

EXHIBIT H**GEOLOGY AND SEISMICITY**

OAR 345-021-0010(1)(h)

TABLE OF CONTENTS

	Page
H.1 INTRODUCTION	H-1
H.2 TOPOGRAPHY, GEOLOGICAL FEATURES, AND SOILS	H-2
H.2.1 Topography	H-2
H.2.2 Geological Features.....	H-3
H.2.3 Soils.....	H-3
H.3 SITE-SPECIFIC GEOLOGICAL AND GEOTECHNICAL WORK.....	H-4
H.3.1 Nature and Extent of Work	H-4
H.3.2 Professional Literature	H-5
H.3.3 Responsible Personnel.....	H-6
H.4 TRANSMISSION LINES	H-7
H.5 PIPELINES	H-8
H.6 SOIL STABILITY MAP	H-8
H.7 SEISMIC HAZARD ASSESSMENT	H-8
H.7.1 Earthquake Sources	H-9
H.7.2 Recorded Earthquakes	H-10
H.7.3 Median Ground Response Spectrum	H-14
H.7.4 Seismic Hazards Expected to Result from Seismic Events	H-14
H.8 NONSEISMIC GEOLOGICAL HAZARDS.....	H-15
H.9 SEISMIC HAZARD MITIGATION	H-15
H.10 NONSEISMIC HAZARD MITIGATION.....	H-16
H.11 CONCLUSION.....	H-17
H.12 REFERENCES.....	H-18

TABLES

H-1 Recorded Earthquakes within 50 Miles of the Leaning Juniper II Facility	H-11
H-2 Significant Historical Earthquakes Greater than 50 Miles from the Leaning Juniper II Facility.....	H-13

FIGURES

- H-1 Geology Map
- H-2 Probabilistic Seismic Hazard Deaggregation of the 500-Year Return Period Earthquake for the Leaning Juniper II Facility Site (USGS, 2005)
- H-3 Probabilistic Seismic Hazard Deaggregation of the 2500-Year Return Period Earthquake for the Leaning Juniper II Facility Site (USGS, 2005)
- H-4 Design Response Spectra for the Leaning Juniper II Facility Site

H.1 INTRODUCTION

Leaning Juniper Wind Power II, LLC (the Applicant) proposes to construct a wind generation facility in Gilliam County, Oregon, with generating capacity of up to approximately 279 megawatts (MW). The proposed facility (the Facility) consists of two main components: (1) Leaning Juniper II North (the north portion of the Facility with up to 93 MW), and (2) Leaning Juniper II South (the south portion of the Facility with up to 186 MW). Exhibit H provides evidence to support a finding by the Council as required by OAR 345-022-0020, which states:

“(1) 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 seismic zone and expected ground motion and ground failure, taking into account amplification, during 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 all maximum probable seismic events. As used in this rule ‘seismic hazard’ includes ground shaking, 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) The Council may issue a site certificate for a facility that would produce power from wind, solar or geothermal energy without making the findings described in section (1). However, the Council may apply the requirements of section (1) to impose conditions on a site certificate issued for such a facility[.]”

“(3) The Council may issue a site certificate for a special criteria facility under OAR 345-015-0310 without making the findings described in section (1). However, the Council may apply the requirements of section (1) to impose conditions on a site certificate issued for such a facility[.]”

Response: The evidence provided below demonstrates that this standard is met because the Applicant conducted a site-specific characterization of seismic, geologic, and soils hazards in the Facility area that indicates a low potential for risk. Further, the Facility will be designed and constructed to standards that adequately protect the Facility and

the public from seismic, geologic, and soils hazards. This Exhibit is organized in accordance with the application requirements contained in OAR 345-021-0010(1)(h).

OAR 345-021-0010(1)(h) *Information from reasonably available sources regarding the geological and soil stability of the site and vicinity, providing evidence to support findings by the Council as required by OAR 345-022-0020, including:*

H.2 TOPOGRAPHY, GEOLOGICAL FEATURES, AND SOILS

OAR 345-021-0010(1)(h)(A) *A description of the geological features and topography of the site and vicinity[.]*

Response: The Facility will be located in the north-central part of Gilliam County, in north-central Oregon. The Facility site is located just south of the Columbia River, in an area situated between the John Day River to the west and Morrow County to the east. The topography and geology for the site and vicinity are summarized below. Figure H-1 shows nearby faults and the general geology of the area.

H.2.1 Topography

Gilliam County encompasses a total of 782,717 acres (1,223 square miles). Located in north-central Oregon, the Columbia River forms the northern border of the County. Gilliam County is bordered on the east by Morrow County, while the east boundary is marked by the canyons of the John Day River. As discussed in Section H.2.2, Gilliam County is situated mainly within the Deschutes-Umatilla Plateau in the Columbia Plateau physiographic province. An area in the southeastern part of the County is situated in the Blue Mountain section of the Columbia Plateau province.

Generally, the County forms a plain that was covered by molten basalt and then uplifted. The basalt in the floor of the plain is overlain by wind-deposited silt (loess). Elevation of the plain ranges from about 250 feet above mean sea level (msl) along the Columbia River to about 3,600 feet msl near the border of the Blue Mountain section. Relief is dominantly nearly level to rolling on the stream dissected terrain. The Blue Mountain section is characterized by flat-topped ridges, broad flats, and steep-walled canyons. Topography is mainly the result of erosion and stream cutting in the basalt. About 584,400 acres of the County are drained to the west into the John Day River. The rest of the County is drained to the north into the Columbia River, which forms the northern boundary of Gilliam County. Elevations of the nearby towns and communities in the County are Arlington, 285 feet msl; Olex, 1,000 feet msl; and Mikkalo, 1,460 feet msl.

Locally, the property is bounded on the south by the east-west trending Alkali Canyon and to the east by the Chemical Waste Management, Inc., facility. The Facility is located on an upland plateau at elevations ranging up to 980 feet msl, with relief of about 130 feet.

H.2.2 Geological Features

Gilliam County is located entirely within the Columbia Plateau physiographic province. The Columbia Plateau is predominantly a volcanic province covering approximately 63,000 square miles in Oregon, Washington, and Idaho (Orr and Orr, 1999). Volcanic rocks mapped as Columbia River Basalt Group (CRBG) underlie nearly the entire province. These rocks are middle Miocene in age (around 6 to 17 million years old) and principally consist of basalt that erupted from vents in central and northeast Oregon, southeast Washington, and Idaho, and flowed westward to the Pacific Ocean (Beeson et al., 1989).

The Columbia Plateau physiographic province is divided into three informal geographic subprovinces: the Yakima Fold Belt, Blue Mountain, and Palouse subprovinces (Meyer and Price, 1979). The Facility site is located in the Yakima Fold Belt subprovince, an area that is characterized by long, narrow anticlines (upward-arching folds in layered rocks) with intervening narrow to broad synclines (downward-arching folds) that extend in an easterly to southeasterly direction from the western margin of the plateau to its center. A regional Dalles-Umatilla syncline lies near the northern boundary of the site and has warped the Tertiary age sediments and basalts. More localized anticlinal ridges have been mapped through and adjacent to the site.

Regionally, most major faults in the subprovince are thrust or reverse faults that strike generally parallel to the anticlinal fold axis. These faults are probably contemporaneous with the folding northwest- to north-trending shear zones, and minor folds commonly transect the major folds (Bauer and Hanson, 2000). The Arlington-Shutler Butte fault passes across the eastern side of the Facility beneath turbines G-8 and H-6. This fault is a northwest-trending structure passing through the Miocene basalts and the Pliocene sedimentary rocks. No evidence of faults in Quaternary deposits has been documented. The Arlington-Shutler Butte is not believed to be active, and slip rate is unknown but is estimated to be less than 2 millimeters per year.

A review of geological maps of the Facility site and geological literature for the Facility area indicates that the site is underlain by Quaternary and Tertiary unconsolidated and semiconsolidated sediments and bedrock of the Columbia River Basalt Group. The Quaternary deposits consist of fluvial, colluvial, alluvial, eolian, and glacial sediments. Most of the Quaternary deposits were associated with catastrophic glacial flood deposits or Columbia River flood deposits. The Tertiary sediments are part of the Dalles Group. The Dalles Group is units of interbedded silt sand and gravel deposits that are moderately cemented with carbonate cement. Basalts underlying the Quaternary and Tertiary sediments within the Facility area are composed primarily of two formations—the Saddle Mountain Basalts and the Wanapum Basalts. Locally, these units have been folded to create the relief evident at the site.

H.2.3 Soils

Soils in the Facility area generally consist of silty and sandy loams that formed of loess, a late Pleistocene soil. The silt loess that covers much of the uplands of the study area is largely derived from wind erosion of the surrounding alluvial and lacustrine deposits.

These loess deposits consist of eolian silt and fine sand. The depth of loess soils can range from 0 to more than 40 feet thick. However, information provided by the Natural Resource Conservation Service (NRCS) Soil Survey for Gilliam County indicate that soils in the Facility area are typically less than 15 feet thick (Holser, 1984).

A review of aerial photography and field reconnaissance of the Facility site in August 2006 did not reveal evidence of slope instability, faulting, or ground rupture at the Facility site.

H.3 SITE-SPECIFIC GEOLOGICAL AND GEOTECHNICAL WORK

OAR 345-021-0010(1)(h)(B) *A description of site specific geological and geotechnical work performed or planned to be performed before construction. The application shall include:*

(i) *A proposed schedule for geotechnical work;*

Response: A detailed, site-specific geotechnical investigation of the Leaning Juniper II Facility will be conducted before construction activities begin. The investigation will be substantially similar to the site-specific geotechnical investigations conducted for other wind energy facilities permitted in the State of Oregon (for example, Stateline Wind Project, Klondike III Wind Project). The investigation will assess subsurface soil and geological conditions and provide information that will be used to identify geological or geotechnical hazards and facilitate design of turbine foundations and foundations of other significant Facility structures. The investigation will also provide data for the installation of underground collector cables and overhead lines.

H.3.1 Nature and Extent of Work

(ii) *A description of the nature and extent of the work with a discussion of the methods used to assess the expected ground response, including amplification, at the site;*

As noted above, work performed at the Leaning Juniper II Facility will be substantially similar to the work performed at other wind energy facilities permitted in the State of Oregon and will consist of geological and geotechnical exploration and engineering services to support the development of site-civil and foundation and design for the Facility. The geological and geotechnical exploration work conducted at the Facility could include the following services:

- Drilling to determine the subsurface profile at turbine locations and to collect soil and rock samples for classification and laboratory testing; the drilling could include in situ testing (such as standard penetration tests) to classify and estimate the engineering properties of the foundation material(s)
- Excavating 3- to 4-foot-deep test pits along each 34.5-kilovolt (kV) collection circuits (home runs) to collect samples for soil thermal resistivity testing
- Performing seismic refraction and/or downhole seismic geophysical techniques at turbine locations to estimate the subsurface profile and estimate the dynamic properties of the soil and rock

- Conducting in situ Wenner soil electrical resistivity testing at turbine locations and at the interconnection substation
- Coordinating and conducting laboratory testing of soil and rock samples (including, for example, strength testing, index testing, soil corrosion testing, and thermal resistivity testing)
- Reviewing laboratory test results, estimating engineering properties, and performing engineering evaluation
- Preparing a geotechnical data report to summarize the collected data and provide engineering recommendations for design

The geological and geotechnical exploration work will be conducted in advance of engineering design and site construction activities. The exploration and reporting will be under the direction of registered professional engineers and engineering geologists. Licensed surveyors will conduct a topographic survey of the site. Final design work for the turbine foundations will be completed by the Facility engineer and construction contractor.

Methods used to assess the site-specific seismicity, including expected ground response and site amplification, are presented in part (F) of this Exhibit (Section H.7, Seismic Hazard Assessment).

H.3.2 Professional Literature

(iii) *A list of professional literature relied on in characterizing the site[.]*

Response:

Bauer, H.H., and A.J. Hansen, Jr. 2000. *Hydrology of the Columbia Plateau Regional Aquifer System, Washington, Oregon, and Idaho*. U.S. Geological Survey Water Resources Investigations Report 96-4106. Tacoma, Washington.

Beeson, M.H., T.L. Tolan, and J.L. Anderson. 1989. *The Columbia River Basalt Group in western Oregon; geologic structures and other factors that controlled flow emplacement patterns*. In: Reidel, S.P., and P.R. Hooper, eds. *Volcanism and Tectonism in the Columbia River Flood-Basalt Province*. Geological Society of America Special Paper 239.

Bela, J.L. 1982. *Geologic and Neotectonic Evaluation of North-central Oregon: The Dalles 1° by 2° Quadrangle*. Oregon Department of Geology and Mineral Resources Geologic Map Series GMS-27, Portland, Oregon.

Building Seismic Safety Council. 2003. *2003 Edition NEHRP Recommended Provisions for Seismic Regulations for New Buildings and Other Structures, Part 1 – Provisions*. Federal Emergency Management Agency report FEMA 450. Washington, D.C.

Geomatrix Consultants. 1995. *Seismic Design Mapping, State of Oregon*. Prepared for Oregon Department of Transportation. Facility No. 2442.

Geomatrix Consultants. 1996. *Probabilistic Seismic Hazard Analysis, DOE Hanford Site, Washington*. Prepared for Westinghouse Hanford Company. Facility No. 2169. WHC-SD-W23A-TI-OO2, Rev. 1A. February.

Holser, Richard E. 1984, *Soil Survey of Gilliam County, Oregon*. Natural Resources Conservation Service, U.S. Department of Agriculture.

International Code Council. 2003. *International Building Code: Building Officials and Code Administrators International, Inc., International Conference of Building Officials, Southern Building Code Congress International*.

Kramer, Steven L. 1996. *Geotechnical Earthquake Engineering*. Upper Saddle River, New Jersey: Prentice-Hall, Inc.

Madin, Ian P. 1994. *Earthquake Database for Oregon 1833 – 10/25/93*. Open File Report 0-94-4, Oregon Department of Geology and Mineral Industries.

Meyer, C.W., and S.M. Price. 1979. *Geologic Studies of the Columbia Plateau, A Status Report*. Rockwell International, Rockwell Hanford Operations RHO-BWI-ST-4.

Orr, E.L. and Orr, W.N. 1999. *Geology of Oregon*. Kendal/Hunt Pub. Co., Dubuque, Iowa. 254 pp.

Uniform Building Code. 1997. *International Conference of Building Officials, Vol. 2*. Whittier, California.

U.S. Geological Survey (USGS). 2005a. Earthquake Hazards Program, National Seismic Hazard Mapping Project Web Page. URL: <http://eqhazmaps.usgs.gov>. Golden, Colorado. Accessed August 3, 2005.

U.S. Geological Survey (USGS). 2005b. Earthquake Hazards Program, Earthquake Search Web Page. URL: http://neic.usgs.gov/neis/epic/epic_circ.html. Golden, Colorado. Accessed August 3, 2005.

U.S. Geological Survey (USGS). 1989. *Volcanism and Tectonism in the Columbia River Flood-Basalt Province*, USGS Special Paper 239, ISBN 0-8137-2239-X.

Walker, G.W., and N.S. MacLeod. 1991. *Geologic Map of Oregon*: U. S. Geological Survey, scale 1:500,000, 2 sheets.

(iv) *The names of the personnel responsible for the work and a description of their relevant experience.*

H.3.3 Responsible Personnel

Response: The personnel responsible for the preparation of this Exhibit text are employed by CH2M HILL. A description of their relevant experience is presented below.

Nason McCullough, P.E., Ph.D. Nason McCullough is a geotechnical engineer with 8 years experience conducting field explorations, seismic hazard studies, and geotechnical engineering analysis and design of shallow and deep foundations, embankment dams, and slopes for both static and seismic design. Dr. McCullough worked on the Stateline Wind Power project. He has Ph.D., M.S., and B.S. degrees in civil engineering from Oregon State University, with emphasis in geotechnical engineering.

Mike Pappalardo, R.G. Mike Pappalardo is a geologist with more than 17 years of experience in environmental planning, permitting, geological investigations, and hydrogeology exploration. He has participated in several wind power projects in the northwest, including the Stateline Wind Power and Wild Horse Wind Power projects, and he managed the Site Certificate Application submittal for the Biglow Canyon Wind Farm Project. Mr. Pappalardo has a B.S. degree in geology from the University of Oregon and is a registered geologist in Oregon and Washington.

Vince Rybel, P.E. Vince Rybel is a geotechnical engineer with more than 33 years of geotechnical and general civil engineering experience, including project and construction management. He has extensive experience in the development of geotechnical site reports and foundation design and construction recommendations. Mr. Rybel worked extensively on the Stateline Wind Power project. He has M.S. (geotechnical) and B.S. degrees in civil engineering from the University of Illinois and is an active registered professional engineer in Oregon, Washington, Kentucky, and Ohio. He has inactive status in Indiana, Nevada, the territory of Guam, and Alaska.

H.4 TRANSMISSION LINES

OAR 345-021-0010(1)(h)(C) *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 geological reconnaissance and other site-specific studies provide evidence of existing landslides or marginally stable slopes that could be made unstable by the planned construction.*

Response: The Facility includes a 400-foot overhead transmission line between the BPA Jones Canyon station and the Leaning Juniper II collector substation (LJ II Substation). It is expected that one end of this overhead line will be supported by a structure attached to the LJ II Substation and the other end of the line will tie into an existing overhead structure at the BPA Jones Canyon Switching Station. The existing overhead structure will likely have the capacity to support the Leaning Juniper II transmission line. If it is determined that new overhead structures are needed, up to two geotechnical borings or test pits would be developed, either at the base of proposed structures or at sites selected by the project geotechnical engineer. As noted in Section H.3.1, work performed at the Facility will include geophysical analysis, laboratory testing of soil and rock samples, and preparation of a Geotechnical Data Report that will summarize data and provide engineering recommendations for design of the transmission line structures.

Geological and geotechnical exploration work will be conducted in advance of engineering design and site construction activities along collector lines (and other components) constructed for the Facility. Registered professional engineers and engineering geologists will conduct field reconnaissance to determine site-specific locations for further geological and geotechnical exploration activities. These locations will include major road crossings, river crossings, dead ends, corners, and portions of the proposed route where reconnaissance and other site-specific studies provide evidence of existing landslides or marginally stable slopes that could be made unstable by the planned construction. As noted in Section H.3.1, these activities could include drilling, test pit excavations, geophysical analysis, laboratory testing of soil and rock samples, and preparation of a Geotechnical Data Report that will summarize data and provide engineering recommendations for design along collector line routes.

H.5 PIPELINES

OAR 345-021-0010(1)(h)(D) *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[.]*

Response: There are no pipelines or related or supporting facilities that would carry explosive, flammable, or hazardous materials, as defined in ORS 469.300.

H.6 SOIL STABILITY MAP

OAR 345-021-0010(1)(h)(E) *A map showing the location of existing and significant potential geological and soil stability hazards and problems, if any, on the site and in its vicinity that could adversely affect, or be aggravated by, the construction and operation of the proposed facility[.]*

Response:

No significant potential geological or soil stability hazards were identified at the Facility site. Most of the slopes in this region consist of basalt with a thin veneer of loess, which is not generally susceptible to slope stability failures at the angles at which the Energy Facility would be constructed. In addition, Facility infrastructure will be set back from slopes (at a distance to be determined by the geotechnical engineer) to protect against instabilities.

H.7 SEISMIC HAZARD ASSESSMENT

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 percent 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 5000 year recurrence interval. In the assessment, the applicant shall include:*

- (i) *Identification of the Oregon Building Code Seismic Zone designation for the site;*

Response: With adoption of the 2003 International Building Code (IBC; International Code Council, 2003), Oregon no longer identifies a seismic zone designation. Previous to the adoption of the 2003 IBC, the area was designated as Oregon Building Code Seismic Zone 2B, a relatively low-hazard zone (particularly compared with Alaska and California). Zone 2B is associated with a seismic zone factor of 0.2 (UBC, 1997). The seismic design parameters for the 2003 IBC are an S_s factor of 0.46 and an S_1 factor of 0.16.

H.7.1 Earthquake Sources

- (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) and the MPE[.]*

Response: The seismic hazard in the Facility area results from three seismic sources: Cascadia Subduction Zone (CSZ) interplate events, CSZ intraslab events, and crustal events (Geomatrix, 1995, 1996).

Two of the potential seismic sources, interplate and intraslab events, are related to the subduction of the Juan de Fuca plate beneath the North American plate. Interplate events are caused by the frictional interface between these two tectonic plates. Intraslab events originate within the subducting Juan de Fuca plate, and are generally associated with normal faulting resulting from bending stresses built up within the plate as it is subducted beneath the North American plate. The combination of these factors is often referred to as the CSZ source mechanism. The CSZ is located beneath western Oregon, Washington, and British Columbia. The two source mechanisms associated with the CSZ are currently thought to be capable of producing maximum earthquakes with moment magnitudes of approximately 9.0 and 7.5 for the interplate and intraplate events, respectively (Geomatrix, 1995; USGS, 2005a,b).

Earthquakes caused by movements along crustal faults, generally in the upper 10 to 15 miles, result in the third source mechanism. In the vicinity of the Facility, earthquakes occur within the crust of the North America tectonic plate when built-up stresses near the surface are released through fault rupture.

There are several crustal faults in the area of the Facility, including the Arlington-Shutler Butte fault (Personius et al., 2003). The Arlington-Shutler Butte fault passes through the site (Figure H-1). The fault trends to the northwest and extends from Washington beneath the Columbia River and approximately 10 miles into Oregon. The fault has both right lateral slip and normal down to the northeast movement. Displacement along the fault is noted in the Miocene Columbia River Basalts and the Pliocene Sedimentary units. The fault also appears to be younger than the anticlinal ridges that are part of the Columbia Hill structures located to the north of the Columbia River, suggesting a post-Miocene date for the fault. Weldon and others (2002) have mapped the fault as active in the late and middle Quaternary. Currently, the fault is considered to be inactive or to

have a recurrence interval that is much greater than the maximum credible earthquake (MCE) (5,000 years).¹

The peak ground acceleration (PGA) at the site resulting from a seismic event on one of these source mechanisms was estimated using information developed by the USGS in its National Seismic Hazard Mapping Facility (USGS, 2005a,b). This information includes estimated PGA at a theoretical soft rock/stiff soil interface for different probabilities of exceedance. The USGS database also provides the seismic deaggregation information for the seismic hazard, including estimates of the mean earthquake moment magnitude and mean epicentral distance associated with given probability of exceedance at a given location.

The maximum probable earthquake (MPE) is considered to be an earthquake that has a probability of exceedance of approximately 10 percent in 50 years (a nominal 500-year recurrence interval). The MCE is considered to be an earthquake with a nominal 2,500-year recurrence interval (a probability of exceedance of approximately 2 percent in 50 years). To provide an estimate of magnitudes for seismic events over distances ranging from 0 to 60 miles and from 60 to 100 miles, both the PGA and a PGA with a Spectral Acceleration (SA) period of 2.0 seconds were input into the USGS seismic hazard database.

MPE Events The USGS deaggregation information indicates the MPE mean moment magnitude at PGA is magnitude 6.21 at a mean distance of 40 miles, with an associated PGA at the soft rock/stiff soil interface of 0.08g. For a PGA with a Spectral Acceleration (SA) period of 2.0 seconds, the MPE mean moment magnitude is magnitude 7.25 at a mean distance of 100 miles, with an associated PGA at the soft rock/stiff soil interface of 0.033g (USGS, 2005a,b).

MCE Events The USGS deaggregation information indicates the MCE mean moment magnitude at PGA is magnitude 6.03 at a mean distance of 15 miles, with a PGA at the soft rock/stiff soil interface of 0.2g. For a PGA with an SA period of 2.0 seconds, the mean MCE moment magnitude would be 7.23 at a distance of 85 miles with an associated PGA of 0.07g (USGS, 2005a,b).

Figures H-2 and H-3 show the deaggregation data for the MPE and MCE events using both the PGA and the PGA with an SA of 2.0 seconds.

H.7.2 Recorded Earthquakes

“(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

¹ No evidence of Quaternary displacement has been documented along the Arlington-Shutler Butte fault. The U.S. Army Corps of Engineers (1983) used regional structural relationships to suggest that youngest movement on the fault occurred more than 1 Ma, but air photo analysis by S.K. Pezzopane (1993) and pers. comm. (1993) in Geomatrix Consultants Inc. (1995), and Geomatrix Consultants, Inc. (1995) suggest that the Arlington-Shutler Butte fault has “good geomorphic expression” of faulting and may have been active in the middle or late Quaternary (<700-780 ka). The fault is also mapped as active in the middle or late Quaternary (<780 ka) by Weldon et al. (2002).

occurrence and a description of the earthquake that includes its magnitude and highest intensity and its epicenter location or region of highest intensity[.]”

Response: Table H-1 provides the date of occurrence, epicenter, depth, reported magnitude, intensity, and distance (unless otherwise noted) of earthquakes within 50 miles of the Facility site. Table H-2 lists recorded earthquakes greater than 50 miles from the site that caused ground shaking at the site more intense than Modified Mercalli (MM) III shaking intensity or greater at the Facility site. For reference, an intensity of MM III is associated with shaking that is “noticeable indoors, but may not be recognized as an earthquake.” An intensity of MM VII is “noticed by people driving cars, everyone runs outdoors, and slight to moderate damage is caused to well-built, ordinary buildings.”

The region has been shaken historically by crustal and intraplate earthquakes and prehistorically by subduction zone earthquakes centered outside the area (Table H-2). This part of (central) Oregon has experienced three historic earthquakes of significance that were centered in the region: the 1893 Umatilla (VI or VII MM Intensity), the 1936 Milton-Freewater (M5.8), 1951 Hermiston, and the 1976 Deschutes Valley (M4.8), all of which were shallow crustal earthquakes. There are also identified faults in the region that have been active in the last 20,000 years. Given this history, there is good reason to believe that the most devastating future earthquakes would originate along shallow crustal faults in the region.²

Other significant historical earthquakes could have resulted in ground shaking more intense than MM III in the Facility area. However, data on the actual intensity of these earthquakes were not recorded, are not readily available, or occurred prior to the historical record. *All the earthquakes within recorded history that have occurred within 50 miles of the project site have a magnitude less than 5.0 (Table H-1).*

Information in Table H-1 was developed by means of information screened from earthquake databases given by the Oregon Department of Geology and Mineral Industries (Madin, 1994; Niewendorp and Neuhaus, 2003) and the USGS Earthquake Hazards Program (USGS, 2005a, b).

Table H-1. Recorded Earthquakes within 50 Miles¹ of the Leaning Juniper II Facility²

Year	Month	Day	Approximate Geographic Location or		Magnitude ³	Depth (mi)	Intensity ⁴	Distance (mi)
			Latitude	Longitude				
1866	11	24	The Dalles		3.7	..	IV	46
1866	12	1	The Dalles		3.0	..	III	46
1892	2	29	The Dalles		3.7	..	IV	46
1893	3	7	46.90	118.34	5	..	VI	48
1920	11	28	45.70	121.50	3.7	..	IV	44
1951	1	7	45.92	-119.32	4	..	V	48

² http://www.oregonshowcase.org/SNHMP_WEB/SNHRA/snha_pdf/OR_SNHMP_Regional-Hazard-Assessments/R5_Mid-Columbia_HA_final.pdf.

Table H-1. Recorded Earthquakes within 50 Miles¹ of the Leaning Juniper II Facility²

Year	Month	Day	Approximate Geographic Location or		Magnitude ³	Depth (mi)	Intensity ⁴	Distance (mi)
			Latitude	Longitude				
1975	6	28	46.24	-119.71	4	..	..	48
1975	7	1	45.63	120	3.5	5	..	17
1976	4	8	44.97	120.8	NA	15	..	43
1976	4	13	45.22	120.77	4.8	15	VI	32
1976	4	17	45.08	120.8	4.2	15	.F	39
1981	6	14	45.95	120.49	3.1	14	..	42
1985	2	10	45.86	119.64	3.7	5	IVF	40
1987	9	8	45.18	120.08	3.1	1	..	14
1988	9	29	45.85	120.26	3.5	13	..	32
1989	3	27	45.82	120.26	3.1	12	..	30
1992	8	7	45.86	119.59	3.9	0	VF	34
1993	12	16	45.2	120.09	3	6	..	13
1993	12	18	45.25	120.11	3.1	0	..	9
1995	8	29	46.21	-119.91	3	..	..	41
1995	11	2	46.15	-119.56	3	..	..	47
1997	3	22	45.19	120.07	3.9	1	..	14
1997	3	23	45.2	120.07	3.4	1	..	13
1997	4	17	45.19	120.08	3.2	1	..	14
1997	10	13	46.1	120.36	3.3	17	..	50
1997	11	18	46.14	-120.47	4	..	.F	35
1997	11	18	46.14	-120.46	3	..	..	35
1998	2	3	45.81	120.2	3.1	16	..	29
1999	8	31	45.19	120.09	3.2	3	..	14
1999	9	4	45.18	120.08	2.9	1	..	15
2000	1	5	45.7	120.05	2.8	5	..	22
2000	1	30	45.2	120.12	4.1	0	.F	13
2000	2	1	45.19	120.11	3.6	0	..	14
2000	8	17	45.31	120.04	3.2	15	..	7
2002	6	29	45.33	121.69	4.5	..	IVF	41
2002	6	29	45.34	121.68	3.8	..	IIIF	47

¹ The approximate center of the Facility site is located at latitude 45° 39' 29" N, longitude 120° 14' 24" W.

² Source: Beaulieu, 1977; Madin, 1994; Niewendorp and Neuhaus, 2003; and USGS Earthquake Hazards Program, Earthquake Search (see http://neic.usgs.gov/neis/epic/epic_circ.html). Databases accessed for the Earthquake Search includes Significant U.S. Earthquakes 1568 to 1989 and USGS/NEIC (PDE) 1973 - Present.

Table H-1. Recorded Earthquakes within 50 Miles¹ of the Leaning Juniper II Facility²

Year	Month	Day	Approximate Geographic Location or		Magnitude ³	Depth (mi)	Intensity ⁴	Distance (mi)
			Latitude	Longitude				

³ Magnitude values are calculated by the USGS. Magnitude values are Local Magnitudes (ML) and Coda Duration Magnitude (MD). LM magnitude is generally referred to as the true "Richter magnitude". The values are computed for distances less than 600 km with depths less than 70 km. MD estimates are derived from the duration or coda length of earthquake vibrations. Duration or coda length magnitude scales are normally adjusted to agree with ML (see http://neic.usgs.gov/neis/epic/code_magnitude.html).

⁴ Modified Mercalli intensity scale. Dashed line equals no data for that event. F indicates that the event was felt in the area.

Table H-2. Significant Historical Earthquakes Greater than 50 Miles¹ from the Leaning Juniper II Facility²

Year	Month	Day	Approximate Geographic Location or		Magnitude ³	Intensity ⁴	Distance (mi)
			Latitude	Longitude			
1700	1	26	Offshore, Cascadia Subduction Zone		9.0	NA	NA
1872	12	15	47.90	120.30	7.0	IXF	155
1877	10	12	45.75	122.50	NA	VIIIF	109
1921	9	14	Walla Walla, WA		5.0	VI	96
1936	7	15	45.97	118.21	5.8	VII	100
1949	4	13	47.17	122.62	7.1	VIIIF	154
1959	8	18	44.50	111.01	6.3	VIII	460
1962	11	6	45.64	122.59	5.2	VIIIF	114
1965	4	29	47.40	122.30	6.7	VIIIF	155
1974	12	13	45.26	121.6	4.1	IVF	72
2001	2	28	47.15	122.73	6.8	VIII	123

¹ The approximate center of the Facility site is located at latitude 45° 39' 49" N, longitude 120° 35' 42" W.

² Source: Beaulieu, 1977; Madin, 1994; Niewendorp and Neuhaus, 2003; and USGS Earthquake Hazards Program, Earthquake Search (see http://neic.usgs.gov/neis/epic/epic_circ.html). Databases accessed for the Earthquake Search includes Significant U.S. Earthquakes 1568 to 1989 and USGS/NEIC (PDE) 1973 - Present.

³ Magnitude values are calculated by the USGS. Magnitude values are Local Magnitudes (ML) and Coda Duration Magnitude (MD). LM magnitude is generally referred to as the true "Richter magnitude". The values are computed for distances less than 600 km (373 miles) with depths less than 70 km (43 miles). MD estimates are derived from the duration or coda length of earthquake vibrations. Duration or coda length magnitude scales are normally adjusted to agree with ML (see http://neic.usgs.gov/neis/epic/code_magnitude.html).

⁴ Modified Mercalli intensity scale. Dashed line equals no data for that event. F indicates that the event was felt in the area.

H.7.3 Median Ground Response Spectrum

“(iv) Assessment of the median ground response spectrum from the MCE and the MPE and identification of the spectral accelerations greater than the design spectrum provided in the Oregon Building Code. The applicant shall include a description of the probable behavior of the subsurface materials and amplification by subsurface materials and any topographic or subsurface conditions that could result in expected ground motions greater than those characteristic of the Oregon Building Code Seismic Zone identified above[.]”

Response: As previously noted, Oregon has adopted the 2003 IBC. Therefore, the following analysis is based on IBC criteria. The 2003 IBC develops a design spectrum by using two-thirds of the MCE ground motion. The MCE earthquake combines probabilistic earthquakes with a 2 percent probability of exceedance in 50 years (recurrence interval of about 2,500 years), with modifications for deterministic ground motions, where necessary (Leyendecker et al., 2000).

The design response spectra for the site based on the USGS probabilistic seismic hazard study (USGS, 2005a, b) and the 2003 IBC are shown in Figure H-4. The estimated site amplification is based on the Building Seismic Safety Council (2003) provisions. The site class is estimated to range from S_C to S_B based on the estimated soil profile and shear wave velocities measured on the site and in similar materials. A site class S_B results in a site amplification of 1.0, for both S_S and S_1 . A site class S_C results in a site amplification of 1.2 and 1.6 for S_S and S_1 , respectively.

The response spectra indicate that a design according to the MPE event (500 year) is well within the IBC 2003 design code spectra.

H.7.4 Seismic Hazards Expected to Result from Seismic Events

“(v) An assessment of seismic hazards expected to result from reasonably probable seismic events. As used in this rule ‘seismic hazard’ includes ground shaking, landslide, lateral spreading, liquefaction, tsunami inundation, fault displacement, and subsidence[.]”

Response: A review of site geology and available literature suggests that the risk of ground rupture related to fault displacement in the Facility vicinity is low. The only mapped fault on the Facility is the Arlington-Shutler Butte Fault. The earliest movement along this fault is estimated to have occurred 700,000 to 1.6 million years ago (Personius et al., 2003). The topography of the Facility area is characterized by gently rolling hills, bedrock is believed to be generally shallow (less than 10 feet in most locations), and the groundwater table is deep. Therefore, the potential for ground rupture, earthquake-induced landslides and slope instability, lateral spreading, liquefaction, and settlement or subsidence at the site are low.

Tsunami inundation is also not a seismic hazard at this inland site. The Facility is not located near any large water bodies and the lowest point of the Facility site is approximately 600 feet above msl.

Because the potential for seismic-induced hazards are low at the Facility site, mitigation measures to address these hazards in the siting, design, and construction of the Facility are not necessary. The design of the turbine tower can readily accommodate the level of seismic energy described in part F.IV (subsection H.7.3, Median Ground Response Spectrum).

H.8 NONSEISMIC GEOLOGICAL HAZARDS

“(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[.]”

Response: The basalt rock present over most of the Facility area is generally competent rock, free of existing landslides. No active landslide activity was observed during the site reconnaissance. However, two locations were identified as potential sites of landslide activity. These areas are described in more detail in Section H.6.

The potential for erosion related to construction activities is moderate. Soil erosion potential within the Facility study area is typically moderate to high, with the presence of existing vegetation. Because of steady, high wind speed, areas of vegetation removal are likely to expose soils to accelerated water and wind erosion until they are stabilized. The action also will alter the landscape with minor cuts and fills for roadways and leveling for turbine foundations. These alterations will result in some minimal impact to existing topography and surface drainage that could potentially cause erosion of area soils. Best management practices will be implemented by the construction contractor through the Facility’s National Pollutant Discharge Elimination System (NPDES) 1200-C Stormwater Construction Permit to mitigate the potential for erosion.

The elevation of the Facility site in Oregon is well above the flood elevations for the area, resulting in no flood-related hazards to human safety or to the Facility operations in Oregon.

H.9 SEISMIC HAZARD MITIGATION

“(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[.]”

Response: The Oregon Building Code uses the IBC 2003 Edition, with current amendments by the State of Oregon and local agencies. Pertinent design codes as they relate to geology, seismicity, and near-surface soils are contained within IBC chapter 16, sections 1614 and 1615, Earthquake Loads and Site Ground Motion, respectively, with slight modifications by the current amendments of the State of Oregon and by local agencies. All components of the Facility must be designed to or exceed these minimum standards.

The building code will provide adequate protection to human safety for the Facility. The IBC design spectra exceed the USGS site-specific spectra from an event with a 500-year

return period. The Facility will comprise improved roadways, wind turbine towers, and underground collector cables. There will be no continually manned facilities other than the Facility office (Operations and Maintenance building[s]), and in general, the area is used for agriculture or cattle grazing and is sparsely populated. Therefore, because this is a wind power generation facility in a thinly populated area, and not a more critical structure, such as a petroleum pipeline or an earth dam, the risks to human safety related to seismic hazards (for example, a tower collapse or a landslide) are minimal.

Current engineering standards (i.e., IBC) will be used in the design of the Facility. These standards require that under the design earthquake, the factors of safety, or resistance factors used in design, exceed certain values. For example, in the case of slope design, a factor of safety of at least 1.1 is normally required during the evaluation of seismic stability. This factor of safety is introduced to account for uncertainties in the design process and to ensure that performance is acceptable. Similar conservatism is introduced during the design of structures and pipelines through the use of load and resistance factors. As in the case of slope stability, these factors are introduced to ensure acceptable performance during the design seismic event. By introducing these levels of conservatism into the design methods being applied, other requirements such as setback distances are also defined. In the event that factors of safety for slope stability are not met, common practice is to estimate amounts of soil displacement. If this displacement is predicted to cause permanent structural damage or risk to occupants, remedial measures are required to mitigate the risk. For slope stability the remedial measures could include use of ground improvement methods, such as retaining structures, to limit the movement to acceptable levels. These standards are appropriate protection measures for human safety, given the relatively low level of risk for the Facility.

H.10 NONSEISMIC HAZARD MITIGATION

“(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).”

Response: Because the construction of roads and turbine foundations will be engineered, and will be subject to an erosion control plan and an NPDES 1200-C construction permit, it is likely that the Facility will be constructed with more protections against erosion than existing farm roads and pastures in the Facility area. Work on the access roads will include grading and regrading of existing roads and construction of new roads. Surface water drainage provisions, including gravel-lined drainage ditches and culverts, also will be included for short- and long-term surface water control. Erosion control measures to be installed during work on the access roads could include:

- Maintenance of vegetative buffer strips between the areas impacted by construction activities and any receiving waters
- Installation of sediment fence or straw bale barriers at locations shown on the plans
- Straw mulching and disking at locations adjacent to the road that have suffered impacts

- Provision of temporary sediment traps downstream of intermittent stream crossings
- Provision of sediment type mats downstream of perennial stream crossings
- Planting of designated seed mixes at affected areas adjacent to the road

Some construction equipment staging areas will be created during the road work. A sediment fence will be installed along the downslope side of these staging areas, as appropriate.

All areas affected by the construction will be seeded when there is adequate soil moisture. They will be reseeded in the spring if a healthy cover crop does not grow. The sediment fence and check dams will remain in place until the affected areas are well vegetated and the risk of erosion has been eliminated. The Applicant will remove the sediment fence at that time.

Whenever feasible, roadways will be constructed such that surface drainage continues to natural drainage patterns, with minimal diversions through ditches and culverts. Surface water will be diverted from turbine facilities into natural drainage paths via drainage ditches. Regular maintenance of drainage facilities will ensure continued proper operation.

Facility components will be located to avoid potential landslide hazards, and new slopes will be designed with an adequate safety factor against sliding. Structures will be constructed with sufficient setback from slopes to mitigate against landslide induction related to their construction.

H.11 CONCLUSION

The risk of seismic hazards to human safety at the proposed site is small. The probability of a large-scale seismic event centered at or near the Facility is also small. Facility structures will be unoccupied (except for times of temporary maintenance) and will be located in sparsely populated areas. As a result, the probability of a large seismic event occurring while the Facility is occupied is much lower than that for a normal building or similar facility. This very low probability results in minimal risk to human safety.

The basalt rock in the area is not generally prone to large-scale landslides, as evidenced by the lack of these types of features in the area. However, two locations of potential instabilities were noted during geological and geotechnical field reconnaissance activities.

Small active faults could potentially occur in the general Facility area. The Arlington-Shutler Butte fault passes across the eastern end of the Facility site; however, the activity of the fault is considered to be generally very low (the earliest movement along the Arlington-Shutler Butte fault has been estimated to have occurred 700,000 to 1.6 million years ago).

The characteristics of the Facility will ensure that the risk to the structure associated with movement along faults is low. For structures located directly above or adjacent to the

Arlington-Shutler Butte fault (or an unknown fault), the risk to life and safety will be low because the structures will be unoccupied most of the time. Failure of one of the turbines from fault movement also would result in minimal environmental damage because these structures do not contain or transport major volumes of fluids or other materials that could contaminate an area. Because of the absence of groundwater in the surficial soil layers in most areas, liquefaction, and its associated effects, such as lateral spreading, is not considered seismic hazards for the site.

The risks posed by nonseismic geological hazards are small. The Facility area can be generally characterized as loess-covered, basalt uplands. Erosion hazard related to soil and wind action will probably be improved with the implementation of an engineered erosion control plan and will pose little or no threat to human safety.

The basalt rock underlying the Facility site is typically highly competent and not subject to landslides, resulting in little risk to human safety. Further geotechnical investigation will be conducted at the Facility site and additional drilling and testing could be required for those areas where geological and geotechnical field reconnaissance indicated potential geological instabilities. The results from the geotechnical investigation will provide the Facility's engineers with the information they need to develop appropriate mitigation to avoid potentially unstable slopes.

Given the relatively small risks these hazards pose to human safety, standard methods of practice, including use of the current IBC, will be adequate for the design and construction of the Facility.

