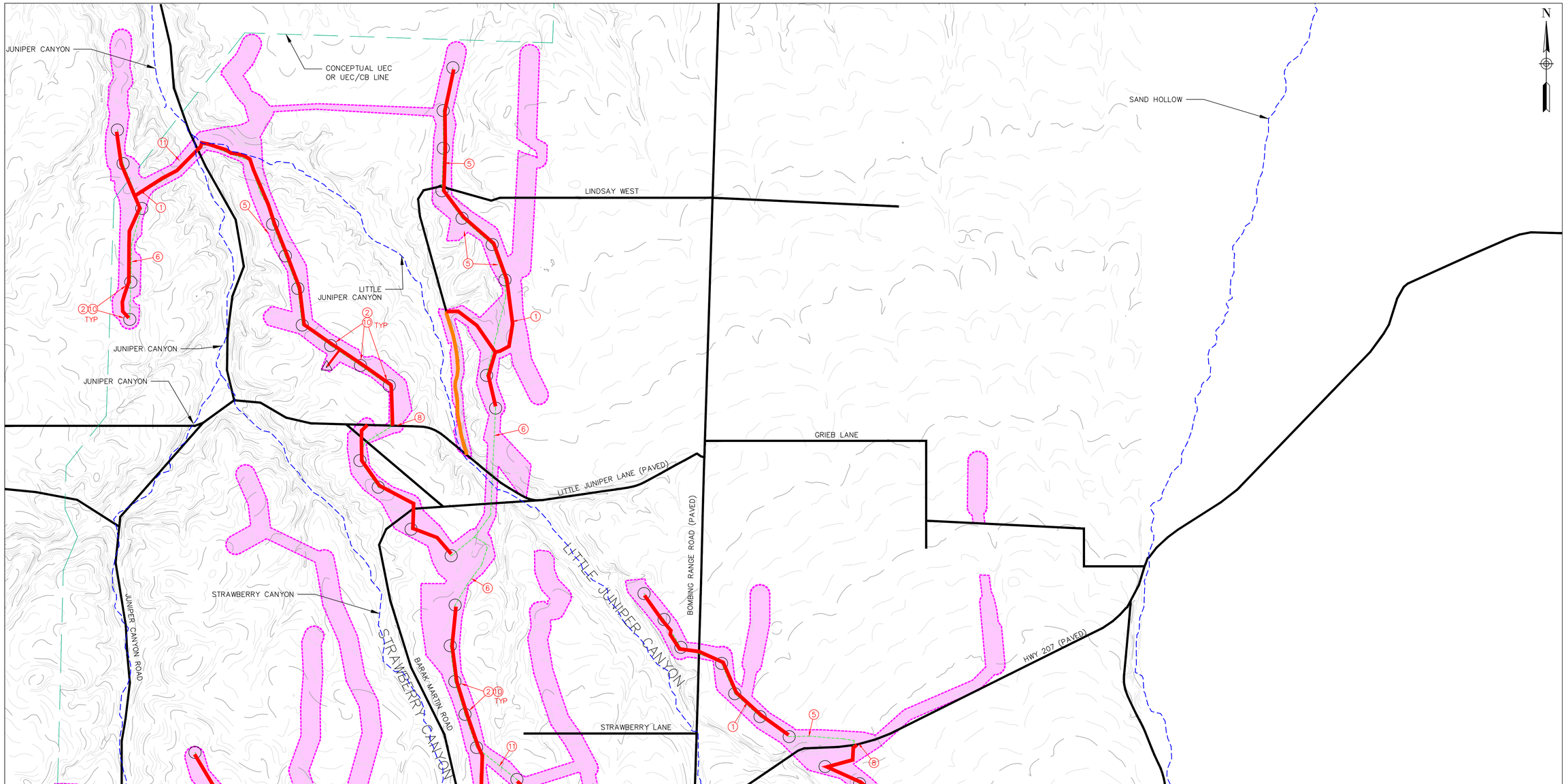

LEGEND:

- SITE BOUNDARY
- TURBINE
- MET TOWER
- EXISTING ROAD
- EXISTING PRIVATE ROAD TO BE IMPROVED
- NEW ROAD TO BE CONSTRUCTED
- OVERHEAD INTRACONNECTION LINES
- ELECTRICAL COLLECTOR LINE
- SUBSTATION
- WETLANDS
- STREAM

NOTES:

1. SEE DRAWING ESC-3 FOR KEYED EROSION CONTROL NOTES.

0 500 1000 FEET

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0	FINAL	JPP/11-21-14	AML/11-21-14	REV/11-21-14	SO/11-21-14

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OREGON
SEPTEMBER 13, 2005
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EXPIRES: 12/31/2014

WHEATRIDGE WIND ENERGY FACILITY
EROSION AND SEDIMENT CONTROL PLAN

WHEATRIDGE WIND ENERGY FACILITY
LEXINGTON, OREGON

EROSION CONTROL – MINIMUM PROJECT IMPACT
GE 2.5-120 PROJECT FACILITIES AND 230 KV
INTRACONNECTION LINES OPTION 3 SITE PLAN
(SHEET 3 OF 5)

THE ORIGINAL DRAWING AND SUBSEQUENT REVISIONS THEREOF WITH APPROVAL NAMES, INITIALS AND PE SEAL, IF APPLICABLE, ARE MAINTAINED IN THE FILES OF TETRA TECH, INC.

SIZE	CONTRACT NO.	DRAWING NO.	REV
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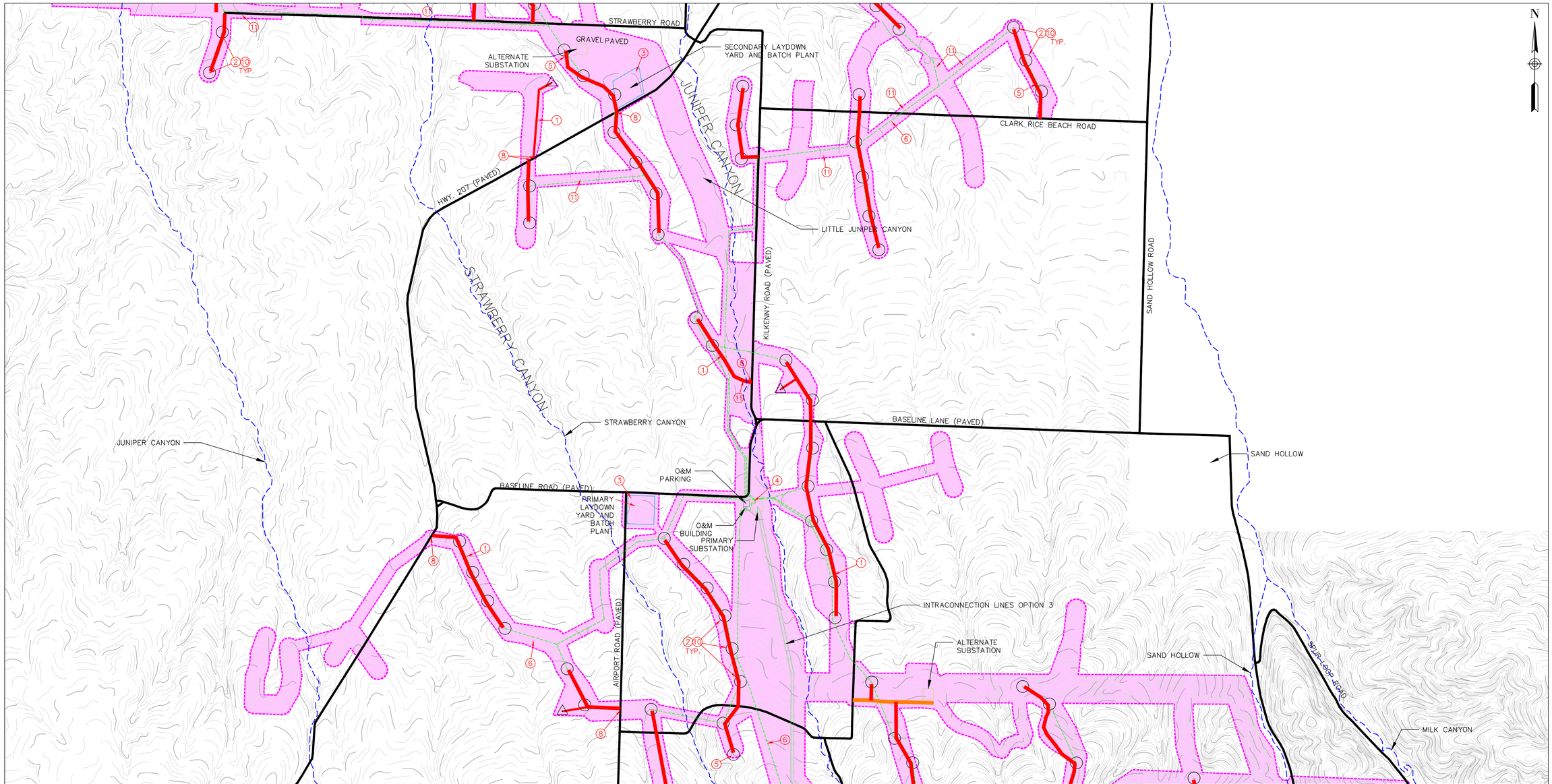

LEGEND:

- SITE BOUNDARY
- TURBINE
- MET TOWER
- EXISTING ROAD
- EXISTING PRIVATE ROAD TO BE IMPROVED
- NEW ROAD TO BE CONSTRUCTED
- OVERHEAD INTRACONNECTION LINES
- ELECTRICAL COLLECTOR LINE
- SUBSTATION
- WETLANDS
- STREAM

NOTES:

1. SEE DRAWING ESC-3 FOR KEYED EROSION CONTROL NOTES.

0 500 1000 FEET

REV	REVISION DESCRIPTION	DSG BY/DATE	DWN BY/DATE	CHK BY/DATE	APPVD/DATE
0	FINAL	JPP/11-21-14	AML/11-21-14	REV/11-21-14	SO/11-21-14

REGISTERED PROFESSIONAL ENGINEER
76918PE
OREGON
SEPTEMBER 13, 2005
SENDA OZKAN

EXPIRES: 12/31/2014

WHEATRIDGE WIND ENERGY FACILITY
EROSION AND SEDIMENT CONTROL PLAN

WHEATRIDGE WIND ENERGY FACILITY
LEXINGTON, OREGON

EROSION CONTROL – MINIMUM PROJECT IMPACT GE 2.5-120 PROJECT FACILITIES AND 230 KV INTRACONNECTION LINES OPTION 3 SITE PLAN (SHEET 4 OF 5)

THE ORIGINAL DRAWING AND SUBSEQUENT REVISIONS THEREOF WITH APPROVAL NAMES, INITIALS AND PE SEAL, IF APPLICABLE, ARE MAINTAINED IN THE FILES OF TETRA TECH, INC.

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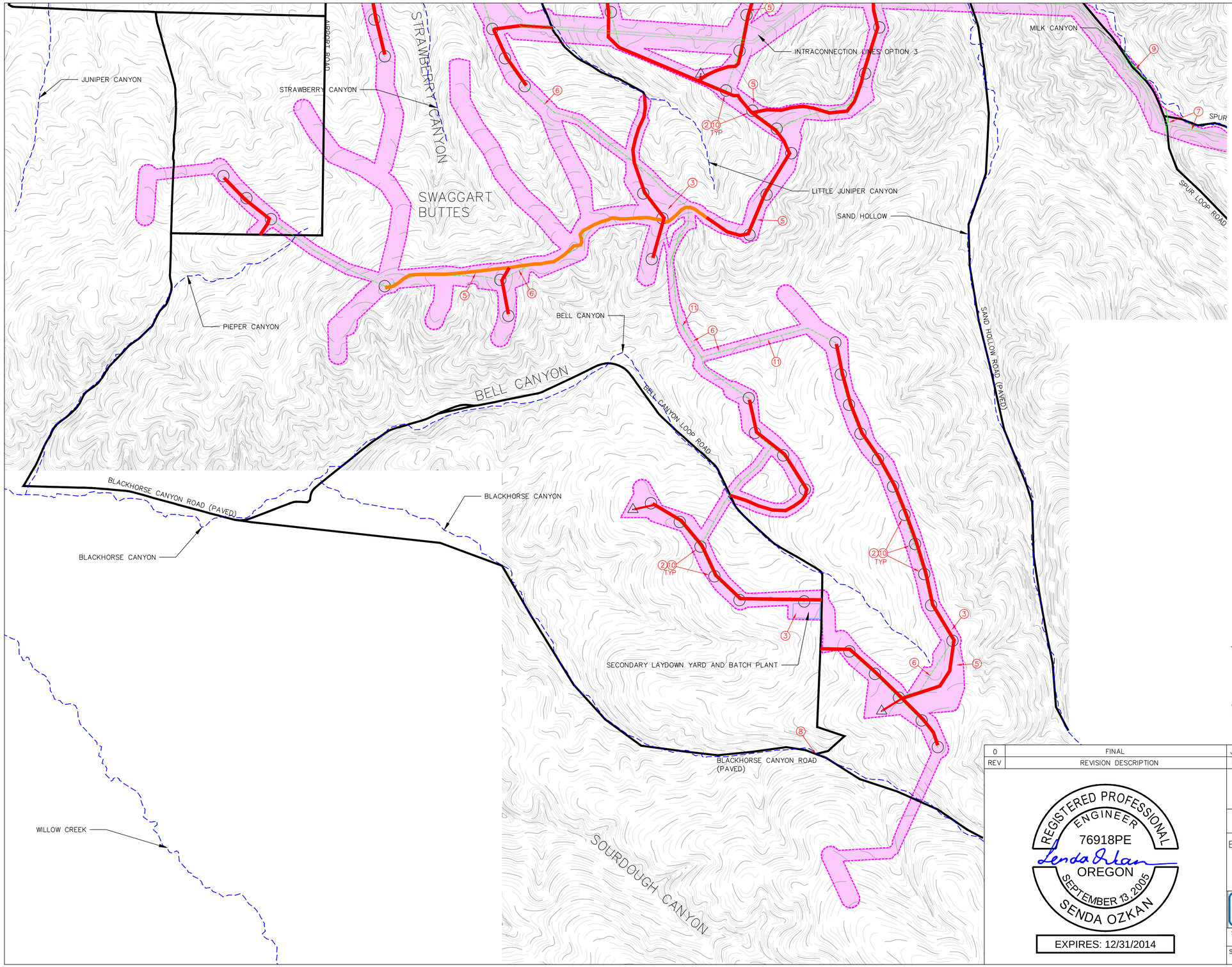

LEGEND:

- SITE BOUNDARY
- TURBINE
- MET TOWER
- EXISTING ROAD
- EXISTING PRIVATE ROAD TO BE IMPROVED
- NEW ROAD TO BE CONSTRUCTED
- OVERHEAD INTRACONNECTION LINES
- ELECTRICAL COLLECTOR LINE
- SUBSTATION
- WETLANDS
- STREAM

NOTES:

1. SEE DRAWING ESC-3 FOR KEYED EROSION CONTROL NOTES.

N

0 500 1000 FEET

REV	REVISION DESCRIPTION	DSG BY/DATE	DWN BY/DATE	CHK BY/DATE	APPVD/DATE
0	FINAL	JPP/11-21-14	AML/11-21-14	REV/11-21-14	SO/11-21-14

REGISTERED PROFESSIONAL ENGINEER
76918PE
OREGON
SEPTEMBER 13, 2005
SENDA OZKAN

EXPIRES: 12/31/2014

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EROSION AND SEDIMENT CONTROL PLAN

WHEATRIDGE WIND ENERGY FACILITY
LEXINGTON, OREGON

EROSION CONTROL – MINIMUM PROJECT IMPACT
GE 2.5-120 PROJECT FACILITIES AND 230 KV
INTRACONNECTION LINES OPTION 3 SITE PLAN
(SHEET 5 OF 5)

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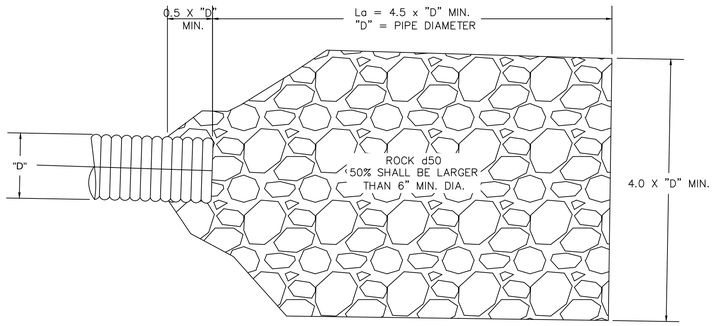
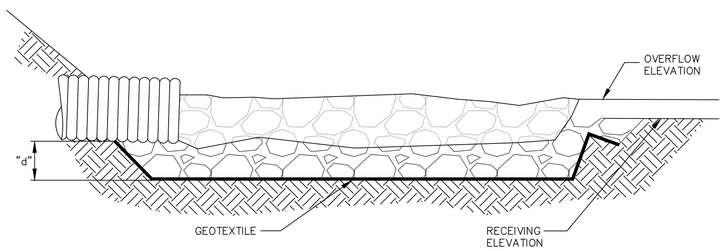


PLAN

NOTES:

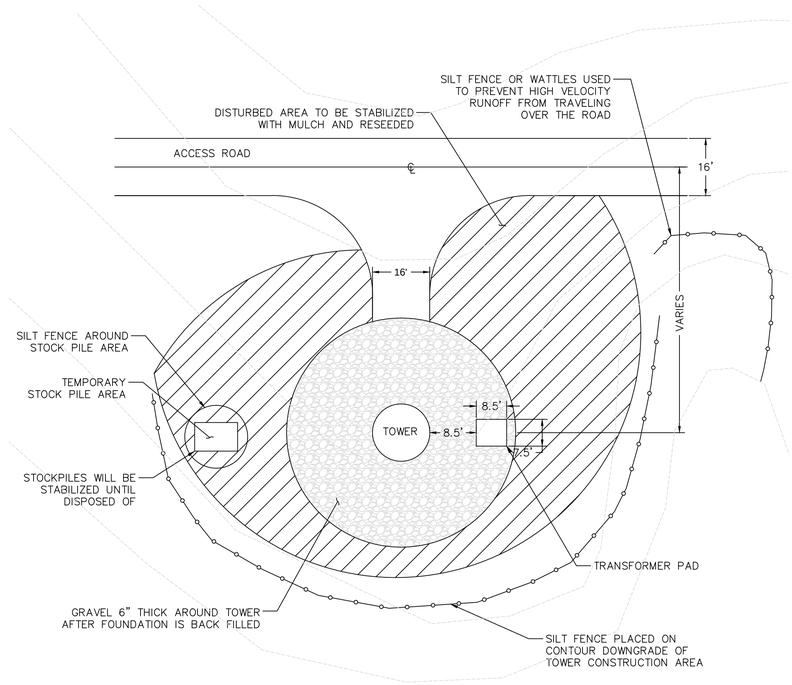
1. " La" = LENGTH OF APRON. DISTANCE " La" SHALL BE OF SUFFICICIENT LENGTH TO DISSIPATE ENERGY.
2. APRON SHALL BE SET HORIZONTALLY AND ALIGNED STRAIGHT
3. FILTER MATERIAL SHALL BE FABRIC OR 6" (150mm) THICK MINIMUM GRADED GRAVEL LAYER.



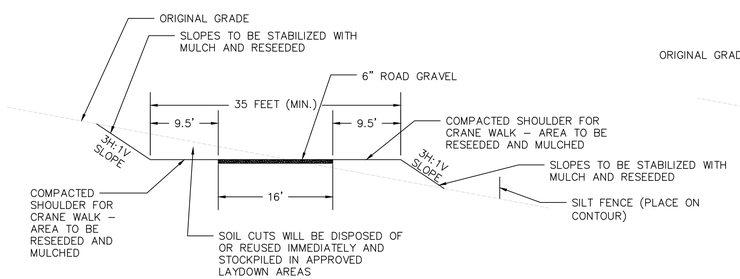
THICKNESS ("d") = 1.5 x MAX. ROCK DIAMETER – 6" (150mm) MIN.

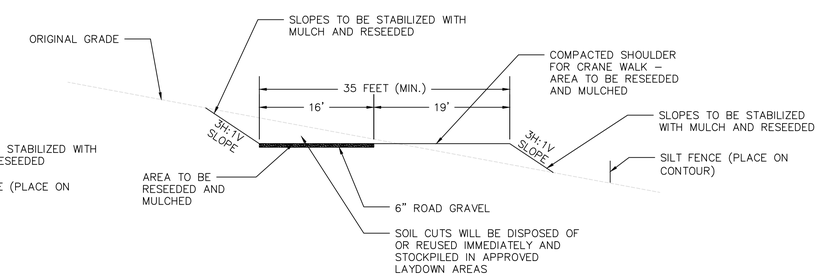
SECTION

OUTLET PROTECTION
RIPRAP BASIN

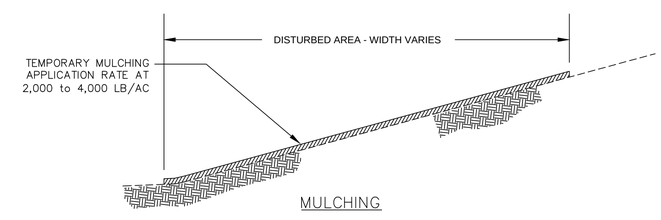


TYPICAL TOWER LAYOUT
N.T.S.





TYPICAL ACCESS ROAD
N.T.S.



MULCHING

REV	REVISION DESCRIPTION	DSG BY/DATE	DWN BY/DATE	CHK BY/DATE	APPVD/DATE
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REGISTERED PROFESSIONAL ENGINEER
76918PE
OREGON
SEPTEMBER 13, 2005
SENDA OZKAN

EXPIRES: 12/31/2014

WHEATRIDGE WIND ENERGY FACILITY
EROSION AND SEDIMENT CONTROL PLAN

WHEATRIDGE WIND ENERGY FACILITY
LEXINGTON, OREGON

EROSION AND SEDIMENT CONTROL
CONSTRUCTION DETAILS (SHEET 1 OF 3)

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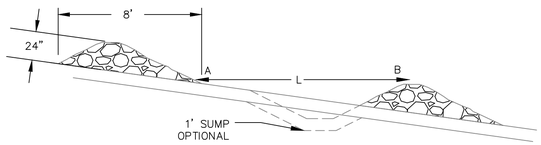
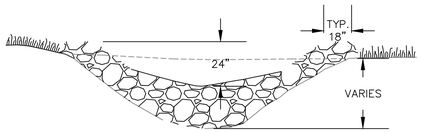


PROFILE

NOTES:

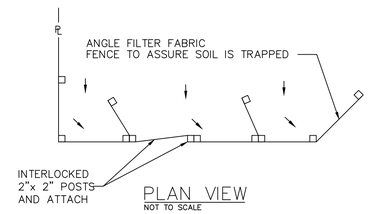
1. KEY STONE INTO THE CHANNEL BANKS AND EXTEND CHECK DAM A MINIMUM OF 18" TO PREVENT FLOW AROUND DAM.
2. L = DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION. SEE TABLE TO THE RIGHT.



SECTION

SLOPE	SPACING L (FT)
2% OR LESS	80
2.1% – 4%	40
4.1% – 7%	25
7.1% – 10%	15
OVER 10%	USE LINED WATERWAY

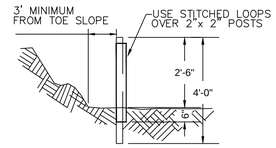
ROCK CHECK DAM



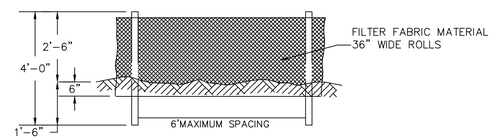
PLAN VIEW
NOT TO SCALE

NOTES:

1. THE PRIMARY PURPOSE OF A SEDIMENT FENCE IS TO REDUCI
2. SEDIMENT FENCE SHALL BE INSTALLED ON A LINE OF EQUAL ELEVATION (CONTOUR) TO THE EXTENT PRACTICABLE.
3. SEDIMENT FENCE SHALL NOT BE USED IN OR ACROSS A FLOWING NATURAL CHANNEL.
4. THE BOTTOM EDGE OF SEDIMENT FENCE SHALL BE BURIED A MINIMUM OF 6" BELOW GROUND.
5. POSTS MAY BE 2" X 2" FIR, PINE OR STEEL FENCE POSTS.
6. POSTS TO BE INSTALLED ON UPHILL SIDE OF SLOPE.
7. COMPACT BOTH SIDES OF FILTER FABRIC TRENCH.
8. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHE ONE–THIRD OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF–SITE AND CAN BE PERMANENTLY STABILIZED.
9. MAXIMUM DRAINAGE AREA TRIBUTARY TO 100 FEET OF SEDIMENT FENCE SHALL BE 0.25 ACRES.
10. FOR MAXIMUM SPACING ON SLOPE SEE SEDIMENT FENCE SPACING TABLE BELOW.

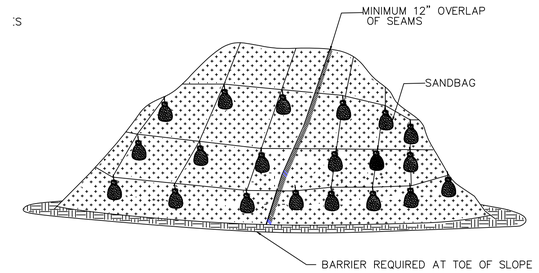


PROFILE
NOT TO SCALE



FRONT VIEW
NOT TO SCALE

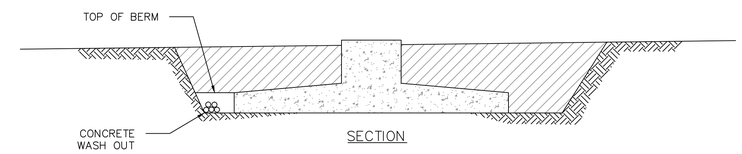
SEDIMENT FENCING



NOTES:

1. MINIMUM 12" OVERLAP OF ALL SEAMS REQUIRED.
2. BARRIER (SEDIMENT FENCE OR FIBER ROLLS/WATTLES) REQUIRED AT TOE OF STOCK PILE.
3. COVERING MAINTAINED TIGHTLY IN PLACE BY USING SANDBAGS OR TIES ON ROPES WITH A MAXIMUM OF 10' GRID SPACING IN ALL DIRECTIONS.
4. IF FEASIBLE, STOCKPILES WILL BE PLACED A MINIMUM OF 50 FEET AWAY FROM DRAINAGE COURSES OR WATER BODIES.

STOCKPILE MANAGEMENT/PLASTIC SHEETING



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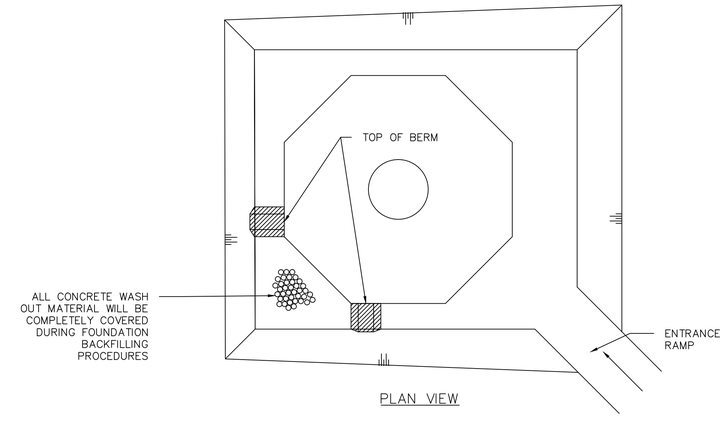
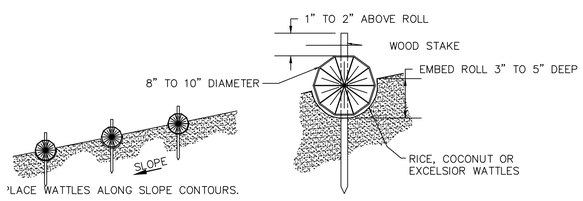


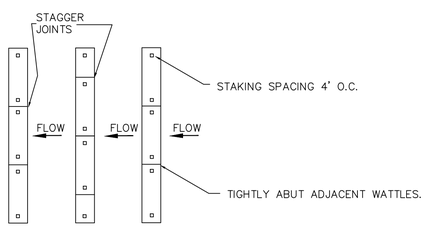
PLAN VIEW

CONCRETE WASHOUT AREA



PLACE WATTLES ALONG SLOPE CONTOURS.

PROFILE SECTION

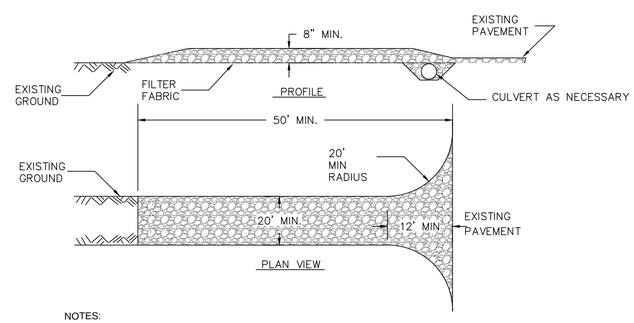


PLAN VIEW

NOTES:

1. STAKES SHALL BE 1"X2" WOODEN STAKES.
2. ADDITIONAL STAKES MAY BE INSTALLED ON DOWNHILL SIDE OF WATTLES, ON STEEP SLOPES OR HIGHLY EROSIVE SOILS
3. FIBER ROLLS OR WATTLES TO BE INSTALLED EVERY 10' TO 25'.

FIBER ROLLS / WATTLES



NOTES:

1. STONE SIZE – USE 3"–6" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH – NOT LESS THAN 50 FT.
3. THICKNESS – NOT LESS THAN 8 INCHES.
4. WIDTH – NOT LESS THAN 20 FT.
5. FILTER FABRIC – WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. PIPE HAS TO BE SIZED AS PER DRAINAGE.
7. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.
10. ENTRANCE/EXIT TRACKING CONTROLS WILL ONLY BE NECESSARY IF DIRT OR MUD IS TRACKED ONTO PUBLIC ROADS, SITE ADJACENT TO WATER BODIES, POOR SOILS ENCOUNTERED ON SITE, DUST IS A PROBLEM DURING DRY WEATHER CONDITIONS, OR IF

CONSTRUCTION ENTRANCE

REV	REVISION DESCRIPTION	DSG BY/DATE	DWN BY/DATE	CHK BY/DATE	APPVD/DATE
0	FINAL	JPP/11–21–14	AML/11–21–14	REV/11–21–14	SO/11–21–14

REGISTERED PROFESSIONAL ENGINEER
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OREGON
SEPTEMBER 13, 2005
SENDA OZKAN

EXPIRES: 12/31/2014

WHEATRIDGE WIND ENERGY FACILITY
EROSION AND SEDIMENT CONTROL PLAN

WHEATRIDGE WIND ENERGY FACILITY
LEXINGTON, OREGON

EROSION AND SEDIMENT CONTROL
CONSTRUCTION DETAILS (SHEET 2 OF 3)

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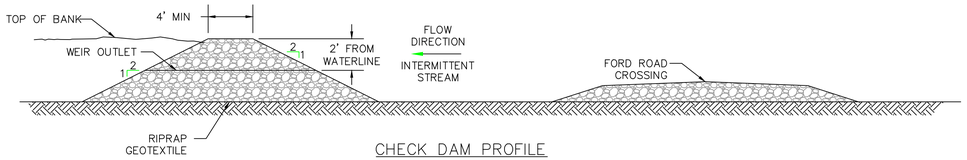
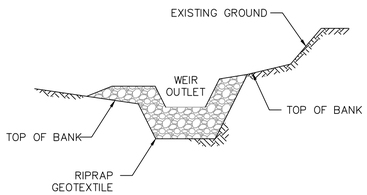
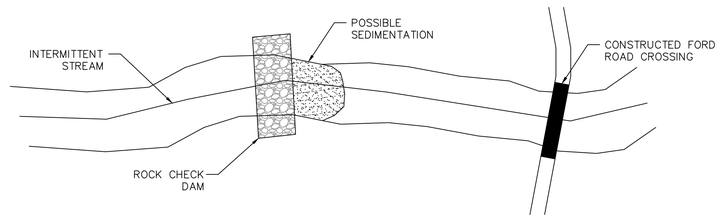


CHECK DAM PROFILE



CHECK DAM SECTION

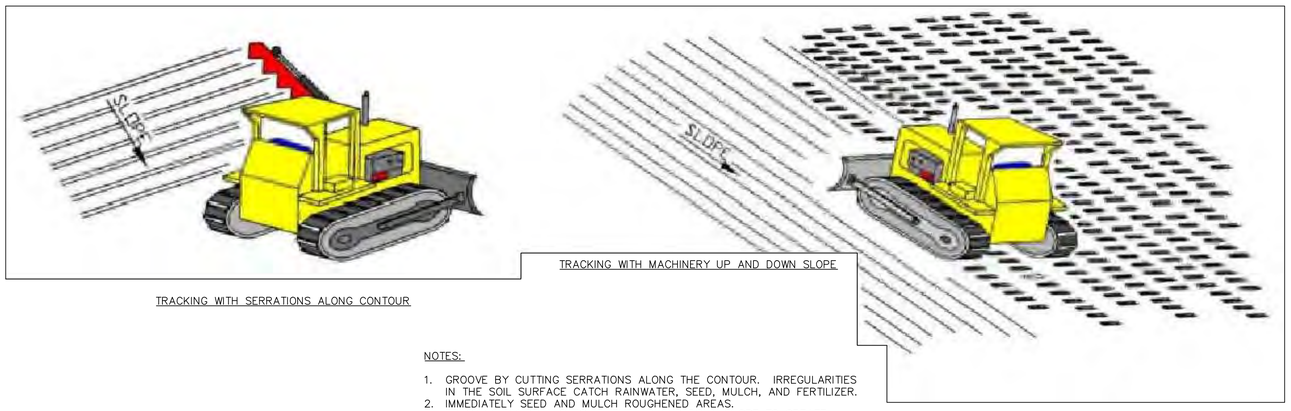


CHECK DAM PLAN VIEW

NOTES:

1. LIMIT GROUND AND VEGETATION DISTURBANCE. TRIM RATHER THAN REMOVE.
2. INSTALL TEMPORARY ROCK CHECK DAM BEFORE UPSTREAM GROUND DISTURBANCE OCCURS.
3. HAND PLACE GEOTEXTILE AND RIPRAP. USE CLASS 100 (METRIC) RIPRAP.
4. FOLLOW MAINTENANCE SPECIFICATIONS STATED IN THE NARRATIVE PORTION OF THE EROSION AND SEDIMENT PLAN IN THE SPECIAL PROVISIONS. PREVENT SEDIMENT RESUSPENSION WHEN PERFORMING MAINTENANCE AND WHEN REMOVING THE TRAP.
5. CLEAN OUT ACCUMULATED SEDIMENT AND REMOVE TRAP AFTER CONSTRUCTION IS COMPLETED.

TEMPORARY SEDIMENT TRAP



TRACKING WITH SERRATIONS ALONG CONTOUR

TRACKING WITH MACHINERY UP AND DOWN SLOPE

NOTES:

1. GROOVE BY CUTTING SERRATIONS ALONG THE CONTOUR. IRREGULARITIES IN THE SOIL SURFACE CATCH RAINWATER, SEED, MULCH, AND FERTILIZER.
2. IMMEDIATELY SEED AND MULCH ROUGHENED AREAS.
3. TRACKING BY DRIVING EQUIPMENT UP AND DOWN SLOPE TO CREATE HORIZONTAL DEPRESSIONS AND GROOVES.

SURFACE ROUGHENING

REV	REVISION DESCRIPTION	DSG BY/DATE	DWN BY/DATE	CHK BY/DATE	APPVD/DATE
0	FINAL	JPP/11-21-14	AML/11-21-14	REV/11-21-14	SO/11-21-14

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OREGON
SEPTEMBER 13, 2005
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EXPIRES: 12/31/2014

WHEATRIDGE WIND ENERGY FACILITY
EROSION AND SEDIMENT CONTROL PLAN

WHEATRIDGE WIND ENERGY FACILITY
LEXINGTON, OREGON

EROSION AND SEDIMENT CONTROL
CONSTRUCTION DETAILS (SHEET 3 OF 3)

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Exhibit J

Wetlands and Other Jurisdictional Waters

Prepared for

Wheatridge Wind Energy, LLC

Wheatridge Wind Energy Facility

July 2015

Prepared by

Tetra Tech, Inc.

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Figure J-2. Wheatridge GE 1.7-103 Turbine Layout Design, Wetland and Waters, Stream Crossings Details Maps

Figure J-3. Wheatridge GE 2.5-120 Turbine Layout Design, Wetland and Waters, Stream Crossings Index Map

Figure J-4. Wheatridge GE 2.5-120 Turbine Layout Design, Wetland and Waters, Stream Crossings Details Maps

List of Attachments

Attachment J-1. Correspondence with U.S. Army Corps of Engineers on Submittal of Wheatridge Wind Energy Facility 2014 Wetlands and Other Waters Delineation Report

Attachment J-2. Correspondence with Oregon Department of State Lands on Submittal of Wheatridge Wind Energy Facility 2014 Wetlands and Other Waters Delineation Report

Attachment J-3. Wheatridge Wind Energy Facility 2014 Wetlands and Other Waters Delineation Report

Terms and Definitions

Collector Line	An underground or overhead electrical 34.5 kV line transmitting power from the turbines to a Substation
Construction Yard	The temporary area for construction activities and Project component storage prior to installation
GE 1.7-103 Layout	Project turbine layout comprised of 292 GE 1.7MW turbines with 80m hub heights and 103m rotor diameters
GE 2.5-120 Layout	Project turbine layout comprised of 200 GE 2.5MW turbines with 85m hub heights and 120m rotor diameters
Gen-tie Line(s)	One or two 230 kV transmission line(s) conveying power from the Project to an interconnection point with the grid, which will be permitted and built by UEC or UEC/CB
Intraconnection Corridor	The intraconnection transmission line corridor connecting Wheatridge East with Wheatridge West
Intraconnection Line(s)	One or two overhead electrical 230 kV lines connecting the Project Substations in Wheatridge East and Wheatridge West.
Met Tower	Permanent meteorological tower
O&M Buildings	Permanent operations and maintenance buildings, including parking
Project	Wheatridge Wind Energy Facility
Site Access Road	Private road to be constructed or improved for the purpose of accessing turbines and associated Project facilities
Site Boundary	The boundary within which all Project facilities will be constructed, also known as the micrositing corridor
Substation	A facility in which electric power from the turbines is aggregated, stepped up in voltage, and connected to the Intraconnection Line(s) or the Gen-tie Line(s)
Turbine	A collective term for the foundation, tower, nacelle, blades and rotor that comprise a wind turbine generator in the Project
Turbine Pad	A cleared, graveled area around the base of each turbine encompassing primarily the turbine's foundation
Wheatridge	Wheatridge Wind Energy, LLC
Wheatridge East	The eastern group of turbines
Wheatridge West	The western group of turbines

Acronyms and Abbreviations

CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
OAR	Oregon Administrative Rule
ODSL	Oregon Department of State Lands
ORS	Oregon Revised Statues
USACE	US Army Corps of Engineers
WOS	waters of the State
Wof US	waters of the United States

1.0 Introduction

Wheatridge Wind Energy, LLC (Wheatridge), proposes to construct the Wheatridge Wind Energy Facility (Project), a wind generation facility with a maximum nominal generating capacity of 500 megawatts (MW) in Morrow and Umatilla counties, Oregon (see Figures C-1 and C-2). The Project is comprised of up to 292 wind turbines divided into two groups: the 'Wheatridge West' wind turbine group and the 'Wheatridge East' wind turbine group. Wheatridge West and Wheatridge East are electrically connected by an 'Intraconnection Corridor' containing up to two parallel overhead 230 kilovolt (kV) transmission lines (Intraconnection Lines), each no longer than 35 miles in length. Other Project components include on-site access roads, an electrical collection and control system, substations, operations and maintenance buildings (O&M Buildings), and temporary construction yards. These facilities are all described in greater detail in Exhibit B.

Wheatridge West is located entirely within Morrow County, approximately 5 miles northeast of Lexington, and approximately 7 miles northwest of Heppner. Wheatridge West is bisected by Oregon Highway 207 (OR-207). Wheatridge East is located approximately 16 miles northeast of Heppner and encompasses land in both Morrow and Umatilla counties. The Intraconnection Corridor is located entirely within Morrow County and adjoins to the southeastern portion of Wheatridge West and the southern portion of Wheatridge East.

There are two turbine layouts for the Project: the GE 1.7-103 layout and the GE 2.5-120 layout. The GE 1.7-103 layout utilizes 292 1.7MW GE turbines with 80-meter (262-foot) hub heights and 103-meter (337-foot) rotor diameters. The GE 2.5-120 utilizes 200 2.5MW GE turbines with 85-meter (278-foot) hub heights and 120-meter (393-foot) rotor diameters. For purposes of Exhibit J, discussions of impacts are based on the GE 1.7-103 layout (Figures J-1 and J-2) because the layout utilizing GE 2.5-120 turbines (Figures J-3 and J-4) has same number and extent of impacts as those described for the GE 1.7-103 layout.

As noted in Exhibit B, the Site Boundary is established as the micrositing corridor within which all Project facilities would be constructed. This approach allows some flexibility in specific component locations and design in response to site-specific conditions and engineering requirements to be determined prior to construction. The Site Boundary encompasses a total of 13,097 acres of privately owned land: 2,956 acres in Wheatridge East, 8,515 acres in Wheatridge West, and 1,626 acres in the Intraconnection Corridor.

Exhibit J provides information related to the impacts of the Project on regulated waters of the State (WOS) and/or waters of the United States (Wof US), as required by Oregon Administrative Rule (OAR) 345-021-0010(1)(j) paragraphs (A) through (F).

2.0 Analysis Area

The analysis area for wetlands and other waters is the area within the Site Boundary. The Site Boundary is defined in detail in Exhibits B and C. Wheatridge conducted delineations of wetlands and other waters inside the Site Boundary, where the Project design showed that those features would potentially be impacted by Project facilities. This approach was based on review and concurrence from the Oregon Department of State Lands (ODSL). Wheatridge acknowledges that if the location of Project facilities change to impact areas outside the Site Boundary, additional delineations may be required. Project components are described in Exhibit B.

3.0 Wetlands and Other Jurisdictional Waters

OAR 345-021-0010(1)(j)(A) requests Wheatridge to provide "A description of all areas within the Site Boundary that might be waters of this state or waters of the United States (Wof US) and a map showing the location of these features." The following sections describe wetlands and other waters, identified by Wheatridge. Descriptions of the wetlands and other waters are presented in Attachment J-1 : Wheatridge Wind Energy Facility 2014 Wetlands and Other Waters Delineation Report. Maps showing locations of delineated features are in Attachment J-1, as well as on Figures J-1 through J-4.

3.1 Federal

Waters of the United States are defined in 33 Code of Federal Regulations (CFR) § 36 328.3(a)(1-7) as:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
    a) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    b) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    c) Which are used or could be used for industrial purpose by industries in interstate commerce;
4. All impoundments of waters otherwise defined as Wof US under the definition;
5. Tributaries of waters identified in paragraphs (a) (1) through (4) of this section;
6. The territorial seas; and

7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1) through (6) of this section.

Wetlands are defined federally at 33 CFR § 328.3(b) as "Those 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 State

Oregon Revised Statutes (ORS) 196.800(14) defines WOS more broadly than federal Wof US. Specifically, WOS include "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 nonnavigable 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."

ODSL's definition of wetlands mirrors the federal definition. See OAR 141-085-0510 (100).

3.3 Jurisdictional Versus Non-jurisdictional Waters

Not all wetlands and streams are within the jurisdiction of state or federal regulation, and not all waters falling within the state's jurisdiction fall under federal jurisdiction. For the Project, several jurisdictional distinctions are important, to allow Wheatridge to estimate impacts only to jurisdictional wetlands and other waters. These include determinations related to the following:

- Perennial and intermittent streams, which are generally regulated by both ODSL and the US Army Corps of Engineers (USACE), as distinct from ephemeral streams, which generally are not under state jurisdiction and are evaluated on a case-by-case basis for federal jurisdiction.
- Artificially created roadside and farm ditches, which are considered WOS if they contain food or game fish and are connected to WOS (OAR 141-085-0515(8)) and Wof US if they connect to other Wof US and are not ephemeral (EPA and USACE 2011).

Ephemeral streams are defined 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."* (Nadeau 2011)

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(46)). Food-producing streams are typically one stream order above a fish-bearing stream.

Intermittent streams are likely to be jurisdictional under federal regulations if they have physical characteristics such as discernible banks, evidence of sustained surface flow for at least three consecutive months of the year, and a surface water connection to other Wof US.

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

3.4 Delineation of Wetlands and Other Water Features

3.4.1 Delineation Methods

Field investigations for the delineation of wetlands and other Wof US included pedestrian surveys within the Site Boundary. The field delineation was conducted during the following time periods: September 16-20, September 23-27, and October 25. All parcels were accessed and the delineation is complete.

The delineation was conducted utilizing techniques published in the 1987 USACE *Wetlands Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008a), and OARs for Wetland Delineations 141-090-0005 through 141-090-0055 (ODSL 2001).

During the delineation effort, each wetland or other water encountered was examined for indications that the feature had characteristics consistent with Wof US or WOS, and this evidence was documented using standard field data sheets. The location and extent of each wetland or other water (regardless of its characteristics) was mapped with Global Positioning System technology.

Steams were characterized as intermittent or ephemeral using the Oregon Streamflow Duration Assessment Method, Interim Version (Nadeau 2011), the Approved Jurisdictional Determination Form Instructional Guidebook (USACE 2007), and the guidance memo Clean Water Act Jurisdiction Following the US Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States* (USACE 2008b).

Detailed descriptions of delineation methods for wetlands and other waters are provided in the 2014 Wetland Delineation Report (Attachment J-1). The reports were submitted to ODSL and USACE on December 12, 2014. Wheatridge has not yet received written concurrence from ODSL and USACE with the delineation report, but will request this in 2015.

The survey area for the delineation of wetland and other waters was the Site Boundary, which is a minimum of 660 feet in width around turbines, and wider in some locations. The Site Boundary width around access roads and electrical collection lines is narrower, between 200 feet and 500 feet in width. The Intraconnection Corridor is approximately 1,000 feet in width, and would contain

all Intraconnection Lines and associated access roads. Wider areas of the Site Boundary would encompass the Project substations, meteorological towers, the O&M Buildings, and the temporary construction yards.

3.4.2 Delineation Results

Based on the results of site investigations between September 16 and October 25, 2013, nine wetlands and 61 non-wetland other water features were delineated within the Site Boundary. Table J-1 summarizes wetland features delineated within the Site Boundary by water type classification. Attachment J-1 provides additional detail about each of the wetlands and other waters. Maps in the wetland delineation report as well as Figures J-1 through J-4, depict the location and extent of each delineated feature. Not all features that were delineated would necessarily be impacted by the Project.

Table J-1. Summary of Delineated Wetlands and Other Water Features

Type of Water	Number of Features	Acres
Wheatridge West		
Palustrine Emergent (PEM) Wetland	1	0.01
Ephemeral stream	27	2.50
Intermittent stream	0	0
Perennial stream	0	0
Intraconnection Corridor		
PEM Wetland	8	5.73
Ephemeral stream	18	0.57
Intermittent stream	4	0.40
Perennial stream	2	1.06
Wheatridge East		
PEM Wetland	0	0.0
Ephemeral stream	10	0.48
Intermittent stream	0	0
Perennial stream	0	0
Project Total		
PEM Wetland	9	5.74
Ephemeral stream	54	3.55
Intermittent stream	4	0.40
Perennial stream	2	1.06

4.0 Effects on Wetlands and Other Jurisdictional Waters

No impacts to WOS will occur for either turbine layout design. Permanent and temporary impacts to ephemeral streams that are potentially Wof US will occur from road crossings and underground collector line crossings along the GE 1.7-103 layout design. There will be no temporary impacts for the GE 2.5-200 layout design. Impacts are described below:

- Temporary impacts that will end when construction is completed, after which the impacted sites will be restored to their pre-existing condition; and
- Permanent impacts that will last for the lifetime of the Project.

Wheatridge estimated the construction of the Project would result in the impacts to other waters for the GE 1.7-103 layout design and are summarized in Table J-2. Impact areas are based on the locations of new and improved access roads, and underground collector lines.

Table J-2. Summary of Impacts (GE1.7-103 Turbine Layout Design)

Type of Water	Permanent (acres)	Temporary (acres)
Wheatridge West		
Ephemeral stream	0.006	0.040
Intraconnection Corridor		
NA	0	0
Wheatridge East		
Ephemeral stream	0	0.004
Total Project		
Ephemeral stream	0.006	0.050

The proposed Project is estimated to impact 14 ephemeral streams. Wheatridge West will create permanent impacts to three ephemeral streams due to new roads and temporary impacts to ten ephemeral streams due to new roads and collector lines. Wheatridge East will only temporarily impact four ephemeral streams due to the installation of the underground collector line system. Permanent impacts are 12% (by area) of the total impacts caused the entire Project. There are no impacts along the Intraconnection Corridor because Wheatridge avoided all impacts by micrositing the Intraconnection Lines to avoid all hydrologic, as well as cultural and biological, features. Table J-3 summarizes the crossing sites, in-channel impact areas, and volumes for the GE 1.7-103 layout design.

Table J-3. Permanent and Temporary Impacts to Ephemeral Streams (GE 1.7-103 Turbine Layout Design)									
Stream ID	**Activity**	**Channel Length (ft)**	**Channel Width (ft)**	**Removal Depth (ft)**	**Removal Volume (cy)**	**Removal Material**	**Fill Depth (ft)**	**Fill Volume (cy)**	**Fill Material**
Wheatridge West									
Permanent Impacts									
EPH 202	New Road	19.0	2.0	1.5	2.1	Silt, Clay, Sand, Gravel	5.0	7.0	Gravel/riprap
EPH 209	New Road	21.0	6.0	1.5	7.1	Silt, Clay, Sand, Gravel, Cobble	5.0	23.7	Gravel/riprap
EPH 313	New Road	26.0	3.0	1.5	4.4	Silt, Clay, Sand, Gravel, Cobble	5.0	14.7	Gravel/riprap
TOTALS		66.0	11.0		13.6			45.4	
Temporary Impacts									
EPH 201	Electrical Collection	28.0	2.0	4.0	8.4	Silt, Clay, Gravel, Cobble	4.0	8.4	Gravel
EPH 202	Electrical Collection	22.0	2.0	4.0	6.6	Silt, Clay, Sand, Gravel	4.0	6.6	Gravel
EPH 202	New Road	27.0	2.0	1.5	3.0	Silt, Clay, Sand, Gravel	5.0	10.0	Gravel
EPH 203	Electrical Collection	46.0	1.5	4.0	10.3	Silt, Clay, Sand, Gravel, Cobble	4.0	10.3	Gravel
EPH 209	Electrical Collection	110.0	6.0	4.0	98.0	Silt, Clay, Sand, Gravel, Cobble	4.0	98.0	Gravel
EPH 209	New Road	26.0	6.0	1.5	8.6	Silt, Clay, Sand, Gravel, Cobble	5.0	28.7	Gravel
EPH 213	Electrical Collection	37.0	4.0	4.0	21.7	Silt, Clay, Sand, Gravel, Cobble	4.0	21.7	Gravel
EPH 214	Electrical Collection	45	3	4	20.0	Silt, Clay, Sand, Gravel, Cobble	4	20.0	Gravel

Table J-3. Permanent and Temporary Impacts to Ephemeral Streams (GE 1.7-103 Turbine Layout Design)									
Stream ID	**Activity**	**Channel Length (ft)**	**Channel Width (ft)**	**Removal Depth (ft)**	**Removal Volume (cy)**	**Removal Material**	**Fill Depth (ft)**	**Fill Volume (cy)**	**Fill Material**
EPH 217	New road	39.1	6	1.5	13.0	Silt, Clay, Sand, Gravel, Cobble	5	43.4	Gravel
EPH 217	Electrical Collection	26.6	6	4.0	23.6	Silt, Clay, Sand, Gravel, Cobble	4	26.6	Gravel
EPH 222	Electrical Collection	38.0	3.0	4.0	16.9	Silt, Clay, Sand, Gravel, Cobble	4	16.9	Gravel
EPH 223	Electrical Collection	27.0	2.0	4.0	7.9	Silt, Clay, Sand, Gravel, Cobble	4	7.9	Gravel
EPH 313	Electrical Collection	40.0	3.0	4.0	17.8	Silt, Clay, Sand, Gravel, Cobble	4	17.8	Gravel
EPH 313	New Road	41.0	3.0	1.5	6.9	Silt, Clay, Sand, Gravel, Cobble	5	23.0	Gravel
TOTALS		**552.7**	**49.5**		**242.8**			**336.4**	
Intraconnection Corridor									
No Impacts									
Wheatridge East									
Temporary Impacts									
EPH 300	Electrical Collection	26.0	1.0	4.0	3.9	Silt, Clay, Cobble	4.0	3.9	Gravel
EPH 303	Electrical Collection	31.0	2.0	4.0	9.1	Sand, Cobble	4.0	9.1	Gravel
EPH 304	Electrical Collection	27.0	2.0	4.0	7.9	Silt, Clay, Sand, Gravel, Cobble	4.0	7.9	Gravel
EPH 305	Electrical Collection	26.0	2.0	4.0	7.8	Silt, Clay, Sand, Gravel, Cobble	4.0	7.8	Gravel
TOTALS		**110.0**	**7.0**		**28.7**			**28.7**	
Project Totals									

Table J-3. Permanent and Temporary Impacts to Ephemeral Streams (GE 1.7-103 Turbine Layout Design)									
Stream ID	**Activity**	**Channel Length (ft)**	**Channel Width (ft)**	**Removal Depth (ft)**	**Removal Volume (cy)**	**Removal Material**	**Fill Depth (ft)**	**Fill Volume (cy)**	**Fill Material**
Project - Permanent		66.0	11.0		13.6			45.4	
Project - Temporary		662.7	56.5		271.5			365.1	

5.0 Potential Adverse Impacts to Wetlands and Other Waters

OAR 345-021-0010(1)(j)(C) mandates that the Applicant describe "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)."

There will be no impacts to WOS from either turbine layout proposed by Wheatridge.

There will be no impacts to wetlands, permanent and intermittent streams or ephemeral streams during construction of the GE 2.5 -102-103 layout Project.

Potential permanent impacts are anticipated to ephemeral streams from the access road crossings on Wheatridge West utilizing the GE 1.7-103 layout design. Impacts may be the placement of a culvert where new access roads will cross ephemeral streams. Culvert placement will be conducted within the existent road prism, outside of wetlands. Access road impacts will include the excavation of bed material, the placement of the culvert, and the fill of gravel and rock placed over the culvert to create the road bed. Total in-channel removal for access roads crossings of ephemeral streams will be 13.6 cubic yards, and the total fill will be 45.4 cubic yards. A total of 66 feet of stream channel will be crossed.

Temporary road impacts will include excavation and fill similar to that for permanent road impacts. Temporary disturbance for underground collector line crossing impacts will include in-channel excavation of a 1-foot-wide by a 4-foot-deep trench, placement of collector lines in the trench and backfill with gravel and excavated soil to original surface contours. Native topsoil will be placed on top of the areas of temporary impact, recontoured and revegetated with a native seed mix appropriate for the region. Further details are provided in the proposed Revegetation Plan, provided as an attachment to Exhibit P. The temporary in-channel excavation for roads and collector lines for Wheatridge West will be 242.8 cubic yards; and total fill will be 336.4 cubic yards. A total of 552.7 feet of stream length will be temporarily impacted. The temporary in-channel excavation for collector lines on Wheatridge East will be 28.7 cubic yards; and total fill will be 28.7 cubic yards. A total of 110 feet of stream length will be temporarily impacted. There will be no impacts to ephemeral streams due to access road construction on Wheatridge East. Total temporary in-channel excavation for roads and collector lines for the entire Project will be 271.5

cubic yards; and total fill be 365.1 cubic yards. A total of 662.7 feet of stream length will be temporarily impacted.

Total in-channel impacts to ephemeral streams for permanent and temporary impacts will be 285.1 cubic yards of removal and 410.5 cubic yards of fill and will affect 728.7 feet of stream length.

6.0 Evidence That Removal-Fill Permit Need Not Be Issued

None of the ephemeral stream channels with proposed facilities crossings are potentially jurisdictional under the state Removal-Fill Law because ephemeral streams are not included in the definition of WOS as defined under OAR 141-085-0510. If the streams were considered intermittent, they would not be jurisdictional under state law because only those intermittent streams that provide spawning, rearing, or food-producing areas for food and game fish are jurisdictional, and none of the streams within the Site Boundary meet these criteria (OAR-141-085-0510(46). There are no fish populations using the ephemeral streams for spawning or rearing and they are not food-producing areas for downstream waters that do support fish because they are either too far upstream from fish-bearing waters or because they do not have a hydrological connection to fish-bearing waters.

After the Project delineation report is submitted to USACE, they may determine that some of the ephemeral channels may be subject to regulation under the Clean Water Act if they have a significant nexus to a traditional navigable water. Further, USACE will work with Wheatridge to determine the appropriate nationwide permit for Project impacts, if needed.

7.0 Mitigation and Monitoring Program for Potential Impacts to Wetlands and Other Waters

No adverse impacts to WOS will occur. Permanent and temporary impacts to ephemeral streams that are potentially Wof US will occur from road crossings and underground collector line crossings. The current proposed Project layout was specifically designed to avoid impacts to wetlands and waters to the maximum extent possible. Below is a description of avoidance and minimization measures used during design and as well as measures that will be used during construction.

7.1 Avoidance and Minimization

Wheatridge has worked to avoid and minimize potential impacts, and will continue to do so through Project construction. Impacts to wetlands and other waters have been and will continue to be avoided during Project design to the extent practicable. Avoidance and minimization measures include:

- The proposed locations of turbine pads and transmission towers were microsited around wetlands.

- Underground collector lines and access roads have been routed around wetlands and waters that do not span the entire width of the right-of-way.
- Wetlands and other waters have been avoided by spanning the transmission line over these features.
- To avoid new road construction, existing roads leading to proposed turbine locations have been used for Project construction and maintenance purposes to the extent possible.
- To the extent practicable, necessary road widening will take place on the side of the road that does not have an adjacent jurisdictional wetland or other water.

Indirect impacts to wetlands and other waters will be avoided and minimized by employing Best Management Practices for erosion and sediment control listed in the National Pollutant Discharge Elimination System permit required for the Project and the accompanying Erosion and Sediment Control Plan (Exhibit I, Attachment I-2).

7.2 Proposed Environmental Training

The following measures will be implemented during construction to avoid impacts:

- Wheatridge will develop an environmental awareness course for the construction contractors that will provide information on the sensitive wetland and stream resources present onsite, the exclusion flagging/signing, permit requirements, and other environmental issues.
- Construction site personnel will be required to attend the environmental awareness course in conjunction with hazard and safety training prior to working onsite. Wheatridge's construction contractor will maintain a list of onsite construction personnel who have received the training.

8.0 Submittal Requirements and Approval Standards

8.1 Submittal Requirements

Table J-4. 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, Attachment J-1, Figures J-1 through Figures J-4
(B) An analysis of whether construction or operation of the proposed facility would adversely affect any waters of this state.	Section 4
(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 5

Table J-4. Submittal Requirements Matrix	
Requirement	**Location**
(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 6
(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.	Section 7

8.2 Approval Standard

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

9.0 References

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USACE. 2008b. U.S. Army Corps of Engineers. Revised Guidance on Clean Water Act Jurisdiction Following the Supreme Court Decision in Rapanos v. U.S. and Carabell v. U.S. Available: http://www.usace.army.mil/CECW/Documents/cecwo/reg/cwa_guide/cwa_juris_2dec08.pdf.

Figures

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Attachment J-1:

Correspondence with U.S. Army Corps of Engineers on Submittal of Wheatridge Wind Energy Facility 2014 Wetlands and Other Waters Delineation Report

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Attachment J-2:

Correspondence with Oregon Department of State Lands on Submittal of Wheatridge Wind Energy Facility 2014 Wetlands and Other Waters Delineation Report

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Attachment J-3:

Wheatridge Wind Energy Facility 2014 Wetlands and Other Waters Delineation Report

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Figures

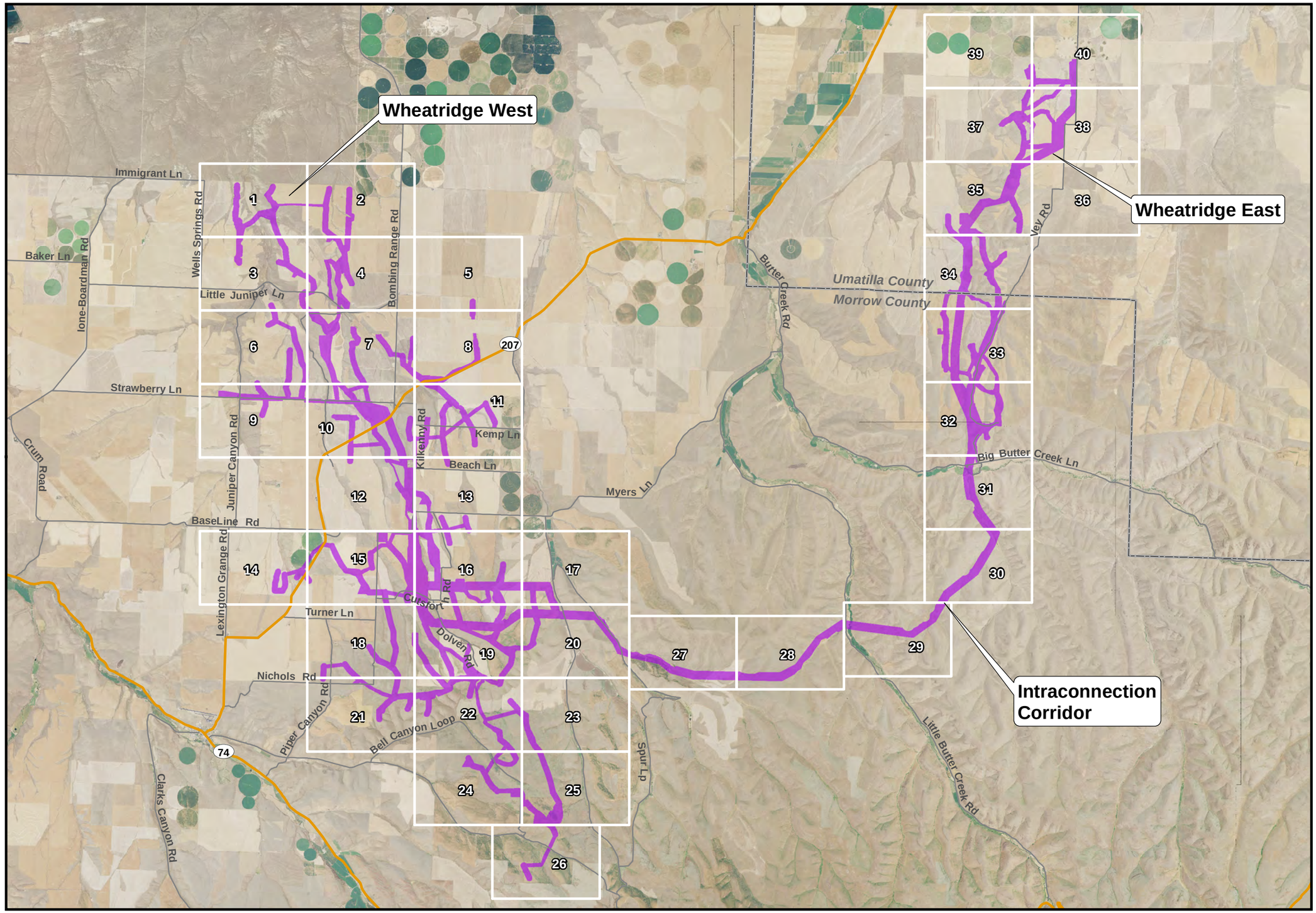

Figure J-1

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Analysis/Survey Area *
- County Boundary
- Map Grid
- State Highway
- Local Road

1:140,000 **WGS84 UTM 11**

0 0.5 1 2 3 4 5 6 7 8 9 10 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads, political boundaries / USDA NAIP: aerial imagery

*** The Analysis Area is the entirety of the Site Boundary**

TETRA TECH

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Figure J-2.1

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

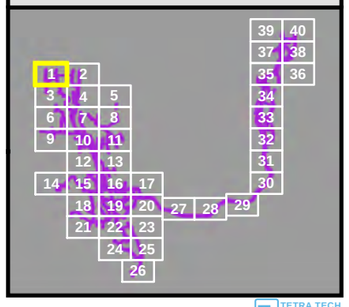
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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Figure J-2.2

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

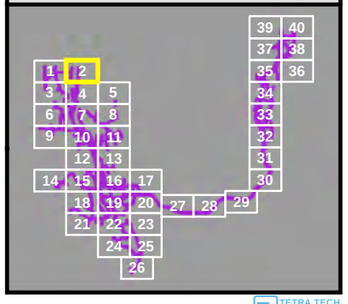
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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Figure J-2.3

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

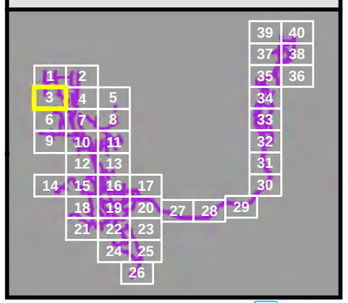
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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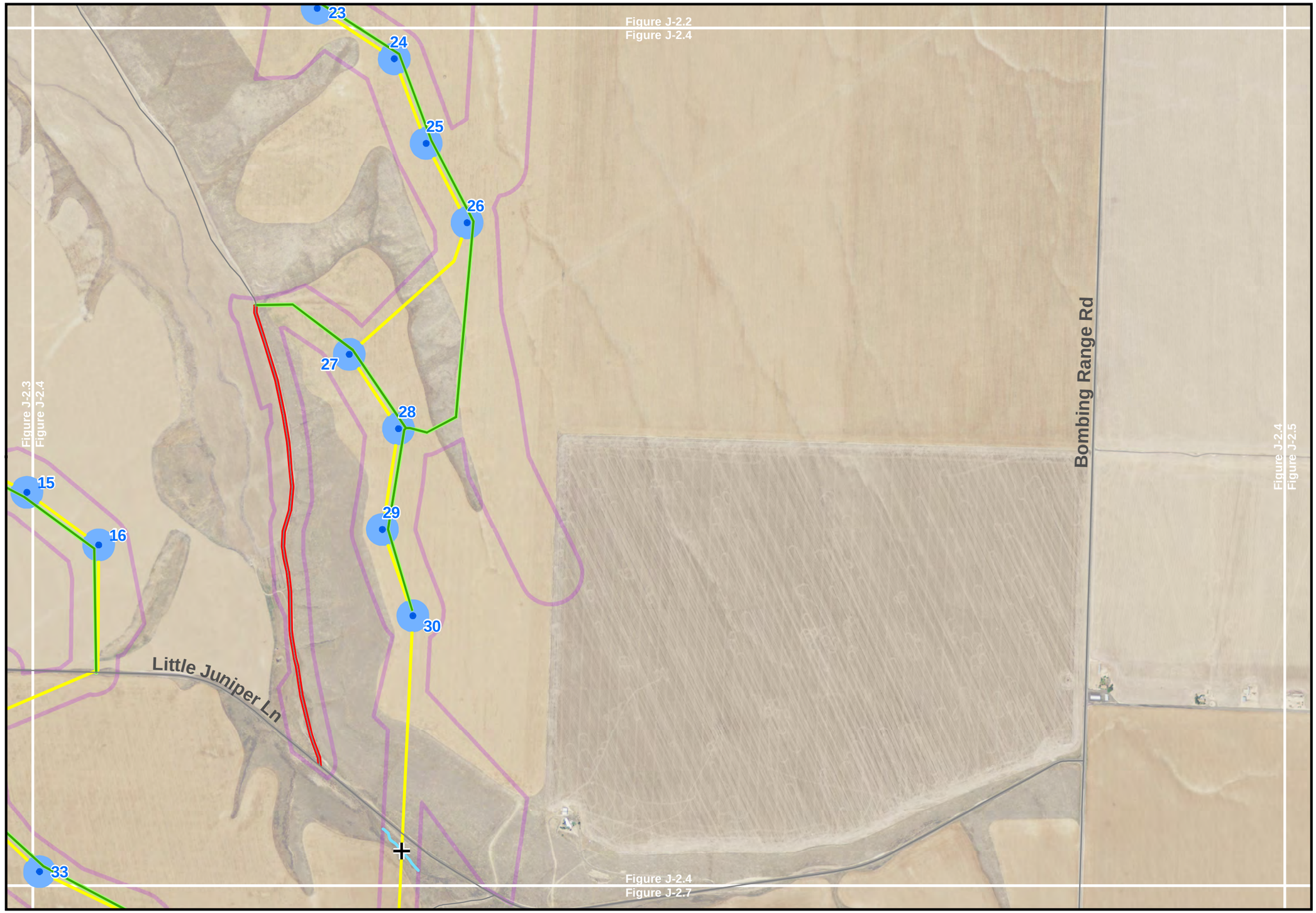


Figure J-2.4

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated

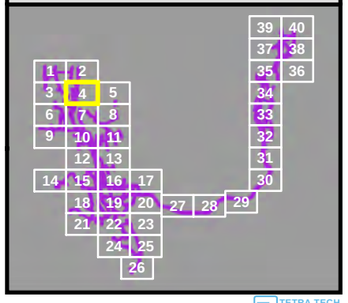
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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TETRA TECH

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Figure J-2.5

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

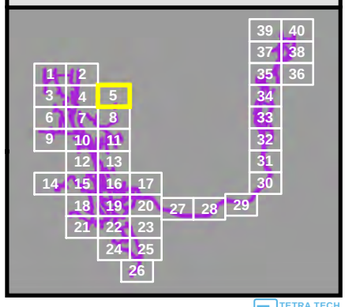
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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TETRA TECH

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Figure J-2.6

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated

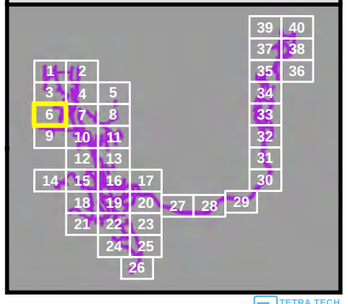
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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TETRA TECH

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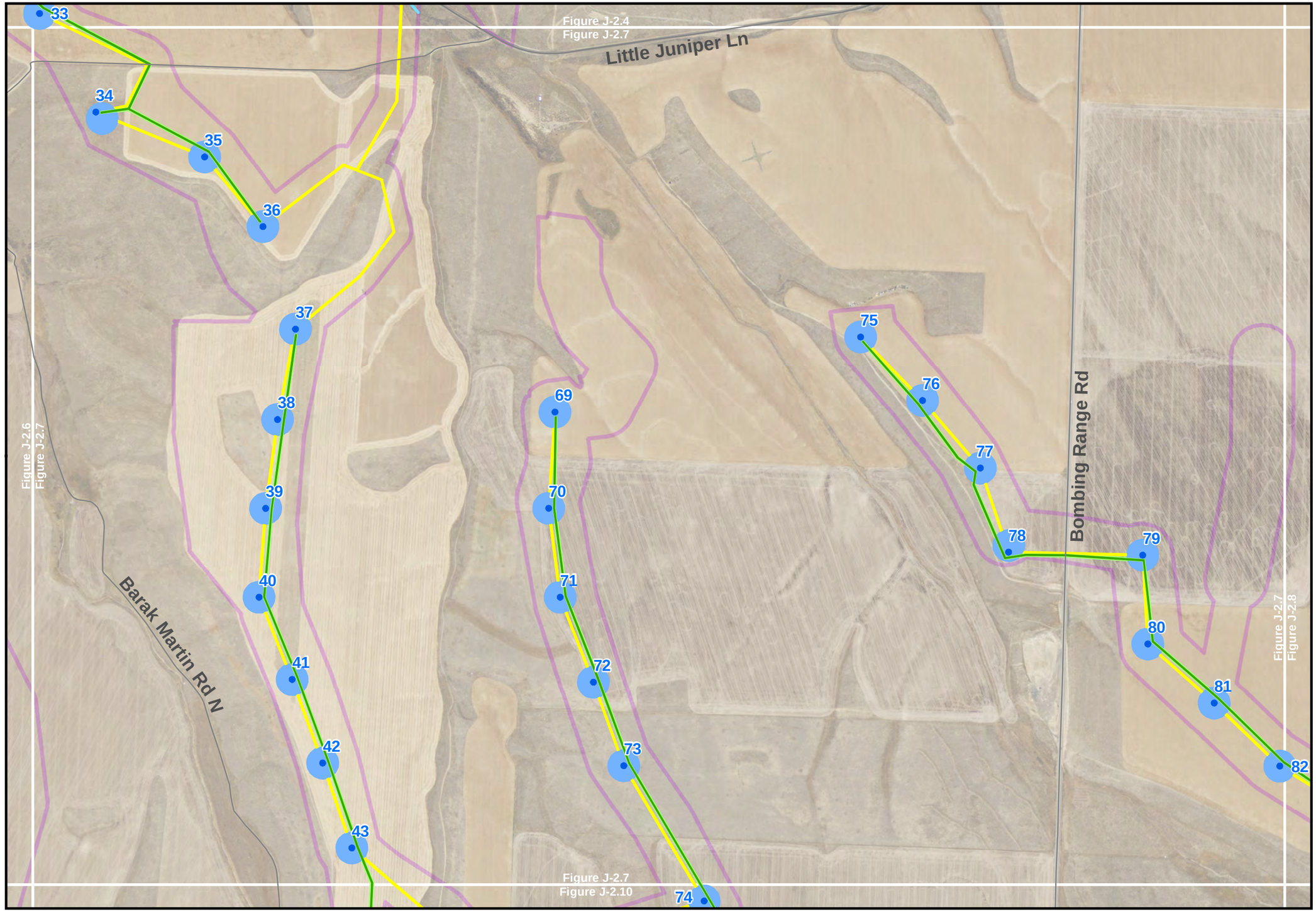


Figure J-2.7

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated

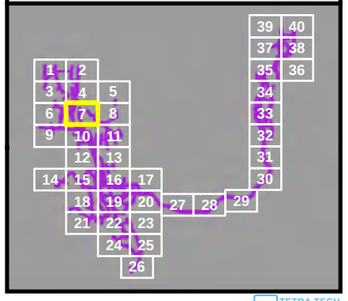
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

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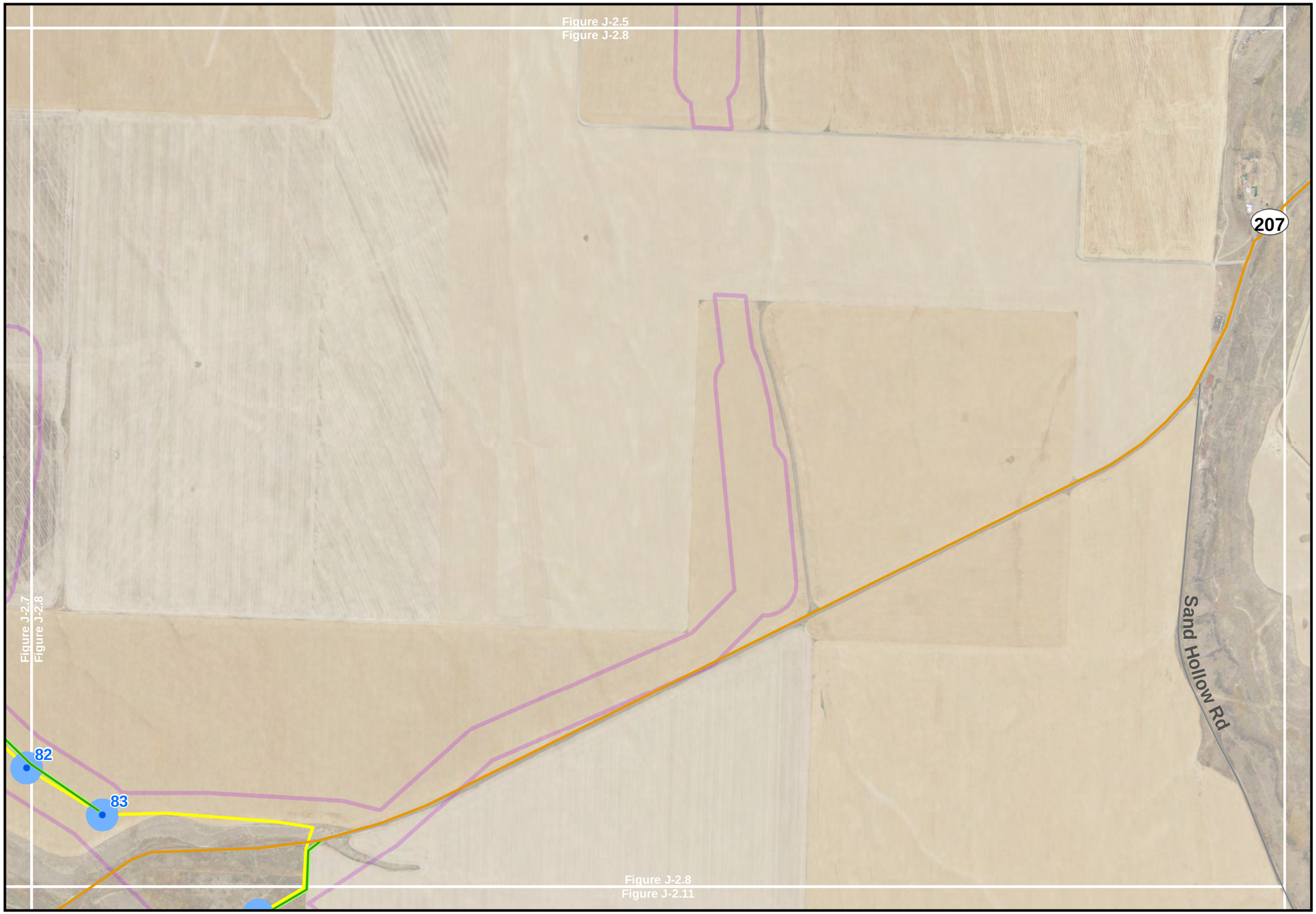


Figure J-2.8

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated

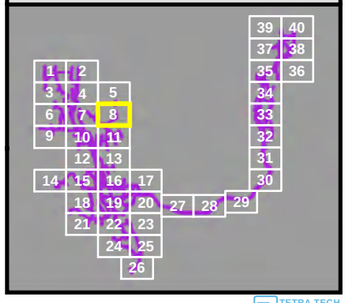
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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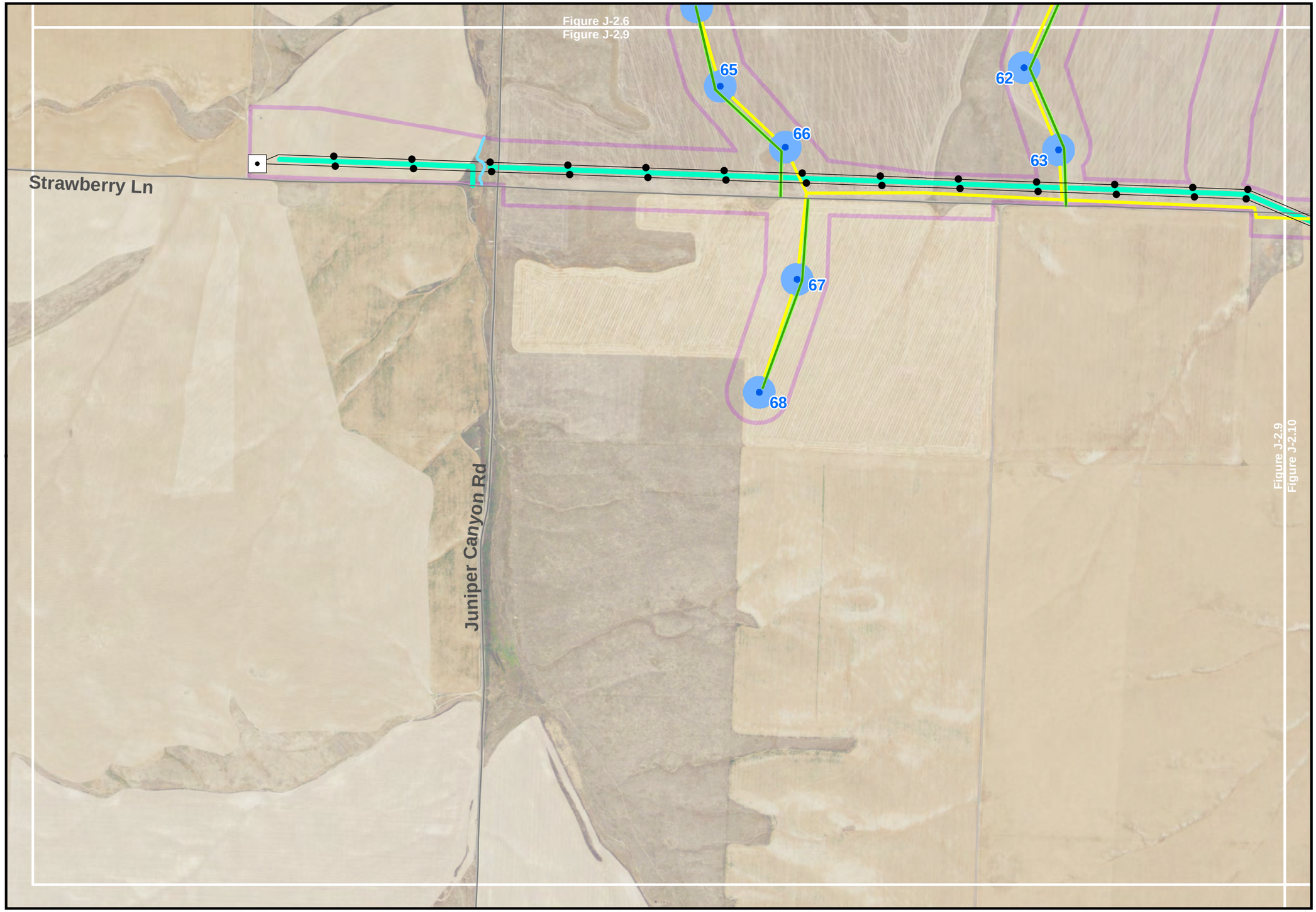


Figure J-2.9

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated

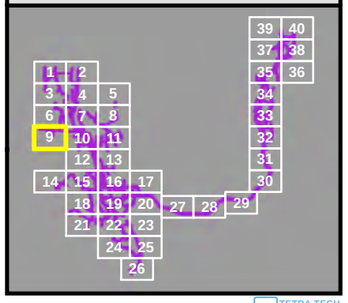
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

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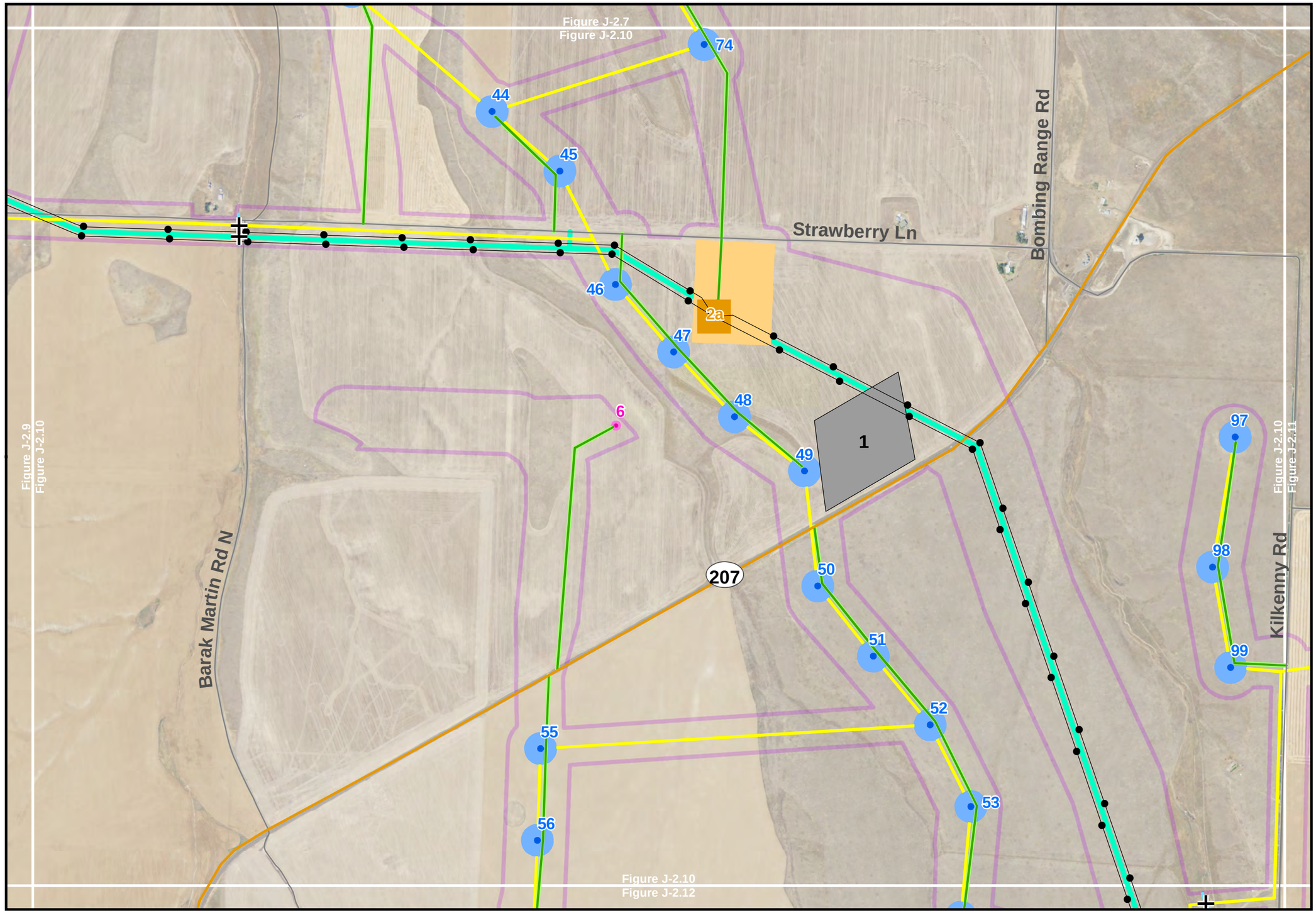


Figure J-2.10

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

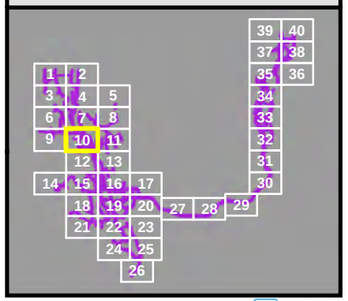
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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TETRA TECH

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Figure J-2.11

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

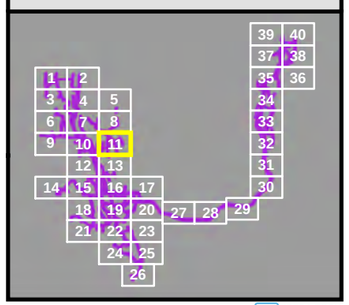
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

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0 0.125 0.25 0.5 0.75 1 Miles

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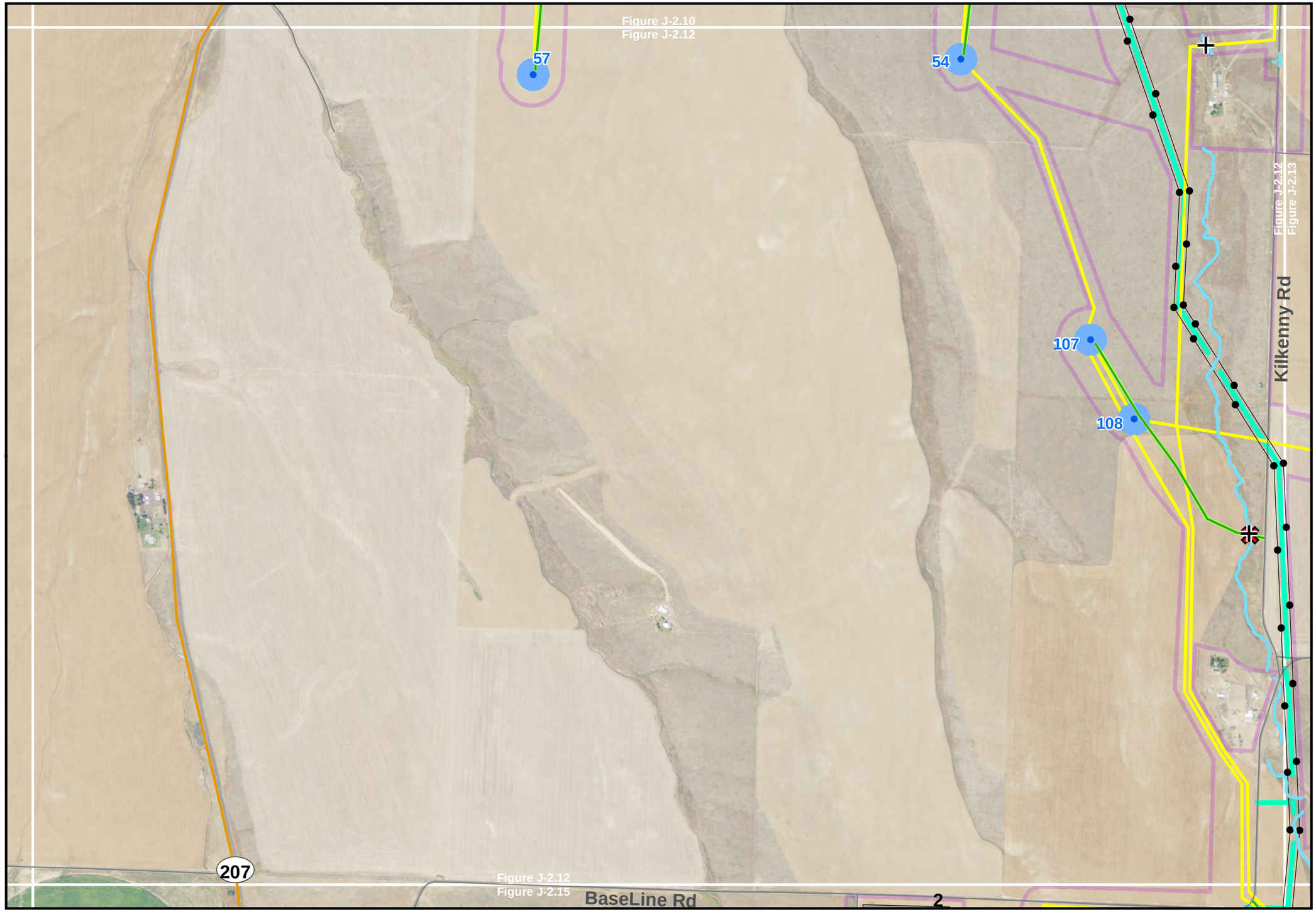


Figure J-2.12

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

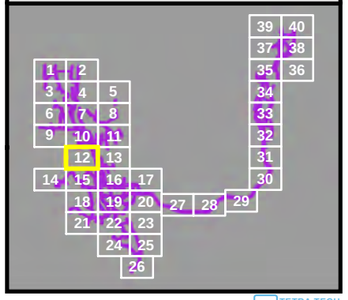
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

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Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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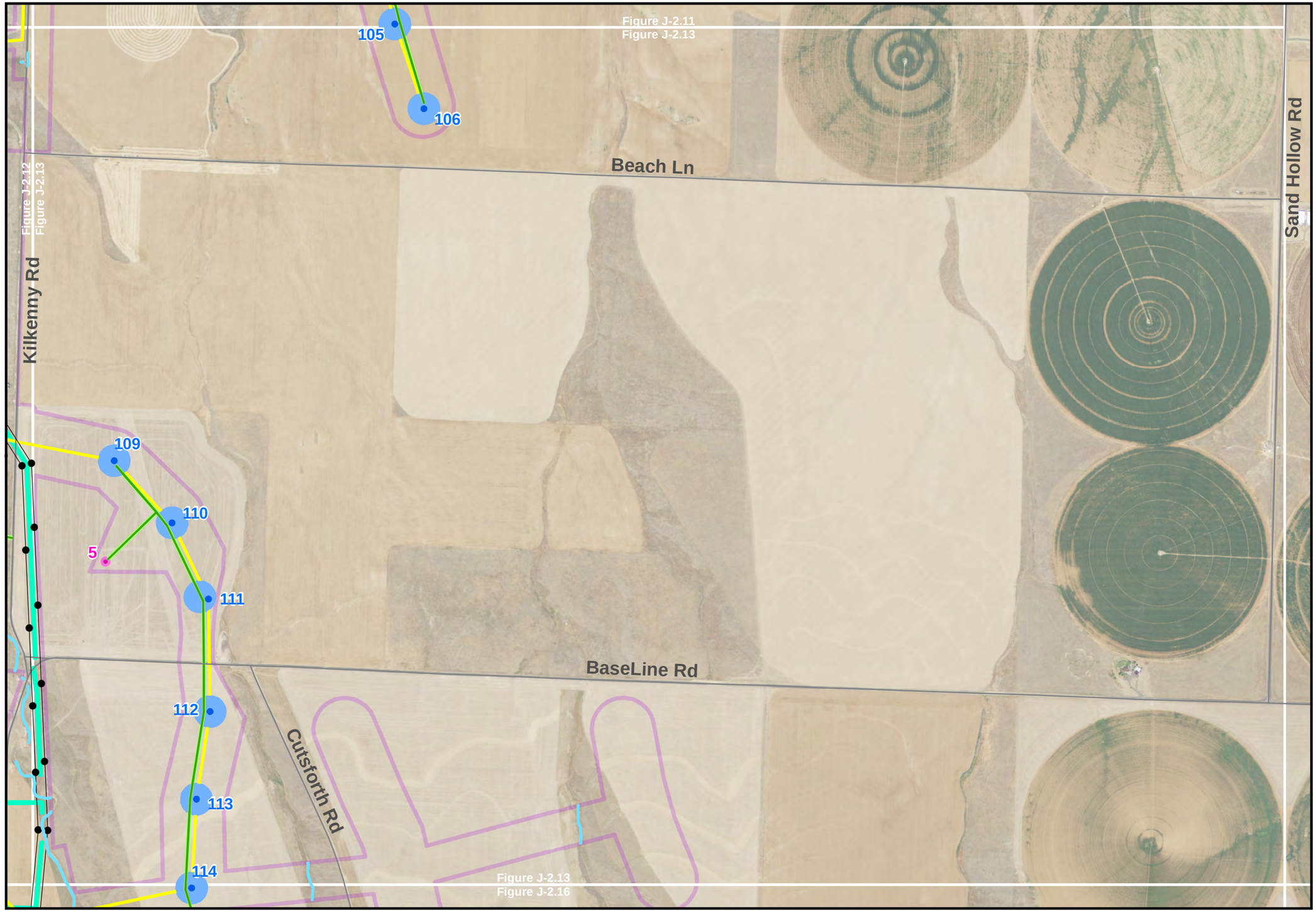


Figure J-2.13

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated

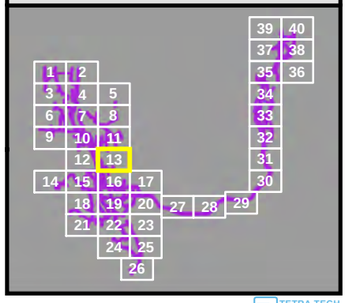
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

* The Analysis Area is the entirety of Site Boundary
** To be constructed and owned by the Umatilla Electric Cooperative or the Umatilla Electric Cooperative with the Columbia Basin Electric Cooperative

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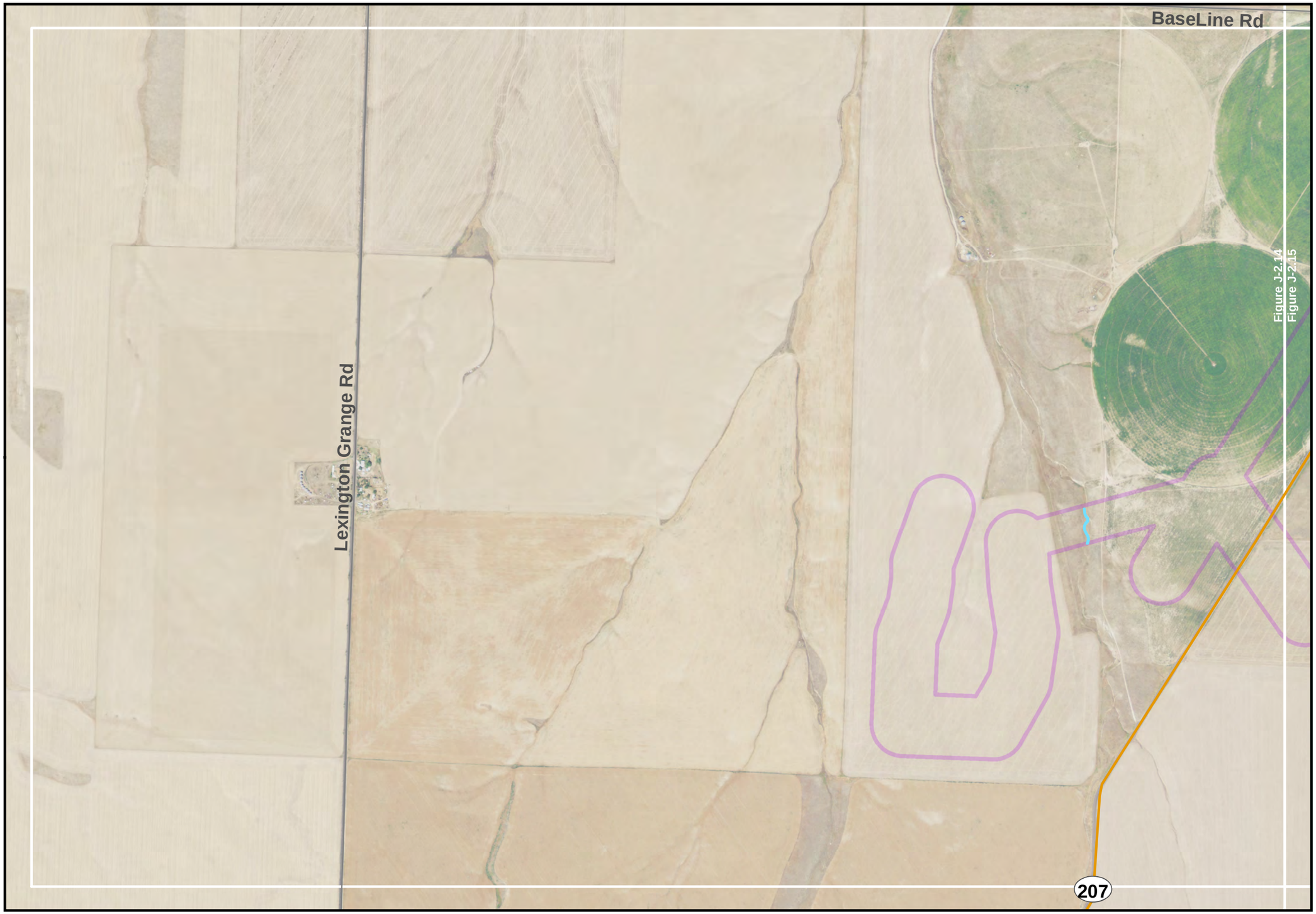


Figure J-2.14

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

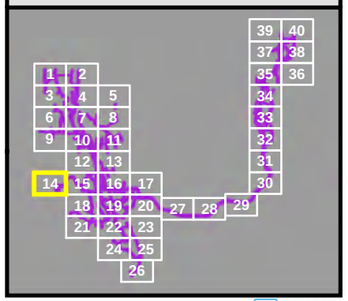
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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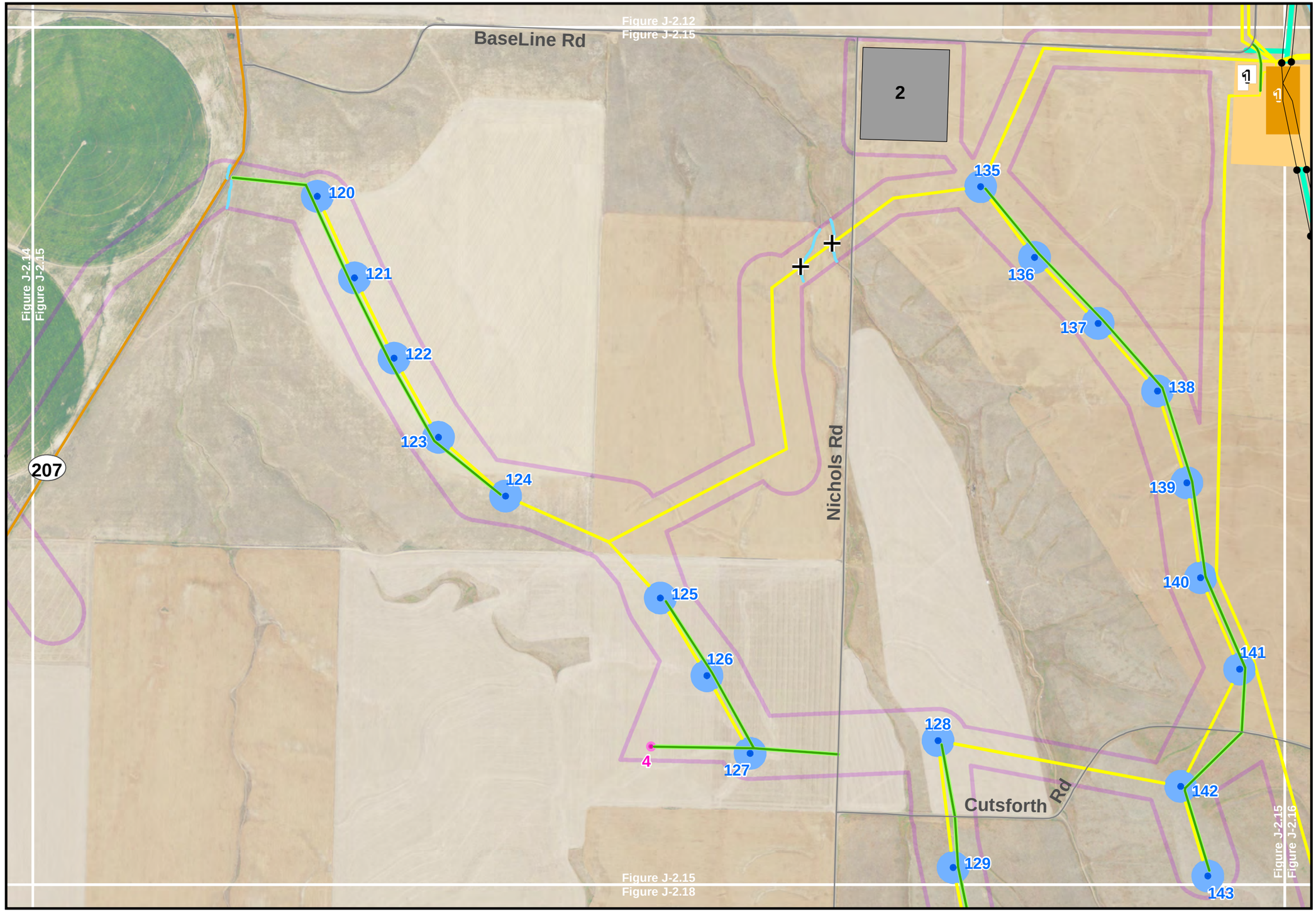


Figure J-2.15

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

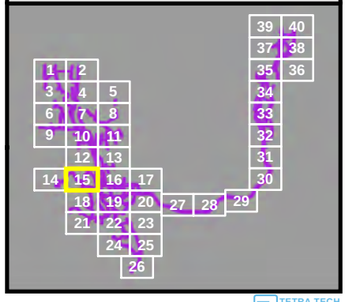
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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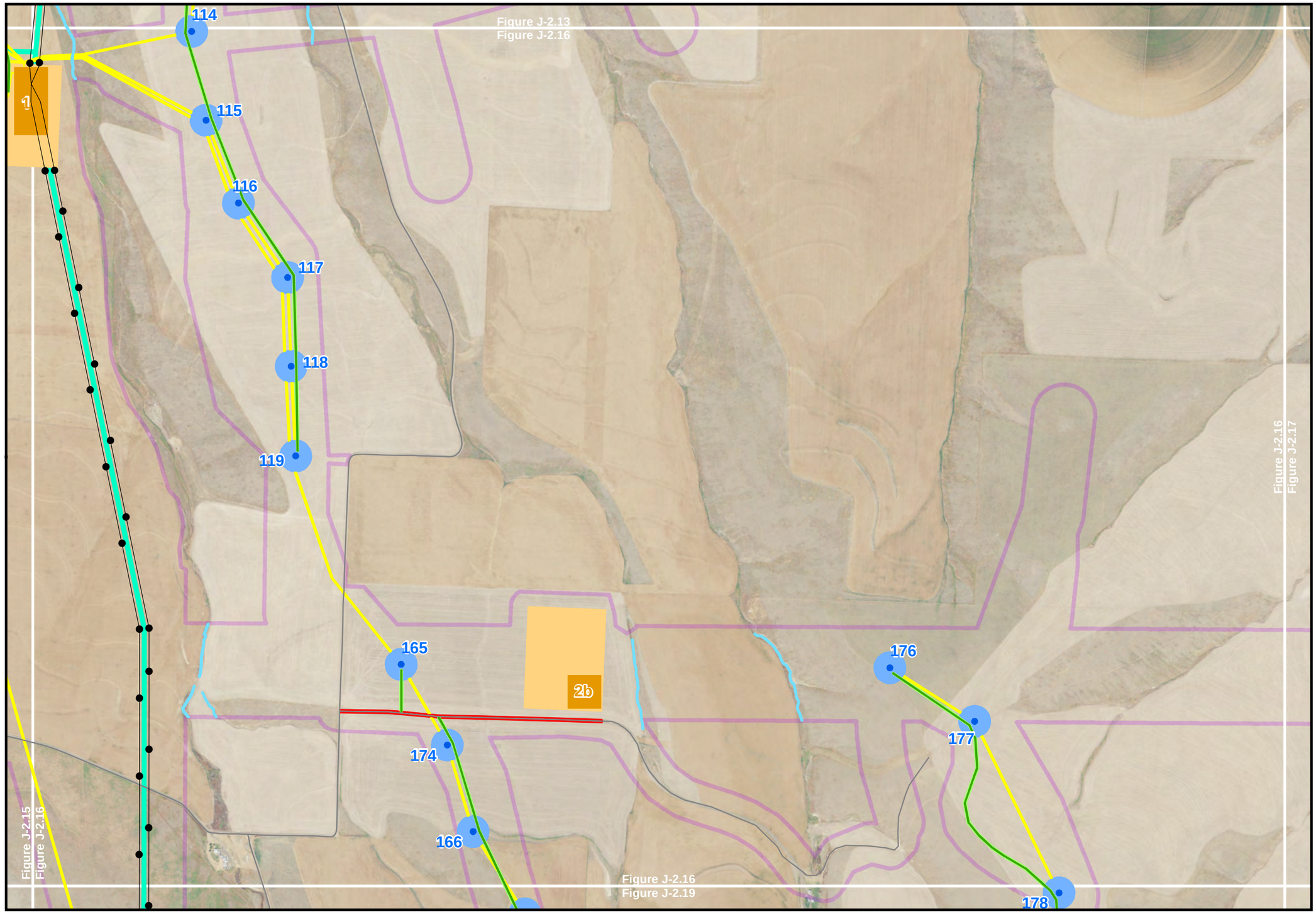


Figure J-2.16

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated

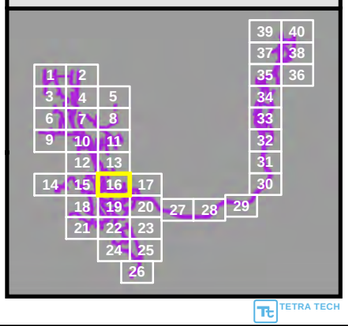
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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Figure J-2.17

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

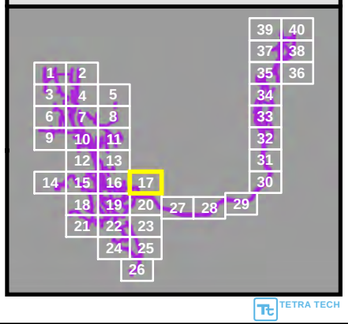
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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TETRA TECH

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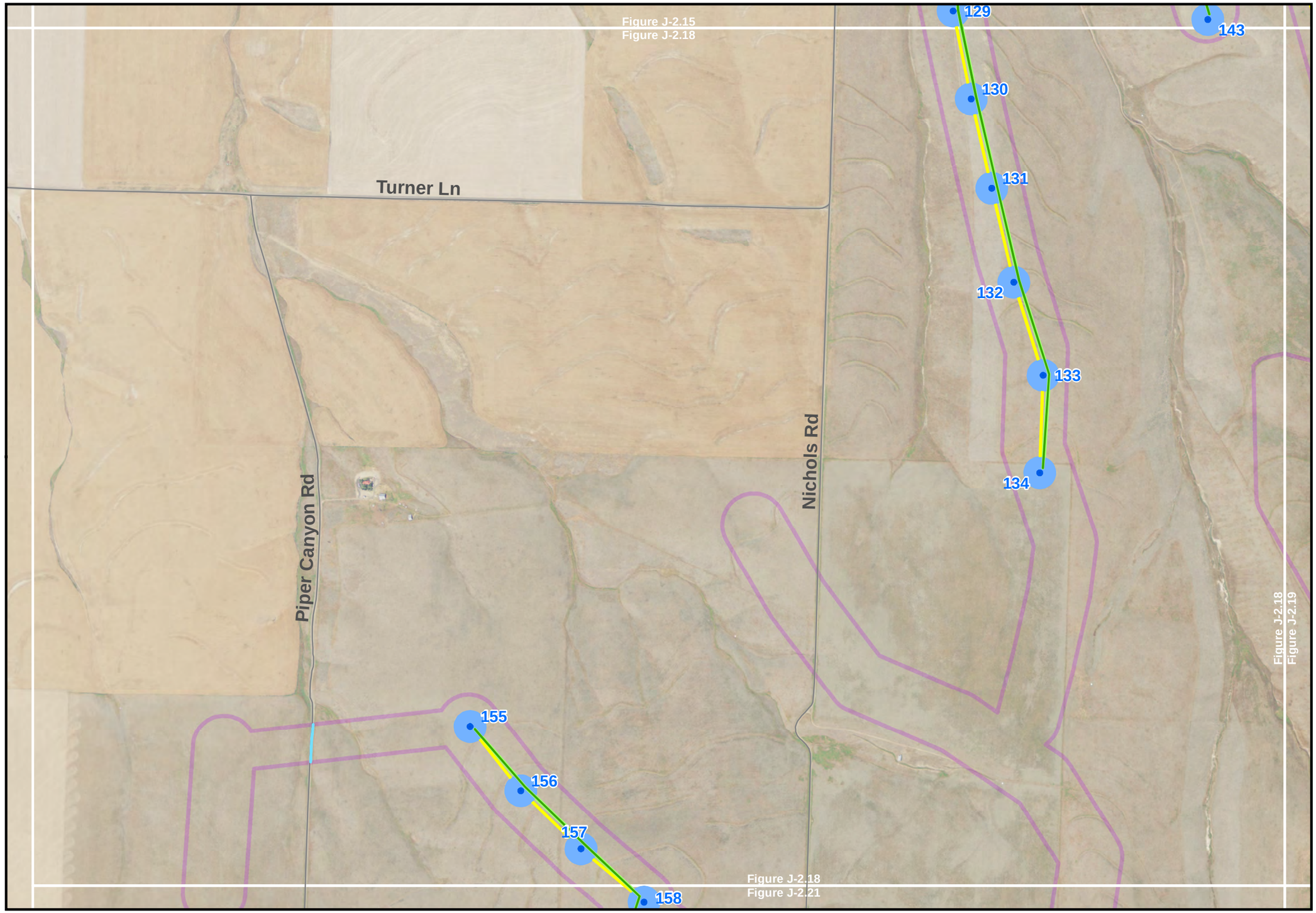


Figure J-2.18

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

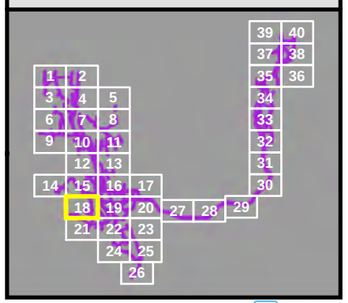
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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TETRA TECH

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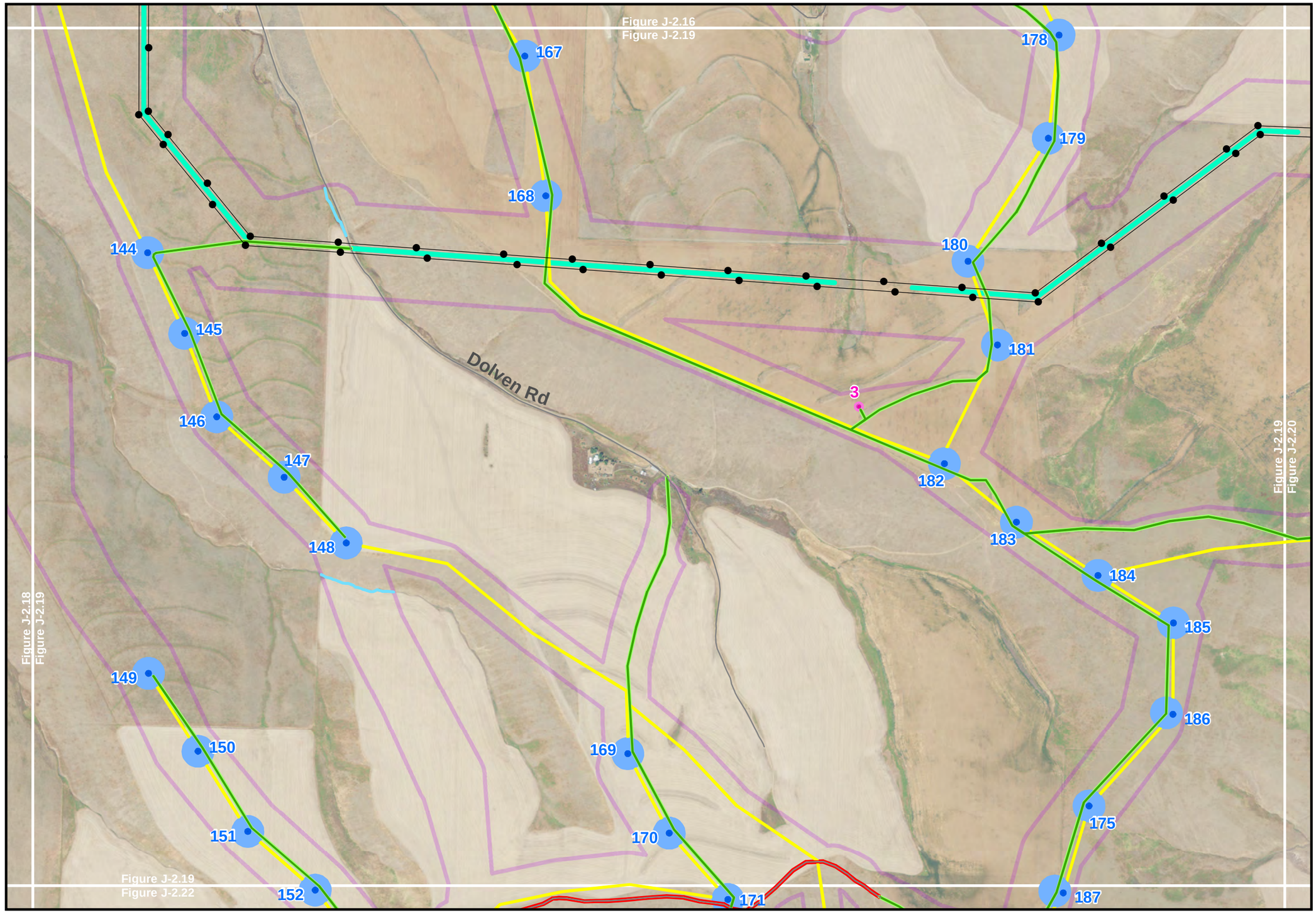


Figure J-2.19

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

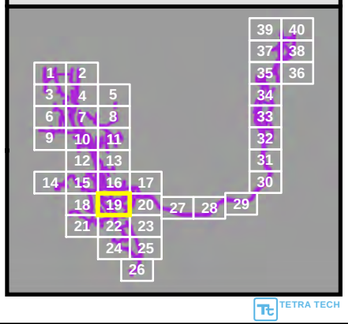
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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TETRA TECH

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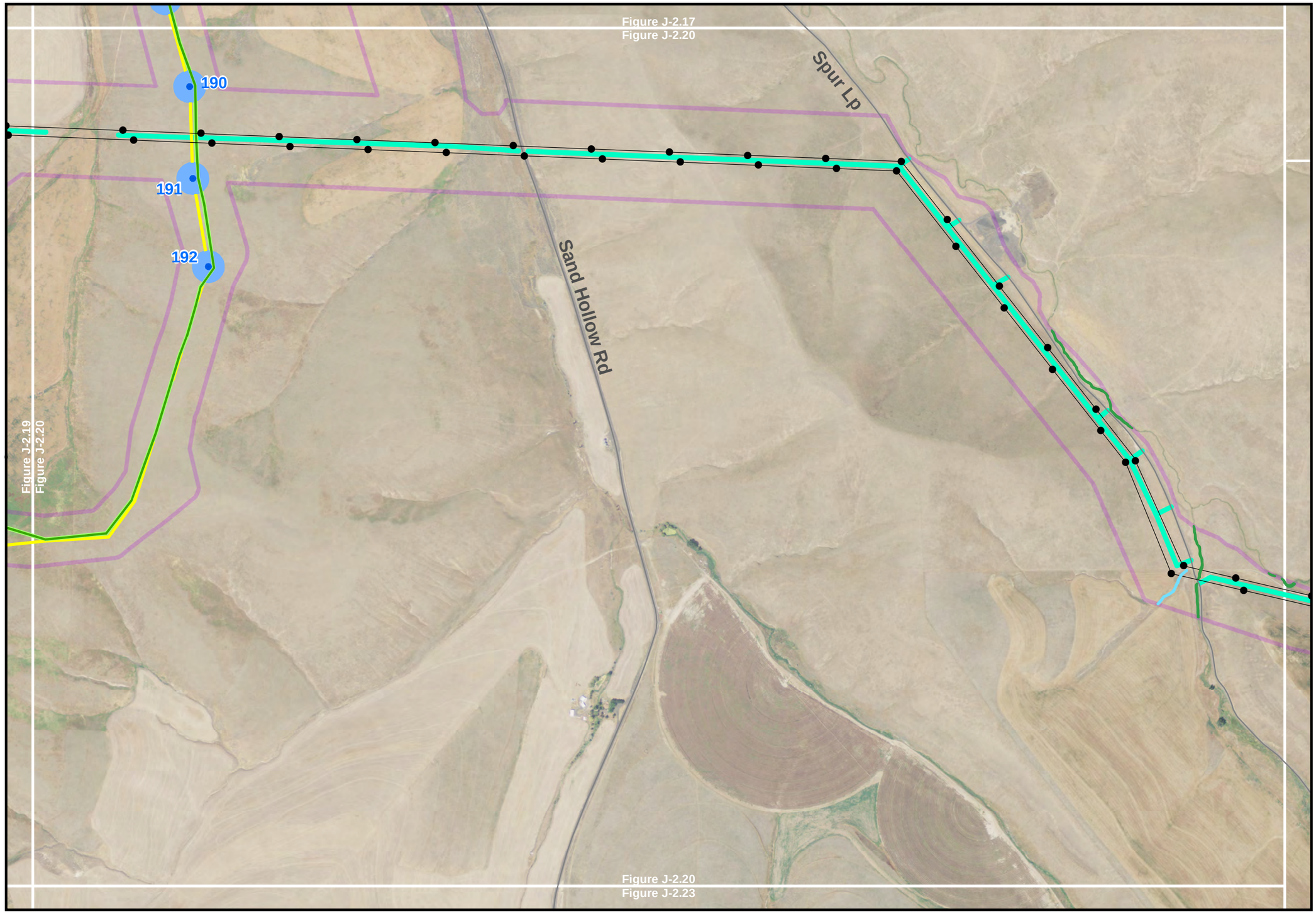


Figure J-2.20

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated

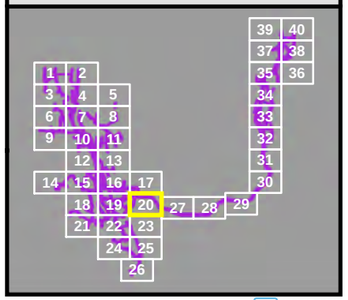
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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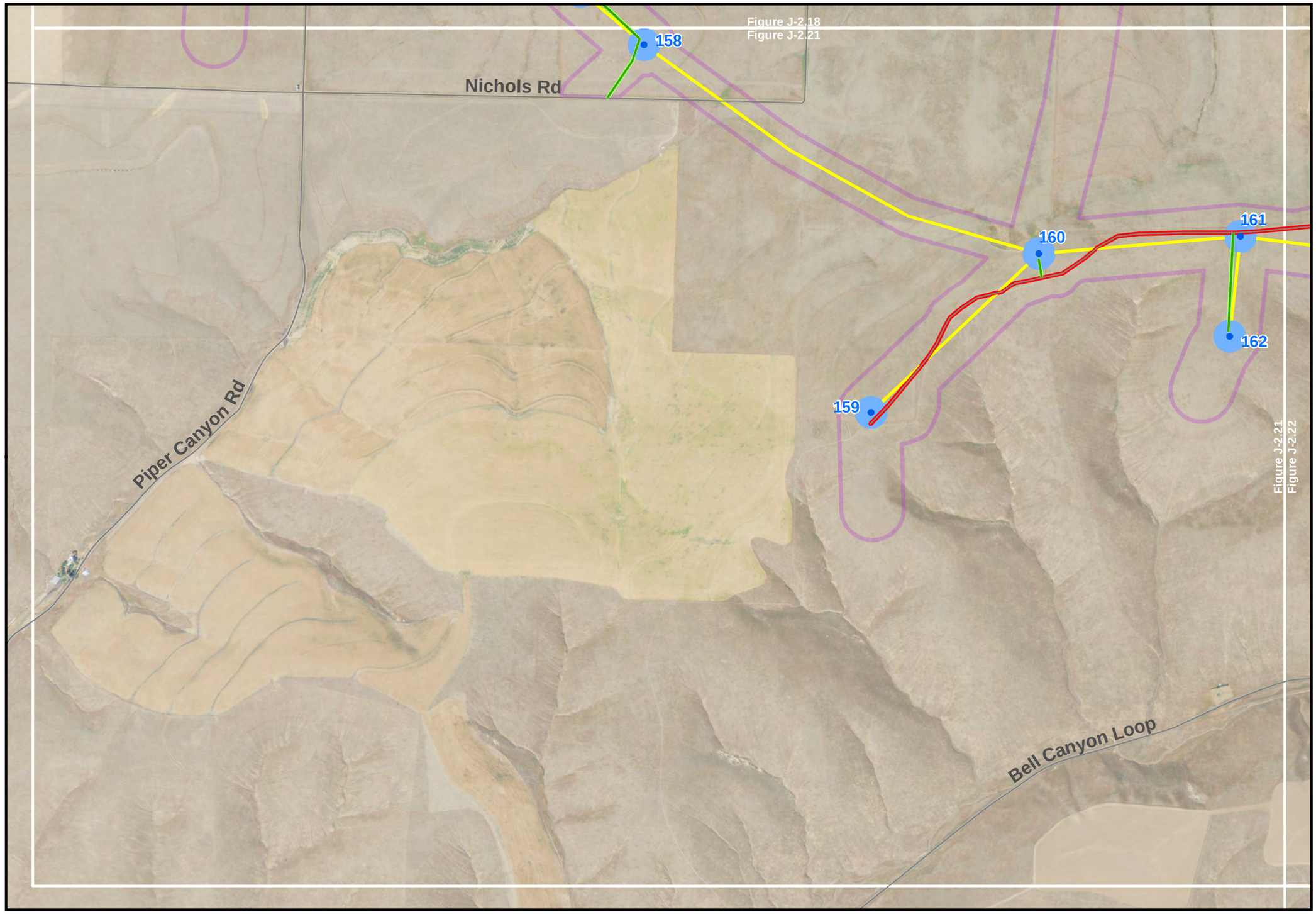


Figure J-2.21

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

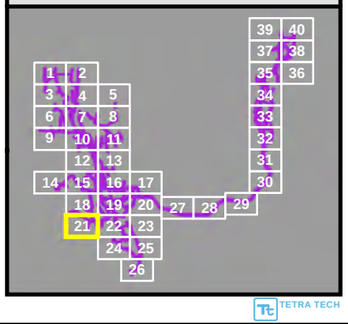
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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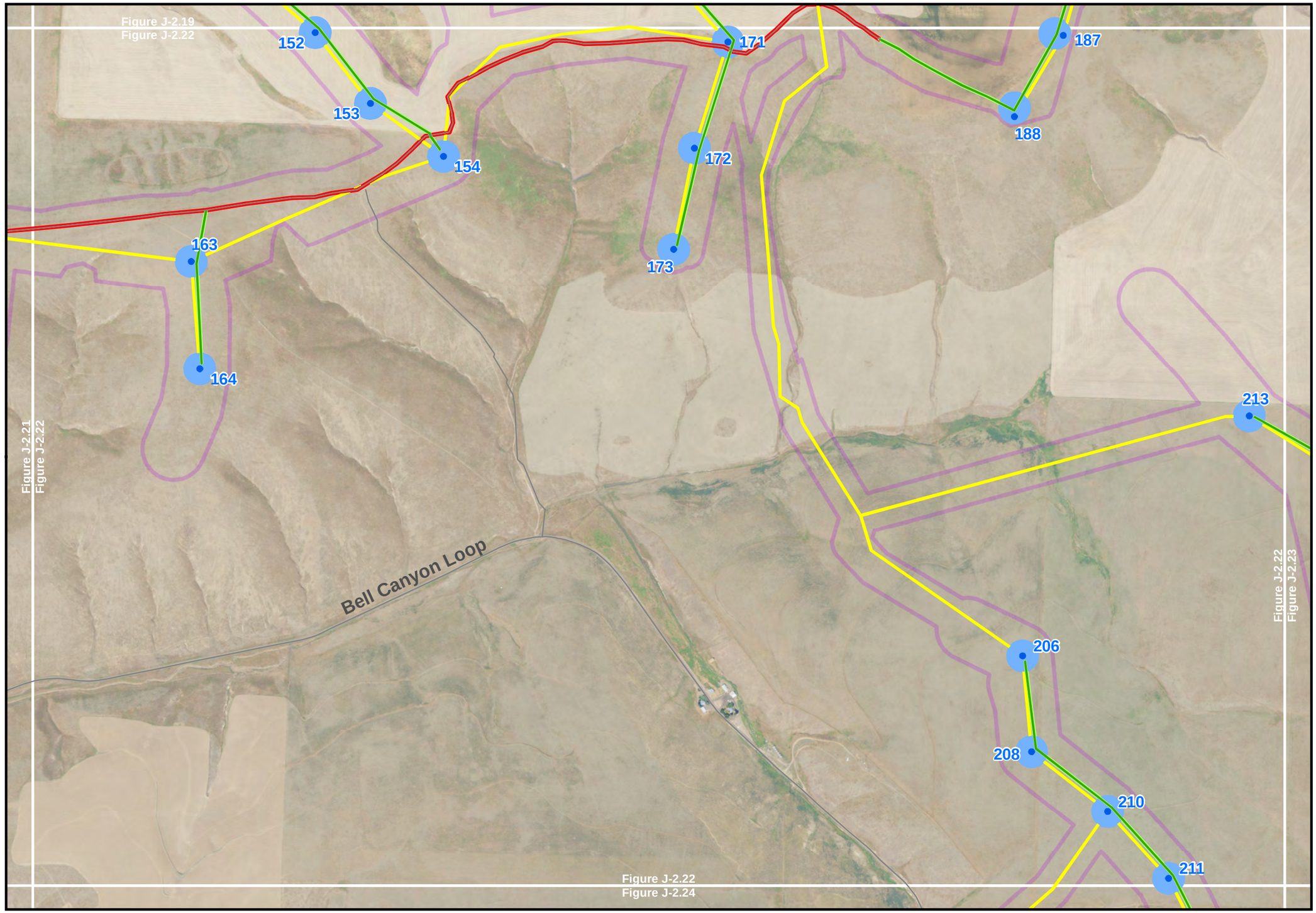


Figure J-2.22

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

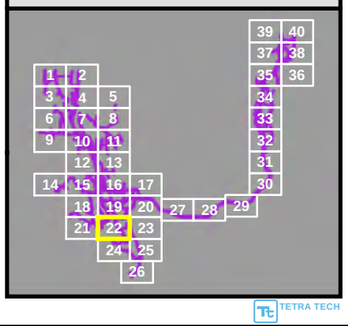
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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Figure J-2.23

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

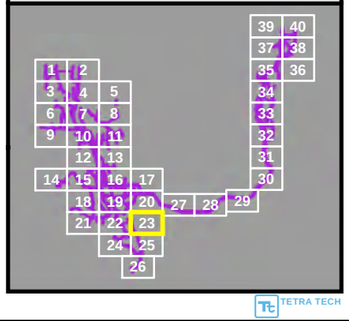
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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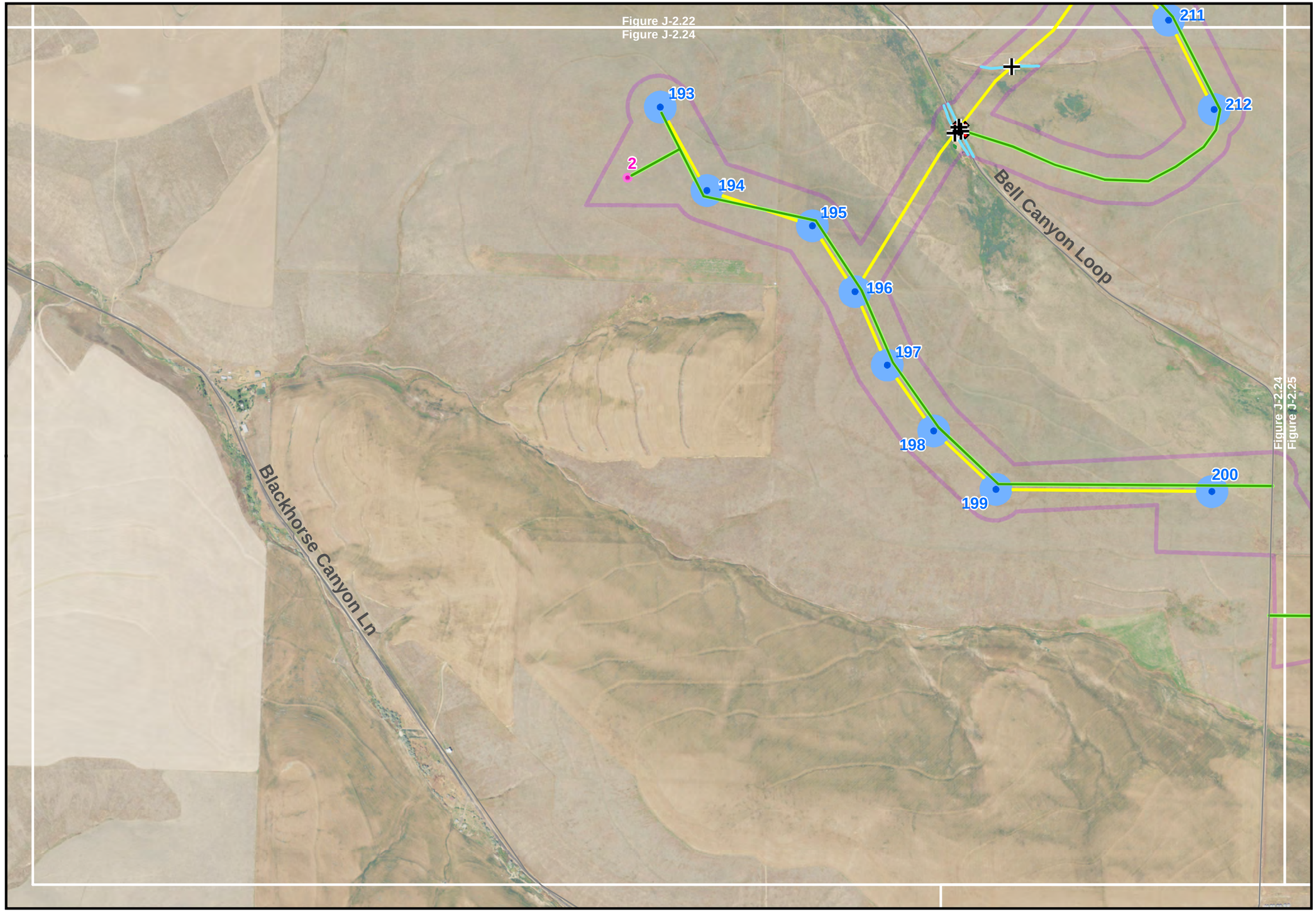


Figure J-2.24

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

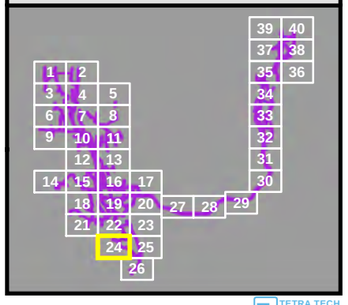
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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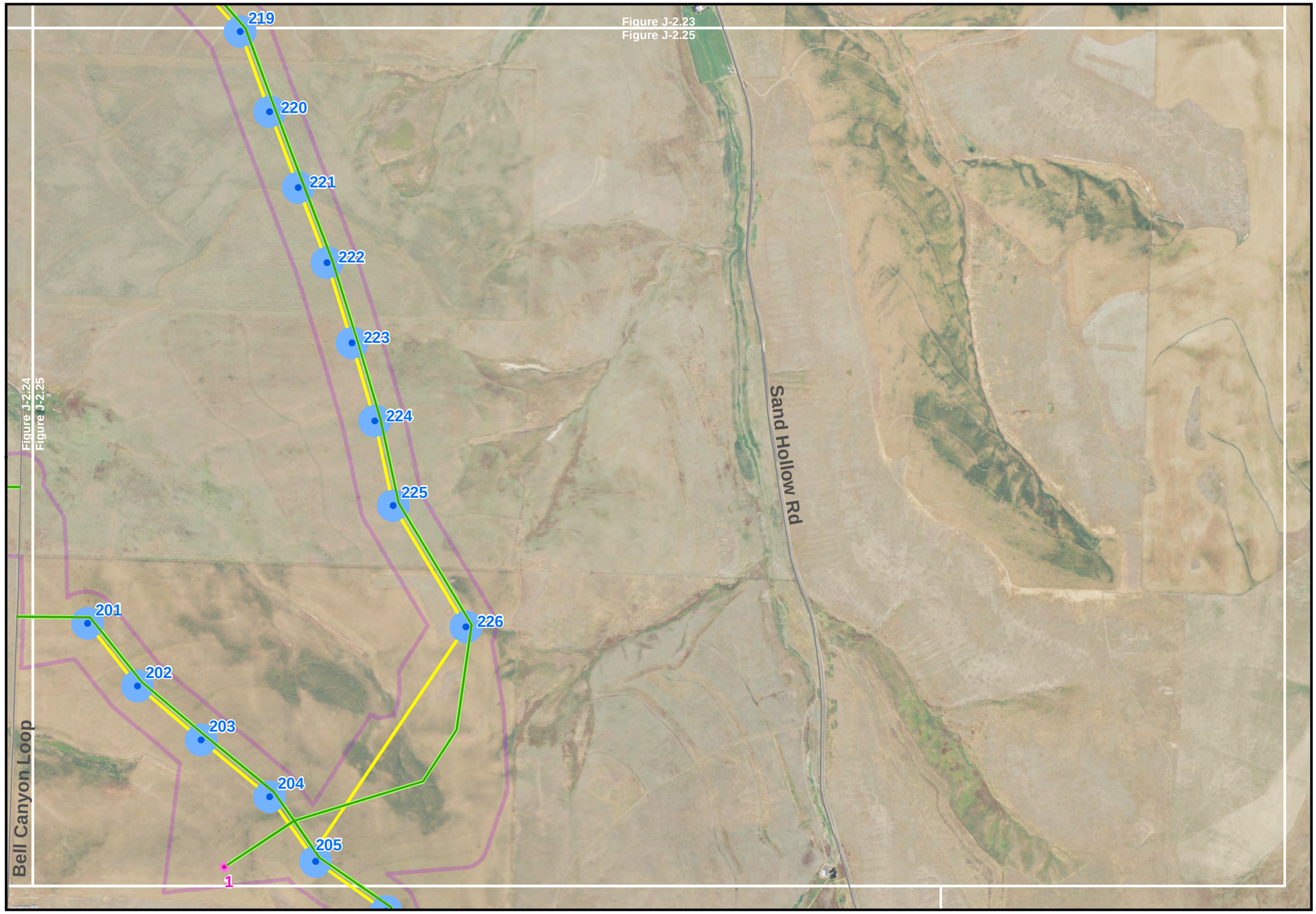


Figure J-2.25

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated

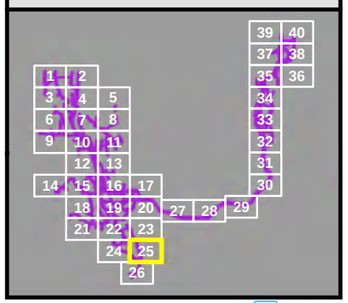
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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Figure J-2.26

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated

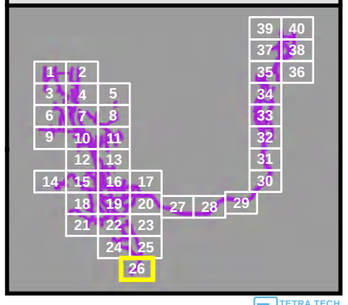
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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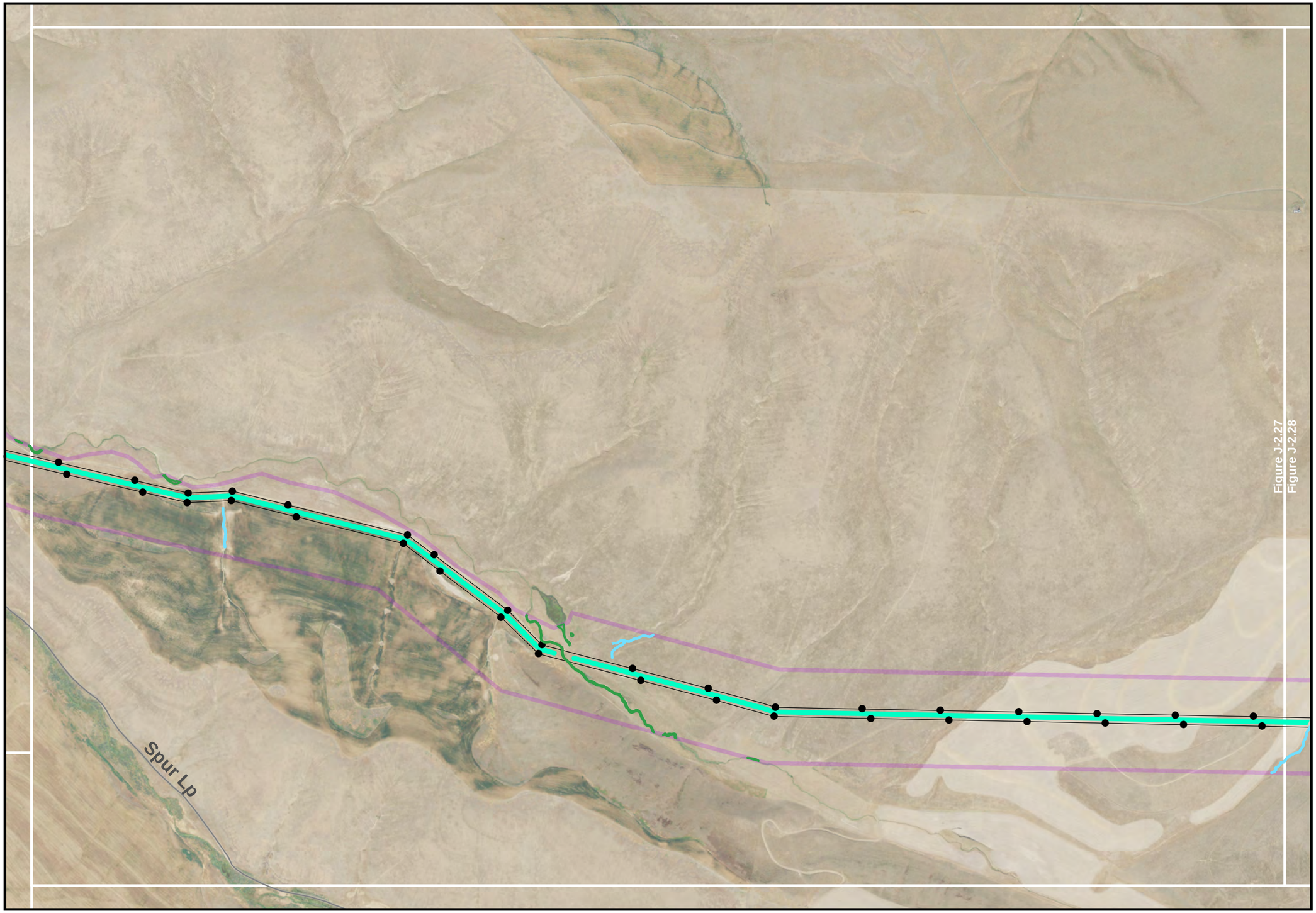


