Request for Amendment

Request for Amendment No. 1 to the Site Certificate for the Leaning Juniper II Wind Power Facility

Prepared for

Oregon Energy Facility Siting Council

June 2009

Prepared by

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CH2MHILL

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Attachments

SECTION 1

Introduction

Leaning Juniper Wind Power II, LLC (LJWP) obtained a site certificate (SC) on September 21, 2007, to construct the Leaning Juniper II Wind Power Facility (LJF) in Gilliam County, Oregon, with up to 133 turbines and a generating capacity of up to 279 megawatts (MW). LJWP is preparing to construct forty-three (43) 2.1-MW turbines with a generating capacity of 90.3 MW in 2009 under the authority of the SC. This first phase of construction is referred to as Leaning Juniper IIA (LJIIA). LJIIA will be constructed on both the Leaning Juniper II North and South properties described in the Final Order for LJF (September 2007).

1.1 Purpose of Proposed Amendment

LJWP requests an amendment to the SC to expand the LJF site boundary farther to the south to minimize wake impacts from existing nearby wind projects and optimize the use of the wind resource. Figure 1 in Attachment 1 shows the LJF site boundary as currently permitted along with the proposed addition to the site boundary. The purpose of the addition is to construct one or more subsequent phases on land immediately southeast of the originally permitted area. The subsequent phase of construction is referred to as Leaning Juniper IIB (LJIIB). LJIIB will consist of up to 90 turbines with a generating capacity of up to 188.7 MW.

1.2 Summary of Modifications

This amendment request does not seek to change the range of turbine types or sizes, maximum number of turbines, or maximum generating capacity of LJF from what was originally authorized in the SC. The total number of turbines at LJF will not exceed 133 and the total MW will not exceed 279. Turbines will not exceed 3.0 MW. The turbine hub-height will not exceed 100 meters (328 feet), and the turbine blade tip height will not exceed 150 meters (492 feet).

The turbine vendor, size, number, and actual generating capacity of LJIIB have not yet been determined. Like the original Application for Site Certificate (ASC) (September 2006), this amendment analyzes impacts for two turbine types. The turbine types represent a range that encompasses the scale and impacts of the turbines potentially used at LJIIB. The minimum turbine layout for LJIIB is 62 3.0-MW turbines. The maximum turbine layout is 90 1.5-MW turbines. The final layout will have 62 to 90 turbines, with any combination of turbines ranging in size up to 3.0 MW and a generating capacity of up to 188.7 MW. The total number of acres within the proposed amended LJF site boundary (including both LJIIA and LJIIB) is approximately 14,366. Please refer to Figures 2 and 3 (Attachment 1) for maps of the proposed amended LJF site boundary and the LJIIB components.

Like the first phase of construction (LJIIA), the LJIIB phase will connect to the Federal Columbia River Transmission System (the regional transmission grid) at Bonneville Power Administration's (BPA) existing Jones Canyon Switching Station (see Figure 4). Energy generated at the turbines located in the proposed amended site boundary will be collected via collector cables to either the approved collector substation to be constructed as part of the first phase, which is located within Lot 4 near the Jones Canyon Switching Station, or to a new additional collector substation located within the proposed amended site boundary closer to the LJIIB turbines. If the energy from the LJIIB turbines is collected and transferred to the first collector substation, a 34.5-kV overhead collector system will be constructed between the LJIIB turbines and the collector substation. If engineering analysis determines that it is more efficient to construct an additional collector substation near the LJIIB turbines, a 230-kV overhead transmission line will be constructed between the new collector substation and the first substation constructed. In either case, the overhead line will be a maximum of approximately 7 miles in length.

1.3 Regulatory Framework for This Request

This request is organized in accordance with Oregon Administrative Rules (OARs) 345-027-0030, -0050, -0060, and -0070, which set forth the required contents of a request to amend a site certificate, as well as additional considerations for the Council in deciding whether to grant an amended site certificate. The following sections of this request provide the information required by OAR 345-027-0030, 345-027-0050(1), OAR 345-027-0060, and OAR 345-027-0070(10).

SECTION 2

Information Required Pursuant to OAR 345-027-0030

(1) The certificate holder may request an amendment to extend the deadlines for beginning or completing construction of the facility that the Council has specified in a site certificate or an amended site certificate. The certificate holder shall submit a request that conforms to the requirements of 345-027-0060 no later than six months before the date of the applicable deadline, or, if the certificate holder demonstrates good cause for the delay in submitting the request, no later than the applicable deadline.

<u>Response</u>: The SC specifies that LJWP shall begin construction of LJF within 3 years after the effective date of the SC or by September 2010, and shall complete construction of the facility within 4 years after the effective date of the SC or by September 2011.

LJWP does not seek to extend the deadline for beginning construction. Rather, LJWP seeks to extend the deadline for completing construction from September 2011 to September 2013. The request for extension is to allow sufficient time to complete construction in the LJIIB area, taking into account the time needed to complete the SC amendment process and prepare the modified design for LJIIB.

LJWP is preparing to begin construction of the first-phase LJIIA, consisting of 43 turbines and a generating capacity of up to 90.3 MW, in winter 2009-2010. With this amendment, LJWP requests to expand the LJF site boundary to allow construction of one or more subsequent phases for the remaining 188.7 MW. LJWP plans to start construction of the LJIIB additional layout, consisting of up to 90 turbines with a generating capacity of up to 188.7 MW, in one phase immediately following construction of LJIIA. Completion of both phases of construction is planned for the end of 2010. Given that construction could conceivably be delayed by weather or other unforeseen circumstances such as market changes, LJWP would like the flexibility to build LJIIB in one or more phases. Therefore, LJWP requests that the original construction completion deadline specified in the Final Order be extended to 6 years from the effective date of the original SC or September 2013.

(3) The Council shall review the request for amendment as described in OAR 345-027-0070.

<u>Response</u>: The information required by OAR 345-027-0070(10) is set forth in Section 7 of this amendment request.

(4) If the Council grants an amendment under this rule, the Council shall specify new deadlines for beginning or completing construction that are not more than two years from the deadlines in effect before the Council grants the amendment.

<u>Response</u>: LJWP requests to extend the construction completion deadline from September 2011 to September 2013, not more than 2 years from the completion deadline currently in effect.

(5) To grant an amendment extending the deadline for beginning or completing construction of an energy facility subject to OAR 345-024-0550, OAR 345-024-0590, or OAR 345-024-0620, the Council must find that the facility complies with the carbon dioxide standard in effect at the time of the Council's order on the amendment.

Response: This rule is not applicable to the LJF.

SECTION 3

Information Required Pursuant to OAR 345-027-0050(1)

(1) Except as allowed under sections (2) and (6), the certificate holder must submit a request to amend the site certificate to design, construct or operate a facility in a manner different from the description in the site certificate if the proposed change:

(a) Could result in a significant adverse impact that the Council has not addressed in an earlier order and the impact affects a resource protected by Council standards;

Response: The proposed changes will add landowners and expand the site boundary to minimize wake impacts from existing nearby wind projects and optimize use of the wind resource. Therefore, an amendment to the SC is required.

Locating a portion of the currently approved turbines within the proposed amended site boundary will require the following modifications to major facilities and related or supporting facilities, as follows:

- The existing site boundary will be expanded to include approximately 7,962 additional acres to the southeast of the current approved site boundary. Construction of 43 turbines within the current approved site boundary will occur as part of a first phase, known as LJIIA. The second phase, known as LJIIB, will include the remaining approved turbine numbers and production capacity within the proposed amended site boundary.
- Power generated from LJIIB will be transferred to the approved collector substation located near BPA's Jones Canyon Switching Station using either of the following methods:
  - Constructing an overhead collector system consisting of two double-circuit 34.5-kV parallel lines from LJIIB to the approved collector substation
  - Constructing an additional collector substation near the LJIIB turbines, and constructing a 230-kV overhead transmission line between the new collector substation and the first substation constructed

  In either case, the overhead line will be a maximum of approximately 7 miles in length.
- An additional collector substation will be required if the engineering analysis determines that it is more effective to use 230-kV overhead transmission lines between LJIIB and the approved collector substation to be constructed as part of the first phase.
- Approximately 25.5 miles of collector lines will be installed as part of the central collector system. Up to 30 percent (7.7 miles) of these collector lines may be installed as overhead lines.
- A supervisory, control and data acquisition (SCADA) system will be installed in the proposed amended site boundary to collect operating and performance data from the

LJIIB turbines, and provide remote operation of the wind turbines. For LJIIB, the length of the SCADA fiber optic cables is equal to the length of the collector line system plus the length of the 34.5-kV or 230-kV lines between LJIIB and the approved collector substation. If a 230-kV transmission line is constructed, a total of up to 32.5 miles of SCADA will be constructed, including 25.5 miles along the central collector system and 7 miles along the transmission line. Of this amount, up to 14.7 miles of SCADA may be installed above ground, including up to 7.7 miles of the central collector system and 7 miles along the transmission line. If a 34.5-kV collector line is constructed from the LJIIB turbines to the approved collector substation, a total of up to 39.5 miles of SCADA will be constructed, including 25.5 miles along the central collector system and 14 miles along the overhead 34.5 kV line to the collector substation (one SCADA cable along each double-circuit line). Of this amount, up to 21.7 miles of SCADA may be installed aboveground, including up to 7.7 miles of the central collector system and 14 miles along the overhead collector system to the approved collector substation.

- Constructing the LJIIB turbines will require improving approximately 5.5 miles of existing County roads and 1.7 miles of existing private roads, and constructing approximately 20.3 miles of new gravel roads to provide access for construction vehicles.
- Based on the maximum turbine layout, approximately seven 2.5-acre staging areas will be located adjacent to each proposed turbine string within LJIIB, with two centrally located, 10-acre staging areas.
- Up to two permanent meteorological (met) towers already authorized under the existing SC will be relocated near the LJIIB turbines.

"(b) Could impair the certificate holder's ability to comply with a site certificate condition; or"

<u>Response:</u> LJWP is able to comply with all existing SC conditions (except as identified in Section 4 of this amendment request and Attachment 2, Redline Site Certificate).

"(c) Could require a new condition or change to a condition in the site certificate."

<u>Response:</u> Modifications to several SC conditions will be required to allow construction in the amended site boundary. These conditions are detailed in Section 4 and Attachment 2 (Redline Site Certificate).

SECTION 4

Information Required Pursuant to OAR 345-027-0060(1)

4.1 OAR 345-027-0060(1)(a) Name and Mailing Address

(1) To request an amendment of a site certificate, the certificate holder shall submit a written request to the Department of Energy that includes the information described in section (2) and the following:

(a) The name and mailing address of the certificate holder and the name, mailing address and phone number of the individual responsible for submitting the request.

Name and Address of Certificate Holder:

Leaning Juniper Wind Power II, LLC
1125 NW Couch Street, Suite 700
Portland, OR 97209

Name, Mailing Address, and Phone Number of Individual Responsible for Submitting the Request:

Sara McMahon Parsons
Iberdrola Renewables, Inc.
1125 NW Couch Street, Suite 700
Portland, OR 97209
(503) 796-7732

4.2 OAR 345-027-0060(1)(b) Description of Facility

(b) A description of the facility including its location and other information relevant to the proposed change.

Response: The LJF is described in Exhibits B and C of the ASC (September 2006) and Section III of the Final Order. LJWP is proposing to alter LJF in the manner described in this amendment request. Figure 1 in Attachment 1 shows the LJF site boundary as currently permitted, including one change request submitted by LJWP for which the Department has confirmed that no SC amendment is required (LJIIA). As originally authorized under the SC, the LJF will have a generating capacity of up to 279 MW and an average generating capacity of approximately 93 MW. The LJIIB components will be located on private land for which LJWP has negotiated long-term wind energy leases and has or will negotiate additional easements as required. The overhead collector or transmission line from the LJIIB turbines to the approved collector substation near the Jones Canyon Switching Station will also cross the Palouse River and Coulee City Railroad. LJWP will obtain a private license agreement with the Railroad to perform this crossing. LJWP successfully obtained license agreements from the Railroad for the Railroad crossing at Stone Lane needed for LJIIA, and will enter into a license agreement with Palouse River and Coulee City Railroad for the LJIIB crossing.

The LJIIB lease boundary is shown on Figure 2. Iberdrola Renewables, Inc., or its affiliates also lease the majority of the adjacent property on either side of the proposed amended site boundary. Another wind energy company leases the majority of the property to the south.

4.3 OAR 345-027-0060(1)(c) Proposed Changes to the Permitted Facility

(c) A detailed description of the proposed change and the certificate holder's analysis of the proposed change under the criteria of OAR 345-027-0050(1).

Response:

4.3.1 Proposed Changes to Major Facilities

This amendment request does not seek to change the range of turbine sizes or types, maximum number of turbines, or maximum generating capacity of LJF from what was originally authorized in the SC. The total number of turbines at LJF will not exceed 133 and the total MW will not exceed 279. Turbines will not exceed 3.0 MW. The turbine hub-height will not exceed 100 meters (328 feet), and the turbine blade tip height will not exceed 150 meters (492 feet).

Specifically, LJIIB will consist of up to 90 turbines with a generating capacity of up to 188.7 MW. The turbine vendor, size, number, and actual generating capacity have not yet been determined. Like the original ASC, this amendment analyzes impacts for two turbine types. The turbine types represent a range that encompasses the scale and impacts of the turbines that could potentially be used at LJIIB. The minimum turbine layout for LJIIB is 62 3.0-MW turbines. The maximum turbine layout is 90 1.5-MW turbines. The final layout will have 62 to 90 turbines, with any combination of turbines ranging in size up to 3.0 MW and a generating capacity of up to 188.7 MW. The total number of acres within the proposed amended LJF site boundary is approximately 14,366. Please refer to Figures 2 and 3 for maps of the proposed amended LJF site boundary and the LJIIB components.

4.3.2 Proposed Changes to Related or Supporting Facilities

Related or supporting facilities for the LJF consist of the operations and maintenance (O&M) building, power collection system, up to two collector substations, interconnection to the existing Jones Canyon Switching Station, SCADA system, transportation and access roads, construction staging areas, and meteorological towers. This amendment request seeks to add power collection system, a substation, SCADA, access roads and staging areas to what was originally authorized in the SC. Related or supporting facilities not described here remain unchanged from those facilities authorized in the SC. In addition, the dimensions of the major facility structures have not changed from what is described in the SC and Final Order, except as described below or in the impact tables provided in Attachment 3.

Central Power Collection System

As described in the SC, a network of collection power cables will be installed along and between the turbine strings to collect power generated by the individual wind turbines. The preliminary collection system for LJIIB is depicted on Figures 2 and 3.

Energy generated at the LJIIB turbines located in the proposed amended site boundary will be collected via collector cables and connected to either the approved collector substation to be constructed as part of the first phase, which is located within Lot 4 near the Jones Canyon Switching Station, or to a new additional collector substation located closer to the LJIIB turbines. These facilities are displayed on Figures 2 and 3.

The majority of the collector system will be buried in the soil approximately 3 feet below the ground surface. However, where site-specific considerations require, the collector system may be aboveground. Using aboveground structures allows the collector cables to "span" canyons and intermittent streams and thus to reduce environmental impacts. The overhead pole structures will generally be about 80 to 100 feet tall, depending on terrain. Support structure diagrams for the collector cables were provided in the ASC.

Based on the maximum turbine layout, approximately 25.5 miles of collector cables will be installed for LJIIB. The maximum length installed aboveground under the worst-case situation will be at most 30 percent of the collector system (approximately 17.8 miles of collector cables installed underground and approximately 7.7 miles of cables installed on overhead pole structures). Examples of specific conditions that will make it environmentally or economically advantageous to run portions of the collection system aboveground are as follows:

- Steep terrain where the use of backhoes and trenching machines is infeasible or unsafe
- Stream and wetland crossings where an aboveground line avoids or minimizes environmental impacts
- Soil with low thermal conductivity preventing adequate heat dissipation from the conductor, and rocky conditions that significantly increase trenching costs
- Highway and railroad crossings

Because detailed geotechnical studies have not yet been completed for the LJIIB area, it is not possible to determine the precise locations where aboveground collector cables may be necessary. Geotechnical studies may show that more cables are needed aboveground than originally planned in the preliminary layout. Therefore, in order for the Department to evaluate the potential impact of aboveground collector cables, LJWP proposes that no more than 30 percent (approximately 7.7 miles) of the collector system be aboveground.

Proposed Additional Collector Substation

The LJIIB collector cables will connect to either the approved collector substation to be constructed as part of the first phase, which is located within Lot 4 near the Jones Canyon Switching Station, or to a new additional collector substation located closer to the LJIIB turbines. The preferred and alternate locations of the collector substation in the latter scenario are shown on Figures 2 and 3. If engineering analysis determines that it is more efficient to construct an additional collector substation, the substation site will be surrounded by a graveled, fenced area with transformer and switching equipment and an area to park utility vehicles.

Interconnection to the Switching Station

Like the first phase of construction, electricity generated from the turbines located in the proposed amended site boundary will be connected to BPA's existing Jones Canyon Switching Station. Energy from the LJIIB turbines will be collected via collector cables to either the approved collector substation to be constructed as part of the first phase, which is located within Lot 4 near the Jones Canyon Switching Station, or to a new additional collector substation located closer to the LJIIB turbines (see Figures 2 and 3). If the energy from the LJIIB turbines is collected and transferred to the first collector substation, a 34.5-kV overhead collector system will be constructed between the LJIIB turbines and the collector substation. The overhead collector system will consist of two double-circuit 34.5-kV lines running parallel to each other. Support structure diagrams for the collector cables were provided in the ASC. LJWP is proposing a preferred and an alternate route, and both are shown on Figures 2 and 3.

If engineering analysis determines that it is more efficient to construct an additional collector substation near the LJIIB turbines, a 230-kV overhead transmission line will be constructed between the new collector substation and the first substation constructed. The support structures for the 230-kV transmission line will be constructed as shown on Figures 5 through 7. The 230-kV overhead transmission line route would follow the same preferred or alternate route described for the 34.5-kV overhead line described above.

Both the preferred and alternate routes terminate at the approved collector substation to be constructed as part of the first phase, which is located within Lot 4 near the Jones Canyon Switching Station, as shown on the same figures and on Figure 4. In either case, the overhead line will be a maximum of approximately 7 miles in length (alternate route), as shown on Figures 2 and 3, and will be located entirely in Gilliam County.

SCADA System

A SCADA system will be installed in the proposed amended site boundary to collect operating and performance data from the LJIIB turbines, and provide remote operation of the wind turbines. The SCADA system consists of fiber optic cables that collect operating and performance data from each wind turbine and carry that information back to a master panel at the collector substation and then from the collector substation to the operator's terminal controls at the existing O&M building. Where the collector lines are installed underground, the fiber optic SCADA cables will be installed in the collector cable trenches above the underground collector lines. Where the collector lines are installed on aboveground structures, the fiber optic SCADA cables will be installed on the overhead structures above the collector line cables.

Based on the maximum turbine layout, approximately 25.5 miles of SCADA fiber optic cables will be installed along the central collector system for LJIIB. Of this amount, up to 30 percent of the central collection system will be installed aboveground, resulting in approximately 7.7 miles of fiber optic cables installed on overhead pole structures.

The LJIIB SCADA system also consists of lightning shield communication wires from the collector substation to the interconnection station along the length of the 230-kV transmission line. The lightning shield or optical ground wires run above the power conductors on the 230-kV line. The lightning shield wire is shown in position TM-F1 on Figure 5, TM-6S on Figure 6, and TM-4E on Figure 7. The maximum length of the transmission line is approximately 7 miles, so the maximum length of the lightning shield wire will also be approximately 7 miles.

If the engineering analysis determines that it is more efficient to run overhead 34.5-kV lines from the LJIIB turbines to the first collector substation located near the Jones Canyon Switching Station, then lightning shield communication cables will parallel each of the double-circuit 34.5-kV lines along the preferred or alternate route (Figures 2 and 3), for a total of up to 14 miles of lightning shield communication wires along these 34.5-kV lines.

Transportation and Access Roads

Transportation to and from the proposed amended site boundary will follow a route that includes access via Interstate, State, and County roads. This route is the same as the route submitted in the LJII ASC. Constructing the LJIIB turbines will require improving some existing County and private roads, and constructing new gravel roads to provide access for construction vehicles. The new construction roads may continue to be used during LJIIB operations. Roads will be designed under the direction of a licensed engineer and compacted to meet equipment load requirements. Based on the maximum turbine layout, approximately 20.3 miles of new roads will be constructed for LJIIB. In addition, a maximum of approximately 5.5 miles of existing County roads and approximately 1.7 miles of existing private roads will be improved (see Figures 2, 3, and 8).

Three existing County roads will be improved by widening, grading, and graveling. County roads are typically 16 feet wide, and will need to be widened to up to 60 feet during construction and up to 30 feet during operations.

In addition, some existing private roads will need to be improved by widening, grading, and graveling. Typical existing roads are 8 to 12 feet wide, and will need to be widened to up to 80 feet during construction and up to 20 feet during operations. Where necessary, existing cattle guards will be replaced with wider cattle guards to accommodate the wider roads.

Figures 2 and 3 show the locations of existing private and County roads that will need improvement.

In areas where existing roads do not provide access to wind turbine locations, and along the length of turbine strings, new gravel roads will be constructed. Generally, these new roads will be up to 20 feet wide (with up to an additional 60 feet temporarily disturbed for crane paths[1] during construction).

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[1] The cranes required to erect turbines will temporarily disturb a corridor up to 60 feet wide during transport between turbine locations. This 60-foot corridor will parallel the access road corridor where possible, and will allow for the irregular path made by the 30-foot-wide crane, and up to 10 feet on either side of the crane for support vehicles. Where vegetation needs to be cleared (i.e., vegetation too large for the crane to walk over), the vegetative spoils will be pushed beyond the 50-foot path for up to 5 feet on either side, for a maximum disturbance width of 60 feet. In locations where the crane paths do not parallel access roads, temporary crane paths will be 55 feet in width instead of the 35 feet reflected in the original calculations.

Additional Construction Staging Areas

During construction of the LJIIB turbines and associated facilities, staging areas will be used to stage construction and store supplies and equipment. Based on the maximum turbine layout, approximately one 2.5-acre staging area will be located adjacent to each proposed turbine string (a total of seven 2.5-acre staging areas) with two centrally located, 10-acre staging areas. The locations of these staging areas are illustrated on Figures 2 and 3.

The additional staging areas will consist of a crushed gravel surface that will be removed following construction. The disturbed area will be restored to preconstruction conditions as required by the SC and the Revegetation Plan included as Attachment B to the Final Order.

Meteorological Towers

The SC authorizes up to four permanent meteorological (met) towers. LJWP will be constructing two met towers at LJIIA as part of the first phase of construction. Up to two permanent meteorological (met) towers will be located within the proposed amended site boundary near the LJIIB turbines for the collection of meteorological data, as shown on Figures 2 and 3. No additional met towers beyond the four authorized in the SC are requested as part of this amendment.

Operations and Maintenance Buildings

This amendment request does not seek to change the O&M buildings from what was originally authorized in the SC. The SC authorizes up to two O&M buildings, each up to 8,000 square feet, and each located on a 10-acre site. LJWP will be constructing one O&M building equal to or less than 8,000 square feet on a 10-acre site at LJIIA as part of the first phase of construction. This O&M building will be used for LJIIB as well. The second O&M building authorized as part of the SC may still be constructed as authorized by the SC but is not currently planned for construction as part of LJIIB. No additional O&M buildings are proposed.

4.3.3 Micrositing Corridor Locations of Energy Facility Site and Related and Supporting Facilities

Additions to the approved site boundary for LJIIB are described in Table 1 and Figure 9.