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Figures

Insert

Figure H-1. Geology Map

Figure H-2. Probabilistic Seismic Hazard Deaggregation of the 500-Year Return Period Earthquake for the Leaning Juniper II Facility Site (USGS, 2005)

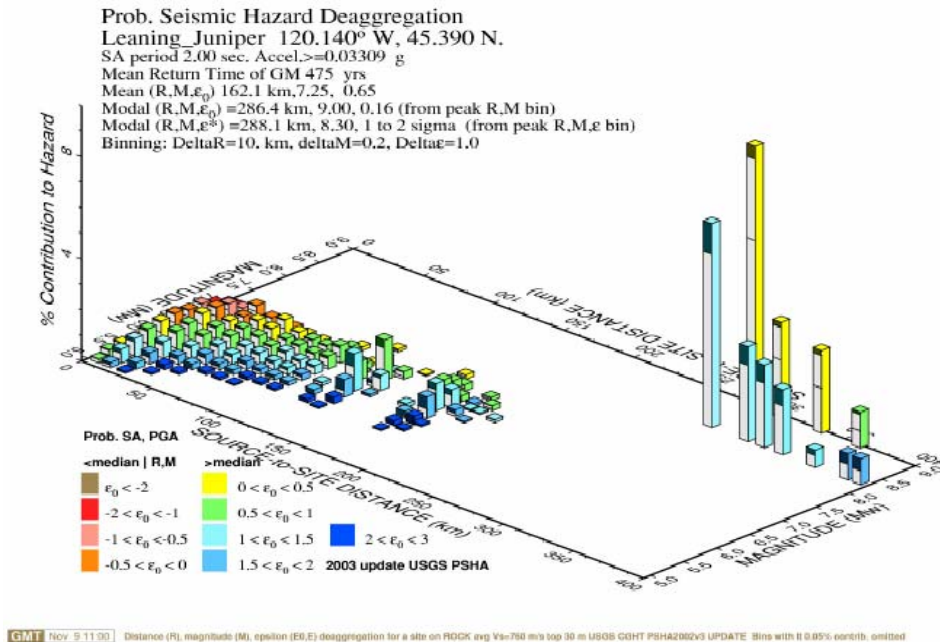
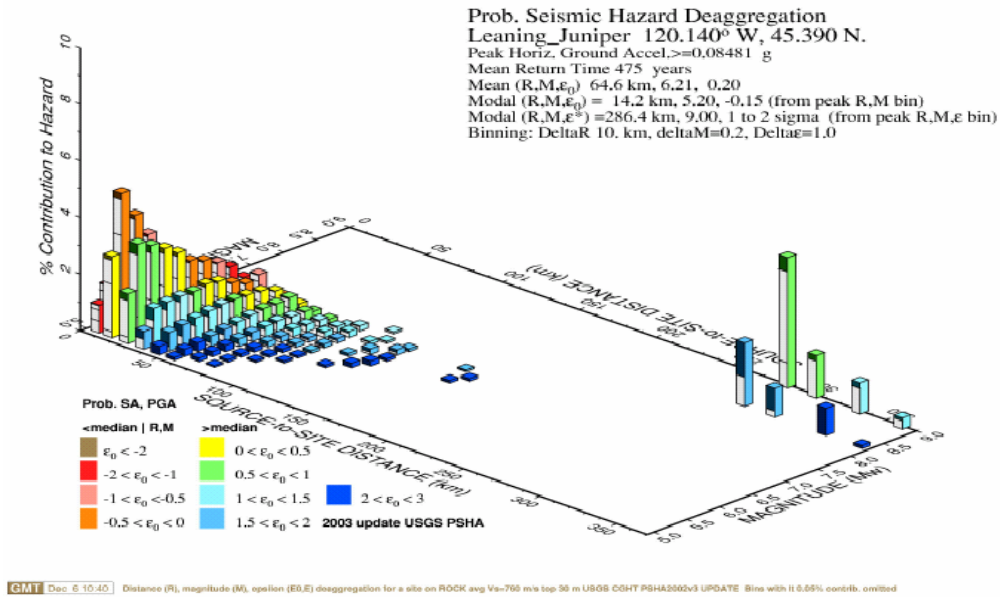
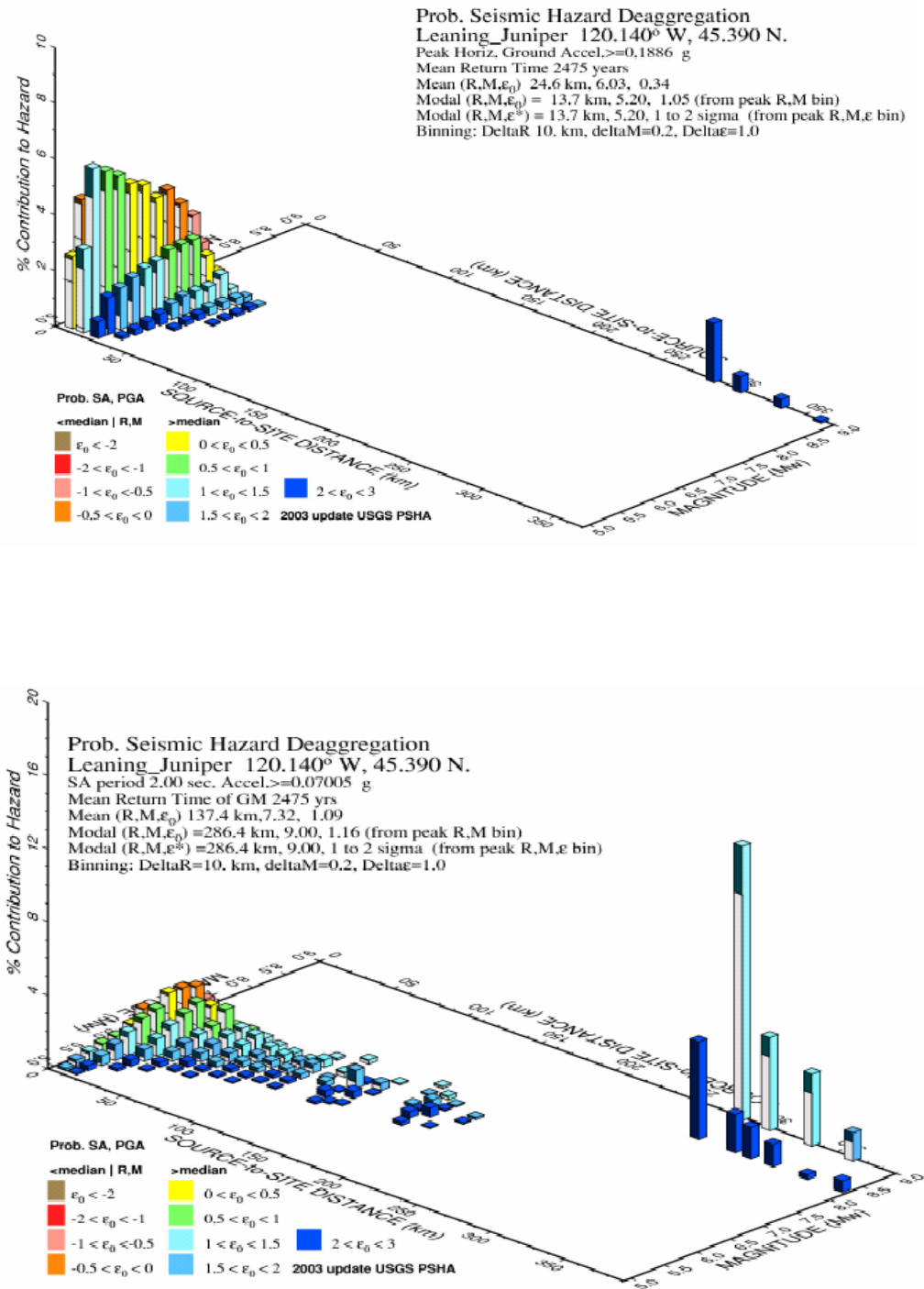
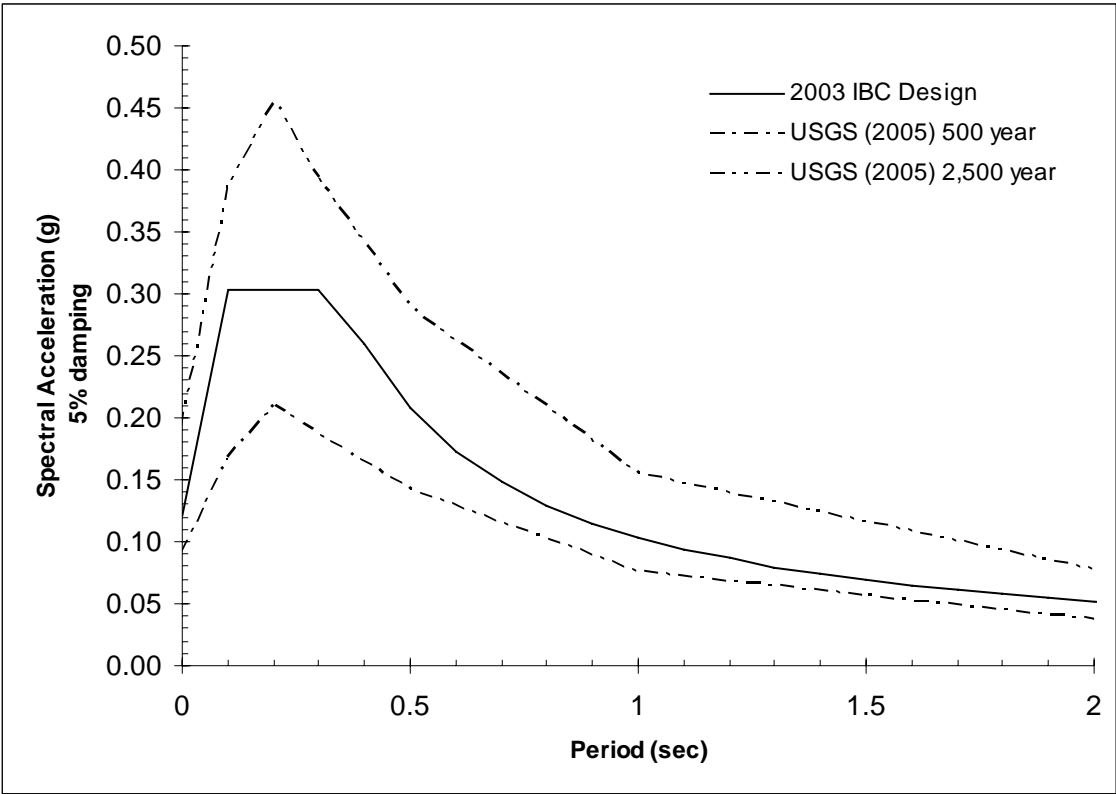


Figure H-3. Probabilistic Seismic Hazard Deaggregation of the 2500-Year Return Period Earthquake for the Leaning Juniper II Facility Site (USGS, 2005)







GMT Nov 9 10:41 Distance (R), magnitude (M), epsilon (E0,E) deaggregation for a site on ROCK avg Vs=760 m/s top 30 m USGS COHT PSHA2002v3 UPDATE Bins with 0.05% contrib. omitted

Figure H-4. Response Spectra for the Leaning Juniper II Facility Site



Geology Legend




















-  Faults
-  Saddle Mountain Basalt, Columbia River Basalt Group - Tcs
-  Tuffaceous sedimentary rocks and tuff - Ts
-  Wanapum Basalt, Columbia River Basalt Group - Tcw

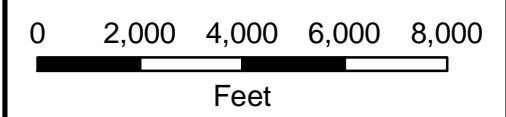
**Figure H-1
Geology Map**

Leaning Juniper II
Wind Power Facility



Legend

- Proposed Permanent Facilities**
 -  Proposed Turbines - Leaning Juniper II North
 -  Proposed Turbines - Leaning Juniper II South
 -  Proposed Permanent Met Tower
- Preferred Collector Routes**
 -  Underground 34.5-kV Line
 -  Overhead 34.5-kV Line
- Alternate Collector Routes**
 -  Underground 34.5-kV Line
 -  Overhead 34.5-kV Line
- Proposed Roads - Leaning Juniper II**
 -  New Road
 -  Existing Road - Improvements Needed
- Alternate Routes - Leaning Juniper II**
 -  Existing Road - Improvements Needed
 -  New Road
- Proposed Substation**
 -  Proposed Substation
 -  Proposed O&M Facility and Laydown Area
 -  Alternate O&M Facility and Laydown Area
 -  BPA Jones Canyon Switching Station
- Proposed Temporary Facilities**
 -  Proposed Crane Path
 -  Proposed 2-Acre Temporary Staging Area
 -  Proposed 5-Acre Temporary Staging Area
- Existing Facilities**
 -  Existing BPA Transmission Line
 -  Major Roads
 -  Existing LJ I Roads
 -  Railroads
 -  Streams
 -  Leaning Juniper II - North
 -  Leaning Juniper II - South



Source: Walker, G.W., and MacLeod, N.S., 1991, Geologic map of Oregon: U. S. Geological Survey

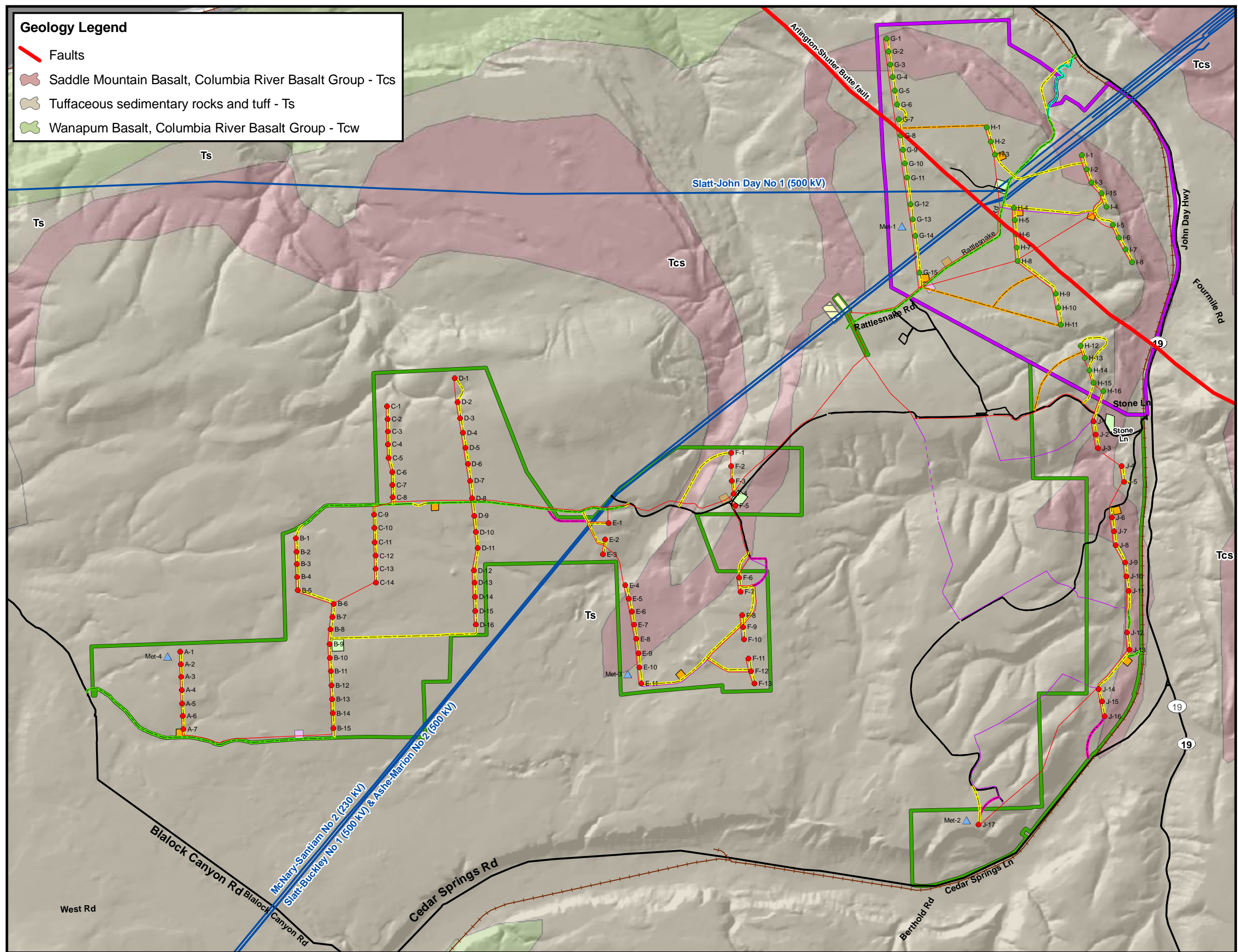


EXHIBIT I**SOILS**

OAR 345-021-0010(1)(i)

TABLE OF CONTENTS

	Page
I.1 INTRODUCTION	I-1
I.2 IDENTIFICATION AND DESCRIPTION OF SOIL TYPES.....	I-1
I.3 IDENTIFICATION AND DESCRIPTION OF LAND USES	I-3
I.4 IDENTIFICATION AND ASSESSMENT OF IMPACTS TO SOILS	I-4
I.5 DESCRIPTION OF PROPOSED MITIGATION MEASURES.....	I-5
I.6 MONITORING PROGRAM	I-6
I.7 REFERENCES.....	I-7

FIGURE

I-1 Soil Survey Map

I.1 INTRODUCTION

Leaning Juniper Wind Power II, LLC (the Applicant) proposes to construct a wind generation facility in Gilliam County, Oregon, with generating capacity of up to approximately 279 megawatts (MW). The proposed facility (the Facility) consists of two main components: (1) Leaning Juniper II North (the north portion of the Facility with up to 93 MW), and (2) Leaning Juniper II South (the south portion of the Facility with up to 186 MW).

Exhibit I provides evidence to support a finding by the Council as required by OAR 345-022-0022, which states:

"To issue a site certificate, the Council must find that the design, construction, operation and retirement 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[.]"

Response: The evidence provided below demonstrates that this standard is met because the Facility will not result in significant adverse impact to soils. The potential impacts from erosion will be minimal and are addressed through erosion control measures required by the National Pollution Discharge Elimination System (NPDES) 1200-C construction permit. The Applicant is in the process of preparing a 1200-C permit application for Leaning Juniper II and plans to submit this application to the Oregon Department of Environmental Quality (DEQ) in the fall of 2006. Finally, the Facility will not cause the deposition of salts or chemicals, land application of effluent, or chemical spills. The Exhibit is organized in accordance with the application requirements contained in OAR 345-021-0010(1)(i).

I.2 IDENTIFICATION AND DESCRIPTION OF SOIL TYPES

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, including:*

"(A) Identification and description of the major soil types at the site and its vicinity[.]"

Response: The near-surface soils at the Facility site and vicinity were identified using the Natural Resources Conservation Service (NRCS) Soil Survey of Gilliam County, Oregon. The Soil Survey includes both general and detailed maps and descriptions of the major soil types (general soil units) and specific soil series that make up the soils of Gilliam County and the Facility area.

A generalized soil series map showing the major soil units for the Facility area is provided in Figure I-1. Each general soil unit includes a number of specific soil series units. The soil series units are mapped and described in greater detail than the general

soil units, but share engineering properties with the general soil units and provide similar spatial coverage. Descriptions of the general soil units that underlie the Facility area are provided below.¹

Krebs—The Krebs series consists of deep, well-drained soils that formed in loess and old water lain sediments. The surface layer is grayish brown silty clay loam about 5 to 6 inches thick. Subsurface layers consist of grayish, dark and very dark grayish, brown, brown and pale brown and very pale brown silty clay loam terminating in a white or pale brown partially decomposed diatomite at 48 inches. Krebs soils are on uplands at elevations of 500 to 900 feet with slopes of 2 to 40 percent. They are well drained with medium to rapid runoff and slow permeability. The principle use is range. Native vegetation is needle-and-thread and bluebunch wheatgrass.

Olex—The Olex series consists of very deep, well-drained soils that formed in loess and very gravelly alluvial material. The surface layer is a brown to dark brown silt loam about 12 inches thick. Subsurface layers are brown and dark brown gravelly and extremely gravelly silt loam to 60 inches thick. The Olex soils are on uplands including terraces and terrace escarpments. Elevations are 300 to 1,100 feet. Slopes are 0 to 65 percent. They are well drained with slow runoff and moderate permeability. These soils are used primarily for livestock grazing. Other uses are wildlife and water supply purposes. Vegetation is mainly bunchgrass, forbs, and shrubs.

Ritzville—The Ritzville series consists of very deep and deep to duripan, well-drained soils formed in loess. They have a small amount, less than 20 percent, of volcanic ash in the surface layer. Ritzville soils are on uplands including plateaus, benches, and canyon side slopes. Elevations are 800 to 3,000 feet. Slopes range from 0 to 70 percent. Typically, the surface layer is brown silt loam and the subsoil is brown and pale brown silt loam. The substratum to a depth of 60 inches or more is pale brown silt loam. In some areas, depth to basalt ranges from 40 to 60 inches. Permeability of the Ritzville soil is moderate with medium runoff. Ritzville soils are used for dryland wheat production and some livestock grazing. Native vegetation is bluebunch wheatgrass, Sandberg bluegrass, Wyoming big sagebrush, and yarrow.

Sagehill—The Sagehill series consists of very deep and deep, well-drained soils formed in lacustrine deposits with a mantle of loess or eolian deposits. The surface layer is a brown to dark brown very fine sandy loam. Subsurface layers are brown, dark, pale and light brownish gray silt and very fine sandy loam to 60 inches thick. Sagehill soils are on terraces and terrace escarpments at elevations of 400 to 2,600 feet in Oregon. Slopes are 0 to 60 percent. These soils are well drained with very slow to medium runoff and moderate permeability. Sagehill soils are used for dryland wheat and rye production, livestock grazing, and irrigated crop production. Native vegetation is bluebunch wheatgrass, Sandberg bluegrass, Thurber needlegrass, needle-and-thread, Wyoming big sagebrush.

¹ To simplify the description of the various soil units underlying the Facility area (and the map shown in Figure I-1), soil series units that share relatively similar spatial coverage and engineering properties are combined. For example, Sagehill fine sandy loam, 2 to 5 percent slopes and Sagehill fine sandy loam, 20 to 40 percent slopes have been combined and are identified in this Exhibit as Sagehill fine sandy loam.

Warden—The Warden series consists of very deep and deep, well-drained soils formed in a thin mantle of loess over lacustrine sediments. Warden soils are on terraces and terrace escarpments at elevations of 500 to 1,300 feet. Slopes are 0 to 65 percent. The surface layer is light brownish gray, very fine sandy loam grading to light gray silt loam at a depth of 60 inches. Warden soils are well drained with very slow to rapid runoff and moderate permeability. Warden soils are used for irrigated cropland, livestock grazing, and some dryland cropland. Dryland crops are wheat and rye in a summer fallow system. Irrigated crops include wheat, grass legume hay, potatoes, dry beans, dry peas, tree fruit, hops, mint, and vegetables. Native vegetation is bluebunch wheatgrass, Sandberg bluegrass, needle-and-thread, and big sagebrush.

Willis—The Willis series consists of moderately deep to a duripan, well-drained soils formed in loess containing volcanic ash. The surface layer is a grayish brown to very dark grayish brown silt loam to 8 inches thick. Subsurface layers consist of brown, dark brown and dark yellowish brown silt loam to 29 inches thick terminating lime-silica indurated duripan. The Willis soils are on uplands, alluvial fan terraces, and terraces at elevations of 500 to 3,000 feet. Slopes are 0 to 65 percent. These soils are well drained with slow or medium runoff and moderate permeability above the lime-silica cemented layer. Willis soils are used for production of small grains in a dryland winter wheat-summer fallow rotation and for grazing. The native vegetation is mainly bluebunch wheatgrass, Sandberg bluegrass, arrowleaf, balsamroot, yarrow, and big sagebrush.

Other—Other soils identified in the Facility area include Xeric Torrifluvents (very deep, well-drained, and somewhat excessively drained fine sandy loams) and soils associated with Roloff-Rock outcrop complex and Wrentham-Rock outcrop complex.

I.3 IDENTIFICATION AND DESCRIPTION OF LAND USES

OAR-345-021-0010(1)(i)(B) *Identification and description of any land uses on the proposed site and its vicinity, such as growing crops, that require or depend on productive soils;*

Response: All Facility components will be located on private land on which the Applicant has negotiated long-term wind energy leases or easements with the landowners. The turbines for Leaning Juniper II North will be located on land owned by a private landowner, J.R. Krebs. This land currently is used for farming and cattle grazing. The turbines for Leaning Juniper II South will be located on land owned by Waste Management Disposal Services of Oregon, Inc., that surrounds the existing Arlington Landfill on three sides. This land functions as a buffer around the landfill and as a source of soils and rock for covering landfill cells as they are filled and closed. Portions of the land are used for cultivation of winter wheat. Other portions are used for cattle grazing. Easements have also been negotiated with Waste Management Disposal Services of Oregon, Inc., on nonleased land and with other adjacent landowners for road and collector cable access, as described in Exhibit C. These nonleased properties also are used for farming and cattle grazing.

I.4 IDENTIFICATION AND ASSESSMENT OF IMPACTS TO SOILS

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;*

Response: Facility construction will temporarily disturb 480 acres and permanently disturb 67 acres of soil. As discussed in the following paragraphs, other types of soil impacts, such as erosion, resulting from construction, operation, and retirement activities will be limited.

Soil erosion potential at the Facility site typically is moderate to high, with the presence of existing vegetation. As a result of steady, relatively high wind speeds, areas of vegetation removal could potentially expose soils to accelerated water and wind erosion until stabilized. Excavations for underground cables could temporarily expose the excavated spoils to wind and water erosion during construction. These conditions will prevail for a relatively limited time period until the cables are laid, trenches are backfilled with the spoil (within 2 weeks of trenching), and the area is revegetated. In addition, roadway widening and turbine pad construction will require removal of surface vegetation before construction, thus exposing the soil to potential for accelerated erosion. Permanent roads and turbine pads will be covered with gravel immediately following exposures, thereby limiting the time for wind or water erosion. Some cut-slope with exposed loess could occur after construction of the roads and turbine pads. Mitigation measures will be used in these areas to limit erosion from wind or water. These measures are discussed in section I.5.

Construction will require the use of heavy equipment and haul trucks to deliver aggregates, concrete, water, and similar construction supplies. See Exhibit U for a discussion of projected trips during construction. The repeated traffic of heavy machinery could cause localized soil compaction, resulting in temporary loss in agricultural productivity where the trucks are forced to leave existing access roads. Potential loss in agricultural productivity caused by compaction will only occur on a temporary basis and will be limited to the permanent Facility because the areas compacted by heavy equipment traffic will be scarified and revegetated as necessary after completion of construction activities. In addition, truck traffic will be limited to designated existing and improved road surfaces, whenever feasible, to limit the extent of the soil compaction.

Facility operations will have no impact on soil erosion. Operations will be confined to the gravel pad constructed at each turbine site. Each gravel pad will be large enough to permit parking and turning of maintenance or other similar vehicles. Therefore, no ground disturbance should occur during Facility operations.

Pervious soils and gravel surfaces will surround the turbine pads. Runoff from impervious surfaces (i.e., concrete turbine pads) will likely discharge as sheet flow to surrounding soils and gravel surfaces, where it will infiltrate directly into the ground. Therefore, it is likely that little to no runoff will occur in the area surrounding the

turbine pads. If the Facility engineer determines that a potential for channelized flow from the site of a turbine pad exists, a shallow drainage ditch will be excavated along the downslope side of the pad where it will capture runoff from the pad area. The runoff will either infiltrate into the ground at the site of the drainage ditch or be directed via gravity flow to an open field for infiltration. For areas where this is not possible, runoff will be directed to a roadside drainage ditch constructed with vegetative buffer strips, check dams, and other erosion control structures

In the event of decommissioning, potential erosion hazards would be similar to those occurring during its construction. Soil would be exposed to accelerated soil erosion because of lack of vegetation during the removal of turbine pads, underground cables, and roadways.

No significant impacts will result from chemical factors during construction, operation, or retirement of the Facility. There will be no cooling towers or other facilities that cause salt deposition. No liquid effluent will be produced. Only minimal amounts of chemicals such as lubricating oils and cleaners for the turbines and pesticides for weed control will be used at the Facility site. These materials are discussed further in Exhibit G. Chemicals will be stored according to applicable requirements and regulations to limit the risk of adverse effects from chemical factors. The risk of a chemical spill is negligible and the impacts of any such spill would be limited because of the small amounts of chemicals that will be transported to the Facility site. See Exhibit G for a discussion of precautions to be taken in handling hazardous materials such as lubricating oils and the equipment that will be onsite in the unlikely event of a chemical spill.

I.5 DESCRIPTION OF PROPOSED MITIGATION MEASURES

OAR 345-021-0010(1)(i)(D) *A description of any measures the applicant proposes to avoid or mitigate adverse impact to soils; and*

Response: Although impacts from turbine footprints are unavoidable, impacts from roads will be minimized by using existing roads in many cases. Rigorous reclamation measures will be implemented to restore the temporarily disturbed near-surface soils and soils disturbed by Facility operations. Construction of roads and turbine foundations will be regulated by an erosion control plan and NPDES 1200-C permit that will require best management practices to minimize possible impacts from erosion or other impacts to soils. The Applicant is in the process of preparing a 1200-C permit application for Leaning Juniper II and plans to submit this application to DEQ in the fall of 2006. Work on the access roads will include grading and regrading of existing roads and construction of new roads.

Erosion control measures to be installed during the work on the access roads include:

- Maintaining vegetative buffer strips between the areas impacted by construction activities and any receiving waters
- Installing sediment fence/straw bale barriers at locations shown on the plans

- Straw mulching and discing at locations adjacent to the road that have been impacted
- Planting designated seed mixes at impacted areas adjacent to the roads
- Creating construction equipment staging areas during the road work
- Installing a sediment fence along the downslope side of these staging areas to minimize erosion

Areas that are impacted by the construction will be seeded in the fall when there is adequate soil moisture. They also will be reseeded in the spring if a healthy cover crop does not grow. The sediment fence, check dams, and other erosion control measures will remain in place until the impacted areas are well vegetated and the risk of erosion has been eliminated.

To the extent possible, haul truck traffic will be limited to improved road surfaces, limiting soil compaction and disturbances. Mitigation efforts to reduce impacts from soil compaction will include scarifying and reseeding affected areas after construction is completed. Proper erosion control methods will be employed to limit soil loss resulting from water and wind action; disturbed areas will be reclaimed at the end of construction activities.

Quarry stone or other similar materials will be used in the drainage ditches to mitigate the potential for erosion of the soil. Repair of underground cables could also be required during operations. Soils exposed during these repairs would be localized and of short duration, and therefore the potential for erosion would be minimal. Sand bags, straw bales, and silt fences could also be used to restrict the erosion if periods of precipitation during repair are forecasted.

Should the Facility be retired, structures will be removed to 3 feet below the ground surface and soil surfaces will be reseeded, with the exception of the improved farm roads. The retirement plan is described in Exhibit W. The decision whether to reclaim new or expanded access roads will be left to the landowner.

Decommissioning requirements would include strict implementation of erosion control measures when soil is exposed to prevent erosion. In addition to revegetation requirements, these measures would include the use of silt fences, straw bales, mulching, check dams, and other similar erosion control methods.

I.6 MONITORING PROGRAM

OAR 345-021-0010(1)(i)(E) *The applicant's proposed monitoring program, if any, for impact to soils.*

Response: Impact to soils by Facility construction and operation will be limited as a result of the mitigation efforts required by an erosion control plan and NPDES 1200-C permit. The Applicant is in the process of preparing a 1200-C permit application for Leaning Juniper II and plans to submit this application to DEQ in the fall of 2006.

Accordingly, a formal monitoring program is not merited. Visual observation will be made during construction and operation of the Facility. If problem areas are observed, mitigation and reclamation measures will be implemented and a formal monitoring program will be established in the problem areas. However, a revegetation plan will be developed for Leaning Juniper II in consultation with the Oregon Department of Energy. The plan will specify multiple years of monitoring to determine the success of revegetation efforts, as described in Exhibit P.

I.7 REFERENCES

CH2M HILL. 2005. *Revegetation Plan, Leaning Juniper Wind Power Project*. Prepared for PPM Energy, Inc., Oregon Department of State Lands, and U.S. Army of Corps of Engineers. January 20, 2005.

Holser, Richard E. 1984. *Soil Survey of Gilliam County, Oregon*. Natural Resources Conservation Service, U.S. Department of Agriculture.

Figure

Soils Legend

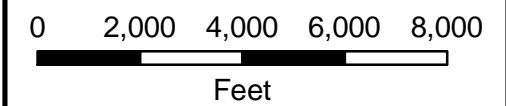
- | | |
|---------------------------------------------------------------------|------------------------------------------------------|
| ■ Krebs silt loam (14B, 14D, 14E) | ■ Sagehill fine sandy loam (40B, 40C, 40D, 40E, 41B) |
| ■ Nansene silt loam (22F) | ■ Blalock loam (4C) |
| ■ Olex silt loam (23B, 23C, 23D) | ■ Warden silt loam (55C, 55D) |
| ■ Olex gravelly silt loam (24D, 24E, 25D) | ■ Willis silt loam (56B, 56C, 56D) |
| ■ Ritzville loam (31B, 31C, 31D, 31E, 32A, 32B, 32C, 32D, 33E, 34E) | ■ Wrentham-Rock outcrop complex (57F) |
| ■ Roloff-Rock outcrop complex (39D) | ■ Xeric Torrifuvents, nearly level (58) |

**Figure I-1
Soil Survey Map**
Leaning Juniper II
Wind Power Facility



Legend

- Proposed Permanent Facilities**
- Proposed Turbines - Leaning Juniper II North
 - Proposed Turbines - Leaning Juniper II South
 - ▲ Proposed Permanent Met Tower
- Proposed Roads - Leaning Juniper II**
- New Road
 - Existing Road - Improvements Needed
- Alternate Routes - Leaning Juniper II**
- Existing Road - Improvements Needed
 - New Road
- Preferred Collector Routes**
- Underground 34.5-kV Line
 - Overhead 34.5-kV Line
- Alternate Collector Routes**
- Underground 34.5-kV Line
 - Overhead 34.5-kV Line
- Proposed Facilities**
- Proposed Substation
 - Proposed O&M Facility and Laydown Area
 - Alternate O&M Facility and Laydown Area
 - BPA Jones Canyon Switching Station
- Proposed Temporary Facilities**
- Proposed Crane Path
 - Proposed 2-Acre Temporary Staging Area
 - Proposed 5-Acre Temporary Staging Area
- Existing Facilities**
- Existing BPA Transmission Line
 - Major Roads
 - Existing LJ I Roads
 - Railroads
 - Streams
 - Leaning Juniper II - North
 - Leaning Juniper II - South



Source:
U.S. Department of Agriculture,
Natural Resources Conservation Service
Soil Survey Geographic (SSURGO) for
Gilliam County, Oregon (2004)

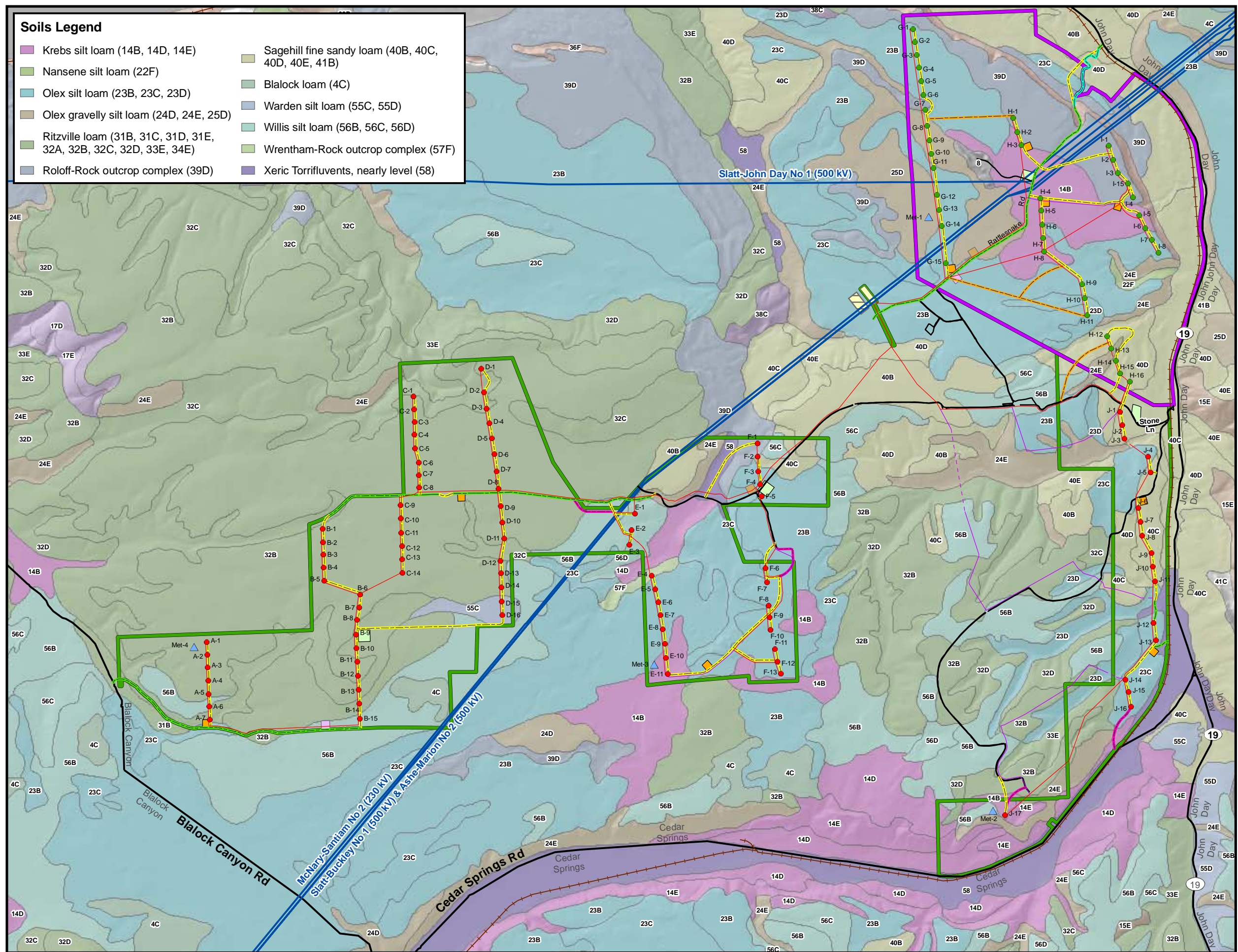


EXHIBIT J**WETLANDS**

OAR 345-021-0010(1)(j)

TABLE OF CONTENTS

	Page
J.1 INTRODUCTION	J-1
J.2 EFFECT ON WATERS OF THE STATE AND WETLANDS	J-1
J.2.1 Methods.....	J-1
J.2.2 Results.....	J-2
J.2.2.1 Potentially Jurisdictional Waters and Wetlands	J-2
J.2.2.2 Nonjurisdictional Areas.....	J-3
J.2.2.3 Impacts Assessment	J-3
J.3 MAP OF WETLANDS UNDER STATE JURISDICTION.....	J-4
J.4 DESCRIPTION OF EACH WETLAND IDENTIFIED	J-4
J.4.1 Wetlands.....	J-5
J.4.1.1 Wetlands W1 and W2.....	J-5
J.4.1.2 Wetlands W3 and W4.....	J-5
J.4.1.3 Wetland W5.....	J-6
J.4.1.4 Wetland W6.....	J-6
J.4.2 Other Jurisdictional Waters	J-7
J.4.2.1 Survey Location S5	J-7
J.4.2.2 Crossing S8B.....	J-7
J.4.2.3 Survey Location S14	J-7
J.5 SIGNIFICANT POTENTIAL IMPACTS TO WETLANDS.....	J-8
J.6 EVIDENCE THAT FILL AND REMOVAL PERMITS CAN BE ISSUED.....	J-9
J.6.1 Evaluation of Factors Listed in ORS 196.825 and OAR Chapter 141 Division 85	J-9
J.6.2 Mitigation Measures	J-9
J.7 MONITORING PROGRAM, IF ANY, FOR IMPACTS TO WETLANDS	J-10
J.8 REFERENCES.....	J-10

FIGURE

J-1 Wetlands and Jurisdictional Waters

ATTACHMENTS

J-1 Original Wetland Delineation Report; January 2006 Addendum; September 2006 Addendum

J.1 INTRODUCTION

Leaning Juniper Wind Power II, LLC (the Applicant) proposes to construct a wind generation facility in Gilliam County, Oregon, with generating capacity of up to approximately 279 megawatts (MW). The proposed facility (the Facility) consists of two main components: (1) Leaning Juniper II North (the north portion of the Facility with up to 93 MW), and (2) Leaning Juniper II South (the south portion of the Facility with up to 186 MW).

The field survey, literature review, and data analysis activities documented in this Exhibit focused on the overall geographical area.

OAR 345-021-0010(1)(j) *Information based on literature and field study, as appropriate, about significant potential impacts of the proposed facility on wetlands that are within state jurisdiction under ORS Chapter 196, including:*

Response: Temporary impacts may occur to the intermittent drainage channel, China Ditch (S27), as a result of replacement of an existing culvert. No impacts to other wetlands or waters of the State are anticipated from the proposed Facility.

J.2 EFFECT ON WATERS OF THE STATE AND WETLANDS

OAR-345-021-0010(1)(j)(A) *A determination, as defined in OAR 141-090-0020, of whether construction or operation of the proposed facility would affect any waters of the state, including wetlands, and, if so, a wetland delineation report, as defined in OAR 141-090-0020, describing how those waters would be affected;*

Response

J.2.1 Methods

Wetlands and waters were delineated in the field after an office review of site-specific literature. U.S. Geological Survey (USGS) 7.5-minute quadrangles (USGS, 1971a, 1971b), National Wetland Inventory (NWI) maps (USFWS 1983a, 1983b), and a list of hydric soil types for Gilliam County (NRCS, 1999) were reviewed to identify potential wetlands and waters within the proposed Facility area.

Field investigations were conducted on November 10 and 11, 2004, September 1, 2005, May 5 and 22, and September 12, 2006, as described in the Wetland Delineation Report included as Attachment J-1. For Leaning Juniper II North, the study areas were 500-foot-wide corridors centered on the preliminary alignments of the proposed wind turbine strings, underground feeder lines, and access roads. For Leaning Juniper II South, the study areas were 200-foot-wide corridors. The field survey focused on the USGS-mapped intermittent streams and the one NWI-mapped wetland adjacent to the study area identified as *palustrine emergent seasonally flooded* (PEM1C). None of the soil types in the analysis area are listed as hydric and none contain inclusions of hydric soils. All crossings were examined in the field for indications of potential jurisdictional status under state and federal guidelines for wetlands and waters of the State or United States.

Field methods followed the 1987 *US Army Corps of Engineers Wetland Delineation Manual* (USACE, 1987).

Channels were considered to be jurisdictional waters of the State or United States if they had physical characteristics such as a streambed, discernible banks, and some evidence of surface flow.¹ In addition, a change in plant species or species abundance was considered, along with other factors necessary to determine if the crossing constituted a “water of the State.” In keeping with Oregon Department of State Lands (DSL) regulations, intermittent drainages that did not meet wetland criteria were considered jurisdictional if they drained to a fish-bearing stream. The U.S. Army Corps of Engineers (USACE) regulates intermittent streams with connectivity to navigable waters.

Wetlands are a type of aquatic resource included within the definition of “waters of the State.” Wetlands are identified in ORS 196.800(16) to be “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.” Field work included determining the presence of wetlands and delineating any that were present.

J.2.2 Results

J.2.2.1 Potentially Jurisdictional Waters and Wetlands

As noted above, the waters that the state of Oregon considers “waters of the state” can be different from the waters that the U.S. Government considers under its jurisdiction. In the following discussion, unless otherwise stated, “jurisdictional” refers to the jurisdiction of the state of Oregon, rather than to the jurisdiction of the United States. The field survey specifically focused on 27 locations where mapped stream channels either crossed or were immediately adjacent to proposed Facility activities, including turbine strings, underground collector lines, and access roads. At three of these survey locations (S5, S14, and S25), an intermittent or ephemeral drainage channel is located adjacent to the proposed Facility area and within 100 feet. At one location, S27, an intermittent drainage, a proposed access road, and an underground collector line cross the drainage. At other locations, potentially jurisdictional drainages were located greater than 100 feet from proposed Facility impact areas. The jurisdictional area for these drainages is confined to the existing channel, with the boundary following the ordinary high water (OHW). Boundary determination was based on distinct evidence of hydrology, including scouring, sedimentation, and presence of water-borne debris. Ordinary high water for all stream channels within 100 feet of proposed Facility impact areas was recorded using a global positioning system (GPS).

The survey also focused on six areas identified in the course of wildlife surveys conducted by Northwest Wildlife Consultants (NWC) during the spring of 2006, as locations of seasonal pools. These areas were small, isolated depressions with distinct

¹ The term “waters of the State” is used in this Exhibit in accordance with the definition in Oregon Revised Statute (ORS) 196.800(14), which provides that “waters of this state” are “natural waterways, including all tidal and nontidal bays, intermittent streams, constantly flowing streams, lakes, wetlands, and other water bodies.”

evidence of hydrology and a predominance of hydrophytic plant species. The wetland boundaries generally followed a slight break in topography combined with a marked change in vegetation from surrounding areas. These areas were all determined to be jurisdictional wetlands. While no permanent impacts are anticipated to any of these wetlands, unavoidable temporary impacts may occur. If impacts occur, consultation with USACE and DSL personnel will be initiated and all appropriate permits secured.

Another potential NWI-mapped wetland area, identified as PEM1C, lies between S14 and S15 outside of the area of potential impacts. This wetland area would likely be jurisdictional under Oregon wetlands regulations. No evidence of wetland conditions was observed within 100 feet of the study corridor.

No other wetland areas were identified.