Figure J-2.27

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

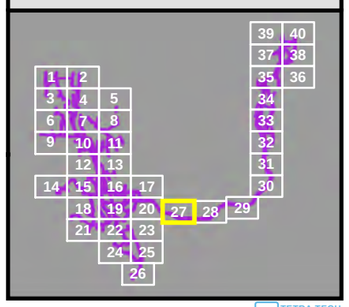
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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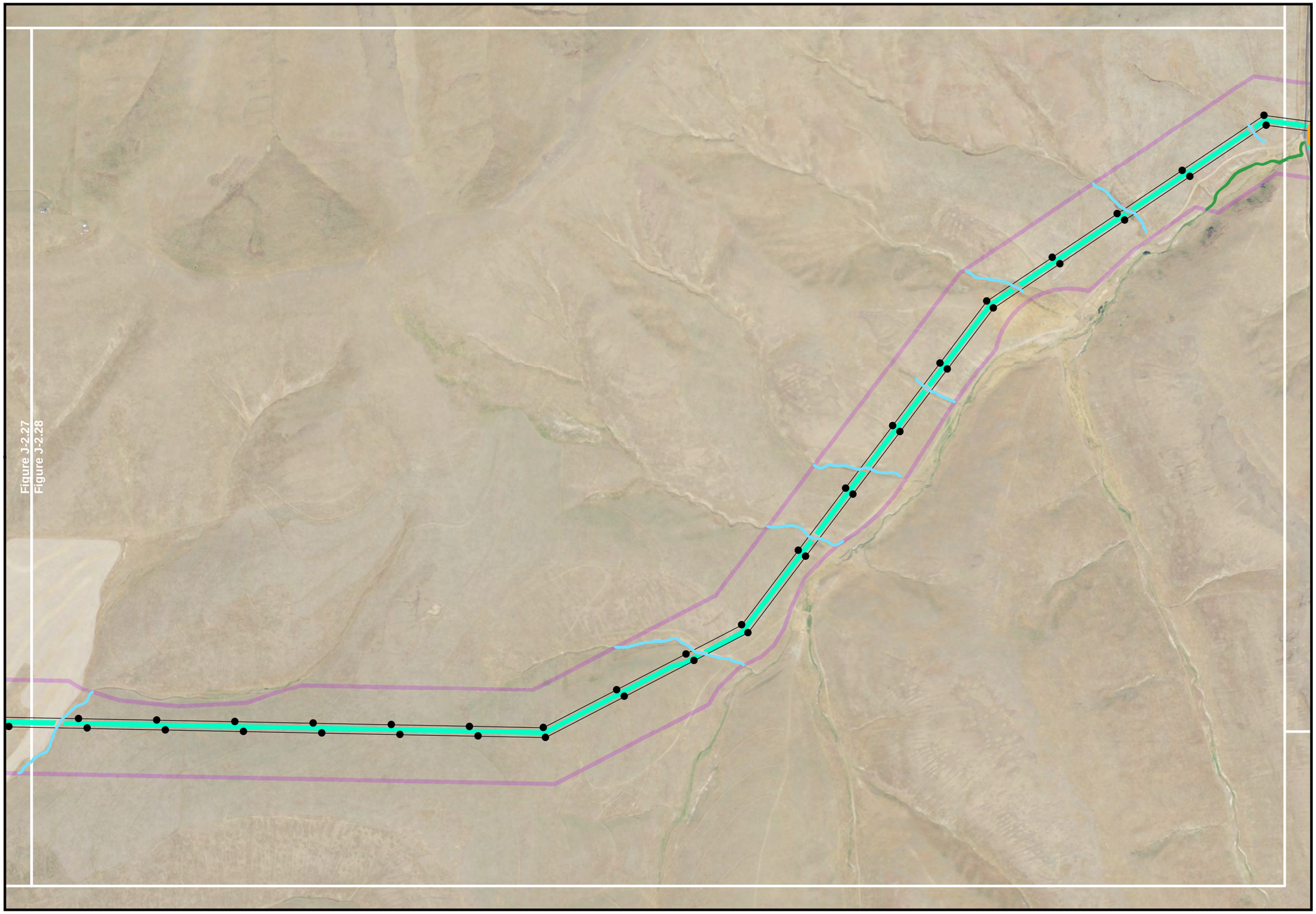


Figure J-2.28

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

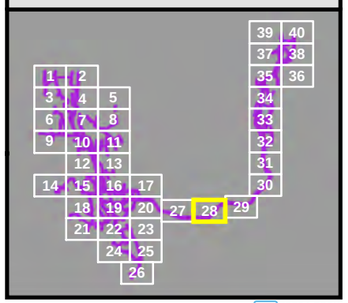
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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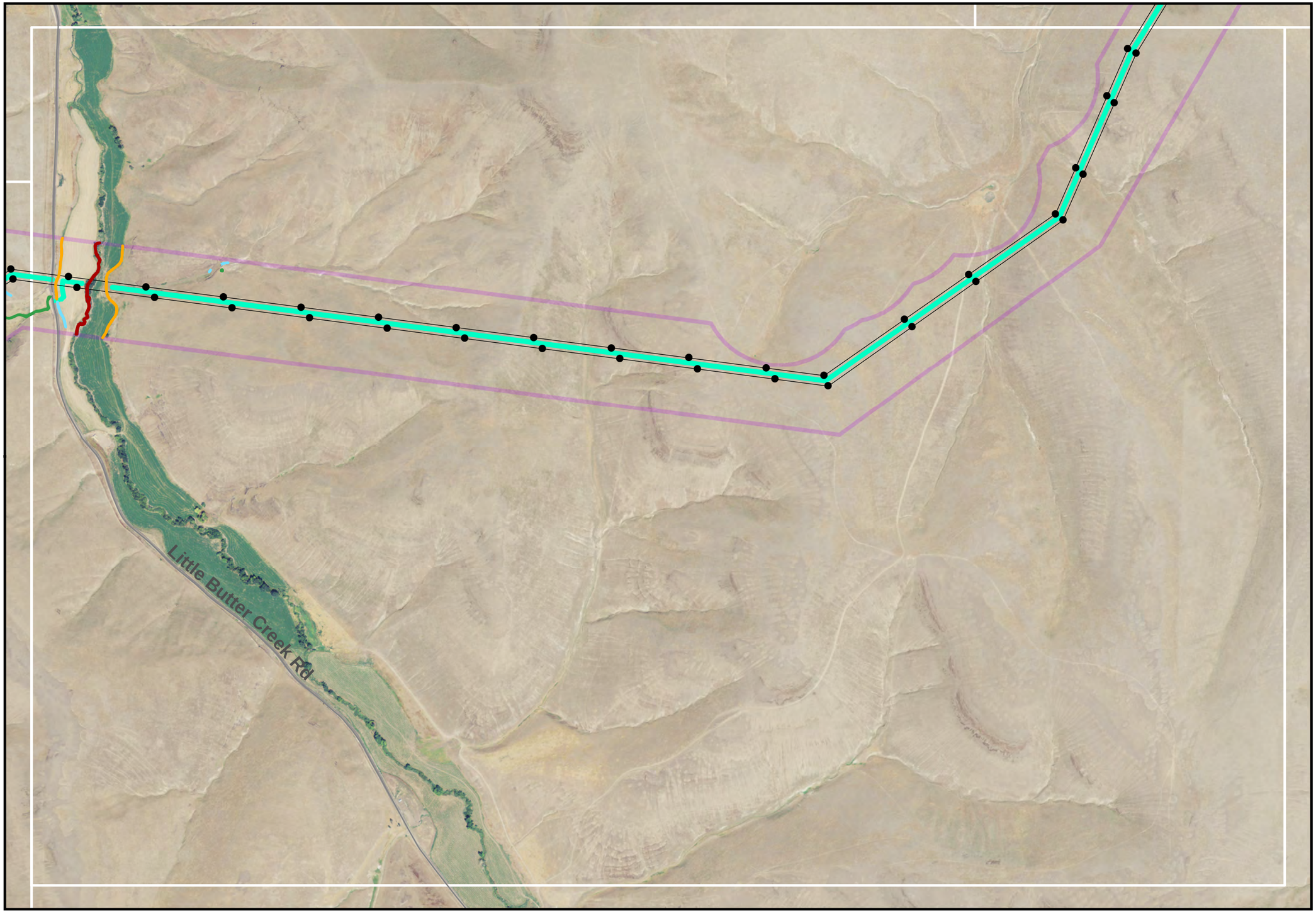


Figure J-2.29

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

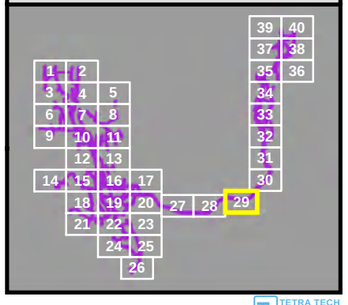
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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Figure J-2.30

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

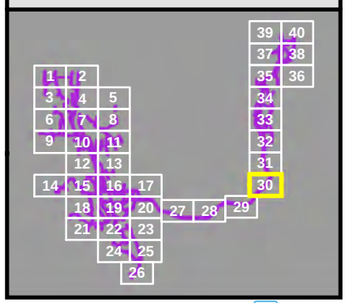
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 **1 inch = 1,000 feet** **WGS84 UTM 11**

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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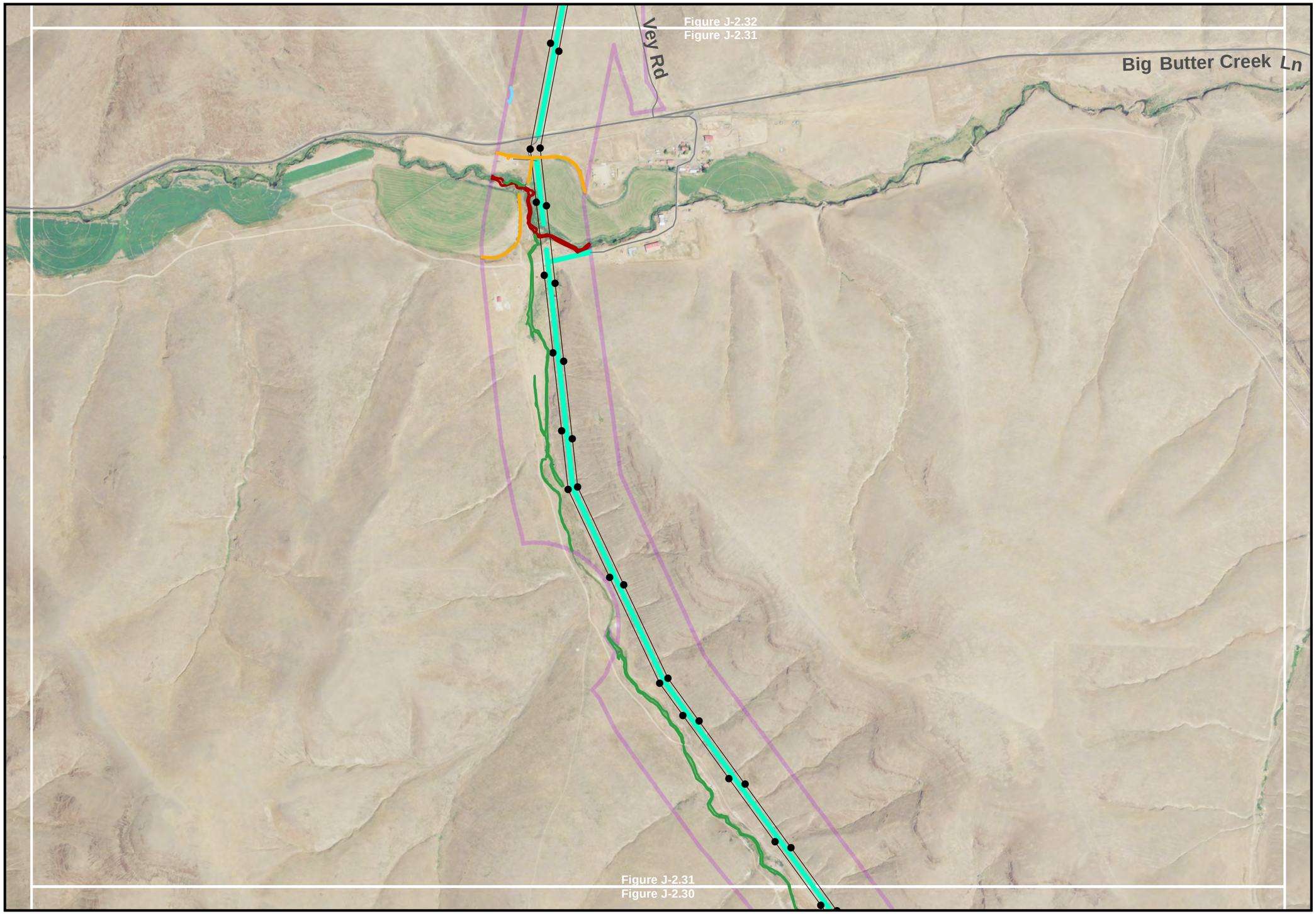


Figure J-2.31

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

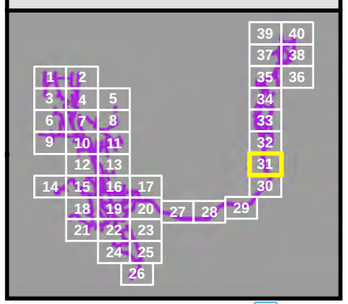
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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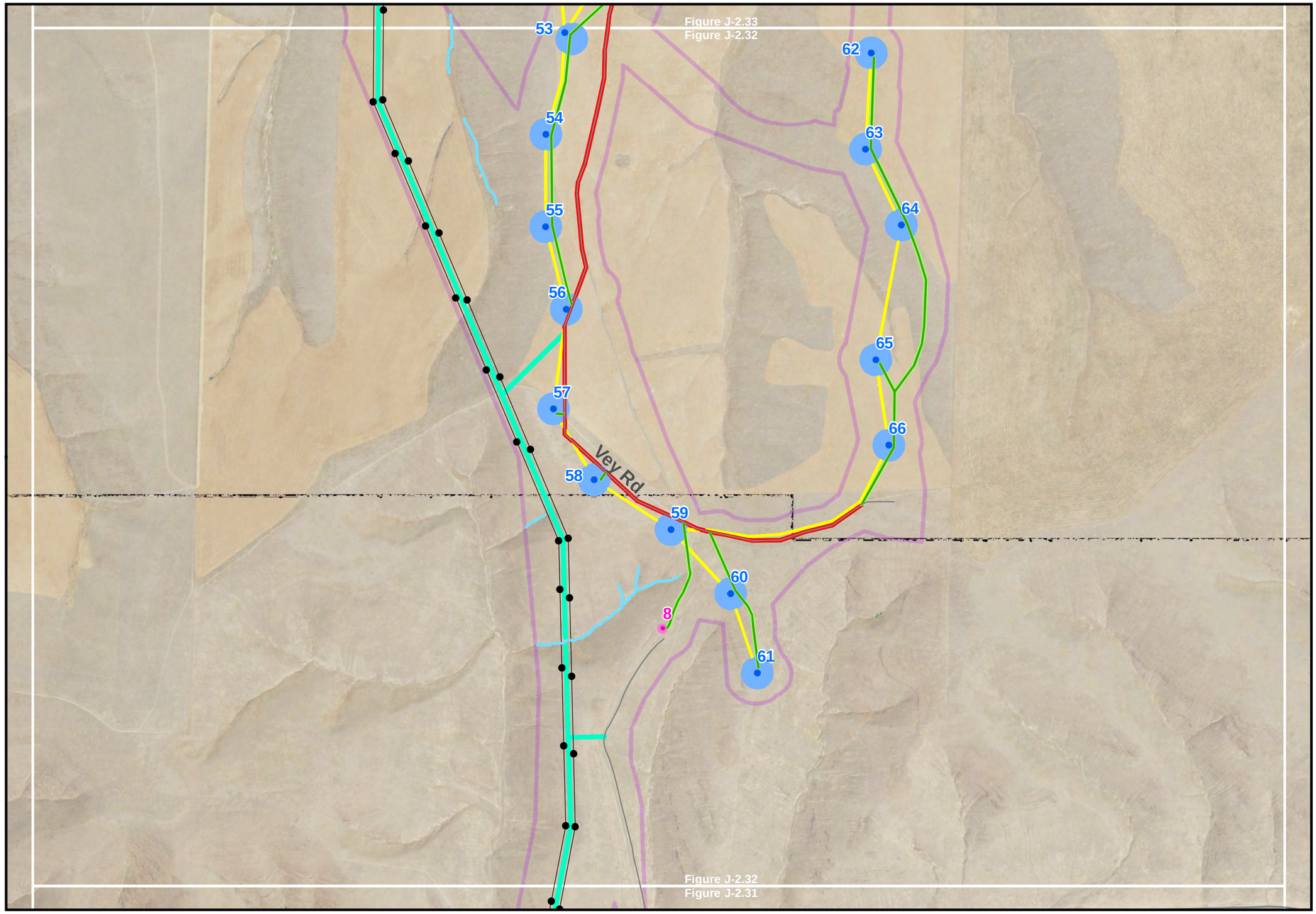


Figure J-2.32

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

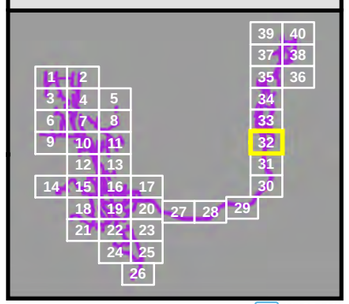
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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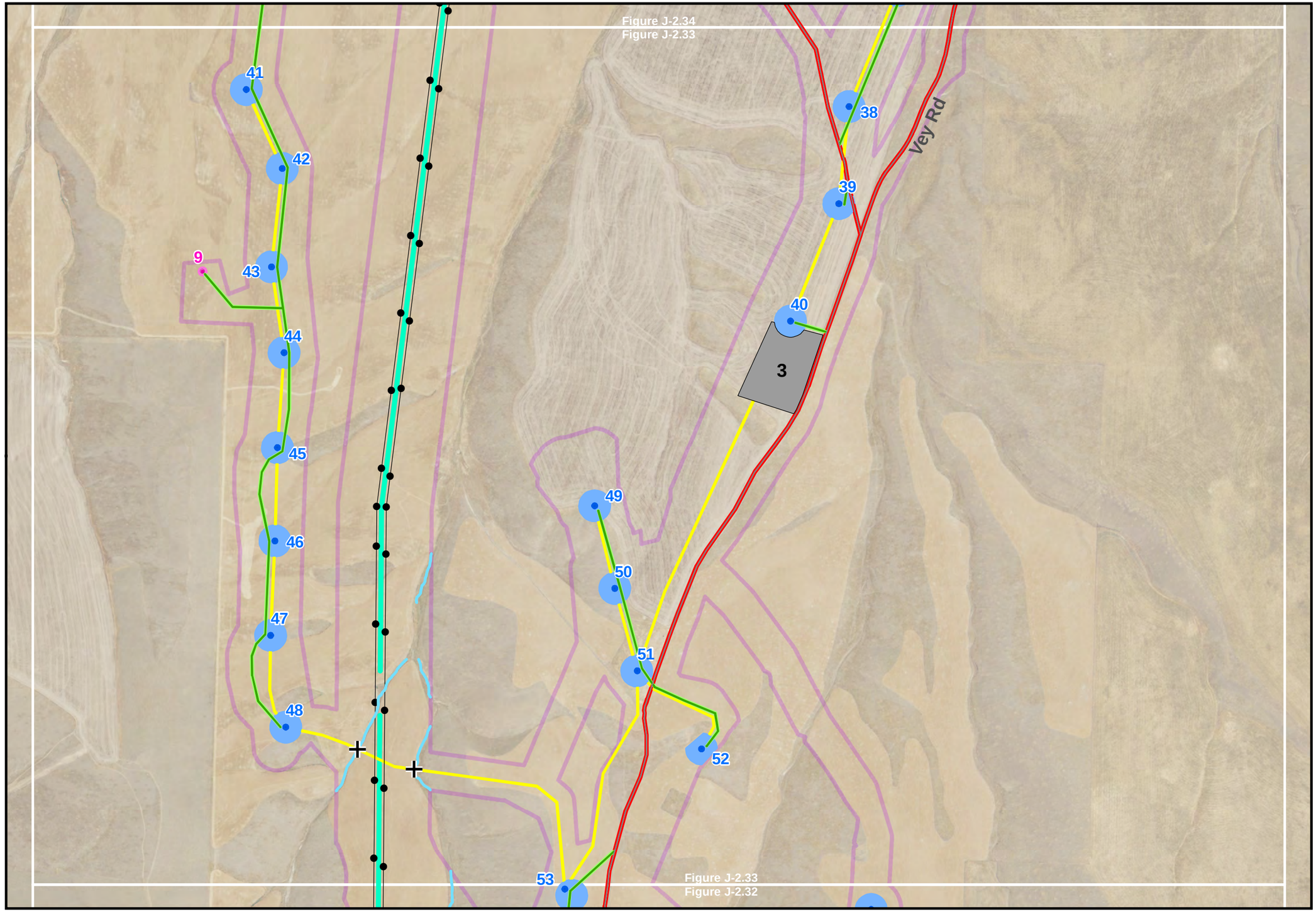

Figure J-2.33

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
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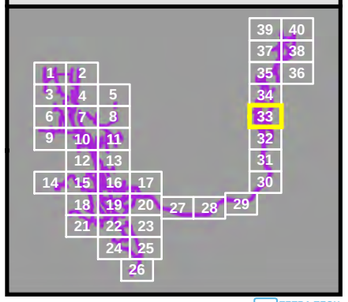
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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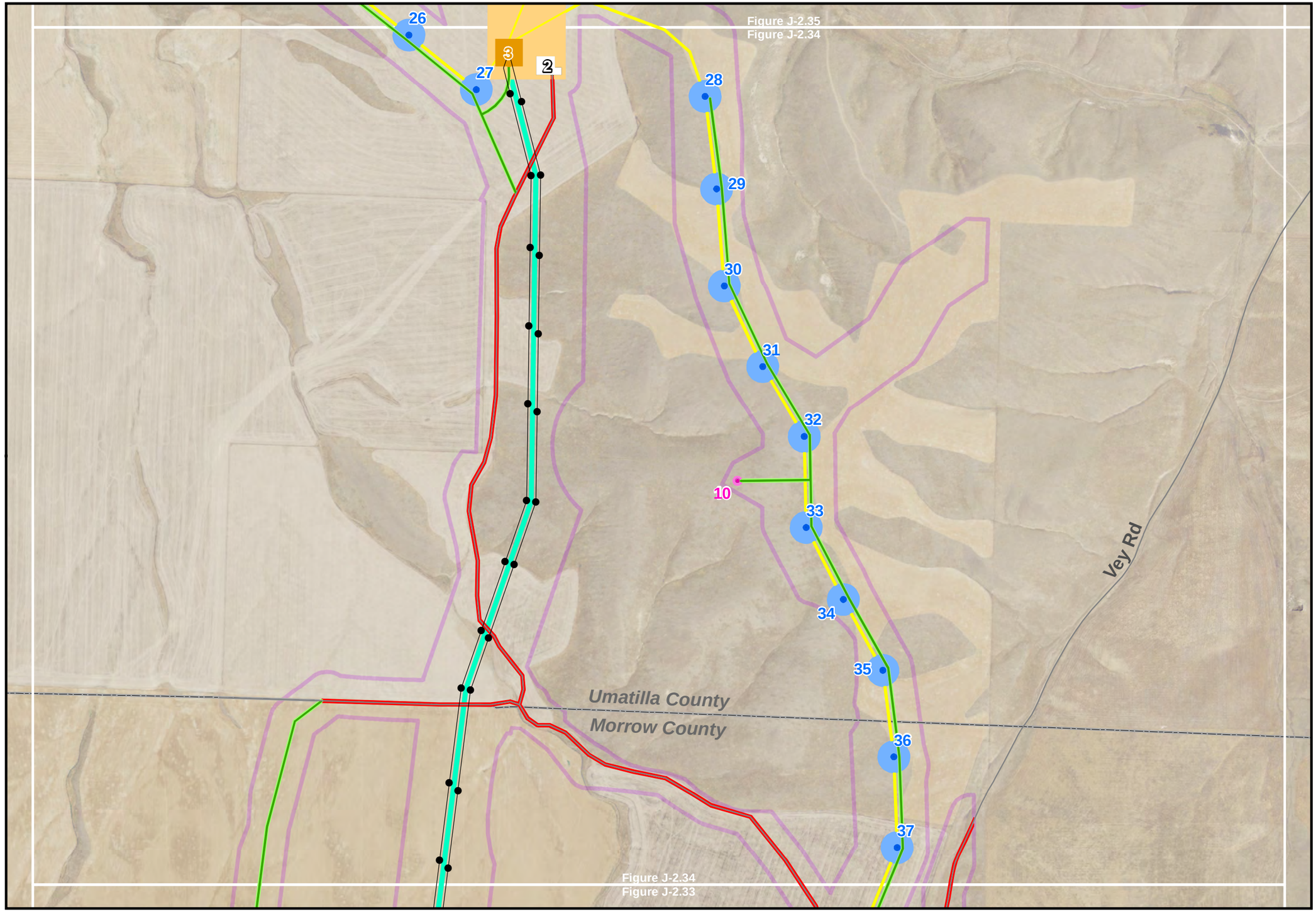

Figure J-2.34

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
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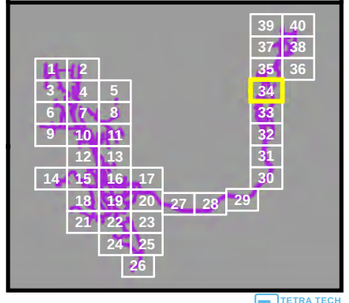
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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** To be constructed and owned by the Umatilla Electric Cooperative or the Umatilla Electric Cooperative with the Columbia Basin Electric Cooperative

TETRA TECH

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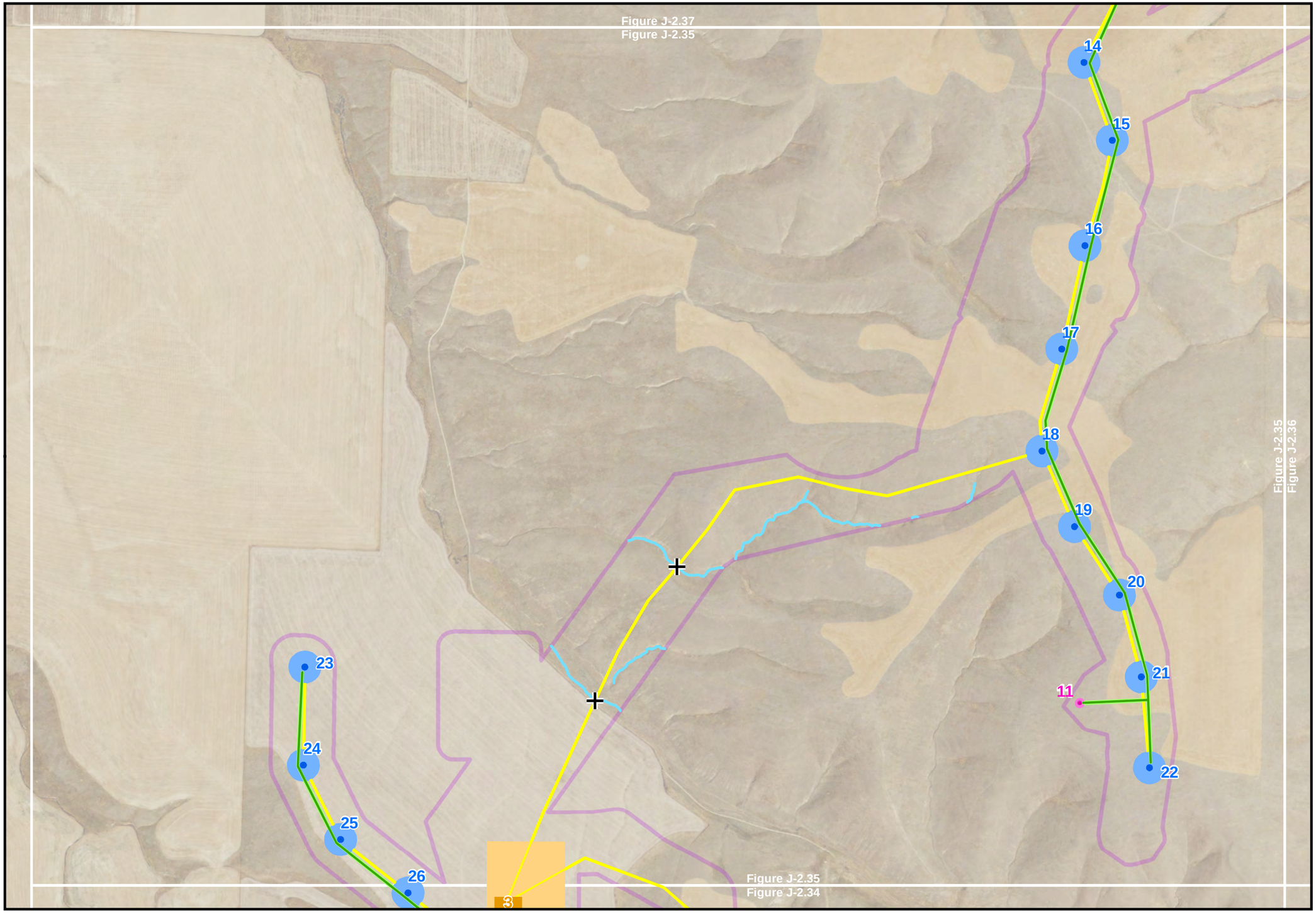


Figure J-2.35

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated

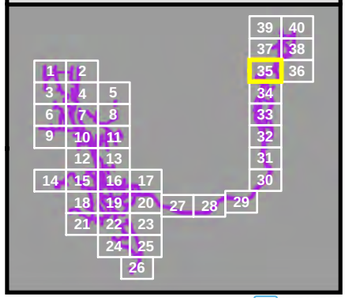
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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Figure J-2.36

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated

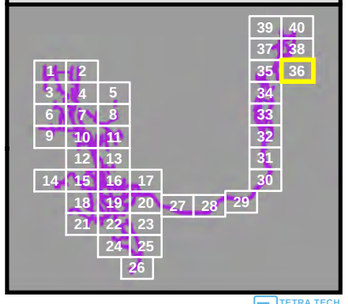
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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Figure J-2.37

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

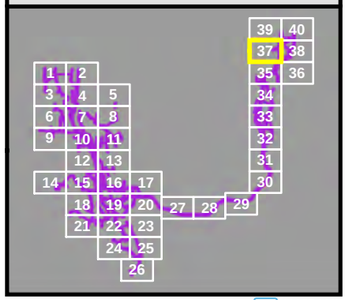
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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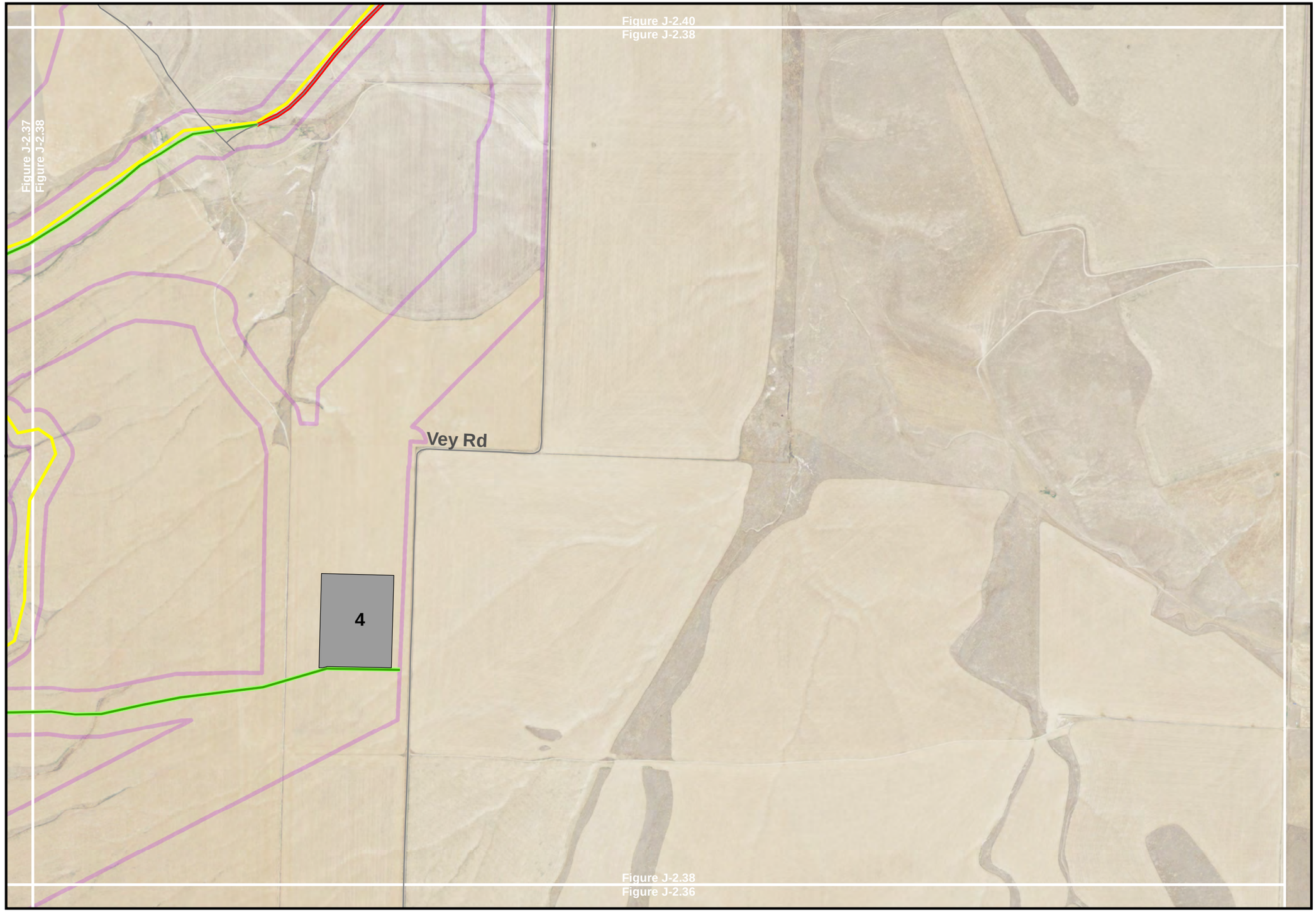


Figure J-2.38

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

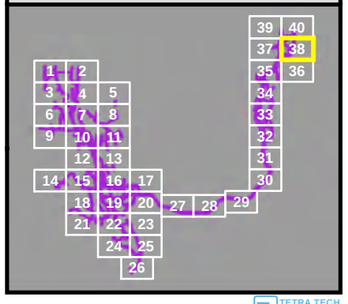
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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Figure J-2.39

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact - GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated

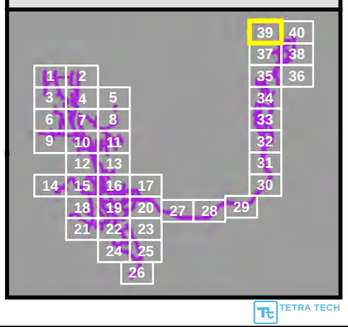
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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TETRA TECH

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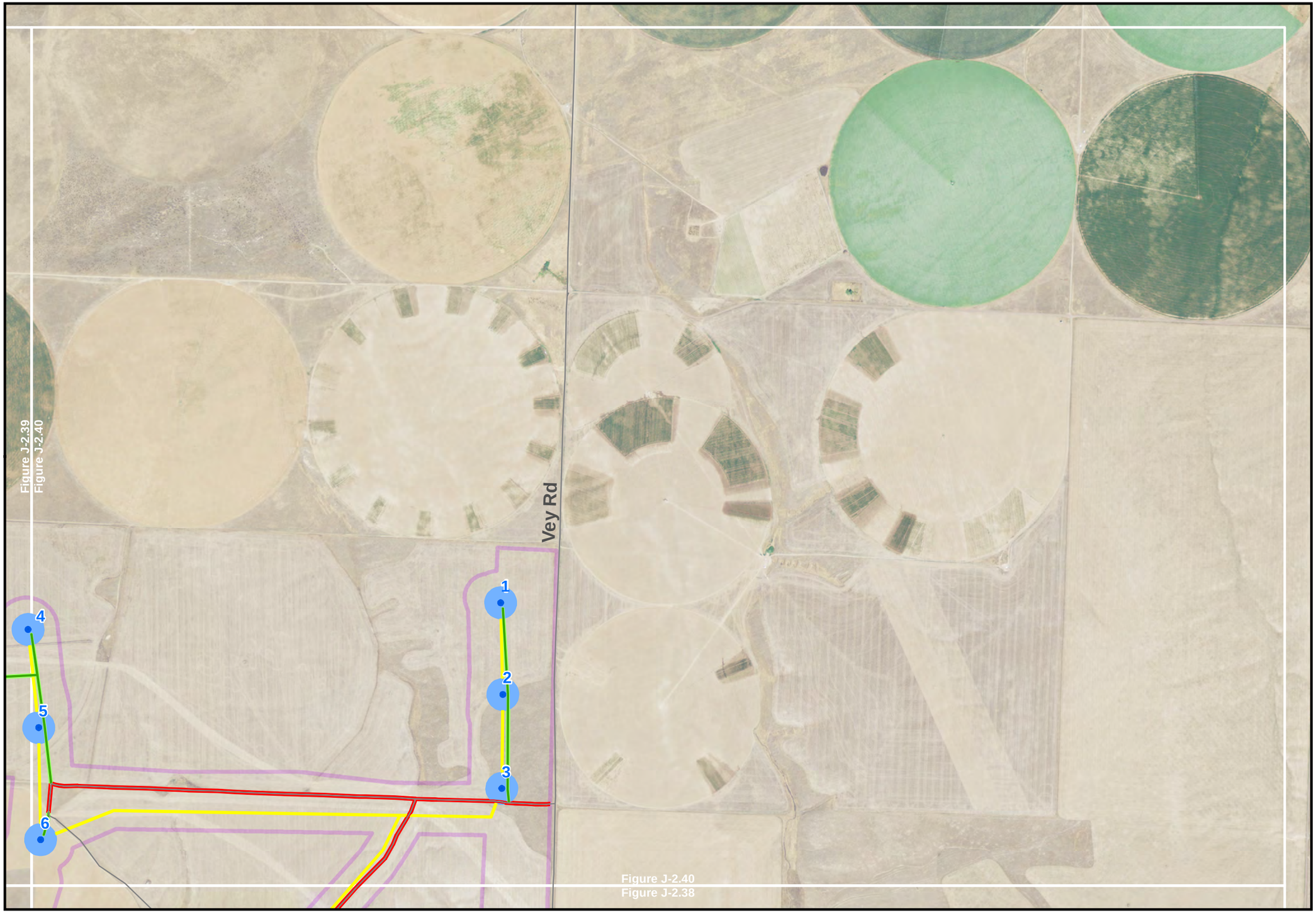


Figure J-2.40

Wheatridge Wind Energy Facility

Wetlands and Waters

- Maximum Project Impact -
GE 1.7-103 Project Facilities and Option 1 230kV Intraconnection Lines

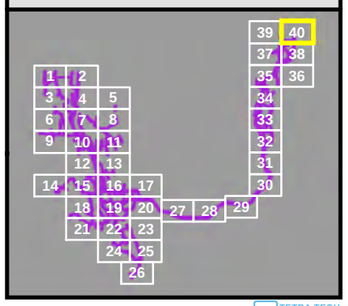
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 1)
- Proposed Strawberry Substation **

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 1.7-103 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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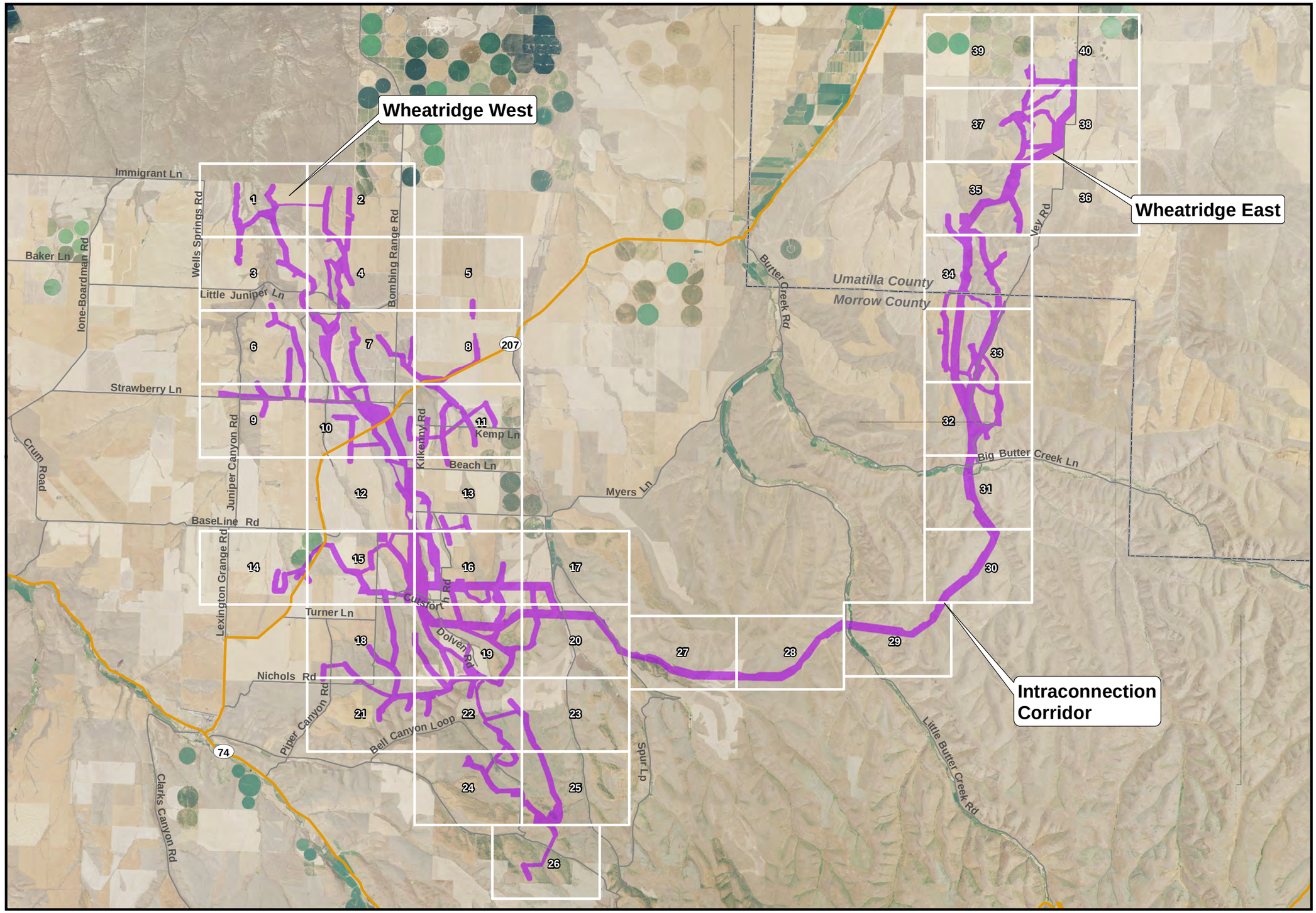

Figure J-2

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Analysis/Survey Area *
- County Boundary
- Map Grid
- State Highway
- Local Road

1:140,000 **WGS84 UTM 11**

0 0.5 1 2 3 4 5 6 7 8 9 10 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads, political boundaries / USDA NAIP: aerial imagery

*** The Analysis Area is the entirety of the Site Boundary**

TETRA TECH

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Figure J-4.1

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

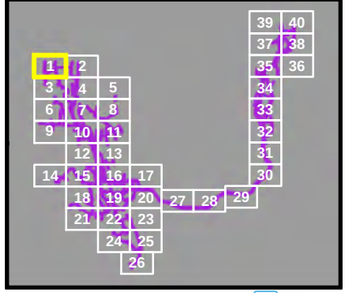
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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TETRA TECH

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Figure J-4.2

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

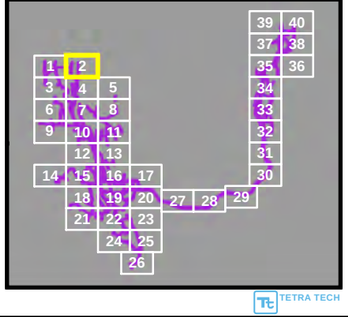
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

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0 0.125 0.25 0.5 0.75 1 Miles

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Figure J-4.3

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

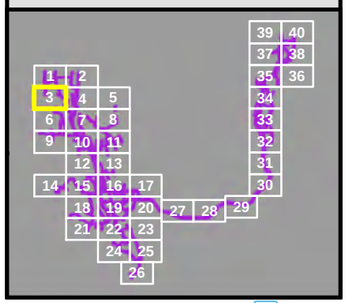
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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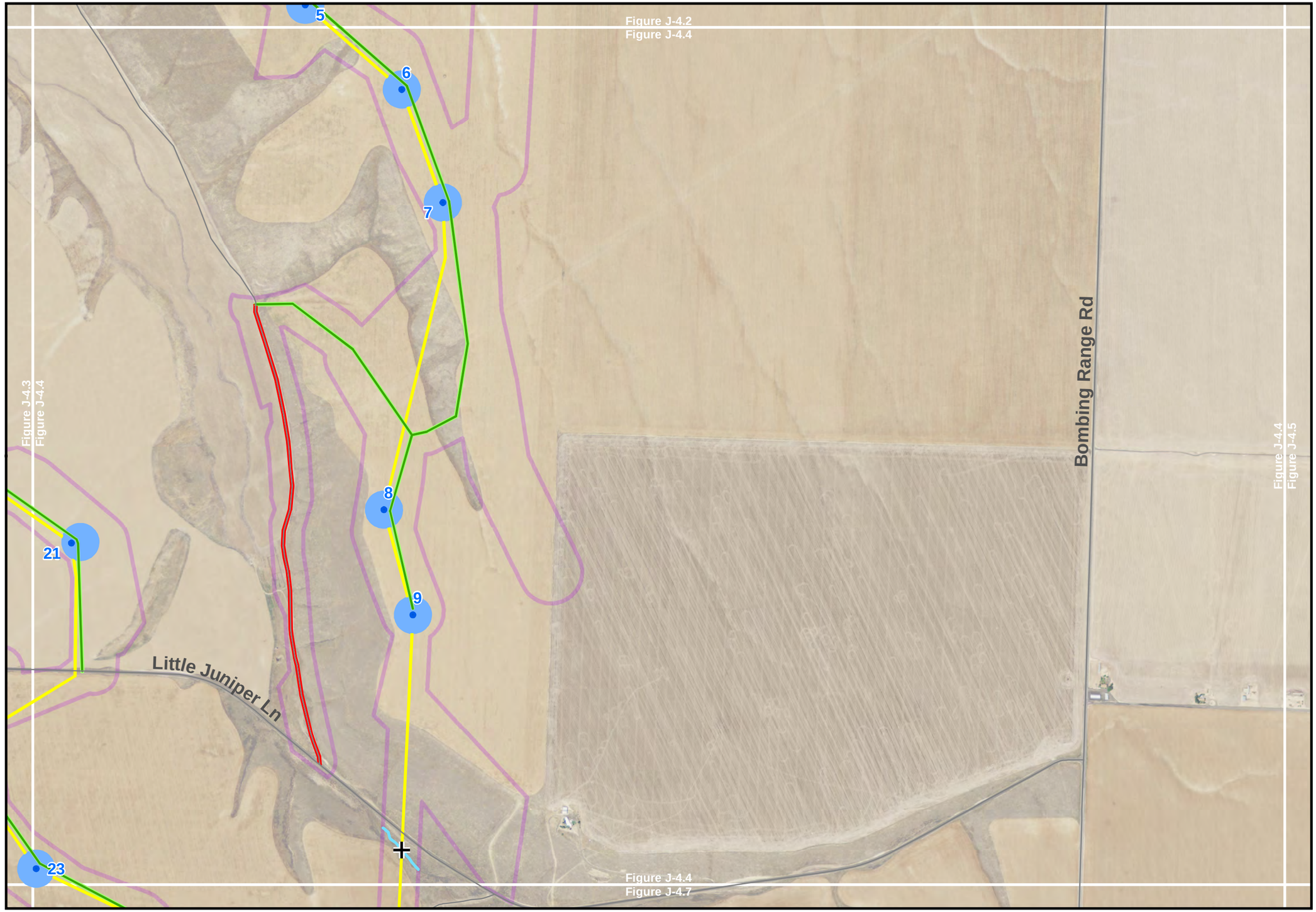


Figure J-4.4

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact - GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

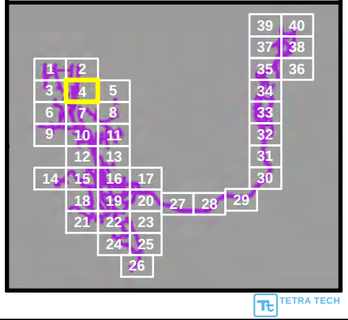
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

N

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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Figure J-4.5

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

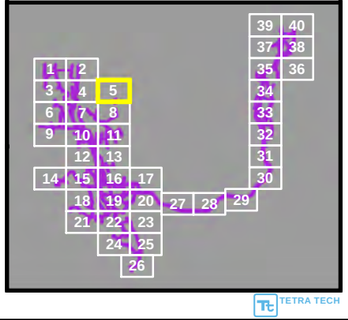
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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Figure J-4.6

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

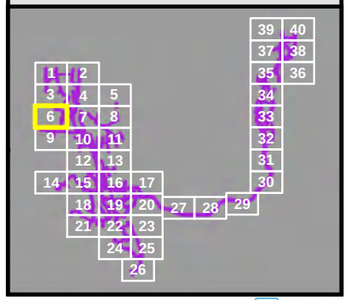
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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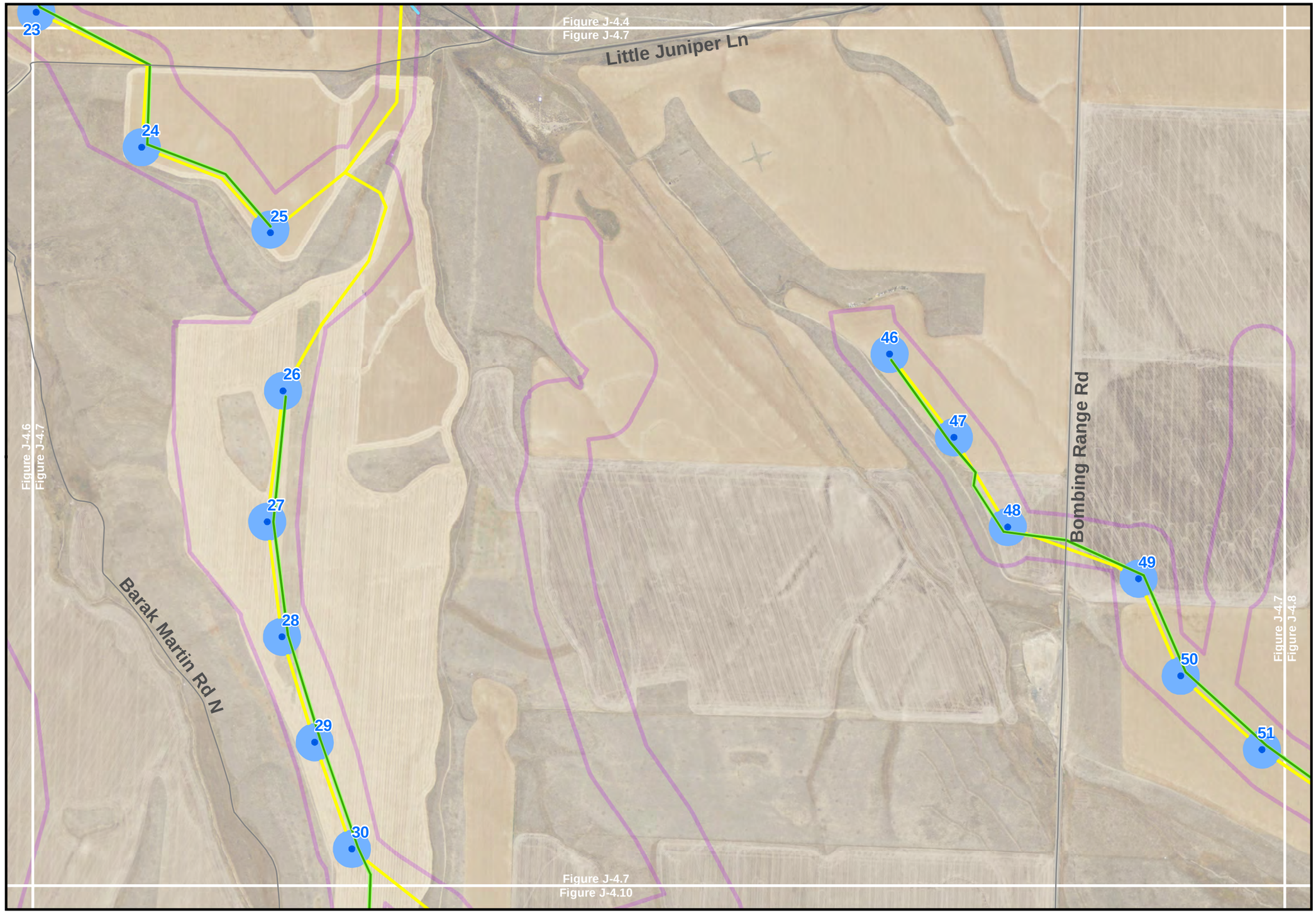


Figure J-4.7

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

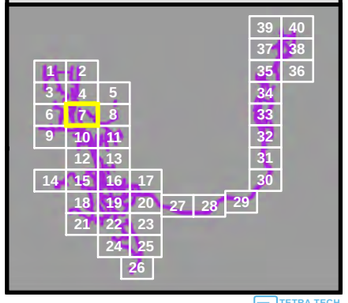
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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TETRA TECH

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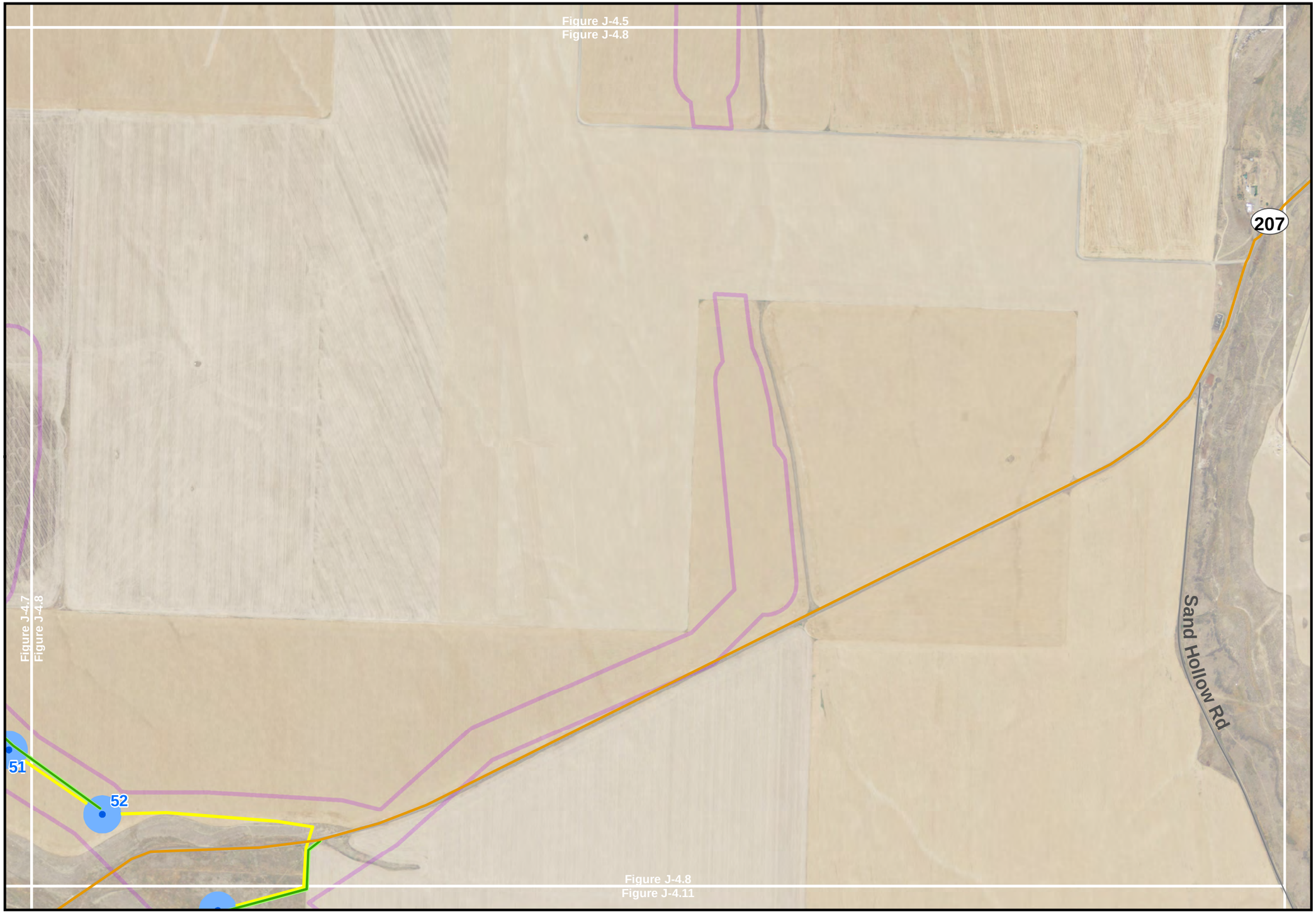


Figure J-4.8

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

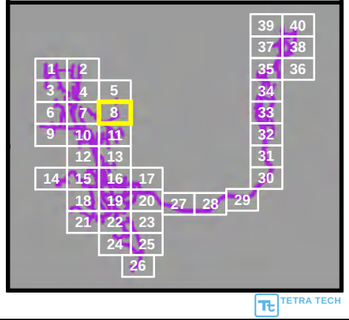
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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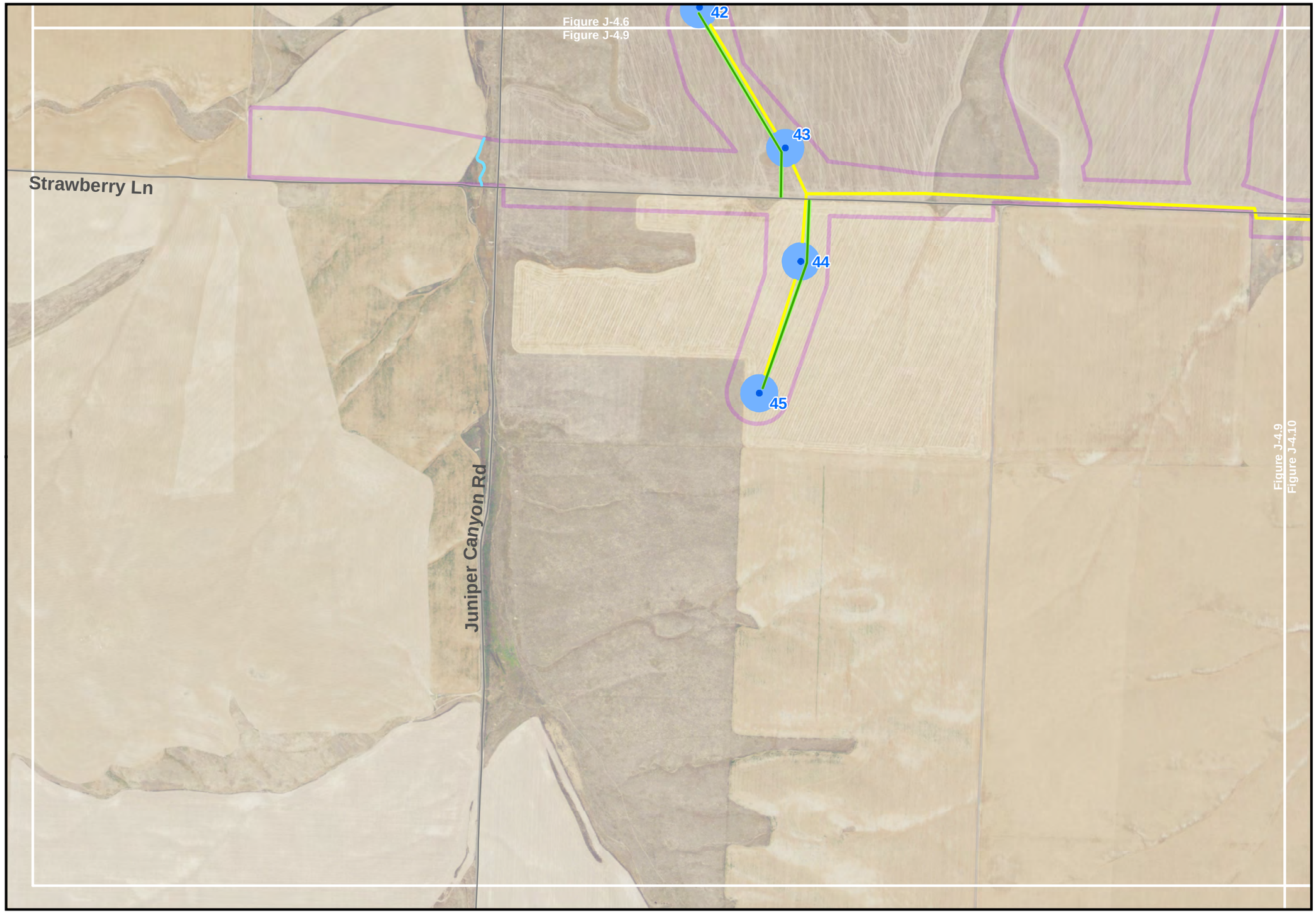


Figure J-4.9

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

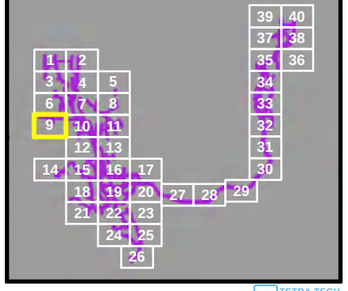
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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TETRA TECH

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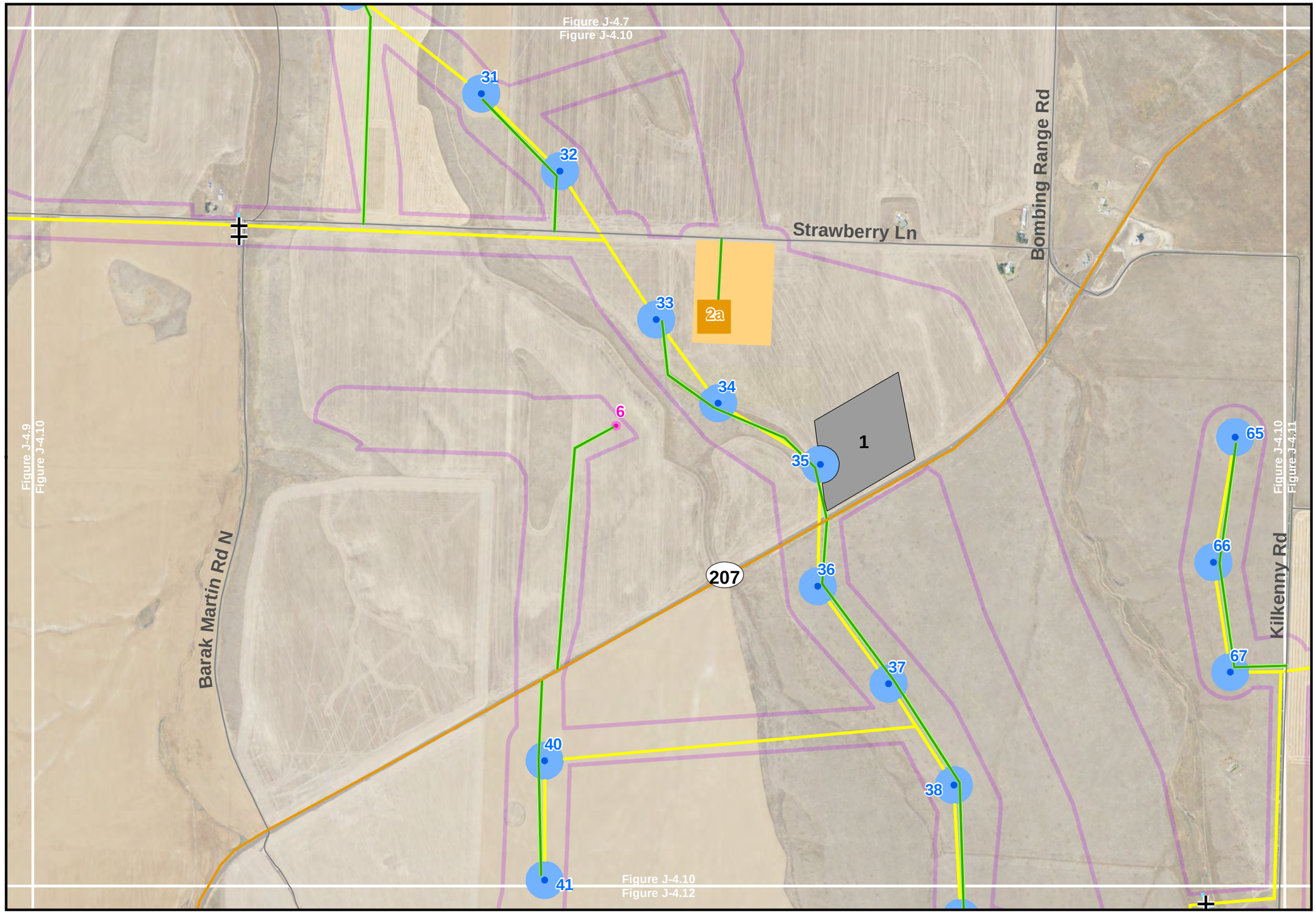


Figure J-4.10

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact - GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

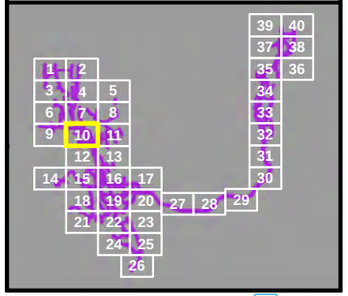
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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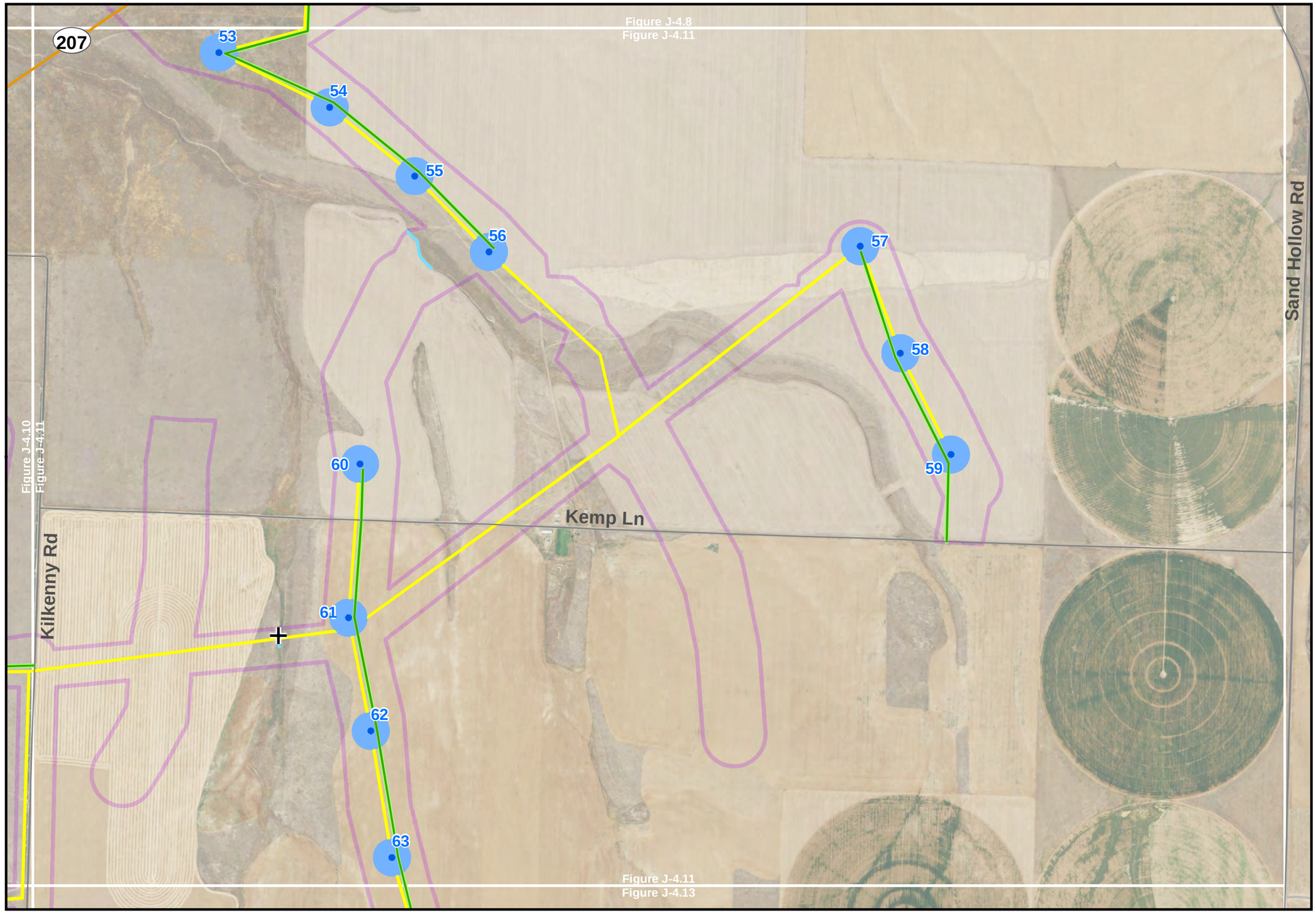


Figure J-4.11

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

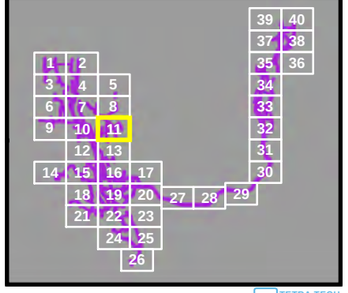
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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Figure J-4.12

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

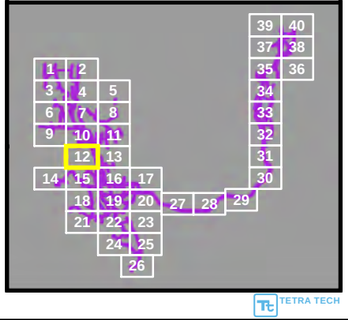
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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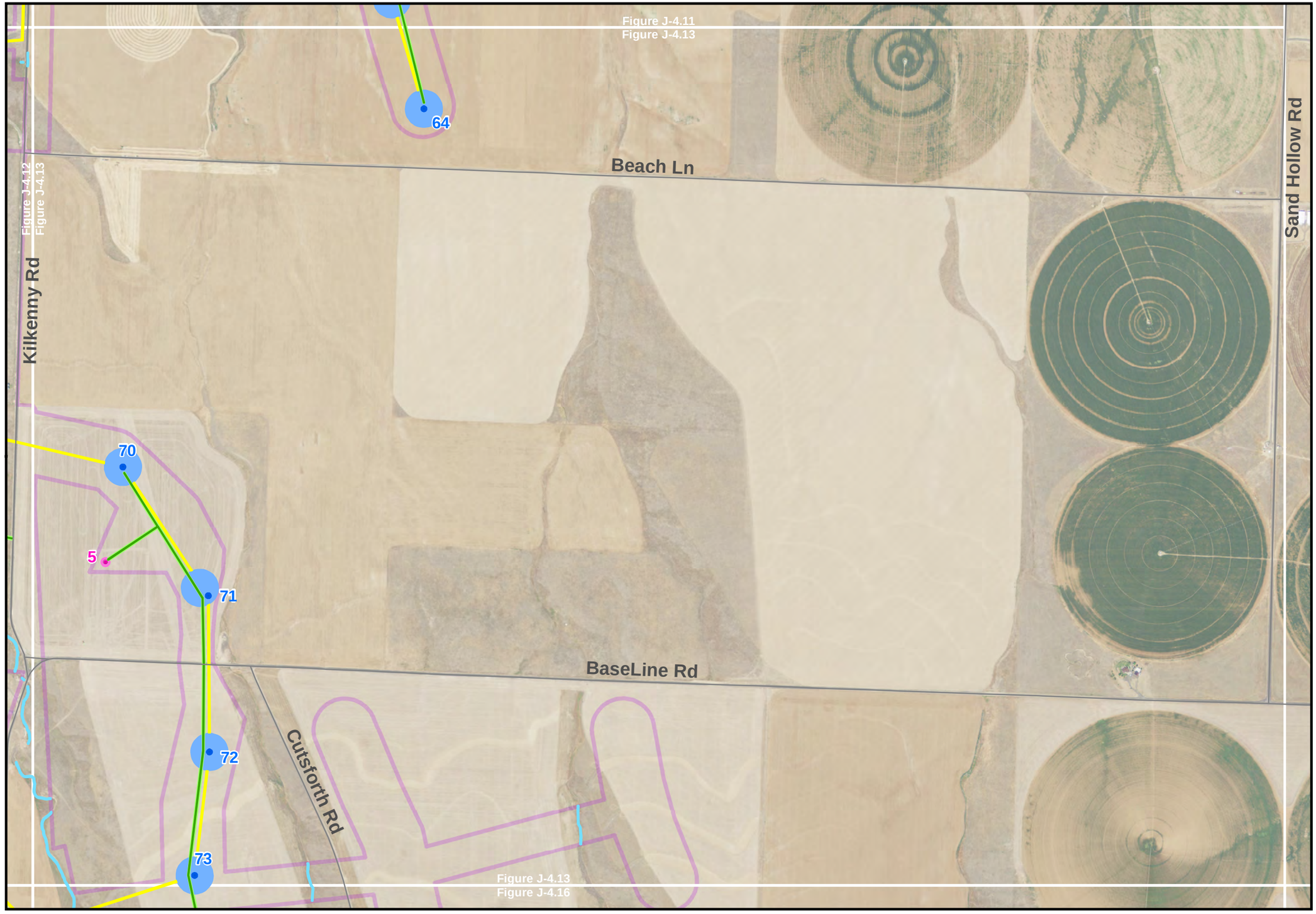


Figure J-4.13

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

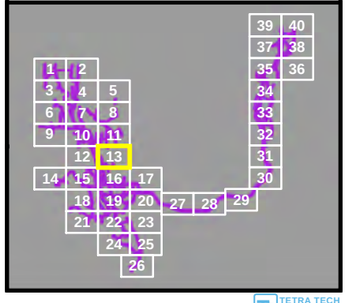
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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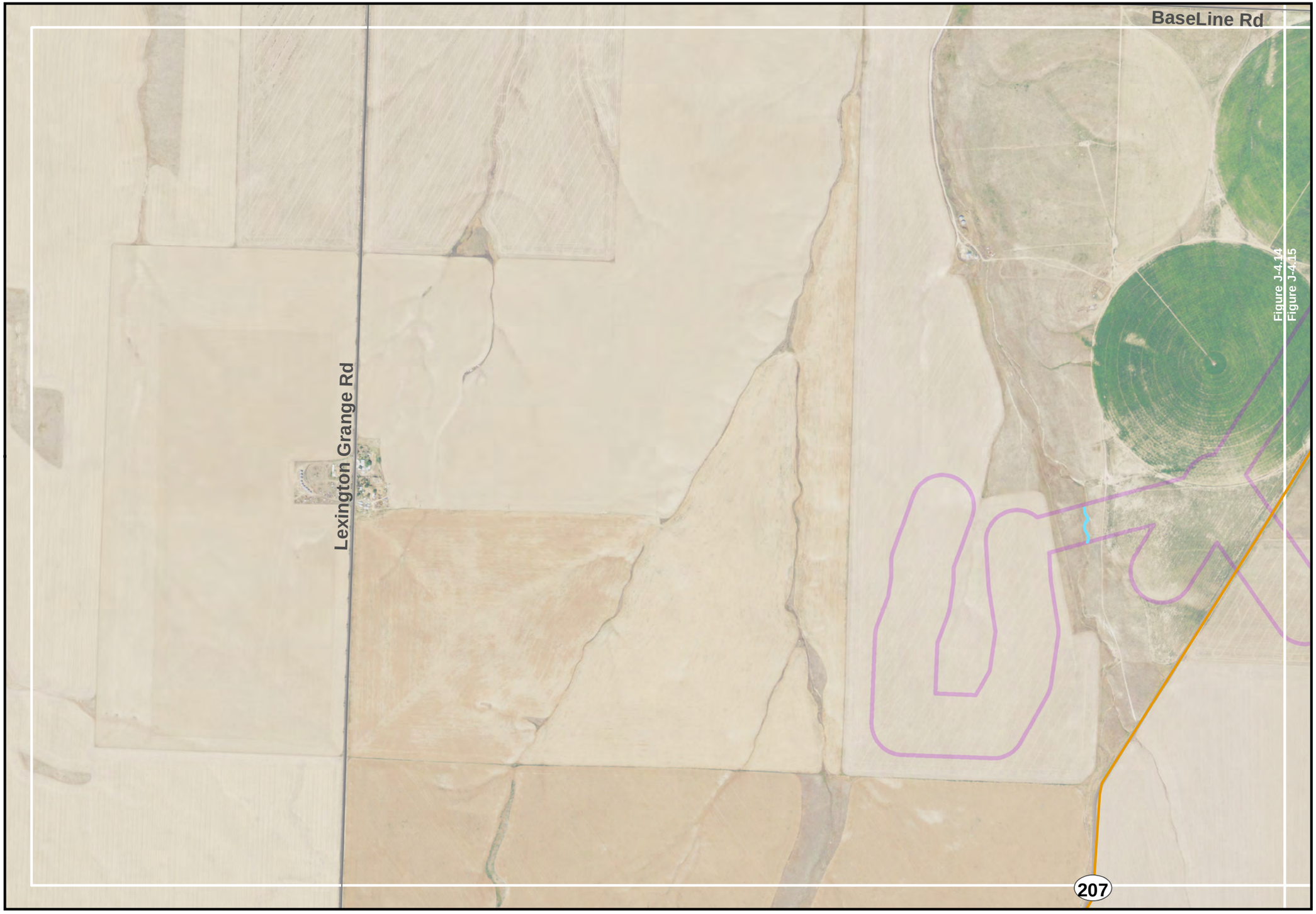


Figure J-4.14

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact - GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

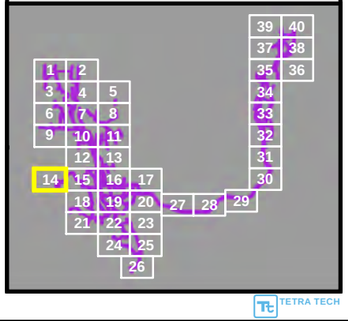
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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TETRA TECH

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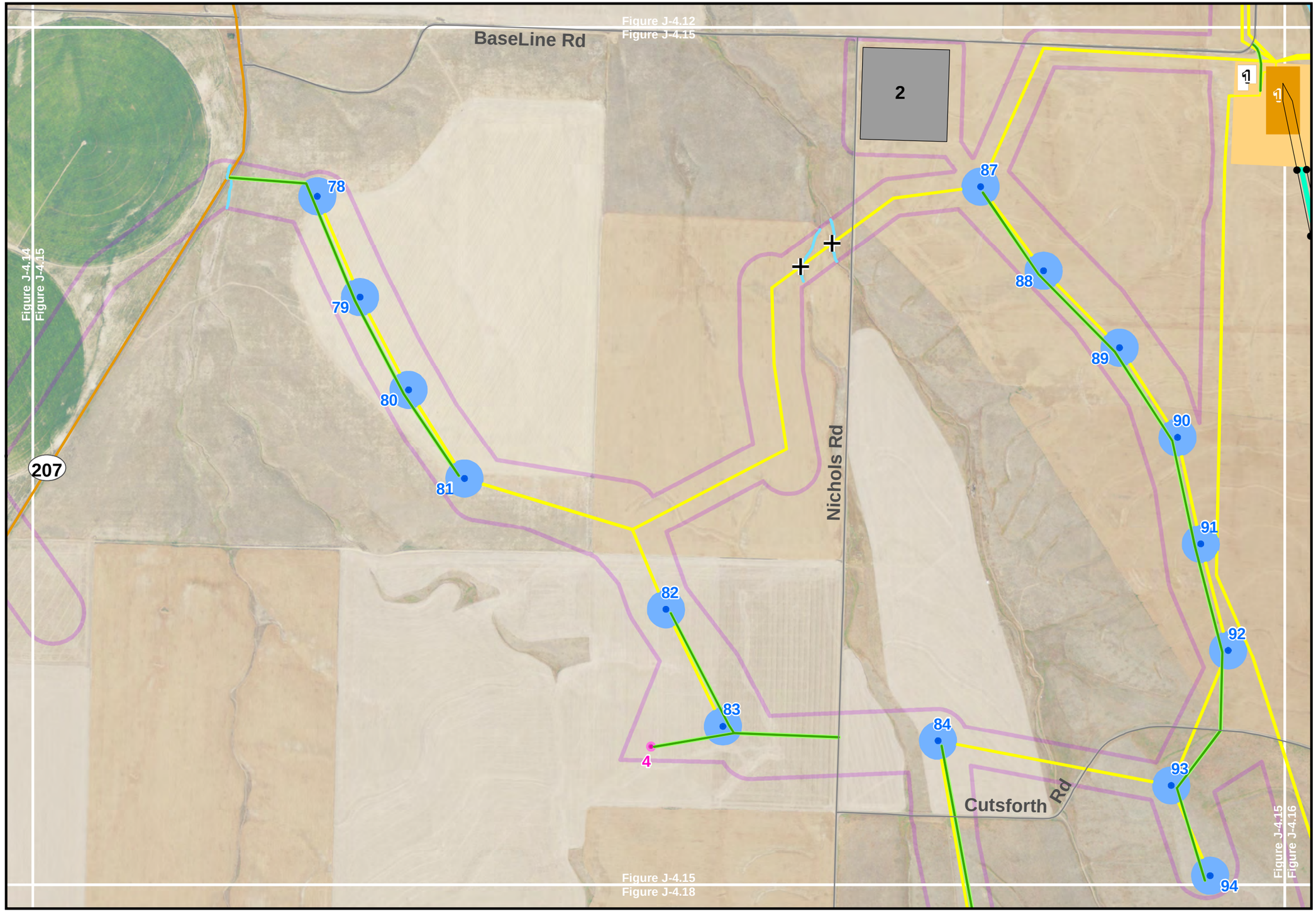


Figure J-4.15

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

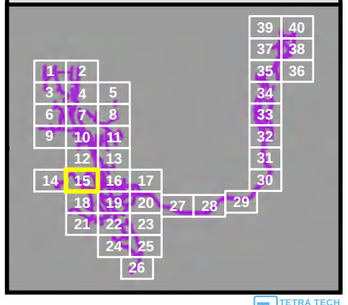
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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TETRA TECH

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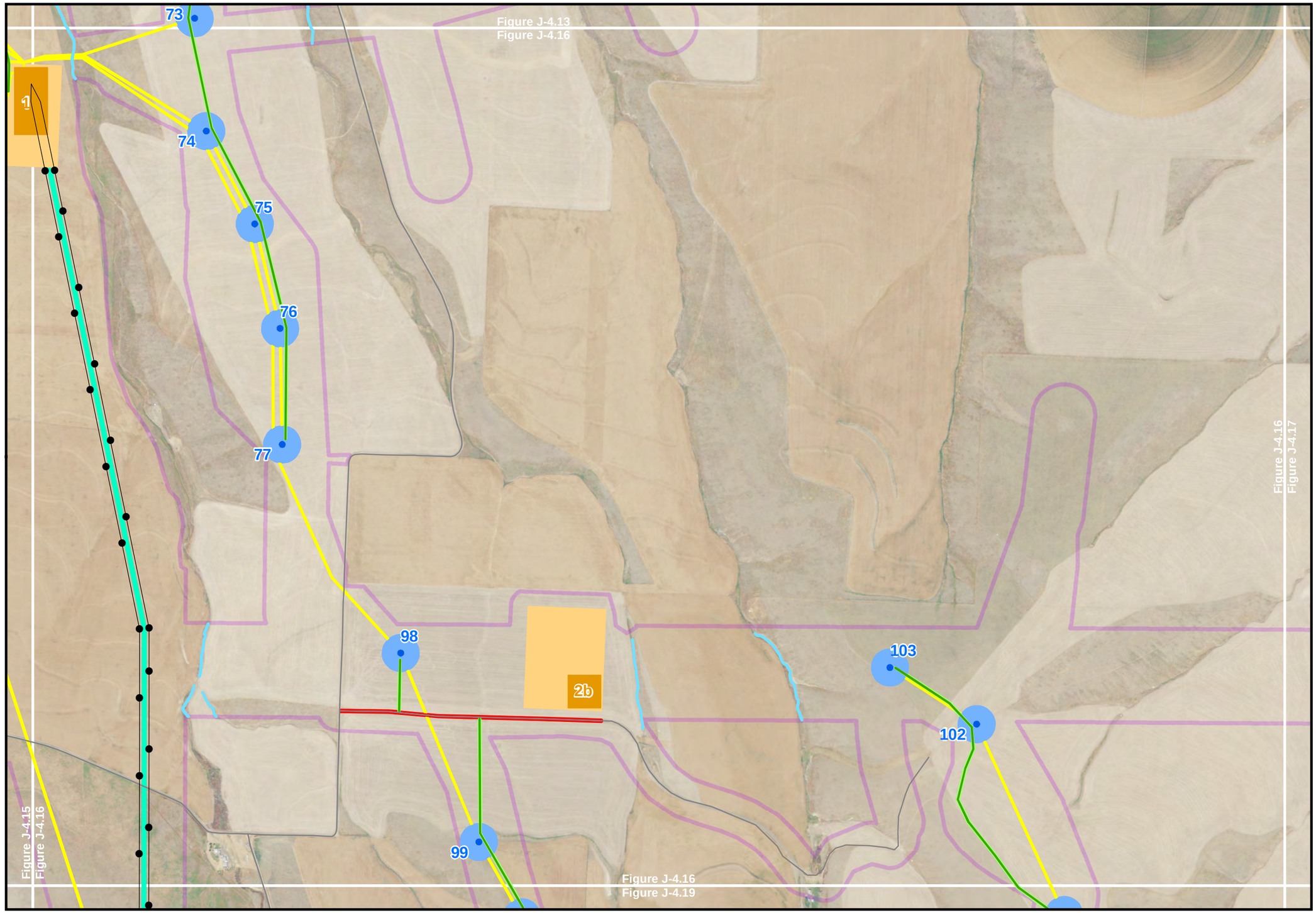


Figure J-4.16

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact - GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

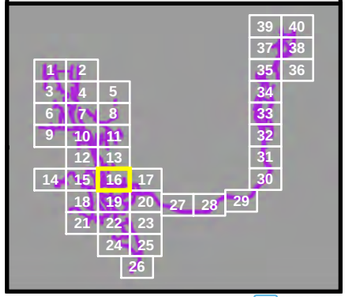
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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Figure J-4.17

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact - GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

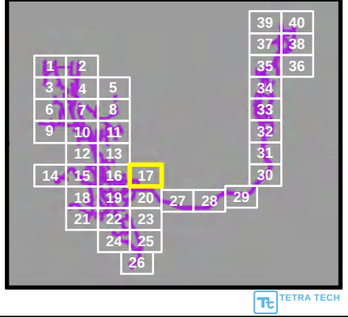
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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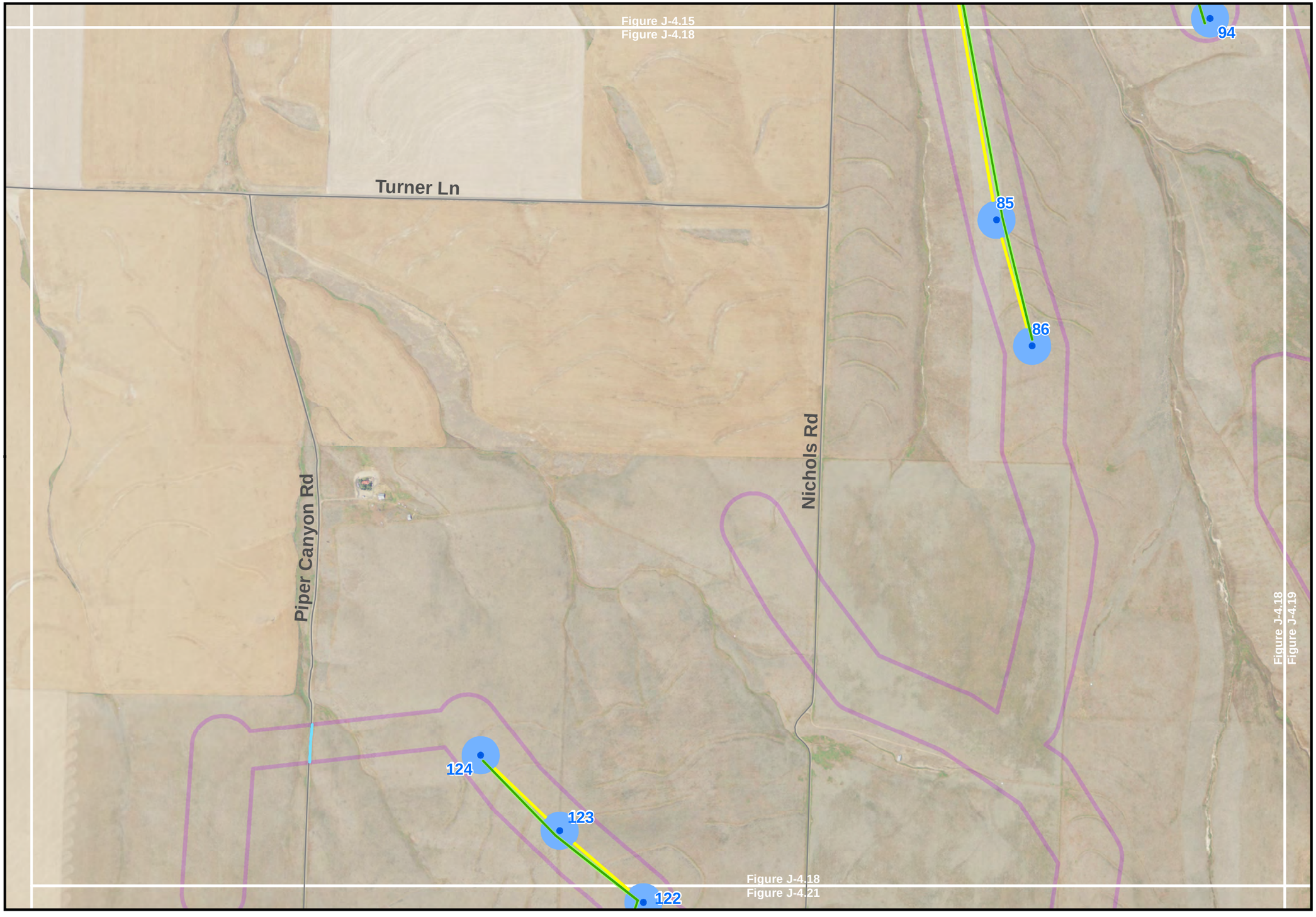


Figure J-4.18

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

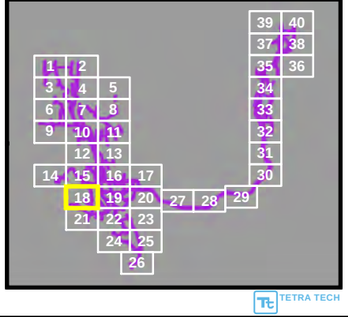
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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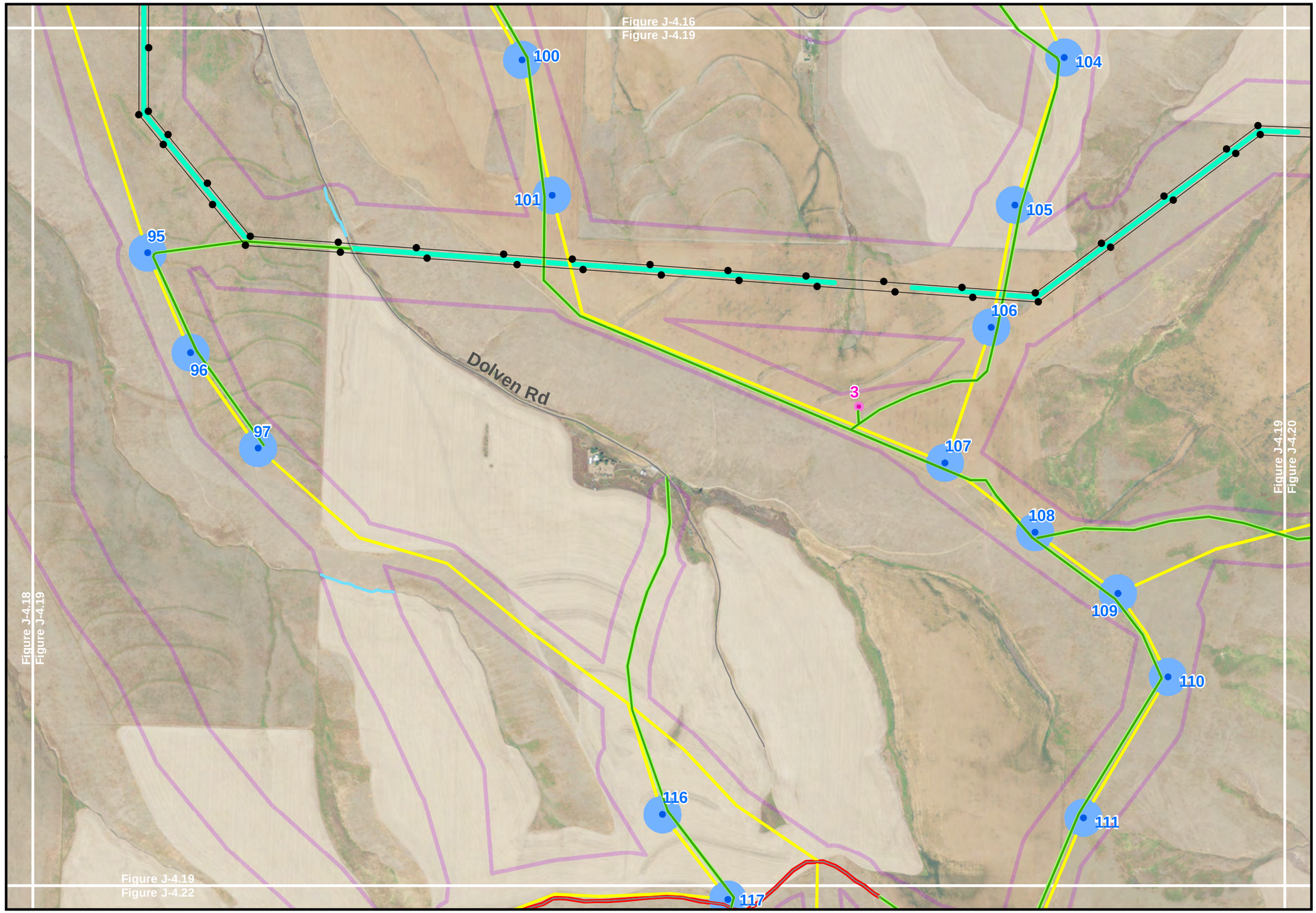


Figure J-4.19

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact - GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

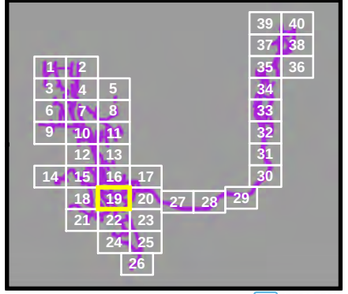
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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TETRA TECH

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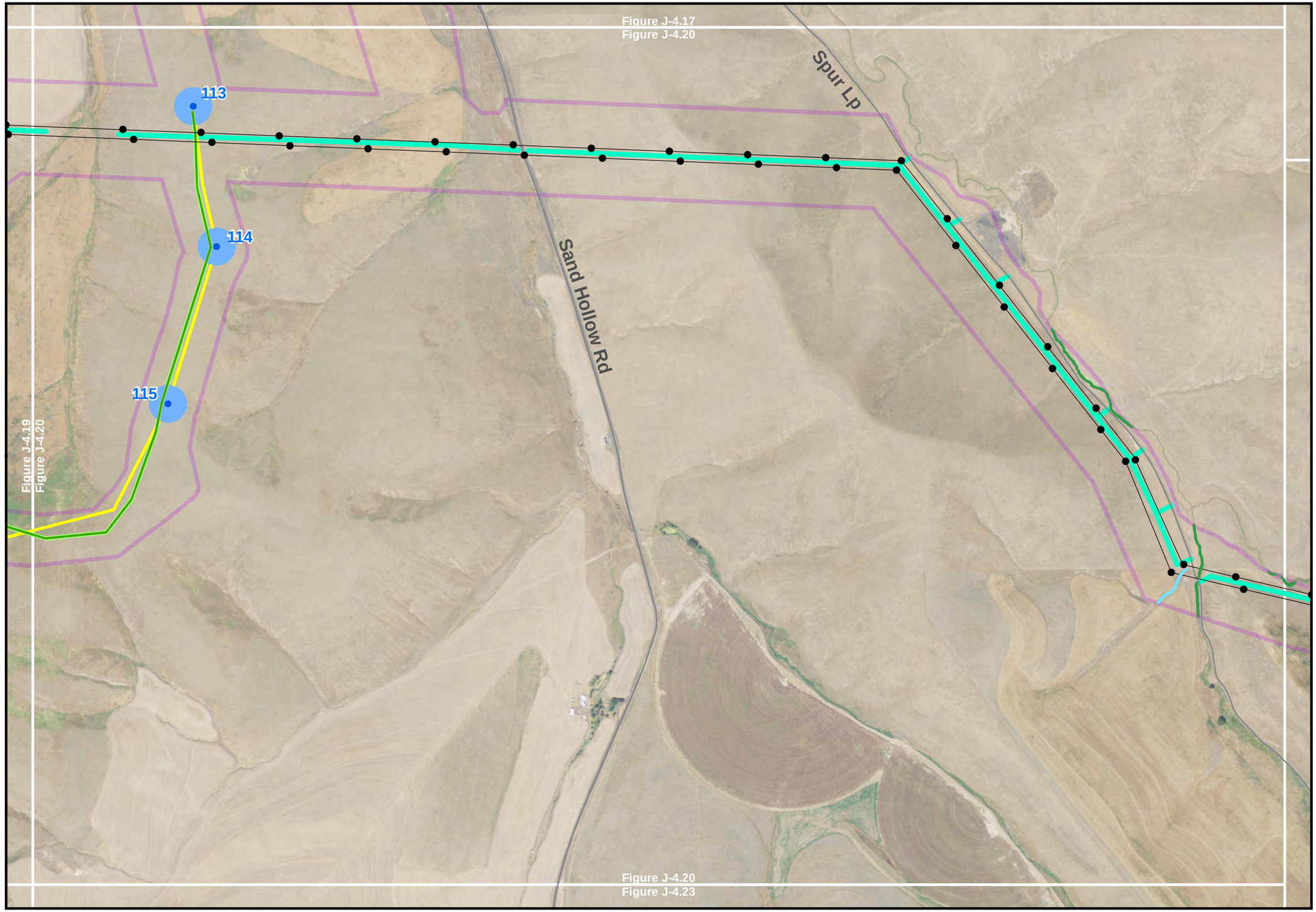


Figure J-4.20

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact - GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

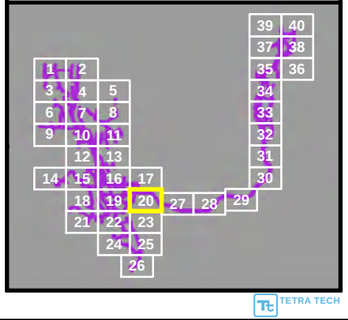
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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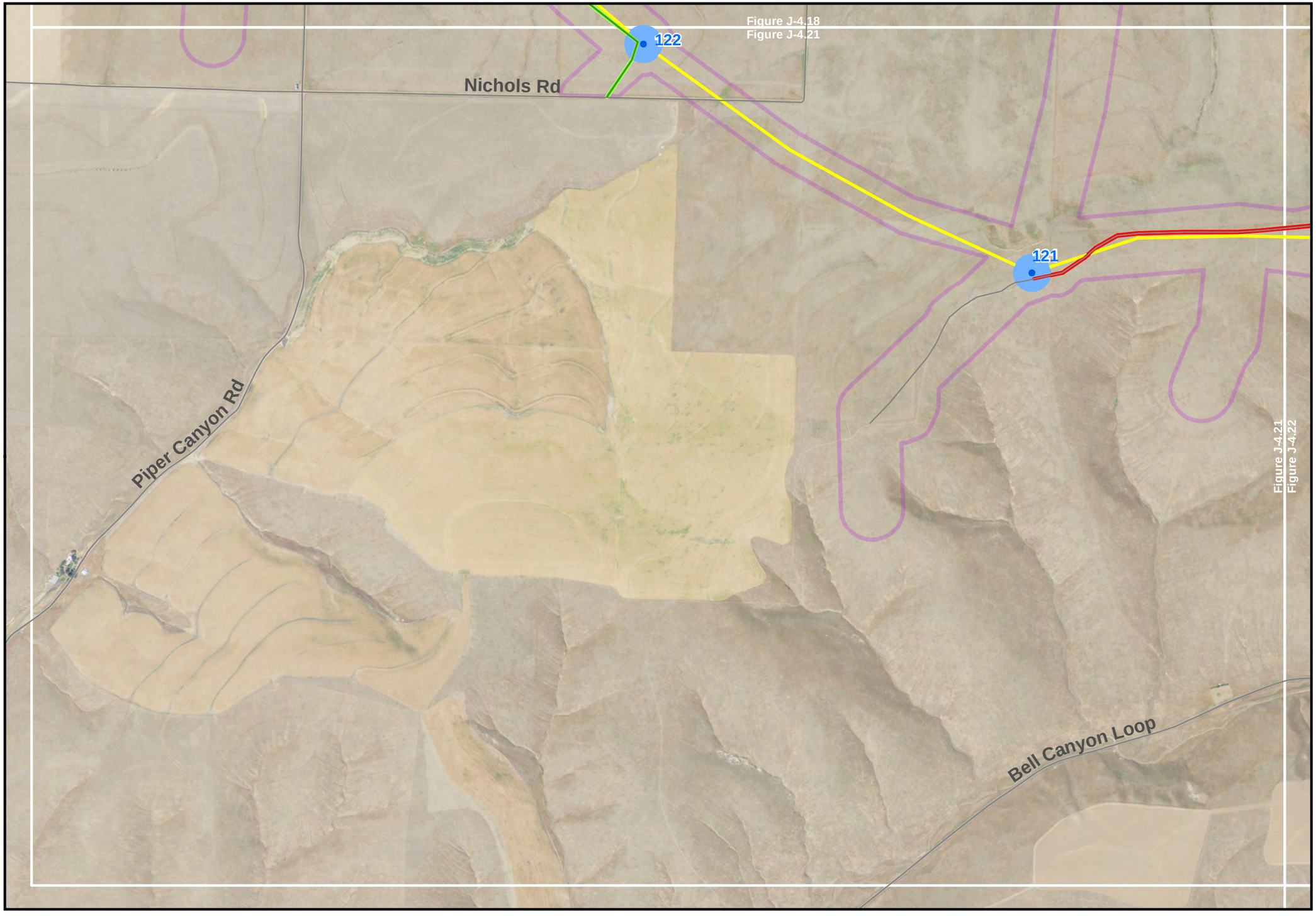


Figure J-4.21

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

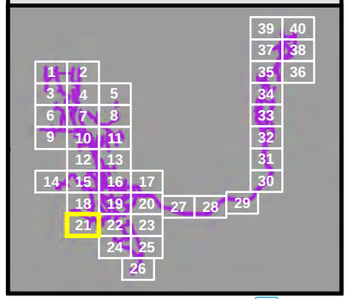
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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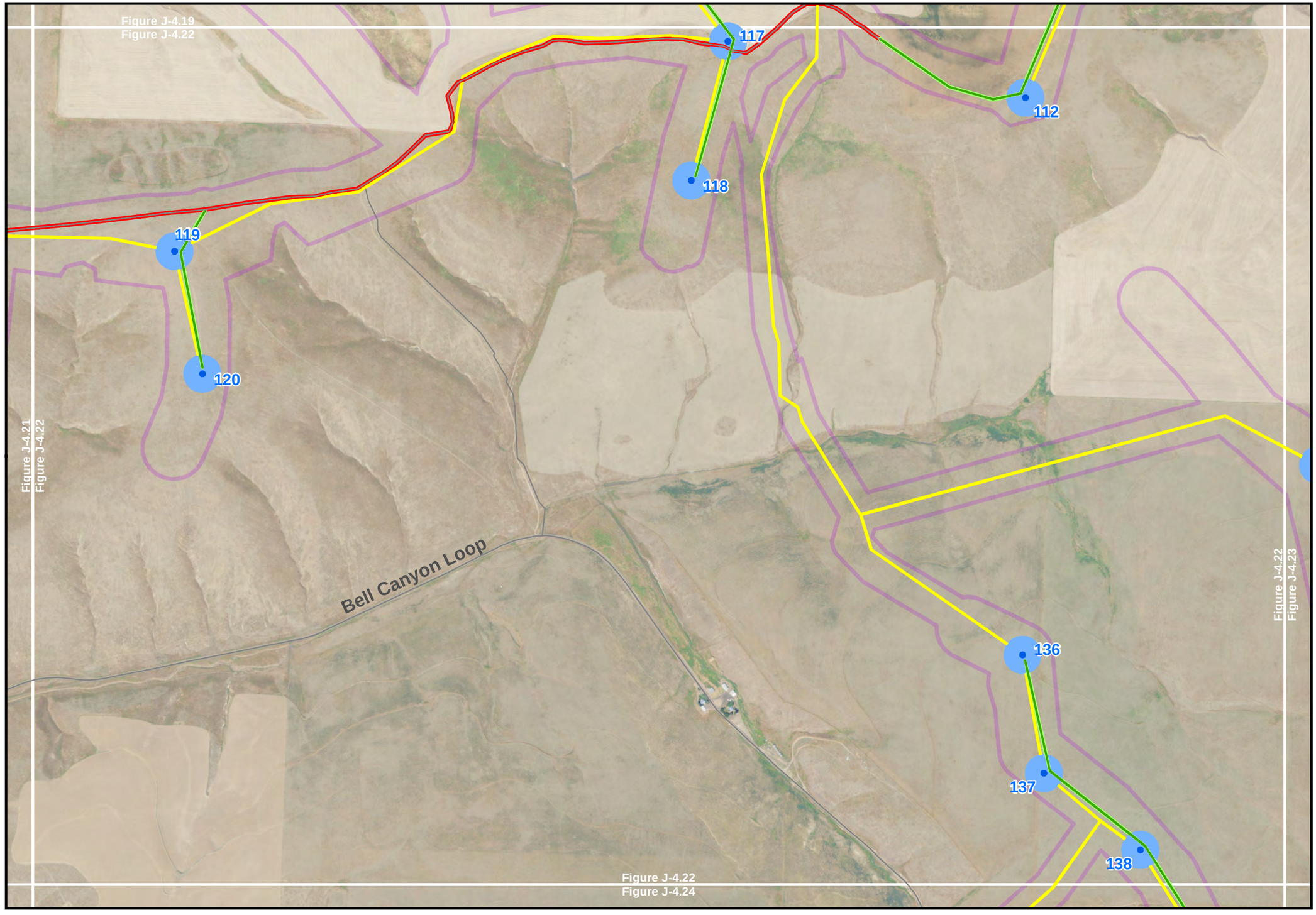


Figure J-4.22

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

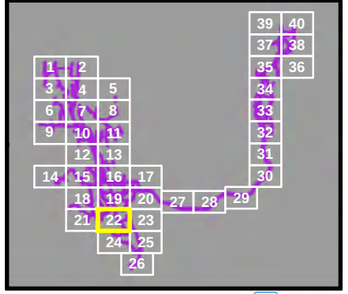
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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TETRA TECH

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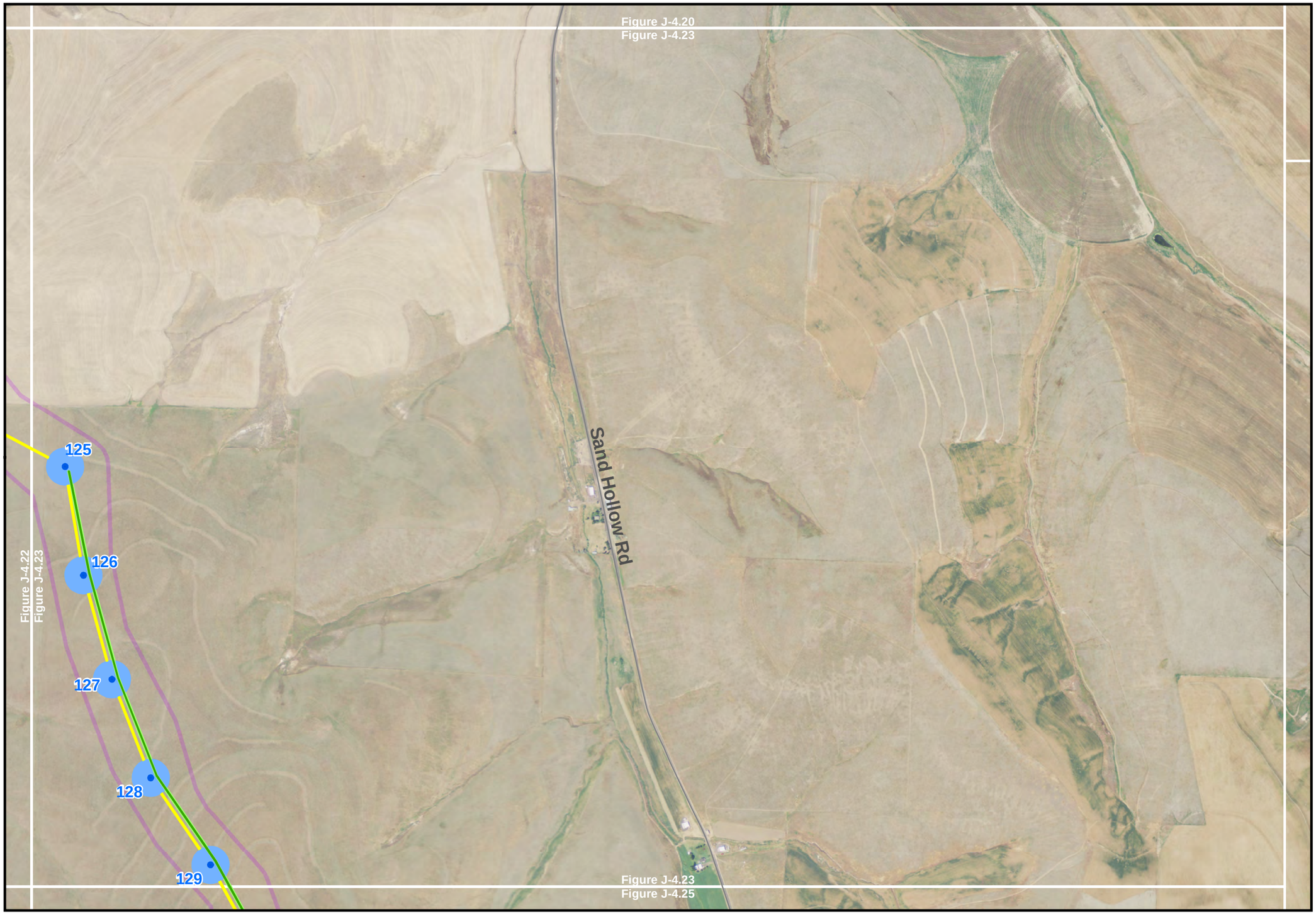


Figure J-4.23

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

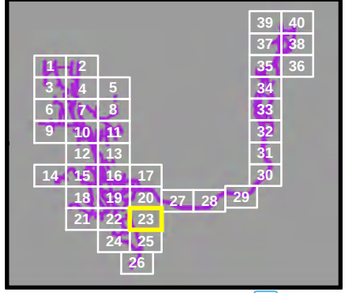
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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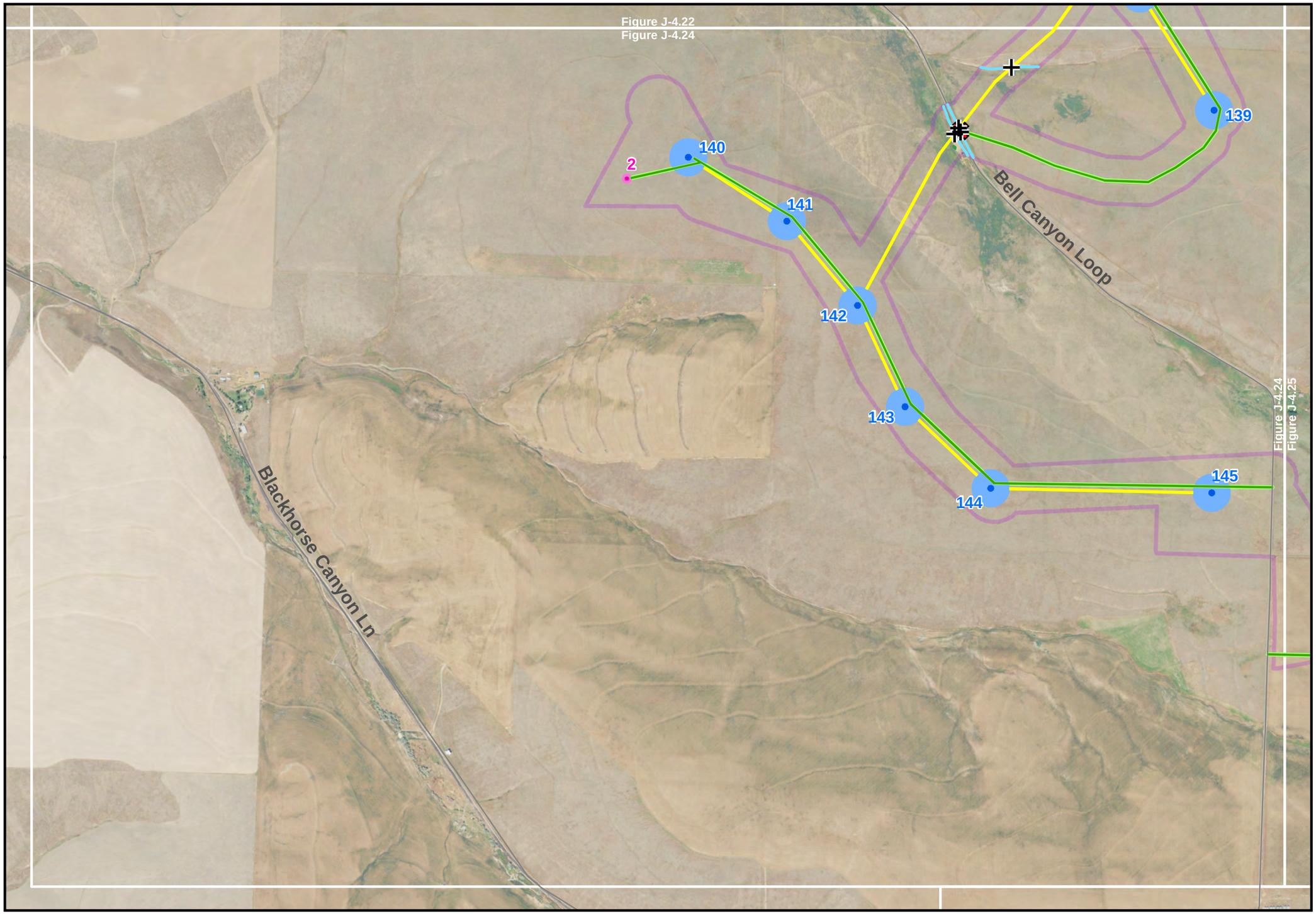


Figure J-4.24

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

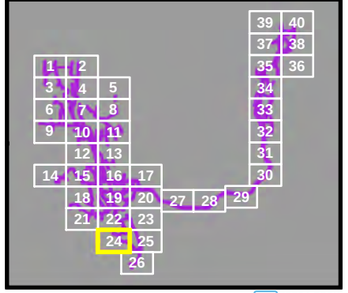
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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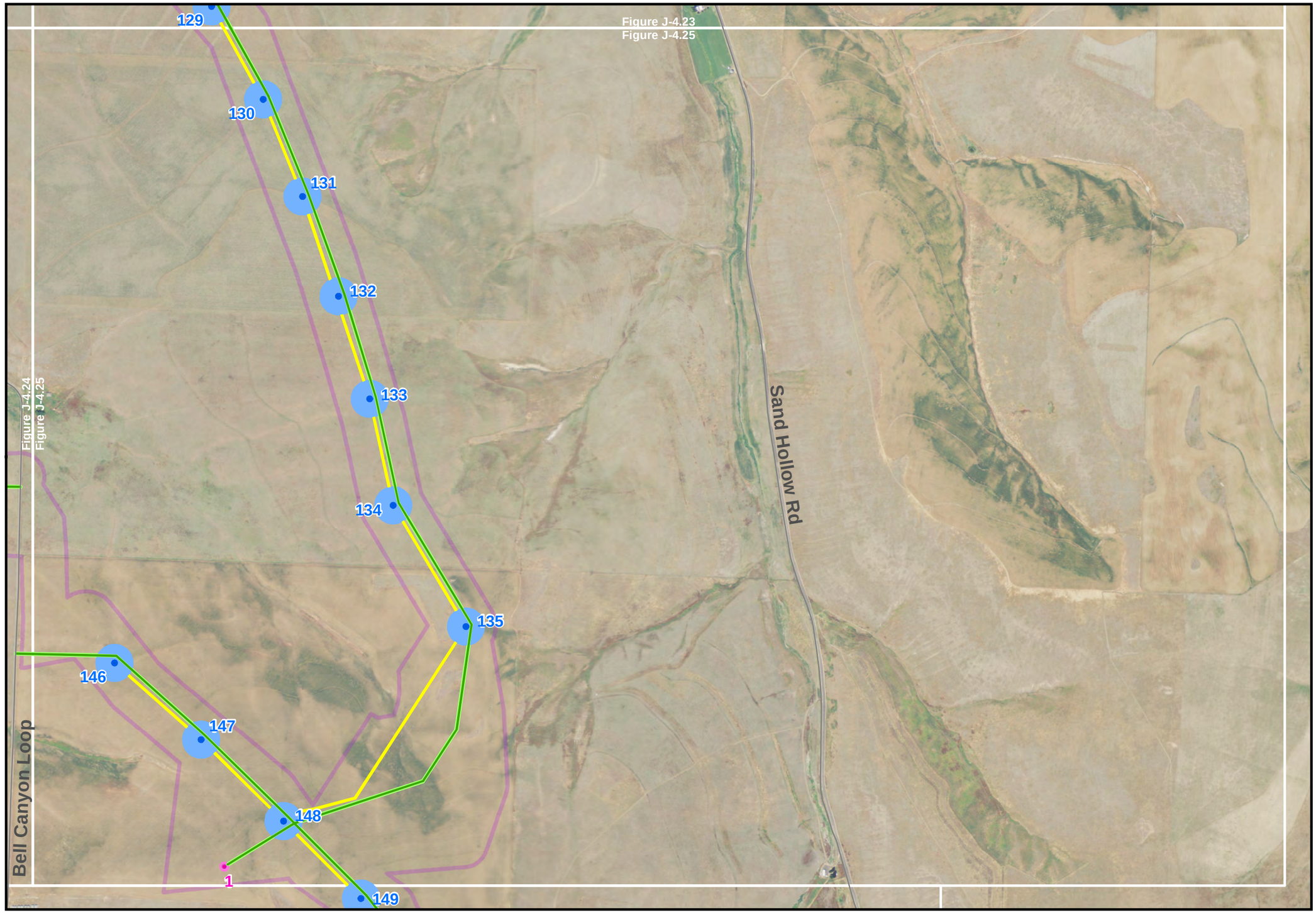


Figure J-4.25

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact - GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

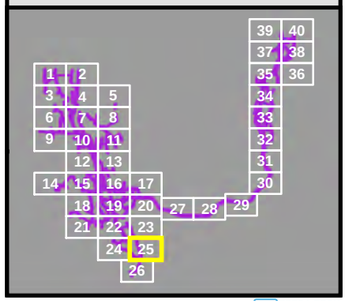
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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Figure J-4.26

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

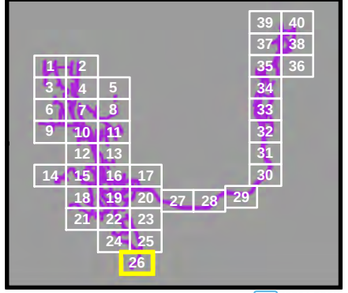
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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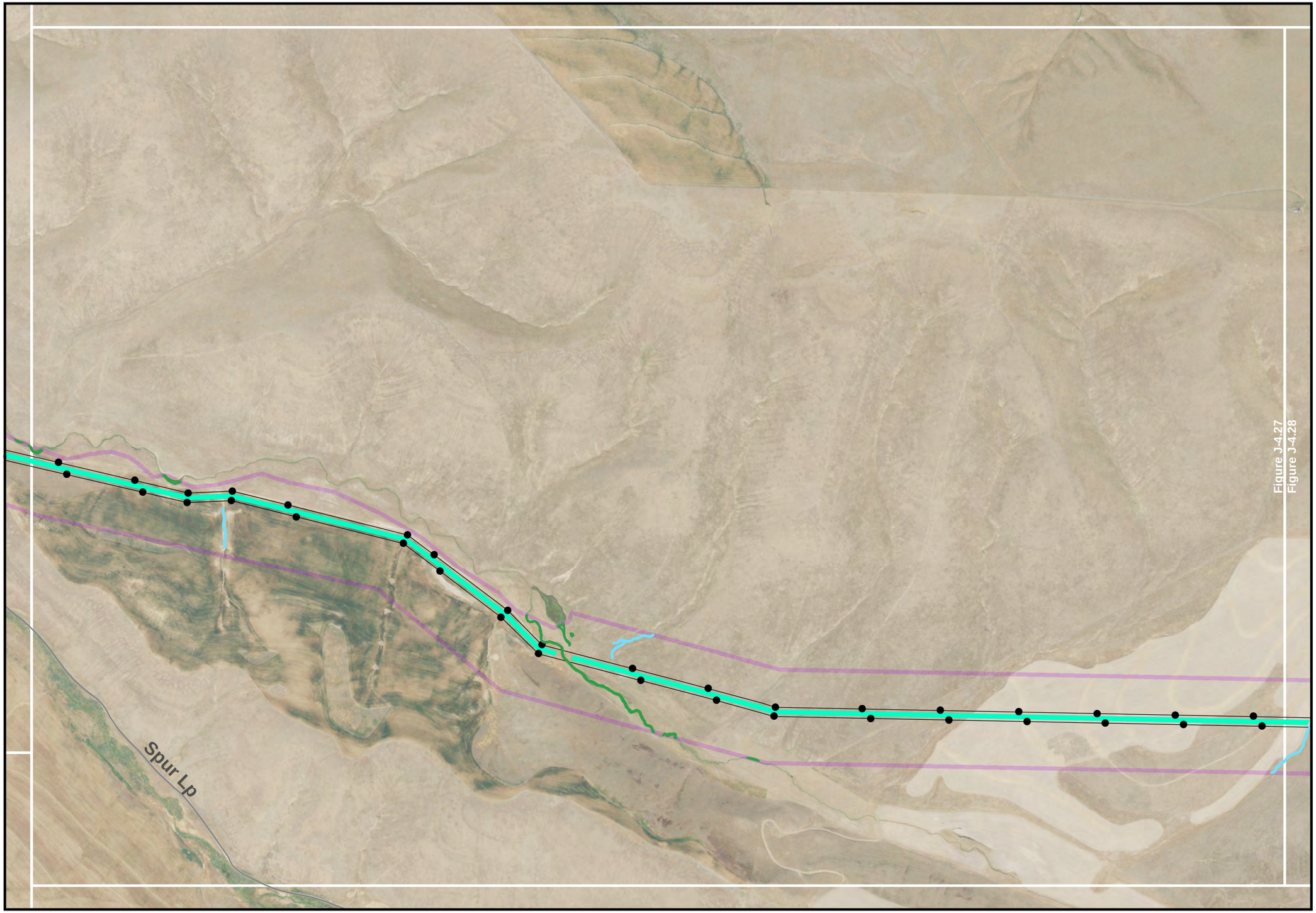


Figure J-4.27

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

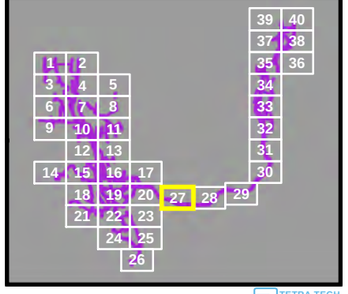
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

N

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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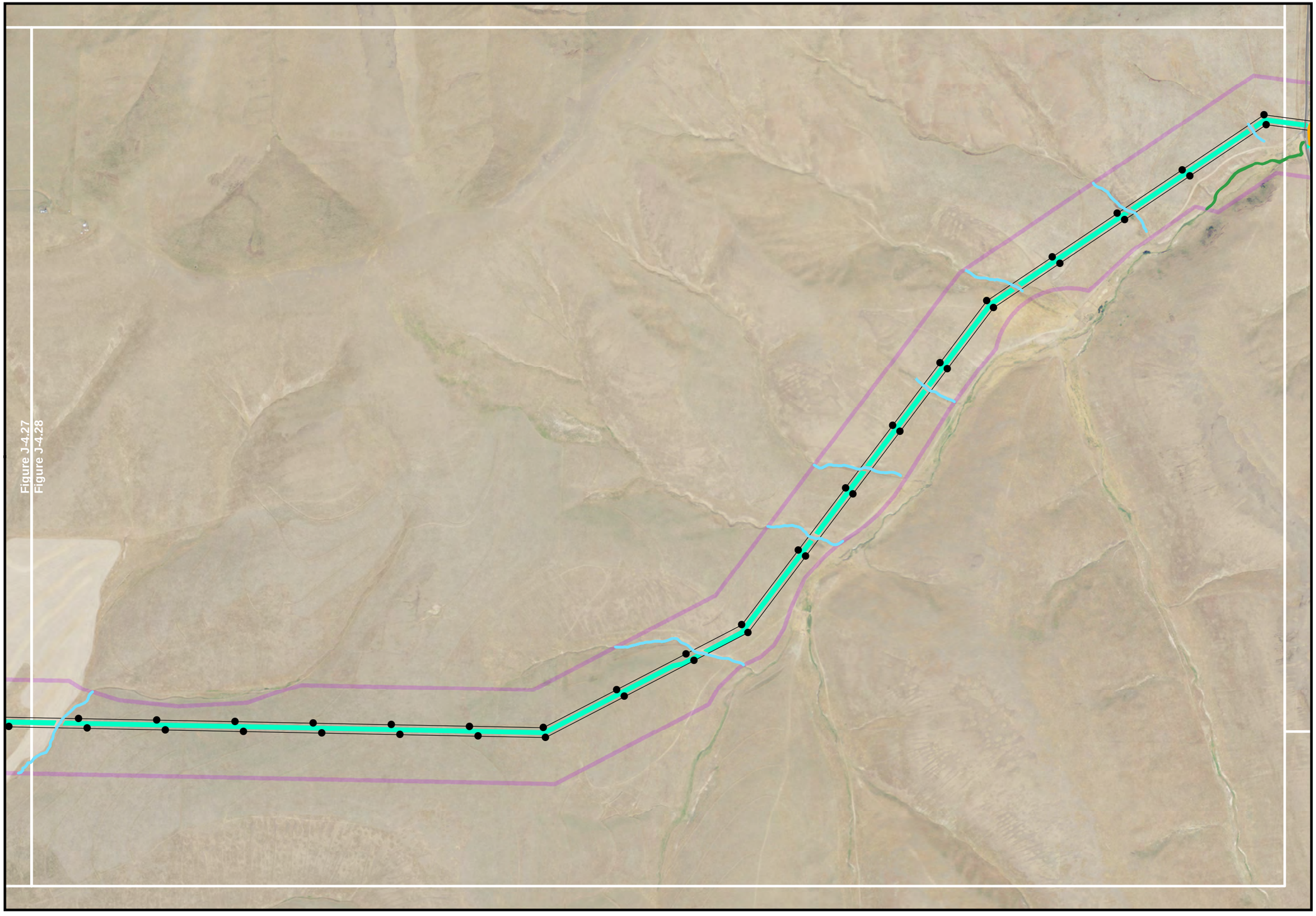


Figure J-4.28

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

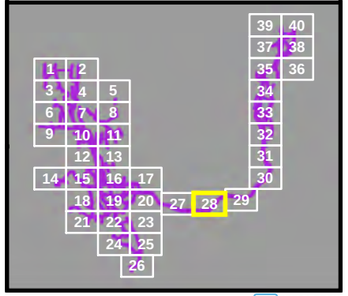
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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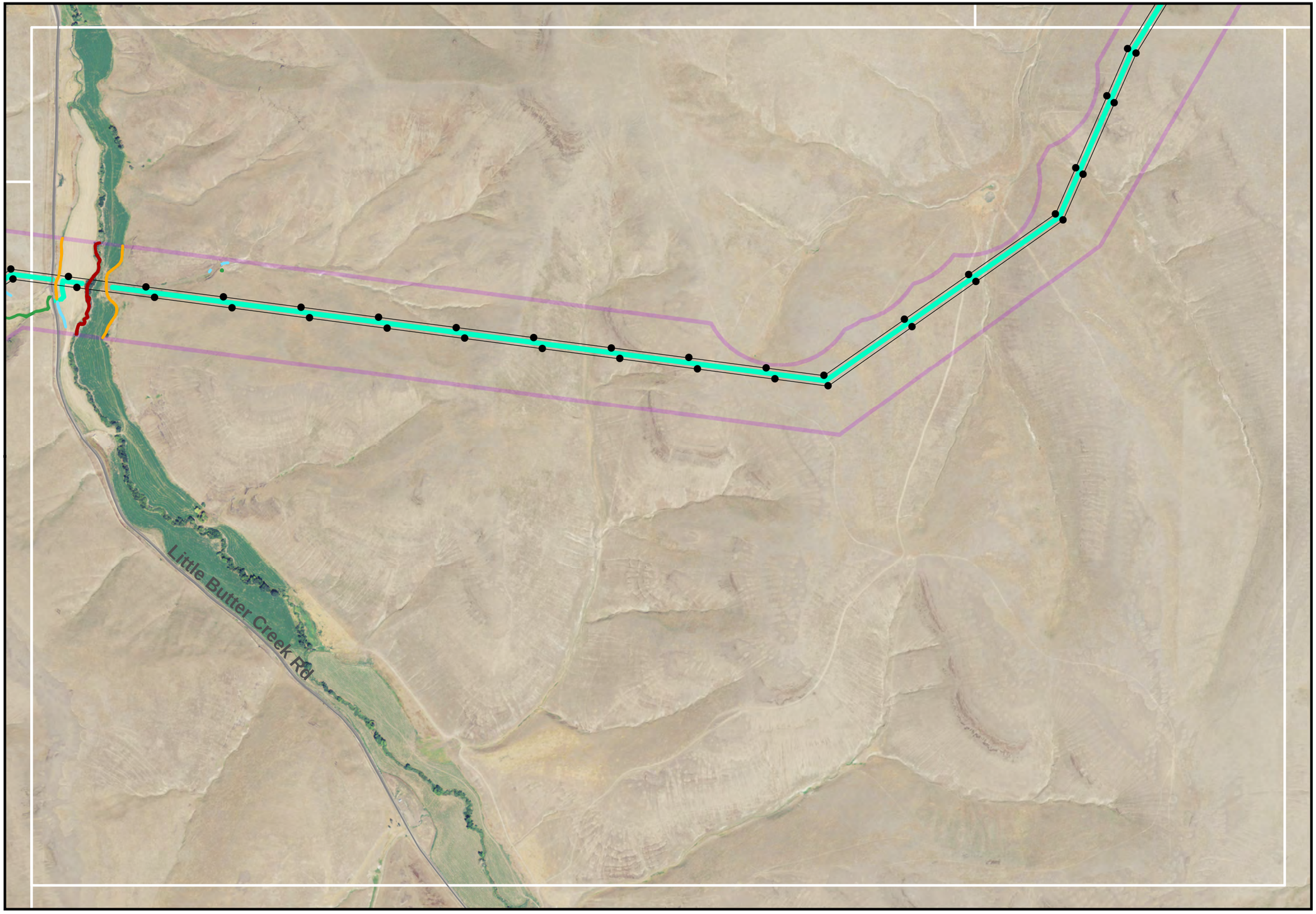


Figure J-4.29

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

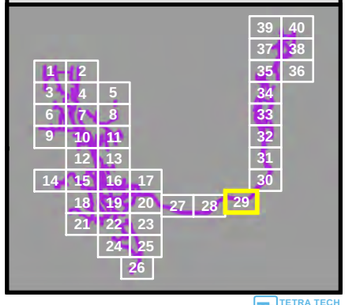
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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Figure J-4.30

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

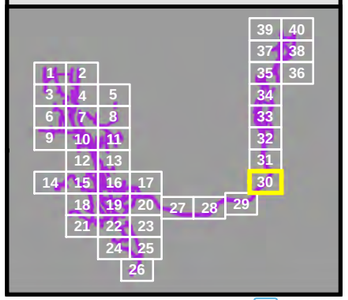
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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TETRA TECH

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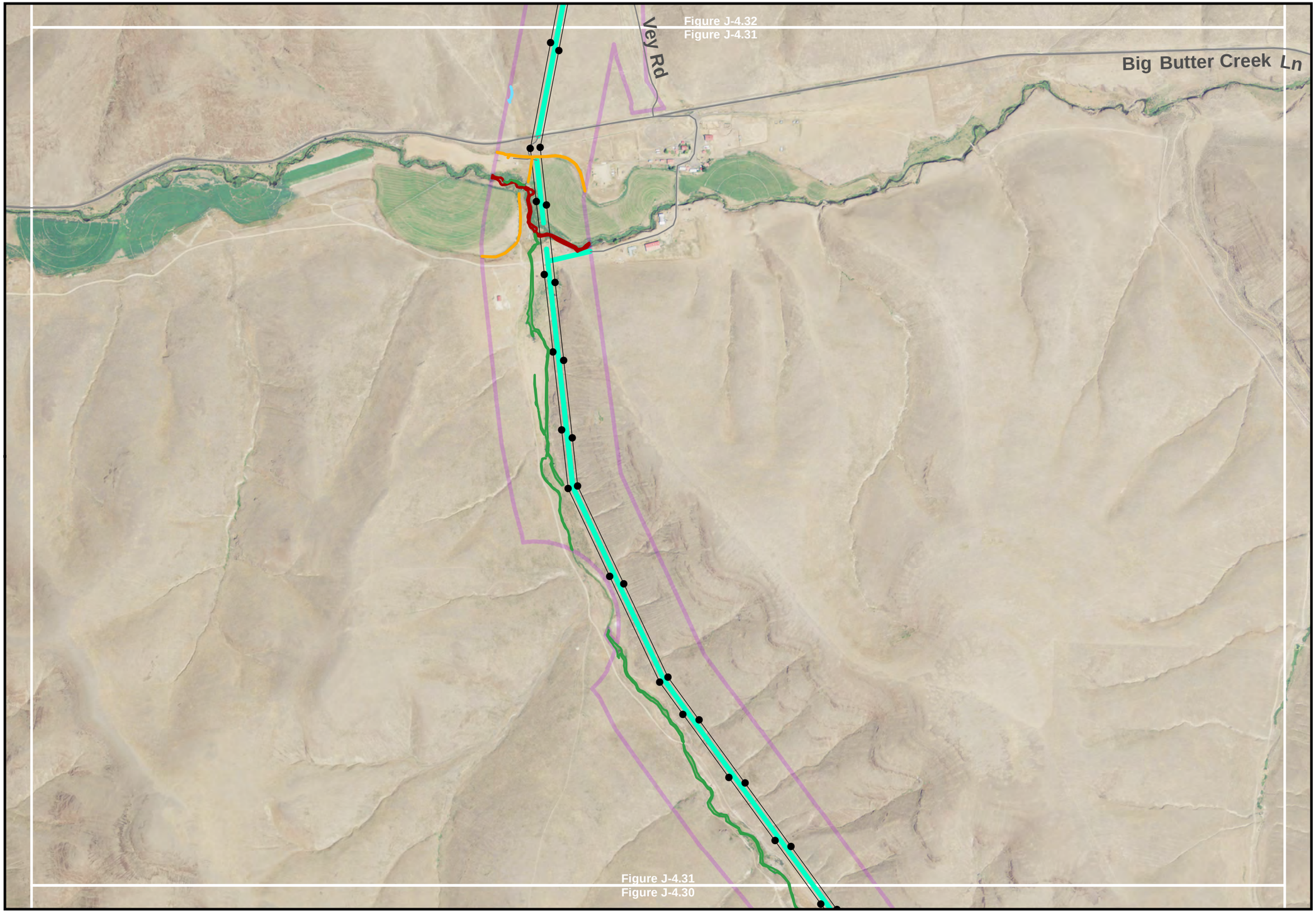


Figure J-4.31

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

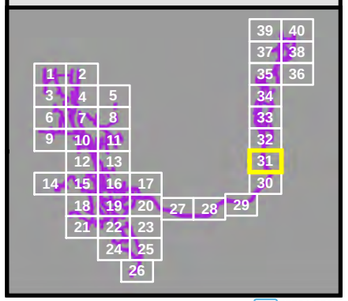
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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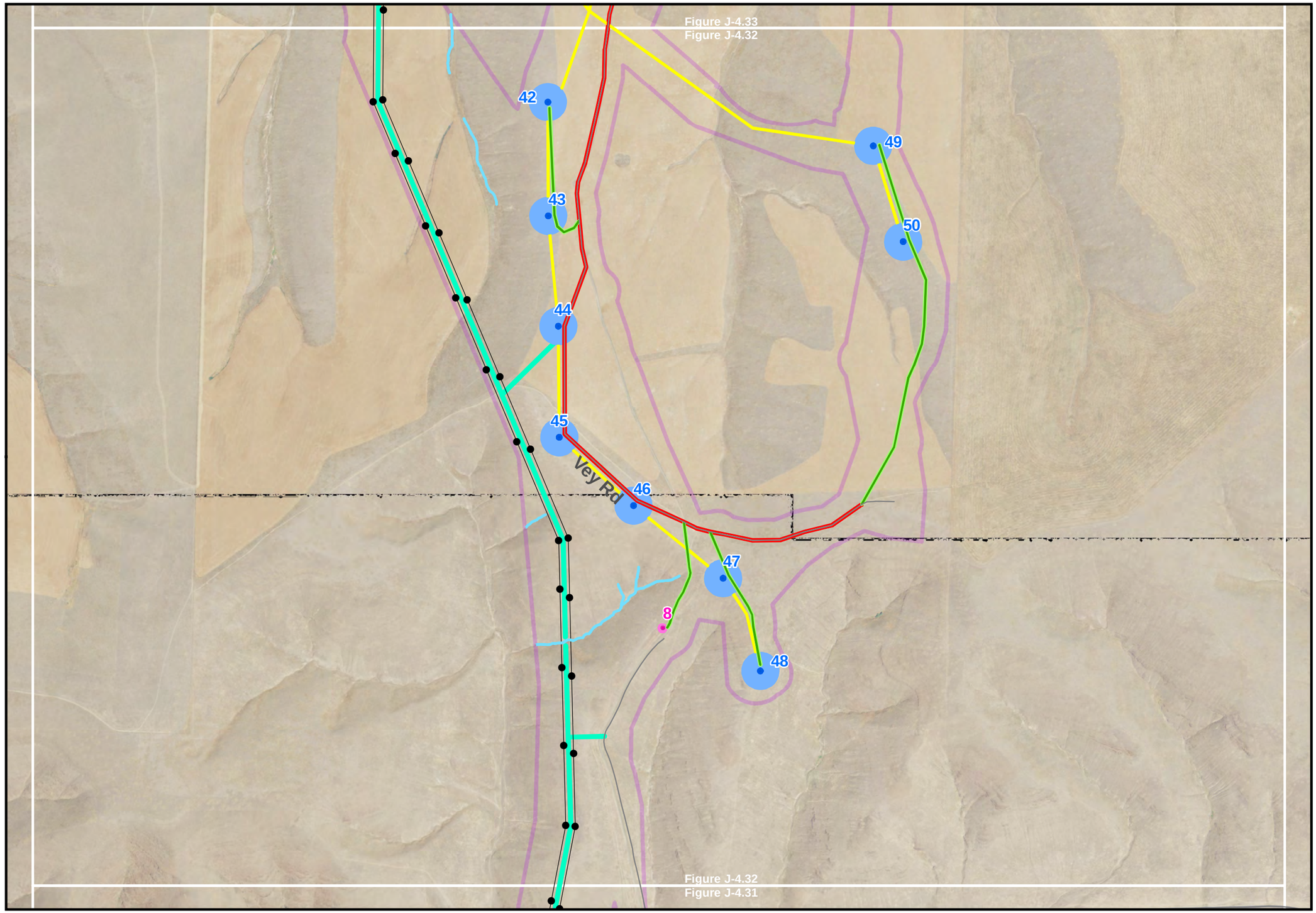


Figure J-4.32

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

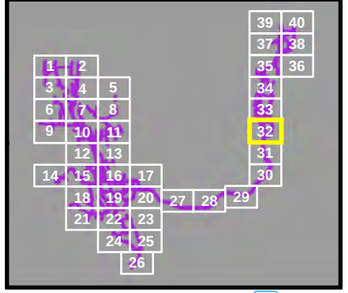
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