TABLE 1
Micrositing Corridors for Proposed Amended Site Boundary

Point ID	Latitude	Longitude	Description	Approximate Length (feet)
1 (Start)	45° 38' 25.152" N	120° 9' 33.922" W		
			Property Line	3965
2	45° 38' 25.116" N	120° 8' 38.449" W		
			Property Line	2607
3	45° 38' 25.029" N	120° 8' 1.449" W		
			Property Line	7911
4	45° 37' 6.951" N	120° 8' 1.651" W		
			Property Line	1329
5	45° 37' 6.667" N	120° 7' 42.962" W		
			East line of the NW1/4 NE1/4 Sec 36 T2N R21E W.M.	1297

TABLE 1
Micrositing Corridors for Proposed Amended Site Boundary

Point ID	Latitude	Longitude	Description	Approximate Length (feet)
6	45° 36' 53.864" N	120° 7' 43.127" W		
			North 88° 53' 32" East	1322
7	45° 36' 54.056" N	120° 7' 24.540" W		
			Property Line	3093
8	45° 36' 40.932" N	120° 6' 59.985" W		
			South 1° 52' 53" West	5288
9	45° 36' 27.840" N	120° 7' 0.686" W		
			South 0° 7' 30" East	5288
10	45° 36' 1.687" N	120° 7' 0.781" W		
			South 1° 15' 46" West	5288
11	45° 35' 48.748" N	120° 7' 1.275" W		
			Property Line	5627
12	45° 35' 9.647" N	120° 7' 24.901" W		
			North 89° 39' 23" West	2670
13	45° 35' 9.926" N	120° 8' 2.430" W		
			South 0° 51' 57" West	3940
14	45° 34' 31.050" N	120° 8' 3.517" W		
			Property Line	7957
15	45° 34' 31.323" N	120° 8' 40.233" W		
			North 0° 7' 59" East	2619
16	45° 34' 57.171" N	120° 8' 39.986" W		
			North 89° 49' 5" West	1324
17	45° 34' 57.270" N	120° 8' 58.602" W		
			North 0° 2' 43" East	3961
18	45° 35' 36.370" N	120° 8' 58.316" W		
			North 45° 5' 13" West	1871
19	45° 35' 49.464" N	120° 9' 16.863" W		
			South 45° 5' 29" West	1869
20	45° 35' 36.496" N	120° 9' 35.553" W		
			South 0° 1' 41" West	1034
21	45° 35' 26.290" N	120° 9' 35.621" W		
			Eastern edge of pavement of Oregon Highway 19	1176
22	45° 35' 15.095" N	120° 9' 31.326" W		
			Centerline of existing farm road	3359
23	45° 35' 0.788" N	120° 10' 12.907" W		
			South 0° 3' 14" West	5629
24	45° 34' 5.224" N	120° 10' 13.304" W		
			Property Line	5091
25	45° 34' 16.724" N	120° 11' 8.160" W		
			Property Line	3500
26	45° 34' 19.244" N	120° 11' 55.936" W		
			North 1° 49' 47" East	37
27	45° 34' 19.611" N	120° 11' 55.918" W		
			Centerline of existing farm road	7610

TABLE 1
Micrositing Corridors for Proposed Amended Site Boundary

Point ID	Latitude	Longitude	Description	Approximate Length (feet)
28	45° 35' 22.575" N	120° 11' 39.862" W		
			North 33° 24’ 26” East	128
29	45° 35' 23.628" N	120° 11' 38.864" W		
			Property Line	862
30	45° 35' 23.577" N	120° 11' 26.740" W		
			North 0° 10’ 32” West	3949
31	45° 36' 2.558" N	120° 11' 26.697" W		
			North 89° 53’ 2” West	1321
32	45° 36' 2.634" N	120° 11' 45.275" W		
			South 0° 11’ 44” East	1317
33	45° 35' 49.633" N	120° 11' 45.282" W		
			South 45° 3’ 0” West	32
34	45° 35' 49.412" N	120° 11' 45.601" W		
			Property Line	6396
35	45° 36' 0.645" N	120° 12' 53.900" W		
			North 80° 8’ 31” West	16
36	45° 36' 0.673" N	120° 12' 54.122" W		
			Western ROW of Berthold Road	5525
37	45° 36' 41.047" N	120° 12' 8.090" W		
			Centerline of Cedar Springs Lane ROW	58
38	45° 36' 41.181" N	120° 12' 7.297" W		
			Eastern ROW of Berthold Road	5225
39	45° 36' 3.362" N	120° 12' 51.128" W		
			Property Line	3420
40	45° 36' 16.101" N	120° 12' 21.459" W		
			Property Line	330
41	45° 36' 19.358" N	120° 12' 21.362" W		
			Property Line	932
42	45° 36' 28.553" N	120° 12' 21.031" W		
			North 89° 56’ 4” East	5200
43	45° 36' 28.418" N	120° 11' 7.894" W		
			North 0° 30’ 41” East	1320
44	45° 36' 41.448" N	120° 11' 7.656" W		
			North 3° 53’ 17” East	1261
45	45° 36' 53.867" N	120° 11' 6.384" W		
			North 42° 20’ 6” East	1870
46	45° 37' 7.461" N	120° 10' 48.597" W		
			North 0° 3’ 18” East	1316
47	45° 37' 20.450" N	120° 10' 48.505" W		
			North 26° 9’ 56” West	1435
48	45° 37' 33.187" N	120° 10' 57.335" W		
			Existing EFSC Site Boundary as defined in the LJII Final Order (Attachment D) and Change Request #1	4986
49	45° 37' 30.735" N	120° 10' 36.793" W		
			South 42° 34’ 49” East	162

TABLE 1
Micrositing Corridors for Proposed Amended Site Boundary

Point ID	Latitude	Longitude	Description	Approximate Length (feet)
50	45° 37' 29.553" N	120° 10' 35.257" W		
			Property Line	569
51	45° 37' 32.904" N	120° 10' 29.170" W		
			South 45° 6' 2" East	1795
52	45° 37' 20.347" N	120° 10' 11.357" W		
			North 89° 59' 37" East	1320
53	45° 37' 20.295" N	120° 9' 52.782" W		
			South 0° 20' 58" West	3949
54	45° 36' 41.319" N	120° 9' 53.352" W		
			North 89° 57' 21" East	1316
55	45° 36' 41.274" N	120° 9' 34.842" W		
			North 0° 18' 55" East	3946
56	45° 37' 20.226" N	120° 9' 34.302" W		
			South 89° 56' 13" East	2144
57	45° 37' 20.113" N	120° 9' 4.147" W		
			Western ROW of Montague Lane	3541
58	45° 37' 36.934" N	120° 9' 46.191" W		
			Centerline of Oregon Highway 19 ROW	61
59	45° 37' 37.529" N	120° 9' 46.302" W		
			Eastern ROW of Montague Lane	3649
60	45° 37' 20.109" N	120° 9' 3.106" W		
			South 89° 56' 18" East	410
61	45° 37' 20.087" N	120° 8' 57.342" W		
			North 0° 12' 16" East	2631
62	45° 37' 46.052" N	120° 8' 57.049" W		
			North 89° 58' 3" West	2635
63	45° 37' 46.178" N	120° 9' 34.122" W		
			North 0° 2' 8" West	3957
1 (End)	45° 38' 25.152" N	120° 9' 33.922" W		

65 (Start)	45° 37' 38.798" N	120° 11' 1.744" W		
			North 29° 5' 52" West	700
66	45° 37' 44.849" N	120° 11' 6.501" W		
			Property Line	664
67	45° 37' 51.403" N	120° 11' 6.447" W		
			Existing EFSC Site Boundary as defined in the LJII Final Order (Attachment D) and Change Request #1	592
68	45° 37' 54.798" N	120° 10' 59.662" W		
			Property Line	255
69	45° 37' 54.710" N	120° 10' 56.081" W		
			South 25° 40' 54" East	731
70	45° 37' 48.190" N	120° 10' 51.657" W		
			Existing EFSC Site Boundary as defined in the LJII Final Order (Attachment D) and Change Request #1	1220
65 (End)	45° 37' 38.798" N	120° 11' 1.744" W		

TABLE 1
Micrositing Corridors for Proposed Amended Site Boundary

Point ID	Latitude	Longitude	Description	Approximate Length (feet)
71 (Start)	45° 37' 54.573" N	120° 11' 7.711" W		
			North 25° 17' 35" West	3897
72	45° 38' 29.412" N	120° 11' 30.946" W		
			Existing EFSC Site Boundary as defined in the LJII Final Order (Attachment D) and Change Request #1	200
73	45° 38' 30.323" N	120° 11' 28.446" W		
			South 25° 17' 35" East	3883
74	45° 37' 55.610" N	120° 11' 5.295" W		
			Existing EFSC Site Boundary as defined in the LJII Final Order (Attachment D) and Change Request #1	201
71 (End)	45° 37' 54.573" N	120° 11' 7.711" W		
75 (Start)	45° 38' 32.276" N	120° 11' 32.856" W		
			North 25° 17' 35" West	4287
76	45° 39' 10.607" N	120° 11' 58.431" W		
			Existing EFSC Site Boundary as defined in the LJII Final Order (Attachment D) and Change Request #1	657
77	45° 39' 17.040" N	120° 11' 59.615" W		
			South 25° 17' 35" East	4905
78	45° 38' 33.187" N	120° 11' 30.356" W		
			Existing EFSC Site Boundary as defined in the LJII Final Order (Attachment D) and Change Request #1	200
75 (End)	45° 38' 32.276" N	120° 11' 32.856" W		
79 (Start)	45° 39' 18.242" N	120° 12' 3.526" W		
			North 25° 17' 35" West	3092
80	45° 39' 45.888" N	120° 12' 21.979" W		
			Existing EFSC Site Boundary as defined in the LJII Final Order (Attachment D) and Change Request #1	234
81	45° 39' 45.634" N	120° 12' 18.701" W		
			South 25° 17' 35" East	2344
82	45° 39' 24.675" N	120° 12' 4.710" W		
			Existing EFSC Site Boundary as defined in the LJII Final Order (Attachment D) and Change Request #1	657
79 (End)	45° 39' 18.242" N	120° 12' 3.526" W		
83 (Start)	45° 39' 48.607" N	120° 12' 23.794" W		
			North 25° 17' 35" West	1723
84	45° 40' 4.009" N	120° 12' 34.078" W		
			Existing EFSC Site Boundary as defined in the LJII Final Order (Attachment D) and Change Request #1	1365

TABLE 1
Micrositing Corridors for Proposed Amended Site Boundary

Point ID	Latitude	Longitude	Description	Approximate Length (feet)
85	45° 39' 52.799" N	120° 12' 23.484" W		
			South 25° 17' 35" East	495
86	45° 39' 48.378" N	120° 12' 20.533" W		
			Existing EFSC Site Boundary as defined in the LJII Final Order (Attachment D) and Change Request #1	233
83 (End)	45° 39' 48.607" N	120° 12' 23.794" W		

87 (Start)	45° 40' 9.912" N	120° 12' 33.017" W		
			Existing EFSC Site Boundary as defined in the LJII Final Order (Attachment D) and Change Request #1	2767
88	45° 40' 25.480" N	120° 12' 20.433" W		
			Property Line	1561
89	45° 40' 10.084" N	120° 12' 19.714" W		
			Property Line	945
87 (End)	45° 40' 9.912" N	120° 12' 33.017" W		

90 (Start)	45° 40' 36.385" N	120° 12' 45.322" W		
			Property Line	1748
91	45° 40' 35.954" N	120° 12' 20.750" W		
			Existing EFSC Site Boundary as defined in the LJII Final Order (Attachment D) and Change Request #1	3180
90 (End)	45° 40' 36.385" N	120° 12' 45.322" W		

92 (Start)	45° 40' 22.810" N	120° 11' 48.747" W		
			Existing EFSC Site Boundary as defined in the LJII Final Order (Attachment D) and Change Request #1	5215
93	45° 40' 6.765" N	120° 11' 9.645" W		
			Property Line	3218
92 (End)	45° 40' 22.810" N	120° 11' 48.747" W		

94 (Start)	45° 40' 4.726" N	120° 11' 4.678" W		
			Existing EFSC Site Boundary as defined in the LJII Final Order (Attachment D) and Change Request #1	1480
95	45° 39' 59.490" N	120° 10' 59.834" W		
			North 58° 58’ 14” West	406
96	45° 40' 1.570" N	120° 11' 4.722" W		
			Property Line	320
94 (End)	45° 40' 4.726" N	120° 11' 4.678" W		

97 (Start)	45° 39' 56.928" N	120° 10' 53.814" W		
			Existing EFSC Site Boundary as defined in the LJII Final Order (Attachment D) and Change Request #1	2043

TABLE 1
Micrositing Corridors for Proposed Amended Site Boundary

Point ID	Latitude	Longitude	Description	Approximate Length (feet)
98	45° 39' 53.285" N	120° 10' 45.253" W		
			North 58° 58' 14" West	711
97 (End)	45° 39' 56.928" N	120° 10' 53.814" W		

Exclusions

Point ID	Latitude	Longitude	Description	Approximate Length (feet)
64 (Start)	45° 36' 41.183" N	120° 8' 57.821" W		
			NE1/4 SE1/4 Sec 35 T2N R21E W.M.	5259
64 (Start)	45° 36' 41.183" N	120° 8' 57.821" W		

4.3.4 Land Area of LJIIB Facility and Related and Supporting Facilities

Additions to the approved impacts are described in Attachment 3, Addendum to Temporary and Permanent Impact Calculations.

4.4 OAR 345-027-0060(1)(d) Proposed Changes to Site Certificate

(d) The specific language of the site certificate, including affected conditions, that the certificate holder proposes to change, add or delete by an amendment.

Response: Attachment 2 to this amendment request is a "redline" version of the SC, showing the proposed changes.

4.5 Relevant Council Standards

(e) A list of the Council standards relevant to the proposed change.

Response: Council standards relevant to the proposed change include Division 22 (General Standards for Siting Facilities) and Division 24 (Specific Standards for Siting Facilities). The requirements of each of these standards are outlined below, along with LJWP's responses.

4.5.1 OAR 345-022

The following Division 22 standards are addressed:

- OAR 345-022-0010 Organizational Expertise
- OAR 345-022-0020 Structural Standard
- OAR 345-022-0022 Soil Protection
- OAR 345-022-0030 Land Use
- OAR 345-022-0040 Protected Areas
- OAR 345-022-0050 Retirement and Financial Assurance
- OAR 345-022-0060 Fish and Wildlife Habitat
- OAR 345-022-0070 Threatened and Endangered Species

- OAR 345-022-0080 Scenic Resources
- OAR 345-022-0090 Historic, Cultural and Archaeological Resources
- OAR 345-022-0100 Recreation
- OAR 345-022-0110 Public Services
- OAR 345-022-0120 Waste Minimization

OAR 345-022-0010 Organizational Expertise

(1) To issue a site certificate, the Council must find that the applicant has the organizational expertise to construct, operate and retire the proposed facility in compliance with Council standards and conditions of the site certificate. To conclude that the applicant has this expertise, the Council must find that the applicant has demonstrated the ability to design, construct and operate the proposed facility in compliance with site certificate conditions and in a manner that protects public health and safety and has demonstrated the ability to restore the site to a useful, non-hazardous condition. The Council may consider the applicant's experience, the applicant's access to technical expertise and the applicant's past performance in constructing, operating and retiring other facilities, including, but not limited to, the number and severity of regulatory citations issued to the applicant.

(2) The Council may base its findings under section (1) on a rebuttable presumption that an applicant has organizational, managerial and technical expertise, if the applicant has an ISO 9000 or ISO 14000 certified program and proposes to design, construct and operate the facility according to that program.

(3) If the applicant does not itself obtain a state or local government permit or approval for which the Council would ordinarily determine compliance but instead relies on a permit or approval issued to a third party, the Council, to issue a site certificate, must find that the third party has, or has a reasonable likelihood of obtaining, the necessary permit or approval, and that the applicant has, or has a reasonable likelihood of entering into, a contractual or other arrangement with the third party for access to the resource or service secured by that permit or approval.

(4) If the applicant relies on a permit or approval issued to a third party and the third party does not have the necessary permit or approval at the time the Council issues the site certificate, the Council may issue the site certificate subject to the condition that the certificate holder shall not commence construction or operation as appropriate until the third party has obtained the necessary permit or approval and the applicant has a contract or other arrangement for access to the resource or service secured by that permit or approval.

<u>Response</u>:

A. Certificate Holder's Expertise

As described in the Final Order, the Certificate Holder is Leaning Juniper Wind Power II, LLC (LJWP). The Final Order also noted that PPM Energy, Inc. (PPM) was the parent of LJWP and that PPM, by way of several other entities, was ultimately owned by Iberdrola SA. Since the Final Order, PPM changed its name to Iberdrola Renewables, Inc. (IBR), and the corporate organization above LJWP has been modified. However, IBR continues to be the parent of LJWP, and IBR continues to be a part of Iberdrola Renovables, S.A., a Spanish company that is the world leader in the renewable energy sector operating in 19 countries. Further, IBR continues to be a leader in the renewable industry in the United States and is also the parent owner of the Klondike III Wind Project operating under a site certificate issued by the Council. Within its power business, IBR is focused on the development and marketing of clean fuel sources, including wind as well as solar, biomass, and natural gas-fired generation.

IBR will provide the organizational, managerial, and technical expertise to construct and operate the amended LJF. The organizational, managerial, and technical expertise of PPM (now IBR) is described in the Final Order. Through direct ownership or power purchase agreements, IBR controls more than 2,000 MW of wind generation currently in operation and then integrates and markets the output from these projects into the wholesale power market.

In the Final Order, the Council found that PPM would provide its expertise to LJWP. The Council concluded that LJWP demonstrated that it has the organizational expertise to construct and operate the LJF. Other than the change in corporate structure and company name, there have been no changes that would affect the Council's previous findings under this standard.

The business address is as follows:

Iberdrola Renewables, Inc.
1125 NW Couch Street, Suite 700
Portland, OR 97209

B. Third-Party Permits

LJWP does not rely on any state or local government permit issued to a third party.

Conclusions

This amendment request does not affect LJWP's ability to comply with the SC. Therefore, OAR 345-022-0010 (1) through (4) is met.

OAR 345-022-0020 Structural Standard

(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 Maximum Considered Earthquake Ground Motion identified at International Building Code (2003 edition) Section 1615 and maximum probable ground motion, taking into account ground failure and amplification for the site specific soil profile under the maximum credible and maximum probable seismic events; and

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

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

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

(2) 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.

Response: LJWP conducted a site-specific study of the proposed amended LJF site boundary for LJIIB (LJIIB area), as described in Attachment 4. Based on the literature review and site reconnaissance, there was no evidence of recent (historical) slope instability, faulting, or ground rupture within the LJIIB area. The study characterized the seismic, geologic, and soil hazards of the LJIIB area and determined that the potential for ground rupture, earthquake-induced landslides and slope instability, lateral spreading, liquefaction, and settlement or subsidence within the LJIIB area is low, and LJWP can design, engineer, and construct the amended LJF to avoid dangers to human safety presented by such hazards.

The LJIIB area is characterized by little or no soil overlying a relatively deep stratum of weakly cemented sedimentary rock (which primarily consists of gravel and interbedded weakly cemented sands and silts). No basalt is anticipated to be encountered for any of the wind turbine foundations. These subsurface conditions are based on a literature review of existing geologic mapping, and by observations made during a site reconnaissance of the LJIIB area in May of 2009 (see Attachment 4). Deformations in the form of medium to very large prehistoric landslides were observed in the vicinity of the LJIIB area. These features are no longer anticipated to be active, and are interpreted to have been triggered by Pleistocene floods. However, apparently stable landslides can sometimes become reactivated by human activity, or by a record rainfall or large seismic event. Attachment 4 provides further description of these features.

This amendment request does not change the information presented in the Final Order or LJWP's ability to comply with the SC, and therefore, OAR 345-022-0020(1) is met.

(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: This rule is not applicable.

OAR 345-022-0022 Soil Protection

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

Response: Soils and soil types at LJF were described in Exhibit I of the ASC. A soil survey conducted for the LJIIB area identified one new soil type, the Lickskillet series, which was not identified during the surveys of the original site boundary. A detailed description of this series is provided in Attachment 4. The Lickskillet series consists of shallow, well-drained stoney and gravelly loams that formed in hill slopes. The surface consists of a thin layer of very stoney loam that is less than 12 inches thick. The clay content increases below

12 inches, and the typical depth to rock beneath this layer is between 12 and 20 inches. For a description of rock types in the area, refer to Attachment 4. Within the LJIIB area, Lickskillet soils are found on south- and west-facing slopes near the crest of sloping areas at elevations between 500 and 1,000 feet mean sea level, with slopes of 7 to 40 percent. Permeability is high with high runoff. Water erosion potential is high but wind erosion potential is not. The principle land use is farming and rangeland. Native vegetation is mainly bunchgrass, forbes, and shrubs, although some areas are dominated by juniper trees.

Attachment 3 summarizes the number of acres that will be temporarily disturbed by LJIIB construction or occupied by permanent facilities during LJIIB operation.

A. Impacts During Construction

Overall impacts on soils during construction of the amended LJF will be the same as those described in the Final Order for LJF.

B. Impacts During Operation

As described in the Final Order, operation of the LJF will have little impact on soils. There will be no additional impact to soils from construction of the amended LJF beyond the description provided in the Final Order.

C. Mitigation Measures

Mitigation measures for the amended LJF will be the same as those described in the Final Order.

This amendment request does not change the mitigation measures presented in the Final Order or LJWP's ability to comply with the SC, and therefore, OAR 345-022-0022 is met.

OAR 345-022-0030 Land Use

(1) To issue a site certificate, the Council must find that the proposed facility complies with the statewide planning goals adopted by the Land Conservation and Development Commission.

(2) The Council shall find that a proposed facility complies with section (1) if:

(a) The applicant elects to obtain local land use approvals under ORS 469.504(1)(a) and the Council finds that the facility has received local land use approval under the acknowledged comprehensive plan and land use regulations of the affected local government; or

(b) The applicant elects to obtain a Council determination under ORS 469.504(1)(b) and the Council determines that:

(A) The proposed facility complies with applicable substantive criteria as described in section (3) and the facility complies 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);

(B) For a proposed facility that does not comply with one or more of the applicable substantive criteria as described in section (3), the facility otherwise complies with the statewide planning goals or an exception to any applicable statewide planning goal is justified under section (4); or

(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 under section (4).

Response: Under OAR 345-027-0070(10), the Council must consider whether the facility complies with the land use standard for areas that will be affected by construction and operation of the amended LJF. As demonstrated below, the amended LJF complies with the applicable substantive criteria of Gilliam County and all directly applicable provisions of the Land Conservation and Development Commission (LCDC) administrative rules.

Pursuant to ORS 469.504(1)(b), the Council found in Section IV.3(a) of the Final Order for LJF (September 2007) that the LJF complies with OAR 345-022-0030(2)(b), with authorization of an exception to Statewide Planning Goal 3 and the imposition of SC conditions 36 through 44. The proposed land use types, applicable Gilliam County zoning district, and applicable substantive criteria for LJIIB have not changed from what was already approved by the Council for LJF. Therefore, this amendment request does not affect the LJWP's ability to comply with ORS 469.504(1)(b), OAR 345-022-0030(2)(b), the Statewide Planning Goals, the applicable substantive criteria from the *Gilliam County Comprehensive Plan* (GCCP) and Gilliam County Zoning Ordinance (GCZO), or SC conditions 36 through 44.

As described in more detail in the response to OAR 345-022-0030(3), directly below, the amended site boundary for LJIIB includes only the types of land uses (e.g., wind turbines, collector cables, access roads) and construction and operation activities originally authorized as part of LJF. In addition, the land uses, amended site boundary and half-mile analysis area proposed with this amendment request are on land in the same Gilliam County zone (Exclusive Farm Use [EFU]) authorized for LJF. Finally, the applicable substantive criteria in the GCCP and GCZO have not changed from what was last updated by Gilliam County on October 25, 2000 (Anderson, pers. comm., 2009).

LJWP requests that the Goal 3 exception authorized for LJF be modified to include both the amended site boundary and facilities for LJIIB. LJWP also submits this analysis in response to the new LCDC administrative rule OAR 660-033-0130(37), effective January 2, 2009. The response to OAR 345-022-0030(4), directly below, provides additional justification for this modification request.

(3) As used in this rule, the "applicable substantive criteria" are criteria from the affected local government's acknowledged comprehensive plan and land use ordinances that are required by the statewide planning goals and that are in effect on the date the applicant submits the application. If the special advisory group recommends applicable substantive criteria, as described under OAR 345-021-0050, the Council shall apply them. If the special advisory group does not recommend applicable substantive criteria, the Council shall decide either to make its own determination of the applicable substantive criteria and apply them or to evaluate the proposed facility against the statewide planning goals.

Response: The applicable substantive criteria in the GCCP and GCZO have not changed from the criteria that were (1) last updated by Gilliam County on October 25, 2000 (Anderson, pers. comm., 2009); (2) identified as applicable to LJF by the special advisory group (SAG)[2]; and (3) addressed in Section IV.3(a) of the Final Order for LJF. The land uses,

[2] The Council appointed the Gilliam County Court on January 28, 2006, as the SAG in review of the ASC for LJF.

amended site boundary, and half-mile analysis area proposed with this amendment request are on privately owned land in the same Gilliam County zone (EFU) as the uses and site already authorized in the Final Order. Figure 10 provides an aerial photograph to demonstrate the pattern of existing land uses within the amended site boundary for LJIIB and adjacent property. Figure 11 shows the GCCP designations and land use zones.