J.2.2.2 Nonjurisdictional Areas

At 23 of the 27 focused stream survey locations, mapped stream channels either did not meet criteria for regulation as jurisdictional waters or were beyond the study corridor and greater than 100 feet from proposed Facility impact areas. At some of these locations, active stream channels no longer exist as a result of alterations to the landscape from historical and current agricultural practices. No physical characteristics were present to indicate a currently active drainage. No discernible bed or banks, evidence of water flow over the surface, or changes in vegetation were observed. Many of these areas currently are cultivated.

At one location, Facility infrastructure will cross Jones Canyon, a shallow, intermittent channel that is considered nonjurisdictional by DSL (Hercamp, pers. comm.), but is considered potentially jurisdictional by USACE. At crossing S8B, underground collector cables will cross the shallow intermittent drainage channel. The existing gravel road in this location may also need improvements.

J.2.2.3 Impacts Assessment

Impacts will result from improvements to an existing ford crossing at one intermittent stream in the Facility area (S8B) and from construction of an underground collector cable trench in the same location. However, as noted above, the DSL has indicated that this water is not a water of the state of Oregon. Ford crossings are designed for minimal impacts to surface hydrology. A rock ford is proposed because it provides stability for construction traffic while keeping the same stream profile, and it will eliminate the need for additional fill required for a large-diameter culvert. The ford crossing will consist of $\frac{3}{4}$ " - minus crushed rock over 3" - minus pit-run rock, over drainage geotextile. Rock and gravel will allow seasonal flow through the clean rock material, separated from the road surface. The stream will maintain its existing alignment and will continue to flow unimpeded. Impacts associated with construction of the collector cable trench will be temporary in nature. The site will be restored to preconstruction contours on completion of construction. Total impact area will be 0.006 acre and 20 cubic yards of removal plus fill.

An existing road and culvert are also located across China Ditch (S27) near the proposed J turbine string. This drainage is potentially jurisdictional under both state and federal regulations. If feasible based on the final turbine layout, the Applicant will use a portion of the existing road and the existing culvert crossing, reducing impacts to native habitat and the drainage. Potential impacts include replacement of the existing, dilapidated culvert, improvements to the existing road, and construction of an underground collector cable trench at that location. The stream will maintain its existing alignment and continue to flow unimpeded. Impacts associated with construction of the collector cable trench will be temporary in nature. The area of trench impacts will be restored to preconstruction contours on completion of construction.

There may also be temporary impacts to isolated seasonal pools/wetlands W-1 and W-2 from collector cable trenches. No permanent impacts will occur. These wetlands are potentially jurisdictional under state regulations. Because these wetlands are isolated, they are not likely to be regulated by the USACE. Project facilities will be designed to avoid impacts to seasonal pools/wetlands W-3, W-4, W-5 and W-6 (as described in Exhibit Q).

Temporary or permanent impacts may also occur at streams S14 and S25. S14 is potentially jurisdictional under state regulations because of its connection with an upslope wetland. S25 is potentially jurisdictional under both state and federal regulations because it drains to China Creek, a presumed fish-bearing stream that drains to the Columbia River. If impacts do occur at these locations, all appropriate state and federal permits will be obtained.

No impacts are anticipated at the potentially jurisdictional drainage crossing S5. The drainage is potentially jurisdictional under state and federal regulations because it drains to China Creek. Anticipated Facility activities at this location include installation of overhead electrical lines. Impacts to the channel will be avoided by placing poles for the overhead lines outside of the jurisdictional area.

J.3 MAP OF WETLANDS UNDER STATE JURISDICTION

OAR-345-021-0010 (1)(j)(B) *A wetland map, as defined in OAR 141-090-0020, showing the location of any wetlands under state jurisdiction on or near the site and the source of the water for the wetlands, including any wetlands identified in the Statewide Wetland Inventory of the Division of State Lands;*

Response: A map of wetlands and other waters identified within the Facility analysis area is included as Figure J-1 in this Exhibit.

J.4 DESCRIPTION OF EACH WETLAND IDENTIFIED

OAR 345-021-0010(1)(j)(C) *A description of each wetland identified in (A);*

Response: Six wetland areas were identified within the analysis area. The field surveys identified five locations where components of the Facility cross or are immediately adjacent to potentially jurisdictional waters of the State within the analysis area. Other

potentially jurisdictional waters in the analysis area are identified on the USGS map as intermittent streams, but field study revealed them to be nonexistent or nonjurisdictional so they are not discussed in this section.

J.4.1 Wetlands

Six wetland areas were identified: five (W1, W2, W3, W4, and W5) in the northern portion of the Facility area and one (W6) in the southern portion.

J.4.1.1 Wetlands W1 and W2

W1 and W2 are two small, isolated vernal pool wetlands located west of Rattlesnake Road in shallow depressional areas in the landscape. No surface water or saturation in the upper 12 inches was present at the time of the field visit. However, distinct evidence of hydrology was observed, including areas bare of vegetation (bare soil areas = 80 percent), cracked and hummocky soils, and hydrophytic vegetation². Soils were a very dark brown clayey silt loam with a thin layer contain redoximorphic concentrations at approximately 7.5 to 8 inches. Vegetation consisted of approximately 20 percent cover of herbaceous vegetation with no trees or shrubs. Dominant plants included prostrate knotweed (*Polygonum aviculare*, FACW-), tiny mousetail (*Myosurus minimus*, OBL), bur buttercup (*Ranunculus testiculatus*, NOL), and scalepod (*Idahoa scapigera*, NOL). The wetland boundaries followed a slight break in topography combined with a marked change in vegetation from that described above to a grassland vegetation community dominated by bulbous bluegrass (*Poa bulbosa*, UPL) and cheatgrass (*Bromus tectorum*, UPL), with percent cover of vegetation nearly 100 percent.

J.4.1.2 Wetlands W3 and W4

W3 and W4 are two small, isolated vernal pool wetlands located east of Rattlesnake Road in the vicinity of the Bonneville Power Administration (BPA) powerlines. The wetlands occupy shallow depressional areas in an area of rolling topography.

W3 is a large, flat vernal pool area with approximately 80 percent cover of herbaceous vegetation. Dominant vegetation includes slender-branched popcorn-flower (*Plagiobothrys leptocladus*, FACW), tiny mousetail (*Myosurus minimus*, OBL), sessile mousetail (*Myosurus sessilis*, OBL), needleleaf navarretia (*navarretia intertexta*, FACW), and marsh cudweed (*Gnathaliium palustre*, FAC+). No surface water or saturation in the upper 12 inches was present at the time of the field visit. However, distinct evidence of hydrology was observed, including areas bare of vegetation (bare soil areas = 20 percent), cracked and hummocky soils, and hydrophytic vegetation. Soils were a very dark brown clayey silt loam with a thin layer contain redoximorphic concentrations at approximately 7.5 to 8 inches. The wetland boundary followed a slight break in topography combined with a marked change in vegetation from that described above to a grassland vegetation community dominated by bulbous bluegrass (*Poa bulbosa*, UPL)

² Hydrophytic definitions are as follows: FACW = facultative wetland; FACW- = facultative wetland, drier; OBL = obligate wetland; NOL = Not found on list; UPL = obligate upland; FAC = facultative; FAC+ = facultative, wetter.

and cheatgrass (*Bromus tectorum*, UPL), with percent cover of vegetation nearly 100 percent.

W4 is a smaller vernal pool east of W3 with a large proportion of bare ground and approximately 40 percent cover of herbaceous vegetation. Dominant vegetation includes slender-branched popcorn-flower (*Plagiobothrys leptocladus*, FACW), tiny mouse-tail (*Myosurus minimus*, OBL), sessile mouse-tail (*Myosurus sessilis*, OBL), and least navarretia (*navarretia minima*, FAC). No surface water or saturation in the upper 12 inches was present at the time of the field visit. However, distinct evidence of hydrology was observed, including areas bare of vegetation (bare soil areas = 60 percent), cracked and hummocky soils, and hydrophytic vegetation. Soils were a very dark brown clayey silt loam with a thin layer contain redoximorphic concentrations at 6.5 to 7 inches. The wetland boundary followed a slight break in topography combined with a marked change in vegetation from that described above to a grassland vegetation community dominated by bulbous bluegrass (*Poa bulbosa*, UPL) and cheatgrass (*Bromus tectorum*, UPL), with percent cover of vegetation nearly 100 percent.

J.4.1.3 Wetland W5

W5 is a very small, isolated vernal pool located in a low area along a farm access road. No surface water or saturation in the upper 12 inches was present at the time of the field visit. However, distinct evidence of hydrology was observed, including areas bare of vegetation (bare soil areas = 90 percent), cracked and hummocky soils, and hydrophytic vegetation. Soils were a very dark brown clayey silt loam with a thin layer contain redoximorphic concentrations at approximately 7.5 to 8 inches. Vegetation consisted of approximately 10 percent cover of herbaceous vegetation with no trees or shrubs. Dominant plants included slender-branched popcorn-flower (*Plagiobothrys leptocladus*, FACW), tiny mouse-tail (*Myosurus minimus*, OBL), sessile mouse-tail (*Myosurus sessilis*, OBL), bur buttercup (*Ranunculus testiculatus*, NOL), and Watson's willowherb (*Epilobium watsonii*, FACW-). The wetland boundaries followed a slight break in topography combined with a marked change in vegetation from that described above to a grassland vegetation community dominated by bulbous bluegrass (*Poa bulbosa*, UPL), cheatgrass (*Bromus tectorum*, UPL), and green rabbitbrush (*Chrysothamnus viscidiflorus*, NOL), with percent cover of vegetation nearly 100 percent.

J.4.1.4 Wetland W6

W6 is a large, flat vernal pool area in the southern portion of the Facility area, west of Jones Canyon in the southwest quarter of Section 19. Dominant vegetation includes slender-branched popcorn-flower (*Plagiobothrys leptocladus*, FACW), tiny mouse-tail (*Myosurus minimus*, OBL), sessile mouse-tail (*Myosurus sessilis*, OBL), needleleaf navarretia (*navarretia intertexta*, FACW), and marsh cudweed (*Gnathaliium palustre*, FAC+). Total percent cover of vegetation is approximately 80 percent. No surface water or saturation in the upper 12 inches was present at the time of the field visit. However, distinct evidence of hydrology was observed, including areas bare of vegetation (bare soil areas = 20 percent), cracked and hummocky soils, and hydrophytic vegetation. Soils were a very dark brown clayey silt loam with a thin layer contain redoximorphic concentrations at approximately 7.5 to 8 inches. The wetland boundary followed a slight

break in topography combined with a marked change in vegetation from that described above to a grassland vegetation community dominated by bulbous bluegrass (*Poa bulbosa*, UPL), cheatgrass (*Bromus tectorum*, UPL), and green rabbitbrush (*Chrysothamnus viscidiflorus*, NOL), with percent cover of vegetation nearly 100 percent.

J.4.2 Other Jurisdictional Waters

J.4.2.1 Survey Location S5

A well-defined intermittent or ephemeral stream channel parallels the roadway on the north near a Facility overhead collector cable. At this location, the channel meanders to within 35 to 40 feet of the road. The channel flows at the bottom of steep slope. It has a distinct rocky bed and banks, and exhibits clear evidence of flow, including scouring, sedimentation, and water-borne debris. No flow was present at the time of the field visit. This stream channel is one order above China Creek, a presumed fish-bearing stream.

J.4.2.2 Crossing S8B

This drainage was determined to be not jurisdictional under state of Oregon wetland regulations (Hercamp, pers. comm.), but is potentially jurisdictional under federal regulations. An existing gravel road crosses Jones Canyon at this location. Jones Canyon is a deep, flat-bottomed canyon, 500 to 700 feet across. USGS and NWI maps indicate an intermittent stream channel meandering across the broad, flat canyon floor in this portion of the Facility area. This channel drains directly to the Columbia River approximately 3.5 miles north of the Facility site. No flow was present at the time of the field investigation. A defined shallow channel extends upstream and downstream of the crossing. The channel did not have any evidence of recent flows or indicators of an OHW mark. In the absence of an OHW mark, the top of the channel banks was determined to be the jurisdictional boundary. Scattered upland vegetation is present in the channel, but is less dense than in the surrounding area. Typical vegetation in and adjacent to the channel includes rigid sagebrush (*Artemisia rigida*, NOL), gray rabbitbrush (*Chrysothamnus nauseosus*, NOL), Russian thistle (*Salsola kali*, UPL), and cheatgrass (*Bromus tectorum*, UPL). As noted above, DSL has stated that this feature is not a water of the State as defined in OAR 141-085-0010 (111) and (84).

J.4.2.3 Survey Location S14

The USGS map indicates an intermittent stream that is a headwater tributary to the stream in Blalock Canyon. The mapped drainage flows from the northeast and appears to continue in the same location as an existing gravel road for approximately 1 mile before joining the main channel of Blalock Canyon. Field observations verified a potential drainage channel north of the road. However, the drainage ends at the roadway and there appears to be no current surface connection between this drainage and the channel of Blalock Canyon. The drainage is a narrow, shallow channel that is poorly defined in places. Defined bed and banks and presence of an apparent OHW mark are present sporadically. No flow was present at the time of the field visit. It is likely that this is an ephemeral drainage. The NWI map indicates a palustrine emergent wetland upslope of this drainage; however, no evidence of wetland conditions was

observed within 150 feet of the roadway. Potential wetland conditions were observed upslope of this point. The wetland was not delineated. Vegetation throughout the drainage channel is dominated by upland shrubs and forbs including sagebrush, rabbitbrush, Russian thistle, and cheatgrass. Soils are dark brown (10YR 3/3) with no hydric features.

J.4.2.4 Survey Location S25

The USGS map indicates an unnamed intermittent stream adjacent to Rattlesnake Road in the northern portion of the Facility area. The channel flows in a narrow canyon from the southwest, parallel to Rattlesnake Road, draining to China Creek. No flow was present at the time of the field visit. Ordinary high water of the drainage was delineated within the Facility area. Vegetation throughout the drainage channel is dominated by upland shrubs and forbs, including rabbitbrush, Russian thistle, and cheatgrass. Soils are dark brown (10YR 3/3) with no hydric features.

J.4.2.5 Survey Location S27

The USGS map indicates an intermittent stream channel, China Ditch, flowing from southwest to northeast in the southeastern portion of the Facility area. An existing gravel road crosses this drainage with a 12-inch culvert crossing. The culvert is collapsed on the upstream side of the road. The channel flows in a narrow canyon from the southwest, draining to China Creek. No flow was present at the time of the field visit. Ordinary high water of the drainage was delineated within the Facility area. Vegetation throughout the drainage channel is dominated by upland shrubs and forbs with occasional juniper. Dominant shrubs and forbs include rabbitbrush, Russian thistle, bulbous bluegrass, and cheatgrass. Soils are dark brown (10YR 3/3) with no hydric features.

J.5 SIGNIFICANT POTENTIAL IMPACTS TO WETLANDS

OAR 345-021-0010(1)(j)(D) *A description of significant potential impact to each wetland, if any, including the nature and amount of material the applicant would remove from or place in each wetland and the specific locations where the applicant would remove or fill that material;*

Response: Temporary impacts to waters of the State are anticipated at the crossing of the intermittent drainage, China Ditch (S27). Impacts may include replacement of an existing culvert, improvements to the existing road, and construction of an underground collector cable trench. Culvert replacement would be conducted entirely within the existing road prism. Temporary impacts to isolated vernal pool wetlands (W-1 and W-2) may also occur. There will be no permanent impacts to wetlands.

At S8B, the Facility will cross an intermittent drainage with underground collector cables. Improvements to the existing gravel road and ford crossing may also be required. DSL does not consider the drainage at S8 to be a water of the State (Hercamp, pers. comm.). Because S8B is located only 1,000 feet downstream of S8 and conditions are essentially similar, it is assumed that DSL also will not take jurisdiction of work

activities at S8B.³ Based on the field survey and characterization of this drainage, the roads, culverts, and underground collector cables can be installed without causing any significant impact.

J.6 EVIDENCE THAT FILL AND REMOVAL PERMITS CAN BE ISSUED

OAR 345-021-0010(1)(j)(E) *Evidence that all required fill and removal permits of the Oregon Division of State Lands can be issued to the proposed facility in compliance with ORS 196.800 et seq., including:*

J.6.1 Evaluation of Factors Listed in ORS 196.825 and OAR Chapter 141 Division 85

- (i) *A discussion and evaluation of the factors listed in ORS 196.825 and OAR chapter 141 division 85; and*

Response: ORS 196.800(5) and (12) define “fill” as “the total of deposits by artificial means equal to or exceeding 50 cubic yards or more of material at one location in any waters of this state,” and it defines “removal” as “the taking of more than 50 cubic yards or the equivalent weight in tons of material in any waters of this state in any calendar year, or the movement by artificial means of an equivalent amount of material on or within the bed of such waters, including channel relocation.”

Because replacement of the culvert at S27 will occur entirely within the existing road prism and temporary impacts are anticipated to be less than 50 cubic yards of removal plus fill, no state Removal/Fill Permit is required per ORS 196.800 and OAR chapter 141 division. If temporary impacts at this location exceed 50 cubic yards, a state Removal/Fill Permit will be required. The Applicant will obtain the necessary permits from USACE to install a culvert. If there are temporary impacts to isolated vernal pool wetlands W-1 and W-2, the areas will be restored to preconstruction conditions. No permanent impacts to wetlands will occur.

J.6.2 Mitigation Measures

- (ii) *A description of the steps the applicant proposes to mitigate impacts to wetlands;*

Response: The Facility will involve minor impacts to two federally jurisdictional drainages at two locations (S8B and S27). One of these drainages is also state jurisdictional (S27). The Facility will avoid all permanent impacts to wetlands and to other waters of the state of Oregon. Because no permanent impacts to wetlands will occur, proposals to mitigate impacts to wetlands are not included in the removal/fill application or this site certificate application. Areas that are temporarily impacted will be restored to preconstruction conditions.

³ Both crossings are potentially jurisdictional under federal regulations because the channel drains to a navigable water (Columbia River). Accordingly, the existing Nationwide Permit #14 may be modified outside of the Council's siting process.

J.7 MONITORING PROGRAM, IF ANY, FOR IMPACTS TO WETLANDS

OAR 345-021-0010(1)(j)(F) *The applicant's proposed monitoring program, if any, for impacts to wetlands.*

Response: There will be no wetland mitigation because no permanent impacts to wetlands will occur. Therefore, no monitoring program is proposed.

J.8 REFERENCES

Brinson, Mark. 1993. *A Hydrogeomorphic Classification for Wetlands*. Wetlands Research Program Technical Report WRP-DE-4. Prepared for U.S. Army Corp of Engineers Waterways Experiment Station. Greenville, North Carolina.

Hercamp, Kevin, Oregon Department of State Lands. Personal communication with Peggy O'Neill, CH2M HILL. February 2, 2005.

National Resources Conservation Service (NRCS). 1999. *Hydric Soils List: Gilliam County, Oregon*. ftp://ftp.-fc.sc.egov.usda.gov/MO1/hydric_pdf/oregon/or055hy.pdf. Accessed November 2004.

U.S. Army Corps of Engineers (USACE). 1987. *Corps of Engineers Wetland Delineation Manual*. Technical Report Y-87-1. Waterways Experiment Station, Vicksburg, Mississippi.

U.S. Fish and Wildlife Service (USFWS). 1983a. *National Wetlands Inventory Map: Arlington, Oregon-Washington*.

U.S. Fish and Wildlife Service (USFWS). 1983b. *National Wetlands Inventory Map: Sundale, Oregon-Washington*.

U.S. Geological Survey (USGS). 1971a. *7.5-minute Topographic Quadrangle Map: Arlington, Oregon-Washington*.

U.S. Geological Survey (USGS). 1971b. *7.5-minute Topographic Quadrangle Map: Sundale, Oregon-Washington*.

Figure

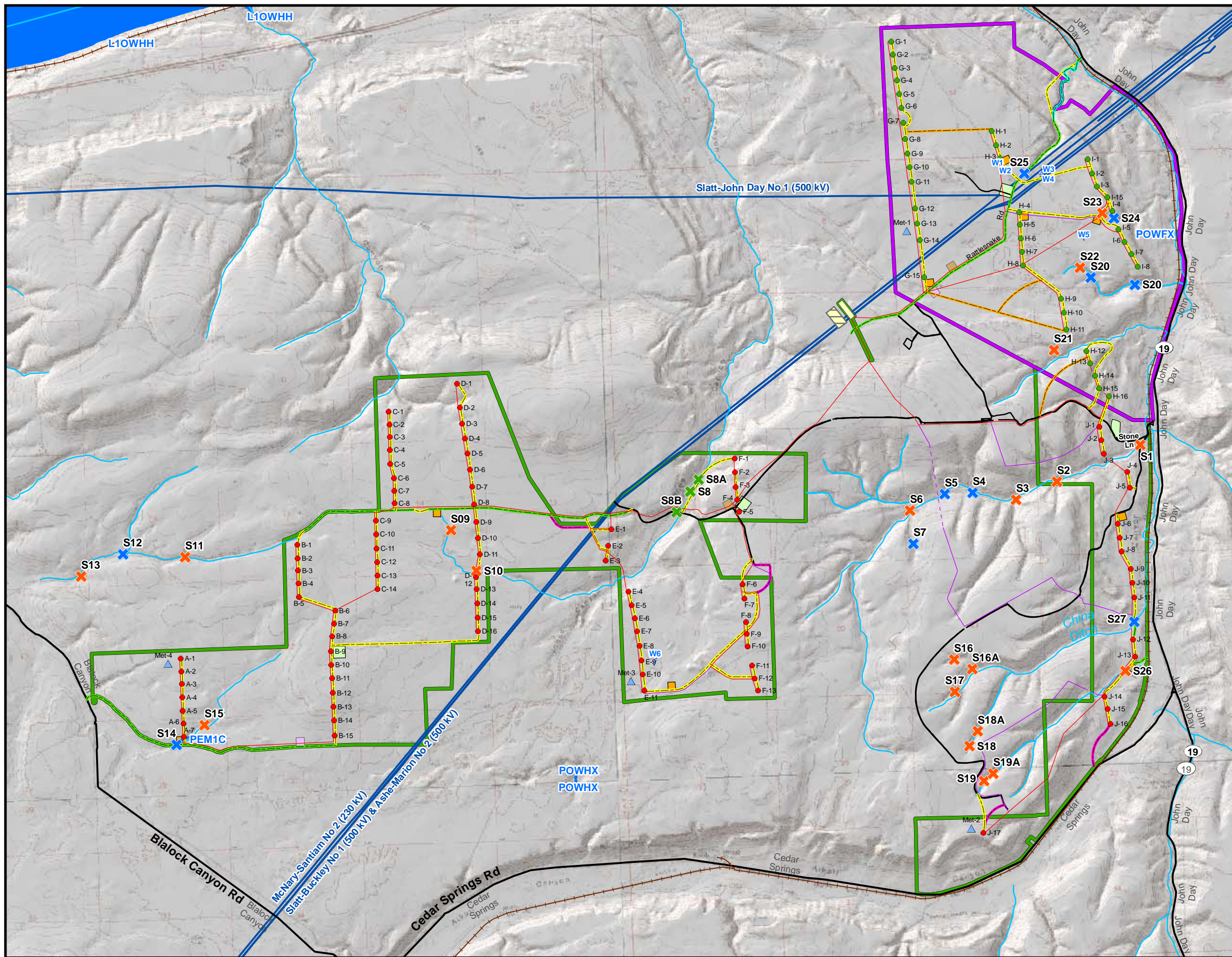
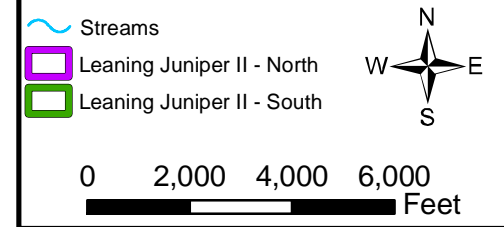
Figure J-1 Wetlands and Jurisdictional Waters

Leaning Juniper II Wind Power Facility



Legend

- Focused Study Locations**
- ✕ Jurisdictional Waters (Corps/DSL)
 - ✕ Corps Only Jurisdictional
 - ✕ Nonjurisdictional Waters
 - ⬮ CH2M HILL-Mapped Wetlands (W)
 - ⬮ NWI Wetlands (POWFX)
- Proposed Permanent Facilities**
- Proposed Turbines - Leaning Juniper II North
 - Proposed Turbines - Leaning Juniper II South
 - ▲ Proposed Permanent Met Tower
- Proposed Roads - Leaning Juniper II**
- New Road
 - Existing Road - Improvements Needed
- Alternate Routes - Leaning Juniper II**
- Existing Road - Improvements Needed
 - New Road
- Preferred Collector Routes**
- Underground 34.5-kV Line
 - - - Overhead 34.5-kV Line
- Alternate Collector Routes**
- Underground 34.5-kV Line
 - - - Overhead 34.5-kV Line
- Proposed Substation**
- Proposed Substation
 - Proposed O&M Facility and Laydown Area
 - Alternate O&M Facility and Laydown Area
 - BPA Jones Canyon Switching Station
- Proposed Temporary Facilities**
- Proposed Crane Path
 - Proposed 2-Acre Temporary Staging Area
 - Proposed 5-Acre Temporary Staging Area
- Existing Facilities**
- Existing BPA Transmission Line
 - Major Roads
 - Existing LJ I Roads
 - Railroads
 - ~ Streams
 - Leaning Juniper II - North
 - Leaning Juniper II - South



ATTACHMENT J-1
Original Wetland Delineation Report
January 2006 Addendum
September 2006 Addendum

Original Wetland Delineation Report

WETLAND DELINEATION / DETERMINATION REPORT COVER FORM

This form constitutes a request for a jurisdictional determination by the Department of State Lands. It must be fully completed and signed, and attached to the front of reports submitted to the Department for review and approval.


**Wetlands Program Manager/Oregon Department of State Lands
775 Summer Street NE, Suite 100
Salem, OR 97301-1279**

<input type="checkbox"/> Applicant <input type="checkbox"/> Owner Name, Firm and Address: Ty Daul/PPM Energy 1125 NW Couch St. Portland, Oregon 97209	Business phone # 503.796.7117 Home phone # (optional) FAX # 503.796.6901 E-mail: Ty.Daul@PPMEnergy.com
<input type="checkbox"/> Authorized Legal Agent, Name and Address: Erin Toelke/CH2M HILL 825 NE Multnomah Suite 1300 Portland, OR 97232	Business phone # 503.872.4442 FAX # 503.736.2000 E-mail: Erin.Toelke@ch2m.com
I either own the property described below or I have legal authority to allow access to the property. I authorize the Department to access the property for the purpose of confirming the information in the report, after prior notification to the primary contact. Typed/Printed Name: <u>Erin Toelke</u> Signature: _____ Date: 1/17/05 Special instructions regarding site access: _____	

Project and Site Information (for latitude & longitude, use centroid of site or start & end points of linear project)

Project Name: Leaning Juniper Wind Energy Project		Latitude: 45°39'20.26" N	Longitude: 120°14'19.58" W
Proposed Use: Wind power generation project		Tax Map # See attached Tax Lot Map	
Project Street Address (or other descriptive location): 3 miles southwest of Arlington, OR, between Alkali and Blalock Canyons		Township/Range/ Sections: T2N, R20E, Sections 11, 12, 13, 14, 15, 16, 17, 20, 21, 22, 23, 24, 26, 27, 28 T2N, R21E, 7, 8, 9, 10, 15, 16, 17, 18, 19, 20, 21, 22, 27, 28, 29, and 33.	
		Tax Lot (s) See Attached Tax Lot Map	
City: NA		County: Gilliam	
		Waterway: multiple, unnamed intermittent streams River Mile: NA	
		NWI Quad(s): Arlington, OR-WA; Sundale, OR-WA	

Wetland Delineation Information

Wetland Consultant Name, Firm and Address: Peggy O'Neill/CH2M HILL 825 NE Multnomah Suite 1300 Portland, OR 97232	Phone # 503.872.4652 FAX # 503.736.2000 E-mail address: Peggy.O'Neill@ch2m.com
The information and conclusions on this form and in the attached report are true and correct to the best of my knowledge. Date: 1/17/2005	
Consultant Signature: 	
Primary Contact for report review and site access is <input checked="" type="checkbox"/> Consultant <input type="checkbox"/> Applicant/Owner <input type="checkbox"/> Authorized Agent	
Wetland/Waters Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Total Wetland Acreage: 0	

Delineation Purpose:

<input type="checkbox"/> R-F permit application submitted with delineation	<input type="checkbox"/> Sale, purchase, lease etc.
<input type="checkbox"/> Mitigation bank site	<input type="checkbox"/> Partition, re-plat, lot line adjustment
<input type="checkbox"/> Industrial Land Certification Program site	<input type="checkbox"/> Habitat restoration project
<input checked="" type="checkbox"/> R-F application will be submitted within 90 days	<input type="checkbox"/> Other:
Other Information:	
Has previous delineation/application been made on parcel?	Y N <input type="checkbox"/> X If known, previous DSL #

Does LWI, if any, show wetland on parcel?

LWI wetland code:

For Office Use Only

DSL Reviewer: _____ Report Tier: 1 2 3 DSL WD # _____

Date Delineation Received: ____/____/____ DSL Project # _____ DSL Site # _____

Scanned: Final Scan: DSL WN # _____ DSL App. # _____

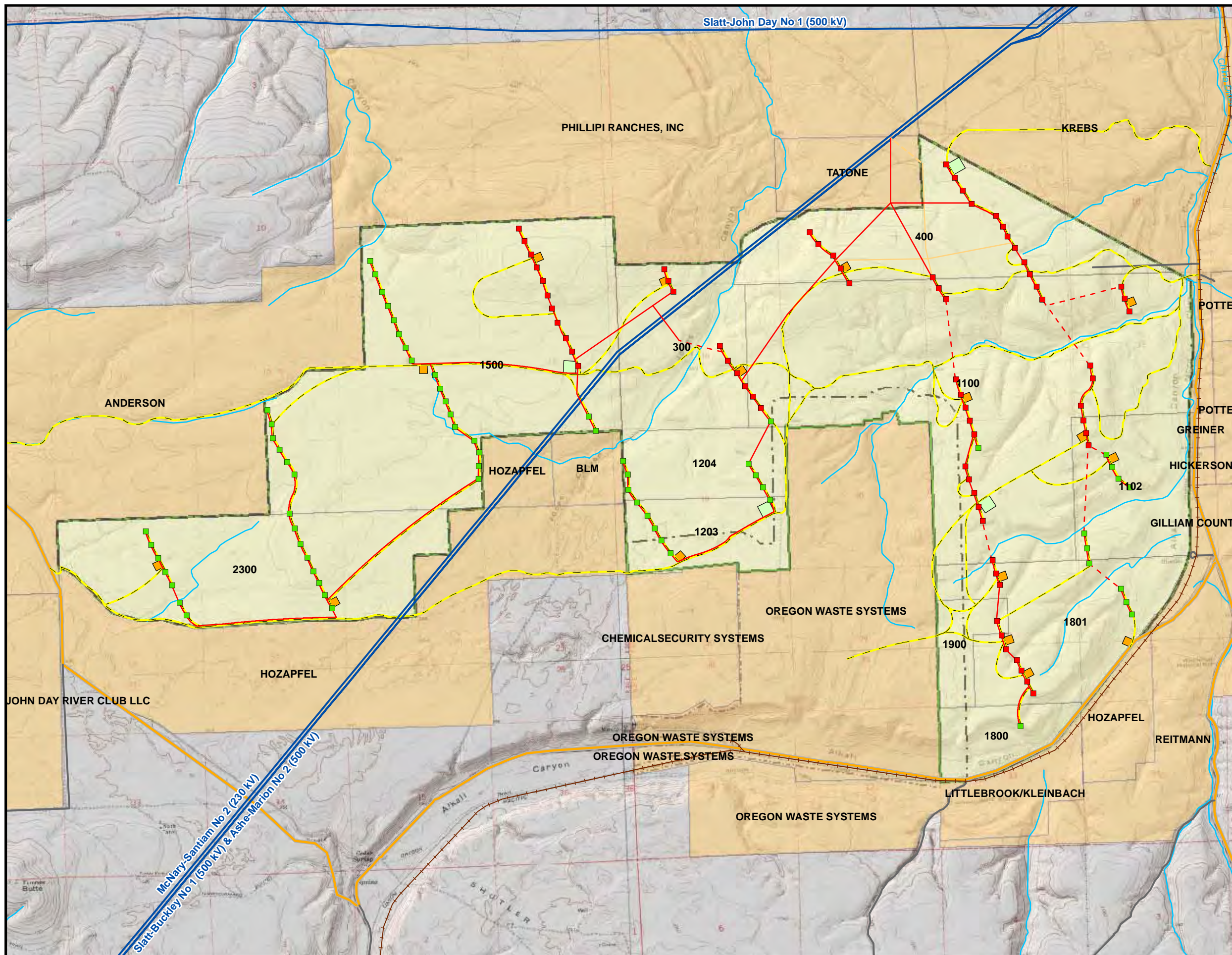


Figure 3 Tax Lot Map

Leaning Juniper Wind Project

 PPM Energy
A ScottishPower Company

Legend

- Proposed Turbines - Phase 1
- Proposed Turbines - Phase 2
- Proposed Turbine Access Road
- Proposed Underground 34.5-kV Transmission Line
- - - Proposed Overhead 34.5-kV Transmission Line
- Alternate Proposed Underground 34.5-kV Transmission Line
- - - Alternate Proposed 230-kV Overhead Transmission Line
- Proposed O&M and Substation Facility
- Proposed Alternate Substation
- Proposed Temporary Facilities**
- Proposed 2-Acre Temporary Staging Area
- Proposed 5-Acre Temporary Staging Area
- Existing Facilities**
- Existing BPA Transmission Line
- Major Roads
- Local Roads
- Railroads
- Streams
- Participating Landowners
- Adjacent Property Owners
- Project Boundary
- Easement Area
- CRLRC Landfill Property



0 1,750 3,500 7,000
Feet

 CH2MHILL

Wetlands and Jurisdictional Waters Determination Report Leaning Juniper Wind Energy Project Gilliam County, Oregon

PREPARED FOR: Ty Daul/PPM Energy
Kevin Hercamp/Oregon Division of State Lands
Karla Ellis/U.S. Army Corps of Engineers

PREPARED BY: Peggy O'Neill/CH2M HILL

COPIES: Carrie Haag/CH2M HILL

DATE: January 19, 2005

Introduction

This technical memorandum summarizes the results of a field survey performed to identify and delineate potential jurisdictional waters and wetlands within the proposed project footprint of the Leaning Juniper Wind Energy Project. The project area lies southwest of the community of Arlington, entirely within Gilliam County, Oregon. The field survey was conducted in T2N, R20E, Sections 11, 12, 13, 14, 15, 16, 17, 20, 21, 22, 23, 24, 26, 27, and 28 and T2N, R21E, Sections 7, 8, 9, 10, 15, 16, 17, 18, 19, 20, 21, 22, 27, 28, 29, and 33 (see Figure 1). Construction of access roads and excavation for electrical cable trenches may affect areas in which there are potentially jurisdictional waters and wetlands.

The study areas were 200-foot-wide corridors centered on the alignments of the proposed wind turbine strings, underground feeder lines, and access roads. Potential jurisdictional areas were identified based on National Wetland Inventory (NWI) designations (Figure 2), U.S. Geological Survey (USGS) mapping (Figure 3), mapped hydric soils (Figure 4), and field observation. The USGS topographic survey map indicates 13 intermittent drainages crossing or adjacent to proposed project impact areas. NWI maps for the area indicate one wetland adjacent to proposed project impact areas. The field survey specifically focused on 20 locations where mapped stream channels either crossed or were immediately adjacent to proposed project activities, including turbine strings, underground feeder lines, and access roads (Figure 5). Mapped drainage channels at all of these locations were examined in the field for indications of potential jurisdictional status under state and federal guidelines for wetlands and waters of the State/U.S. Field methods followed the *1987 Corps of Engineer Wetland Delineation Manual*. At eight of the survey locations, the drainages were determined to be potentially jurisdictional intermittent or ephemeral streams under state and federal regulations for wetlands and waters of the State/U.S. No wetlands were identified within the study area.

Federal and state permits will be required before work can be performed in the jurisdictional waters. This delineation represents the best professional judgment of CH2M HILL. However, the U.S. Army Corps of Engineers and Oregon Division of State Lands will make the final jurisdictional determinations for regulatory permitting.

Methods

A CH2M HILL biologist trained in wetland delineation and jurisdictional determinations, with work experience in the vegetation communities found in Gilliam County, performed the jurisdictional determination on November 10 and 11, 2004.

Office Review

Prior to conducting the field investigation, the following documents were reviewed:

- National Wetland Inventory maps: Arlington, Oregon-Washington (USFWS, 1983); Sundale, Oregon-Washington (USFWS, 1983)
- USGS Topographic maps: Arlington, Oregon-Washington (USGS, 1971); Sundale, Oregon-Washington (USGS, 1971)
- Soil Survey of Gilliam County, Oregon (1984)
- Hydric Soils List: Gilliam County, Oregon (1999)
- Historical Climate Data, Pendleton, OR Forecast Office

Turbine strings, roads, and proposed developments were overlain on USGS 7.5-minute quadrangles using GIS software. The Soil Survey of Gilliam County, Oregon, was examined for information about soils and precipitation regimes. The Gilliam County hydric soils list was compared with soils identified in the project area. USGS and National Wetland Inventory maps were examined to help identify potentially jurisdictional waters.

Field Investigation

Determination of wetlands and waters of the U.S./State followed procedures described in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987) for determining federal and state jurisdictional wetlands and waters of the United States. The *National List of Plant Species that Occur in Wetlands: Northwest (Region 9)* (USFWS, 1988) and its 1993 supplement (COE, 1993) were used to determine hydrophytic status of vegetation. Locations of the proposed project impact areas were determined in the field using Trimble Geo XT GPS unit into which proposed turbine locations, access roads, and underground electrical cable routes were entered and superimposed on a USGS quad map.

The project area includes cultivated wheat fields, and intermittent and ephemeral streams¹. An area was considered to be potentially jurisdictional if it met criteria for hydrology,

¹ Stream definitions are taken from *Properly Functioning Condition Rapid Assessment Process* (Pritchard, et al., 1998) and are as follows:

Perennial streams flow continuously. They are generally associated with a water table in the localities in which they flow.

hydric soils, and hydrophytic vegetation or had physical characteristics such as a streambed and discernable banks, and some evidence of surface flow. Ephemeral drainages are subject to jurisdiction of the Oregon Division of State Lands (OAR 141-085-0015) if they drain to fish-bearing streams. Presence of defined bed and banks meet the criteria for jurisdiction under regulations of the US Army Corp of Engineers (33 CFR 328.3). Ordinary high water boundaries were mapped in the field using Trimble GeoXT GPS unit. Map accuracy is estimated to be +/- 1 meter.

Results

Office Review

National Wetland Inventory (NWI) Map

The National Wetland Inventory maps for Arlington, Oregon-Washington (USFWS, 1983) and Sundale, Oregon-Washington (USFWS, 1983) indicate one NWI-mapped wetland in the vicinity of the project area (Figure 2). A small *palustrine emergent persistent seasonally flooded* wetland is mapped along an intermittent drainage channel, a headwater tributary to Blalock Canyon, in the southwest portion of the project area. This potential wetland is located outside the 200-foot study corridor. No NWI-mapped wetlands were identified within the study area.

USGS Topographic Map

The site is located in the Arlington, Oregon-Washington (USGS, 1971) and Sundale, Oregon-Washington (USFWS, 1971) 7.5-minute quadrangles of the USGS topographic maps (Figure 3). The USGS maps indicate 13 stream channels within the proposed project area. Topography consists of high plateaus and rolling hills dissected by stream drainages in canyons and draws. Elevation ranges from 600 feet mean sea level (msl) (W.M.) at the confluence of stream C and China Creek in the eastern portion of the project area to 1,340 feet on the high plateau west of Jones Canyon in the northern portion of the site.

Three major stream channels were identified within or adjacent to the proposed project area. All appear to be intermittent streams, channeling water seasonally. All three drain directly to the Columbia River. China Creek in Alkali Canyon, adjacent to the project site on the south and east, drains to the Columbia River at Arlington, approximately 4 miles northeast of the project site. Jones Canyon bisects the site, flowing southwest to northeast, then north to the Columbia. Blalock Canyon borders the westernmost portion of the project site and continues northwest to its confluence with the Columbia. All three of these streams are presumed to be fish-bearing for at least a portion of every year owing to their proximity to the Columbia River.

Intermittent (seasonal) streams flow only at certain times of the year when it receives water from springs or from some surface source such as melting snow in the mountains. Generally, intermittent streams flow continuously for periods of at least 30 days and usually have visible vegetation or physical characteristics reflective of permanent water influences, such as the presence of cottonwoods. Intermittent streams may have obligate wetland vegetation, hydric soils, and indicators of permanent water influence.

Ephemeral streams flow only in direct response to precipitation, and whose channel is above the water table at all times. Ephemeral streams generally do not flow continuously for more than 30 days and usually have more robust upland vegetation than found outside of the ephemeral riparian area. Ephemeral streams generally lack obligate wetland vegetation and hydric soils.

Ten unnamed intermittent or ephemeral stream drainages were also identified within the proposed project area. Six of these channels drain directly to China Creek, three to Blalock Canyon, and one to Jones Canyon. All are one order above these presumed fish-bearing streams.

Gilliam County Soil Survey

A review of the *Soil Survey the Gilliam County Area, Oregon* (Hosler, 1984) reveals 22 soil types mapped within the study area (Figure 4):

- 4c Blalock loam, 2 to 12 percent slopes
- 14B Krebs silt loam, 2 to 5 percent slopes
- 14D Krebs silt loam, 5 to 20 percent slopes
- 22D Nansene silt loam, 35 to 70 percent slopes
- 23B Olex silt loam, 0 to 5 percent slopes
- 23C Olex silt loam, 5 to 12 percent slopes
- 24D Olex gravelly silt loam, 12 to 20 percent slopes
- 24E Olex gravelly silt loam, 20 to 40 percent slopes
- 32B Ritzville silt loam, 2 to 7 percent slopes
- 32C Ritzville silt loam, 7 to 12 percent slopes
- 32D Ritzville silt loam, 12 to 20 percent slopes
- 39D Roloff-rock outcrop complex, 1 to 20 percent slopes
- 40B Sagehill fine sandy loam, 2 to 5 percent slopes
- 40C Sagehill fine sandy loam, 5 to 12 percent slopes
- 40D Sagehill fine sandy loam, 12 to 20 percent slopes
- 40E Sagehill fine sandy loam, 20 to 40 percent slopes
- 55C Warden silt loam, 2 to 5 percent slopes
- 56B Willis silt loam, 2 to 5 percent slopes
- 56C Willis silt loam, 5 to 12 percent slopes
- 56D Willis silt loam, 12 to 20 percent slopes
- 57 Wrentham-rock outcrop complex, 35 to 70 percent slopes
- 58 Xeric torrifluvents, nearly level

None these soils are listed as hydric and none contain inclusions of hydric soils. The *Hydric Soils of Gilliam County, Oregon* list (NRCS, 1999) was used to determine hydric soil status. Detailed soils information is presented in Table 1.

Land Use

The primary land use in the project area is agricultural, with much of the land planted in dryland wheat.