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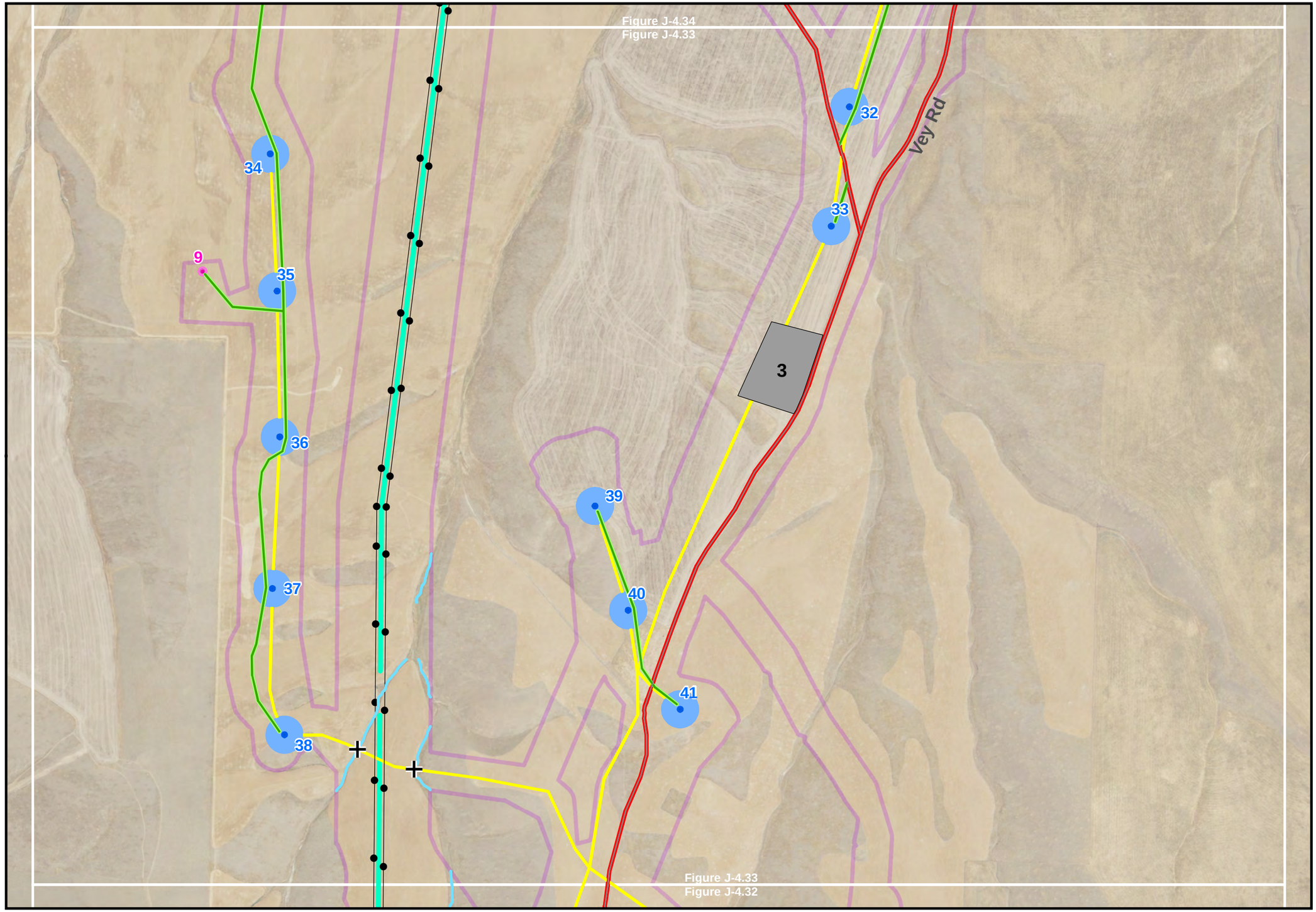


Figure J-4.33

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

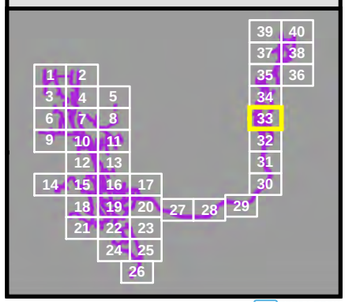
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



1:12,000 1 inch = 1,000 feet WGS84 UTM 11

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TETRA TECH

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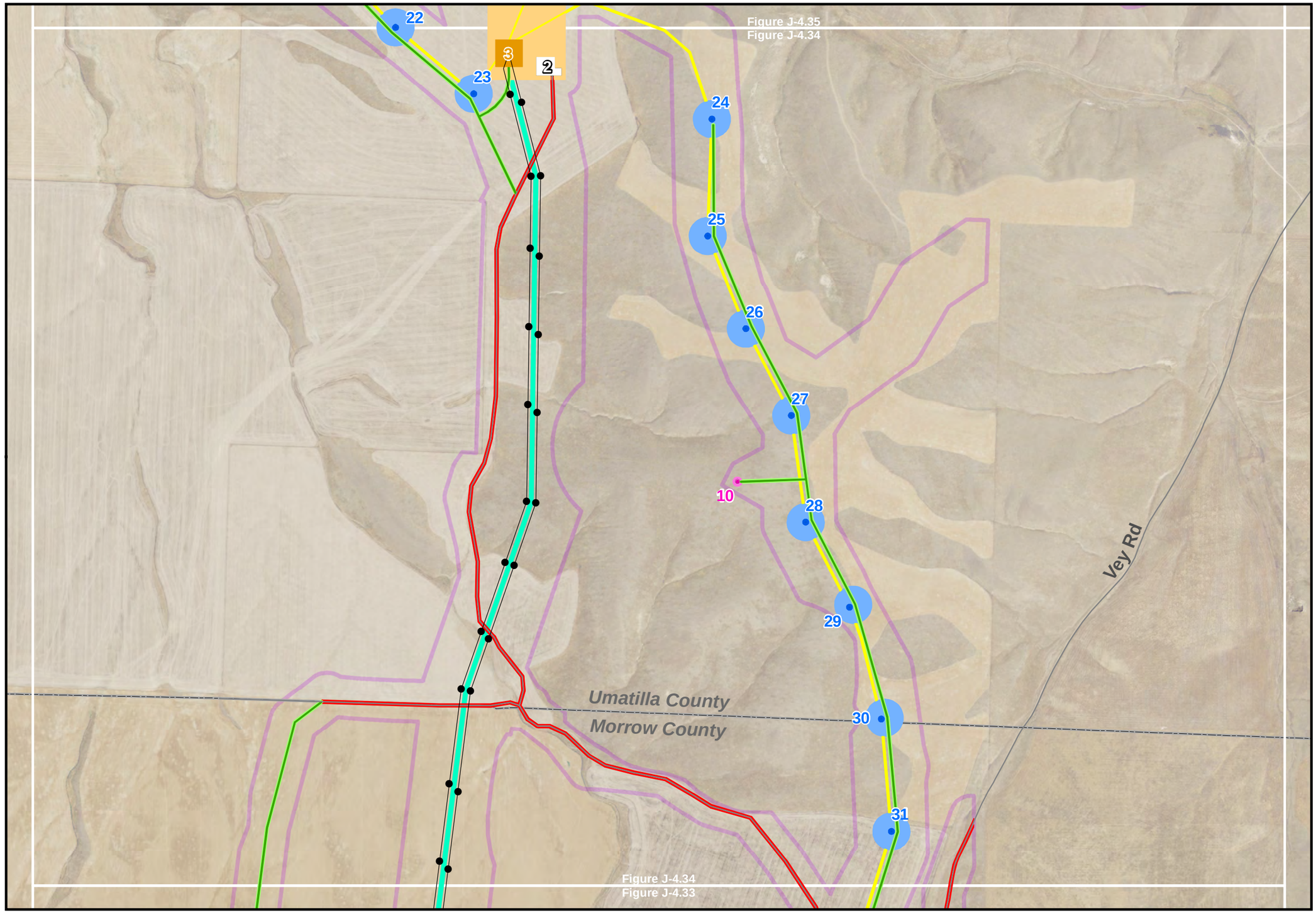


Figure J-4.34

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

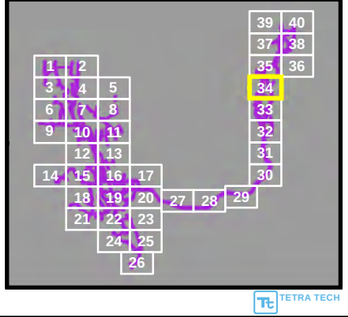
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

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Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

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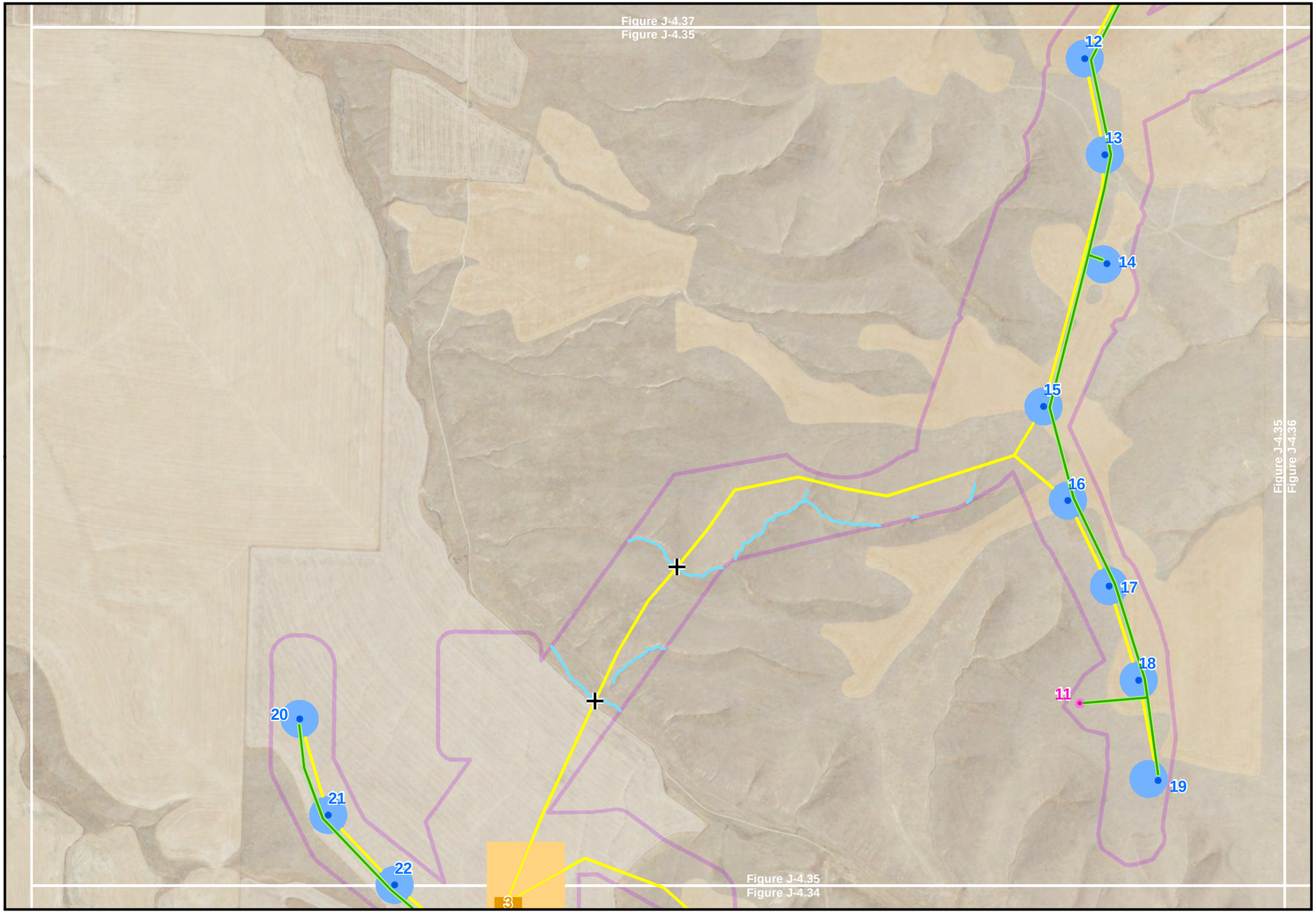


Figure J-4.35

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact - GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

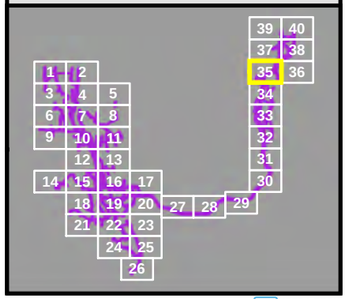
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

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Figure J-4.36

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

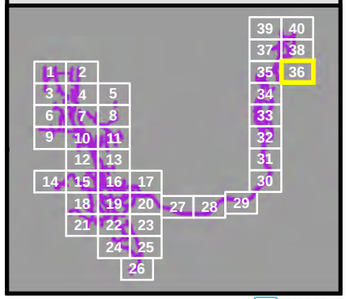
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

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Figure J-4.37

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

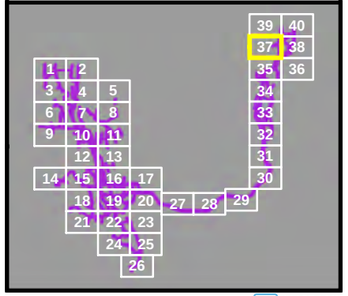
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

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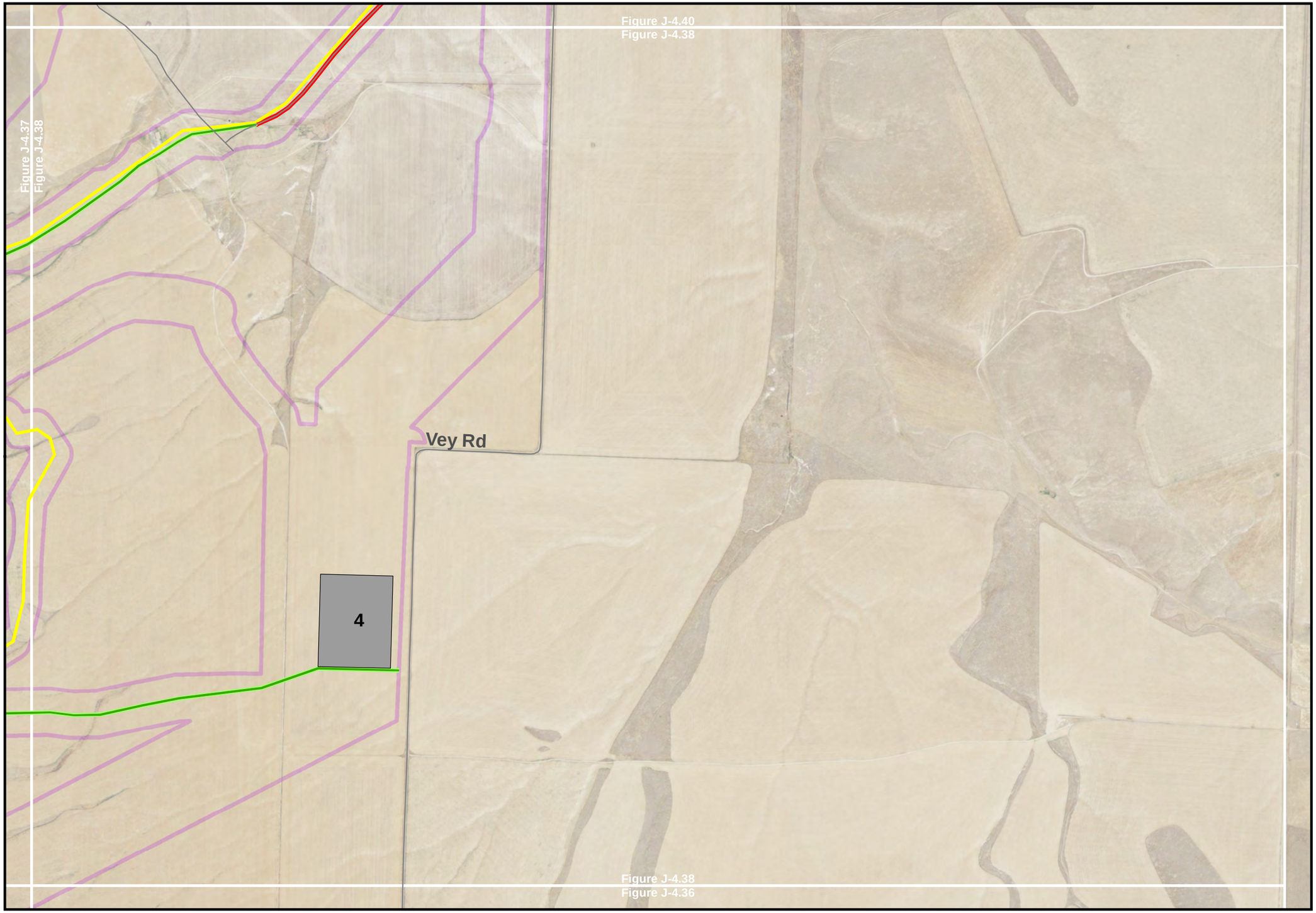


Figure J-4.38

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

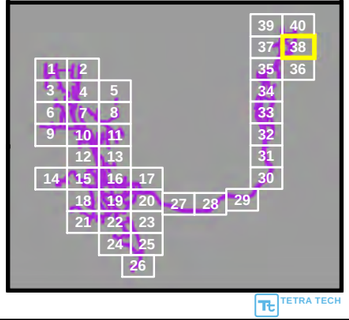
Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts
- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts
- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

* The Analysis Area is the entirety of Site Boundary
** To be constructed and owned by the Umatilla Electric Cooperative or the Umatilla Electric Cooperative with the Columbia Basin Electric Cooperative

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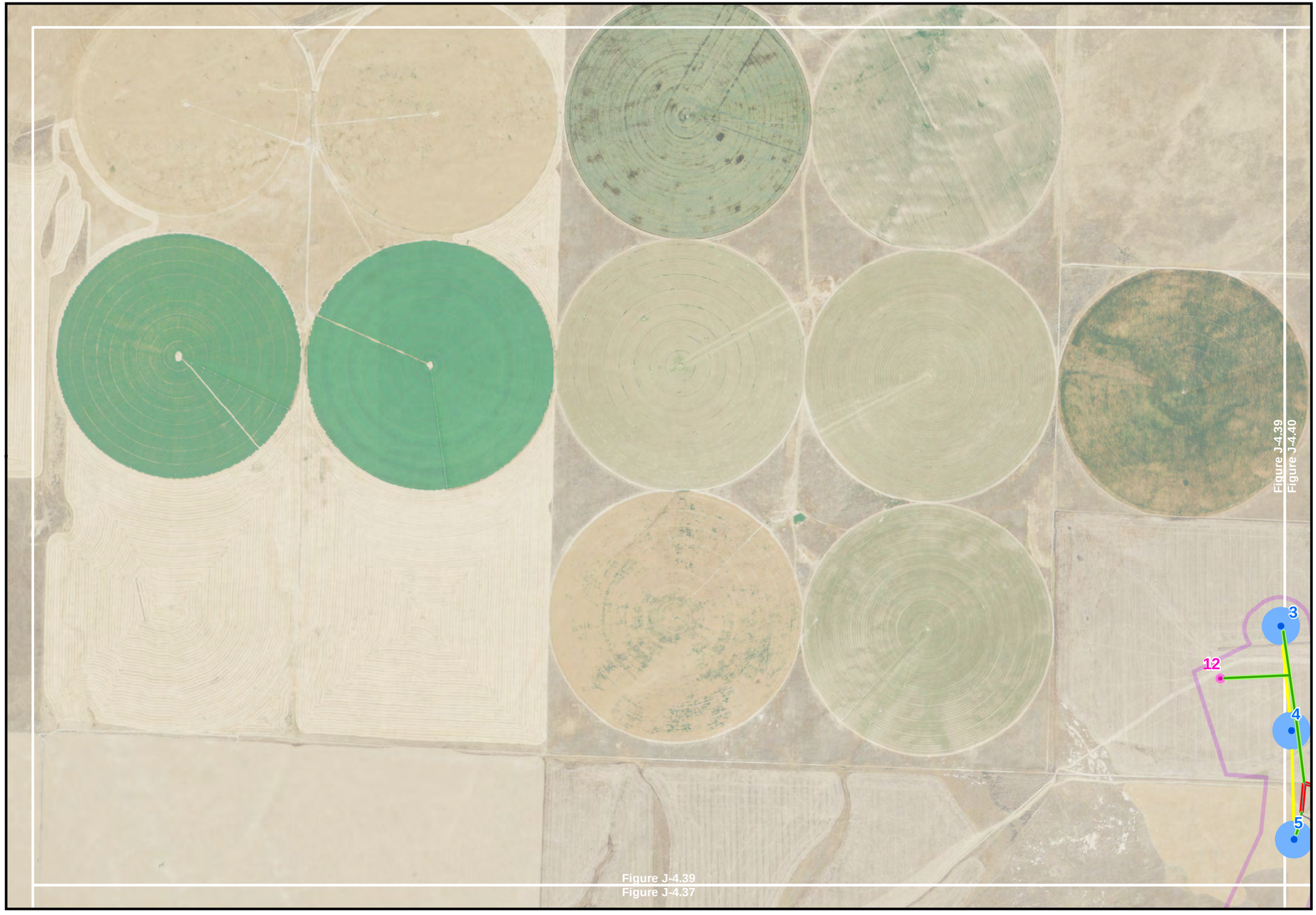


Figure J-4.39

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

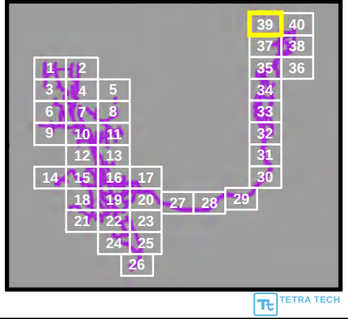
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

* The Analysis Area is the entirety of Site Boundary
** To be constructed and owned by the Umatilla Electric Cooperative or the Umatilla Electric Cooperative with the Columbia Basin Electric Cooperative

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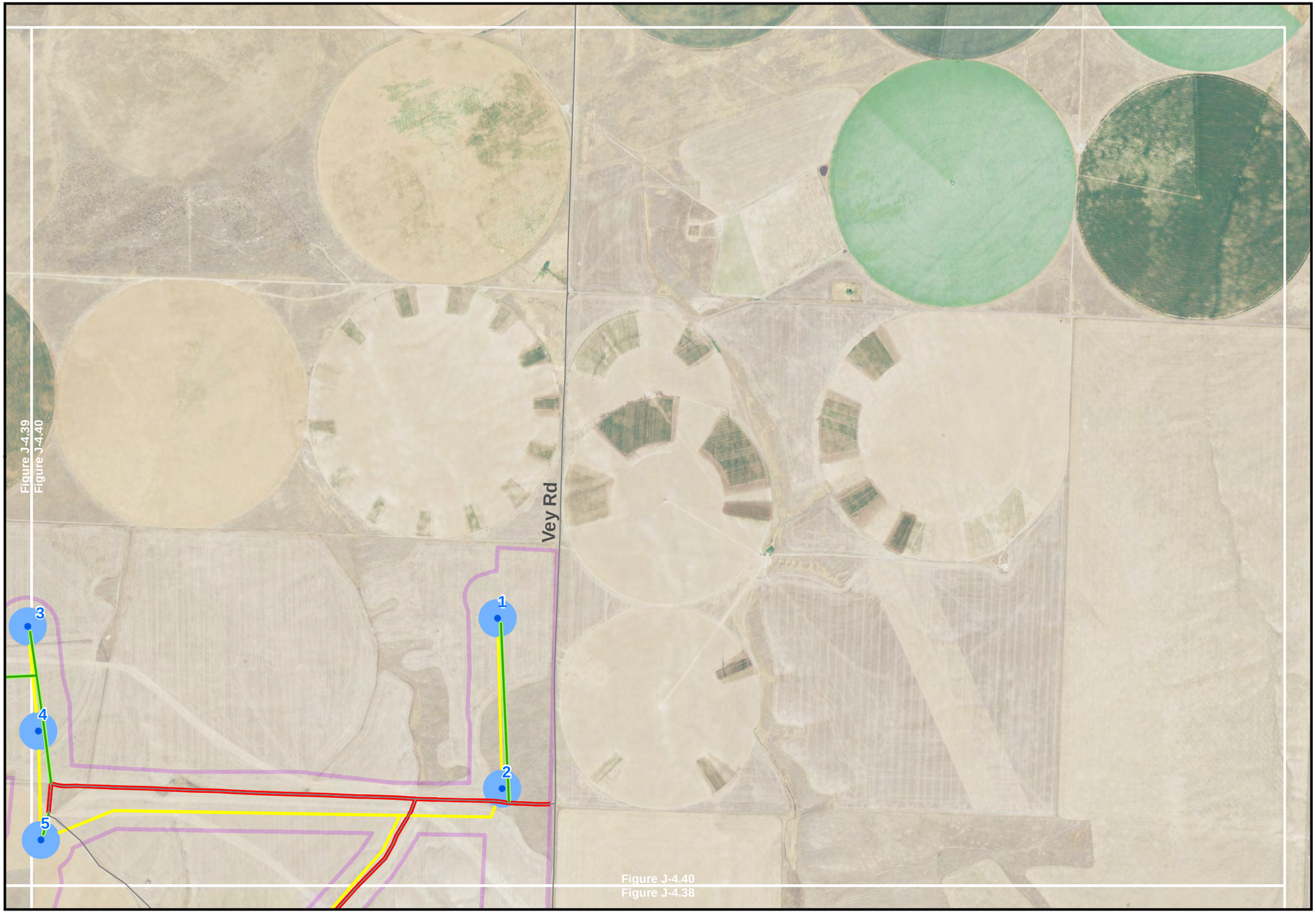


Figure J-4.40

Wheatridge Wind Energy Facility

Wetlands and Waters

- Minimum Project Impact -
GE 2.5-120 Project Facilities and Option 3 230kV Intraconnection Lines

Morrow and Umatilla Counties, OR
March 2015

- Permanent Impact
- Temporary Impact
- Analysis/Survey Area *
- Wetland Boundary - Delineated
- County Boundary
- Map Grid
- State Highway
- Local Road
- Intraconnection Lines (Option 3)

Waters Class - Delineated

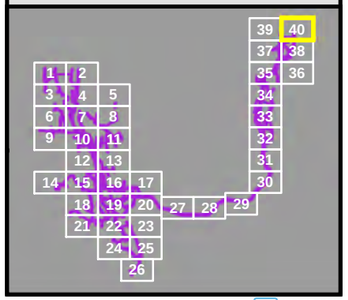
- Upper Perennial
- Intermittent
- Ephemeral

GE 2.5-120 Impacts

- Turbine Permanent
- Turbine Temporary
- Met Tower Permanent
- Met Tower Temporary
- Existing Road To Be Improved Temporary
- New Road To Be Constructed Permanent
- New Road To Be Constructed Temporary
- Substation Permanent
- Substation Temporary
- O&M Facility Permanent
- Construction Yard Temporary
- Electrical Collector Line Temporary

Intraconnection Lines Impacts

- Tower Permanent
- Access Road Temporary



TETRA TECH

1:12,000 1 inch = 1,000 feet WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 Miles

Data Sources Wheatridge Wind Energy: project facilities / ESRI: roads, political boundaries / USDA NAIP: aerial imagery / Tetra Tech 2013: wetlands and waters

* The Analysis Area is the entirety of Site Boundary
** To be constructed and owned by the Umatilla Electric Cooperative or the Umatilla Electric Cooperative with the Columbia Basin Electric Cooperative

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Attachments

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Attachment J-1:

Correspondence with U.S. Army Corps of Engineers on Submittal of Wheatridge Wind Energy Facility 2014 Wetlands and Other Waters Delineation Report

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Friedel, Robert

From: Olmstead, Peter NWS <Peter.D.Olmstead@usace.army.mil>
Sent: Monday, December 01, 2014 10:13 AM
To: Friedel, Robert
Subject: RE: Wheatridge: submission of Delineation report (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Rob,
My apologies, just realized you were asking about the delineation not the permit application. There is still no fee. If you are asking for a JD with the delineation, you will need to send it to our Portland office at the address in my first email. If you're just coordinating the delineation with me, the you can just email it or send a CD to me at the address below.
Thanks,

Peter D. Olmstead
Project Manager/Biologist
U.S. Army Corps of Engineers
Portland District, Regulatory Branch
La Grande Field Office
3502 Highway 30
La Grande, Oregon 97850-5628
Office: 541-962-0401
Cell: 503-758-2864

-----Original Message-----
From: Olmstead, Peter NWS
Sent: Monday, December 01, 2014 10:03 AM
To: 'Friedel, Robert'
Subject: RE: Wheatridge: submission of Delineation report (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hi Rob,
Good thing you checked in. The Corps has no application fee. The only permitting fee we charge is $100 at the time of issuance for some Individual Permits (not NWPs). The application will also need to be mailed to our district office in Portland for in-processing (you can copy me in an email if you want). The address is below:

U.S. Army Corps of Engineers
333 SW First Ave.
P.O. Box 2946
Portland, OR 97208-2946

Thanks,

Peter

-----Original Message-----
From: Friedel, Robert [mailto:Robert.Friedel@tetratech.com]
Sent: Monday, December 01, 2014 9:18 AM
To: Olmstead, Peter NWS
Subject: [EXTERNAL] Wheatridge: submission of Delineation report

Good morning Peter,

Hope you had a good holiday. I wanted to double check with you on a quick something for the delineation report to USACE. It is my understanding that we submit it directly to you along with a check for $396 payable to U.S. Army Corps of Engineers. Am I correct in my assumptions here? Thanks much for your help and I'll talk to you again soon.

Rob

Robert Friedel - GISP

GIS Coordinator / Project Manager

direct: 503.721.7216 | cell: 541.231.9990

robert.friedel@tetratech.com <mailto:robert.friedel@tetratech.com>

Tetra Tech, Inc.

1750 SW Harbor Way, Suite 400

Portland OR, 97201

Main: 503-221-8636

Fax: 503-227-1287

www.tetratech.com <https://tmail.tetratech.com/OWA/UrlBlockedError.aspx>

Classification: UNCLASSIFIED
Caveats: NONE

Attachment J-2:

Correspondence with Oregon Department of State Lands on Submittal of Wheatridge Wind Energy Facility 2014 Wetlands and Other Waters Delineation Report

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Friedel, Robert

From: DOWNING Andrea <andrea.downing@state.or.us>
Sent: Tuesday, December 16, 2014 2:02 PM
To: andrew@diversifiedwinds.com; DAvanzo, Jennifer
Cc: Friedel, Robert
Subject: Electronic WD Report Assignment

We received the electronically submitted 392–page wetland delineation report on 12/12/2014 for the **Wheatridge Wind Energy Facility project** in Morrow County that was submitted to the Department for review and approval. The report has been assigned to Chris Stevenson (503-986-5246) for review. The DSL file number is **WD 2014-0534.**

The review fee for 2014 is $396. *IF it has not already* been paid (we received the 12/12/14 email notification that the check was sent out with FedEx, thank you), please note that the fee must be received before the report submittal is considered complete and the agency review process begins. If payment is not received within 30 days of the report received date, the report may be rejected. Please send payments to: **Oregon Department of State Lands, 775 Summer St. NE #100, Salem, OR 97301**, along with a copy of the report cover form and note the file number above. You may pay the fee by credit card by phoning 503-986-5200. They will need the file number in order to process your payment.

You may check the review status of a delineation report at the following web site: http://www.statelandsonline.com/index.cfm?fuseaction=Wetlands.SelectCounty

Andrea Downing
Support Services Specialist
Oregon Department of State Lands
775 Summer Street NE #100
Salem, OR 97301
503-986-5235 direct
Andrea.Downing@dsl.state.or.us

Friedel, Robert

From: CARY Dan <dan.cary@state.or.us>
Sent: Tuesday, November 25, 2014 12:14 PM
To: Friedel, Robert
Subject: RE: Wheatridge: discussion of Wetlands and Waters submission

OK. Rob,

Thanks for the break. I hope to work with you sometime. Jennifer and I are working on other projects together, already. Heidi will do a good job for you. Just a thought: It is likely that Chris Stevenson (503-986-5246) will be reviewing any wetland delineations for those counties if that is all you needed to talk to us about and she is here today.

Dan

Dan Cary, PWS, Aquatic Resource Lead
Aquatic Resources Management Program
Oregon Department of State Lands
775 Summer Street NE, Suite 100
Salem, OR 97301-1279
Voice (503) 986-5302
Fax (503) 378-4844
dan.cary@state.or.us
DSL Web Sites: www.oregonstatelands.us; www.statelandsonline.com

---

From: Friedel, Robert [mailto:Robert.Friedel@tetratech.com]
Sent: Tuesday, November 25, 2014 12:03 PM
To: CARY Dan
Subject: RE: Wheatridge: discussion of Wetlands and Waters submission

Dan,

Well, if it's Heidi is the one to whom I should be taking my troubles I think you're off the hook. We will plan to catch up with her next week and make plans from there. I appreciate you clarifying that with me and maybe we'll get to work something out on another project down the road.

Sincerely,

Rob Friedel

From: CARY Dan [mailto:dan.cary@state.or.us]
Sent: Tuesday, November 25, 2014 11:46 AM
To: Friedel, Robert
Cc: HARTMAN Heidi
Subject: RE: Wheatridge: discussion of Wetlands and Waters submission

Rob,

2:00 works for me. Actually, I'll will be referring you to our aquatic resource coordinator for those counties in our Bend office, Heidi Hartman (541-388-6060). I will not be handling this application review. She is out on vacation this week but I am happy to talk to you if you want to talk to a live person this week. I am very familiar with the EFSEC/ODOE process

as I have handled the big transmission line projects (Cascade Crossing and B2H) but she will be the one that will be reviewing your project.

Dan

Dan Cary, PWS, Aquatic Resource Lead
Aquatic Resources Management Program
Oregon Department of State Lands
775 Summer Street NE, Suite 100
Salem, OR 97301-1279
Voice (503) 986-5302
Fax (503) 378-4844
dan.cary@state.or.us
DSL Web Sites: www.oregonstatelands.us; www.statelandsonline.com

---

From: Friedel, Robert [mailto:Robert.Friedel@tetratech.com]
Sent: Tuesday, November 25, 2014 11:38 AM
To: CARY Dan
Subject: Wheatridge: discussion of Wetlands and Waters submission

Good morning Dan,

Got your voicemail returning my call, thank you much for getting back to me. So it seems later this afternoon works for you as well. Would 2:00 be OK for myself and our wetlands scientist Jennifer to give you a call to talk about the submission of our report to ORDSL?

Rob

Robert Friedel - GISP
GIS Coordinator / Project Manager
direct: 503.721.7216 | cell: 541.231.9990
robert.friedel@tetratech.com

Tetra Tech, Inc.
1750 SW Harbor Way, Suite 400
Portland OR, 97201
Main: 503-221-8636
Fax: 503-227-1287
www.tetratech.com

From: HOWARD Heather
Subject: WD #2014-0534 - Concurrence
Date: Thursday, July 2, 2015 10:48:26 AM
Importance: High

We have completed our review of the wetland delineation report that was prepared for the **Wheatridge Wind Energy Facility in Morrow County**. The report was submitted to the Department for approval, given the file number **WD 2014-0534**, and assigned to Chris Stevenson for review.

The results and conclusions from that review are explained in the following link, http://docs.dsl.state.or.us/PublicReview/docview.aspx?id=2564844&dbid=0. If the attached document is illegible or difficult to open (please be patient, it's over 200 pgs!), you may contact the Department and request a paper copy. Otherwise, please review the attachment carefully and direct any questions or comments to Chris at (503) 798-7622. Thank you for your interest in this project.

Oregon Department of State Lands
Aquatic Resource Management Section
775 Summer St. NE, Ste 100
Salem, OR 97301-1279
Fax: (503) 378-4844
http://www.oregonstatelands.us

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2015.0.6037 / Virus Database: 4365/10146 - Release Date: 07/02/15

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Attachment J-3:

Wheatridge Wind Energy Facility 2014 Wetlands and Other Waters Delineation Report

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Wheatridge Wind Energy Facility

2014 Wetlands and Other Waters Delineation Report

Prepared for

Wheatridge Wind Energy, LLC

Wheatridge Wind Energy Facility

December 2014

Prepared by

Tetra Tech, Inc.

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1.2 Study Area 2
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1.4 Local Soil Types 3
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Figure A-2: Tax Lot Map

Figure A-3: Soils Map

Figure A-4: National Wetland Inventory Map

Figure A-5: Wetland Delineation Map

Appendix B: Data Forms

B-1 – Wetland Data Sheets

B-2 - OSDAM

Appendix C: Ground Level Color Photographs with Captions

Appendix D: Tables

D-1: Daily Precipitation

D-2: Wetlands

D-3: Waters

D-4: Other Features

D-5: Deviations

Terms and Definitions

Intraconnection Corridor	The intraconnection transmission line corridor connecting Wheatridge East with Wheatridge West
Intraconnection Lines	Overhead electrical 230 kV lines connecting the Project substations in Wheatridge East and Wheatridge West.
O&M building	Operations and maintenance building
Project	Wheatridge Wind Energy Facility
Study Area	The area that was investigated for the presence of waters of the state; equivalent to the Project Site Boundary
Wheatridge	Wheatridge Wind Energy, LLC
Wheatridge East	The eastern group of Project turbines
Wheatridge West	The western group of Project turbines

Acronyms and Abbreviations

EPA	Environmental Protection Agency
FAC	Facultative
FACW	Facultative wetland
FOTG	Field Office Technical Guide
GPS	Global Positioning System
HUC	Hydrologic Unit Code
LRR B	Columbia/Snake River Plateau Land Resource Region
LWI	Local Wetlands Inventory
NHD	National Hydrography Dataset
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OAR	Oregon Administrative Rule
OBL	Obligate wetland
ODSL	Oregon Department of State Lands
OHWM	Ordinary high water mark
OSDAM	Oregon Streamflow Duration Assessment Method
RNW	Relatively permanent water
TNW	Traditional Navigable Water
USACE	US Army Corps of Engineers
USDA	US Department of Agriculture
USGS	US Geological Survey
WY	water year
WET	Wetland
WETS	Wetlands Determination

1.0 Landscape Setting and Land Use

1.1 Project Location

Wheatridge Wind Energy, LLC (Wheatridge), proposes to construct a wind generation facility (the Project) with a maximum nominal generating capacity of 500 megawatts in Morrow and Umatilla counties, Oregon. The Project is comprised of up to 292 wind turbines divided into two groups: the 'Wheatridge West' wind turbine group and the 'Wheatridge East' wind turbine group. Wheatridge West and Wheatridge East are electrically connected by an 'Intraconnection Corridor' containing up to two, parallel, overhead 230 kilovolt transmission lines (Intraconnection Lines), each no longer than 35 miles in length. Other Project components include onsite access roads, an electrical collection and control system, substations, operations and maintenance (O&M) buildings, and temporary construction yards.

Wheatridge West is located entirely within Morrow County, approximately 5 miles northeast of Lexington, and approximately 7 miles northwest of Heppner. Wheatridge West is bisected by Oregon Highway 207 (OR-207). Wheatridge East is located approximately 16 miles northeast of Heppner and encompasses land in both Morrow and Umatilla counties. The Intraconnection Corridor is located entirely within Morrow County and adjoins to the southeastern portion of Wheatridge West and the southern portion of Wheatridge East.

The Project study area encompasses the entirety of the Site Boundary, and includes some or all of the following townships, ranges, and sections (Table 1-1). Figure A-2 shows the section lines and tax lots in relation to the study area.

Table 1-1: Township, Range, and Section within Project Study Area

TOWNSHIP RANGE	SECTION
Wheatridge West	
T2N/R25E	25,26,27,34,35,36
T1N/R25E	1,2,11,12,13,14,15,22,23,24
T1N/R26E	4,6,7,8,9,15,16,17,18,19,20,21,22,28,29,30,32,33
T1S/R25E	1,12
T1S/R26E	2,3,4,5,6,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,25,26,27, 28,29,34,35,36
Intraconnection Corridor	
T1S/R26E	12 1/
T1S/R27E	7,12,13,14,15,16,17,18,21,22,23,24
T1S/R28E	3,4,7,8,9,16,17,18
T1N/R28E	21 2/, 28, 33
Wheatridge East	
T1N/R28E	4,5,8,9,16,17,21
T2N/R28E	2,3,9,10,11,14,15,16,21,22,27,28,29,32,33

1/ Duplicate with Wheatridge West
2/ Duplicate with Wheatridge East

1.2 Study Area

The study area for wetlands delineation is the entirety of the Project Site Boundary. The Site Boundary establishes the micrositing corridor within which all Project facilities will be located. Permitting micrositing corridors allows Wheatridge the flexibility to adjust the specific location of Project facilities at the time of construction (a process referred to as micrositing), while establishing outer boundaries of potential construction that can then be used for purposes of impact assessment. The Site Boundary establishes the locations of turbine strings, and will encompass all of the permanent and temporary Project facilities. The Site Boundary is a minimum of 660 feet in width around turbines, and wider in some locations. The Site Boundary width around access roads and electrical collector lines is narrower, between 200 feet and 500 feet in width. The Intraconnection Corridor is approximately 1,000 feet in width, and would contain all Intraconnection Lines and associated access roads. Wider areas of the Site Boundary would encompass the Project substations, meteorological towers, the O&M buildings, and the temporary construction yards. The Site Boundary has been narrowed in various locations to avoid impacts to streams and wetlands.

1.3 Geology and Vegetation

The Project is located within the Environmental Protection Agency (EPA) Level III Columbia Plateau ecoregion (Thorson et al. 2007). This ecoregion's name is derived from the Columbia River Plateau, a flood basalt plateau formed by the Columbia River Basalt Group during the late Miocene and early Pliocene. The Columbia Plateau ecoregion is characterized by semiarid lowlands formed by flood basalts and soils scoured and deposited by the Missoula Floods, or formed from loess deposits. Limited precipitation (9 to 15 inches per year average) supports semi-arid grassland, and sagebrush steppe. Non-native cheatgrass (*Bromus tectorum*) inhabits vast areas of this ecoregion (Franklin and Dyrness 1988). The Columbia Plateau ecoregion has been subdivided into six EPA Level IV ecoregions, the study area is within two of these: Pleistocene Lake Basin and Umatilla Plateau.

The Pleistocene Lake Basins ecoregion extends out to approximately 15 miles from the Columbia River. Only the northern extent of Wheatridge West and Wheatridge East are located within this ecoregion, which is approximately 5% of the entire study area. This ecoregion is characterized by nearly flat to undulating ancient lake plain. The region is the driest and warmest of the Columbia Plateau, with mean annual precipitation varying from 7 to 10 inches. Dryland wheat production is common. Native vegetation, where present, consists of bluebunch wheatgrass (*Pseudoroegneria spicata*), Sandberg bluegrass (*Poa secunda*) and basin big sagebrush (*Artemisia tridentata*). Cheatgrass (*Broumus tectorum*), a non-native grass, covers large areas within this ecoregion.

The Umatilla Plateau ecoregion, extending east and south from the margin of the Pleistocene Lakes Basin, 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 with grains and alfalfa (*Medicago sativa),* and rangeland dominates areas of thin or nonexistent loess deposits. 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 eight inches (OSU 2010).

Dominant native grassland is similar to the Pleistocene Lake basins ecoregion and stiff sagebrush (*Artemisia rigida)* and buckwheat *(Eriogonum* spp.*)* are common on thin loess soils (Thorson et al. 2007). Forbs common across the Columbia Plateau, and typical of both the Pleistocene Lake Basin and Umatilla Plateau ecoregions, include arrow leaf balsamroot (*Balsamorhiza sagitata*), prairie smoke (*Geum triflorum*), yarrow (*Achillea millefolium*), and silky lupine (*Lupinus sericeus*) (Franklin and Dyrness 1988).

1.4 Local Soil Types

The Figure A-3 map set in Appendix A provides the soils mapped by the US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) within the study area. The soil units are described in the *Soil Survey of Morrow County, Oregon* (NRCS 1983), and *Soil Survey of Umatilla County, Oregon* (NRCS 1988).

Of the six hydric soils mapped in Morrow County and the 36 hydric soils mapped in Umatilla County, none are present in the study area (NRCS 2012). There is one partially hydric soil unit with Wheatridge East, located in Umatilla County.

Soils within the study area appear to be highly erodible by evidence of steep down cuts in stream beds, and the numerous acres of cropland and pasture with erosion control berms traversing them. Upland soils examined during the site visit were typically very well drained loamy sands, or silt loams all lacking redoximorphic features. Soils in wetlands were typically silty clay loams or sandy/gravelly/cobbly loams with a redox dark surface.

1.5 Historic and Current Land Uses

The study area generally encompasses rural lands. Towns within proximity to the Project include the cities of Lexington and Heppner in Morrow County and Echo in Umatilla 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. Land use in the vicinity of the Project includes grain agriculture, grazing, Conservation Reserve Program land, farm, residential, and wind production. The predominant dryland crop is winter wheat (*Triticum aestivum*).

Within Morrow County, the Project borders the southeastern edge of the Naval Weapons System Training Facility (a.k.a. Boardman Bombing Range).

Recreational use of the study area includes sight-seeing, photography, and game and bird hunting.

1.6 Waterbody Crossings and Water Resources

The Site Boundary crosses three Hydrologic Unit Code (HUC) 4 drainage basins: Middle Columbia-Lake Wallula, Willow, and Umatilla. Major named rivers and perennial streams within the HUC 4

drainage basins within the study area are Butter Creek and Little Butter Creek in the Umatilla Basin. Smaller perennial and intermittent streams also within the study area are discussed in Section 5.2.

Surface water in the study area flows in three general directions via numerous canyons and rills: northwest, southwest and northeast. Drainages in Wheatridge West in the Middle-Columbia-Lake Wallula Basin predominately drain northwest via Strawberry Canyon and Little Juniper Canyon, where they end up on nearly level ground and generally dissipate into erosional features. A few drainages in Wheatridge West in the Willow Basin drain southwest to Blackhorse Canyon. Blackhorse Canyon drains northwest to Willow Creek. Willow Creek flows north and eventually into the Columbia River. The Columbia River is approximately 17 miles north of the northern edge of the Project. Drainages along Wheatridge East and the Intraconnection Corridor within the Umatilla Basin drain northeast via Sand Hollow, Milk Canyon, Morris Canyon and Ayers Canyon. These canyons drain into Butter Creek in the study area. Butter Creek eventually flows to the Umatilla River about 10 miles outside of the study area.

Elevation across the study area ranges from approximately 250 feet above mean sea level at the north end of Wheatridge East to approximately 800 feet above mean sea level at the south end of Wheatridge West.

2.0 Site Alterations

Site alterations are those activities that directly or indirectly impact wetlands and other waters such that the function or area of the wetland or other water changes significantly. A significant alteration is one that renders the wetland or other water non-functioning or one that changes the boundaries of the wetland or other water. Land use in the study area is generally dominated by farming and ranching as well as road use. These rural land uses have affected presence, extent, and function of the wetlands and waters documented in this report. Many of the ephemeral drainages on site have been altered due to agricultural practices. Plowing appears to have likely obliterated the channels of intermittent streams that US Geological Survey (USGS) National Hydrography Dataset (NHD) has mapped as intermittent (USGS 2001).

Site alterations often occur at the intersection of roads and wetlands and other waters. Roads are a significant contributor to site alterations as they may alter the physical environment, fragment habitat, and provide a vector for the introduction of exotic vegetation. Roads have been constructed throughout the study area. These consist most commonly of un-surfaced or graveled agricultural access roads. Many features that have been altered are discussed in Section 5.3 and are listed in Table D-4, in Appendix D.

3.0 Precipitation Data and Analysis

Precipitation data for the duration of the wetland delineations was obtained from Natural Resources Conservation Service (NRCS) Field Office Technical Guide (FOTG) at the Heppner

weather station (NRCS 2014). These data characterize the climate-sourced hydrology for the water resources examined from September 16 through September 27, 2013 and October 25, 2013. Table 3-1 summarizes the accumulated precipitation for the water year (WY) per month and actual monthly precipitation amounts, and compares the actual monthly totals with historic averages found in Wetlands Determination (WETS) table for Station (353827) in Heppner Oregon (NRCS 2014). Daily precipitation amounts for the 2 weeks prior to the first day of the field investigation plus those for the remainder of the delineation are provided in Appendix D, Table D-1.

Table 3-1: Current and Historic Precipitation Data (Inches)

Month	Total (inch)	WETS Average	Precipitation Relative to Average Monthly Total	WETS Normal Range	Water Year (inch)	Wets Accumulated Monthly Average	Precipitation Relative to Average Water Year	Outcome Daily Precipitation to WETS Range
October 2012	1.41	1.12	125.89%	0.46 - 1.36	1.41	1.12	125.89%	Above
November 2012	1.4	1.77	79.10%	1.09 - 2.14	2.81	2.89	97.23%	Within Range
December 2012	1.26	1.33	94.74%	0.83 - 1.61	4.07	4.22	96.45%	Within Range
January 2013	0.18	1.42	12.68%	0.93 - 1.70	4.25	5.64	75.35%	Below
February 2013	0.04	1.23	3.25%	0.79 - 1.48	4.29	6.87	62.45%	Below
March 2013	0.71	1.6	44.38%	1.25 - 1.84	5	8.47	59.03%	Within Range
April 2013	0.75	1.4	53.57%	0.73 - 1.71	5.75	9.87	58.26%	Within Range
May 2013	2.07	1.67	123.95%	1.13 - 1.99	7.82	11.54	67.76%	Above
June 2013	1.79	1.09	164.22%	0.58 - 1.32	9.61	12.63	76.09%	Above
July 2013	0.0	0.35	0.00%	0.10 - 0.42	9.61	12.98	74.04%	Below
August 2013	0.61	0.54	112.96%	0.09 - 0.63	10.22	13.52	75.59%	Within Range
September 2013 1/	2.37	0.68	348.53%	0.15 - 0.82	12.59	14.2	88.66%	Above
WY to-date Sep 30	12.59	14.2	NA	8.13 - 17.02	64.87	55.4	NA	Within Range
October 2013 1/	0.81	1.12	72.32%	0.46 - 1.36	0.81	1.21	66.94%	Within Range

1/ Field months

NRCS FOTG and NRCS WETS table data demonstrates that precipitation has often been above the average range during the four months preceding field work, as well as during the time of field work, with the exception of July. In the month of September precipitation was recorded well above normal a week prior to field delineations. For this reason, during the wetland delineation,

groundwater and surface flow were estimated to be above the normal range typically encountered at this time of year. There was no snow accumulation within the study area at the time of the investigation.

Higher than normal precipitation levels did not affect the delineation of wetlands, as evidence of jurisdictional hydrology was not observed in locations with non-hydric soils or non-hydrophytic vegetation. Higher than normal precipitation levels did not affect the delineation of waters as determinations of intermittent vs. ephemeral streams were made using indicators described in the Oregon Streamflow Duration Assessment Method (OSDAM) (Nadeau 2011), which relies on multiple indicators independent of the presence/absence of hydrology, in particular vegetation and slope of the channel.

4.0 Methods

4.1 Pre-field Data Review

Prior to the on-site investigation, an analysis of the mapped soil units, recent aerial photographs, recent precipitation, USFWS National Wetland Inventory (NWI) maps (USFWS 2012), and the NHD maps was completed for the study area. Maps used in the field contained the NWI, NHD and recent aerial photograph overlays. Figure A-4 exhibits NWI-mapped features in the study area.

4.2 Wetland Delineation Methods

Field investigations for the delineation of wetlands and other waters of the U.S. included pedestrian surveys within the study area. The field delineation was conducted during the following time periods in 2013: September 16-20, September 23-27, and October 25. All parcels were accessed and the delineation is complete.

The delineation was conducted utilizing techniques published in the 1987 US Army Corps of Engineers (USACE) *Wetlands Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008a), and Oregon Administrative Rules (OARs) for Wetland Delineations 141-090-0005 through 141-090-0055 (Oregon Department of State Lands [ODSL], 2001).

The Project is located within the Columbia/Snake River Plateau Land Resource Region (LRR B) of the Arid West Region (USACE 2008a). It is necessary to conduct the delineation of wetlands and other waters during the growing season, which, within LRR B, coincides with the normal dry season (March to October) characterized by falling water tables and a period in which evapotranspiration exceeds precipitation. For this reason, observations of wetlands and other waters were made outside the optimum hydroperiod for observing inundation, saturation, and highest water tables. In some cases, flow and/or saturation/inundation were present; however, for many wetlands, delineations relied on a combination of secondary hydrology indicators. In addition, OSDAM (Nadeau 2011) was employed for assessing the duration of streamflow at locations where determinations were in question due to seasonality.

The delineation includes examination of the vegetation, soils, and hydrology in sample plots located in the Figure A-5 map set: Delineated Wetlands and Other Waters. Paired sample points were used to determine wetland boundaries and were selected to best represent conditions in each wetland and adjacent upland location. Each of the sample plots was selected to be in close proximity to the line separating wetland from upland. Single sample plot locations were dug to confirm absence of wetland conditions at locations that appeared as potential wetland on aerial maps, and to confirm upland conditions at some NWI mapped wetlands. Notes on the specific rationale used to select each sample plot location are included in the comment section for each data sheet. All data sheets are included in Appendix B-1.

The location of each wetland and upland sampling point were selected based on vegetation community homogeneity and are considered representative of the vegetation community. At each sample plot, trees within a 30-foot (9.1-meter) radius, shrubs within a 15-foot (4.5-meter) radius, and non-woody herbaceous plants within a 5-foot (1.5-meter) radius of plot center, were identified and recorded on a wetland field data forms. The dominant species for each stratum are defined as those that provide 20% or more cover. The indicator status of each of the dominant species was used to determine the presence of wetland vegetation. A sample plot is considered to have wetland vegetation if more than 50% of the dominant species have an indicator status of facultative (FAC) or wetter. Scientific nomenclature of all plant species follows that of Hitchcock and Cronquist (1976). When plants could not be identified to species due to seasonal constraints or grazing, only the genus or plant community is listed.

Soil samples were obtained at each representative sampling plot by digging a pit down to a depth of at least 20 inches (51 centimeters), unless an impenetrable layer of soil or rock prohibited digging. Soil samples were then examined for hydric indicators. Organic content was estimated visually and texturally. Soil colors were evaluated against a Munsell soil color chart (GretagMacbeth LLC 2000).

Wetland hydrology, if present, was generally determined through the presence of the primary indicators Saturation (A3), Surface Soil Cracks (B6), and Hydrogen Sulfide Odor (C1). When two or more secondary hydrology indicators were found, they were typically Drainage Patterns (B10) and FAC-Neutral Test (D5).

Climatic and hydrologic conditions were considered not typical during field visits in September. Regional precipitation levels during September were well above average rainfall, and above the normal range reported by the WETS station for this area. Precipitation data and analysis are presented in more detail in Section 3.0 of this report.

4.3 Other Waters Field Methods

The jurisdictional limits of other waters (e.g., streams, deep ponds) as described in OAR 141-085-0015 were delineated. During field investigations, these features were identified by the presence of a defined bed and bank and ordinary high water mark (OHWM) criteria such as, changes in the character of the soil, sediment, litter or debris deposition, changes in vegetation and scour lines. Streams were classed as perennial, intermittent, or ephemeral according to water permanence. Streams were determined to be perennial if they flow continuously throughout the year and

methodology included direct observation during the site visit. Intermittent streams are larger drainages that receive baseflow only during the wet weather season. Methods in OSDAM (Nadeau 2011) were used to classify intermittent and ephemeral streams. These include position in the landscape, indicators of flow level and velocity, hydrophytic plant species in or adjacent to stream banks, indicators of prolonged soils saturation within the channel, well developed banks, and a defined developed meandering channel with scour and deposition. Ephemeral drainages are in the upper reaches of the landscape that only flow in response to direct precipitation or snow melt. Ephemeral determinations were made if features had straight, poorly developed stream channels tending to flatten out at the base of slopes, and upland vegetation dominated the channel. The geomorphology, hydrology, and dominate vegetation data was collected at each feature and listed on Table D-3 in Appendix D. Additional information recorded included vegetation, channel depth, and site alterations, if any. Where an OSDAM was recorded, the data sheets are included in Appendix B-2.

4.4 Other Features

Stream channels viewed on aerial photos and NHD maps were examined for channel structure and potential hydrology. In many cases, NHD lines that appeared to be wetland swales or channels on aerial photos turned out to be relict erosional features or upland swales that lacked channel structure, or the contours had been smoothed due to plowing. Erosional features and upland swales observed in the field had sides and a bottom covered with upland vegetation; however, they lacked channel structure and OHWM. These features may have occasional flow after precipitation or snowmelt events. In many cases, the flow of water appeared to splay out as overland flow, and infiltrate the well-drained loamy soils. Also, erosion control berms constructed on sloping fields were encountered where NHD maps exhibited streams. These erosion control berms slow the formation of gullies and rills from sheet flow. In all cases where features were determined to lack channel characteristics, they were mapped as erosional features, labeled “XBB” and photographed. These features are found on Table D-4 in Appendix D.

5.0 Descriptions of All Wetlands and Other Waters

All wetlands and other waters evaluated in the study area are depicted in Appendix A, Figure A-5, Wetland Delineation Figures. These figures are provided at three scales. Figure A-5 is a large-scale (1:165,000) index figure depicting the location of intermediate-scale (1:12,000) Figures A-5.1 through A-5.33. The intermediate scale depicts the locations of the detail scale (1:2,400) Figures A-5.1.1 through A-5.1.103.

Individual wetland and stream data sheets are provided in Appendix B and photographs are provided in Appendix C. Photographs are arranged to match the sequence of the wetland map sheet they are located on. Detailed wetland and water descriptions are provided in table format in Appendix D, Table D-2 and D-3.

5.1 Wetlands

Wetland Table D-2a (Wheatridge West) and Table D-2b (Intraconnection Lines), located in Appendix D, lists all wetlands delineated during field investigations. No wetlands were delineated within Wheatridge East. The primary wetland type delineated was wetland swale; other wetland types included a fringe wetland along a stream, a vernal pool, a stock pond wetland, and a push-up dam wetland. All wetlands were located along the Intraconnection Corridor except for Wetland (WET) 2A, located within Wheatridge West.

Wetlands and other waters are detailed in Figures A-5.1.1 through A-5.1.103 at 1:2,400 scale. These figures depict the locations where features were recorded during field investigations. Area outside the figure boundaries was surveyed for the presence of wetlands and other waters; however, no features were recorded, therefore maps have not been generated for those areas.

The wetland swales were long-linear wetlands within vegetated channels that were dominated primarily with obligate (OBL) and facultative wetland (FACW) species. Plant species include rushes (*Juncus* sp.) (FACW), watercress (*Nasturtium officinale*)(OBL), cutleaf waterparsnip (*Berula erecta*)(OBL), and annual rabbitsfoot grass (*Polypogon monspeliensis*)(FACW). Some of these wetlands showed clear evidence of excavation and all were 80% to 100% vegetated. These wetlands appeared to be spring and precipitation fed. Trampling and grazing were evident within these wetlands and was observed in the field. WET A, B, C, E, and G represent wetland swales.

The fringe wetland (WET D) was adjacent to Big Butter Creek, and was dominated by reed canarygrass (*Phalaris arundinacea*) (FACW) and hemp dogbane (*Apocynum cannabinum*) (FAC). This small wetland occurred at a location where the Big Butter Creek channel was braided, downstream of a disintegrating old bridge foundation and existing overhead large pipe crossing. The southern boundary of this wetland was defined by the ordinary high water line of Big Butter Creek, and the northern boundary was defined by a gradual change in vegetation associated with the topographic change up to a terrace.

The vernal pool (WET H) was located in a small bowl above a basalt ledge, and was restricted at 7 inches (18 centimeters) by bedrock. The center of the vernal pool contained roughly 40% vegetation cover and roughly 60% bare soil with surface cracks indicating ponding. No inlet or outlet was observed. Vernal pools typically contain plant species adapted to spring inundation followed by complete drying out of the soils. This wetland was dominated by marshpepper knotweed (*Persicaria hydropiper*) (OBL), prostrate knotweed (*Polygonum aviculare*)(FACW), barnyard grass (*Echinochloa crusgalli*)(FACW), and annual rabbitsfoot grass (FACW). There was an additional plant species covering 15% of the vernal pool that had senesced and could not be identified during the September field visit, which is typical of species adapted to vernal pool hydrology.

The stock pond wetland (WET 2A) was heavily trampled which limited vegetation growth; the hydrology source for this wetland was a stock watering tank upslope of the wetland. The push-up dam wetland (WET I) was excavated and located at the junction of two erosional features. It was

dominated by prostrate knotweed, although it was sparsely vegetated and had a cracked soil surface indicating early season ponding.

5.2 Other Waters

Waters Table D-3, located in Appendix D, lists all irrigation canals, ephemeral, intermittent, and perennial channels within the study area. These features were delineated by the presence of a defined bed and bank and OHWM criteria.

Ephemeral single thread channels are the most common type of stream morphology in the study area.

5.3 Other Features

Many features across the Project are erosional features or upland swales that typically take the form of steep gradient gullies and rills, or low gradient shallow swales or saddles, all typified by the absence of channel structure and OHWM. These features have sides and bottoms covered with upland vegetation and are considered to lack bed and banks. Swales in this region typically do not support hydrophytes due to soils with high infiltration rates including sandy loams.

Also present are hill slope ephemeral channels that become erosional features farther downslope due to a lack of a defined channel where they transition to valley bottoms. In these depositional zones, there is a loss in channel confinement and sheet flood zones and/or rill erosion occurs where water rapidly infiltrates. Consequently there is not an identifiable OHWM.

Table D-4, included in Appendix D, lists other features that were identified within the study area during field investigations. Erosional features are the predominant feature listed, however other features for which data notes were included are: sample plots demonstrating uplands, and ground conditions in areas that were not easily interpreted from aerial photographs such as erosion control berms.

6.0 Deviations from Local Wetlands Inventory and National Wetlands Inventory

The Project comes in proximity to Heppner, which has not completed a Local Wetlands Inventory (LWI) (ODSL 2013); therefore, LWI mapping was not considered.

Table D-5a (Wheatridge West) and Table D-5b (Intraconnection Lines), included in Appendix D, provides a list of the wetlands and waters delineated as deviations. No deviations were identified on Wheatridge East. Deviations are features that are mapped by the NWI that differ from field observations. In addition, features determined in the field to be wetlands or other waters that were not mapped by the NWI, and streams that had a different flow regime than mapped by the NWI, are also included in Table D-5.

7.0 Mapping Method

All field data were collected using a survey grade Trimble GeoXH handheld Global Positioning System (GPS). Field data was then differentially corrected in post-processing using same time data from known surrounding base stations. Position dilution of precision was limited to a value of six or less to maintain data quality. Trimble GeoExplorer data has sub-meter accuracy when using differential correction.

Wetland boundaries were recorded as polygon features using GPS units. Locations of sample plots, photograph locations, and other data collection sites were recorded as GPS point features.

Other waters were recorded as polyline features using GPS units. Streams wider than 2 meters, regardless of their duration of flow, were documented as 2 linear features, one representing OHWM stage on each side of the channel. Streams less than 2 meters wide were documented as a single centerline of the channel. These small streams were documented with a centerline because the combination of the estimated accuracy of the GPS equipment and software (1 meter) and the mapping scale would not reliably result in the features being depicted as polygons if the data were collected as such.

On Figures A-5.1.1 – A-5.1.103, direction of flow arrows have been included for all stream features mapped and arrows have been added where wetlands or other waters continue out of the study area.

8.0 Additional Information

Other water features that were evaluated as ephemeral streams in this report are excluded from jurisdictional status as the field assessments determined they would not meet the definition of Waters of the US (Wof US). The jurisdictional status of wetlands and other waters is generally based on the USACE *Jurisdictional Determination Form Instructional Guidebook* (USACE 2007a) and USACE guidance resulting from CWA Jurisdiction following the U.S. Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States* (USACE 2008b). In order for an aquatic feature to be considered a Wof US, it must be at least one of the following:

- A Traditional Navigable Water (TNW);
- A wetland adjacent to a TNW;
- A relatively permanent water (RPW), including tributaries that typically flow year-round or have a continuous flow at least seasonally (typically three consecutive months depending on the region);
- A wetland that directly abuts an RPW;
- A wetland adjacent (proximal but not abutting) to an RPW, but only if it can be shown that the feature has a "significant nexus" with a TNW; or

- A non-RPW or wetland adjacent to a non-RPW if the feature has a "significant nexus" with a TNW (USACE 2007a).

Adjacent is defined as "bordering, contiguous, or neighboring." Wetlands separated from other Wof US by barriers such as natural river berms, man-made dikes, and beach dunes may be considered adjacent wetlands. The 2008 ruling also requires that the agencies not generally assert jurisdiction over the following features (2008b):

- Swales or erosional features (e.g., gullies or small washes characterized by low volume, infrequent, or short duration flow); and
- Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

USACE guidance states that the agencies will apply a significant nexus standard as follows (USACE 2007b):

- A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine whether they significantly affect the chemical, physical, and biological integrity of downstream traditional navigable waters. Significant nexus includes consideration of hydrologic and ecologic factors.
- In the absence of adjacent wetlands, lateral jurisdiction over nontidal waters extends to the OHWM.

The online interactive mapper, StreamNet (StreamNet 2003), was queried for information pertaining to fish presence in waters within the study area. No fish species were mapped for waters within the study area.

9.0 Results and Conclusions

Based on the results of site investigations between September 16 and October 25, 2013, Tetra Tech identified 9 wetlands and 60 other water features within the study area. Table 9-1 summarizes wetland features observed within the study area. In total, the 9 wetlands equaling 5.74 acres were delineated within the study area.

Table 9-1: Summary of Identified Wetland Features

Wetland Type	Acres
Palustrine Emergent (PEM)	5.74

Table 9-2 summarizes the other water features delineated within the study area by water type.

Table 9-2: Summary of Identified Other Waters	
Feature	**Acres**
Ephemeral	3.48
Intermittent	0.40
Perennial	1.05

10.0 Disclaimer

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

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Appendix A: Figures

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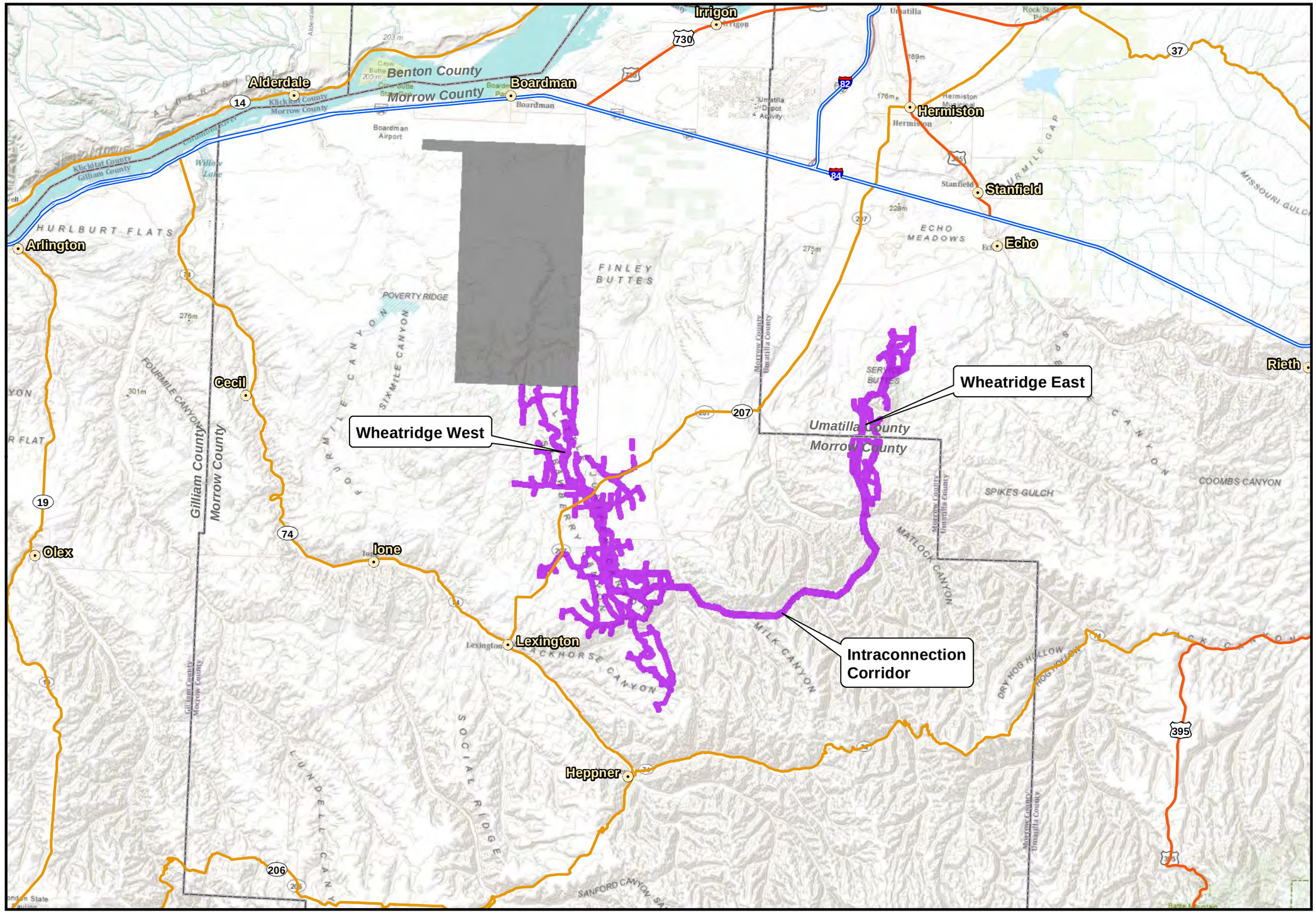

1:300,000 WGS84 UTM 11

0 1 2 4 6 8 10 12 14 16 18 20 Miles

Data Sources Wheatridge Wind Energy: study area / ESRI: roads, cities, political boundaries

Figure A-1

Wheatridge Wind Energy Facility

Facility Location

Morrow and Umatilla Counties, OR
December 2014

- Study Area
- City/Town
- County Boundary
- Boardman Bombing Range
- Interstate Highway
- Federal Highway
- State Highway

TETRA TECH

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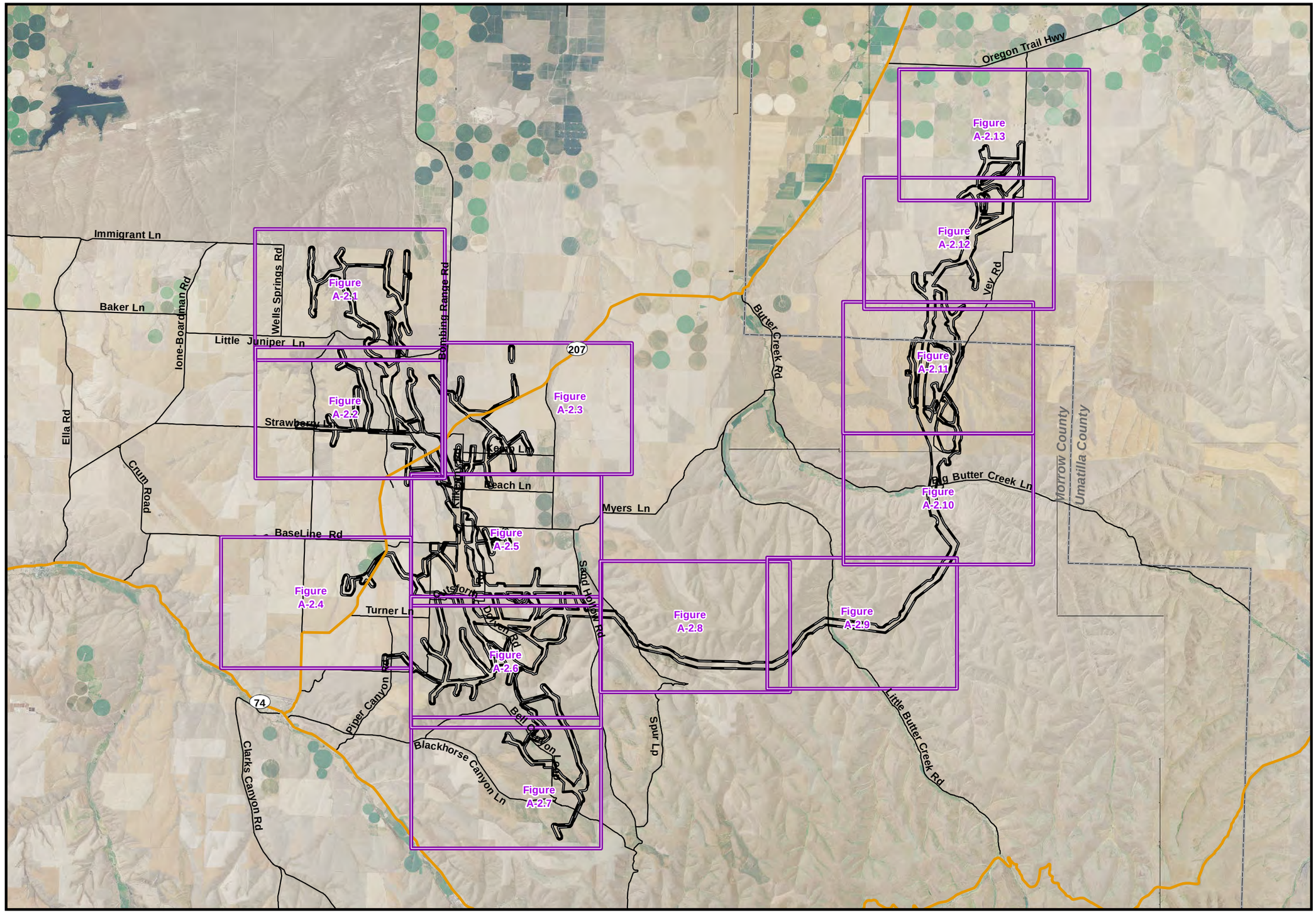

Figure A-2 Index Map

Wheatridge Wind Energy Facility

Tax Lot Index Map

Morrow and Umatilla Counties, OR

December 2014

- Map Grid
- Wetland and Waters Study Area
- State Highway
- Local Road
- County Boundary

1:165,000 **WGS84 UTM 11**

0 0.5 1 2 3 4 5 6 7 8 9 10 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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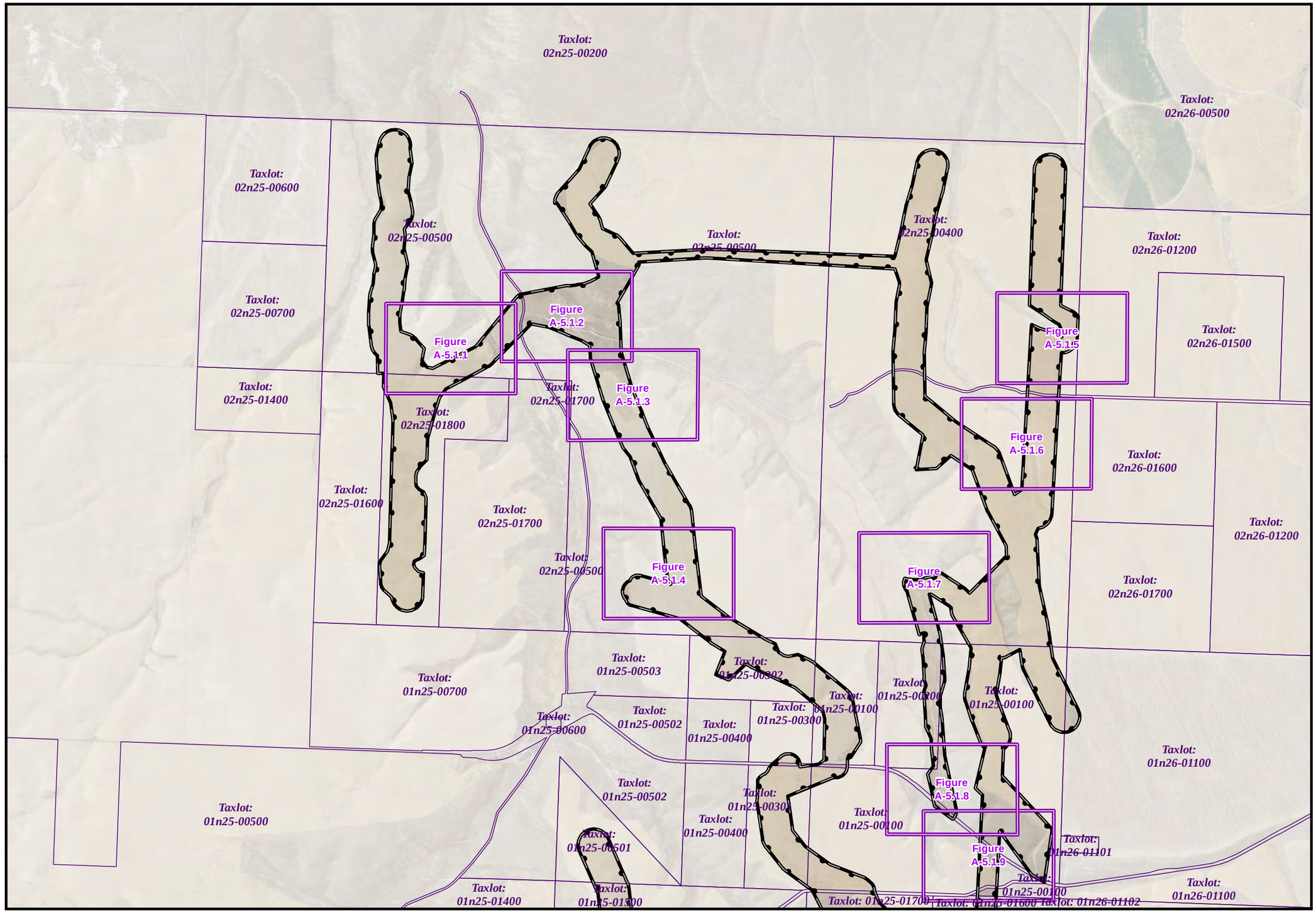


1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-2.1

Wheatridge Wind Energy Facility

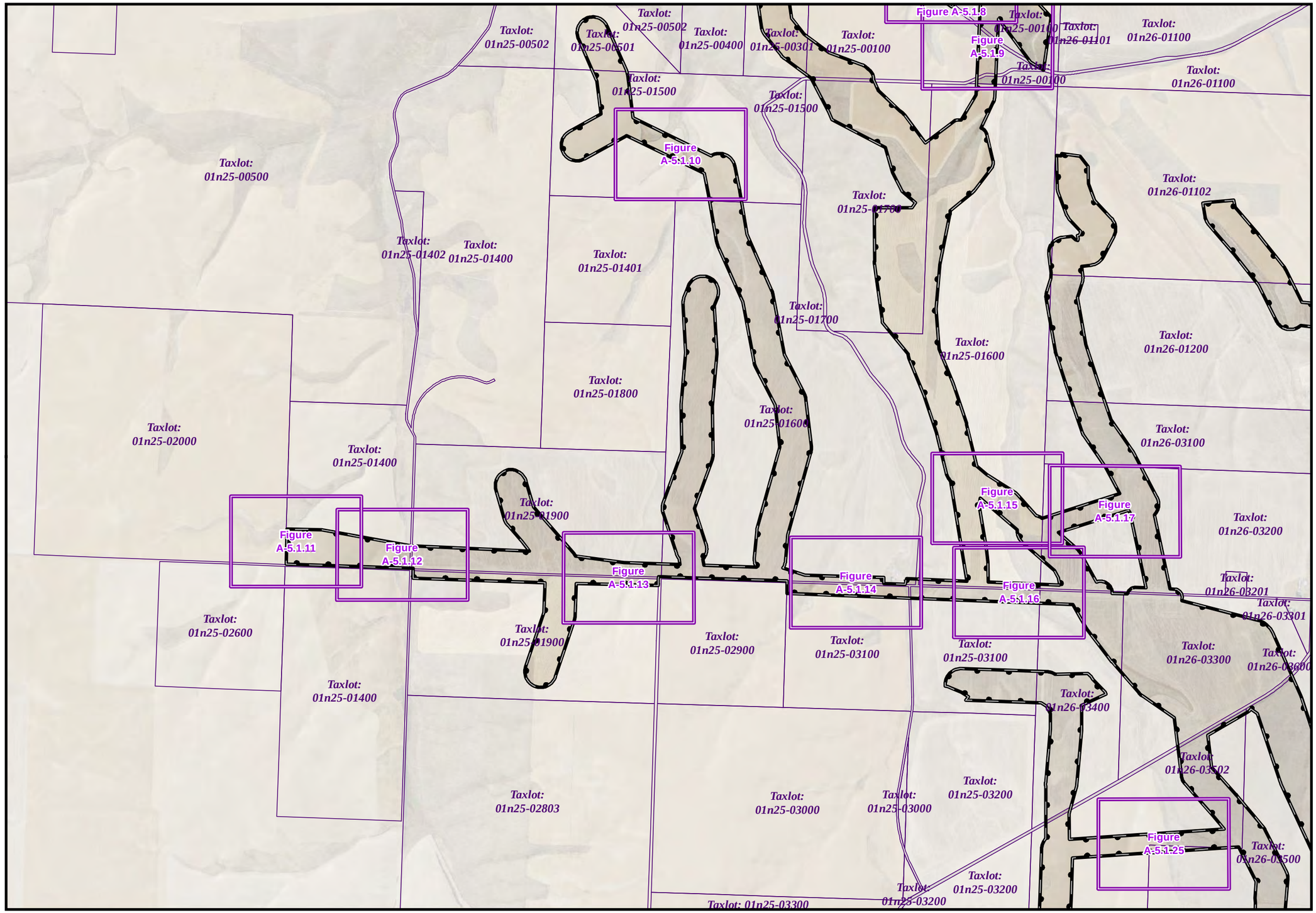
Tax Lot Map
Map 1 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH



1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-2.2

Wheatridge Wind Energy Facility

Tax Lot Map
Map 2 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH

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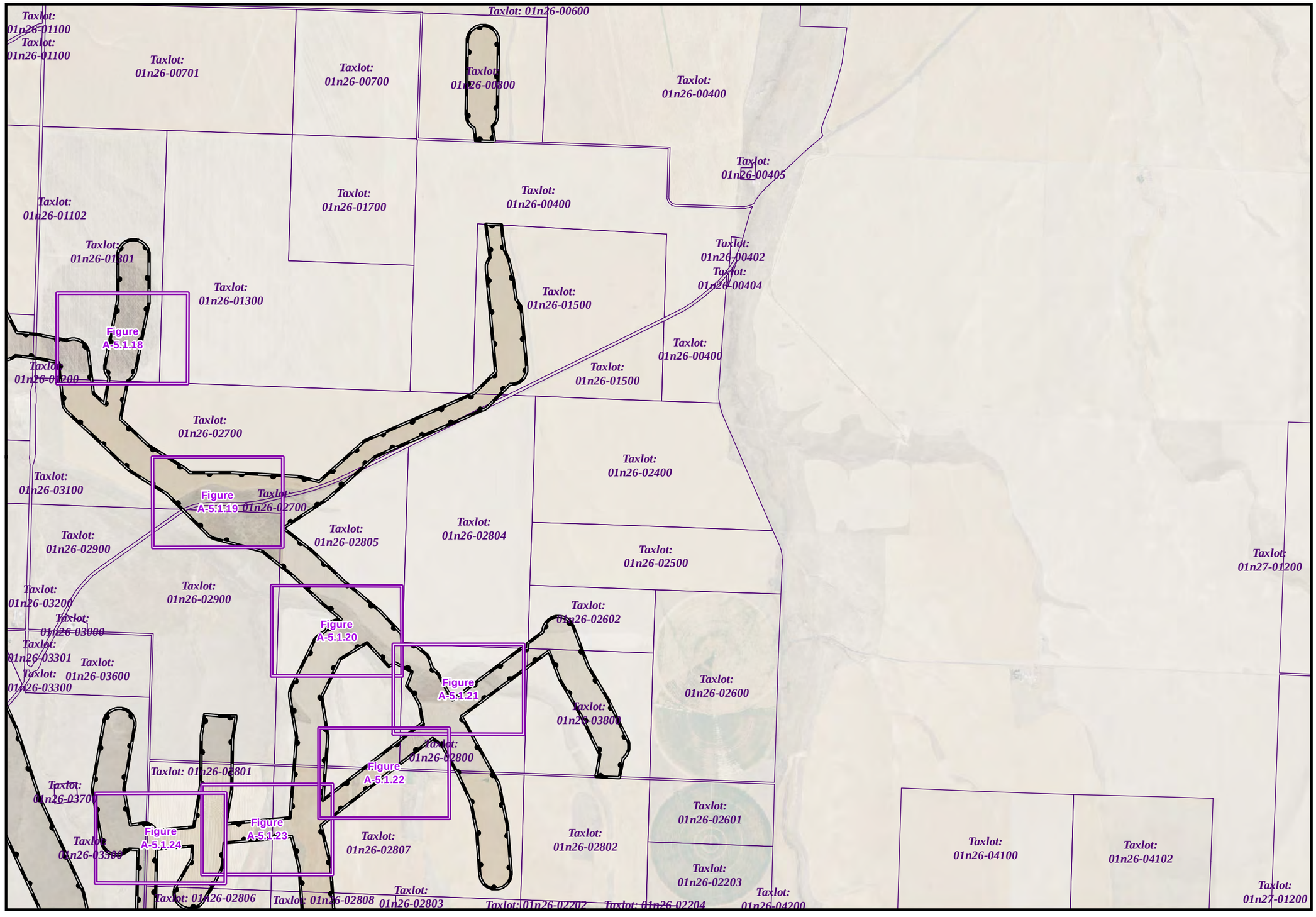

Figure A-2.3

Wheatridge Wind Energy Facility

Tax Lot Map
Map 3 of 13

Morrow and Umatilla Counties, OR

December 2014

Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Taxlot Boundary

N

1:24,000 **WGS84 UTM 11**

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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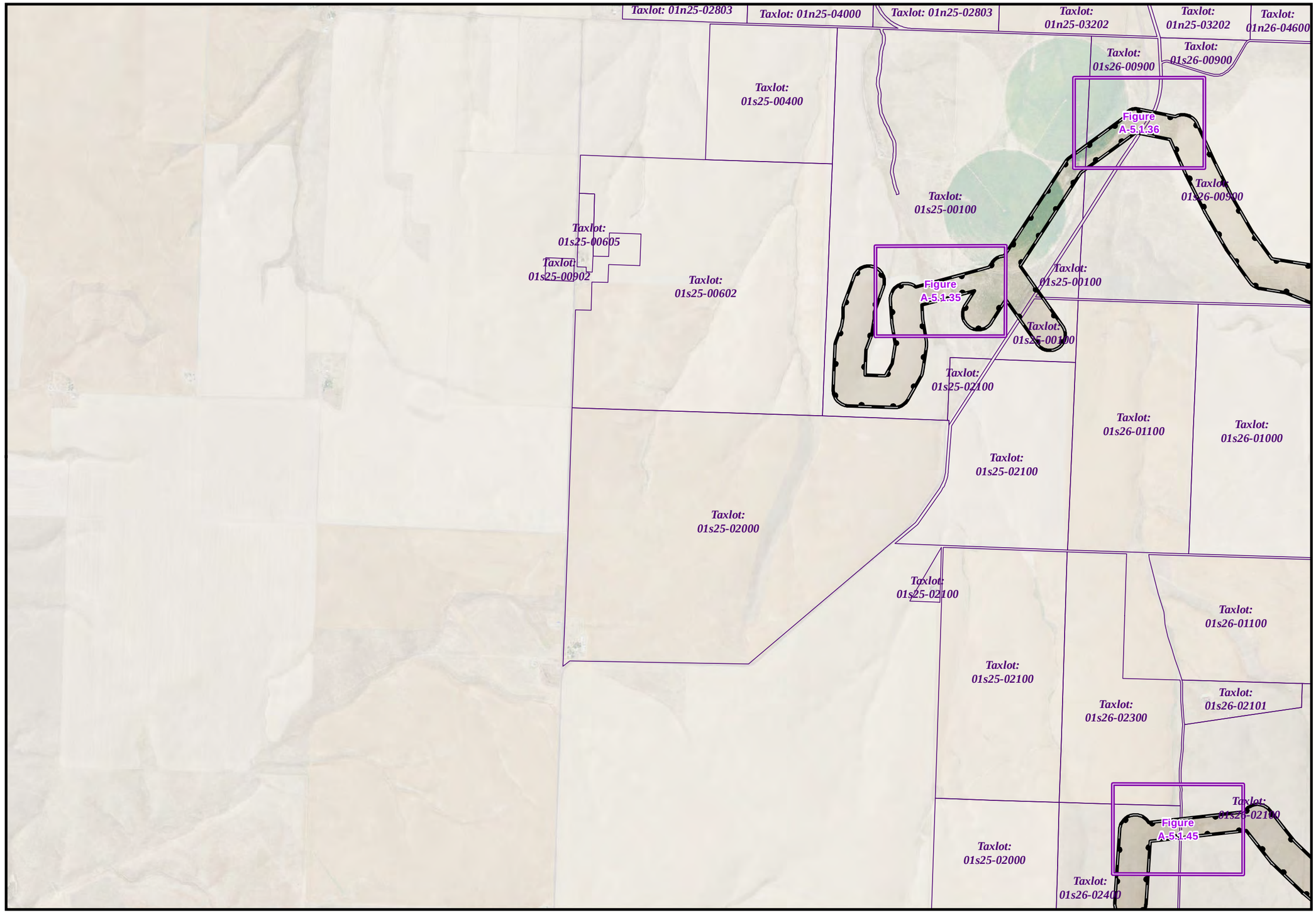

Figure A-2.4

Wheatridge Wind Energy Facility

Tax Lot Map
Map 4 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

1:24,000 **WGS84 UTM 11**

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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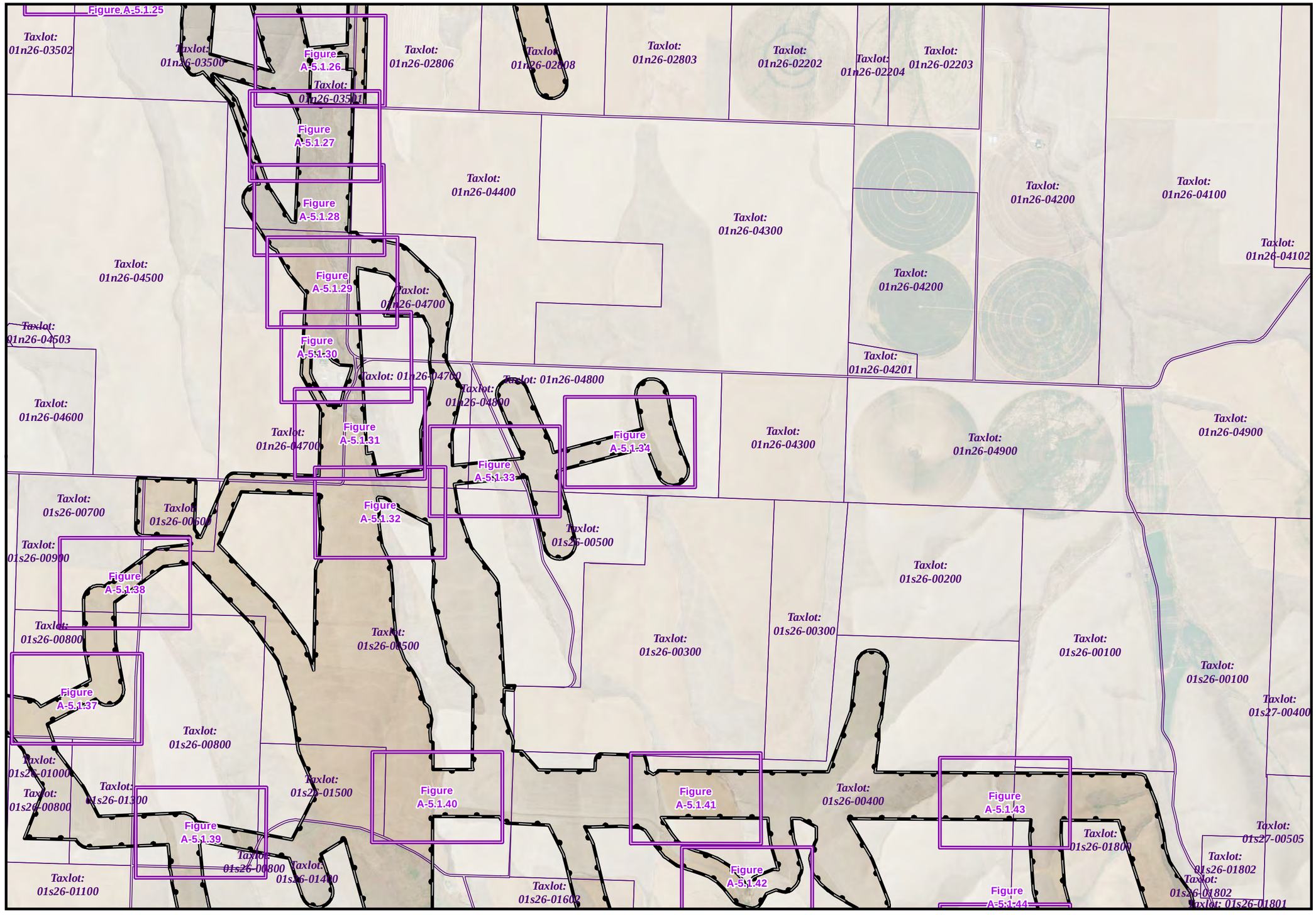

Figure A-2.5

Wheatridge Wind Energy Facility

Tax Lot Map
Map 5 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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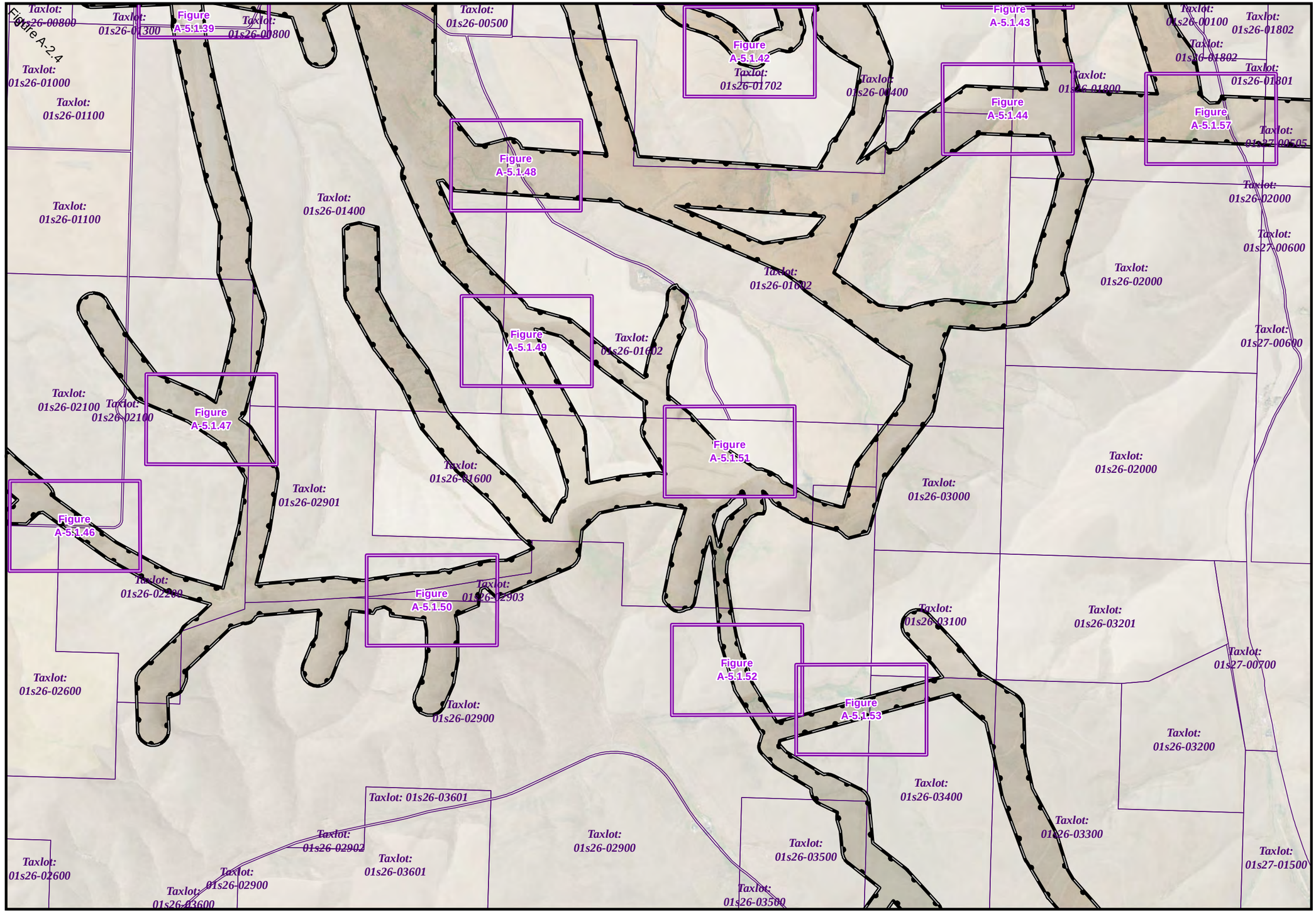

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-2.6

Wheatridge Wind Energy Facility

Tax Lot Map
Map 6 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH

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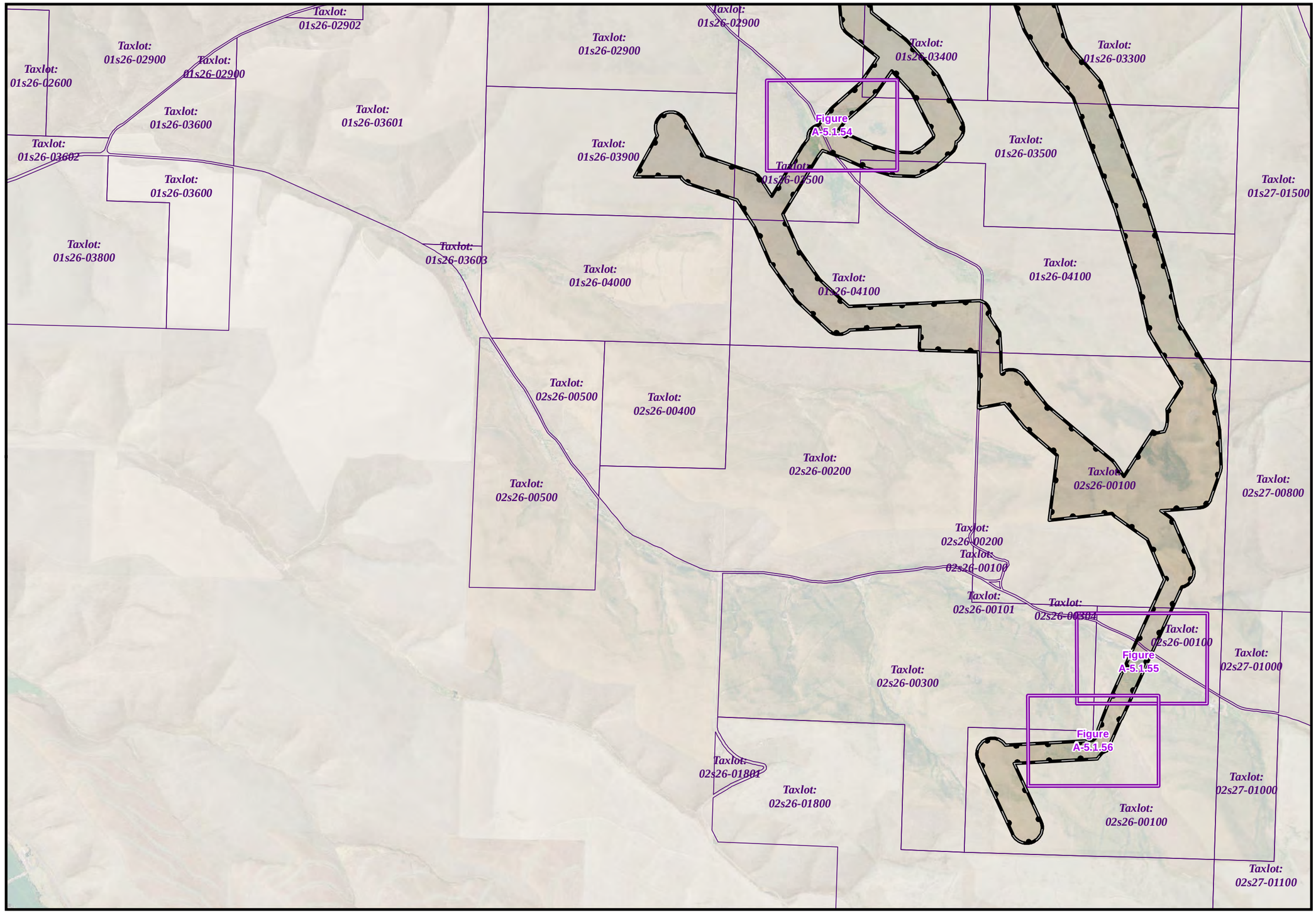

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-2.7

Wheatridge Wind Energy Facility

Tax Lot Map
Map 7 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH

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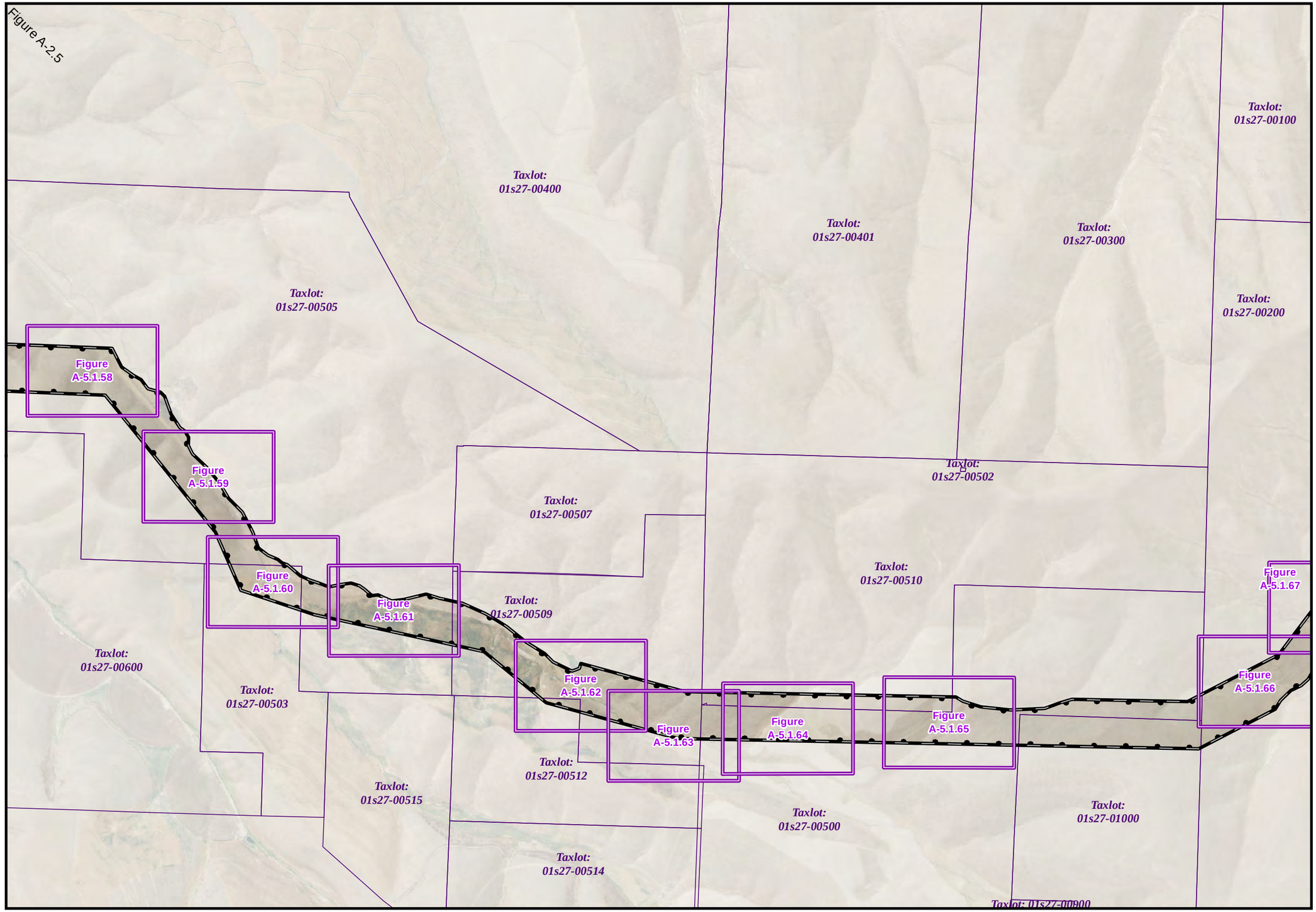

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-2.8

Wheatridge Wind Energy Facility

Tax Lot Map
Map 8 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH

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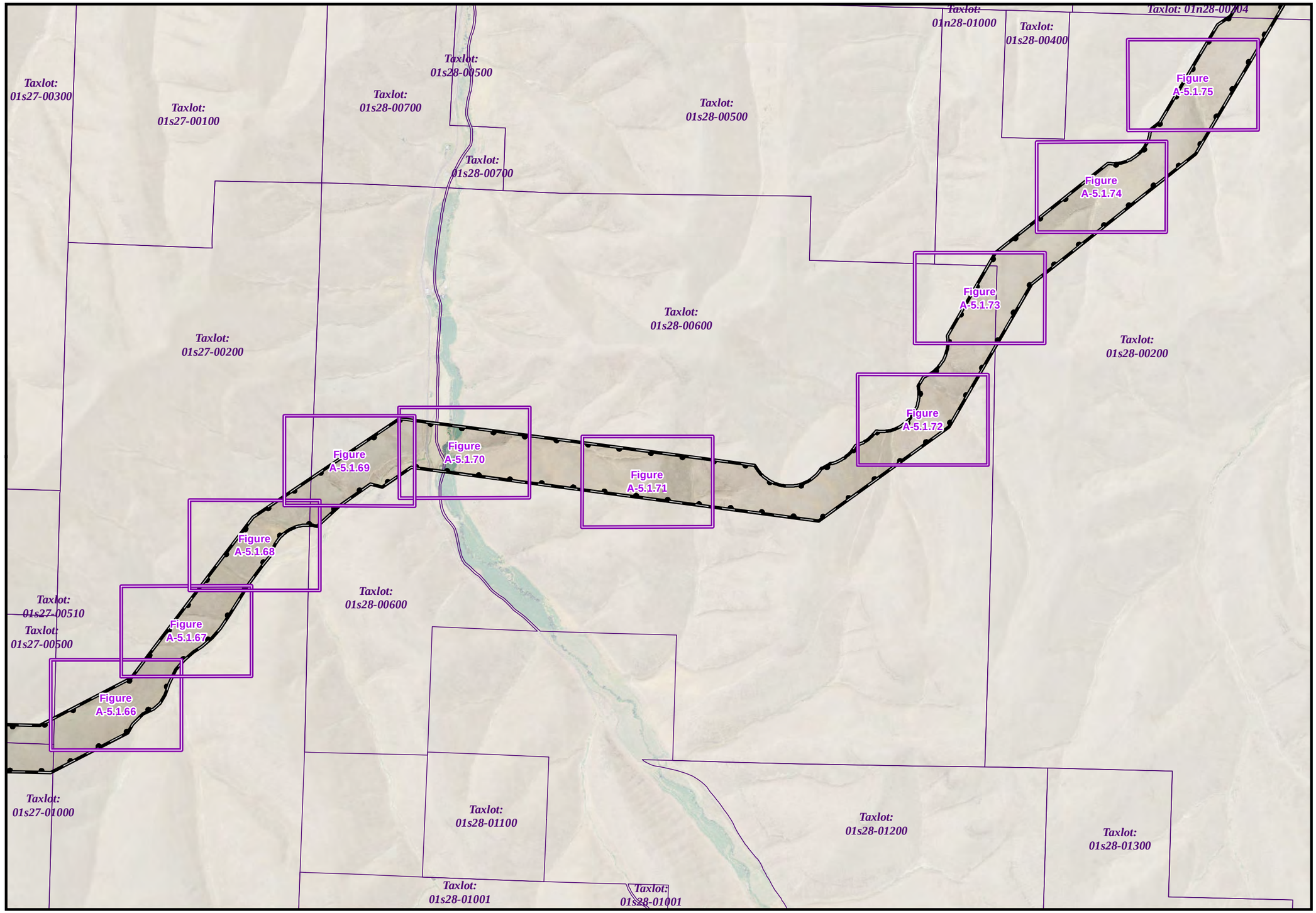

Figure A-2.9

Wheatridge Wind Energy Facility

Tax Lot Map
Map 9 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

1:24,000 **WGS84 UTM 11**

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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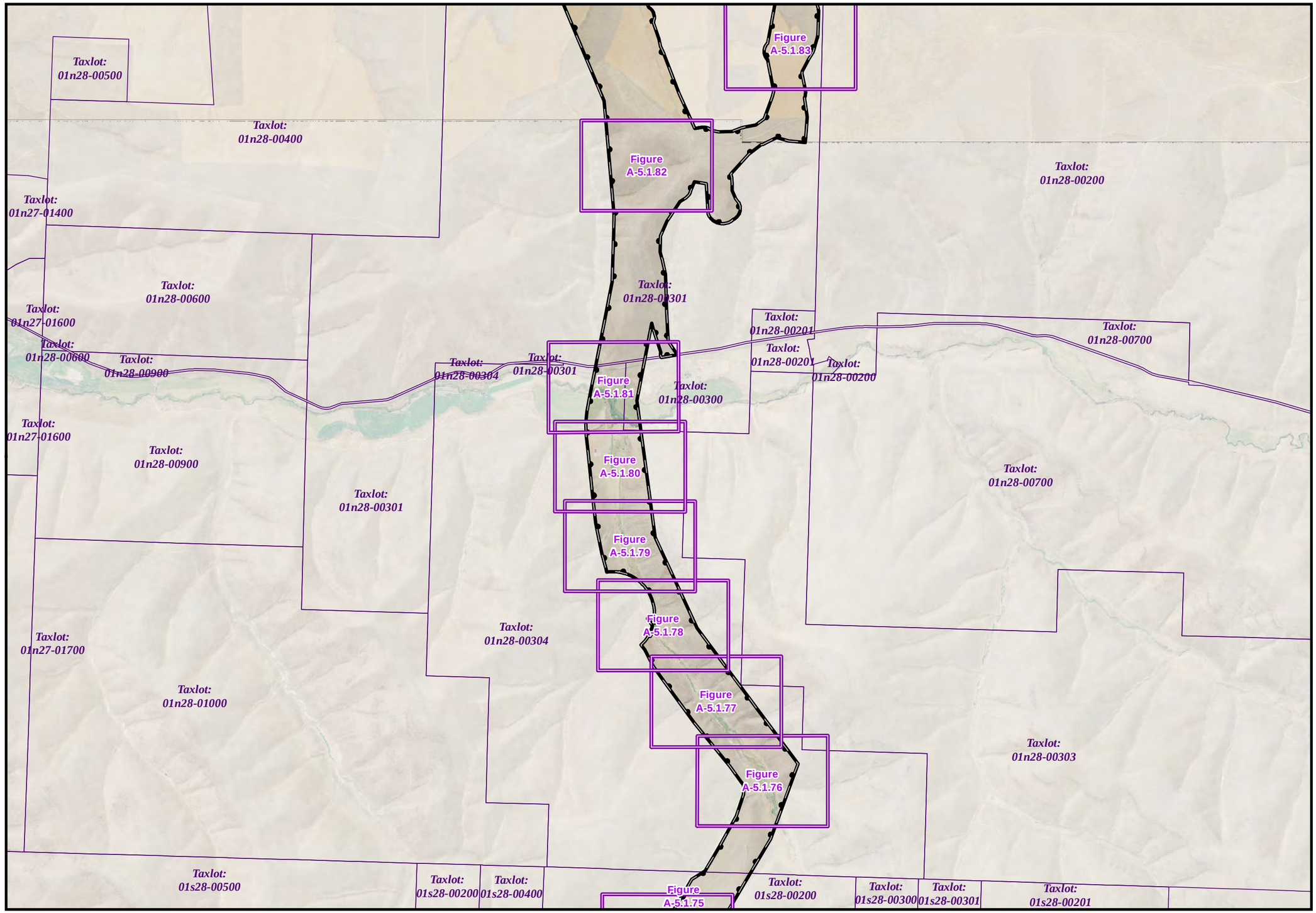

Figure A-2.10

Wheatridge Wind Energy Facility

Tax Lot Map
Map 10 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

1:24,000 **WGS84 UTM 11**

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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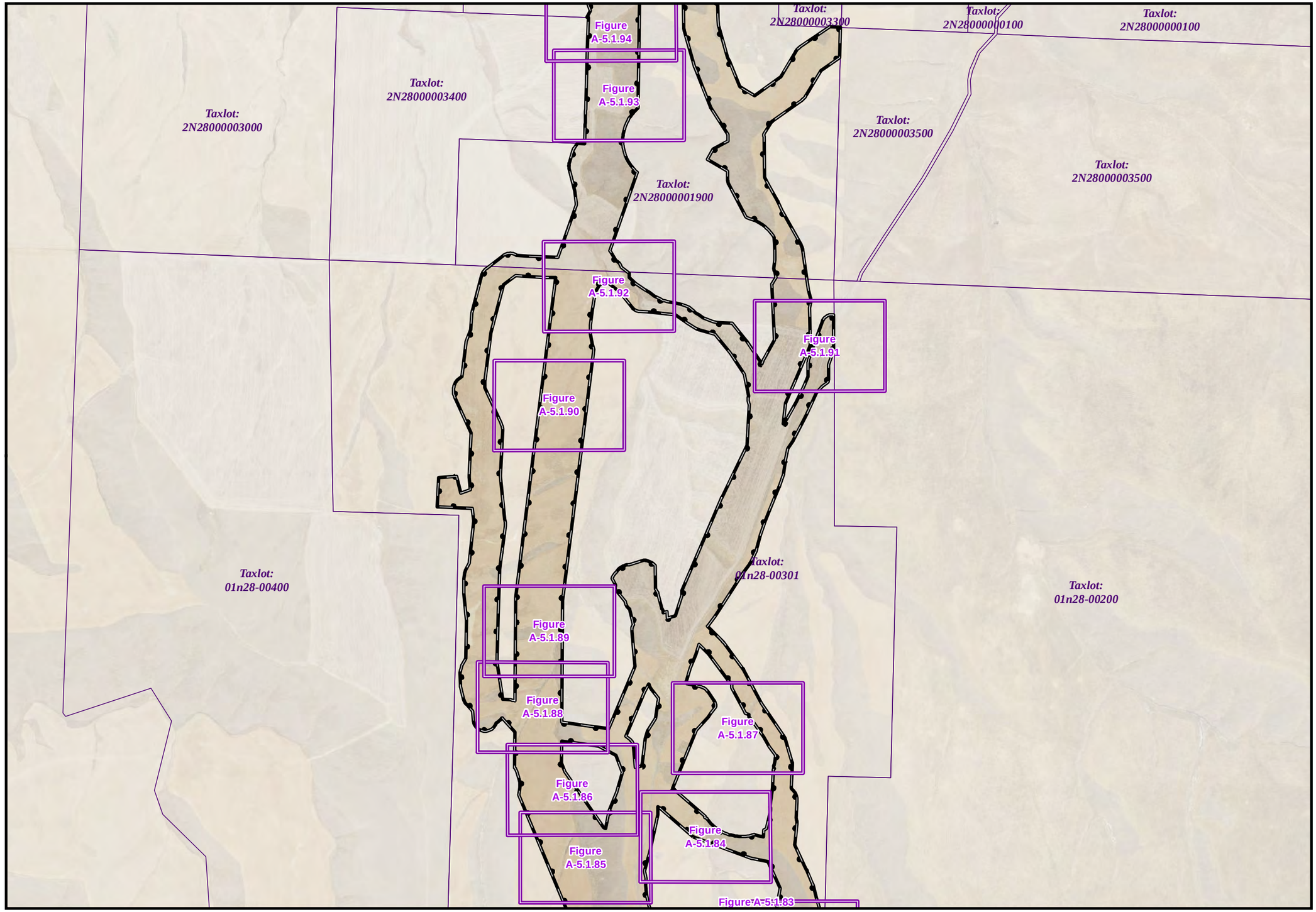

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-2.11

Wheatridge Wind Energy Facility

Tax Lot Map
Map 11 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH

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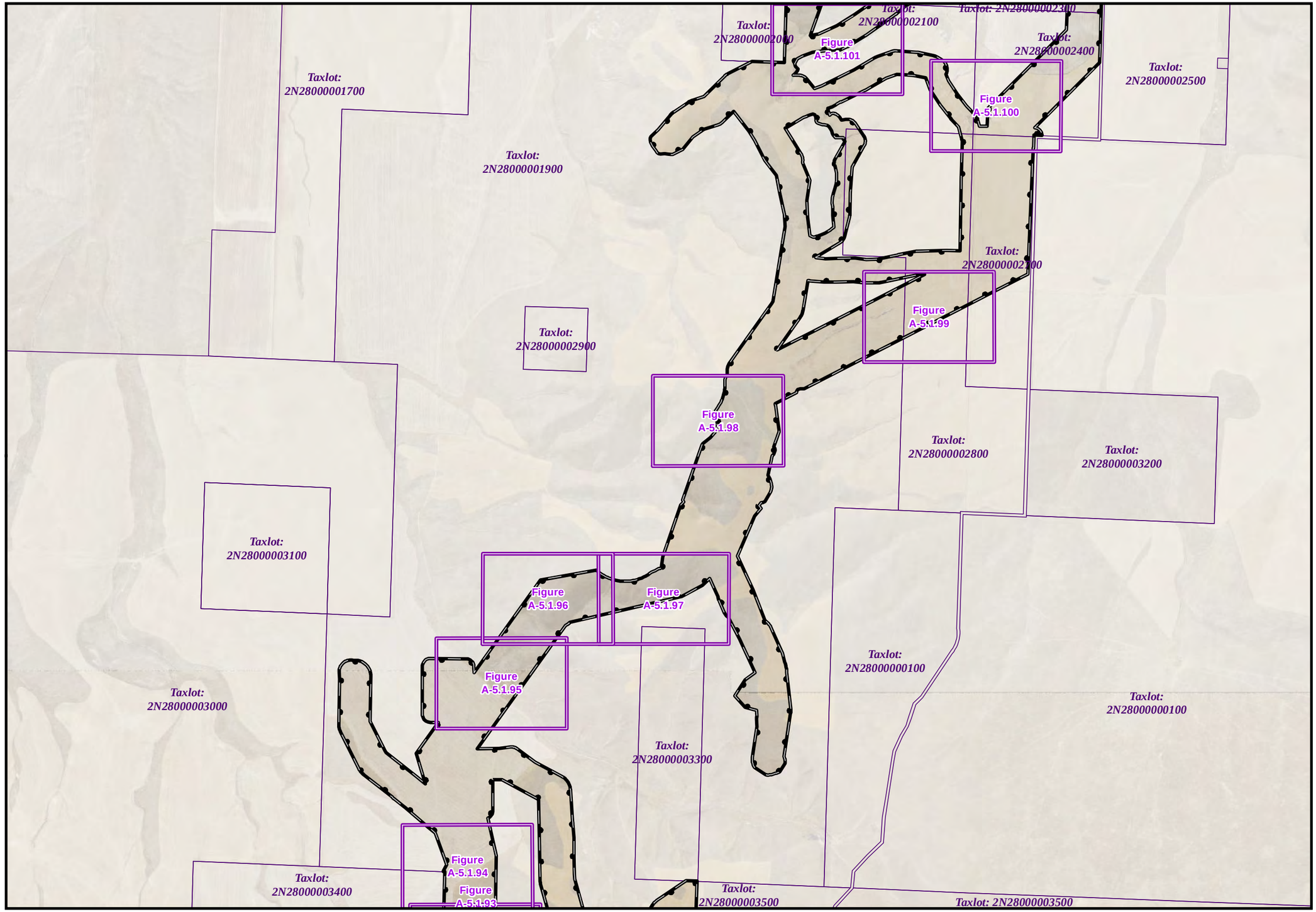

Figure A-2.12

Wheatridge Wind Energy Facility

Tax Lot Map
Map 12 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

1:24,000 **WGS84 UTM 11**

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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Figure A-2.13

Wheatridge Wind Energy Facility

Tax Lot Map
Map 13 of 13

Morrow and Umatilla Counties, OR

December 2014

Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Taxlot Boundary

1:24,000 **WGS84 UTM 11**

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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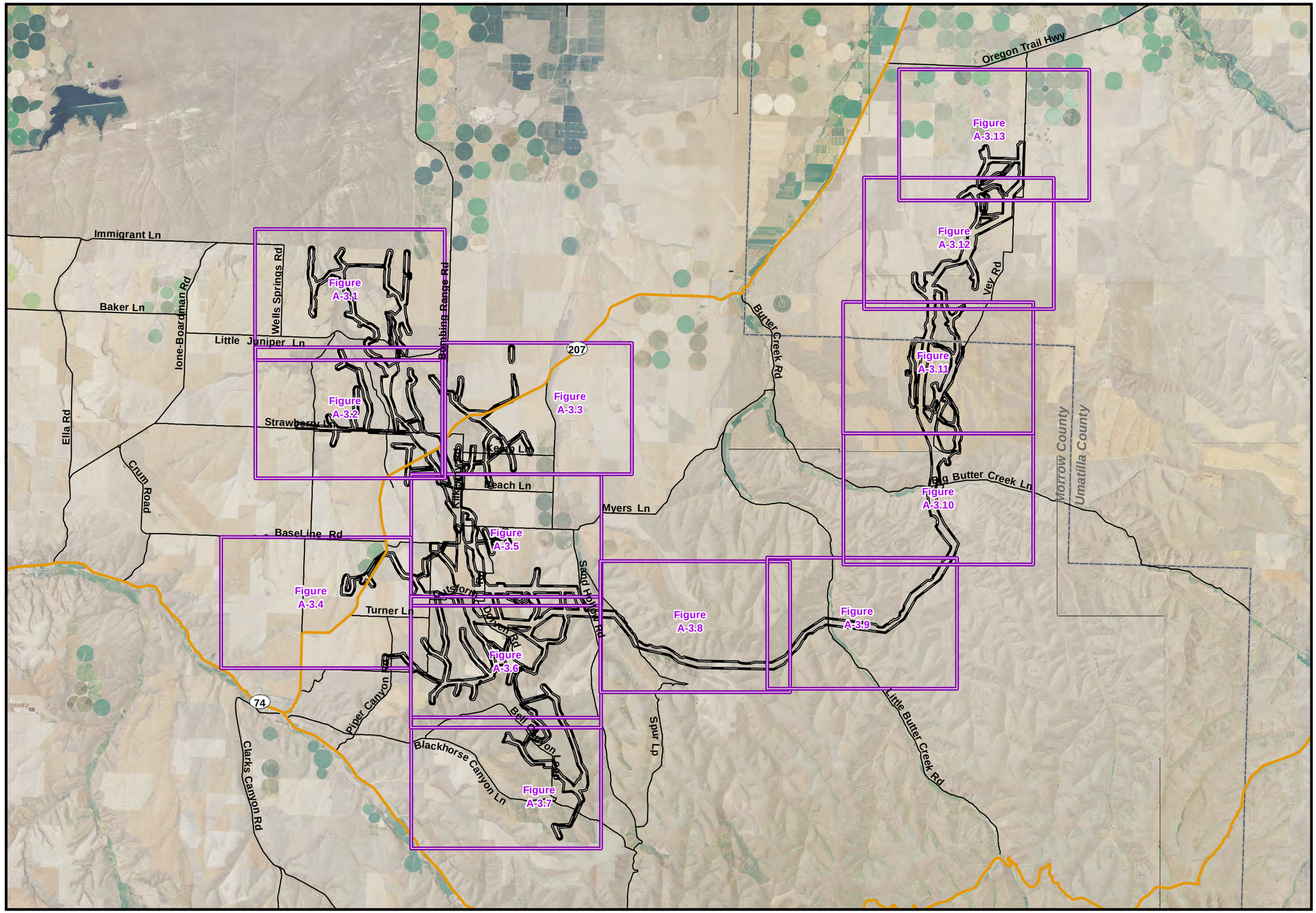

1:165,000 WGS84 UTM 11

0 0.5 1 2 3 4 5 6 7 8 9 10 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-3 Index Map

Wheatridge Wind Energy Facility

Soils Index Map

Morrow and Umatilla Counties, OR

December 2014

- Map Grid
- Wetland and Waters Study Area
- State Highway
- Local Road
- County Boundary

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Figure A-3 Legend

Wheatridge Wind Energy Facility

Soils Map Legend

Morrow and Umatilla Counties, OR

December 2014

Map Symbol: Map Unit Name

105A:Umapine silt loam, 0 to 3 percent slopes
106A:Umapine silt loam, reclaimed, 0 to 3 percent slopes
10B:Ellum fine sandy loam, 2 to 5 percent slopes
10C:Ellum fine sandy loam, 5 to 12 percent slopes
119A:Wanser loamy fine sand, 0 to 3 percent slopes
11:Endersby fine sandy loam
120C:Wanser-Quincy complex, 0 to 12 percent slopes
121B:Willis silt loam, 2 to 7 percent slopes
121C:Willis silt loam, 7 to 12 percent slopes
121D:Willis silt loam, 12 to 30 percent slopes
125F:Wrentham-Rock outcrop complex, 35 to 70 percent slopes
126A:Xerofluvents, 0 to 3 percent slopes
127F:Xerollic Durorthids, 30 to 60 percent slopes
128A:Yakima silt loam, 0 to 3 percent slopes
12:Esquatzel silt loam
13D:Gravden very gravelly loam, 5 to 20 percent slopes
13E:Gravden very gravelly loam, 20 to 40 percent slopes
14B:Burbank loamy fine sand, 0 to 5 percent slopes
15B:Burke silt loam, 1 to 7 percent slopes
15C:Burke silt loam, 7 to 12 percent slopes
15E:Burke silt loam, 12 to 30 percent slopes
16D:Cantala silt loam, 12 to 20 percent slopes
16E:Cantala silt loam, 20 to 35 percent slopes
18B:Condon silt loam, 1 to 7 percent slopes
18C:Condon silt loam, 7 to 12 percent slopes
19D:Condon silt loam, 12 to 20 percent north slopes
1B:Adkins fine sandy loam, 0 to 5 percent slopes
1C:Adkins fine sandy loam, 5 to 25 percent slopes
20D:Condon silt loam, 12 to 20 percent south slopes
21B:Irrigon fine sandy loam, 2 to 5 percent slopes
21C:Irrigon fine sandy loam, 5 to 12 percent slopes
21D:Condon-Bakeoven complex, 2 to 20 percent slopes
22:Kimberly fine sandy loam
23:Dune land
26B:Koehler loamy fine sand, 2 to 5 percent slopes
26C:Koehler loamy fine sand, 5 to 12 percent slopes
27A:Esquatzel silt loam, 0 to 3 percent slopes
28E:Lickskillet very stony loam, 7 to 40 percent slopes
29F:Lickskillet-Rock outcrop complex, 40 to 70 percent slopes
2C:Adkins fine sandy loam, gravelly substratum, 5 to 25 percent slopes
2D:Bakeoven very cobbly loam, 2 to 20 percent slopes
30B:Mikkalo silt loam, 2 to 7 percent slopes
30C:Mikkalo silt loam, 7 to 12 percent slopes
30D:Mikkalo silt loam, 12 to 20 percent slopes
31B:Morrow silt loam, 1 to 7 percent slopes
31C:Morrow silt loam, 7 to 12 percent slopes
32D:Morrow silt loam, 12 to 20 percent north slopes
32E:Morrow silt loam, 20 to 35 percent north slopes
33D:Morrow silt loam, 12 to 20 percent south slopes
33E:Morrow silt loam, 20 to 30 percent south slopes
34F:Nansene silt loam, 35 to 70 percent slopes
35:Onyx silt loam
36:Pedigo silt loam
3D:Bakeoven-Morrow complex, 2 to 20 percent slopes
40C:Quincy loamy fine sand, 2 to 12 percent slopes
42A:Kimberly fine sandy loam, 0 to 3 percent slopes
43A:Kimberly silt loam, 0 to 3 percent slopes
43B:Rhea silt loam, 1 to 7 percent slopes
43C:Rhea silt loam, 7 to 12 percent slopes
43D:Rhea silt loam, 12 to 20 percent slopes
43E:Rhea silt loam, 20 to 35 percent slopes
43F:Rhea silt loam, 35 to 50 percent slopes
44B:Ritzville very fine sandy loam, 2 to 7 percent slopes
44C:Ritzville very fine sandy loam, 7 to 12 percent slopes
44D:Ritzville very fine sandy loam, 12 to 25 percent slopes
45A:Ritzville silt loam, 0 to 2 percent slopes
45B:Ritzville silt loam, 2 to 7 percent slopes
45C:Ritzville silt loam, 7 to 12 percent slopes
45D:Ritzville silt loam, 12 to 20 percent slopes
46E:Ritzville silt loam, 20 to 40 percent north slopes
47B:Koehler loamy fine sand, 0 to 5 percent slopes
47E:Ritzville silt loam, 20 to 40 percent south slopes
48E:Lickskillet very stony loam, 7 to 40 percent slopes
49F:Lickskillet-Nansene association, 35 to 70 percent slopes
4D:Bakeoven-Valby complex, 2 to 20 percent slopes
50F:Lickskillet-Rock outcrop complex, 40 to 70 percent slopes
51B:Royal loamy fine sand, 2 to 5 percent slopes
51C:Royal loamy fine sand, 5 to 12 percent slopes
52B:Royal fine sandy loam, 2 to 5 percent slopes
52C:Royal fine sandy loam, 5 to 12 percent slopes
52D:Royal fine sandy loam, 12 to 20 percent slopes
53A:Royal silt loam, 0 to 3 percent slopes
53D:McKay silt loam, 7 to 25 percent south slopes
54B:Mikkalo silt loam, 2 to 7 percent slopes
54B:Sagehill fine sandy loam, 2 to 5 percent slopes
54C:Mikkalo silt loam, 7 to 12 percent slopes
54C:Sagehill fine sandy loam, 5 to 12 percent slopes
54D:Mikkalo silt loam, 12 to 20 percent slopes
54D:Sagehill fine sandy loam, 12 to 20 percent slopes
54E:Mikkalo silt loam, 20 to 35 percent slopes
55B:Sagehill fine sandy loam, hummocky, 2 to 5 percent slopes
55C:Sagehill fine sandy loam, hummocky, 5 to 12 percent slopes
56B:Morrow silt loam, 1 to 7 percent slopes
56C:Morrow silt loam, 7 to 12 percent slopes
56F:Snell very stony loam, 35 to 70 percent north slopes
57:Snow silt loam
57D:Morrow silt loam, 12 to 20 percent north slopes
58A:Taunton fine sandy loam, 0 to 2 percent slopes
58B:Taunton fine sandy loam, 2 to 5 percent slopes
58C:Taunton fine sandy loam, 5 to 12 percent slopes
59B:Taunton fine sandy loam, hummocky, 0 to 5 percent slopes
59D:Morrow-Bakeoven complex, 2 to 20 percent slopes
60F:Nansene silt loam, 35 to 70 percent slopes
63B:Valby silt loam, 1 to 7 percent slopes
63C:Valby silt loam, 7 to 12 percent slopes
64D:Valby silt loam, 12 to 20 percent north slopes
65A:Pedigo loamy fine sand, 0 to 3 percent slopes
65D:Valby silt loam, 12 to 20 percent south slopes
65E:Valby silt loam, 20 to 30 percent south slopes
66A:Pedigo silt loam, 0 to 3 percent slopes
66B:Waha silt loam, 1 to 7 percent slopes
67D:Waha silt loam, 7 to 25 percent north slopes
67E:Waha silt loam, 25 to 40 percent north slopes
68D:Waha silt loam, 7 to 25 percent south slopes
69D:Waha-Rockly complex, 2 to 20 percent slopes
70B:Warden very fine sandy loam, 2 to 5 percent slopes
70C:Warden very fine sandy loam, 5 to 12 percent slopes
70D:Warden very fine sandy loam, 12 to 20 percent slopes
71A:Warden silt loam, 0 to 2 percent slopes
71B:Warden silt loam, 2 to 5 percent slopes
71C:Warden silt loam, 5 to 12 percent slopes
71D:Warden silt loam, 12 to 20 percent slopes
71E:Warden silt loam, 20 to 40 percent slopes
72A:Powder silt loam, 0 to 3 percent slopes
72C:Warden silt loam, 3 to 12 percent slopes, eroded
72D:Warden silt loam, 12 to 20 percent slopes, eroded
73D:Prosser silt loam, 12 to 20 percent slopes
73E:Prosser silt loam, 20 to 40 percent slopes
73E:Waterbury extremely stony silt loam, 7 to 40 percent slopes
74B:Quincy fine sand, 0 to 5 percent slopes
74F:Waterbury-Rock outcrop complex, 40 to 70 percent slopes
75B:Quincy loamy fine sand, 0 to 5 percent slopes
75B:Willis silt loam, 2 to 5 percent slopes
75C:Willis silt loam, 5 to 12 percent slopes
75D:Willis silt loam, 12 to 20 percent slopes
75E:Quincy loamy fine sand, 5 to 25 percent slopes
76B:Quincy loamy fine sand, gravelly substratum, 0 to 5 percent slopes
77C:Quincy loamy fine sand, 0 to 25 percent slopes, eroded
77F:Wrentham-Rock outcrop complex, 35 to 70 percent slopes
78:Xeric Torriorthents, nearly level
79B:Ritzville very fine sandy loam, 2 to 7 percent slopes
79D:McKay silt loam, 7 to 25 percent south slopes
80B:Ritzville silt loam, 2 to 7 percent slopes
80C:Ritzville silt loam, 7 to 12 percent slopes
80D:Ritzville silt loam, 12 to 25 percent slopes
80F:Lickskillet-Nansene association, 35 to 70 percent slopes
81D:Condon-Bakeoven complex, 2 to 20 percent slopes
81E:Ritzville silt loam, 25 to 40 percent north slopes
82B:Condon silt loam, 1 to 7 percent slopes
83D:Condon silt loam, 12 to 20 percent north slopes
85C:Condon silt loam, 7 to 12 percent slopes
85F:Rock outcrop-Xeric Torriorthents complex, 10 to 70 percent slopes
87B:Sagehill fine sandy loam, 2 to 5 percent slopes
87C:Sagehill fine sandy loam, 5 to 12 percent slopes
88B:Shano very fine sandy loam, 2 to 7 percent slopes
88C:Burke silt loam, 7 to 12 percent slopes
88C:Shano very fine sandy loam, 7 to 12 percent slopes
88D:Shano very fine sandy loam, 12 to 25 percent slopes
89B:Shano silt loam, 2 to 7 percent slopes
89C:Shano silt loam, 7 to 12 percent slopes
89D:Shano silt loam, 12 to 25 percent slopes
8B:Burbank loamy fine sand, 2 to 5 percent slopes
8C:Burbank loamy fine sand, 5 to 12 percent slopes
91A:Stanfield silt loam, 0 to 3 percent slopes
92A:Stanfield silt loam, reclaimed, 0 to 3 percent slopes
93B:Starbuck very fine sandy loam, 2 to 20 percent slopes
95B:Taunton fine sandy loam, 1 to 7 percent slopes
9:Dune land
W:Water

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties / NRCS: Soils data

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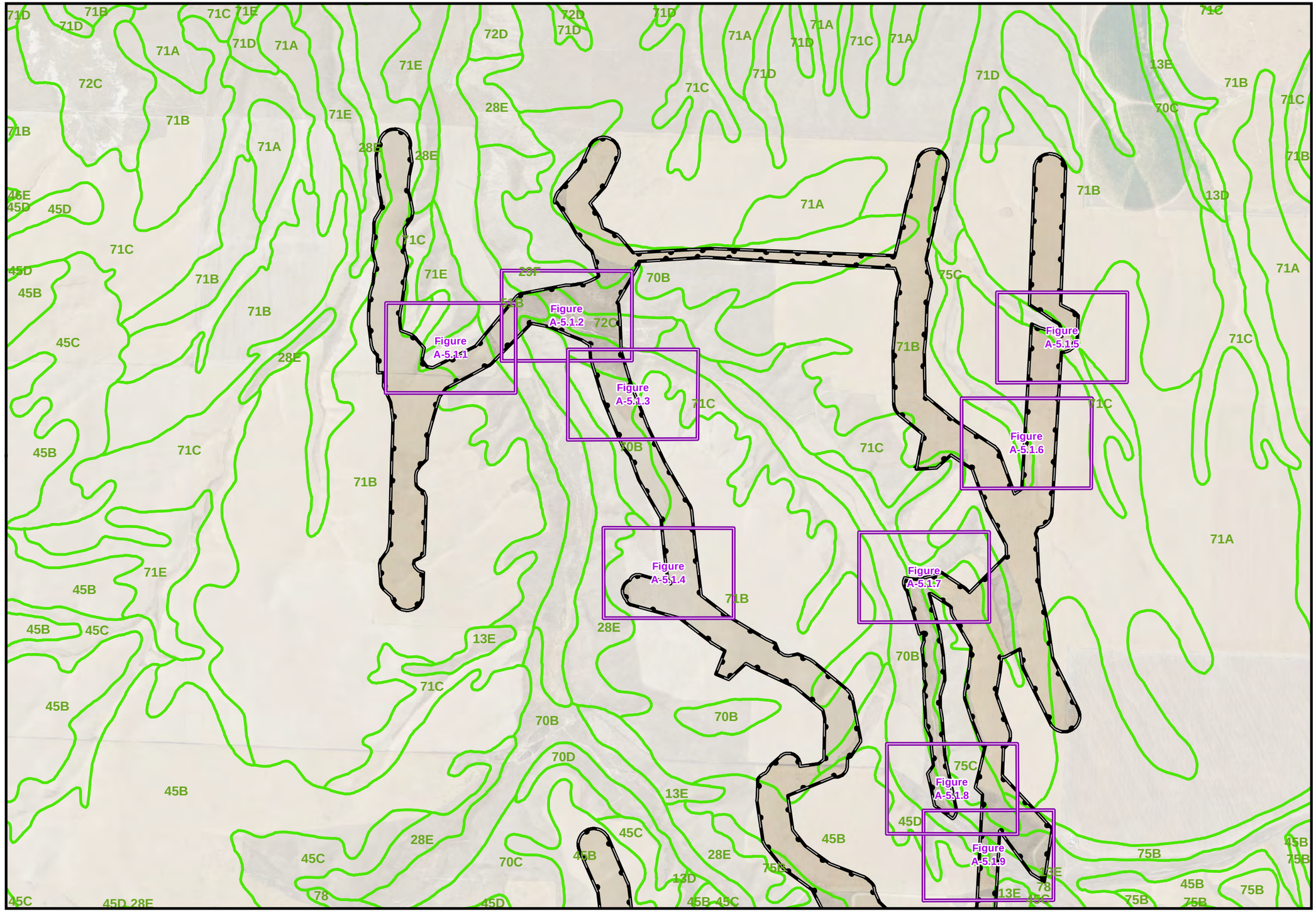
Figure A-3.1

Wheatridge Wind Energy Facility

Soils Map
Map 1 of 13

Morrow and Umatilla Counties, OR
December 2014

Wetland Delineation A-5 Map Grid
Wetland and Waters Study Area
Hydric Rating
Not Hydric



1:24,000 WGS84 UTM 11

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Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties / NRCS: Soils data

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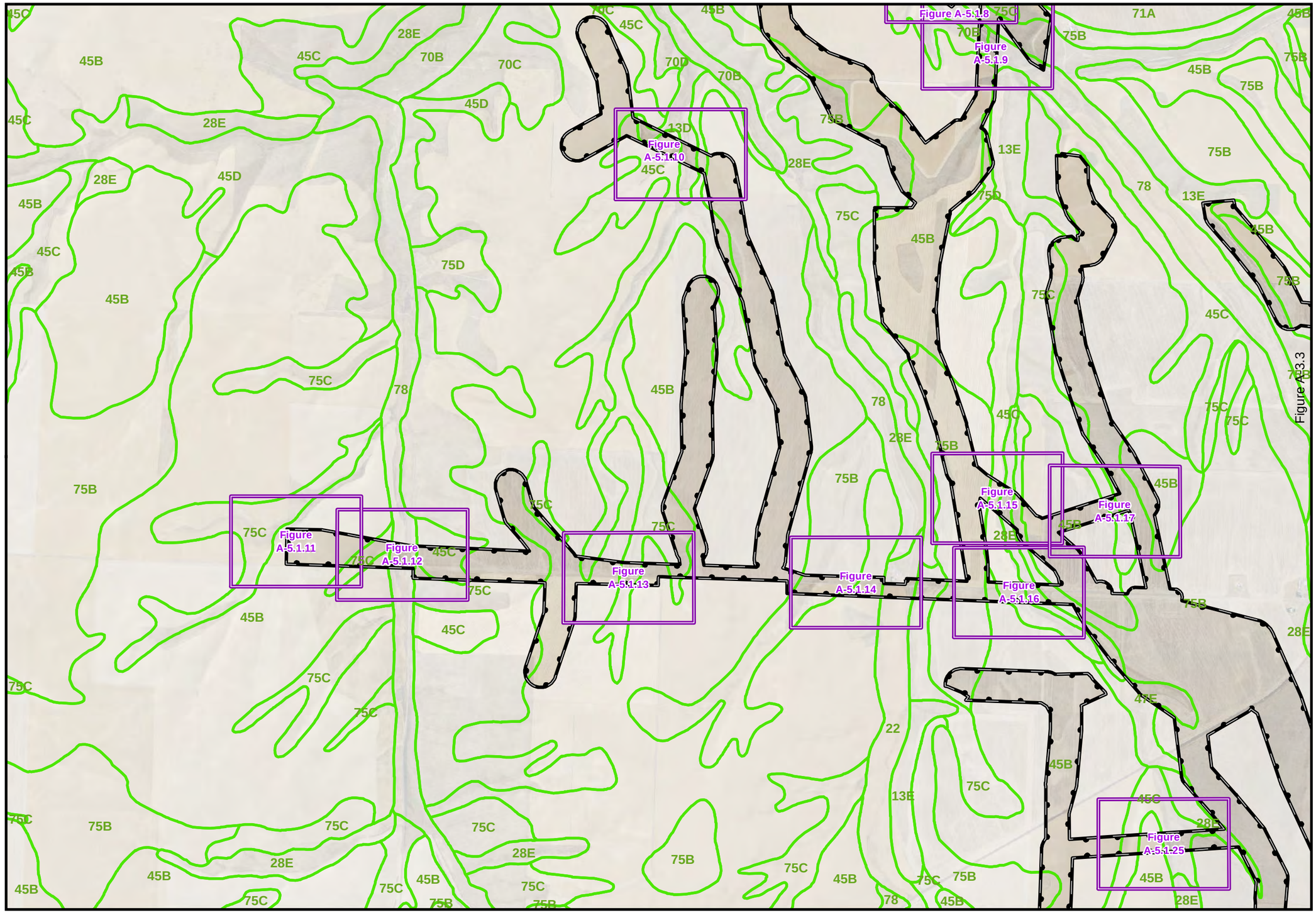