This amendment request includes only the land use types and construction and operation activities originally authorized for LJF. Therefore, the land use types proposed for the LJIIB facilities are within the same categories specified in the GCZO [see GCZO Sections 4.020(D)(14), 4.020(D)(24), 4.020(D)(25), 4.020(D)(29), and 4.020(D)(34)] and described on pages 29 and 30, Section IV.3(a)(A) of the Final Order. These land use types include commercial utility facilities for the purpose of generating power for public sale [4.020(D)(14)]; improvements of public roads and highways [4.020(D)(24)]; transportation improvements on rural lands [4.020(D)(25)]; utility facilities necessary for public service [4.020(D)(29)]; and wind power generation facilities [4.020(D)(34)]. Therefore, the applicable substantive criteria for the amended LJF remain consistent with previous recommendations made by the SAG as described on pages 27 and 28, Section IV.3(a)(A) of the Final Order.

(4) The Council may find goal compliance for a proposed facility that does not otherwise comply with one or more statewide planning goals by taking an exception to the applicable goal. Notwithstanding the requirements of ORS 197.732, the statewide planning goal pertaining to the exception process or any rules of the Land Conservation and Development Commission pertaining to the exception process, the Council may take an exception to a goal if the Council finds:

(a) The land subject to the exception is physically developed to the extent that the land is no longer available for uses allowed by the applicable goal;

(b) The land subject to the exception is irrevocably committed as described by the rules of the Land Conservation and Development Commission to uses not allowed by the applicable goal because existing adjacent uses and other relevant factors make uses allowed by the applicable goal impracticable; or

(c) The following standards are met:

(A) Reasons justify why the state policy embodied in the applicable goal should not apply;

(B) 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; and

(C) The proposed facility is compatible with other adjacent uses or will be made compatible through measures designed to reduce adverse impacts.

Response: For the reasons discussed above and set forth in Section IV.3(a)(A) of the Final Order, the amended LJF complies with the applicable substantive criteria recommended to the Council by Gilliam County except GCZO Section 4.020(D)(14), which limits the area that a "commercial utility facility" may occupy as a conditional use in the EFU zone. Because the proposed LJIIB facilities do not comply with all applicable local land use criteria (specifically GCZO 4.020(D)(14)), the Council must determine whether, under ORS 469.504(1)(b)(B), the proposed facilities "otherwise comply with the applicable statewide planning goals." For a use located within an EFU zone, the "applicable statewide planning goal" is Goal 3. OAR chapter 660, division 33 contains LCDC administrative rules for implementing the requirements for agricultural land as defined by Goal 3. OAR 660-033-0120 (Table 1) lists the "commercial utility facility" use as a type "R" use ("use may be approved, after required review"). Prior to the effective date of OAR 660-033-0130(37), the standards found in OAR 660-033-0130(5) and (22) applied to wind power facilities proposed to be located on non-high-value farmland and OAR 660-033-0130(5) and (17) applied to such facilities proposed to be located on high-value farmland.

However, OAR 660-033-0130(37) (effective January 9, 2009) amended OAR 660-003-0120 (Table 1) to (1) list "wind power generation facility" as a type "R" use, and (2) add OAR 660-033-0130(37), which lists new requirements for wind energy facilities on agricultural lands. The effect of these amendments was to eliminate the 12-acre and 20-acre restrictions on wind energy facilities by excluding wind energy facilities from the definition of "commercial utility facility" subject to OAR 660-033-0130(17) and (22). Instead, the amendments imposed new restrictions on wind energy facilities, as set forth in OAR 660-033-0130(37). The applicability of OAR 660-033-0130(5) (implementing ORS 215.296) does not change.

Gilliam County has yet to amend the GCZO to incorporate OAR 660-033-0130(37) and therefore, GCZO 4.020(D)(14) still requires a commercial utility facility to obtain a Goal 3 exception pursuant to OAR 660-033-0130(17) or (22) if it exceeds the 12-acre or 20-acre threshold. Thus, the following sections demonstrate that in addition to meeting the new requirements in OAR 660-033-0130(37), the proposed facility complies with Goal 3 and is authorized under OAR 345-022-0030(4)(c).

Exception to Goal 3 under ORS 469.504(2)

As shown in Table 2, the proposed LJIIB components will occupy approximately 21 acres of high-value farmland. In addition, the proposed LJIIB components will occupy approximately 51 acres of non-high-value farmland. The proposed LJIIB components do not comply with OAR 660-033-0130(17) or (22), which triggers the need for a Goal 3 exception under the old rules.

TABLE 2
Areas Occupied by LJIIB Components

Structure	Total Permanent Impacts (acres)	High-Value Farmland Impacts (acres)[1]	Non-High-Value Farmland Impacts (acres)[2]
Principal Use			
Turbine towers, including pad areas	3.431	1.333	2.098
Meteorological towers	0.041	0.021	0.021
Overhead 34.5-kV Collector Line Structures (Home Run)	0.100	0.000	0.100
Overhead 230-kV Transmission Line Structures (Home Run)	0.067	0.000	0.067
LJIIB Collector Substation	3.000	0.000	3.000
Subtotal	*6.640*	*1.354*	*5.286*
Access Roads	66.153	19.992	46.136

TABLE 2
Areas Occupied by LJIIB Components

Structure	Total Permanent Impacts (acres)	High-Value Farmland Impacts (acres)[1]	Non-High-Value Farmland Impacts (acres)[2]
Total[3]	**72.793**	**21.345**	**51.422**

Notes:

This table is based on the worst-case (maximum turbine layout) locations for LJIIB components as shown on Figure 2 in Attachment 1 and Figure 3 in Attachment 3.

Some specific soil types found within the amended site boundary (e.g., soil types 32A, 32B, 40B, and 55B) are NRCS Class II soils (i.e., defined as high-value farmland) if irrigated and Class III soils (i.e., defined as non-high-value farmland) if not irrigated. Thus, the calculations of impact to high-value and non-high-value farmland provided in this table are based on a conservative methodology assuming that these soil types are all irrigated or high-value farmland.

1 OAR 660-033-0020(8)(a) defines high-value farmland as a tract composed predominately of soils that are irrigated or not irrigated and classified prime, unique, Class I or II by the NRCS and also include other specific soils listed in the OARs. Thus, impacts to Class I and II soils are high-value farmland impacts.

2 OAR 660-033-00020(1)(a)(A) defines agricultural land as NRCS Soil Classes I-VI in Eastern Oregon and OAR 660-033-00020(8)(a) defines high-value as NRCS Soil Classes I and II. Thus, non-high-value farmland consists of those areas in NRCS Soil Classes III-VI.

3 In addition to the areas listed, the worst-case scenario will also result in 0.026 acre of impact to Class VII soil, which is neither high-value nor non-high-value farmland.

In Section IV.3(a)(C) of the Final Order, the Council found that a Goal 3 exception was justified under ORS 469.504(2)(c) for LJF, and although this Amendment Request seeks to amend the LJF site boundary farther to the south to minimize wake impacts from existing nearby wind projects and optimize the use of the wind resource, the exceptions analysis and findings set forth in Section IV.3(a)(C) of the Final Order support a Goal 3 exception for this Amendment Request. Those findings can be summarized (in bold) as follows:

Reasons Supporting the Exception

1. **Although the amended site boundary for LJIIB will include approximately 7,962 acres of EFU farmland, the LJIIB components will permanently occupy approximately 21 acres of high-value farmland, or 0.26 percent of the EFU farmland within the amended site boundary.** It is significant to note that the wind facility structures will not occupy a single, continuous area within which no farming activities could occur. Rather, the spacing of turbines and turbine strings will allow farm use to continue efficiently on most of the land currently used for dryland wheat farming or other cultivated farm activities.

2. **The LJIIB access roads will be available to landowners for use in farm operations.** As shown in Table 2, of the approximately 21 acres of high-value farmland occupied by the LJIIB components, the access roads will occupy approximately 20 acres. The roads will be available to the landowners for farming or ranching and livestock grazing. Facility access roads will be the minimum size necessary for safe operation and will be located to minimize conflict with farm uses on surrounding land.

3. **The facility is compatible with farm use, will not seriously interfere with accepted farm practices on adjacent land and will not materially alter the overall land use pattern**

of the area. This Amendment Request does not propose any new types of related or supporting facilities.

4. **Approval of the proposed facility furthers the state policy embodied in Goal 13 (Energy Conservation).** EFU land is particularly well suited to the utilization of wind energy, which requires open land with unobstructed access to consistently strong winds. The areas within Gilliam County that have sufficient open space and strong winds are within EFU zones and the LJF will be sited on EFU land and produce renewable energy.

5. **The use of farmland for the location of the facility provides efficient access to the regional transmission system.** Less than 8 miles of new transmission line will be needed to connect the proposed LJIIB components to existing regional power lines.

Accordingly, these reasons justify why the policy embodied in Goal 3 should not apply and thus ORS 469.504(2)(c)(A) and OAR 345-022-0030(4)(c)(A) are met.

<u>Significant environmental, economic, social and energy consequences</u>

The facility will meet all applicable Council standards. The Council's standards address the environmental, economic, social, and energy (EESE) consequences of the LJF with the proposed LJIIB components. In Section IV.3(a)(C) of the Final Order, the Council determined that the LJF will have no significant adverse EESE consequences The reasons and justifications supporting findings of no significant adverse EESE consequences in Section IV.3(a)(C) also support a finding of no significant adverse EESE consequences for the proposed LJIIB components. Further, as demonstrated in this Amendment Request, the amended site boundary will also comply with all applicable Council rules.

The significant EESE consequences have been identified and to the extent necessary, adverse impacts will be mitigated in accordance with the Council rules applicable to the siting of the proposed facility; accordingly, ORS 469.504(2)(c)(B) and OAR 345-022-0030(4)(c)(B) are met.

<u>Compatibility with adjacent uses</u>

The facility is compatible with farm use, will not seriously interfere with accepted farm practices on adjacent land and will not materially alter the overall land use pattern of the area. Section IV.3(a)(C) of the Final Order describes the adjacent land uses to include farming (dryland wheat cultivation and cattle grazing) and the operation of the region's largest landfill, and no new uses are identified as a part of this amendment request. The LJIIB components are compatible with farm uses for the reasons discussed in reference to GCZO 7.010, and the amended site boundary for LJIIB will not force a significant change in accepted farm practices on surrounding lands and will not significantly increase the cost of farm practices. The findings and justifications in Section IV.3(a)(C) supporting a finding of compatibility for LJF also support a finding that the amended LJF is compatible with adjacent uses and meets ORS 469.504(2)(c)(C).

<u>Analysis Under OAR 660-033-0130(37)</u>

(a) For high-value farmland soils described at ORS 195.300(10), the governing body or its designate must find that all of the following are satisfied:

(A) Reasonable alternatives have been considered to show that siting the wind power generation facility or component thereof on high-value farmland soils is necessary

for the facility or component to function properly or if a road system or turbine string must be placed on such soils to achieve a reasonably direct route considering the following factors:

(i) Technical and engineering feasibility;

(ii) Availability of existing rights of way; and

(iii) The long term environmental, economic, social and energy consequences of siting the facility or component on alternative sites, as determined under paragraph (37)(a)(B) of this subsection.

<u>Response</u>: LJWP proposes to extend the LJF site boundary farther to the south to minimize wake impacts from existing nearby wind projects and optimize the use of the wind resource. The proposed land use is an optimization of an existing wind power generation facility (approved before the new rules were adopted by LCDC). The proposed LJIIB components are part of an amendment to a SC to optimize the layout of the LJF. It would be unreasonable to require the certificate holder to locate the LJIIB components at a distant location remote from the first phase of construction. Therefore, for an amendment that optimizes the site of an existing facility, a "reasonable alternative" must be on non-high-value farmland where there is a substantially similar wind resource, and must be either be contiguous with, or sufficiently close to, the existing facility to ensure that operation of the entire facility is practicable. If both prongs of the test cannot be satisfied, then there is no "reasonable alternative" and the analysis under OAR 660-033-0130(37)(a)(A) ends.

Here, Figure 12 provides information on the soil characteristics that exist within and near the amended site boundary for LJIIB. Soil maps of the area, based on data from the NRCS, show a mosaic of soil types, with high-value farmland soils (Class I and II) interspersed with non-high-value farmland soils. The soil mosaic is typical of this area of Gilliam County, as shown on Figure 13. From Figures 12 and 13, it is evident that there are few areas in which high-value farmland soils will not be affected to some extent and still meet the project needs.

As mentioned above, LJWP proposes to amend the LJF site boundary to minimize wake impacts from existing nearby wind projects and optimize the use of the wind resource. LJWP is preparing to begin the first phase of construction (LJIIA) within the authorized site boundary, and plans to construct one or more subsequent phases (LJIIB) within the amended site boundary on land immediately southeast of the originally permitted area. Both phases will connect to the Jones Canyon Switching Station and will operate as one facility. For these reasons, the proposed LJIIB components must be sited in reasonable proximity to the first phase of construction. The location of the amended site boundary for LJIIB was determined based on this need to optimize the use of wind resources for the LJF, and is also constrained by the existing wind projects in the area and by land leased or otherwise committed to other wind power generation facilities.

In addition to the mosaic of high- and non-high-value farmland soils, the amended site boundary for LJIIB allows for efficient use of existing transmission infrastructure and the use of existing points of interconnection with the regional power grid. The amended site boundary for LJIIB includes approximately 7,962 acres. Although the proposed LJIIB components will permanently occupy less than 73 acres, a larger area is necessary to allow sufficient flexibility for micrositing considerations in the final design of the facility.

Given the diverse mosaic of soil types on the area of Gilliam County that is near or contiguous to the LJF and potentially available for the amended site boundary, there are no "reasonable alternatives" to locating components of the LJIIB components entirely or partially on high-value farmland soils. Any alternative configuration to the proposed LJIIB components will likely affect high-value farmland soils to some extent and the EESE consequences of alternative configurations will be substantially the same as the proposed configuration. Siting the proposed LJIIB components partially on high-value farmland soils is necessary for the facility to function properly and that siting portions of the road system and turbine strings on high-value farmland is necessary to achieve a reasonably direct route. For these reasons, OAR 660-033-0130(37)(a)(A) is satisfied.

(B) *The long-term environmental, economic, social and energy consequences resulting from the wind power generation facility or any component thereof at the proposed site with measures designed to reduce adverse impacts are not significantly more adverse than would typically result from the same proposal being located on other agricultural lands that do not include high-value farmland soils.*

<u>Response</u>: The test required under OAR 660-033-0130(37)(a)(B) is similar to the test required by ORS 469.504(2)(c)(B), which is analyzed above to justify a "reasons" exception to Goal 3. The EESE consequences have been considered above as a part of the Goal 3 exception analysis, and for the reasons addressed there, the consequences for siting the proposed LJIIB components on high-value farmland are not significantly more adverse than would typically result from locating the components on non-high-value farmland. Accordingly, OAR 660-033-0130(37)(a)(B) is satisfied.

(C) *Costs associated with any of the factors listed in paragraph (A) of this subsection may be considered, but costs alone may not be the only consideration in determining that siting any component of a wind power generation facility on high-value farmland soils is necessary.*

<u>Response</u>: Costs are not the only consideration in the proposed location for the LJIIB components and therefore this criterion is met.

(D) *The owner of a wind power generation facility approved under OAR 660-033-0130(37)(a) shall be responsible for restoring, as nearly as possible, to its former condition any siting, maintenance, repair or reconstruction of the facility. Nothing in*

this subsection shall prevent the owner of the facility from requiring a bond or other security from a contractor or otherwise imposing on a contractor the responsibility for restoration.

Response: The certificate holder must restore all areas disturbed by the construction, including farmland, according to the Revegetation Plan (included as Attachment B to the Final Order) and Condition 74 of the Final Order. This Amendment Request does not impact the certificate holder's ability to comply with the Revegetation Plan and Condition 74. Therefore, OAR 660-033-0130(37)(a)(D) is met.

(E) The criteria in OAR 660-033-0130(37)(b) are satisfied.

Response: As discussed below, the criteria in OAR 660-033-0130(37)(b) are met, and therefore the facility complies with OAR 660-033-0130(a)(E).

(b) For arable land, meaning lands that are cultivated or suitable for cultivation, including high-value farmland soils described at ORS 195.300(10), the governing body or its designate must find that:

(A) The proposed wind power facility will not create unnecessary negative impacts on agricultural operations conducted on the subject property. Negative impacts could include, but are not limited to, the unnecessary construction of roads, dividing a field or multiple fields in such a way that creates small or isolated pieces of property that are more difficult to farm, and placing wind farm components such as meteorological towers on lands in a manner that could disrupt common and accepted farming practices; and

Response: This requirement is substantially similar to the analysis under GCZO 7.010 and ORS 469.504(2)(c)(C). As discussed above and in Section IV.3(a)(C) of the Final Order, the amended LJF will not create unnecessary negative impacts on agricultural operations conducted within the site boundary. OAR 660-033-0130(37)(b)(A) is met.

(B) The presence of a proposed wind power facility will not result in unnecessary soil erosion or loss that could limit agricultural productivity on the subject property. This provision may be satisfied by the submittal and county approval of a soil and erosion control plan prepared by an adequately qualified individual, showing how unnecessary soil erosion will be avoided or remedied and how topsoil will be stripped, stockpiled and clearly marked. The approved plan shall be attached to the decision as a condition of approval;

Response: LJWP will conduct all construction work in compliance with an Erosion and Sediment Control Plan (ESCP) satisfactory to the Oregon Department of Environmental Quality and as required by the National Pollutant Discharge Elimination System (NPDES) Stormwater Discharge General Permit 1200-C (Condition 70 of the Final Order). Attachment 5 contains LJWP's proposed ESCP. The amended LJF will be included in the ESCP and governed under the NPDES Permit 1200-C. Further, this request for amendment demonstrates that the amended LJF meets the Council's Soil Protection Standard. For these reasons, the construction and operation of the amended LJF will not result in unnecessary soil erosion and OAR 660-033-0130(37)(b)(B) is met.

(C) Construction or maintenance activities will not result in unnecessary soil compaction that reduces the productivity of soil for crop production. This provision may be satisfied by the submittal and county approval of a plan prepared by an adequately qualified individual, showing how unnecessary soil compaction will be avoided or remedied in a timely manner through deep soil decompaction or other appropriate practices. The approved plan shall be attached to the decision as a condition of approval; and

Response: The certificate holder is obligated to decommission and restore the facility site under the Council's Retirement and Financial Assurance Standard, which includes restoring the site to pre-construction conditions suitable for agricultural use (see, e.g., Condition 75 of Final Order). This Amendment Request addresses the certificate holder's ability to meet the Council's Retirement and Financial Assurance Standard. For the reasons discussed there, and subject to SC conditions, the construction and operation of the amended LJF will not result in unnecessary soil compaction that reduces the productivity of soil for crop production. OAR 660-033-0130(37)(b)(C) is met.

(D) Construction or maintenance activities will not result in the unabated introduction or spread of noxious weeds and other undesirable weeds species. This provision may be satisfied by the submittal and county approval of a weed control plan prepared by an adequately qualified individual that includes a long-term maintenance agreement. The approved plan shall be attached to the decision as a condition of approval.

Response: During construction and operation of the facility, the certificate holder must implement a plan to control the introduction and spread of noxious weeds (Condition 82 of the Final Order). The amended LJF will be subject to the plan, and therefore construction or maintenance of the amended LJF will not result in the unabated introduction or spread of noxious weeds or other undesirable weed species. OAR 660-033-0130(37)(b)(D) is met.

(c) For nonarable lands, meaning lands that are not suitable for cultivation, the governing body or its designate must find that the requirements of OAR 660-033-0130(37)(b)(D) are satisfied.

Response: This criterion is not applicable. Regardless, as discussed above, OAR 660-033-0130(37)(b)(D) is met.

(d) In the event that a wind power generation facility is proposed on a combination of arable and nonarable lands as described in OAR 660-033-0130(37)(b) and (c) the approval criteria of OAR 660-033-0130(37)(b) shall apply to the entire project.

Response: All criteria under OAR 660-033-0130(37)(b) are met.

Conclusion

For the foregoing reasons, a Goal 3 exception for the amended LJF is justified and all requirements of OAR 660-033-0130(37) are met. Therefore, the facility complies with OAR 345-022-0030(4).

(5) If the Council finds that applicable substantive local criteria and applicable statutes and state administrative rules would impose conflicting requirements, the Council shall resolve the conflict

consistent with the public interest. In resolving the conflict, the Council cannot waive any applicable state statute.

Response: Section IV.3(a) of the Final Order for LJF does not indicate that any of the applicable substantive local criteria recommended by the SAG impose conflicting requirements when compared against applicable state statutes and administrative rules. The land use types and amendment to the site boundary proposed with this amendment request are within the same jurisdiction and land use zone as the uses and site already approved in the SC for LJF. The amended site boundary for LJIIB is proposed entirely within the Gilliam County EFU zone. The SAG recommended substantive criteria from the GCZO as described on pages 27-28, Section IV.3(a), of the Final Order. Gilliam County has not revised or updated the GCZO since it was applied to the review of LJF (Anderson, pers. comm., 2009). In addition, the amended LJF includes only the land use types and construction and operation activities originally authorized for LJF. Therefore, the applicable substantive criteria used to assess LJF have not changed from what was recommended for LJF and do not conflict with applicable state statutes and administrative rules. Accordingly, OAR 345-022-0030(5) is met.

(6) If the special advisory group recommends applicable substantive criteria for an energy facility described in ORS 469.300(10)(a)(C) to (E) or for a related or supporting facility that does not pass through more than one local government jurisdiction or more than three zones in any one jurisdiction, the Council shall apply the criteria recommended by the special advisory group. If the special advisory group recommends applicable substantive criteria for an energy facility described in ORS 469.300(10)(a)(C) to (E) or a related or supporting facility that passes through more than one jurisdiction or more than three zones in any one jurisdiction, the Council shall review the recommended criteria and decide whether to evaluate the proposed facility against the applicable substantive criteria recommended by the special advisory group, against the statewide planning goals or against a combination of the applicable substantive criteria and statewide planning goals. In making the decision, the Council shall consult with the special advisory group, and shall consider:

(a) The number of jurisdictions and zones in question;

(b) The degree to which the applicable substantive criteria reflect local government consideration of energy facilities in the planning process; and

(c) The level of consistence of the applicable substantive criteria from the various zones and jurisdictions.

Response: The land use types and amendment to the site boundary proposed with this amendment request are within the same jurisdiction and land use zone as the uses and site already approved in the SC for LJF. The amended site boundary for LJIIB is proposed entirely within the Gilliam County EFU zone. The SAG recommended substantive criteria from the GCZO as described on pages 27 and 28, Section IV.3(a) of the Final Order. Gilliam County has not revised or updated the GCZO since it was applied to the review of LJF (Anderson, pers. comm., 2009). In addition, the amended LJF includes only the land use types and construction and operation activities originally authorized for LJF. Therefore, the substantive criteria have not changed from what was recommended for LJF and OAR 345-022-0030(6) is met.

OAR 345-022-0040 Protected Areas

(1) Except as provided in sections (2) and (3), the Council shall not issue a site certificate for a proposed facility located in the areas listed below. To issue a site certificate for a proposed facility located outside the areas listed below, 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 the areas listed below. References in this rule to protected areas designated under federal or state statutes or regulations are to the designations in effect as of May 11, 2007:

(a) National parks, including but not limited to Crater Lake National Park and Fort Clatsop National Memorial;

(b) National monuments, including but not limited to John Day Fossil Bed National Monument, Newberry National Volcanic Monument and Oregon Caves National Monument;

(c) Wilderness areas established pursuant to The Wilderness Act, 16 U.S.C. 1131 et seq. and areas recommended for designation as wilderness areas pursuant to 43 U.S.C. 1782;

(d) National and state wildlife refuges, including but not limited to Ankeny, Bandon Marsh, Baskett Slough, Bear Valley, Cape Meares, Cold Springs, Deer Flat, Hart Mountain, Julia Butler Hansen, Klamath Forest, Lewis and Clark, Lower Klamath, Malheur, McKay Creek, Oregon Islands, Sheldon, Three Arch Rocks, Umatilla, Upper Klamath, and William L. Finley;

(e) National coordination areas, including but not limited to Government Island, Ochoco and Summer Lake;

(f) National and state fish hatcheries, including but not limited to Eagle Creek and Warm Springs;

(g) National recreation and scenic areas, including but not limited to Oregon Dunes National Recreation Area, Hell's Canyon National Recreation Area, and the Oregon Cascades Recreation Area, and Columbia River Gorge National Scenic Area;

(h) State parks and waysides as listed by the Oregon Department of Parks and Recreation and the Willamette River Greenway;

(i) State natural heritage areas listed in the Oregon Register of Natural Heritage Areas pursuant to ORS 273.581;

(j) State estuarine sanctuaries, including but not limited to South Slough Estuarine Sanctuary, OAR chapter 142;

(k) Scenic waterways designated pursuant to ORS 390.826, wild or scenic rivers designated pursuant to 16 U.S.C. 1271 et seq., and those waterways and rivers listed as potentials for designation;

(l) Experimental areas established by the Rangeland Resources Program, College of Agriculture, Oregon State University: the Prineville site, the Burns (Squaw Butte) site, the Starkey site and the Union site;

(m) Agricultural experimental stations established by the College of Agriculture, Oregon State University…

(n) Research forests established by the College of Forestry, Oregon State University, including but not limited to McDonald Forest, Paul M. Dunn Forest, the Blodgett Tract in Columbia County, the Spaulding Tract in the Mary's Peak area and the Marchel Tract;

(o) Bureau of Land Management areas of critical environmental concern, outstanding natural areas and research natural areas;

(p) State wildlife areas and management areas identified in OAR chapter 635, division 8.