Table 1. Soils Occurring Within or Adjacent to the Study Area

ID	Soil Name	Description	Profile	Hydric	Hydric Inclusions
4c	Blalock loam, 2 to 12 percent slopes	Shallow, well drained soil on uplands. It formed in loess. Permeability is moderate	0-2" 10YR 3/2 loam 2-7" 10YR 3/3 loam 7-12" 10YR 4/3 loam 12-18" 10 YR 4/3 gravelly loam 18-22" 10YR 6/2 very gravelly duripan 22-41" 10YR 5/3 gravelly loam	No	No
14B	Krebs silt loam, 2 to 5 percent slopes	Deep, well drained soils on uplands. It formed in loess and in the underlying water	0-5" 10YR 3/2 silt loam	No	No
14D	Krebs silt loam, 5 to 20 percent slopes		5-17" 10YR 3/2 silty clay loam	No	No
22D	Nansene silt loam, 35 to 70 percent slopes	Very deep, well drained soils formed in loess. Permeability is	0-3" 10YR 2/2 silt loam 3-21" 10YR 3/2 silt loam 21-34" 7.5YR 3/3 silt loam	No	No
23B	Olex silt loam, 0 to 5 percent slopes	Very deep, well drained soils on high terraces. It formed in loess and very	0-12" 10YR 3/2 silt loam	No	No
23C	Olex silt loam, 5 to 12 percent slopes		12-24" 10YR 3/2 gravelly silt loam	No	No
24D	Olex gravelly silt loam, 12 to 20 percent slopes	Very deep, well drained soils on uplands north of Rock Creek. It formed in loess and	0-12" 10YR 3/2 silt loam	No	No
24E	Olex gravelly silt loam, 20 to 40 percent slopes		12-24" 10YR 3/2 gravelly silt loam	No	No
32B	Ritzville silt loam, 2 to 7 percent slopes	Very deep, well drained soils on uplands. It formed in loess and volcanic ash. Permeability is moderate.	0-31" 10YR 3/3 silt loam	No	No
32C	Ritzville silt loam, 7 to 12 percent slopes		No	No	
32D	Ritzville silt loam, 12 to 20 percent slopes		No	No	
39D	Roloff-rock outcrop complex, 1 to 20 percent slopes	Moderately deep, well drained soils formed in loess. Permeability is moderate.	0-8" 10YR 3/2 silt loam 8-24" 10YR 3/3 silt loam >24" basalt	No	No
40B	Sagehill fine sandy loam, 2 to 5 percent slopes	Very deep, well drained soil on terraces. It formed in loess and calcareous lacustrine sediment. Permeability is moderate.	0-25" 10YR 3/3 fine sandy loam	No	No
40C	Sagehill fine sandy loam, 5 to 12 percent slopes		25-35" 2.5 YR 4/2 silt loam	No	No
40D	Sagehill fine sandy loam, 12 to 20 percent slopes		No	No	
40E	Sagehill fine sandy loam, 20 to 40 percent slopes		No	No	
55C	Warden silt loam, 2 to 5 percent slopes	Very deep, well drained soils on uplands. It formed in loess and in the underlying calcareous lacustrine silt. Permeability is moderate.	0-3" 10YR 3/3 silt loam 3-30" 10YR 4/3 silt loam	No	No
56B	Willis silt loam, 2 to 5 percent slopes	Moderately deep, well drained soils on terraces. It formed in loess. Permeability is moderate.	0-19" 10YR 3/3 silt loam	No	No
56C	Willis silt loam, 5 to 12 percent slopes		19-26" 10YR 4/3 silt loam	No	No
56D	Willis silt loam, 12 to 20 percent slopes		26-60" duripan	No	No
57	Wrentham-rock outcrop complex, 35 tp 70 percent slopes	Moderately deep, well-drained soils, on north facing exposures on uplands. It formed in loess and colluvium from basalt. Permeability is moderately slow.	0-18" 10YR 2/2 silt loam 18-33" 10YR 3/3 very gravelly silt loam	No	No
58	Xeric torrifluvents, nearly level	Very deep, somewhat excessively drained soils on bottom lands of streams. It formed in recent alluvium and windlaid materials. Permeability is rapid.	0-6" 10YR 3/3 fine sandy loam 6-22" 10YR 4/3 fine sandy loam 22-41" 10YT 4/3 loamy fine sand	No	No

Field Investigation

The site investigation was conducted on November 10 and 11, 2004. Weather during the field investigation was clear and mild with no precipitation. According to the Oregon Climate Data Service (Historical Climate Data, Pendleton, OR Forecast Office) for Pendleton, the nearest reporting station, it rained 0.37 inch during the 2-week period preceding the field visit, which was 62 percent of the mean for that time period (0.60 inch). Rainfall amounts and hydrological conditions recorded represent a slightly drier than normal flow period.

Nonjurisdictional Areas

At 12 of the 20 focused survey locations, mapped stream channels either did not meet criteria for regulation as jurisdictional waters or were beyond the 200-foot study corridor and greater than 100 feet from proposed project impact areas (Figure 5). At some of these locations, active stream channels no longer exist owing to alterations to the landscape as a result of historical and current agricultural practices. No physical characteristics were present to indicate a currently active drainage. No discernable bed or banks, evidence of water flow over the surface, or changes in vegetation were observed. Many of these areas are currently cultivated. At other locations, potentially jurisdictional drainages were located greater than 100 feet from proposed project impact areas. Ordinary high water boundaries of all such stream channels were recorded in the field using GPS for reference during final project design. Representative photographs depicting each of these areas are presented in Attachment A. Field datasheets are presented in Attachment B.

S1: At this location, a broad draw from the west opens into a broad, flat area adjacent to the highway. However, no defined channel, bed and banks, and other indications of flow at or within 100 feet of the road crossing (Photo Plates 1, 2) were observed. A shallow channel was observed approximately 300 feet east of the roadway parallel to the railroad tracks, indicating possible relocation of the historical channel at this location.

S2: At this location, a very narrow, steep-sided draw south of the road may channel water during storm events. However, no clear bed and banks, ordinary high water mark, and other indications of flow were observed. The channel does not continue north of the road, but appears to drain on to the gravel roadway (Photo Plate 3). No surface connection exists between this draw and the stream channel north of the roadway.

S3: South of the road is a broad draw with a farm road extending along the bottom of it. There is no evidence of a channel south of the road within 100 feet of the roadway. A narrow, shallow channel was observed upslope adjacent to the farm road, approximately 200 feet from the main road. North of the road a narrow draw extends from the road to a larger channel to the north (Photo Plate 4). The draw joins the channel approximately 300 feet north of the road. However, no defined channel, bed and banks, and other clear evidence of flow within this draw were observed.

S6: The USGS map shows an intermittent stream flowing from the south and crossing the roadway at this location. Field observation found no evidence of a channel on either side of the roadway (Photo Plates 6, 7). East of the roadway, a shrub-steppe plant community occupies a broad flat draw. The area west and southwest of the roadway is cultivated entirely across the bottom of the draw. No evidence of a channel was observed within 100

feet of the road on either side. A well-defined channel does exist approximately 200 feet to the north. This is an upstream tributary or continuation of the main stream channel that continues west, paralleling the roadway on the north.

S9: The USGS map indicates an intermittent stream at this location. A slight draw is evident, but it does not contain a channel. There is no indication of bed or banks, and no other evidence of flow through this area. The entire area is entirely cultivated in dryland wheat (Photo Plate 11).

S10: This is the downstream continuation of the USGS-mapped stream channel at S9. As at S9, no channel currently exists and the entire area is cultivated in wheat (Photo Plate 12). There are no indications of flow at this location.

S11: The USGS map indicates an intermittent stream coincident with the road for approximately 0.9 mile in this area. There is no indication of flow in this area and no channel was observed within or adjacent to the road (Photo Plate 13). A defined channel, with distinct bed and banks and evidence of flow begins adjacent to the roadway approximately 500 feet to the west.

S15: The USGS map indicates an intermittent stream at this location; however, no channel exists here currently. The area is a broad, shallow draw completely cultivated in wheat (Photo Plate 18). No indications of bed and banks and no evidence of flow were observed.

S16: The USGS map indicates an intermittent stream at this location; however, no evidence of a currently existing drainage channel was observed. No defined bed and banks, and no indications of flow were present at this location. The existing gravel farm road crosses a narrow draw at this location. East of the road, a dirt road runs down the center of the draw. West of the road crossing, the area is cultivated in wheat entirely across the draw (Photo Plates 19, 20).

S17: The USGS map indicates an intermittent stream at this location. However, no defined channel, bed and banks, or other evidence of flow were observed in the field. The existing farm road crosses a narrow draw at this location. East of the road, a well-traveled animal path runs through the bottom of the draw. The area west of the road crossing is cultivated in wheat (Photo Plate 21).

S18: The USGS-mapped intermittent stream was not observed in the field at this location. The area is a broad, shallow draw with no defined channel, no bed and banks, or other indications of flow (Photo Plate 22). Vegetation is dominated by upland shrubs and forbs.

S19: The USGS-mapped intermittent stream was not observed in the field at this location. This is a broad, shallow draw with a well-traveled animal trail along the lowest part of the draw. No defined channel, bed, banks, or other evidence of flow was observed (Photo Plate 23).

Potentially Jurisdictional Waters/Wetlands

Potentially jurisdictional waters were identified at eight locations within the 200-foot-wide corridors centered on the alignments of the proposed wind turbine strings, underground feeder lines, and access roads (Figure 5). At seven of these locations (S4, S5, S7, S12, S13, S14, and S20), an intermittent or ephemeral drainage channel is located adjacent to proposed

project area within 100 feet. At the eighth location, a project access road crosses a shallow intermittent drainage channel (S8). The jurisdictional area for these drainages is confined to the existing channel with the boundary following the ordinary high water. Boundary determination was based on distinct evidence of hydrology, including scouring, sedimentation, and presence of water-borne debris. Ordinary high water for all of these streams within 100 feet of proposed project impact areas was recorded using GPS. A potential wetland area between S14 and S15 lies at least 100 feet beyond the 200-foot-wide study corridor. No evidence of wetland conditions was observed within 100 feet of the 200-foot study corridor at these locations. No other wetland areas were identified. Representative photos of each of these areas are presented in Attachment A. Field datasheets are presented in Attachment B.

S4: A well-defined intermittent or ephemeral stream channel parallels the roadway on the north. At this location, the channel comes within less than 100 feet of the road (Photo Plate 5). The channel flows at the bottom of steep slope. It has a distinct rocky bed and banks, and exhibits clear evidence of flow including scouring, sedimentation, and water-borne debris. No flow was present at the time of the field visit. This stream channel is one order above China Creek, a presumed fish-bearing stream.

S5: The upstream continuation of the stream channel at S4 continues to parallel the road. The channel meanders to within 35 to 40 feet of the road at this location (No photo).

S7: USGS and NWI maps do not indicate a stream at this location. However, a deep, very incised drainage channel was observed adjacent to an existing farm road at this location (Photo Plate 8). A well-defined channel, with distinct bed and banks, parallels the road at the base of steep slope. Clear evidence of water flow through this drainage was observed including scouring, sedimentation, and water-borne debris. At the north end of the channel, all evidence of channel and flow ends at a cultivated field approximately 150 feet from the main road and approximately 350 feet from the upstream continuation of the stream channel at S4 and S5 north of the main road. There is no apparent surface connection between the two channels.

S8: An existing gravel road crosses Jones Canyon at this location. Jones Canyon is a deep, flat-bottomed canyon, 500 to 700 feet across. USGS and NWI maps indicate an intermittent stream channel meandering across the broad, flat canyon floor in this portion of the project area. This channel drains directly to the Columbia River approximately 3.5 miles north of the project site. No flow was present at the time of the field investigation. In the area of the road crossing, the channel is generally poorly defined. South of the road, a broad, shallow drainage channel meanders through shrub-steppe vegetation (Photo Plate 9). The channel has minimally defined bed and banks and intermittent evidence of an ordinary high water mark. Upland vegetation is present throughout the channel, but is somewhat sparser than in the surrounding area. Typical vegetation in and adjacent to the channel includes rigid sagebrush (*Artemisia rigida*, NOL), gray rabbitbrush (*Chrysothamnus nauseosus*, NOL), Russian thistle (*Salsola kali*, UPL), and cheatgrass (*Bromus tectorum*, UPL). North of the road, there is no evidence of a defined drainage channel within 75 feet of the road (Photo Plate 10). The only indication of possible drainage is a slight topographic depression that becomes a marginally-defined channel approximately 75 feet north of the road. At this point there is sporadic evidence of bed and banks, as well as other indications of flow including some scouring and occasionally apparent ordinary high water marks.

S12, S13: A well-defined stream channel, with distinct bed and banks, and evidence of flow, is adjacent to the roadway on the north this area. The channel meanders downstream and comes within less than 100 feet of the roadway at S12 and S13. The channel has a well-defined rock, boulder, and cobble bed, and distinct banks (Photo Plates 14 to 16). It was dry at the time of the field investigation. Clear evidence of flow includes scouring, sedimentation, and scarcity of vegetation in the channel. At S12, the channel immediately abuts the roadway in one area where there is evidence of recent bank failure. It appears that a rock revetment has been installed to address this abutment. At S13, the channel comes to within 10 feet of the roadway. The channel is one order above the channel in Blalock Canyon, a presumed fish-bearing stream.

S14: The USGS map indicates an intermittent stream that is a headwater tributary to the stream in Blalock Canyon. The mapped drainage flows from the northeast and appears to continue in the same location as an existing gravel road for approximately 1 mile before joining the main channel of Blalock Canyon. Field observations verified a potential drainage channel north of the road. However, the drainage ends at the roadway and there appears to be no current surface connection between this drainage and the channel of Blalock Canyon. The drainage is a narrow, shallow channel that is poorly defined in places. Defined bed and banks and presence of an apparent ordinary high water mark are present sporadically. No flow was present at the time of the field visit. It is likely that this is an ephemeral drainage. The NWI map indicates a palustrine emergent wetland upslope of this drainage; however, no evidence of wetland conditions was observed within 150 feet of the roadway. Potential wetland conditions were observed upslope of this point. The wetland was not delineated. Vegetation throughout the drainage channel is dominated by upland shrubs and forbs including sagebrush, rabbitbrush, Russian thistle, and cheatgrass. Soils are dark brown (10YR 3/3) with no hydric features (Photo Plate 17).

S20: An intermittent or ephemeral stream channel parallels the roadway for approximately one half-mile at this location. The channel flows along the toe of the roadside slope. All or a portion of the channel flows within 100 feet of the roadway throughout this half-mile reach. The drainage is characterized by a clearly defined channel with distinct bed and banks. Other evidence of flow includes scouring, sedimentation, and indications of ordinary high water. No flow was present at the time of the field investigation. The channel averages 3 feet across with a rock, cobble, and boulder bed. It drains to China Creek, a presumed fish-bearing stream (Photo Plates 24, 25).

Conclusion

Jurisdictional waters of the U.S. were identified within or immediately adjacent to the proposed project area at eight locations: S4, S5, S7, S8, S12, S13, S14, and S20. At all other locations, either no evidence of a currently existing channel was found or the nearest boundary of the stream channel was outside the 200-foot study corridor and greater than 100 feet from proposed project impact areas. NWI maps indicate no wetlands within the 200-foot study corridor. The Gilliam County hydric soils list indicates no mapped hydric soils or soils containing hydric inclusions within the study area. No surface water was present in any of the identified drainage channels or at any other location with the study area at the time of the field investigation. The field survey verified that no wetlands are

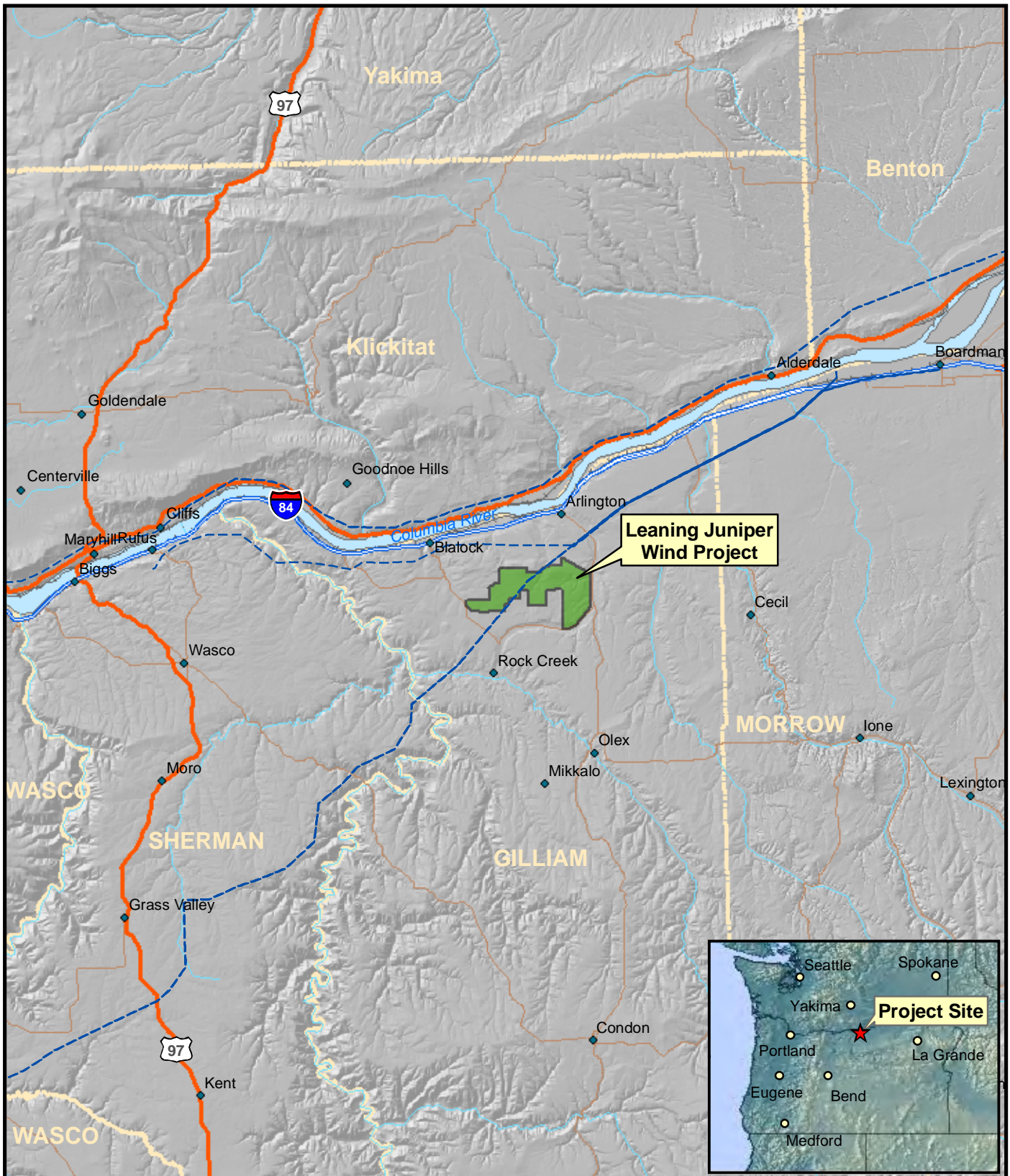
present within the study area. All of the identified drainage channels have been impacted by current and historical agricultural practices in the area, including clearing of streamside vegetation, ditching, bank degradation, and encroachment of non-native plant species.

"This report documents the investigation, best professional judgment and conclusions of the investigator. It should be considered a Preliminary Jurisdictional Determination and used at your own risk until it has been reviewed and approved in writing by the Oregon Division of State Lands in accordance with OAR 141-090-0055" and by the U.S. Army Corps of Engineers.

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- USFWS. 1983. *National Wetlands Inventory Map: Arlington, Oregon-Washington*. USDI Fish and Wildlife Service, Washington, DC.
- USFWS. 1983. *National Wetlands Inventory Map: Sundale, Oregon-Washington*. USDI Fish and Wildlife Service, Washington, DC.
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Figures



Leaning Juniper Wind Project

- Limited Access Highway
- Highway
- Major Road
- Existing BPA Transmission Line
- Water
- Project Boundary
- City Limits

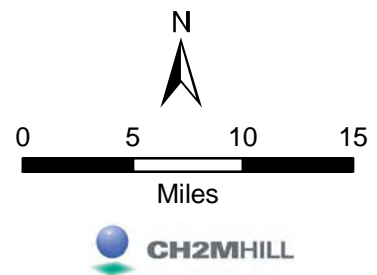


Figure 1
Site Map

Leaning Juniper Wind Project



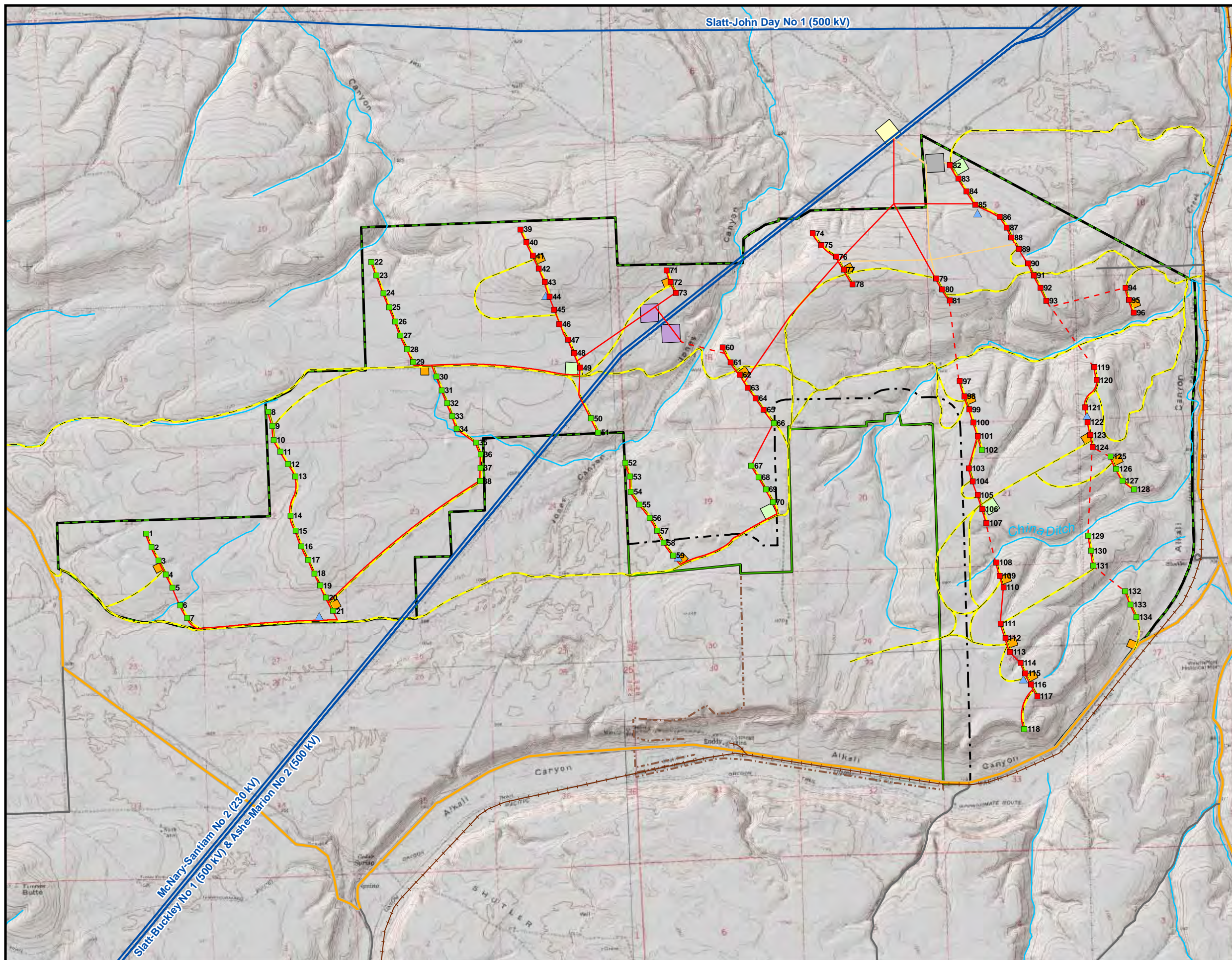



Figure 2 Project Facilities

Leaning Juniper Wind Project



 A ScottishPower Company

Legend

Proposed Permanent Facilities

- Proposed Turbines - Phase 1
- Proposed Turbines - Phase 2
- ▲ Proposed Permanent Met Towers
- Proposed Turbine Access Road
- Proposed Overhead 34.5-kV Transmission Line
- Proposed Underground 34.5-kV Transmission Line
- Proposed Underground 34.5-kV Transmission Line (Alternative 1)
- Proposed 230-kV Overhead Transmission Line (Alternate 1)
- Proposed O&M and Substation Facility (Preferred)
- Proposed O&M Facility (Alternative 1)
- Proposed O&M and Substation Facility (Alternative 2)


Proposed Temporary Facilities


- Proposed 2-Acre Temporary Staging Area
- Proposed 5-Acre Temporary Staging Area

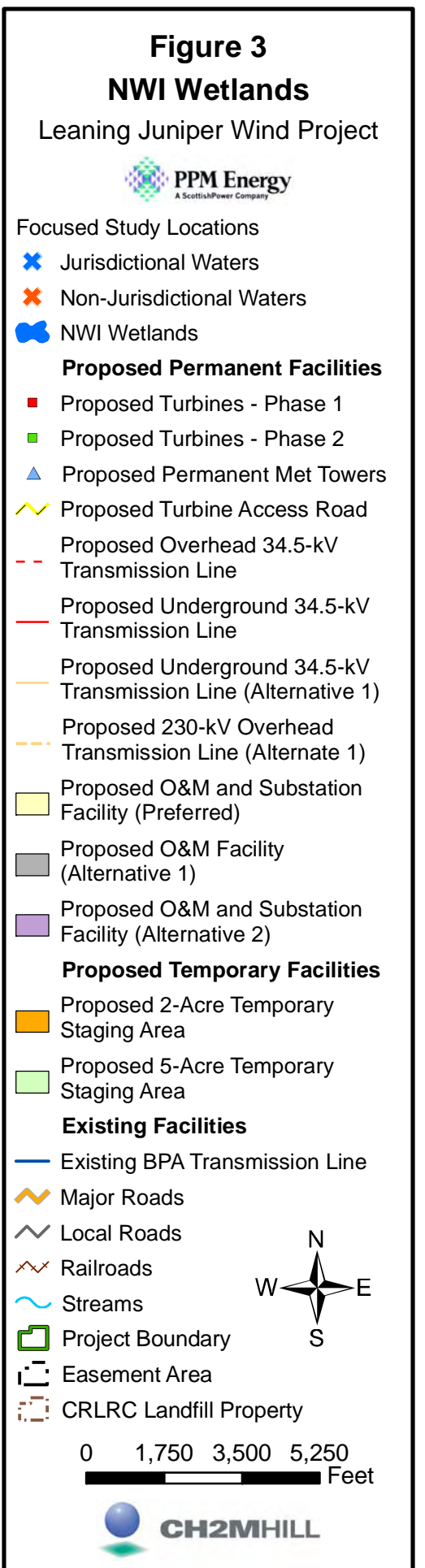
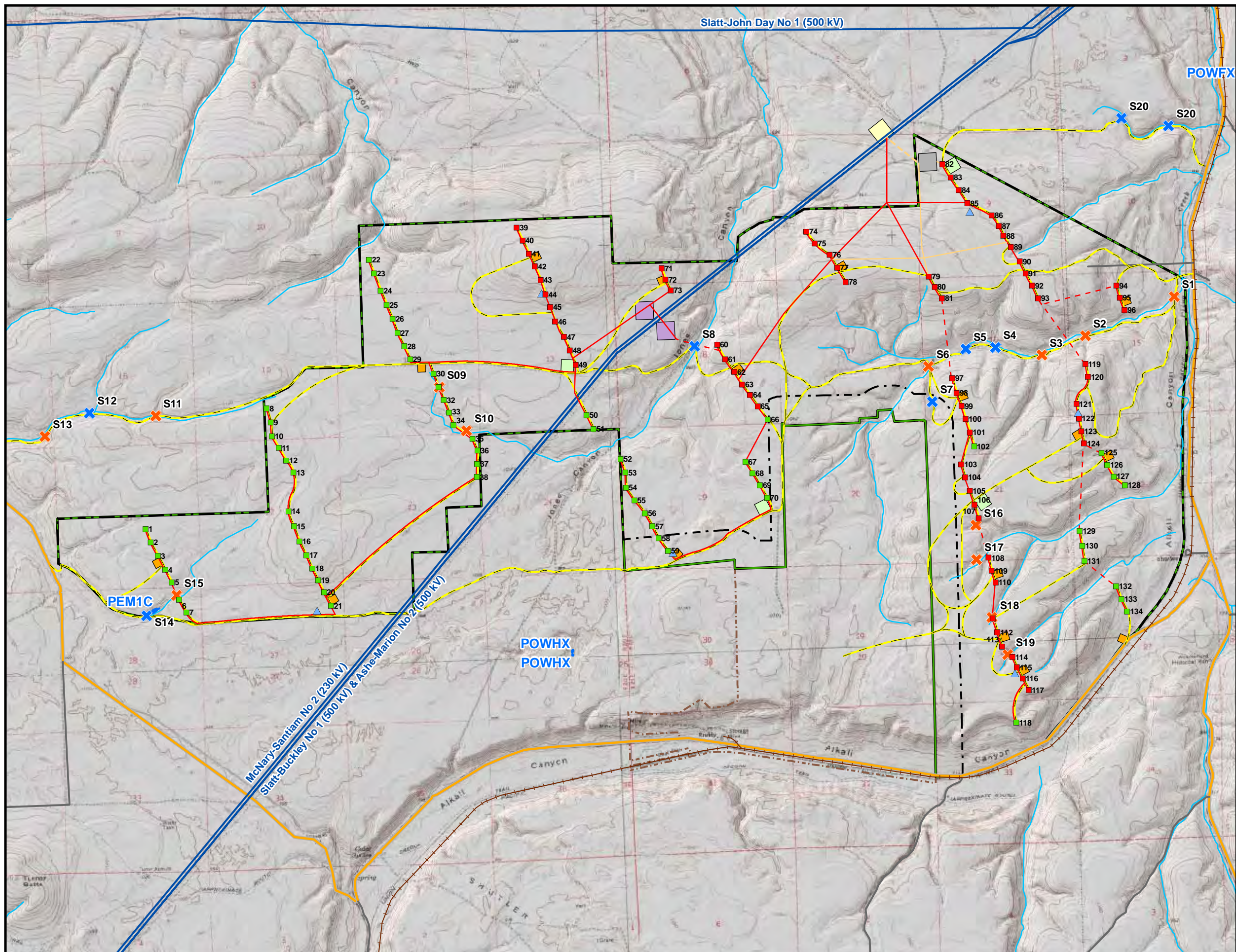
Existing Facilities

- Existing BPA Transmission Line
- Major Roads
- Local Roads
- Railroads
- Streams
- Project Boundary
- Easement Area
- CRLRC Landfill Property

0 1,750 3,500 5,250
 Feet





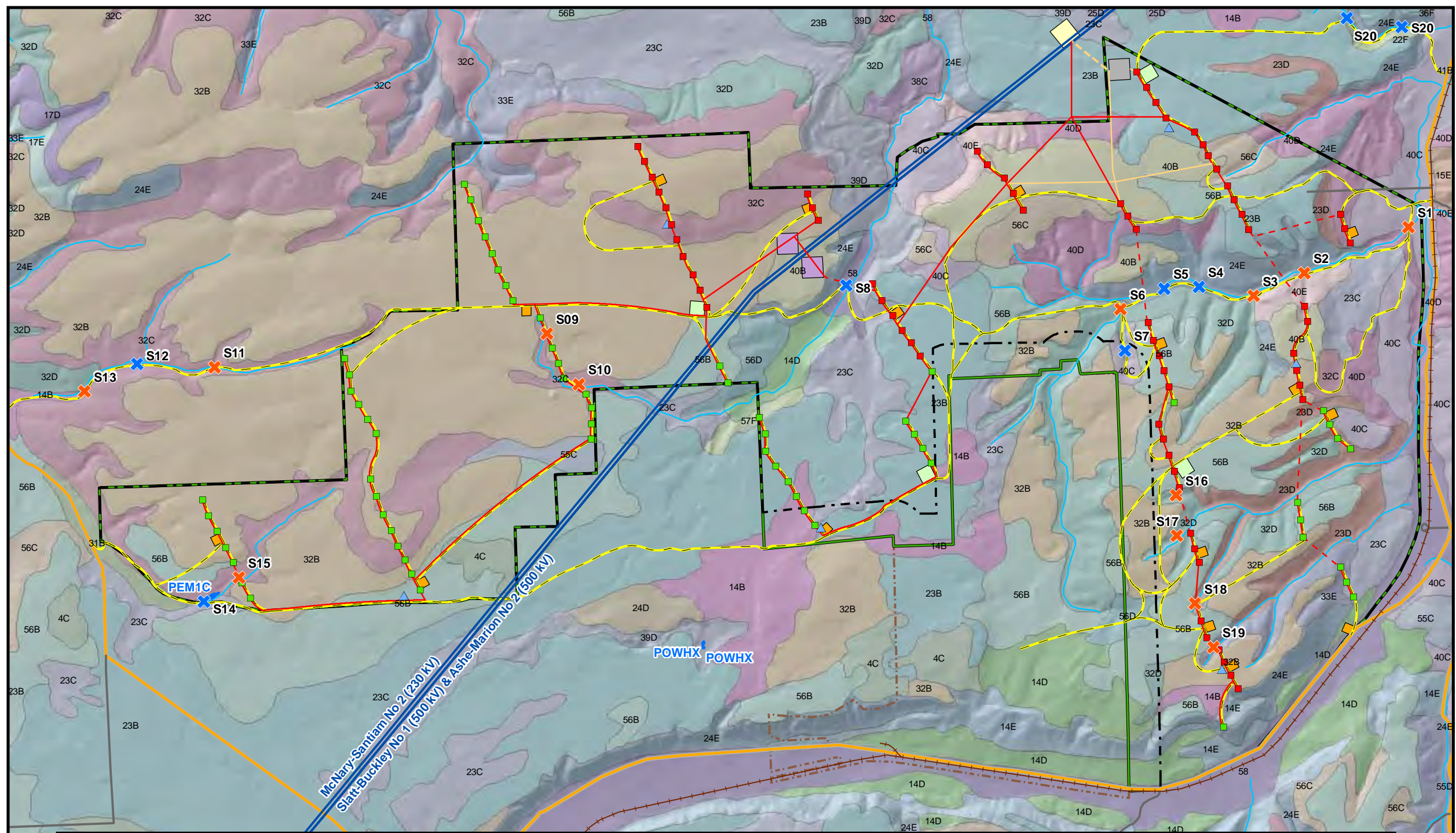


**Figure 4
Soil Survey Map**

Leaning Juniper Wind Project



- Focused Study Locations**
- ✕ Jurisdictional Waters
 - ✕ Non-Jurisdictional Waters
 - 🌿 NWI Wetlands
- Proposed Permanent Facilities**
- Proposed Turbines - Phase 1
 - Proposed Turbines - Phase 2
 - ▲ Proposed Permanent Met Towers
 - 🛣️ Proposed Turbine Access Road
 - Proposed Overhead 34.5-kV Transmission Line
 - Proposed Underground 34.5-kV Transmission Line
 - Proposed Underground 34.5-kV Transmission Line (Alternative 1)
 - Proposed 230-kV Overhead Transmission Line (Alternate 1)
 - Proposed O&M and Substation Facility (Preferred)
 - Proposed O&M Facility (Alternative 1)
 - Proposed O&M and Substation Facility (Alternative 2)
- Proposed Temporary Facilities**
- Proposed 2-Acre Temporary Staging Area
 - Proposed 5-Acre Temporary Staging Area
- Existing Facilities**
- Existing BPA Transmission Line
 - 🛣️ Major Roads
 - 🛣️ Local Roads
 - 🚂 Railroads
 - 🌊 Streams
 - 📐 Project Boundary
 - 📐 Easement Area
 - 📐 CRLRC Landfill Property



Soils Legend

(14B) Krebs silt loam, 2 to 5 percent slopes	(24D) Olex gravelly silt loam, 5 to 20 percent slopes	(34E) Ritzville silt loam, 20 to 40 percent south slopes	(55C) Warden silt loam, 5 to 12 percent slopes
(14D) Krebs silt loam, 5 to 20 percent slopes	(24E) Olex gravelly silt loam, 20 to 40 percent slopes	(36F) Rock outcrop-Rubble land complex, very steep	(55D) Warden silt loam, 12 to 20 percent slopes
(14E) Krebs silt loam, 20 to 40 percent slopes	(25D) Olex-Roloff complex, 5 to 20 percent slopes	(38C) Roloff silt loam, 7 to 12 percent slopes	(56B) Willis silt loam, 2 to 5 percent slopes
(15E) Licksillet very stony loam, 7 to 40 percent slopes	(31B) Ritzville very fine sandy loam, 2 to 7 percent slope	(39D) Roloff-Rock outcrop complex, 1 to 20 percent slopes	(56C) Willis silt loam, 5 to 12 percent slopes
(17D) Mikkalo silt loam, 12 to 20 percent slopes	(31C) Ritzville very fine sandy loam, 7 to 12 percent slope	(40B) Sagehill fine sandy loam, 2 to 5 percent slopes	(56D) Willis silt loam, 12 to 20 percent slopes
(17E) Mikkalo silt loam, 20 to 40 percent slopes	(32A) Ritzville silt loam, 0 to 2 percent slopes	(40C) Sagehill fine sandy loam, 5 to 12 percent slopes	(57F) Wrentham-Rock outcrop complex, 35 to 70 percent slope
(22F) Nansene silt loam, 35 to 70 percent slopes	(32B) Ritzville silt loam, 2 to 7 percent slopes	(40D) Sagehill fine sandy loam, 12 to 20 percent slopes	(58) Xeric Torrifluvents, nearly level
(23B) Olex silt loam, 0 to 5 percent slopes	(32C) Ritzville silt loam, 7 to 12 percent slopes	(40E) Sagehill fine sandy loam, 20 to 40 percent slopes	
(23C) Olex silt loam, 5 to 12 percent slopes	(32D) Ritzville silt loam, 12 to 20 percent slopes	(41B) Sagehill fine sandy loam, hummocky, 2 to 5 percent s	
(23D) Olex silt loam, 12 to 20 percent slopes	(33E) Ritzville silt loam, 20 to 40 percent north slopes	(4C) Blalock loam, 2 to 12 percent slopes	

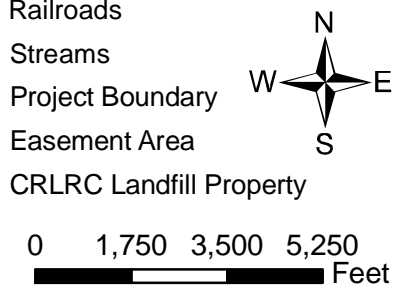
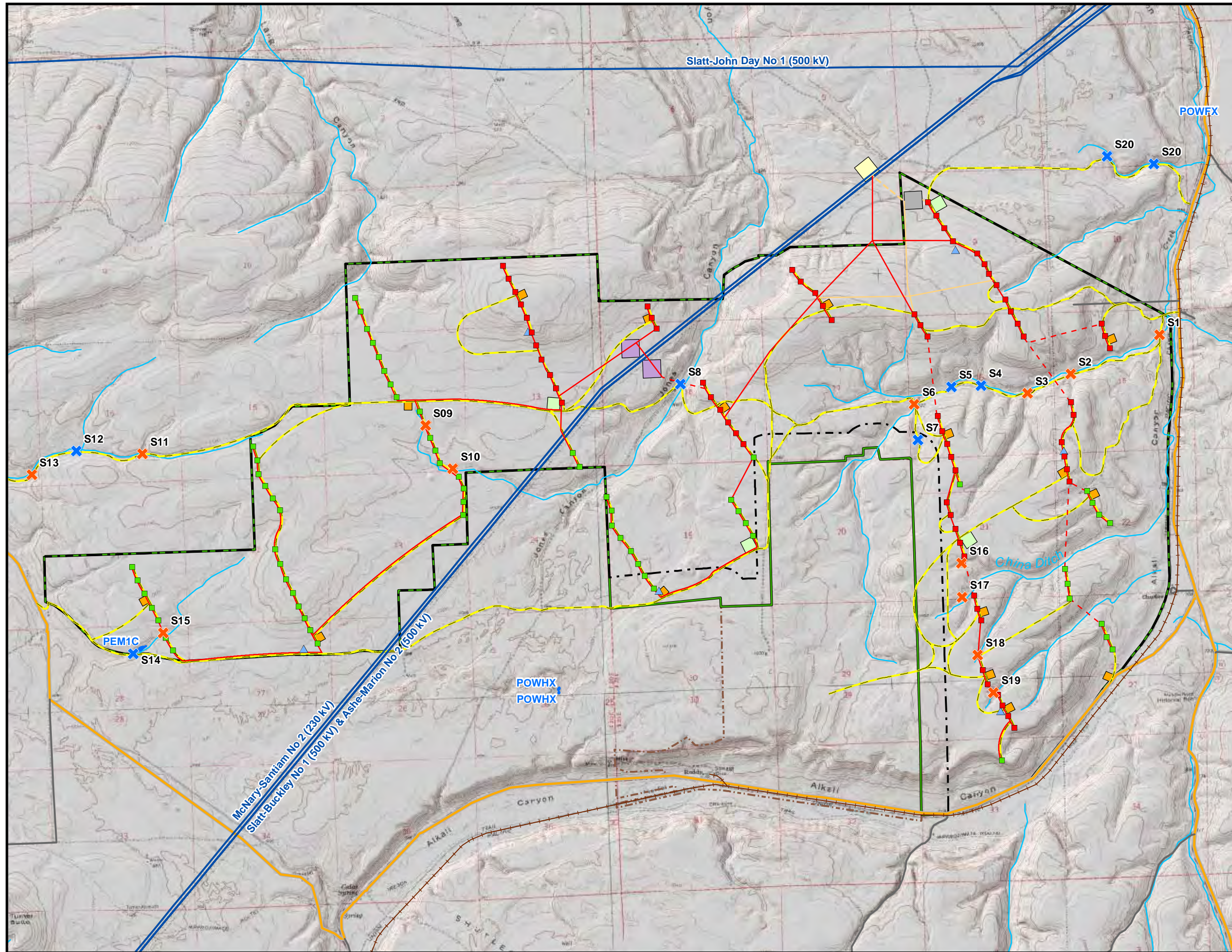
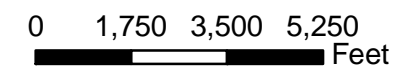


Figure 5
Potential Jurisdictional Waters Map
 Leaning Juniper Wind Project



- Focused Study Locations
- ✕ Jurisdictional Waters
 - ✕ Non-Jurisdictional Waters
 - ✕ NWI Wetlands
- Proposed Permanent Facilities**
- Proposed Turbines - Phase 1
 - Proposed Turbines - Phase 2
 - ▲ Proposed Permanent Met Towers
 - Proposed Turbine Access Road
 - - - Proposed Overhead 34.5-kV Transmission Line
 - Proposed Underground 34.5-kV Transmission Line
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- Proposed Temporary Facilities**
- Proposed 2-Acre Temporary Staging Area
 - Proposed 5-Acre Temporary Staging Area
- Existing Facilities**
- Existing BPA Transmission Line
 - Major Roads
 - Local Roads
 - Railroads
 - ~ Streams
 - Project Boundary
 - - - Easement Area
 - - - CRLRC Landfill Property



ATTACHMENT A
Site Photos



Photo Plate 1 View west showing location of USFS-mapped stream channel at S1.



Photo Plate 2 View west showing location of mapped stream channel at S1.



Photo Plate 3 View south showing potential drainage south of roadway (S2). Draw does not continue north of roadway.



Photo Plate 4 View northeast showing shallow draw north of roadway (S3). Draw meanders downslope toward a jurisdictional channel but exhibits no clear evidence of flow.



Photo Plate 5 View west showing stream drainage adjacent to roadway at S4.



Photo Plate 6 View northeast showing area of USGS-mapped stream channel (S6) south of roadway.



Photo Plate 7 View northeast showing area of USGS-mapped stream channel (S6) north of roadway.



Photo Plate 8 View south showing drainage channel adjacent to roadway at S7.



Photo Plate 9 View southwest showing drainage channel south of road crossing in Jones Canyon at S8.



Photo Plate 10 View northeast showing area of drainage channel north of road crossing in Jones Canyon at S8.



Photo Plate 11 View southwest showing area of USGS-mapped stream at S9.



Photo Plate 12 View southeast showing area of USGS-mapped stream at S10.



Photo Plate 13 View west showing area of USGS-mapped stream at S11.



Photo Plate 14 View west showing stream channel adjacent to roadway at S12. White rock in foreground is a revetment for an apparent bank failure at this location.



Photo Plate 15 View southwest showing stream channel adjacent to road at S13.



Photo Plate 16 View southwest showing streambed at S13.



Photo Plate 17 View north showing drainage channel at S14.



Photo Plate 18 View northeast showing area of USGS-mapped stream at S15.



Photo Plate 19 View east showing area of USGS-mapped stream at S16.