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties / NRCS: Soils data

Figure A-3.2

Wheatridge Wind Energy Facility

Soils Map
Map 2 of 13

Morrow and Umatilla Counties, OR

December 2014

Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Hydric Rating

Not Hydric

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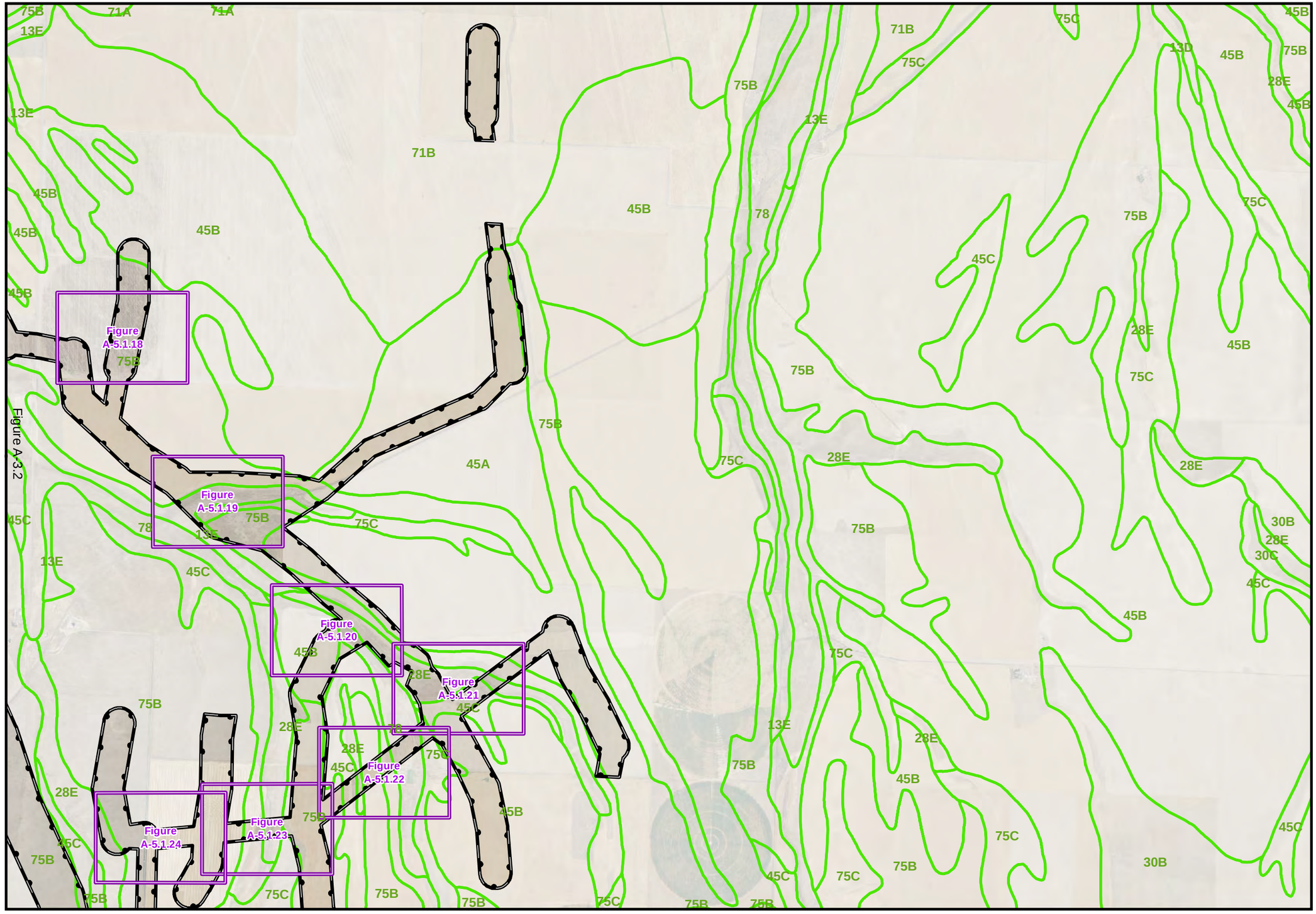

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties / NRCS: Soils data

Figure A-3.3

Wheatridge Wind Energy Facility

Soils Map
Map 3 of 13

Morrow and Umatilla Counties, OR
December 2014

Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Hydric Rating

Not Hydric

TETRA TECH

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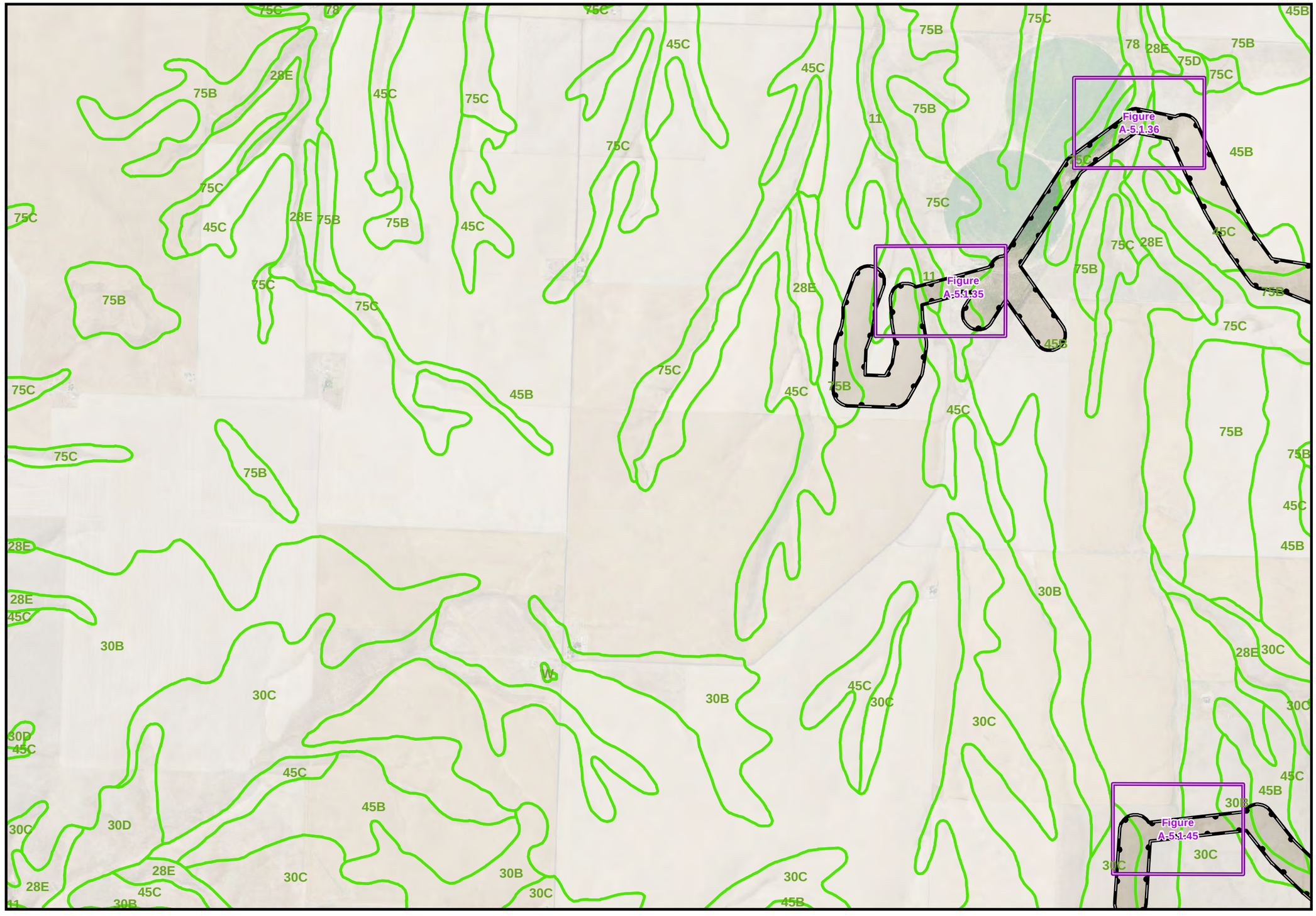

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties / NRCS: Soils data

Figure A-3.4

Wheatridge Wind Energy Facility

Soils Map
Map 4 of 13

Morrow and Umatilla Counties, OR
December 2014

Wetland Delineation A-5 Map Grid
Wetland and Waters Study Area

Hydric Rating
Not Hydric
Unknown Hydric

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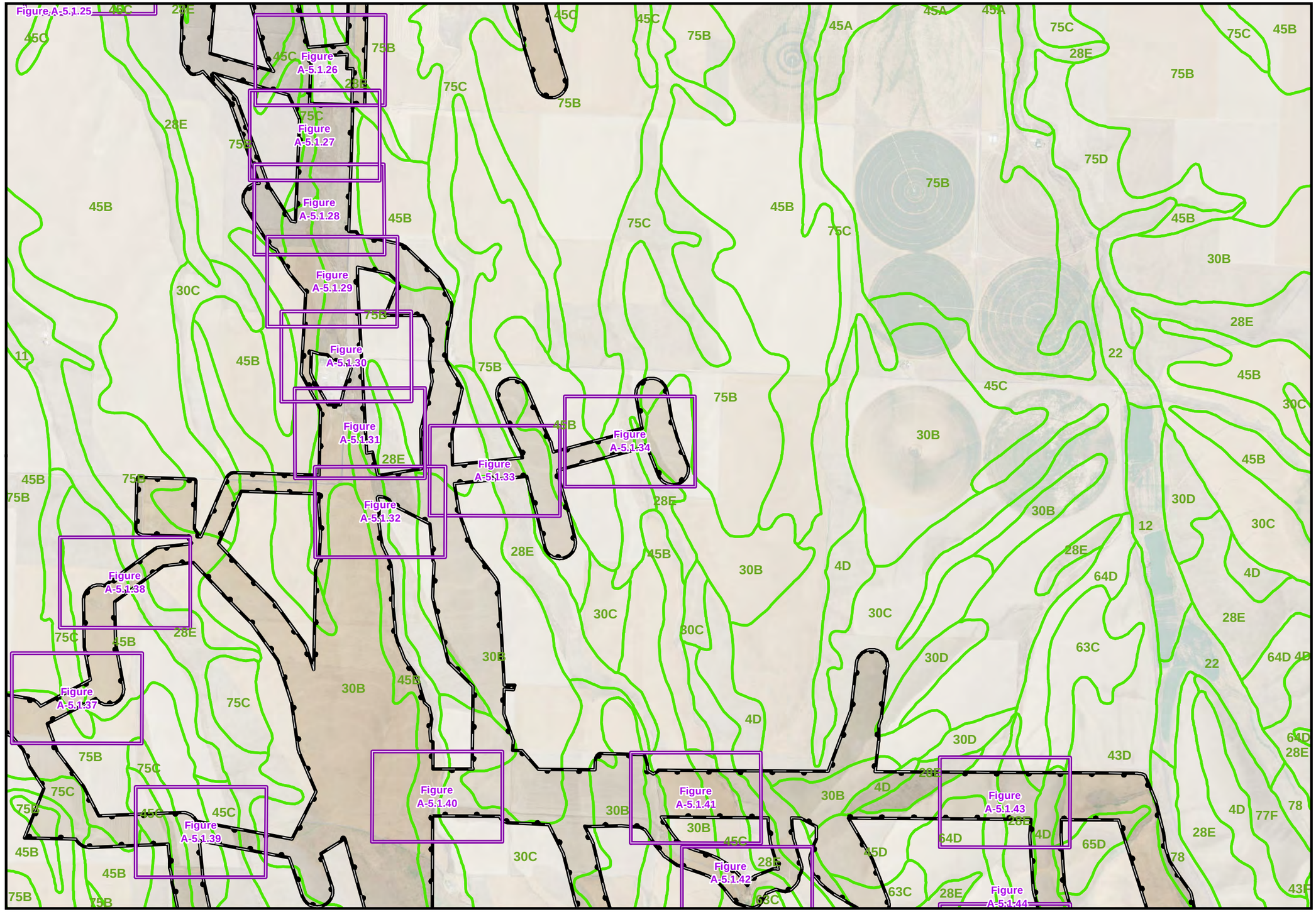

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties / NRCS: Soils data

Figure A-3.5

Wheatridge Wind Energy Facility

Soils Map
Map 5 of 13

Morrow and Umatilla Counties, OR

December 2014

Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Hydric Rating

Not Hydric

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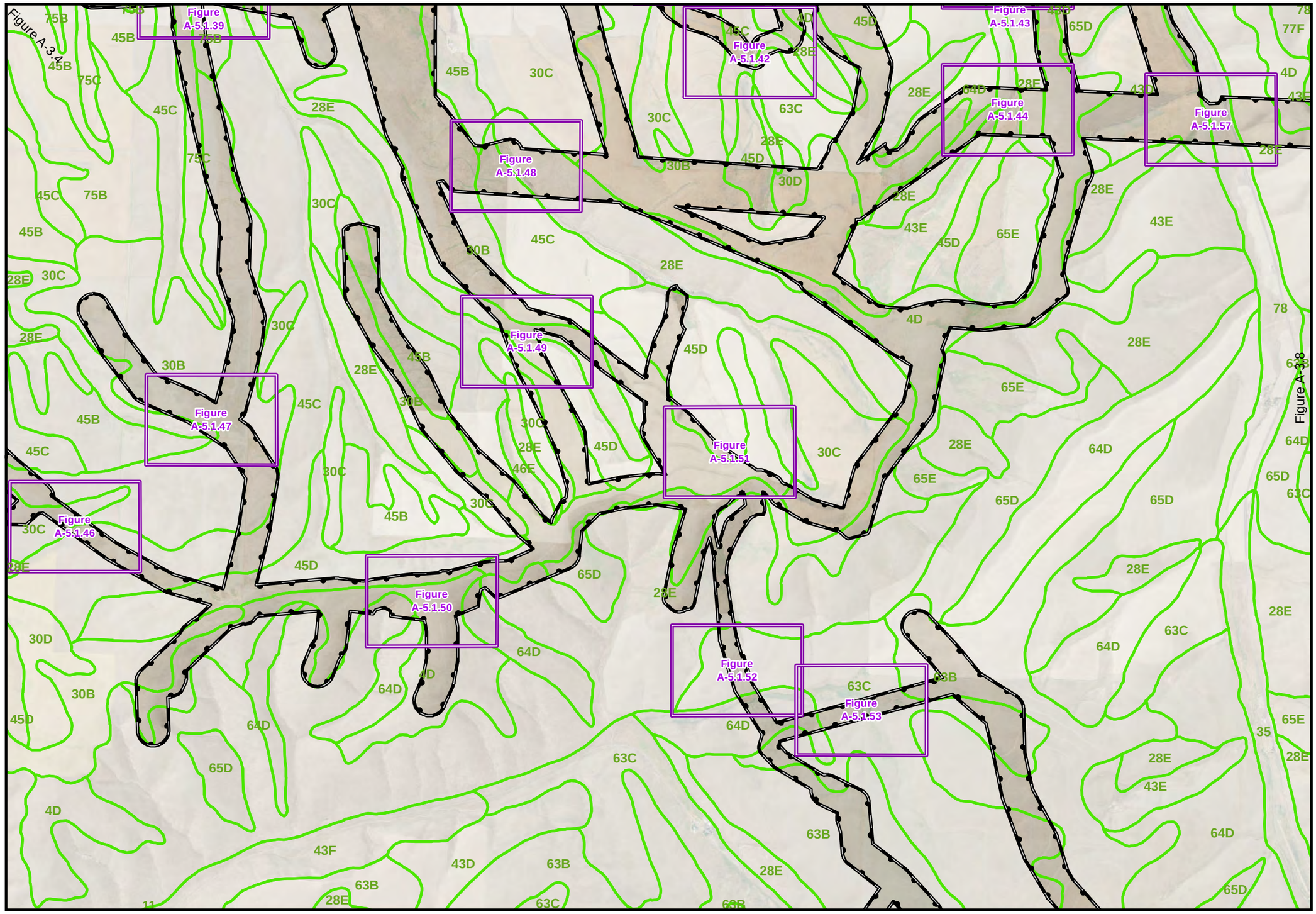

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties / NRCS: Soils data

Figure A-3.6

Wheatridge Wind Energy Facility

Soils Map
Map 6 of 13

Morrow and Umatilla Counties, OR
December 2014

Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Hydric Rating

Not Hydric

TETRA TECH

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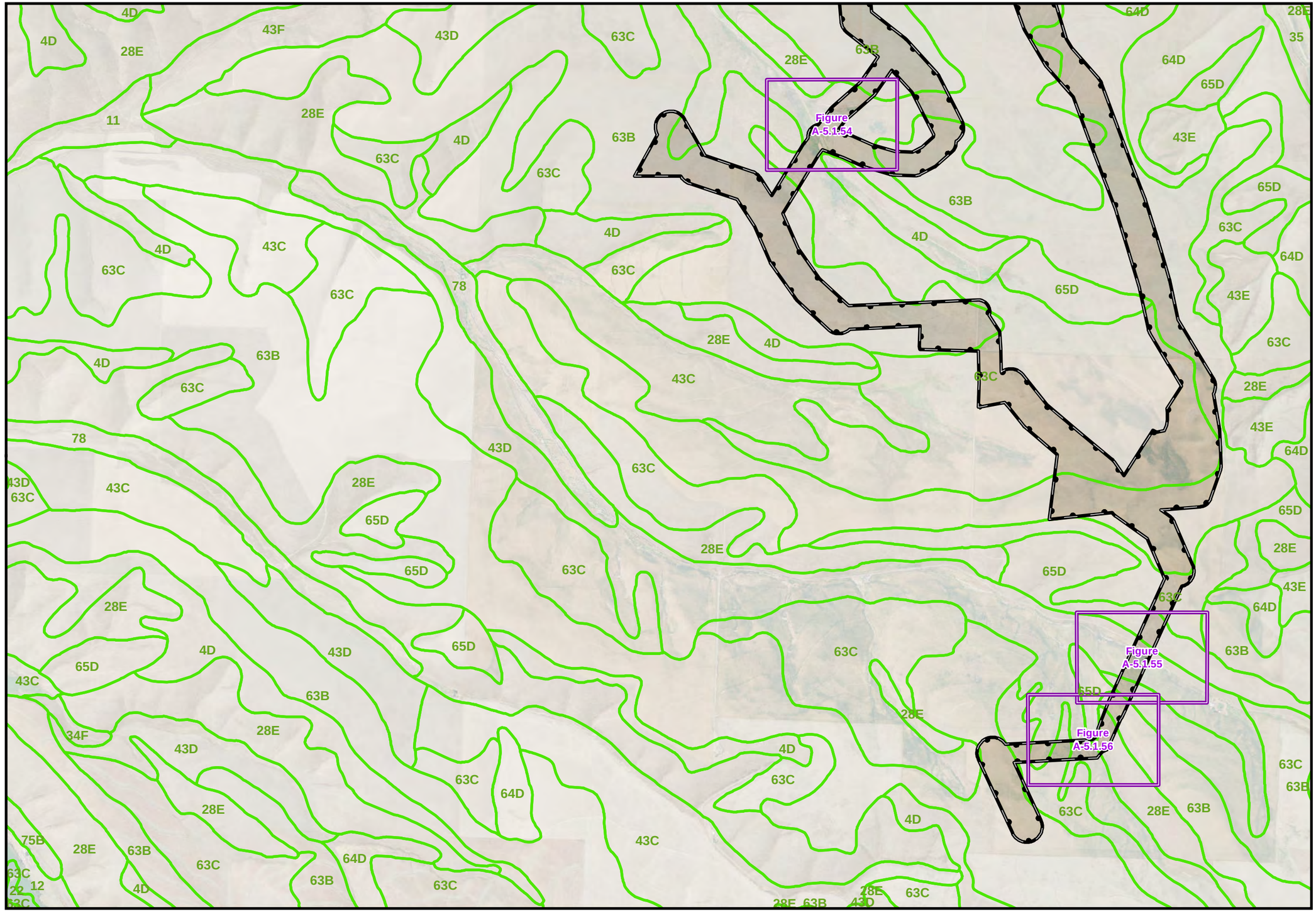

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties / NRCS: Soils data

Figure A-3.7

Wheatridge Wind Energy Facility

Soils Map
Map 7 of 13

Morrow and Umatilla Counties, OR
December 2014

Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Hydric Rating

Not Hydric

TETRA TECH

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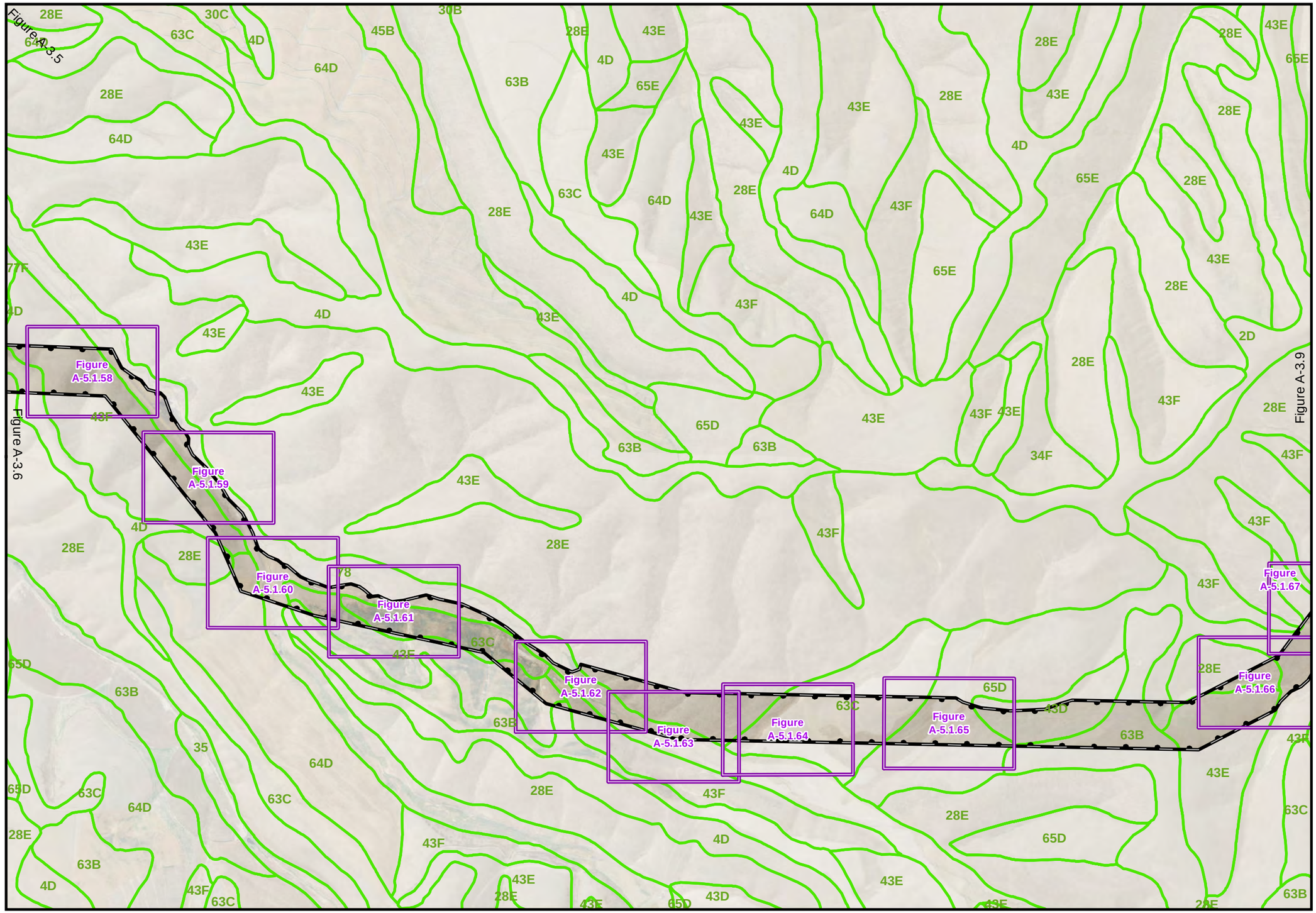

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties / NRCS: Soils data

Figure A-3.8

Wheatridge Wind Energy Facility

Soils Map
Map 8 of 13

Morrow and Umatilla Counties, OR
December 2014

Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Hydric Rating

Not Hydric

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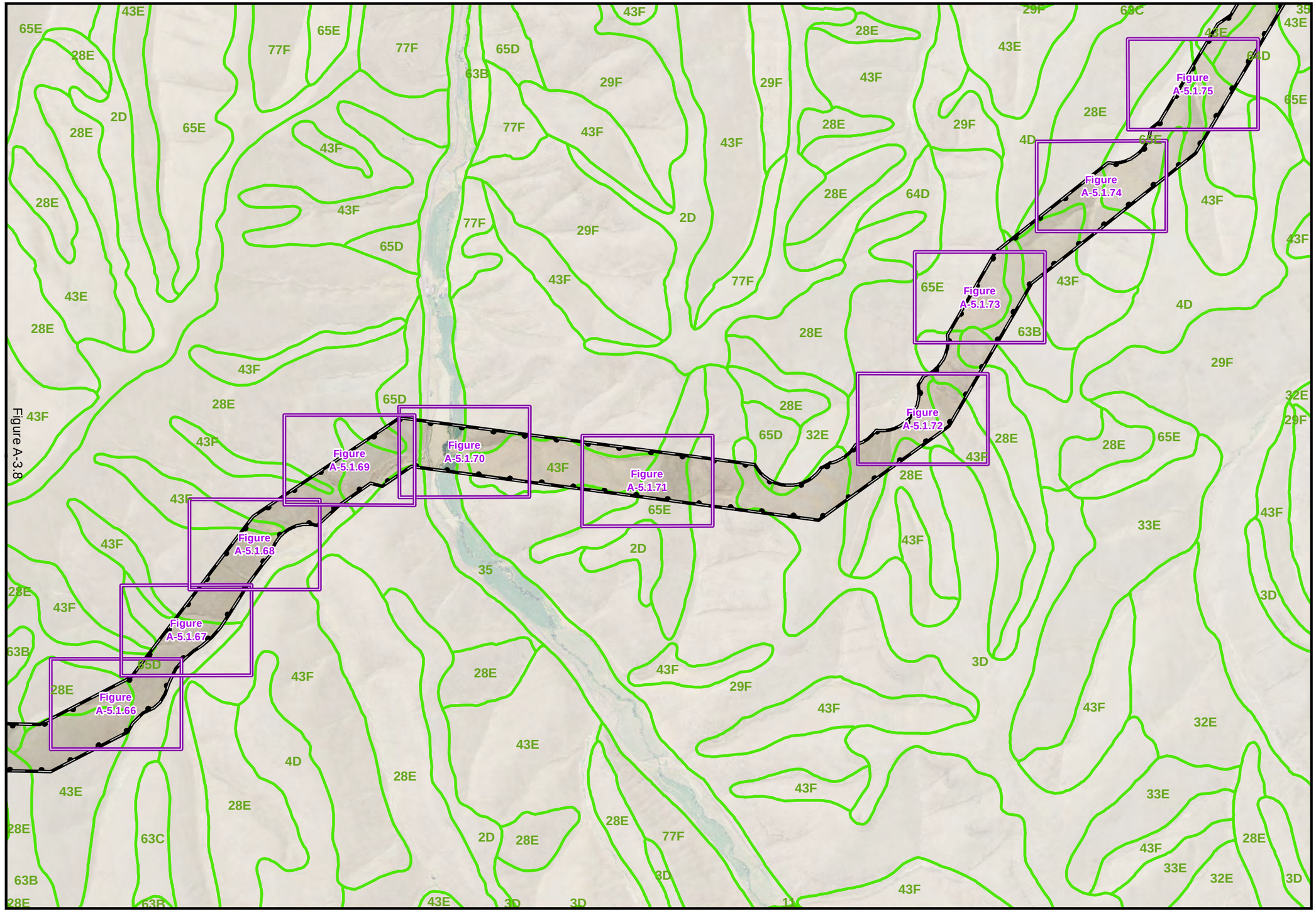

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties / NRCS: Soils data

Figure A-3.9

Wheatridge Wind Energy Facility

Soils Map
Map 9 of 13

Morrow and Umatilla Counties, OR

December 2014

Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Hydric Rating

Not Hydric

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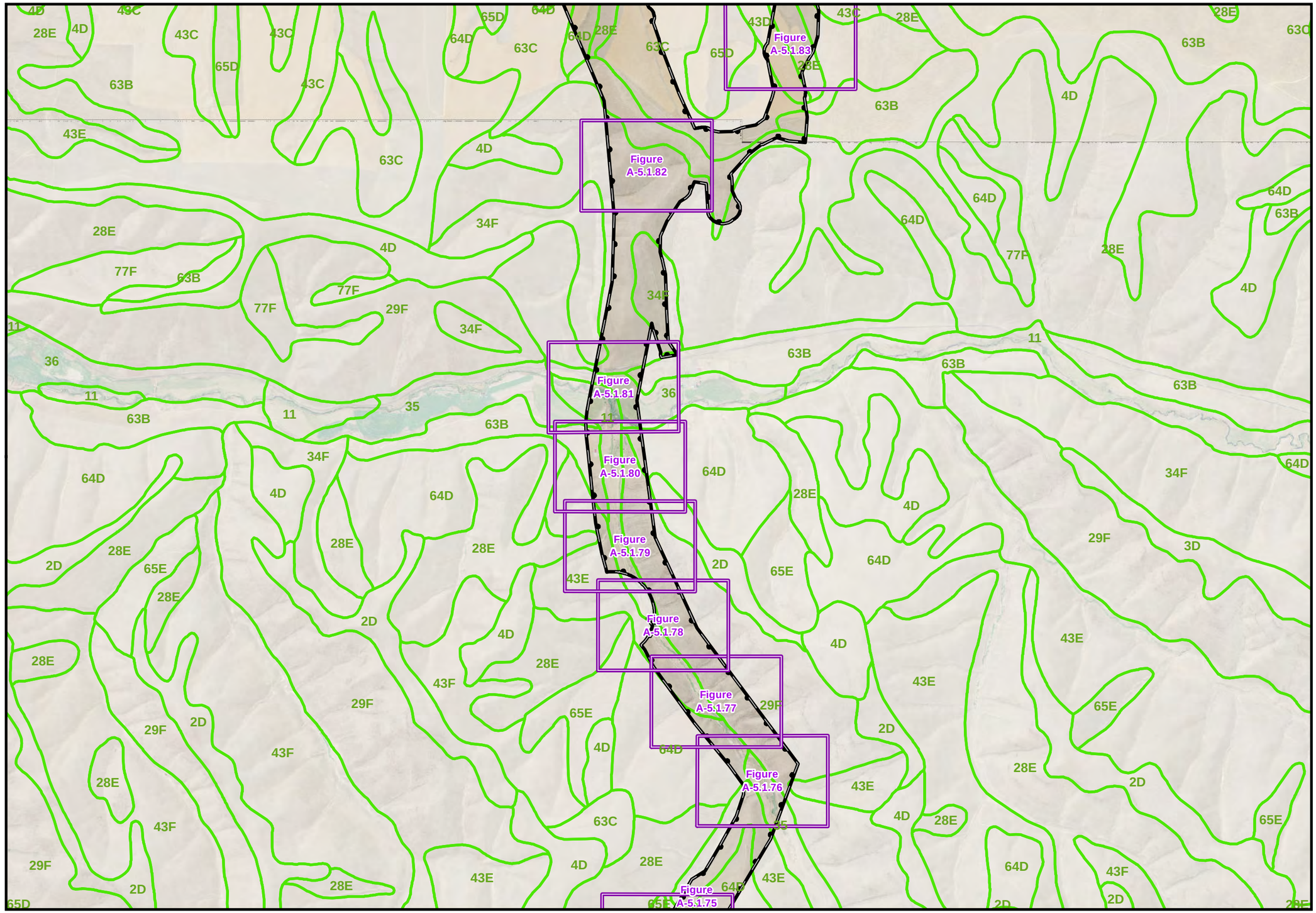

Figure A-3.10

Wheatridge Wind Energy Facility

Soils Map
Map 10 of 13

Morrow and Umatilla Counties, OR
December 2014

Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Hydric Rating

Not Hydric

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties / NRCS: Soils data

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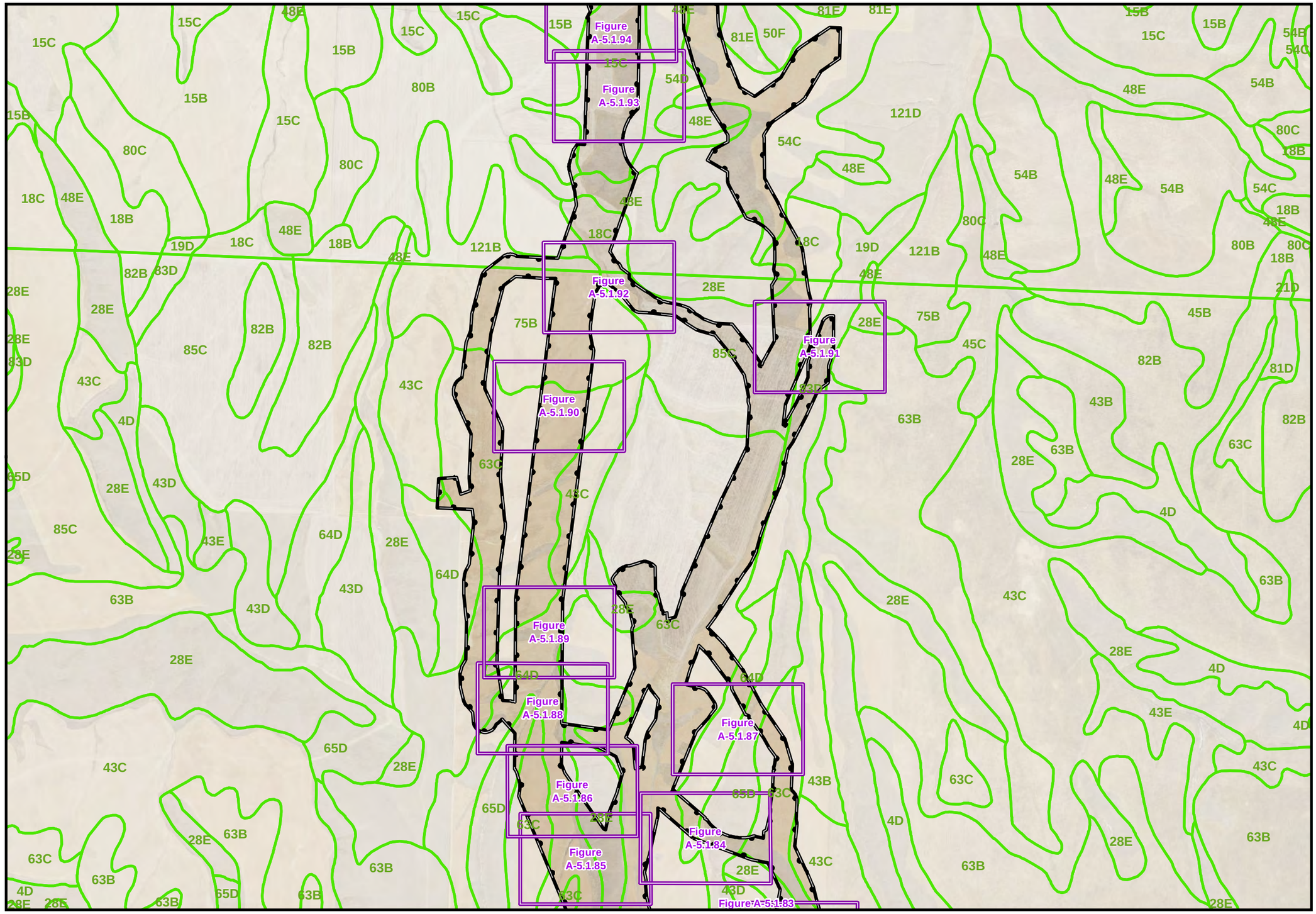

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties / NRCS: Soils data

Figure A-3.11

Wheatridge Wind Energy Facility

Soils Map
Map 11 of 13

Morrow and Umatilla Counties, OR
December 2014

Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Hydric Rating

Not Hydric

TETRA TECH

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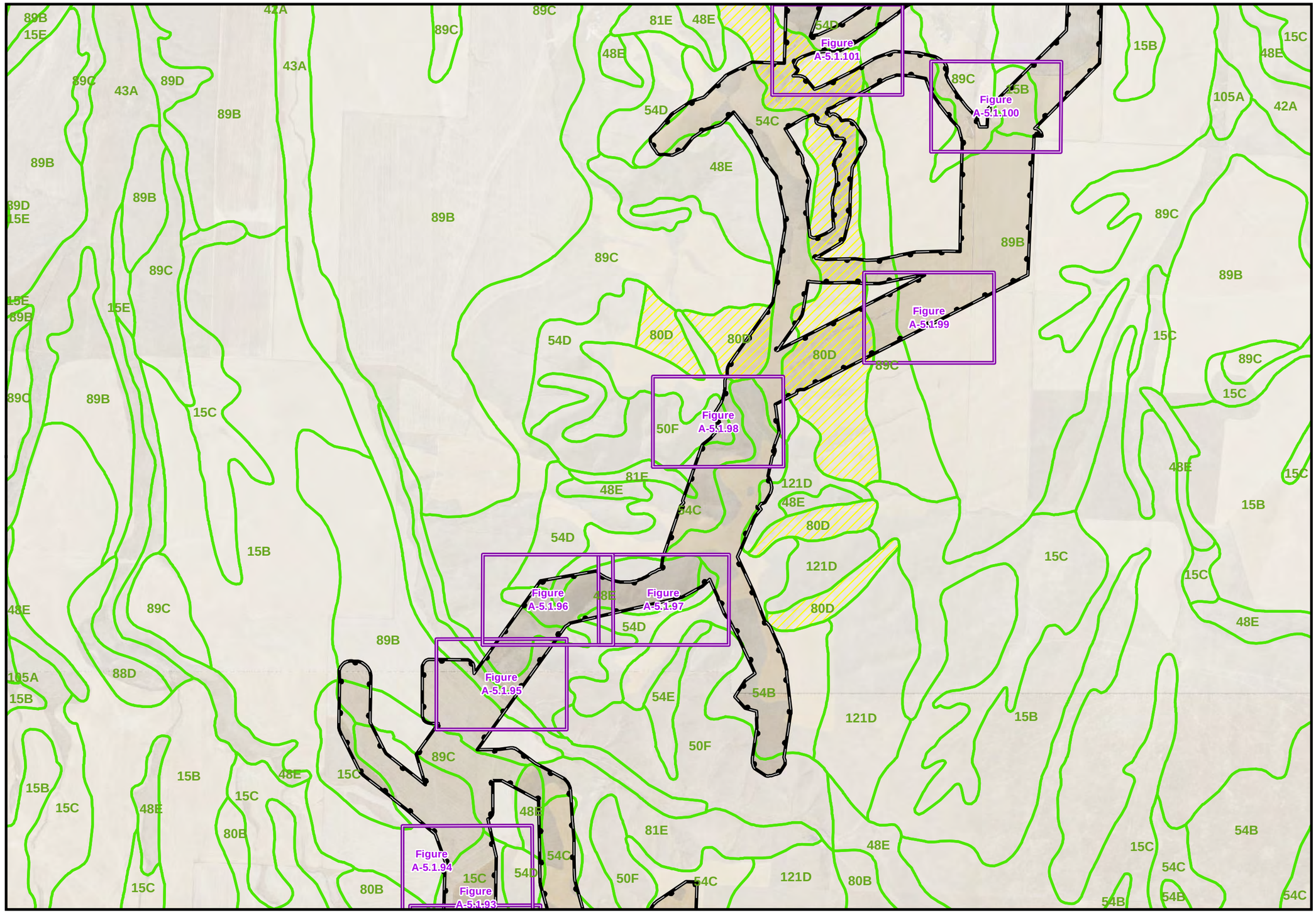

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties / NRCS: Soils data

Figure A-3.12

Wheatridge Wind Energy Facility

Soils Map
Map 12 of 13

Morrow and Umatilla Counties, OR
December 2014

Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Hydric Rating

Not Hydric

Partially Hydric

TETRA TECH

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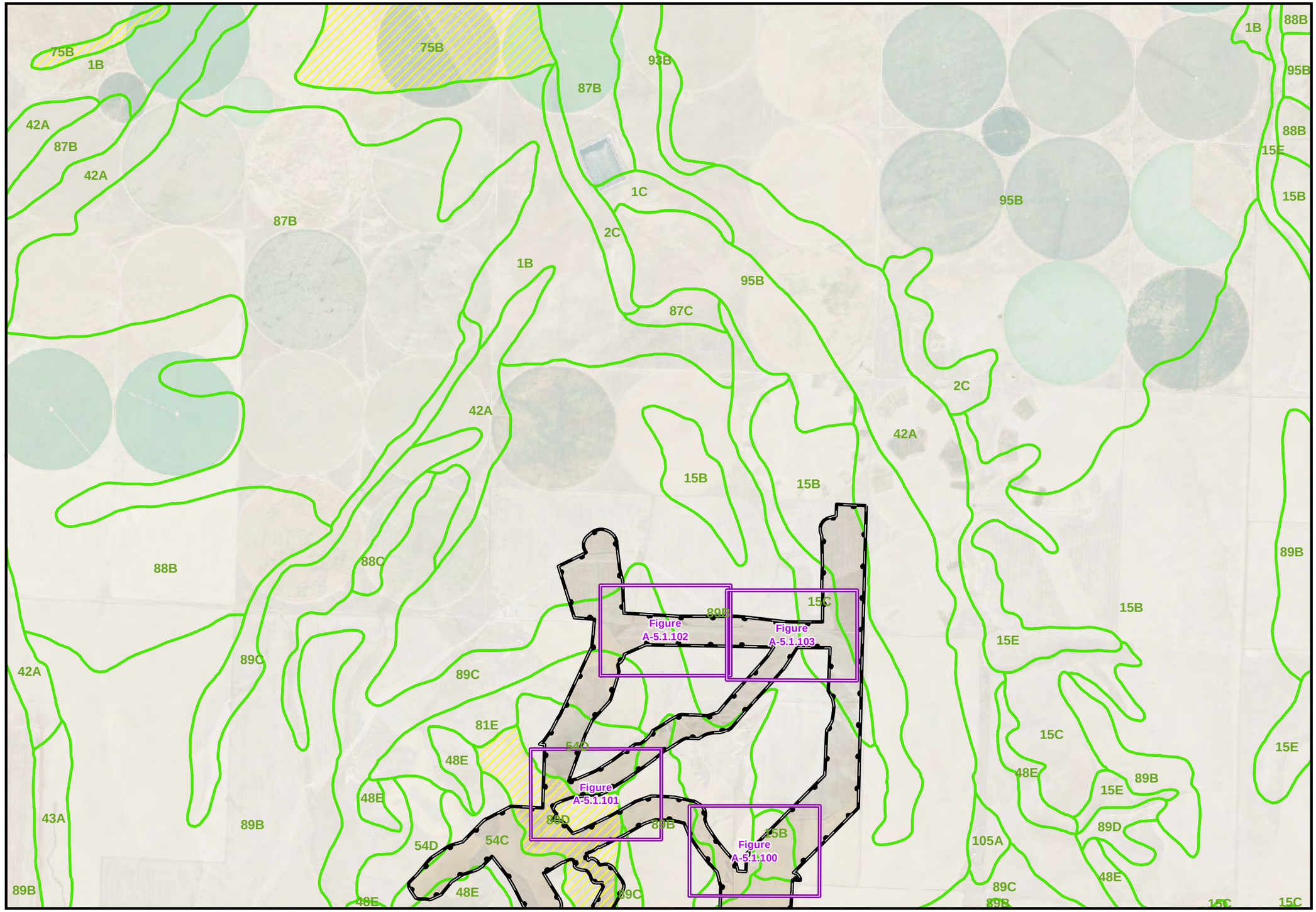

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties / NRCS: Soils data

Figure A-3.13

Wheatridge Wind Energy Facility

Soils Map
Map 13 of 13

Morrow and Umatilla Counties, OR
December 2014

Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Hydric Rating

Not Hydric

Partially Hydric

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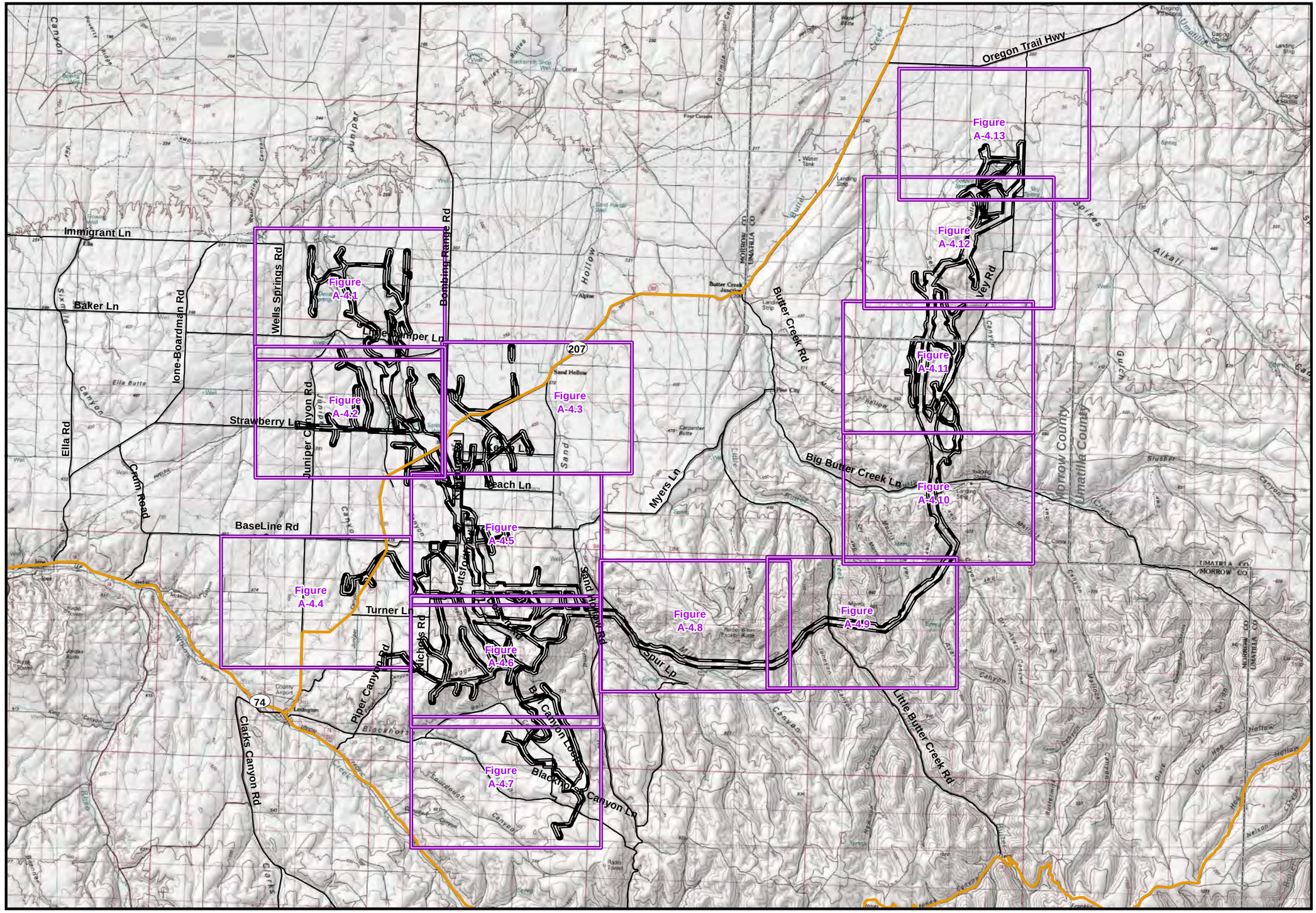

A-4 Index Map

Wheatridge Wind Energy Facility

National Wetlands Inventory Index Map

Morrow and Umatilla Counties, OR

December 2014

- Map Grid
- Wetland and Waters Study Area
- State Highway
- Local Road
- County Boundary

1:165,000 WGS84 UTM 11

0 0.5 1 2 3 4 5 6 7 8 9 10 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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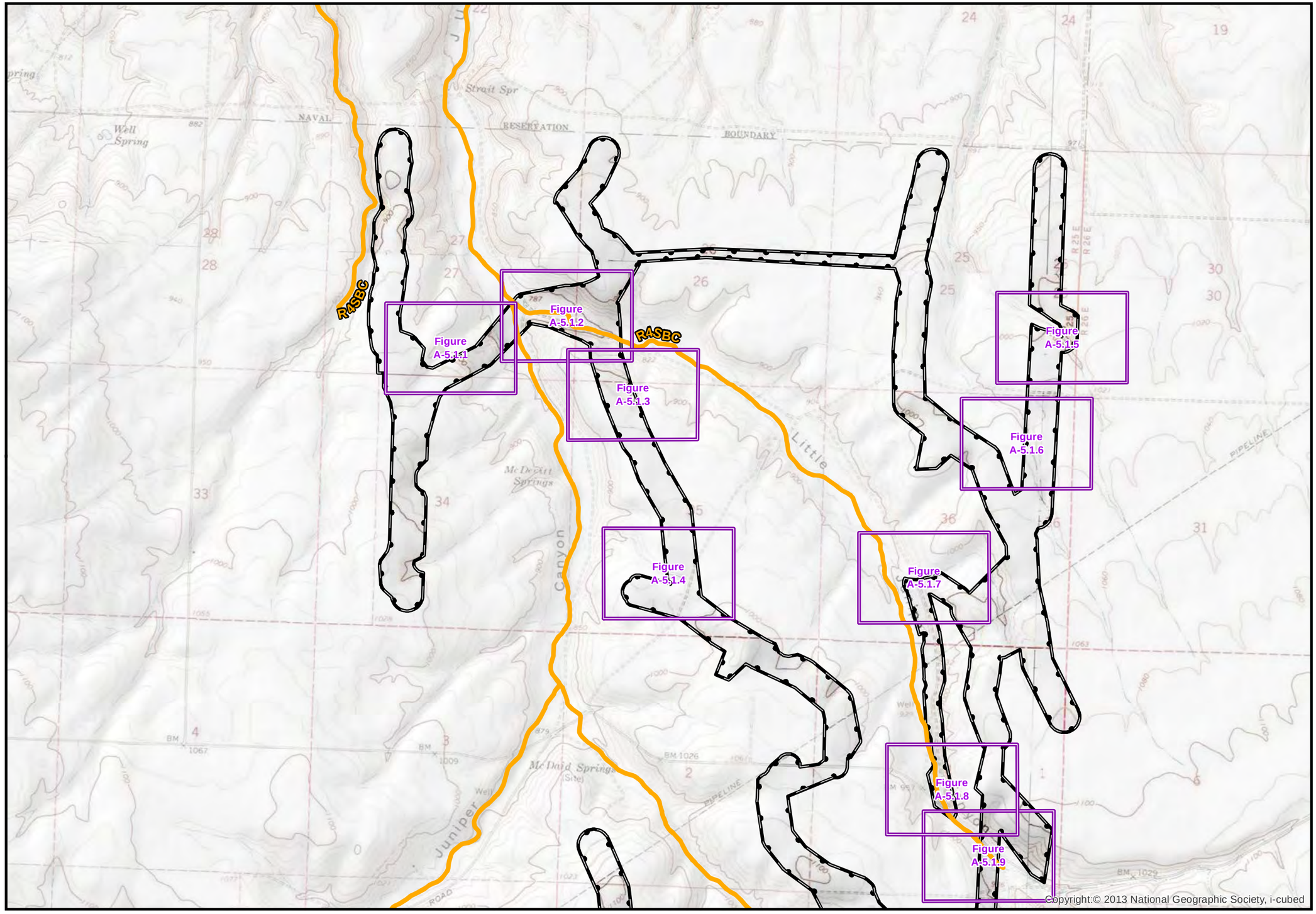

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads. topographic maps / USFWS: NWI

Figure A-4.1

Wheatridge Wind Energy Facility

National Wetland Inventory
Map 1 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area

NWI Wetland

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

TETRA TECH

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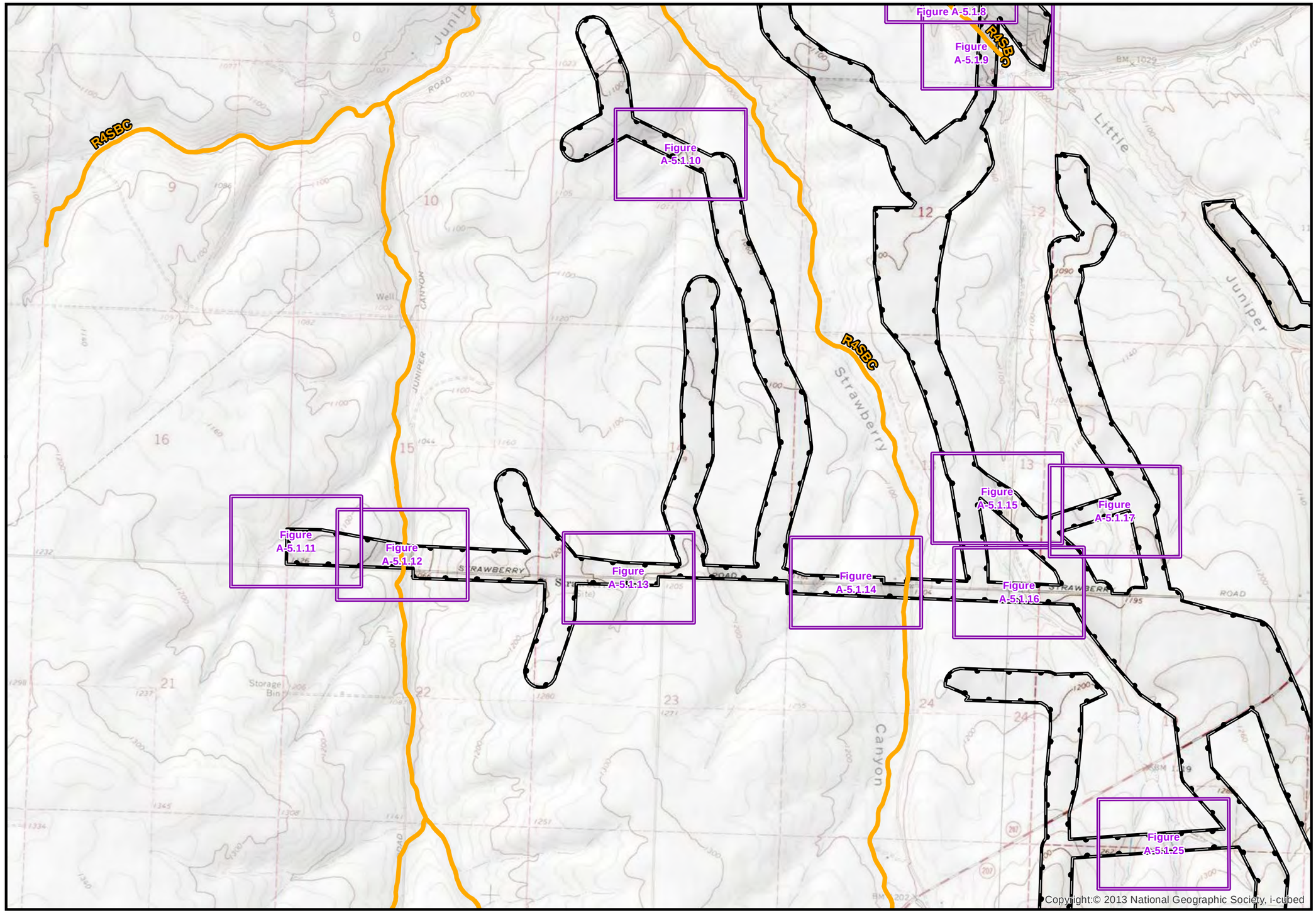

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads. topographic maps / USFWS: NWI

Figure A-4.2

Wheatridge Wind Energy Facility

National Wetland Inventory
Map 2 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area

NWI Wetland

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

TETRA TECH

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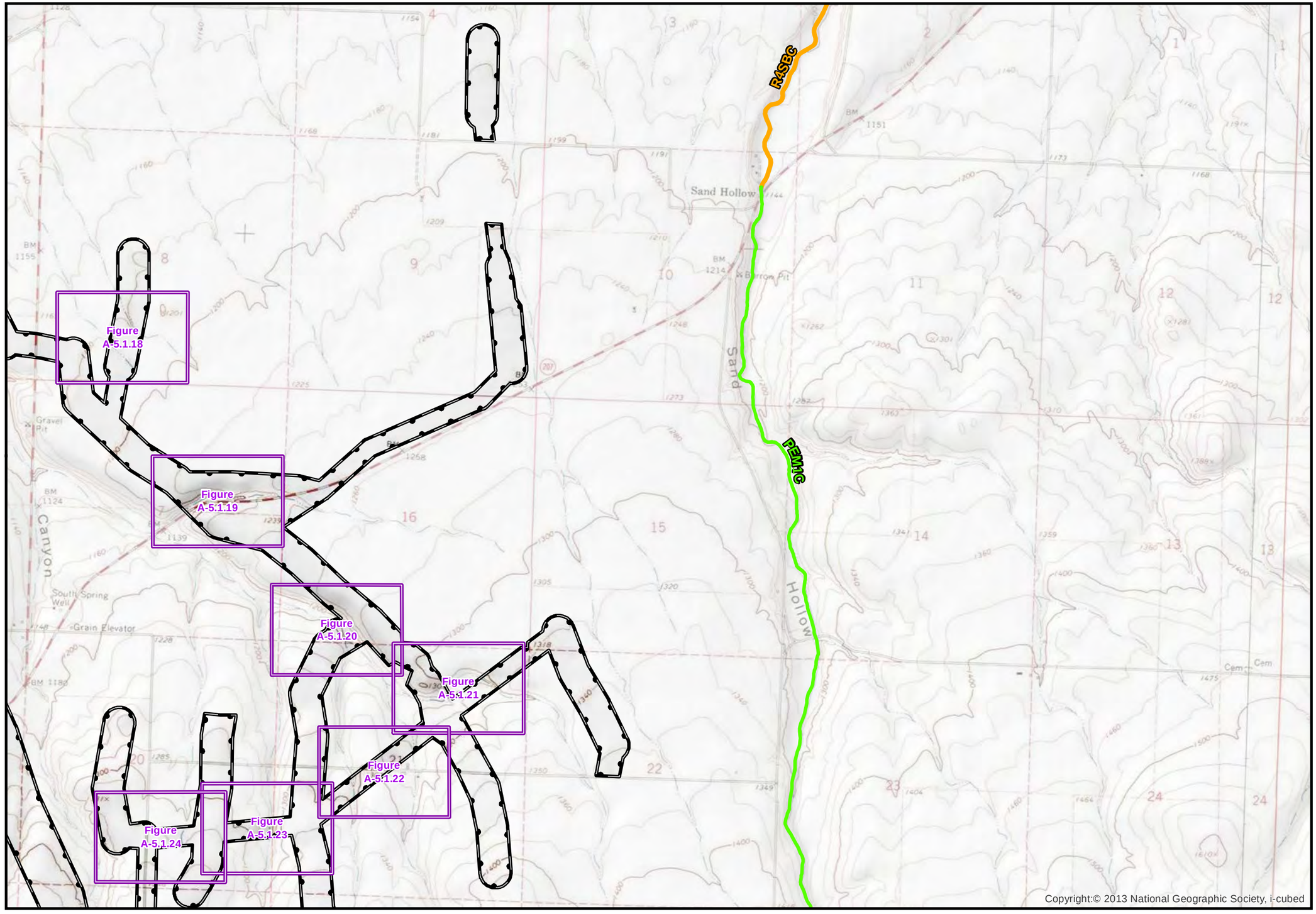

Figure A-4.3

Wheatridge Wind Energy Facility

National Wetland Inventory
Map 3 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area

NWI Wetland

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

1:24,000 **WGS84 UTM 11**

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads. topographic maps / USFWS: NWI

TETRA TECH

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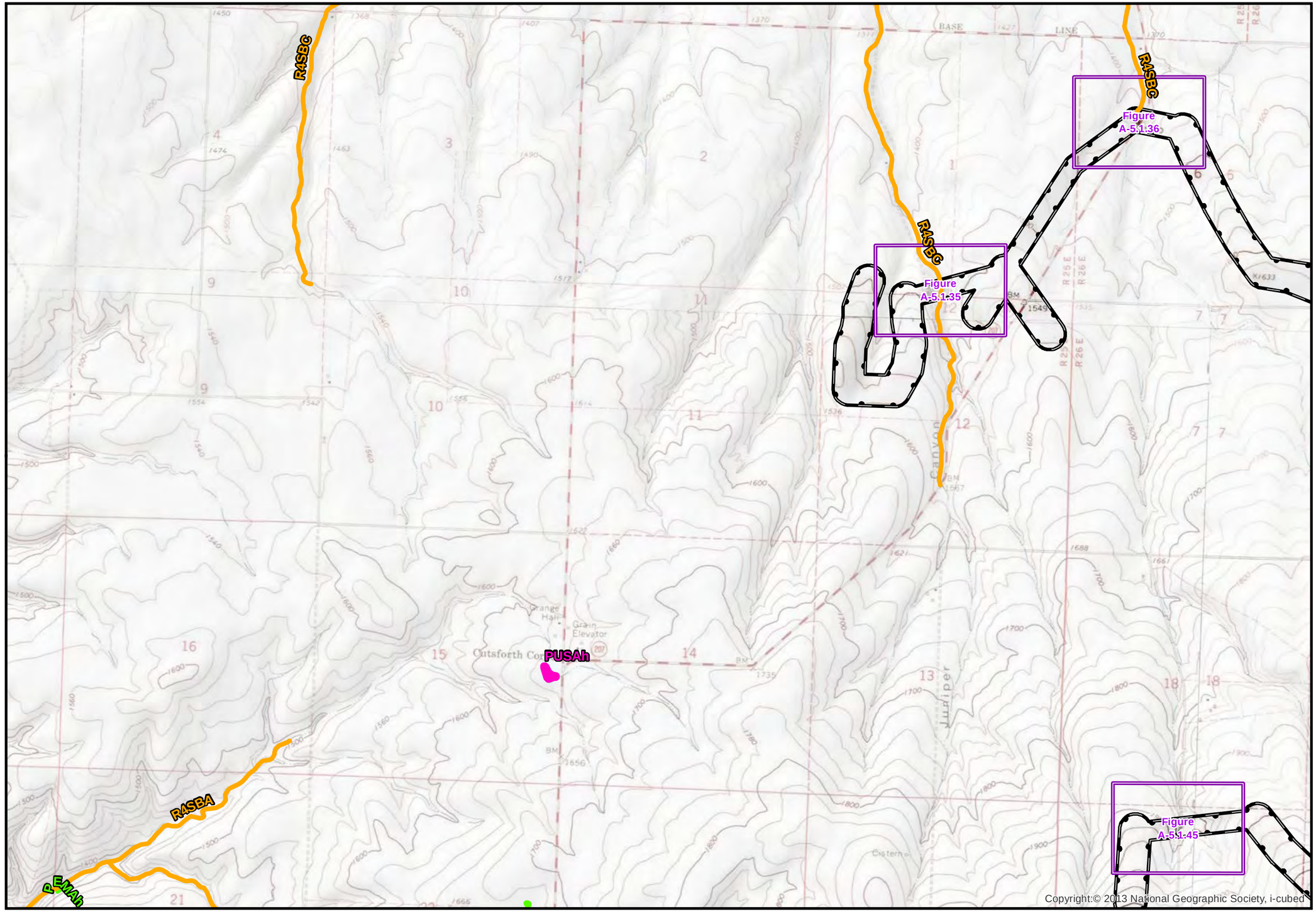

Figure A-4.4

Wheatridge Wind Energy Facility

National Wetland Inventory
Map 4 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area

NWI Wetland

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

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads. topographic maps / USFWS: NWI

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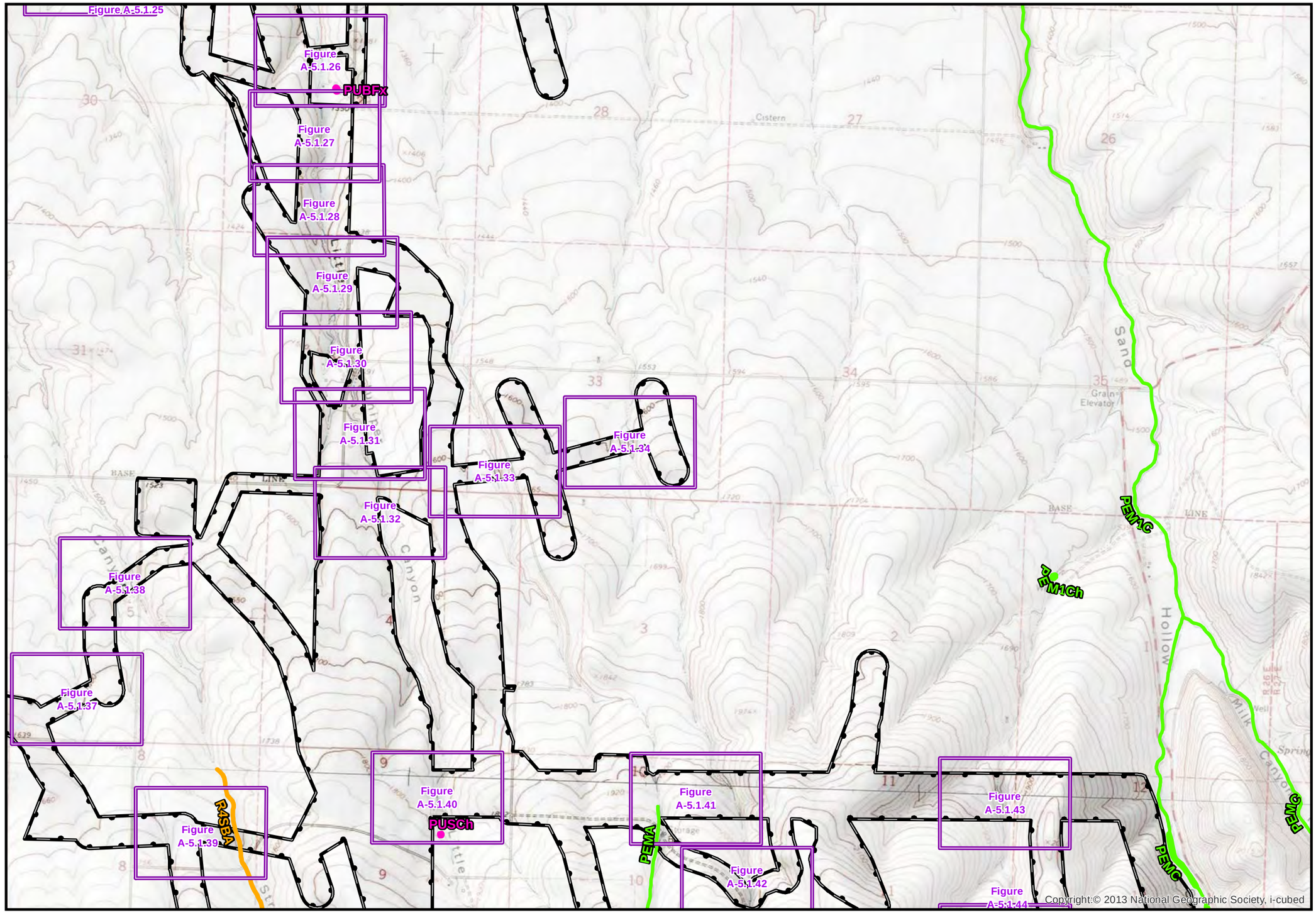

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads. topographic maps / USFWS: NWI

Figure A-4.5

Wheatridge Wind Energy Facility

National Wetland Inventory
Map 5 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area

NWI Wetland

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

TETRA TECH

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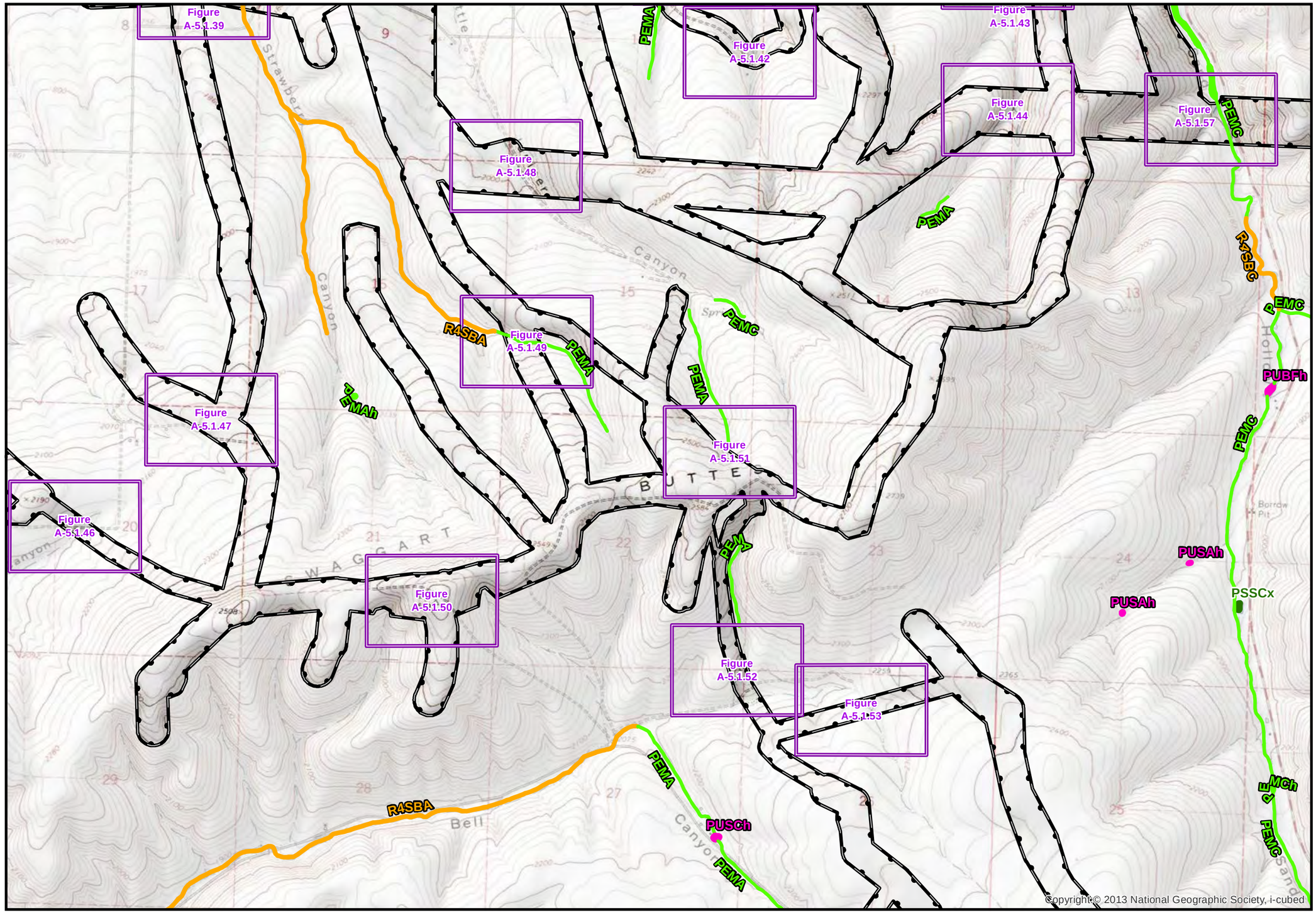

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads. topographic maps / USFWS: NWI

Figure A-4.6

Wheatridge Wind Energy Facility

National Wetland Inventory
Map 6 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area

NWI Wetland

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

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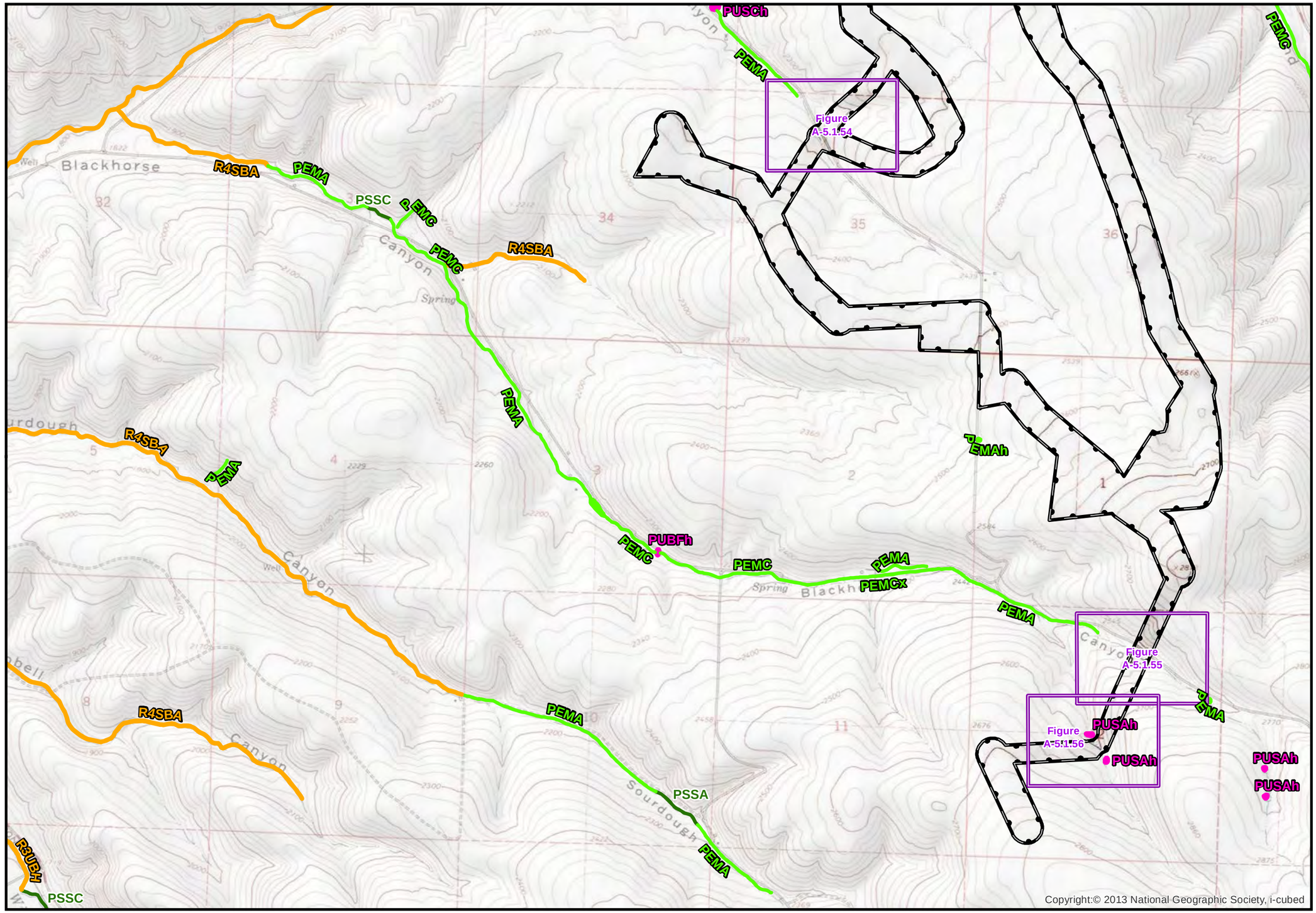

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads. topographic maps / USFWS: NWI

Figure A-4.7

Wheatridge Wind Energy Facility

National Wetland Inventory
Map 7 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area

NWI Wetland

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

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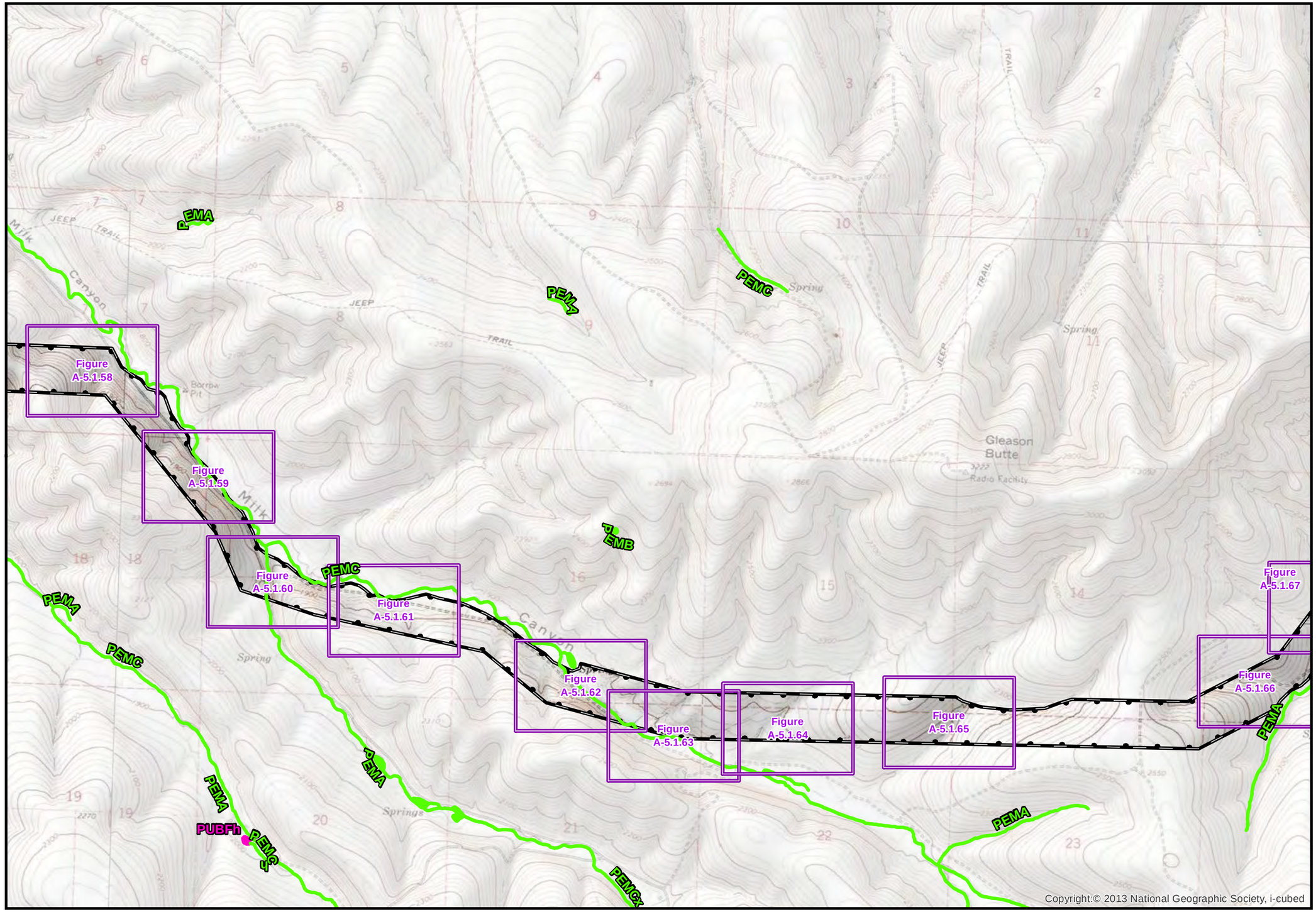

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads. topographic maps / USFWS: NWI

Figure A-4.8

Wheatridge Wind Energy Facility

National Wetland Inventory
Map 8 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area

NWI Wetland

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

TETRA TECH

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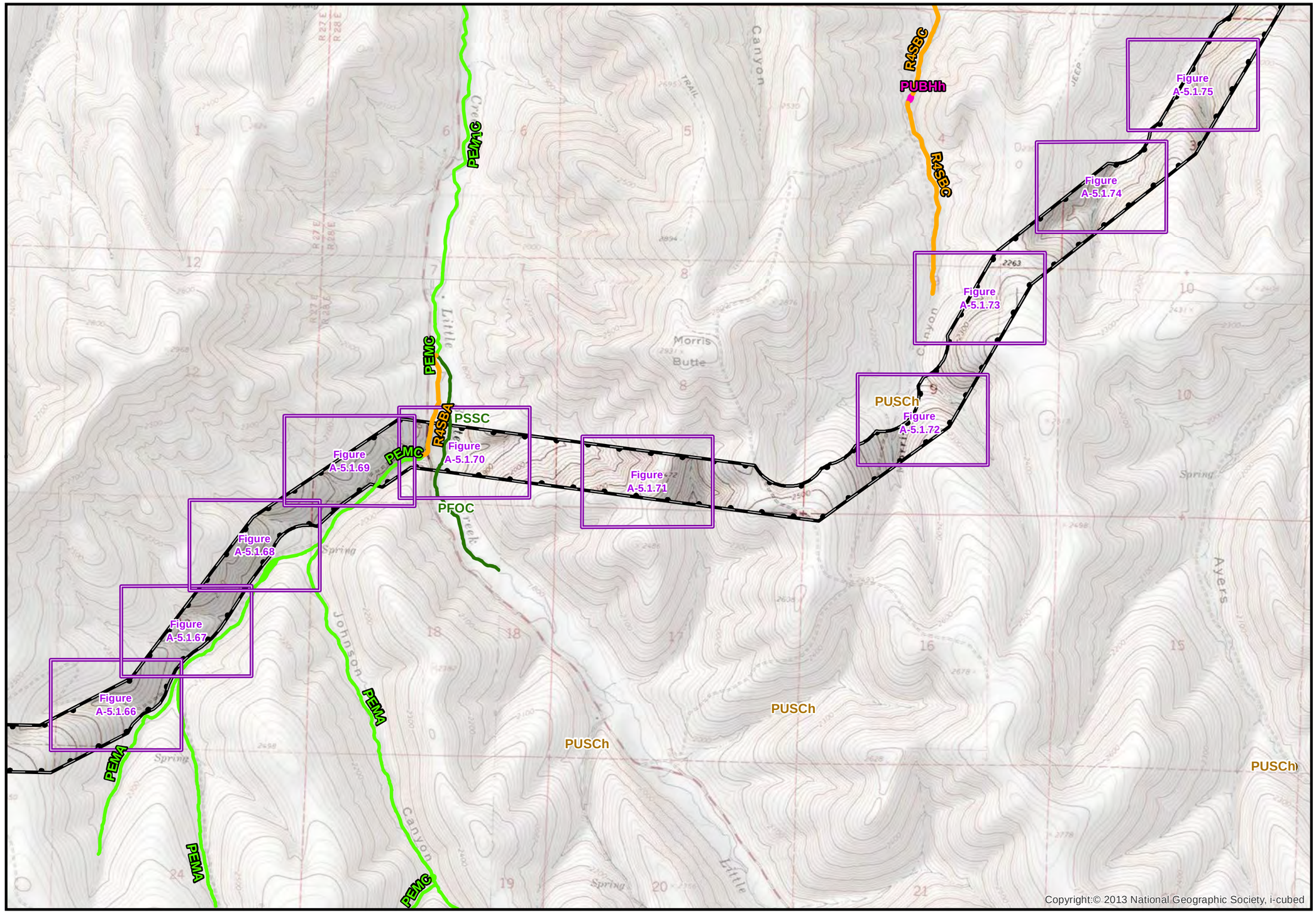

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads. topographic maps / USFWS: NWI

Figure A-4.9

Wheatridge Wind Energy Facility

National Wetland Inventory Map 9 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area

NWI Wetland

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

TETRA TECH

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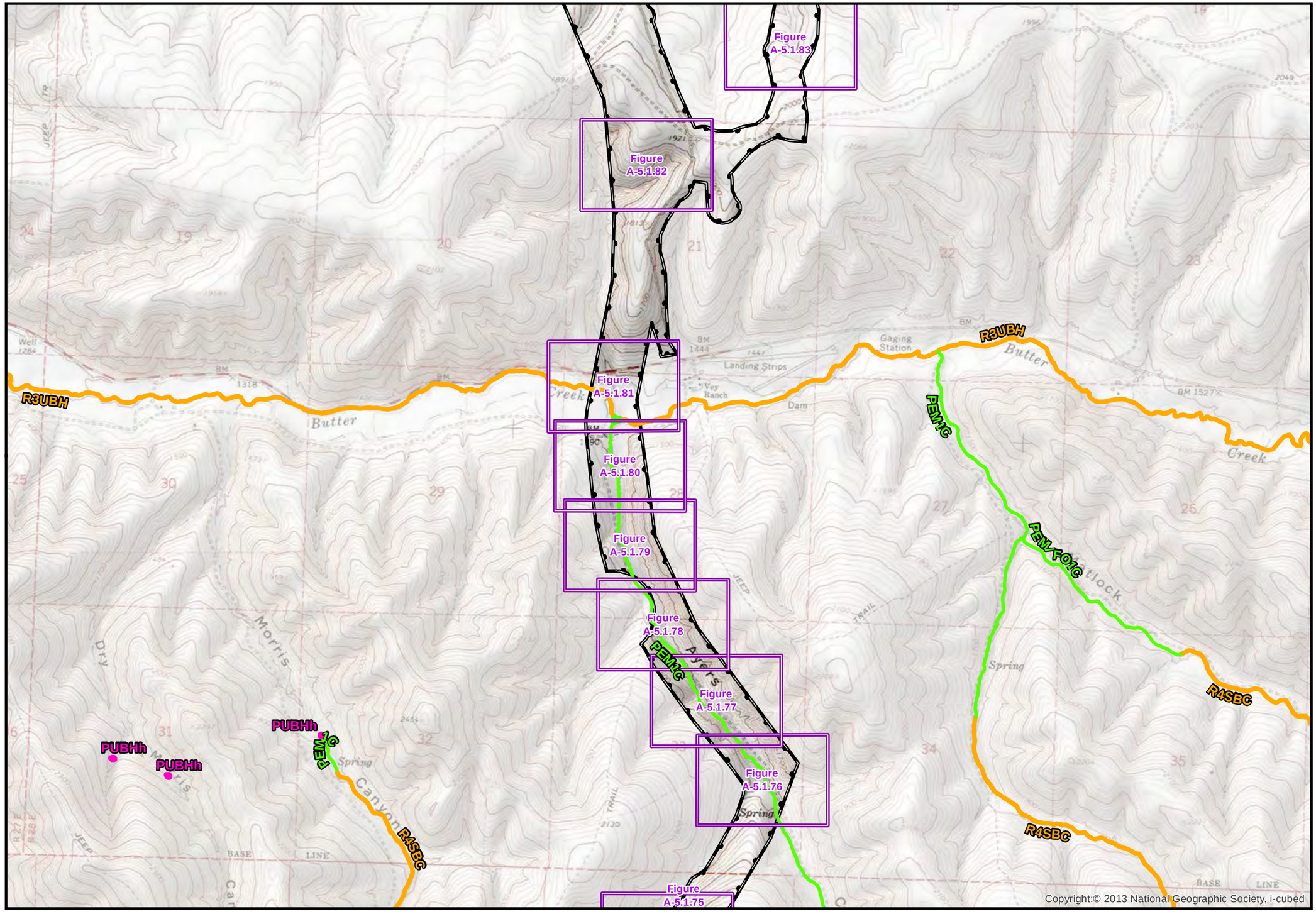

Figure A-4.10

Wheatridge Wind Energy Facility

National Wetland Inventory
Map 10 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area

NWI Wetland

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

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads. topographic maps / USFWS: NWI

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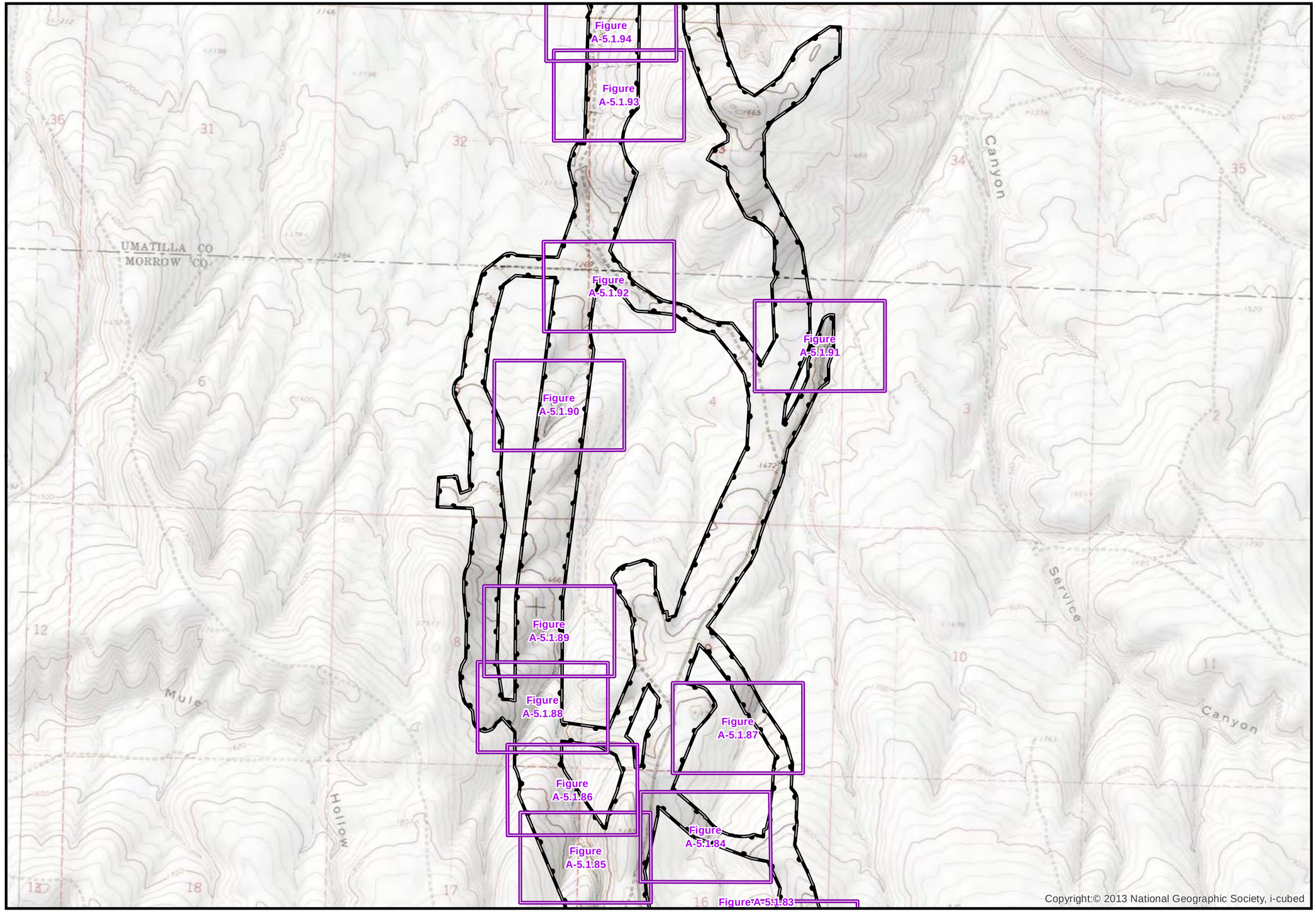

1:24,000 WGS84 UTM 11

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads. topographic maps / USFWS: NWI

Figure A-4.11

Wheatridge Wind Energy Facility

National Wetland Inventory
Map 11 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area

NWI Wetland

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

TETRA TECH

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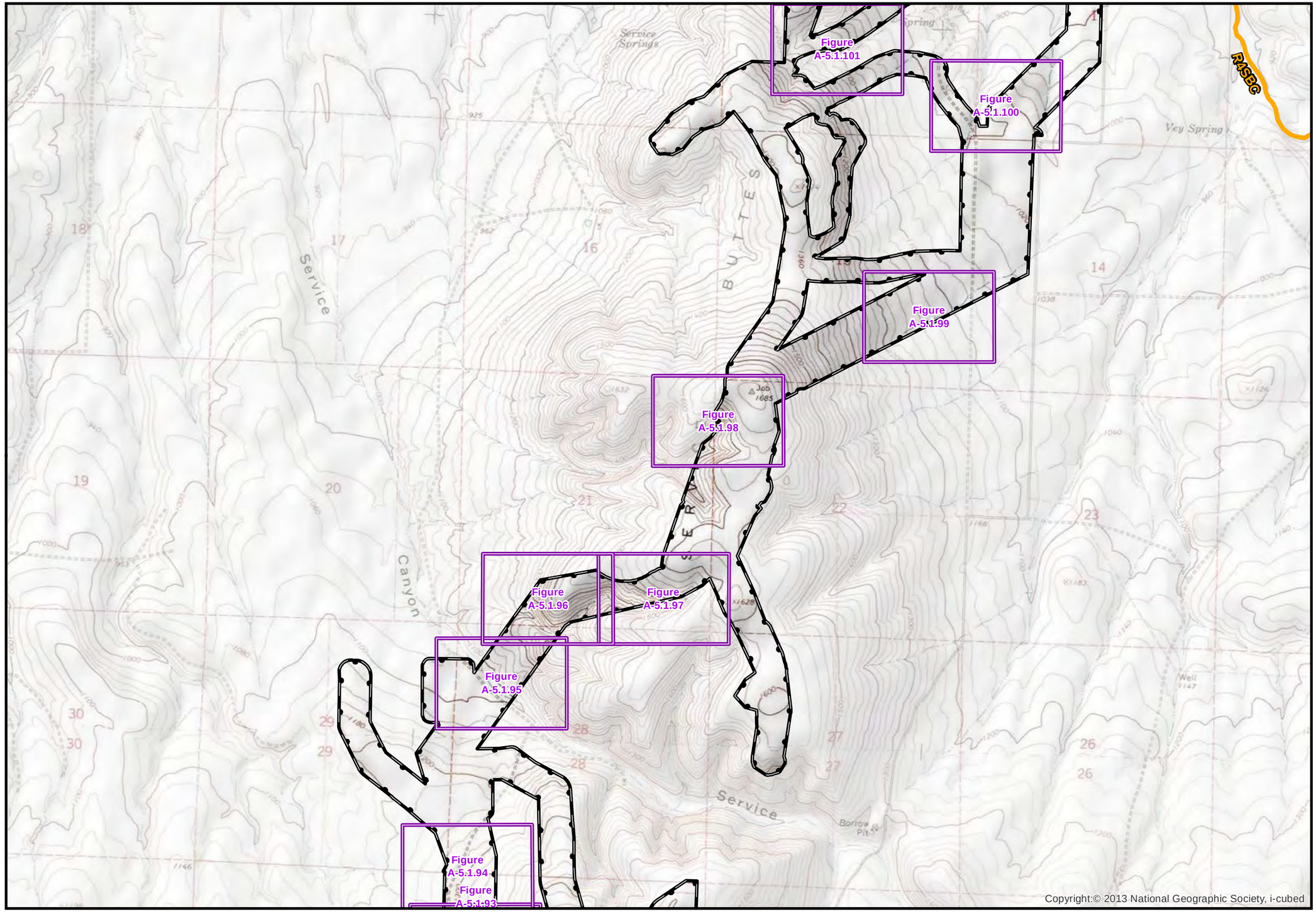

Figure A-4.12

Wheatridge Wind Energy Facility

National Wetland Inventory
Map 12 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area

NWI Wetland

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

1:24,000 **WGS84 UTM 11**

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads. topographic maps / USFWS: NWI

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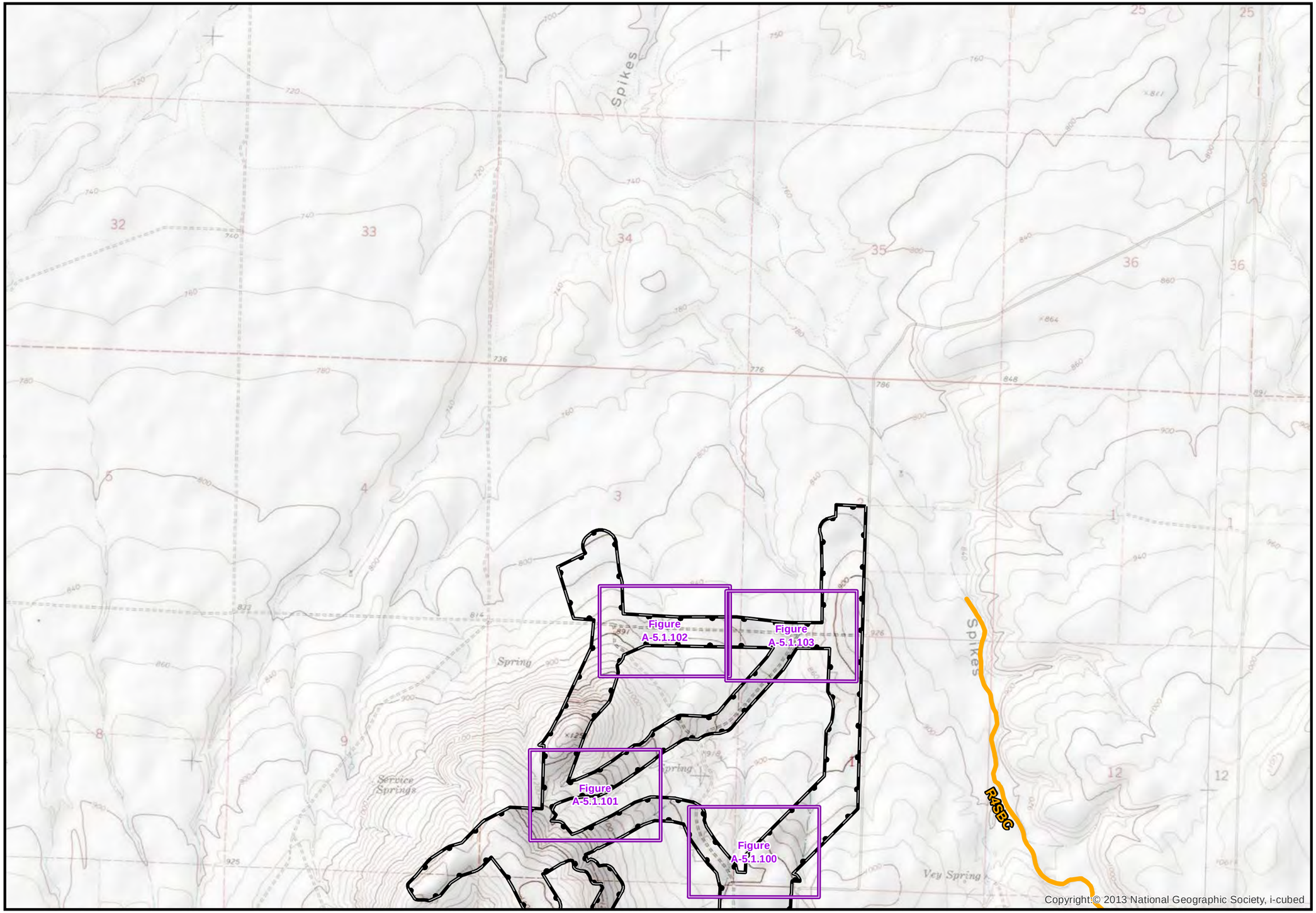

Figure A-4.13

Wheatridge Wind Energy Facility

National Wetland Inventory
Map 13 of 13

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area

NWI Wetland

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

1:24,000 **WGS84 UTM 11**

0 0.125 0.25 0.5 0.75 1 1.25 1.5 1.75 2 2.25 2.5 **Miles**

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads. topographic maps / USFWS: NWI

TETRA TECH

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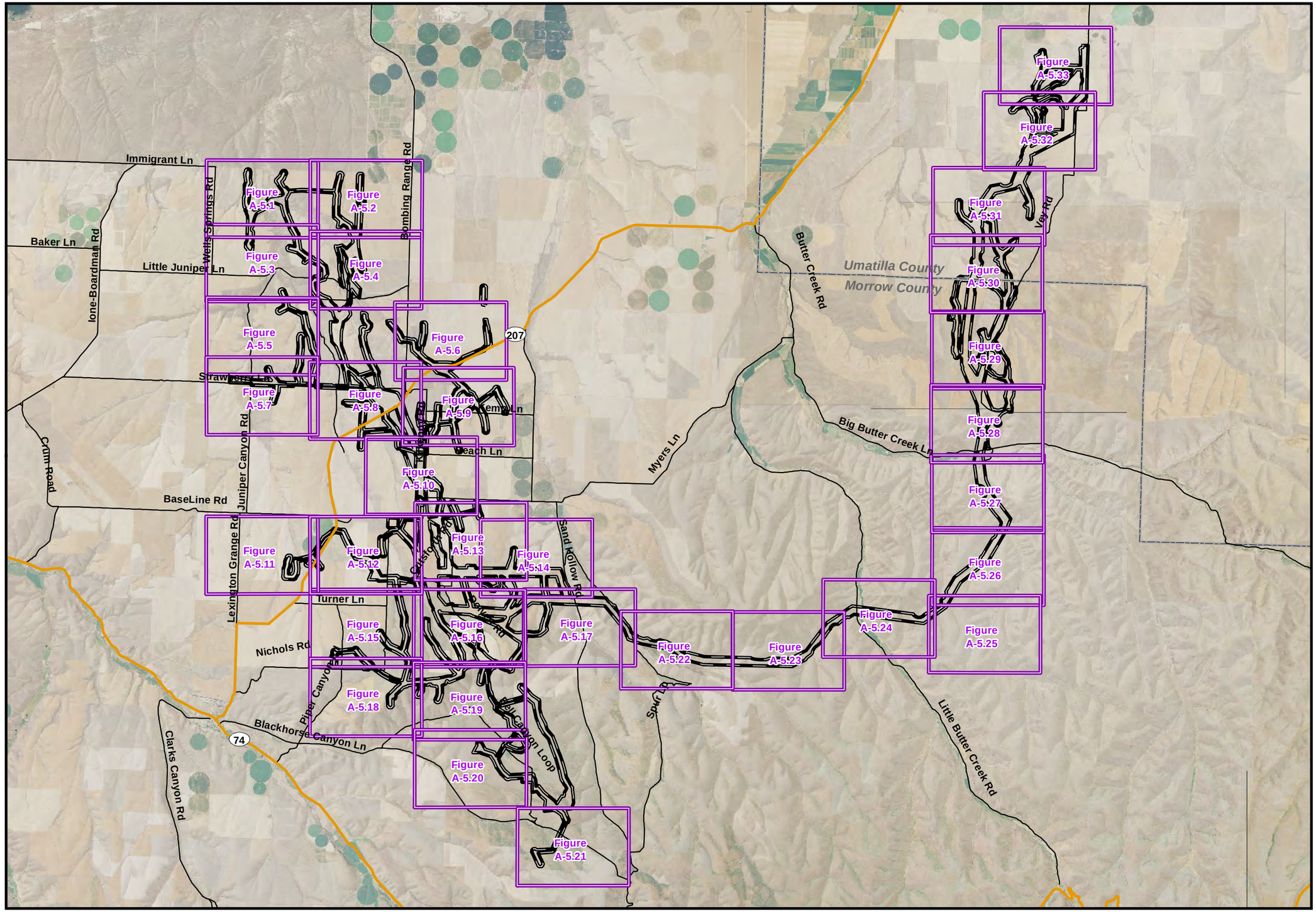
Figure A-5 Index Map

Wheatridge Wind Energy Facility

Wetland Delineation Index Map

Morrow and Umatilla Counties, OR

December 2014



- Map Grid
- Wetland and Waters Study Area
- State Highway
- Local Road
- County Boundary

1:140,000 WGS84 UTM 11

0 0.5 1 2 3 4 5 6 7 8 9 10 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

TETRA TECH

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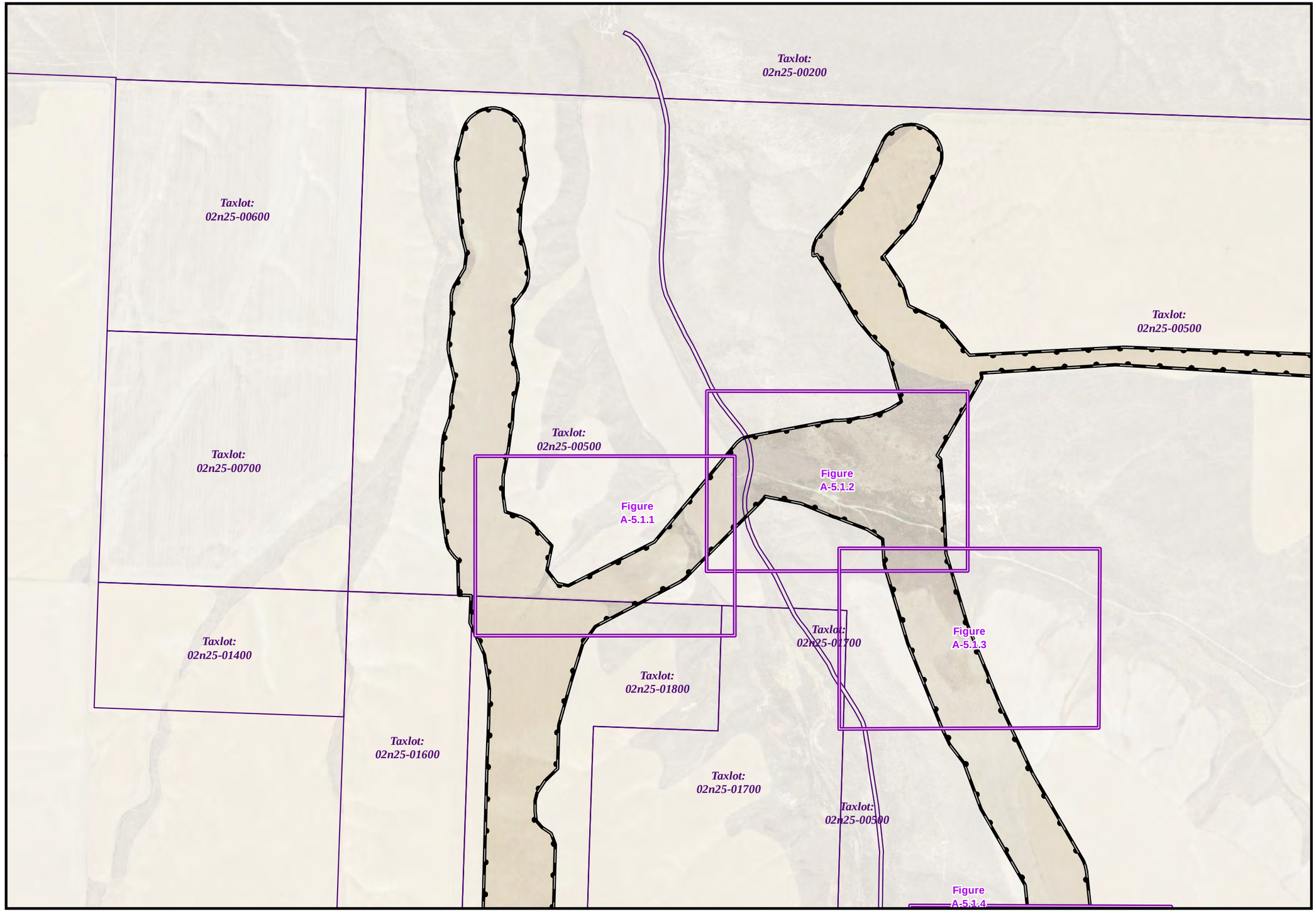

Figure A-5.1

Wheatridge Wind Energy Facility

Wetland Delineation
Map 1 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

1:12,000 **WGS84 UTM 11**

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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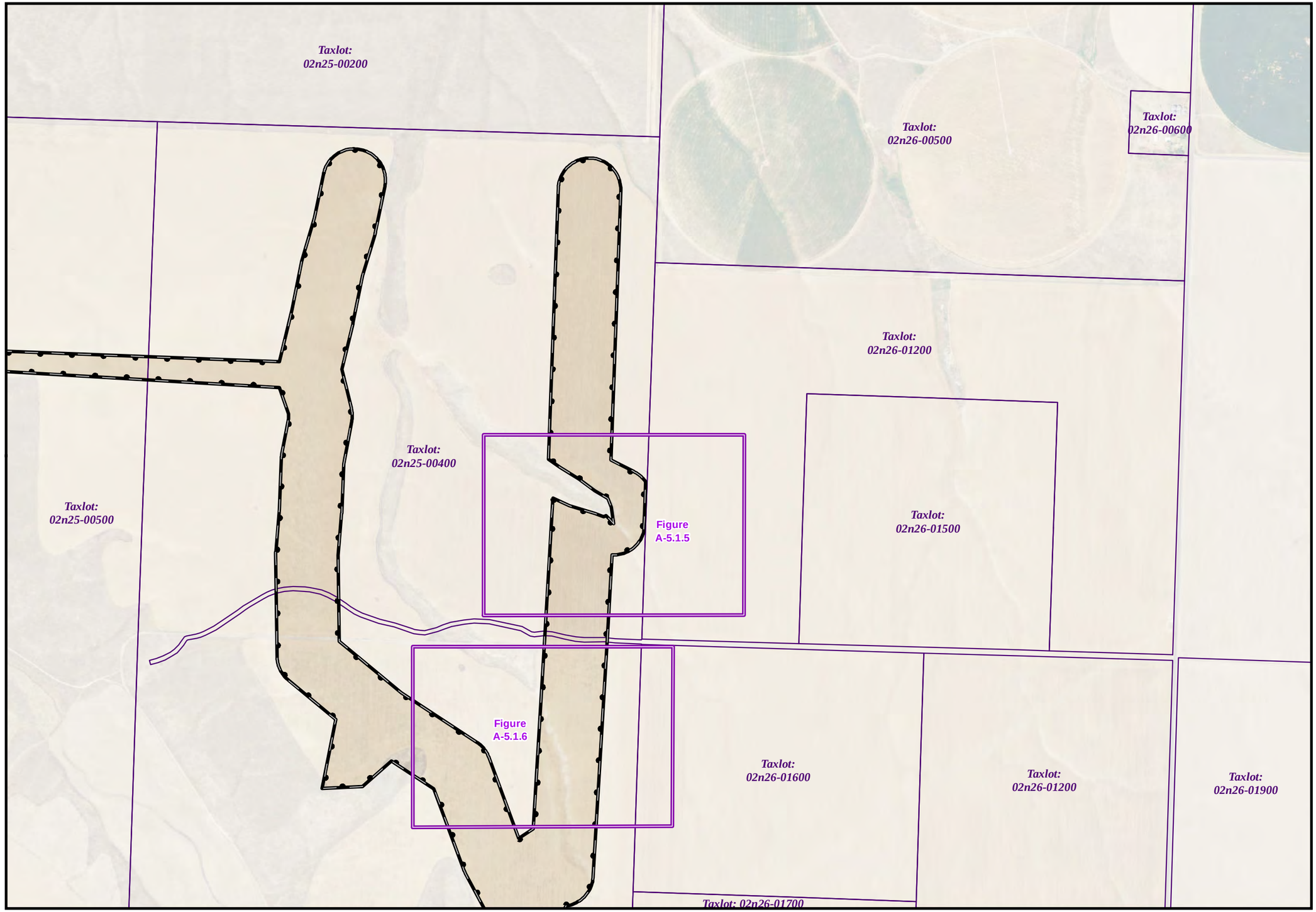

1:12,000 WGS84 UTM 11

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.2

Wheatridge Wind Energy Facility

Wetland Delineation
Map 2 of 33

Morrow and Umatilla Counties, OR

December 2014

Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Taxlot Boundary

TETRA TECH

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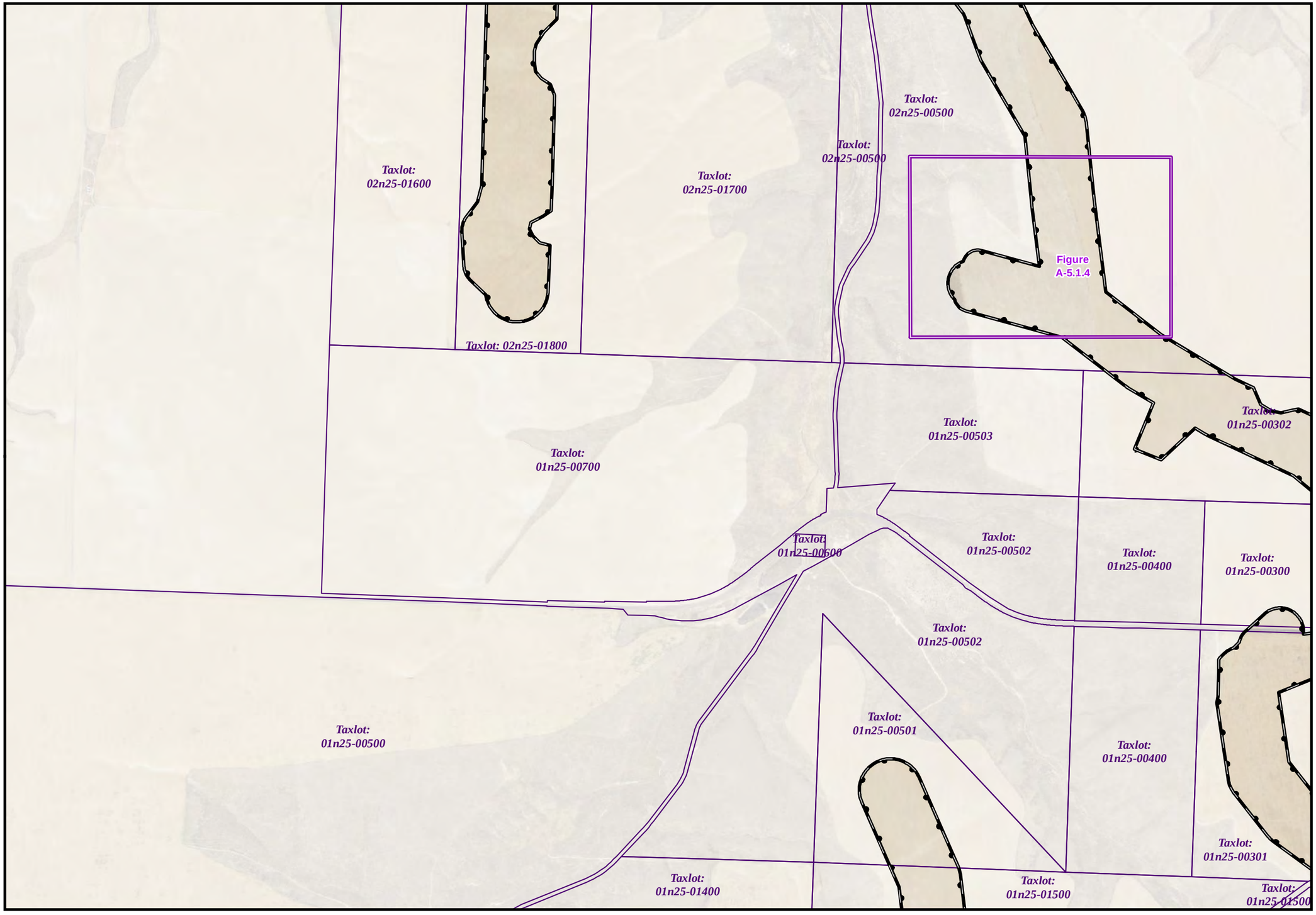

Figure A-5.3

Wheatridge Wind Energy Facility

Wetland Delineation
Map 3 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

1:12,000 **WGS84 UTM 11**

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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Figure A-5.4

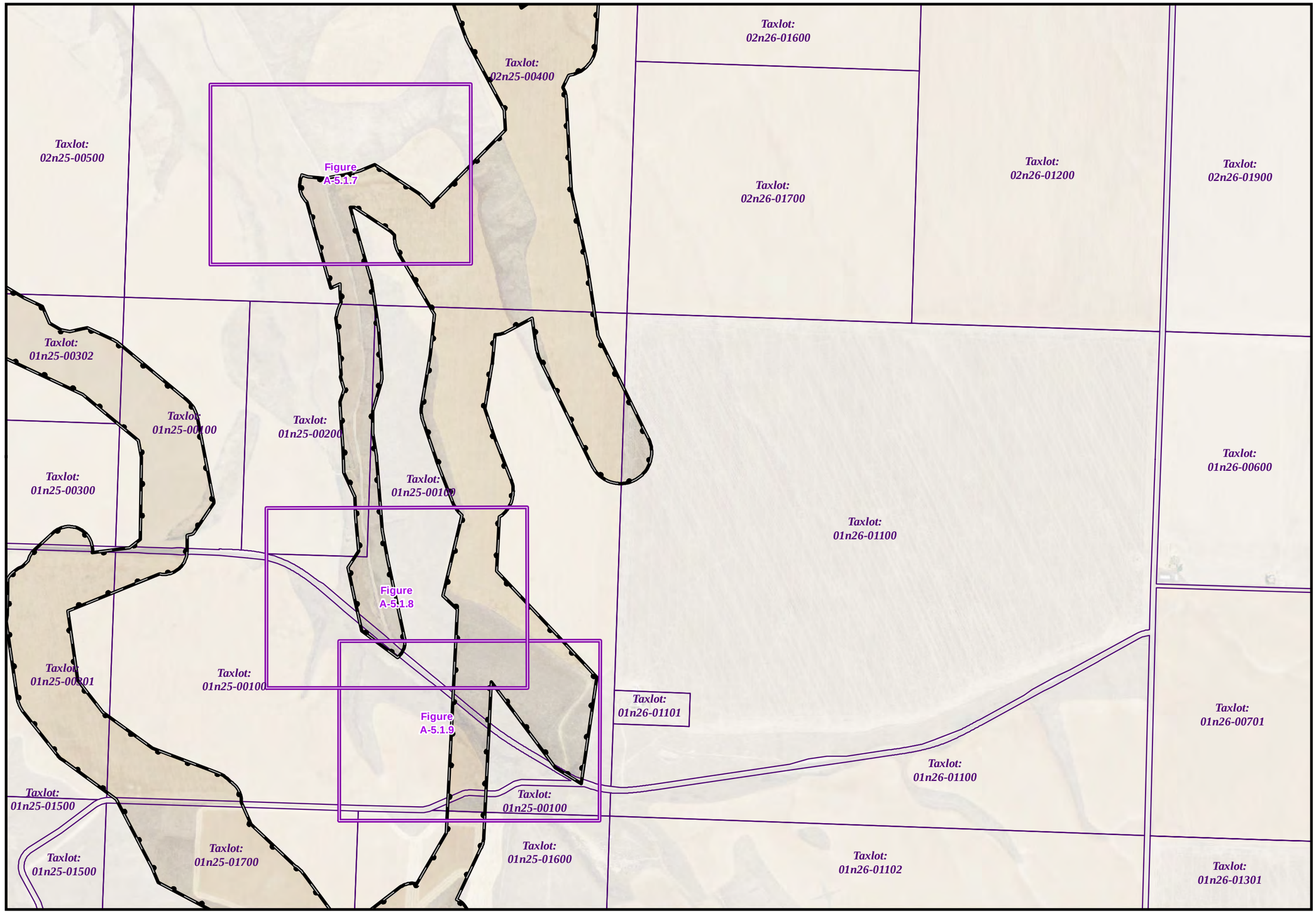
Wheatridge Wind Energy Facility

Wetland Delineation
Map 4 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary



1:12,000 **WGS84 UTM 11**

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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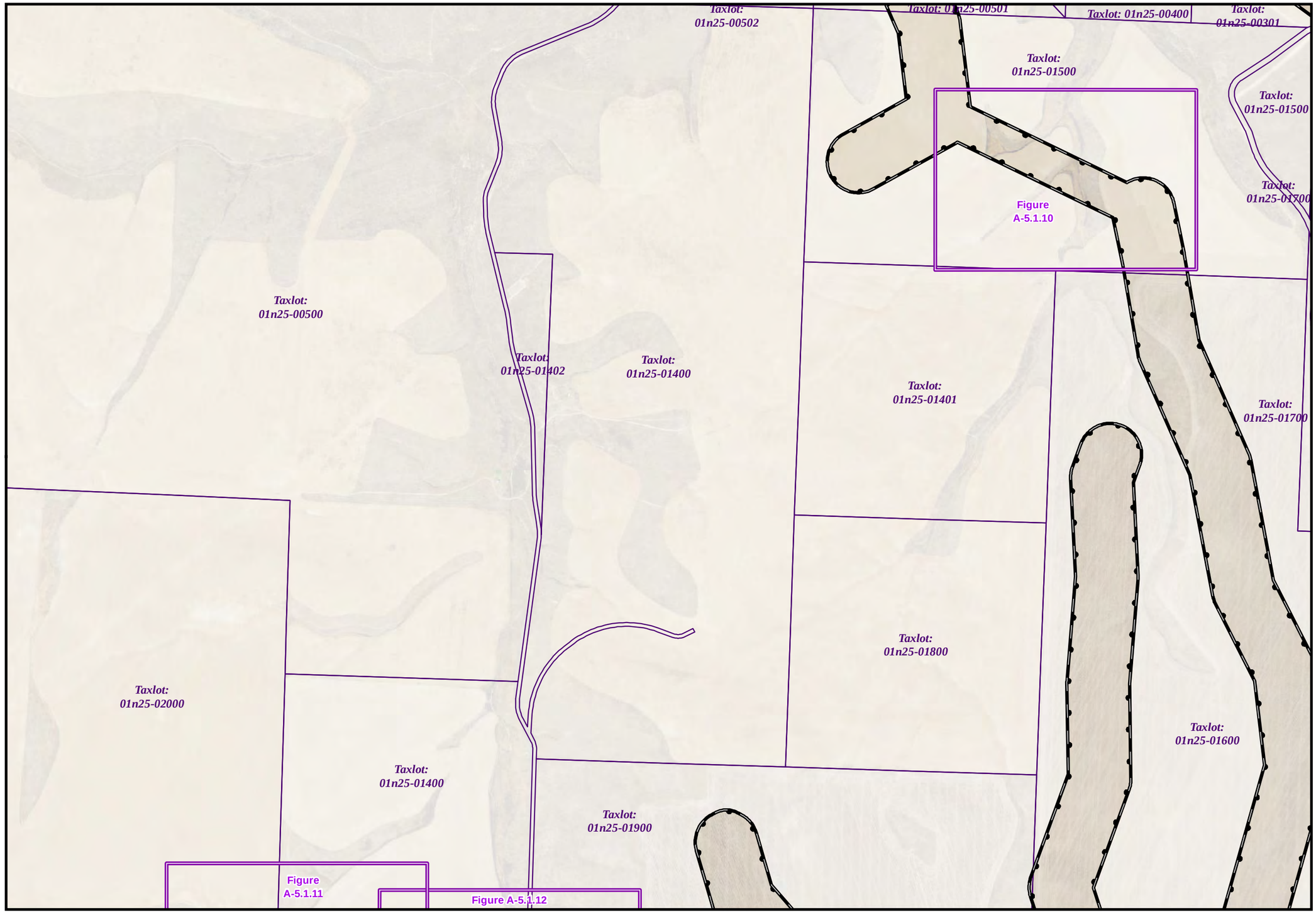

1:12,000 WGS84 UTM 11

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.5

Wheatridge Wind Energy Facility

Wetland Delineation
Map 5 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH

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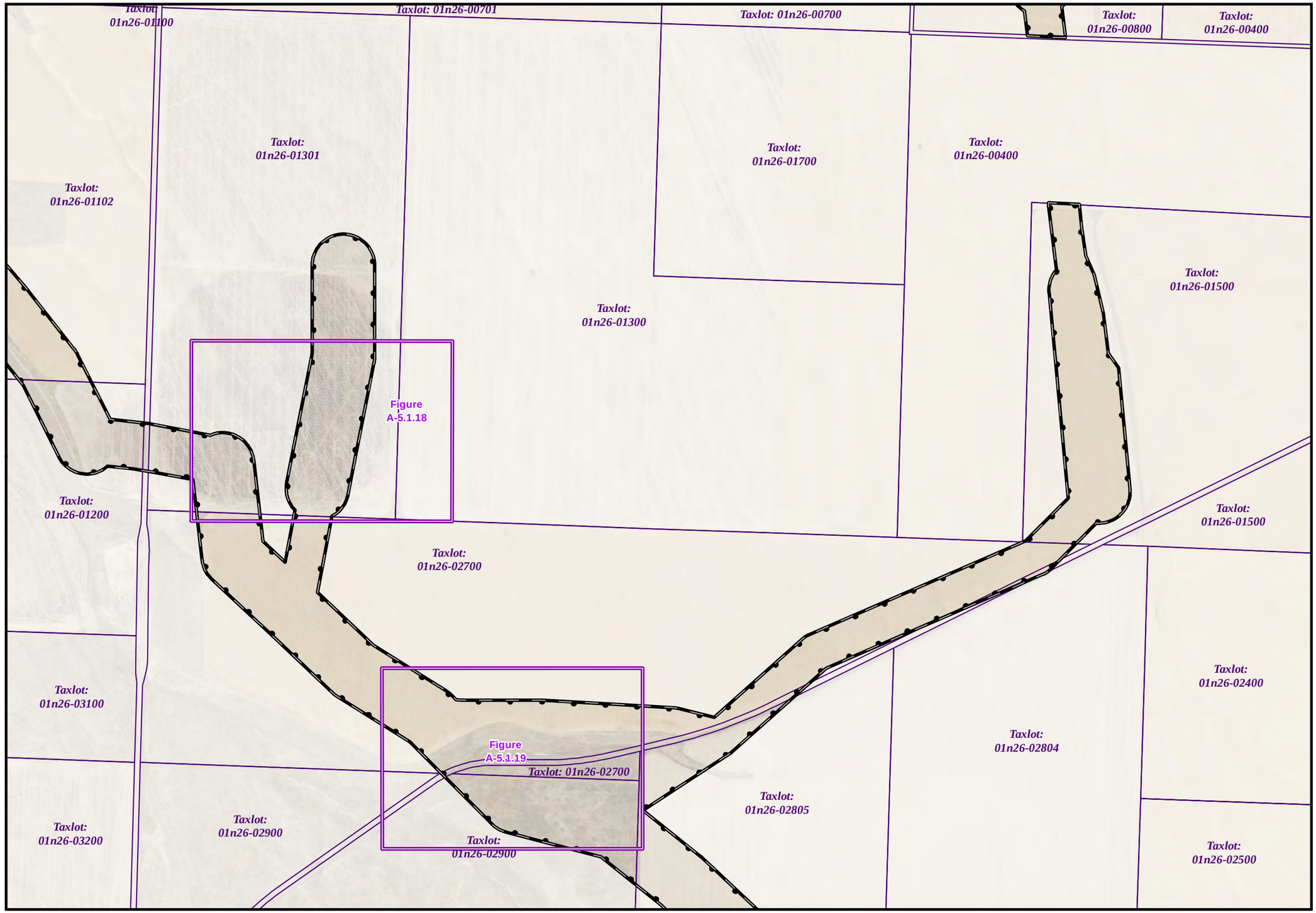

1:12,000 WGS84 UTM 11

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.6

Wheatridge Wind Energy Facility

Wetland Delineation
Map 6 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH

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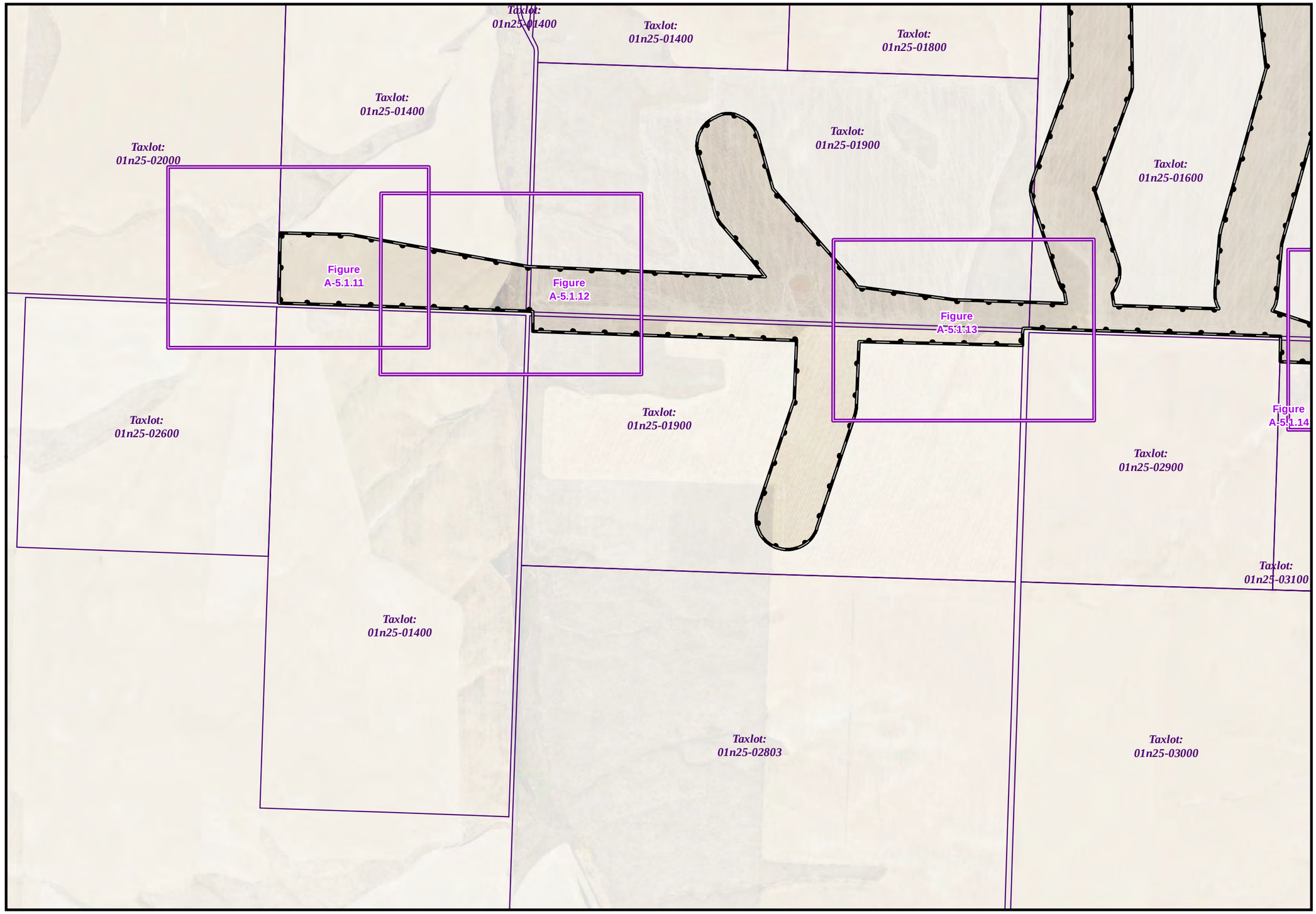

Figure A-5.7

Wheatridge Wind Energy Facility

Wetland Delineation
Map 7 of 33

Morrow and Umatilla Counties, OR

December 2014

Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Taxlot Boundary

1:12,000 **WGS84 UTM 11**

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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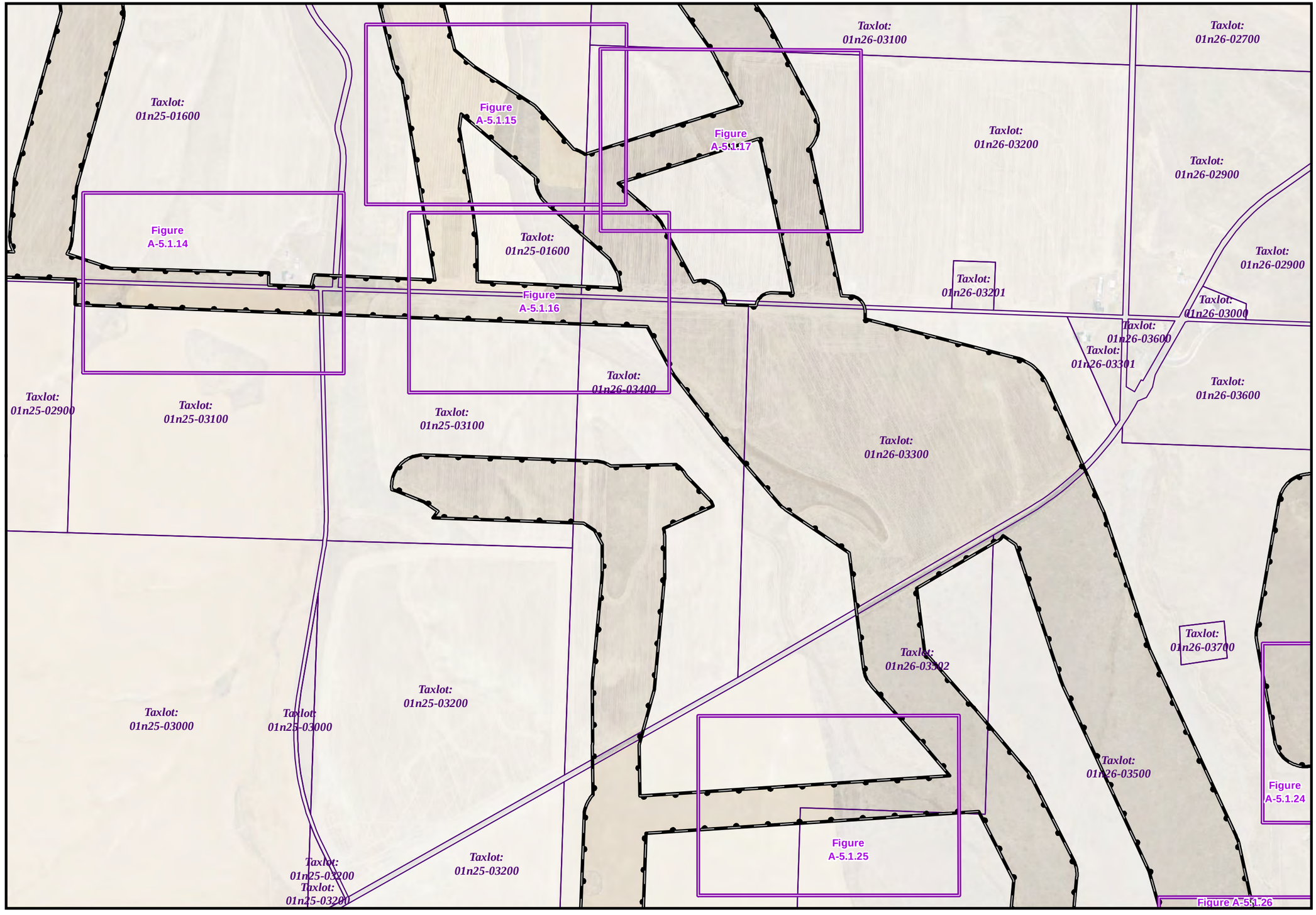
Figure A-5.8

Wheatridge Wind Energy Facility

Wetland Delineation
Map 8 of 33

Morrow and Umatilla Counties, OR

December 2014



Wetland Delineation A-5 Map Grid
Wetland and Waters Study Area
Taxlot Boundary

1:12,000 **WGS84 UTM 11**

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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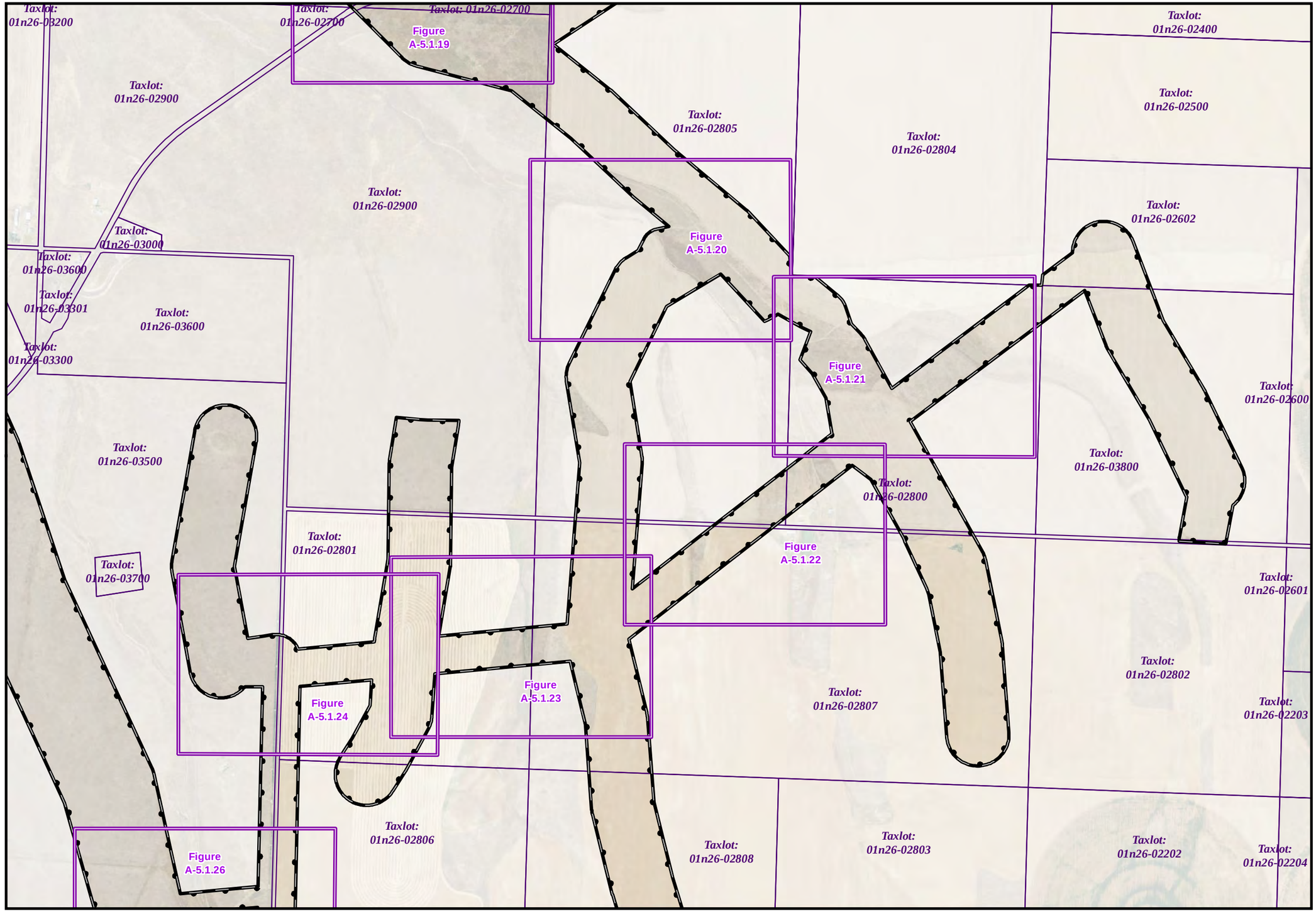

1:12,000 WGS84 UTM 11

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.9

Wheatridge Wind Energy Facility

Wetland Delineation
Map 9 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH

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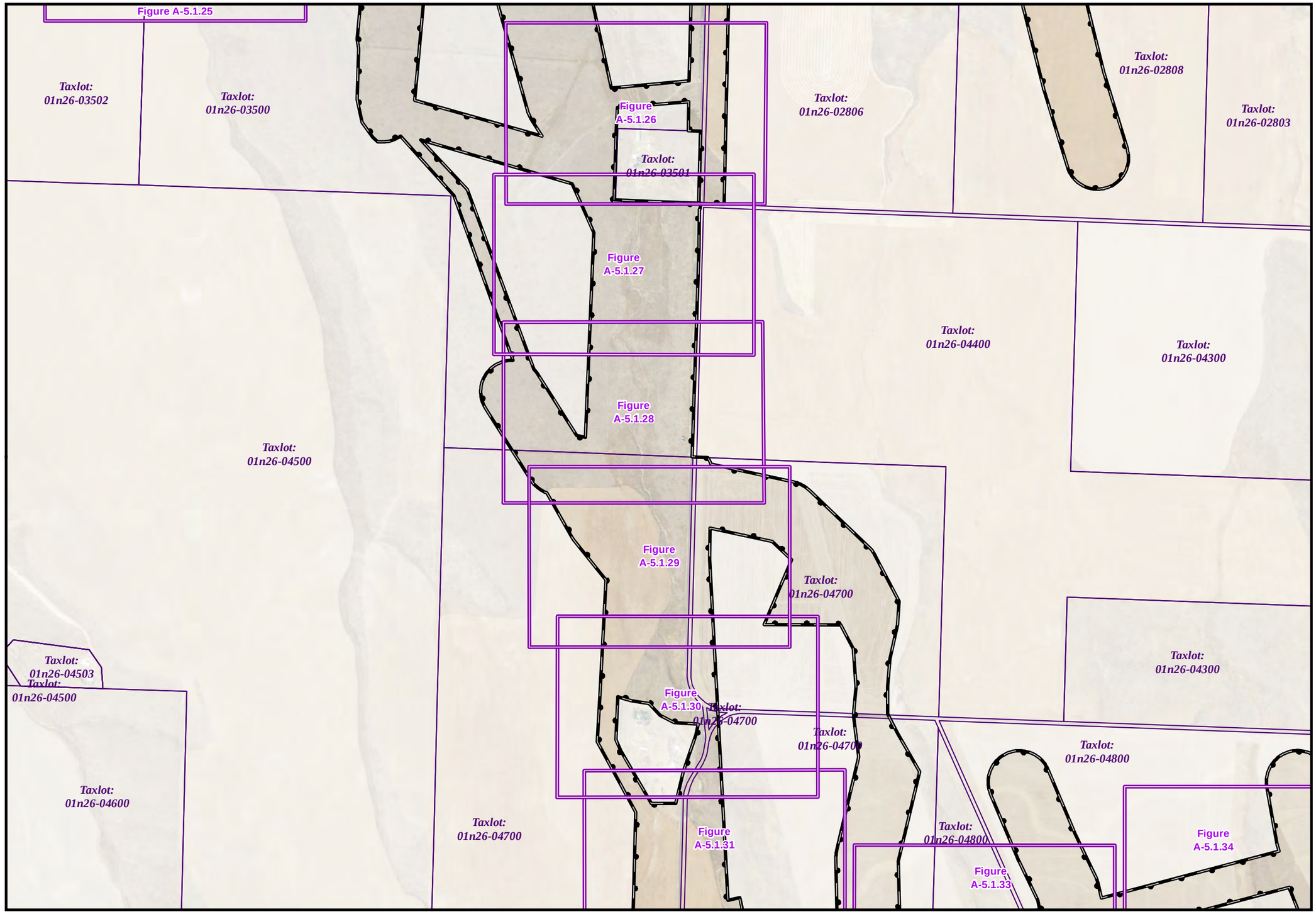