Response:

LJWP conducted an analysis of significant potential impacts on protected areas as described above in (a) through (p) for an analysis area extending 20 miles from the proposed amended site boundary for LJIIA and LJIIB [in accordance with OAR 345-001-0010(2) and -57(e)], including areas outside the state. Two Zone of Visual Influence (ZVI) maps were developed for the analysis area, one for the maximum turbine layout (see Figure 14) and one for the minimum turbine layout (see Figure 15). Both maps show the locations of the protected areas that have been identified within the analysis area. In addition, the maps include a ZVI analysis to show the areas from which LJIIA and LJIIB wind turbines potentially will be visible.

In the Final Order for LJF, four protected areas were within 20 miles of the Facility, but the LJF was not located within any protected area. No protected areas lie within the proposed amended LJF site boundary. There are no additional protected areas within the 20-mile analysis area beyond the four identified in Section IV.3(c), Table 6, of the Final Order. These four areas are shown on Figures 14 and 15 and summarized in Table 3.

TABLE 3
Protected Areas within 20-Mile Analysis Area

Protected Area	Rule Reference	Approximate Distance from Nearest LJIIA or LJIIB Turbine (Miles)	Direction from LJIIA and LJIIB	State
John Day Wildlife Refuge	(d)	6 (LJIIA)	W	Oregon
John Day Federal Wild and Scenic River	(k)	6 (LJIIA)	W	Oregon
John Day State Scenic Waterway	(k)	6 (LJIIA)	W	Oregon
Horn Butte Area of Critical Environmental Concern (ACEC)	(o)	3 (LJIIB)	E	Oregon

Note:

John Day Dam, Columbia Southern Railroad Passenger Station and Warehouse, and JS Burres State Park are not protected areas pursuant to OAR 345-022-0040(1) for the reasons described in Footnote 81, Page 55, of the Final Order for LJF.

The design, construction, and operation of the amended LJF will not result in noise, traffic, water, or wastewater impacts on any of the protected areas listed in Table 3 for the reasons described on pages 55 and 56 of the Final Order for LJF and supplemented by information in this amendment request (see responses to OAR 340-035-0035, Noise; OAR 345-022-0110, Public Services; and OAR 345-022-0120, Waste Minimization). This finding is consistent with OAR 345-021-0010(1)(L)(C)(i-iv).

Supplemental analysis was conducted to determine the extent to which LJIIA and LJIIB turbines will be visible from the protected areas, and where visible, to assess the nature and degree of potential impacts on the existing scenic qualities of the protected areas. Review of the ZVI analysis presented on Figures 14 and 15 indicates that the nearest LJIIA or LJIIB turbine will be approximately 6 miles away and will not be visible from the portion of the John Day River designated as a Federal Wild and Scenic River and State Scenic Waterway. Therefore, no significant adverse impacts to either of these protected areas will occur, as described on pages 56 and 57 of the Final Order for LJF and supplemented by information in this amendment request (see response to OAR 345-022-0080).

The John Day Wildlife Refuge is approximately 6 miles from the nearest LJIIA or LJIIB turbine. The refuge is protected for wildlife habitat. It is not managed for its scenic views. The ZVI shows that a few turbines might be visible from some isolated areas of the refuge approximately ¼-mile from the river bank. No significant adverse impacts to this protected area will occur, as described on pages 56 and 57 of the Final Order for LJF and supplemented by information in this amendment request (see response to OAR 345-022-0080).

Review of the ZVI analysis presented on Figures 14 and 15 indicates that LJIIA and LJIIB turbines will be visible from the Horn Butte Area of Critical Environmental Concern (ACEC). This protected area is managed for wildlife and wildlife habitat and not for scenic quality. In addition, existing views from the majority of the Horn Butte ACEC already include wind turbines, various transmission lines, highways and roads, and other human-made features. Accordingly, the limited views of LJIIA and LJIIB turbines will not constitute a significant adverse impact on this protected area.

Although this request for amendment proposes to expand the LJF site boundary to the southeast of the originally permitted area, the impact on protected areas from the amended LJF does not change from what is described in Section IV.3(c) of the Final Order for LJF. The design, construction, and operation of the amended LJF will not occur within, nor will it result in any significant adverse impacts to the protected areas listed. Accordingly, LJWP demonstrates that the Project can be designed, constructed, and operated in accordance with OAR 345-022-0040(1).

(2) Notwithstanding section (1), the Council may issue a site certificate for a transmission line or a natural gas pipeline or for a facility located outside a protected area that includes a transmission line or natural gas or water pipeline as a related or supporting facility located in a protected area identified in section (1), if other alternative routes or sites have been studied and determined by the Council to have greater impacts. Notwithstanding section (1), the Council may issue a site certificate for surface facilities related to an underground gas storage reservoir that have pipelines and injection, withdrawal or monitoring wells and individual wellhead equipment and pumps located in a protected area, if other alternative routes or sites have been studied and determined by the Council to be unsuitable.

Response: This rule is not applicable because the amendment request for LJIIB does not include any related or supporting facilities in a protected area identified in OAR 345-022-0040(1).

(3) The provisions of section (1) do not apply to transmission lines or natural gas pipelines routed within 500 feet of an existing utility right-of-way containing at least one transmission line with a voltage rating of 115 kilovolts or higher or containing at least one natural gas pipeline of 8 inches or greater diameter that is operated at a pressure of 125 psig.

Response: This rule is not applicable because the amendment request for LJIIB does not include a transmission line or natural gas pipeline routed within 500 feet of an existing utility right-of-way containing at least one transmission line with a voltage rating of 115 kilovolts (kV) or higher or containing at least one natural gas pipeline of 8 inches or greater diameter that is operated at a pressure of 125 pounds per square inch gauge (psig).

OAR 345-022-0050 Retirement and Financial Assurance

To issue a site certificate, the Council must find that:

(1) The site, taking into account mitigation, can be restored adequately to a useful, non-hazardous condition following permanent cessation of construction or operation of the facility.

Response:

The amendment request includes an increase in the area occupied by access roads and other facilities and additional area of estimated site restoration. However, this amendment request does not change the information presented in the Final Order regarding the process or methods for retiring (decommissioning) the site following permanent cessation of construction or operation of the LJF, or LJWP's ability to comply with the SC. The methodology used for decommissioning and site restoration the amended site boundary to include the LJIIB components will not change from the methodology described in the Final Order. LJIIB can be retired (decommissioned) and the site restored adequately to a useful, nonhazardous condition that allows continued use for agriculture. Accordingly, this amendment request does not change LJWP's ability to meet OAR 345-022-0050 and the Council may find under OAR 345-027-0070(10) that the retirement and financial assurance standard is met.

(2) The applicant has a reasonable likelihood of obtaining a bond or letter of credit in a form and amount satisfactory to the Council to restore the site to a useful, non-hazardous condition.

Response:

As described in the Final Order, LJWP demonstrated a reasonable likelihood of obtaining a bond or letter of credit in the amount of $8.847 million in 2006 dollars to retire the 279-MW LJF site to a useful, nonhazardous condition. LJWP is preparing to construct 43 2.1-MW turbines with a generating capacity of 90.3 MW in 2009 under the authority of the SC, and will submit an adjusted bond or letter of credit based on the 90.3-MW layout prior to construction as required by the SC.

This amendment request does not seek to change the range of turbine types or sizes, maximum number of turbines, or maximum generating capacity of LJF from what was originally authorized in the SC. While construction of LJIIB will result in additional area of restoration and retirement of additional roads and transmission facilities, the total number of turbines at LJF will not exceed 133 and the total MW will not exceed 279. LJWP has demonstrated a reasonable likelihood of obtaining a bond or letter of credit to retire a facility with up to 133 turbines and up to 279 MW, and the SC allows for the adjustment of the bond or letter of credit prior to construction. As will be done for LJIIA, LJWP will submit an adjusted bond or letter of credit based on the final LJIIB layout prior to construction.

Attachment 6 to this amendment request contains a cost estimate for restoration of the LJIIB portion of LJF. Based on the maximum turbine layout, the total estimated cost (including contingencies, general costs, performance bonds, administration and project management, and maximum lengths of components) for restoration of this portion of LJF is 8.6 million in 2nd Quarter 2009 dollars. This cost estimate is conservative because it is based on using the more costly of the two interconnection options; the 230-kV transmission line was considered in this estimate rather than the two 34.5-kV double-circuit lines, and the maximum lengths were used. Should LJWP elect to construct less than the maximum length of the 230-kV transmission line, or should LJWP elect to construct the 34.5-kV collector lines to connect with the approved collector substation to be constructed as part of the first phase, the estimate for restoring the LJIIB facility will be less than the estimated cost provided in Attachment 6.

The cost estimate is based on the Department's estimates of cost removal and does not include scrap value. However, LJWP respectfully requests that the Council recognize the costs of said decommissioning security and reserves the right to argue that the Council take into account the following when establishing the amount and timing of said security:

- The risk of the LJIIB facility ceasing operations in the first 10 years is extremely low.
- The wind turbines will have a significant resale value in the early years of facility life.
- The salvage value of the turbines and towers warrants consideration.
- The landowner leases require LJWP to decommission the facility.

LJWP prefers that the decommissioning security requirement become effective in the later years of the LJIIB facility's life (e.g., in year 15). At that point, the facility will still have substantial commercial value, but decommissioning could be expected after another 15 to 20 years. In order to reflect the phased construction of the proposed amended LJF, Condition 30 will be modified as follows:

> 30. Before beginning construction **of each respective phase of the facility**, the certificate holder shall submit to the State of Oregon through the Council a bond or letter of credit in the amount described herein naming the State of Oregon, acting by and through the Council, as beneficiary or payee. The initial bond or letter of credit amount is $8.847 million (in 2006 dollars) **for LJIIA,** adjusted to the date of issuance as described in (b), or the amount determined as described in (a). **The supplemental bond or letter of credit amount is $8.6 million (in 2nd quarter 2009 dollars) for LJIIB, adjusted to the date of issuance as described in (b), or the amount determined as described in (a). The** certificate holder shall adjust the amount of the bonds or **letters** of credit on an annual basis thereafter as described in (b).
>
> a. The certificate holder may adjust the amount of the bond**s** or letter**s** of credit based on the final design configuration of the facility by applying the unit costs and general costs illustrated in Table 2 and Table 3 of the Final Order on the Application to the final design and calculating the

financial assurance amount as described in that order, adjusted to the date of issuance as described in (b) and subject to approval by the Department.

b. The certificate holder shall adjust the amount of the bonds or letters of credit, using the following calculation and subject to approval by the Department:

   i. Adjust the gross cost component of the bond or letter of credit amount (expressed in 2006 dollars) to present value, using the U.S. Gross Domestic Product Implicit Price Deflator, Chain-Weight, as published in the Oregon Department of Administrative Services' "Oregon Economic and Revenue Forecast" or by any successor agency (the "Index") and using the annual average index value for 2006 dollars and the quarterly index value for the date of issuance of the new bond or letter of credit. If at any time the Index is no longer published, the Council shall select a comparable calculation to adjust 2006 dollars to present value.

   ii. Add 1 percent of the adjusted gross cost (i) for the adjusted performance bond amount, 10 percent of the adjusted gross cost for the adjusted administration and project management costs and 10 percent of the adjusted gross cost for the adjusted future developments contingency.

   iii. Add the adjusted gross cost (i) to the sum of the percentages (ii) and round the resulting total to the nearest $1,000 to determine the adjusted financial assurance amount.

c. The certificate holder shall use a form of bond or letter of credit approved by the Council.

d. The certificate holder shall use an issuer of the bond or letter of credit approved by the Council.

e. The certificate holder shall describe the status of the bonds or letters of credit in the annual report submitted to the Council under Condition 21.

f. The bonds or letters of credit shall not be subject to revocation or reduction before retirement of the facility site.

For the reasons above, and subject to the proposed condition, LJF, as amended, meets OAR 345-022-0050 and the Council may find under OAR 345-027-0070(10) that the retirement and financial assurance standard is met.

OAR 345-022-0060, Fish and Wildlife Habitat

To issue a site certificate, the Council must find that the design, construction and operation of the facility, taking into account mitigation, are consistent with the fish and wildlife habitat mitigation goals and standards of OAR 635-415-0025 in effect as of September 1, 2000.

OAR 635-415-0025 Requirements (Implementation of Department Habitat Mitigation Recommendations):[3]

(1) "Habitat Category 1" is irreplaceable, essential habitat for a fish or wildlife species, population, or a unique assemblage of species and is limited on either a physiographic province or site-specific basis, depending on the individual species, population or unique assemblage.

(a) The mitigation goal for Category 1 habitat is no loss of either habitat quantity or quality. ***

(2) "Habitat Category 2" is essential habitat for a fish or wildlife species, population, or unique assemblage of species and is limited either on a physiographic province or site-specific basis depending on the individual species, population or unique assemblage.

(a) The mitigation goal if impacts are unavoidable, is no net loss of either habitat quantity or quality and to provide a net benefit of habitat quantity or quality. ***

(3) "Habitat Category 3" is essential habitat for fish and wildlife, or important habitat for fish and wildlife that is limited either on a physiographic province or site-specific basis, depending on the individual species or population.

(a) The mitigation goal is no net loss of either habitat quantity or quality. ***

(4) "Habitat Category 4" is important habitat for fish and wildlife species.

(a) The mitigation goal is no net loss in either existing habitat quantity or quality. ***

(5) "Habitat Category 5" is habitat for fish and wildlife having high potential to become either essential or important habitat.

(a) The mitigation goal, if impacts are unavoidable, is to provide a net benefit in habitat quantity or quality. ***

(6) "Habitat Category 6" is habitat that has low potential to become essential or important habitat for fish and wildlife.

(a) The mitigation goal is to minimize impacts. ***

Response: All of the fish and wildlife habitats within the addition to the site boundary for LJIIB were identified and categorized according to Oregon Department of Fish and Wildlife (ODFW) policy, as described in Attachments 3 and 7. No Category 1 habitat will be impacted by the amended LJF. Approximately 54 percent of the amended site boundary for LJIIB is located in agricultural croplands and CRP grasslands. During final design, the LJIIB components will be microsited to avoid impacts to Category 1 habitat, and to avoid and minimize both temporary and permanent impacts to high-quality native habitat where practicable. The area of impact for the LJIIB components within each affected habitat category and the corresponding mitigation area for each category are calculated as follows, based on worst-case estimates that represent maximum potential impacts:

- Category 1
  - All impacts will be avoided.

[3] The provisions cited under OAR 635-415-0025 are included only in part, rather than in their entirety, for purposes of brevity.

- Category 2
  - Footprint impacts: 19.9 acres
  - Temporary impacts to SSA (shrub-grass; sagebrush-rabbitbrush-snakeweed/bunchgrass-annual grass) or SSE (bitterbrush-buckwheat-bunchgrass-annual grass) 11.9 acres
  - Mitigation area requirement: [19.9 acres (footprint) x 2] + [11.9 (temporary impacts) acres x 0.5] = 45.8 acres
- Category 3
  - Footprint impacts: 15.2 acres
  - Temporary impacts to SSA or SSE: 0.4 acre
  - Mitigation area requirement: 15.2(footprint) acres + [0.2 (temporary impacts)x 0.5] = 15.3 acres
- Category 4
  - Footprint impacts: 2.8 acres
  - Mitigation area requirement: 2.8 acres
- Category 5
  - Footprint impacts: 0 acre
  - Mitigation area: 0 acre
- **Total mitigation area (rounded to nearest whole acre): 64 acres**

Temporary habitat impacts will be mitigated consistent with ODFW standards as described in the Revegetation Plan included as Attachment B to the Final Order. Permanent impacts and temporary impacts to SSA and SSE that cannot be avoided will be mitigated consistent with ODFW standards as described in the Habitat Mitigation Plan included as Attachment C to the Final Order. As described in Attachment C, LJWP identified a 440-acre parcel in a relatively remote setting where habitat protection and enhancement are feasible and sufficient land area is available to accommodate the size of the mitigation area, based on a worst-case estimate. LJWP has executed an Option for Conservation Easements with the landowner for 280 acres, which is sufficient to accommodate the size of the mitigation area calculated for both LJIIA and LJIIB facilities.

This amendment request does not change LJWP's ability to comply with the Final Order. There is sufficient evidence upon which the Energy Facility Siting Council may find that the design, construction, and operation of LJIIB, taking into account the proposed mitigation measures, are consistent with the fish and wildlife mitigation goals and standards of OAR 635-415-0025 and that LJWP has demonstrated compliance with OAR 345-022-0060.

OAR 345-022-0070, Threatened and Endangered Species

To issue a site certificate, the Council, after consultation with appropriate state agencies, must find that:

(1) For plant species that the Oregon Department of Agriculture has listed as threatened or endangered under ORS 564.105(2), the design, construction and operation of the proposed facility, taking into account mitigation:

(a) Are consistent with the protection and conservation program, if any, that the Oregon Department of Agriculture has adopted under ORS 564.105(3); or

(b) If the Oregon Department of Agriculture has not adopted a protection and conservation program, are not likely to cause a significant reduction in the likelihood of survival or recovery of the species; and

(2) For wildlife species that the Oregon Fish and Wildlife Commission has listed as threatened or endangered under ORS 496.172(2), the design, construction and operation of the proposed facility, taking into account mitigation, are not likely to cause a significant reduction in the likelihood of survival or recovery of the species.

Response:

The *2008-2009 Supplemental Study to the 2005 Leaning Juniper Wildlife Baseline Study* is provided as Attachment 7 to this amendment request. One population of a plant species, Laurent's milk-vetch (*Astragalus collinus* var. *laurentii*), listed as threatened under ORS 564.105(2), has been identified within the analysis area. No other plants listed as threatened or endangered ORS 564.105(2) were documented within the analysis area. One state-listed endangered species, the Washington ground squirrel (WGS), is located within the site boundary, and one state-listed threatened species, the bald eagle, might travel through the area, but neither they nor their habitat will be significantly affected by the amended LJF. Avoidance and mitigation measures built into the LJF location and design, the SC, and attachments to the Final Order, will reduce the potential for impacts to insignificant levels.

This amendment request does not change LJWP's ability to comply with the Final Order. With regard to Condition 88 of the SC, LJWP will consult with ODFW and the Department regarding an amendment to the current Incidental Take Permit letter to reflect the revised layout for the amended LJF. Therefore, based on the information provided in this amendment request, there is sufficient evidence upon which the Council may find that LJIIB, taking into account the proposed mitigation measures, is not likely to cause a significant reduction in the likelihood of survival or recovery of threatened or endangered plant or wildlife species within the analysis area, and that LJWP demonstrates compliance with OAR 345-022-0070.

OAR 345-022-0080 Scenic Resources

(1) Except for facilities described in section (2), to issue a site certificate, the Council must find that the design, construction and operation of the facility, taking into account mitigation, are not likely to result in significant adverse impact to scenic resources and values identified as significant or important in local land use plans, tribal land management plans and federal land management plans for any lands located within the analysis area described in the project order.

(2) 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: Under OAR 345-027-0070(10), the Council must consider whether the facility complies with the scenic resource standard for areas that will be affected by construction and operation of the amended LJF. As demonstrated below, the design, construction, and operation of the amended LJF will not result in significant adverse impacts to scenic resources and values identified as significant or important in local land use plans, tribal land management plans, or federal management plans for any land located within the 10-mile analysis area measured from the overall amended site boundary (including both LJIIA and LJIIB).

A. Visual Features of the Site and the Proposed Facility

LJWP is preparing to construct 43 2.1-MW turbines with a generating capacity of 90.3 MW in 2009 under the authority of the SC within the approved site boundary. This first phase of construction is referred to as LJIIA. LJWP requests an amendment to the SC to extend the LJF site boundary farther to the south to minimize wake impacts from existing nearby wind projects and optimize the use of the wind resource. The subsequent phase(s) of construction within the amended site boundary is referred to as LJIIB, and will consist of up to 90 turbines with a generating capacity of up to 188.7 MW. This amendment request does not seek to change the maximum number of turbines, the maximum generating capacity, or the range of turbine types or sizes originally authorized under the SC.

The primary visual features of the amended LJF (the wind turbines, meteorological towers, and O&M building), will be the same as those described in the Final Order. Modifications to visual features include the aboveground 230-kV transmission line or 34.5-kV collector system from the LJIIB turbines to the approved collector substation located near the Jones Canyon Switching Station and the potential for a second collector substation, as described in Section 4.3 of this amendment request.

B. Effect on Identified Scenic Values

LJWP conducted an analysis of the amended LJF and significant potential impacts on scenic resources and values identified as significant or important in applicable land use and land management plans. The purpose of the analysis was to determine potential visual impacts from the proposed amended LJF, including potential combined impacts from LJIIA and LJIIB.

Analysis Methodology

The visual analysis was conducted using the Zones of Visual Influence (ZVI) methodology described for LJF in Sections R.1.1 and R.1.2 of Exhibit R from the original ASC (September 2006). The original analysis area for LJF was 30 miles, in accordance with the analysis area specified by state regulation at the time the ASC was prepared. Since then, the relevant OAR (OAR 345-001-0010(2) and (57)) has been amended to reduce the analysis area for OAR 345-022-0080 to a 10-mile analysis area. Thus, to fully assess impacts from the proposed amended site boundary, the visibility of facilities associated with both LJIIA and LJIIB was modeled using the new 10-mile analysis area measured from the overall amended site boundary (including both LJIIA and LJIIB).

The ZVI data were overlaid on maps of the analysis area to evaluate potentially significant impacts. Four ZVI maps of the analysis area (Figures 16 through 19) were developed. Figure 16 depicts the maximum turbine layout,[4] and Figure 17 depicts the minimum turbine layout.[5] Figures 16 and 17 show the areas from which both the LJIIA and LJIIB wind turbines will potentially be visible. Figures 18 and 19 depict the ZVI for the electrical line connecting the LJIIB turbines to the approved collector substation located near the Jones Canyon Switching Station; the ZVI assumes this line will be a 230-kV overhead transmission line from a new collector substation near the LJIIB turbines rather than a 34.5-kV overhead collector system, because the 230-kV structures would be taller and more visible than the 34.5-kV structures. Figure 18 indicates areas where the preferred LJIIB transmission line route will potentially be visible and Figure 19 depicts areas where the alternative transmission line route will potentially be visible.[6]

A comparison of the ZVI from the wind turbines (Figures 16 and 17) with the ZVI from the transmission line routes (Figures 18 and 19) demonstrates that the turbines will be more visible than the transmission lines, and that the visibility of either transmission line route would be less than the visibility of the turbines. Therefore, the analysis of the potential visibility of LJIIA and LJIIB focuses on the wind turbines. In addition, because there is little to no difference in the potential visibility of the maximum and minimum turbine layouts from identified scenic resources within the 10-mile analysis zone, the analysis assumes that both ZVI scenarios will have the same potential visual impacts.

In addition to the ZVI analysis, a site visit was conducted by CH2M HILL on April 27, 2009, to confirm and document the existing visual conditions of the analysis area. Photographs from various locations within the analysis area were taken to depict the landscape character and existing conditions. Photographs showing the typical conditions within the analysis area are included as Figures 20 through 23.

Applicable Local, Tribal, and Federal Plans

The reduced analysis area from 30 to 10 miles resulted in a smaller number of applicable land use and land management plans compared to those listed in Table 7, Section IV.3(d)(B) of the Final Order. The applicable planning areas include Sherman County, Oregon; Gilliam County, Oregon; Morrow County, Oregon; City of Arlington, Oregon; Klickitat County, Washington; John Day River; and Oregon Trail. Based on a review of the ZVI, the amended LJF is potentially visible from each of these planning areas. The applicable planning areas include one not analyzed in Section IV.3(d)(B) of the Final Order -- the City of Arlington is

[4] For Figure 16, maximum turbine layout, the LJIIB towers were assumed to be 80 meters (262 feet), the rotors were assumed to be 77 meters (253 feet) in diameter, and the distance from the ground to the tip of the blade was assumed to be 118.5 meters (389 feet). The LJIIA towers were assumed to be 79 meters (259 feet), the rotors were assumed to be 88 meters (289 feet) in diameter, and the distance from the ground to the tip of the blade was assumed to be 123 meters (403 feet). This is consistent with the methodology used in the original ASC.