Photo Plate 20 View west showing area of USGS-mapped stream at S16.



Photo Plate 21 View northeast showing area of USGS-mapped stream at S17.



Photo Plate 22 View northeast showing area of USGS-mapped stream at S18.



Photo Plate 23 View northeast showing area of USGS-mapped stream at S19.



Photo Plate 24 View southeast showing drainage channel adjacent to roadway at S20.



Photo Plate 25 View west showing drainage channel adjacent to roadway at S20.

ATTACHMENT B
Field Data Sheets

January 2006 Addendum

Jones Canyon Road Crossing Jurisdictional Waters Determination - Revised Location Leaning Juniper Wind Power Project Gilliam County, Oregon

PREPARED FOR: Ty Daul/PPM Energy
Mary Hoffman/COE

PREPARED BY: Joel Shaich/CH2M HILL

COPIES: Sara McMahon/PPM Energy
Carrie Konkol/CH2M HILL
Peggy O'Neill/CH2M HILL

DATE: January 16, 2006

This document summarizes the results of a field survey performed on January 12, 2006 to identify and delineate potentially jurisdictional waters and wetlands at a location in Jones Canyon within the proposed project footprint of the Leaning Juniper Wind Project. The site is approximately 1000 feet south (upstream) of the site labeled S8 in the initial Delineation Report prepared by CH2M HILL (January 10, 2005) and is the modified location for the proposed road crossing of the drainage in the canyon (T2N, R21E, Section 18). All NWI, USGS, and Soils information is the same as that discussed for site S8 in the original report.

At this location, an existing dirt road crosses a defined shallow channel that extends upstream and downstream of the crossing. There was no water in the channel in spite of recent heavy rains in the area. No evidence of any regular flow was observed. A sample pit in the channel bottom dug 6 inches to an impenetrable gravel layer was dry. Soils in the sample pit were 10 YR 3/2 with no redoximorphic features. There were no indications in the channel of scouring or sedimentation, no water-borne debris, and no distinct change in vegetation between the channel and the surrounding area. Vegetation consists entirely of upland shrub-steppe vegetation including big sagebrush (*Artemisia tridentate*, NOL), rigid sagebrush (*Artemisia rigida*, NOL), gray rabbitbrush (*Chrysothamnus nauseosus*, NOL), Russian thistle (*Salsola kali*, UPL), and cheatgrass (*Bromus tectorum*, UPL) (Photo Plates 1-3).

The channel at the study site is a potentially jurisdictional water of the U.S and was mapped by GPS (see attached map). In the absence of any indicators of ordinary high water, the top of the channel banks was identified as the upper extent of jurisdiction.

This report documents the investigation, best professional judgment, and conclusions of the investigator. It should be considered a Preliminary Jurisdictional Determination and used at your own risk until it has been reviewed and approved in writing by Gilliam County and the U.S. Army Corps of Engineers.

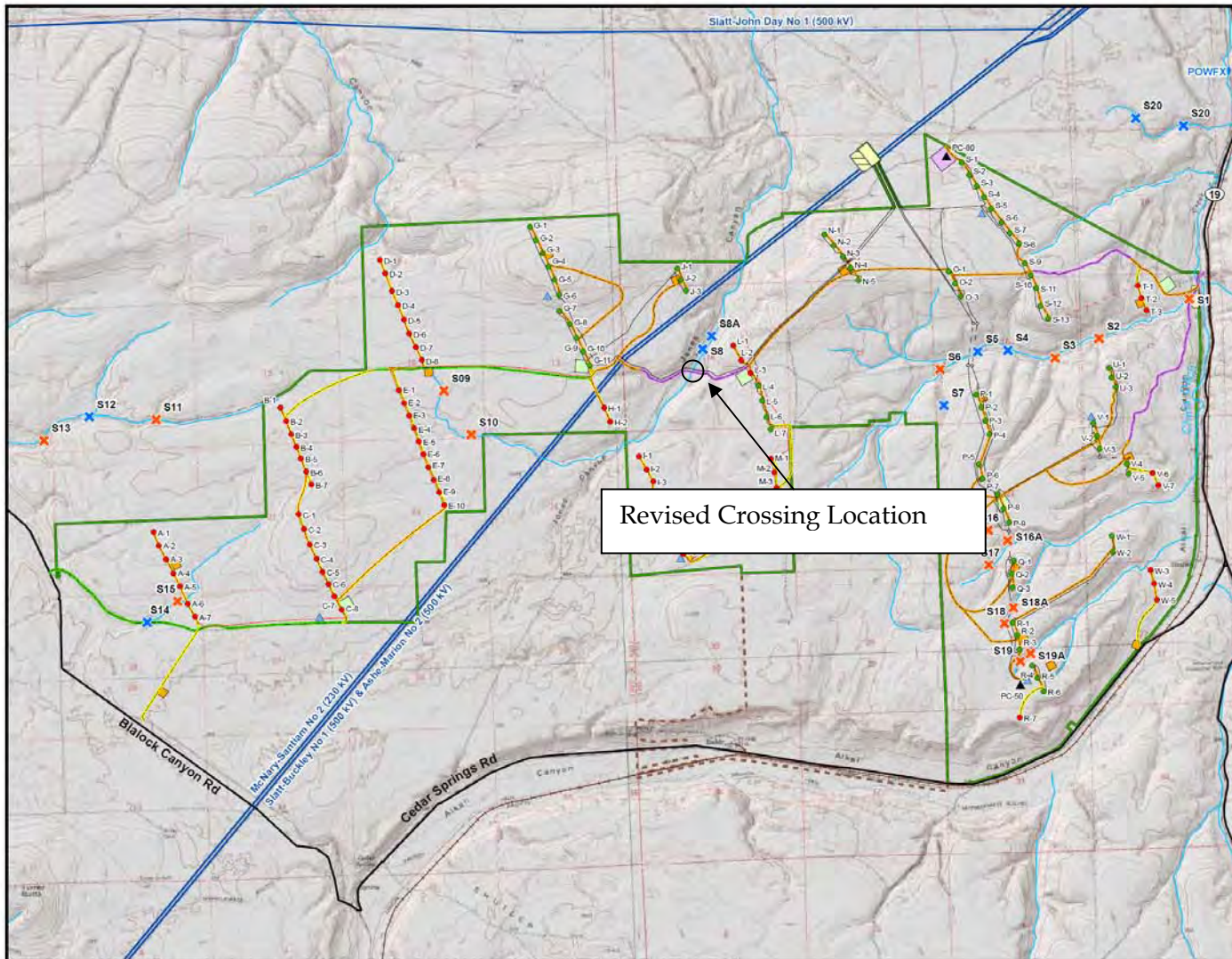


Figure J Wetlands and Jurisdictional Waters Leaning Juniper Wind Power Facility

PPM Energy
A Shell Global Energy Company

Legend

- Focused Study Locations**
- ✕ Jurisdictional Waters
- ✕ Non-Jurisdictional Waters
- ⊕ NWI Wetlands
- Proposed Permanent Facilities**
- Proposed Turbine - Phase I
- Proposed Turbine - Phase II
- ▲ Proposed Permanent Met Tower
- ▲ Existing Temporary Met Towers
- Proposed Roads - Phase I**
- New Road
- Existing Road - Improvements Needed
- Proposed Roads - Phase II**
- New Road
- Existing Road - Improvements Needed
- Proposed Collector System - Phase I**
- Underground 34.5-kV Line
- Overhead 34.5-kV Line
- Proposed Collector System - Phase II**
- Underground 34.5-kV Line
- Overhead 34.5-kV Line
- Proposed O&M Facility and Laydown Area
- Proposed Substation
- BPA Jones Canyon Substation
- Proposed Temporary Facilities**
- Proposed 2-Acre Temporary Staging Area
- Proposed 5-Acre Temporary Staging Area
- Proposed Additional Laydown Area
- Existing Facilities**
- Existing BPA Transmission Line
- Major Roads
- Railroads
- Streams
- Site Boundary
- CRLRC Landfill Property

0 1,750 3,500 5,250

Feet

Revised Crossing Location



Photo 1. Looking north (upstream) along channel. Vehicle is parked at existing dirt road, site of proposed road crossing.



Photo 2. Looking north (upstream) at proposed road crossing location.



Photo 3. Looking south (downstream) along channel. Vehicle is parked at existing dirt road, site of proposed road crossing.

September 2006 Addendum

Addendum

Wetlands and Jurisdictional Waters Determination Report

Leaning Juniper II Wind Power Facility

Gilliam County, Oregon

PREPARED FOR: Andrew O'Connell/PPM Energy
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COPIES: Sara McMahon/PPM Energy
Erin Toelke/CH2M HILL

DATE: September 25, 2006

Summary

This document summarizes the results of a field survey performed to identify and delineate potentially jurisdictional waters and wetlands at 12 additional locations within the proposed project footprint of the Leaning Juniper II Wind Power Facility (see Figure 1 for site map). The proposed facility (the Facility) consists of two main components: (1) Leaning Juniper II North (the north portion of the Facility with up to 93 MW), and (2) Leaning Juniper II South (the south portion of the Facility with up to 186 MW). Nine of the 12 sites are located in the north portion of the Facility identified as Leaning Juniper II North. Three of the sites are located within the Leaning Juniper II South area. The additional survey locations are labeled S21 through S27, and W1 through W6, and are shown on Figure 2.

Within the Leaning Juniper II North boundary, four potential stream crossings and five seasonal (vernal) pools were investigated. Three of the four potential stream crossings are mapped intermittent streams on the U.S. Geological Survey (USGS) map of the area. The fourth is a topographic drainage to a mapped intermittent stream. One of the streams (S25) was determined to be potentially jurisdictional under federal and state wetlands regulations. The other three were determined to be not jurisdictional within 500 feet of proposed Facility activities under federal and state regulations. All five vernal pools were determined to be potentially jurisdictional as wetlands under state and federal wetlands regulations. Three of the five vernal pools are located within 500 feet of proposed Facility activities. All of the vernal pools were dry at the time of the field investigation.

Two potential stream crossings and one vernal pool in the Leaning Juniper II South area area also were investigated. Both stream drainages are mapped intermittent streams on the USGS map of the area. One of the streams (S27) was determined to be potentially

jurisdictional under federal and state wetlands regulations. The other (S26) was determined to be not jurisdictional under federal and state regulations within 500 feet of proposed Facility activities. The vernal pool was determined to be potentially jurisdictional as a wetland under state and federal wetlands regulations. It is located within 500 feet of proposed Facility activities and was dry at the time of the field investigation.

This document is intended as an addendum to the initial Delineation Report (January 10, 2005) and subsequent Addendum (September 2, 2005) prepared by CH2M HILL and includes information specific to the additional sites only. All other information pertaining to the proposed Facility background and activities, site information, and methodology is provided in the original report.

Results

This section summarizes the delineation results derived from the office review and field investigation.

Office Review

The office review consisted of a review of the following resources:

- National Wetland Inventory (NWI) maps: Arlington, Oregon-Washington (USFWS, 1983); Sundale, Oregon-Washington (USFWS, 1983)
- USGS Topographic maps: Arlington, Oregon-Washington (USGS, 1971); Sundale, Oregon-Washington (USGS, 1971)
- Soil Survey of Gilliam County, Oregon (1984)
- Hydric Soils List: Gilliam County, Oregon (1999)
- Historical Climate Data, Pendleton, OR Forecast Office

Six of the survey locations were mapped or unmapped (USGS) drainages located within 500 feet of proposed Facility activities. Six of the survey locations were seasonal (vernal) pools identified in the course of wildlife habitat surveys of the Facility area. All of the vernal pools are located within 500 feet of proposed Facility activities or are immediately adjacent to the study area.

National Wetland Inventory Map

The NWI maps for Arlington, Oregon-Washington (USFWS, 1983) and Sundale, Oregon-Washington (USFWS, 1983) indicate one NWI-mapped wetland in the vicinity of the Facility area (Figure 3). A small *palustrine emergent persistent seasonally flooded* wetland is mapped along an intermittent drainage channel, a headwater tributary to Blalock Canyon, in the southwest portion of the Facility area. This potential wetland is located outside the 200-foot study corridor. No NWI-mapped wetlands were identified within the study area.

USGS Topographic Map

Leaning Juniper II North is located in the Arlington, Oregon-Washington (USGS, 1971) and Sundale, Oregon-Washington (USFWS, 1971) 7.5-minute quadrangles of the USGS

topographic maps (Figure 3). The USGS maps indicate three stream channels within 500 feet of the proposed Facility area. Topography consists of high plateaus and rolling hills dissected by stream drainages in canyons and draws. Elevation ranges from 600 feet mean sea level (msl) (W.M.) at the confluence of stream C and China Creek in the eastern portion of the Facility area to 1,340 feet on the high plateau west of Jones Canyon in the northern portion of the site.

The USGS map also identifies two intermittent stream channels in the southeast portion of the Facility area within 500 feet of proposed Facility activities. The channels of China Ditch and an unnamed drainage to the south flow southwest to northeast, draining directly to China Creek. China Creek is located in Alkali Canyon, adjacent to the Facility site on the south and east, drains to the Columbia River at Arlington, approximately 4 miles northeast of the Facility site.

Gilliam County Soil Survey

A review of the *Soil Survey the Gilliam County Area, Oregon* (Hosler, 1984) reveals 24 soil types mapped within the study area (Figure 4):

- 4c Blalock loam, 2 to 12 percent slopes
- 14B Krebs silt loam, 2 to 5 percent slopes
- 14D Krebs silt loam, 5 to 20 percent slopes
- 22F Nansene silt loam, 35 to 70 percent slopes
- 23B Olex silt loam, 0 to 5 percent slopes
- 23C Olex silt loam, 5 to 12 percent slopes
- 23D Olex silt loam, 12 to 20 percent slopes
- 24D Olex gravelly silt loam, 12 to 20 percent slopes
- 24E Olex gravelly silt loam, 20 to 40 percent slopes
- 32B Ritzville silt loam, 2 to 7 percent slopes
- 32C Ritzville silt loam, 7 to 12 percent slopes
- 32D Ritzville silt loam, 12 to 20 percent slopes
- 36F Rock outcrop-Rubble land complex, very steep
- 39D Roloff-rock outcrop complex, 1 to 20 percent slopes
- 40B Sagehill fine sandy loam, 2 to 5 percent slopes
- 40C Sagehill fine sandy loam, 5 to 12 percent slopes
- 40D Sagehill fine sandy loam, 12 to 20 percent slopes
- 40E Sagehill fine sandy loam, 20 to 40 percent slopes
- 55C Warden silt loam, 2 to 5 percent slopes
- 56B Willis silt loam, 2 to 5 percent slopes
- 56C Willis silt loam, 5 to 12 percent slopes
- 56D Willis silt loam, 12 to 20 percent slopes
- 57 Wrentham-rock outcrop complex, 35 to 70 percent slopes
- 58 Xeric torrfluvents, nearly level

None these soils are listed as hydric and none contain inclusions of hydric soils. The *Hydric Soils of Gilliam County, Oregon* list (NRCS, 1999) was used to determine hydric soil status. Detailed soils information is presented in Table 1.

Land Use

The primary land use in the Facility area is agricultural, with much of the land planted in dryland wheat.

Weather and Climate Data

May 5 field visit: Weather was clear and warm with no precipitation. According to the Oregon Climate Data Service for Pendleton (Historical Climate Data, Pendleton, Oregon, Forecast Office), the nearest reporting station, no rainfall was recorded during 14-day period preceding the field visit. Normal mean precipitation for this period is 0.52 inch. Rainfall amounts and hydrological conditions recorded represent a dryer than normal flow period.

May 22 field visit: Weather was overcast with intermittent showers and occasional thundershowers. According to the Oregon Climate Data Service for Pendleton (Historical Climate Data, Pendleton, Oregon, Forecast Office), the nearest reporting station, it rained 0.76 inch during 14-day period preceding the field visit. The 0.76 inch of rain represents 138 percent of the mean for that time period (0.55 inch). Rainfall amounts and hydrological conditions recorded represent a wetter than normal flow period.

September 12 field visit: Weather was clear and hot, +/- 96°, with no precipitation. According to the Oregon Climate Data Service for Pendleton (Historical Climate Data, Pendleton, Oregon, Forecast Office), the nearest reporting station, it rained 0.01 inch during 14-day period preceding the field visit. The 0.01 inch of rain represents 2 percent of the mean for that time period (0.56 inch). Rainfall amounts and hydrological conditions recorded represent a considerably drier than normal flow period.

Field Investigation

The supplemental field investigation was conducted on May 5 and 22, and September 12, 2006.

Potential Stream Crossings

At four of the survey locations, S21, S22, S23, and S26, USGS-mapped stream channels did not meet criteria for regulation. At these locations, active stream channels no longer exist because of alterations to the landscape resulting from historical and current agricultural practices. No physical characteristics were present to indicate a currently active drainage. No discernable bed or banks, no evidence of water flow over the surface, and no changes in vegetation were observed. At two locations, S25 and S27, well-defined channels with distinct bed and banks are present. No flow was present in either drainage at the time of the field visit. However, evidence of flow including scouring and sedimentation was observed. Both channels drain directly to China Creek, a presumed fish-bearing water. China Creek is a ditched natural drainage that drains directly to the Columbia River approximately 15 miles north of the Facility site. Representative photographs depicting each area are presented in Attachment A. Field datasheets are presented in Attachment B.

S21: The USGS map indicates an unnamed, intermittent stream flowing from southwest to northeast at this location. The area is a broad, shallow draw with no defined channel, no bed

and banks, and no other indications of flow. Vegetation is entirely upland, consisting of rabbitbrush (*Chrysothamnus nauseosus*, UPL), Russian thistle (*Salsola kaoli*, UPL), cheatgrass (*Bromus tectorum*, UPL) and other grasses. Soils show no indications of hydric characteristics (Photo Plate 1).

S22: The USGS map indicates an unnamed, intermittent stream flowing from northwest to southeast at this location. The area is a broad, shallow draw with no defined channel, no bed and banks, and no other indications of flow. A well-used farm road is located along the lowest part of the draw. Vegetation consists of foxtail barley (*Hordeum jubatum*, UPL), Russian thistle (*Salsola kaoli*, UPL), and cheatgrass (*Bromus tectorum*, UPL). Soils show no indications of hydric characteristics (Photo Plate 2).

S23: The USGS map indicates an unnamed, intermittent stream flowing from west to east at this location. The area is a broad, shallow draw with no defined channel, no bed and banks, and no other indications of flow at this location. Vegetation is entirely upland, consisting predominantly of rabbitbrush (*Chrysothamnus nauseosus*, UPL), big sagebrush (*Artemisia tridentata*, NoL), and bulbous bluegrass (*Poa bulbosa*, UPL). Soils show no indications of hydric characteristics (Photo Plate 3). A well-defined channel with distinct bed and banks (identified on the attached map as **S24**) and evidence of intermittent flow begins approximately 1,000 feet downslope of the survey location S23 in the same drainage.

S25: The USGS map indicates an unnamed, intermittent stream adjacent to Rattlesnake Road in the northern portion of the Facility area. The channel flows in a narrow canyon from the southwest, parallel to Rattlesnake Road, draining to China Creek. No flow was present at the time of the field visit. Ordinary high water of the drainage was delineated within the Facility area. Vegetation throughout the drainage channel is dominated by upland shrubs and forbs, including rabbitbrush, Russian thistle, and cheatgrass. Soils are dark brown (10YR 3/3) with no hydric features (Photo Plate 4).

S26: The USGS map indicates an unnamed, intermittent stream flowing southwest to northeast at this location. While a defined drainage is present in places, a continuous drainage feature is not present. The upstream portion of the mapped stream is a defined drainage in a narrow v-shaped valley that spreads out and disappears as a drainage feature in a broad, flat valley adjacent to the highway. Distinct bed and banks were not observed, and no scouring, sedimentation, or other evidence of flow was present. Vegetation throughout the drainage channel is dominated by upland shrubs and forbs, including rabbitbrush, Russian thistle, and cheatgrass. Soils are dark brown (10YR 3/3) with no hydric features (Photo Plate 5).

S27: The USGS map indicates an intermittent stream channel, China Ditch, flowing from southwest to northeast in the southeastern portion of the Facility area. An existing gravel road crosses this drainage with a 12-inch culvert crossing. The culvert is collapsed on the upstream side of the road. The channel drains to China Creek. No flow was present at the time of the field visit. Ordinary high water of the drainage was delineated within 500 feet of proposed Facility. Vegetation throughout the drainage channel is dominated by upland shrubs and forbs with occasional juniper. Dominant shrubs and forbs include rabbitbrush, Russian thistle, bulbous bluegrass, and cheatgrass. Soils are dark brown (10YR 3/3) with no hydric features (Photo Plate 6).

Potential Wetlands

Six potentially jurisdictional seasonal (vernal) pool areas were investigated. All six vernal pools were determined to be potentially jurisdictional as wetlands under state and federal wetlands regulations. Four of the six vernal pools, W3, W4, W5, and W6, are located within 500 feet of proposed Facility activities. All of the vernal pools were dry at the time of the field investigation. Wetlands and sample points are shown on Figures 6A through 6D. Representative photographs depicting each area are presented in Attachment A. Field datasheets are presented in Attachment B.

Wetlands W1 and W2: W1 and W2 are two small, isolated vernal pool wetlands located west of Rattlesnake Road in shallow, depression areas in the landscape. No surface water or saturation in the upper 12 inches was present at the time of the field visit. However, distinct evidence of hydrology was observed, including areas bare of vegetation (bare soil areas = 80 percent), cracked and hummocky soils, and hydrophytic vegetation¹. Soils were a very dark brown clayey silt loam with a thin layer contain redoximorphic concentrations at approximately 7.5 to 8 inches. Vegetation consisted of approximately 20 percent cover of herbaceous vegetation with no trees or shrubs. Dominant plants included prostrate knotweed (*Polygonum aviculare*, FACW-), tiny mouse tail (*Myosurus minimus*, OBL), bur buttercup (*Ranunculus testiculatus*, NOL), and scalepod (*Idahoa scapigera*, NOL). The wetland boundaries followed a slight break in topography combined with a marked change in vegetation from that described above to a grassland vegetation community dominated by bulbous bluegrass (*Poa bulbosa*, UPL) and cheatgrass (*Bromus tectorum*, UPL), with percent cover of vegetation nearly 100 percent (Photo Plates 7 and 8).

Wetlands W3 and W4: W3 and W4 are two small, isolated vernal pool wetlands located east of Rattlesnake Road in the vicinity of the Bonneville Power Administration (BPA) powerlines. The wetlands occupy shallow depression areas in an area of rolling topography.

W3 is a large, flat vernal pool area with approximately 80 percent cover of herbaceous vegetation. Dominant vegetation includes slender-branched popcorn-flower (*Plagiobothrys leptocladus*, FACW), tiny mouse tail (*Myosurus minimus*, OBL), sessile mouse tail (*Myosurus sessilis*, OBL), needleleaf navarretia (*navarretia intertexta*, FACW), and marsh cudweed (*Gnathaliium palustre*, FAC+). No surface water or saturation in the upper 12 inches was present at the time of the field visit. However, distinct evidence of hydrology was observed, including areas bare of vegetation (bare soil areas = 20 percent), cracked and hummocky soils, and hydrophytic vegetation. Soils were a very dark brown clayey silt loam with a thin layer contain redoximorphic concentrations at approximately 7.5 to 8 inches. The wetland boundary followed a slight break in topography combined with a marked change in vegetation from that described above to a grassland vegetation community dominated by bulbous bluegrass (*Poa bulbosa*, UPL) and cheatgrass (*Bromus tectorum*, UPL), with percent cover of vegetation nearly 100 percent (Photo Plate 9).

¹ Hydrophytic definitions are as follows: FACW = facultative wetland; FACW- = facultative wetland, drier; OBL = obligate wetland; NOL = Not found on list; UPL = obligate upland; FAC = facultative; FAC+ = facultative, wetter.

W4 is a smaller vernal pool east of W3 with a large proportion of bare ground and approximately 40 percent cover of herbaceous vegetation. Dominant vegetation includes slender-branched popcorn-flower (*Plagiobothrys leptocladus*, FACW), tiny mouse-tail (*Myosurus minimus*, OBL), sessile mouse-tail (*Myosurus sessilis*, OBL), and least navarretia (*navarretia minima*, FAC). No surface water or saturation in the upper 12 inches was present at the time of the field visit. However, distinct evidence of hydrology was observed, including areas bare of vegetation (bare soil areas = 60 percent), cracked and hummocky soils, and hydrophytic vegetation. Soils were a very dark brown clayey silt loam with a thin layer contain redoximorphic concentrations at 6.5 to 7 inches. The wetland boundary followed a slight break in topography combined with a marked change in vegetation from that described above to a grassland vegetation community dominated by bulbous bluegrass (*Poa bulbosa*, UPL) and cheatgrass (*Bromus tectorum*, UPL), with percent cover of vegetation nearly 100 percent (Photo Plate 10).

Wetland W5: W5 is a very small, isolated vernal pool located in a low area along a farm access road. No surface water or saturation in the upper 12 inches was present at the time of the field visit. However, distinct evidence of hydrology was observed, including areas bare of vegetation (bare soil areas = 90 percent), cracked and hummocky soils, and hydrophytic vegetation. Soils were a very dark brown clayey silt loam with a thin layer contain redoximorphic concentrations at approximately 7.5 to 8 inches. Vegetation consisted of approximately 10 percent cover of herbaceous vegetation with no trees or shrubs. Dominant plants included slender-branched popcorn-flower (*Plagiobothrys leptocladus*, FACW), tiny mouse-tail (*Myosurus minimus*, OBL), sessile mouse-tail (*Myosurus sessilis*, OBL), bur buttercup (*Ranunculus testiculatus*, NOL), and Watson's willowherb (*Epilobium watsonii*, FACW-). The wetland boundaries followed a slight break in topography combined with a marked change in vegetation from that described above to a grassland vegetation community dominated by bulbous bluegrass (*Poa bulbosa*, UPL), cheatgrass (*Bromus tectorum*, UPL), and green rabbitbrush (*Chrysothamnus viscidiflorus*, NOL), with percent cover of vegetation nearly 100 percent (Photo Plate 11).

Wetland W6: W6 is a large, flat vernal pool area in the southern portion of the Facility area, west of Jones Canyon in the southwest quarter of Section 19. Dominant vegetation includes slender-branched popcorn-flower (*Plagiobothrys leptocladus*, FACW), tiny mouse-tail (*Myosurus minimus*, OBL), sessile mouse-tail (*Myosurus sessilis*, OBL), needleleaf navarretia (*navarretia intertexta*, FACW), and marsh cudweed (*Gnathaliium palustre*, FAC+). Total percent cover of vegetation is approximately 80 percent. No surface water or saturation in the upper 12 inches was present at the time of the field visit. However, distinct evidence of hydrology was observed, including areas bare of vegetation (bare soil areas = 20 percent), cracked and hummocky soils, and hydrophytic vegetation. Soils were a very dark brown clayey silt loam with a thin layer contain redoximorphic concentrations at approximately 7.5 to 8 inches. The wetland boundary followed a slight break in topography combined with a marked change in vegetation from that described above to a grassland vegetation community dominated by bulbous bluegrass (*Poa bulbosa*, UPL), cheatgrass (*Bromus tectorum*, UPL), and green rabbitbrush (*Chrysothamnus viscidiflorus*, NOL), with percent cover of vegetation nearly 100 percent (Photo Plate 12).

Conclusion

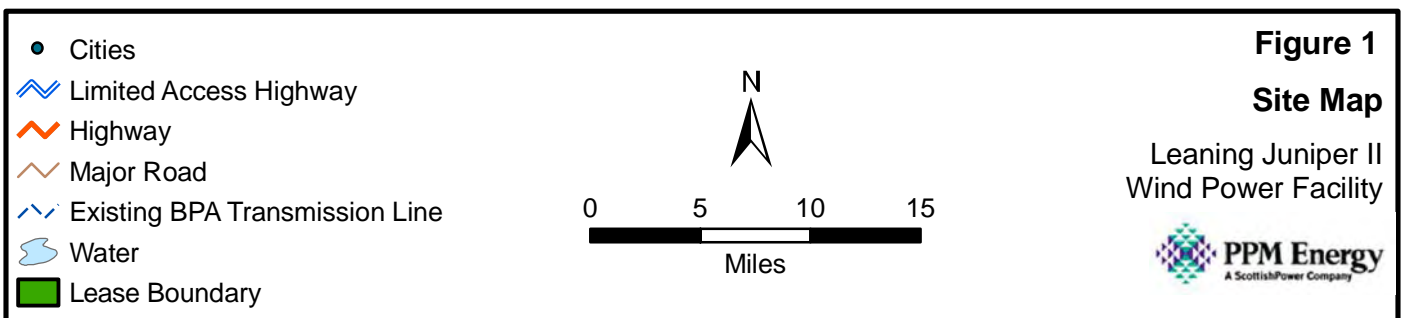
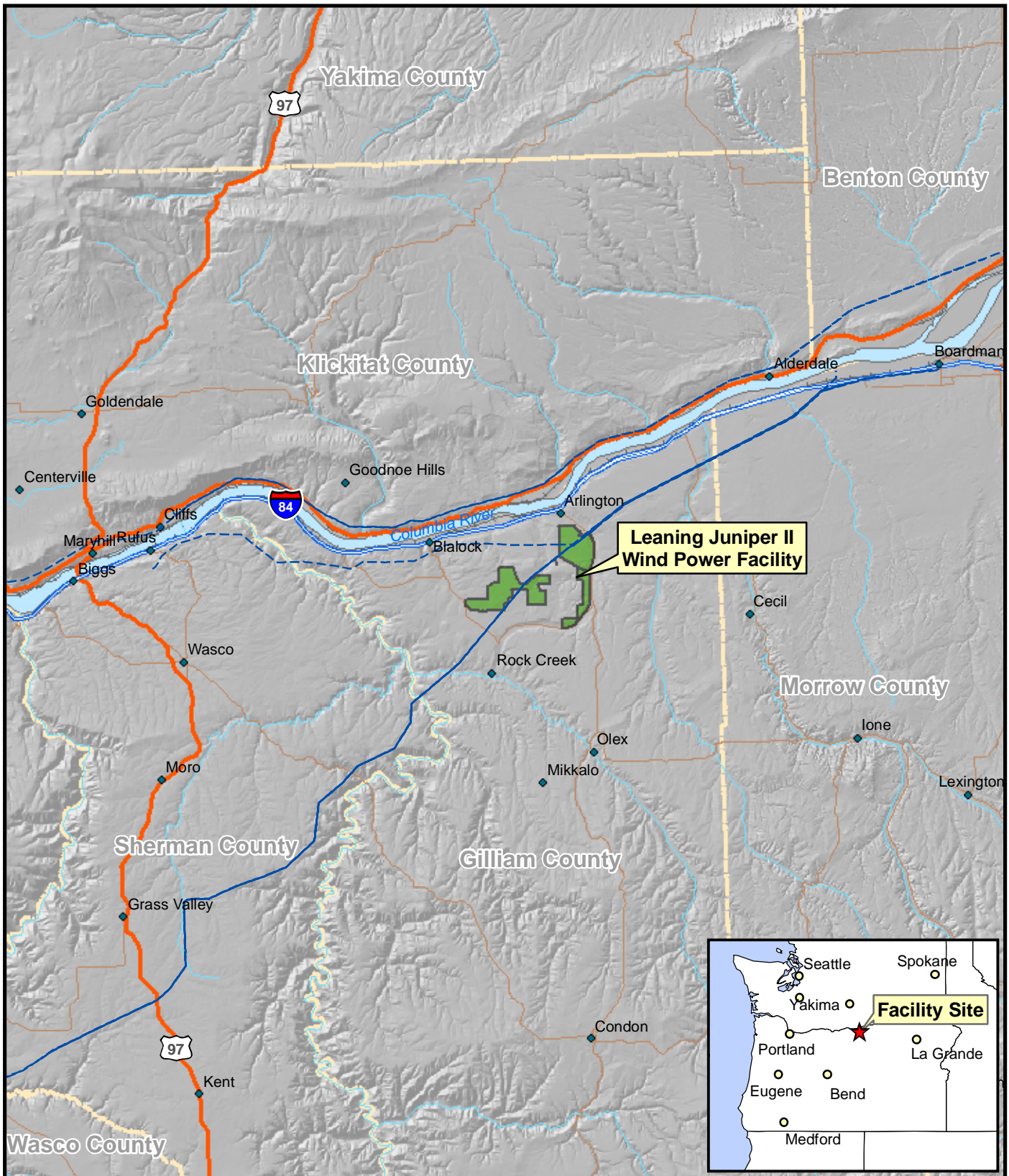
Two additional areas of potentially jurisdictional waters of the U.S. were identified in this supplementary investigation: S25, along Rattlesnake Road and S27, China Ditch in the Leaning Juniper II South area. Six seasonal wetlands also were identified and delineated. Four of these wetlands are located within 500 feet of proposed Facility activities. Federal and/or state permits may be required for impacts to these features.

This report documents the investigation, best professional judgment, and conclusions of the investigator. It should be considered a Preliminary Jurisdictional Determination and used at your own risk until it has been reviewed and approved in writing by the Oregon Department of State Lands and the U.S. Army Corps of Engineers.

Table 1. Soils Occurring Within or Adjacent to the Study Area

ID	Soil Name	Description	Profile	Hydric	Hydric Inclusions
4c	Blalock loam, 2 to 12 percent slopes	Shallow, well drained soil on uplands. It formed in loess. Permeability is moderate	0-2" 10YR 3/2 loam 2-7" 10YR 3/3 loam 7-12" 10YR 4/3 loam 12-18" 10 YR 4/3 gravelly loam 18-22" 10YR 6/2 very gravelly duripan 22-41" 10YR 5/3 gravelly loam	No	No
14B	Krebs silt loam, 2 to 5 percent slopes	Deep, well drained soils on uplands. It formed in loess and in the underlying water	0-5" 10YR 3/2 silt loam	No	No
14D	Krebs silt loam, 5 to 20 percent slopes		5-17" 10YR 3/2 silty clay loam	No	No
22D	Nansene silt loam, 35 to 70 percent slopes	Very deep, well drained soils formed in loess. Permeability is	0-3" 10YR 2/2 silt loam 3-21" 10YR 3/2 silt loam 21-34" 7.5YR 3/3 silt loam	No	No
23B	Olex silt loam, 0 to 5 percent slopes	Very deep, well drained soils on high terraces. It formed in loess and very	0-12" 10YR 3/2 silt loam	No	No
23C	Olex silt loam, 5 to 12 percent slopes		12-24" 10YR 3/2 gravelly silt loam	No	No
24D	Olex gravelly silt loam, 12 to 20 percent slopes	Very deep, well drained soils on uplands north of Rock Creek. It formed in loess and	0-12" 10YR 3/2 silt loam	No	No
24E	Olex gravelly silt loam, 20 to 40 percent slopes		12-24" 10YR 3/2 gravelly silt loam	No	No
32B	Ritzville silt loam, 2 to 7 percent slopes	Very deep, well drained soils on uplands. It formed in loess and volcanic ash. Permeability is moderate.	0-31" 10YR 3/3 silt loam	No	No
32C	Ritzville silt loam, 7 to 12 percent slopes		No	No	
32D	Ritzville silt loam, 12 to 20 percent slopes		No	No	
39D	Roloff-rock outcrop complex, 1 to 20 percent slopes	Moderately deep, well drained soils formed in loess. Permeability is moderate.	0-8" 10YR 3/2 silt loam 8-24" 10YR 3/3 silt loam >24" basalt	No	No
40B	Sagehill fine sandy loam, 2 to 5 percent slopes	Very deep, well drained soil on terraces. It formed in loess and calcareous lacustrine sediment. Permeability is moderate.	0-25" 10YR 3/3 fine sandy loam	No	No
40C	Sagehill fine sandy loam, 5 to 12 percent slopes		25-35" 2.5 YR 4/2 silt loam	No	No
40D	Sagehill fine sandy loam, 12 to 20 percent slopes		No	No	
40E	Sagehill fine sandy loam, 20 to 40 percent slopes		No	No	
55C	Warden silt loam, 2 to 5 percent slopes	Very deep, well drained soils on uplands. It formed in loess and in the underlying calcareous lacustrine silt. Permeability is moderate.	0-3" 10YR 3/3 silt loam 3-30" 10YR 4/3 silt loam	No	No
56B	Willis silt loam, 2 to 5 percent slopes	Moderately deep, well drained soils on terraces. It formed in loess. Permeability is moderate.	0-19" 10YR 3/3 silt loam	No	No
56C	Willis silt loam, 5 to 12 percent slopes		19-26" 10YR 4/3 silt loam	No	No
56D	Willis silt loam, 12 to 20 percent slopes		26-60" duripan	No	No
57	Wrentham-rock outcrop complex, 35 tp 70 percent slopes	Moderately deep, well-drained soils, on north facing exposures on uplands. It formed in loess and colluvium from basalt. Permeability is moderately slow.	0-18" 10YR 2/2 silt loam 18-33" 10YR 3/3 very gravelly silt loam	No	No
58	Xeric torrifluvents, nearly level	Very deep, somewhat excessively drained soils on bottom lands of streams. It formed in recent alluvium and windlaid materials. Permeability is rapid.	0-6" 10YR 3/3 fine sandy loam 6-22" 10YR 4/3 fine sandy loam 22-41" 10YT 4/3 loamy fine sand	No	No

Figures



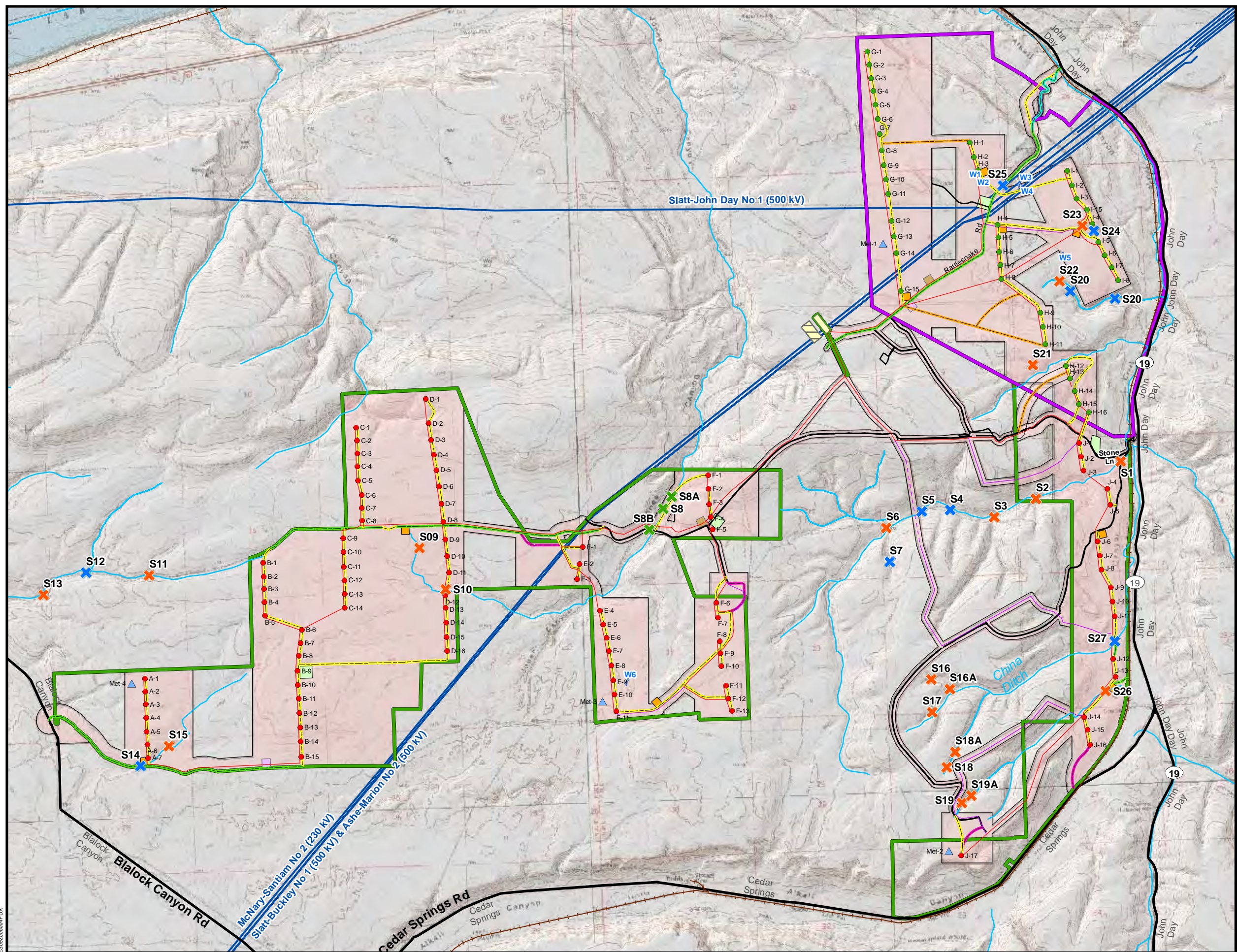
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**Figure 2
Facility Components
(1.5-MW Layout)**
Leaning Juniper II
Wind Power Facility



Legend

- ✕ Jurisdictional Waters (Corps/DSL)
- ✕ Corps Only Jurisdictional
- ✕ Nonjurisdictional Waters
- ~ CH2M HILL-Mapped Wetlands
- Leaning Juniper II Facility Corridor
- Proposed Permanent Facilities**
- Proposed Turbine - Leaning Juniper II North
- Proposed Turbine - Leaning Juniper II South
- ▲ Proposed Permanent Met Tower
- Proposed Roads - Leaning Juniper II**
- New Road
- Existing Road - Improvements Needed
- Alternate Routes - Leaning Juniper II**
- Existing Road - Improvements Needed
- New Road
- Preferred Collector Routes**
- Underground 34.5-kV Line
- Overhead 34.5-kV Line
- Alternate Collector Routes**
- Underground 34.5-kV Line
- Overhead 34.5-kV Line
- Proposed Substation
- Proposed O&M Facility and Laydown Area
- Alternate O&M Facility and Laydown Area
- BPA Jones Canyon Switching Station
- Proposed Temporary Facilities**
- Proposed Crane Path
- Proposed 2-Acre Temporary Staging Area
- Proposed 5-Acre Temporary Staging Area
- Existing Facilities**
- Existing BPA Transmission Line
- Existing LJ I Roads
- Major Roads
- Railroads
- ~ Streams
- Lease Boundary
- Leaning Juniper II - North
- Leaning Juniper II - South



ES/06200604PDX

Figure 3
NWI Wetlands Map
 Leaning Juniper II
 Wind Power Facility



Legend

Focused Study Locations

- ✕ Jurisdictional Waters (Corps/DSL)
- ✕ Corps Only Jurisdictional
- ✕ Nonjurisdictional Waters
- ▭ CH2M HILL-Mapped Wetlands
- ✕ NWI Wetlands

Proposed Permanent Facilities

- Proposed Turbines - Leaning Juniper II North
- Proposed Turbines - Leaning Juniper II South
- ▲ Proposed Permanent Met Tower

Proposed Roads - Leaning Juniper II

- New Road
 - Existing Road - Improvements Needed
- Alternate Routes - Leaning Juniper II**
- Existing Road - Improvements Needed
 - New Road