1:12,000 WGS84 UTM 11

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.10

Wheatridge Wind Energy Facility

Wetland Delineation
Map 10 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH

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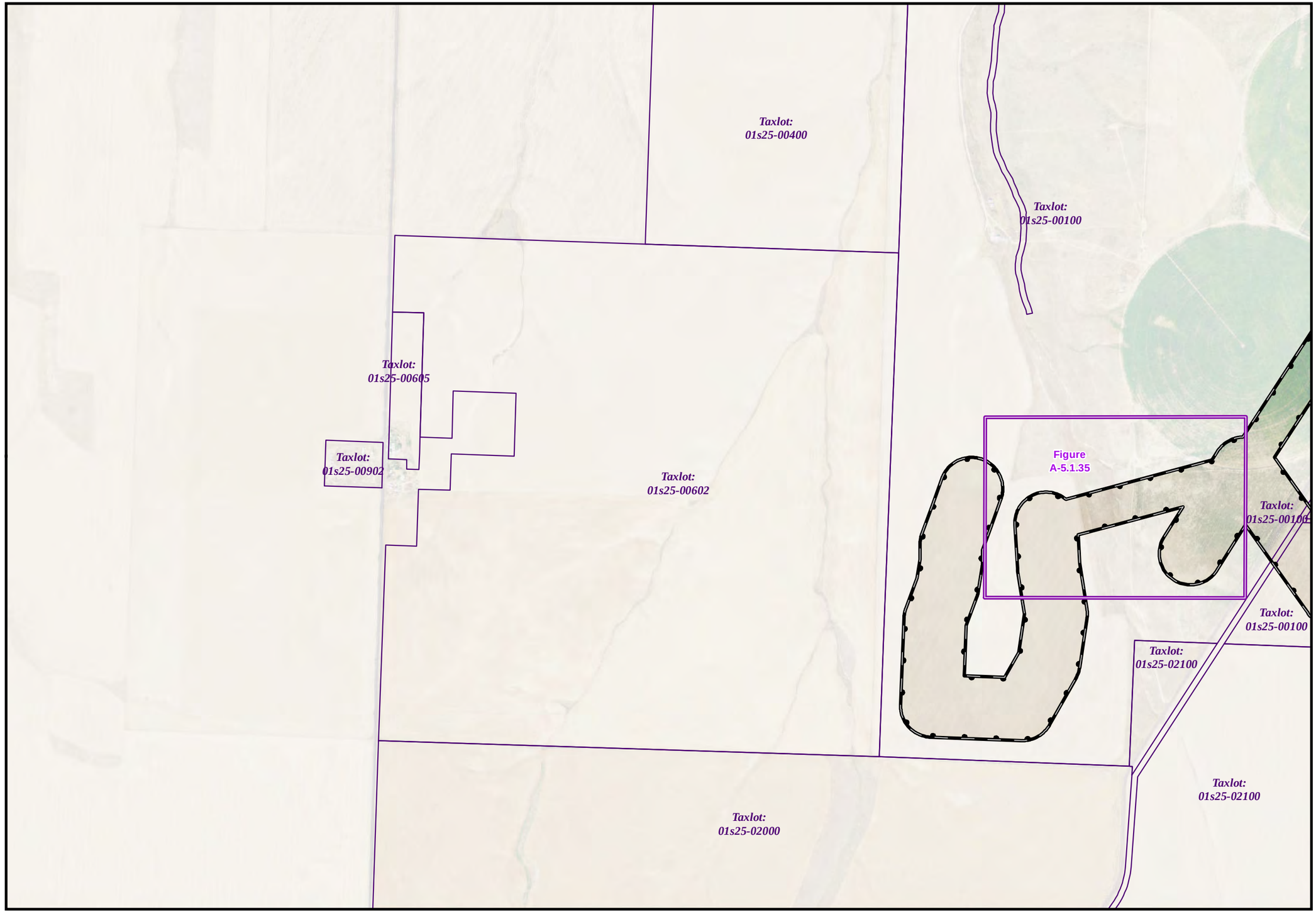

Figure A-5.11

Wheatridge Wind Energy Facility

Wetland Delineation
Map 11 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

1:12,000 **WGS84 UTM 11**

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

TETRA TECH

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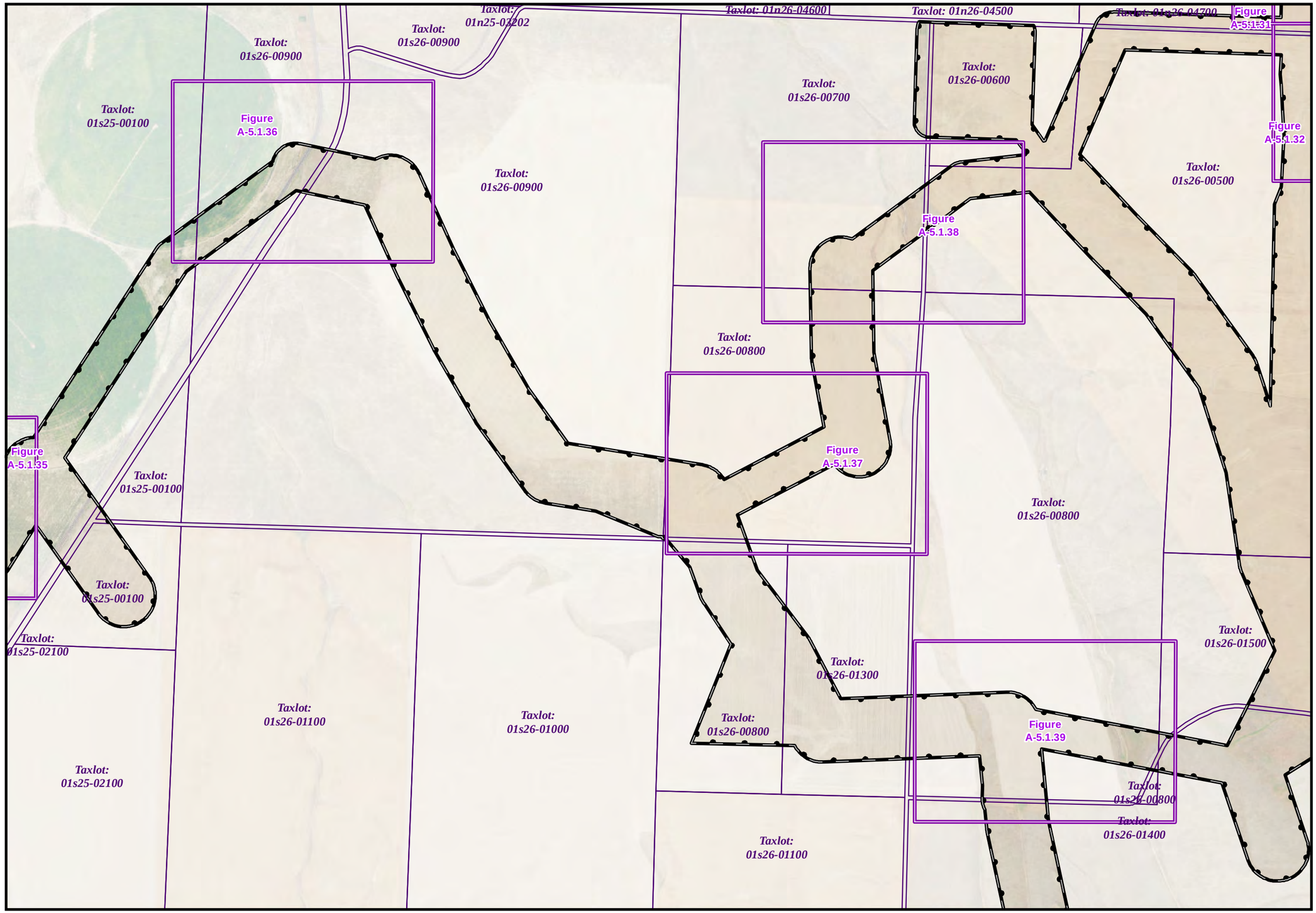

1:12,000 WGS84 UTM 11

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.12

Wheatridge Wind Energy Facility

Wetland Delineation
Map 12 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH

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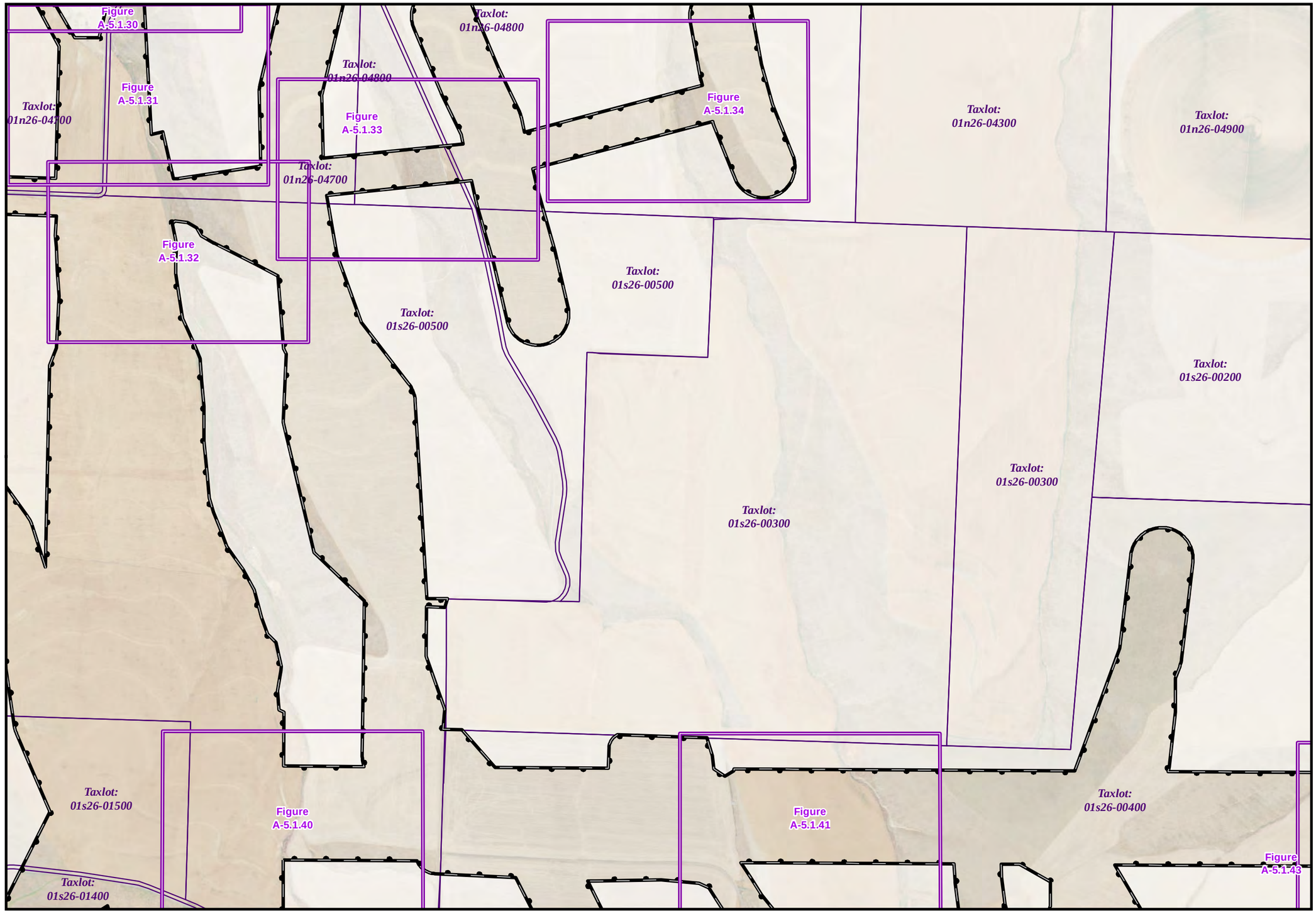

1:12,000 WGS84 UTM 11

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.13

Wheatridge Wind Energy Facility

Wetland Delineation
Map 13 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH

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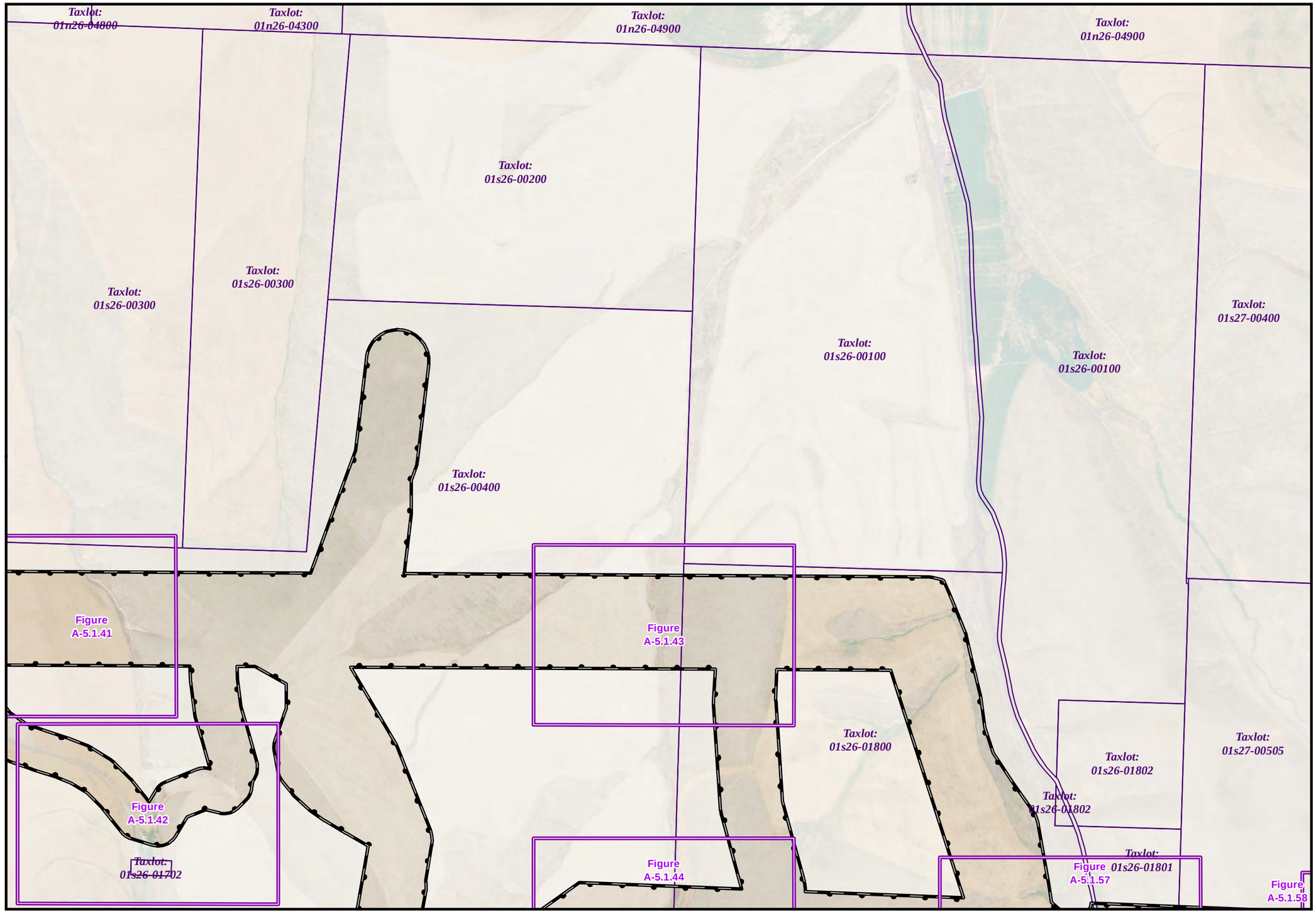

Figure A-5.14

Wheatridge Wind Energy Facility

Wetland Delineation
Map 14 of 33

Morrow and Umatilla Counties, OR

December 2014

Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Taxlot Boundary

1:12,000 **WGS84 UTM 11**

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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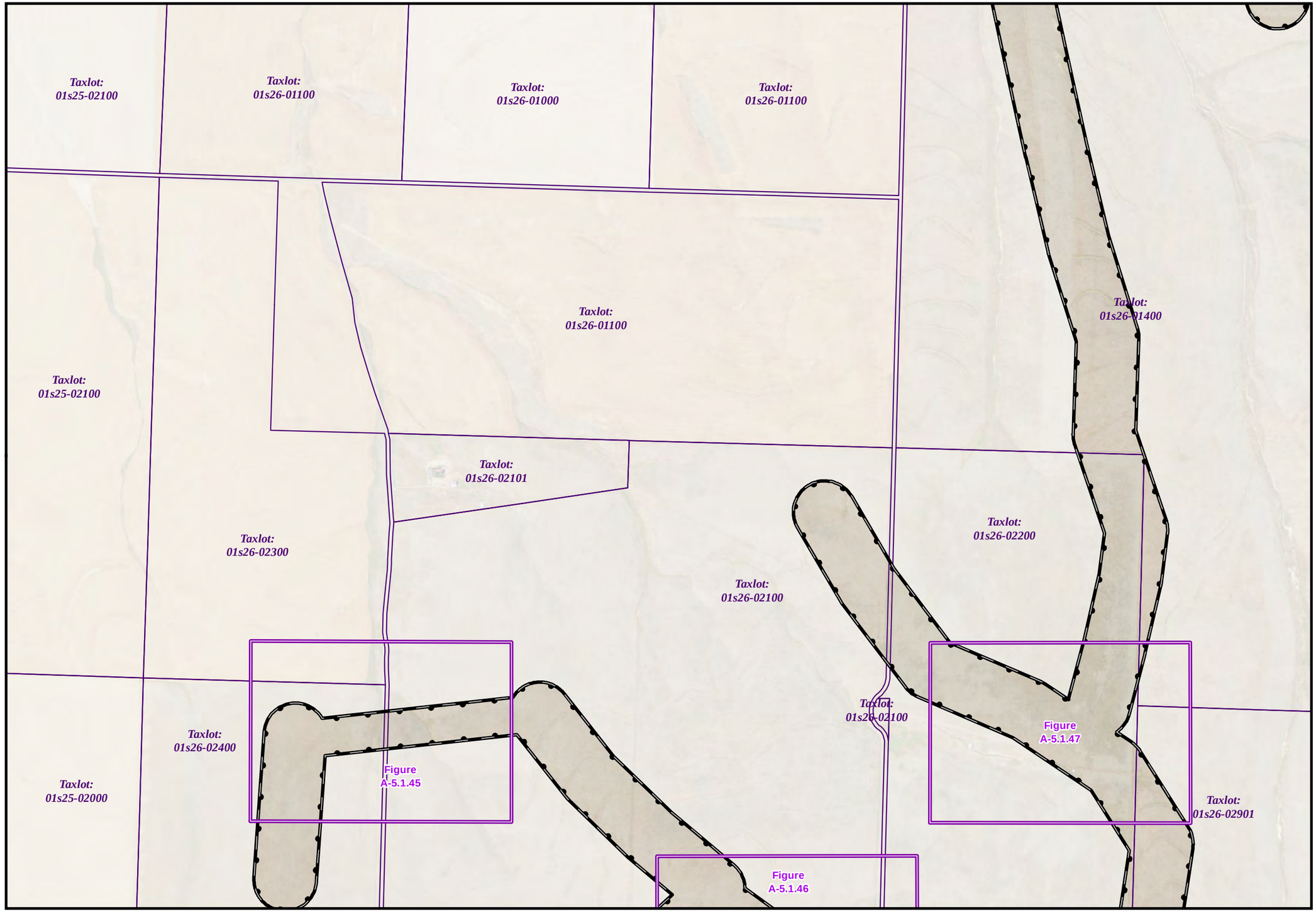

Figure A-5.15

Wheatridge Wind Energy Facility

Wetland Delineation
Map 15 of 33

Morrow and Umatilla Counties, OR

December 2014

Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Taxlot Boundary

1:12,000 **WGS84 UTM 11**

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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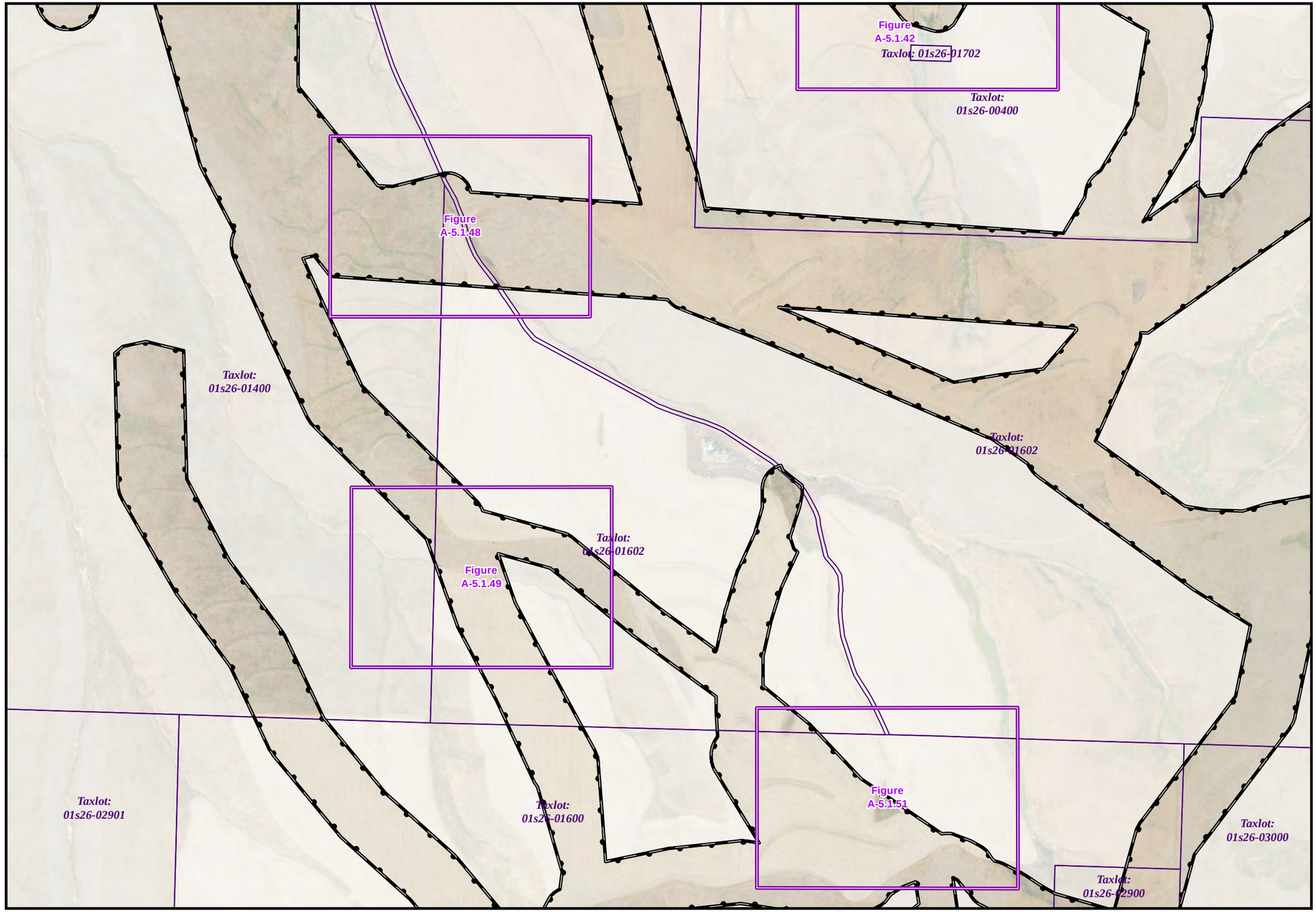

1:12,000 WGS84 UTM 11

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.16

Wheatridge Wind Energy Facility

Wetland Delineation
Map 16 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH

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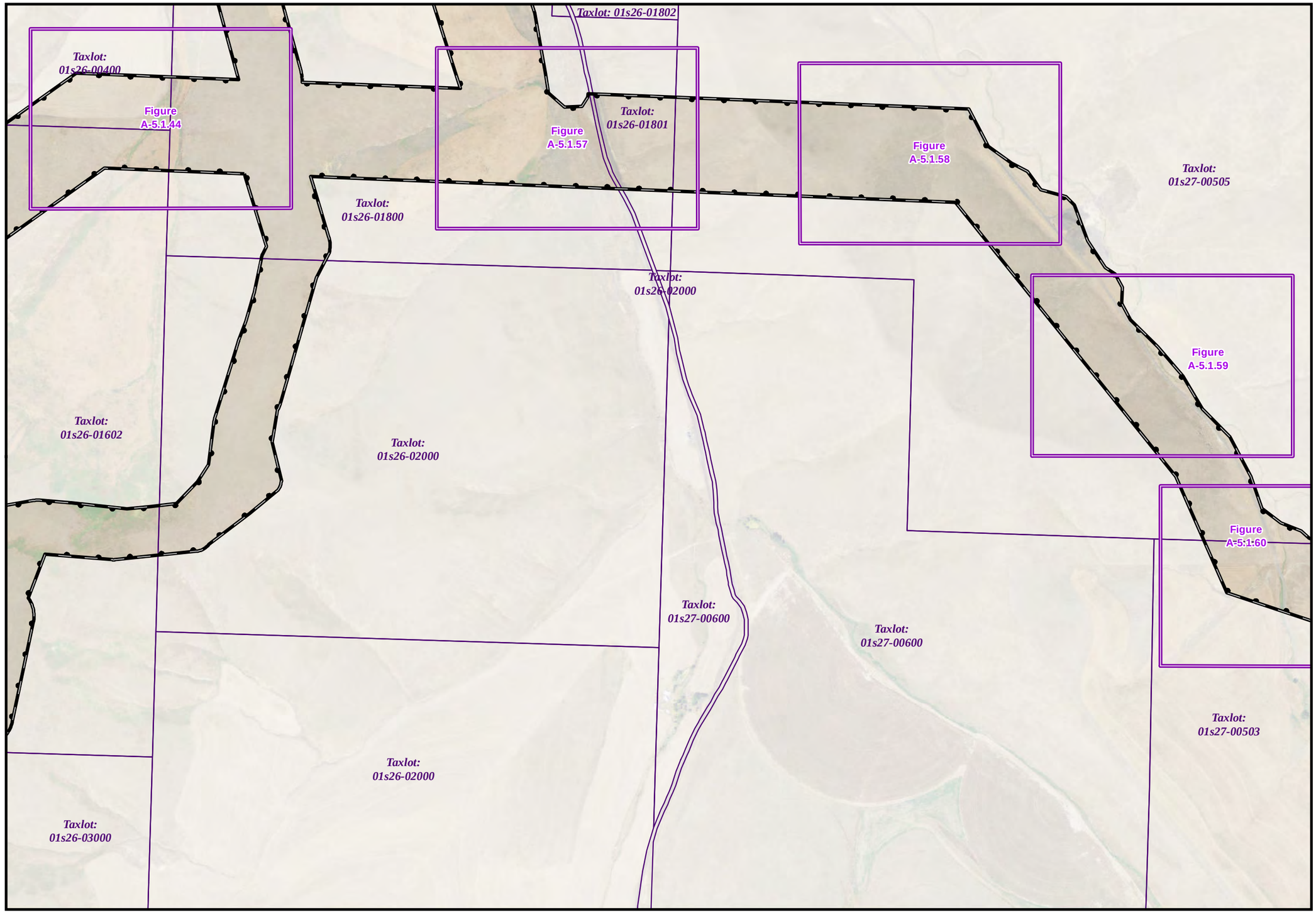

1:12,000 WGS84 UTM 11

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.17

Wheatridge Wind Energy Facility

Wetland Delineation
Map 17 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH

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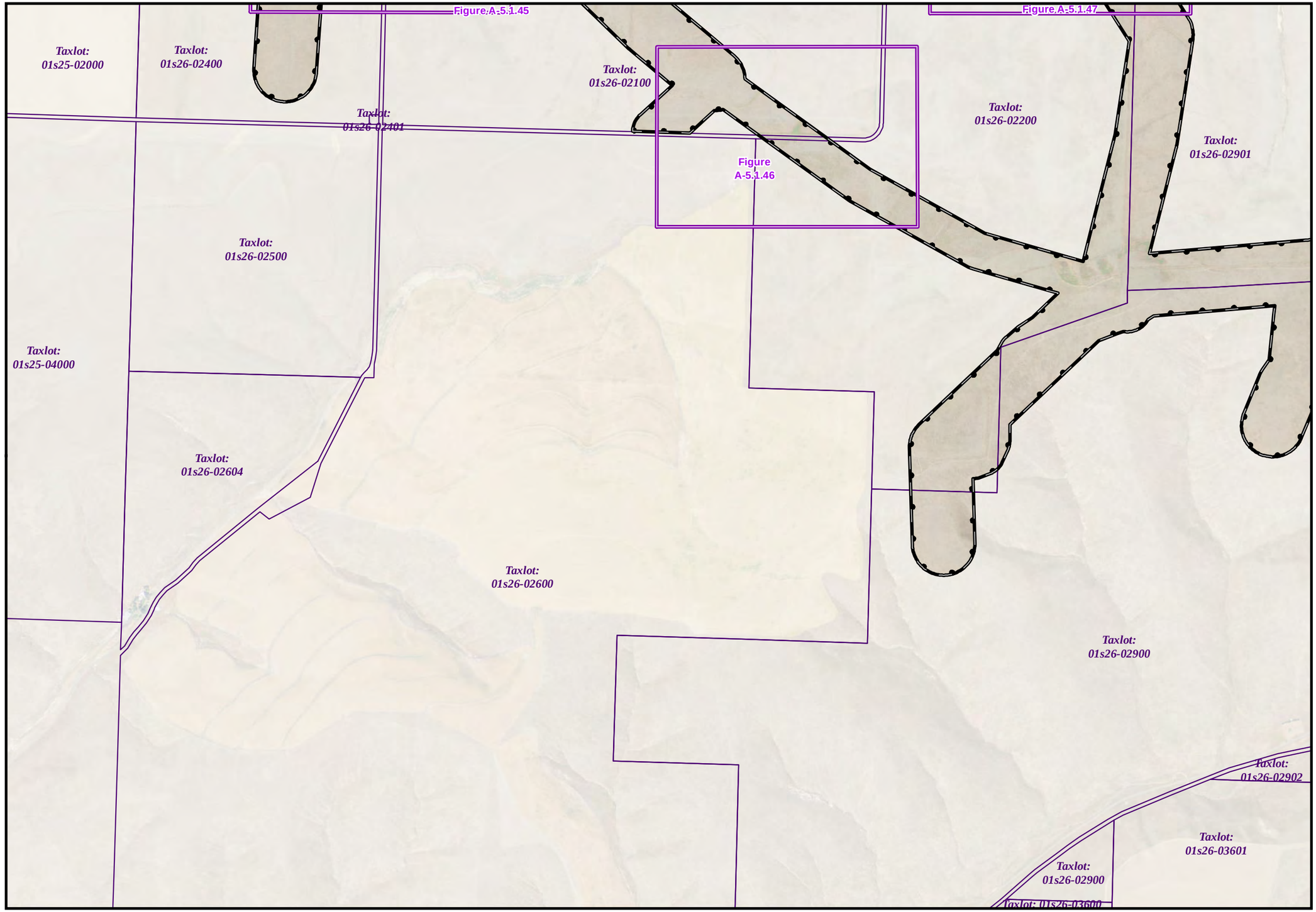

Figure A-5.18

Wheatridge Wind Energy Facility

Wetland Delineation
Map 18 of 33

Morrow and Umatilla Counties, OR

December 2014

Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Taxlot Boundary

1:12,000 **WGS84 UTM 11**

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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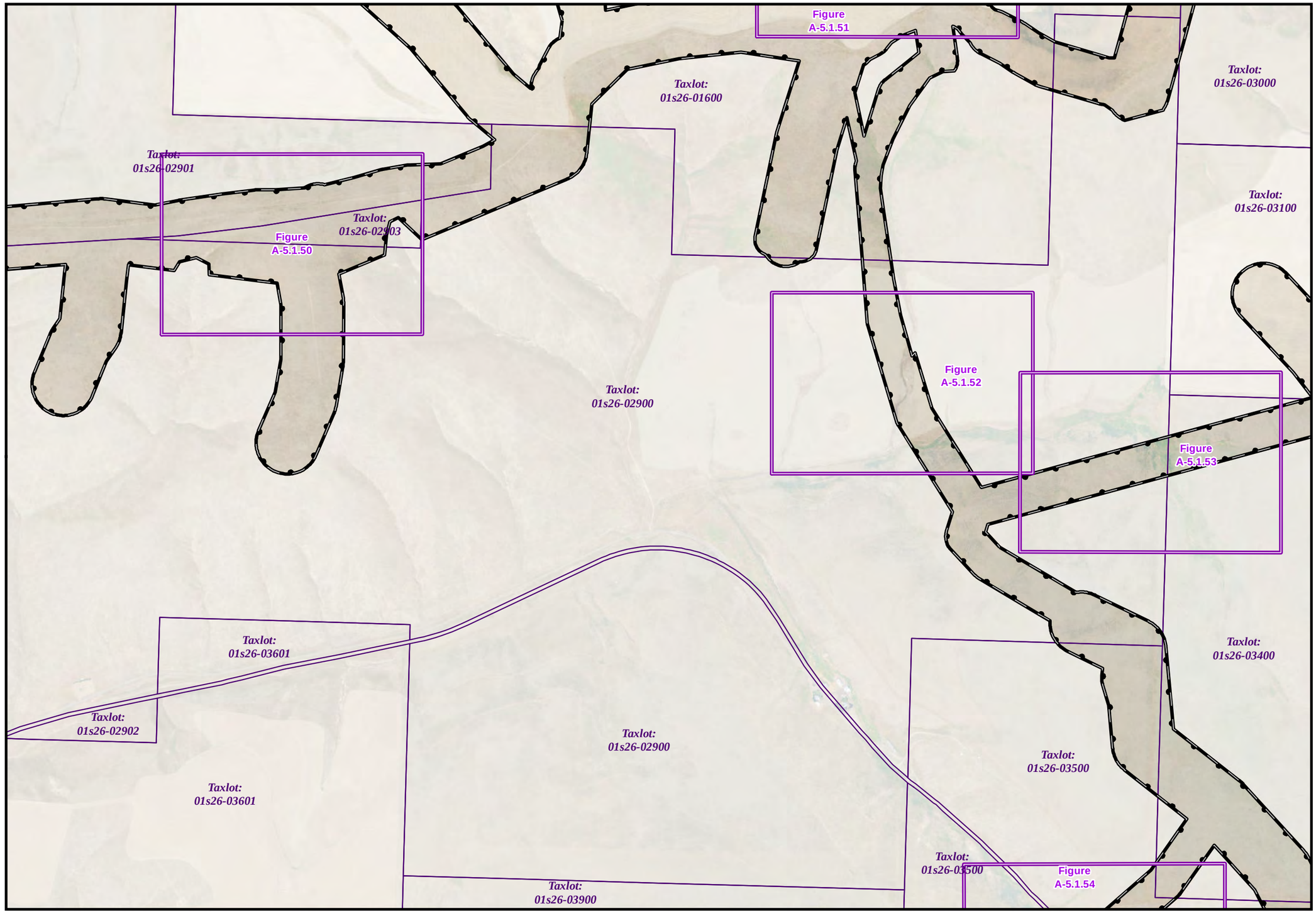
Figure A-5.19

Wheatridge Wind Energy Facility

Wetland Delineation
Map 19 of 33

Morrow and Umatilla Counties, OR

December 2014



Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Taxlot Boundary

1:12,000 **WGS84 UTM 11**

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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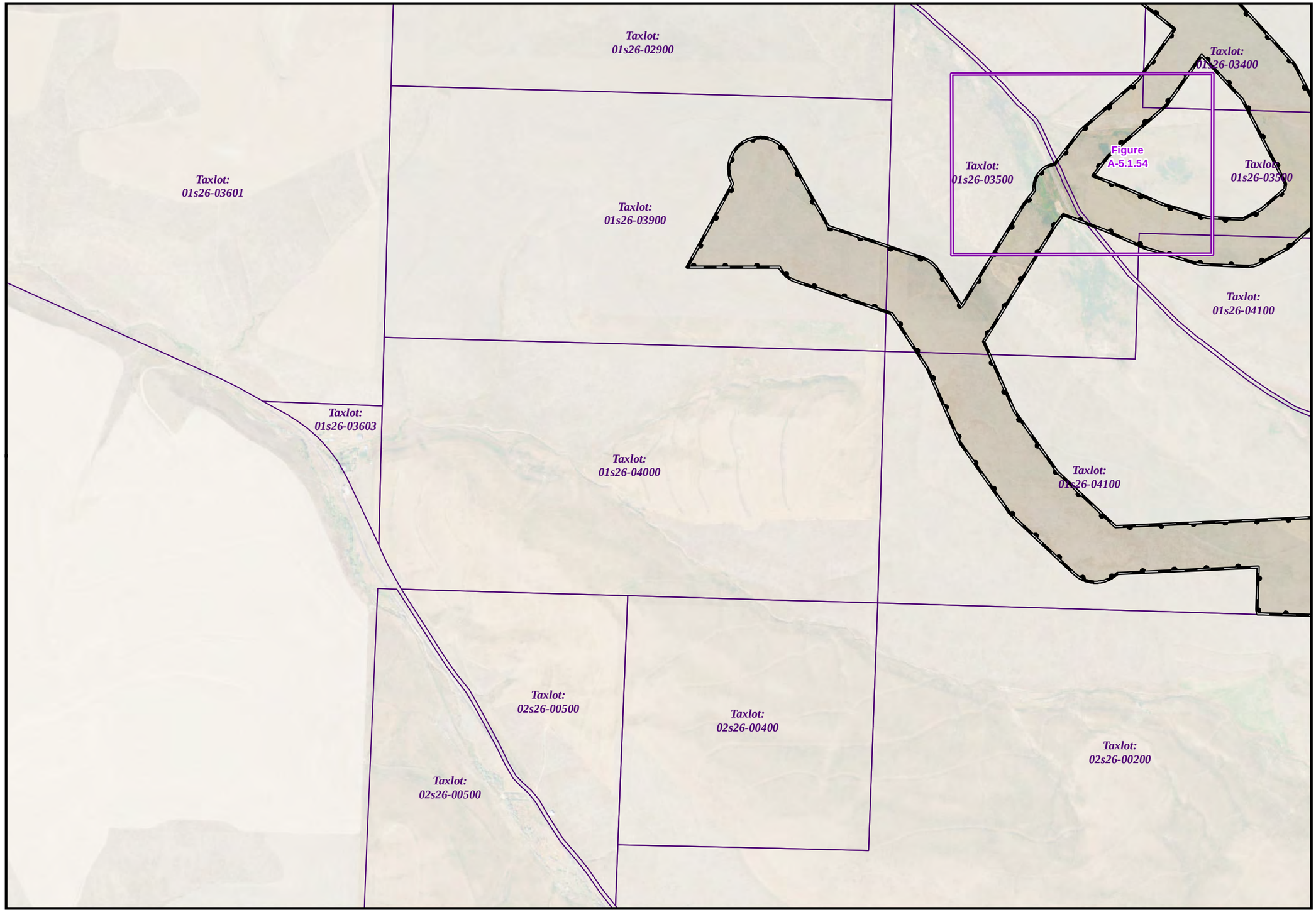

1:12,000 WGS84 UTM 11

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.20

Wheatridge Wind Energy Facility

Wetland Delineation
Map 20 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH

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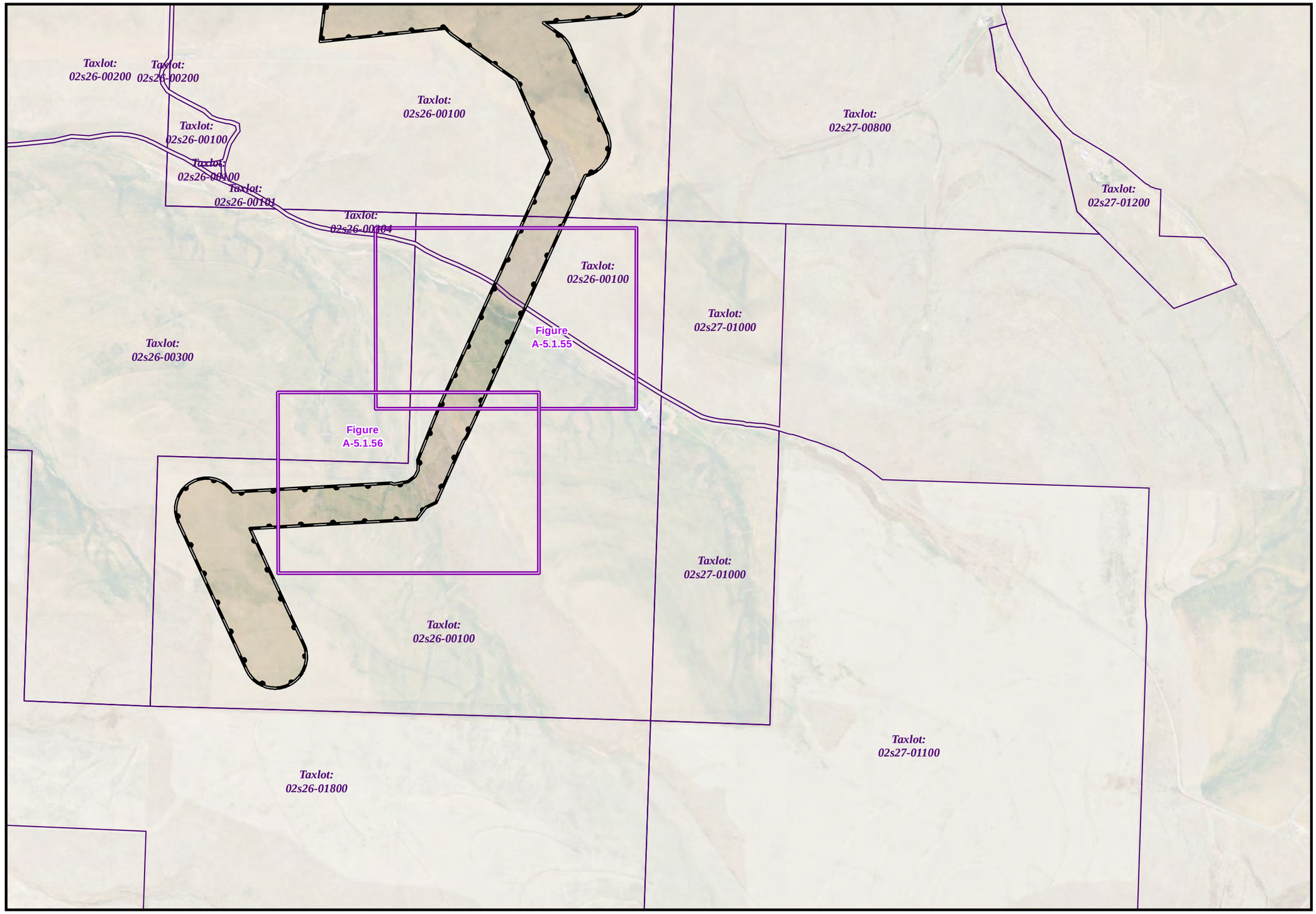

Figure A-5.21

Wheatridge Wind Energy Facility

Wetland Delineation
Map 21 of 33

Morrow and Umatilla Counties, OR

December 2014

Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Taxlot Boundary

1:12,000 **WGS84 UTM 11**

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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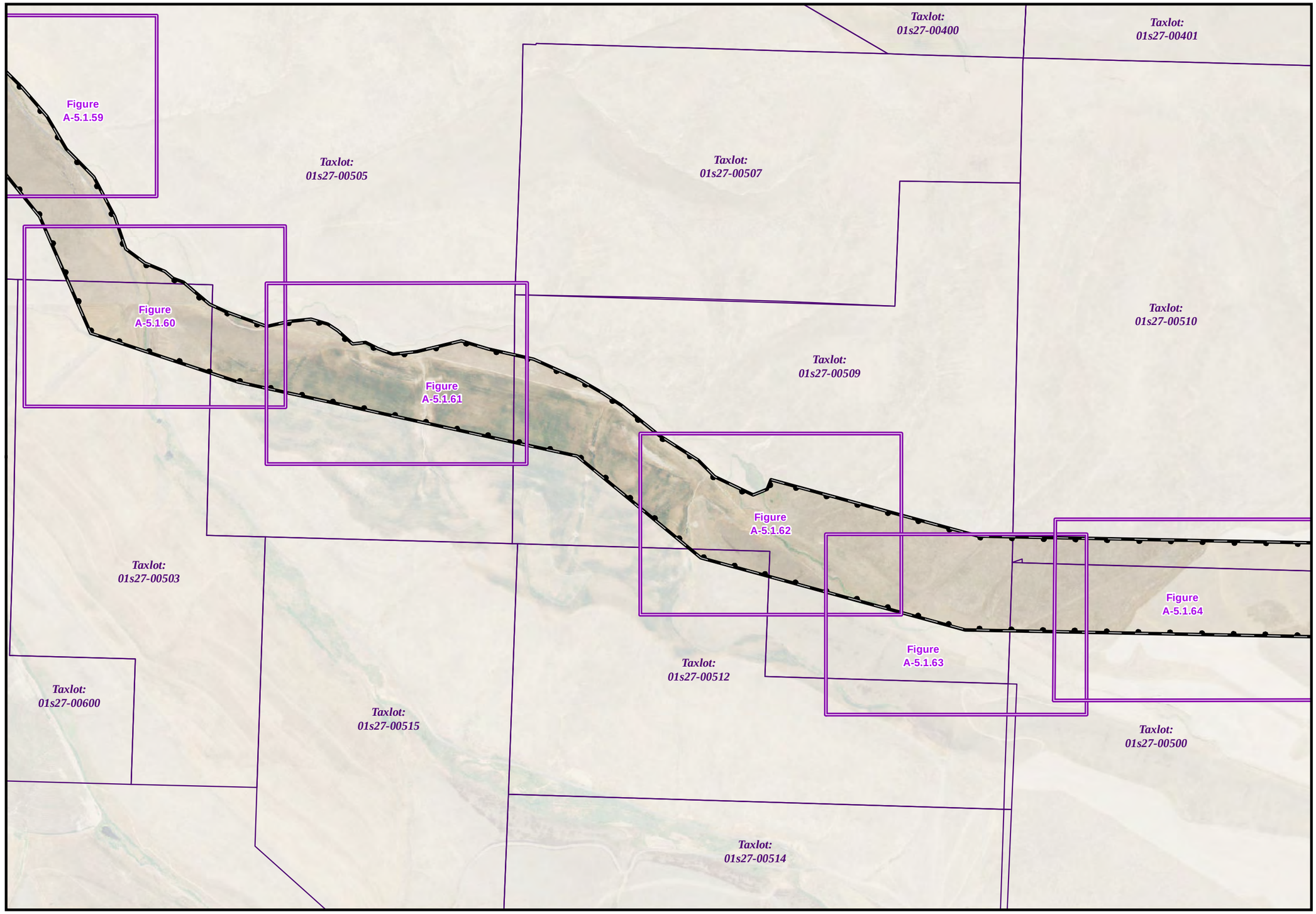

1:12,000 WGS84 UTM 11

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.22

Wheatridge Wind Energy Facility

Wetland Delineation
Map 22 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH

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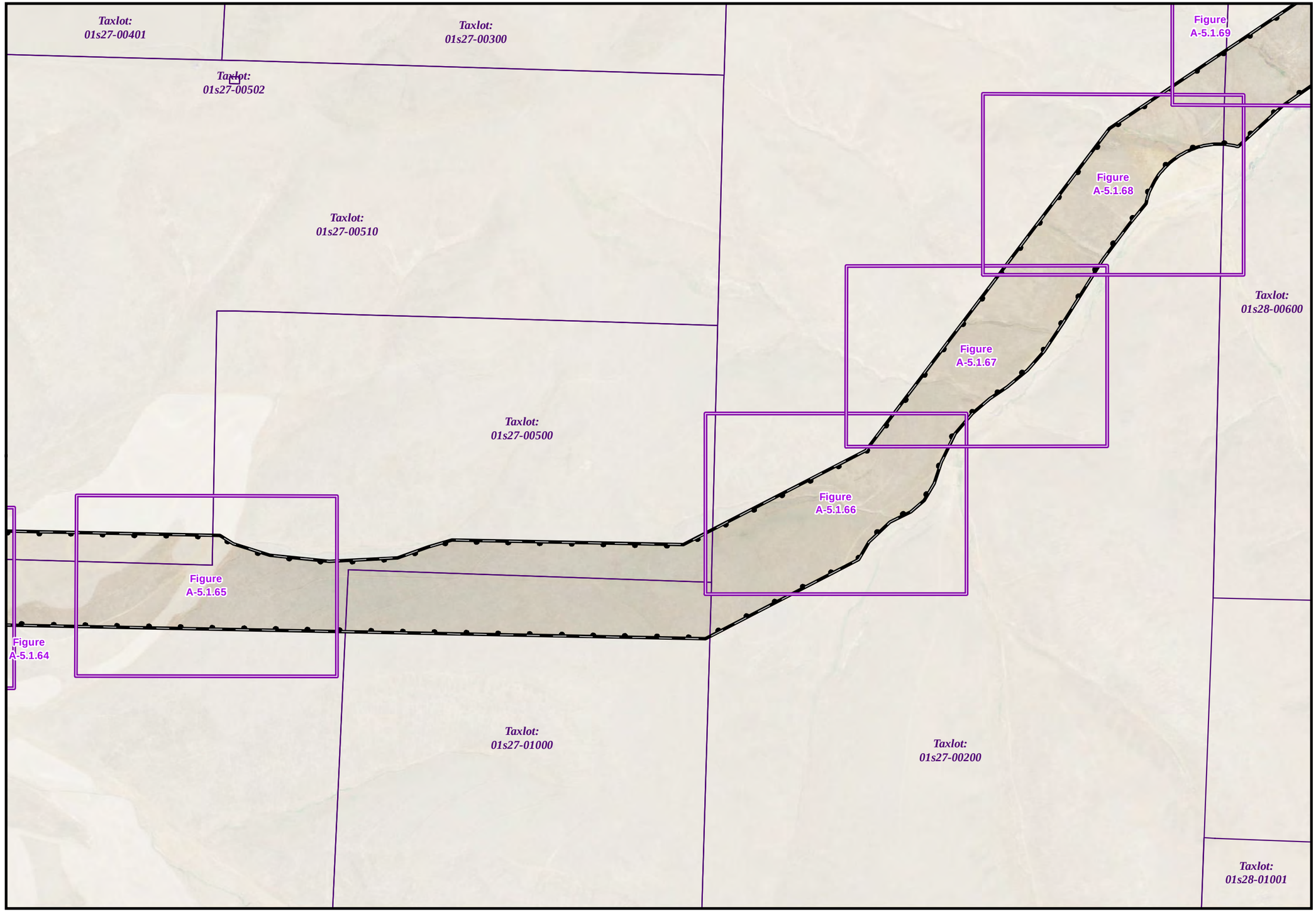

1:12,000 WGS84 UTM 11

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.23

Wheatridge Wind Energy Facility

Wetland Delineation
Map 23 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH

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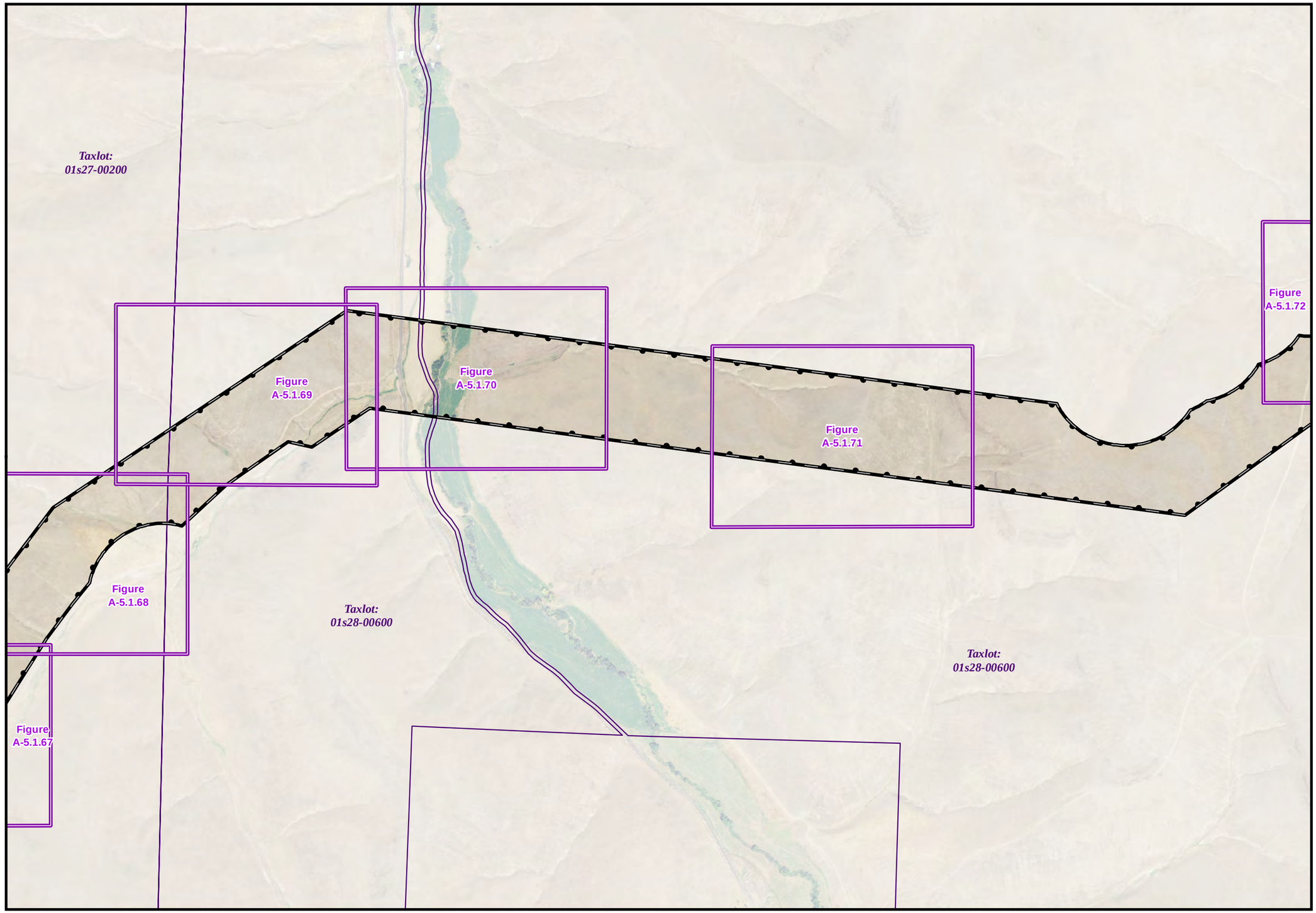

Figure A-5.24

Wheatridge Wind Energy Facility

Wetland Delineation
Map 24 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

1:12,000 **WGS84 UTM 11**

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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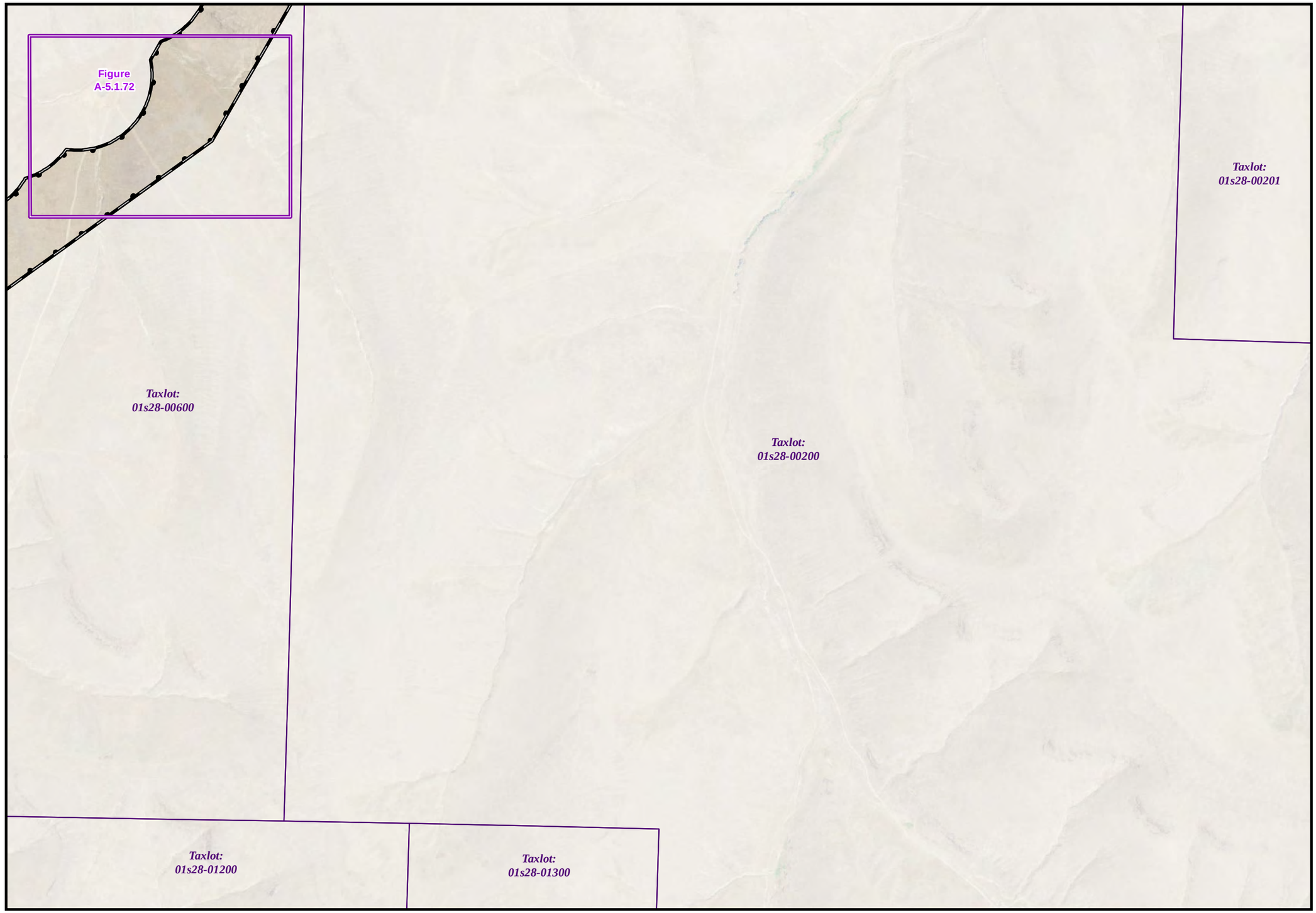

Figure A-5.25

Wheatridge Wind Energy Facility

Wetland Delineation
Map 25 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

1:12,000 **WGS84 UTM 11**

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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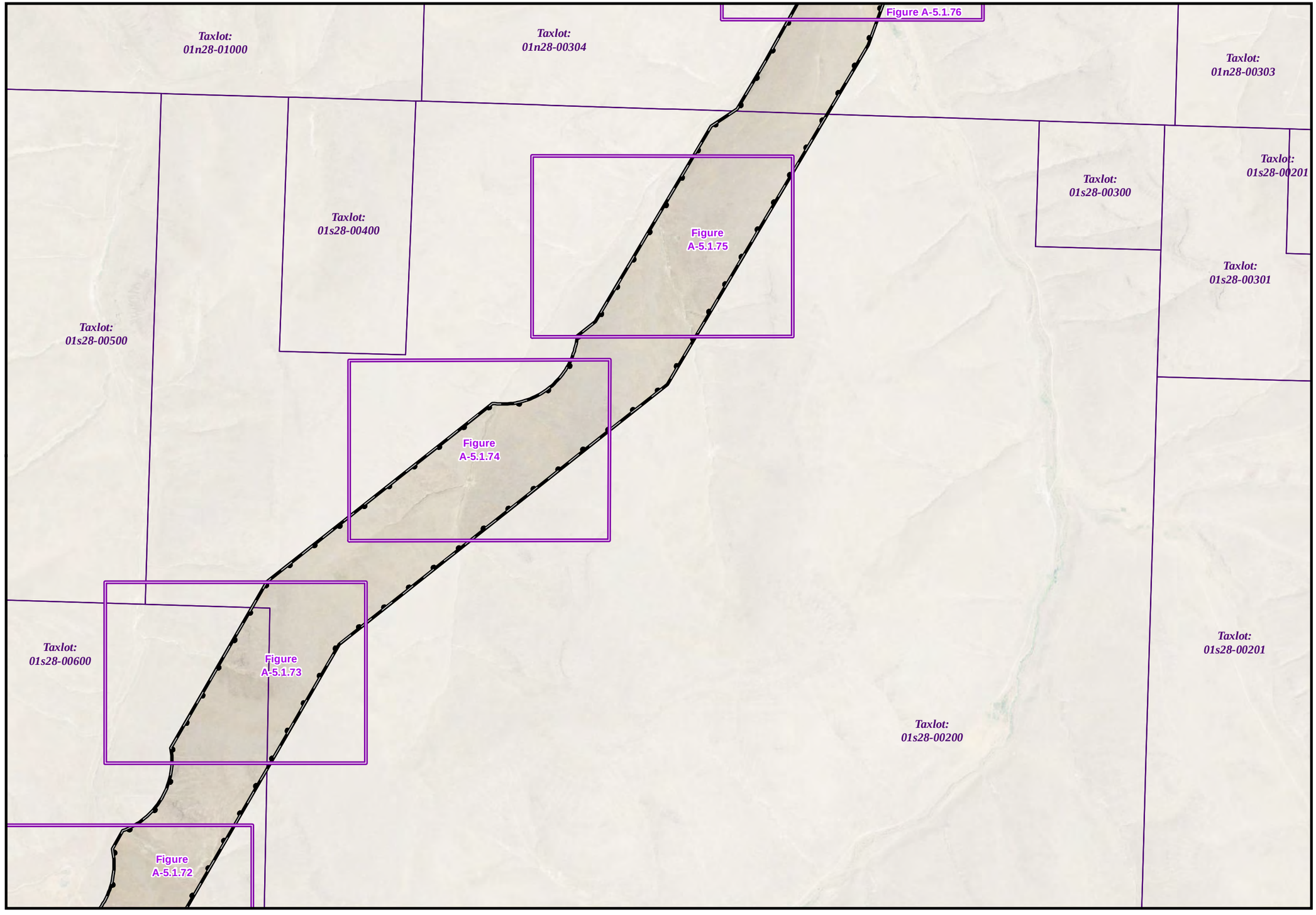

Figure A-5.26

Wheatridge Wind Energy Facility

Wetland Delineation
Map 26 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

1:12,000 **WGS84 UTM 11**

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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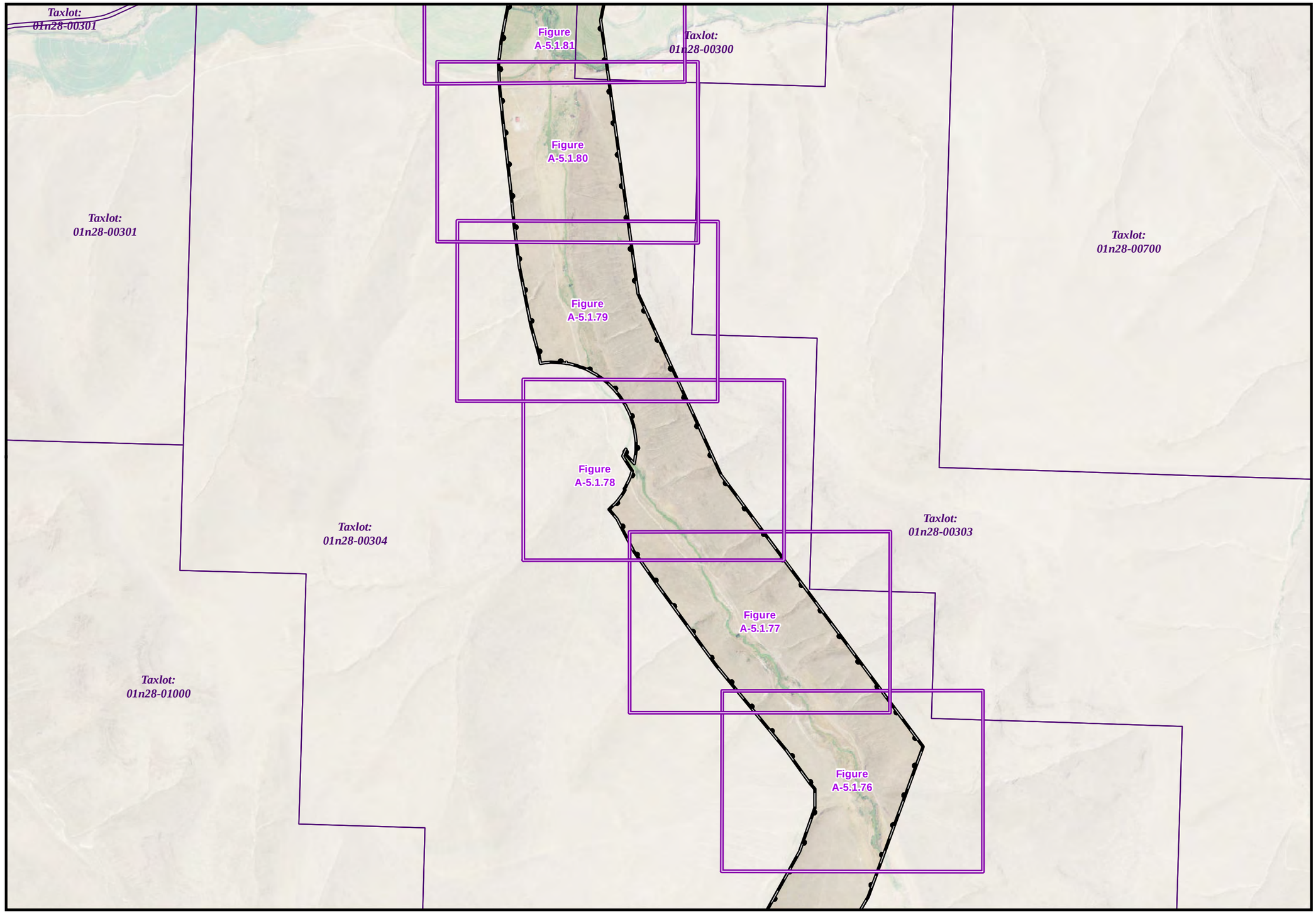

Figure A-5.27

Wheatridge Wind Energy Facility

Wetland Delineation
Map 27 of 33

Morrow and Umatilla Counties, OR

December 2014

Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Taxlot Boundary

1:12,000 **WGS84 UTM 11**

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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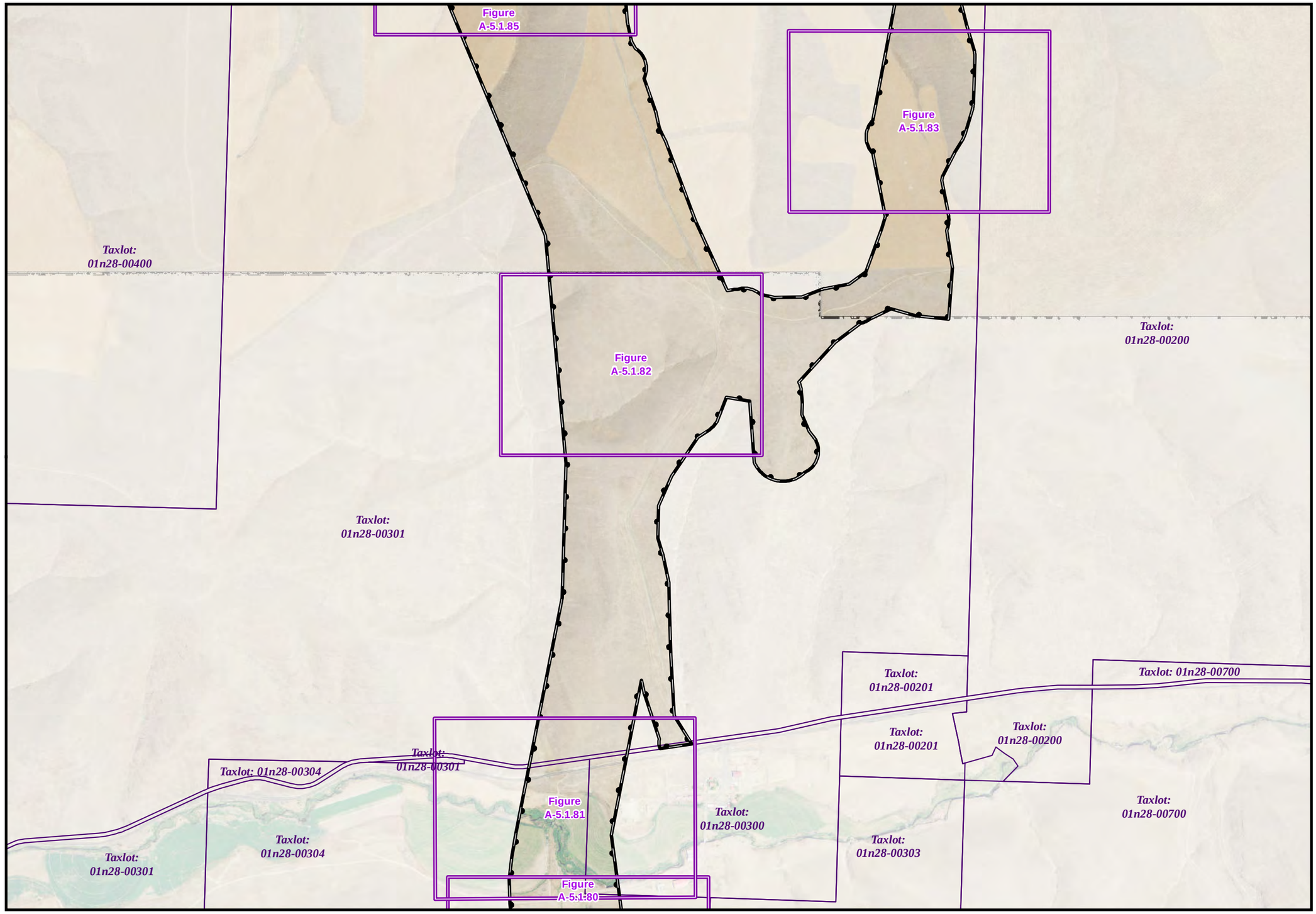

1:12,000 WGS84 UTM 11

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.28

Wheatridge Wind Energy Facility

Wetland Delineation
Map 28 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH

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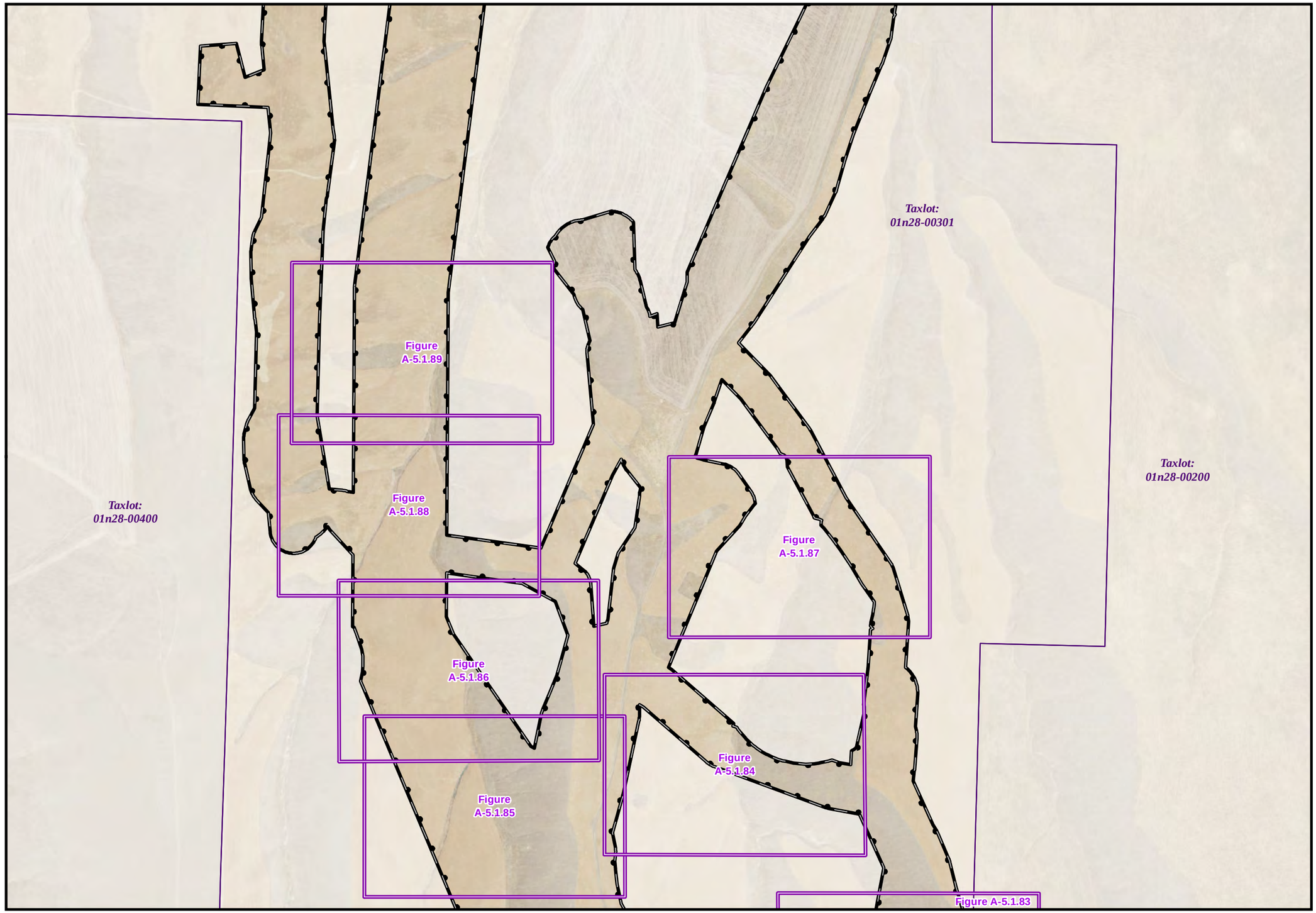

1:12,000 WGS84 UTM 11

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.29

Wheatridge Wind Energy Facility

Wetland Delineation
Map 29 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH

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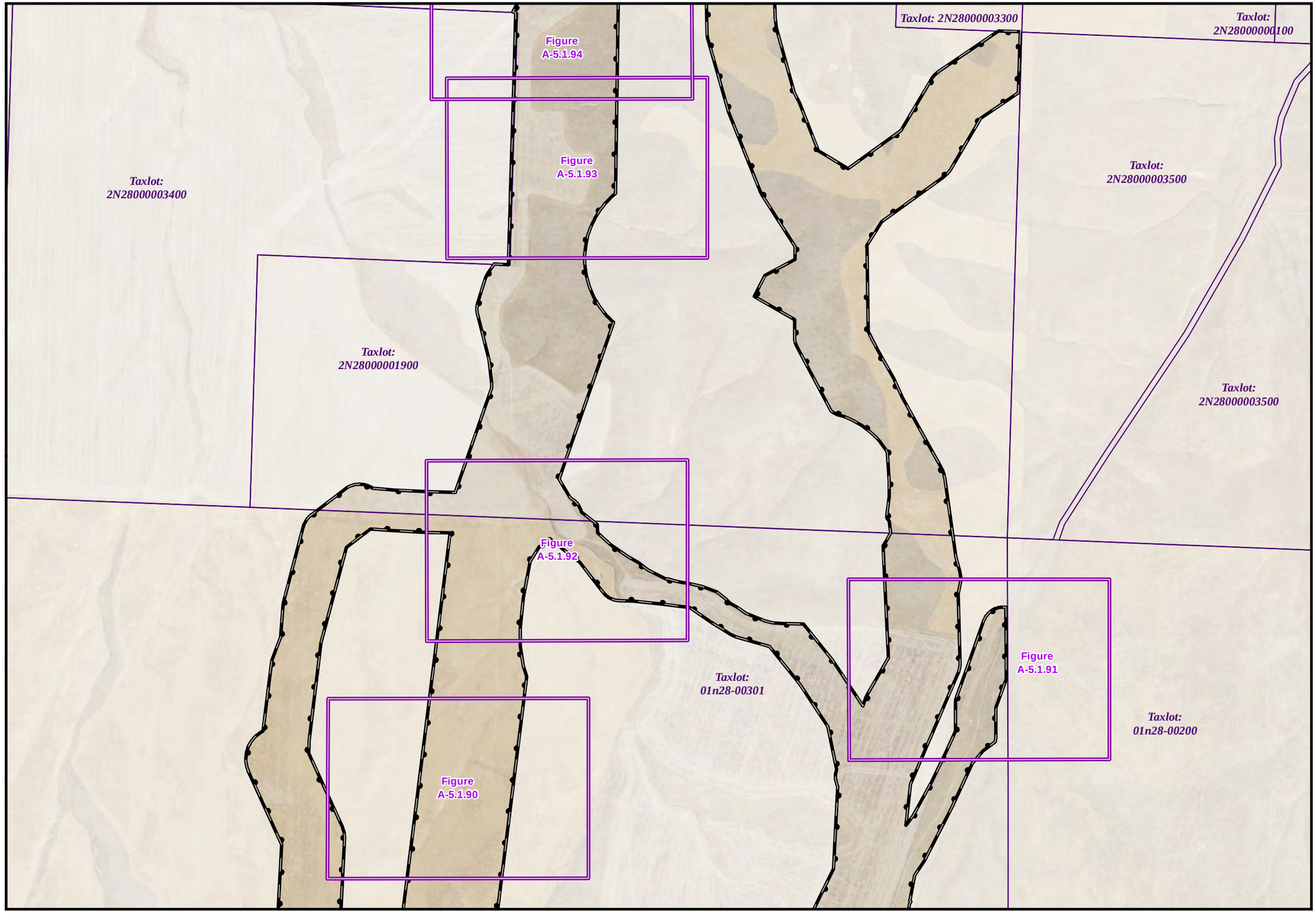

1:12,000 WGS84 UTM 11

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.30

Wheatridge Wind Energy Facility

Wetland Delineation
Map 30 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH

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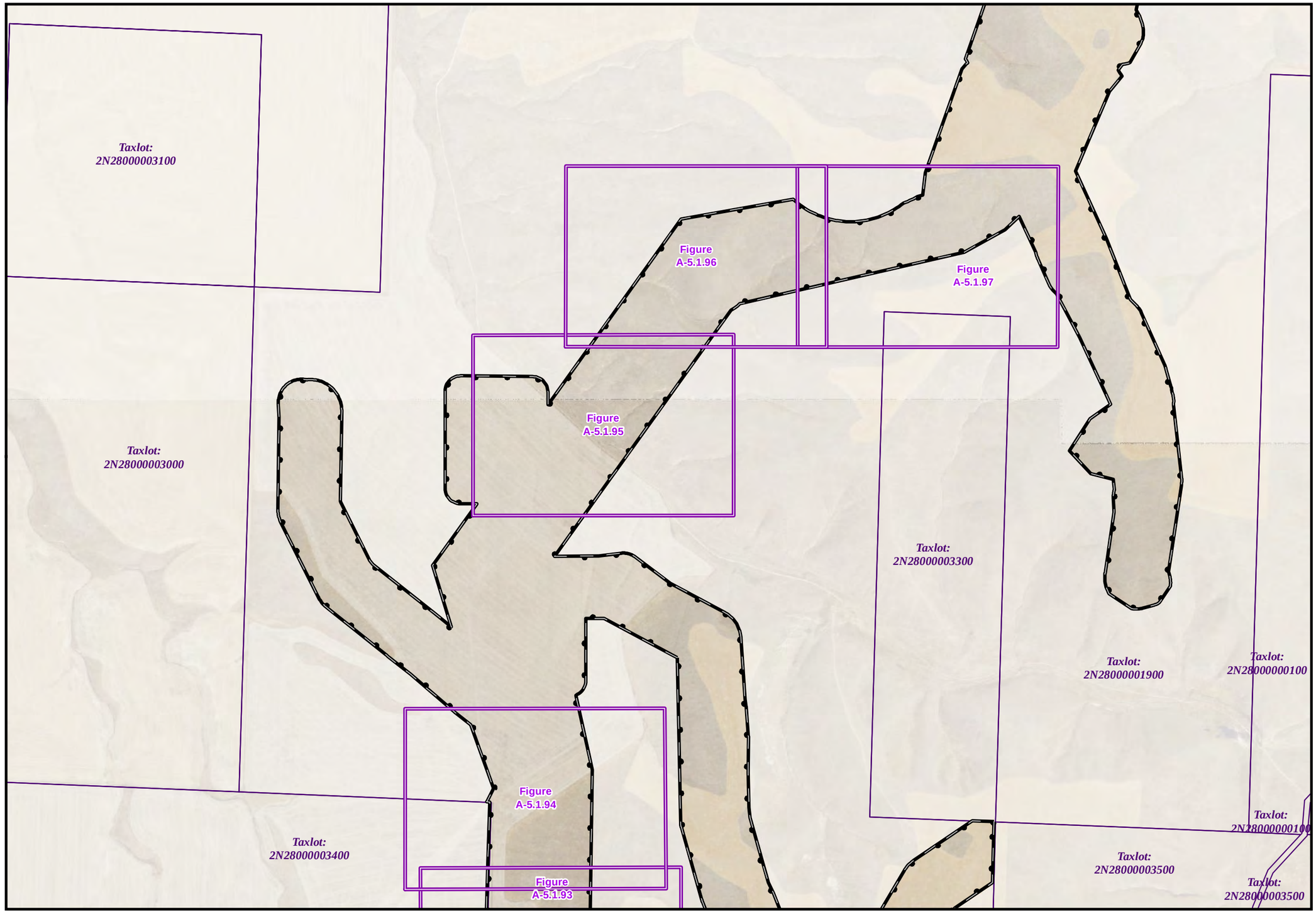

Figure A-5.31

Wheatridge Wind Energy Facility

Wetland Delineation
Map 31 of 33

Morrow and Umatilla Counties, OR

December 2014

Wetland Delineation A-5 Map Grid

Wetland and Waters Study Area

Taxlot Boundary

1:12,000 **WGS84 UTM 11**

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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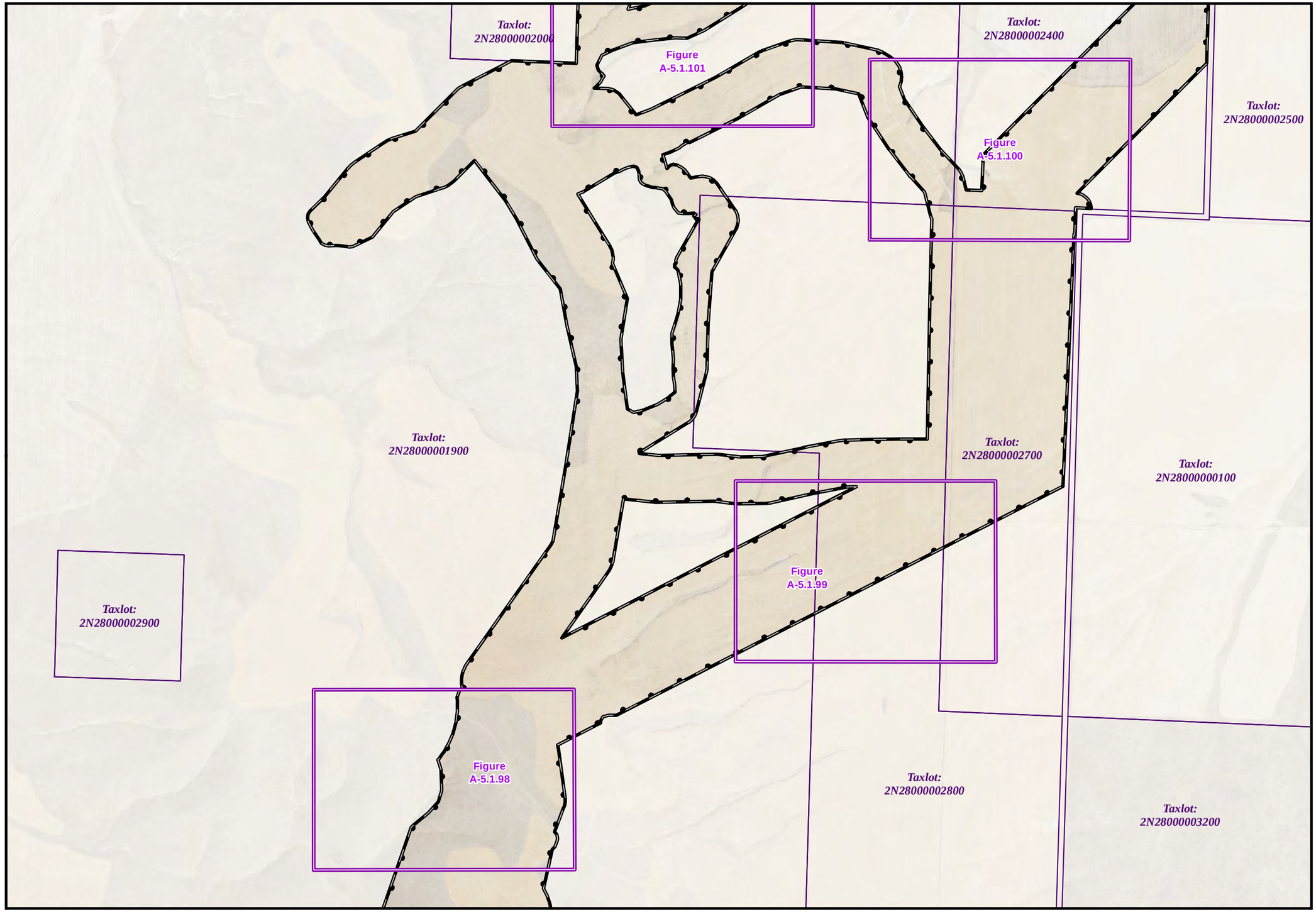

1:12,000 WGS84 UTM 11

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.32

Wheatridge Wind Energy Facility

Wetland Delineation
Map 32 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH

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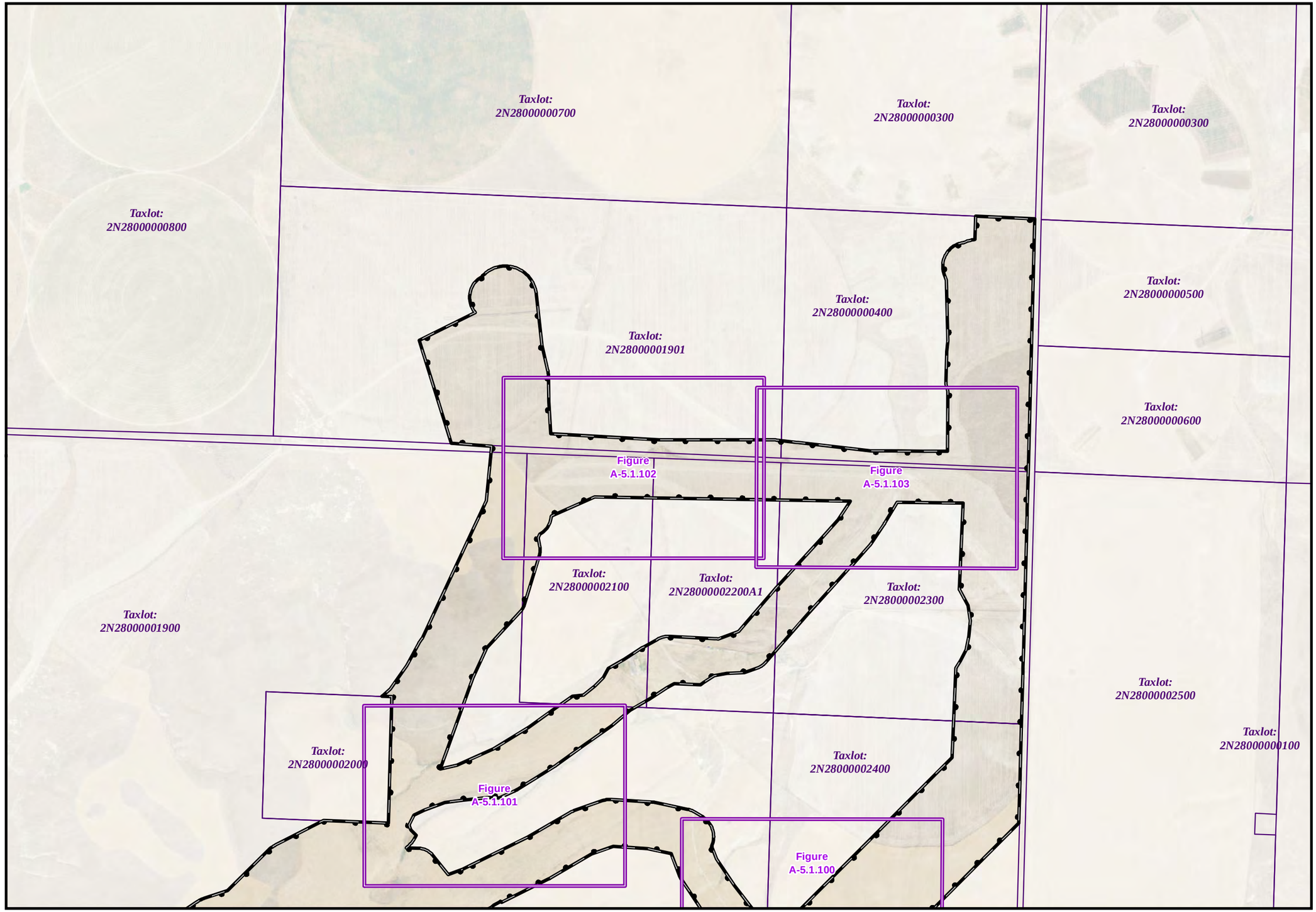

1:12,000 WGS84 UTM 11

0 0.25 0.5 1 Miles

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.33

Wheatridge Wind Energy Facility

Wetland Delineation
Map 33 of 33

Morrow and Umatilla Counties, OR

December 2014

- Wetland Delineation A-5 Map Grid
- Wetland and Waters Study Area
- Taxlot Boundary

TETRA TECH

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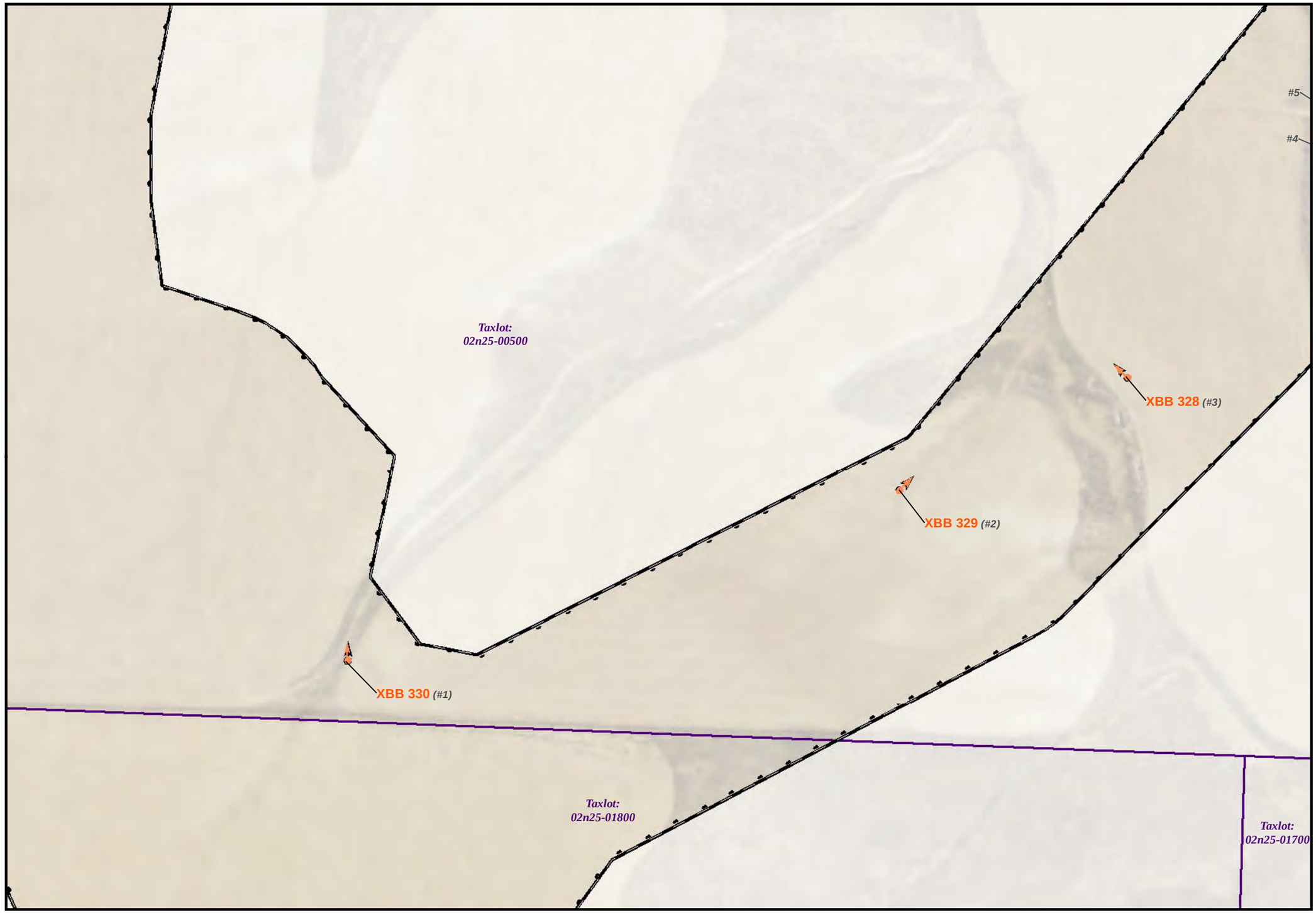

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.1

Wheatridge Wind Energy Facility

Wetland Delineation
Map 1 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

Boundaries of wetlands and other waters were surveyed with a Trimble GeoXH 6000 GNSS-enabled device. GPS data was differentially corrected to sub-meter accuracy.

TETRA TECH

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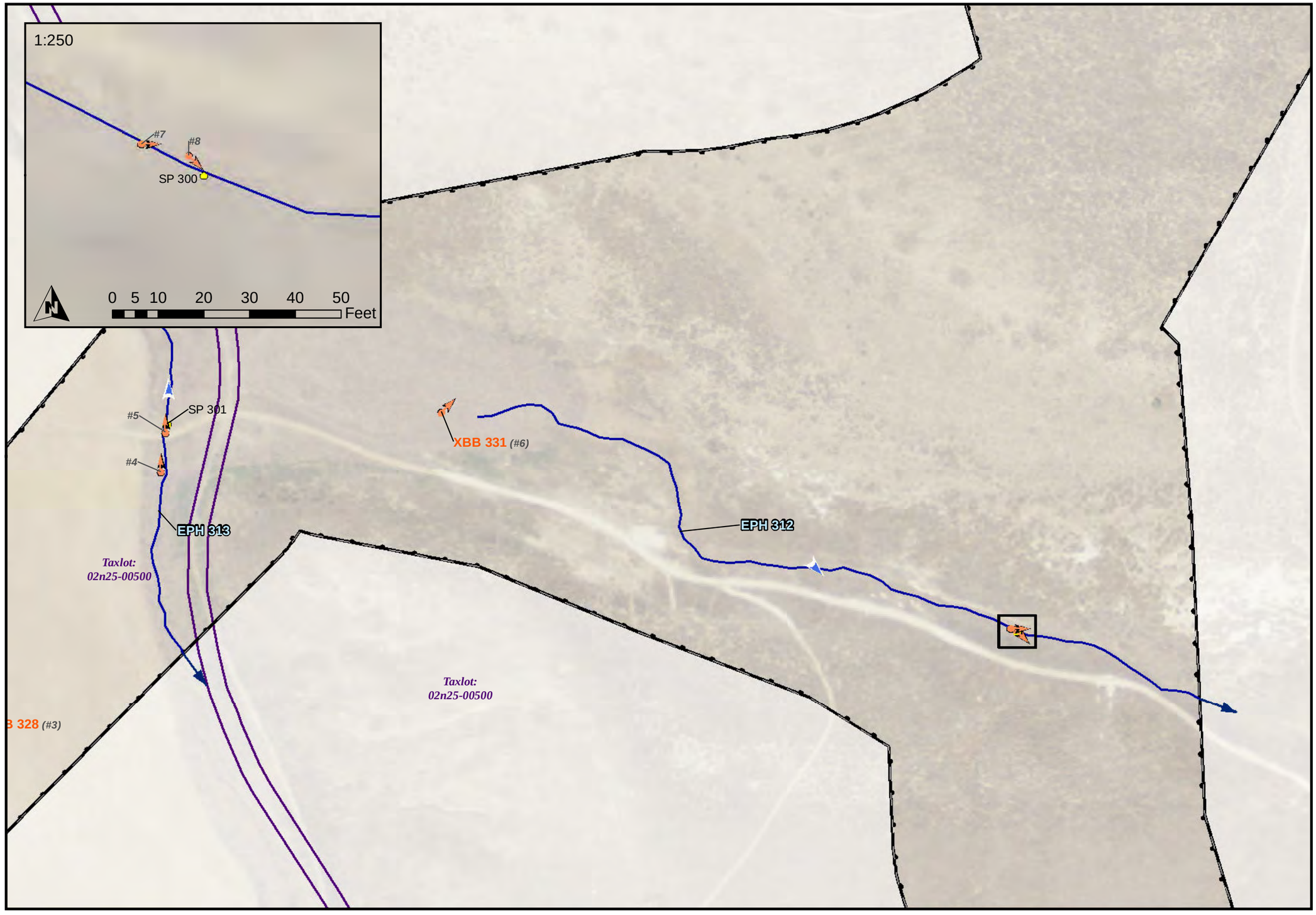

Figure A-5.1.2

Wheatridge Wind Energy Facility

Wetland Delineation
Map 2 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

Boundaries of wetlands and other waters were surveyed with a Trimble GeoXH 6000 GNSS-enabled device. GPS data was differentially corrected to sub-meter accuracy.

1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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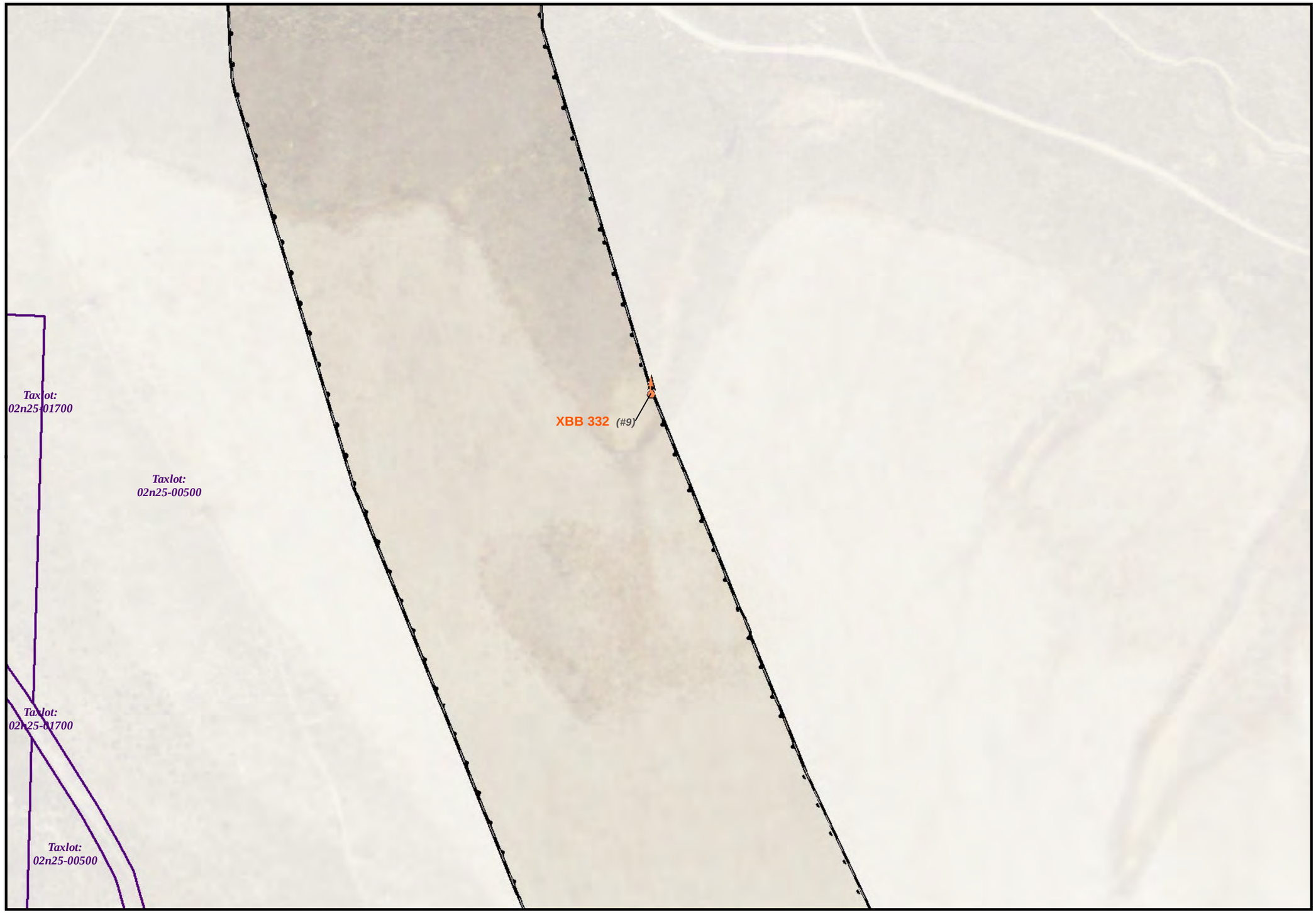

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.3

Wheatridge Wind Energy Facility

Wetland Delineation
Map 3 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

Boundaries of wetlands and other waters were surveyed with a Trimble GeoXH 6000 GNSS-enabled device. GPS data was differentially corrected to sub-meter accuracy.

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Figure A-5.1.4

Wheatridge Wind Energy Facility

Wetland Delineation
Map 4 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

Boundaries of wetlands and other waters were surveyed with a Trimble GeoXH 6000 GNSS-enabled device. GPS data was differentially corrected to sub-meter accuracy.

1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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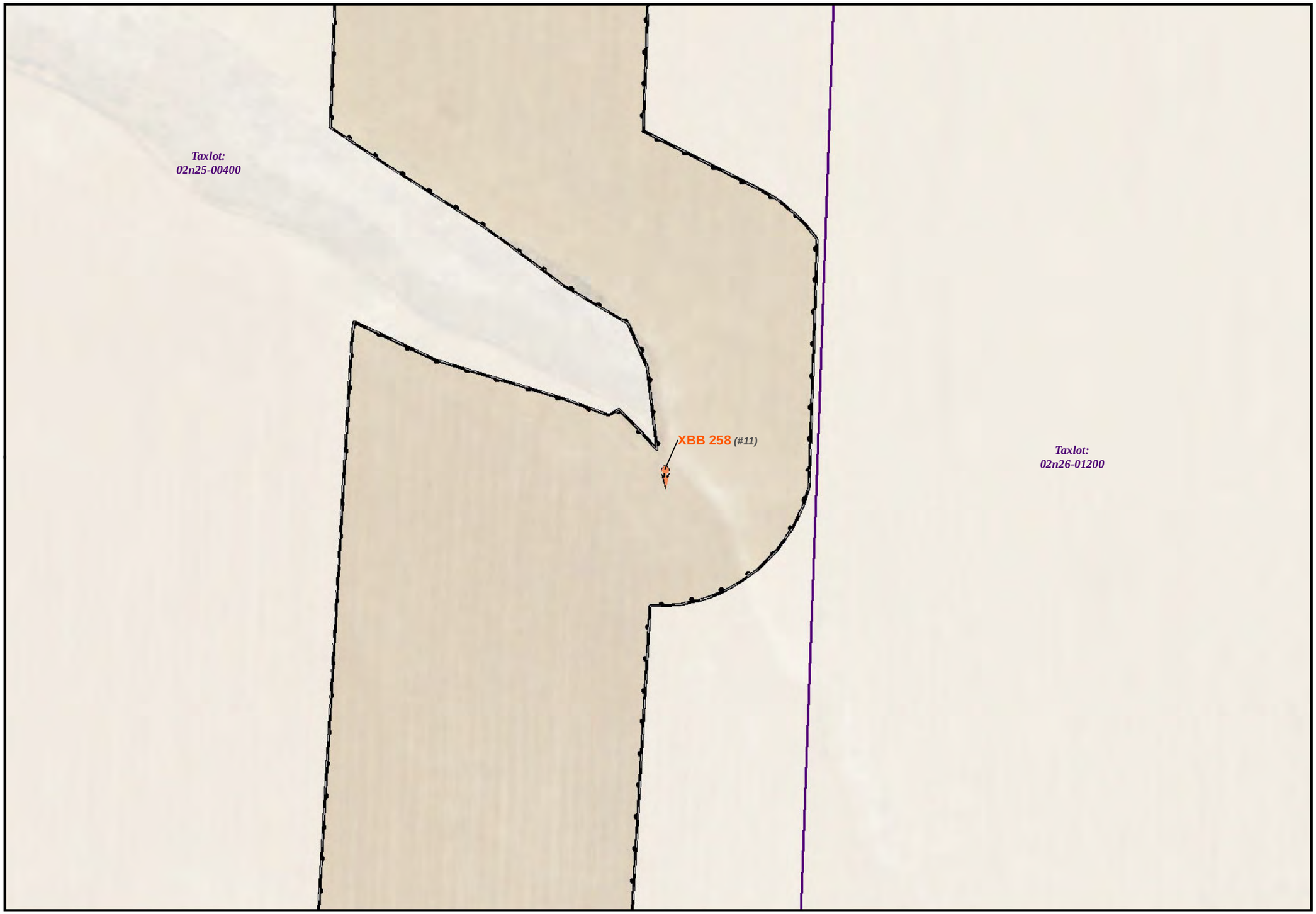

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.5

Wheatridge Wind Energy Facility

Wetland Delineation
Map 5 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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TETRA TECH

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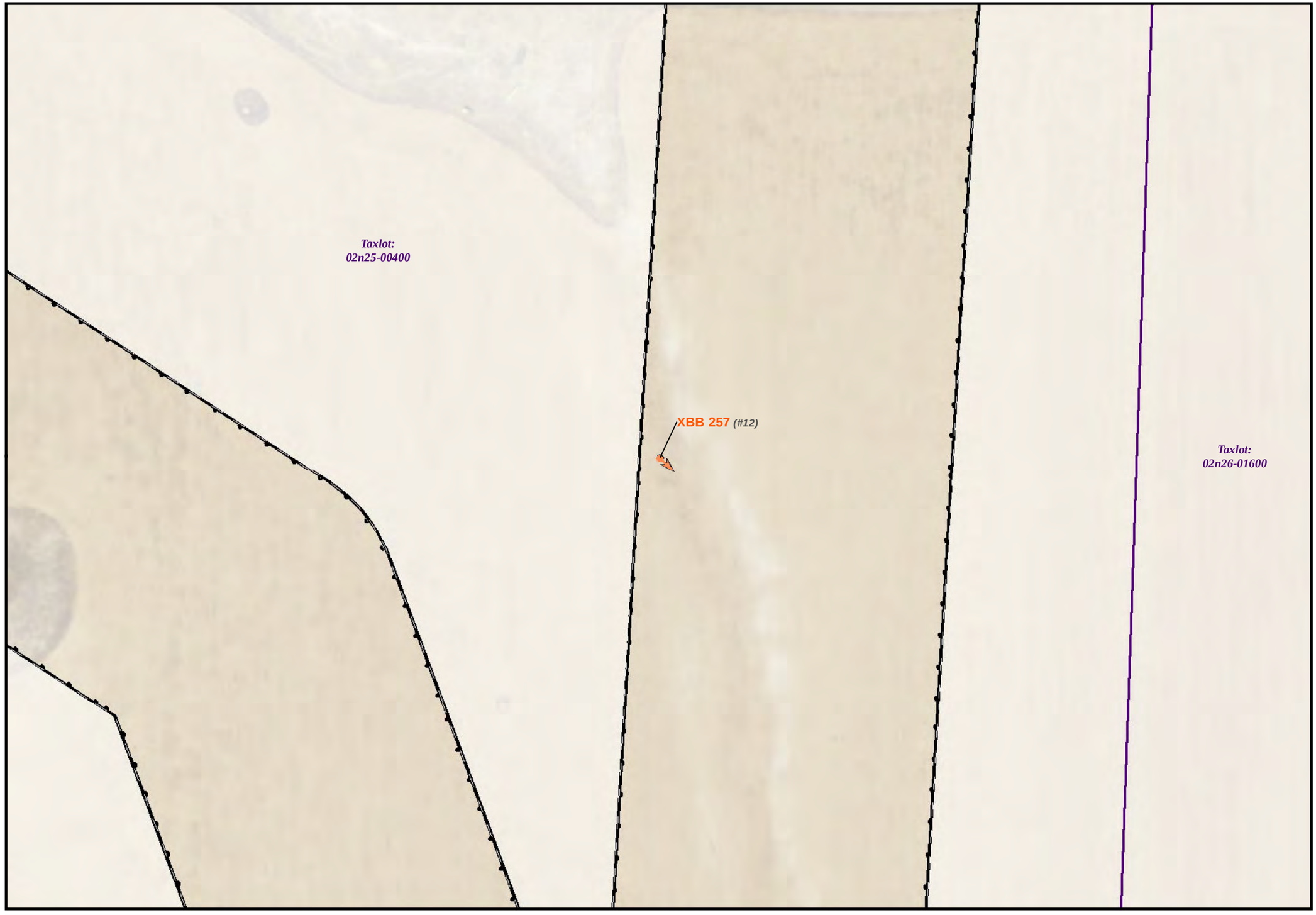

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.6

Wheatridge Wind Energy Facility

Wetland Delineation
Map 6 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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Figure A-5.1.7

Wheatridge Wind Energy Facility

Wetland Delineation
Map 7 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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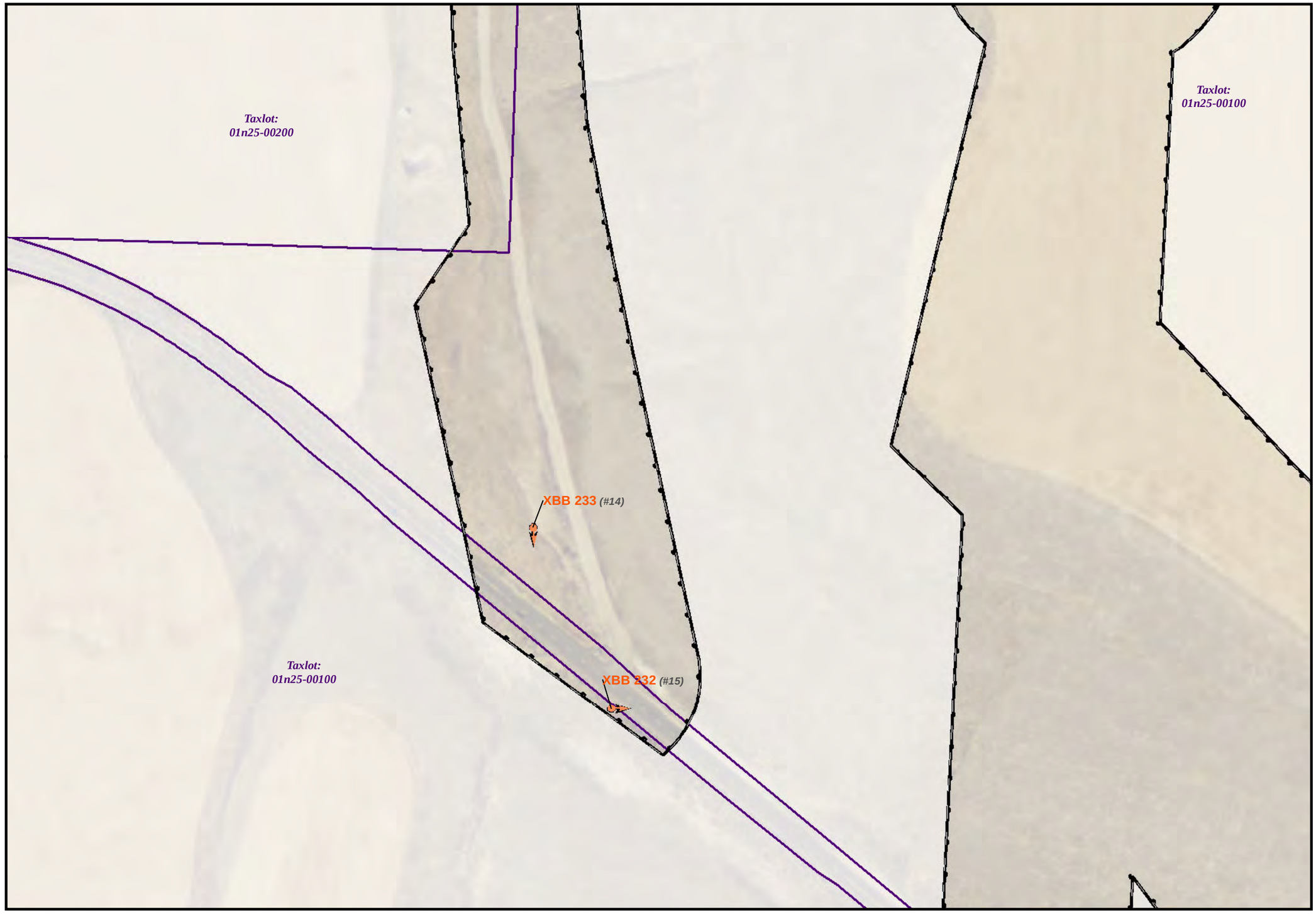

Figure A-5.1.8

Wheatridge Wind Energy Facility

Wetland Delineation
Map 8 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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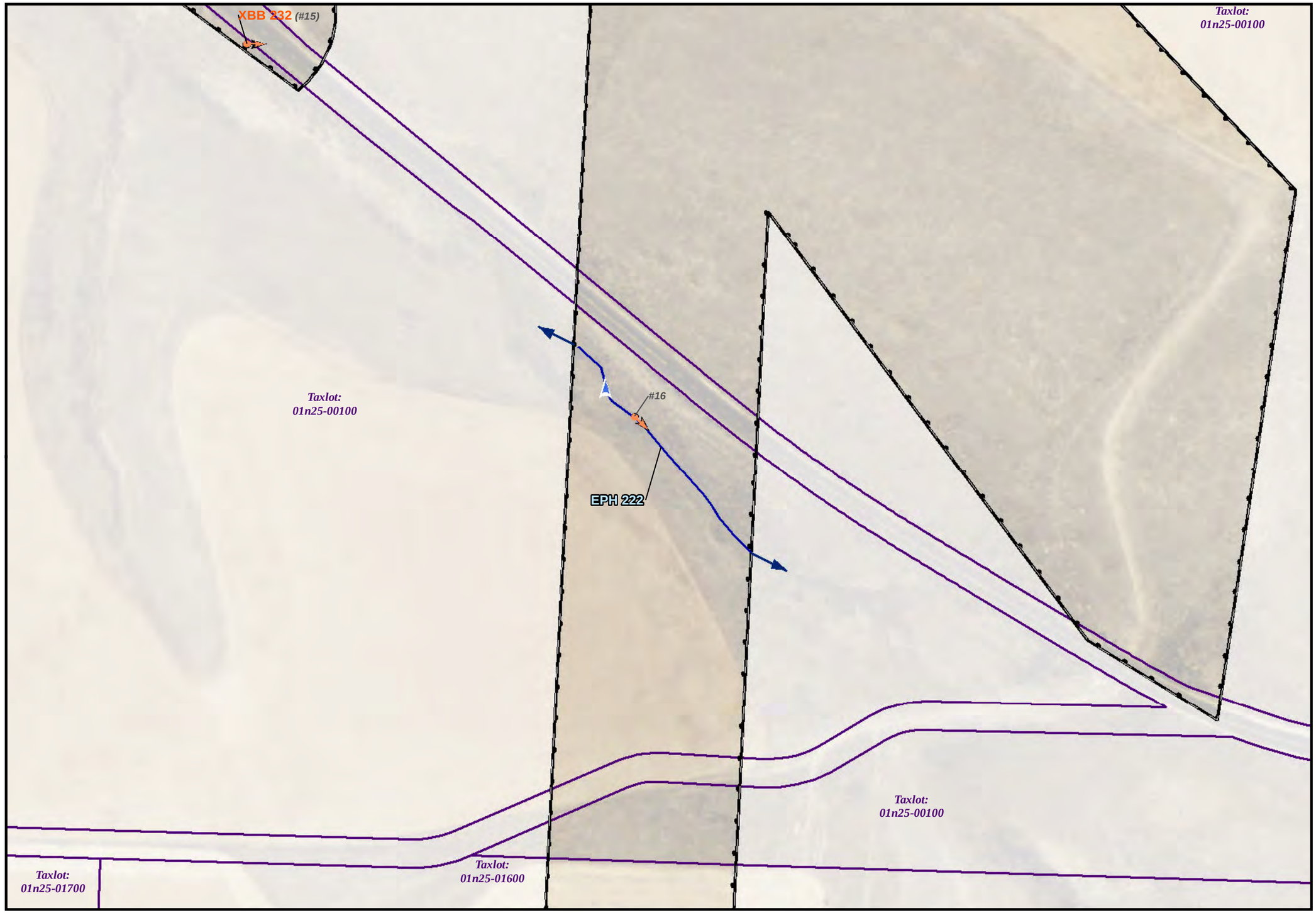

Figure A-5.1.9

Wheatridge Wind Energy Facility

Wetland Delineation
Map 9 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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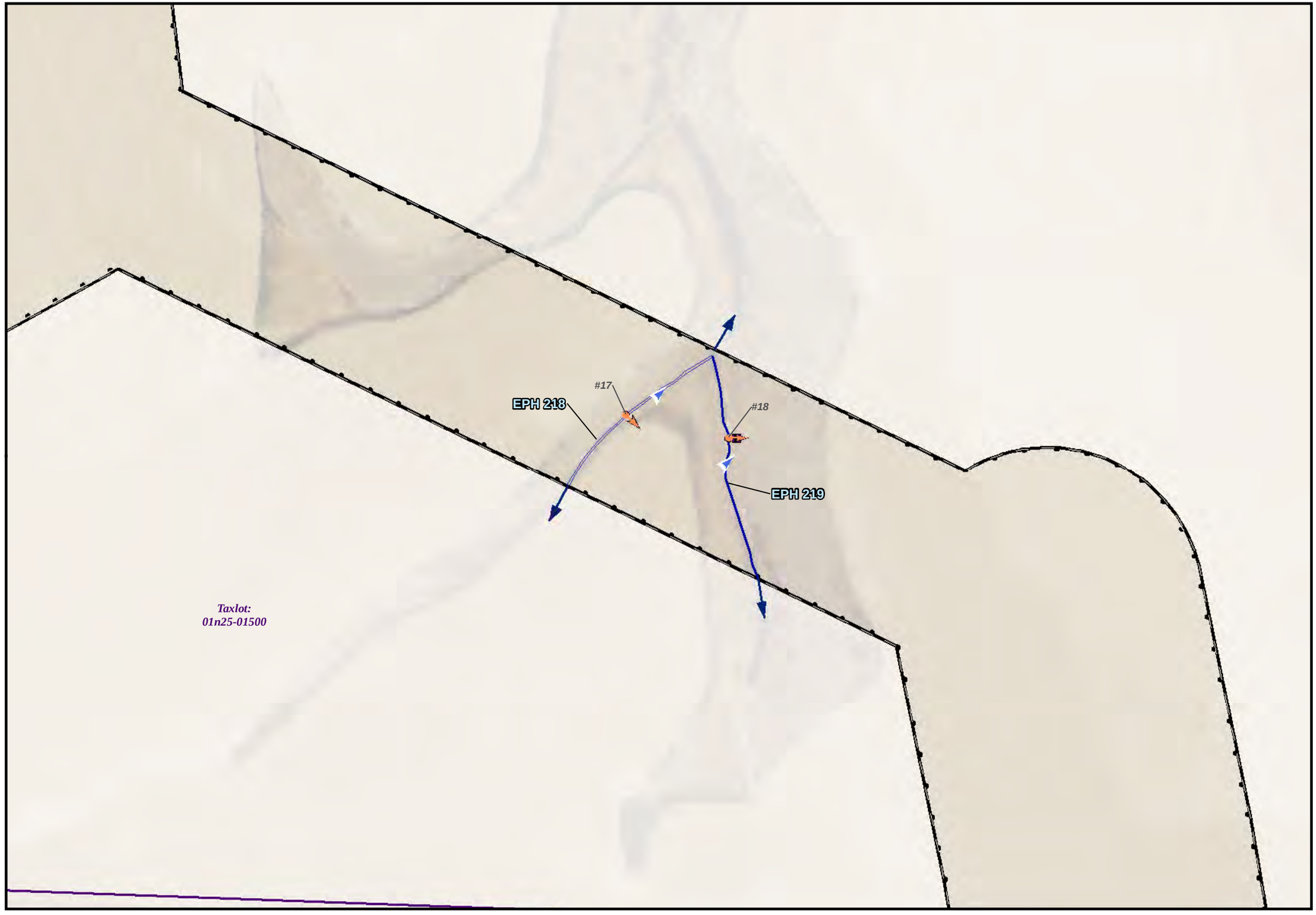

Figure A-5.1.10

Wheatridge Wind Energy Facility

Wetland Delineation
Map 10 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.11

Wheatridge Wind Energy Facility

Wetland Delineation
Map 11 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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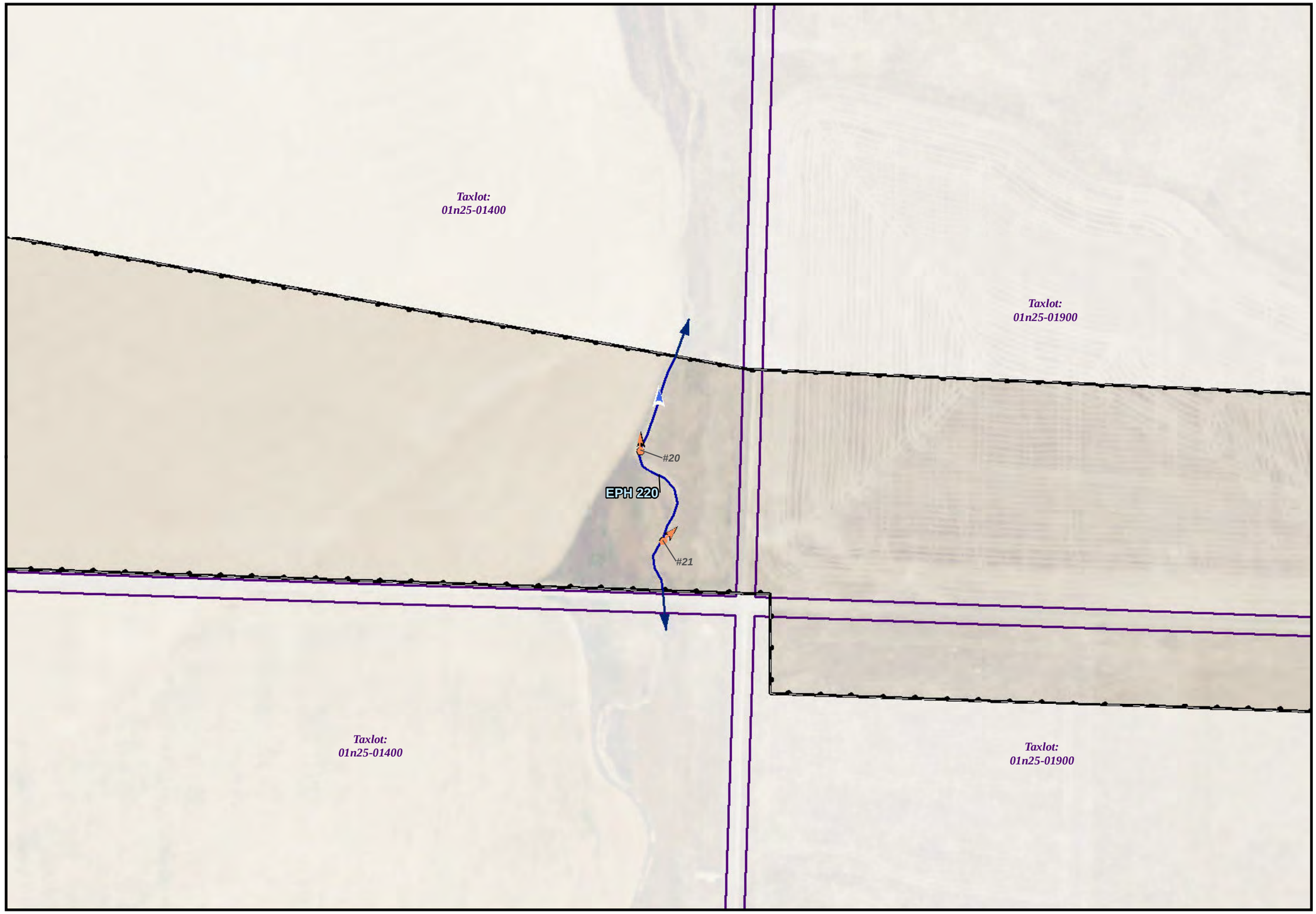

Figure A-5.1.12

Wheatridge Wind Energy Facility

Wetland Delineation
Map 12 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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Figure A-5.1.13

Wheatridge Wind Energy Facility

Wetland Delineation
Map 13 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

Boundaries of wetlands and other waters were surveyed with a Trimble GeoXH 6000 GNSS-enabled device. GPS data was differentially corrected to sub-meter accuracy.

1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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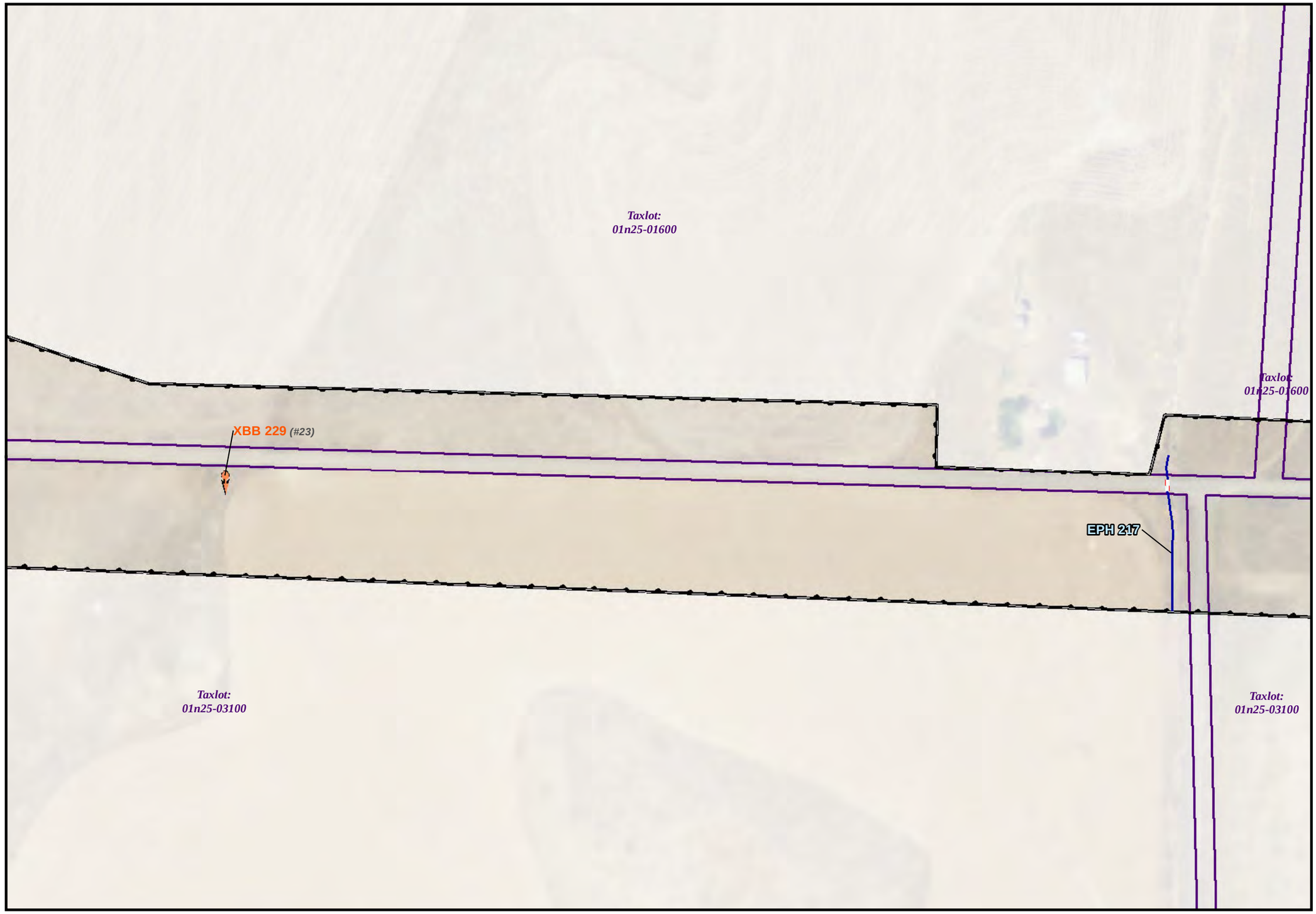

Figure A-5.1.14

Wheatridge Wind Energy Facility

Wetland Delineation
Map 14 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

Boundaries of wetlands and other waters were surveyed with a Trimble GeoXH 6000 GNSS-enabled device. GPS data was differentially corrected to sub-meter accuracy.

1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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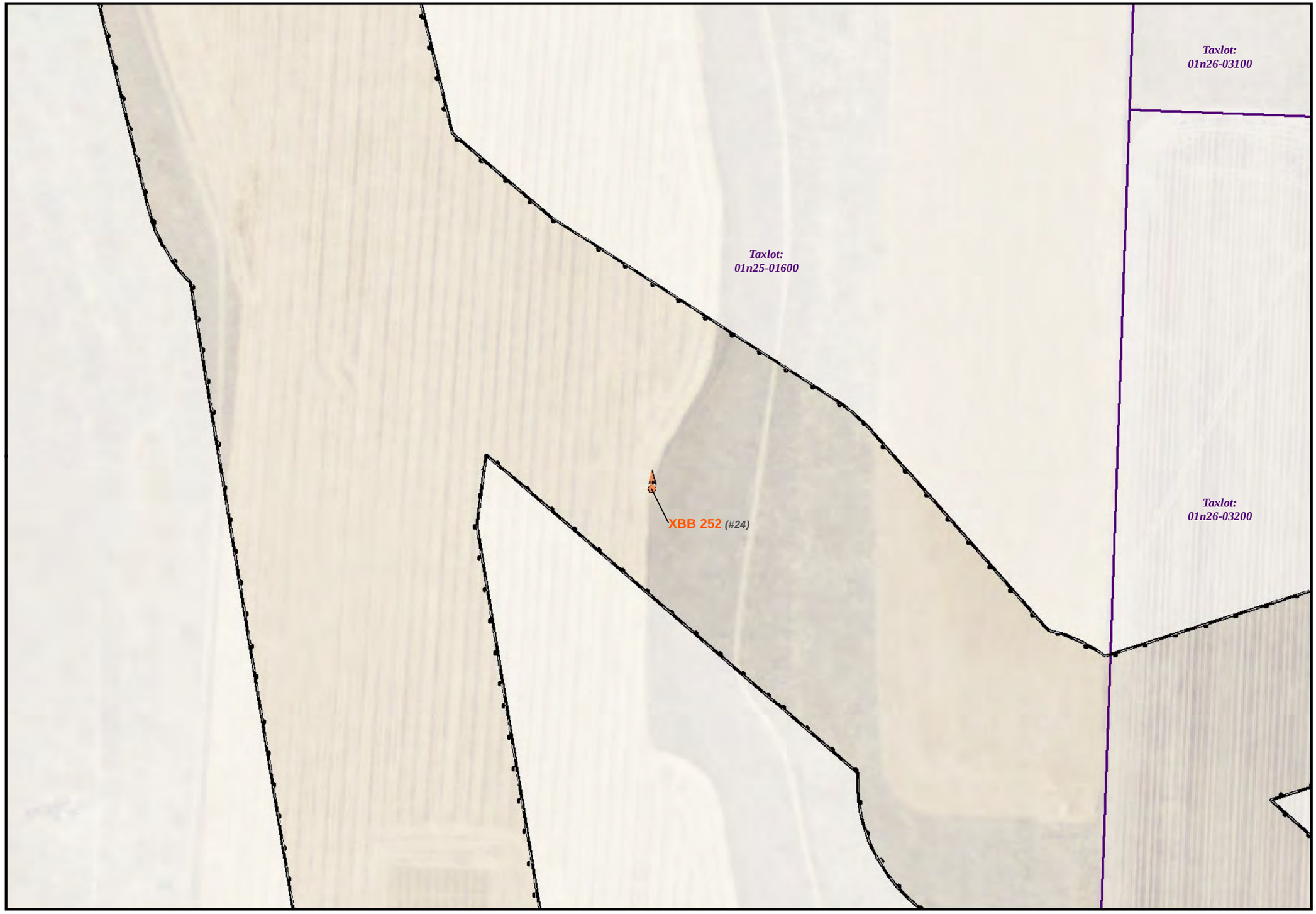

Figure A-5.1.15

Wheatridge Wind Energy Facility

Wetland Delineation
Map 15 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

Boundaries of wetlands and other waters were surveyed with a Trimble GeoXH 6000 GNSS-enabled device. GPS data was differentially corrected to sub-meter accuracy.

1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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Figure A-5.1.16

Wheatridge Wind Energy Facility

Wetland Delineation
Map 16 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

Boundaries of wetlands and other waters were surveyed with a Trimble GeoXH 6000 GNSS-enabled device. GPS data was differentially corrected to sub-meter accuracy.

1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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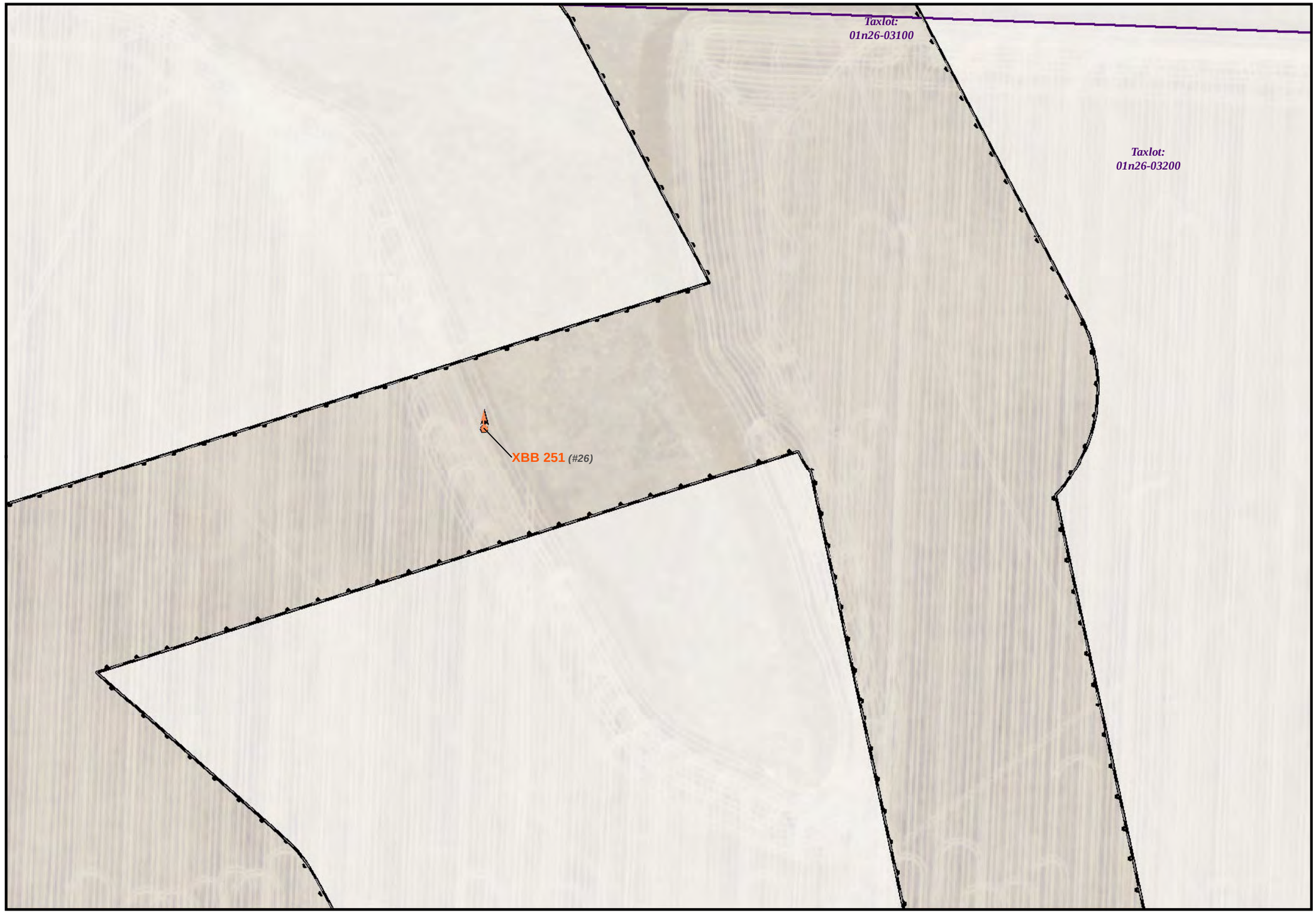

Figure A-5.1.17

Wheatridge Wind Energy Facility

Wetland Delineation
Map 17 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.18

Wheatridge Wind Energy Facility

Wetland Delineation
Map 18 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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TETRA TECH

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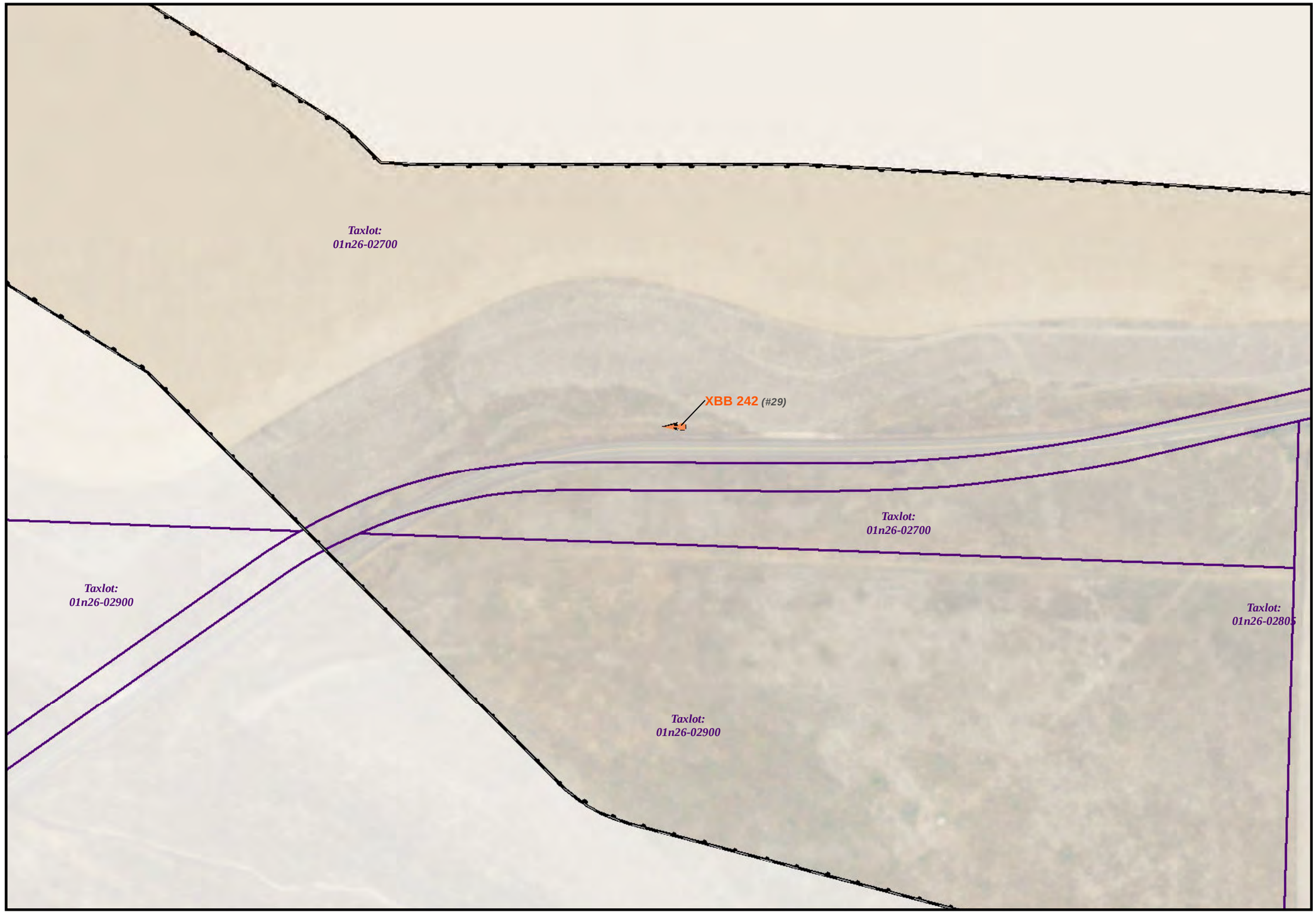

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.19

Wheatridge Wind Energy Facility

Wetland Delineation
Map 19 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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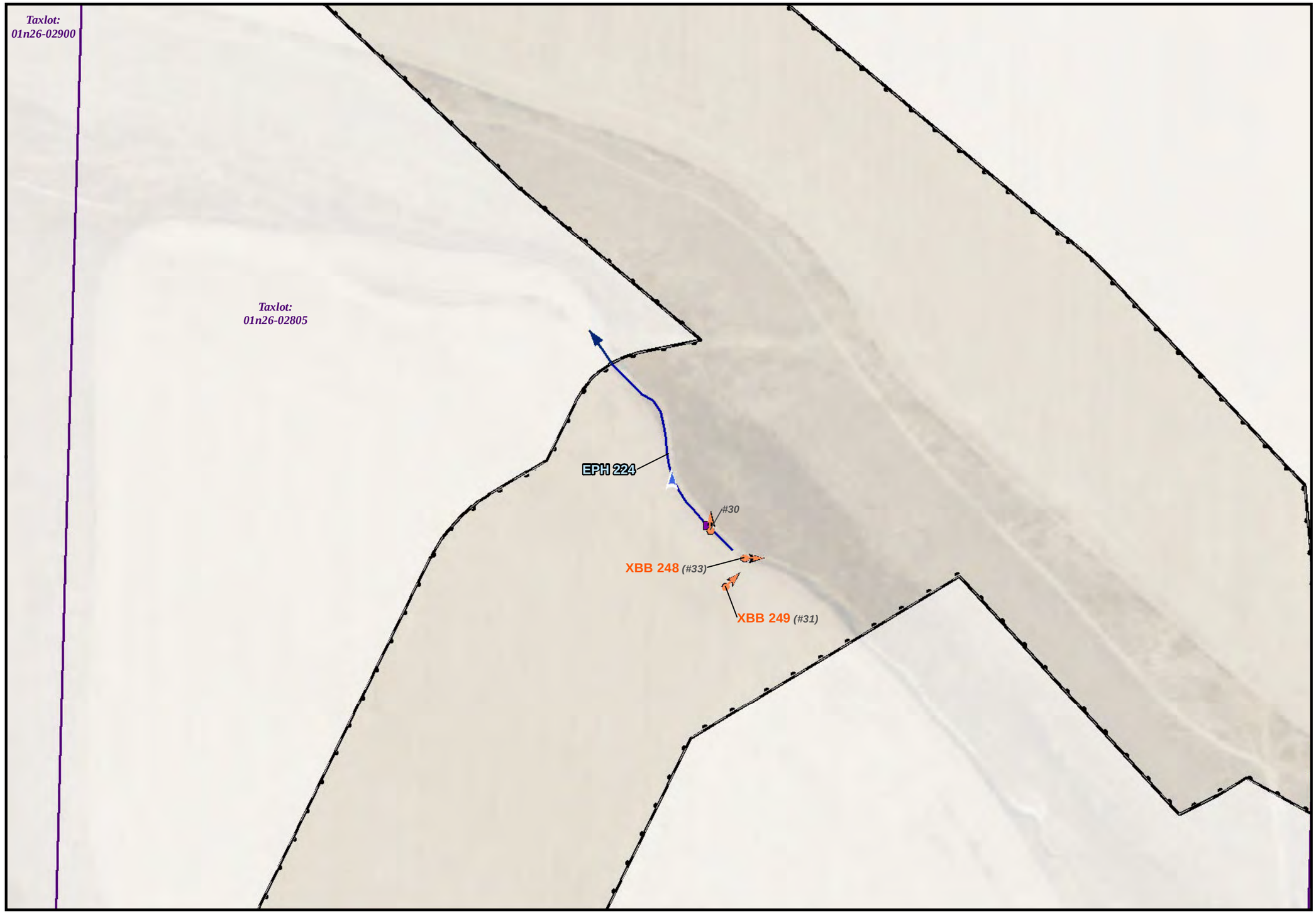

Figure A-5.1.20

Wheatridge Wind Energy Facility

Wetland Delineation
Map 20 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.21

Wheatridge Wind Energy Facility

Wetland Delineation
Map 21 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

Boundaries of wetlands and other waters were surveyed with a Trimble GeoXH 6000 GNSS-enabled device. GPS data was differentially corrected to sub-meter accuracy.