[5] For Figure 17, the minimum turbine layout, the LJIIB towers for the minimum turbine layout were assumed to be 100 meters (328 feet) tall, the rotors were assumed to be 100 meters (328 feet) in diameter, and the distance from the ground to the tip of the blade was assumed to be 150 meters (492 feet). The LJIIA towers were assumed to be 79 meters (259 feet), the rotors were assumed to be 88 meters (289 feet) in diameter, and the distance from the ground to the tip of the blade was assumed to be 123 meters (403 feet). This is consistent with the methodology used in the original ASC.

[6] For Figures 18 and 19, the analysis assumed the tops of the transmission line structures to be 30.5 meters (100 feet) high.

within the 10-mile analysis area. The ZVI shows that the proposed amended LJF (including both LJIIA and LJIIB) will potentially be visible from this jurisdiction. Therefore, the *City of Arlington Comprehensive Plan* (July 2003) was added to the analysis of potentially significant impacts on scenic resources and values for the LJF amendment.

Identification, Description, and Potential Impacts on Scenic Resources and Values Identified as Significant or Important

Section IV.3(d)(B) of the Final Order includes descriptions of significant or important scenic resources and values specifically identified in applicable land use and land management plans. The analysis below addresses only information that has changed since issuance of the SC, new information introduced since issuance of the SC, or differences in the analysis area due to the proposed amended site boundary.

The LJF turbine strings will be located on the tops of ridges in sparsely populated, open country near other existing wind projects. As evidenced in the ZVI depicted on Figures 16 and 17, topography such as canyons and slopes will prevent views of the turbines from many areas including John Day River, Rock Creek, Fourmile Canyon, and Willow Creek. These areas are the only locations within the 10-mile analysis area that were identified as scenic or important scenic resources in applicable land use and land management plans (see discussions below). In addition, turbines will not be visible from most areas along the Columbia River and Interstate-84. As illustrated on Figures 18 and 19, the preferred and alternate transmission line routes will be less visible than the wind turbines.

Both LJIIA and LJIIB will be lighted in accordance with FAA regulations to minimize aviation risks. Because the flashing lights are most noticeable only at night within approximately 1 mile of them, the visual impacts of the turbine lights will be low. Accordingly, FAA lights associated with the turbines will not have significant adverse impacts on any scenic resources or values.

Table 4 lists the planning areas shown on Figures 16 and 17 from which the amended LJF turbines might be visible.

TABLE 4
Land Management Areas

Area	Management	Location	Approximate Distance from Nearest LJIIA or LJIIB Turbine (Miles)
Oregon National Historic Trail	Federal	Oregon	0.07 (LJIIB)
John Day River	Federal/State	Oregon	6 (LJIIA)
Morrow County	County	Oregon	6 (LJIIB)
Klickitat County	County	Washington	2 (LJIIA)
Sherman County	County	Oregon	6 (LJIIA)
Gilliam County	County	Oregon	0
City of Arlington	City	Oregon	1 (LJIIA)

Oregon National Historic Trail

The Oregon National Historic Trail passes through six states and covers 2,130 miles. The applicable federal land management plan is the Comprehensive Management and Use Plan (CMP) adopted by the National Park Service in 1999. As described in the CMP, the purposes of the Oregon National Historic Trail are "to identify, preserve, and interpret sites, route, and history of the Oregon Trail" and "to commemorate the westward movement of emigrants to the Oregon country as an important chapter of our national heritage." Accordingly, the Oregon Trail is managed for historical significance and not primarily as a scenic resource. This conclusion is consistent with the Council's findings in Section IV.3(d) of the Final Order on the Shepherds Flat Wind Farm, dated July 25, 2008.

The Oregon Trail is designated as an historic trail under the National Trails System Act (Act), and under the Act, portions of the trail are identified as "high-potential" segments or sites. These segments or sites provide an opportunity to interpret the historic significance of the trail. Criteria for selection of a high-potential segment or site include "historic significance, presence of visible historic remnants, scenic quality, and relative freedom from intrusion." Within the 10-mile analysis area there are two high-potential historic sites. The *Two Rivers Resource Management Plan and Record of Decision* (1986) and the *Comprehensive Management and Use Plan Update: Final Environmental Impact Statement, Oregon National Historic Trail and Mormon Pioneer National Historic Trail* (U.S. National Park Service, 1999) identify John Day River Crossing (McDonald Crossing) and Fourmile Canyon as "high-potential" sites with scenic qualities. In addition, the Oregon Trail Management Plan (1993) was prepared by the BLM Prineville District to manage the Fourmile Canyon site.

McDonald Crossing and Fourmile Canyon are located within the analysis area as shown on Figures 16 and 17. The ZVI analysis (Figures 16 through 19) shows that the amended LJF turbines will not be visible from McDonald Crossing on the John Day River. Thus, significant adverse impacts to the McDonald Crossing's visual setting will not occur. The ZVI analysis shows that Fourmile Canyon is on the edge of an area where turbines could be potentially visible, although line-of-sight views to turbines from this area will be unlikely or limited due to topography. To the limited extent turbines could be seen in this area, they will appear as small objects in the background of the view. In addition, the BLM Prineville District's management plan proposes a "protective corridor extending ¼-mile either side of the main trail ruts…dependent on the amount of public land surrounding the individual trail segments," to protect the visual qualities of the Fourmile Canyon site. The nearest proposed wind turbine is on private land approximately 4 miles from the Fourmile Canyon site. The important scenic value connected with Fourmile Canyon is the view of the visible remnants of the Oregon Trail and the immediate surroundings on public land. An interpretive wayside is located within the canyon itself where the topography would likely block the line-of-sight to the amended LJF. Therefore, construction of the amended LJF will not affect the Council's conclusion in the Final Order that, if visible at all, LJF is unlikely to result in significant adverse impact to the scenic values associated with the Fourmile Canyon historic site.

John Day River

A segment of the John Day River is within the 10-mile analysis area as shown on Figures 16 and 17. This segment of the John Day River is federally designated as a "recreational river" under the federal Wild and Scenic River Act and by Oregon as a State Scenic Waterway under the State Scenic Waterway Act. The applicable federal management plans include the *Two Rivers Resource Management Plan and Record of Decision* (1986) as amended by the *Record of Decision John Day River Management Plan, Two Rivers, John Day and Baker Resource Management Plan Amendment* (2001).

The ZVI depicted on Figures 16 and 17 shows that the amended LJF will be visible to a very limited degree from areas surrounding the segment of the John Day River within the 10-mile analysis area. Because the amended site boundary is further from the river than the originally approved site boundary, the amended LJF turbines will be less potentially visible in and around the John Day River than the original turbine locations described in the SC. As described in the Final Order, there would be few, if any, potential line-of-sight views between the river and the LJF turbines. Thus, consistent with the findings of the Final Order, visual impacts to the John Day River from construction of the amended LJF will not result in significant adverse impact to the significant or important scenic values within the John Day River area as a result of this amendment request.

<u>Morrow County</u>

No specific scenic resources are identified in the *Morrow County Comprehensive Plan* as significant or important. Consequently, no further analysis of the Morrow County, Oregon, land use and land management plans is required. The findings and conclusions with respect to this plan in Section IV.3(d)(B) of the Final Order apply to the amended LJF.

<u>Klickitat County</u>

The amended site boundary for LJIIB is located farther from Klickitat County than the original site boundary. The Final Order states that no significant potential adverse impacts will occur to scenic resources or values that are identified in the Klickitat County Comprehensive Plan. Because the amended site boundary for LJIIB is even farther from Klickitat County, the amended LJF will also have no significant potential adverse impacts to scenic resources or values in Klickitat County. Consequently, no further analysis of the Klickitat County, Washington, land use and land management plans is required. The findings and conclusions with respect to this plan in Section IV.3(d)(B) of the Final Order apply to the amended LJF.

<u>Sherman County</u>

The 10-mile analysis area covers a small piece of Sherman County on the west side of the John Day River. The *Sherman County Comprehensive Plan* was updated in 2007 after issuance of the SC. However, the updated Comprehensive Plan altered only the organization of the Comprehensive Plan and not the content with respect to scenic resources and values. The updated Comprehensive Plan does not identify any new scenic resources or values not already addressed in Section IV.3(d)(B) of the Final Order. Additionally, the amended LJF site boundary is located the same or greater distance from Sherman County than the original site boundary. Therefore, the amended LJF will not result in significant potential adverse impacts to scenic resources or values identified in the *Sherman County Comprehensive Plan*.

Gilliam County

The 10-mile analysis area encompasses a large portion of Gilliam County. Therefore, the specific provisions applicable to scenic resources and values from Part Five of the *Gilliam County Comprehensive Plan* (October 25, 2000) still apply, and were described in Section IV.3(d)(B) of the Final Order.

The *Gilliam County Comprehensive Plan* includes a general reference to rock outcroppings as important characteristics of the Gilliam County landscape (Finding 2 of Part 5). However, no specific rock outcroppings are identified in the amended site boundary. The only basalt exposures observed within the proposed amended site boundary were in the slopes along the Alkali Canyon creek bed that parallels Oregon Highway 19 (also known as John Day Highway), approximately 1 mile north of the intersection with Montague Lane. Rock outcroppings in Finding 2 are connected to walls and steep canyon slopes. The ZVI shows that the amended LJF will not be visible from within canyons (especially the steepest canyons) located in Gilliam County, where views of rock outcroppings are most significant. These canyons include the John Day River, Rock Creek, Fourmile Canyon, and Willow Creek. Thus, the turbines will not be within the view of rock outcroppings from the most significant canyons in Gilliam County. The *Gilliam County Comprehensive Plan* includes the two provisions listed above related to the John Day River. Analysis of the John Day River is included above and demonstrates compliance with the applicable federal land management plans. Therefore, the amended LJF will not result in significant potential adverse impacts to scenic resources or values identified in the *Gilliam County Comprehensive Plan.*

City of Arlington

The *City of Arlington Comprehensive Plan* was not included in Section IV.3(d)(B) of the Final Order. The *City of Arlington Comprehensive Plan* (July 2003) includes only one reference to scenic resources or values. The reference is as follows:

> *Goal 5. Open Space, Scenic and Historic Areas, and Natural Resources*
>
> *F. Outstanding Scenic View and Sites*
>
> *The views outside the City to the east, west, and north are considered scenic views and the topography of the City tends to protect those views as development occurs.*

LJF is located due south of the City of Arlington. This reference from the *City of Arlington Comprehensive Plan* shows the City of Arlington values the views toward the Columbia River and away from LJF (i.e., east, west, and north). Therefore, construction and operation of the proposed amended LJF will not result in significant potential adverse impacts to scenic resources or values identified in the *City of Arlington Comprehensive Plan.*

C. Conclusions

In accordance with the Final Order and the discussion above, the design, construction, and operation of the amended LJF will not result in significant adverse impacts to scenic resources and values identified as significant or important in local land use plans, tribal land management plans, and federal land management plans for any lands within the applicable analysis area. Accordingly, LJWP demonstrates that the proposed amended LJF can be designed, constructed, and operated in accordance with OAR 345-022-0080.

OAR 345-022-0090 Historic, Cultural and Archaeological Resources

(1) Except for facilities described in sections (2) and (3), to issue a site certificate, the Council must find that the construction and operation of the facility, taking into account mitigation, are not likely to result in significant adverse impacts to:

(a) Historic, cultural or archaeological resources that have been listed on, or would likely be listed on the National Register of Historic Places;

(b) For a facility on private land, archaeological objects, as defined in ORS 358.905(1)(a), or archaeological sites, as defined in ORS 358.905(1)(c); and

(c) For a facility on public land, archaeological sites, as defined in ORS 358.905(1)(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.

Response: Under OAR 345-027-0070(10), the Council must find that all applicable standards are satisfied before approving a site certificate amendment request. As discussed below, the amended LJF will not result in significant adverse impacts to historic, cultural, or archeological resources, and thus, although not required under OAR 345-022-0090(2), the Council may find that the amended LJF satisfies OAR 345-022-0090 and thus is allowed under OAR 345-027-0070(10).

LJWP conducted cultural resource investigations for the proposed amended site boundary for LJIIB in February, April, and May 2009. In February 2009, CH2M HILL on behalf of LJWP conducted a literature search at the Oregon State Historic Preservation Office (SHPO). CH2M HILL also contacted SHPO and the Oregon Historic Trail Advisory Council (OHTAC) regarding the Oregon Trail (OHTAC, pers. comm., 2009). On May 26, 2009, OHTAC responded to Mr. McClintock of CH2M HILL and in response, LJWP will be providing OHTAC with additional information and is coordinating future discussions as needed.

Field investigations of potential cultural resources were conducted in April and May 2009. Field surveys were conducted within and near the amended site boundary, as shown on Figure 24. Detailed results of this survey are provided in Attachment 8, *Addendum to the Cultural Resources Survey Report for the Leaning Juniper II Wind Power Facility*.

A. Field Survey Results

The baseline field survey identified six historic sites, six historic isolates, one prehistoric isolate, and two standing structures. The six historic sites consist of the following:

- **LJ-H-1:** A widely dispersed scatter of crushed cans and historic debris. There are an estimated 250 crushed cans dispersed across the site. Other notable artifacts include a metal windshield frame from a pre-1930s era vehicle, and several bottle fragments manufactured as early as 1902 and as late as 1954.
- **LJ-4/7/09-1:** A number of automobiles, bicycles, and agricultural equipment pieces that have been deposited for long- or short-term storage or abandoned.

- **LJ-4/9/09-9:** A historic debris scatter containing fewer than 100 artifacts and including stoneware and ceramic shards, a few crushed tin cans, and glass fragments. The site is a surface deposit and appears to be the result of a single dumping event.
- **LJ-4/10/09-6:** An array of artifacts likely dating to 1910-1935 based on historic artifact types. The debris scatter consists mainly of chunks of terra-cotta colored clay pipe and sanitary cans.
- **LJ-4/10/09-7:** A narrow array of fewer than 30 artifacts, including a 1940s vintage washing machine, metal panels of an early automobile, and barrel hoops.
- **LJ-4/10/09-8:** A large farmstead complex with multiple features dating to ca. 1900-1945. The site contains a location where a two-story house used to be, a hand-dug well, a dugout cellar, a garden/chicken coop area, at least two depressions, and an array of mostly metal and brick artifacts.

The two standing structures consist of the following:

- **Berthold Road Garage and Barn:** Berthold Road Garage and Barn are ca. 1930s vintage buildings currently in use as storage facilities that are remnants of a former farmstead.

Isolates, except in rare cases, are generally considered insignificant cultural properties and do not require evaluation, protection, or mitigation. None of the isolates discovered during the field investigations is considered significant or require further evaluation, protection, or mitigation. The six historic isolates and one prehistoric isolate are described in Attachment 8, *Addendum to the Cultural Resources Survey Report for the Leaning Juniper II Wind Power Facility*.

Based on the findings and conclusions of the field investigations, only the farmstead complex above (LJ-4/10/09-8) is potentially eligible for listing on the NRHP. As such, it will be protected from all LJF construction and operation activities by a surrounding 50-foot buffer, as described in the proposed modification to Condition 50 of the Final Order. The site will be marked on construction drawings as a no entry area and will be flagged or staked during construction. Given that the other sites have no historic, archaeological, or cultural resource value, no further work is recommended for these sites.

<u>Oregon Trail</u>

The Oregon Trail is a designated historic trail under both federal and Oregon statutes. The approximate alignment of the Oregon Trail route, as mapped on USGS maps, is presumed to cross the northern portion of the amended site boundary for LJIIB, as shown on Figure 24. Field surveys identified no intact portions of the approximate Oregon Trail route within the amended site boundary. The only visibly intact (hereafter referred to as intact) stretch of the Oregon Trail near the LJIIB area was observed outside the amended site boundary. The intact segment of the trail was mapped using a handheld GPS Trimble device, and runs approximately between Oregon Highway 19 and Montague Lane, as further described in Attachment 8. The intact portion of the trail starts approximately 200 feet or more to the east of Oregon Highway 19 and disappears approximately 200 feet or more before reaching Montague Lane. Consequently, the intact segment of the trail is not visible from public roads or other publicly accessible locations. However, there is an existing monument on the west side of Oregon Highway 19 as well as an Oregon/California Trail Association marker on the east side in the road right-of-way. Both these signs are located near where the approximate alignment of the Oregon Trail intersects with Oregon Highway 19, on the border of the amended site boundary and within the road right-of-way.

It appears that livestock have used the intact portion of the trail route and created numerous parallel trails. The intact portion of the trail is also incised across the slope and shows small switchbacks across the small rises. Additionally, some modern vehicle use of the intact portion of the trail has likely occurred given the relatively easy access and proximity to Oregon Highway 19 and Montague Lane.

Given that the small intact portion of the Oregon Trail in the vicinity of LJIIB is outside the amended site boundary, no LJIIB components will be constructed in the area and there will be no disturbance to the intact portion of the trail. Within the amended site boundary for LJIIB, the approximate alignment of the Oregon Trail route, as mapped by the USGS, will be intersected in four locations by LJIIB components: the "JJ" turbine string; the new access road just south of Montague Lane; the underground collector line crossing Montague Lane; and a 230-kV transmission or 34.5-kV collector cable west of Oregon Highway 19. However, field investigations identified no visually intact segments of the trail in these locations and therefore construction of the LJIIB components will have no adverse impact on the Oregon Trail. If any intact physical evidence of the Oregon Trail is discovered near the presumed alignment route during construction, any disturbance of the intact segments will be avoided as set forth in proposed Condition 50.

Accordingly, for these reasons there is sufficient basis upon which the Council may find that the construction and operation of the amended LJF has no significant adverse impact on the Oregon Trail under OAR 345-022-0090.

B. Conclusions

For the reasons stated above, LJWP demonstrates that the amended LJF, including the LJIIB components, can be designed, constructed, and operated in accordance with OAR 345-022-0090, subject to existing Conditions 45 through 48 of the Final Order (as modified in Attachment 2) and proposed Condition 50.

OAR 345-022-0100 Recreation

(1) Except for facilities described in section (2), to issue a site certificate, the Council must find that the design, construction and operation of a facility, taking into account mitigation, are not likely to result in a significant adverse impact to important recreational opportunities in the analysis area as described in the project order. The Council shall consider the following factors in judging the importance of a recreational opportunity:

(a) Any special designation or management of the location;

(b) The degree of demand;

(c) Outstanding or unusual qualities;

(d) Availability or rareness;

(e) Irreplaceability or irretrievability of the opportunity.

Response:

A. Recreational Opportunities in the Analysis Area

Recreational opportunities within the 5-mile analysis area for the amended LJF include camping, hiking, upland bird and big game hunting, boating, fishing, sightseeing, nature and wildlife photography, wind surfing, and bicycling. Many other locations exist outside the analysis area for these opportunities. Thus, these recreational opportunities within the analysis area may be considered common and replaceable.

The surrounding landscape is used primarily for cultivation of wheat. The approximate alignment of the Oregon National Historic Trail crosses the analysis area, and is presumed to cross the northern portion of the amended site boundary for LJIIB. However, agriculture, modern roadways, and other modern developments have obliterated physical traces of the Oregon Trail along most of its approximate alignment or route. No intact portions of the Oregon Trail are visible from county roads or public viewing areas. A field investigation did reveal a small portion of intact Oregon Trail within the 5-mile analysis area (outside the amended site boundary), but this visual portion of the Oregon Trail is located on private property and is only visible from private property. Consequently, the intact segment of the Oregon Trail is not visible from areas the public can access like Oregon Highway 19 or Montague Lane.

The recreational opportunity associated with the historic trail alignments is limited to visiting and viewing the approximate historic alignments from public roads, like Oregon Highway 19 where there is a monument marking the approximate alignment of the trail.

B. Potential Impact on Important Recreational Opportunities

Design, construction, and operation of the amended LJF will have no adverse effect on the recreational opportunities listed above, taking into account mitigation measures required by the SC. The project will not affect intact segments of the Oregon Trail because there are no intact segments of the trail within the amended site boundary, nor will the project affect any publicly accessible locations where the Oregon Trail may be viewed because there are none. Accordingly, the Project can be designed, constructed, and operated in accordance with OAR 345-022-0100(1).

OAR 345-022-0110 Public Services

(1) Except for facilities described in sections (2) and (3), to issue a site certificate, the Council must find that the construction and operation of the facility, taking into account mitigation, are not likely to result in significant adverse impact to the ability of public and private providers within the analysis area described in the project order to provide: sewers and sewage treatment, water, storm water drainage, solid waste management, housing, traffic safety, police and fire protection, health care and schools.

(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.

Response: This amendment request does not change the maximum number of turbines, maximum generating capacity of LJF, or potential adverse impacts on public services from what was originally authorized in the SC, nor affect LJWP's ability to comply with the SC.

A. Sewage, Stormwater, and Solid Waste

There will be no change to impacts on sewers, sewage treatment, or solid waste during construction or operations. During construction, LJWP will maintain portable toilets, stormwater drainage will continue to be subject to National Pollutant Discharge Elimination System (NPDES) permit requirements, and LJWP will implement a waste management plan as described in the SC. The existing 1200-C NPDES construction stormwater permit will be amended to include the LJIIB Erosion and Sediment Control Plan, which is provided as Attachment 5 to this request. During operations, sewage from the O&M building will be disposed of in onsite septic systems, appropriate measures will be used to avoid or reduce erosion from stormwater runoff during operations, and LJWP will continue to implement the waste management plan.

B. Water

Water use during construction of LJIIA will be a maximum of approximately 17.0 million gallons, as presented in Table 5. LJIIB water use will be a maximum of approximately 17.7 million gallons, as presented in Table 6. Water required for construction will be obtained from the City of Arlington, as described in the Final Order. The City of Arlington has previously provided a statement of water availability for up to 35 million gallons of water to construct the LJII wind facility. Water usage during construction of LJIIA and LJIIB will be approximately 34.7 million gallons.

This amendment request does not significantly change the quantity of water used during construction or operations, or the quantity of wastewater or stormwater from what was originally authorized in the SC. Water for operations will come from new onsite well(s) at the O&M building. Because LJIIB will use the O&M building that has already been authorized in the Final Order, and the total number of turbines and generating capacity of the overall project will not change from the existing LJII SC, water use during operation will not exceed 5,000 gallons per day, as described in the Final Order. In addition, there are no changes to the blade-washing described in the Final Order.

TABLE 5
Water Use During Construction of LJIIA Based on 43 2.1-MW Turbines

Material	Foundations	Material Per Foundation (Approximate)	Total (Approximate)	Ultimate Disposition
Water Use for Concrete Mixing				
Water for concrete mixing (30 gallons water per cubic yard of concrete)	43	12,780 gallons of water per foundation	549,540 gallons of water	Incorporated into concrete
Water Use for Dust Control and Road Compaction				
Material	**Days**	**Water Use Gallons/ Day**	**Total Water Use**	**Ultimate Disposition**
Road watering during road construction	72	120,000 gallons/day	8,640,000 gallons	Absorbed or evaporated
Road watering during foundation construction	60	80,000 gallons/day	4,800,000	
Road watering during erection	60	50,000 gallons/day	3,000,000	
Total Gallons	**Approximately 192 days**		**16,440,000**	
Total Maximum Water Usage			**16,989,540**	

TABLE 6
Water Use During Construction of LJIIB Based on 90 GE 1.5-MW Turbines or 62 Vestas 3.0-MW Turbines

Material	Foundations	Material Per Foundation (Approximate)	Total (Approximate)	Ultimate Disposition
Water Use for Concrete Mixing				
Water for concrete mixing (30 gallons water per cubic yard of concrete)	62 to 90	8,300 to 21,000 gallons of water per foundation	747,000 to 1,302,000 gallons of water	Incorporated into concrete
Ranges are provided based on construction of up to 90 GE 1.5-MW turbines or up to 62 Vestas 3.0-MW turbines.				
Water Use for Dust Control and Road Compaction				
Material	**Days**	**Water Use Gallons/ Day**	**Total Water Use**	**Ultimate Disposition**
Road watering during road construction	72	120,000 gallons/day	8,640,000 gallons	Absorbed or evaporated
Road watering during foundation construction	60	80,000 gallons/day	4,800,000	
Road watering during erection	60	50,000 gallons/day	3,000,000	
Total Gallons	**Approximately 192 days**		**16,440,000**	
Total Maximum Water Usage			**17,742,000**	

C. Housing, Police and Fire Protection, Health Care and Schools

This amendment request does not affect the impacts described in the Final Order to the socioeconomic and demographic characteristics of the local populations. The amendment request extends the period of time that construction workers would be needed for LJF, and although the increased period of construction might extend the duration of some types of fire risk, it would not add a significant new adverse impact to or burden on local emergency response services. This amendment request does not change the previous analysis of the ability of the service providers to provide services, as the proposed changes are not significant and will fall within the same service provider boundaries previously analyzed.

D. Traffic Safety

As described in the response to OAR 345-027-0060(1)(c), Proposed Changes, transportation to and from the proposed amended site boundary will follow the same major transporter routes that were included in the LJII ASC. Constructing the LJIIB turbines will require improving three existing County roads: Berthold Road, Weatherford Road, and Montague Lane. These County roads will be improved by widening, grading, and graveling. Figures 8 and 25 provide a detailed view of the major transporter routes proposed for use during LJIIB construction and operation.