Preferred Collector Routes

- Underground 34.5-kV Line
- - - Overhead 34.5-kV Line

Alternate Collector Routes

- Underground 34.5-kV Line
- - - Overhead 34.5-kV Line

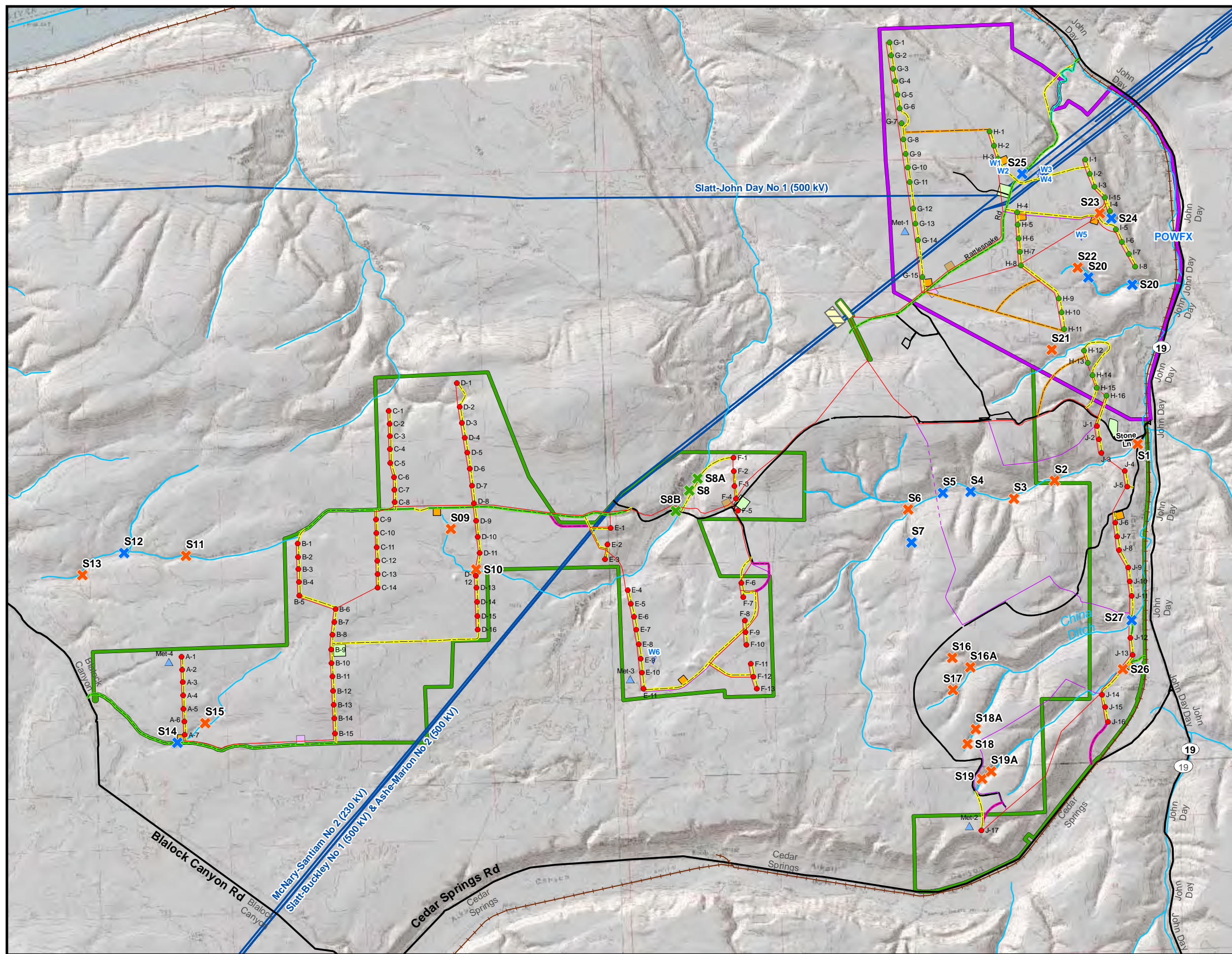
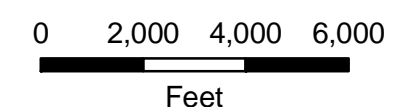
- Proposed Substation
- Proposed O&M Facility and Laydown Area
- Alternate O&M Facility and Laydown Area
- BPA Jones Canyon Switching Station

Proposed Temporary Facilities

- Proposed Crane Path
- Proposed 2-Acre Temporary Staging Area
- Proposed 5-Acre Temporary Staging Area

Existing Facilities

- Existing BPA Transmission Line
- Major Roads
- Existing LJ I Roads
- Railroads
- ~ Streams
- Leaning Juniper II - North
- Leaning Juniper II - South



Soils Legend

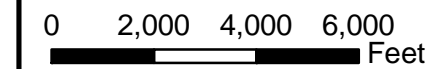
- | | |
|-------------------------------------------------------------------|----------------------------------------------------|
| Krebs silt loam (14B, 14D, 14E) | Sagehill fine sandy loam (40B, 40C, 40D, 40E, 41B) |
| Nansene silt loam (22F) | Blalock loam (4C) |
| Olex silt loam (23B, 23C, 23D) | Warden silt loam (55C, 55D) |
| Olex gravelly silt loam (24D, 24E, 25D) | Willis silt loam (56B, 56C, 56D) |
| Ritzville loam (31B, 31C, 31D, 31E, 32A, 32B, 32C, 32D, 33E, 34E) | Wrentham-Rock outcrop complex (57F) |
| Roloff-Rock outcrop complex (39D) | Xeric Torrifluvents, nearly level (58) |

Figure 4
Soil Survey Map
 Leaning Juniper II
 Wind Power Facility



Legend

- Jurisdictional Waters (Corps/DSL)
- Corps Only Jurisdictional
- Nonjurisdictional Waters
- CH2M HILL-Mapped Wetlands
- Proposed Permanent Facilities**
- Proposed Turbines - Leaning Juniper II North
- Proposed Turbines - Leaning Juniper II South
- Proposed Permanent Met Tower
- Proposed Roads - Leaning Juniper II**
- New Road
- Existing Road - Improvements Needed
- Alternate Routes - Leaning Juniper II**
- Existing Road - Improvements Needed
- New Road
- Preferred Collector Routes**
- Underground 34.5-kV Line
- Overhead 34.5-kV Line
- Alternate Collector Routes**
- Underground 34.5-kV Line
- Overhead 34.5-kV Line
- Proposed Substation
- Proposed O&M Facility and Laydown Area
- Alternate O&M Facility and Laydown Area
- BPA Jones Canyon Switching Station
- Proposed Temporary Facilities**
- Proposed Crane Path
- Proposed 2-Acre Temporary Staging Area
- Proposed 5-Acre Temporary Staging Area
- Existing Facilities**
- Existing BPA Transmission Line
- Major Roads
- Existing LJ I Roads
- Railroads
- Streams
- Leaning Juniper II - North
- Leaning Juniper II - South



Source:
 U.S. Department of Agriculture,
 Natural Resources Conservation Service
 Soil Survey Geographic (SSURGO) for
 Gilliam County, Oregon (2004)

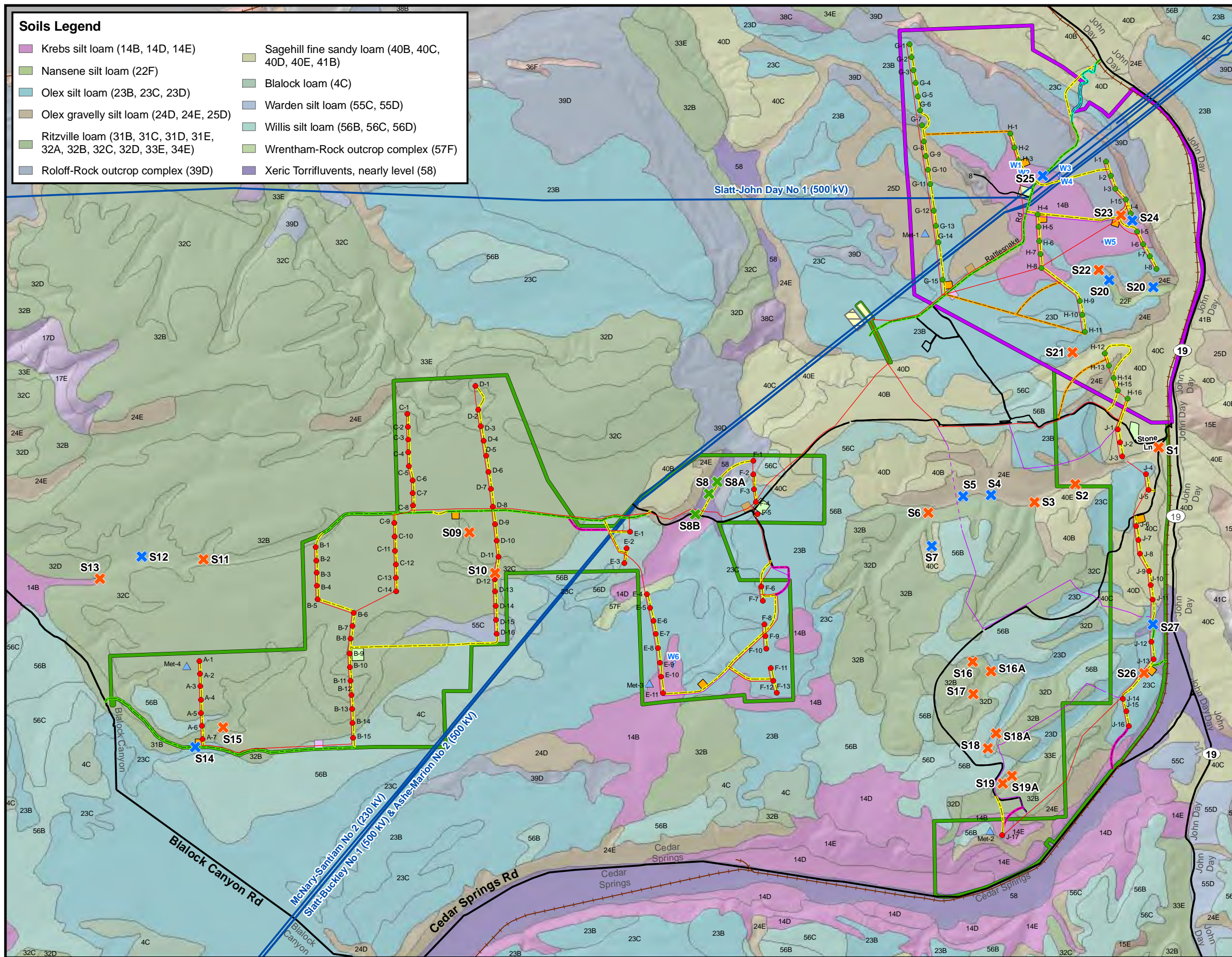
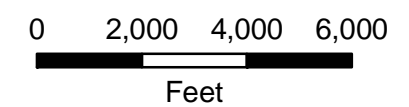
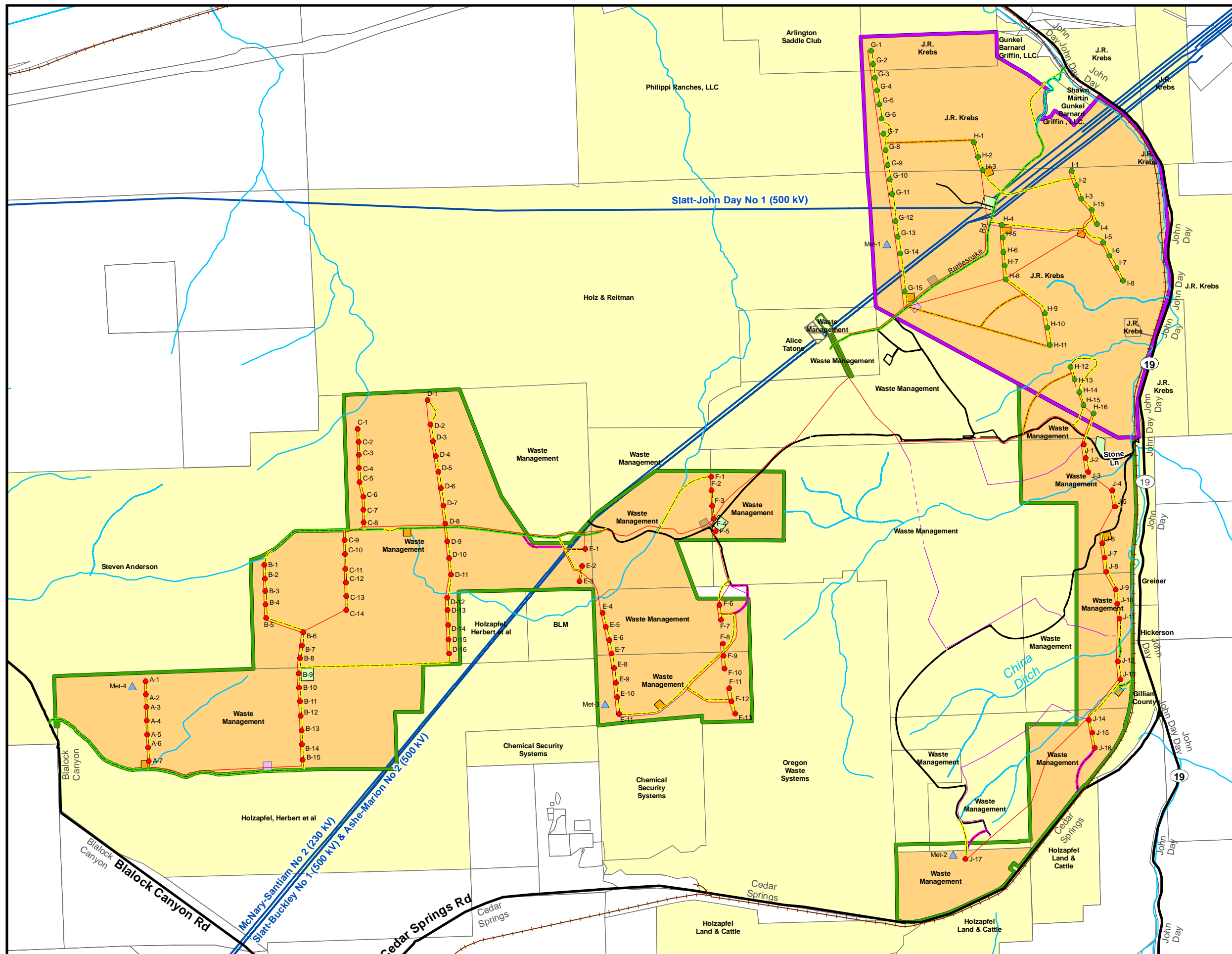


Figure 5
Tax Lot Map
 Leaning Juniper II
 Wind Power Facility



Legend

- Proposed Permanent Facilities**
- Proposed Turbine - Leaning Juniper II North
- Proposed Turbine - Leaning Juniper II South
- ▲ Proposed Permanent Met Tower
- Proposed Roads - Leaning Juniper II**
- New Road
- Existing Road - Improvements Needed
- Alternate Routes - Leaning Juniper II**
- Existing Road - Improvements Needed
- New Road
- Preferred Collector Routes**
- Underground 34.5-kV Line
- Overhead 34.5-kV Line
- Alternate Collector Routes**
- Underground 34.5-kV Line
- Overhead 34.5-kV Line
- Proposed Substation
- Proposed O&M Facility and Laydown Area
- Alternate O&M Facility and Laydown Area
- BPA Jones Canyon Switching Station
- Proposed Temporary Facilities**
- Proposed Crane Path
- Proposed 2-Acre Temporary Staging Area
- Proposed 5-Acre Temporary Staging Area
- Existing Facilities**
- Existing BPA Transmission Line
- Existing LJ I Roads
- Major Roads
- Railroads
- Streams
- Participating Landowners
- Non-Participating Adjacent Landowner
- Tax Lots
- Lease Boundary
- Leaning Juniper II - North
- Leaning Juniper II - South



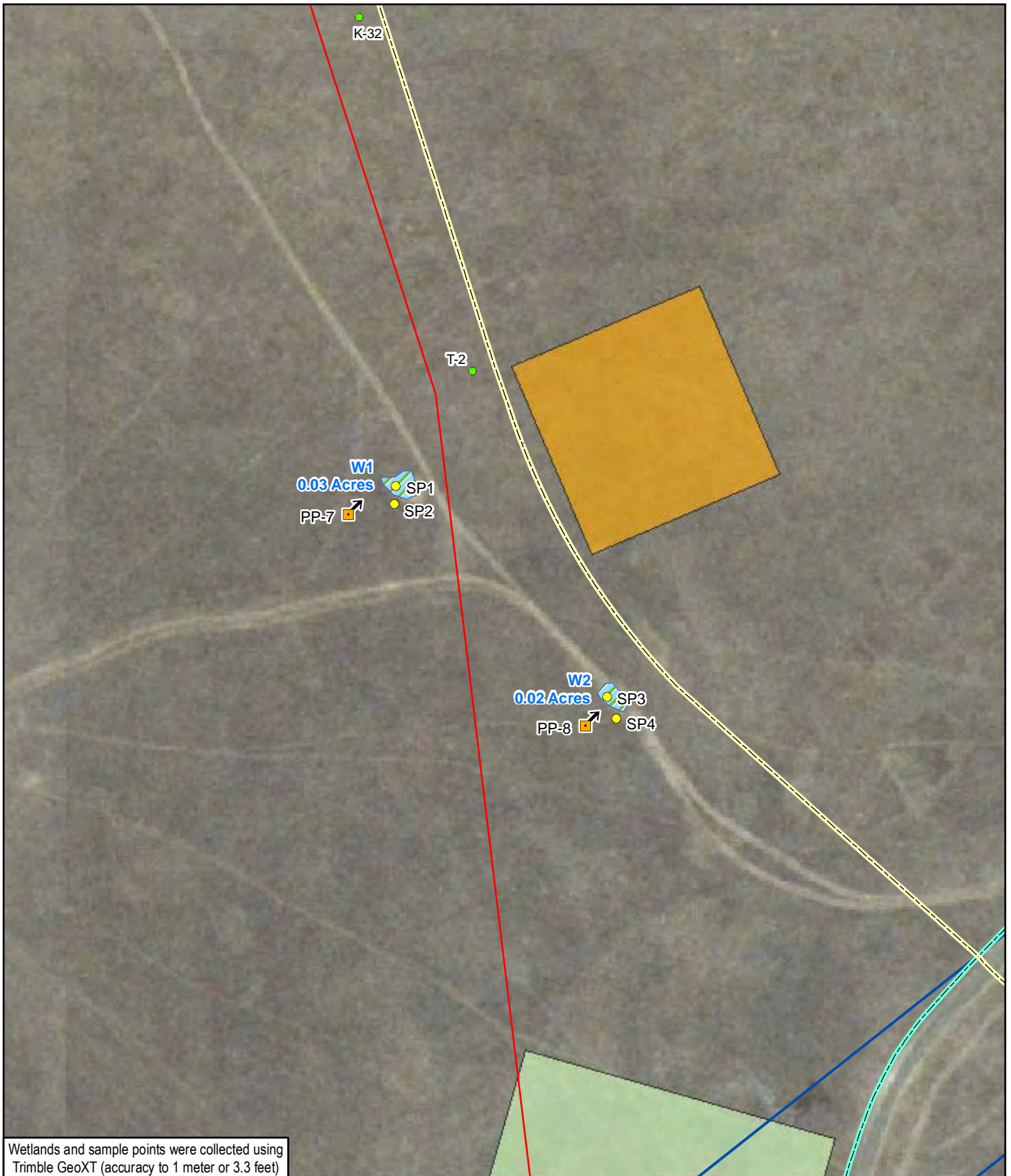
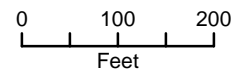


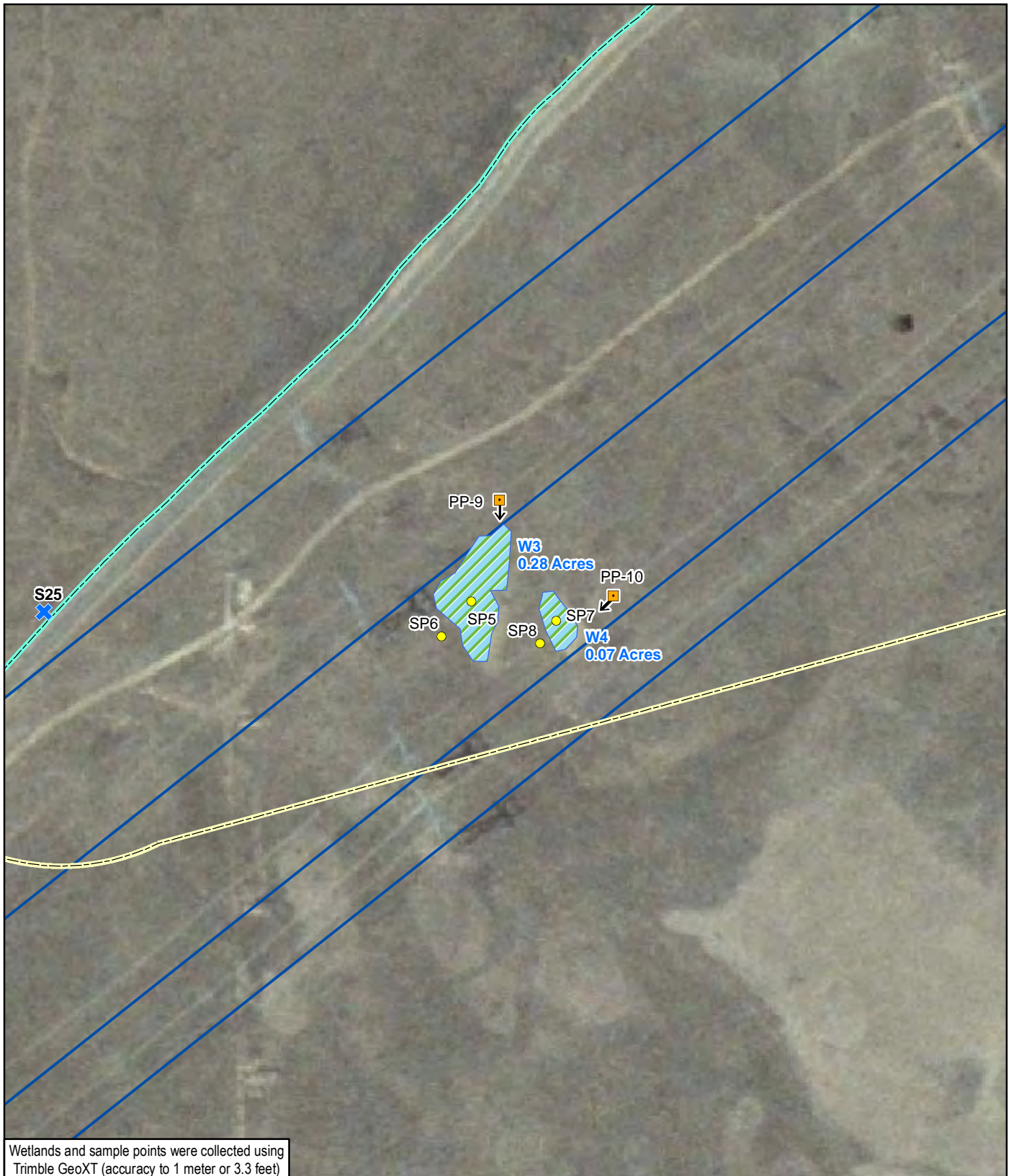
Figure 6A

Wetland Delineation Map

LEGEND

- | | | |
|----------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|
| CH2M HILL-Mapped Wetlands | Proposed Roads - Leaning Juniper II
New Road | Alternate Collector Routes
Underground 34.5-kV Line |
| Sample Points | Existing Road - Improvements Needed | Overhead 34.5-kV Line |
| Photo Points | Preferred Collector Routes
Underground 34.5-kV Line | Proposed 2-Acre Temporary Staging Area |
| Jurisdictional Waters | Overhead 34.5-kV Line | Proposed 5-Acre Temporary Staging Area |
| Proposed Turbines - Leaning Juniper II North | | Existing BPA Transmission Line |
| Proposed Turbines - Leaning Juniper II South | | |

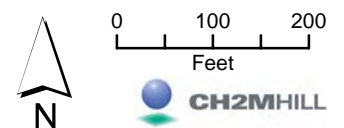




LEGEND		
CH2M HILL-Mapped Wetlands	Proposed Roads - Leaning Juniper II	Alternate Collector Routes
Sample Points	New Road	Underground 34.5-kV Line
Photo Points	Existing Road - Improvements Needed	Overhead 34.5-kV Line
Jurisdictional Waters	Preferred Collector Routes	Proposed 2-Acre Temporary Staging Area
Proposed Turbines - Leaning Juniper II North	Underground 34.5-kV Line	Proposed 5-Acre Temporary Staging Area
Proposed Turbines - Leaning Juniper II South	Overhead 34.5-kV Line	Existing BPA Transmission Line

Figure 6B

Wetland Delineation Map





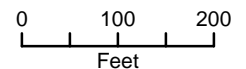
Wetlands and sample points were collected using Trimble GeoXT (accuracy to 1 meter or 3.3 feet)

Figure 6C

Wetland Delineation Map


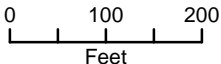








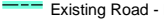
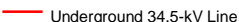
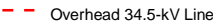
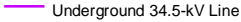
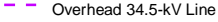
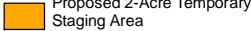
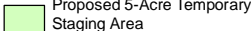

LEGEND

- | | | |
|----------------------------------------------|--------------------------------------------|----------------------------------------|
| CH2M HILL-Mapped Wetlands | Proposed Roads - Leaning Juniper II | Alternate Collector Routes |
| Sample Points | New Road | Underground 34.5-kV Line |
| Photo Points | Existing Road - Improvements Needed | Overhead 34.5-kV Line |
| Jurisdictional Waters | Preferred Collector Routes | Proposed 2-Acre Temporary Staging Area |
| Proposed Turbines - Leaning Juniper II North | Underground 34.5-kV Line | Proposed 5-Acre Temporary Staging Area |
| Proposed Turbines - Leaning Juniper II South | Overhead 34.5-kV Line | Existing BPA Transmission Line |





Wetlands and sample points were collected using Trimble GeoXT (accuracy to 1 meter or 3.3 feet)

LEGEND			Figure 6D Wetland Delineation Map   
 CH2M HILL-Mapped Wetlands  Sample Points  Photo Points  Jurisdictional Waters  Proposed Turbines - Leaning Juniper II North  Proposed Turbines - Leaning Juniper II South	Proposed Roads - Leaning Juniper II  New Road  Existing Road - Improvements Needed Preferred Collector Routes  Underground 34.5-kV Line  Overhead 34.5-kV Line	Alternate Collector Routes  Underground 34.5-kV Line  Overhead 34.5-kV Line  Proposed 2-Acre Temporary Staging Area  Proposed 5-Acre Temporary Staging Area  Existing BPA Transmission Line	

ATTACHMENT A
Site Photographs



Photo Plate 1 View northeast showing drainage S21. Draw is completely vegetated with no evidence of channel or flow (5/5/2006).



Photo Plate 2 View southeast showing existing farm road along the bottom of drainage S22 (5/5/2006).



Photo Plate 3 View southeast showing drainage S23 in the vicinity of proposed Facility activities. No evidence of channel or flow. Defined channel with clear evidence of intermittent flow begins with a steep drop approximately 1,000 feet downslope. (5/5/2006).



Photo Plate 4 View northeast showing drainage S25. Mostly vegetated at this location, bed and banks and evidence of flow become more defined downstream. Channel drains to China Creek (5/5/2006).



Photo Plate 5 View northeast showing typical section of drainage S26. Draw is completely vegetated with no evidence of channel or flow (9/12/2006).



Photo Plate 6 View northeast showing drainage S27, China Ditch. Existing gravel access road crosses drainage with a 24-inch culvert (9/12/2006).



Photo Plate 7 View northeast showing vernal pool wetland, W1 (5/22/06).



Photo Plate 8 View northeast showing vernal pool wetland, W2, approximately 100 feet southeast of W1 (5/22/06).



Photo Plate 9 View south showing vernal pool wetland, W3 (5/22/06).



Photo Plate 10 View west showing vernal pool wetland, W4. Wetland W3 visible over rise in background (5/22/06).



Photo Plate 11 View north showing vernal pool wetland, W5 (5/22/06).



Photo Plate 12 View south showing vernal pool wetland, W6 (5/22/06).

ATTACHMENT B
Field Datasheets

WETLAND DETERMINATION FORM

Project #: 180506.D1.05
 Client/Owner: PPM Energy
 Investigator: P. O'Neill
 Do normal circumstances exist on the site? Yes
 Is it an atypical situation? No
 Is the area a potential problem area? No

Date: 5/22/2006
 State: OR
 County: Gilliam
 Township, Range, Section: T2N R20E S28
 Plant Community: Sagebrush-steppe/Vernal Pool
 Sample Plot: 3
W2

VEGETATION

<u>Tree stratum</u>	% Cover	Dom.	Status	<u>Herbaceous stratum</u>	% Cover	Dom.	Indicator status
Total Cover: 0%				Total Cover: 50%			
				<i>Polygonum aviculare</i>	10		FACW-
				<i>Idahoia scapigera</i>	T		NOL
				<i>Geranium robertianum</i>	15		UPL
				<i>Poa bulbosa</i>	15		UPL
				<i>Ranunculus testiculatus</i>	30	X	NOL
				<i>Myosurus minimus</i>	20	X	OBL
				<i>Gnathium palustre</i>	20	X	FAC+
				<i>Triticum aestivum</i>	T		UPL

% of dominant species that are OBL, FACW, or FAC (excluding FAC-): 2 of 3 = 66.7 %

Comments:

SOILS

Mapped Unit Name: Krebs silt loam, 2 to 5 percent slopes (14B) Matches Profile? Yes
 Taxonomy: Fine, smectitic, mesic Aridic Calcic Agrixerolls Drainage Class: well-drained

Depth	Matrix Color	Mottle Color	Mottle Abundance, Size, Contrast	Soil Texture
0-10"	10YR 3/2	none		silt loam
10"	refusal			

Histol Reducing conditions (test) Gleyed
 Histic epipedon High organic content surface layer Organic streaking
 Sulfidic odor Redox concentrations (w/in 10") Organic pan
 Probable aquic moisture regime Concretions (w/in 3", >2mm) On hydric soils list

Comments: distinct evidence of seasonal hydrology; presence of obligate wetland plant species

HYDROLOGY

Depth of surface water: <u>NA</u> Depth to free water in pit: <u>>10"</u> Depth to saturated soil: <u>>10"</u>	Primary Indicators:	Secondary Indicators:
	<input type="checkbox"/> Inundated	<input type="checkbox"/> Oxidized rhizospheres in upper 12 in.
	<input type="checkbox"/> Saturated in upper 12 in.	<input type="checkbox"/> Water-stained leaves
	<input type="checkbox"/> Water marks	<input type="checkbox"/> Local soil survey data
	<input type="checkbox"/> Drift lines	<input type="checkbox"/> FAC neutral test
	<input checked="" type="checkbox"/> Sediment deposits	<input type="checkbox"/> Other
	<input checked="" type="checkbox"/> Drainage patterns in wetlands	

Comments: distinct depressional area in the landscape

WETLAND DETERMINATION

Hydrophytic Vegetation? Yes
 Hydric Soils? No
 Wetland Hydrology? Yes

Is this sample plot within a wetland? Yes

Comments: While soils do not meet hydric criteria, presence of obligate and other hydrophytic plant species indicate sufficient hydrology is present during the growing season for this area to meet the Clean Water Act definition of a wetland.

WETLAND DETERMINATION FORM

Project #: 180506.D1.05
 Client/Owner: PPM Energy
 Investigator: P. O'Neill
 Do normal circumstances exist on the site? Yes
 Is it an atypical situation? No
 Is the area a potential problem area? No

Date: 5/22/2006
 State: OR
 County: Gilliam
 Township, Range, Section: T2N R20E S28
 Plant Community: Sagebrush-steppe/Vernal Pool
 Sample Plot: 5
W3

VEGETATION

Tree stratum	% Cover	Dom.	Status	Herbaceous stratum	% Cover	Dom.	Indicator status
Total Cover: 0%				Total Cover: 80%			
				<i>Myosurus minimus</i>	50	X	OBL
				<i>Myosurus sessilis</i>	20	X	OBL
				<i>Plagiobothrys leptocladus</i>	10		FACW
				<i>Ventenata dubia</i>	10		NOL
				<i>Gnathaliium palustre</i>	20	X	FAC+
				<i>Eryngium spp.</i>	20	X	OBL

% of dominant species that are OBL, FACW, or FAC (excluding FAC-): 4 of 4 = 100.0 %

Comments:

SOILS

Mapped Unit Name: Krebs silt loam, 2 to 5 percent slopes (14B) Matches Profile? Yes
 Taxonomy: Fine, smectitic, mesic Aridic Calcic Agrixerolls Drainage Class: well-drained

Depth	Matrix Color	Mottle Color	Mottle Abundance, Size, Contrast	Soil Texture
0-10"	10YR 3/2	none		silt loam
10"	refusal			

Histol Reducing conditions (test) Gleyed
 Histic epipedon High organic content surface layer Organic streaking
 Sulfidic odor Redox concentrations (w/in 10") Organic pan
 Probable aquic moisture regime Concretions (w/in 3", >2mm) On hydric soils list

Comments: distinct evidence of seasonal hydrology; presence of obligate wetland plant species

HYDROLOGY

Depth of surface water: <u>NA</u> Depth to free water in pit: <u>>10"</u> Depth to saturated soil: <u>>10"</u>	Primary Indicators:	Secondary Indicators:
	<input type="checkbox"/> Inundated	<input type="checkbox"/> Oxidized rhizospheres in upper 12 in.
	<input type="checkbox"/> Saturated in upper 12 in.	<input type="checkbox"/> Water-stained leaves
	<input type="checkbox"/> Water marks	<input type="checkbox"/> Local soil survey data
	<input type="checkbox"/> Drift lines	<input type="checkbox"/> FAC neutral test
	<input checked="" type="checkbox"/> Sediment deposits	<input type="checkbox"/> Other
	<input checked="" type="checkbox"/> Drainage patterns in wetlands	

Comments: distinct depressional area in the landscape

WETLAND DETERMINATION

Hydrophytic Vegetation? Yes
 Hydric Soils? No
 Wetland Hydrology? Yes

Is this sample plot within a wetland? Yes

Comments: While soils do not meet hydric criteria, presence of obligate and other hydrophytic plant species indicate sufficient hydrology is present during the growing season for this area to meet the Clean Water Act definition of a wetland.

WETLAND DETERMINATION FORM

Project #: 180506.D1.05
 Client/Owner: PPM Energy
 Investigator: P. O'Neill
 Do normal circumstances exist on the site? Yes
 Is it an atypical situation? No
 Is the area a potential problem area? No

Date: 5/22/2006
 State: OR
 County: Gilliam
 Township, Range, Section: T2N R20E S28
 Plant Community: Sagebrush-steppe/Vernal Pool
 Sample Plot: 7
W4

VEGETATION

<u>Tree stratum</u>	% Cover	Dom.	Status	<u>Herbaceous stratum</u>	% Cover	Dom.	Indicator status
Total Cover: 0%				Total Cover: 40%			
				<i>Myosurus minimus</i>	40	X	OBL
				<i>Myosurus sessilis</i>	20	X	OBL
				<i>Plagiobothrys leptocladus</i>	10		FACW
				<i>Ventenata dubia</i>	10		NOL
				<i>Grindelia nana</i>	10		FACU+
				<i>Eryngium spp.</i>	10		OBL

% of dominant species that are OBL, FACW, or FAC (excluding FAC-): 2 of 2 = 100.0 %

Comments:

SOILS

Mapped Unit Name: Krebs silt loam, 2 to 5 percent slopes (14B) Matches Profile? Yes
 Taxonomy: Fine, smectitic, mesic Aridic Calcic Agrixerolls Drainage Class: well-drained

Depth	Matrix Color	Mottle Color	Mottle Abundance, Size, Contrast	Soil Texture
0-14"	10YR 3/2	none		silt loam
14"	refusal			

<u> </u> Histol	<u> </u> Reducing conditions (test)	<u> </u> Gleyed
<u> </u> Histic epipedon	<u> </u> High organic content surface layer	<u> </u> Organic streaking
<u> </u> Sulfidic odor	<u> </u> Redox concentrations (w/in 10")	<u> </u> Organic pan
<u>X</u> Probable aquic moisture regime	<u> </u> Concretions (w/in 3", >2mm)	<u> </u> On hydric soils list

Comments: distinct evidence of seasonal hydrology; presence of obligate wetland plant species

HYDROLOGY

Depth of surface water: <u>NA</u> Depth to free water in pit: <u>>14"</u> Depth to saturated soil: <u>>14"</u>	Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in upper 12 in. <input type="checkbox"/> Water marks <input type="checkbox"/> Drift lines <input checked="" type="checkbox"/> Sediment deposits <input checked="" type="checkbox"/> Drainage patterns in wetlands	Secondary Indicators: <input type="checkbox"/> Oxidized rhizospheres in upper 12 in. <input type="checkbox"/> Water-stained leaves <input type="checkbox"/> Local soil survey data <input type="checkbox"/> FAC neutral test <input type="checkbox"/> Other
----------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Comments: distinct depressional area in the landscape

WETLAND DETERMINATION

Hydrophytic Vegetation? Yes
 Hydric Soils? No
 Wetland Hydrology? Yes
 Is this sample plot within a wetland? Yes

Comments: While soils do not meet hydric criteria, presence of obligate and other hydrophytic plant species indicate sufficient hydrology is present during the growing season for this area to meet the Clean Water Act definition of a wetland.

EXHIBIT K**LAND USE**

OAR 345-021-0010(1)(k)

TABLE OF CONTENTS

	Page
K.1 INTRODUCTION AND LAND USE REVIEW PATH	K-1
K.2 LAND USE ANALYSIS AREA AND MAP	K-1
K.3 LOCAL LAND USE APPROVAL.....	K-2
K.4 ENERGY FACILITY, RELATED AND SUPPORTING FACILITIES AND ACCESS ROADS	K-2
K.5 COUNCIL DETERMINATION ON LAND USE.....	K-3
K.5.1 Applicable Local Substantive Criteria – Consistency of Three Facility Components with Applicable Zoning and Fundamental EFU-Zone Approval Criteria	K-3
K.5.2 Provisions Applicable to All Permitted and Conditionally Permitted Uses (All Facility Components).....	K-6
K.5.3 Applicable Local Substantive Criteria – GCZO Section 7.010(1)(A) – Authorization to Grant or Deny Conditional Uses	K-6
K.5.4 Applicable Local Substantive Criteria – GCZO Section 7.010(1)(B) – Authorization to Impose Conditions of Approval.....	K-13
K.5.5 Applicable Local Substantive Criteria – GCZO Section 7.020 – Additional Applicable Standards	K-16
K.5.6 Directly Applicable Statutes, Goals and LCDC Rules	K-20
K.6 FEDERAL LAND MANAGEMENT PLANS	K-26
K.7 REFERENCES.....	K-27

FIGURES

- K-1 Zoning Map
- K-2 Land Use Map

ATTACHMENT

- K-1 Landowner Statements Regarding Compatibility with Farming Practices

K.1 INTRODUCTION AND LAND USE REVIEW PATH

OAR 345-021-0010(1)(k) *Information about the proposed Facility's compliance with the statewide planning goals adopted by the Land Conservation and Development Commission, providing evidence to support a finding by the Council as required by OAR 345-022-0030. The applicant shall state whether the applicant elects to address the Council's land use standard by obtaining local land use approvals under ORS 469.504(1)(a) or by obtaining a Council determination under ORS 504(1)(b). An applicant may elect different processes for an energy Facility and a related or supporting Facility but may not otherwise combine the two processes. Notwithstanding OAR 345-021-0090(2), once the applicant has made an election, the applicant may not amend the application to make a different election. In this subsection, "affected local government" means a local government that has land use jurisdiction over any part of the proposed site of the Facility. In the application, the applicant shall:*

Response: To issue a site certificate, the Energy Facility Siting Council (Council) must find that the Leaning Juniper II Wind Power Facility (the Facility) complies with the statewide land use planning goals (goals) adopted by the Land Conservation and Development Commission (LCDDC) (OAR 345-022-0030(1)). Leaning Juniper Wind Power II, LLC (the Applicant) has elected to seek a Council determination of compliance under ORS 469.504(1)(b). Under this election, a finding of compliance is required when the Council determines that:

ORS 469.504(1)(b)(A) *The proposed Facility complies with applicable substantive criteria from the affected local government's acknowledged comprehensive plan and land use regulations that are required by the statewide planning goals and in effect on the date the application is submitted, and with any Land Conservation and Development Commission administrative rules and goals and any land use statutes directly applicable to the Facility under ORS 197.646(3);*

ORS 469.504(1)(b)(B) *For a proposed Facility that does not comply with one or more of the applicable substantive criteria...the Facility otherwise complies with the statewide planning goals or an exception to any applicable statewide planning goal is justified...; or*

ORS 469.504(1)(b)(C) *For a proposed Facility that the Council decides, under sections (3) or (6), to evaluate against the statewide planning goals, the proposed Facility complies with the applicable statewide planning goals or that an exception to any applicable statewide planning goal is justified... (OAR 345-022-0030(2)(b)).*

Exhibit K demonstrates the Facility's compliance with the applicable substantive criteria from the Gilliam County (County) acknowledged comprehensive plan and land use ordinances and with LCDDC administrative rules and goals and any land use statutes directly applicable to the Facility. Exhibit K also demonstrates that a reasons exception to statewide planning goal 3, agriculture, is justified under ORS 469.504(2).

K.2 LAND USE ANALYSIS AREA AND MAP

OAR 345-021-0010(1)(k)(A) *Include a map showing the comprehensive plan designations and land use zones of the Facility site, all areas that may be temporarily disturbed by any activity*

related to the design, construction and operation of the proposed Facility and property adjacent to the site.

Response: Figure K-1 depicts the Facility location, the Gilliam County Comprehensive Plan (GCCP or Comprehensive Plan) designations and land use zones of the Facility site and property adjacent to the site, areas of the site that may be temporarily disturbed during the design, construction, or operation of the Facility, and needed or supporting facilities. Figure K-2 depicts actual land uses within the half-mile land use study area.

K.3 LOCAL LAND USE APPROVAL

OAR 345-021-0010(1)(k)(B) *If the applicant elects to obtain local land use approvals:*

- (i) Identify the affected local government(s) from which land use approvals will be sought;*
- (ii) Describe the land use approvals required in order to satisfy the Council's land use standard;*
- (iii) Describe the status of applicant's application for each land use approval; and*
- (iv) Provide an estimate of time for issuance of local land use approvals.*

Response: The Applicant has elected to obtain a Council determination on land use for the Facility.

K.4 ENERGY FACILITY, RELATED AND SUPPORTING FACILITIES AND ACCESS ROADS

The Facility is described in Exhibit B of this Application for a Site Certificate (ASC). It consists of two main components: (1) Leaning Juniper II North (the north portion of the Facility with up to 93 MW), and (2) Leaning Juniper II South (the south portion of the Facility with up to 186 MW). Both components are in the same physical location, are entirely in the Exclusive Farm Use zone (EFU), and are discussed together for purposes of analysis in this Exhibit. Please refer to Exhibit C, Figures C-1, C-2, and C-3, for maps of the site vicinity, Facility location, and Facility components, respectively.

All Facility components will be located on private land on which the Applicant has negotiated long-term wind energy leases with the landowners. All of the Leaning Juniper II South turbines will be located on lands owned by Waste Management Services of Oregon, Inc., that surround on three sides the existing Arlington Landfill. These lands currently function as a buffer around the landfill and as a source of soils for covering landfill cells as they are filled and closed. Some of the land is used for cultivation of winter wheat, while other portions are used for cattle grazing. The turbines for Leaning Juniper II North will be located on land owned by a private landowner, J.R. Krebs. This land currently is used for farming and cattle grazing. Easements have also been negotiated with adjacent landowners for road and collector cable access. The turbines and related or supporting facilities will be constructed and sited in a manner that minimizes disruption to existing farm operations.

Temporary impacts to agricultural land will be approximately 480 acres. Permanent impacts to agricultural land will be approximately 67 acres. Tables C-4 and C-5 in Exhibit C provide detailed acreage impacts and identify impacts associated with both Leaning Juniper II North and Leaning Juniper II South.

K.5 COUNCIL DETERMINATION ON LAND USE

OAR 345-021-0010 (1)(K)(C) *If the applicant elects to obtain a Council determination on land use:*

(i) *Identify the affected local government(s);*

Response: The Facility will be sited solely in Gilliam County, which is the affected local government.