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Figure A-5.1.22

Wheatridge Wind Energy Facility

Wetland Delineation
Map 22 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

TETRA TECH

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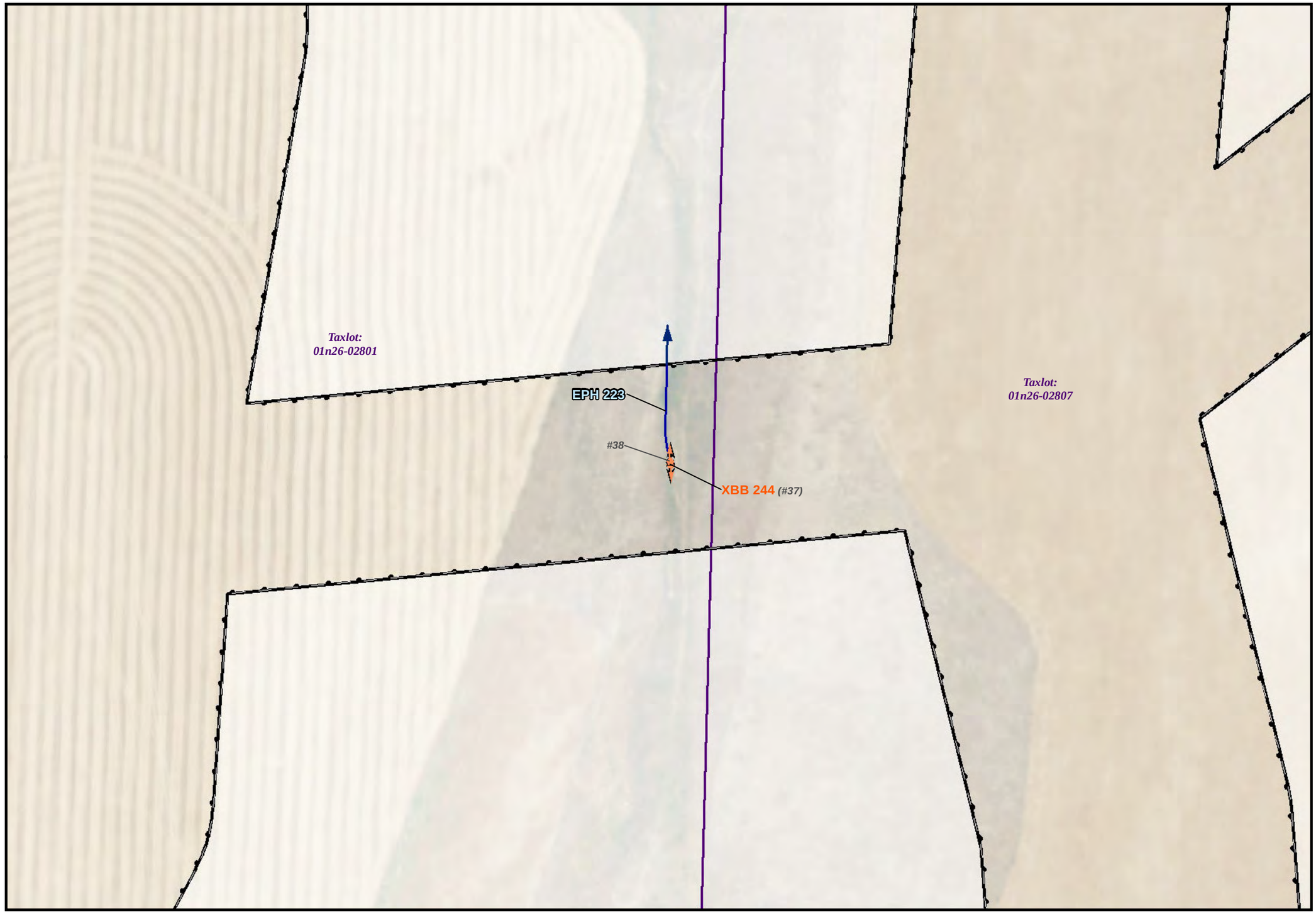

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.23

Wheatridge Wind Energy Facility

Wetland Delineation
Map 23 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

Boundaries of wetlands and other waters were surveyed with a Trimble GeoXH 6000 GNSS-enabled device. GPS data was differentially corrected to sub-meter accuracy.

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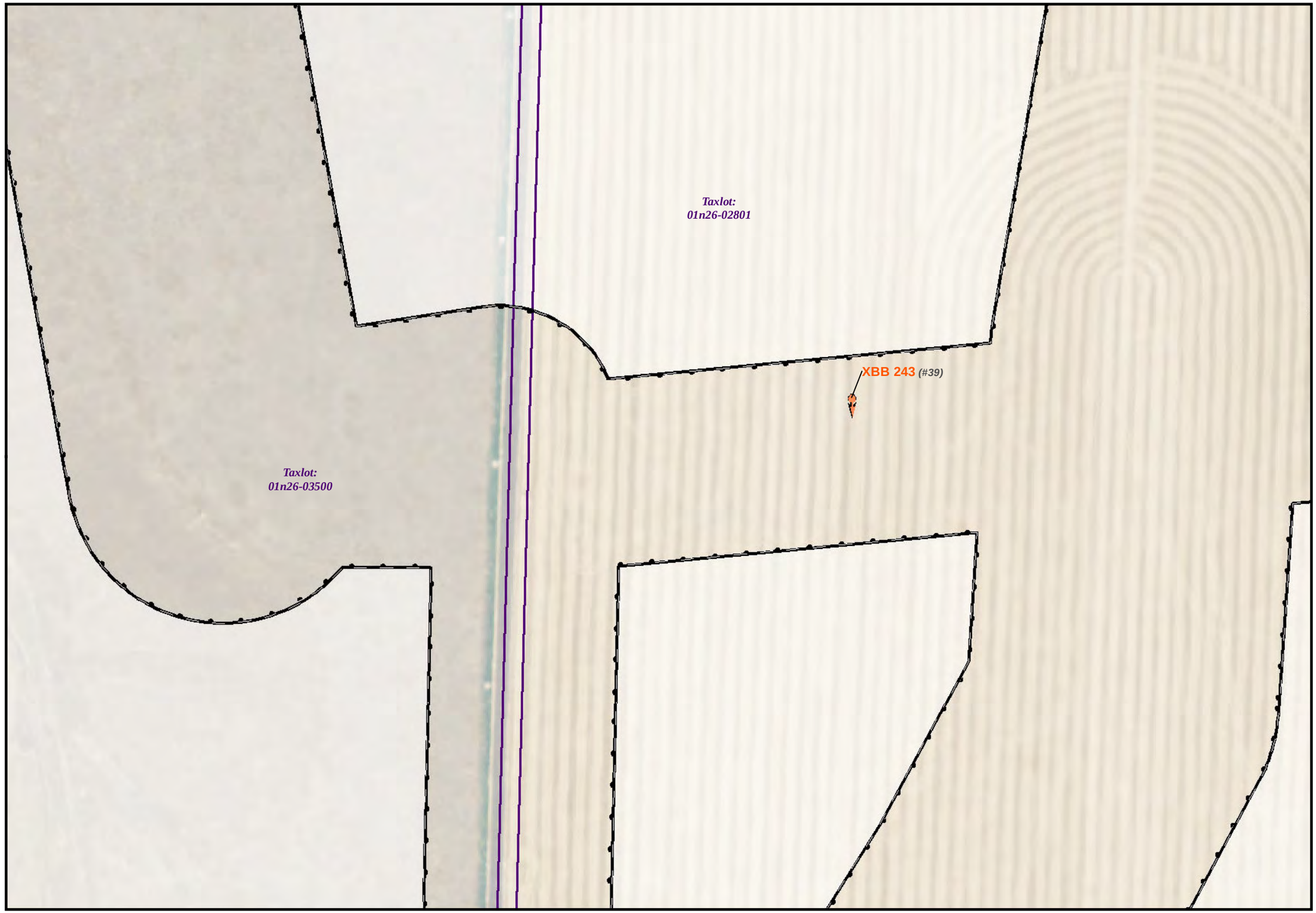

Figure A-5.1.24

Wheatridge Wind Energy Facility

Wetland Delineation
Map 24 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

TETRA TECH

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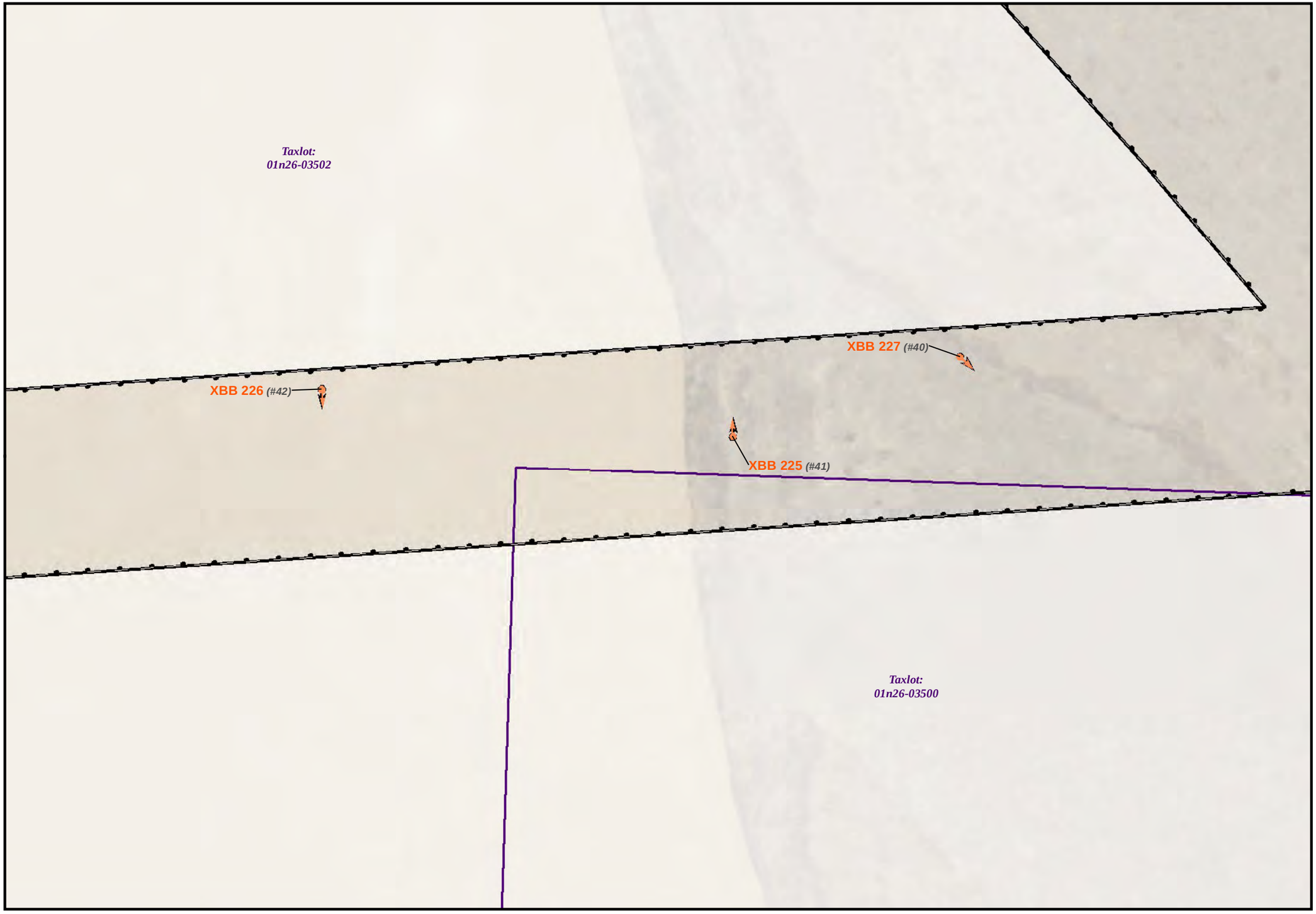

Figure A-5.1.25

Wheatridge Wind Energy Facility

Wetland Delineation
Map 25 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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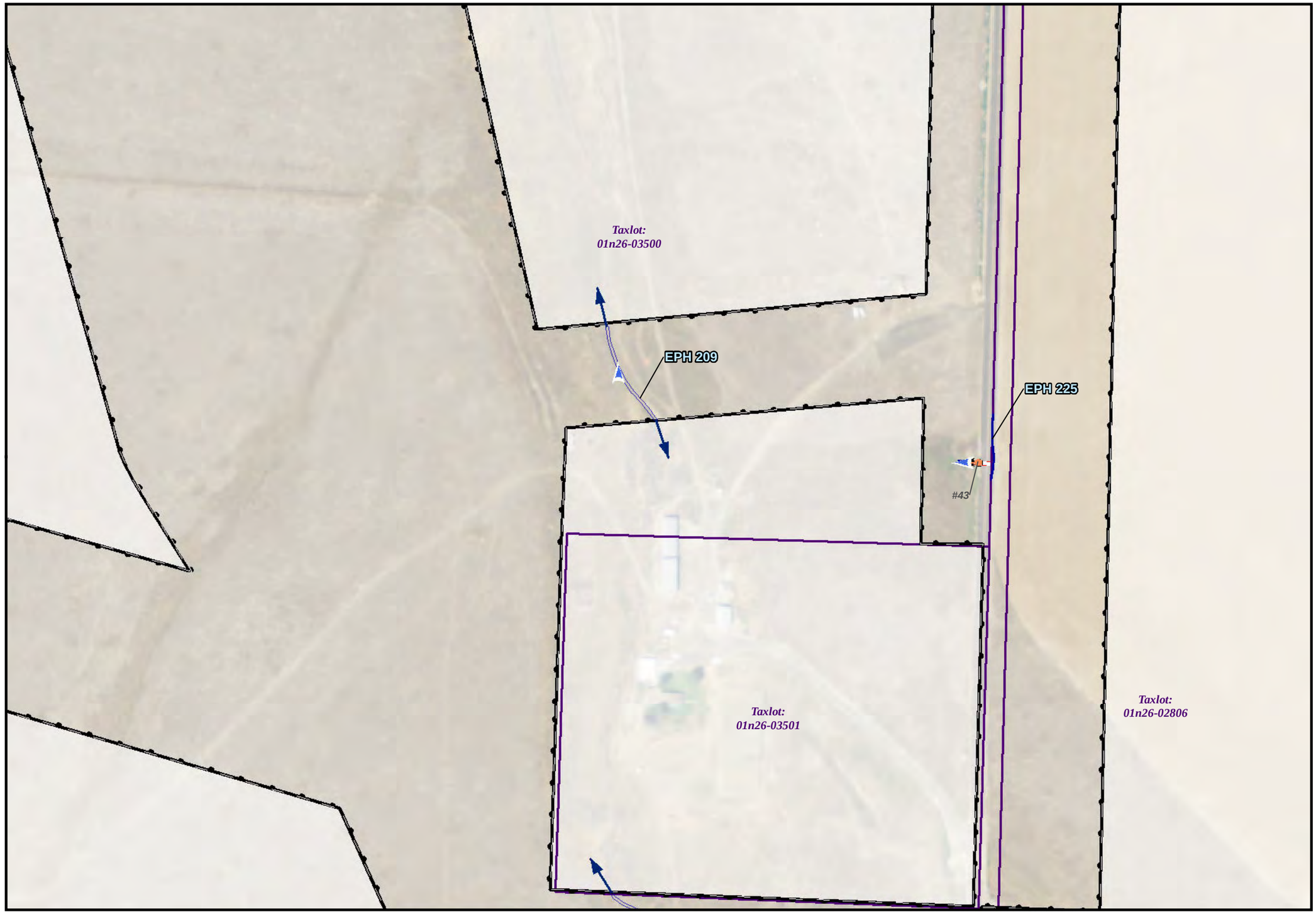

Figure A-5.1.26

Wheatridge Wind Energy Facility

Wetland Delineation
Map 26 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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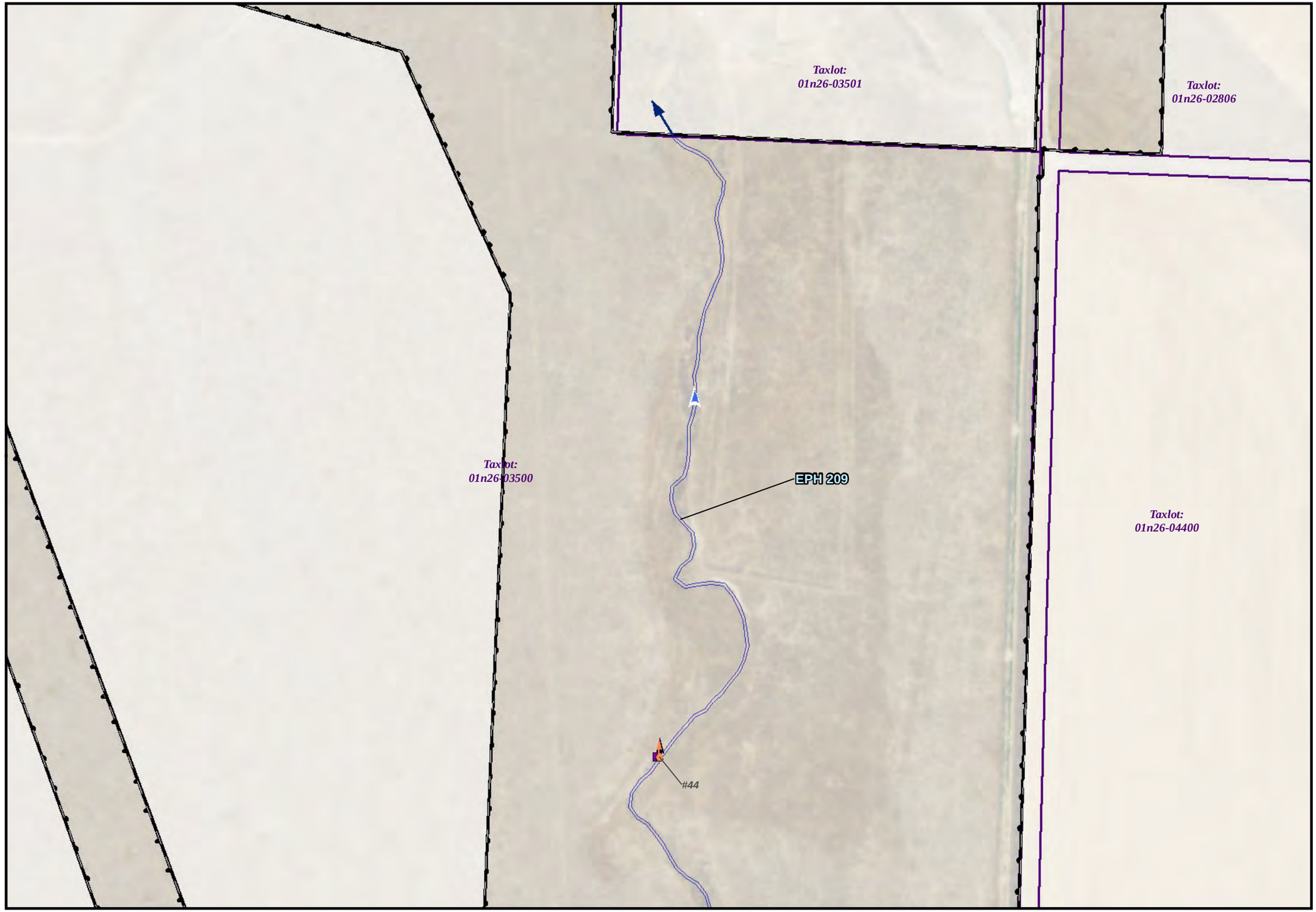

Figure A-5.1.27

Wheatridge Wind Energy Facility

Wetland Delineation
Map 27 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

TETRA TECH

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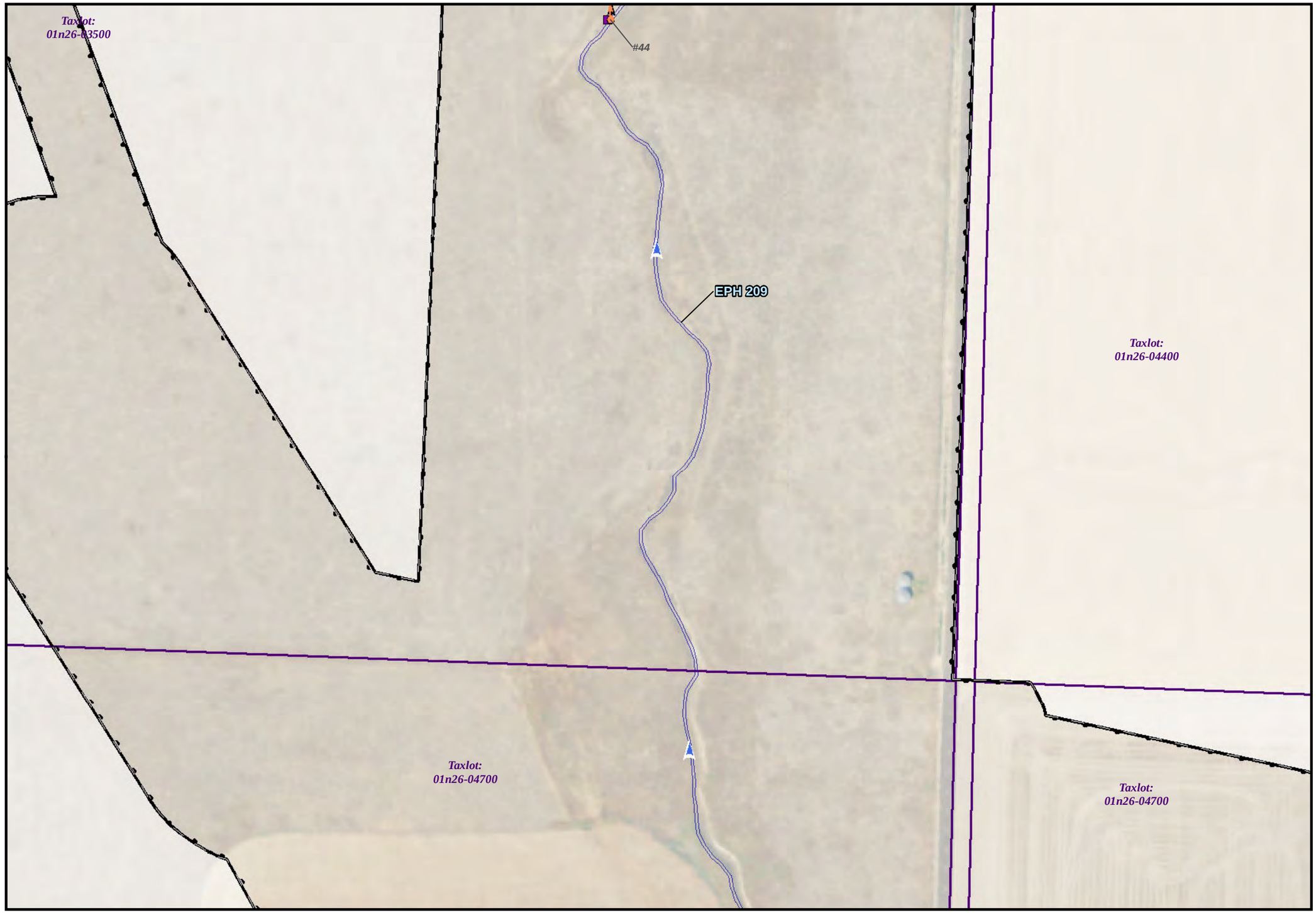

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.28

Wheatridge Wind Energy Facility

Wetland Delineation
Map 28 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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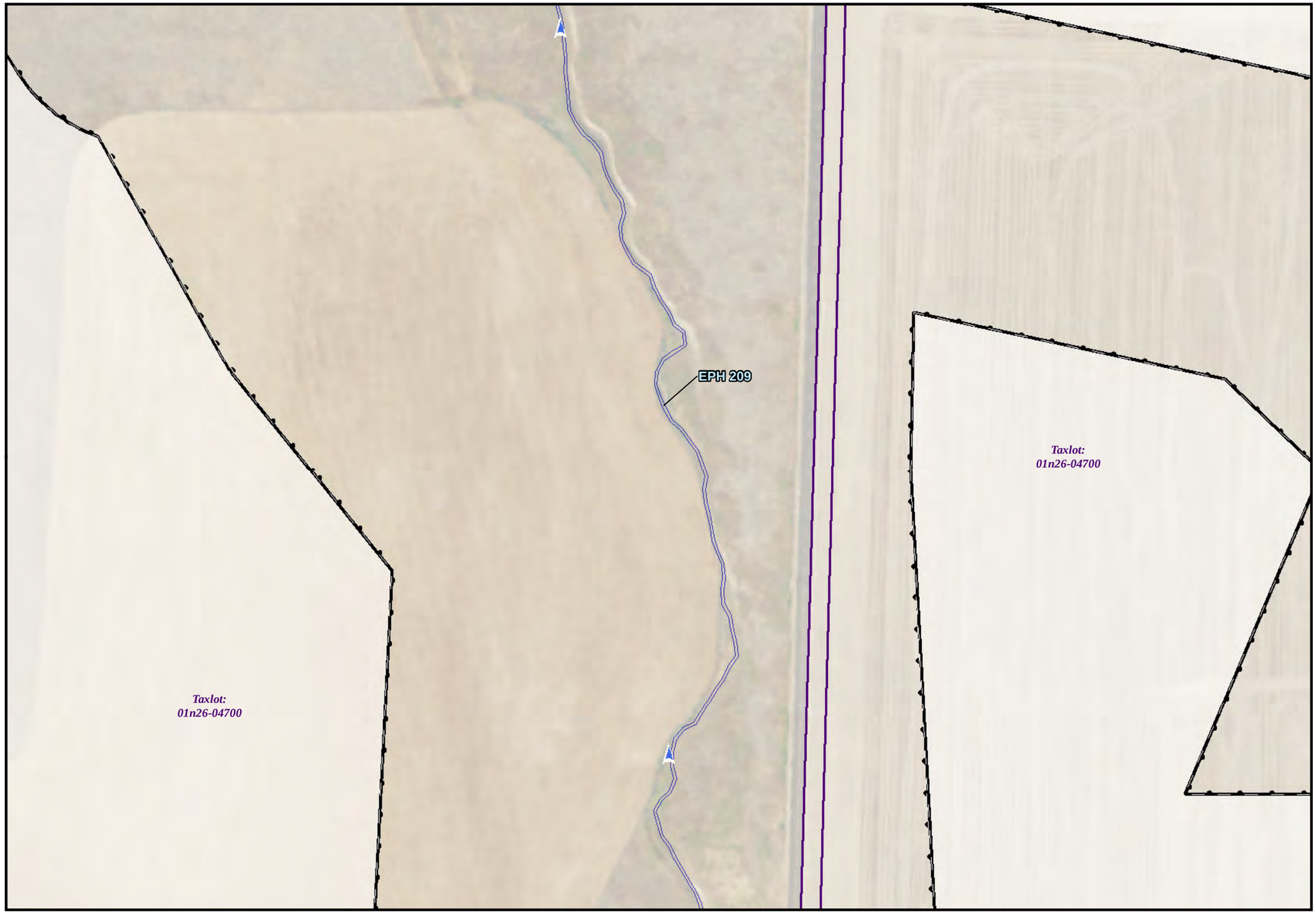

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.29

Wheatridge Wind Energy Facility

Wetland Delineation
Map 29 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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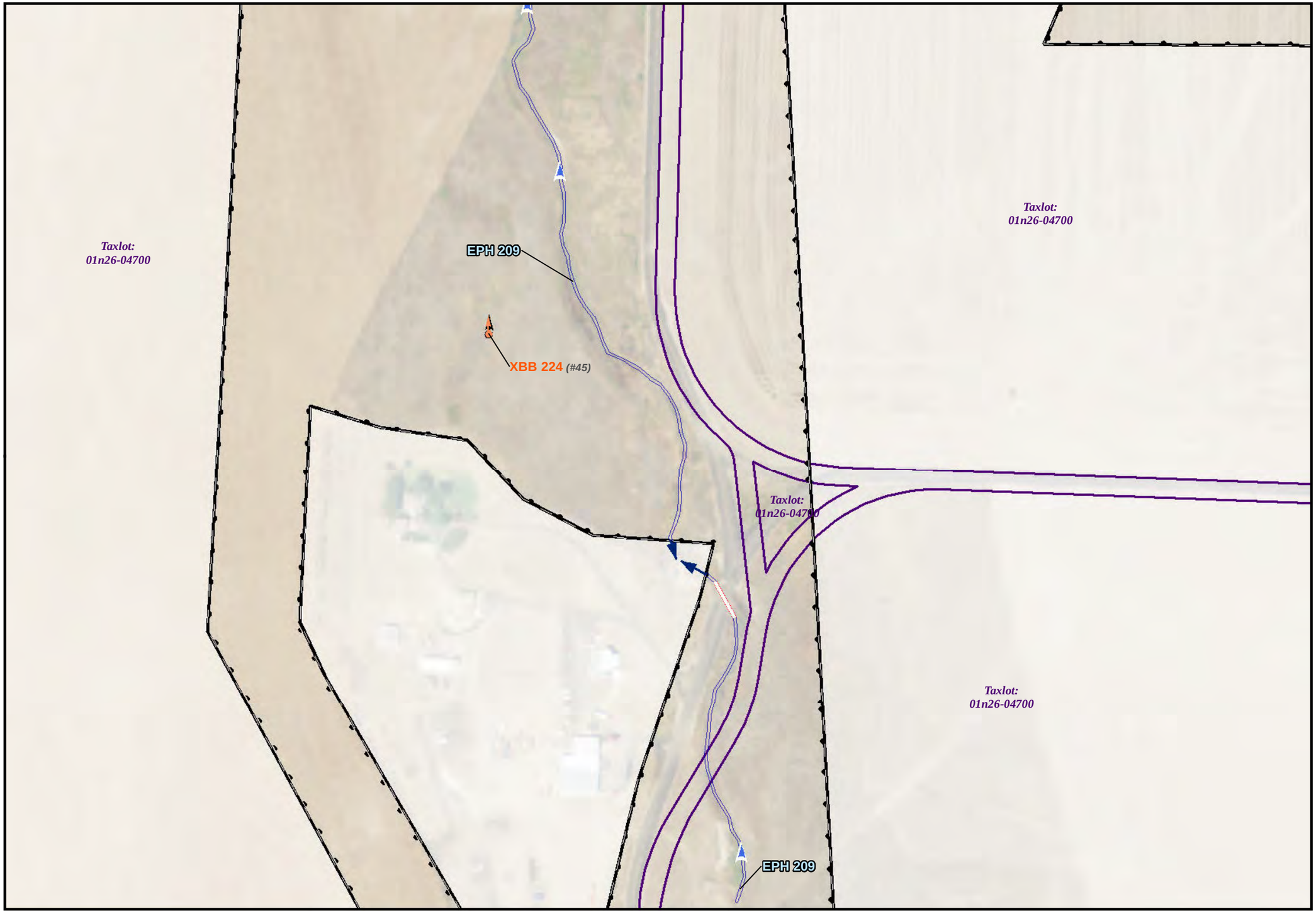

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.30

Wheatridge Wind Energy Facility

Wetland Delineation
Map 30 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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TETRA TECH

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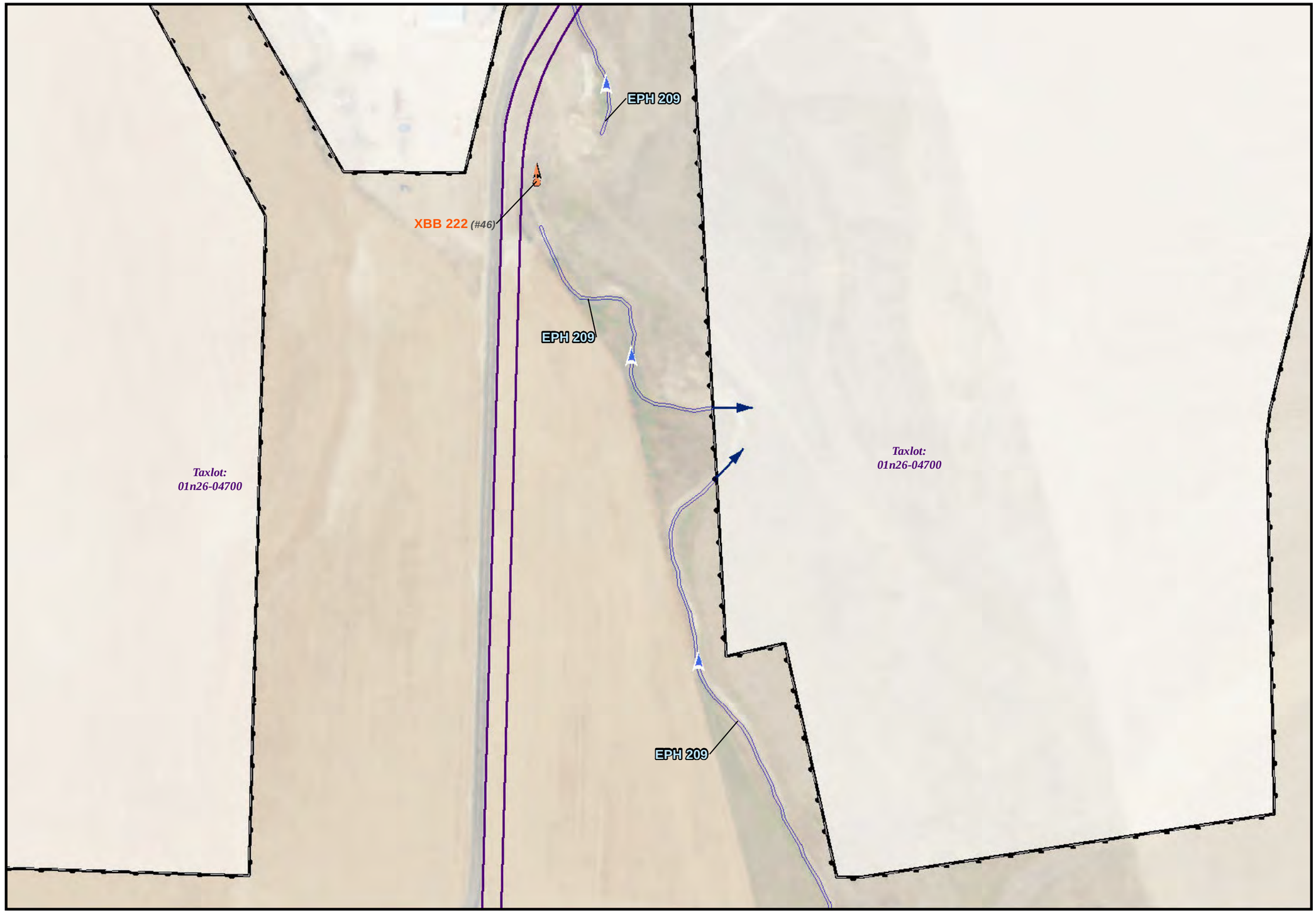

Figure A-5.1.31

Wheatridge Wind Energy Facility

Wetland Delineation
Map 31 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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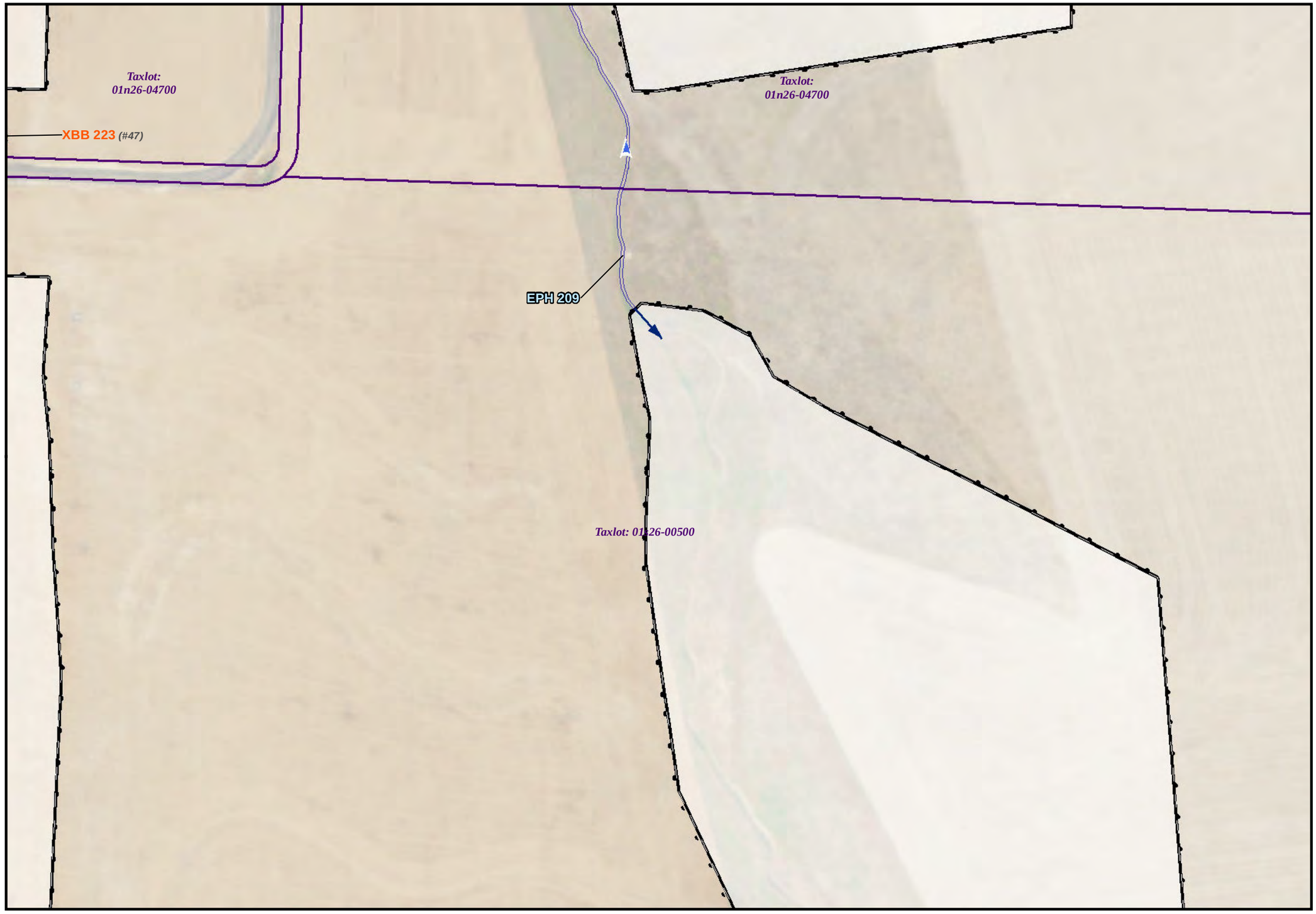

Figure A-5.1.32

Wheatridge Wind Energy Facility

Wetland Delineation
Map 32 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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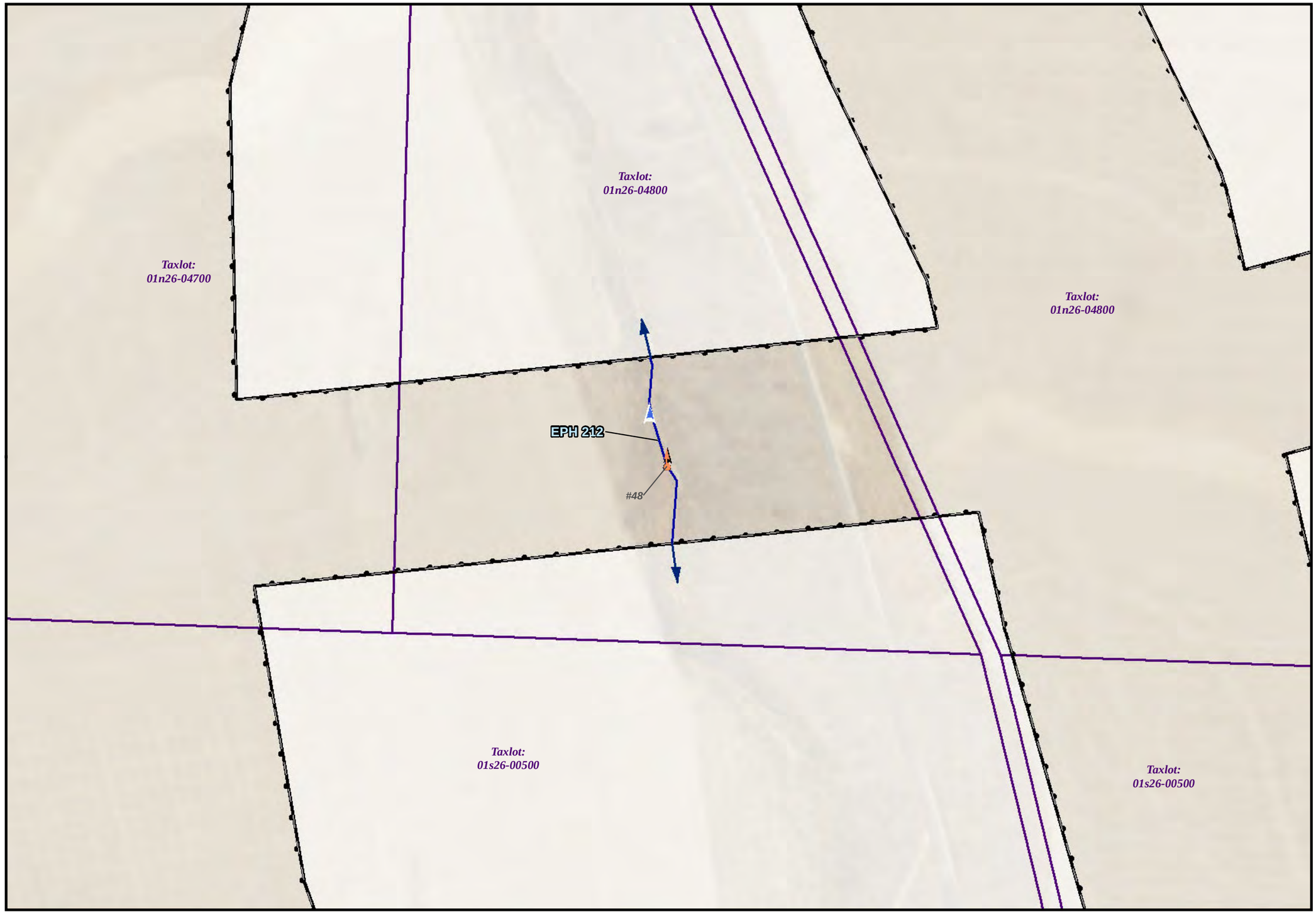

Figure A-5.1.33

Wheatridge Wind Energy Facility

Wetland Delineation
Map 33 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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Figure A-5.1.34

Wheatridge Wind Energy Facility

Wetland Delineation
Map 34 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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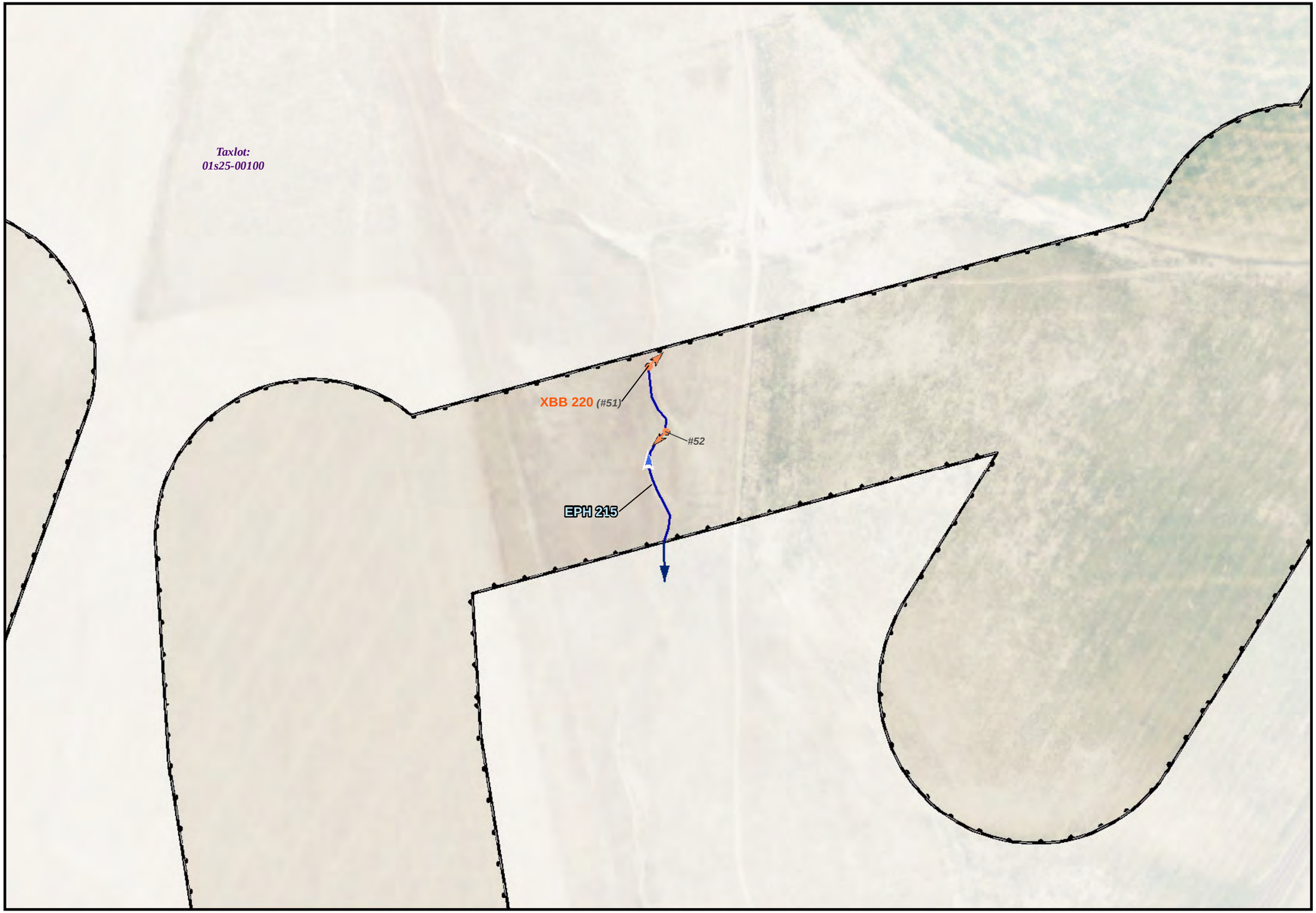

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.35

Wheatridge Wind Energy Facility

Wetland Delineation
Map 35 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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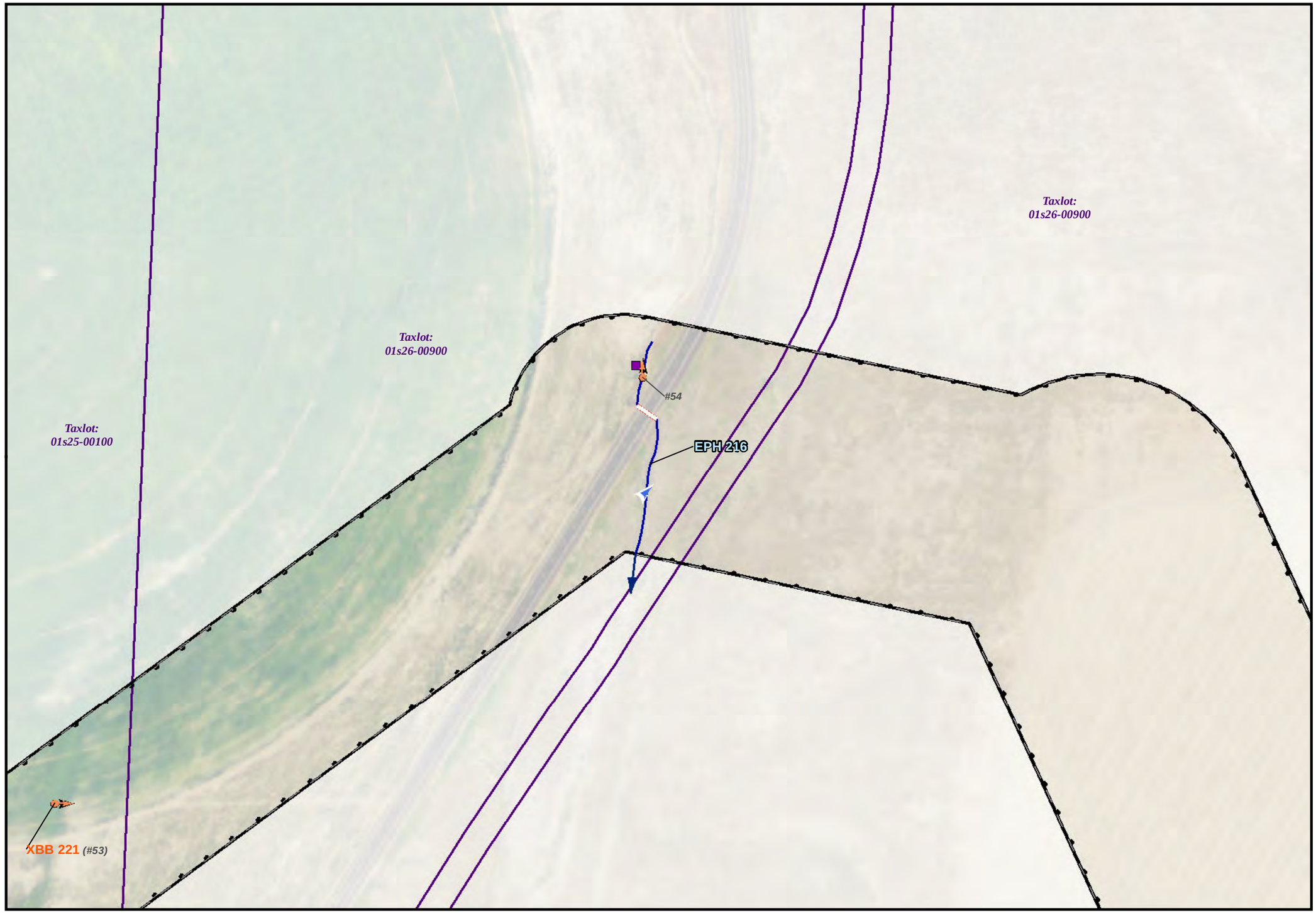

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.36

Wheatridge Wind Energy Facility

Wetland Delineation
Map 36 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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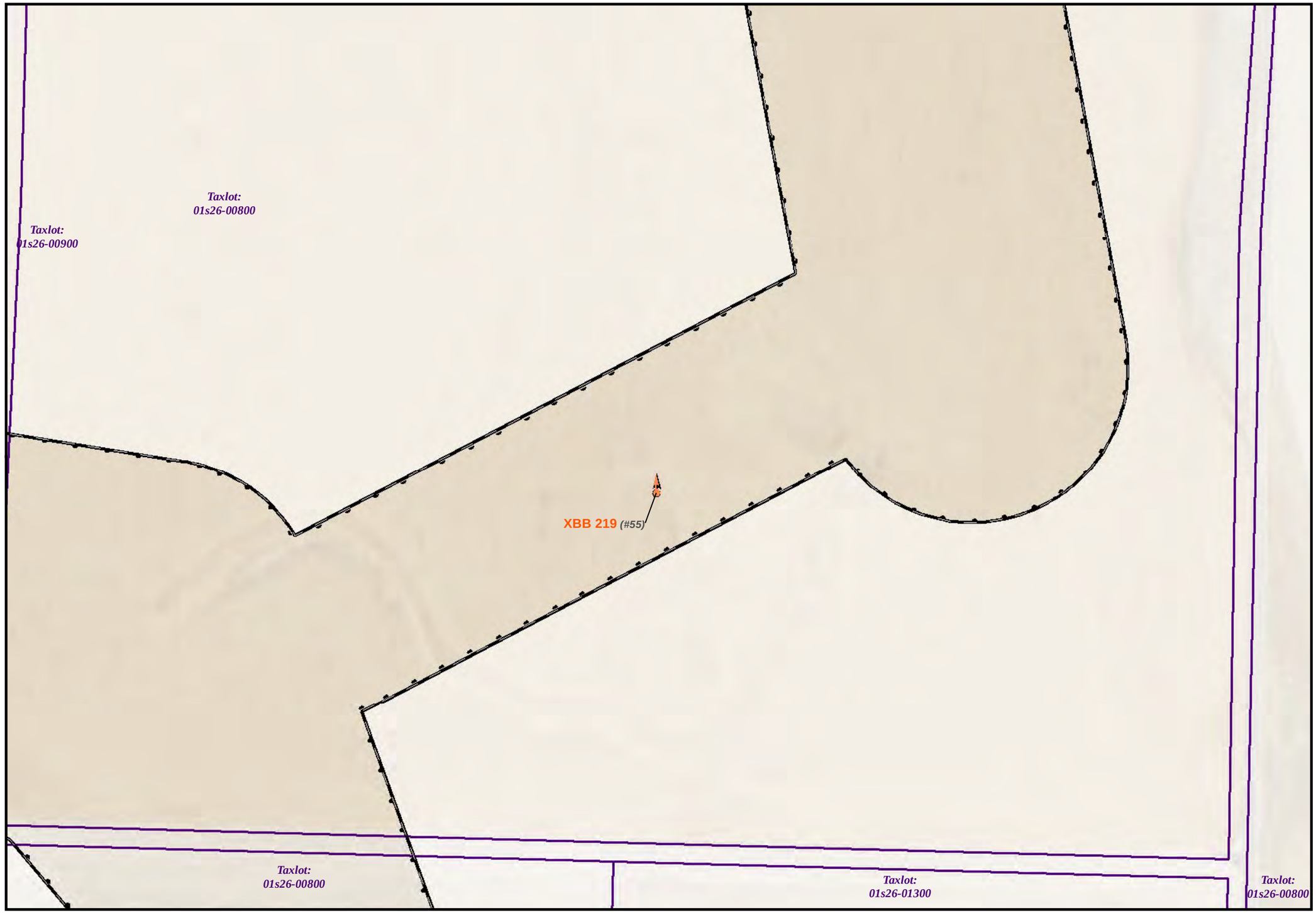

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.37

Wheatridge Wind Energy Facility

Wetland Delineation
Map 37 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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TETRA TECH

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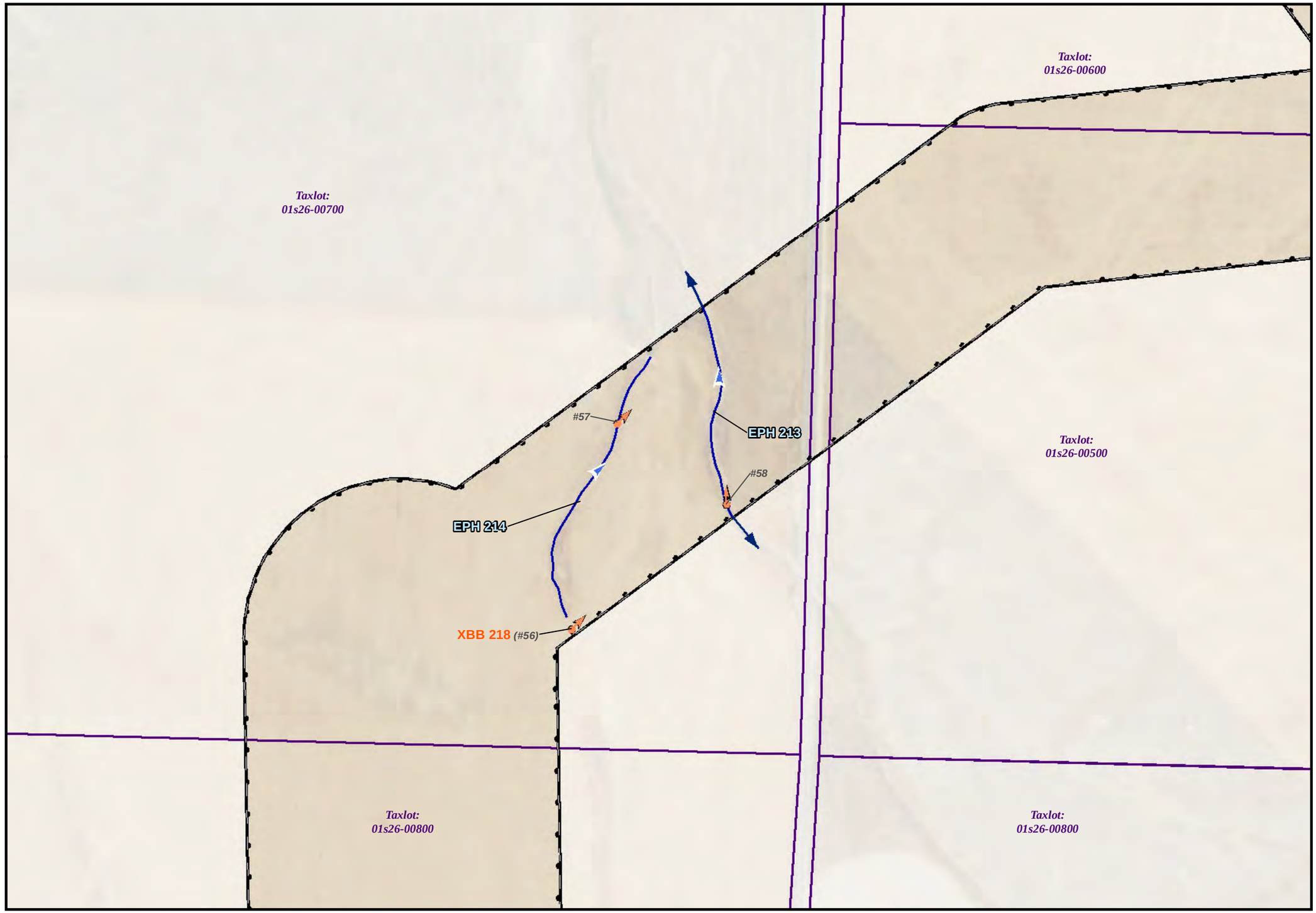

Figure A-5.1.38

Wheatridge Wind Energy Facility

Wetland Delineation
Map 38 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.39

Wheatridge Wind Energy Facility

Wetland Delineation
Map 39 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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TETRA TECH

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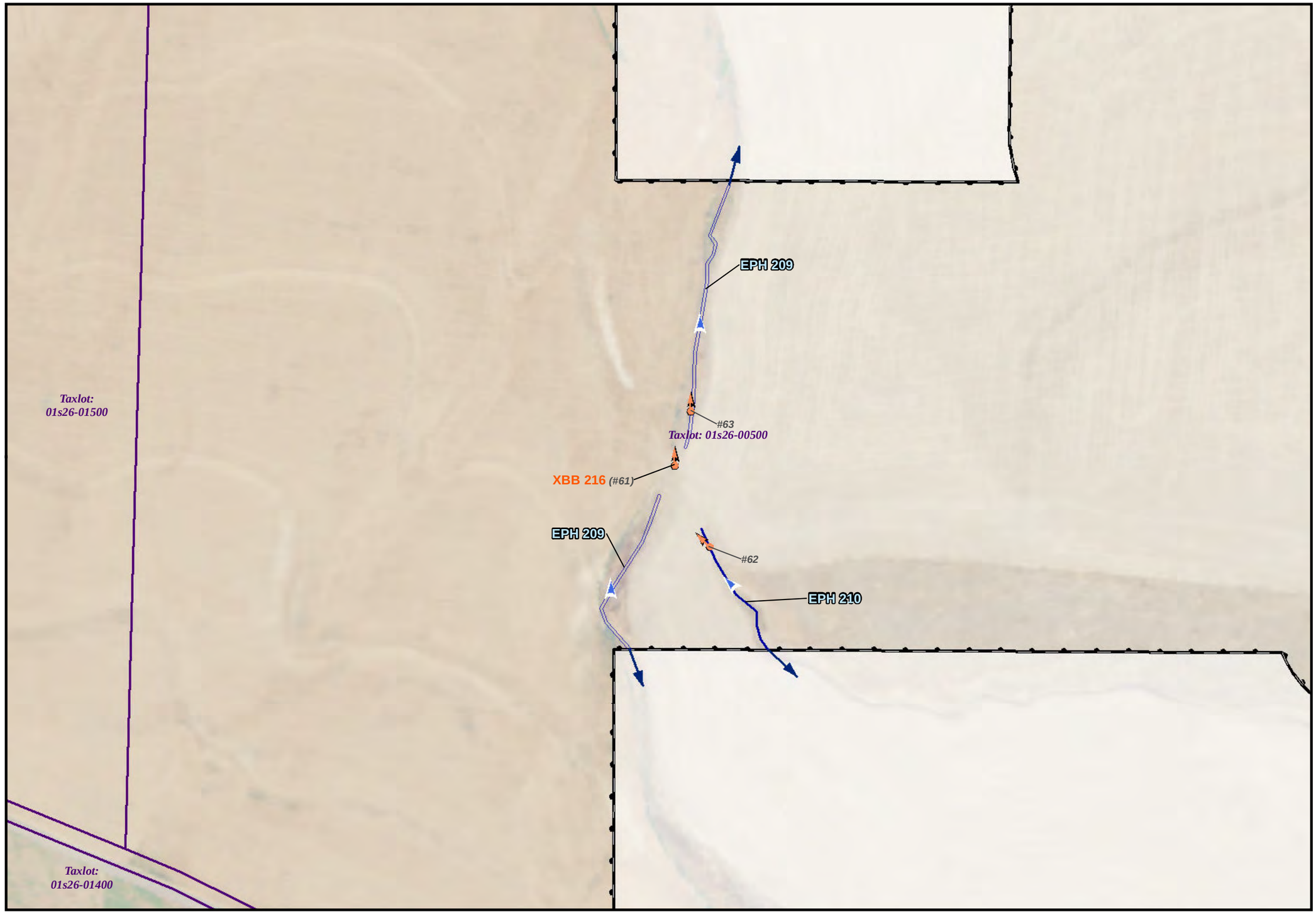

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.40

Wheatridge Wind Energy Facility

Wetland Delineation
Map 40 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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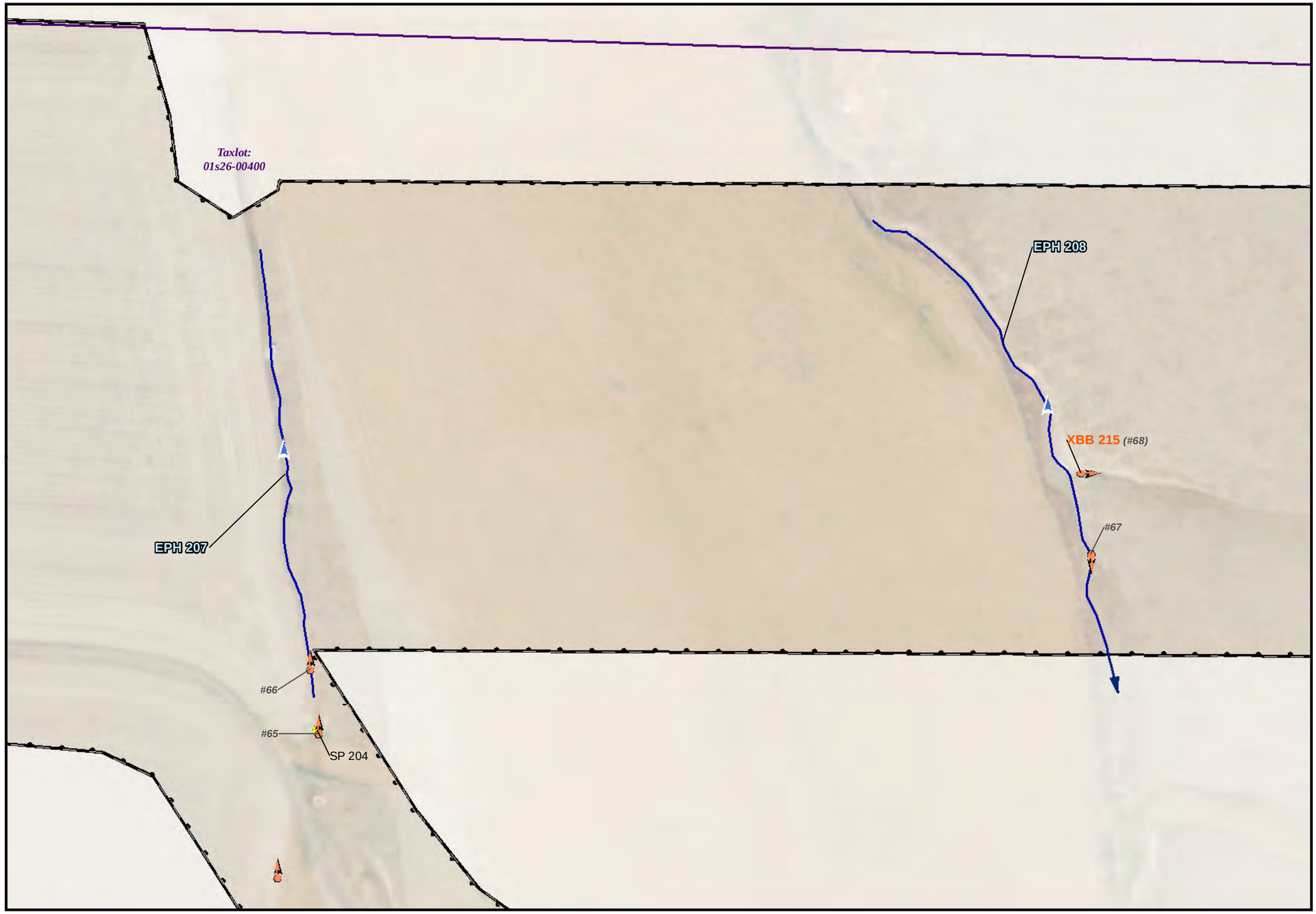

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.41

Wheatridge Wind Energy Facility

Wetland Delineation
Map 41 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

Boundaries of wetlands and other waters were surveyed with a Trimble GeoXH 6000 GNSS-enabled device. GPS data was differentially corrected to sub-meter accuracy.

TETRA TECH

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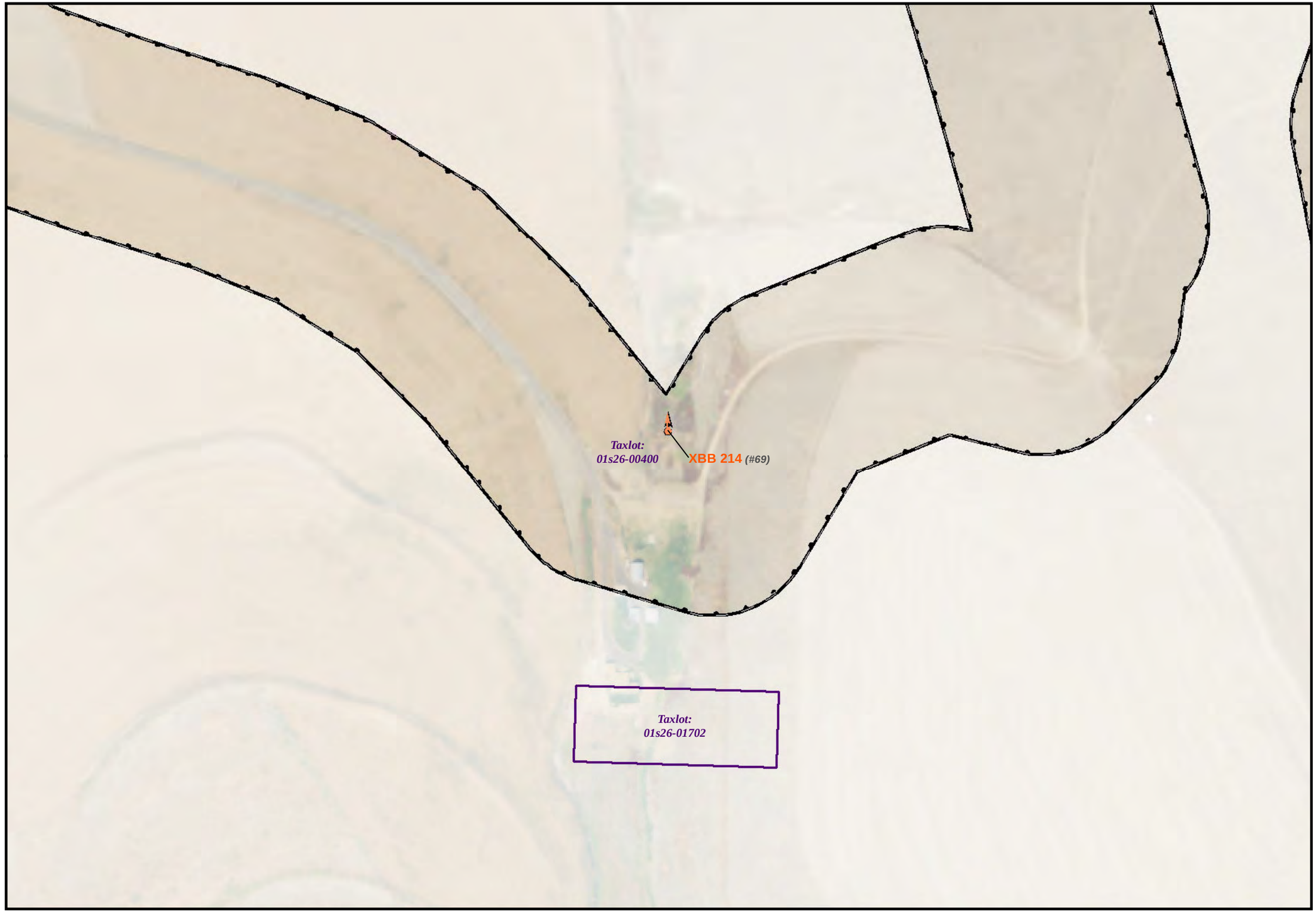

Figure A-5.1.42

Wheatridge Wind Energy Facility

Wetland Delineation
Map 42 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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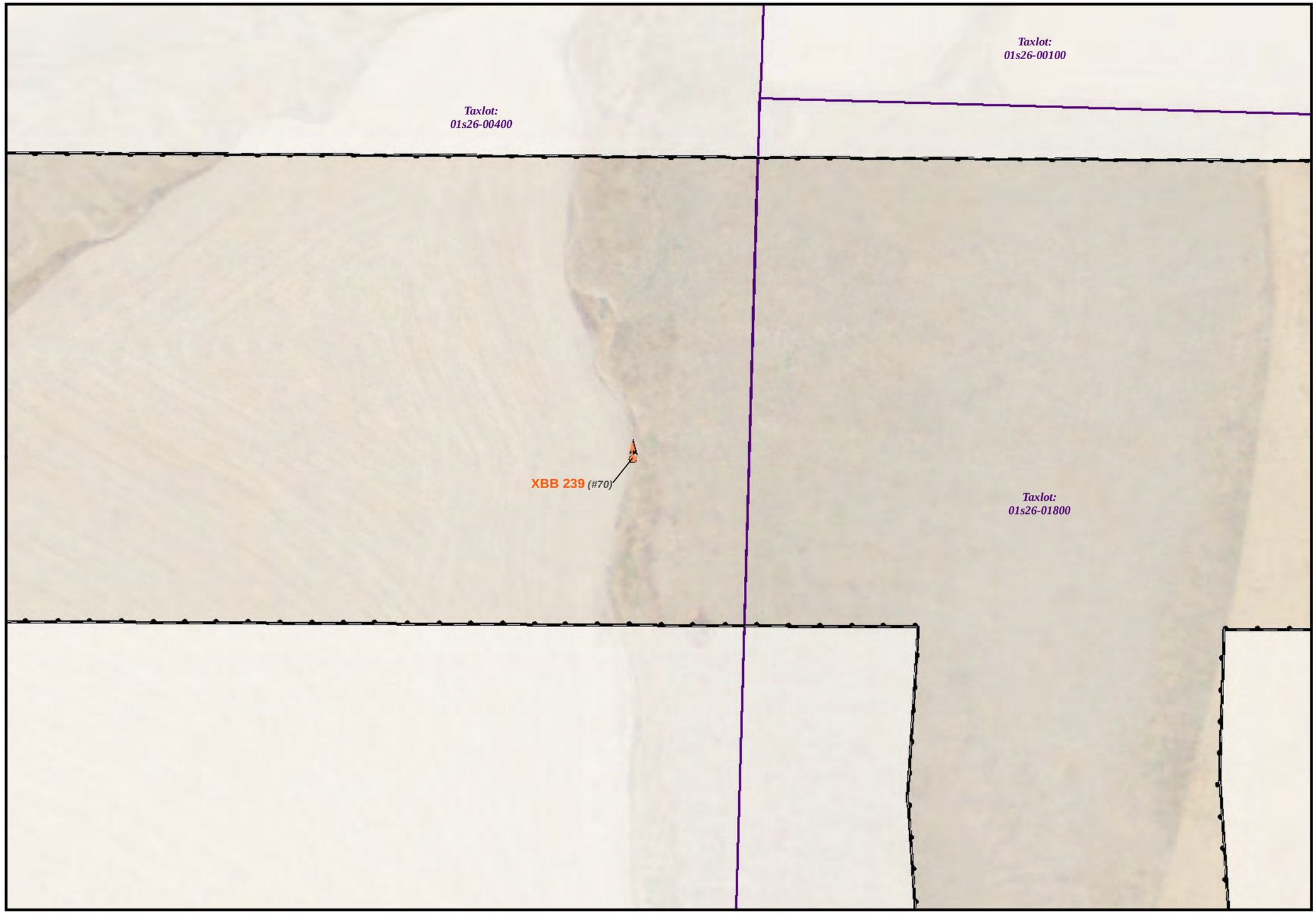

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.43

Wheatridge Wind Energy Facility

Wetland Delineation
Map 43 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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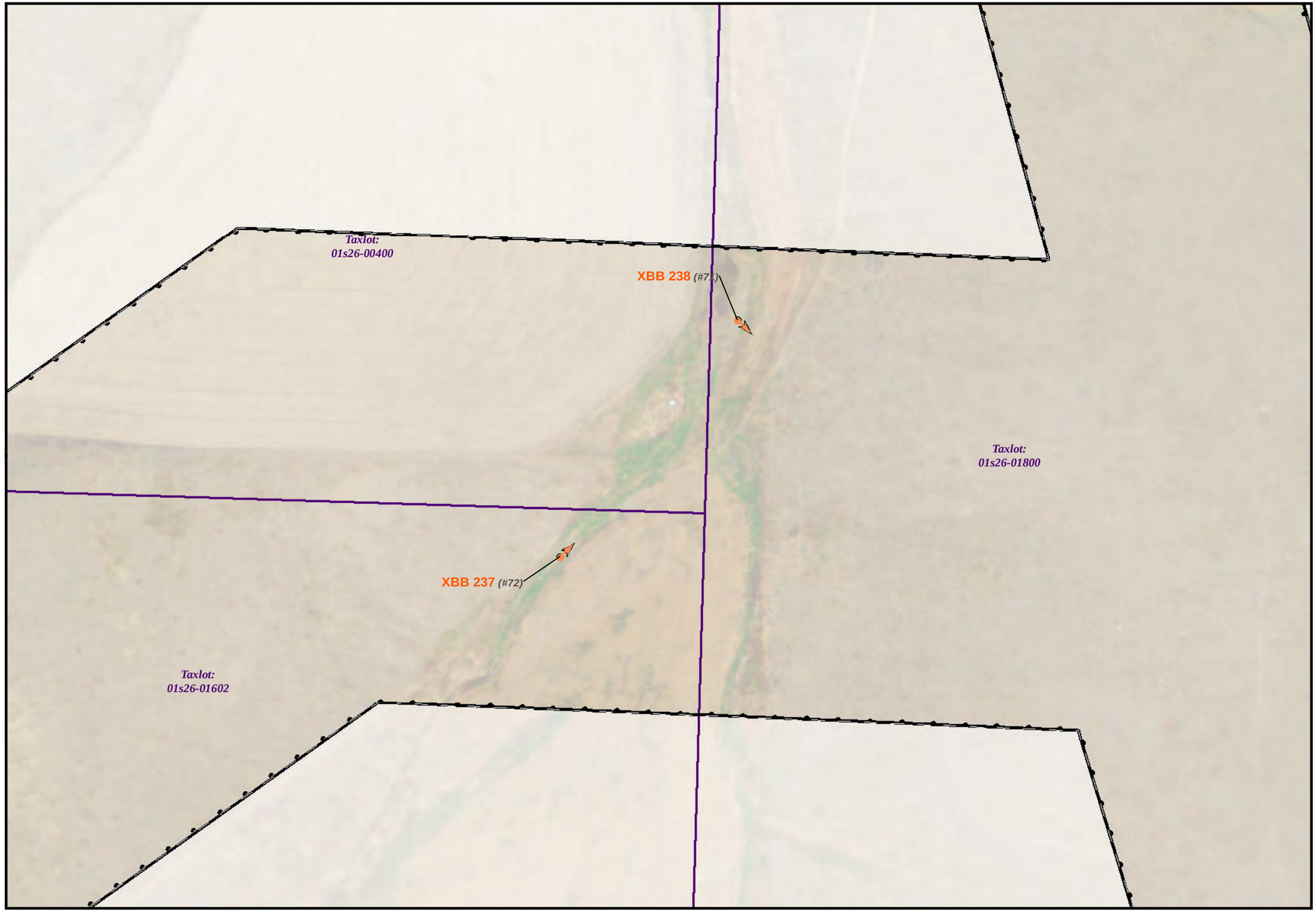

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.44

Wheatridge Wind Energy Facility

Wetland Delineation
Map 44 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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TETRA TECH

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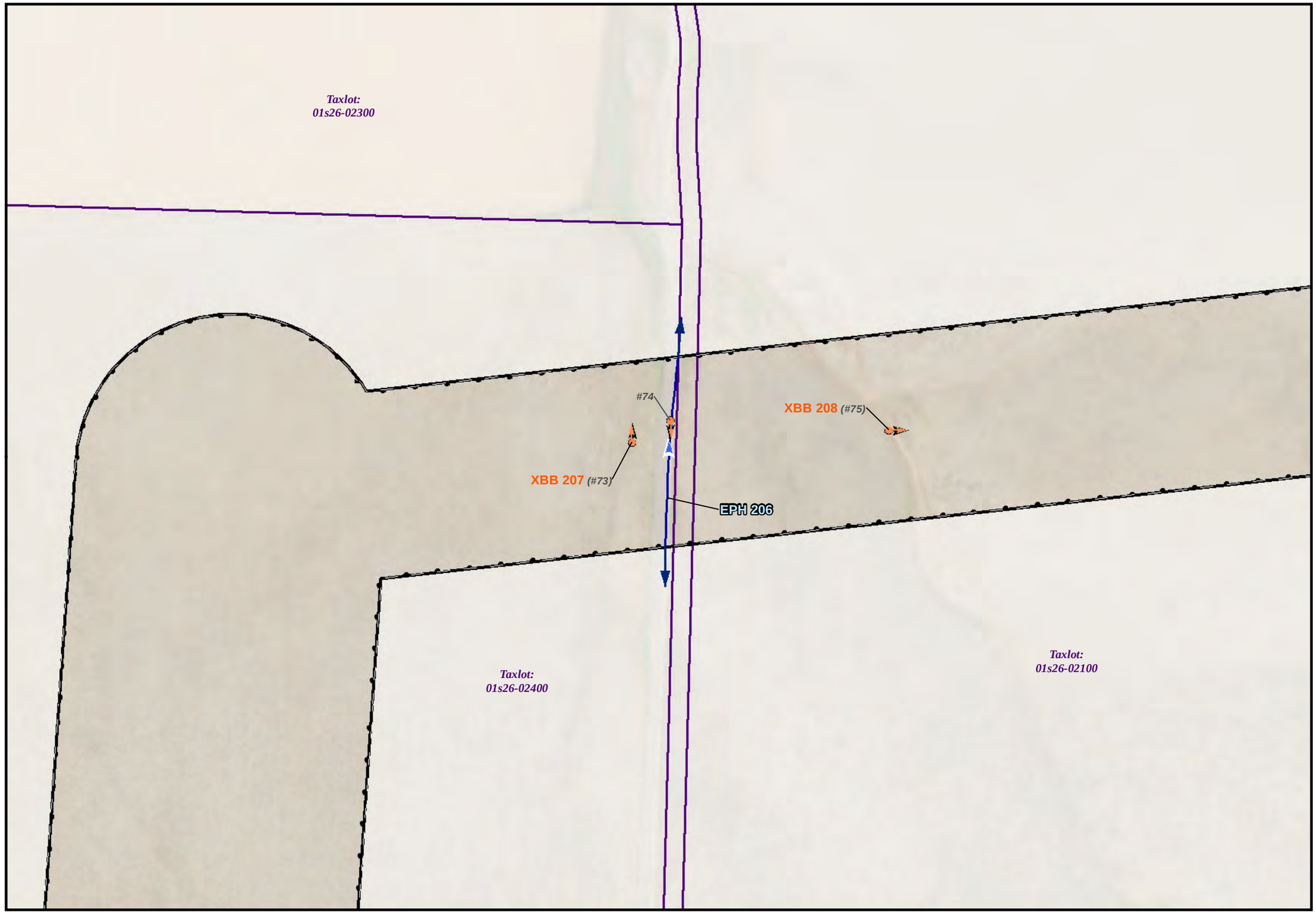

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.45

Wheatridge Wind Energy Facility

Wetland Delineation
Map 45 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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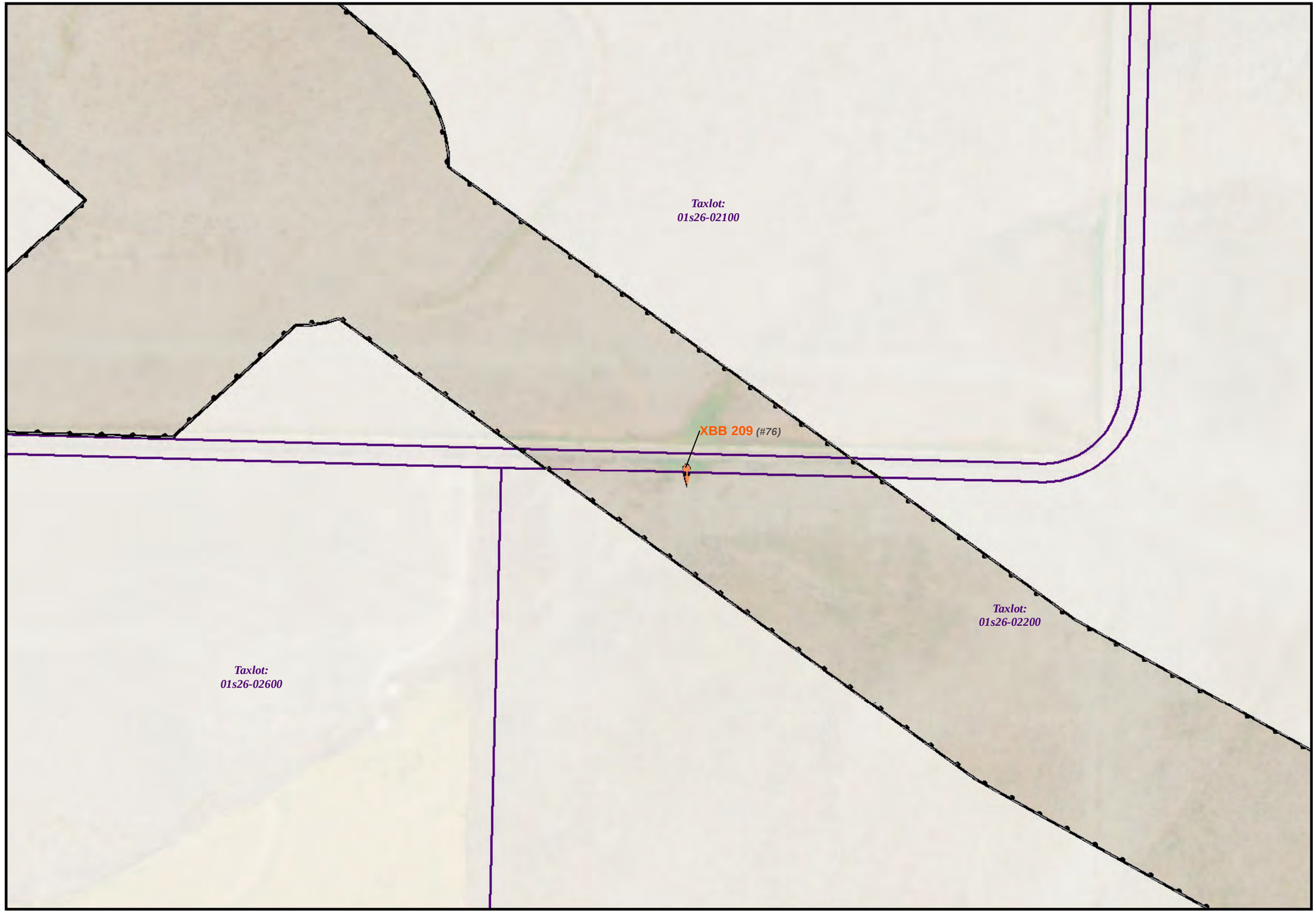

Figure A-5.1.46

Wheatridge Wind Energy Facility

Wetland Delineation
Map 46 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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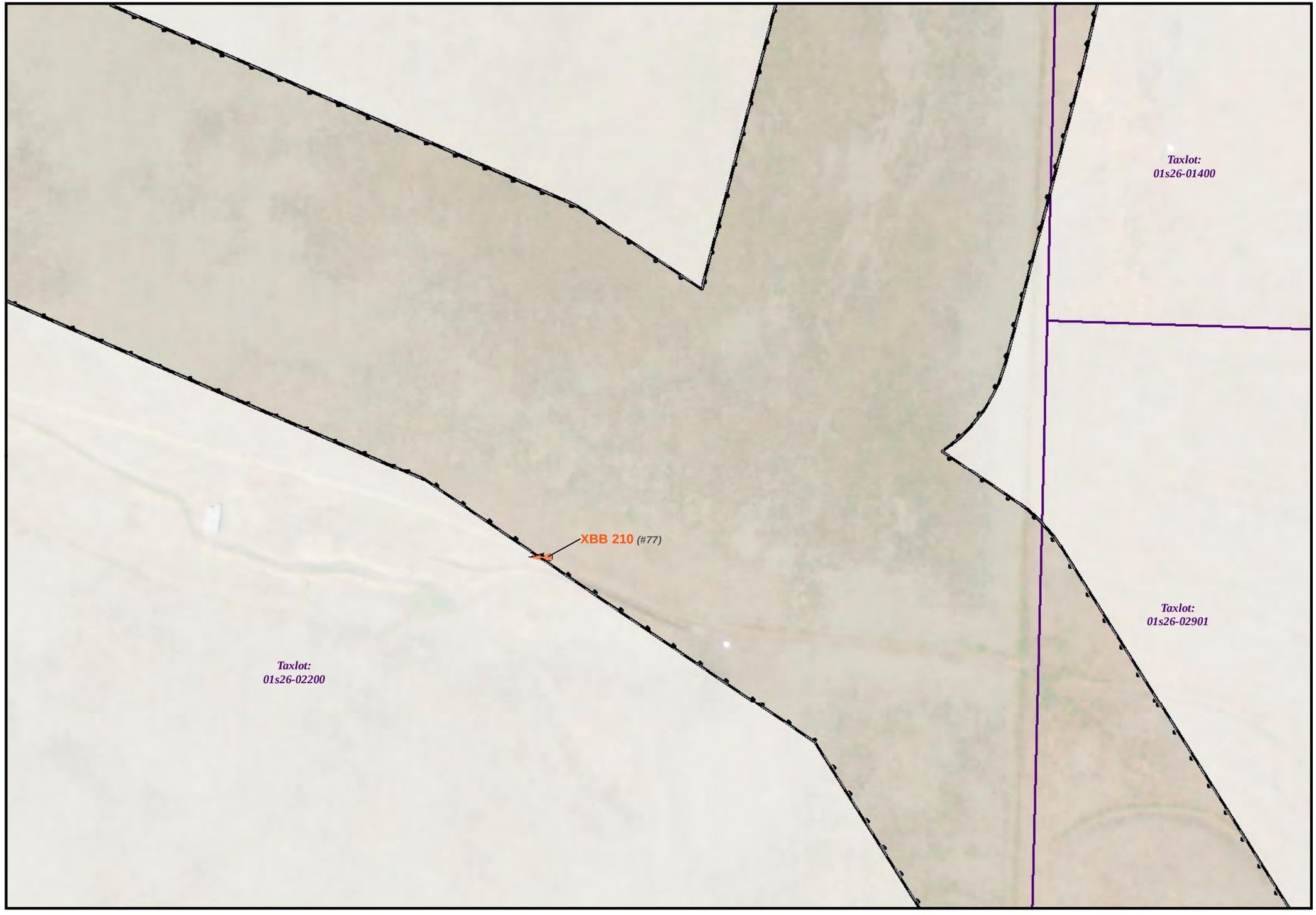

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.47

Wheatridge Wind Energy Facility

Wetland Delineation
Map 47 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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TETRA TECH

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Figure A-5.1.48

Wheatridge Wind Energy Facility

Wetland Delineation
Map 48 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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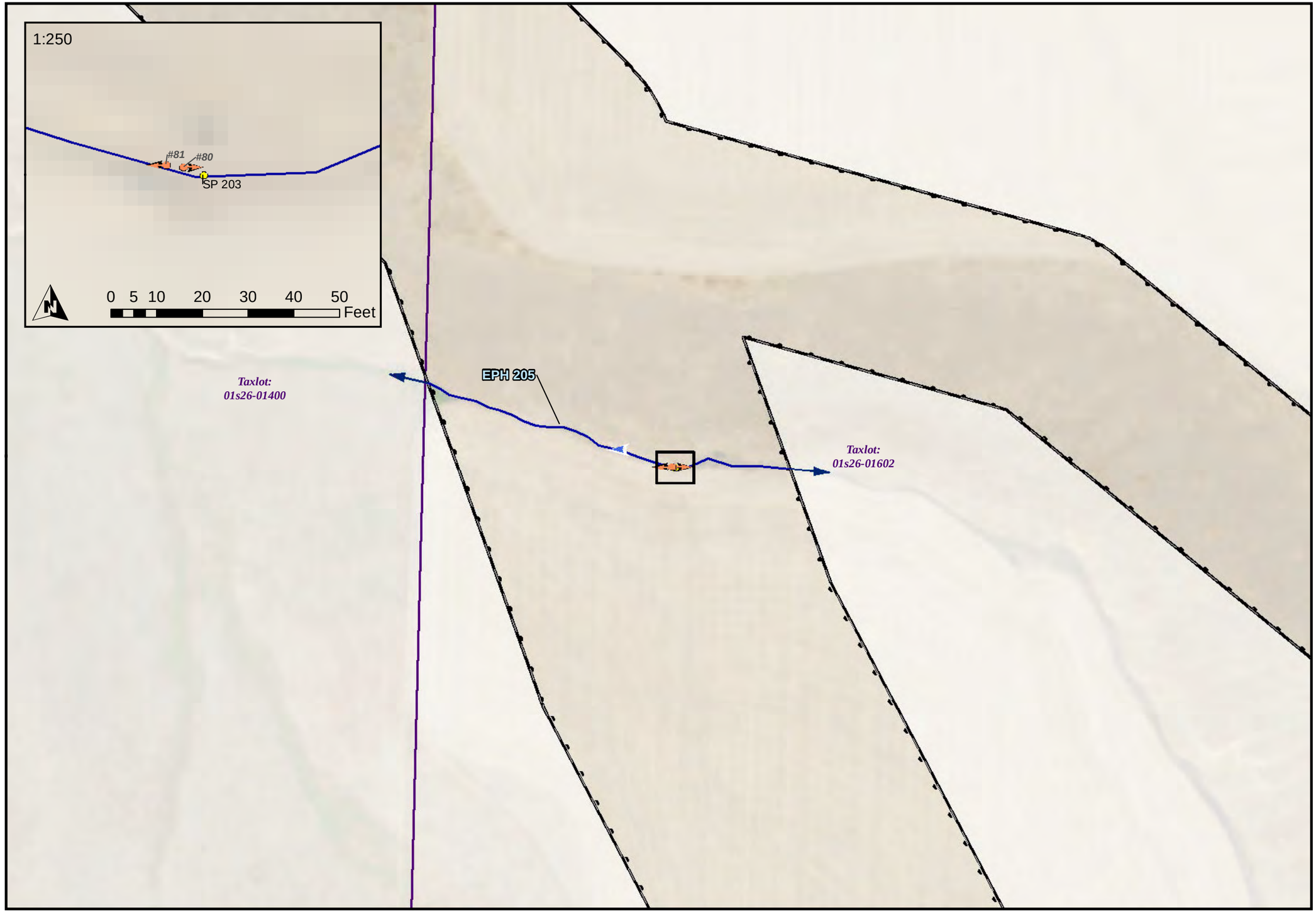

Figure A-5.1.49

Wheatridge Wind Energy Facility

Wetland Delineation
Map 49 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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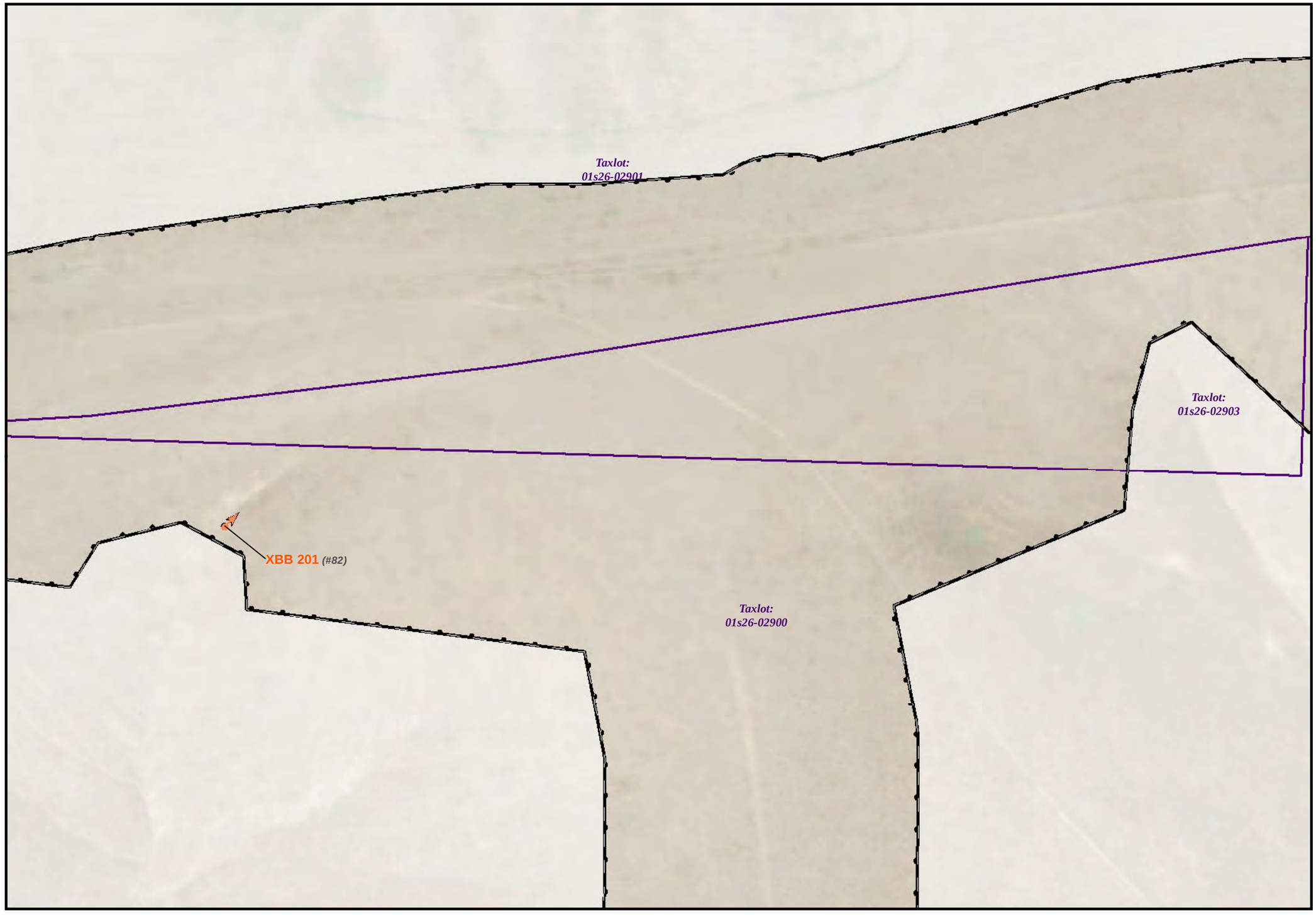

Figure A-5.1.50

Wheatridge Wind Energy Facility

Wetland Delineation
Map 50 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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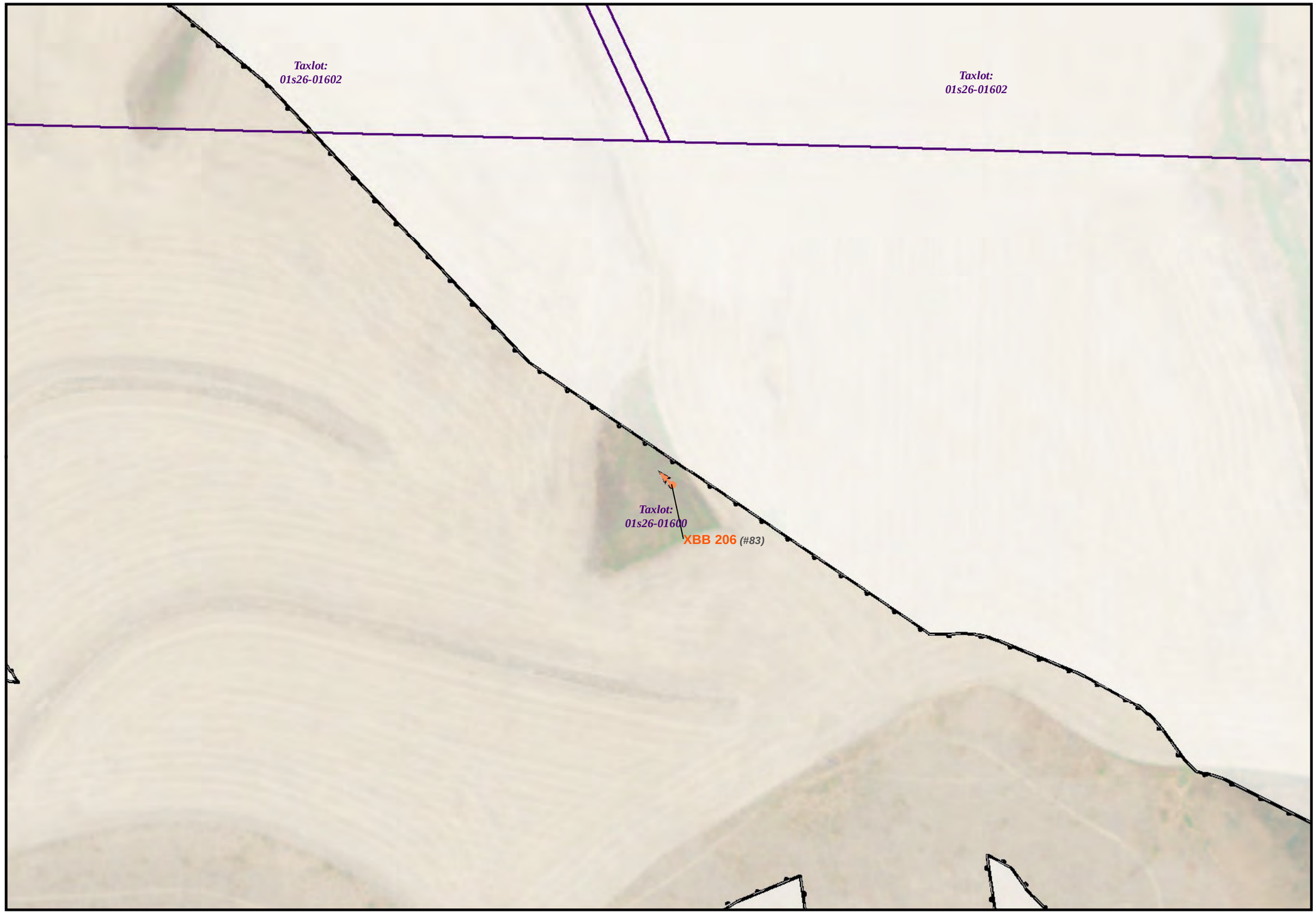

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.51

Wheatridge Wind Energy Facility

Wetland Delineation
Map 51 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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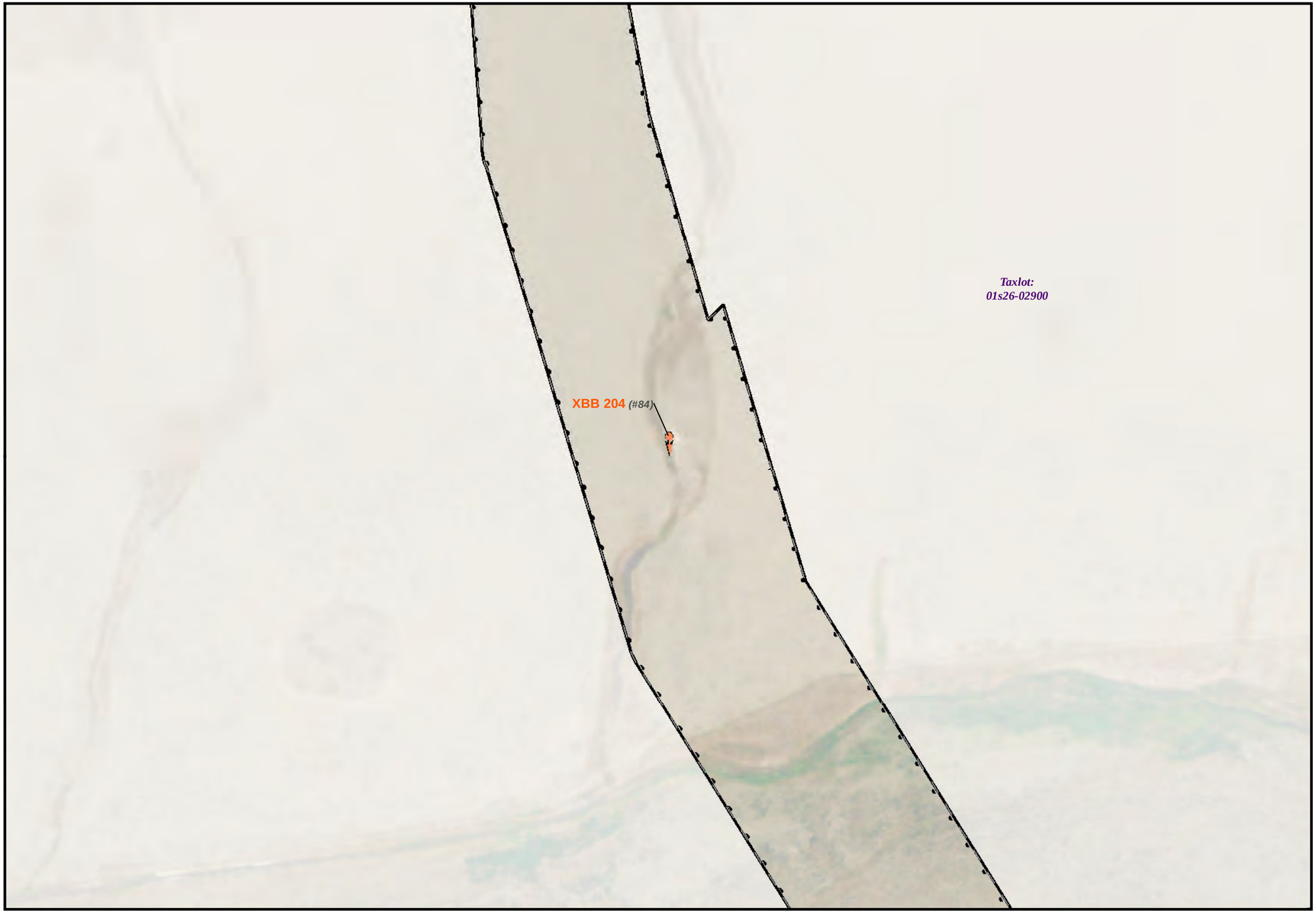

Figure A-5.1.52

Wheatridge Wind Energy Facility

Wetland Delineation
Map 52 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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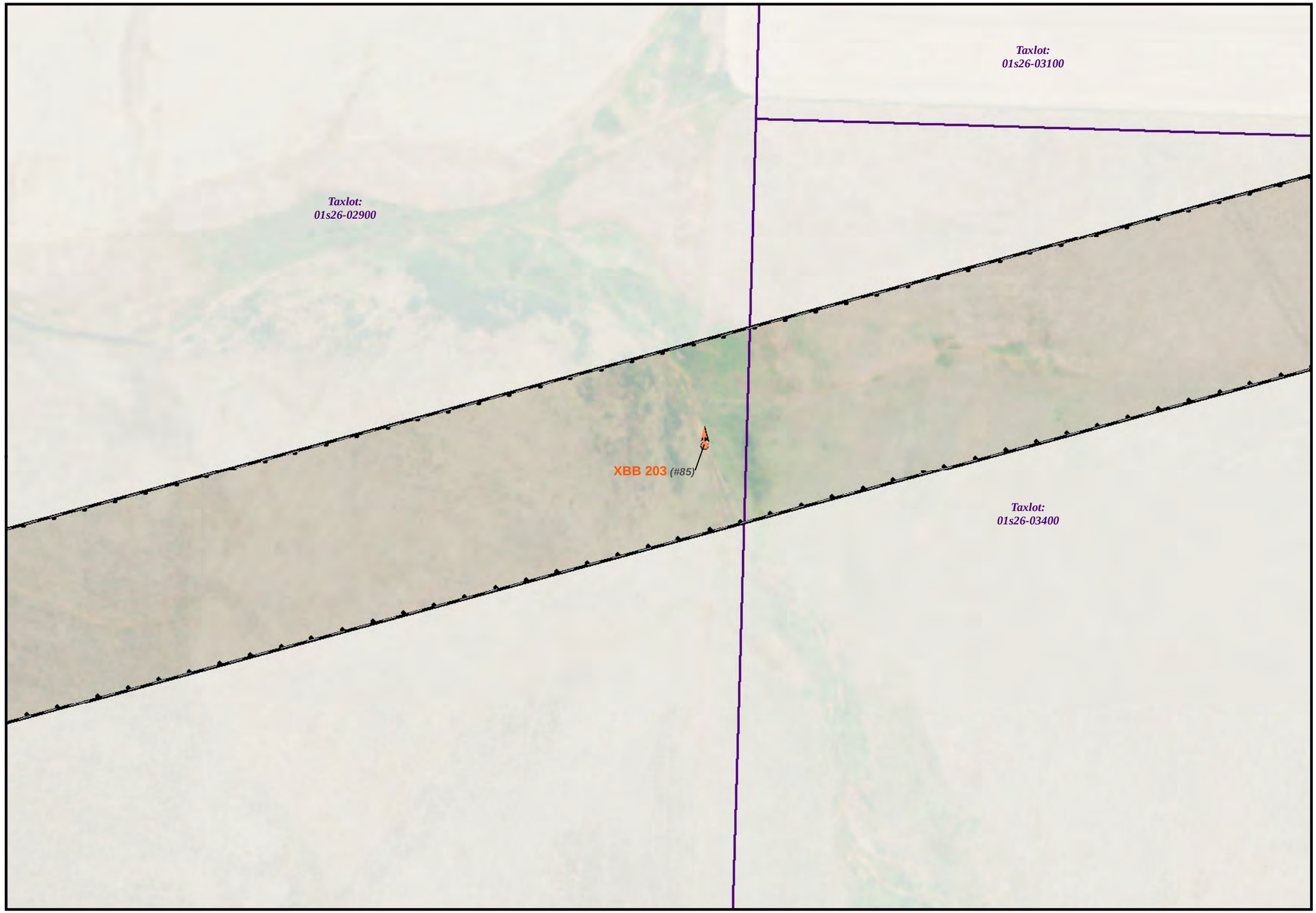

Figure A-5.1.53

Wheatridge Wind Energy Facility

Wetland Delineation
Map 53 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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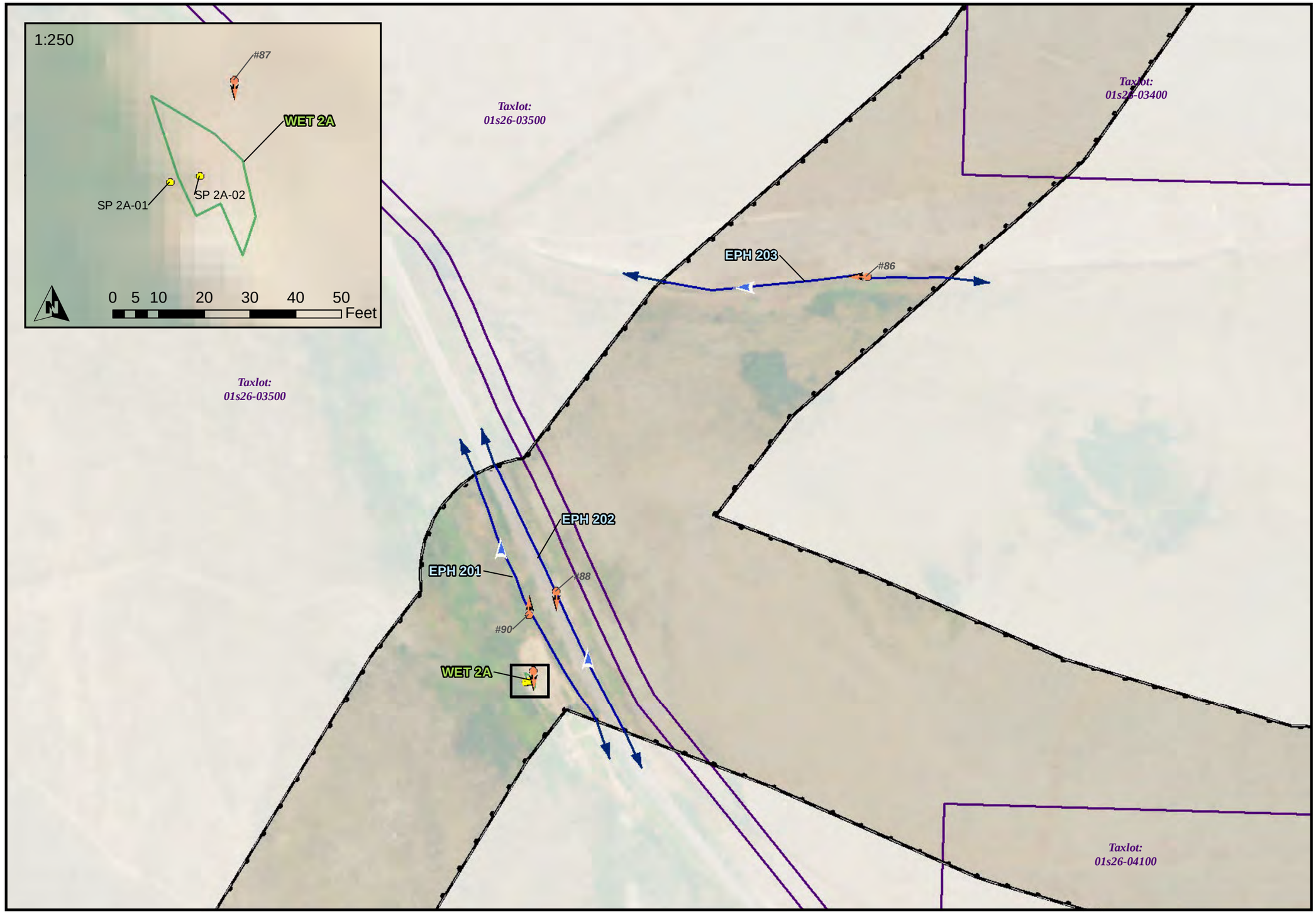

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.54

Wheatridge Wind Energy Facility

Wetland Delineation
Map 54 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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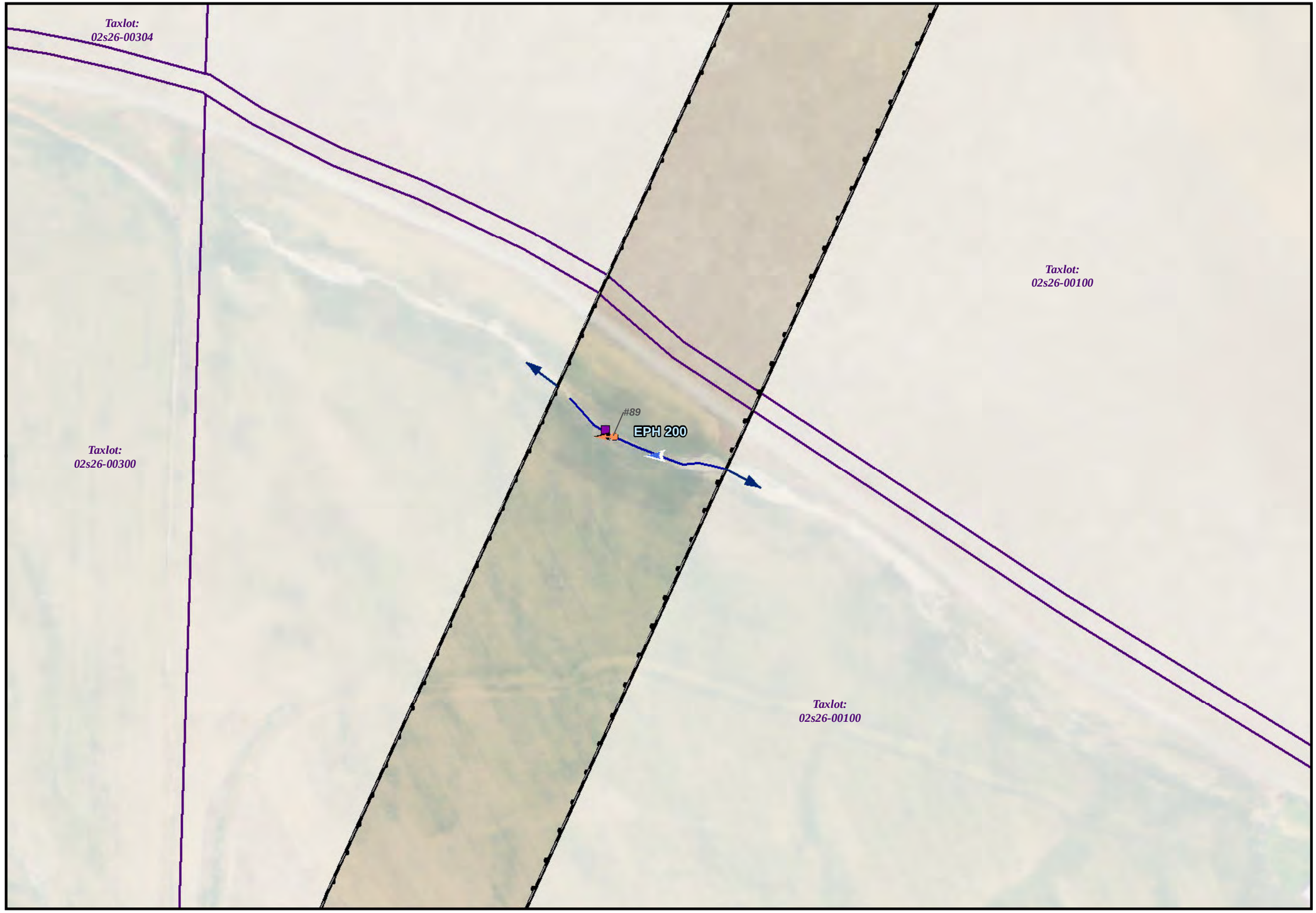

Figure A-5.1.55

Wheatridge Wind Energy Facility

Wetland Delineation
Map 55 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

Boundaries of wetlands and other waters were surveyed with a Trimble GeoXH 6000 GNSS-enabled device. GPS data was differentially corrected to sub-meter accuracy.

1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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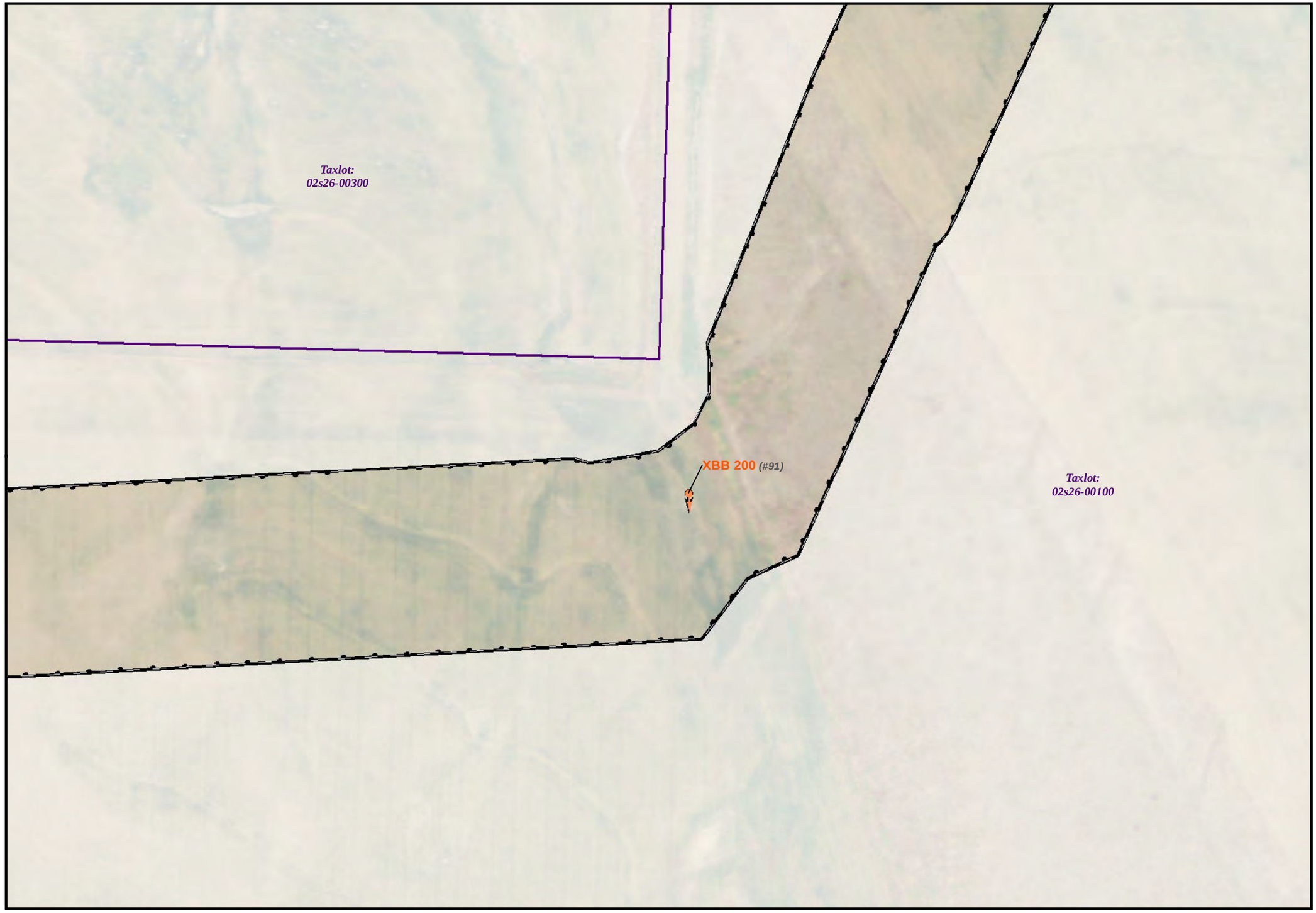

Figure A-5.1.56

Wheatridge Wind Energy Facility

Wetland Delineation
Map 56 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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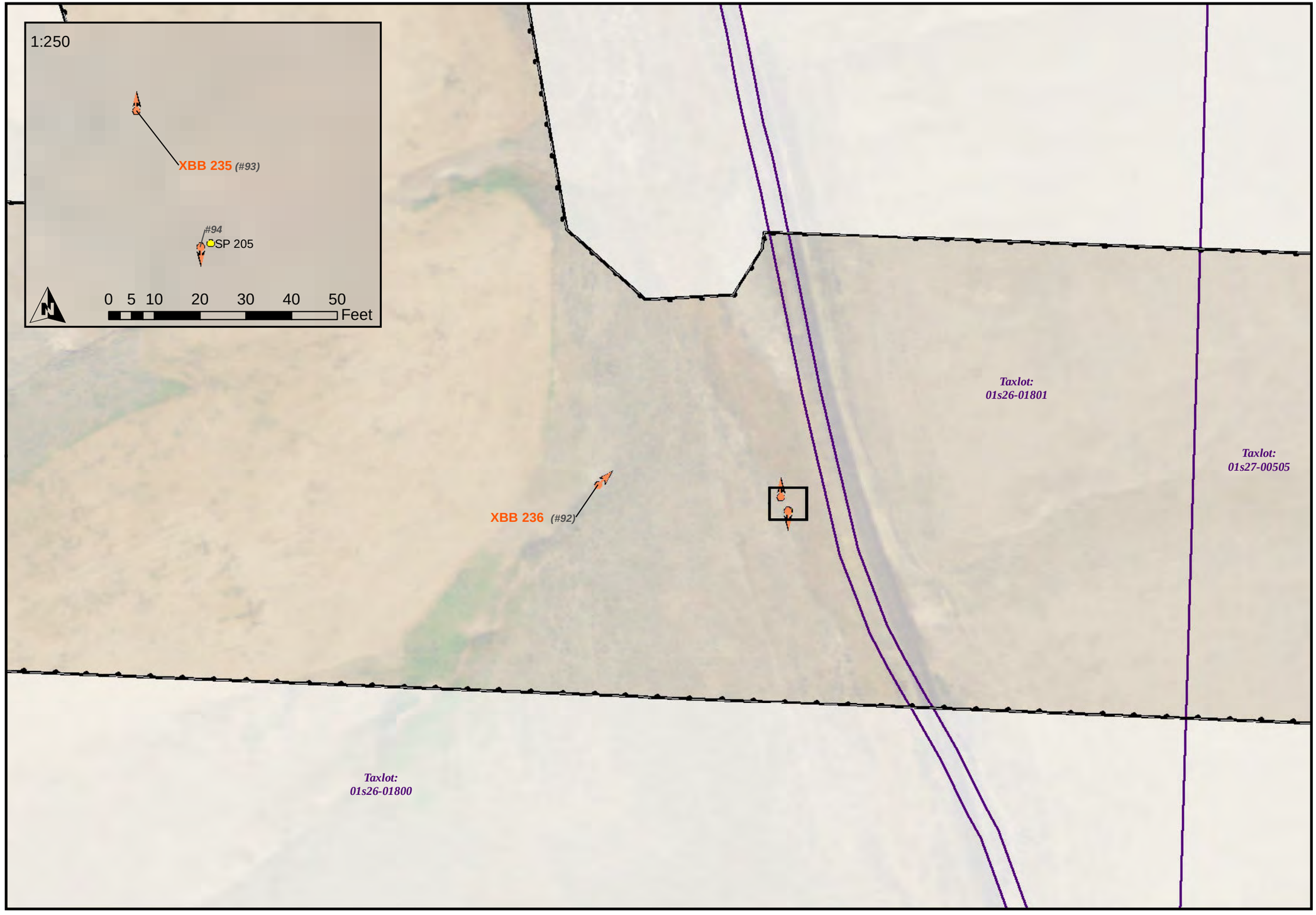

Figure A-5.1.57

Wheatridge Wind Energy Facility

Wetland Delineation
Map 57 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.58

Wheatridge Wind Energy Facility

Wetland Delineation
Map 58 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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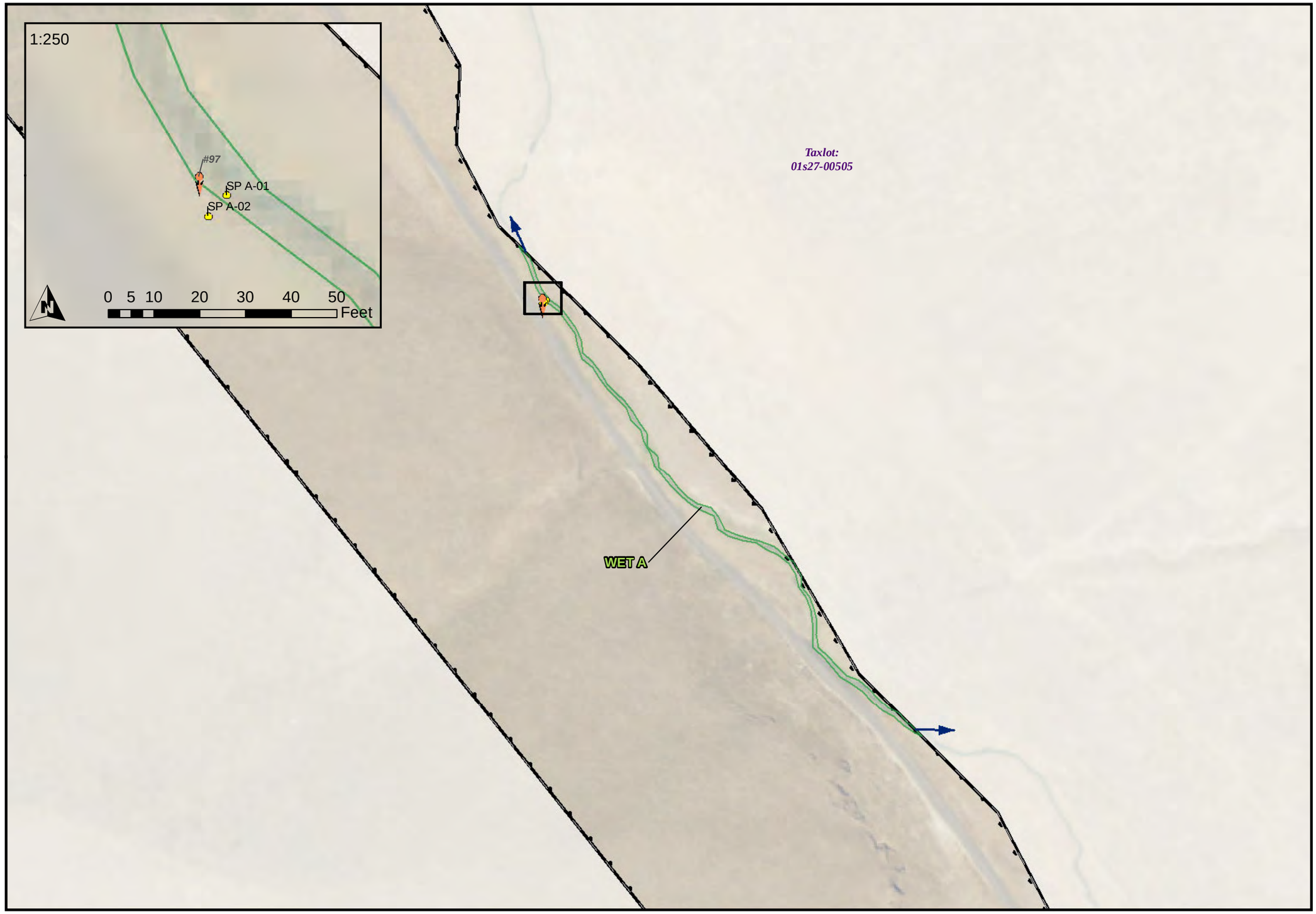

Figure A-5.1.59

Wheatridge Wind Energy Facility

Wetland Delineation
Map 59 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

Boundaries of wetlands and other waters were surveyed with a Trimble GeoXH 6000 GNSS-enabled device. GPS data was differentially corrected to sub-meter accuracy.