To access LJIIB from Oregon Highway 19, LJWP would approach the highway via two County roads, Weatherford Road and Montague Lane, and two new private access roads. The Oregon Department of Transportation (ODOT) issued a permit for Leaning Juniper and determined that no further access procedure or construction was required for access off Oregon Highway 19 from either Rattlesnake Road or Stone Lane for Leaning Juniper II. Depending on guidance from ODOT, LJWP may need to obtain a new Approach Permit for Weatherford Road, Montague Lane, and the two new private access roads. To obtain an Approach Permit, LJWP will provide ODOT with relevant property information (e.g., tax lot ID, milepost), proof of insurance, and design specifications of the new approach (width, angle, turning radius, paving limit, and proposed surface). After the new approach has been approved and constructed, LJWP or its primary road construction contractor will inspect the approach to ensure that gravel and mud are not tracked onto the state road, in accordance with proposed Condition 37.

This amendment request will not significantly increase traffic volume on nearby roads during construction or operation compared to traffic volumes without the amendment. Impacts to the Gilliam County Roads Department and ODOT are described as follows:

- State, county, or local roadways may be temporarily affected by traffic increases resulting from construction vehicles accessing the site. However, any traffic delays will be short-term and temporary. Local roadways currently have very low use.
- Potential construction and operational impacts to traffic safety or maintenance on state highways from LJIIB are anticipated to be inconsequential as the state highway system (Interstate 84 and Oregon Highway 19) is constructed to sufficient design, safety, and load-bearing standards. These roadways are able to accommodate vehicles at the legal load limit, thereby reducing the potential for significant traffic safety and maintenance impacts.

- Potential construction impacts to county and local roadways are anticipated to be inconsequential as these roads will safely accommodate LJIIB construction traffic. LJWP will work with local transportation officials to conduct improvements such as widening, grading, and graveling where necessary to accommodate construction traffic. LJWP will evaluate the condition of County roads before construction and again after completing construction, and repair the road to preconstruction conditions or better as required by the SC. LJWP will also ensure that no equipment or machinery is parked or stored on any county road except while in use.

The only condition in the SC that requires modification for this amendment request is Condition 37(e) of the Final Order, which requires the certificate holder to implement measures to reduce traffic impacts, including maintaining at least one travel lane at all times so that roads will not be closed to traffic because of construction vehicles. For construction pursuant to this amendment request, there are areas, especially at turns, where turbine component trucks may need to occupy both lanes. When this occurs, these areas will have both signage and flaggers, consistent with Condition 37(b) and (c). Thus, LJWP would propose that Condition 37(e) be revised as follows (with proposed additional text underlined):

> "37 During construction, the certificate holder shall implement measures to reduce traffic impacts, including:
>
> "(e) Maintaining at least one travel lane at all times **<u>to the extent reasonably possible</u>** so that roads will not be closed to traffic because of construction vehicles."

E. Additional Service Providers

Other than the proposed modification to Condition 37(e) above, this amendment request does not change LJWP's ability to comply with the SC. Given the existing requirements in Condition 37(b) and (c), this amendment request, including the proposed modification to Condition 37(e), meets OAR 345-022-0110.

OAR 345-022-0120 Waste Minimization

(1) Except for facilities described in sections (2) and (3), to issue a site certificate, the Council must find that, to the extent reasonably practicable:

(a) The applicant's solid waste and wastewater plans are likely to minimize generation of solid waste and wastewater in the construction and operation of the facility, and when solid waste or wastewater is generated, to result in recycling and reuse of such wastes;

(b) The applicant's plans to manage the accumulation, storage, disposal and transportation of waste generated by the construction and operation of the facility are likely to result in minimal adverse impact on surrounding and adjacent areas.

(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 types of waste generated from LJIIB, and the methodology for handling, storing, disposing of, transporting, and minimizing waste during construction and operation of LJIIB, do not change the information presented in the Final Order or LJWP's ability to comply with the SC. Therefore, OAR 345-022020 is met.

4.5.2 OAR 345-024

The following Division 24 standards are addressed:

- OAR 345-024-0010 Public Health and Safety Standards for Wind Energy Facilities
- OAR 345-024-0015 Siting Standards for Wind Energy Facilities
- OAR 345-024-0090 Transmission Lines

OAR 345-024-0010, Public Health and Safety Standards for Wind Energy Facilities

To issue a site certificate for a proposed wind energy facility, the Council must find that the applicant:

(1) Can design, construct and operate the facility to exclude members of the public from close proximity to the turbine blades and electrical equipment.

Response: Exclusion of the public from proximity to turbines and electrical equipment was addressed in Section IV.3(f) of the Final Order for LJF. This amendment request does not change the information presented in the Final Order or LJWP's ability to comply with the SC. Nevertheless, to reflect new safety standards being implemented at other facilities, LJWP is proposing to modify Condition 39 of the Final Order, with the modified Condition applicable to both LJIIA and LJIIB. Currently, Condition 39 requires a setback from residences and public roads (except Rattlesnake Road and Stone Lane)[7] equal to the maximum blade tip height plus 50 feet. As shown in the redline Site Certificate (Attachment 2), LJWP proposes a revised condition that represents a greater setback from residences (1,320 feet, measured from the centerline of the turbine tower to the center of the nearest residence existing at the time of tower construction), and from roads (110 percent of maximum blade tip height, measured from the centerline of the turbine tower to the nearest edge of any public road right-of-way). In addition, LJWP proposes to maintain a minimum distance of 110 percent of maximum blade tip height, measured from the centerline of the turbine tower to the nearest boundary of LJWP's lease area. Accordingly, LJWP demonstrates that the amended LJF can be designed, constructed, and operated in accordance with OAR 345-024-0010(1).

(2) Can design, construct and operate the facility to preclude structural failure of the tower or blades that could endanger the public safety and to have adequate safety devices and testing procedures designed to warn of impending failure and to minimize the consequences of such failure.

Response: The SC contains conditions pertaining to design, construction, and operation of the facility to preclude structural failure and to warn of impending failure and minimize the consequences of such failure. This amendment request does not affect the information

[7] Please note that Stone Lane is a private road rather than a public road. This was an error in the original ASC and Final Order.

presented in the Final Order or LJWP's ability to comply with the SC. Therefore, OAR 345-024-0010(2) is met.

OAR 345-024-0015 Siting Standards for Wind Energy Facilities

To issue a site certificate for a proposed wind energy facility, the Council must find that the applicant can design and construct the facility to reduce cumulative adverse environmental effects in the vicinity by practicable measures including, but not limited to, the following:

(1) Using existing roads to provide access to the facility site, or if new roads are needed, minimizing the amount of land used for new roads and locating them to reduce adverse environmental impacts.

Response: LJWP considered and analyzed potential adverse environmental impacts in locating the proposed new access roads. Constructing the LJIIB turbines will require improving some existing private roads and constructing new gravel roads to provide access for construction vehicles. The construction of new gravel roads will be limited to locations within the lease boundary. New gravel roads will be constructed in areas where existing roads do not provide access to wind turbine locations, and along the length of turbine strings. In addition, improvements will be made to some existing public roads within the County right-of-way (ROW), including grading and graveling. A detailed description of the improved and new roads is provided in the response to OAR 345-022-0110 (Public Services). Road construction and improvement will not significantly affect wetlands, other waters of the state, or fish and wildlife habitat. The changes proposed in this request for amendment do not affect LJWP's ability to comply with the SC. For these reasons, OAR 345-024-0015(1) is met.

(2) Using underground transmission lines and combining transmission routes.

(3) Connecting the facility to existing substations, or if new substations are needed, minimizing the number of new substations.

Response: As with LJIIA, the 34.5-kV collector lines that collect the power generated by individual wind turbines will be predominantly underground, although some portions of the central collection system may be placed aboveground where necessary due to terrain or other considerations, as described in Section 4.3.2. Up to 30 percent (7.7 miles) of the central collector system will be constructed aboveground.

Energy generated at the LJIIB turbines will be collected via collector cables to either the approved collector substation to be constructed as part of the first phase, which is located within Lot 4 near the Jones Canyon Switching Station, or to a new additional collector substation located closer to the LJIIB turbines. If the energy from the LJIIB turbines is collected and transferred to the first collector substation, a single project substation will serve the LJWF, reducing the need for additional substations. If engineering analysis determines that it is more efficient to construct an additional collector substation near the LJIIB turbines, a 230-kV overhead transmission line will be constructed between the new collector substation and the first substation constructed. In either case, the 34.5-kV line or 230-kV line connecting LJIIB to the Jones Canyon Switching Station will be constructed aboveground, with a maximum length of approximately 7 miles. Both the preferred and alternate routes for the 34.5-kV or 230-kV route are direct routes needed to interconnect LJIIB to existing transmission lines serving the regional power grid. Transmission lines and substations for LJIIB are described in Section 4.3 of this amendment request as part of the response to OAR 345-027-0060(1)(c), Proposed Changes.

Condition 78 of the Final Order limits the total length of aboveground segments of the collector system to no more than 9.9 miles for LJIIA. LJWP proposes modifying Condition 78 to limit the length of the aboveground segments of the collector system for LJIIB to no more than 14.7 miles.

For the reasons stated above, and with the proposed condition, the requirements in OAR 345-024-0015(2) and (3) are satisfied.

(4) Designing the facility to reduce the risk of injury to raptors or other vulnerable wildlife in areas near turbines or electrical equipment.

Response: The amended LJF will be designed to reduce the risk of injury to raptors or other vulnerable wildlife in areas near turbines or electrical equipment. The creation of artificial habitat for raptors or raptor prey will be avoided. Pad-mounted transformers at each turbine will be designed to avoid use by raptors or prey species as artificial habitat. Turbine pad areas will be graveled to reduce the potential for erosion and weed infestation. The turbines will be mounted on smooth tubular towers rather than lattice towers to avoid creating horizontal perching opportunities. Transmission support poles will conform to raptor protection guidelines recommended by the Avian Power Line Interaction Committee (APLIC). Meteorological towers will be freestanding 80-meter pole structures with no guy wires. The Final Order describes measures required to reduce risk of injury to raptors or other vulnerable wildlife. This amendment request does not change the information presented in the Final Order or LJWP's ability to comply with the SC. Therefore, OAR 345-024-0015(4) is met.

(5) Designing the components of the facility to minimize adverse visual features.

Response: The wind turbines will be mounted on tubular steel towers of uniform height. The towers will be uniformly painted white or a shade of white. This amendment request does not change the information presented in the Final Order or LJWP's ability to comply with the SC. Therefore, OAR 345024-0015(5) is satisfied.

(6) Using the minimum lighting necessary for safety and security purposes and using techniques to prevent casting glare from the site, except as otherwise required by the Federal Aviation Administration or the Oregon Department of Aviation.

Response: As stated in the Final Order, turbines will have the minimum lighting required by the FAA or conforming to FAA guidelines. This amendment request does not change the information presented in the Final Order or LJWP's ability to comply with the SC. Therefore, OAR 345-024-0015(6) is met.

OAR 345-024-0090 Transmission Lines

To issue a site certificate for a facility that includes any transmission line under Council jurisdiction, the Council must find that the applicant:

(1) Can design, construct and operate the proposed transmission line so that alternating current electric fields do not exceed 9 kV per meter at one meter above the ground surface in areas accessible to the public;

(2) Can design, construct and operate the proposed transmission line so that induced currents resulting from the transmission line and related or supporting facilities will be as low as reasonably achievable.

Response:

Central Power Collection System—Underground and Aboveground 34.5-kV Collector Lines

As described in Section 4.3 in the response to OAR 345-027-0060, a network of collection power cables will be installed along and between the turbine strings to collect power generated by the individual wind turbines. The energy generated at the LJIIB turbines will be collected via overhead and underground 34.5-kV single-circuit and double-circuit collector lines. This amendment request does not change the information presented in the Final Order on the rated voltage, load carrying capacity, type of current, and structure dimensions of the 34.5-kV collector lines, or LJWP's ability to comply with safety measures in the SC that limit electric fields to 9 kV per meter at 1 meter above the ground surface in areas accessible to the public and require induced voltages are as low as reasonably achievable.

The majority of the collector system will be buried underground. However, some portions of the collector system will be aboveground. SC Condition 78 of the Final Order has been modified to limit the length of the aboveground segments for LJIIB to no more than 14.7 miles, including 7.7 miles of the central collector system and 7 miles for the interconnection to the switching station.

The electric and magnetic field modeling for the 34.5-kV central collector system lines was conducted for two configurations: one 34.5-kV single-circuit monopole line and one 34.5-kV double-circuit monopole line, as described in Exhibit AA of the original ASC. The central collector system for the LJIIB turbines will consist of the same two configurations. Therefore, no additional modeling was conducted for the central collector system.

Interconnection to the Switching Station—Aboveground 34.5 kV or 230-kV Transmission Line

Energy generated at the LJIIB turbines will be collected via collector cables to either the approved collector substation to be constructed as part of the first phase (LJIIA), which is located near the Jones Canyon Switching Station, or to a new, additional collector substation located closer to the LJIIB turbines. If the energy from the LJIIB turbines is collected and transferred to the first collector substation located near the Jones Canyon Switching Station, two parallel 34.5-kV double-circuit lines will be constructed between the LJIIB turbines and the first collector substation. Two parallel double-circuit lines were not modeled in the original ASC and are analyzed in Attachment 9, *Addendum to Leaning Juniper II Wind Power Facility Exhibit AA Electromagnetic Fields Analysis*. For modeling purposes, a distance of 75 feet between the centerlines of each 34.5-kV double-circuit line was conservatively assumed. If engineering analysis determines that it is more efficient to construct an additional collector substation near the LJIIB turbines, a 230-kV overhead transmission line will be constructed between the new collector substation and the first substation constructed. In either case, the 34.5-kV line or 230-kV line connecting LJIIB to the approved collector substation located near the Jones Canyon Switching Station will be constructed aboveground, with a maximum length of approximately 7 miles.

Modeling was conducted to calculate the estimated electric and magnetic fields for both the overhead 34.5-kV line (consisting of two parallel 34.5-kV double-circuit lines) and the 230-kV line because they were not evaluated as part of the original ASC Exhibit AA or described in the Final Order. The results of this modeling are presented in Attachment 9. Appendix A to Attachment 9 contains modeling results for the 34.5-kV overhead collector line and Appendix B to Attachment 9 contains modeling results for the 230-kV overhead transmission line.

To estimate the maximum electric and magnetic fields, calculations are performed at midspan where the conductor has sagged to its lowest point between structures (the estimated maximum sag point). The proposed 34.5-kV lines were modeled with a minimum clearance of 7.6 meters (25 feet) from the ground at midspan. The proposed 230-kV line was modeled with a minimum clearance of 9.1 meters (30 feet) from the ground at midspan. The electric and magnetic fields were computed for a height of 1 meter (3.3 feet) above the ground on the proposed options.

The electric fields on the corridor containing either the proposed two double-circuit 34.5-kV overhead collector lines or one single-circuit 230-kV overhead transmission line do not exceed 9 kV per meter at any location (see Figures 5, 7, and 9 in Attachment 9 to this amendment request). These figures demonstrate that the electric field estimated at the center of the right-of-way for either option is less than 2.5 kV per meter. Based on these results, the proposed 34.5-kV overhead collector lines or 230-kV overhead transmission line will comply with the 9-kV-per-meter standard set forth in OAR 345-024-0090(1) and Condition 80 of the Final Order.

LJWP has designed the proposed double-circuit 34.5-kV lines of the 34.5-kV overhead collector system and the 230-kV single-circuit line overhead transmission line so that induced voltage and current resulting from the lines and related or supporting facilities will be as low as reasonably achievable. An analysis of the risk of induced currents from the proposed transmission lines is provided in Attachment 9.

Accordingly, LJWP demonstrates that LJIIB can be designed, constructed, and operated in accordance with OAR 345-024-0090.

4.6 OAR 345-027-0060(1)(f) Other Applicable Requirements

(f) An analysis of whether the facility, with the proposed change, would comply with the requirements of ORS Chapter 469, applicable Council rules, and applicable state and local laws, rules and ordinances if the Council amends the site certificate as requested. For the purpose of this rule, a law, rule or ordinance is "applicable" if the Council would apply or consider the law, rule or ordinance under OAR 345-027-0070(10).

<u>Response</u>: Rules and laws applicable under this section include the Department of Environmental Quality's (DEQ) noise control regulations; regulations adopted by the Department of State Lands (DSL) for removing, filling, or altering material within "waters of the state"; Oregon State laws pertaining to groundwater appropriation; and Oregon Revised Statute (ORS) 469.310 pertaining to the protection of public health and safety. These regulations and LJWP's responses are explained further below. Regulations are summarized for brevity.

To summarize the results of the following analysis, under this amendment request LJWP would comply with applicable DEQ noise control regulations, DSL fill-removal regulations, Oregon laws pertaining to groundwater appropriation, and ORS 469.310. This amendment request does not change LJWP's ability to comply with the SC.

1. DEQ Noise Control Regulations—OAR 340-035-0035

DEQ noise regulations for industrial and commercial noise sources are established under OAR 340-035-0035. More specifically, OAR 340-035-0035(1)(b)(B)(iii) establishes the noise standards for noise levels generated by a wind energy facility. In Section V.1(a) of the Final Order, the Council found that LJF would meet applicable DEQ noise standards, subject to conditions of approval (Conditions 93 through 95).

CH2M HILL prepared the *Addendum to Leaning Juniper II Wind Power Facility Noise Analysis,* included as Attachment 10 to this amendment request, which demonstrates compliance with the DEQ noise regulations for the proposed amended facility (LJIIA and LJIIB). Accordingly, LJWP demonstrates that the Project can be designed, constructed, and operated in accordance with OAR 340-035-0035.

2. Department of State Lands (DSL) Removal/Fill Regulations—ORS 196.795 to .990, OAR 141-085-0500 to -0785, and Section 404 of the Clean Water Act

The Oregon Removal-Fill Law (ORS 196.795 to .990) and regulations (OAR 141-085-0500 to -0785) adopted by DSL require a Removal/Fill Permit if 50 cubic yards or more of material is removed, filled, or altered within any "waters of the state" at the proposed site. The Council must determine whether a permit is needed. In addition to the DSL regulations, the U.S. Army Corps of Engineers (Corps) administers Section 404 of the Clean Water Act, which regulates the discharge of fill into waters of the United States (including wetlands). Under Section 404, a federal Nationwide or Individual fill permit may be required if waters of the United States are affected by project construction or operation.

As described in the Final Order, LJWP submitted a Joint Permit Application to DSL and the Corps for anticipated impacts to two drainages, and DSL indicated that a Removal/Fill Permit would be needed for one of those crossings: the crossing of S27, China Ditch. The Council approved issuance of the Removal/Fill Permit, and LJWP received confirmation from the Corps on January 24, 2008 that the crossings are authorized under Nationwide Permit 12. CH2M HILL completed a wetland delineation report for the locations of the proposed LJIIB facility (*Addendum to Leaning Juniper II Wind Power Facility Wetlands and Waters Delineation Report*), which was submitted to DSL for review and approval on June 8, 2009. CH2M HILL has prepared a letter to the Corps requesting concurrence that the project is authorized under NWP 12 and 14. The Addendum is included as Attachment 11, and the January 24, 2008, Corps authorization letter is provided following the Addendum.

Following is a summary of findings from the wetland delineation:

- One potential playa lake/wetland area identified as W8 was delineated approximately 50 feet south of the preferred transmission line route. W8 is potentially jurisdictional under the Removal-Fill Law and Clean Water Act. No impacts will occur to W8 because it is outside the preferred transmission line route and will not be disturbed by construction activities.

- Six ephemeral stream channels, identified as streams S28 through S33, were delineated within the amended site boundary for LJIIB. The ephemeral streams drain to Alkali Canyon where they end; they are not tributaries of any other streams. All six of the ephemeral stream channels are potentially not jurisdictional under the state Removal-Fill Law because ephemeral streams are not included in the definition of waters of the state. Two new road crossings are proposed for new access roads across streams S28 and S31. Proposed improvements to Montague Lane may impact Stream S33. Five underground collector line stream crossings are proposed: one at Stream S29, one at Stream S30, two at Stream S31, and one at Stream S32.
- While the six ephemeral stream channels could be subject to regulation by the Corps, ephemeral streams are not waters of the state by definition, and thus are not subject to the permit requirements of the Removal-Fill Law. Even if the streams were considered intermittent, they would still not be jurisdictional because they do not provide spawning, rearing, or food-producing areas for food and game fish. No fish populations use the ephemeral streams. The streams do not flow into any downstream waters and are not tributaries to downstream waters that do support fish.

In addition to approving issuance of the Removal/Fill Permit, the Final Order included Condition 72 to require pre-construction surveys for any areas not previously investigated for potentially jurisdictional waters and measures to ensure that construction of the LJF would have no impact on any jurisdictional water identified in the preconstruction surveys. LJWP requests the modification of Condition 72(b) as follows to reflect the presence of the wetland identified as W8 in the delineation report (provided as Attachment 11):

> (b) The certificate holder shall avoid any disturbance to the six wetland areas identified as "W1" through "W6" on Figure J-1 of the Site Certificate Application **and the wetland area identified as "W8" on Figure 6 of the *Addendum to Leaning Juniper II Wind Power Facility Wetlands and Waters Delineation Report (CH2M HILL, June 3, 2009)***.

This amendment request does not add to the DSL jurisdictional drainage crossings presented in the Final Order, or affect LJWP's ability to comply with the SC. Therefore, OARs 141-085-0500 through -0785 are met.

3. Groundwater Act of 1955—ORS 537.505 to .796, and OAR Chapter 690

Through the provisions of the Groundwater Act (GWA) of 1955, ORS 537.505 to .796, and OAR Chapter 690, the Oregon Water Resources Commission administers the rights of appropriation and use of the groundwater resources of the state. Under OAR 345-022-0000(1), the Council must determine whether the facility complies with these statutes and administrative rules.

Section V.1(c) of the Final Order finds that LJWP's proposed use of groundwater would be consistent with (1) the GWA and Oregon Water Resources Department (OWRD) statutes, (2) administration regarding rights of appropriation, and (3) the uses of state groundwater resources. As described in the response to OAR 345-022-0110 (Public Services), the amendment request does not significantly change the quantity of water used during construction or operations, or the quantity of wastewater or stormwater from what was originally authorized in the SC. Water for operations will come from new onsite well(s) at the O&M building. Because LJIIB will use the O&M building that has already been authorized in the Final Order, and the total number of turbines and generating capacity of the overall project will not change from the existing LJII SC, water use during operation will not exceed 5,000 gallons per day, as described in the Final Order.

This amendment request does not affect LJWP's ability to comply with the SC, and therefore, the conditions of OAR Chapter 690 are met.

4. State Highway Access and Crossings —OAR Chapter 734, Divisions 51 and 55

Under OAR Chapter 734, Division 51, ODOT regulates highway approaches and access control. In particular, pursuant to OAR 734-051-0070, an Approach Permit is required for a new approach (permanent or temporary) to a state highway. As described in the Final Order, Oregon Highway 19 runs along the eastern boundary of LJIIA and through the expanded site boundary for LJIIB. ODOT issued a permit for Leaning Juniper and determined that no further access procedure or construction was required for access off Oregon Highway 19 for either Rattlesnake Road or Stone Lane for Leaning Juniper II.

Additional state highway road approach permits may be needed from ODOT for the expanded site boundary. To access LJIIB from Oregon Highway 19, LJWP will approach the highway via two County roads, Weatherford Road and Montague Lane, and two new private access roads, as described further in the Response to OAR 345-022-0110 (Public Services) (see also Figures 8 and 25 in Attachment 1). Depending on guidance from ODOT, LJWP may need to obtain a new Approach Permit for Weatherford Road, Montague Lane, and the two new private access roads. To obtain an Approach Permit, LJWP will provide ODOT with relevant property information (e.g., tax lot ID, milepost), proof of insurance, and design specifications of the new approach (width, angle, turning radius, paving limit, and proposed surface). After the new approach has been approved and constructed, LJWP or primary road construction contractor will inspect the approach to ensure that gravel and mud are not tracked onto the state road, in accordance with proposed Condition 37.

Under OAR Chapter 734, Division 55, ODOT regulates the location, installation, construction, maintenance, and use of utility structures, including buried cables, within state highway right-of-way. Thus, in addition to the Approach Permits, state highway utility Crossing Permits may be needed from ODOT for the proposed amended site boundary for collector cables or transmission line crossings of Oregon Highway 19 (see Figure 25). LJWP will provide ODOT with an Application and Permit to Occupy or Perform Operations Upon a State Highway (Crossing Permit) for installation of the overhead line (either 230-kV or 34.5-kV) crossing Oregon Highway 19, which will span from the amended site boundary around the LJIIB turbines to the approved collector substation located near the Jones Canyon Switching Station. LJWP will also obtain Crossing Permits for the underground 34.5-kV collection cables connecting the turbine strings, which also cross Oregon Highway 19.