(ii) *Identify the applicable substantive criteria from the affected local government's acknowledged comprehensive plan and land use regulations that are required by the statewide planning goals and that are in effect on the date the application is submitted and describe how the proposed Facility complies with those criteria;*

Response: The proposed Facility and all related or supporting facilities will be located within the Exclusive Farm Use base zone (EFU zone); see Figure K-1. The Facility complies with the EFU zone criteria set forth in the Gilliam County Zoning Ordinance (GCZO or Zoning Ordinance) in the manner described in the following section:

K.5.1 Applicable Local Substantive Criteria – Consistency of Three Facility Components with Applicable Zoning and Fundamental EFU-Zone Approval Criteria

K.5.1.1 GCZO Section 4.020(D) – Conditional Uses Permitted in County EFU Zone

Consistent with state land use statutes and the GCZO, the Facility is analytically divided into three separate uses of land: commercial electricity generating facilities (the wind turbines and collector network), transportation improvements (new and improved access roads), and utility facilities necessary for public service (collector lines, substations, meteorological [met] towers, and Operations and Maintenance [O&M] building[s]). These three separate types of land use are addressed, in turn, by GCZO 4.020(D)(14), GCZO 4.020(D)(25) and GCZO 4.020(D)(29).

GCZO 4.020(D). Conditional Uses Permitted. *In the EFU Zone, the following uses and their accessory uses may be permitted if determined by the Planning Commission during a public hearing to satisfy the applicable criteria and procedures set forth in Section 7.040.*

(14) *Commercial utility facilities for the purpose of generating power for public use by sale. A power generation Facility not located on high-value farmland shall not preclude more than 20 acres from use as a commercial agricultural enterprise. A power generation Facility located on high-value farmland shall not preclude more than 12 acres from use as a commercial agricultural enterprise. Approval of a use pursuant to this subsection is subject to the review criteria of Section 4.020.H, and any other applicable criteria or provisions of law.*

- (25) *Transportation improvements on rural lands allowed by OAR 660-012-0065.¹ Approval of a use pursuant to this subsection is subject to the review criteria of Section 4.020.H, and any other applicable criteria or provisions of law.*
- (29) *Utility facilities necessary for public service subject to the provisions of ORS 215.275 and OAR 660-033-0130(16). No local legislative criteria shall be applied for consideration of establishing a utility facility necessary for public service.*

Response: This Exhibit demonstrates the compliance of each of the three Facility components with the relevant legal standards. In addition, GCZO 4.020(D)(34) specifically lists “Wind Power Generation Facilities” as a conditional use in the EFU zone, and GCZO 7.020(18)(T) contains specific standards applicable to such facilities. Based on previous Conditional Use Permit (CUP) findings, the County appears to treat GCZO 4.020(D)(34) as additive to GCZO 4.020(D)(14) rather than as a more specific replacement for that provision. This Exhibit follows the same course, showing compliance with both sections and using the more general section, GCZO 4.020(D)(14), as the organizing one.

K.5.1.2 Energy Generating Facility’s Compliance With Fundamental Approval Criteria of GCZO 4.020(H)(1)(a) & (b)

GCZO 4.020(D)(14) and (34) implement ORS 215.283(2)(g), which provides that “commercial utility facilities for the purpose of generating power for public use by sale” are permitted on EFU land subject to ORS 215.296. ORS 215.296 is implemented, in relevant part, verbatim by GCZO 4.020(H), which provides:

1. *The use may be approved only where the County finds that the use will not:*
 - a) *Force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use; or*
 - b) *Significantly increase the cost of accepted farm or forest practices on surrounding lands devoted to farm or forest use.*

This section also applies to the proposed road improvements (see GCZO 4.020(D)(25)). Therefore, the Applicant’s response below considers the entire Facility rather than dividing it into components.²

Response: For the reasons provided below, the Facility will neither force significant changes in, nor significantly increase the cost of, accepted farming practices on surrounding lands. In addition, the Applicant directs the Council’s attention to two important precedents. First, Gilliam County previously made the same findings, for the adjacent wind facility, Leaning Juniper I, in issuing CUP 2004-05. Second, the Council

¹ OAR 660-012-0065 allows construction of new roads and improvement of existing roads to serve local travel needs on rural lands subject to several review criteria. These criteria, and the local implementing standards, are addressed in appropriate sections of this Exhibit.

² Neither GCZO 4.020(H) nor ORS 215.296 applies to utility facilities necessary for public service, but no effort was made to carve out these Facility components from the following analysis because their sizes and impact profiles are insignificant in comparison to the rest of the Facility.

has previously found that a wind project located in a rural, dry-land farming and grazing area can meet these statutory tests (see Stateline Wind Project site certificate and subsequent amendments). In the Stateline case, the owners of “surrounding lands” have not, to the Applicant’s knowledge, complained that the project (built and operating since 2001) has forced a change in farming practices or increased the cost of such practices. As described below, the proposed Facility meets the same tests and is not materially different from Leaning Juniper I or Stateline in either Facility features or the nature of farming practices on surrounding lands.

Given the evident lack of long- or medium-distance impacts of wind projects on agricultural practices on surrounding lands, a logical boundary for the Facility’s “surrounding lands” would be lands located within the land use study area (i.e., lands within a half-mile of the Facility lease boundaries). Within this area, land that is devoted to farm use is used to grow wheat or barley. No forest use occurs in this area. Very little land in this area is irrigated, rainfall is low, and soils and terrain are consistent in type. Accepted farm practices include soil preparation in the spring and fall, sowing, fertilizing, pest and weed management, and harvesting.

The development and operation of the Facility will have no significant impact on either the continuation of these practices or their cost. (See Attachment K-1, Landowner Statements.) The Facility will occupy some agricultural land permanently (67 acres). Further, development of the Facility may cause small-scale changes in agricultural practices on immediately surrounding lands: changes in harvest patterns, access to farm fields, processes for delivering and applying fertilizers and other projects to crops, and the harvesting of crops. None of these are “significant” given the primarily temporary nature of much of the disturbance and the small permanent Facility footprint in comparison to the overall acreage in agricultural production in the surrounding lands.

Ground disturbance during construction can encourage weeds that temporarily and minimally interfere with crop yields until eradicated. The development of access roads and turbine tower pads create margins in the wheat fields that can also temporarily cause the spread of weeds. In conjunction with the Gilliam County Weed District, the Applicant will develop and implement a weed control management plan within the Facility site to minimize the growth and spreading of noxious weed species in the areas in which the Facility will be built.

Upon completion of the construction of the Facility, all of the staging and laydown areas will be rehabilitated and made available for agricultural and wildlife use. Further, where necessary and feasible, the Applicant will provide access across construction trenches to fields within the Facility area. The Applicant will undertake measures to avoid or mitigate impacts to soil, such as employing dust-control and erosion-control measures. The Applicant will also consult with area landowners and lessees during construction and operation of the Facility to minimize or avoid any adverse impacts to surrounding agricultural practices and to avoid any increase in farming costs caused by the construction or operation of the Facility.

The Applicant will use existing access roads to minimize the Facility’s impact to resource land. However, as described in Exhibits B and C, some new access roads are

required. These roads will not significantly adversely impact farming practices or increase farming costs, either during construction or use of these roads. Instead, they will provide farmers with better access to local agricultural lands. Further, during operation of the Facility, employees will use these roads infrequently.

The Facility will also not significantly increase the cost of accepted farm practices on surrounding farmland. (See Attachment K-1, Landowner Statements.) While development and operation of the Facility may cause some minor change to harvesting patterns or various farming practices associated with the application of fertilizers and other products, the changes would not significantly increase the cost of farming in the surrounding area.

K.5.1.3 Related and Supporting Facilities' Compliance with ORS 215.283(1)(d) and GCZO 4.020(D)(29)

GCZO 4.020(D)(29) simply quotes ORS 215.283(1)(d). Please see Section K.5.6 for a demonstration of compliance with that statute and ORS 215.275.

K.5.2 Provisions Applicable to All Permitted and Conditionally Permitted Uses (All Facility Components)

GCZO chapter 5 contains provisions that are applicable to a wide variety of land divisions and development proposals. The Applicant has reviewed this chapter and does not find any criteria or standards applicable to the Facility.

K.5.3 Applicable Local Substantive Criteria – GCZO Section 7.010(1)(A) – Authorization to Grant or Deny Conditional Uses

In addition to the criteria, standards and conditions that may be set forth in a specific Zone, this Article, or other regulations applicable to a specific Conditional Use, shall not be approved or permitted unless the following criteria are met. A Conditional Use may be approved on the Condition or Conditions that the applicant obtain and maintain compliance with other permits and approvals required.

- a) *The proposed use shall be in compliance with the applicable Comprehensive Plan designation and polices.*
- b) *As applicable, sewage and/or solid waste disposal methods shall be provided in compliance with applicable local, State and Federal regulations.*
- c) *Proposal shall be found to be in compliance or conditioned upon compliance with applicable air and noise pollution standards.*
- d) *Required access shall be legally established, available, and adequate to serve the proposed use.*
- e) *Public services deemed necessary shall be available or provisions for such provided, and no use shall be approved which is found to exceed the carrying capacities of affected public services unless there are provisions to bring such capacities up to the need.*

- f) *Proposal shall be in compliance with the applicable standards and limitations of the primary and combining Zone as may be applicable.*
- g) *No use shall be approved which is found to have a significant adverse impact on resource carrying capacities unless there are provisions for mitigating such impact.*
- h) *No use shall be approved which is found to exceed the carrying capacities of affected public services and facilities.*
- i) *All required State and Federal permits or approvals have been obtained or will be as a condition of approval.*

Response: Each criterion is addressed separately below.

- (a) *The proposed use shall be in compliance with the applicable Comprehensive Plan designation and polices.*

Response: Comprehensive Plan goals and policies generally apply to the County's planning function in general rather than to individual development applications. In the following discussion, the Applicant has identified those goals and policies that could be relevant to the ASC and have shown how the Facility complies with such goals and policies.

K.5.3.1 GCCP Part 2. General Planning Policies

Policy 1. The County recognizes and supports State and Federal legislative and regulatory efforts directed towards the preservation and improvement of the environment; Relative thereto, the following policies are set forth:

- A) *The county shall continue to require compliance with State and Federal regulations, as applicable, for land use activities involving sewage disposal treatment and disposal, solid waste disposal, and air, water and noise pollution.*

Response: The Facility will comply with all state and federal regulations addressing air, water and noise pollution; thereby meeting the intent of this policy. The Facility will maintain the existing quality of the physical environment within the County by not significantly adversely impacting that environment.

Temporary impacts to land within the Facility area will occur with the creation of the staging areas and excavation for underground power lines not located near the roads. To minimize soil exposure during installation of the power lines, the Applicant will endeavor to open the smallest necessary sections of trench during each day of construction, and will backfill the trenches as soon as practicable after the power lines have been set in the trenches. Establishing staging areas will involve stripping and temporarily stockpiling topsoil before placing gravel on the laydown areas. Because stockpiling will occur during the time of year when rainfall is lowest, very little erosion will result from precipitation. Construction of the Leaning Juniper II Facility will be conducted pursuant to a National Pollutant Discharge Elimination System (NPDES) General Construction Stormwater (1200-C) Permit issued by the Oregon Department of

Environmental Quality (DEQ). The NPDES permits require the use of best management practices to minimize the potential for erosion. The Applicant is in the process of preparing a 1200-C permit application for Leaning Juniper II and plans to submit this application to DEQ in the fall of 2006.

Best management practices will also be used to minimize the impacts of wind erosion. In actively farmed areas, the wheat crop will protect the stockpiles from wind erosion. In other areas, hay bales or other similar soil containment features will be used during construction of the Facility. As needed, water trucks will be used to keep wind-borne erosion losses to a minimum. After the need for the staging areas ends, the staging area locations will be brought back to their original contours, topsoil will be spread in these areas, and they will be revegetated or prepared for planting of wheat or barley, or for use as range land. Any disturbed Conservation Reserve Program (CRP) areas and other noncropped vegetated areas will be revegetated with the appropriate species.

Policy 3. Economic development and diversification is deemed vital to the economic future and stability of the County, and is therefore to be encouraged, however, such economic development and diversification is not to be achieved at the expense of enterprises currently operating in the County by preferential treatment with respect to tax obligations due to the County.

Response: Development of the Facility will increase economic diversity within the County and offer nonagricultural employment opportunities for local residents. The Facility will substantially contribute to the diversification of the County's economic base. Allowing the development of the Facility is consistent with the purposes of the EFU zone, which allows for the development of commercial utility facilities as a conditional use.

Operation of the Facility is projected to produce additional tax revenue for the County. Development of the Facility would not adversely affect enterprises currently operating in the County by offering preferential treatment with respect to tax obligations due to the County.

Policy 4. In order to avoid unnecessary damage to property and natural resources of the county, development in draws, canyons and similar occasional watercourses will avoid placement of buildings and structures such as fences in such a manner as to impede, obstruct or divert drainage or flood waters that flow through these watercourses, unless such structures are specifically designed for the purpose of interfering with the free flow of water, and are adequately designed and engineered for that purpose.

Response: All development occurring in draws, canyons, and similar occasional watercourses will avoid placement of structures that would impede, obstruct, or divert drainage or flood waters.

Policy 5. Development on hillside areas known to be potentially hazardous because of landslide should be undertaken only after careful consideration has been given to the stability of the area and the probably effects of proposed cut and fill activities. When processing

applications for development on lands in these areas, the county may require the application to be accompanied by investigative reports prepared by competent authority.

Response: No development will occur on hillside areas known to be potentially hazardous.

Policy 6. In issuing permits for development, the county will require evidence that adequate erosion control techniques have been designed and will be employed in the construction and operation of the project.

Response: Erosion control will be standard practice both during and after construction and during the revegetation period. Erosion control will comply with all State and County standards and will include, where necessary, sediment control basins and traps in drainages or other erosion control devices (e.g., jute netting, soil stabilizers, check dams) to minimize soil erosion. Surface flows will be directed away from cut-and-fill slopes and into ditches that outlet into natural drainages with silt traps, as necessary. Both during and after site revegetation, all revegetation and erosion control debris will be collected and disposed of properly.

Policy 8. It is not the intent of the county that its development policy or regulations inhibit or unnecessarily restrict the design of facilities intended to conserve energy or to develop alternative sources of energy. For this reason, accommodation of design or development features intended to result in energy conservation or utilization of alternative energy sources constitutes sufficient grounds for relaxation or adjustment of standards imposed by county regulatory devices. Variances granted for this purpose shall be the minimum variance required to achieve the intent of this policy.

Response: The Facility will provide an alternative energy source to the state of Oregon.

K.5.3.2 GCCP Part 3. Agricultural Land Use

Policy 1. It shall be the policy of Gilliam County to maximize the preservation and protection of commercial agriculture in the County, and to provide maximum incentives for such through the application of zoning in compliance with ORS 215 to all lands identified as "Agricultural Lands." However, this policy shall not be construed to, nor is it intended to, exclude non-farm uses that are authorized by state statutes on Lands zoned as Exclusive Farm Use (EFU) and are otherwise consistent with the Plan.

Response: As discussed in this Exhibit, the Facility will remove approximately 67 acres from agricultural production and the Facility must obtain a Goal 3 exception under the criteria set forth in ORS 469.504(2)(c). A Goal 3 reasons exception is requested and justified in Section K.5.6 of this Exhibit.

Based on statements from farmland landowners directly impacted by the Facility, the Facility would be compatible with farm uses and would not interfere with the County policy of maximization of protection and preservation of commercial agriculture (see Attachment K-1). Two common sources of conflict between farm and nonfarm uses are the ability of farmers to maneuver equipment or vehicles around obstacles (like turbines), and timely access to parcels without conflicts with non-farm-related traffic or

construction-related delays. For this Facility, access roads will be located to minimize disturbance and maximize transportation efficiency. Existing County roads and private farm roads will be used to the extent feasible.

The Facility will have minimal impact on farm uses, and the Applicant will take steps to minimize any disruption to farming practices. Wherever feasible, turbines and transmission interconnection lines will be placed along the margins of cultivated areas to reduce the potential for conflict with farm operations.

As a result of the minimal amount of land being permanently disturbed and the mitigation measures taken by the Applicant, the Facility is compatible with farm uses of the property.

Policy 7. Non-farm uses that legitimately require a location in close proximity to areas of commodity production, shall not interfere with the use of surrounding lands for agricultural pursuits. Such uses shall be considered to be commercial activities in conjunction with or of direct service and support to agriculture.

Response: The Facility and all of the related or supporting facilities must be sited on EFU-zoned land in order to produce commercial quantities of energy to the power grid in a safe and economically viable manner. To the Applicant's knowledge, all Oregon wind projects have been located on EFU land; such land seems to hold most, if not all, of Oregon's commercially viable wind resource. Further, the Applicant is not aware of any meteorological information concerning significant, developable wind resources on non-EFU land in Gilliam County. Gilliam County has stated that "[W]ith the exception of the General Industrial lands indicated on the comprehensive plan map and the lands included within the established Areas of Mutual Concern, all lands in Gilliam County are hereby defined as agricultural lands for purposes of applying policies adopted by this comprehensive plan." None of the general industrial locations has the necessary wind resource, adequate parcels of land, or proximate transmission system necessary to build the Facility.

Policy 7. Non-farm uses that legitimately require a location in close proximity to areas of commodity production, shall not interfere with the use of surrounding lands for agricultural pursuits. Such uses shall be considered to be commercial activities in conjunction with or of direct service and support to agriculture.

Response: Discussed above under GCCP Part 3, Agricultural Land Use Policy 1.

K.5.3.3 GCCP Part 4. Urban and Urban Type Land Uses

Policy 1. It is the policy of Gilliam County that, with exceptions elsewhere specified, non-farm residential, commercial and industrial uses shall be located within unincorporated cities and related urban growth boundaries.

Response: The County's EFU zone expressly allows wind generation facilities as a conditional use (GCZO 4.020(D)(34)). The Facility is locationally dependent and, accordingly, cannot be located within any of the area's unincorporated cities or related

urban growth boundaries. Furthermore, the Facility will not have a large impact on services in the County. Its co-location and compatibility with existing and ongoing agricultural activities provides an example of orderly and efficient land use.

K.5.3.4 GCCP Part 6. Transportation Facilities

Policy 4. Although the county, within limitations of available time and manpower, has provided some limited maintenance assistance on private roads on a cost-reimbursable basis, the county is not in a position to guarantee maintenance of private roads, or of any road not designed and constructed to predetermined county standards.

Response: Some existing private roads will be improved by widening, grading, and graveling. Typical existing roads are 8 to 12 feet wide and would need to be widened to up to 20 feet. Where necessary, existing cattle guards will be replaced with wider cattle guards to accommodate the wider roads. The Applicant is taking responsibility for these upgrades and any maintenance that will be required.

Policy 5. It has been and will continue to be the policy of Gilliam County not to build or totally fund major improvements of existing roads to serve isolated non-agricultural areas or developments. The requirements for new roads or major improvements for such areas and/or developments shall, therefore, be the responsibility of those areas or developments needed and requesting such facilities and/or improvements. The County will continue to concentrate its maintenance and construction efforts on County Roads of major significance to the overall economy of the County and to those roads which have been constructed to and "accepted" as County Roads for full maintenance responsibility.

Response: Transportation to and from the site will follow a route that includes access via interstate, state, and county roads. A final transportation plan will be developed in consultation with the Gilliam County Public Works Department before construction begins.

No new public roads or highways will be constructed as part of the Facility. The design for the private access roads has been developed by the Applicant. The Applicant will be responsible for maintenance of private roads.

Policy 10. Operation, maintenance, repair and preservation of existing transportation facilities shall be allowed without land use review, except where specifically regulated.

Response: No new public roads or highways will be constructed as part of the Facility.

Policy 11. Dedication of right-of-way, authorization of construction and the construction of facilities and improvements that follow roadway classification and approved road standards shall be allowed without land use review for improvements designated in the Transportation System Plan.

Response: A final transportation plan will be developed in consultation with the Gilliam County Public Works Department before construction begins.

Policy 16. Gilliam County shall protect the function of existing and planned roadways as identified in the Transportation System Plan.

Response: A final transportation plan will be developed in consultation with the Gilliam County Public Works Department before construction begins.

Policy 17. Gilliam County shall include a consideration of a proposal's impact on existing or planned transportation facilities in all land use decisions.

Response: A final transportation plan will be developed in consultation with the Gilliam County Public Works Department before construction begins.

Policy 18. Gilliam County shall protect the function of existing or planned roadways or roadway corridors through the application of appropriate land use regulations.

Response: A final transportation plan will be developed in consultation with the Gilliam County Public Works Department before construction begins.

- b) *As applicable, sewage and/or solid waste disposal methods shall be provided in compliance with applicable local, State and Federal regulations.*

Response: Solid waste generated in the construction and operation of the proposed Facility is described in Exhibit V. The Facility will generate minimal construction waste and very little solid waste that would require offsite disposal. Concrete trucks may also be washed down at each foundation site to prevent the concrete from hardening in the trucks. In these cases, the concrete wastewater will be disposed of on backfill piles and buried underground with the backfill over the tower foundation. Any nonrecyclable wastes will be collected and disposed of at the Arlington Landfill. The O&M building(s) will contain a septic system constructed in compliance with applicable regulations.

- c) *Proposal shall be found to be in compliance or conditioned upon compliance with applicable air and noise pollution standards.*

Response: Wind power is a clean and renewable source of energy. Wind facilities do not emit greenhouse gases or particulates. No substantial adverse impacts to air quality will occur as a result of Facility construction or operation. The construction activities for site preparation will likely create dust; however, this would not be significant in a rural area where farming also creates dust. Standard best management practices to control dust and wind erosion will be used, such as sprinkling the site periodically.

As explained in Exhibit X, the Facility will meet DEQ noise standards.

- d) *Required access shall be legally established, available, and adequate to service the proposed use.*

Response: No new public roads are proposed with this ASC; therefore, no roads are proposed that would not conform to the County's Transportation System Plan. Construction of the Facility will not result in upgrades to existing public roads. Construction vehicles that must access the Facility site will use public roads. Travel

routes will be developed in consultation with the Gilliam County Public Works Department before construction begins.

- e) *Public services deemed necessary shall be available or provisions for such provided, and no use shall be approved which is found to exceed the carrying capacities of affected public services unless there are provisions to bring such capacities up to the need.*

Response: The Facility is not expected to have an adverse impact on the availability of public services, such as hospital or emergency service facilities, educational facilities, or sanitary landfills. Exhibit U evaluates the capacity of service providers in the Facility area.

- f) *Proposal shall be in compliance with applicable standards and limitations of the primary and combining Zone as may be applicable.*

Response: Other than the criteria in GCZO 4.020(H), which are discussed above, there are no EFU-specific local standards applicable to projects like the Facility.

- g) *No use shall be approved which is found to have a significant adverse impact on resource carrying capacities unless there are provisions for mitigating such impact.*

Response: As described in this ASC, the Facility will not exceed resource carrying capacities.

- h) *No use shall be approved which is found to exceed the carrying capacities of affected public services and facilities.*

Response: As described in this ASC, the Facility will not exceed public Facility carrying capacities.

- i) *All required State and Federal permits or approvals have been obtained or will be as a condition of approval.*

Response: Applicable federal and state permits or approvals are discussed in other sections of this ASC and their issuance will be a preconstruction condition of the site certificate.

K.5.4 Applicable Local Substantive Criteria – GCZO Section 7.010(1)(B) – Authorization to Impose Conditions of Approval

- B. *In addition to specific standards and/or conditions set forth by the applicable Zone, this Article or other applicable regulations, other conditions may be imposed that are determined necessary to avoid a detrimental impact, and to otherwise protect the best interests of the surrounding area and the County as a whole. Such conditions may include, but are not limited to the following:*

- a) *Limited the manner in which the use is conducted including restricting the time an activity may take place and restraints to minimize such environmental effects as noise, vibration, air pollution, glare and odor.*
- b) *Establishing a special setback or other open space or lot area or dimension.*
- c) *Limiting the height, size or location of a building or other structure.*
- d) *Designating the size, number, improvements, location and nature of vehicle access points and parking or loading areas.*
- e) *Limiting or otherwise designating the number, size, location, height, and lighting of signs and outdoor lighting.*
- f) *Requiring diking, screening, fencing, landscaping or another facility to protect adjacent or nearby property and designating standards for its installation and maintenance.*
- g) *Protecting and preserving existing trees, vegetation, water resources, wildlife habitat or other significant natural resources.*
- h) *Limiting the term of the Conditional Use Permit to a specific time.*
- i) *Requiring necessary on-site or off-site improvements and maintenance.*
- j) *Requiring the holder of a conditional use permit to obtain review, renewal, or reapplication approval of the permit in the event that there is an increase in impact from the use on public facilities beyond that which was projected at the time of initial approval.*

Response: Each provision is addressed separately below.

- a) *Limited the manner in which the use is conducted including restricting the time an activity may take place and restraints to minimize such environmental effects as noise, vibration, air pollution, glare and odor.*

Response: The Applicant expects that the site certificate will contain conditions of approval, based on other Council standards, sufficient to minimize the potential “nuisance” type impacts referenced in the GCZO.

- b) *Establishing a special setback or other open space or lot area or dimension.*

Response: Leaning Juniper II South is being developed on property owned by Waste Management. Leaning Juniper II North is being developed on property owned by one landowner (see landowner statement from J.R. Krebs in Attachment K-1). No new lots will be created by the Facility and no special setbacks are required.

- c) *Limiting the height, size or location of a building or other structure.*

Response: No special height limit is necessary or appropriate for the wind turbines, met towers, or overhead collector lines. The substation and O&M building(s) will be one story in height.

- d) *Designating the size, number, improvements, location and nature of vehicle access points and parking or loading areas.*

Response: The Applicant will secure Oregon Department of Transportation (ODOT) approval as required for any new access points. The Applicant sees no need for additional conditions.

- e) *Limiting or otherwise designating the number, size, location, height, and lighting of signs and outdoor lighting.*

Response: There will be no outdoor advertising signs. All lighting, other than that required by the Federal Aviation Administration (FAA), will be hooded and oriented so that it does not shine on adjacent properties or on public rights-of-way; external lights at the O&M building(s) and substation will use motion-activated switches.

- f) *Requiring diking, screening, fencing, landscaping or another facility to protect adjacent or nearby property and designating standards for its installation and maintenance.*

Response: No landscaping is necessary or appropriate. Access roads from main public rights-of-way will also have lockable gates. Turbine towers will have internal ladders with lockable hatches.

- g) *Protecting and preserving existing trees, vegetation, water resources, wildlife habitat or other significant natural resources.*

Response: The Applicant expects that the site certificate will contain conditions of approval, based on other Council standards, sufficient to protect the resources referenced in the GCZO. Exhibit P identifies the measures the Applicant proposes to minimize and mitigate impacts to wildlife habitat.

- h) *Limiting the term of the Conditional Use Permit to a specific time.*

Response: The site certificate will contain dates for commencement of construction and completion of construction. The Facility will be subject to review for compliance with all conditions of approval during the term of the site certificate. The site certificate should last for the life of the Facility; an arbitrary limit is not necessary or appropriate.

- i) *Requiring necessary on-site or off-site improvements and maintenance.*

Response: The Applicant will restore roads to preconstruction conditions and will maintain various Facility components (fire suppression, water well, septic system, fences, weed control systems) throughout the life of the Facility.

- j) *Requiring the holder of a conditional use permit to obtain review, renewal, or reapplication approval of the permit in the event that there is an increase in impact from the use on public facilities beyond that which was projected at the time of initial approval.*

Response: No significant use of public facilities is proposed, and no special condition necessary or appropriate.

K.5.5 Applicable Local Substantive Criteria – GCZO Section 7.020 – Additional Applicable Standards

Response: Two sections of the GCZO contain additional specific standards. GCZO 7.020(14) applies to the access roads. Section 7.020(T) contains specific standards applicable to “wind power generation facilities.”

1. GCZO 7.020(14). Transportation Improvements

- A. *Construction, reconstruction, or widening of highways, roads, bridges or other transportation projects that are: (1) not improvements designated in the Transportation System Plan or (2) not designed and constructed as part of a subdivision or planned development subject to site plan and/or conditional use review shall comply with the Transportation System Plan and the following standards:*
- a) *The project is designed to be compatible with existing land use and social patterns, including noise generation, safety, and zoning.*

Response: The permanent and temporary access roads are a conditional use in the EFU zone and will be compatible with the existing land uses in the rural agricultural area of the Facility site. The new private access roads will be constructed to access the Facility turbines and will extend from County roads as shown in Figures K-1 and K-2. These roads will be up to 16 feet wide. During construction, an additional 10 feet on either side of the 16-foot road section will be temporarily disturbed in order to construct the private access roads. To the maximum extent possible, these roads will be located adjacent to the turbine towers to minimize the length of the roads.

The permanent private access roads will not increase traffic in the area but will provide improved access by land managers and farmers to their fields. As explained in Exhibit X, the Facility will meet DEQ noise standards.

Construction-related traffic may cause brief traffic delays when trucks deliver the turbines and other Facility equipment, but these delays are unlikely to impair the function of the public roadways. Once the Facility is constructed, trips generated by the operation staff will not have any perceptible effect on the functioning of the roads or highways in the vicinity of the Facility because general usage of these highways and roads is low and will remain low.

Permanent staff for the Facility will use the improved local road system. Because few trips will be generated by these employees and existing usage is low, no adverse impacts to the road system as a result of new permanent staff are anticipated.

- b) *The project is designed to minimize avoidable environmental impacts to identified wetlands, wildlife, air and water quality, cultural resources, and scenic qualities.*

Response: A thorough discussion of these issues is found in Exhibits J, O, P, Q, R, S, and T. Based on the wetland and jurisdictional water survey, seasonal pools and jurisdictional crossings exist within the Facility area. If jurisdictional waters cannot be avoided, then appropriate permits will be obtained (see Exhibit J for further discussion).

As demonstrated in Exhibits P and Q, no suitable habitat for federally listed species is present in the Facility area. A sensitive species survey was conducted and the results and impact minimization measures are discussed in Exhibits P and Q. A cultural resource survey was conducted and results are described in Exhibit S. No significant archaeological resources or historic-period resources were found that are eligible for listing in the National Register.

No substantial adverse impacts to air quality will result from the Facility construction or operation. The construction activities for site preparation will likely create dust but this will not be significant in a rural area where farming practices create dust. Standard best management practices to control dust and wind erosion will be used.

- c) *The project preserves or improves the safety and function of the Facility through access management, traffic calming, or other design features.*

Response: Some existing private roads will be improved by widening, grading, and graveling to accommodate construction-related traffic. Many of these roads are in poor condition; therefore, the proposed improvements will have a long-term beneficial effect for the users of these roads. Little traffic occurs on the roads in the area; thus, access management, traffic calming, or other such features designed to reduce traffic conflicts are not necessary.

- d) *The project includes provision for bicycle and pedestrian circulation as consistent with the comprehensive plan and other requirements of this ordinance.*

Response: No bicycle or pedestrian facilities are appropriate for the Facility area. The access roads will be located in a rural agricultural area where pedestrian and bicycle facilities are not appropriate, safe, or required by the County's ordinances or plans.

1. GCZO 7.020(T). Wind Power Generation Facilities

4. *Wind Power Generation Facility Siting Requirements. The requirements set out in this section shall apply for the application and review of the siting of a Wind Power Generation Facility and the issuance of a Gilliam County Facility Conditional Use Permit.*

- a) *The following information shall be provided as part of the application:*

Response: The required information is found throughout this ASC.

- b) *Gilliam County may impose clear and objective conditions in accordance with the County Comprehensive Plan, County Development Code and State law, which Gilliam County considers necessary to protect the best interests of the surrounding area, or Gilliam County as a whole.*

Response: The site certificate will contain conditions necessary to ensure compliance with applicable Council standards and local criteria.

- c) *Prior to commencement of any construction, all other necessary permits shall be obtained, e.g., Gilliam County zoning Permit, road access and other permits from the Gilliam County Public Works Department, and from the Oregon Department of Transportation.*

Response: The site certificate will contain a condition requiring compliance with other applicable permit requirements.

- d) *The following requirements and restrictions apply to the siting of a facility:*

- (1) *The Wind Power Generation Facility shall be on property zoned EFU, and no portion of the facility shall be within 3,520 feet of properties zoned residential use or designated on the Comprehensive Plan as residential. (For clarification purposes of this section, EFU Zones are not considered zoned for residential use.)*

Response: This criterion is met. See Figures K-1 and K-2.

- (2) *Reasonable efforts shall be made to blend the wind facility's towers with the natural surroundings in order to minimize impacts upon open space and the natural landscape.*

Response: The towers will be painted a neutral color (white or grey) in a flat finish, and lighting will be the minimum required by the FAA.

- (3) *Reasonable efforts shall be taken to protect and to preserve existing trees, vegetation, water resources, wildlife habitat or other significant natural resources.*

Response: No trees will be removed and very little water will be used. Impacts on vegetation and wildlife habitat are minimized and mitigated consistent with Oregon Department of Fish and Wildlife standards. See Exhibit P.

- (4) *The turbine towers shall be designed and constructed to discourage bird nesting and wildlife attraction.*

Response: Towers will be tubular and offer no perching or resting opportunity.

- (5) *The turbine towers shall be of a size and design to help reduce noise or other detrimental effects.*

Response: The Applicant is not aware of any feasible tower modifications that would achieve this goal. Current turbine design includes noise reduction features to assure compliance with noise standards.

- (6) *Private access roads shall be gated to protect the facility and property owners from illegal or unwarranted trespass, and illegal dumping and hunting.*

Response: Based on discussions with the landowners, there will be no lockable gates at road entrances. However, the towers and substation will be locked to prevent public entry. The O&M building(s) and associated parking and storage area may also be locked.

- (7) *Where practicable the electrical cable collector system shall be installed underground, at a minimum depth of 3 feet; elsewhere the cable collector system shall be installed to prevent adverse impacts on agriculture operations.*

Response: Most of the collector cable system will be underground and at a minimum depth of 3 feet. In some locations it will be overhead, to avoid canyons or wetlands. Where aboveground, cable will be installed to prevent adverse impacts on agricultural operations.

- (8) *Required permanent maintenance/operations buildings shall be located off-site in one of Gilliam County's appropriately zoned areas, except that such a building may be constructed on-site if:*
- (a) *The building is designed and constructed generally consistent with the character of similar buildings used by commercial farmers or ranchers; and*

Response: The Applicant proposes up to two onsite O&M buildings. The building(s) will be 4,000 to 8,000 square feet, single-story, and painted a neutral color. The building(s) will be similar in size and appearance to buildings used by commercial farmers and ranchers.

- (b) *The building will be removed or converted to farm use upon decommissioning of the Wind Power Generation Facility consistent with the provisions of this section.*

Response: The site certificate will contain a condition meeting the intent of this provision.

- (9) *A Wind Power Generation Facility shall comply with the Specific Safety Standards for Wind Facilities delineated in OAR 345-024-0010 (as adopted at time of application).*

Response: See Exhibit BB.

- (10) *To the extent feasible, the county will accept information presented by an application for an EFSC proceeding in the form and on the schedule required by EFSC.*

Response: Not applicable.

K.5.6 Directly Applicable Statutes, Goals and LCDR Rules

OAR 345-021-0010(1k)(c)(iii)

Identify all LCDR administrative rules, statewide planning goals, and land use statutes directly applicable to the Facility under ORS 197.646(3) and describe how the proposed Facility complies with those rules, goals, and statutes

K.5.6.1 Goal 3 Exception

Overview

The Facility will occupy non-high-value farm soils. OAR 660-033-0120(22) places 12-acre (high-value) and 20-acre (non-high-value) limits on the use of farmland without an exception to Goal 3.

The Facility and access roads will preclude 58 acres of EFU farmland from use as a commercial agricultural enterprise. Accordingly, a Goal 3 exception is required for the Facility and access roads.³ The Applicant demonstrates that a reasons exception is warranted. ORS 469.504(2) provides the controlling criteria for exceptions proposed for energy facilities under the jurisdiction of the Council.

An “exception” is a “decision to exclude certain land from the requirements of [an] applicable statewide goal” (OAR 660-004-0000(2)). The need for an exception arises when a goal does not permit a particular use. For local jurisdictions, the exceptions process is authorized by Goal 2 (Land Use Planning) and ORS 197.732 and is governed by the criteria in OAR 660-004-0000, *et seq.*

State law provides a different exception path, including somewhat different criteria, for energy facilities (ORS 469.504(2); OAR 345-022-0030(4)). The relevant Council criteria and the Applicant’s response are stated below. In this case, an exception is warranted to allow a locationally dependent Facility that will fulfill important State and County goals by providing energy while minimizing impacts on local farming practices.

³ No Goal 3 exception is required for the “utility facilities necessary for public service” under ORS 215.275 and GCZO 4.020(B)(29). The entire Facility and associated access roads minus the utility facilities (collector lines, substation, met towers, and O&M building(s)) will occupy 58 acres. Thus, the requested exception is for 58 acres.

Need for the Goal 3 Exception

The turbine and associated access roads for the Facility will preclude from agricultural use approximately 58 acres of farmland. This acreage does not include areas affected by related and supporting “utility facilities necessary for public service” because they are permitted uses in the EFU zone. The exception acreage also does not include acreage leased to the Applicant that will not be precluded from agricultural use.

Because the acreage precluded from agricultural use is more than the 12/20-acre limit in OAR 660 Division 33, an exception to Goal 3 is required.

K.5.6.2 Demonstration that a “Reasons” Exception is Appropriate

“Reasons justify why the state policy embodied in the applicable goal should not apply[.]” (OAR 345-022-0030(4)(c)(A))

Response: The Applicant requests a “reasons” exception pursuant to OAR 345-022-0030(4)(c). This type of exception requires three showings, as described in the subsections below.

The general state policy embodied in Goal 3 is “[t]o preserve and maintain agricultural lands.” As discussed in this Exhibit, the Facility will not have significant adverse effects on accepted farm or forest practices. However, the ASC must demonstrate why the “policy” contained in the 12- and 20-acre limitations should not apply to the Facility.

As set forth below, several reasons support not applying the Goal 3 acreage limitation to the Facility. These reasons are the same as those relied on by the Council in its Stateline decisions that granted and expanded a Goal 3 exception on facts that are materially identical to the Leaning Juniper situation.

The Use Is Locationally Dependent and Cannot be Developed on Nonresource Lands

The proposed Facility and all of the related or supporting facilities must be sited on EFU-zoned land in order to produce commercial quantities of energy to the power grid in a safe and economically viable manner. To the Applicant’s knowledge, all Oregon wind projects have been located on EFU land; such land seems to hold most, if not all, of Oregon’s commercially viable wind resource. Further, the Applicant is not aware of any meteorological information concerning significant, developable wind resources on non-EFU land in Gilliam County. The only non-EFU land in the area is located in the cities of Arlington and Condon. Neither of these locations has the necessary wind resources within the city limits, adequate parcels of land, or proximate transmission system necessary to build the Facility.

The Facility Will Further Important State Policies

Gilliam County’s comprehensive plan expressly allows wind power generation facilities as a conditional use (GCZO 4.020(D)(34)).

The state of Oregon recently published a Renewable Energy Action Plan for the state (ODOE, 2005). The Plan calls for significant, additional development of renewable resources, including wind energy. Further, Statewide Land Use Planning Goal 13 calls for development of renewable energy. The Oregon Legislative Assembly has enacted numerous tax credits and economic development incentives favoring renewable energy development. Oregon's numerous statutory programs together reflect a thoroughgoing state policy of supporting renewable energy development. See, for example, ORS 757.612 (creating system benefit charge, a portion of the funds from which go to renewable energy); and ORS 757.603(2) (requiring Oregon electric utilities to provide retail customers with at least one option including significant percentage of renewable energy).

On balance, the Facility will produce a significant advancement of important County and State policies while causing only a minor inconsistency with the policies behind Goal 3.

The Facility Will Advance the State and County Policies of Furthering Efficient Development and Economic Growth

As described in this Exhibit, the Facility will encourage the efficient siting of land uses. The Facility will facilitate the multiple use of land. The Facility will allow access to farmland on those acres occupied by turbine facilities.

The Facility will benefit the local economy through employment opportunities, particularly during construction, and through contributions to the local tax base. The Applicant proposes an earliest construction beginning date for Leaning Juniper II of early 2007 and completion of construction by the end of 2007.

During construction, an estimated average of 167 people will be employed at the Facility (an average of 55 people for Leaning Juniper II North and 112 people for Leaning Juniper II South), with a maximum of 335 employees during the entire construction period (a maximum of 112 people for Leaning Juniper II North and 223 people for Leaning Juniper II South). Most construction workers will be employees of construction and equipment manufacturing companies under contract to the Applicant.

Construction workers will include a mix of locally hired workers within 30 miles of the Facility site (e.g., from Gilliam, Morrow, Sherman, Wasco, Klickitat, Benton, and Yakima counties) for road and turbine pad construction, and specialized workers for specialized construction (e.g., substation and electrical transmission construction, turbine erection, turbine testing).

An estimated 10 to 30 operational personnel will be employed at the Facility. Most of the O&M staff will be hired locally, with the exception of those positions (e.g., supervisors) that require previous experience at other wind generation facilities. Some specialized outside contractors may also be required on occasion (e.g., for repair of nacelles or meteorological services). The assumption is that operations will begin in late 2007, and continue for at least 30 years and probably much longer. (See Exhibit B for a discussion

of Facility life.) The Facility is expected to provide substantial tax revenues to the County over its life span, with insubstantial countervailing public service demands.

K.5.6.3 ESEE Consequences Favor the Exception

“The significant environmental, economic, social and energy consequences anticipated as a result of the proposed Facility have been identified and adverse impacts will be mitigated in accordance with rules of the Council applicable to the siting of the proposed Facility[.]” (OAR 345-022-0030(4)(c)(B)).

Response:

Environmental. The Facility’s environmental consequences are discussed thoroughly in Exhibits J, L, P and Q. These Exhibits identify potential environmental consequences of Facility construction and operation, and demonstrate that the Facility, including proposed mitigation measures, will not cause any significant adverse environmental consequences.

Socioeconomic. The Facility’s socioeconomic consequences will not be adverse. As demonstrated in Exhibits R, S, and T, the Facility will have no significant adverse impacts on scenic, cultural, historical, archeological, or recreational resources. Exhibit U also demonstrates that the Facility will not have significant adverse impacts on community services such as housing, sewer, water supply, waste disposal, health care, education, and transportation. As discussed previously, the Facility will create jobs and contribute significant income to the County. These benefits should be measured against the relatively small amount of agricultural activity that will be displaced by the Facility, and compared with impacts on agricultural activity that can occur from utility facilities that would be permitted outright.

Energy. The energy consequences of the Facility are positive because the Facility will produce renewable, emissions-free energy.

The Facility Is Compatible with Other Adjacent Land Uses

*“The Proposed Facility is compatible with other adjacent uses***.” (OAR 345-22-0030(4)(c)(C))*

Response: Adjacent land uses are dry-land farming, some irrigated farming, and a land fill. The construction and operation of the Facility will be compatible with these uses. Attachment K-1 contains statements from surrounding landowners explaining the Facility’s compatibility with their use of land. Additional detail on compatibility is provided throughout Exhibit K.

Conclusion

In summary, compelling reasons support the conclusion that siting the Facility on agricultural land is necessary and justifies making an exception to Goal 3.

Energy Generating Facility's and New Access Roads' Compliance with ORS 215.283(2)(g) and ORS 215.296

ORS 215.296 requires application of specific conditional use criteria for uses permitted by ORS 215.283(2), including ORS 215.283(2)(g) – commercial generating facilities. The GCZO has adopted the specific conditional use criteria that are listed in ORS 215.296 and in GCZO 4.020(H). These are discussed in Section K.5.1.

Related and Supporting Facilities' Compliance with ORS 215.283(1)(d) and GCZO 4.020(H)(29).

Compliance with the state statute and local ordinance is established through compliance with ORS 215.275.

ORS 215.275 (1) *provides that a utility facility established under ORS 215.283(1)(d) is necessary for public service "if the facility must be sited in an exclusive farm use zone in order to provide the service."*

Response: The proposed Energy Facility and all of the related or supporting utility facilities must be sited on EFU-zoned land in order to produce commercial quantities of energy to the power grid in a safe and economically viable manner.⁴ To the Applicant's knowledge, all Oregon wind energy facilities have been located on EFU land; such land seems to hold most, if not all of Oregon's commercially viable wind resource. Further, the Applicant is not aware of any meteorological information concerning significant, developable wind resources on non-EFU land in Gilliam County. The only non-EFU land in the area is located in the cities of Arlington and Condon. None of these locations has the necessary wind resource, adequate parcels of land, or proximate transmission system necessary to build such a facility.