1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

TETRA TECH

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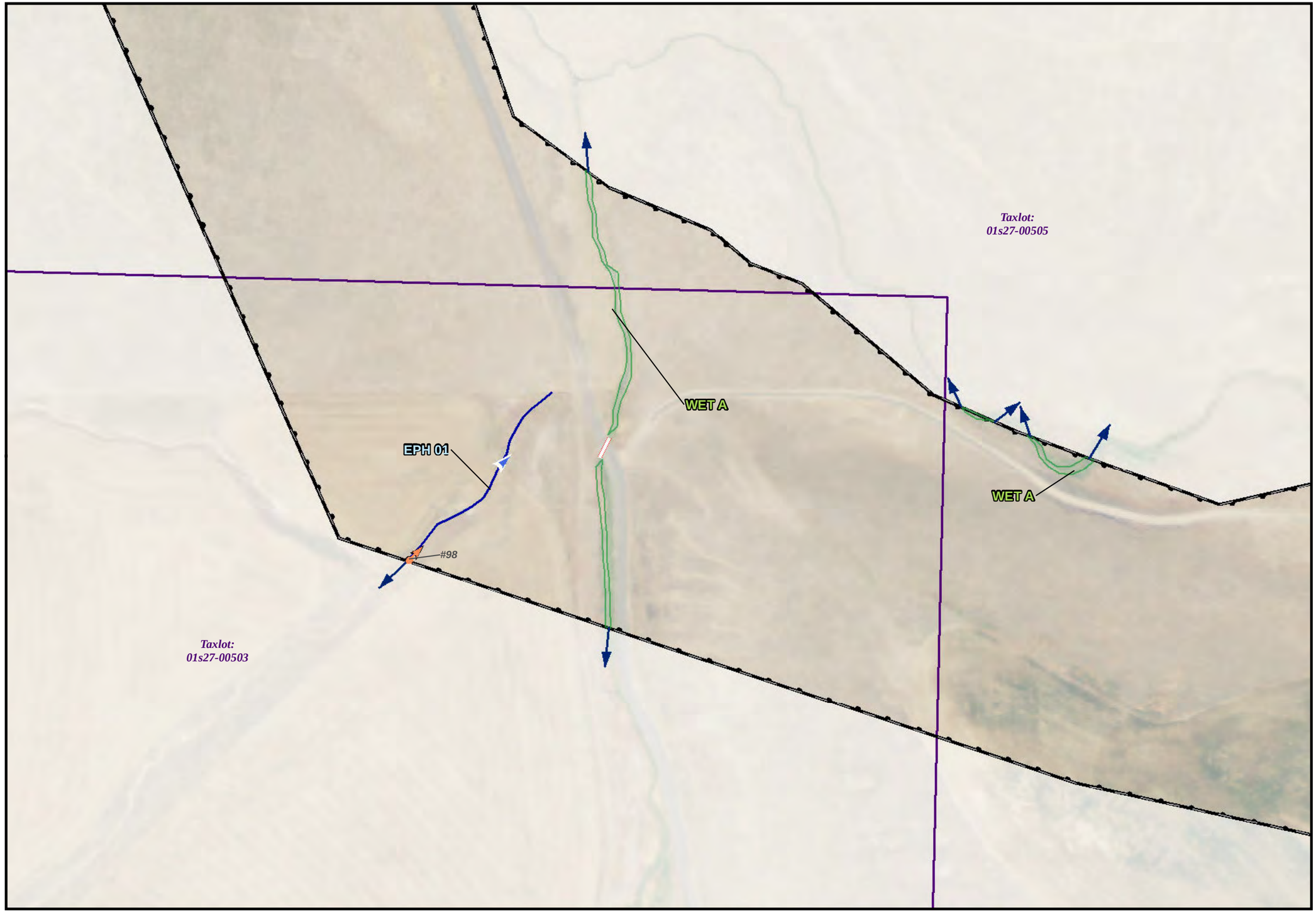

Figure A-5.1.60

Wheatridge Wind Energy Facility

Wetland Delineation
Map 60 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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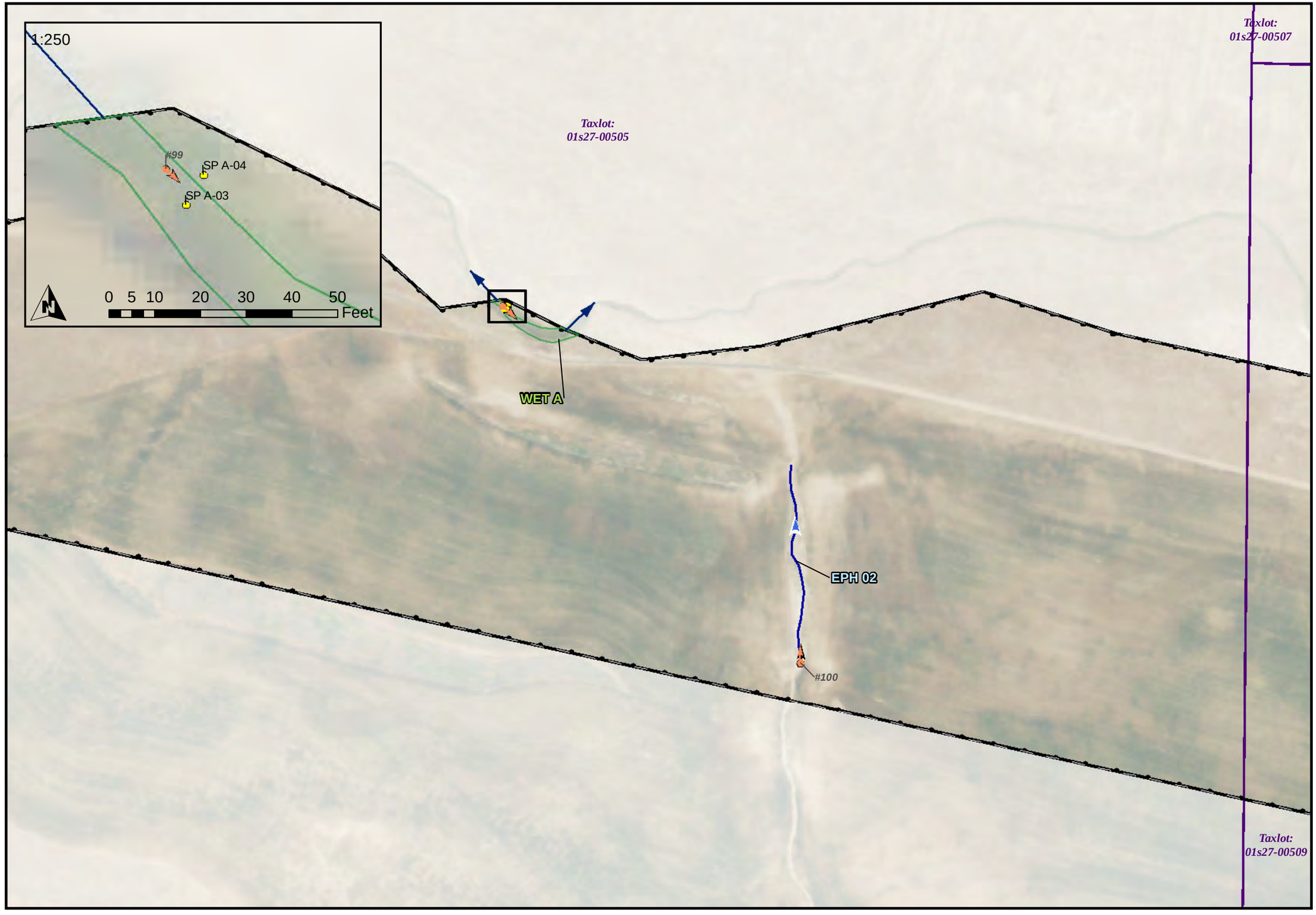

Figure A-5.1.61

Wheatridge Wind Energy Facility

Wetland Delineation
Map 61 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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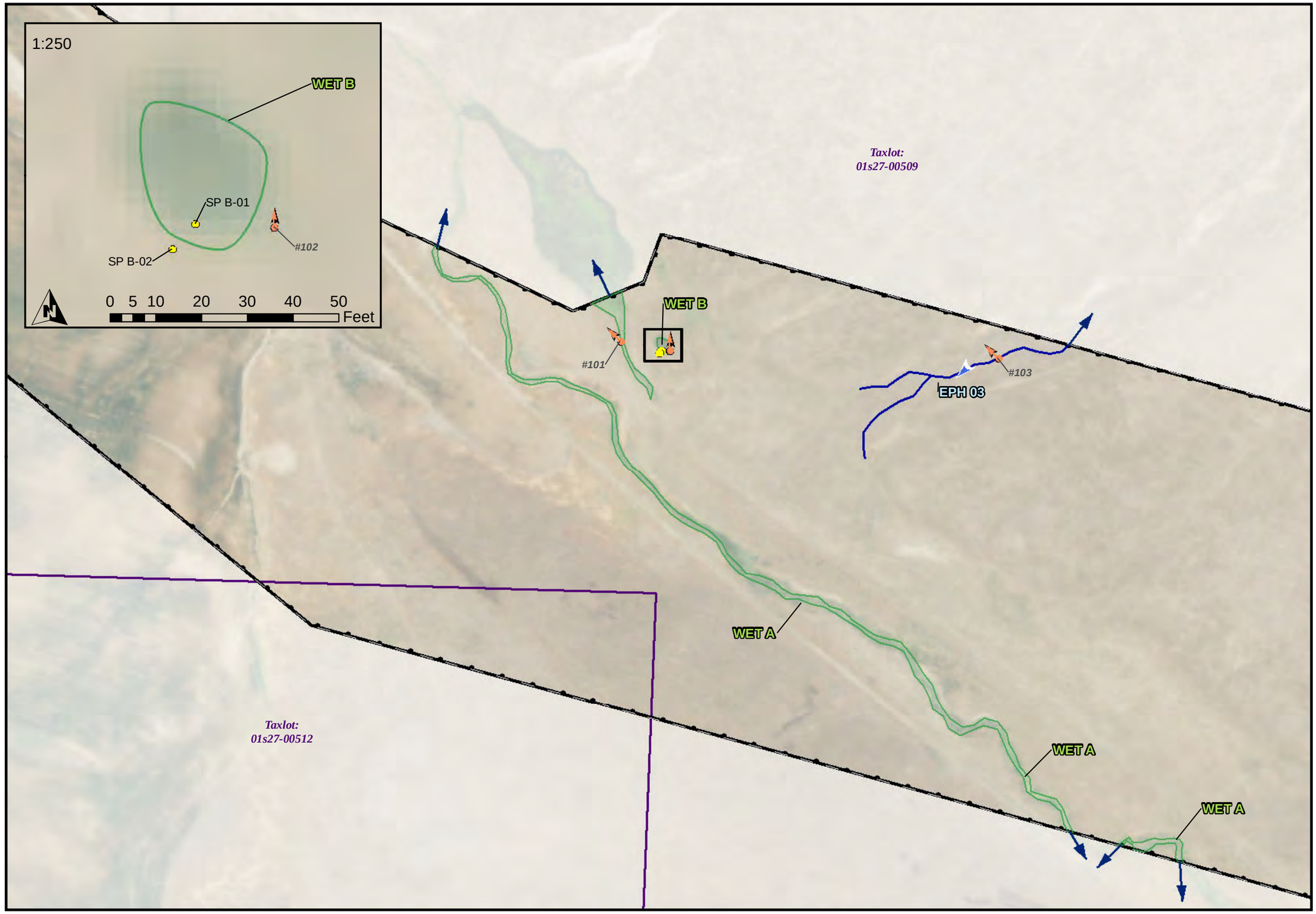

Figure A-5.1.62

Wheatridge Wind Energy Facility

Wetland Delineation
Map 62 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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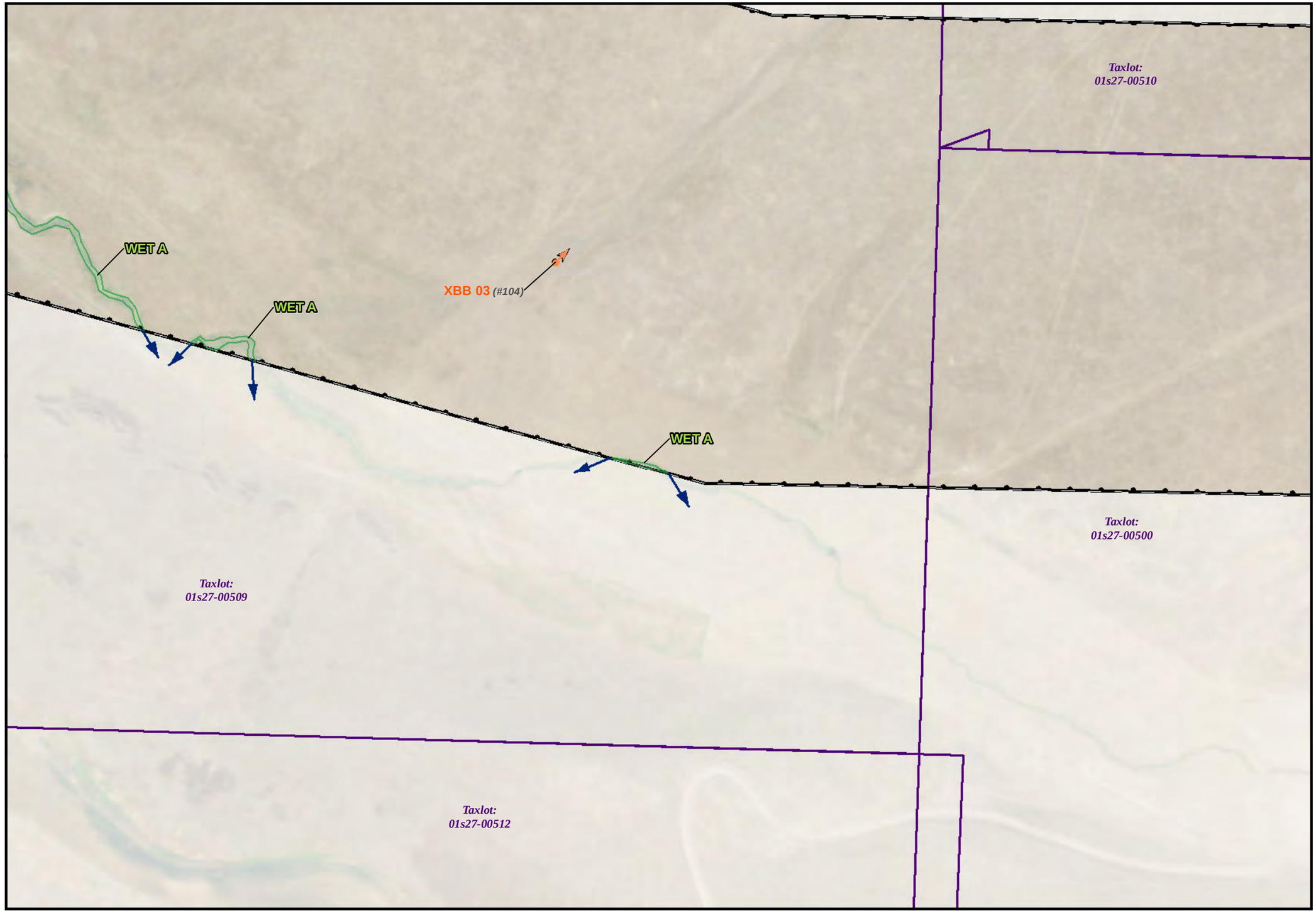

Figure A-5.1.63

Wheatridge Wind Energy Facility

Wetland Delineation
Map 63 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
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- Surveyed Water (Maximum OHWL Width)
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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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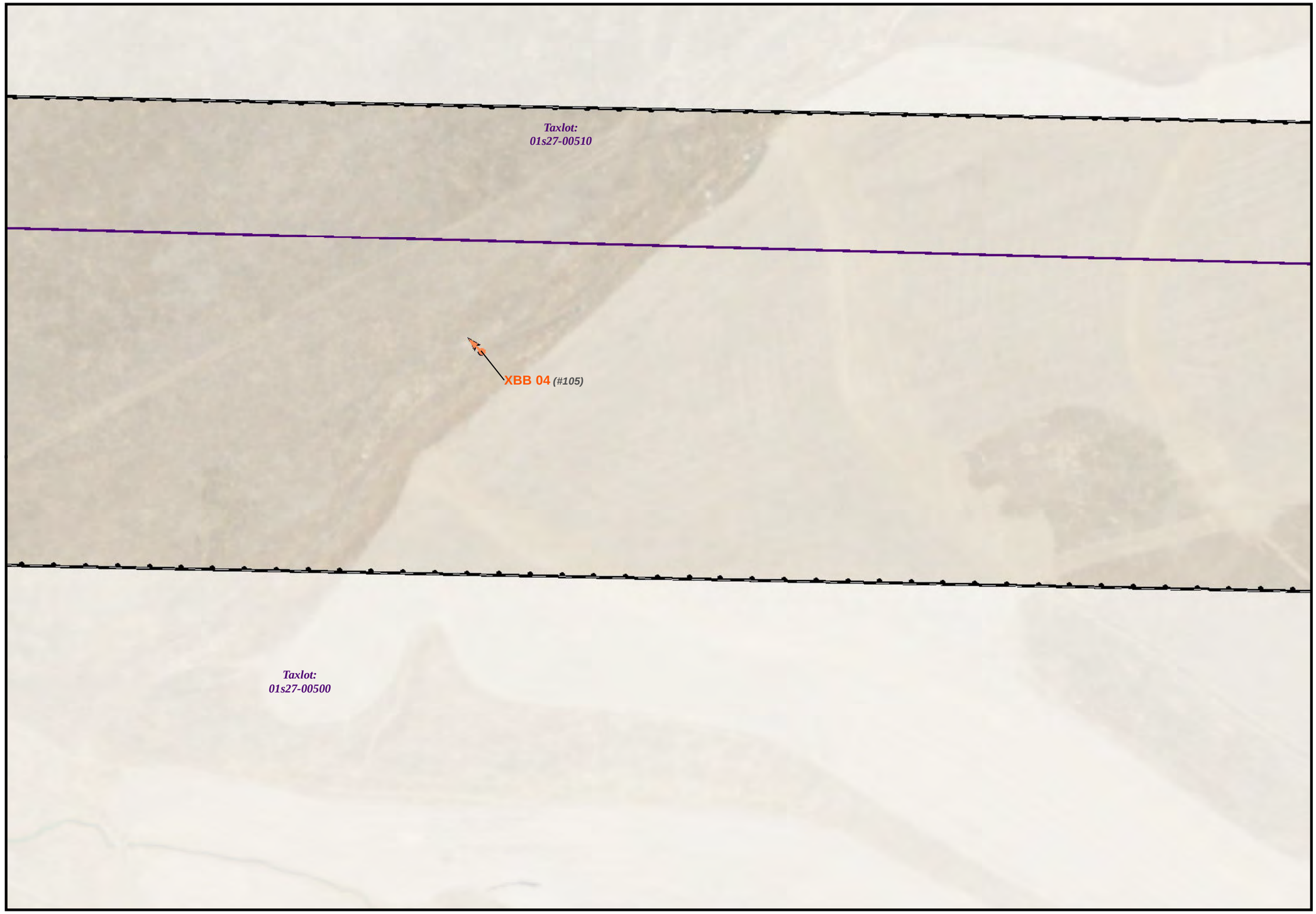

Figure A-5.1.64

Wheatridge Wind Energy Facility

Wetland Delineation
Map 64 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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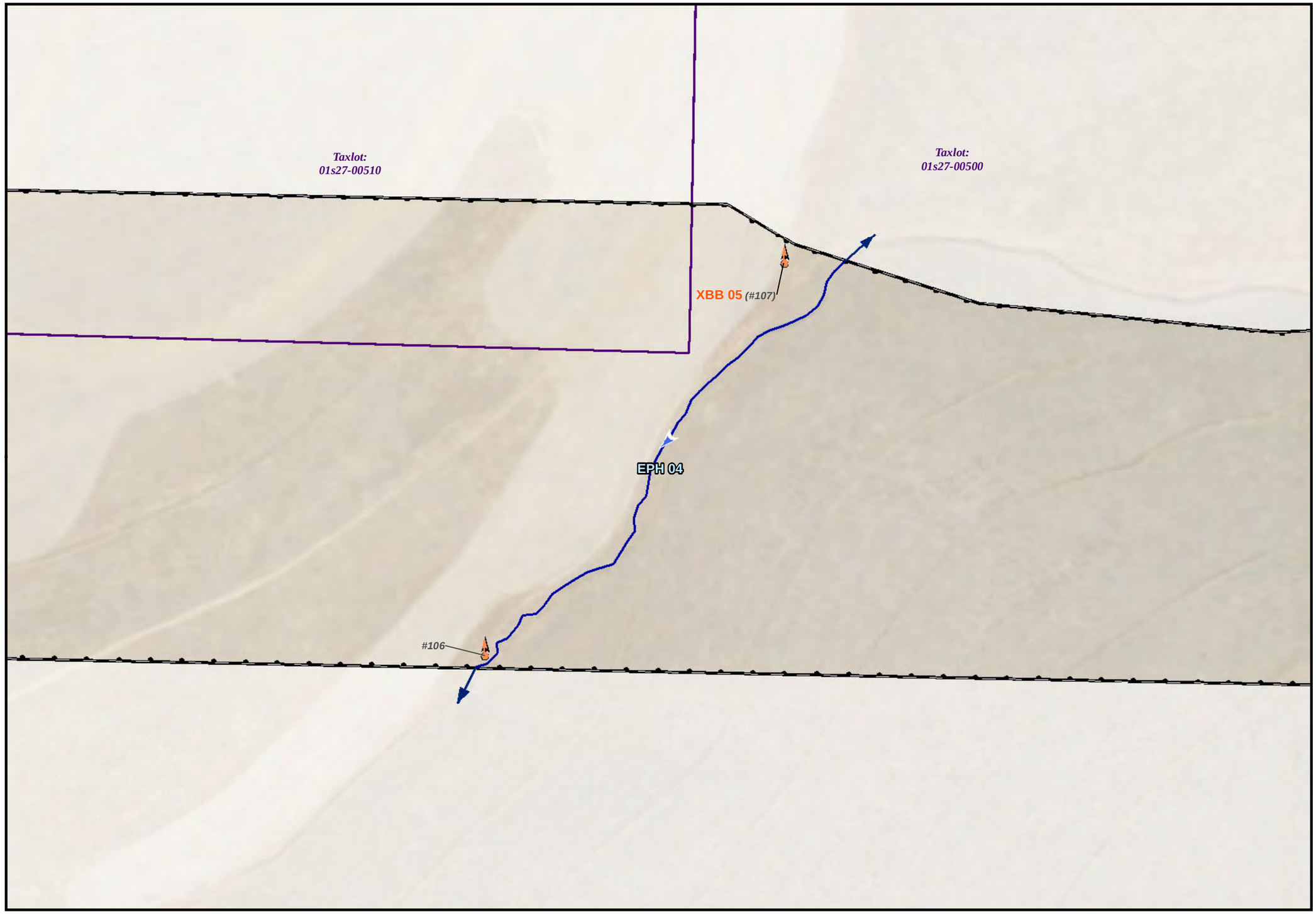

Figure A-5.1.65

Wheatridge Wind Energy Facility

Wetland Delineation
Map 65 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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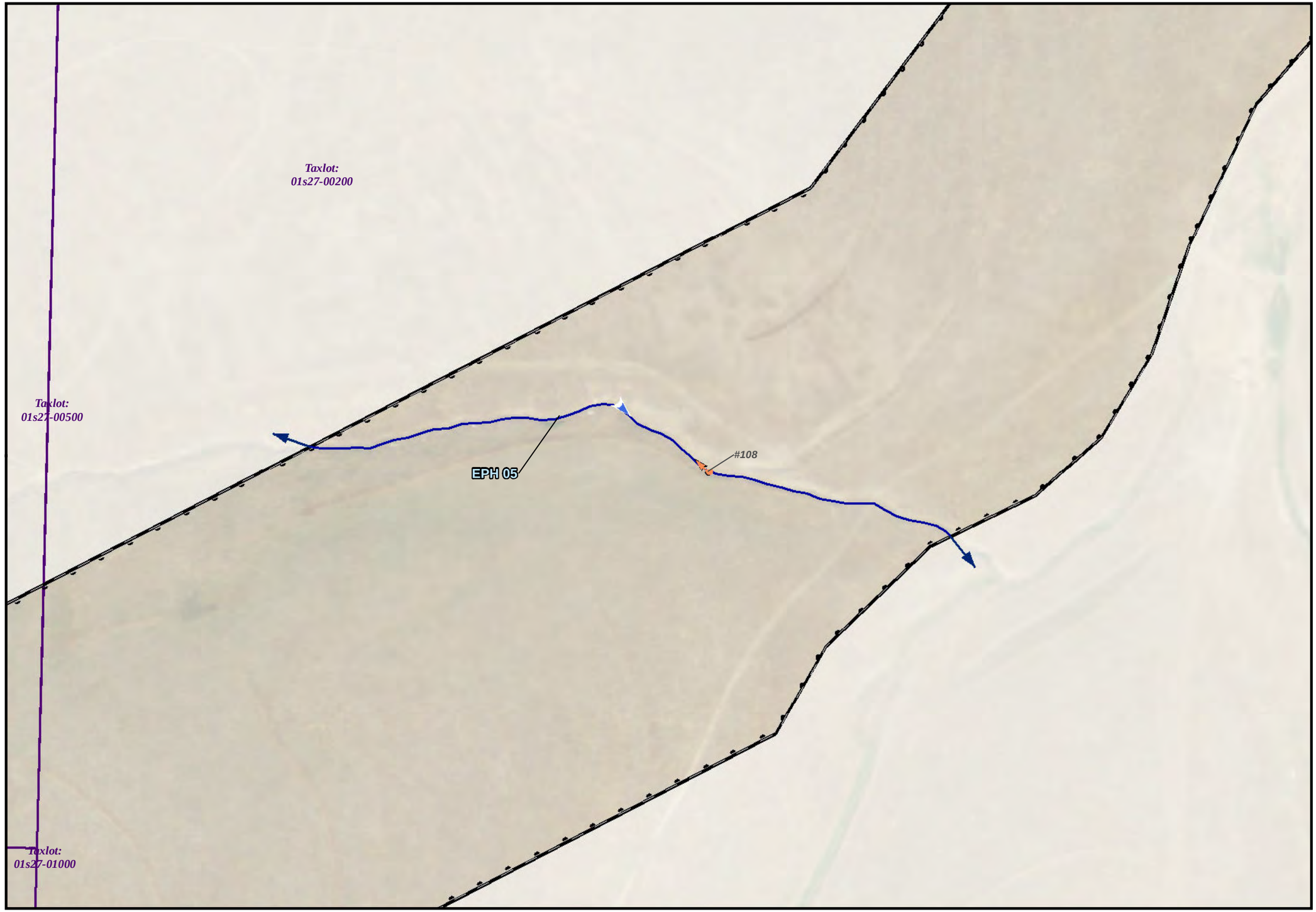

Figure A-5.1.66

Wheatridge Wind Energy Facility

Wetland Delineation
Map 66 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
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0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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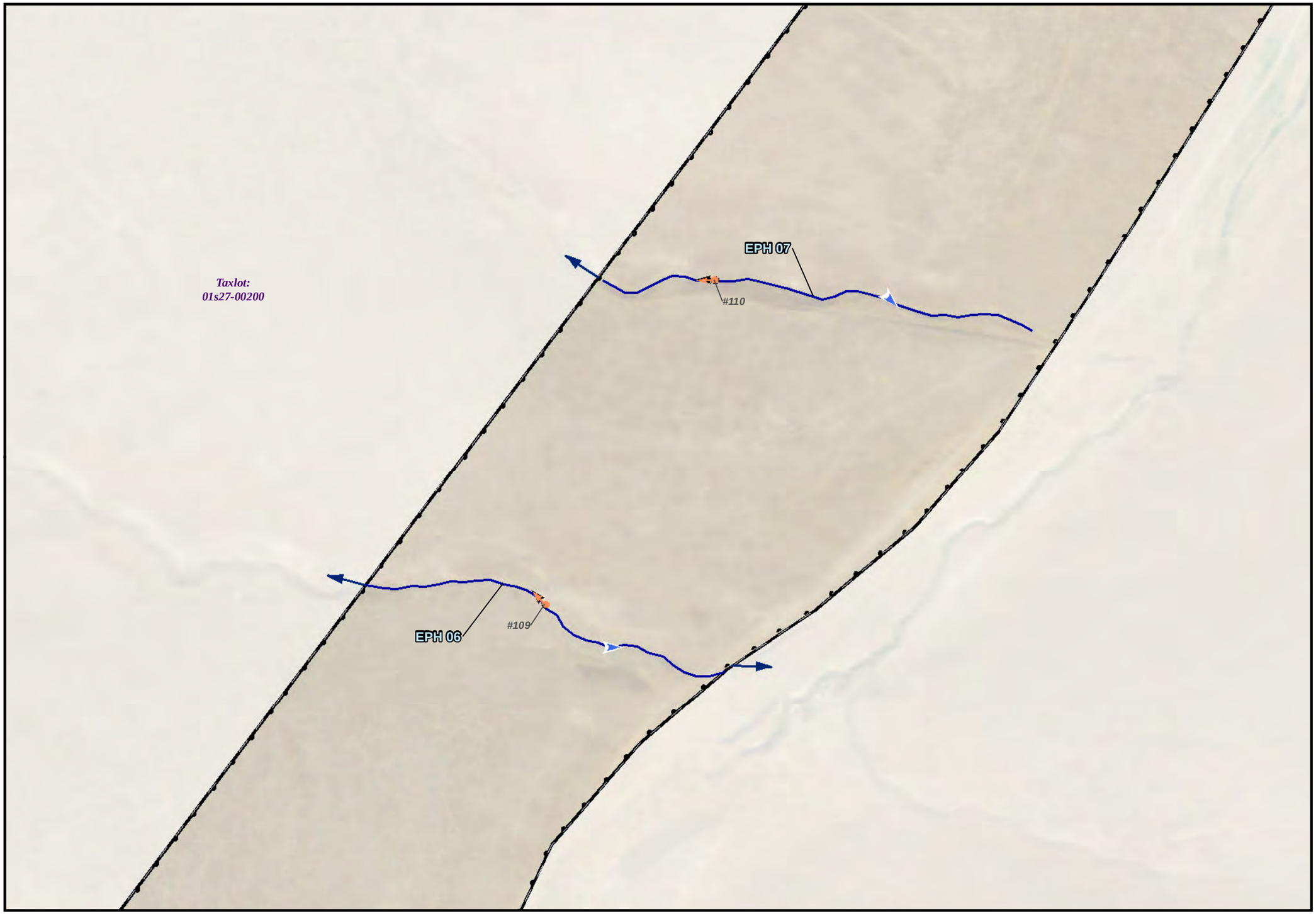

Figure A-5.1.67

Wheatridge Wind Energy Facility

Wetland Delineation
Map 67 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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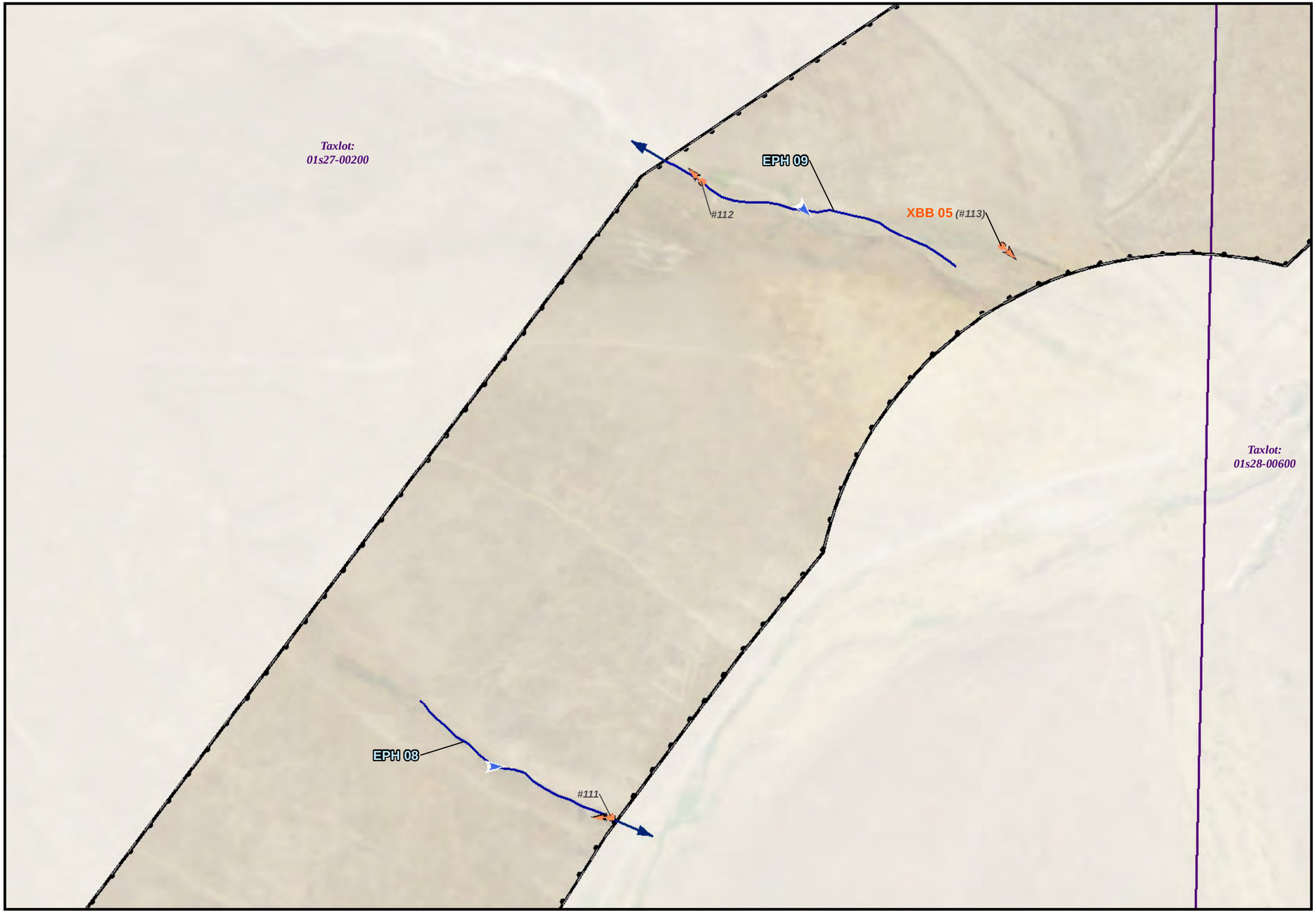

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.68

Wheatridge Wind Energy Facility

Wetland Delineation
Map 68 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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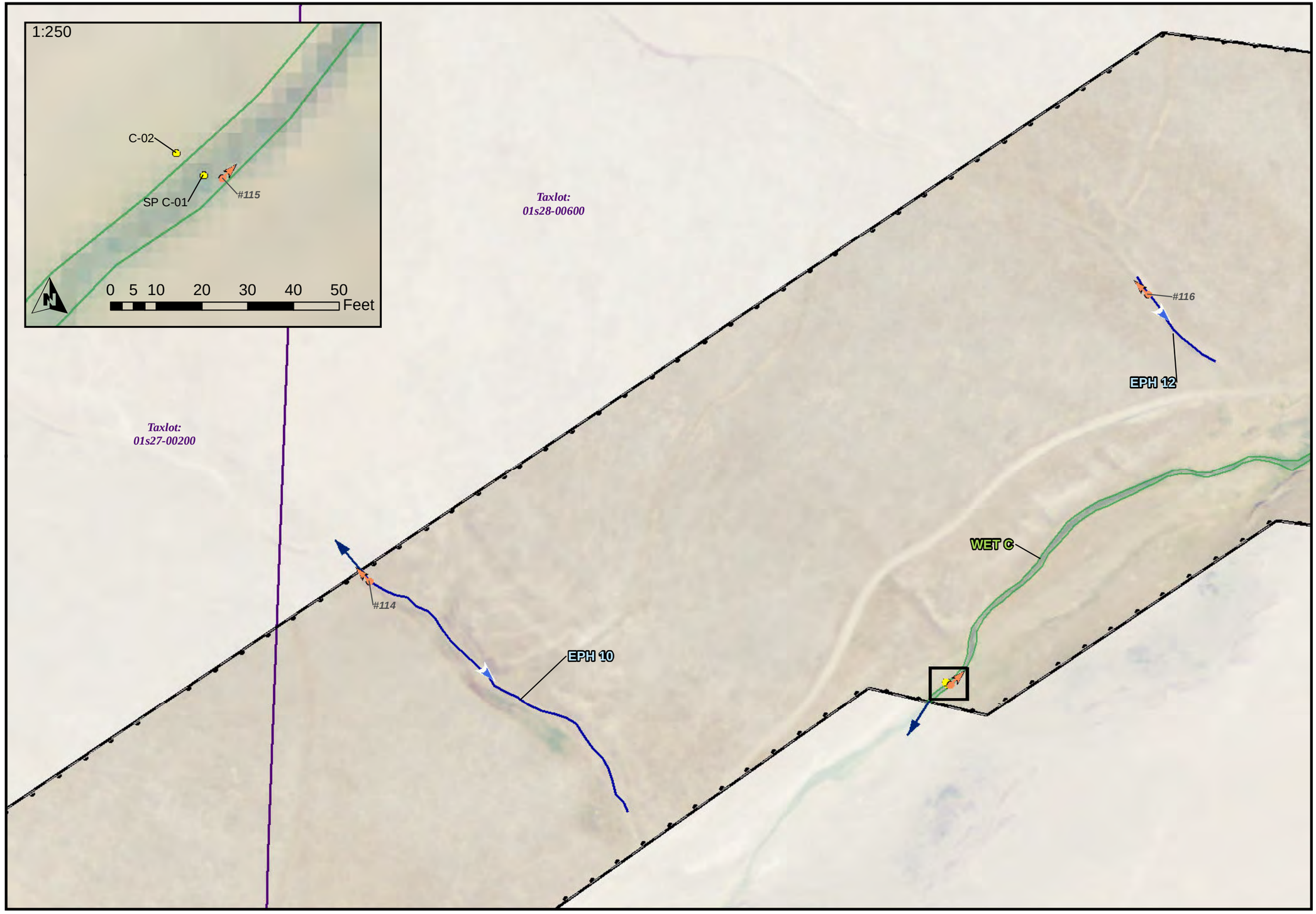

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.69

Wheatridge Wind Energy Facility

Wetland Delineation
Map 69 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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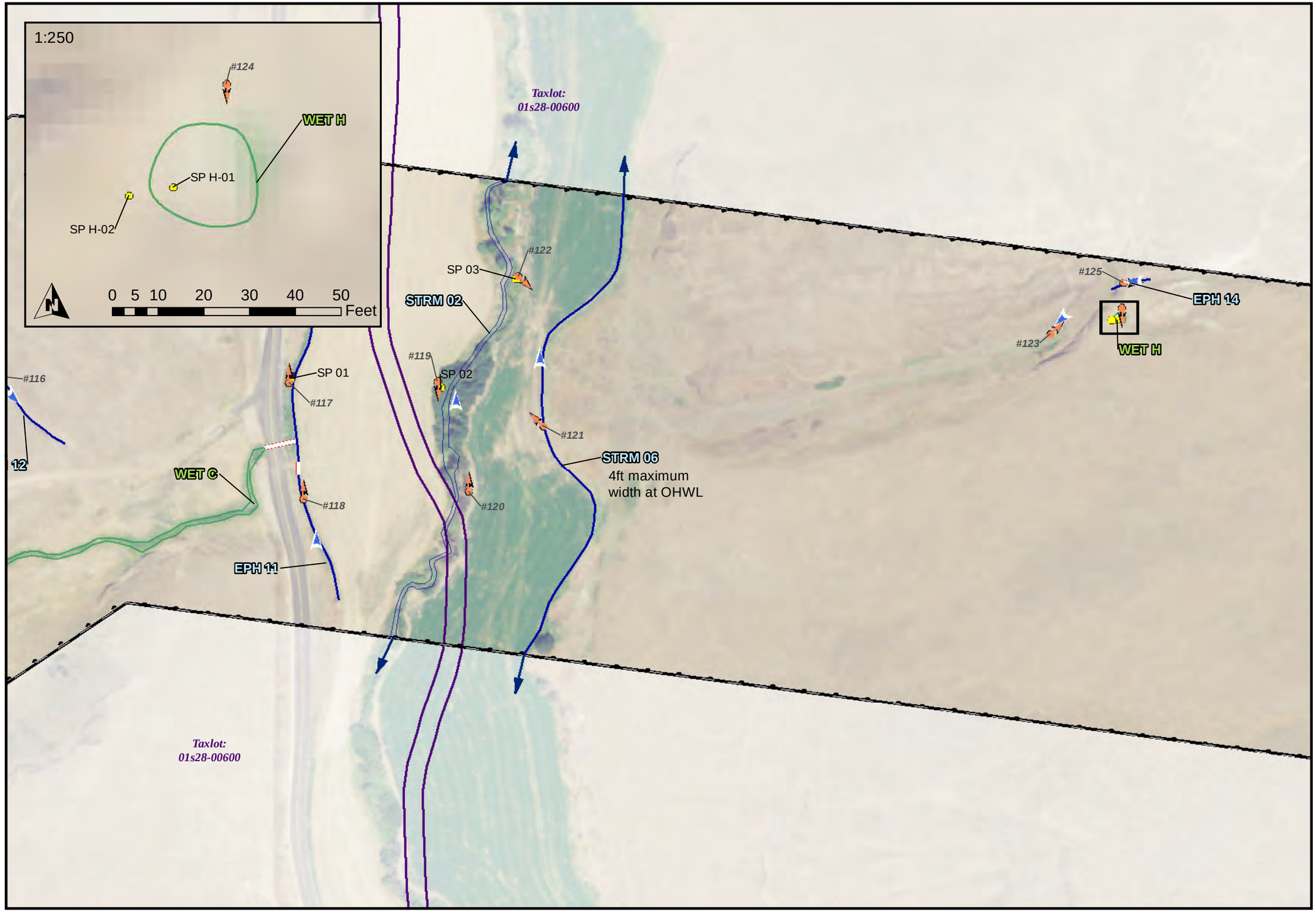

Figure A-5.1.70

Wheatridge Wind Energy Facility

Wetland Delineation
Map 70 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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Figure A-5.1.71

Wheatridge Wind Energy Facility

Wetland Delineation
Map 71 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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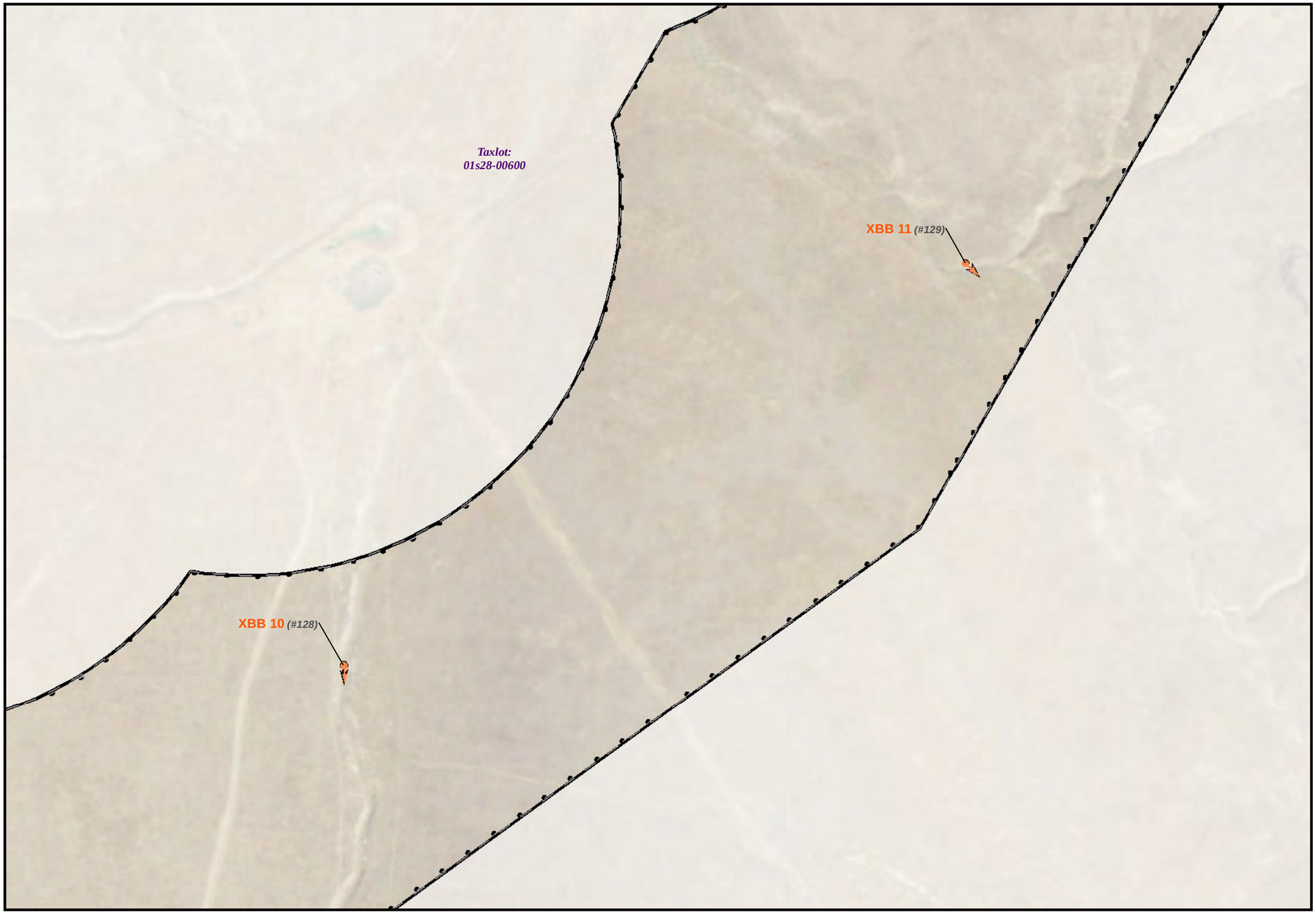

Figure A-5.1.72

Wheatridge Wind Energy Facility

Wetland Delineation
Map 72 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

TETRA TECH

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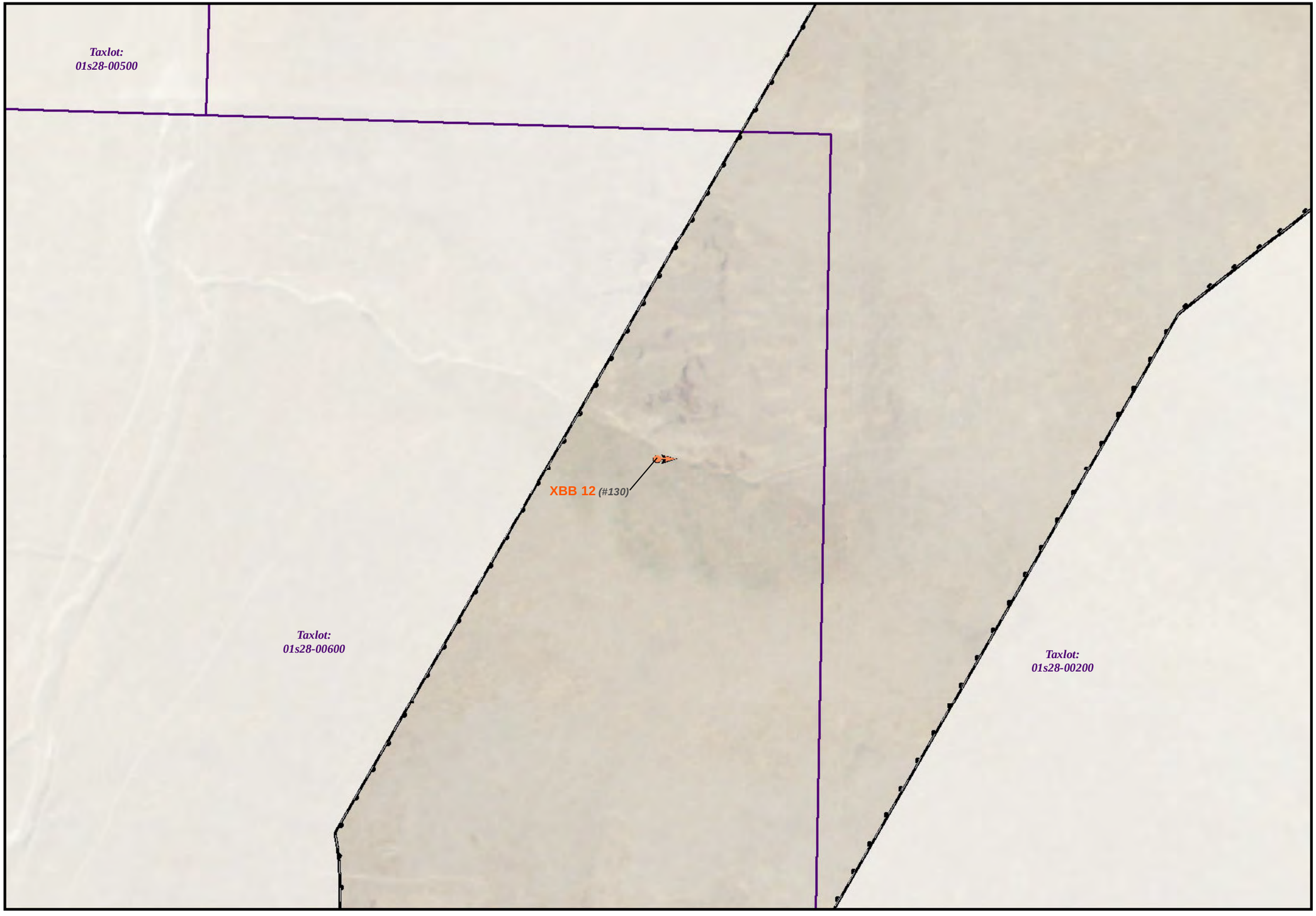

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.73

Wheatridge Wind Energy Facility

Wetland Delineation
Map 73 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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TETRA TECH

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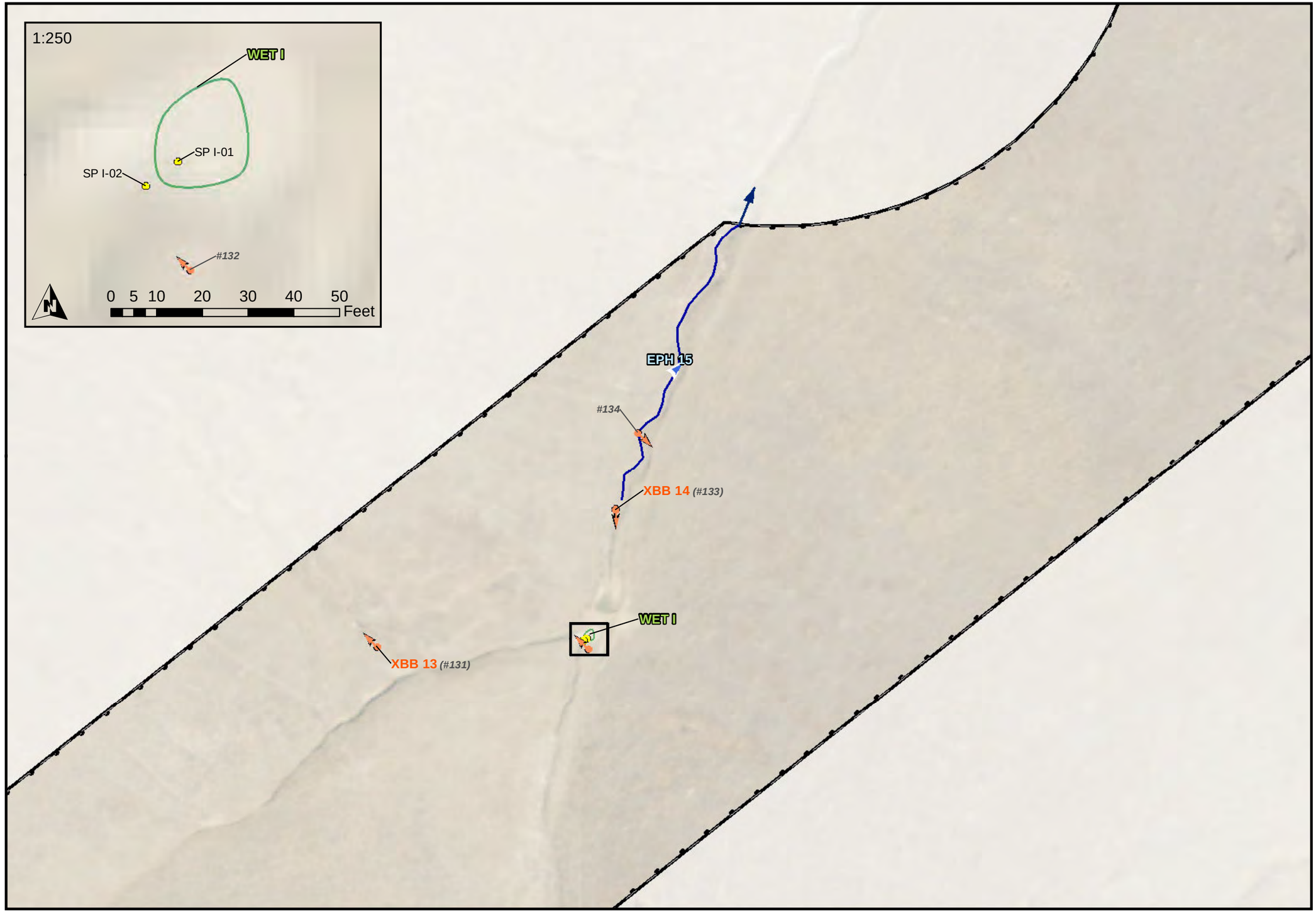

Figure A-5.1.74

Wheatridge Wind Energy Facility

Wetland Delineation
Map 74 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

TETRA TECH

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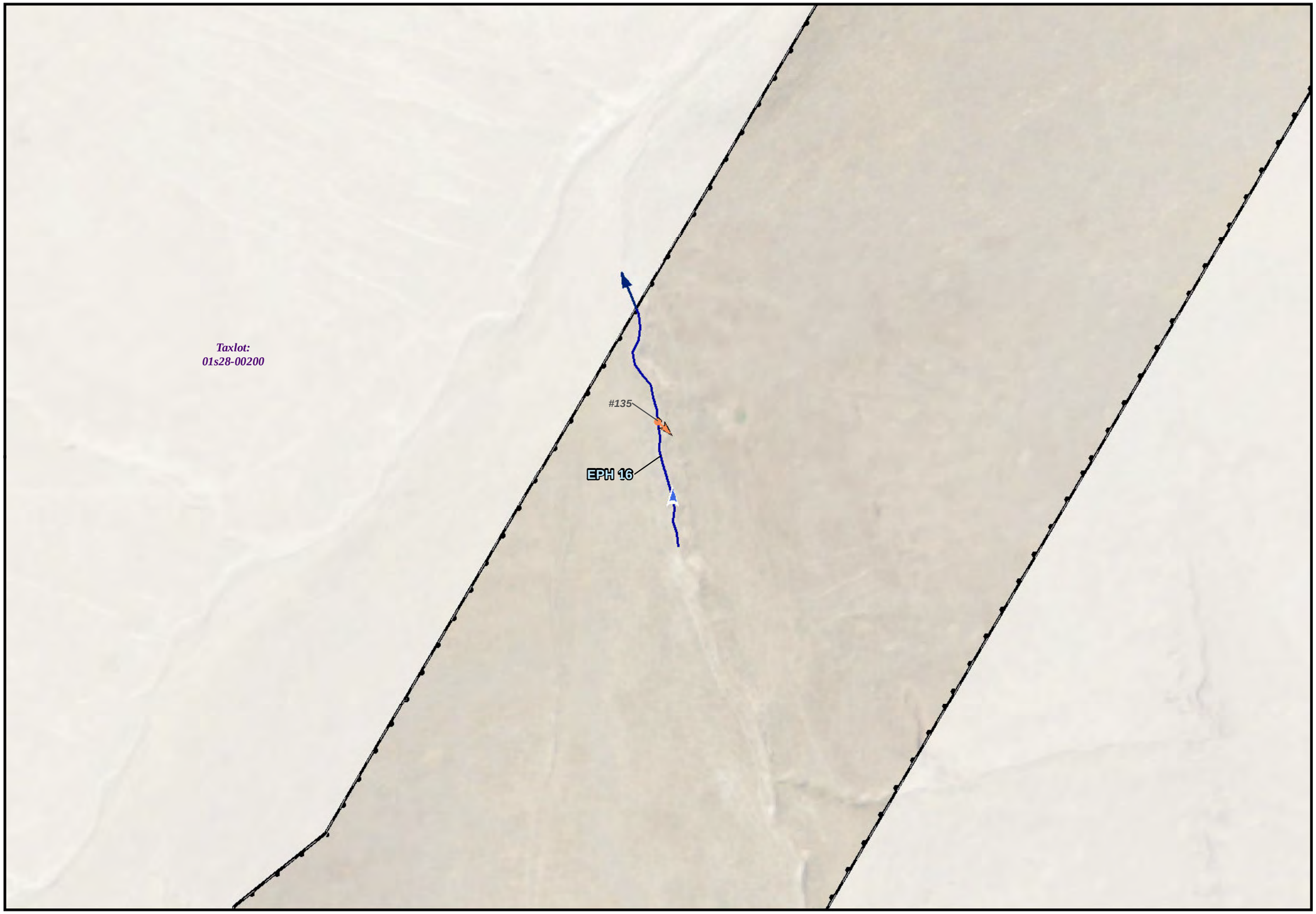

Figure A-5.1.75

Wheatridge Wind Energy Facility

Wetland Delineation
Map 75 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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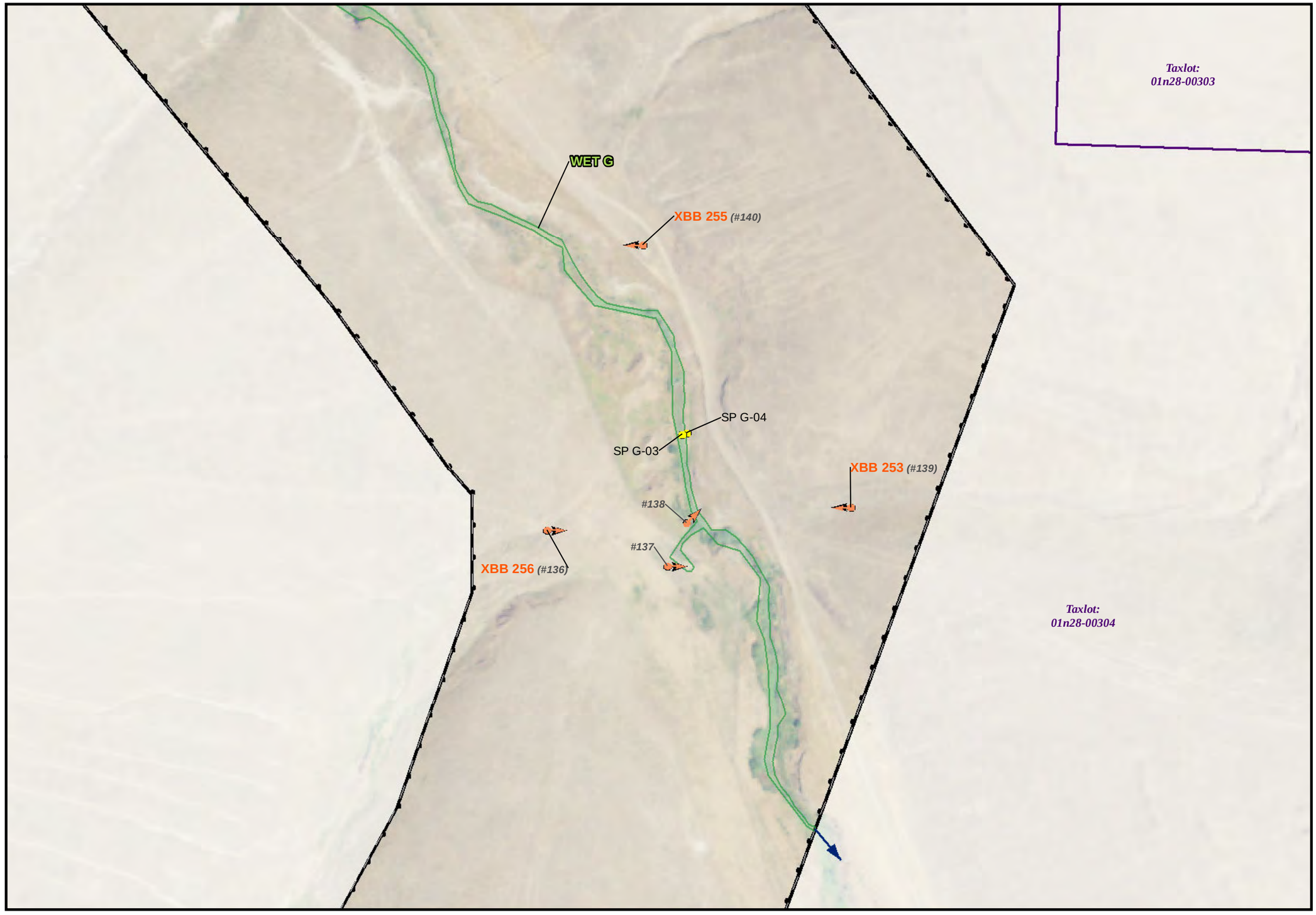

Figure A-5.1.76

Wheatridge Wind Energy Facility

Wetland Delineation
Map 76 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

Boundaries of wetlands and other waters were surveyed with a Trimble GeoXH 6000 GNSS-enabled device. GPS data was differentially corrected to sub-meter accuracy.

1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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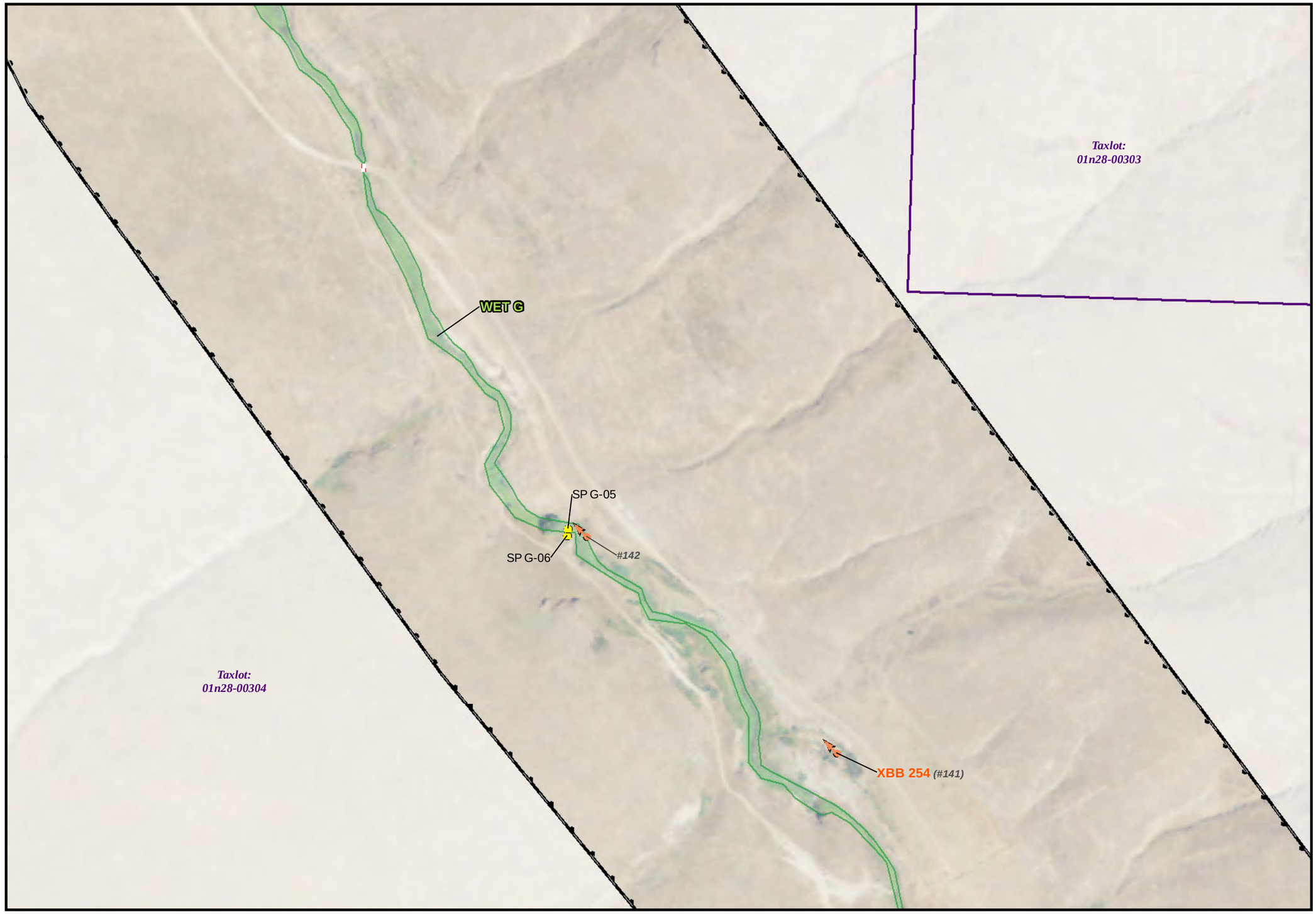

Figure A-5.1.77

Wheatridge Wind Energy Facility

Wetland Delineation
Map 77 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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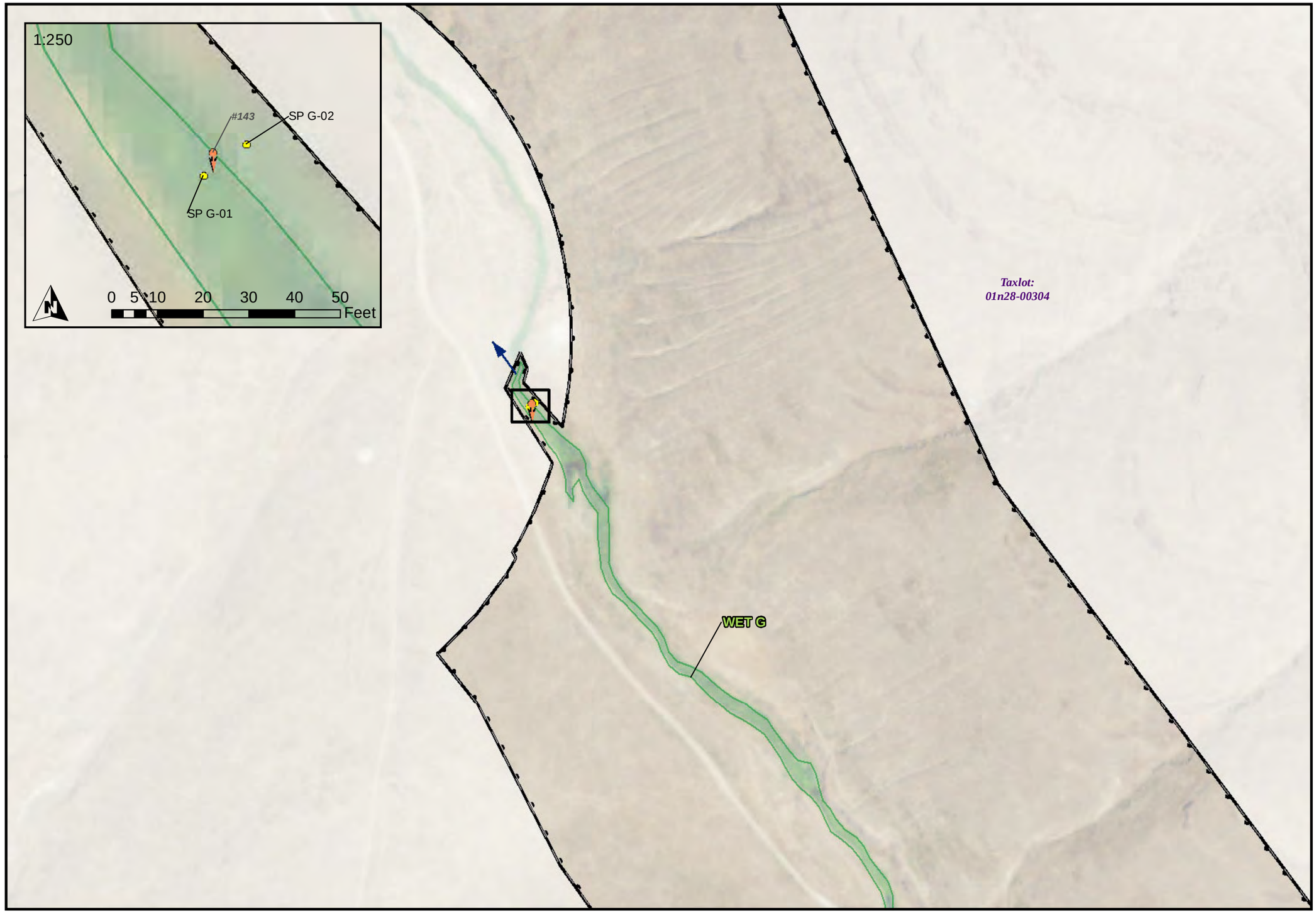

Figure A-5.1.78

Wheatridge Wind Energy Facility

Wetland Delineation
Map 78 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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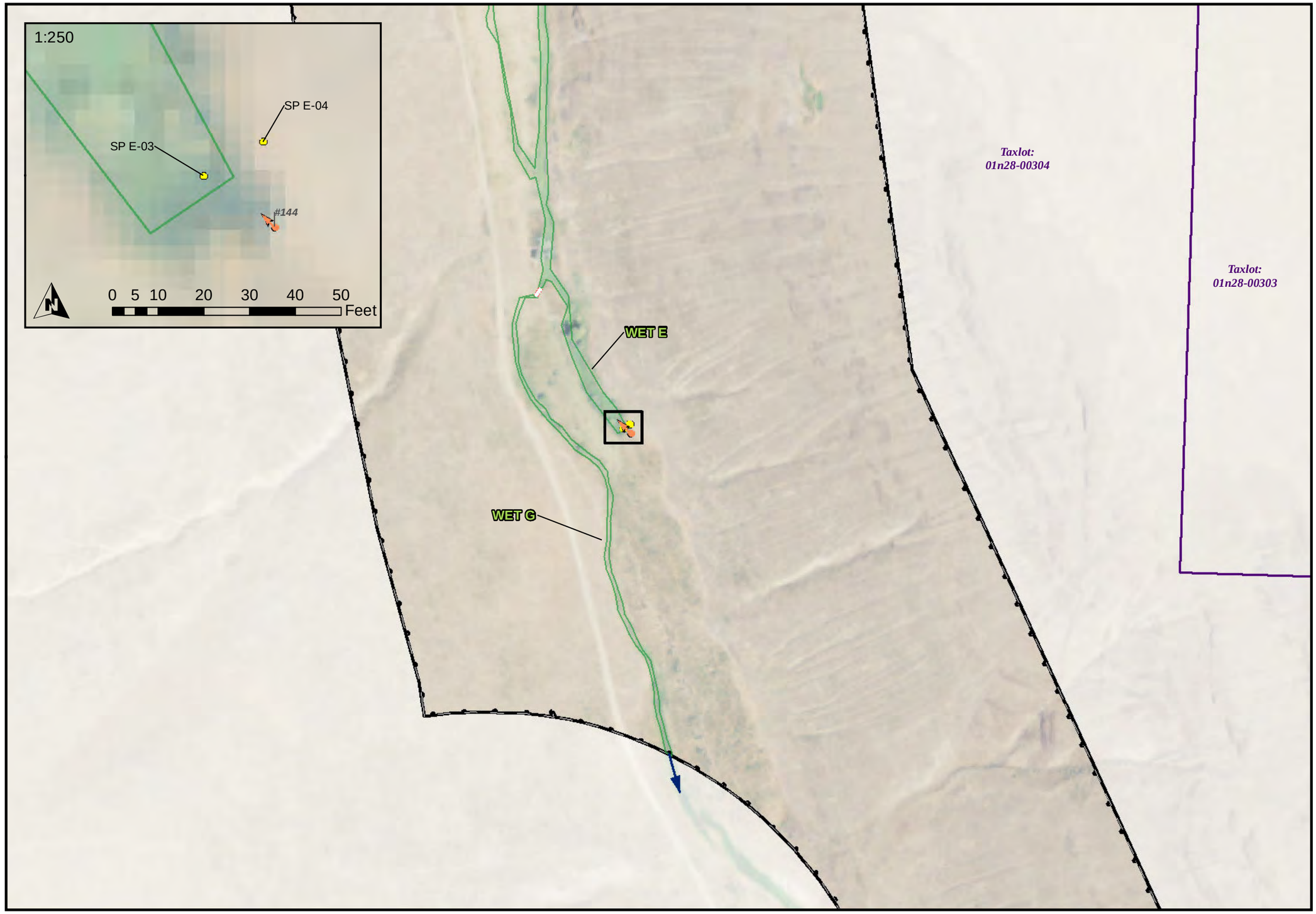

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.79

Wheatridge Wind Energy Facility

Wetland Delineation
Map 79 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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TETRA TECH

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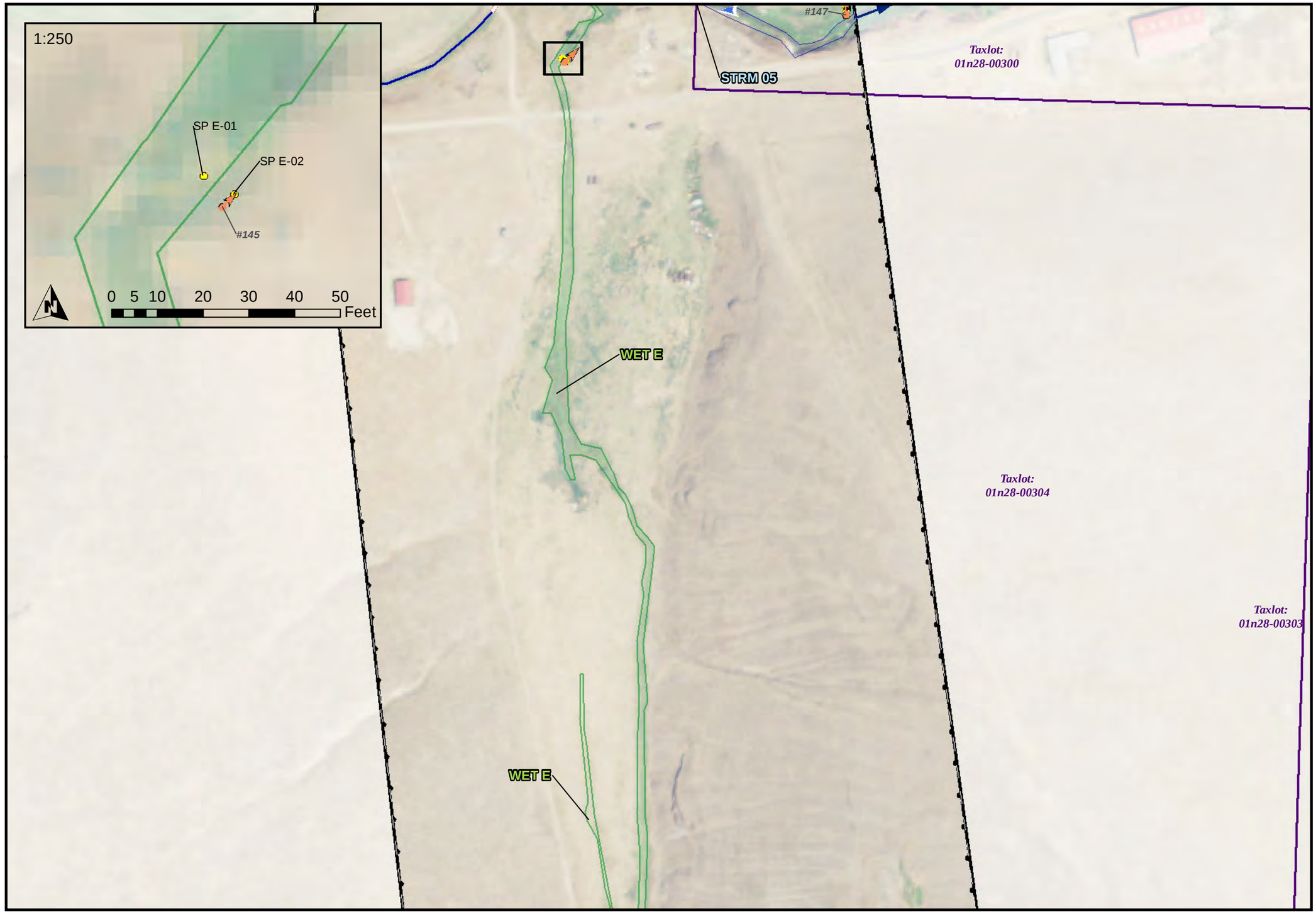

Figure A-5.1.80

Wheatridge Wind Energy Facility

Wetland Delineation
Map 80 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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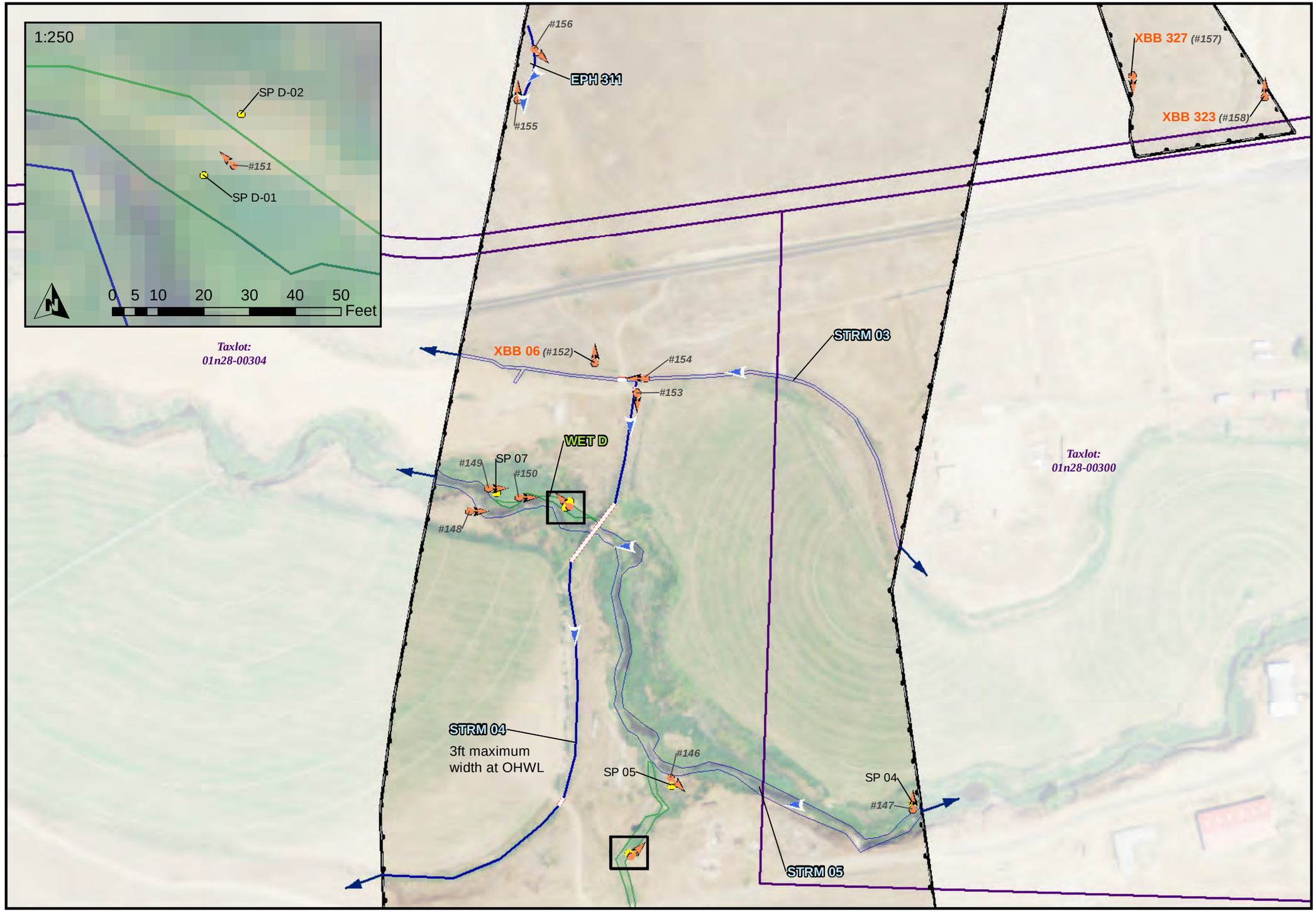

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.81

Wheatridge Wind Energy Facility

Wetland Delineation
Map 81 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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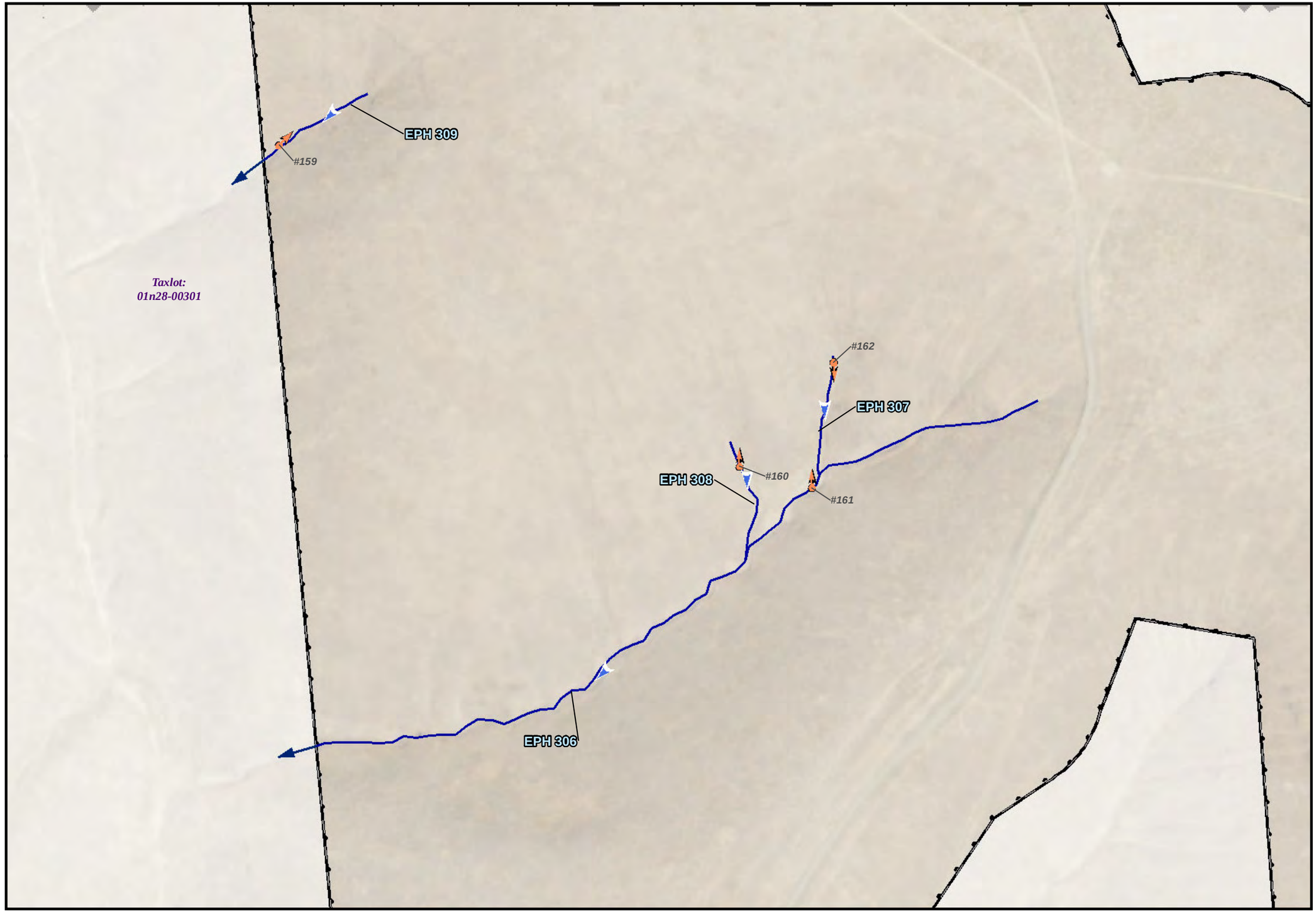

Figure A-5.1.82

Wheatridge Wind Energy Facility

Wetland Delineation
Map 82 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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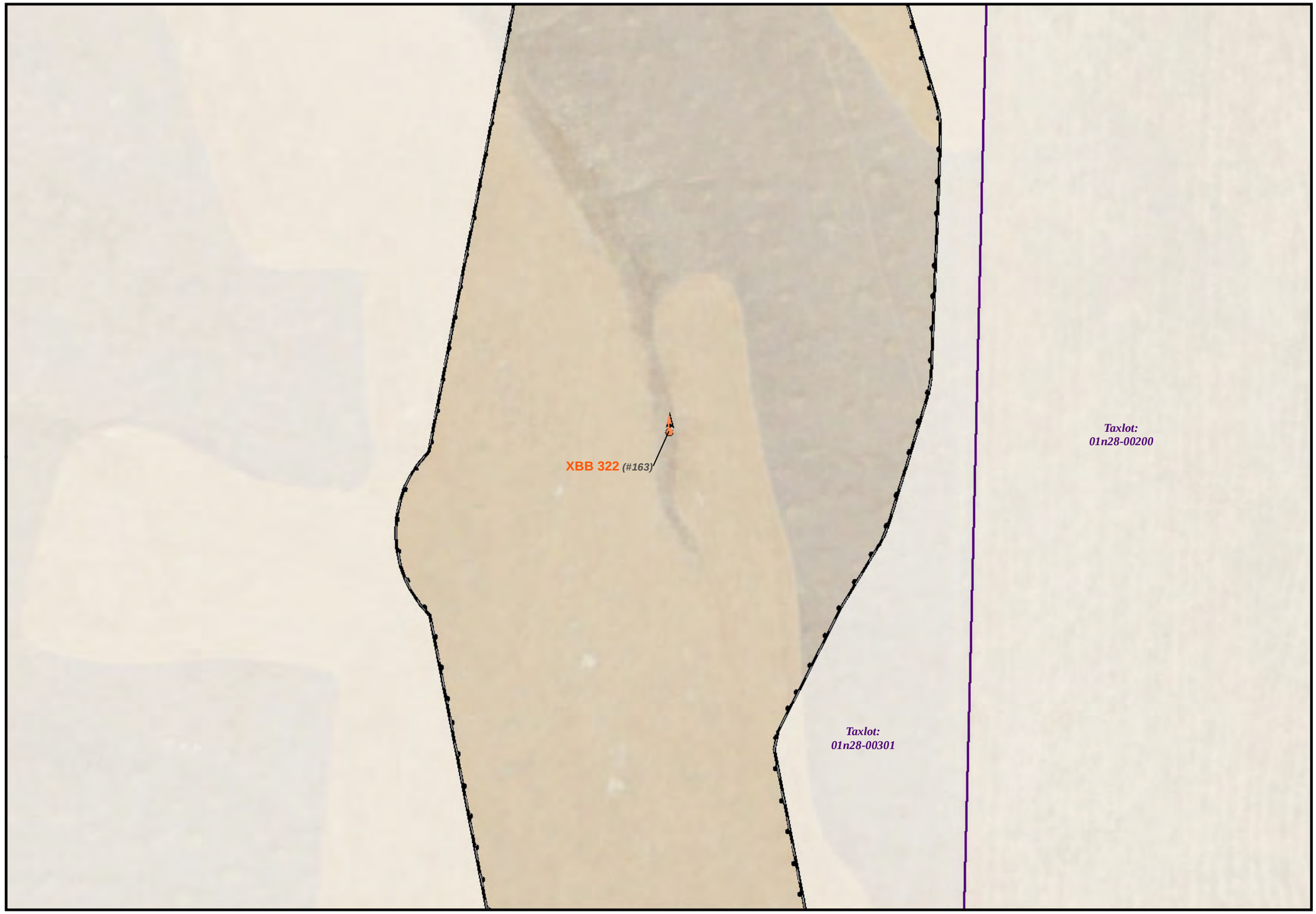

Figure A-5.1.83

Wheatridge Wind Energy Facility

Wetland Delineation
Map 83 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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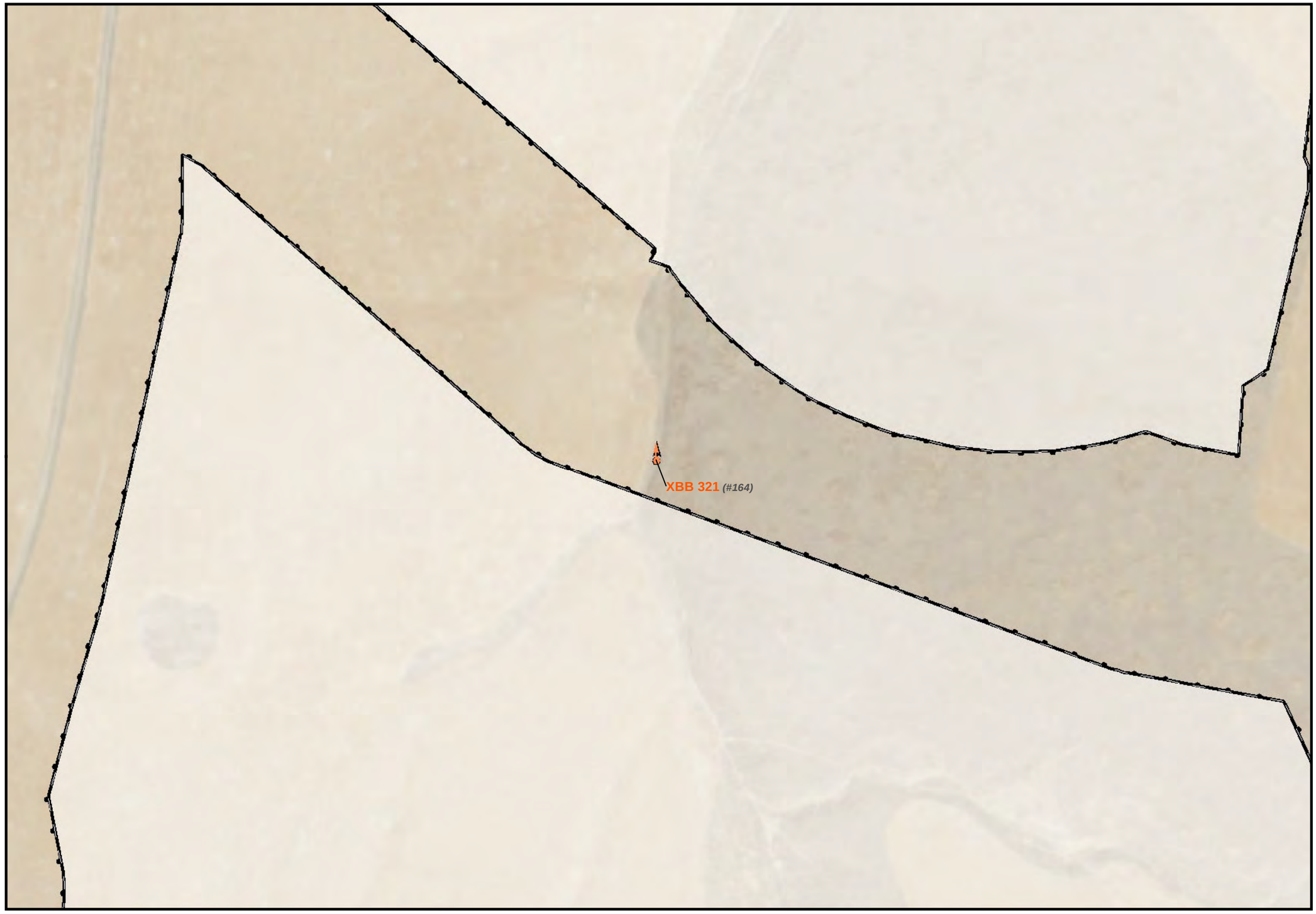

Figure A-5.1.84

Wheatridge Wind Energy Facility

Wetland Delineation
Map 84 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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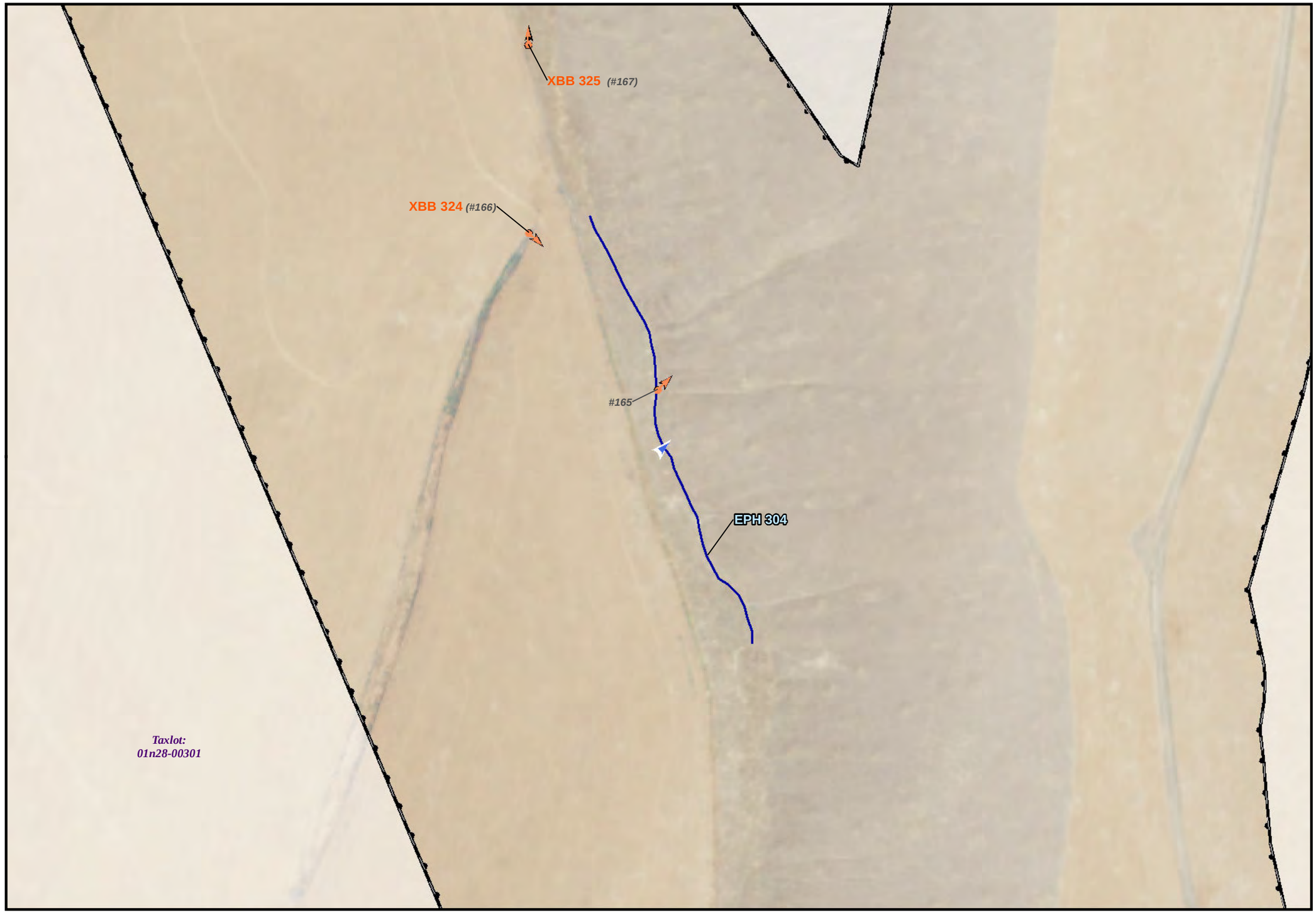

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.85

Wheatridge Wind Energy Facility

Wetland Delineation
Map 85 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

Boundaries of wetlands and other waters were surveyed with a Trimble GeoXH 6000 GNSS-enabled device. GPS data was differentially corrected to sub-meter accuracy.

TETRA TECH

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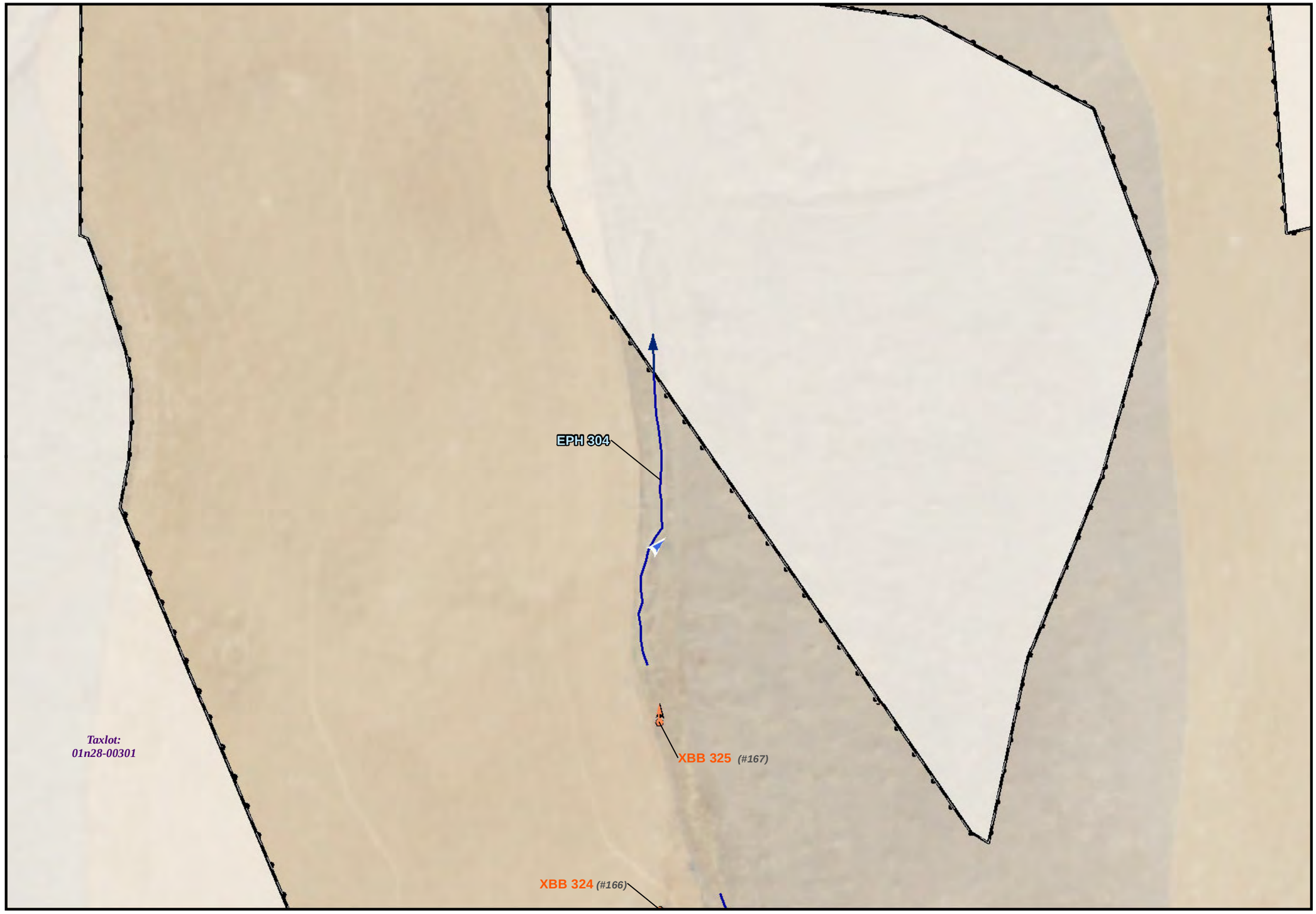

Figure A-5.1.86

Wheatridge Wind Energy Facility

Wetland Delineation
Map 86 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

Boundaries of wetlands and other waters were surveyed with a Trimble GeoXH 6000 GNSS-enabled device. GPS data was differentially corrected to sub-meter accuracy.

1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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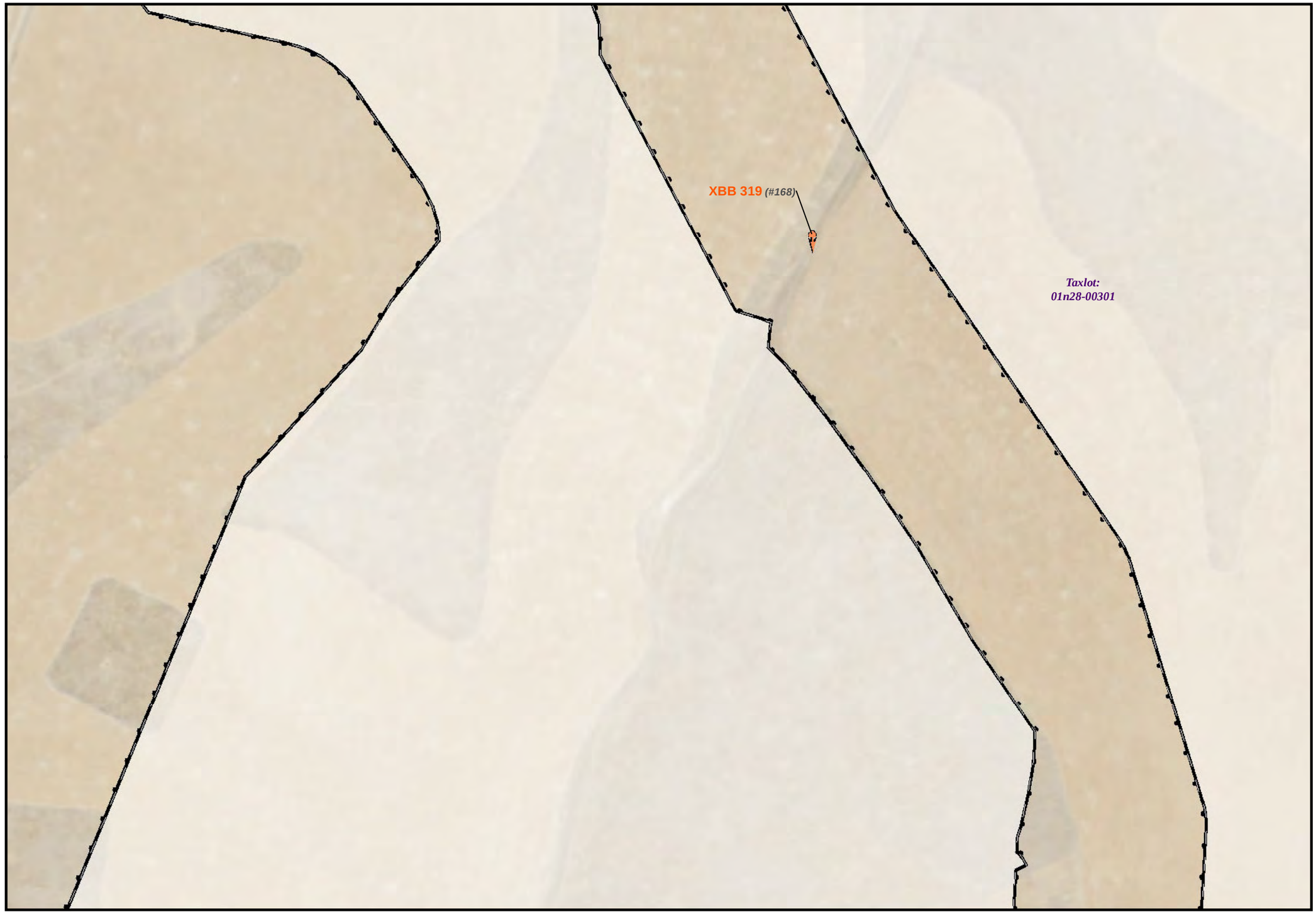

Figure A-5.1.87

Wheatridge Wind Energy Facility

Wetland Delineation
Map 87 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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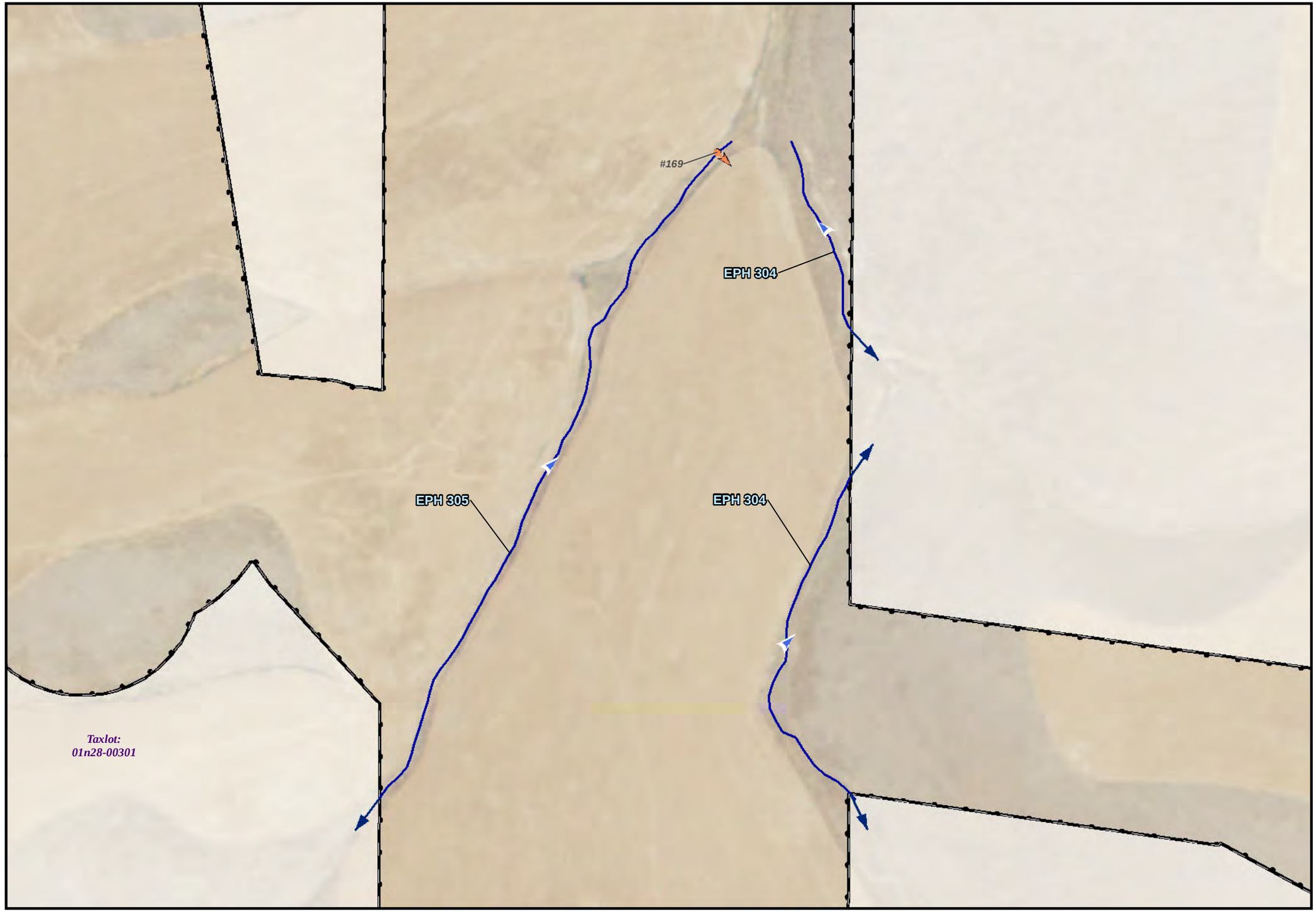

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.88

Wheatridge Wind Energy Facility

Wetland Delineation
Map 88 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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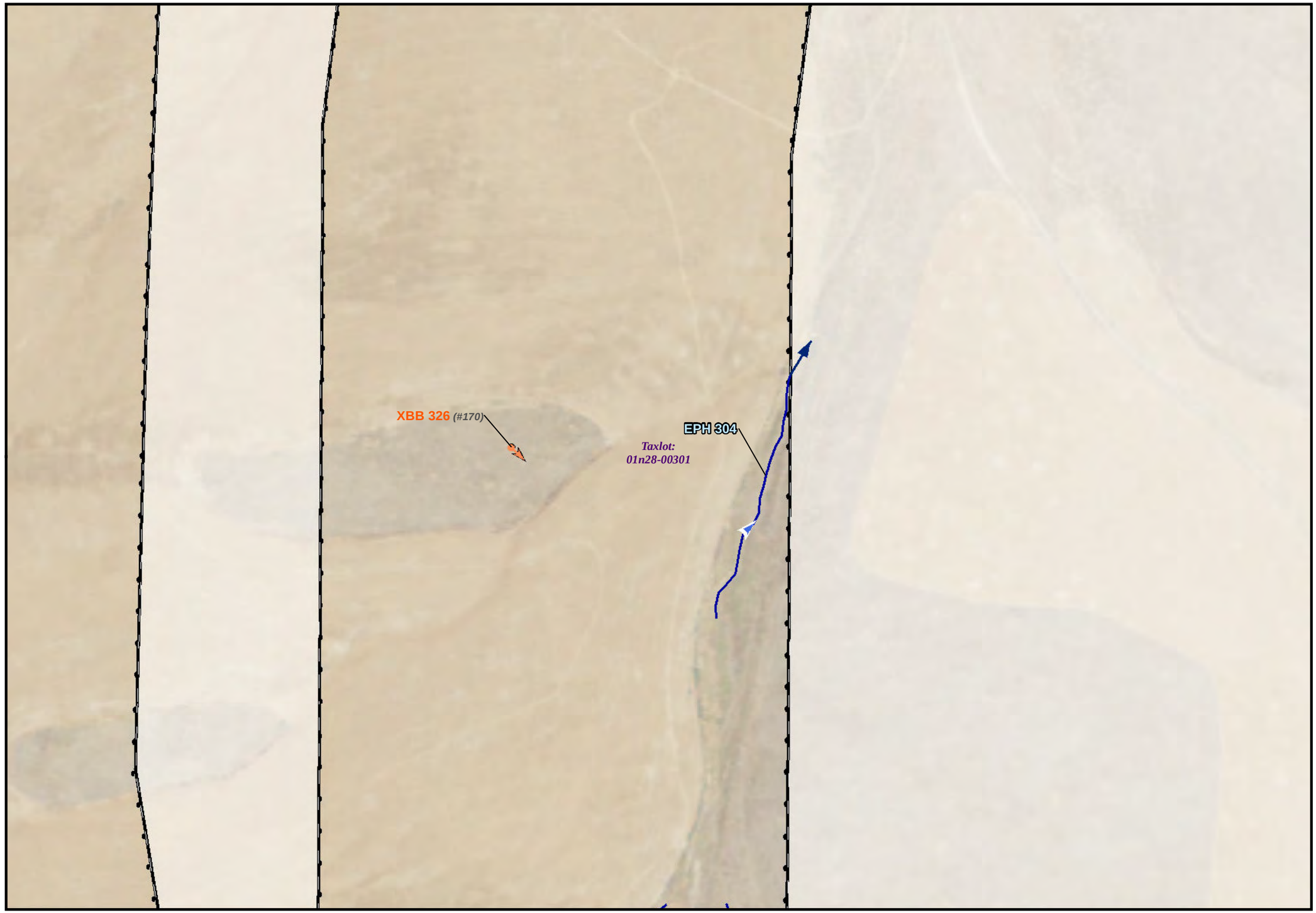

Figure A-5.1.89

Wheatridge Wind Energy Facility

Wetland Delineation
Map 89 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

Boundaries of wetlands and other waters were surveyed with a Trimble GeoXH 6000 GNSS-enabled device. GPS data was differentially corrected to sub-meter accuracy.

1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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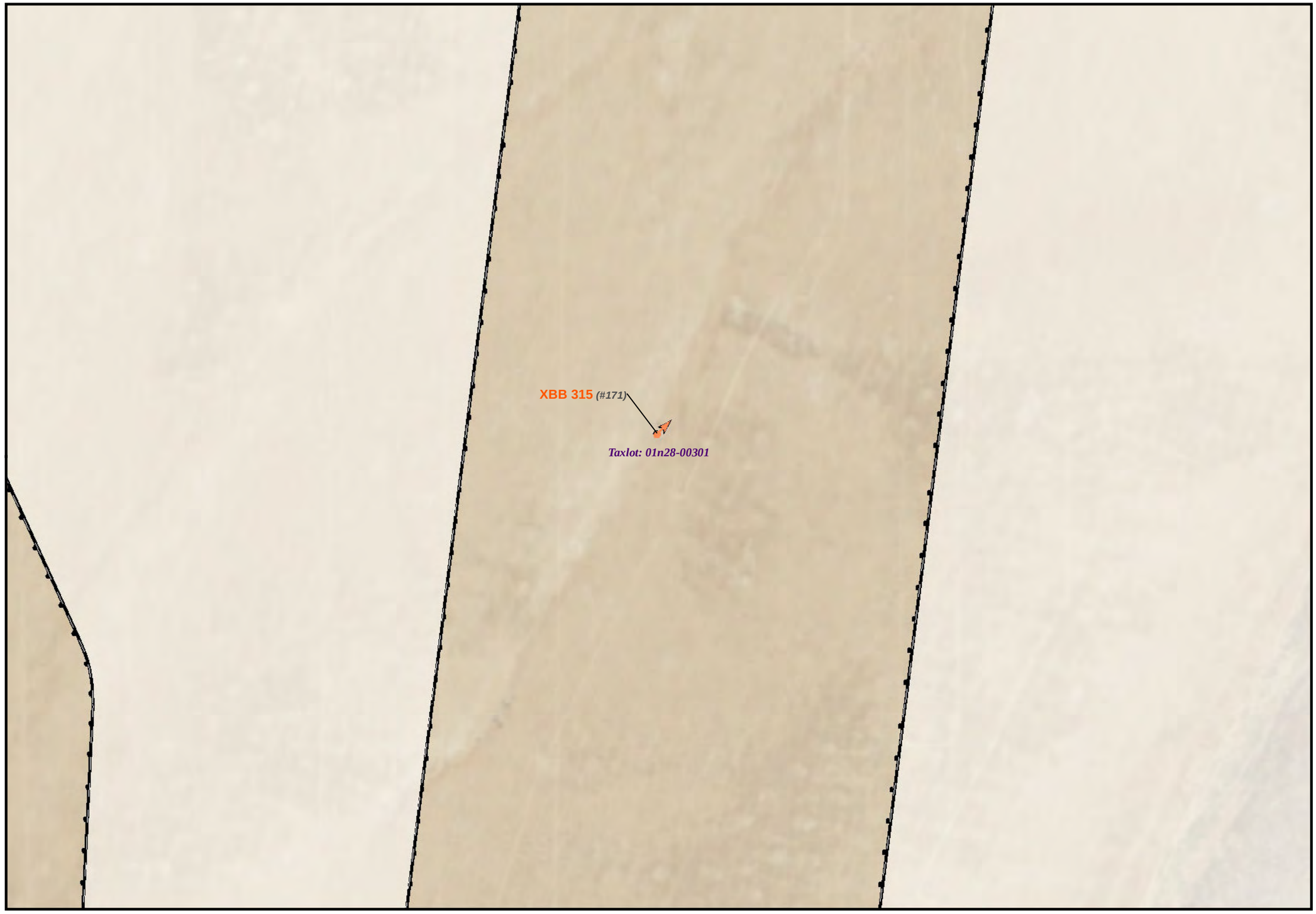

Figure A-5.1.90

Wheatridge Wind Energy Facility

Wetland Delineation
Map 90 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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Figure A-5.1.91

Wheatridge Wind Energy Facility

Wetland Delineation
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Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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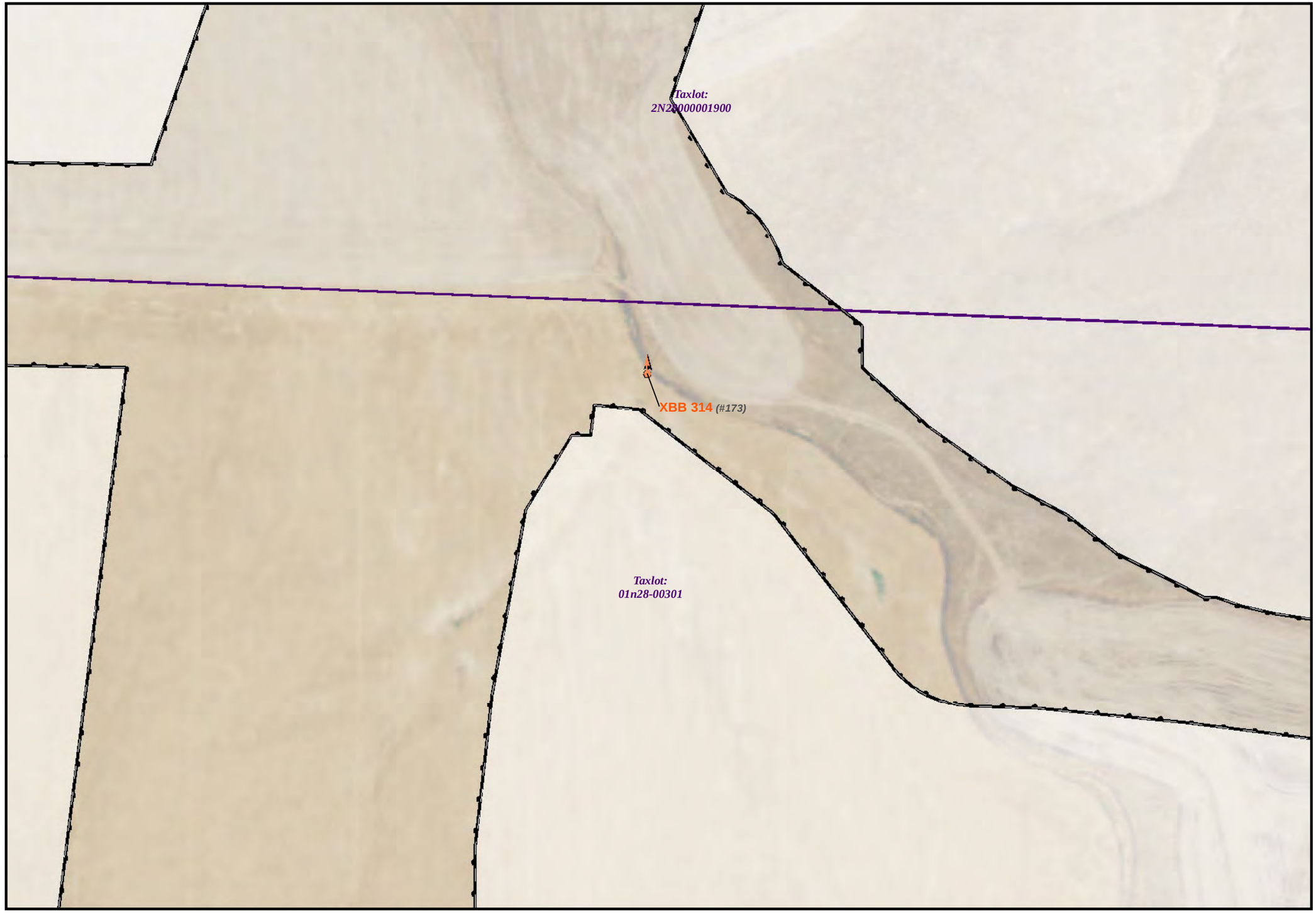

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.92

Wheatridge Wind Energy Facility

Wetland Delineation
Map 92 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.93

Wheatridge Wind Energy Facility

Wetland Delineation
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Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
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Figure A-5.1.94

Wheatridge Wind Energy Facility

Wetland Delineation
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Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

Boundaries of wetlands and other waters were surveyed with a Trimble GeoXH 6000 GNSS-enabled device. GPS data was differentially corrected to sub-meter accuracy.

1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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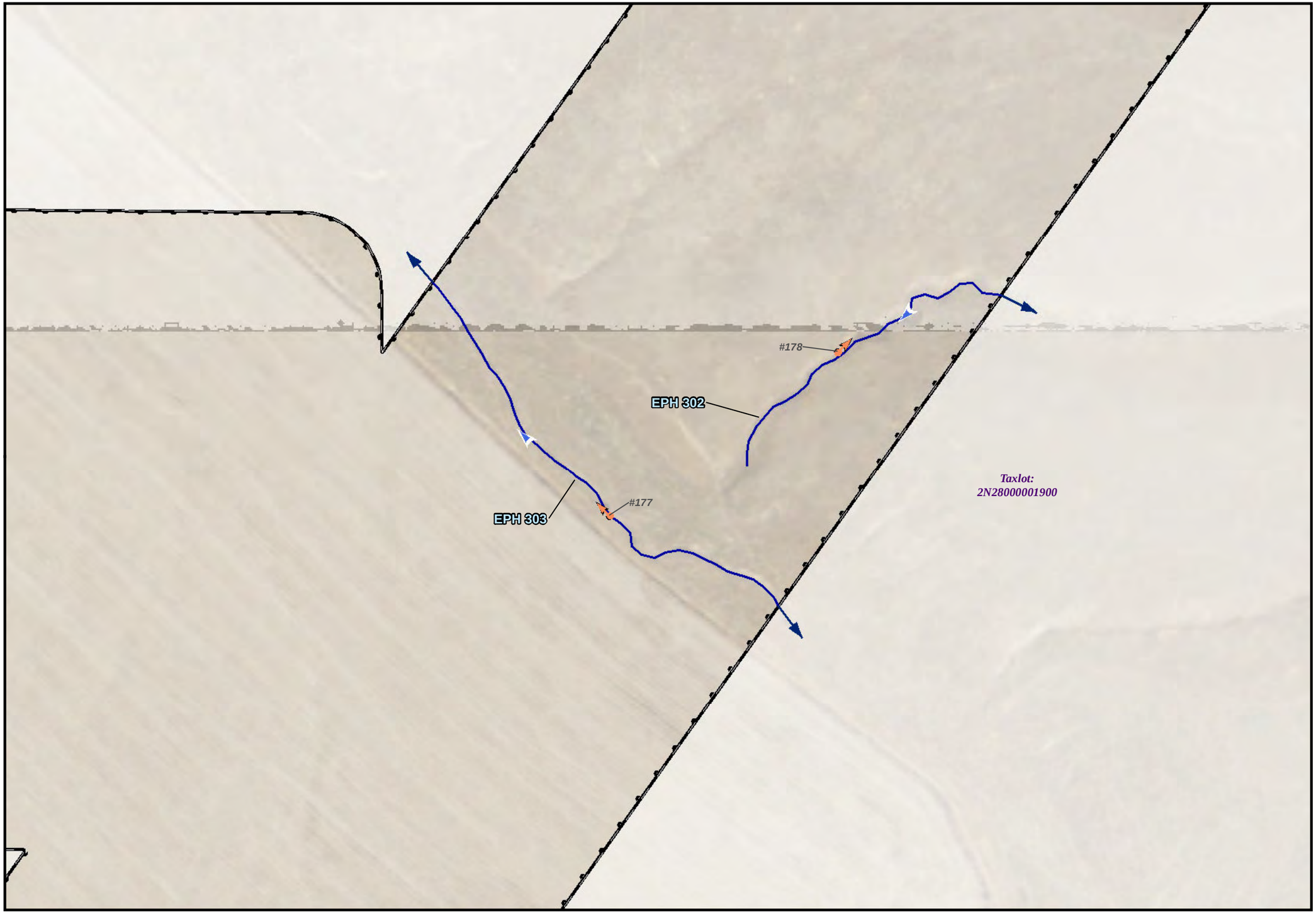

Figure A-5.1.95

Wheatridge Wind Energy Facility

Wetland Delineation
Map 95 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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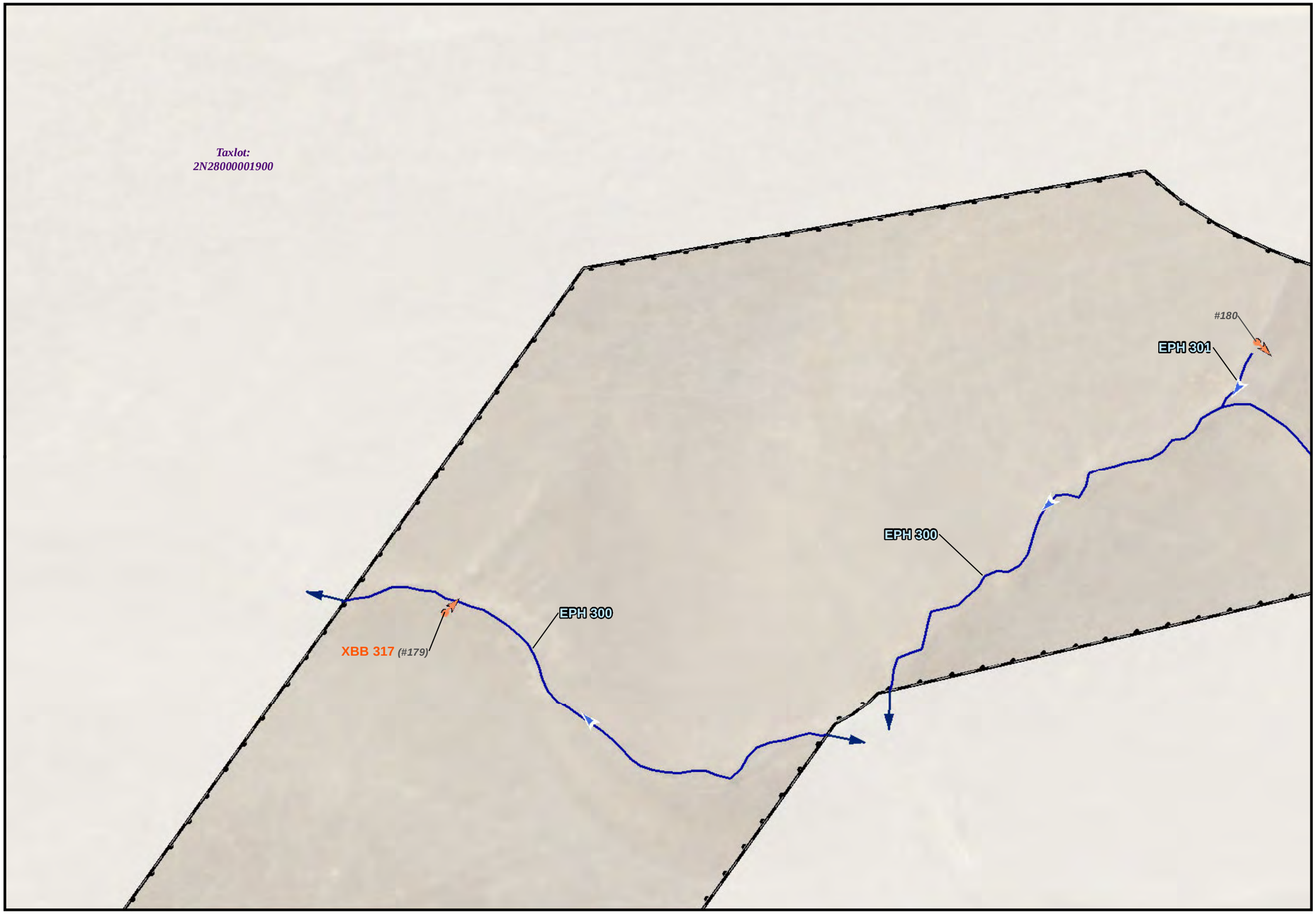

Figure A-5.1.96

Wheatridge Wind Energy Facility

Wetland Delineation
Map 96 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
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1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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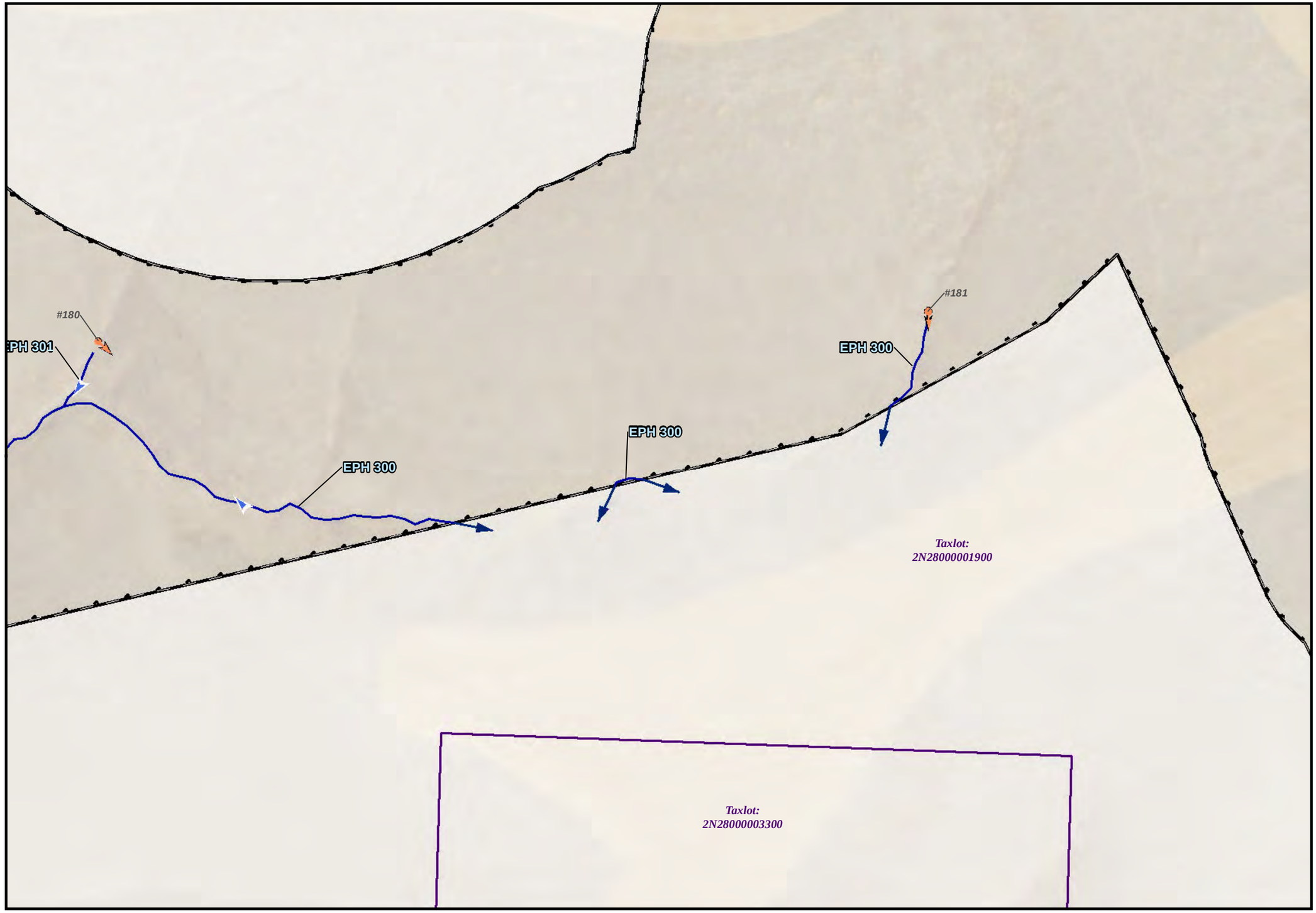

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.97

Wheatridge Wind Energy Facility

Wetland Delineation
Map 97 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

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Figure A-5.1.98

Wheatridge Wind Energy Facility

Wetland Delineation
Map 98 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
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0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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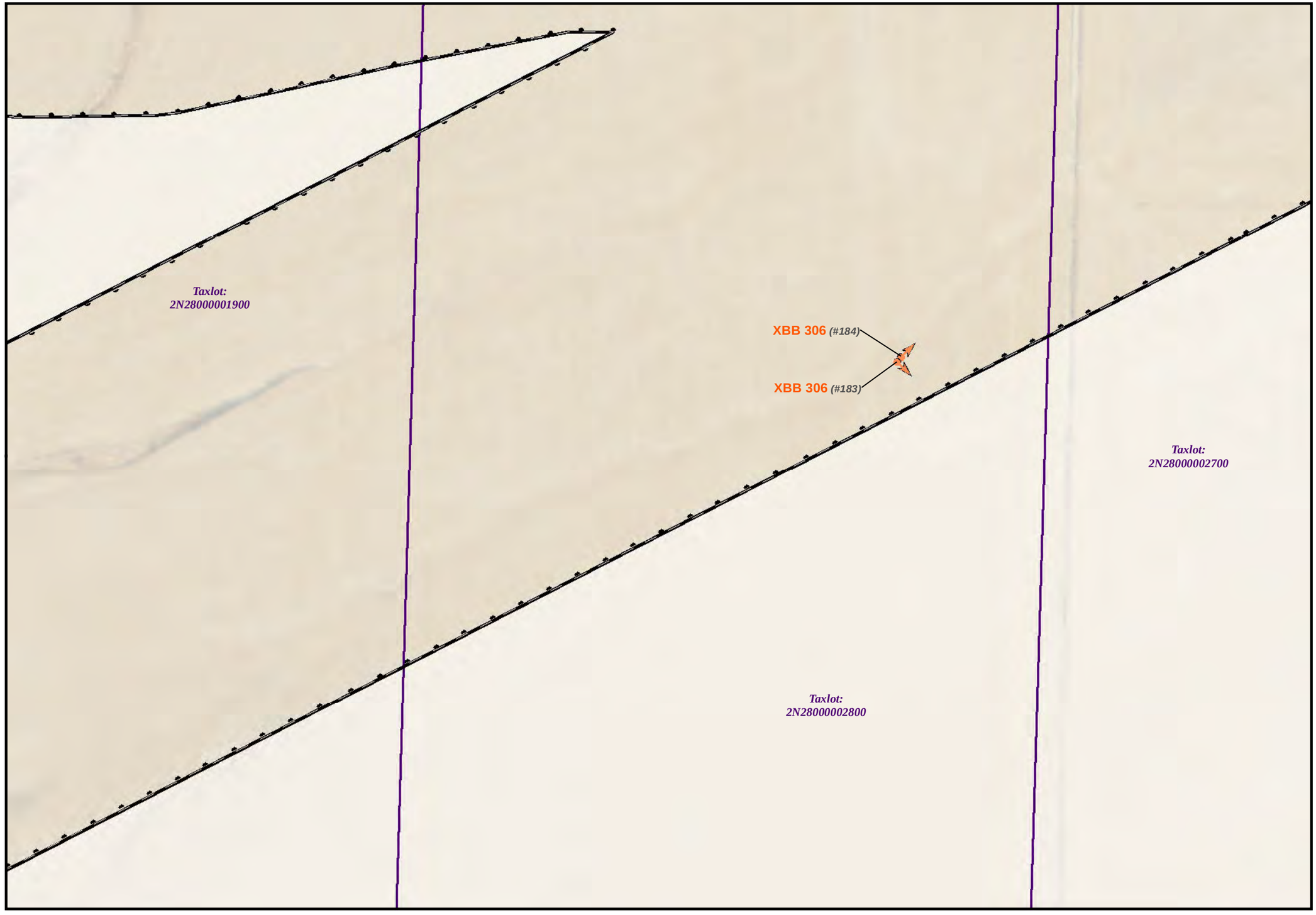

Figure A-5.1.99

Wheatridge Wind Energy Facility

Wetland Delineation
Map 99 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

Boundaries of wetlands and other waters were surveyed with a Trimble GeoXH 6000 GNSS-enabled device. GPS data was differentially corrected to sub-meter accuracy.

1:2,400 **WGS84 UTM 11**

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

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1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.100

Wheatridge Wind Energy Facility

Wetland Delineation
Map 100 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
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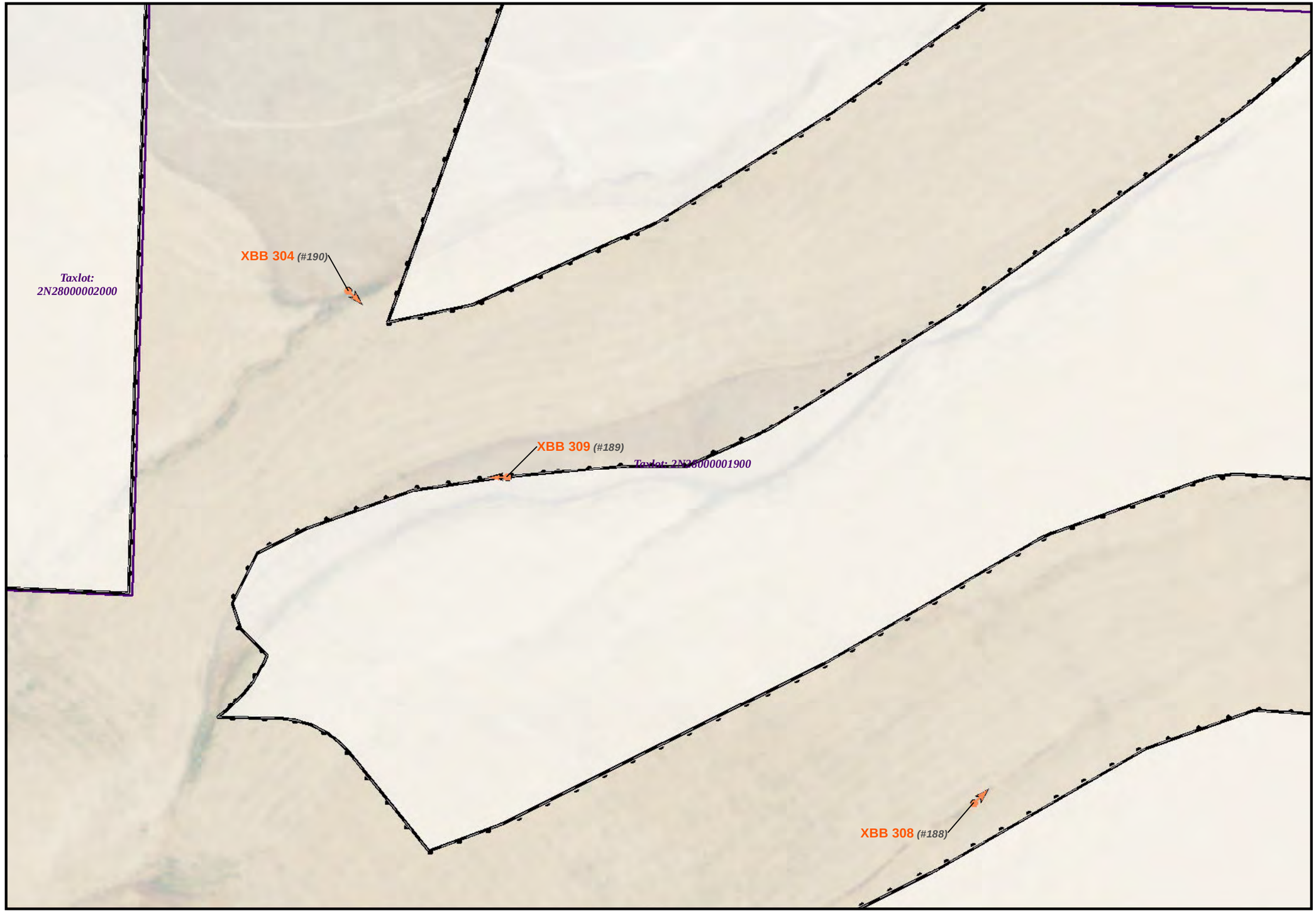

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.101

Wheatridge Wind Energy Facility

Wetland Delineation
Map 101 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
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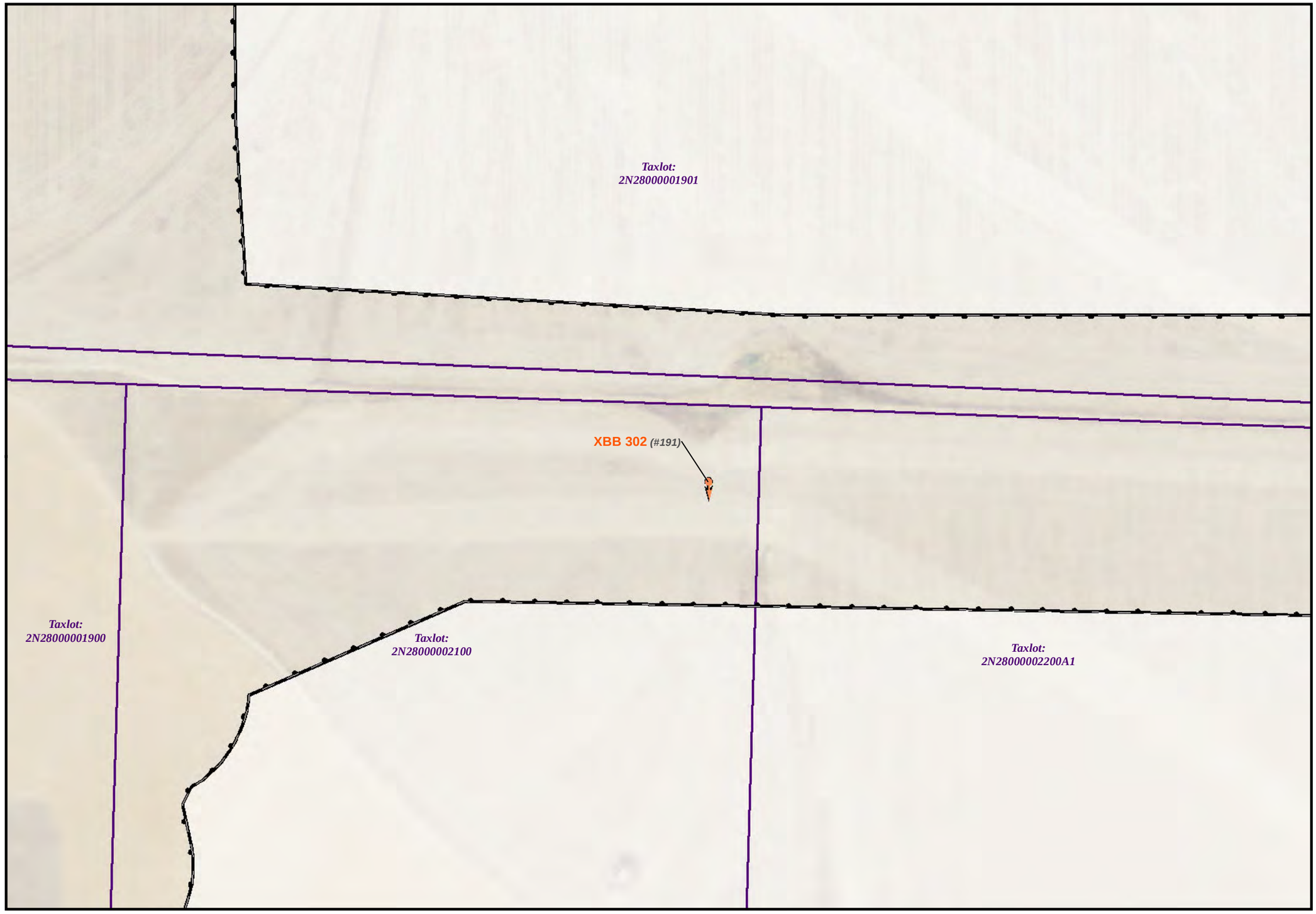

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.102

Wheatridge Wind Energy Facility

Wetland Delineation
Map 102 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
- Wetlands or Waters Continues Beyond Study Area
- Culvert
- Surveyed Water Centerline
- Wetland Boundary - Delineated
- Surveyed Water (Maximum OHWL Width)
- Wetland and Waters Study Area
- Taxlot Boundary

Boundaries of wetlands and other waters were surveyed with a Trimble GeoXH 6000 GNSS-enabled device. GPS data was differentially corrected to sub-meter accuracy.

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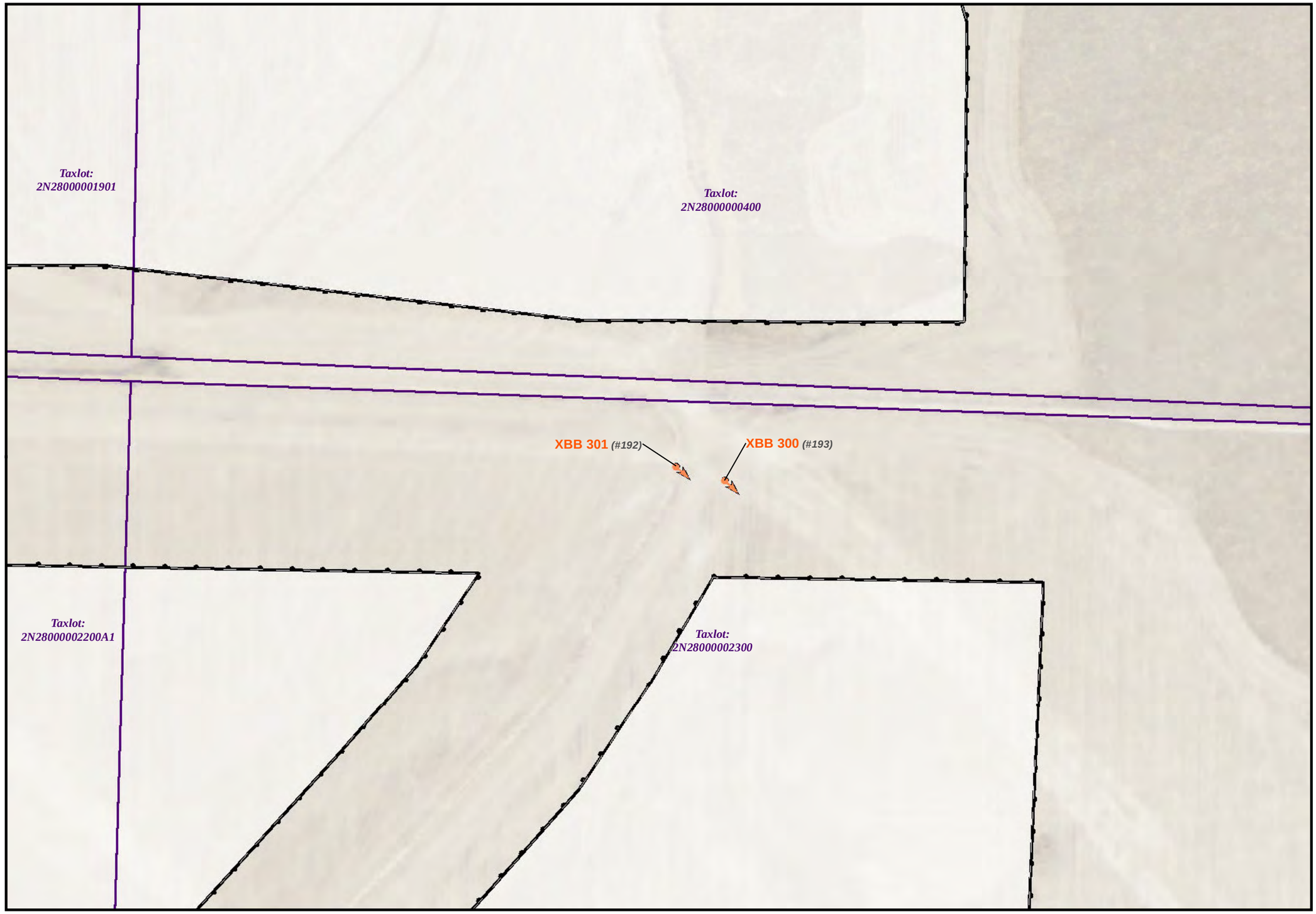

1:2,400 WGS84 UTM 11

0 50 100 200 300 400 500 600 700 800 900 1,000 Feet

Data Sources Wheatridge Wind Energy: site boundary / ESRI: roads / USDA: 2012 NAIP Imagery for Morrow and Umatilla Counties / Taxlots: Morrow and Umatilla Counties

Figure A-5.1.103

Wheatridge Wind Energy Facility

Wetland Delineation
Map 103 of 103

Morrow and Umatilla Counties, OR

December 2014

- Flow Direction
- Photo Point (*#PhotoNumber*)
- Sample Plot
- OSDAM Point
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Appendix B: Data Forms

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APPENDIX B-1: WETLAND DATA SHEETS

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WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 19-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP 01**

Investigator(s): Laura Miller, Amy Bensted **Section, Township, Range:** **S** 7 **T** 1S **R** 28E

Landform (hillslope, terrace, etc.): trench **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR): LRR B **Lat.:** 45.4907608 **Long.:** -119.3755722 **Datum:** WGS 84

Soil Map Unit Name: 43F - Rhea silt loam, 35 to 50 percent slopes **NWI classification:**

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipitation is above normal for September due to recent heavy rains. This sample plot was taken to examine potential for ditch to be a wetland.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30)	**Absolute % Cover**	**Dominant Species? Rel.Strat. Cover**	**Indicator Status**
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 30)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5)			
1. Phalaris arundinacea	90	☑ 100.0%	FACW
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	90	**= Total Cover**	

Woody Vine Stratum (Plot size: 5)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 10 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	90	x 2 =	180
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	90 (A)		180 (B)

Prevalence Index = B/A = 2.000

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 ○

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP 01

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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR	2/2	99	10YR	3/3	1%	C	M	fine sandy clay loam	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 20-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP 02**

Investigator(s): Laura Miller, Amy Bensted **Section, Township, Range:** **S** 7 **T** 1S **R** 28E

Landform (hillslope, terrace, etc.): top of streambank **Local relief (concave, convex, none):** none **Slope:** 0.0 **%** / 0.0 °

Subregion (LRR): LRR B **Lat.:** 45.5217209 **Long.:** -119.3128738 **Datum:** WGS 84

Soil Map Unit Name: 35 - Onyx silt loam **NWI classification:** PSS

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Rainfall is somewhat above average for September due to recent heavy rains. A half radius plot was used in order to avoid including the adjacent plowed fallow agricultural field. There is no upland sample plot pair as this is just confiming the PSS mapping by NWI is incorrect.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. Prunus virginiana	70	☑ 100.0%	FAC
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	70	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30)			
1. Prunus virginiana	50	☑ 100.0%	FAC
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	50	= Total Cover	
Herb Stratum (Plot size: 5)			
1. Conium maculatum	30	☑ 100.0%	FACW
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	30	= Total Cover	
Woody Vine Stratum (Plot size: 5)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

% Bare Ground in Herb Stratum: 70 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	120	x 3 =	360
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	150 (A)		420 (B)

Prevalence Index = B/A = 2.800

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 ○

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP 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 %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR	3/2	100%						Sandy Clay Loam	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

This plot was taken to confim or not the NWI mapping of PSS wetland. This is an upland riparian fringe and not PSS wetland.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 20-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP 03**

Investigator(s): Laura Miller, Amy Bensted **Section, Township, Range:** **S** 7 **T** 1S **R** 28E

Landform (hillslope, terrace, etc.): channel slope **Local relief (concave, convex, none):** none **Slope:** 20.0 **%** / 11.3 °

Subregion (LRR): LRR B **Lat.:** 45.5256004 **Long.:** -119.3177948 **Datum:** WGS 84

Soil Map Unit Name: 43E - Rhea silt loam, 20 to 35 percent slopes **NWI classification:** PSS

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipitation is above average for September due to recent havey rainfall. Sample plot dug to confirm location is not a wetland. Soils and hydrology are not present. Plot is sampled on a terrace of a sloughed off creek bank.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		**= Total Cover**	
Sapling/Shrub Stratum (Plot size: 30)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0		**= Total Cover**	
Herb Stratum (Plot size: 5)				
1. Phalaris arundinacea	120	☑	80.0%	FACW
2. Urtica dioica	30	☑	20.0%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
	150		**= Total Cover**	
Woody Vine Stratum (Plot size: 5)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0		**= Total Cover**	

% Bare Ground in Herb Stratum: 0 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	120	x 2 =	240
FAC species	30	x 3 =	90
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	150 (A)		330 (B)

Prevalence Index = B/A = 2.200

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 ○

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP 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 %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR	3/2	100%						Sandy Clay Loam	
12-18	10YR	3/2	99	10YR	3/4	1%	C	M	Sandy Clay Loam	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 24-Sep-23

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP 04**

Investigator(s): John Gordon, Amy Bensted **Section, Township, Range:** **S** 28 **T** 1N **R** 28E

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** flat **Slope:** 2.0 % / 1.1 °

Subregion (LRR): LRR B **Lat.:** 45.4739494 **Long.:** -119.4629822 **Datum:** WGS 84

Soil Map Unit Name: 78 - Xeric Torriorthents, nearly level **NWI classification:**

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipitation is above normal for September. Plot is sampled to confirm location is not a wetland. It is located on a terrace between Butter Creek and an agricultural field.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	**Absolute % Cover**	**Dominant Species? Rel.Strat. Cover**	**Indicator Status**
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	
Herb Stratum (Plot size:)			
1. Conium maculatum	60	☑ 85.7%	FACW
2. Solidago canadensis	5	☐ 7.1%	FACU
3. Apocynum cannabinum	5	☐ 7.1%	FAC
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	70	**= Total Cover**	
Woody Vine Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 30 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	5	x 3 =	15
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	70 (A)		155 (B)

Prevalence Index = B/A = 2.214

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 ○

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP 04

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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-13	10YR	3/3	100%						Fine Sand	
13-20	10YR	3/2	100%						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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 24-Sep-23

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP 05**

Investigator(s): John Gordon, Amy Bensted **Section, Township, Range:** **S** 28 **T** 1N **R** 28E

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** flat **Slope:** 2.0 **%** / 1.1 **°**

Subregion (LRR): LRR B **Lat.:** 45.5420341 **Long.:** -119.3240585 **Datum:** WGS 84

Soil Map Unit Name: 36 - Pedigo silt loam **NWI classification:** PEM

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipitation is above normal for September. Sample plot is about 12' to 15' above Butter Creek, about 20' south of the top of a steep bank. This is in a mapped NWI PEM wetland; wetland conditions are not present.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	**Absolute % Cover**	**Dominant Species? Rel.Strat. Cover**	**Indicator Status**
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	

Herb Stratum (Plot size:)			
1. Conium maculatum	60	☑ 100.0%	FACW
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	60	**= Total Cover**	

Woody Vine Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 40 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = 2.000

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 ○

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP 05

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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-20	7.5YR	3/2	100%						Sand	

[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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 24-Sep-23

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP 07**

Investigator(s): John Gordon, Amy Bensted **Section, Township, Range:** **S** 28 **T** 1N **R** 28E

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** flat **Slope:** 1.0 **%** / 0.6 **°**

Subregion (LRR): LRR B **Lat.:** 45.4406128 **Long.:** -119.5483017 **Datum:** WGS 84

Soil Map Unit Name: 63C - Valby silt loam, 7 to 12 percent slopes **NWI classification:**

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipitation is above normal for September. Sample plot documents upland conditions at a mapped NWI PEM wetland located at the confluence of Ayers Creek and Butter Creek.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	**Absolute % Cover**	**Dominant Species? Rel.Strat. Cover**	**Indicator Status**
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	

Herb Stratum (Plot size:)			
1. Apocynum cannabinum	50	☑ 50.0%	FAC
2. Phalaris arundinacea	30	☑ 30.0%	FACW
3. Solidago canadensis	20	☑ 20.0%	FACU
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	100	**= Total Cover**	

Woody Vine Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 0 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	50	x 3 =	150
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	100 (A)		290 (B)

Prevalence Index = B/A = 2.900

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 ○

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP 07

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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-9	7.5YR	3/3	100%						Sand	
9-14	7.5YR	3/2	100%						Loam	
14-20	7.5YR	3/3	100%						Sand	

[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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 19-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP 203**

Investigator(s): Ed Strohmaier, Wendy Young **Section, Township, Range:** **S** 15 **T** 1S **R** 27E

Landform (hillslope, terrace, etc.): Stream channel **Local relief (concave, convex, none):** concave **Slope:** 12.3 % / 7.0 °

Subregion (LRR): LRR B **Lat.:** 45.440609 **Long.:** -119.5483246 **Datum:** WGS 84

Soil Map Unit Name: 63C - Valby silt loam, 7 to 12 percent slopes **NWI classification:**

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipitation in September is above average and above the normal range. Sample plot is located within an ephemeral stream channel. No water was present, nor indicators of flow.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	**Absolute % Cover**	**Dominant Species? Rel.Strat. Cover**	**Indicator Status**
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	
Herb Stratum (Plot size: 5'X5')			
1. Salsola kali	30	☑ 50.0%	FACU
2. Bromus tectorum	25	☑ 41.7%	UPL
3. Triticum x aestivum	5	☐ 8.3%	UPL
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	60	**= Total Cover**	
Woody Vine Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 40 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	30	x 4 =	120
UPL species	30	x 5 =	150
Column Totals:	60 (A)		270 (B)

Prevalence Index = B/A = 4.500

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 ◉

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP 203

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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-4	10YR	3/2	100%						Silt Loam	
4-6	10YR	3/2	100%						Fine 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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rock

Depth (inches): 6

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 23-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP 204**

Investigator(s): Jennifer D'Avanzo, Ed Strohmaier **Section, Township, Range:** **S** 10 **T** 1S **R** 28E

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** concave **Slope:** 3.5 **%** / 2.0 **°**

Subregion (LRR): LRR B **Lat.:** 45.4739647 **Long.:** -119.4629669 **Datum:** WGS 84

Soil Map Unit Name: 78 - Xeric Torriorthents, nearly level **NWI classification:**

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipitation is above normal for the month of September. Sample plot located in a mapped NWI wetland (PEM). There is no evidence of wetland conditions. Dug the plot in a plowed area because the feature to the north has a bedrock bottom that impeded shovel penetration. Vegetation in both locations is upland.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	

Herb Stratum (Plot size:)			
1. Salsola kali	20	☑ 100.0%	FACU
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	20	= Total Cover	

Woody Vine Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

% Bare Ground in Herb Stratum: 80 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	20 (A)		80 (B)

Prevalence Index = B/A = 4.000

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 ◉

Remarks:

Bareground is comprised of duff and dead plants.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP 204

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR	3/2	100%						Sandy Clay Loam	Platy structure
5-11	10YR	3/2	50%						Silty Clay Loam	Platy structure
	10YR	3/1	50%						Silty Clay Loam	Platy structure
11-18	10YR	3/2	100%						Silty Clay Loam	Platy structure

[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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are platy in structure throughout. Horizon 5-11 inches is straited with 3/2 and 3/1 soils. They were not uniform in plot so combined into one layer. No redox features. No roots.