Assuming ODOT confirms that Approach Permits or Crossing Permits are in fact required, LJWP proposes the following condition language to address the issuance of the Approach Permits and Crossing Permits (see proposed Condition 37):

> "Before beginning construction of a new highway approach or approaches authorized by the Final Order on Amendment #1, the certificate

> holder shall obtain a permit or permits from ODOT after submitting the necessary application or applications in a form satisfactory to ODOT and the Department and subject to conditions required under OAR chapter 734, division 51, authorizing the location, construction and maintenance of an approach or approaches to State Highway 19 for access to the site. Before construction of collector cables or transmission lines crossing Highway 19 authorized by the Final Order on Amendment #1, the certificate holder shall obtain a permit or permits from ODOT after submitting the necessary application or applications in a form satisfactory to ODOT and the Department and subject to conditions required by OAR chapter 734, division 55, authorizing the location, construction, and maintenance of collector cables or transmission lines crossing Highway 19." [Amendment No. 1]

This amendment request does not change LJWP's ability to comply with the SC. Given that the permit conditions for approach roads for highway access are defined by OAR Chapter 734, Division 51, and that permit conditions for utility crossings are defined by OAR Chapter 734, Division 55, LJWP will be capable of complying with those permit conditions ultimately imposed by ODOT, which will be decided once detailed utility design decisions have been made. Consistent with the proposed condition language above, OAR Chapter 734, Divisions 51 and 55 are met.

5. Public Health and Safety—ORS 469.310

Under ORS 469.310, the Council must ensure that the "siting, construction and operation of energy facilities shall be accomplished in a manner consistent with protection of the public health and safety …." The state siting statute also provides that "the site certificate shall contain conditions for the protection of the public health and safety …." In Section V.1(e) of the Final Order, the Council imposed conditions of approval to address public health and safety issues with respect to fire protection (Conditions 58 and 60 through 66), electric and magnetic fields (Condition 81), and coordination with the Public Utilities Commission (PUC) on design and specifications for transmission lines (Condition 79). Electric and magnetic fields and transmission line requirements are addressed in the response to OAR 345-024-0090 and in Attachment 9 of this request for amendment. Specific public health and safety requirements for wind facilities are addressed in the response to OAR 345-024-0010.

This amendment request does not change the information presented in the Final Order or LJWP's ability to comply with the SC. Nevertheless, to reflect new safety standards being implemented at other facilities, LJWP proposes to modify Condition 39, with the modified Condition applicable to both LJIIA and LJIIB, to increase safety setbacks, as described in the response to OAR 345-024-0010 (Public Health and Safety Standards for Wind Energy Facilities). Therefore, ORS 469.310 is met.

4.7 OAR 345-027-0060(1)(g) Landowners Within or Adjacent to the Facility

(g) If the amendment would change the site boundary, extend the deadlines for beginning or completing construction or change the legal description of the facility, an updated list of the owners

of property located within or adjacent to the site of the facility, as described in OAR 345-021-0010(1)(f).

> *OAR 345-021-0010(1)(f)* ***Exhibit F****. A list of the names and mailing addresses of all owners of record, as shown on the most recent property tax assessment roll, of property located within or adjacent to the site boundary as defined in OAR 345-001-0010. The applicant shall submit an updated list of property owners as requested by the Department before the Department issues notice of any public hearing on the application for a site certificate as described in OAR 345-015-0220. In addition to incorporating the list in the application for a site certificate, the applicant shall submit the list to the Department in electronic format acceptable to the Department for the production of mailing labels. Property adjacent to the site boundary means property that is:*
>
> *(A) Within 100 feet of the site boundary where the site, corridor or micrositing corridor is within an urban growth boundary;*
>
> *(B) Within 250 feet of the site boundary where the site, corridor or micrositing corridor is outside an urban growth boundary and not within a farm or forest zone; and*
>
> *(C) Within 500 feet of the site boundary where the site, corridor or micrositing corridor is within a farm or forest zone;*

Response: An updated list of the owners of property, consistent with OAR 345-021-0010(1)(f)(C), is contained in Attachment 12 to this amendment request. A second, identical list formatted for label printing is provided, as well.

SECTION 5

Information Described in Applicable Exhibits and Incorporation of Previous Information by Reference, Pursuant to OAR 345-027-0060(2)

OAR 345-027-0060(2) In a request to amend a site certificate, the certificate holder shall provide the information described in applicable subsections of OAR 345-021-0010(1). The certificate holder may incorporate by reference relevant information that the certificate holder has previously submitted to the Department or that is otherwise included in the Department's administrative record on the facility.

Response: All exhibits of the ASC are hereby incorporated by reference.

SECTION 6

Information Described in Applicable Exhibits and Incorporation of Previous Information by Reference, Pursuant to OAR 345-027-0060(3), and (4)

OAR 345-027-0060(3) Before submitting a request to amend a site certificate, the certificate holder may prepare a draft request and may confer with the Department about the content of the request. Although the Council does not require the certificate holder to prepare a draft request and confer with the Department, the Council recommends that the certificate holder follow this procedure.

Response: LJWP met with the Department on May 5, 2009, to confer about the nature of the proposed changes to LJF, and to discuss the content of this request for amendment. At this time, an outline of the amendment request was provided to the Department. During this conversation, it was determined that a draft request would not be needed (John White, Pers. Comm., May 5, 2009). Recommendations made by the Department during the May 5 meeting have been incorporated into this amendment request.

OAR 345-027-0060(4) The certificate holder shall submit an original and ten copies of the amendment request to the Department. In addition to the printed copies, the certificate holder shall submit the text (including appendices and graphical information to the extent practical) of the amendment request in a non-copy-protected electronic format acceptable to the Department. The certificate holder shall provide additional copies of the amendment request to the Department upon request and copies or access to copies to any person requesting copies. If requested by the Department, the certificate holder shall send copies of the request to persons on a mailing list provided by the Department.

Response: LJWP will comply with this requirement.

SECTION 7

Information Required Pursuant to OAR 345-027-0070(10)

OAR 345-027-0070(10) In making a decision to grant or deny issuance of an amended site certificate, the Council shall apply the applicable substantive criteria, as described in OAR 345-022-0030, in effect on the date the certificate holder submitted the request for amendment and all other state statutes, administrative rules, and local government ordinances in effect on the date the Council makes its decision. The Council shall consider the following:

(a) For an amendment that would change the site boundary or the legal description of the site, the Council shall consider, for the area added to the site by the amendment, whether the facility complies with all Council standards;

Response: The site boundary and legal description have been modified as described in Section 4.3 of this amendment request. Council standards relevant to these changes are addressed in Section 4.5.

(b) For an amendment that extends the deadlines for beginning or completing construction, the Council shall consider:

(A) Whether the Council has previously granted an extension of the deadline;

Response: The Council has not previously granted an extension of the deadline.

(B) Whether there has been any change of circumstances that affects a previous Council finding that was required for issuance of a site certificate or amended site certificate; and

Response:

The SC specifies that LJWP shall begin construction of the facility within 3 years after the effective date of the SC or by September 2010, and shall complete construction of the facility within 4 years after the effective date of the SC or by September 2011.

LJWP is preparing to begin construction of the first phase LJIIA, consisting of 43 turbines and a generating capacity of up to 90.3 MW, in the winter of 2009-2010. With this amendment, LJWP requests to amend the LJF site boundary to allow LJWP to construct one or more subsequent phases for the remaining 188.7 MW. LJWP currently plans to start construction of the LJIIB amended layout, consisting of up to 90 turbines with a generating capacity of up to 188.7 MW, in one phase immediately following construction of LJIIA. Completion of both phases of construction originally had been planned for the end of 2010.

However, given that construction could conceivably be delayed by weather or other unforeseen circumstances such as market changes, LJWP would like the flexibility to build LJIIB in one or more phases, and requests the original construction completion deadline specified in the Final Order be extended to 6 years from the effective date of the original SC or September 2013.

(C) Whether the facility complies with all Council standards, except that the Council may choose not to apply a standard if the Council finds that:

(i) The certificate holder has spent more than 50 percent of the budgeted costs on construction of the facility;

(ii) The inability of the certificate holder to complete the construction of the facility by the deadline in effect before the amendment is the result of unforeseen circumstances that are outside the control of the certificate holder;

(iii) The standard, if applied, would result in an unreasonable financial burden on the certificate holder; and

(iv) The Council does not need to apply the standard to avoid a significant threat to the public health, safety or the environment;

Response: The amended LJF complies with all Council standards as set forth herein.

(c) For any amendment not described above, the Council shall consider whether the amendment would affect any finding made by the Council in an earlier order.

Response: Section 4 of this amendment request addresses the compliance of proposed changes with the applicable Council standards for issuance of a SC.

(d) For all amendments, the Council shall consider whether the amount of the bond or letter of credit required under OAR 345-022-0050 is adequate.

Response: It is LJWP's position that the discussion in Section 4.5.1 of this amendment request, responding to OAR 345-022-0050, reflects a conservative approach to determining the amount of the bond or letter of credit to be required.

SECTION 8

Works Cited

Anderson, Susie, Gilliam County Planner. 2009. Personal communication via e-mail with CH2M HILL on April 28, 2009.

Bureau of Land Management (BLM). 1986. *Two Rivers Resource Management Plan and Record of Decision*. June 1986.

Bureau of Land Management (BLM). 1993. *Oregon Trail Management Plan*. Prepared by the BLM Prineville District.

Bureau of Land Management (BLM). 2001. *Record of Decision John Day River Management Plan, Two Rivers, John Day and Baker Resource Management Plan Amendment*. February 2001.

National Park Service. 1999. *Comprehensive Management and Use Plan*.

Oregon Historic Trail Advisory Council (OHTAC). 2009. Personal communication between Wendell Baskins, OHTAC, and Robin McClintock, CH2M HILL, on May 26, 2009.

U.S. National Park Service. 1999. *Comprehensive Management and Use Plan Update: Final Environmental Impact Statement, Oregon National Historic Trail and Mormon Pioneer National Historic Trail*. August 1999.

White, John, Oregon Department of Energy. 2009. Personal communication with Sara Parsons of Iberdrola Renewables, Inc., David Filippi of Stoel Rives LLP, and Linnea Eng of CH2M HILL on May 5, 2009.

ATTACHMENT 12

Updated Property Owners List

ATTACHMENT 12
Property Ownership Within 500 Feet of Amended Site Boundary for LJIIB

TAX ID	OWNER OF RECORD	MAILING ADDRESS
01N21E00100	PLATEAU FARMS NO. 2	1200 S.W. MAIN BLDG. PORTLAND, OR 97205
02N21E00100	KREBS, J.R.	PO BOX 8 ARLINGTON, OR 97812
01N21E00200	WALTERS, KENNETH A. FAMILY TRUST	69759 HWY 19 ARLINGTON, OR 97812
02N21E00200	PHILIPPI RANCHES, INC.	68988 KUNZE LANE BOARDMAN, OR 97818
01N21E00300	HOLTZ, TIM H. & DEBORAH L.	c/o RIETMANN, JERRY L. & LISA G. PO BOX 131 IONE, OR 97843
01N21E00400	HARPER, RICHARD E. &	c/o WEATHERFORD-HARPER, ALICE PO BOX 8 IONE, OR 97843
02N21E00400	WASTE MANAGEMENT	c/o OREGON WASTE SYSTEMS, INC. PO BOX 1450 CHICAGO, IL 60690
01N21E00500	HOLZAPFEL LAND & CATTLE, LP.	PO BOX 1027 WILLOWS, CA 95988
02N21E00500	TATONE FARM, LLC.	PO BOX 576 CONDON, OR 97823
02N21E00502	UNITED STATES OF AMERICA	c/o BONNEVILLE POWER ADMINISTRATION PO BOX 61409 VANCOUVER, WA 98666
02N21E00503	PACIFICORP	825 NE MULTNOMAH PORTLAND, OR 97232
02N21E00504	LEANING JUNIPER WIND POWER, LLC	c/o JOHN KNIGHT 1125 N.W. COUCH, SUITE 700 PORTLAND, OR 97209
01N22E00700	PLATEAU FARMS NO. 2	1200 S.W. MAIN BLDG. PORTLAND, OR 97205
01N21E00800	SUTTON, EVELYN M. & ROBERT H.	c/o TRUSTEES UNDER DECL. OF TRUST 1460 WESTBROOK DRIVE NW SALEM, OR 97304
01N22E00800	ATHEARN, ROBERT F. LIVING TRUST	c/o ATHEARN, ROBERT F. TRUSTEE 333 ROSE COURT MOUNT VERNON, WA 98273
01N21E00804	HOLTZ, TIM H. & DEBORAH L.	c/o RIETMANN, JERRY L. & LISA G. PO BOX 131 IONE, OR 97843
01N21E00805	RIETMANN, JERRY L. & LISA G.	c/o HOLTZ, TIM H. & DEBORAH L. PO BOX 131 IONE, OR 97843
01N21E00806	RIETMANN, JERRY L. & LISA G.	c/o HOLTZ, TIM H. & DEBORAH L. PO BOX 131 IONE, OR 97843
01N21E00900	ATHEARN, ROBERT F. LIVING TRUST	c/o ATHEARN, ROBERT F. TRUSTEE 333 ROSE COURT MOUNT VERNON, WA 98273
02N21E00900	POTTER, MILDRED M.	STAR ROUTE ARLINGTON, OR 97812
01N21E01002	RUCKER, JIMMY I. & SARAH D. TRUST	c/o RUCKER, JIMMY I. & SARAH D.,TRUSTEE 68618 HWY 19 ARLINGTON, OR 97812
02N21E01100	WASTE MANAGEMENT	c/o OREGON WASTE SYSTEMS, INC. PO BOX 1450 CHICAGO, IL 60690
02N21E01104	GILLIAM COUNTY (INDUSTRIAL PARK)	c/o GILLIAM COUNTY COURT PO BOX 427 CONDON, OR 97823
02N21E01400	SUMNER, PHYLLIS A. TRUST	c/o SUMNER, PHYLLIS A., TRUSTEE 71667 HWY 19 BOX 8 ARLINGTON, OR 97812
02N21E01500	ARLINGTON GREEN FARMS	7908 3RD AVE. BROOKLYN, NY 11209
02N21E01600	ARLINGTON GREEN FARMS	7908 3RD AVE. BROOKLYN, NY 11209
02N21E01700	LITTLEBROOK W & K, INC.	c/o KLEINBACH, HAROLD G. 56304 E MAIN PRNE WALLA WALLA, WA 99362
02N21E01701	HOLZAPFEL, HERBERT R. & VIRGINIA W.	PO BOX 1027 WILLOWS, CA 95988
02N21E01703	RIETMANN, JERRY L. & LISA G.	c/o HOLTZ, TIM H. & DEBORAH L. PO BOX 131 IONE, OR 97843

ATTACHMENT 12
Property Ownership Within 500 Feet of Amended Site Boundary for LJIIB

TAX ID	OWNER OF RECORD	MAILING ADDRESS
02N21E01800	WASTE MANAGEMENT	c/o OREGON WASTE SYSTEMS, INC. PO BOX 1450 CHICAGO, IL 60690
02N21E01801	WASTE MANAGEMENT	c/o OREGON WASTE SYSTEMS, INC. PO BOX 1450 CHICAGO, IL 60690
02N21E02100	HOLZAPFEL LAND & CATTLE, LP.	PO BOX 1027 WILLOWS, CA 95988
02N21E02103	WASTE MANAGEMENT	c/o WASTE MANAGEMENT SYSTEMS PO BOX 1450 CHICAGO, IL 60690
02N21E02300	WALTERS, KENNETH A. FAMILY TRUST	69759 HWY 19 ARLINGTON, OR 97812
02N21E02400	PLATEAU FARMS NO. 2	1200 S.W. MAIN BLDG. PORTLAND, OR 97205
02N21E02500	SUMNER, PHYLLIS A. TRUST	c/o SUMNER, PHYLLIS A., TRUSTEE 71667 HWY 19 BOX 8 ARLINGTON, OR 97812
02N22E02600	SUMNER, PHYLLIS A. TRUST	c/o SUMNER, PHYLLIS A., TRUSTEE 71667 HWY 19 BOX 8 ARLINGTON, OR 97812
02N22E02900	THURSTON, HELEN	c/o CUSTARD, BEVERLY 1951 E. 68TH ST. TACOMA, WA 98404
02N21E88888	PALOUSE RIVER & COULEE CITY RAILROAD	315 W. 3RD STREET, PITTSBURGH, KS 66762

Attachment 11

Addendum to Leaning Juniper II Wind Power Facility Wetlands and Waters Delineation Report; Authorization Letter from U.S. Army Corps of Engineers

WETLAND DELINEATION / DETERMINATION REPORT COVER FORM

This form must be included with any wetland delineation report submitted to the Department of State Lands for review and approval. A wetland delineation report submittal is not "complete" unless the fully completed and signed report cover form and the required fee are submitted. Attach the form to the front of an unbound report and submit to: **Oregon Department of State Lands, 775 Summer Street NE, Suite 100, Salem, OR 97301-1279**

Mail a copy of the completed form with payment of the required report review fee to: **Oregon Department of State Lands, P.O. Box 4395, Unit 18, Portland, OR 97208-4395.**

For new credit card payment option, see DSL web site.

☒ Applicant ☐ Owner Name, Firm and Address: **Sara Parsons, Business Developer** **Iberdrola Renewables, Inc.** **1125 NW Couch St., Suite 700** **Portland, OR 97209**	Business phone # **503-796-7732** Mobile phone # (optional) FAX # **503-796-6901** E-mail: **sara.parsons@iberdrolausa.com**
☒ Authorized Legal Agent, Name and Address: **Linnea Eng, CH2M HILL, Inc.** **1100 112th Avenue NE Suite 400** **Bellevue, WA 98004**	Business phone # **425-241-0042** FAX # **425-468-3021** Mobile phone # E-mail: **linnea.eng@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: **Linnea Eng** Signature: Linnea Eng

Date: **6/8/2009** Special instructions regarding site access: **Contact Joel Shaich/CH2M HILL**

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

Project Name: **Leaning Juniper IIB Wind Power Facility**	Latitude: **45.62 N** Longitude: **120.18 W**
Proposed Use: **Wind energy generation**	Tax Map # **multiple sections and tax lots, see delineation report**
Project Street Address (or other descriptive location): **Approximately 5 miles south of Arlington on Highway 19**	Township Range Section QQ Tax Lot (s)
City: **NA** County: **Gilliam**	Waterway: River Mile: NWI Quad(s): **Arlington, Shutler Flat, Hickland Butte**

Wetland Delineation Information

Wetland Consultant Name, Firm and Address: **Joel Shaich, CH2M HILL Inc.** **2020 SW Fourth Ave., Suite 300** **Portland, OR 97201**	Phone # **503-803-2896** Mobile phone # **503-803-2896** FAX # **503-736-2000** E-mail: **jshaich@ch2m.com**

The information and conclusions on this form and in the attached report are true and correct to the best of my knowledge.

Consultant Signature: Joel Shaich — Date: **6/8/2009**

Primary Contact for report review and site access is ☒ Consultant ☐ Applicant/Owner ☐ Authorized Agent

Wetland/Waters Present? ☒ Yes ☐ No — Study Area size: **4839.5 acres** — Total Wetland Acreage: **0.39**

Check Box Below if Applicable:	**Fees:**
☐ R-F permit application submitted	☒ Fee payment submitted **$ 364.00**
☐ Mitigation bank site	☐ Fee ($100) for resubmittal of rejected report
☐ Wetland restoration/enhancement project (not mitigation)	Name of Payor: **CH2M HILL Inc.**
☐ Industrial Land Certification Program Site	

Other Information:

	Y	N	
Has previous delineation/application been made on parcel?	☒	☐	If known, previous DSL # **05-0142 & 07-0116**
Does LWI, if any, show wetland or waters on parcel?	☐	☒	

For Office Use Only

DSL Reviewer: ____	Fee Paid Date: ___ / ___ / ___	DSL WD # ____
Date Delineation Received: ___ / ___ / ___	DSL Project # ____	DSL Site # ____
Scanned: ☐ Final Scan: ☐	DSL WN # ____	DSL App. # ____

Addendum to Leaning Juniper II Wind Power Facility Wetlands and Waters Delineation Report Gilliam County, Oregon

PREPARED FOR:	Sara Parsons/Iberdrola Renewables, Inc. Jeffrey Durocher/Iberdrola Renewables, Inc.
PREPARED BY:	Joel Shaich/CH2M HILL
COPIES:	Linnea Eng/CH2M HILL Nichole Seidell/CH2M HILL
DATE:	June 8, 2009

Introduction

CH2M HILL conducted a wetlands and waters delineation in April 2009 for the amendment request to expand the site boundary for the Leaning Juniper II Wind Power Facility (LJF) in Gilliam County, Oregon (Figure 1 in Appendix A). The delineation was completed in accordance with Section 404 of the Clean Water Act (CWA) and the Oregon Removal-Fill Law.

Background

Leaning Juniper Wind Power II, LLC (LJWP) obtained a site certificate (SC) on September 21, 2007, to construct the Leaning Juniper II Wind Power Facility (LJF) in Gilliam County, Oregon, with up to 133 turbines and a generating capacity of up to 279 megawatts (MW). LJWP is preparing to construct forty-three (43) 2.1-MW turbines with a generating capacity of 90.3 MW in 2009 under the authority of the SC. This first phase of construction is referred to as Leaning Juniper IIA (LJIIA). LJIIA will be constructed on both the Leaning Juniper II North and South properties described in the Final Order for LJF (September 2007).

LJWP requests an amendment to the SC to expand the LJF site boundary farther to the south to minimize wake impacts from existing nearby wind projects and optimize the use of the wind resource. The purpose of the addition is to construct one or more subsequent phases on land immediately southeast of the originally permitted area. The subsequent phase of construction is referred to as Leaning Juniper IIB (LJIIB). LJIIB will consist of up to 90 turbines with a generating capacity of up to 188.7 MW.

The turbines and associated facilities will be constructed approximately 5 miles south of Arlington, southeast of the existing LJF facility. Figure 2 in Appendix A shows the approved LJF site boundary and the proposed amended site boundary for LJIIB.

Like the first phase of construction (LJIIA), the LJIIB phase will connect to the Federal Columbia River Transmission System (the regional transmission grid) at Bonneville Power Administration's (BPA) existing Jones Canyon Switching Station (see Figure 4). Energy generated at the turbines located in the proposed amended site boundary will be collected via collector cables to either the approved collector substation constructed as part of the first phase, which is located within Lot 4 near the Jones Canyon Switching Station, or to a new additional collector substation located within the proposed amended site boundary closer to the LJIIB turbines. If the energy from the LJIIB turbines is collected and transferred to the first collector substation, a 34.5-kV overhead collector system will be constructed between the LJIIB turbines and the collector substation. If engineering analysis determines that it is more efficient to construct an additional collector substation near the LJIIB turbines, a 230-kV overhead transmission line will be constructed between the new collector substation and the first substation constructed. In either case, the overhead line will be a maximum of approximately 7 miles in length.

Wetland study areas for the LJIIB delineation are in portions of the following tax lots (Figure 2):

- Township 2 North, Range 21 East, tax lots 100, 4000, 500, 1100, 1102, 1400, 1600, 1701,1703, 1704, 1801, 2100, 2400, 2500
- Township 2 North, Range 22 East, tax lot 2600
- Township 1 North, Range 21 East, tax lots 100, 200, 300, 800
- Township 1 North, Range 22 East, tax lot 700

Previous Work Performed

Portions of the preferred and alternate routes for the transmission line or collector line were previously delineated for LJF and approved by the Oregon Department of State Lands (DSL file nos. WD05-0142 and WD 07-0116) and U.S. Army Corps of Engineers (Corps file no. NWP-2007-168). Figure 2 (Appendix A) shows the wetland study areas for the previous delineations.

Previous CH2M HILL delineation work for LJF identified seven wetlands labeled W1 through W7. Labeling for wetlands for the LJIIB delineation began with W8.

Previous CH2M HILL delineation work for LJF also mapped 27 drainage reaches as S01 through S27. Labeling for streams for the LJIIB delineation began with S28. Previous delineation maps included labeling for a number of drainages that were not waters but were upland vegetated swales. The LJIIB delineation maps and labeling only include drainages that are waters.