Given the need for locating the wind generators themselves on EFU land, there is no reasonable alternative to also locating on EFU land the related and supporting utility facilities. The electric collector cable network and collector lines must connect the generators to each other and to BPA's transmission network, and there is no non-EFU path for such system. The substation must be located within or near the Facility site because the voltage must be stepped up before transmitting it to BPA's transmission system, located nearby also on EFU land. The met towers must of course be located on the Facility site, which is all EFU land. Finally, the O&M building(s) must be located reasonably near to the Facility in order to give O&M staff the chance to react quickly to operational situations and to stage maintenance that might require larger equipment. Even looking offsite, there is no nearby non-EFU land that would be a suitable location for the O&M building(s).

ORS 215.275(2) ORS 215.275 (2) *provides that to demonstrate the necessity of a utility service, an applicant must show that reasonable alternatives have been considered and that the facility must be sited in an exclusive farm use zone because of one or more of the following factors:*

⁴ Technically, ORS 215.275 does not apply to the wind turbine generators, which are permitted under ORS 215.283(2)(g). The analytic question in this section therefore is, *given the wind turbines' permitted location on EFU land, must the related and supporting utility facilities also be located on EFU land?*

- (i) *Technical engineering and feasibility*
- (ii) *Locational dependency of the proposed Facility (a utility facility is locationally dependent if it must cross land in one or more areas zoned for exclusive farm use in order to achieve a reasonably direct route or to meet unique geographical needs that cannot be satisfied on other lands~*
- (iii) *Lack of available urban and non – resource land*
- (iv) *Availability of existing rights of way*
- (v) *Public health and safety*
- (vi) *Other requirements of state or federal agencies*

Response: For the reasons stated in response to ORS 215.275(1), the Facility is locationally dependent [item (ii)] and there is a lack of available urban and nonresource land [item (iii)]. Any alternative site in Gilliam County would involve siting the Facility on EFU land. The proposed location is the most direct route for interconnecting the Facility to the energy grid because BPA’s substation will be located very close to the Facility boundary. There are no available urban or nonresource lands in the area on which to site a wind facility or its related and supporting utility facilities. Accordingly, there are no “reasonable alternatives” to consider on non-EFU land.

ORS 215.275(4). ORS 215.275 (4) *provides that the owner of a utility facility approved under ORS 215.283(1)(d) must be responsible for restoring to its former condition, as nearly as possible, any agricultural land and associated improvements that are damaged or otherwise disturbed during the siting, maintenance, repair, or reconstruction of the Facility.*

Response: Once construction is complete, the Applicant will restore the staging areas to their former, preconstruction condition. The Applicant will similarly restore all areas disturbed during maintenance, repair, or reconstruction of the Facility.

ORS 215.275(5) ORS 215.275 (5) *provides that the Council must impose clear and objective conditions on an application for a utility facility sited under ORS 215.283(1)(i) to mitigate and minimize the impacts of the proposed Facility, if any, on surrounding lands devoted to farm use in order to prevent a significant change in accepted farm practices or a significant increase in the cost of farm practices on the surrounding farmlands.*

Response: Measures to avoid, minimize, and mitigate for impacts to farmland and farming practices are discussed throughout this Exhibit. The Applicant will comply with the conditions imposed by the Council under its Land Use standard.

Access Roads’ Compliance with OAR 660-12-0065

In pertinent part, OAR 660-012-0065 provides:

- (3) *The following transportation improvements are consistent with goals 3, 4, 11, and 14 subject to the requirements of this rule:*

...

- (o) *Transportation facilities, services, and improvements other than those listed in this rule that serve local travel needs. The travel capacity and level of service of facilities and improvements serving local travel needs shall be limited to that necessary to support rural land uses identified in the acknowledged comprehensive plan or to provide adequate emergency access.*

...

- (5) *For transportation uses or improvements listed in subsection (3)(d) to (g) and (o) of this rule within an exclusive farm use (EFU) or forest zone, a jurisdiction shall, in addition to demonstrating compliance with the requirements of ORS 215.296:*
 - (a) *Identify reasonable build design alternatives, such as alternative alignments, that are safe and can be constructed at a reasonable cost, not considering raw land costs, with available technology. Until adoption of a local TSP pursuant to the requirements of OAR 660-012-0035, the jurisdiction shall consider design and operations alternatives within the project area that would not result in a substantial reduction in peak hour travel time for projects in the urban fringe that would significantly reduce peak hour travel time. A determination that a project will significantly reduce peak hour travel time is based on OAR 660-012-0035(10). The jurisdiction need not consider alternatives that are inconsistent with applicable standards or not approved by a registered professional engineer.*
 - (b) *Assess the effects of the identified alternatives on farm and forest practices, considering impacts to farm and forest lands, structures, and facilities, considering the effects of traffic on the movement of farm and forest vehicles and equipment, and considering the effects of access to parcels created on farm and forest lands; and*
 - (c) *Select from the identified alternatives, the one, or combination of identified alternatives that has the least impact on lands in the immediate vicinity devoted to farm or forest use.*

The proposed road improvements are for access to the Facility and will not impact peak hour travel times on surrounding rural roads. No new road alignments are proposed. Improvements to local roads to accommodate the weight and size of turbine components are proposed. The improvements will bring local roads closer to the County's proposed standards and might exceed them in some cases. No changes to road capacity will result; however, widening roads to include shoulders will assist farmers in maneuvering equipment without impeding traffic in both directions. Improvements will be consistent with, and in some cases will assist, local farming operations.

K.6 FEDERAL LAND MANAGEMENT PLANS

OAR 345-021-0010(1)(k)(D) *If the proposed Facility will be located on federal land:*

- i. *Identify the applicable land management plans adopted by the federal agency with jurisdiction over the federal land;*

- ii. *Explain any differences between state or local land use requirements and federal land management requirements;*
- iii. *Describe how the proposed Facility complies with the applicable federal land management plan;*
- iv. *Describe any federal land use approvals required for the proposed Facility and the status of application for each required federal land use approval; and*
- v. *Provide an estimate of time for issuance of federal land use approvals;*
- vi. *If federal law or the land management plan conflicts with any applicable state or local land use requirements, explain the differences in the conflicting requirements, state whether the applicant requests Council waiver of the land use standard described under paragraph (B) or (C) of this subsection and explain the basis for the waiver.*

Response: These provisions are not applicable to the Facility because no portion of the Facility will be located on federal land.

K.7 REFERENCES

- Gilliam County. 2000. Gilliam County Comprehensive Land Use Plan and Zoning Ordinances, As Amended October 25, 2000, by Order of the Gilliam County Court.
- Oregon Department of Energy (ODOE). 2005. *Renewable Energy Action Plan*. April 12, 2005.

Figures

ATTACHMENT K-1

**Landowner Statements Regarding Compatibility
with Farming Practices**

Landowner Statement Regarding Compatibility with Farming Practices Leaning Juniper 2 Wind Project (Owner)

I make this statement in support of the Leaning Juniper 2 Wind Project's application for a site certificate from the Oregon Energy Facility Siting Council.

I own land in Gilliam County, Oregon located in and around the wind project area, and I actively use this land as a part of a commercial agricultural enterprise. Portions of the project will occupy the land that I own, which has also been leased to the project developer, PPM, for this purpose.

Based on conversations with PPM about their plans for Leaning Juniper 2, and on my observation of the construction and operation of the nearby Leaning Juniper Wind Project, I have come to the conclusion that development of Leaning Juniper 2 will be compatible with my ongoing agricultural operations. In particular:

- The amount of my acreage the project's turbines, roads, and other facilities will occupy is very small in comparison to the total acreage that I control. Accordingly, the amount of my land taken out of economic agricultural production will not represent a significant portion of my farm income.
- Outside of the project footprint, I expect the project's existence will require me to adjust my farming practices in minor ways (i.e., new access routes, increased wind control). However, I do not think that these adjustments will be a significant change in how I farm, and I do not expect them to significantly increase the cost of my farming operations.
- The project will not change the basic pattern of land use in the surrounding area. I am not aware of anyone that is going to stop farming as a result of the project's development, or start using their land for a different purpose. Basically, once the project is up and running, we expect things to go on pretty much as before.

As a farmer, I value the rural farming way of life and I would not support any project that I thought would harm or change that way of life. I support the Leaning Juniper 2 project because I am convinced that it can be built and operated in a way that fits in with and supports the existing land uses and the community that depends on them.

Thank you for considering my opinion.

Name: J.R. Krebs

Address: P.O. Box 8

Arlington, OR 97812

Signature: J.R. Krebs

Date: 8-30-06

Landowner Statement Regarding Compatibility with Farming Practices Leaning Juniper Wind Project (Lessee)

I make this statement in support of the Leaning Juniper Wind Project's application for a site certificate from the Oregon Energy Facility Siting Council.

I lease land in Gilliam County, Oregon located in and around the wind project area, and I actively use this land as a part of a commercial agricultural enterprise. Portions of the project will occupy the land that I lease, which has also been leased to the project developer, PPM, for this purpose.

Based on conversations with PPM about their plans for Leaning Juniper, and on my observation of the construction and operation of the nearby Biglow Canyon Wind Project, I have come to the conclusion that development of Leaning Juniper will be compatible with my ongoing agricultural operations. In particular:

- The amount of my acreage the project's turbines, roads, and other facilities will occupy is very small in comparison to the total acreage that I control. Accordingly, the amount of my land taken out of economic agricultural production will not represent a significant portion of my farm income.
- Outside of the project footprint, I expect the project's existence will require me to adjust my farming practices in minor ways (i.e., new access routes, increased wind control). However, I do not think that these adjustments will be a significant change in how I farm, and I do not expect them to significantly increase the cost of my farming operations.
- The project will not change the basic pattern of land use in the surrounding area. I am not aware of anyone that is going to stop farming as a result of the project's development, or start using their land for a different purpose. Basically, once the project is up and running, we expect things to go on pretty much as before.

As a farmer, I value the rural farming way of life and I would not support any project that I thought would harm or change that way of life. I support the Leaning Juniper project because I am convinced that it can be built and operated in a way that fits in with and supports the existing land uses and the community that depends on them.

Thank you for considering my opinion.

Name: Ritz Ag. Inc

Address: P.O. Box 131

Inc, Or 97843

Signature:

Ritz AG Inc
by [Signature] *President*

Date:

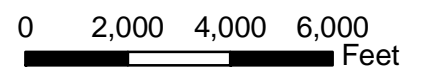
12-15-05

**Figure K-1
Zoning Map
Leaning Juniper II
Wind Power Facility**

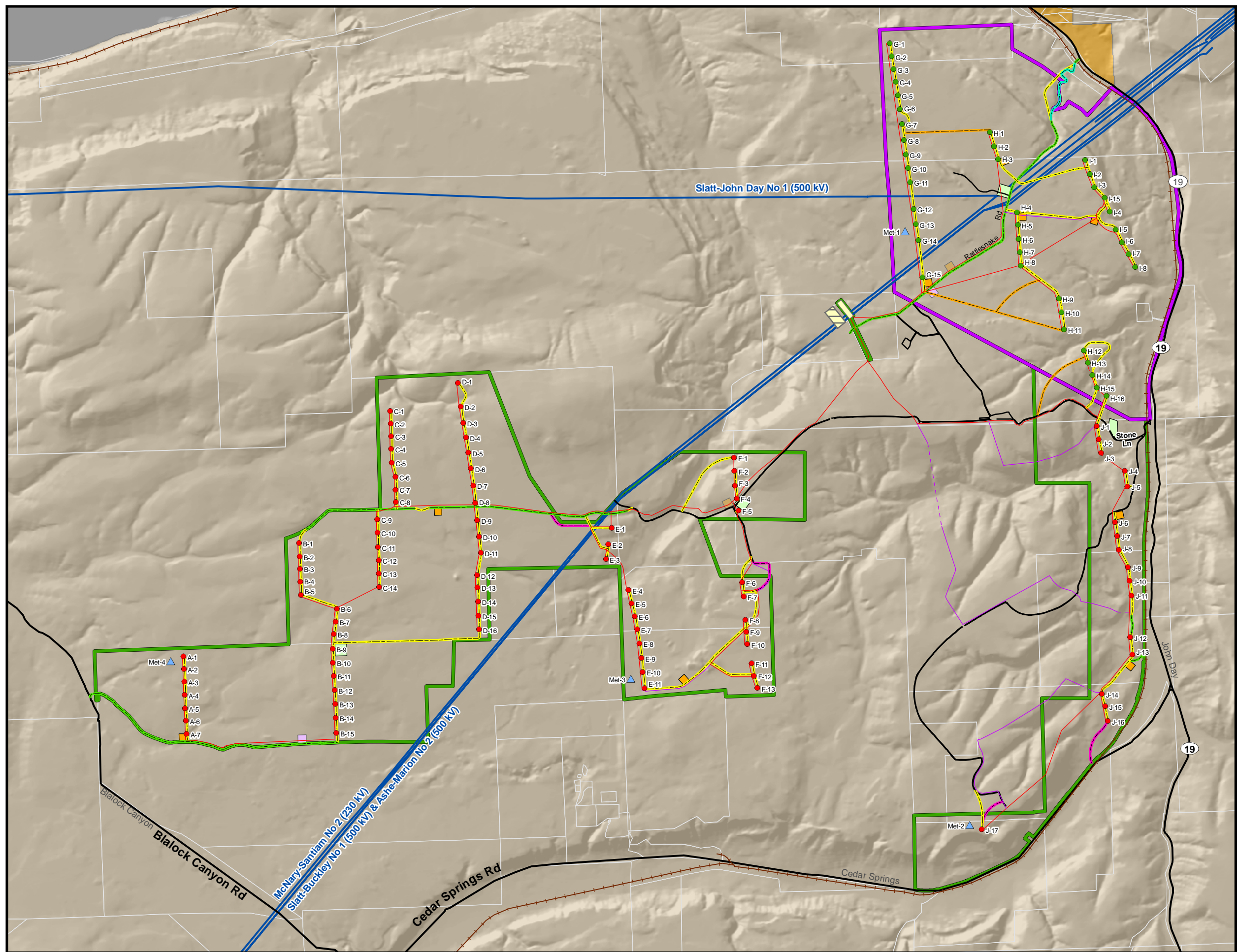
Legend



- Zoning**
- Industrial
 - Agriculture (Exclusive Farm Use)
- Proposed Permanent Facilities**
- Proposed Turbine - Leaning Juniper II North
 - Proposed Turbine - Leaning Juniper II South
 - Proposed Permanent Met Tower
- Proposed Roads - Leaning Juniper II**
- New Road
 - Existing Road - Improvements Needed
- Alternate Routes - Leaning Juniper II**
- Existing Road - Improvements Needed
 - New Road
- Preferred Collector Routes**
- Underground 34.5-kV Line
 - Overhead 34.5-kV Line
- Alternate Collector Routes**
- Underground 34.5-kV Line
 - Overhead 34.5-kV Line
- Proposed Temporary Facilities**
- Proposed Crane Path
 - Proposed 2-Acre Temporary Staging Area
 - Proposed 5-Acre Temporary Staging Area
- Existing Facilities**
- Existing BPA Transmission Line
 - Major Roads
 - Existing LJ I Roads
 - Railroads
 - Streams
 - Tax Lots
 - Leaning Juniper II - North
 - Leaning Juniper II - South



Source:
Susan Anderson, Gilliam County
Economic Development Department



File Path: Z:\Projects\OR-WA\Leaning Juniper\MapDocuments\Report Figures\EFSC (LJII)\Figure K-1 - Zoning Map.mxd, Date: September 15, 2006 1:01:47 PM

Figure K-2
Land Use Map
 Leaning Juniper II
 Wind Power Facility



Legend

- Proposed Permanent Facilities**
 - Proposed Turbine - Leaning Juniper II North
 - Proposed Turbine - Leaning Juniper II South
 - ▲ Proposed Permanent Met Tower
- Proposed Roads - Leaning Juniper II**
 - New Road
 - Existing Road - Improvements Needed
- Alternate Routes - Leaning Juniper II**
 - Existing Road - Improvements Needed
 - New Road
- Preferred Collector Routes**
 - Underground 34.5-kV Line
 - Overhead 34.5-kV Line
- Alternate Collector Routes**
 - Underground 34.5-kV Line
 - Overhead 34.5-kV Line
- Proposed Substation**
- Proposed O&M Facility and Laydown Area**
- Alternate O&M Facility and Laydown Area**
- BPA Jones Canyon Switching Station**
- Proposed Temporary Facilities**
 - Proposed Crane Path
 - Proposed 2-Acre Temporary Staging Area
 - Proposed 5-Acre Temporary Staging Area
- Existing Facilities**
 - Major Roads
 - Existing LJ I Roads
 - Railroads
 - Intermittent Streams
 - Existing Transmission Line
 - Leaning Juniper II - North
 - Leaning Juniper II - South
- Land Use**
 - Sand Dune
 - Developed
 - Grassland
 - Shrub-steppe
 - Woodland

* Note:
 -Land Use boundaries not surveyed.

0 2,000 4,000 6,000 Feet

Field Data Collected by:
 Northwest Wildlife Consultants, Inc.

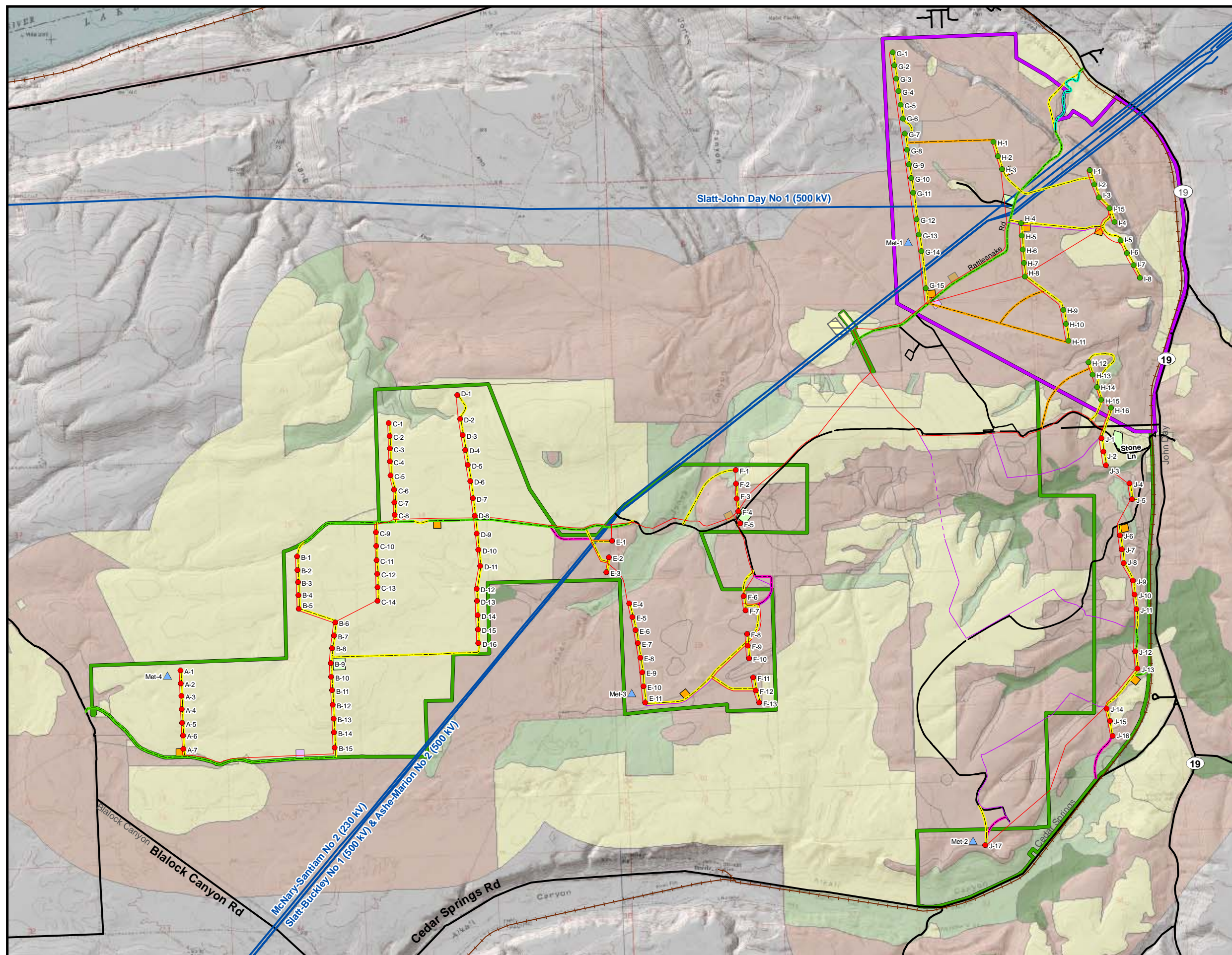


EXHIBIT L**IMPACTS ON PROTECTED AREAS**

OAR 345-021-0010(1)(L)

TABLE OF CONTENTS

	Page
L.1 INTRODUCTION	L-1
L.2 MAP OF PROPOSED FACILITY IN RELATION TO PROTECTED AREAS.....	L-1
L.3 POTENTIAL IMPACTS	L-2
L.4 CONCLUSION	L-6
L.5 REFERENCES.....	L-6

Table

L-1 Protected Areas Located Within a 20-Mile Radius of the Leaning Juniper II Wind Power Facility Site.....	L-2
-------------------------------------------------------------------------------------------------------------	-----

Figures

L-1 Protected Areas (1.5-MW Layout)
L-2 Protected Areas (3.0-MW Layout)

L.1 INTRODUCTION

Leaning Juniper Wind Power II, LLC (the Applicant) proposes to construct a wind generation facility in Gilliam County, Oregon, with generating capacity of up to approximately 279 megawatts (MW). The proposed facility (the Facility) consists of two main components: (1) Leaning Juniper II North (the north portion of the Facility with up to 93 MW), and (2) Leaning Juniper II South (the south portion of the Facility with up to 186 MW).

Exhibit L addresses impacts the proposed Facility would have on Protected Areas in the analysis area. The Exhibit responds to the requirements of OAR 345-022-0010(1)(L), which requires the submission of:

OAR 345-021-0010(1)(L) *Information about the proposed facility's impact on Protected Areas, providing evidence to support a finding by the Council as required by OAR 345-022-0040, including:*

Response: OAR 345-022-0040 requires that the application for site certificate (ASC) for the proposed Energy Facility address impacts to Protected Areas as defined in OAR 345-022-0040(l)(a)(p). Except under special circumstances, as defined in OAR 345-022-0040(2), the Council will not issue a site certificate for a proposed facility located in a Protected Area. For facilities located outside these areas, the Council “must find that, taking into account mitigation, the design, construction, and operation of the facility are not likely to result in significant adverse impact [to Protected Areas].”

In response to OAR requirements, a systematic analysis was undertaken. The first step was to review the categories of Protected Areas defined in OAR 345-022-0040, and then to consult area maps and other data sources to determine whether any areas or sites meeting the definitions of these Protected Areas are located either on the Facility site or within the 20-mile analysis area around the site. The Applicant's search included areas within the state of Washington, though no protected areas were found in Washington within 20 miles of the Leaning Juniper II site. Once identified, these Protected Areas were listed in Table L-1, and their locations indicated on the analysis area maps presented as Figures L-1 and L-2. For each Protected Area, the data presented in the other Exhibits prepared for this ASC were reviewed, and in some cases, supplemental analysis was carried out, to determine whether the Facility will be likely to have adverse effects on the Protected Area, and if so, whether those effects will be significant.

The results of this analysis are presented in this Exhibit in a sequence directly related to the organization of the application requirements contained in OAR 345-021-0010(1)(L). The results provide evidence to support a finding by the Council as required by OAR 345-022-0040.

L.2 MAP OF PROPOSED FACILITY IN RELATION TO PROTECTED AREAS

OAR 345-021-0010(1)(L)(A) *A map showing the location of the proposed facility in relation to the Protected Areas listed in OAR 345-022-0040 located within the analysis area:*

Response: The analysis area for impacts on Protected Areas includes the area within the Facility site and extends 20 miles beyond the site boundary. Figures L-1 and L-2 are maps on which the boundary of the analysis area has been drawn. Both maps indicate the locations of the Protected Areas that have been identified within the analysis area. Table L-1 lists these Protected Areas and their approximate minimum distance from the proposed Facility. No Protected Areas as defined by OAR 345-022-0040 lie within the Facility site itself.

Table L-1. Protected Areas Located Within a 20-Mile Radius of the Leaning Juniper II Wind Power Facility Site

Protected Area	Distance to Nearest Turbine (miles)
Horn Butte Area of Critical Environmental Concern (ACEC)	3
John Day Wild and Scenic River/ John Day State Scenic Waterway	6
John Day Wildlife Refuge	6
J.S. Burres State Park	13
Columbia Southern Railroad Passenger Station and Warehouse	19
John Day Dam	19

L.3 POTENTIAL IMPACTS

OAR 345-021-0010(1)(L)(B) *A description of significant potential impacts of the proposed facility, if any, on the protected areas including, but not limited to, potential impacts such as:*

Response: Through an analysis of potential impacts, the determination has been made that the design, construction, and operation of the Facility are not likely to result in significant adverse impact to Protected Areas. The analysis is described below.

- (i) *Noise resulting from facility construction or operation;*

See Exhibit X.

Given projected noise levels and the distance between turbine locations and Protected Areas, noise resulting from Facility construction and operation will not significantly affect the Protected Areas in the 20-mile analysis zone. At the closest Protected Areas, the Horn Butte ACEC, the John Day Wild and Scenic River/John Day State Scenic Waterway, and the John Day Wildlife Refuge, Facility-induced noise levels will not exceed the 45-dBA standard for “quiet areas,” a standard the Council has applied to wildlife refuges even where, as in this case, the Protected Areas cited above are not expressly designated as quiet areas.

(ii) Increased traffic resulting from facility construction or operation;

Response: A detailed traffic analysis is presented in Exhibit U. Increased traffic resulting from Facility construction or operation will not adversely impact Protected Areas.

The primary transportation route for Facility construction vehicles will begin from either eastbound or westbound I-84, and continue south on Highway Oregon 19 (ORE 19) from Arlington, Oregon, past Shutler. Primary access to the site from the east will be along Stone Lane and Rattlesnake Road from ORE 19. To access the site from the west, the primary route will travel south on ORE 19 and then continue west on Cedar Springs Road and north on Blalock Canyon Road. The primary route will not include Blalock Canyon Road to the north of Heritage Lane, although pickups may drive on Blalock Canyon Road to enter and leave the site. These roadways follow the general perimeter of the study area and intersect with local unnamed gravel roadways that will provide access to the individual turbine string roads.

State, county, or local roadways might be temporarily affected by traffic increases from construction vehicles accessing the site. Potential construction and operational impacts to traffic safety or maintenance on state highways from this Facility are anticipated to be inconsequential, as the state highway system (I-84 and ORE 19) was constructed to design, safety, and load-bearing standards. These roadways can accommodate vehicles at the legal load limit, thereby reducing the potential for significant traffic safety and maintenance impacts.

Temporary impacts, such as short-term traffic delays at the I-84 and ORE 19 convergence, and local roads are expected to be temporary and negligible, and will not have detrimental impacts on these or the other Protected Areas in the 20-mile radius analysis area. Long-term negative impacts from traffic will be negligible, because the Facility will employ only 15 to 20 people.

County and local roadways could require improvement before construction can begin, and might need to be monitored during construction to ensure and protect the quality of the roadway after the Facility has been completed. Local road improvements will enhance segments of the secondary access routes to the John Day River, and thus will have some positive impacts on accessibility to Protected Areas associated with the river.

In conclusion, increased traffic resulting from Facility construction or operation will not adversely impact Protected Areas.

(iii) Water use during facility construction or operation;

Response: There will be no potential impacts to water resources in Protected Areas. As discussed in Exhibit O, Facility water use will be temporary, fairly small in volume, and limited to the construction period (except for a very small amount to be used at the operations and maintenance building). Specifically,

water will be used during construction for concrete mixing, road compaction, and dust suppression. The construction contractor will be responsible for arranging for delivery of water to the site via water trucks from an established source with an existing water right. For this Facility, water most likely will be obtained from the city of Arlington. The city would serve as a sufficient water source to meet the Facility requirements.

Water for dust suppression will have a positive effect on nearby Protected Areas by minimizing the creation of dust clouds during the construction period. Other water uses during Facility construction or operation will not affect any of the Protected Areas within the 20-mile analysis zone.

- (iv) *Wastewater disposal resulting from facility construction or operation;*

Response: There will be no potential wastewater impacts. As discussed in Exhibit V, the use of water for construction practices is not anticipated to generate runoff. Wastewater will not be discharged into wetlands or other adjacent resources. Sanitary effluent will be treated via the proposed septic tank and stormwater will infiltrate onsite.

Wastewater resulting from Facility construction or operation will not affect any of the Protected Areas in the 20-mile analysis zone.

- (v) *Visual impacts of facility structures, including cooling tower or other plumes, if any; and*

Response: The visual impacts of the Facility are evaluated in detail in Exhibit R. Because some of the Protected Areas are not included among the classes of sites for which evaluations were required in Exhibit R, supplemental analysis was conducted to determine the extent to which the Facility will be visible from the Protected Areas not evaluated in Exhibit R and to assess the nature and degree of impacts on the aesthetic values associated with the Protected Area status of these sites.

To provide a basis for determining whether the Facility will be visible from the Protected Areas identified, the results of the Zones of Visual Influence (ZVI) analysis described in Exhibit R were overlaid on the maps presented as Figure L-1 (1.5-MW layout), and Figure L-2 (3.0-MW layout).¹ Review of these maps makes it possible to identify those Protected Areas from which the Facility might be visible, and for which evaluation of Facility visual impacts is required. As pointed out in Exhibit R, the visibility pattern the ZVI analysis presents is highly conservative in that it calculates a line-of-sight from the tips of the rotors at their highest positions. In some areas where Facility visibility is being indicated, the only parts of the Facility that might be visible will be the tips of the blades. In addition, the ZVI analysis does not take into account the screening role of structures and trees. As a result, there might be localized areas where Facility visibility is indicated but views of the turbines will, in reality, be screened by

¹ The ZVI model and methods are described in Exhibit R.

trees or structures in the foreground of the view. Finally, the ZVI analysis does not consider attenuating factors such as haze, distance, weather, or landscape background.

Review of the ZVI analysis presented in Figures L-1 and L-2 indicates that the Facility's turbines will not be visible from J.S. Burres State Park, John Day Dam, and the Columbia Southern Railroad Passenger Station and Warehouse. Because the Facility will not be visible from these Protected Areas, it is assumed that the Facility will have no visual impacts on these sites.

The Exhibit R analysis of the Facility's visibility from the canyon of the John Day River and the ZVI analysis in Figures L-1 and L-2 both indicate that the Facility will be visible to varying degrees from the land within ¼ mile of the banks that lie within the John Day Wild and Scenic River/John Day State Scenic Waterway.

The John Day Wildlife Refuge is managed for wildlife and wildlife habitat and not for scenic quality (Kohl, pers. comm.). Accordingly, the limited views of Facility turbines, as described in Exhibit R, will not constitute a significant adverse impact on this Protected Area.

The John Day Wild and Scenic River/John Day State Scenic Waterway both are managed for outstanding scenic quality (BLM, 1986; BLM, 2000; BLM, 2001). As described in Exhibit R, the areas protected by these special designations extend only ¼ mile beyond each bank of the river, and the special designations do not provide for regulation of activities on privately owned lands beyond this area. Nonetheless, Exhibit R contains a thorough analysis of the Facility's potential visual impacts on these areas.

Review of the ZVI analysis presented in Figures L-1 and L-2 indicates that the Facility's turbines will be visible from the Horn Butte ACEC. This area has been identified as a significant wildlife habitat in both the Mainstem Columbia and Umatilla subbasins (Ward, D. et al., 2001) because it constitutes the largest remaining undeveloped shrub-steppe habitat in the Oregon portion of the Columbia Basin. Several state and federally listed threatened, endangered, and sensitive species occur in this area. Like the John Day Wildlife Refuge, this area is managed for wildlife and wildlife habitat and not for scenic quality. Accordingly, the limited views of Facility turbines will not constitute a significant adverse impact on this Protected Area.

- (vi) *Visual impacts from air emissions resulting from facility construction or operation, including, but not limited to, impacts on Class 1 visual resources as described in OAR 340-204-0050;*

Response: During construction, dust might be generated during road construction, temporary batch plant operation, and clearing activities for the turbine pads. Dust will be controlled through the construction period by watering. Potential impacts are anticipated to be temporary and negligible.

Because Facility operation will create no air emissions, the Facility will have no impacts on air quality during the operational period. As a consequence, during both the construction and operation periods, there will be no air emission impacts that adversely affect views from the Protected Areas.

The minor dust-related issues that might occur during the construction period have no potential for adverse impacts on Class I Prevention of Significant Deterioration Areas. The Facility does not lie within a Class I area, and the closest Class I area, the Mount Hood Wilderness, lies more than 60 miles to the west of the Facility site.

L.4 CONCLUSION

The proposed Facility will comply with all applicable regulatory guidelines concerning Protected Areas as previously discussed in OAR 345-021-0010(l)(L)(A) and (B). The design, construction, and operation of the proposed Facility are not likely to result in significant adverse impacts to Protected Areas, and the Council may find that the standard in OAR 345-022-0040 has been satisfied.

L.5 REFERENCES

- Bureau of Land Management (BLM). 1986. *Two Rivers Resource Management Plan Record of Decision*. U.S. Department of the Interior. June 1986.
- Bureau of Land Management (BLM). 2000. *John Day River Proposed Management Plan, Two Rivers and John Day Resource Management Plan Amendments and Final Environmental Impact Statement*. U.S. Department of the Interior. June 2000.
- Bureau of Land Management (BLM). 2001. *Record of Decision John Day River Management Plan, Two Rivers, John Day, and Baker Resource Management Plan Amendments*. U.S. Department of the Interior. February 2001.
- Kohl, Keith. 2005. District Wildlife Biologist. Mid-Columbia District. Oregon Department of Fish and Wildlife. Personal communication via telephone conversation with Sean Sullivan. March 7, 2005. Cited in Klondike III Wind Project Exhibit L, April 1, 2005.
- Ward, D. Oregon Department of Fish and Wildlife. 2001. Draft Mainstem Columbia River Subbasin Summary. Available at <http://www.cbfwa.org/fwprogram/documents.cfm>

Figures

Protected Area	Distance to Nearest Turbine (mi)
Horn Butte Area of Critical Environmental Concern (ACEC)	3
John Day Wild and Scenic River/John Day State Scenic Waterway	6
John Day River Wildlife Refuge	6
J.S. Burres State Park	13
Columbia Southern Railroad Passenger Station and Warehouse	19
John Day Dam	19

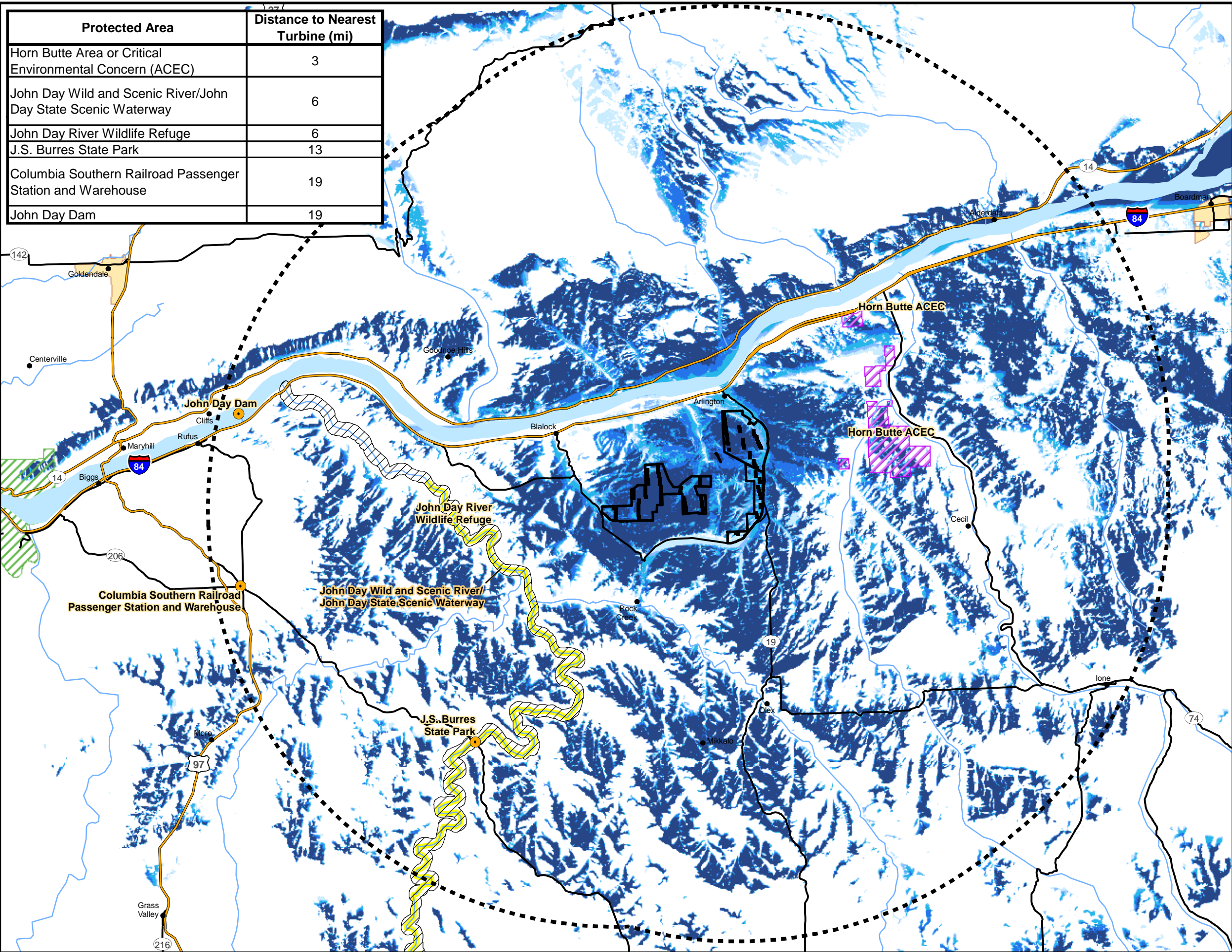


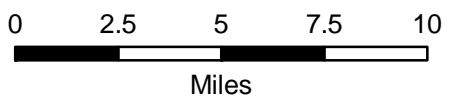
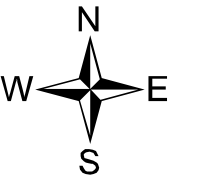
Figure L-1
Protected Areas
(1.5-MW Layout)
 Leaning Juniper II
 Wind Power Facility



Legend

- Protected Areas
 - Proposed Turbine
 - Local Road
 - Major Road
 - Highway
 - Site Boundary
 - Lakes & Rivers
 - Wild and Scenic River/John Day River Wildlife Refuge
 - John Day River Wildlife Refuge
 - Horn Butte ACEC
 - Columbia Gorge National Scenic Area Boundary
 - 20-mile Analysis Area
 - + City Limits
- ZVI Analysis
- Number of Visible Turbines
- 1 - 5
 - 51 - 10
 - 11 - 30
 - 31 - 50
 - > 50

Note:
 ZVI analysis assumes 133 1.5-MW turbines for Leaning Juniper II.



Protected Area	Distance to Nearest Turbine (mi)
Horn Butte Area of Critical Environmental Concern (ACEC)	3
John Day Wild and Scenic River/John Day State Scenic Waterway	6
John Day River Wildlife Refuge	6
J.S. Burres State Park	13
Columbia Southern Railroad Passenger Station and Warehouse	19
John Day Dam	19

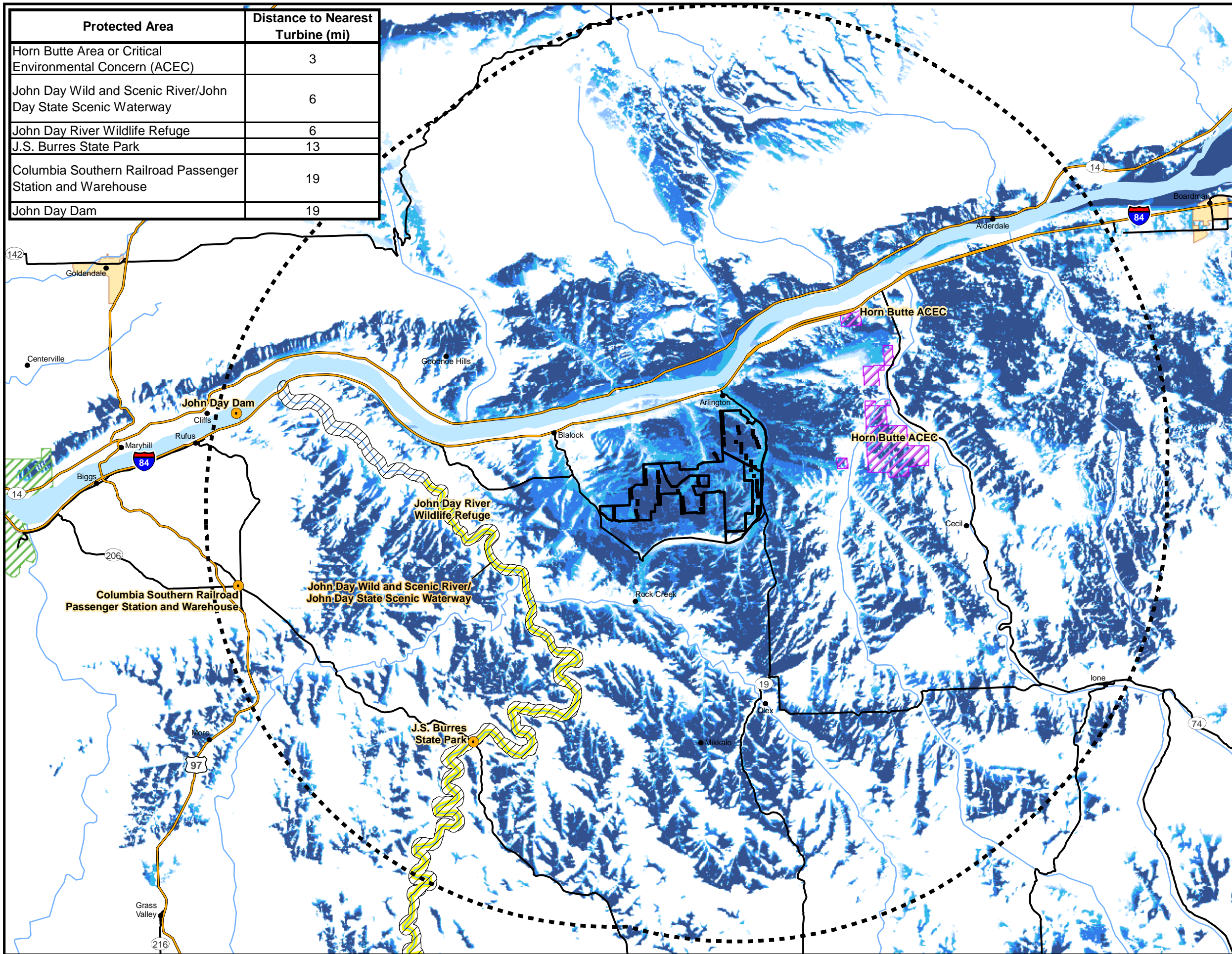


Figure L-2
Protected Areas
(3.0-MW Layout)
 Leaning Juniper II
 Wind Power Facility



Legend

- Protected Areas
 - Proposed Turbines
 - Local Road
 - Major Road
 - Highway
 - ▭ Site Boundary
 - Lakes & Rivers
 - ▨ Horn Butte ACEC
 - ▨ Wild and Scenic River/John Day River Wildlife Refuge
 - ▨ John Day River Wildlife Refuge
 - ▨ Columbia Gorge National Scenic Area Boundary
 - ⋯ 20-mile Analysis Area
 - ⊕ City Limits
- ZVI Analysis
- Number of Visible Turbines
- 1 - 5
 - 6 - 10
 - 11 - 30
 - 31 - 50
 - > 50
- Note:
 ZVI analysis assumes 93 3.0-MW turbines for Leaning Juniper II.