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

No evidence of hydrology at or around plot.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 26-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP 205**

Investigator(s): Ed Strohmaier, Jennifer D'Avanzo **Section, Township, Range:** **S** 12 **T** 1S **R** 28E

Landform (hillslope, terrace, etc.): Channel (abandoned) **Local relief (concave, convex, none):** concave **Slope:** 1.0 **%** / 0.6 °

Subregion (LRR): LRR B **Lat.:** 45.4781647 **Long.:** -119.479744 **Datum:** WGS 84

Soil Map Unit Name: 78 - Xeric Torriorthents, nearly level **NWI classification:** PEMC

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: September 2013 has had above average precipitation for the month and above the normal range based WETS data. Sample plot dug at a mapped NWI wetland which is not a wetland. There is a slight depression on landscape of sagebrush habitat.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3' X 5')			
1. Artemisia tridentata	20	☑ 100.0%	UPL
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	20	= Total Cover	
Herb Stratum (Plot size: 3' X 5')			
1. Bromus tectorum	55	☑ 68.8%	UPL
2. Thinopyrum intermedium	10	☐ 12.5%	UPL
3. Hesperostipa comata	10	☐ 12.5%	UPL
4. Achillea millefolium	5	☐ 6.3%	FACU
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	80	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

% Bare Ground in Herb Stratum: 0 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	95	x 5 =	475
Column Totals:	100 (A)		495 (B)

Prevalence Index = B/A = 4.950

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 ◉

Remarks:

No wetland present within mapped NWI wetland. The sample plot is located within a linear ditch. Adjacent upland is sagebrush dominated community.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP 205

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 %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR		100%						Silt Loam	
6-11	10YR		95%	10YR	2/1	3%	C	M	Silt Loam	
6-11	10YR	3/2	95%	10YR	4/4	2%	C	M	Silt Loam	
11-20	10YR	3/2	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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉	Depth (inches): 0
Water Table Present?	Yes ○	No ◉	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches): 0

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

Soil was dry below 6".

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 17-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP 2A-01**

Investigator(s): Ed Strohmaier, Wendy Young **Section, Township, Range:** **S** 35 **T** 1S **R** 26E

Landform (hillslope, terrace, etc.): Hillside **Local relief (concave, convex, none):** convex **Slope:** 5.2 **%** / 3.0 °

Subregion (LRR): LRR B **Lat.:** 45.4781837 **Long.:** -119.4797287 **Datum:** WGS 84

Soil Map Unit Name: 78 - Xeric Torriorthents, nearly level **NWI classification:**

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipitation in September is above average and above the normal range. Plot is located on CRP land, immediately to the west of the fenceline that separates the area used by cattle (including the livestock watering tank) and the extensive area of upland CRP grassland to the west.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		**= Total Cover**	
Sapling/Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0		**= Total Cover**	
Herb Stratum (Plot size: 5'X5')				
1. Thinopyrum intermedium	70	☑	70.0%	UPL
2. Sisymbrium altissimum	20	☑	20.0%	FACU
3. Malva neglecta	10	☐	10.0%	UPL
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
	100		**= Total Cover**	
Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0		**= Total Cover**	

% Bare Ground in Herb Stratum: **% Cover of Biotic Crust** 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	20	x 4 =	80
UPL species	80	x 5 =	400
Column Totals:	100 (A)		480 (B)

Prevalence Index = B/A = 4.800

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 ◉

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP 2A-01

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 %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR	3/2	100%						Silt Loam	
8-16	10YR	3/2	100%						Silt Loam	cobbles to 3"
16-20	10YR	3/2	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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

Soil was slightly moist throughout the profile.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 19-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP 2A-02**

Investigator(s): Ed Strohmaier, Wendy Young **Section, Township, Range:** **S** 35 **T** 1S **R** 26E

Landform (hillslope, terrace, etc.): Stream channel **Local relief (concave, convex, none):** concave **Slope:** 5.2 **%** / 3.0 °

Subregion (LRR): LRR B **Lat.:** 45.4766235 **Long.:** -119.573822 **Datum:** WGS 84

Soil Map Unit Name: 45D - Ritzville silt loam, 12 to 20 percent slopes **NWI classification:**

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipitation in September is above average and above the normal range. Wetland has developed adjacent to the east side of a livestock watering tank which is continuallly overflowing onto the ground. Surface conditions in the vicinity of the watering tank, are mowed vegetation, and trampled by cattle.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	**Absolute % Cover**	**Dominant Species? Rel.Strat. Cover**	**Indicator Status**
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5'X5')			
1. Veronica americana	10	☑ 66.7%	OBL
2. Thinopyrum intermedium	5	☑ 33.3%	UPL
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	15	**= Total Cover**	

Woody Vine Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 85 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

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

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

Percent of dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	5	x 5 =	25
Column Totals:	15 (A)		35 (B)

Prevalence Index = B/A = 2.333

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 ○

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP 2A-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
0-6	10YR	2/1	90%	N	2.5/1	10%	C	M	Silt Loam	
6-16	10YR	3/2	80%	10YR	5/2	20%	D	M	Silty Clay Loam	
16-20	10YR	3/2	50%	10YR	5/2	50%	D	M	Silty Clay Loam	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☑ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ○	Depth (inches):	0.5
Water Table Present?	Yes ○	No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Source of hydrology is an overflowing stock watering tank.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 26-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP 300**

Investigator(s): Laura Miller **Section, Township, Range:** **S** 26 **T** 2N **R** 25E

Landform (hillslope, terrace, etc.): Channel (active) **Local relief (concave, convex, none):** concave **Slope:** 2.0 **%** / 1.1 **°**

Subregion (LRR): LRR B **Lat.:** 45.6206322 **Long.:** -119.6622696 **Datum:** WGS 84

Soil Map Unit Name: 72C - Warden silt loam, 3 to 12 percent slopes, eroded **NWI classification:** R4SBC

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipatation is above normal for September. This plot was sampled in a low area in landscape mapped by NWI as Riverine; however, was found to be only an ephemeral channel. On aerial, the area looks greener than the surrounding areas but this is due to a robust community of Salsola tragus (FACU).

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30)	**Absolute % Cover**	**Dominant Species? Rel.Strat. Cover**	**Indicator Status**
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	
Sapling/Shrub Stratum (Plot size: 15)			
1. Gutierrezia sarothrae	5	☑ 50.0%	UPL
2. Chrysothamnus nauseosus	5	☑ 50.0%	UPL
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	10	**= Total Cover**	
Herb Stratum (Plot size: 5)			
1. Poa secunda	25	☑ 62.5%	FACU
2. Salsola tragus	5	☐ 12.5%	FACU
3. Bromus tectorum	5	☐ 12.5%	UPL
4. Sisymbrium altissimum	5	☐ 12.5%	FACU
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	40	**= Total Cover**	
Woody Vine Stratum (Plot size: 5)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 50 **% Cover of Biotic Crust** 0

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	35	x 4 =	140
UPL species	15	x 5 =	75
Column Totals:	50 (A)		215 (B)

Prevalence Index = B/A = 4.300

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 ◉

Remarks:

Radius for shrubs reduced to 15 feet in order to stay within channel morphology and avoid community on adjacent higher ground.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP 300

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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-7	10YR 3/2	100%					Sandy Clay Loam	fine sandy clay loam

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: bedrock

Depth (inches): 7

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

No wetland indicators are present in this low area in channel within a floodplain.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 27-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP 301**

Investigator(s): Laura Miller **Section, Township, Range:** **S** 27 **T** 2N **R** 25E

Landform (hillslope, terrace, etc.): Channel (active) **Local relief (concave, convex, none):** concave **Slope:** 1.0 **%** / 0.6 °

Subregion (LRR): LRR B **Lat.:** 45.6216621 **Long.:** -119.6692886 **Datum:** WGS 84

Soil Map Unit Name: 51B - Royal loamy fine sand, 2 to 5 percent slopes **NWI classification:** R4SBC

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ○ No ◉

Hydric Soil Present? Yes ○ No ◉

Wetland Hydrology Present? Yes ○ No ◉

Is the Sampled Area within a Wetland? Yes ○ No ◉

Remarks: This is lowest area in an ephemeral channel in a flooplain that has been plowed and planted but not recently immediately adjacent to the stream; however, there is active wheat cultivation a few yards from the channel. There is evidence of flash flooding after (early September); however, floodplain rarely receives input. Precipatation is above normal for September.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. Salsola tragus	80	☑ 98.8%	FACU
2. Triticum durum	1	☐ 1.2%	UPL
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	81	= Total Cover	
Woody Vine Stratum (Plot size: 5)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

% Bare Ground in Herb Stratum: 0 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	80	x 4 =	320
UPL species	1	x 5 =	5
Column Totals:	81 (A)		325 (B)

Prevalence Index = B/A = 4.012

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 ◉

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP 301

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 %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/2						Sandy Clay Loam	fine sandy clay loam
14-18	10YR 3/2						Sandy Clay	fine sandy clay

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

Drift deposits are due to recent unusually high flash flooding and is not likely ordinary for this drainage.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 16-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP A-01**

Investigator(s): Laura Miller, Amy Bensted **Section, Township, Range:** **S** 18 **T** 1S **R** 27E

Landform (hillslope, terrace, etc.): broad valley **Local relief (concave, convex, none):** concave **Slope:** 15.0 % / 8.5 °

Subregion (LRR): LRR B **Lat.:** 45.5256424 **Long.:** -119.3177872 **Datum:** WGS 84

Soil Map Unit Name: 43E - Rhea silt loam, 20 to 35 percent slopes **NWI classification:** PEMC

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipation is above normal for September due to recent heavy rain event. Recent flash flood occurred; creek overflowed banks into floodplain. There was standing water in the channel. Observed Cowardin: PEMF.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30)	**Absolute % Cover**	**Dominant Species? Rel.Strat. Cover**	**Indicator Status**
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 30)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5 - 1/2 r)			
1. Veronica anagallis-aquatica	70	☑ 48.3%	OBL
2. Juncus balticus	30	☑ 20.7%	FACW
3. Rorippa intermedia	20	☐ 13.8%	UPL
4. Echinochloa crus-galli	20	☐ 13.8%	FACW
5. Polypogon monspeliensis	5	☐ 3.4%	FACW
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	145	**= Total Cover**	

Woody Vine Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 2 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	70	x 1 =	70
FACW species	55	x 2 =	110
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	20	x 5 =	100
Column Totals:	145 (A)		280 (B)

Prevalence Index = B/A = 1.931

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 ○

Remarks:

Half radius chosen to reflect this draiange and not include opposite upland bank. Plot only considers plants in the lowest part of this drainge wetland.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP A-01

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
0-5	7.5YR	3/1	80%	7.5YR	3/4	20%	C	M	fn sndy cl lm	
5-10	7.5YR	2.5/1	98	7.5YR	4/6	3%	C	PL	fn sndy lmy cl	
10-18	7.5YR	2.5/1	99	2.5YR	4/2	1%	D	M	fn sndy lmy cl	

[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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ○	Depth (inches):	2
Water Table Present?	Yes ◉	No ○	Depth (inches):	2
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Pit was dug at edge of inundation so that water wouldn't fill pit. There was surface water within the plot but not at the pit location. The pit had a water table roughly at the level of the adjacent inundation. There were significant sediment and drift deposits due top recent flash flood; however, these are not included above because they are not indicative of the wetland boundary, but are rather due to an unusual strom event.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 16-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP A-02**

Investigator(s): Laura Miller, Amy Bensted **Section, Township, Range:** **S** 18 **T** 1S **R** 27E

Landform (hillslope, terrace, etc.): Valley bottom **Local relief (concave, convex, none):** none **Slope:** 2.0 **%** / 1.1 **°**

Subregion (LRR): LRR B **Lat.:** 45.5306358 **Long.:** -119.3226547 **Datum:** WGS 84

Soil Map Unit Name: 43E - Rhea silt loam, 20 to 35 percent slopes **NWI classification:** none

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipitation is above normal for the month of September. Recent flash flood occurred; creek overflowed banks into floodplain.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 30)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0		**= Total Cover**	

Herb Stratum (Plot size: 5)				
1. Distichlis spicata	40	☑	42.1%	FAC
2. Erodium cicutarium	20	☑	21.1%	UPL
3. Poa secunda	15	☐	15.8%	FACU
4. Taeniatherum caput-medusae	10	☐	10.5%	UPL
5. Pseudoroegneria spicata ssp. spicata	5	☐	5.3%	UPL
6. Bromus tectorum	5	☐	5.3%	UPL
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
	95		**= Total Cover**	

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0		**= Total Cover**	

% Bare Ground in Herb Stratum: 0 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	50.0%	(A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	40	x 3 =	120	
FACU species	15	x 4 =	60	
UPL species	40	x 5 =	200	
Column Totals:	95	(A)	380	(B)

Prevalence Index = B/A = 4.000

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 ◉

Remarks:

There were rabbitbrush shrubs within 30', but at higher topographic position so not included.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP A-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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-24	10YR	3/2	100%						Sandy Clay Loam	minor marbling; no redox

[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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: none

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Occasional flecks of white (possibly salts).

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

Pit was dug to 24 inches bgs to rule out dry season hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 17-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP A-03**

Investigator(s): Amy Bensted, Laura Miller **Section, Township, Range:** **S** 17 **T** 1S **R** 27E

Landform (hillslope, terrace, etc.): small basin drainage **Local relief (concave, convex, none):** concave **Slope:** 1.0 **%** / 0.6 **°**

Subregion (LRR): LRR B **Lat.:** 45.4879761 **Long.:** -119.3861923 **Datum:** WGS 84

Soil Map Unit Name: 65D - Valby silt loam, 12 to 20 percent south slopes **NWI classification:** PEMC

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipation is above normal for September to recent heavy rain event. PEMF wetland. Mapped pertennial stream by NHD. NWI maps wetland as PEMC at sample plot location, and PEMA nearby; however, entirety of WET A is PEMF.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. Nasturtium officinale	10	☐ 12.5%	OBL
2. Polypogon monspeliensis	5	☐ 6.3%	FACW
3. Juncus articulatus	50	☑ 62.5%	OBL
4. Berula erecta	10	☐ 12.5%	OBL
5. Poa secunda	5	☐ 6.3%	FACU
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	80	= Total Cover	
Woody Vine Stratum (Plot size: 5)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

% Bare Ground in Herb Stratum: 5 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	70	x 1 =	70
FACW species	5	x 2 =	10
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	80 (A)		100 (B)

Prevalence Index = B/A = 1.250

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 ○

Remarks:

Half plot was used in herb stratum. Poa secunda occurred on hummocks in wetland. Plants heavily grazed and trampled. Hummocks from cattle and slow gradient flow.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP A-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 %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR	2/1	80%	5YR	4/6	20%	C	M	Loamy Sand	
8-10	10YR	3/1	50%	5YR	4/6	20%	C	PL	Fine Sandy Clay Loam	50% Charcoal.

[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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Cobbles

Depth (inches): 10

Hydric Soil Present? Yes ◉ No ○

Remarks:

anticipate a comment from DSL re: H2S presence with no saturation

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Was not able to dig soil pit past 10 inches due to rock. Sulfidic odor present although soils moist but not saturated. Assume very recent saturation.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 17-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP A-04**

Investigator(s): Amy Bensted, Laura Miller **Section, Township, Range:** **S** 17 **T** 1S **R** 27E

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** none **Slope:** 0.0 **%** / 0.0 **°**

Subregion (LRR): LRR B **Lat.:** 45.4879875 **Long.:** -119.3862152 **Datum:** WGS 84

Soil Map Unit Name: 65D - Valby silt loam, 12 to 20 percent south slopes **NWI classification:** N/A

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipatation is above normal for September due to recent heavy rain event. Recent flash flood came through this wetland drainage.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30)	**Absolute % Cover**	**Dominant Species? Rel.Strat. Cover**	**Indicator Status**
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 30)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5)			
1. Leymus cinereus	30	☑ 41.7%	FAC
2. Cirsium arvense	15	☑ 20.8%	FACU
3. Cirsium undulatum	5	☐ 6.9%	FACU
4. Conyza canadensis	1	☐ 1.4%	FACU
5. Poa secunda	15	☑ 20.8%	FACU
6. Sisymbrium altissimum	2	☐ 2.8%	FACU
7.	4	☐ 5.6%	FAC
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	72	**= Total Cover**	

Woody Vine Stratum (Plot size: 5)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 50 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	33.3%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	34	x 3 =	102
FACU species	38	x 4 =	152
UPL species	0	x 5 =	0
Column Totals:	72 (A)		254 (B)

Prevalence Index = B/A = 3.528

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 ◉

Remarks:

Unknown grass 4% cover - conservatively assumed to be FAC (program would not allow these species to be entered). Bare soil partly due to deposition of silts from recent flash flood and partly due to cattle trail.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP A-04

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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-24	10YR 3/2	100%					Fine sandy clay loam	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

Pit dug to 24 inches to eliminate dry season hydrology indicator since a facultative species dominates the veg community (wild rye). There are sediment deposits and rack is present but is due to recent flash flood. While this plot is in the floodplain, it is not wetland.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 17-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP B-01**

Investigator(s): Amy Bensted, Laura Miller **Section, Township, Range:** **S** 16 **T** 1S **R** 27E

Landform (hillslope, terrace, etc.): depression **Local relief (concave, convex, none):** concave **Slope:** 1.0 **%** / 0.6 **°**

Subregion (LRR): LRR B **Lat.:** 45.4902611 **Long.:** -119.3810349 **Datum:** WGS 84

Soil Map Unit Name: 35 - Onyx silt loam **NWI classification:** None

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipatation is above normal for September due to recent heavy rain event. Isolated wetland (PEMC) is adjacent to but not hydrologically connected to WET A.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30)	**Absolute % Cover**	**Dominant Species? Rel.Strat. Cover**	**Indicator Status**
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	
Sapling/Shrub Stratum (Plot size: 30)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	
Herb Stratum (Plot size: 5)			
1. Festuca pratensis	40	☑ 40.0%	FACU
2. Juncus ensifolius	5	☐ 5.0%	FACW
3. Polypogon monspeliensis	10	☐ 10.0%	FACW
4. Medicago lupulina	10	☐ 10.0%	FAC
5. Juncus balticus	15	☑ 15.0%	FACW
6. Juncus articulatus	15	☑ 15.0%	OBL
7. Equisetum sp.	5	☐ 5.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	100	**= Total Cover**	
Woody Vine Stratum (Plot size: 5)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 0 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	66.7%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	30	x 2 =	60
FAC species	10	x 3 =	30
FACU species	40	x 4 =	160
UPL species	0	x 5 =	0
Column Totals:	95 (A)		265 (B)

Prevalence Index = B/A = 2.789

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 ○

Remarks:

Festuca pratensis occurred on hummocks within wetland.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP B-01

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 %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR	2/1	95%	5YR	3/4	5%	C	M	Very Fine Sandy Clay Lo	
10-18	2.5Y	2.5/1	95%	5YR	4/6	1%	C	M	Fine sandy loamy clay	
				7.5YR	4/6	3%	C	M		
				2.5YR	4/6	1%	C	PL		

[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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☑ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Hummocks located throughout depressional wetland.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 17-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP B-02**

Investigator(s): Amy Bensted, Laura Miller **Section, Township, Range:** **S** 16 **T** 1S **R** 27E

Landform (hillslope, terrace, etc.): Valley bottom **Local relief (concave, convex, none):** none **Slope:** 1.0 **%** / 0.6 **°**

Subregion (LRR): LRR B **Lat.:** 45.490284 **Long.:** -119.3822708 **Datum:** WGS 84

Soil Map Unit Name: 35 - Onyx silt loam **NWI classification:** N/A

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precip is above normal for September due to recent heavy rain event.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30)	**Absolute % Cover**	**Dominant Species? Rel.Strat. Cover**	**Indicator Status**
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 30)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5)			
1. Poa bulbosa	30	☑ 31.6%	UPL
2. Distichlis spicata	25	☑ 26.3%	FAC
3. Unknown grass	5	☐ 5.3%	
4. Juncus balticus	5	☐ 5.3%	FACW
5. Cirsium vulgare	15	☐ 15.8%	FACU
6. Achillea millefolium	5	☐ 5.3%	FACU
7. Lepidium perfoliatum	5	☐ 5.3%	FACU
8. Erodium cicutarium	5	☐ 5.3%	UPL
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	95	**= Total Cover**	

Woody Vine Stratum (Plot size: 15)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 5 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	50.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	25	x 3 =	75
FACU species	25	x 4 =	100
UPL species	35	x 5 =	175
Column Totals:	90 (A)		360 (B)

Prevalence Index = B/A = 4.000

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 ◉

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP B-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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-12	10YR	2/2	100%						Clay Loam	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rock refusal

Depth (inches): 12

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 19-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP C-01**

Investigator(s): Laura Miller, Amy Bensted **Section, Township, Range:** **S** 7 **T** 1S **R** 28E

Landform (hillslope, terrace, etc.): Valley/drainage **Local relief (concave, convex, none):** concave **Slope:** 2.0 **%** / 1.1 °

Subregion (LRR): LRR B **Lat.:** 45.4907684 **Long.:** -119.3755341 **Datum:** WGS 84

Soil Map Unit Name: 43F - Rhea silt loam, 35 to 50 percent slopes **NWI classification:** PEMC

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Above average rainfall for the month of September. This plot was dug at a transitional point: this wetland swale is inundated just upslope, saturated at this plot, and dry downslope.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30)	**Absolute % Cover**	**Dominant Species? Rel.Strat. Cover**	**Indicator Status**
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	
Sapling/Shrub Stratum (Plot size: 30)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	
Herb Stratum (Plot size: 3)			
1. Juncus articulatus	100	☑ 76.9%	OBL
2. Epilobium ciliatum	10	☐ 7.7%	FACW
3. Polypogon monspeliensis	5	☐ 3.8%	FACW
4. Lolium perenne ssp. multiflorum	5	☐ 3.8%	UPL
5. Nasturtium officinale	10	☐ 7.7%	OBL
6.		☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	130	**= Total Cover**	
Woody Vine Stratum (Plot size: 5)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 0 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	110	x 1 =	110
FACW species	15	x 2 =	30
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	5	x 5 =	25
Column Totals:	130 (A)		165 (B)

Prevalence Index = B/A = 1.269

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 ○

Remarks:

3' radius chosen so as not to capture distinct upland vegetation community outside wetland boundary. Boundary determined by abrupt topo change and vegetation community change.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP C-01

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 %	Type[1]	Loc[2]	Texture	Remarks
0-10	7.5YR	2.5/1	90%	5YR	4/6	5%	C	M	fine sandy clay loam	
+mottle				10YR	4/6	4%	C	M		
+mottle				10YR	4/6	1%	C	PL		
10-15	10YR	2/1	98	10YR	3/6	20%	C	M	fine sandy clay	
15-17	10YR	2/1	99	10YR	3/6	1%	C	M	gravelly fine sandy clay	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: clay

Depth (inches): 10

Hydric Soil Present? Yes ◉ No ○

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☑ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ◉ No ○ Depth (inches): 10

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Due to absense of water table yet saturation at 10 inches below ground level, wetland is presumed to be perched. The HGM is a slope wetland. Although this is a narrow sinuous swale, it does not have channel characteristics and is 100% vegetated; thus, it is not a riverine system. There is a spring upslope approximately 0.5 miles; other hydro source is precipitation. Hydrogen sulfide odour was faint; observed at 8 inches.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 19-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP C-02**

Investigator(s): Laura Miller, Amy Bensted **Section, Township, Range:** **S** 7 **T** 1S **R** 28E

Landform (hillslope, terrace, etc.): Valley bottom **Local relief (concave, convex, none):** none **Slope:** 0.0 % / 0.0 °

Subregion (LRR): LRR B **Lat.:** 45.4908943 **Long.:** -119.3804474 **Datum:** WGS 84

Soil Map Unit Name: 35 - Onyx silt loam **NWI classification:** none

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Above average rainfall for the month of September; recent heavy rain.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30)	**Absolute % Cover**	**Dominant Species? Rel.Strat. Cover**	**Indicator Status**
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 30)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5)			
1. Daucus carota	40	☑ 40.0%	UPL
2. Centaurea diffusa	40	☑ 40.0%	UPL
3. Lactuca serriola	5	☐ 5.0%	FACU
4. Cichorium intybus	5	☐ 5.0%	FACU
5. Sisymbrium altissimum	5	☐ 5.0%	FACU
6. Other	5	☐ 5.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	100	**= Total Cover**	

Woody Vine Stratum (Plot size: 5)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 20 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	15	x 4 =	60
UPL species	80	x 5 =	400
Column Totals:	95 (A)		460 (B)

Prevalence Index = B/A = 4.842

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 ◉

Remarks:

Half radius chosen for herb stratum to eliminate wetland swale plant community that is adjacent to upland plot.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP C-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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-16	7.5YR 3/2	100%					fine sandy clay loam	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

Location of plot is above swale.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 23-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP D-01**

Investigator(s): Amy Bensted, John Gordon **Section, Township, Range:** **S** 28 **T** 1N **R** 28E

Landform (hillslope, terrace, etc.): narrow floodplain terrace **Local relief (concave, convex, none):** convex **Slope:** 2.0 **%** / 1.1 °

Subregion (LRR): LRR B **Lat.:** 45.5416985 **Long.:** -119.3263702 **Datum:** WGS 84

Soil Map Unit Name: 11 - Endersby fine sandy loam **NWI classification:** R3UBH/ PEM

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Above normal precipitation for September. Small PEM wetland adjacent to Butter Creek. South edge is defined by OHWL and north edge is defined by abrubt change in vegetation and topography.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	**Absolute % Cover**	**Dominant Species? Rel.Strat. Cover**	**Indicator Status**
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	
Herb Stratum (Plot size:)			
1. Phalaris arundinacea	60	☑ 60.0%	FACW
2. Apocynum cannabinum	40	☑ 40.0%	FAC
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	100	**= Total Cover**	
Woody Vine Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 0 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	40	x 3 =	120
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		240 (B)

Prevalence Index = B/A = 2.400

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 ○

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP D-01

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

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR	3/2	100%						Clay Loam	See below.
5-20	10YR	3/2	95%	2.5YR	4/8	5%	C	M, P	Sandy Clay Loam	
20-22	5YR	2.5/1	99	2.5YR	4/8	1%		M	Sandy loam	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

5"-20" matrix is comprised of small pockets of sandy loam and silty loam, mixed, but not clearly layered.

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches): 20

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

H2S odor at 20" but below level required for indicator C1.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 24-Sep-23

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP D-02**

Investigator(s): John Gordon, Amy Bensted **Section, Township, Range:** **S** 28 **T** 1N **R** 28E

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** flat **Slope:** 1.0 % / 0.6 °

Subregion (LRR): LRR B **Lat.:** 45.5436707 **Long.:** -119.3269653 **Datum:** WGS 84

Soil Map Unit Name: 11 - Endersby fine sandy loam **NWI classification:**

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipitation is above normal for September. Plot is dug approximately 5 feet from wetland boundary and 5 feet higher in elevation than wetland.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	**Absolute % Cover**	**Dominant Species? Rel.Strat. Cover**	**Indicator Status**
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	
Sapling/Shrub Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	
Herb Stratum (Plot size:)			
1. Solidago canadensis	95	☑ 95.0%	FACU
2. Phalaris arundinacea	5	☐ 5.0%	FACW
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	100	**= Total Cover**	
Woody Vine Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 0 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	0	x 3 =	0
FACU species	95	x 4 =	380
UPL species	0	x 5 =	0
Column Totals:	100 (A)		390 (B)

Prevalence Index = B/A = 3.900

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 ◉

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP D-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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-13	10YR	3/2	100%						Fine Sand	
13-20	10YR	3/2	100%						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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 24-Sep-23

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP E-01**

Investigator(s): John Gordon, Amy Bensted **Section, Township, Range:** **S** 28 **T** 1N **R** 28E

Landform (hillslope, terrace, etc.): Channel **Local relief (concave, convex, none):** concave **Slope:** 2.0 **%** / 1.1 **°**

Subregion (LRR): LRR B **Lat.:** 45.5420914 **Long.:** -119.3260345 **Datum:** WGS 84

Soil Map Unit Name: 11 - Endersby fine sandy loam **NWI classification:** PEM

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○

Hydric Soil Present? Yes ◉ No ○

Wetland Hydrology Present? Yes ◉ No ○

Is the Sampled Area within a Wetland? Yes ◉ No ○

Remarks: Precipitation is above normal for September. Wetland is a linear feature that is 100 percent vegetated.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0		= Total Cover	

Herb Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Berula erecta	70	☑	70.0%	OBL
2. Juncus balticus	20	☑	20.0%	FACW
3. Bidens cernua	5	☐	5.0%	OBL
4. Persicaria hydropiper	3	☐	3.0%	OBL
5. Rumex crispus	2	☐	2.0%	FAC
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
	100		= Total Cover	

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0		= Total Cover	

% Bare Ground in Herb Stratum: 0 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

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

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

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	78	x 1 =	78
FACW species	20	x 2 =	40
FAC species	2	x 3 =	6
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		124 (B)

Prevalence Index = B/A = 1.240

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 ○

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP E-01

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 %	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR	2/1	85%	N	2.5/1	15%	C	M	Silty Clay Loam	
7-13	10YR	4/1	80%	10YR	3/2	20%	C	M	Loam	
13-20	10YR	3/1	100%						Sand	

[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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: change in texture

Depth (inches): 7

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soil below 7" is very firm; the change in texture may act as a restrictive layer.

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches): 0

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Surface water is present in isolated areas. No surface flow was observed. Water is moving downslope in the upper layer of soil. The upper 7" are saturated.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 25-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP E-02**

Investigator(s): Amy Bensted, John Gordon **Section, Township, Range:** **S** 28 **T** 1N **R** 28E

Landform (hillslope, terrace, etc.): Valley bottom **Local relief (concave, convex, none):** none **Slope:** 0.0 % / 0.0 °

Subregion (LRR): LRR B **Lat.:** 45.4904251 **Long.:** -119.5174789 **Datum:** WGS 84

Soil Map Unit Name: 78 - Xeric Torriorthents, nearly level **NWI classification:** PEM1C

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipitation is above normal for the month of September. Plot is located approximately six feet from wetland boundary. Wetland boundary is abrupt change in vegetation.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		**= Total Cover**	
Sapling/Shrub Stratum (Plot size: 15)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0		**= Total Cover**	
Herb Stratum (Plot size: 5)				
1. Leymus cinereus	5	☐	4.3%	FAC
2. Poa secunda	10	☐	8.7%	FACU
3. Bromus tectorum	20	☑	17.4%	UPL
4. Achillea millefolium	10	☐	8.7%	FACU
5. Distichlis spicata	20	☑	17.4%	FAC
6. Onopordum acanthium	20	☑	17.4%	UPL
7. Dipsacus fullonum	5	☐	4.3%	FAC
8. Lepidium perfoliatum	5	☐	4.3%	FACU
9. Chenopodium berlandieri	10	☐	8.7%	UPL
10. Salsola kali	10	☐	8.7%	FACU
11.	0	☐	0.0%	
	115		**= Total Cover**	
Woody Vine Stratum (Plot size: 15)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0		**= Total Cover**	

% Bare Ground in Herb Stratum: 0 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	30	x 3 =	90
FACU species	35	x 4 =	140
UPL species	50	x 5 =	250
Column Totals:	115 (A)		480 (B)

Prevalence Index = B/A = 4.174

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 ◉

Remarks:

All strata but herb were half plots due to proximity of plot to wetland boundary (~6ft).

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP E-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 %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR	3/2	100%						Sandy Loam	
3-20	10YR	3/2	90%						Sandy Loam	
3-20	10YR	6/3	10%						Sandy Clay Loam	Bands and large chunks of local Sandy Clay Loam

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Bands and large chunks of local Sandy Clay Loam deposits are located throughout bottom soil layer.

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 25-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP E-03**

Investigator(s): Amy Bensted, John Gordon **Section, Township, Range:** **S** 28 **T** 1N **R** 28E

Landform (hillslope, terrace, etc.): Valley bottom **Local relief (concave, convex, none):** concave **Slope:** 1.0 **%** / 0.6 **°**

Subregion (LRR): LRR B **Lat.:** 45.4974022 **Long.:** -119.5635986 **Datum:** WGS 84

Soil Map Unit Name: 30C - Mikkalo silt loam, 7 to 12 percent slopes **NWI classification:** PEM1C

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipitation is above normal for September. Long linear vegetated feature with low gradient.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		**= Total Cover**	
Sapling/Shrub Stratum (Plot size: 15)				
1. Ribes aureum	20	☑	80.0%	FAC
2. Salix exigua	5	☑	20.0%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	25		**= Total Cover**	
Herb Stratum (Plot size: 5)				
1. Berula erecta	40	☑	40.0%	OBL
2. Marrubium vulgare	10	☐	10.0%	FACU
3. Urtica dioica	15	☑	15.0%	FAC
4. Lactuca serriola	5	☐	5.0%	FACU
5. Epilobium ciliatum	15	☑	15.0%	FACW
6. Onopordum acanthium	5	☐	5.0%	UPL
7. Nasturtium officinale	10	☐	10.0%	OBL
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
	100		**= Total Cover**	
Woody Vine Stratum (Plot size: 15)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0		**= Total Cover**	

% Bare Ground in Herb Stratum: 0 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	50	x 1 =	50
FACW species	20	x 2 =	40
FAC species	35	x 3 =	105
FACU species	15	x 4 =	60
UPL species	5	x 5 =	25
Column Totals:	125 (A)		280 (B)

Prevalence Index = B/A = 2.240

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 ○

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP E-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 %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR	2/2	100%						Loamy Sand	with roots and debris
2-20	10YR	2/1	100%						Loamy Sand	with woody debris

[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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Faint hydrogen sulfide odour at surface (when broken). Soil is also hydric by definition - observed saturated and assumed to be saturated greater than 2 weeks out of the growing season because of presence of perennial spring. Woody debris and wood chips throughout profile.

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ◉ No ○ Depth (inches): 0

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Water seeping into pit from 2" below surface.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 25-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP E-04**

Investigator(s): Amy Bensted, John Gordon **Section, Township, Range:** **S** 28 **T** 1N **R** 28E

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** none **Slope:** 0.0 **%** / 0.0 **°**

Subregion (LRR): LRR B **Lat.:** 45.5052109 **Long.:** -119.3283157 **Datum:** WGS 84

Soil Map Unit Name: 28E - Lickskillet very stony loam, 7 to 40 percent slopes **NWI classification:** N/A

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipitation is above normal for the month of September.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30)	**Absolute % Cover**	**Dominant Species? Rel.Strat. Cover**	**Indicator Status**
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	
Sapling/Shrub Stratum (Plot size: 15)			
1. Chrysothamnus nauseosus	5	☑ 100.0%	UPL
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	5	**= Total Cover**	
Herb Stratum (Plot size: 5)			
1. Achillea millefolium	15	☑ 21.4%	FACU
2. Distichlis spicata	20	☑ 28.6%	FAC
3. Bromus tectorum	15	☑ 21.4%	UPL
4. Onopordum acanthium	5	☐ 7.1%	UPL
5. Poa bulbosa	10	☐ 14.3%	UPL
6. Salsola kali	5	☐ 7.1%	FACU
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	70	**= Total Cover**	
Woody Vine Stratum (Plot size: 15)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 30 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	25.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	20	x 4 =	80
UPL species	35	x 5 =	175
Column Totals:	75 (A)		315 (B)

Prevalence Index = B/A = 4.200

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 ◉

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP E-04

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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-15	10YR	4/4	100%						Sandy Loam	with gravels

[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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rock

Depth (inches): 15

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soil is somewhat compacted.

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 25-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP G-01**

Investigator(s): Amy Bensted, John Gordon **Section, Township, Range:** **S** 33 **T** 1N **R** 28E

Landform (hillslope, terrace, etc.): Valley bottom **Local relief (concave, convex, none):** concave **Slope:** 1.0 **%** / 0.6 **°**

Subregion (LRR): LRR B **Lat.:** 45.5052261 **Long.:** -119.3282928 **Datum:** WGS 84

Soil Map Unit Name: 28E - Lickskillet very stony loam, 7 to 40 percent slopes **NWI classification:** PEM1C

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipitation is above normal for the month of September. Wetland is long linear feature that was mostly a stream due to the topography of the feature. Today it is completely vegetated. Wetland shows evidence of having been trampled while saturated.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0		**= Total Cover**	

Herb Stratum (Plot size: 5)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Rumex crispus	5	☐	5.0%	FAC
2. Polypogon monspeliensis	5	☐	5.0%	FACW
3. Equisetum laevigatum	5	☐	5.0%	FACW
4. Juncus articulatus	80	☑	80.0%	OBL
5. Juncus balticus	5	☐	5.0%	FACW
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
	100		**= Total Cover**	

Woody Vine Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0		**= Total Cover**	

% Bare Ground in Herb Stratum: 0 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	80	x 1 =	80
FACW species	15	x 2 =	30
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		125 (B)

Prevalence Index = B/A = 1.250

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 ○

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP G-01

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 %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR	3/2	93	5YR	5/8	5%	C	M	Sandy Loam	roots in upper 3".
+mottle				5YR	5/8	20%	C	PL	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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: compacted soil

Depth (inches): 12

Hydric Soil Present? Yes ◉ No ○

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Standing water in other portions of wetland.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 25-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP G-02**

Investigator(s): Amy Bensted, John Gordon **Section, Township, Range:** **S** 33 **T** 1N **R** 28E

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** none **Slope:** 0.0 **%** / 0.0 **°**

Subregion (LRR): LRR B **Lat.:** 45.5217133 **Long.:** -119.3129044 **Datum:** WGS 84

Soil Map Unit Name: 35 - Onyx silt loam **NWI classification:** N/A

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipitation is above normal for the month of September. Upland plot on terrace above wetland.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30)	**Absolute % Cover**	**Dominant Species? Rel.Strat. Cover**	**Indicator Status**
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	
Sapling/Shrub Stratum (Plot size: 15)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	
Herb Stratum (Plot size: 5)			
1. Verbascum thapsus	5	☐ 5.0%	FACU
2. Dipsacus fullonum	30	☑ 30.0%	FAC
3. Achillea millefolium	10	☐ 10.0%	FACU
4. Xanthium strumarium	5	☐ 5.0%	FAC
5. Bromus tectorum	20	☑ 20.0%	UPL
6. Lactuca serriola	5	☐ 5.0%	FACU
7. Centaurea diffusa	10	☐ 10.0%	UPL
8. Poa bulbosa	15	☑ 15.0%	UPL
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	100	**= Total Cover**	
Woody Vine Stratum (Plot size: 15)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 0 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	33.3%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	35	x 3 =	105
FACU species	20	x 4 =	80
UPL species	45	x 5 =	225
Column Totals:	100 (A)		410 (B)

Prevalence Index = B/A = 4.100

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 ◉

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP G-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 %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR	4/3	99	5YR	4/6	1%	C	M	Sandy Loam	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Compacted soil

Depth (inches): 12

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 27-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP G-03**

Investigator(s): Ed Strohmaier, John Gordon **Section, Township, Range:** **S** 33 **T** 1N **R** 28E

Landform (hillslope, terrace, etc.): Creek channel **Local relief (concave, convex, none):** concave **Slope:** 3.0 **%** / 1.7 **°**

Subregion (LRR): LRR B **Lat.:** 45.5306549 **Long.:** -119.3226166 **Datum:** WGS 84

Soil Map Unit Name: 11 - Endersby fine sandy loam **NWI classification:** PEM

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○

Hydric Soil Present? Yes ◉ No ○

Wetland Hydrology Present? Yes ◉ No ○

Is the Sampled Area within a Wetland? Yes ◉ No ○

Remarks: Precipitation is above normal for September. Wetland is clearly defined by vegetation and topography.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0		= Total Cover	

Herb Stratum (Plot size: 5')				
1. Berula erecta	90	☑	90.0%	OBL
2. Dipsacus fullonum	5	☐	5.0%	FAC
3. Urtica dioica	5	☐	5.0%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
	100		= Total Cover	

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0		= Total Cover	

% Bare Ground in Herb Stratum: 0 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	90	x 1 =	90
FACW species	0	x 2 =	0
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		120 (B)

Prevalence Index = B/A = 1.200

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 ○

Remarks:

Wetland is contained within the channel of a perennial stream. The channel is fully vegetated with herbaceous species. Plots are located on the east side of the creek.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP G-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 %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR	3/2	45%	10YR	4/4	5%	C	M	Fine Sandy Loam	noticeable organics in soil from decomposing OBL
	N	2.5/1	45	10YR	4/4	5%	C	M	Fine 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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: streambed rock

Depth (inches): 6

Hydric Soil Present? Yes ◉ No ○

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ○	Depth (inches):	3
Water Table Present?	Yes ◉	No ○	Depth (inches):	4
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

There is surface water inside the channel. Depth is estimated due to the total coverage of vegetation. Sample plot is at the edge of where standing water increases in depth into the channel.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 27-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP G-04**

Investigator(s): John Gordon **Section, Township, Range:** **S** 33 **T** 1N **R** 28E

Landform (hillslope, terrace, etc.): Toeslope **Local relief (concave, convex, none):** concave **Slope:** 4.0 **%** / 2.3 **°**

Subregion (LRR): LRR B **Lat.:** 45.5350342 **Long.:** -119.3247833 **Datum:** WGS 84

Soil Map Unit Name: 29F - Lickskillet-Rock outcrop complex, 40 to 70 percent slopes **NWI classification:**

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ○ No ◉

Hydric Soil Present? Yes ○ No ◉

Wetland Hydrology Present? Yes ○ No ◉

Is the Sampled Area within a Wetland? Yes ○ No ◉

Remarks: Precipitation is above normal for September. Plot is located on the furthest south end of feature.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Symphoricarpos albus	1	☑	50.0%	FACU
2. Prunus virginiana	1	☑	50.0%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	2		= Total Cover	

Herb Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Bromus tectorum	80	☑	80.0%	UPL
2. Dipsacus fullonum	10	☐	10.0%	FAC
3. Sisymbrium altissimum	5	☐	5.0%	FACU
4. Achillea millefolium	2	☐	2.0%	FACU
5. Onopordum acanthium	1	☐	1.0%	UPL
6. Verbascum thapsus	1	☐	1.0%	FACU
7. Lactuca serriola	1	☐	1.0%	FACU
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
	100		= Total Cover	

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0		= Total Cover	

% Bare Ground in Herb Stratum: 0 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	11	x 3 =	33
FACU species	10	x 4 =	40
UPL species	81	x 5 =	405
Column Totals:	102 (A)		478 (B)

Prevalence Index = B/A = 4.686

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 ◉

Remarks:

This plot is in an apparent riparian improvement project. Landscape fabric is present in a strip about 20' wide along the wetland edge. It is generally overgrown with the weedy species reported in the herb stratum. The snowberry and chokecherry were likely planted.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP G-04

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 %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR	3/2	100%						Sandy Clay Loam	
10-20	10YR	3/3	100%						Clay Loam	

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

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 27-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP G-05**

Investigator(s): Ed Strohmaier, John Gordon **Section, Township, Range:** **S** 33 **T** 1N **R** 28E

Landform (hillslope, terrace, etc.): Creek channel **Local relief (concave, convex, none):** concave **Slope:** 3.0 **%** / 1.7 **°**

Subregion (LRR): LRR B **Lat.:** 45.5350571 **Long.:** -119.3247375 **Datum:** WGS 84

Soil Map Unit Name: 29F - Lickskillet-Rock outcrop complex, 40 to 70 percent slopes **NWI classification:** PEM

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipitation is above normal for September.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	**Absolute % Cover**	**Dominant Species? Rel.Strat. Cover**	**Indicator Status**
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	

Herb Stratum (Plot size:)			
1. Berula erecta	80	☑ 80.0%	OBL
2. Juncus effusus	20	☑ 20.0%	FACW
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	100	**= Total Cover**	

Woody Vine Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 0 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	80	x 1 =	80
FACW species	20	x 2 =	40
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		120 (B)

Prevalence Index = B/A = 1.200

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 ○

Remarks:

Wetland is contained within the channel of a perennial stream. The channel is fully vegetated with herbaceous species. Plots are located on the west side of the creek.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP G-05

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 %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR	3/2	100%						Fine Sandy Loam	
6-20	10YR	3/2	70%	10YR	3/4	10%	C	M	Fine Sandy Loam	
	10YR	2.5/1	20						Fine 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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ○	Depth (inches):	3
Water Table Present?	Yes ◉	No ○	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Surface water is inside the channel. Depth is estimated due to the total coverage of vegetation. Sample plot is at the edge of where standing water increases in depth into the channel.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 27-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP G-06**

Investigator(s): John Gordon **Section, Township, Range:** **S** 33 **T** 1N **R** 28E

Landform (hillslope, terrace, etc.): Slope **Local relief (concave, convex, none):** convex **Slope:** 10.0 **%** / 5.7 **°**

Subregion (LRR): LRR B **Lat.:** 45.541687 **Long.:** -119.3263397 **Datum:** WGS 84

Soil Map Unit Name: 11 - Endersby fine sandy loam **NWI classification:**

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ○ No ◉

Hydric Soil Present? Yes ○ No ◉

Wetland Hydrology Present? Yes ○ No ◉

Is the Sampled Area within a Wetland? Yes ○ No ◉

Remarks: Precipitation is above normal for September.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0		= Total Cover	

Herb Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Bromus tectorum	30	☑	35.3%	UPL
2. Dipsacus fullonum	15	☑	17.6%	FAC
3. Onopordum acanthium	10	☐	11.8%	UPL
4. Lepidium perfoliatum	10	☐	11.8%	FACU
5. Leymus cinereus	10	☐	11.8%	FAC
6. Achillea millefolium	5	☐	5.9%	FACU
7. Sisymbrium altissimum	5	☐	5.9%	FACU
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
	85		= Total Cover	

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0		= Total Cover	

% Bare Ground in Herb Stratum: 15 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

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

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

Percent of dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	25	x 3 =	75
FACU species	20	x 4 =	80
UPL species	40	x 5 =	200
Column Totals:	85 (A)		355 (B)

Prevalence Index = B/A = 4.176

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 ◉

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP G-06

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 %	Type[1]	Loc[2]	Texture	Remarks
0-20	7.5YR	3/3	90%						Sandy Loam	
	10YR	8/1	10%						sand	see below

[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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soil has 10% 10YR 8/1 fragments of loosely consolidated tuffaceous material. Fragments range up to approximately 1".

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 26-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP H-01**

Investigator(s): John Gordon, Amy Bensted **Section, Township, Range:** **S** 7 **T** 1S **R** 28E

Landform (hillslope, terrace, etc.): Depression on bench **Local relief (concave, convex, none):** Concave **Slope:** 0.0 **%** / 0.0 **°**

Subregion (LRR): LRR B **Lat.:** 45.5437088 **Long.:** -119.3269348 **Datum:** WGS 84

Soil Map Unit Name: 11 - Endersby fine sandy loam **NWI classification:** PEMA

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipitation is above normal for September. This wetland is a vernal pool.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	**Absolute % Cover**	**Dominant Species? Rel.Strat. Cover**	**Indicator Status**
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	**= Total Cover**	

Herb Stratum (Plot size:)			
1. Polypogon monspeliensis	10	☑ 40.0%	FACW
2. Persicaria hydropiper	5	☑ 20.0%	OBL
3. Echinochloa crusgalli	5	☑ 20.0%	FACW
4. Polygonum aviculare	5	☑ 20.0%	FACW
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	25	**= Total Cover**	

Woody Vine Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 60 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	20	x 2 =	40
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	25 (A)		45 (B)

Prevalence Index = B/A = 1.800

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 ○

Remarks:

An unidentified senescent species covered 15% of the wetland, in the sparsely covered lowest central part. The vegetation sample plot includes the entire wetland.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP H-01

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 %	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR	3/2	100%						Loam	
7	N/A								Bedrock	

[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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☑ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Bedrock

Depth (inches): 7

Hydric Soil Present? Yes ◉ No ○

Remarks:

This wetland has seasonally ponded soil. Evidence includes closed depression at a low spot in the surrounding landscape; cracked soil surface; a shallow restrictive layer; sparse vegetation; and apparent ponding of sufficient duration to prevent the growth of invasive upland weeds.

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☑ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☑ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 26-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP H-02**

Investigator(s): John Gordon, Amy Bensted **Section, Township, Range:** **S** 7 **T** 1S **R** 28E

Landform (hillslope, terrace, etc.): Slope **Local relief (concave, convex, none):** Concave **Slope:** 7.0 **%** / 4.0 **°**

Subregion (LRR): LRR B **Lat.:** 45.5437431 **Long.:** -119.3275375 **Datum:** WGS 84

Soil Map Unit Name: 11 - Endersby fine sandy loam **NWI classification:**

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ○ No ◉

Hydric Soil Present? Yes ○ No ◉

Wetland Hydrology Present? Yes ○ No ◉

Is the Sampled Area within a Wetland? Yes ○ No ◉

Remarks: Precipitation is above normal for September.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
	0		= Total Cover	

Sapling/Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0		= Total Cover	

Herb Stratum (Plot size:)				
1. Bromus tectorum	60	☑	85.7%	UPL
2. Lepidium perfoliatum	5	☐	7.1%	FACU
3. Malva neglecta	5	☐	7.1%	UPL
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
	70		= Total Cover	

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0		= Total Cover	

% Bare Ground in Herb Stratum: 30 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	65	x 5 =	325
Column Totals:	70 (A)		345 (B)

Prevalence Index = B/A = 4.929

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 ◉

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP H-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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3	10YR	3/3	100%						Loam	
3	N/A								Bedrock	

[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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Bedrock

Depth (inches): 3

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 26-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP I-01**

Investigator(s): John Gordon, Amy Bensted **Section, Township, Range:** **S** 3 **T** 1S **R** 28E

Landform (hillslope, terrace, etc.): Excavated depression **Local relief (concave, convex, none):** Concave **Slope:** 0.0 **%** / 0.0 **°**

Subregion (LRR): LRR B **Lat.:** 45.4855843 **Long.:** -119.4949112 **Datum:** WGS 84

Soil Map Unit Name: 78 - Xeric Torriorthents, nearly level **NWI classification:** PEMA

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipitation is above normal for September. This wetland appears to function as an artificially created vernal pool. It is an excavated depression upslope from a push-up dam at the junction of two eroded swales, neither of which has apparently conveyed water for at least a year.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	

Herb Stratum (Plot size:)			
1. Polygonum aviculare	60	☑ 100.0%	FACW
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	60	= Total Cover	

Woody Vine Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

% Bare Ground in Herb Stratum: 40 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = 2.000

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 ○

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP I-01

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
0-4	10YR 3/2	99.9	unk	0.1	C	M	Clay Loam	See below.
4							Rock	

[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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☑ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rock

Depth (inches): 4

Hydric Soil Present? Yes ◉ No ○

Remarks:

2 or 3 small (0.5 mm - 1.0 mm) possible redox features were observed but they were so small and crumbled so fast that reliable colors were not obtained. Shattered rock layer at 4". Evidence for seasonally ponded soil includes: closed depression at a low spot in the surrounding landscape; cracked soil surface; a shallow restrictive layer; sparse vegetation; and apparent ponding of sufficient duration to prevent the growth of invasive upland weeds.

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☑ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks:

Early season ponding is probable based on sparse vegetation and cracked soil surface.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Wheatridge Wind Energy Facility **City/County:** Morrow **Sampling Date:** 26-Sep-13

Applicant/Owner: Wheatridge Wind Energy, LLC **State:** OR **Sampling Point:** **SP I-02**

Investigator(s): John Gordon, Amy Bensted **Section, Township, Range:** **S** 3 **T** 1S **R** 28E

Landform (hillslope, terrace, etc.): Slope **Local relief (concave, convex, none):** Concave **Slope:** 4.0 **%** / 2.3 **°**

Subregion (LRR): LRR B **Lat.:** 45.4855957 **Long.:** -119.4948959 **Datum:** WGS 84

Soil Map Unit Name: 78 - Xeric Torriorthents, nearly level **NWI classification:**

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

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Precipitation is above normal for September.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	**Absolute % Cover**	**Dominant Species? Rel.Strat. Cover**	**Indicator Status**
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size:)			
1. Chrysothamnus nauseosus	10	☑ 100.0%	UPL
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	10	**= Total Cover**	

Herb Stratum (Plot size:)			
1. Centaurea diffusa	70	☑ 77.8%	UPL
2. Achillea millefolium	10	☐ 11.1%	FACU
3. Onopordum acanthium	5	☐ 5.6%	UPL
4. Verbascum thapsus	5	☐ 5.6%	FACU
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
11.	0	☐ 0.0%	
	90	**= Total Cover**	

Woody Vine Stratum (Plot size:)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	**= Total Cover**	

% Bare Ground in Herb Stratum: 10 **% Cover of Biotic Crust** 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	15	x 4 =	60
UPL species	85	x 5 =	425
Column Totals:	100 (A)		485 (B)

Prevalence Index = B/A = 4.850

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 ◉

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP I-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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-9	10YR	3/2	100%						Sandy Loam	
9	N/A								Rock	

[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 Muck 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)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils:[3]

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: Rock

Depth (inches): 9

Hydric Soil Present? Yes ○ No ◉

Remarks:

Excavation refusal, 9".

Hydrology

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift deposits (B3) (Noneriverine)
- ☐ 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 along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more 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 ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks:

Sample plot is at a point where the lowest spot in the bottom of a canyon (an eroded swale) opens toward WET I. There is no surface indication of flow for at least 1 year; the soil surface is covered with dead plant litter and the swale if vegetated.

APPENDIX B-2: OSDAM

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Appendix B: Streamflow Duration Field Assessment Form

Project # / Name Wheatridge Wind Energy Facility	Assessor ES WLY
Address Morrow County	Date 16 SEP 2013
Waterway Name EPH 200	Coordinates at downstream end (ddd.mm.ss) Lat. N
Reach Boundaries Site Boundary	Long. W
Precipitation w/in 48 hours (cm) NO	Channel Width 2 feet
	☐ 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

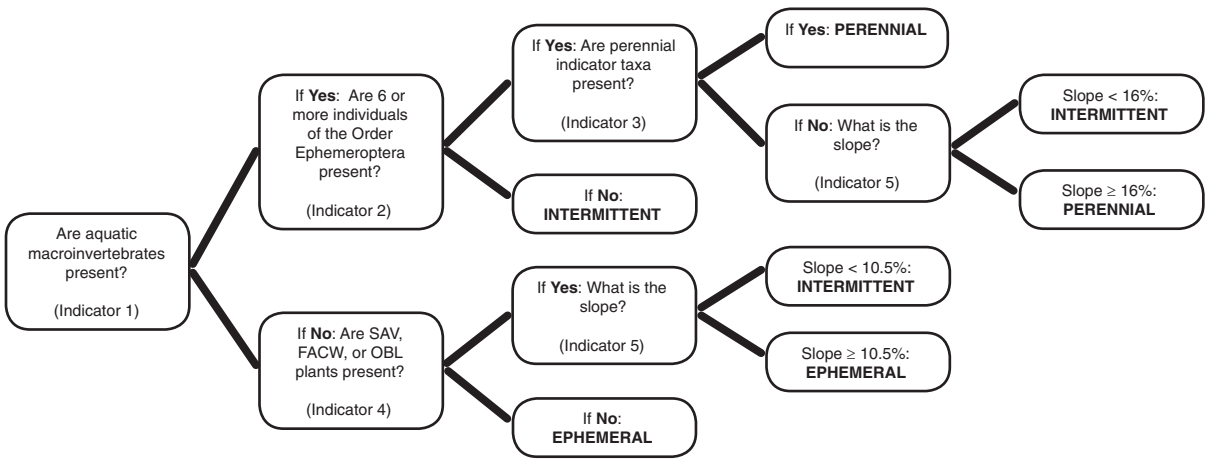
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals
None Observed			

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.

- ☐ 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.

Mapped intermittent NHD feature is an ephemeral stream through a wheatfield.

Ancillary Information:

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

Observed Amphibians, Aquatic Snakes, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed

Appendix B: Streamflow Duration Field Assessment Form

Project # / Name Wheatridge Wind Energy Facility	Assessor ES WLY
Address Morrow County	Date 16 SEP 2013
Waterway Name EPH 200	Coordinates at downstream end (ddd.mm.ss) Lat. N
Reach Boundaries Site Boundary	Long. W
Precipitation w/in 48 hours (cm) NO	Channel Width 2 feet
	☐ 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

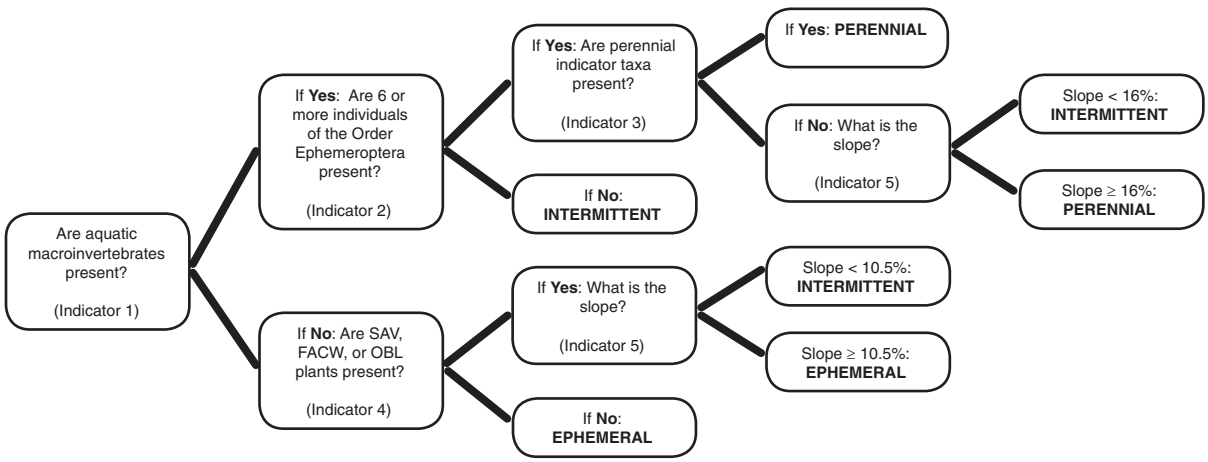
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals
None Observed			

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.

- ☐ 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.

Mapped intermittent NHD feature is an ephemeral stream through a wheatfield.

Ancillary Information:

- ☐ Riparian Corridor
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Taxa	Life History Stage	Location Observed	Number of Individuals Observed

Appendix B: Streamflow Duration Field Assessment Form

Project # / Name Wheatridge Wind Energy Facility	Assessor ES WLY
Address Morrow County	Date 16 SEP 2013
Waterway Name EPH 200	Coordinates at downstream end (ddd.mm.ss) Lat. N
Reach Boundaries Site Boundary	Long. W
Precipitation w/in 48 hours (cm) NO	Channel Width 2 feet
	☐ 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

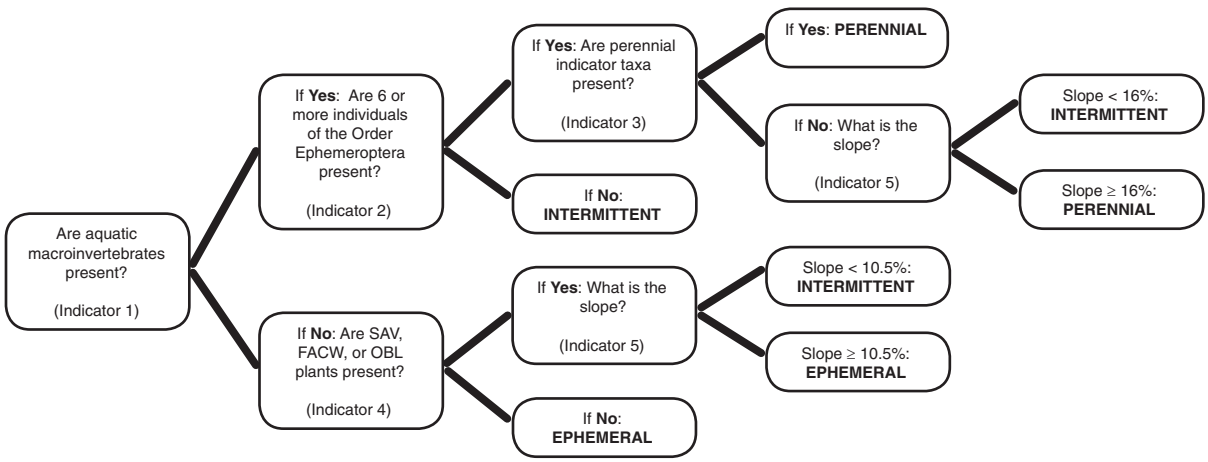
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals
None Observed			

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.

- ☐ 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.

Mapped intermittent NHD feature is an ephemeral stream through a wheatfield.

Ancillary Information:

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

Observed Amphibians, Aquatic Snakes, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed

Appendix B: Streamflow Duration Field Assessment Form

Project # / Name Wheatridge Wind Energy Facility	Assessor ES WLY
Address Morrow County	Date 16 SEP 2013
Waterway Name EPH 200	Coordinates at downstream end (ddd.mm.ss) Lat. N
Reach Boundaries Site Boundary	Long. W
Precipitation w/in 48 hours (cm) YES (1)	Channel Width 2 feet
☐ 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

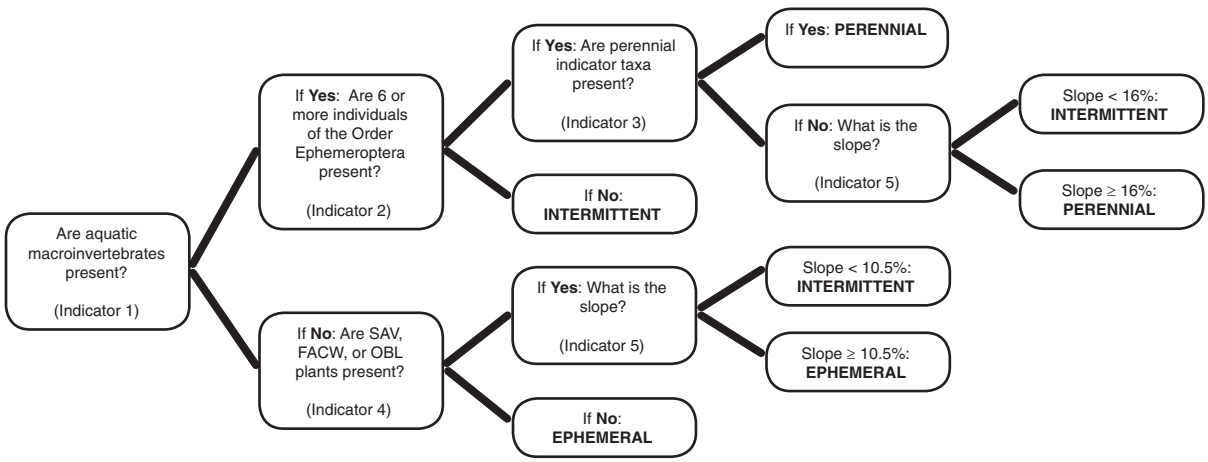
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals
None Observed			

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.

- ☐ 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.

Mapped intermittent NHD feature is an ephemeral stream through a wheatfield.

Ancillary Information:

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

Observed Amphibians, Aquatic Snakes, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed

Appendix B: Streamflow Duration Field Assessment Form

Project # / Name Wheatridge Wind Energy Facility	Assessor ES WLY
Address Morrow County	Date 16 SEP 2013
Waterway Name EPH 200	Coordinates at downstream end (ddd.mm.ss) Lat. N
Reach Boundaries Site Boundary	Long. W
Precipitation w/in 48 hours (cm) NO	Channel Width 2 feet
	☐ 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

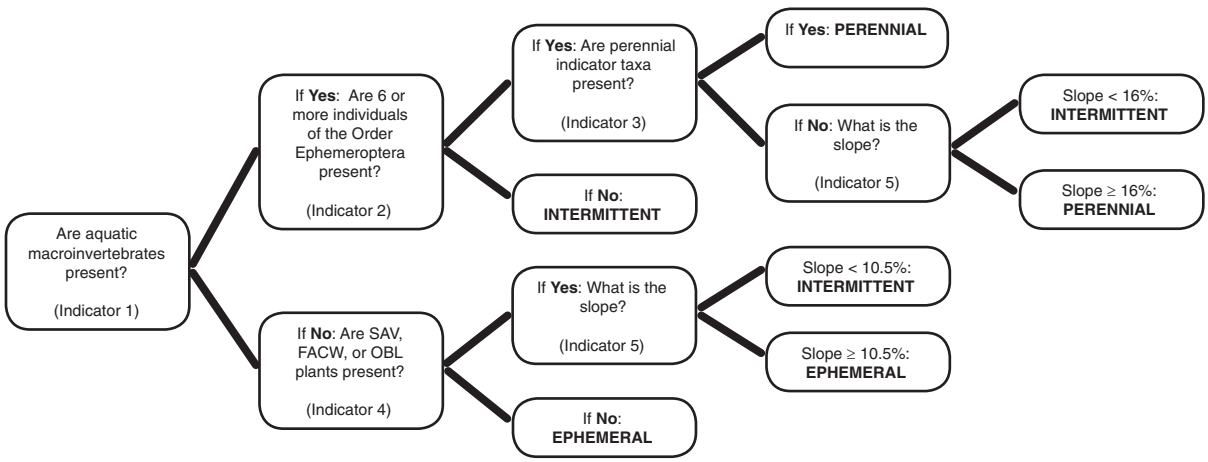
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals
None Observed			

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.

- ☐ 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.

Mapped intermittent NHD feature is an ephemeral stream through a wheatfield.

Ancillary Information:

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

Observed Amphibians, Aquatic Snakes, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed

Appendix B: Streamflow Duration Field Assessment Form

Project # / Name Wheatridge Wind Energy Facility	Assessor ES WLY
Address Morrow County	Date 16 SEP 2013
Waterway Name EPH 200	Coordinates at downstream end (ddd.mm.ss) Lat. N
Reach Boundaries Site Boundary	Long. W
Precipitation w/in 48 hours (cm) YES (2)	Channel Width 2 feet
☐ 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

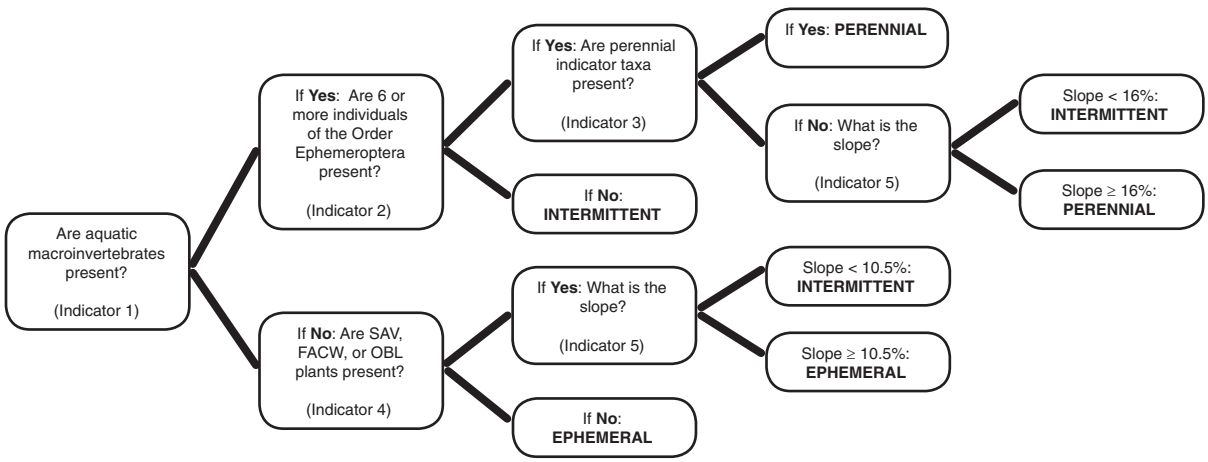
Observed Macroinvertebrates:

Taxon	Indicator Status	Ephemer-optera?	# of Individuals
None Observed			

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.

- ☐ 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.

Mapped intermittent NHD feature is an ephemeral stream through a wheatfield.

Ancillary Information:

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

Observed Amphibians, Aquatic Snakes, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed

Appendix C: Ground Level Colored Photos with Captions

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APPENDIX C-1A: WHEATRIDGE WEST

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Photo 1. XBB 330. Looking North. No feature present. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 2. XBB 329. Looking Northeast. NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present.

Photo 3. XBB 328. Looking Northwest. Shovel on NHD-presumed channel that may have been destroyed due to plowing practices. No bed and bank present.

Photo 4. EPH 313. Looking North. View of ephemeral channel.

Photo 5. SP 301. Looking North. Plot confirming uplands, located in an area mapped by NWI as Riverine.

Photo 6. XBB 331. Looking Northeast. Erosional feature. Bed and bank absent. NHD and NWI-mapped intermittent channel not present.

Photo 7. SP 300. Looking East. Plot confirming uplands, located in an area mapped by NWI as Riverine.

Photo 8. EPH 312. Looking Southeast. Downslope at ephemeral stream.

Photo 9. XBB 332. Looking North. Upland swale. Bed and bank absent.

Photo 10. XBB 259. Looking East. Shovel on NHD-presumed channel that may have been destroyed due to plowing practices. Field is now CRP land. No bed and bank present. NHD-mapped intermittent channel not present.

Photo 11. XBB 258. Looking South. Shovel on NHD-presumed channel that may have been destroyed due to plowing practices. No bed and bank present. NHD-mapped intermittent channel not present.

Photo 12. XBB 257. Looking Southeast. Shovel on NHD-presumed channel that may have been destroyed due to plowing practices. No bed and bank present. NHD-mapped intermittent channel not present.

Photo 14. XBB 233. Looking South. Upland swale. Bed and bank absent. NHD and NWI mapped intermittent channel not present.

Photo 15. XBB 232. Looking East. No feature present. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 16. EPH 222. Looking Southeast. NHD and NWI-mapped intermittent stream is actually an ephemeral stream.

Photo 17. EPH 218. Looking Southwest. NHD-mapped intermittent stream is actually ephemeral. Shovel on centerline.

Photo 18. EPH 219. Looking East. NHD-mapped intermittent stream is actually ephemeral. Shovel on centerline.

Photo 19. XBB 260. Looking Northeast. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 20. EPH 220. Looking North. NHD and NWI-mapped intermittent stream not present.

Photo 21. EPH 220. Looking Northeast. View of ephemeral channel, downstream.

Photo 22. XBB 230. Looking North. Shovel on NHD-presumed channel that may have been destroyed due to plowing practices. Field is now CRP land. No bed and bank present. NHD-mapped intermittent channel not present.

Photo 23. XBB 229. Looking South. NHD-mapped stream not present.

Photo 24. XBB 252. Looking North. Shovel on NHD-presumed channel that may have been destroyed due to plowing practices. No bed and bank present. NHD-mapped intermittent channel not present.

Photo 25. XBB 228. Looking Southeast. Shovel on NHD-presumed channel that may have been destroyed due to plowing practices. No bed and bank present. NHD-mapped intermittent channel not present.

Photo 26. XBB 251. Looking North. Shovel on NHD-presumed channel that may have been destroyed due to plowing practices. No bed and bank present. NHD-mapped intermittent channel not present.

Photo 27. XBB 240. Looking East. Shovel on NHD-presumed channel that may have been destroyed due to plowing practices. No bed and bank present. NHD-mapped intermittent channel not present.

Photo 28. XBB 241. Looking Southeast. Shovel on NHD-presumed channel that may have been destroyed due to plowing practices. No bed and bank present. NHD-mapped intermittent channel not present.

Photo 29. XBB 242. Looking West. Shovel in roadside swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 30. EPH 224. Looking North. Ephemeral feature with exposed channel located where NHD mapped an intermittent stream.

Photo 31. XBB 249. Looking Northeast. Shovel on NHD-presumed channel that may have been destroyed due to plowing practices. Field is now CRP land. No bed and bank present. NHD-mapped intermittent channel not present.

Photo 32. XBB 247. Looking East. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 33. XBB 248. Looking East. Upland swale south of EPH 224. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 34. XBB 250. Looking Northeast. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 35. XBB 246. Looking North. Interface of the wheat field and weeds; no stream present. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 36. XBB 245. Looking South. Interface of the wheat field and weeds; no stream present. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 37. XBB 244. Looking South. Upland swale south of EPH 223. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 38. EPH 223. Looking North. Small ephemeral with a head cut. Terminated in corridor.

Photo 39. XBB 243. Looking South. Shovel on NHD-presumed channel that may have been destroyed due to plowing practices. No bed and bank present. NHD-mapped intermittent channel not present.

Photo 40. XBB 227. Looking Southeast. Shovel on NHD-presumed channel that may have been destroyed due to plowing practices. No bed and bank present. NHD-mapped intermittent channel not present.

Photo 41. XBB 225. Looking North. Shovel on NHD-presumed channel that may have been destroyed due to plowing practices. Field is now CRP land. No bed and bank present. NHD-mapped intermittent channel not present.

Photo 42. XBB 226. Looking South. Shovel on NHD-presumed channel that may have been destroyed due to plowing practices. No bed and bank present. NHD-mapped intermittent channel not present.

Photo 43. EPH 225. Looking West. NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present.

Photo 44. EPH 209. Looking North. North end of EPH 209.

Photo 45. XBB 224. Looking North. Shovel on NHD-presumed channel that may have been destroyed due to plowing practices. Field is now CRP land. No bed and bank present. NHD-mapped intermittent channel not present.

Photo 46. XBB 222. Looking North. Shovel located where EPH 209 is plowed.

Photo 47. XBB 223. Looking South. No feature present. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 48. EPH 212. Looking North. NHD-mapped intermittent stream is actually ephemeral. Shovel on centerline.

Photo 49. XBB 217. Looking North. No feature present where NHD mapped an intermittent stream.

Photo 50. EPH 211. Looking North. NHD-mapped intermittent stream is actually ephemeral. Shovel in channel. Dead plant material lines channel.

Photo 51. XBB 220. Looking Northeast. EPH 215 does not continue. Shovel on centerline where there is a feature mapped by NHD, but it is a swale.

Photo 52. EPH 215. Looking Southwest. NHD-mapped intermittent stream is actually ephemeral. Shovel on centerline.

Photo 53. XBB 221. Looking East. Shovel located on a non-wetland feature mapped by NHD. Feature is a broad upland swale in a wheat field.

Photo 54. EPH 216. Looking North. NHD-mapped intermittent stream is actually ephemeral. Shovel on centerline.

Photo 55. XBB 219. Looking North. No feature present at mapped NHD line.

Photo 56. XBB 218. Looking Northeast. Shovel in plowed field where EPH 214 terminates. Bed and bank absent.

Photo 57. EPH 214. Looking Northeast. NHD-mapped intermittent stream is actually ephemeral. Shovel on centerline.

Photo 58. EPH 213. Looking North. NHD-mapped intermittent stream is actually ephemeral. Shovel on centerline.

Photo 59. XBB 212. Looking North. Upland swale mapped as intermittent stream by NHD.

Photo 60. XBB 211. Looking North. Upland swale. Bed and bank absent. NHD and NWI-mapped intermittent channel not present.

Photo 61. XBB 216. Looking North. Shovel on NHD-presumed channel that may have been destroyed due to plowing practices. No bed and bank present. NHD-mapped intermittent channel not present.

Photo 62. EPH 210. Looking Northwest. Shovel on centerline. Plowed field in foreground where it is mapped by NHD as connecting.

Photo 63. EPH 209. Looking North. Shovel in channel. South end of EPH 209.

Photo 64. XBB 213. Looking North. Confirms that the plot is not a wetland, and no NHD feature.

Photo 65. EPH 207. Looking North. Non-wetland sample in foreground. EPH 207 in background.

Photo 66. SP 204. Looking North. Plot confirming uplands, located in an area mapped by NWI as PEM.

Photo 67. EPH 208. Looking South. Mapped NHD intermittent stream is ephemeral.

Photo 68. XBB 215. Looking East. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 69. XBB 214. Looking North. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 70. XBB 239. Looking North. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 71. XBB 238. Looking Southwest. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 72. XBB 237. Looking Northeast. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 73. XBB 207. Looking North. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 74. EPH 206. Looking South. Roadside ditch with evidence of flow.

Photo 75. XBB 208. Looking East. Aerial image feature is actually a berm with no bed and bank.

Photo 76. XBB 209. Looking South. No feature present. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 77. XBB 210. Looking West. Erosion control berm.

Photo 78. EPH 204. Looking Northwest. Facing toward road crossing.

Photo 79. XBB 205. Looking Northwest. No feature present. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 80. SP 203. Looking East. Plot confirming uplands, located in an area mapped by NWI as PEM.

Photo 81. EPH 205. Looking West. Bedrock channel with no evidence of flow.

Photo 82. XBB 201. Looking Northeast. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 83. XBB 206. Looking Northwest. Facing from Russian thistle patch toward NWI feature that is not present and out of Site Boundary.

Photo 84. XBB 204. Looking South. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

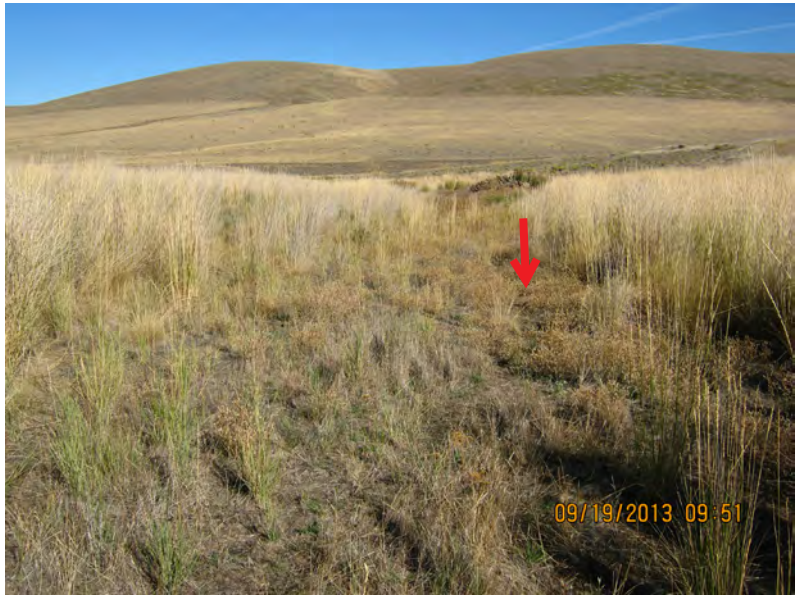

Photo 85. XBB 203. Looking North. Erosional Feature. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 86. EPH 203. Looking West. Excavated drainage.

Photo 87. WET 2A. Looking South. Shovel is at wetland boundary.

Photo 88. EPH 202. Looking South. NHD-mapped ephemeral stream is intermittent, located on edge of Site Boundary.

Photo 89. EPH 200. Looking West. Ephemeral stream flowing through wheat field.

Photo 90. EPH 201. Looking North. Artificially created ditch with upland vegetation.

Photo 91. XBB 200. Looking South. NHD-presumed channel may have been destroyed due to plowing practices. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 92. XBB 236. Looking Northeast. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

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APPENDIX C-1B: INTRACONNECTION LINE

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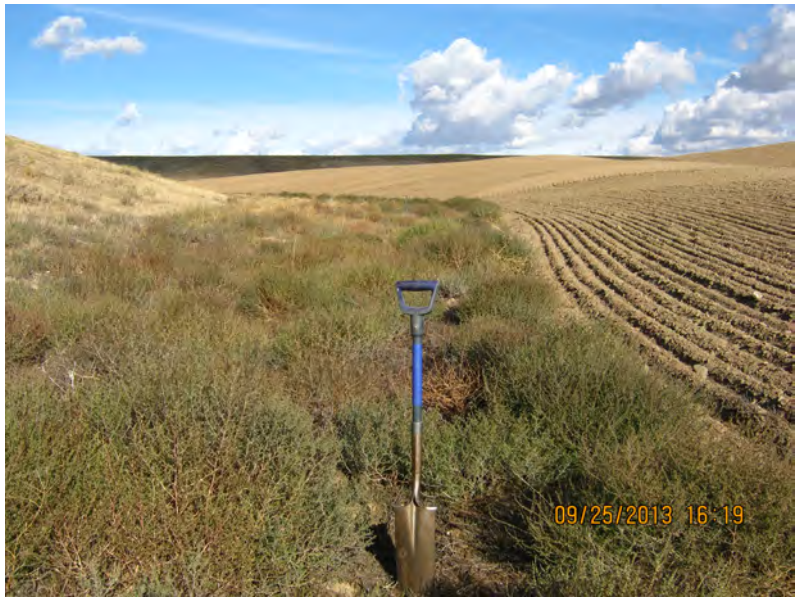

Photo 13. XBB 234. Looking East. No feature present. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 93. XBB 235. Looking North. No feature present. Bed and bank absent. NHD-mapped intermittent channel not present. NWI-mapped wetland not present.

Photo 94. SP 205. Looking South. Plot confirming uplands, located in an area mapped by NWI as PEM.

Photo 95. XBB 01. Looking North. Erosional Feature. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 96. XBB 02. Looking East. Erosional Feature. No bed and bank present.

Photo 97. WET A. Looking South. Shovel on transition, wetland to left of shovel.

Photo 98. EPH 01. Looking Northeast. View downslope. Shovel in center of ephemeral channel.

Photo 99. WET A. Looking Southeast. Shovel on wetland transition, wetland to the right.

Photo 100. EPH 02. Looking North. View downslope of incised channel.

Photo 101. WET A. Looking Northwest. View downstream.

Photo 102. WET B. Looking North. View into wetland.

Photo 103. EPH 03. Looking Northwest. Shovel mid-channel.

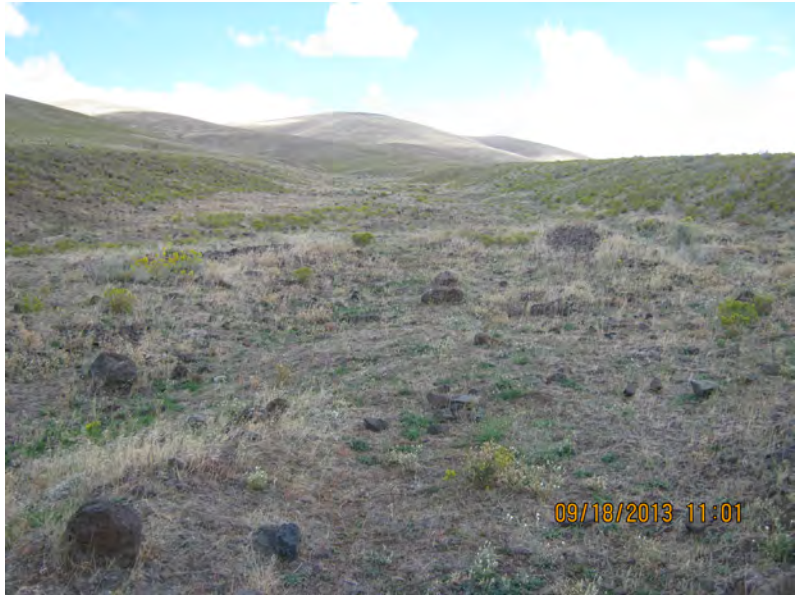

Photo 104. XBB 03. Looking Northeast. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 105. XBB 04. Looking Northwest. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 106. EPH 04. Looking North. View upslope at shovel midstream.

Photo 107. XBB 05. Looking North. Erosional Feature. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 108. EPH 05. Looking Northwest. View upstream at shovel mid-channel.

Photo 109. EPH 06. Looking Northwest. View upstream at shovel in center of stream.

Photo 110. EPH 07. Looking West. View upstream, shovel in center of channel.

Photo 111. EPH 08. Looking West. View upslope, shovel in center of channel.

Photo 112. EPH 09. Looking Northwest. View upstream, shovel in center of channel.

Photo 113. XBB 05. Looking Southeast. NHD-presumed channel may have been destroyed due to plowing practices. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 114. EPH 10. Looking Northwest. View upstream of ephemeral channel.

Photo 115. WET C. Looking Northeast. Wetland transition. Wetland to the left of the shovel.

Photo 116. EPH 12. Looking Northwest. Shovel in center of channel.

Photo 117. STRM 01, SP 01. Looking North. Shovel in SP 01, located in center of STRM 01 channel.

Photo 118. EPH 11. Looking North. Shovel in center of ephemeral channel.

Photo 119. SP 02. Looking South. Plot confirming uplands, located in an area mapped by NWI as PSS.

Photo 120. STRM 02. Looking North. View downstream of perennial Little Butter Creek.

Photo 121. STRM 06. Looking Northwest. Shovel on left bank of intermittent irrigation ditch.

Photo 122. SP 03. Looking Southwest. Plot confirming uplands, located in an area mapped by NWI as PSS.

Photo 123. EPH 13. Looking Northeast. Basalt ledge with staining, indicating ephemeral flow.

Photo 124. WET H. Looking South. View down into vernal pool. Sparse vegetation in wetland is visible.

Photo 125. EPH 14. Looking East. View upstream of ephemeral channel. Bare rock in photo center is channel.

Photo 126. XBB 08. Looking East. View upslope in small canyon with no bed or bank.

Photo 127. XBB 09. Looking North. Upland, vegetated swale. Bed and bank absent. NHD-mapped intermittent channel not present. View upslope of canyon confluence.

Photo 128. XBB 10. Looking South. View up dry canyon. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 129. XBB 11. Looking Southeast. NHD-mapped intermittent channel not present. Bed and bank absent.

Photo 130. XBB 12. Looking East. View upslope of erosional feature.

Photo 131. XBB 13. Looking Northwest. View upslope of small canyon without bed or bank.

Photo 132. WET I. Looking Northwest. Shove on the wetland transition, push-up dam on right. Wetland in lower right.

Photo 133. XBB 14. Looking South. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 134. EPH 15. Looking Southeast. View upstream of ephemeral channel.

Photo 135. EPH 16. Looking Southeast. View upslope of ephemeral channel.

Photo 136. XBB 256. Looking East. Upland swale lined with cheat grass. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 137. WET G. Looking East. Stock tank with wetland and drainage connected to WET G.

Photo 138. WET G. Looking Northeast. Overview of WET G.

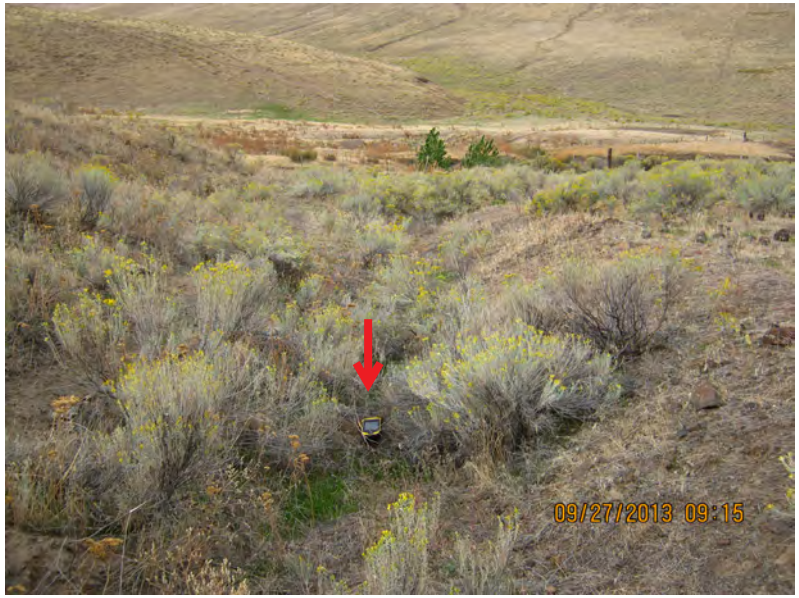

Photo 139. XBB 253. Looking West. Trimble in center of upland swale where two hillslopes come together. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 140. XBB 255. Looking West. Stock tanks, no wetland or drainage features connecting it to WET G.

Photo 141. XBB 254. Looking Northwest. Upland swale with tank in it. Bed and bank absent.

Photo 142. WET G. Looking Northwest. Wetland interface between biologists.

Photo 143. SP 06. Looking South. Plot confirming uplands, located in an area mapped by NWI as Riverine

Photo 144. WET E. Looking Northwest. View of wetland transition.

Photo 145. WET E. Looking Northeast. Shovel on wetland boundary.

Photo 146. SP 05. Looking Southeast. Plot confirming uplands, located in an area mapped by NWI as PEM.

Photo 147. SP 04. Looking North. Plot confirming uplands, located in an area mapped by NWI as Riverine.

Photo 148. STRM 05. Looking East. Overview photo of STRM 05 and WET D. WET D at top center.

Photo 149. SP 07. Looking East. Plot confirming uplands, located in an area mapped by NWI as Riverine.

Photo 150. STRM 05. Looking East. View upstream, of Butter Creek.

Photo 151. WET D. Looking Northwest. Shovel in upland plot.

Photo 152. XBB 06. Looking North. No feature present. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 153. STRM 04. Looking South. View of irrigation ditch.

Photo 154. STRM 03. Looking West. Shovel in center of irrigation ditch, at junction with additional irrigation ditch.

Photo 155. EPH 310. Looking North. Upslope at ephemeral channel.

Photo 156. EPH 311. Looking Southwest. Downslope at ephemeral channel.

Photo 157. XBB 327. Looking South. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 158. XBB 323. Looking North. Spillway beside a large berm. Bed and bank absent. NHD-mapped intermittent channel not present.

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APPENDIX C-1C: WHEATRIDGE EAST

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Photo 159. EPH 309. Looking Northeast. Upslope at channel.

Photo 160. EPH 308. Looking North. Ephemeral tributary to EPH 306.

Photo 161. EPH 306. Looking North. Upslope at channel.

Photo 162. EPH 307. Looking South. Ephemeral tributary to EPH 306.

Photo 163. XBB 322. Looking North. Upland swale. Bed and bank absent.

Photo 164. XBB 321. Looking North. Erosional feature. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 165. EPH 304. Looking Northeast. Downstream.

Photo 166. XBB 324. Looking Southwest. Upland swale. Bed and bank absent. Hydrophytes not present.

Photo 167. XBB 325. Looking North. Flat area between ephemeral channels. Bed and bank absent. NHD-mapped intermittent not present.

Photo 168. XBB 319. Looking South. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 169. EPH 305. Looking Southwest. Upslope at ephemeral channel.

Photo 170. XBB 326. Looking Southwest. CRP patch that looks green on aerial photo.

Photo 171. XBB 315. Looking Northeast. NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD-mapped intermittent channel not present.

Photo 172. XBB 316. Looking North. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 173. XBB 314. Looking North. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 174. XBB 313. Looking West. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 175. XBB 312. Looking West. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 176. XBB 312. Looking West. Edge of wheat field. Visible from aerial photo.

Photo 177. EPH 303. Looking Northwest. Weak OHWL characteristics.

Photo 178. EPH 302. Looking Northeast. Upstream at channel.

Photo 179. XBB 317. Looking Northeast. Erosional feature. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 180. EPH 301. Looking Southwest. Downslope at ephemeral channel.

Photo 181. EPH 300. Looking South. Downslope at top of ephemeral stream.

Photo 182. XBB 305. Looking North. Erosional feature. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 184. XBB 306. Looking Northeast. NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD-mapped intermittent channel not present.

Photo 185. XBB 311. Looking Northeast. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 186. XBB 310. Looking Southwest. Upland swale. Bed and bank absent.

Photo 187. XBB 307. Looking North. NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD-mapped intermittent channel not present.

Photo 188. XBB 308. Looking Northeast. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 189. XBB 309. Looking West. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 190. XBB 304. Looking Southwest. Upland swale. Bed and bank absent. NHD-mapped intermittent channel not present.

Photo 191. XBB 302. Looking South. NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD-mapped intermittent channel not present.

Photo 192. XBB 301. Looking Southwest. NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD-mapped intermittent channel not present.

Photo 193. XBB 300. Looking Southwest. NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD-mapped intermittent channel not present.

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Appendix D: Tables

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APPENDIX D-1: DAILY PRECIPITATION

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Table D-1: Daily Precipitation Totals for Heppner			
September 2013		October 2013	
Day	Total Precipitation	Day	Total Precipitation
1	0	11	0
2	0	12	0
3	0.38	13	0
4	0	14	0
5	0	15	0
6	0.22	16	0
7	0	17	0
8	0	18	0
9	0	19	0
10	0	20	0
11	0	21	0
12	0	22	0
13	0	23	0
14	0	24	0
15	0	25	0
16	0.24		
17	0		
18	0.15		
19	0		
20	0		
21	0.02		
22	0.01		
23	0.21		
24	0.18		
25	0.02		
26	0.02		
27	0		
28	0.18		
29	0.37		
30	0.37		
31	0.03		

Source: Heppner (353827) Observed Daily Data (NRCS 2014)

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APPENDIX D-2: WETLANDS

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Table D-2a: Wetlands Delineated (Wheatridge West)									
Feature Name	**Map Number**	**Latitude**	**Longitude**	**Cowardin**	**HGM**	**Sample plot**	**Photo Number**	**Additional Notes**	**Acres Delineated**
WET 2A	A-5.1.54	45.44062	-119.548	PEMC	Slope valley	SP 2A-01, SP 2A-02	87	Boundary determination method: abrupt break in soil, hydrology, and vegetation. Wetland edge is at toe of slope. Wetland occurs entirely within study area.	0.01

Table D-2b: Wetlands Delineated (Intraconnection Line)									
Feature Name	**Map Number**	**Latitude**	**Longitude**	**Cowardin**	**HGM**	**Sample plot**	**Photo Number**	**Additional Notes**	**Acres Delineated**
WET A	A-5.59, A-5.60, A-5.61, A-5.62, A-5.63	45.47704	-119.476	PEMC	Riverine Flow Through	SP A-01, SP A-02, SP A-03, SP A-04	97, 99, 101	Boundary determination method: abrupt break: in topography, hydrology, and vegetation. Gradual break in in soil. NWI Cowardin rating is incorrect. Wetland continues off site to the northeast. Wetland continues off site to the southeast.	1.27
WET B	A-5.62	45.47399	-119.463	PEMKf	Depression	SP B-01, SP B-02	102	Boundary determination method: abrupt break: in topography, and vegetation. Visible change in vegetation community. Wetland occurs entirely within study area.	0.02
WET C	A-5.69, A-5.70	45.489	-119.384	PEMC	Slope valley	SP C-01, SP C-02	115	Boundary determination method: abrupt break in topography, and vegetation. Wetland continues off site to the southwest.	0.34
WET H	A-5.70	45.49078	-119.376	PEMAx	Depression	SP H-01, SP H-02	124	Boundary determination method: abrupt break in topography, hydrology, and vegetation. Vernal pool. Wetland occurs entirely within study area.	0.01
WET I	A-5.74	45.50524	-119.328	PEMAx	Depression	SP I-01, SP I-02	132	Boundary determination method: abrupt break in topography, hydrology, and vegetation. Subtle break in soil. Visible change in vegetation community. Artificially created/modified causes is an excavated push up dam. Wetland occurs entirely within study area.	0.01
WET G	A-5.76, A-5.77, A-5.78, A-5.79	45.52637	-119.318	PEMA	Riverine Flow Through	SP G-01, SP G-02, SP G-03, SP G-04	137, 138, 142	Boundary determination method: abrupt break in topography, hydrology, and vegetation. Subtle break in soil. Wetland continues off site to the south.	2.67
WET E	A-5.79, A-5.80, A-5.81	45.53852	-119.326	PEMF	Slope headwater	SP E-01, SP E-02, SP E-03, SP E-04	144, 145	Boundary determination method: abrupt break in topography, soil, hydrology, and vegetation. Visible change in vegetation community. Wetland occurs entirely within study area.	1.36
WET D	A-5.81	45.54368	-119.327	PEMFx	Riverine Flow Through	SP D-01, SP D-02	151	Boundary determination method: abrupt break in topography. Gradual break in soil, and vegetation. Subsurface exam. NWI wetland is outside of study area. Wetland occurs entirely within study area.	0.05

APPENDIX D-3: WATERS

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TABLE D-3a: Non-wetland Other Waters (Wheatridge West)										
Feature Name	**Map Number**	**Latitude**	**Longitude**	**Cowardin***	**Flow Direction**	**OHWL Width (feet)**	**OHWL Height (feet)**	**Photo Number**	**Additional Notes**	**Acres**
EPH 312	A-5.1.2	45.62104	-119.664	Ephemeral	Southeast	2	0.5	8	Channel is multi-channel. Flow direction is southeast. Feature flows into out of study area. OHWL field indicators: presence of litter, debris, silt stained leaves, slope angle break in bank, change in vegetation.	0.08
EPH 313	A-5.1.2	45.62139	-119.669	Ephemeral	North	3	1	4	Channel is single channel. Flow direction is north. Feature flows into out of study area. OHWL field indicators: presence of litter, debris, silt stained leaves, slope angle break in bank, change in vegetation.	0.06
EPH 222	A-5.1.9	45.59138	-119.629	Ephemeral	North	3	0.75	16	Channel is single channel. Flow direction is north. Feature flows into out of study area. OHWL field indicators: slope angle break in bank.	0.04
EPH 219	A-5.1.10	45.58434	-119.653	Ephemeral	Northeast	4	0.25	18	Channel is single channel. Flow direction is northeast. Feature flows into out of study area. OHWL field indicators: slope angle break in bank.	0.05
EPH 218	A-5.1.10	45.58461	-119.654	Ephemeral	Northwest	4	0.5	17	Channel is single channel. Flow direction is northwest. Feature flows into study area. OHWL field indicators: slope angle break in bank.	0.04
EPH 220	A-5.1.12	45.56072	-119.676	Ephemeral	North	4	0.5	20, 21	Channel is single channel. Flow direction is north. Feature flows into out of study area. OHWL field indicators: slope angle break in bank, elevation of float debris.	0.05
EPH 224	A-5.1.20	45.5605	-119.576	Ephemeral	North	3	0.5	30	Channel is single channel. Flow direction is north. Feature flows into study area. OHWL field indicators: change in vegetation, textural change of depositional sediment or soil. .	0.03
EPH 223	A-5.1.23	45.5492	-119.581	Ephemeral	North	2	0.5	38	Channel is single channel. Flow direction is north. Feature entirely within study area. OHWL field indicators: .	0.01
EPH 225	A-5.1.26	45.54091	-119.591	Ephemeral	West	2.5	0.5	43	Channel is single channel. Feature is a roadside ditch. Flow direction is west. Feature entirely within study area. OHWL field indicators: clear, natural line, presence of litter, debris, silt stained leaves.	0.01

TABLE D-3a: Non-wetland Other Waters (Wheatridge West)										
Feature Name	**Map Number**	**Latitude**	**Longitude**	**Cowardin***	**Flow Direction**	**OHWL Width (feet)**	**OHWL Height (feet)**	**Photo Number**	**Additional Notes**	**Acres**
EPH 209	A-5.1.26, A-5.1.40, A-5.1.32, A-5.1.31, A-5.1.30, A-5.1.28, A-5.1.29, A-5.1.27	45.52505	-119.591	Ephemeral	North	6	1	63	Channel is single channel. Flow direction is north. Feature originates within study area and flows out . OHWL field indicators: change in vegetation, textural change of depositional sediment or soil. .	1.41
EPH 212	A-5.1.33	45.51753	-119.578	Ephemeral	North	5	1	48	Channel is single channel. Flow direction is north. Feature flows into out of study area. OHWL field indicators: textural change of depositional sediment or soil. .	0.05
EPH 211	A-5.1.34	45.51942	-119.567	Ephemeral	North	5	1	50	Channel is single channel. Flow direction is north. Feature flows into out of study area. OHWL field indicators: change in vegetation, textural change of depositional sediment or soil. .	0.05
EPH 215	A-5.1.35	45.50152	-119.648	Ephemeral	North	4	0.5	52	Channel is single channel. Flow direction is north. Feature flows into out of study area. OHWL field indicators: change in vegetation, textural change of depositional sediment or soil. .	0.04
EPH 216	A-5.1.36	45.5116	-119.632	Ephemeral	Northeast	3	1	54	Channel is single channel. Flow direction is northeast. Feature flow_into. OHWL field indicators: change in vegetation, textural change of depositional sediment or soil. .	0.03
EPH 213	A-5.1.38	45.51063	-119.608	Ephemeral	North	4	0.5	58	Channel is single channel. Flow direction is north. Feature flows into out of study area. OHWL field indicators: change in vegetation, textural change of depositional sediment or soil. .	0.04
EPH 214	A-5.1.38	45.51019	-119.609	Ephemeral	Northeast	3	0.5	57	Channel is single channel. Flow direction is northeast. Feature flows into study area. OHWL field indicators: change in vegetation, textural change of depositional sediment or soil. .	0.04
EPH 210	A-5.1.40	45.49789	-119.581	Ephemeral	Northwest	3	1	62	Channel is single channel. Flow direction is northwest. Feature flows into study area. OHWL field indicators: change in vegetation, textural change of depositional sediment or soil. .	0.02

TABLE D-3a: Non-wetland Other Waters (Wheatridge West)										
Feature Name	**Map Number**	**Latitude**	**Longitude**	**Cowardin***	**Flow Direction**	**OHWL Width (feet)**	**OHWL Height (feet)**	**Photo Number**	**Additional Notes**	**Acres**
EPH 207	A-5.1.41	45.49887	-119.564	Ephemeral	North	3	0.5	65	Channel is single channel. Flow direction is north. Feature originates within study area and flows out . OHWL field indicators: clear, natural line.	0.07
EPH 208	A-5.1.41	45.49934	-119.558	Ephemeral	North	4	0.5	67	Channel is single channel. Flow direction is north. Feature flows into out of study area. OHWL field indicators: clear, natural line, presence of litter, debris, silt stained leaves.	0.1
EPH 206	A-5.1.45	45.47104	-119.627	Ephemeral	North	2	0.5	74	Channel is single channel. Feature is a roadside ditch. Flow direction is north. Feature flows into out of study area. OHWL field indicators: clear, natural line, textural change of depositional sediment or soil. .	0.02
EPH 204	A-5.1.48	45.4875	-119.576	Ephemeral	Southeast	5	2	78	Channel is single channel. Feature is a roadside ditch. Flow direction is southeast. Feature flows into study area. OHWL field indicators: clear, natural line, change in vegetation, textural change of depositional sediment or soil. .	0.06
EPH 205	A-5.1.49	45.47678	-119.574	Ephemeral	West	3	1	81	Channel is single channel. Flow direction is west. Feature flows into out of study area. OHWL field indicators: clear, natural line, textural change of depositional sediment or soil. .	0.06
EPH 201	A-5.1.54	45.44107	-119.548	Ephemeral	North	2	0.5	90	Channel is single channel. Feature is a roadside ditch. Flow direction is north. Feature flows into out of study area. OHWL field indicators: slope angle break in bank.	0.03
EPH 202	A-5.1.54	45.44109	-119.548	Ephemeral	North	2	0.25	88	Channel is single channel. Feature is a roadside ditch. Flow direction is north. Feature flows into out of study area. OHWL field indicators: .	0.03
EPH 203	A-5.1.54	45.44296	-119.546	Ephemeral	West	1.5	0.25	86	Channel is single channel. Flow direction is west. Feature flows into out of study area. OHWL field indicators: clear, natural line, slope angle break in bank.	0.02
EPH 200	A-5.1.55	45.41191	-119.521	Ephemeral	West	2	0.5	89	Channel is single channel. Flow direction is west. Feature flows into out of study area. OHWL field indicators: clear, natural line, presence of litter, debris, silt stained leaves.	0.02

*Notes: Cowardin et al. does not have a class for ephemeral streams. For purposes of this report, features that are ephemeral are written out and do not have a classification code.

TABLE D-3b: Non-wetland Other Waters (Intraconnection Line)										
Feature Name	**Map Number**	**Latitude**	**Longitude**	**Cowardin***	**Flow Direction**	**OHWL Width (feet)**	**OHWL Height (feet)**	**Photo Number**	**Additional Notes**	**Acres**
EPH 01	A-5.1.60	45.47861	-119.49	Ephemeral	Northeast	5	2	98	Channel is single channel. Flow direction is northeast. Feature flows into study area. OHWL field indicators: clear, natural line, presence of litter, debris, silt stained leaves, slope angle break in bank.	0.06
EPH 02	A-5.1.61	45.47677	-119.477	Ephemeral	North	4	1	100	Channel is single channel. Flow direction is north. Feature entirely within study area. OHWL field indicators: slope angle break in bank, area of washed rock.	0.04
EPH 03	A-5.1.62	45.47382	-119.461	Ephemeral	Southwest	1	0.5	103	Channel is multi-channel. Flow direction is southwest. OHWL field indicators: slope angle break in bank, area of washed rock, change in vegetation.	0.02
EPH 04	A-5.1.65	45.47182	-119.433	Ephemeral	Southwest	2	0.5	106	Channel is single channel. Flow direction is southwest. Feature flows into out of study area. OHWL field indicators: slope angle break in bank, change in vegetation.	0.06
EPH 05	A-5.1.66	45.47479	-119.407	Ephemeral	Southeast	1	0.5	108	Channel is single channel. Flow direction is southeast. Feature flows into out of study area. OHWL field indicators: slope angle break in bank, change in vegetation.	0.03
EPH 06	A-5.1.67	45.47821	-119.402	Ephemeral	East	3	0.5	109	Channel is single channel. Flow direction is east. Feature flows into out of study area. OHWL field indicators: slope angle break in bank, area of washed rock, change in vegetation.	0.06
EPH 07	A-5.1.67	45.48012	-119.4	Ephemeral	Southeast	3	0.5	110	Channel is single channel. Flow direction is southeast. OHWL field indicators: clear, natural line, presence of litter, debris, silt stained leaves, slope angle break in bank.	0.07
EPH 08	A-5.1.68	45.48241	-119.397	Ephemeral	East	1	0.5	111	Channel is single channel. Flow direction is east. Feature entirely within study area. OHWL field indicators: clear, natural line, slope angle break in bank.	0.01
EPH 09	A-5.1.68	45.48566	-119.395	Ephemeral	Southeast	1.5	0.5	112	Channel is single channel. Flow direction is southeast. OHWL field indicators: clear, natural line.	0.02
EPH 10	A-5.1.69	45.4879	-119.39	Ephemeral	Southeast	3	0.5	114	Channel is single channel. Flow direction is southeast. OHWL field indicators: clear, natural line, slope angle break in bank.	0.05

TABLE D-3b: Non-wetland Other Waters (Intraconnection Line)										
Feature Name	**Map Number**	**Latitude**	**Longitude**	**Cowardin***	**Flow Direction**	**OHWL Width (feet)**	**OHWL Height (feet)**	**Photo Number**	**Additional Notes**	**Acres**
EPH 12	A-5.1.69	45.49009	-119.384	Ephemeral	Southeast	1	0.25	116	Channel is single channel. Flow direction is southeast. Feature entirely within study area. OHWL field indicators: slope angle break in bank, change in vegetation.	0.01
EPH 11	A-5.1.70	45.48937	-119.382	Ephemeral	North	4	3	118	Channel is single channel. Feature is a roadside ditch. Flow direction is north. Feature entirely within study area. OHWL field indicators: clear, natural line, slope angle break in bank.	0.03
EPH 13	A-5.1.70	45.49075	-119.376	Ephemeral	Southwest	3	0.25	123	Channel is single channel. Flow direction is southwest. Feature entirely within study area. OHWL field indicators: presence of litter, debris, silt stained leaves.	0
EPH 14	A-5.1.70	45.49098	-119.375	Ephemeral	West	2	0.25	125	Channel is single channel. Flow direction is west. Feature entirely within study area. OHWL field indicators: presence of litter, debris, silt stained leaves.	0
STRM 01	A-5.1.70	45.49069	-119.382	R4SB4	North	4	3	117	Channel is single channel. Feature is a roadside ditch. Flow direction is north. Feature originates within study area and flows out . OHWL field indicators: clear, natural line, slope angle break in bank, textural change of depositional sediment or soil. .	0.06
STRM 02	A-5.1.70	45.49007	-119.381	R2UB1	North	7	2	120	Channel is single channel. Flow direction is north. Feature flows into out of study area. OHWL field indicators: clear, natural line, presence of litter, debris, silt stained leaves, slope angle break in bank.	0.25
STRM 06	A-5.1.70	45.49006	-119.38	R4SB3	North	4	2	121	Channel is single channel. Feature is an excavated irrigation ditch. Flow direction is north. Feature flows into out of study area. OHWL field indicators: clear, natural line, slope angle break in bank.	0.1
EPH 15	A-5.1.74	45.50683	-119.328	Ephemeral	Northeast	3	1	134	Channel is single channel. Flow direction is northeast. Feature originates within study area and flows out . OHWL field indicators: clear, natural line, textural change of depositional sediment or soil. .	0.05
EPH 16	A-5.1.75	45.51247	-119.321	Ephemeral	North	5	1	135	Channel is single channel. Flow direction is north. Feature originates within study area and flows out . OHWL field indicators: textural change of depositional sediment or soil. .	0.06

TABLE D-3b: Non-wetland Other Waters (Intraconnection Line)										
Feature Name	**Map Number**	**Latitude**	**Longitude**	**Cowardin***	**Flow Direction**	**OHWL Width (feet)**	**OHWL Height (feet)**	**Photo Number**	**Additional Notes**	**Acres**
EPH 310	A-5.1.81	45.54601	-119.327	Ephemeral	South	3	0.2	155	Channel is single channel. Flow direction is south. OHWL field indicators: slope angle break in bank, change in vegetation.	0
EPH 311	A-5.1.81	45.54622	-119.327	Ephemeral	Southwest	1	0.2	156	Channel is single channel. Flow direction is southwest. OHWL field indicators: slope angle break in bank, change in vegetation.	0
STRM 04	A-5.1.81	45.54259	-119.327	R4	South	3	1	153	Channel is single channel. Feature is an excavated irrigation ditch. Flow direction is south. Feature entirely within study area. OHWL field indicators: slope angle break in bank.	0.08
STRM 05	A-5.1.81	45.5428	-119.326	R2UB1	West	30	8	150	Channel is multi-channel. Flow direction is west. Feature flows into out of study area. OHWL field indicators: clear, natural line, top of the zone of washed roots, slope angle break in bank.	0.81
STRM 03	A-5.1.81	45.5443	-119.326	R4SB3	West	6	2	154	Channel is single channel. Feature is an excavated irrigation ditch. Flow direction is west. Feature flows into study area. OHWL field indicators: clear, natural line, slope angle break in bank, change in vegetation.	0.16

*Notes: Cowardin et al. does not have a class for ephemeral streams. For purposes of this report, features that are ephemeral are written out and do not have a classification code

TABLE D-3c: Non-wetland Other Waters (Wheatridge East)										
Feature Name	**Map Number**	**Latitude**	**Longitude**	**Cowardin***	**Flow Direction**	**OHWL Width (feet)**	**OHWL Height (feet)**	**Photo Number**	**Additional Notes**	**Acres**
EPH 306	A-5.1.82	45.55602	-119.324	Ephemeral	Southwest	2	0.25	161	Channel is single channel. Flow direction is southwest. Feature flows into out of study area. OHWL field indicators: slope angle break in bank, elevation of float debris, area of washed rock, change in vegetation.	0.08
EPH 307	A-5.1.82	45.55706	-119.323	Ephemeral	South	2	0.25	162	Channel is single channel. Flow direction is south. Feature entirely within study area. OHWL field indicators: slope angle break in bank, area of washed rock, change in vegetation.	0.01
EPH 308	A-5.1.82	45.55656	-119.323	Ephemeral	South	1	0.25	160	Channel is single channel. Flow direction is south. Feature entirely within study area. OHWL field indicators: lowest extent of woody veg, slope angle break in bank, area of washed rock, change in vegetation.	0.01
EPH 309	A-5.1.82	45.55864	-119.327	Ephemeral	Southwest	1	0.5	159	Channel is single channel. Flow direction is southwest. Feature originates within study area and flows out . OHWL field indicators: slope angle break in bank, change in vegetation.	0.01
EPH 304	A-5.1.85, A-5.1.86,A-5.1.88, A-5.1.89	45.57455	-119.331	Ephemeral	Northeast	2	0.25	165	Channel is single channel. Flow direction is northeast. OHWL field indicators: slope angle break in bank, change in vegetation.	0.15
EPH 305	A-5.1.88	45.57731	-119.334	Ephemeral	Northeast	2	0.25	169	Channel is single channel. Flow direction is northeast. OHWL field indicators: slope angle break in bank, change in vegetation.	0.07
EPH 302	A-5.1.95	45.62872	-119.326	Ephemeral	Southwest	1	0.5	178	Channel is single channel. Flow direction is southwest. Feature flows into study area. OHWL field indicators: slope angle break in bank, area of washed rock, change in vegetation.	0.02
EPH 303	A-5.1.95	45.62801	-119.328	Ephemeral	Northwest	2	0.5	177	Channel is single channel. Flow direction is northwest. Feature entirely within study area. OHWL field indicators: slope angle break in bank, change in vegetation.	0.05

TABLE D-3c: Non-wetland Other Waters (Wheatridge East)										
Feature Name	**Map Number**	**Latitude**	**Longitude**	**Cowardin***	**Flow Direction**	**OHWL Width (feet)**	**OHWL Height (feet)**	**Photo Number**	**Additional Notes**	**Acres**
EPH 300	A-5.1.96, A-5.1.97	45.63246	-119.32	Ephemeral	South	1	0.5	181	Channel is single channel. Flow direction is south. Feature flows into out of study area. OHWL field indicators: slope angle break in bank, change in vegetation.	0.08
EPH 301	A-5.1.96, A-5.1.97	45.63355	-119.319	Ephemeral	Southwest	1	0.5	180	Channel is single channel. Flow direction is southwest. Feature entirely within study area. OHWL field indicators: slope angle break in bank, change in vegetation.	0

*Notes: Cowardin et al. does not have a class for ephemeral streams. For purposes of this report, features that are ephemeral are written out and do not have a classification code

APPENDIX D-4: OTHER FEATURES

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Table D-4a : Other Features Observed (Wheatridge West)					
Feature Name	**Map Number**	**Lat**	**Long**	**Photos**	**Feature Characteristics**
XBB 328	A-5.1.1	45.62003833	-119.6708678	3	NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present.
XBB 329	A-5.1.1	45.61934352	-119.6726957	2	NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. present
XBB 330	A-5.1.1	45.61825905	-119.6771737	1	Erosional Feature. Bed and Bank absent. NHD mapped intermittent channel not present.
SP 300	A-5.1.2	45.62064976	-119.66232	7	Plot confirming uplands located in area mapped by NWI as Riverine
SP 301	A-5.1.2	45.62161494	-119.6692974	5	Plot confirming uplands located in area mapped by NWI as Riverine
XBB 331	A-5.1.2	45.62178712	-119.6670418	6	Erosional Feature. Bed and Bank absent. NHD and NWI mapped intermittent channel not present.
XBB 332	A-5.1.3	45.61753117	-119.6596833	9	Erosional Feature. Bed and Bank absent.
XBB 259	A-5.1.4	45.60687804	-119.6561664	10	NHD-presumed channel may have been destroyed due to plowing practices. Field is now CRP land. No bed and bank present. NHD mapped intermittent channel not present
XBB 258	A-5.1.5	45.62119521	-119.6245204	11	NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD mapped intermittent channel not present
XBB 257	A-5.1.6	45.6150986	-119.6271994	12	NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD mapped intermittent channel not present
XBB 234	A-5.1.7	45.6071853	-119.6351746	13	No feature present. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 232	A-5.1.8	45.59361966	-119.6326968	15	No feature present. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 233	A-5.1.8	45.59464848	-119.6333885	14	Upland Swale. Bed and Bank absent. NHD and NWI mapped intermittent channel not present.
XBB 260	A-5.1.11	45.56204852	-119.6852138	19	Upland swale. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 230	A-5.1.13	45.56006861	-119.6571924	22	NHD-presumed channel may have been destroyed due to plowing practices. Field is now CRP land. No bed and bank present. NHD mapped intermittent channel not present
XBB 229	A-5.1.14	45.55988011	-119.642084	23	Mapped NHD stream not present.
XBB 252	A-5.1.15	45.56500382	-119.6272389	24	NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD mapped intermittent channel not present
XBB 228	A-5.1.16	45.55991914	-119.6252279	25	NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD mapped intermittent channel not present
XBB 251	A-5.1.17	45.56480673	-119.6189809	26	NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD mapped intermittent channel not present
XBB 240	A-5.1.18	45.57614896	-119.5945133	27	NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD mapped intermittent channel not present

Table D-4a : Other Features Observed (Wheatridge West)					
Feature Name	**Map Number**	**Lat**	**Long**	**Photos**	**Feature Characteristics**
XBB 241	A-5.1.18	45.5777463	-119.59356	28	NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD mapped intermittent channel not present
XBB 242	A-5.1.19	45.56784277	-119.5856805	29	Roadside swale. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 248	A-5.1.20	45.55991087	-119.575033	33	Upland swale south of EPH 224. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 249	A-5.1.20	45.55974316	-119.5751795	31	NHD-presumed channel may have been destroyed due to plowing practices. Field is now CRP land. No bed and bank present. NHD mapped intermittent channel not present
XBB 247	A-5.1.21	45.55671048	-119.5687852	32	Upland swale. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 250	A-5.1.21	45.55776078	-119.5632003	34	Upland swale. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 245	A-5.1.22	45.55183991	-119.5741856	36	Interface of the wheat field and weeds that is not present. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 246	A-5.1.22	45.55392975	-119.5693467	35	Interface of the wheat field and weeds that is not present. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 244	A-5.1.23	45.5488975	-119.580859	37	Upland swale south of EPH 223. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 243	A-5.1.24	45.5485966	-119.588079	39	NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD mapped intermittent channel not present
XBB 225	A-5.1.25	45.54574881	-119.6120421	41	NHD-presumed channel may have been destroyed due to plowing practices. Field is now CRP land. No bed and bank present. NHD mapped intermittent channel not present
XBB 226	A-5.1.25	45.54594177	-119.615414	42	NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD mapped intermittent channel not present
XBB 227	A-5.1.25	45.54624709	-119.6102006	40	NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD mapped intermittent channel not present
XBB 224	A-5.1.30	45.5244685	-119.5920645	45	NHD-presumed channel may have been destroyed due to plowing practices. Field is now CRP land. No bed and bank present. NHD mapped intermittent channel not present
XBB 222	A-5.1.31	45.52096186	-119.5904057	46	Upland swale where EPH 209 has been plowed.
XBB 223	A-5.1.32	45.51663915	-119.5929141	47	No feature present. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 217	A-5.1.34	45.51920568	-119.567966	49	No feature present where NHD mapped an intermittent stream.
XBB 220	A-5.1.35	45.50203081	-119.6482772	51	EPH 215 does not continue. Shovel on centerline where there is a feature mapped by NHD but it is a swale.
XBB 221	A-5.1.36	45.50945311	-119.6372383	53	Non wetland feature mapped by NHD. Feature is a broad upland swale in a wheat field.

Table D-4a : Other Features Observed (Wheatridge West)					
Feature Name	**Map Number**	**Lat**	**Long**	**Photos**	**Feature Characteristics**
XBB 219	A-5.1.37	45.50341443	-119.6117997	55	No feature present at mapped NHD line.
XBB 218	A-5.1.38	45.50935812	-119.6088263	56	Plowed field where EPH 214 terminates. Bed and Bank absent.
XBB 211	A-5.1.39	45.4958475	-119.5981883	60	Upland swale. Bed and Bank absent. NHD and NWI mapped intermittent channel not present.
XBB 212	A-5.1.39	45.49620833	-119.6043462	59	Upland swale mapped as intermittent stream by NHD.
XBB 216	A-5.1.40	45.49859164	-119.5819216	61	NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD mapped intermittent channel not present
SP 204	A-5.1.41	45.49775074	-119.5636658	66	Plot confirming uplands located in area mapped by NWI as PEM.
XBB 213	A-5.1.41	45.49654812	-119.5638819	64	Confirms non wetland and no NHD feature.
XBB 215	A-5.1.41	45.49901919	-119.5574159	68	Upland swale. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 214	A-5.1.42	45.49387961	-119.5564013	69	Upland swale. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 239	A-5.1.43	45.49932805	-119.535801	70	Upland swale. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 237	A-5.1.44	45.49031569	-119.5359891	72	Upland swale. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 238	A-5.1.44	45.4917073	-119.5346012	71	Upland swale. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 207	A-5.1.45	45.47109246	-119.6275339	73	Upland swale. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 208	A-5.1.45	45.47121068	-119.6254369	75	Aerial image feature is a berm with no bed and bank.
XBB 209	A-5.1.46	45.46515914	-119.6101898	76	No feature present. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 210	A-5.1.47	45.47100703	-119.6004153	77	Erosion control berm.
XBB 205	A-5.1.48	45.48589415	-119.5741418	79	EPH 204 splays out into an erosional feature with bed and bank absent. NHD mapped intermittent channel not present.
SP 203	A-5.1.49	45.47662864	-119.5738392	80	Plot confirming uplands located in area mapped by NWI as PEM.
XBB 201	A-5.1.50	45.46112577	-119.5845499	82	Upland swale. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 206	A-5.1.51	45.47055887	-119.556952	83	Facing NW from Russian Thistle patch toward NWI feature that is not present and out of site boundary.
XBB 204	A-5.1.52	45.4582898	-119.5558074	84	Upland swale. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 203	A-5.1.53	45.45619596	-119.5452712	85	Erosional Feature. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 200	A-5.1.56	45.40679118	-119.5241134	91	NHD-presumed channel may have been destroyed due to plowing practices. Bed and Bank absent. NHD mapped intermittent channel not present.
SP 205	A-5.1.57	45.49042106	-119.5174881	94	Plot confirming uplands located in area mapped by NWI as PEM.
XBB 236	A-5.1.57	45.49053784	-119.519044	92	Upland swale. Bed and Bank absent. NHD mapped intermittent channel not present.

Table D-4b : Other Features Observed (Intraconnection Line Corridor)					
Feature Name	**Map Number**	**Lat**	**Long**	**Photos**	**Feature Characteristics**
XBB 235	A-5.1.57	45.49050162	-119.5175461	93	No feature present. Bed and bank absent. NHD mapped intermittent channel not present. NWI mapped wetland not present.
XBB 01	A-5.1.58	45.49048539	-119.5033634	95	Erosional feature. Bed and bank absent. NHD-mapped intermittent channel not present.
XBB 02	A-5.1.59	45.48693411	-119.4974682	96	Erosional feature visible from aerial photo. No bed and bank.
XBB 03	A-5.1.63	45.47172993	-119.4561434	104	Upland swale. Bed and bank absent. NHD mapped intermittent channel not present.
XBB 04	A-5.1.64	45.47183074	-119.4474154	105	Upland swale. Bed and bank absent. NHD mapped intermittent channel not present.
XBB 05	A-5.1.65, A-5.1.68	45.47302099	-119.4317849	107, 113	Erosional feature. Bed and bank absent. NHD mapped intermittent channel not present.
XBB 05	A-5.1.65, A-5.1.68	45.47302099	-119.4317849	107, 113	Erosional feature. Bed and bank absent. NHD mapped intermittent channel not present.
SP 02	A-5.1.70	45.49029357	-119.3810653	119	Plot confirming uplands located in area mapped by NWI as PSS.
SP 03	A-5.1.70	45.49091131	-119.3804272	122	Plot confirming uplands located in area mapped by NWI as PSS.
SP 03	A-5.1.70	45.49091131	-119.3804272	122	Plot confirming uplands located in area mapped by NWI as Riverine
XBB 08	A-5.1.71	45.48978018	-119.3678439	126	Small canyon with no bed or bank.
XBB 09	A-5.1.71	45.48747655	-119.3605294	127	Upland, vegetated swale. Bed and bank absent. NHD mapped intermittent channel not present.
XBB 10	A-5.1.72	45.49133233	-119.3443373	128	Bed and bank absent. NHD mapped intermittent channel not present.
XBB 11	A-5.1.72	45.49374912	-119.3393484	129	NHD mapped intermittent channel not present. Bed and Bank absent.
XBB 12	A-5.1.73	45.49966559	-119.3374543	130	Erosional feature.
XBB 13	A-5.1.74	45.50514182	-119.3300038	131	Small canyon without bed or bank.
XBB 14	A-5.1.74	45.50596322	-119.3280805	133	Upland swale. Bed and bank absent. NHD mapped intermittent channel not present.
XBB 253	A-5.1.76	45.5213179	-119.3115126	139	Erosional feature where two hillslopes come together. Bed and bank absent. NHD mapped intermittent channel not present.
XBB 255	A-5.1.76	45.52279386	-119.3132795	140	Stock tanks no wetland or drainage features connecting it to WET G.
XBB 256	A-5.1.76	45.52113843	-119.3139949	136	Upland swale lined with chest grass. Bed and bank absent. NHD mapped intermittent channel not present.
XBB 254	A-5.1.77	45.5243986	-119.3155382	141	Upland swale with tank in it. Bed and bank absent.
SP 04	A-5.1.81	45.54199409	-119.3240557	147	Plot confirming uplands located in area mapped by NWI as Riverine
SP 05	A-5.1.81	45.5421327	-119.3260432	146	Plot confirming uplands located in area mapped by NWI as PEM.
XBB 06	A-5.1.81	45.54451138	-119.3267631	152	No feature present. Bed and bank absent. NHD mapped intermittent channel not present.

Table D-4b : Other Features Observed (Intraconnection Line Corridor)					
Feature Name	**Map Number**	**Lat**	**Long**	**Photos**	**Feature Characteristics**
XBB 323	A-5.1.81	45.54615451	-119.321345	158	Spillway beside a large berm. Bed and bank absent. NHD mapped intermittent not present.
XBB 327	A-5.1.81	45.54624984	-119.3224372	157	Upland swale. Bed and bank absent. NHD mapped intermittent channel not present.

Table D-4c : Other Features Observed (Wheatridge East)					
Feature Name	**Map Number**	**Lat**	**Long**	**Photos**	**Feature Characteristics**
XBB 322	A-5.1.83	45.56417847	-119.3124565	163	Upland swale. Bed and bank absent.
XBB 321	A-5.1.84	45.5701531	-119.3199283	164	Erosional feature. Bed and bank absent. NHD mapped intermittent channel not present.
XBB 324	A-5.1.85	45.57004949	-119.3308035	166	Upland swale. Bed and bank absent. Hydrophytes not present.
XBB 325	A-5.1.86	45.5711313	-119.3308558	167	Flat area between ephemeral channels. Bed and bank absent. NHD mapped intermittent not present.
XBB 319	A-5.1.87	45.57780495	-119.3163213	168	Upland swale. Bed and Bank absent. NHD mapped intermittent channel not present.
XBB 326	A-5.1.89	45.58179033	-119.3344201	170	CRP patch that looks green on aerial photo
XBB 315	A-5.1.90	45.59490223	-119.3329476	171	NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD mapped intermittent channel not present
XBB 316	A-5.1.91	45.59862247	-119.3114244	172	Upland swale. Bed and bank absent. NHD mapped intermittent channel not present.
XBB 314	A-5.1.92	45.60217036	-119.3292584	173	Upland swale. Bed and bank absent. NHD mapped intermittent channel not present.
XBB 312	A-5.1.93	45.6143841	-119.3289359	175	Upland swale. Bed and bank absent. NHD mapped intermittent channel not present.
XBB 313	A-5.1.93	45.61150831	-119.3286035	174	Upland swale. Bed and bank absent. NHD mapped intermittent channel not present.
XBB 318	A-5.1.94	45.617206	-119.3292617	176	Edge of wheat field. Visible from aerial photo.
XBB 317	A-5.1.96	45.63208287	-119.3253648	179	Erosional Feature. Bed and bank absent. NHD mapped intermittent channel not present.
XBB 305	A-5.1.98	45.64354822	-119.3100181	182	Erosional Feature. Bed and bank absent. NHD mapped intermittent channel not present.
XBB 306	A-5.1.99	45.65048576	-119.2910917	184	NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD mapped intermittent channel not present
XBB 306	A-5.1.99	45.65048576	-119.2910917	184	NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD mapped intermittent channel not present
XBB 307	A-5.1.100	45.66277321	-119.2841062	187	NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD mapped intermittent channel not present
XBB 310	A-5.1.100	45.66294221	-119.2917847	186	Upland swale. Bed and bank absent.
XBB 311	A-5.1.100	45.66060316	-119.2904965	185	Upland swale. Bed and bank absent. NHD mapped intermittent channel not present.
XBB 304	A-5.1.101	45.66603312	-119.3037909	190	Upland swale. Bed and bank absent. NHD mapped intermittent channel not present.
XBB 308	A-5.1.101	45.66319336	-119.2985375	188	Upland swale. Bed and bank absent. NHD mapped intermittent channel not present.
XBB 309	A-5.1.101	45.66499062	-119.3024486	189	Upland swale. Bed and bank absent. NHD mapped intermittent channel not present.

Table D-4c : Other Features Observed (Wheatridge East)					
Feature Name	**Map Number**	**Lat**	**Long**	**Photos**	**Feature Characteristics**
XBB 302	A-5.1.102	45.67453467	-119.2954795	191	NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD mapped intermittent channel not present
XBB 300	A-5.1.103	45.67447076	-119.2849455	193	NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD mapped intermittent channel not present
XBB 301	A-5.1.103	45.67454572	-119.2853471	192	NHD-presumed channel may have been destroyed due to plowing practices. No bed and bank present. NHD mapped intermittent channel not present
SP 01	A-5.1.120	45.48966457	-119.3807848	70	Plot in center of STRM 01 channel (intermittent stream), mapped by NWI as Riverine.

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APPENDIX D-5: DEVIATIONS

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Table D-5a: Deviations from National Wetlands Inventory (Wheatridge West)							
Feature Name	**Map Number**	**Lat**	**Long**	**Photo #**	**NWI Classification**	**Field Cowardin Classification***	**Reason for Deviation**
SP 300	A-5.1.2	45.62064976	-119.66232	7	R4SBC	Ephemeral	Plot confirming uplands/ephemeral drainage located in area mapped by NWI as Riverine
SP 301	A-5.1.2	45.62161494	-119.6692974	5	R4SBC	Ephemeral	Plot confirming uplands located in area mapped by NWI as Riverine
XBB 331	A-5.1.2	45.62178712	-119.6670418	6	R4SBC	None	NWI mapped intermittent channel not present. No bed and banks present.
EPH 312	A-5.1.2	45.6210403	-119.6638489	8	R4SBC	Ephemeral	NWI mapping error: NWI waters mapped at this site, but Cowardin Classification and mapped extent are incorrect.
EPH 313	A-5.1.2	45.6213913	-119.6693115	4	R4SBC	Ephemeral	NWI mapping error: NWI waters mapped at this site, but Cowardin Classification and mapped extent are incorrect. See SP 301.
XBB 232	A-5.1.8	45.59361966	-119.6326968	15	R4SBC	None	NWI mapped intermittent channel not present. No bed and banks present.
XBB 233	A-5.1.8	45.59464848	-119.6333885	14	R4SBC	None	NWI mapped intermittent channel not present. Bed and bank absent.
EPH 222	A-5.1.9	45.5913773	-119.6291962	16	R4SBC	Ephemeral	NWI mapping error: NWI waters mapped at this site, but Cowardin Classification is incorrect.
EPH 220	A-5.1.12	45.5607224	-119.6757736	20, 21	R4SBC	Ephemeral	NWI mapping error: NWI waters mapped at this site, but Cowardin Classification and mapped extent are incorrect.
XBB 220	A-5.1.35	45.50203081	-119.6482772	51	R4SBC	None	NWI mapped intermittent channel not present. No bed and banks present.
EPH 215	A-5.1.35	45.5015182	-119.6481857	52	R4SBC	Ephemeral	NWI mapping error: NWI waters mapped at this site, but Cowardin Classification and mapped extent are incorrect.

Table D-5a: Deviations from National Wetlands Inventory (Wheatridge West)							
Feature Name	**Map Number**	**Lat**	**Long**	**Photo #**	**NWI Classification**	**Field Cowardin Classification***	**Reason for Deviation**
XBB 211	A-5.1.39	45.4958475	-119.5981883	60	R4SBA	None	NWI mapped intermittent channel not present. No bed and banks present.
SP 204	A-5.1.41	45.49775074	-119.5636658	66	PEMA	None	Plot confirming uplands located in area mapped by NWI as PEM.
EPH 207	A-5.1.41	45.498867	-119.5639267	65	PEMA	Ephemeral	NWI mapping error: NWI wetland mapped at this site, but Cowardin classification and mapped extent are incorrect, and feature is a water, not a wetland.
SP 203	A-5.1.49	45.47662864	-119.5738392	80	PEMA	Ephemeral	Plot confirming uplands/ephemeral drainage located in area mapped by NWI as PEM.
EPH 205	A-5.1.49	45.4767799	-119.5743942	81	PEMA	Ephemeral	NWI mapping error: NWI wetland mapped at this site, but Cowardin classification and mapped extent are incorrect, and feature is a water, not a wetland. See SP 203.
WET 2A	A-5.1.54	45.4406166	-119.5482941	87	None	PEMKf	Wetland delineated was not mapped by NWI

*Cowardin et al. does not have a class for ephemeral streams. For purposes of this report, features that are ephemeral are written out and do not have a classification code.

Table D-5b: Deviations from National Wetlands Inventory (Intraconnection Line Corridor)							
Feature Name	**Map Number**	**Lat**	**Long**	**Photo #**	**NWI Classification**	**Field Cowardin Classification***	**Reason for Deviation**
SP 205	A-5.1.57	45.49042106	-119.5174881	94	PEMC	None	Plot confirming uplands located in area mapped by NWI as PEM.
XBB 235	A-5.1.57	45.49050162	-119.5175461	93	PEMC	None	No feature present. Bed and Bank absent. NHD mapped intermittent channel not present. NWI mapped wetland not present.
WET A	A-5.1.59, A-5.1.60, A-5.1.61, A-5.1.62, A-5.1.63	45.4770355	-119.4755859	97, 99, 101	PEMC	PEMF	NWI mapping error: NWI wetland mapped at this site, but Cowardin classification and mapped extent are incorrect.
WET B	A-5.1.62	45.4739914	-119.4629593	102	None	PEMC	Wetland delineated was not mapped by NWI
WET C	A-5.1.69, A-5.1.70	45.4889984	-119.3844757	115	PEMC	PEMC	NWI mapping error: NWI wetland mapped at this site, but mapped extent is incorrect.
SP 02	A-5.1.70	45.49029357	-119.3810653	119	PSSC	None	Plot confirming uplands located in area mapped by NWI as PSS.
SP 03	A-5.1.70	45.49091131	-119.3804272	122	PSSC	None	Plot confirming uplands located in area mapped by NWI as PSS.
WET H	A-5.1.70	45.4907761	-119.3755035	124	None	PEMA	Wetland delineated was not mapped by NWI
STRM 02	A-5.1.70	45.4900665	-119.3808899	120	PSSC	R3UB1	NWI mapping error: NWI wetland mapped at this site, but Cowardin classification and mapped extent are incorrect, and feature is a water, not a wetland. See SP 02 and SP 03.
STRM 06	A-5.1.70	45.4900627	-119.3799515	121	None	R4SB3	Water delineated was not mapped by NWI.
WET I	A-5.1.74	45.5052414	-119.32827	132	None	PEMAx	Wetland delineated was not mapped by NWI

Table D-5b: Deviations from National Wetlands Inventory (Intraconnection Line Corridor)							
Feature Name	**Map Number**	**Lat**	**Long**	**Photo #**	**NWI Classification**	**Field Cowardin Classification***	**Reason for Deviation**
WET G	A-5.1.76, A-5.1.77, A-5.1.78, A-5.1.79	45.526371	-119.3180847	137, 138, 142	PEM1C	PEMF	NWI mapping error: NWI wetland mapped at this site, but mapped extent is incorrect.
WET E	A-5.1.79, A-5.1.80, A-5.1.81	45.5385246	-119.3258514	144, 145	PEM1C	PEMFx	NWI mapping error: NWI wetland mapped at this site, but Cowardin classification and mapped extent are incorrect.
SP 07	A-5.1.81	45.54376803	-119.3276023	149	R3UBH	None	Plot confirming uplands located in area mapped by NWI as Riverine
SP 04	A-5.1.81	45.54199409	-119.3240557	147	R3UBH	None	Plot confirming uplands located in area mapped by NWI as Riverine
SP 05	A-5.1.81	45.5421327	-119.3260432	146	PEM1C	None	Plot confirming uplands located in area mapped by NWI as PEM.
WET D	A-5.1.81	45.5436783	-119.3270721	151	R3UBH	PEMC	NWI mapping error: NWI wetland mapped at this site, but Cowardin classification and mapped extent are incorrect.
STRM 03	A-5.1.81	45.5443001	-119.3257904	154	None	R4SB3	Water delineated was not mapped by NWI.
STRM 04	A-5.1.81	45.5425949	-119.3270569	153	None	R4	Water delineated was not mapped by NWI.
STRM 05	A-5.1.81	45.5428047	-119.3261948	150	R3UBH	R3UB1	NWI mapping error: NWI waters mapped at this site, but Cowardin Classification and mapped extent are incorrect.

*Cowardin et al. does not have a class for ephemeral streams. For purposes of this report, features that are ephemeral are written out and do not have a classification code.