Report Organization

This report is organized in accordance with DSL requirement, as follows:

A Description of the Site, Landscape Setting, and Previous and Current Land Uses
B Site Alterations
C Precipitation Data and Analysis
D Site-Specific Methods
E Description of Wetlands and Other Waters

Appendixes are as follows:

A. Description of the Site, Landscape Setting, and Previous and Current Land Uses *OAR141-090-0035 (7)(a)*

The proposed amended LJF is located in the Columbia Plateau physiographic region. Most of the turbines and associated facilities will be on the Shutler Flat Plateau. The plateau is dissected by gently-sloped headwater gullies that become steeper-sloped canyons descending north and west to Alkali Canyon. The two largest drainages are West Fork Shutler Creek and East Fork Shutler Creek. Alkali Canyon is a flat-bottomed valley that contains several alkali flats. Channels in the drainages coming into the canyon become less distinct as they reach the canyon floor until they no longer have defined bed and banks. There is no natural stream channel downslope (northward) through Alkali Canyon for drainage coming off the Shutler Flat plateau. Drainage off the plateau collects and evaporates in the alkali flats in the canyon or may move downslope through the canyon in upland vegetated swales or roadside ditches along State Highway 19 and Cedar Springs Lane. The nearest natural drainage downslope is China Creek, which enters Alkali Canyon approximately 1 mile north of the Shutler Flat plateau.

The eastern edge of the project area drains east to Eightmile Canyon.

The preferred overhead collector line or transmission line route west of Cedar Springs Lane travels across high plateaus and rolling hills dissected by drainages in canyons and draws. Drainages descend east to Alkali Canyon and are tributaries of China Creek.

Area elevations range from 700 feet above mean sea level (AMSL) in Alkali Canyon to 1,160 feet AMSL on the Shutler Flat plateau.

Historical land use was dominated by wheat farming and livestock grazing. Current land use includes wheat farming and livestock grazing. The preferred overhead collector line/transmission line route west of Cedar Springs Lane passes through the existing Leaning Juniper I Wind Project owned by PacifiCorp.

B. Site Alterations *OAR141-090-0035 (7)(c)*

The headwaters of ephemeral drainages in the project area are managed through row crop agriculture (wheat). These areas are regularly plowed and planted as part of ongoing agricultural operations. The drainages eventually reach unfarmed areas (due to slope or rocky soils) where the drainages have developed channels, apparently as the result of natural erosive processes. The channels then become less defined as they enter the flatter bottom of Alkali Canyon.

C. Precipitation Data and Analysis *OAR141-090-0035 (7)(i)*

Precipitation data were obtained from the Oregon Climate Center for the nearest station with complete information, located at Arlington, approximately 5 miles north of the project site. The 30-year annual precipitation average (1971-2000) for the Arlington weather station is 9.05 inches, including an average annual snowfall of 7.84 inches.

Fieldwork was conducted on April 1 and 2, 2009, during which 0.06 inch of rain fell. Precipitation for the portion of the water year prior to the fieldwork (October 2008 through March 2009) was 6.24 inches, within the normal range for the period (Table 1). Combined January, February, and March precipitation was within the normal range for those months, although March precipitation was slightly above the normal range (+0.04 inch). Precipitation for the 2 weeks prior to the fieldwork was 0.47 inch.

Precipitation prior to and during the fieldwork was generally within the normal range for the area and would have been unlikely to affect observations or analysis of wetland hydrology indicators and stream flow duration indicators.

TABLE 1
Monthly Precipitation (inches), Arlington, Oregon (Oregon Climate Service, 2009)

	Actual Precipitation	Normal Range[a]	Outside Normal Range
October 2008	0.51	0.27 – 0.79	
November 2008	0.56	0.71 – 1.53	-0.15
December 2008	1.58	0.73 – 1.77	
January 2009	1.53	0.84 – 1.71	
February 2009	1.09	0.67 – 1.26	
March 2009	0.97	0.40 – 0.93	+0.04
Total	6.24	3.62 – 7.99	

[a]Normal Range is the range within which precipitation for the given period has a 70 percent chance of occurring. Data are from the National Resource Conservation Service WETS table.

D. Site-Specific Methods *OAR141-090-0030, OAR141-090-0035 (7)(d-e), (g-h), (16)(a-b), (f), (d) or (g), (17), & (19-20)*

The wetland study areas were 1,000-foot-wide corridors centered on preliminary alignments of the proposed wind turbines, meteorological towers, access roads, underground and overhead electrical collector lines, substations, staging areas, and transmission lines. Along portions of County roads (Berthold Road, Montague Lane, and Weatherford Road) the study areas were limited to the 60-foot road right-of-way. The study area for the preferred collector line or transmission line route from the expanded site boundary around the LJIIB turbines to the approved collector substation near the Jones Canyon Switching Station was limited to the width of the easement area through the existing Leaning Juniper I Wind Project owned by PacifiCorp, or 200 feet wide.

Office Review

Prior to conducting the field investigation, the following information was reviewed:

- Wetlands and Jurisdictional Waters Determination, Report, Leaning Juniper Wind Energy Project, Gilliam County, Oregon (CH2M HILL, 2005)
- Addendum: Wetlands and Jurisdictional Waters Determination Report, Leaning Juniper II Wind Energy Project, Gilliam County, Oregon (CH2M HILL, 2006)
- DSL concurrence letter dated July 6, 2007 for DSL files WD#05-0142 and WD#07-0116
- U.S. Geological Survey (USGS) 7.5′ topographic maps
- USGS National Hydrography Dataset - digital surface water mapping (Figure 3)
- National Wetlands Inventory (NWI) digital data (Figure 3)
- Soil Survey of Gilliam County, Oregon; SSURGO digital soils data (Figure 4)
- Hydric Soils List for Gilliam County
- Aerial imagery (USDA, 2005) (Figure 5)

CH2M HILL previously delineated a section of China Creek in the alternate transmission line route as an intermittent stream, identified as stream S27, and concurred with by DSL and USACE. S27 is the only delineated water or wetland in the areas previously delineated by CH2M HILL that overlaps with the LJIIB wetland study areas. S27 was not field-verified again for the LJIIB delineation.

Thirty-five potential stream reaches were identified in the study area from the USGS mapping and digital surface water mapping. There are no NWI-mapped wetlands or mapped hydric soils in the study area.

The USGS map also shows an intermittent lake or pond in the study area in Alkali Canyon on the east side of Cedar Springs Lane. The feature is labeled “Alkaline Flat.”

Field Investigation

Fieldwork was conducted on April 1 and 2, 2009. Potential waters and wetlands identified in the office review were field verified. No additional potential waters or wetlands were observed during fieldwork. Three of the potential streams were only observed downstream from the wetland study areas due to difficult access.

Data collection, description, and analysis for wetlands and other jurisdictional waters of the U.S. followed procedures in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE, 2008).

The routine onsite wetland determination method was used to observe vegetation, soils, and hydrological conditions at representative locations. Paired sample plots were used to document wetland and upland areas adjacent to wetland boundaries. The *National List of*

Plant Species that Occur in Wetlands: Northwest (*Region 9)* (Reed, 1988) and the 1993 supplement (Reed et al., 1993) were used to determine hydrophytic status of vegetation.

The widths of stream channels were estimated in the field [Ordinary High Water Mark to Ordinary High Water Mark (OHWM to OHWM)].

E. Description of Wetlands and Other Waters *OAR141-090-0035 (2), (7)(b), & (17)*

One playa lake/wetland and six ephemeral stream channel reaches were delineated within the wetland study area (Figure 6). The other potential streams identified in the office review were field investigated and determined to be upland-vegetated swales lacking channels and evidence of regular flow. Some of the potential streams were only observed downstream from the wetland study areas due to difficult access (see photos 2, 13 and 15). All of these drainages were upland-vegetated swales at the point of observation. It is unlikely that these drainages have waters or wetlands within the wetland study areas upstream from the observation points. The portions of these drainages within the wetland study areas were the upper-most reaches of the drainages and observations of the entire project area during fieldwork indicated that the upper reaches of drainages were the least likely to have waters. In addition, no wetland signatures or riparian vegetation signatures were observed in these drainages on aerial photographs. There are no springs mapped on USGS maps in the entire project area and none was observed during fieldwork.

Playa Lake/Wetland W8

Wetland W8 was delineated as the northeastern tip of the playa lake within the area mapped by USGS as an intermittent lake or pond (Figure 6a). Most of the playa lake is located outside the study area to the southwest and is visible as a gray area on the aerial photograph (Figure 5). The portion within the study area was 0.39 acre in size. The playa lake appears to collect and hold rainfall and surface runoff from the surrounding canyon slopes and side drainages. No outlet was observed. W8 did not meet wetland criteria based on the available information, although it may under problem area procedures with additional information.

W8 had mostly bare soil with scattered upland plants and areas of ponding and saturated soils (see photos 3 and 4 and sample plots SP1 and SP2). There was a distinct transition from the bare soil area to an upland Juniper/Sage/grassland community (see sample plot SP3). The edge of the area of bare soil was presumed to be the edge of the area of intermittent ponding and was used to delineate the wetland/playa lake.

Sample plots in the bare areas did not meet wetland criteria based on the available information. The vegetation was not hydrophytic and the soils did not have hydric soil indicators. It is possible that W8 could meet wetland criteria under problem area procedures. The existing upland vegetation may have established during dryer periods and be replaced by hydrophytic vegetation during wetter periods. Soils in alkaline flats often have high PH that prevents the formation of redoximorphic features. Without additional information to complete the problem area procedure, W8 is presumed to be a wetland, in addition to being a playa lake.

Ephemeral Stream Channels

Six ephemeral stream channel reaches were mapped in the wetland study areas (Table 2; Figure 6). None of the channels contained flow during the fieldwork. The channels had mostly continuous bed and banks and gravel/cobble substrates. No springs, seeps, wetland vegetation, desiccated streamer mosses or algal mats, amphibians or distinct riparian corridors were observed in or adjacent to the channels, indicating that they are not supported by groundwater and are not intermittent. Stream reaches S28, S29, and S30 are portions of an unnamed stream channel that drains Shutler Flat Plateau and becomes indistinct when it reaches Alkali Canyon. Reaches S31 and S32 are portions of West Fork Shutler Creek. Reach S33 is a portion of East Fork Shutler Creek. There are no stream channels in the Eightmile Canyon watershed portion of the project area, only upland vegetated swale drainages.

TABLE 2
Stream Channels in the Leaning Juniper IIB Study Area

Stream Reach ID	Stream Name	Flow Regime	Width (feet)	Preliminary Jurisdictional Determination[a] Clean Water Act Section 404	Preliminary Jurisdictional Determination[a] Oregon Removal-Fill Law
S28		Ephemeral	4	NO	NO
S29		Ephemeral	4	NO	NO
S30		Ephemeral	6	NO	NO
S31	West Fork Shutler Creek	Ephemeral	3	NO	NO
S32	West Fork Shutler Creek	Ephemeral	6	NO	NO
S33	East Fork Shutler Creek	Ephemeral	6	NO	NO

[a]Jurisdictional determinations, including the applicability of exemptions, are preliminary only. Final determinations are made by the regulatory agencies.

F. Deviations from NWI/LWI Mapping *OAR141-090-0035 (16)(e)*

No Local Wetland Inventory (LWI) has been compiled for the study area. The NWI did not map any wetlands in the project area (Figure 3).

G. Wetland Mapping Method *OAR141-090-0035 (7)(f), (11), (12), (13), (18), and (22)*

Wetland sample plot locations, wetland boundaries and stream channel centerlines were mapped using a hand-held Global Positioning System (GPS) unit with sub-meter accuracy capability. Estimated accuracy of mapped wetland boundaries is +/- 3 feet.

H. Additional Information Used to Establish Jurisdiction *OAR141-085-0015 (1-7), OAR141-090-0030 (2), OAR141-090-0035 (6)(c), (16)(c), & (21)*

Information on fish distribution was obtained from the StreamNet Pacific NW Interactive Mapper web site (NOAA-NRO, 2009). None of the streams in the project area support fish populations, nor does China Creek downstream of the project area.

I. Results and Conclusions OAR141-090-0035(7)(i)

Wetland W8, a potentially jurisdictional playa lake/wetland totaling 0.39 acre, was delineated in the wetland study area. W8 is potentially subject to federal and state jurisdiction. Six stream channel reaches were delineated. All six are potentially exempt from federal and state jurisdiction.

Playa Lake/Wetland W8

W8 is a playa lake, an intermittently ponded area. It may also meet wetland criteria under problem area procedures; however, additional information would be required to complete the problem area procedures.

W8 is potentially subject to regulation under the CWA as an intrastate playa lake or wetland if USACE determines that the use, degradation, or destruction of W8 could affect interstate or foreign commerce. The USACE does not have specific guidance on making such a determination.

W8 is potentially jurisdictional under the state Removal-Fill Law as a playa lake or as a natural wetland, both of which are types of waters of the state, by definition.

Ephemeral Stream Channels

The six ephemeral stream channel reaches could be subject to regulation under the CWA if they were determined by USACE to have a significant nexus to traditional navigable waters, in this case the Columbia River. A significant nexus exists if the ephemeral streams have more than a speculative or insubstantial effect on the chemical, physical, or biological integrity of the traditional navigable water. USACE does not have specific guidance on making such determinations. Given the lack of a direct surface connection between the ephemeral stream channels and the Columbia River, it seems unlikely that they could be determined to have a significant nexus.

All of the ephemeral stream channels are potentially not jurisdictional under the state Removal-Fill Law because ephemeral streams are not included in the definition of waters of the state. Even if the streams were considered intermittent, they would still not be jurisdictional because they do not provide spawning, rearing or food-producing areas for food and game fish. There are no fish populations using the ephemeral streams and they are not food-producing areas for downstream waters that do support fish, because they do not flow directly into any downstream waters.

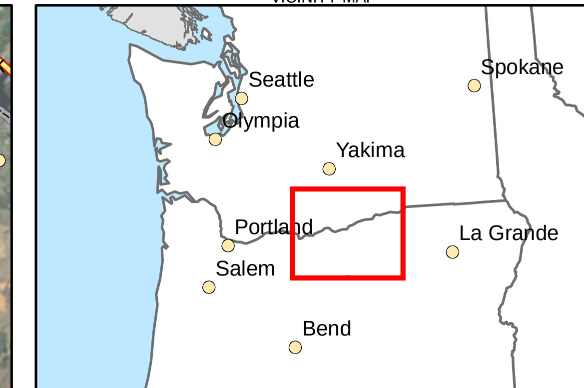
J. Disclaimer *OAR141-090-0035 (7)(k)*

This report documents the investigation, best professional judgment, and conclusions of the investigator. It is correct and complete to the best of my knowledge. It should be considered a Preliminary Jurisdictional Determination and used at your own risk until it has been reviewed and approved in writing by the Oregon DSL in accordance with OAR 141-090-0055 and by the U.S. Army Corps of Engineers (USACE), Portland District.

Jurisdictional determinations, including the applicability of exemptions, are made on a case-by-case basis by DSL and USACE.

APPENDIX A
Figures

VICINITY MAP



Legend

- City
- Limited Access
- Highway
- Secondary Road
- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- County Boundary
- River/ Stream

0 3 6 9
Miles

N

Figure 1
Location Map
Leaning Juniper II Wind Power Facility Amendment
Addendum to Wetland Delineation Report

IBERDROLA RENEWABLES

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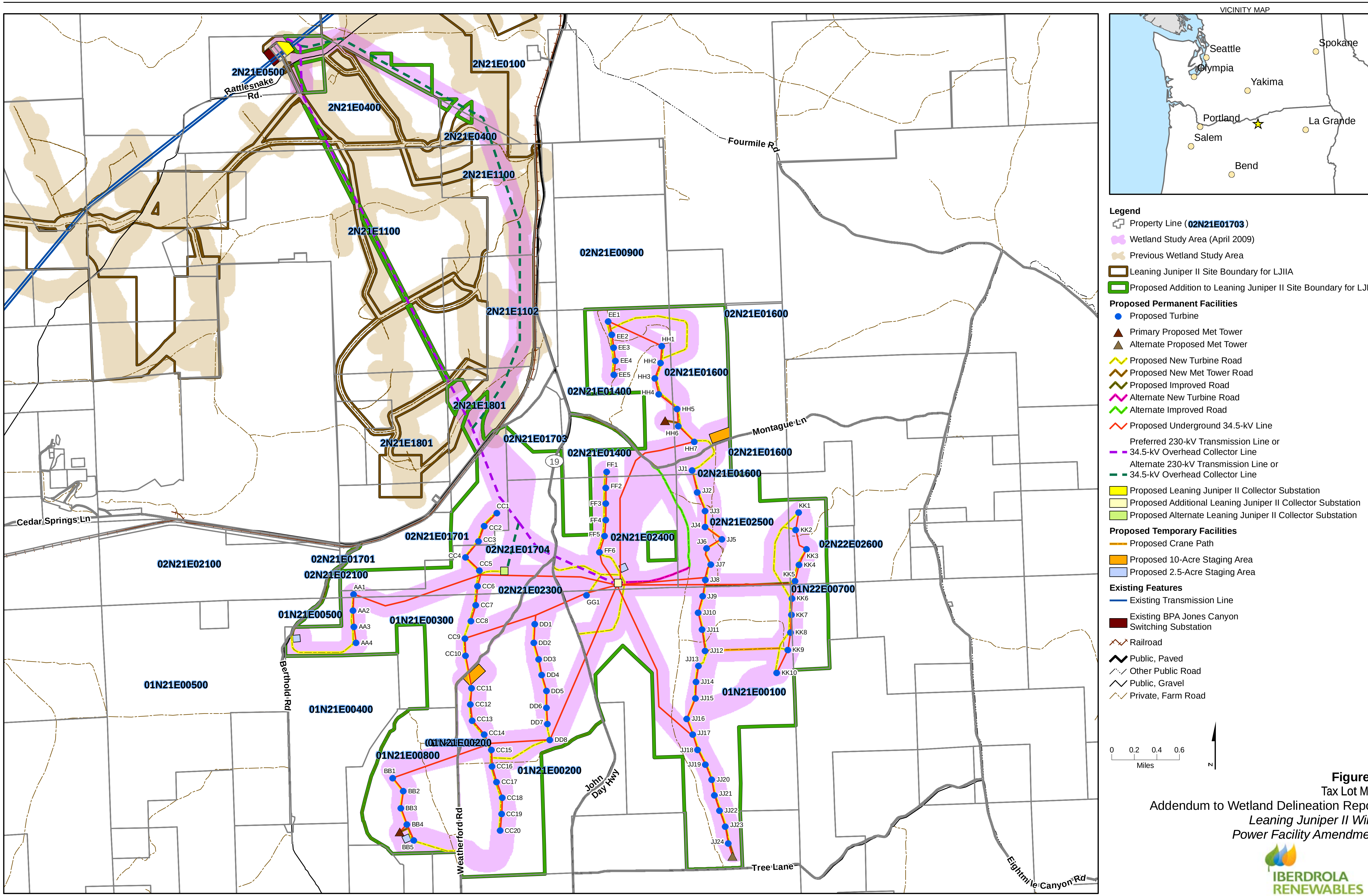

Figure 2
Tax Lot Map
Addendum to Wetland Delineation Report
Leaning Juniper II Wind Power Facility Amendment

IBERDROLA RENEWABLES

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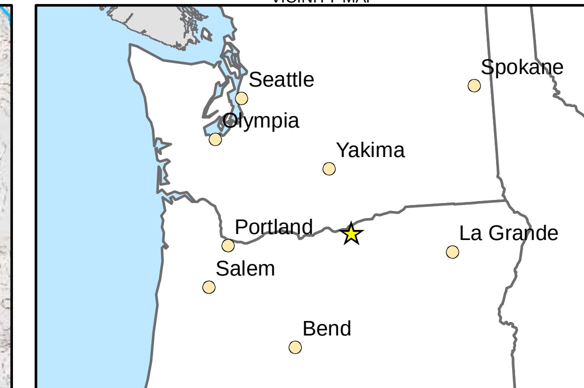
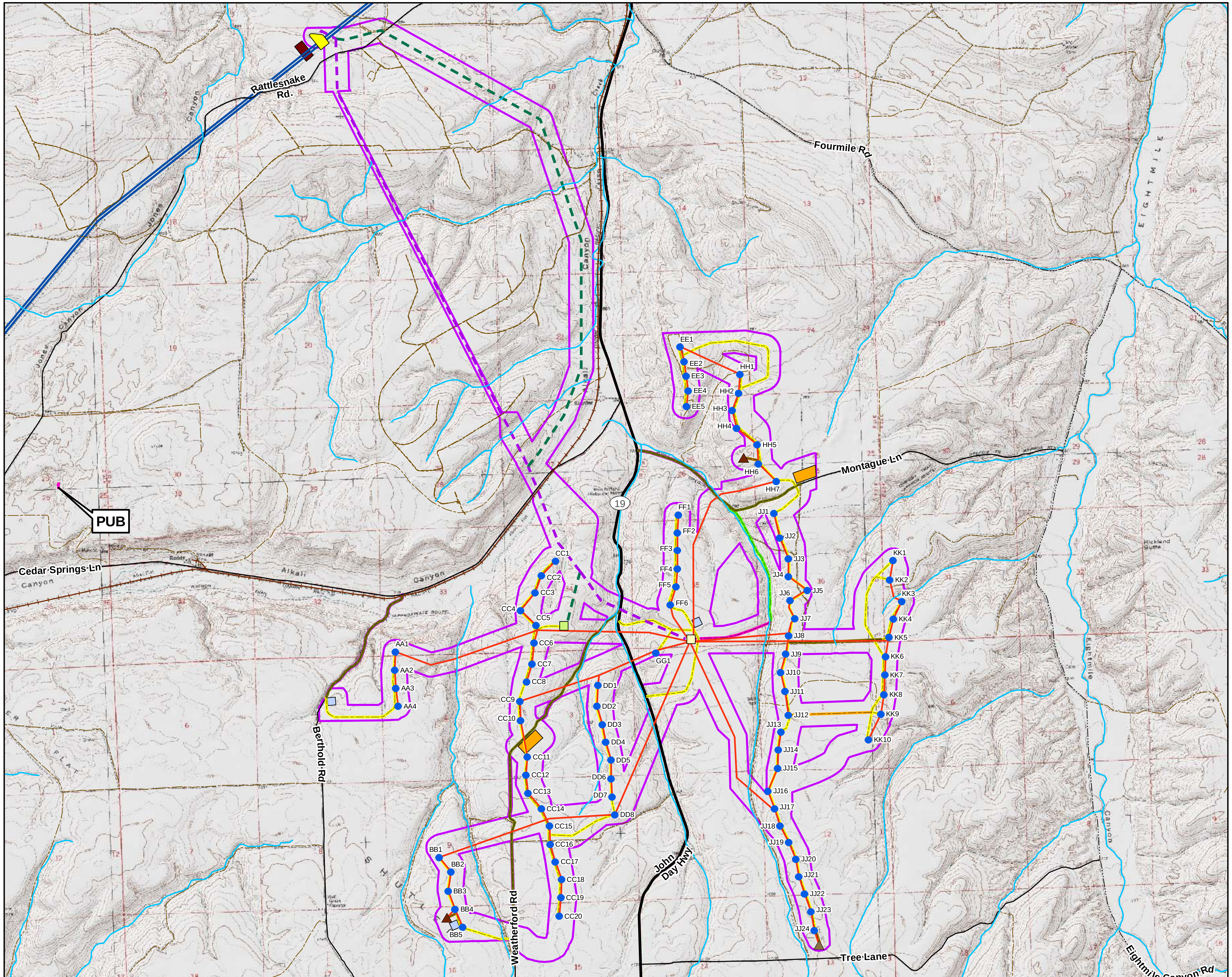
VICINITY MAP





Legend

- NWI Wetland [1]
- Wetland Study Corridor (April 2009)

Proposed Permanent Facilities

- Proposed Turbine
- Primary Proposed Met Tower
- Alternate Proposed Met Tower
- Proposed New Turbine Road
- Proposed New Met Tower Road
- Proposed Improved Road
- Alternate New Turbine Road
- Alternate Improved Road
- Proposed Underground 34.5-kV Line
- Proposed Leaning Juniper II Collector Substation
- Proposed Additional Leaning Juniper II Collector Substation
- Proposed Alternate Leaning Juniper II Collector Substation
- Preferred 230-kV Transmission Line or 34.5-kV Overhead Collector Line
- Alternate 230-kV Transmission Line or 34.5-kV Overhead Collector Line

Proposed Temporary Facilities

- Proposed Crane Path
- Proposed 10-Acre Staging Area
- Proposed 2.5-Acre Staging Area

Existing Features

- Existing Transmission Line
- Existing BPA Jones Canyon Switching Substation
- Stream[2]
- Railroad
- Public, Paved
- Other Public Road
- Public, Gravel
- Private, Farm Road

Sources:
1. USFWS National Wetlands Inventory.
2. USGS/EPA NHD (National Hydrography Dataset)

0 0.2 0.4 0.6
Miles

N

Figure 3
National Wetlands Inventory Map
Leaning Juniper II Wind Power Facility Amendment
Addendum to Wetland Delineation Report

IBERDROLA RENEWABLES

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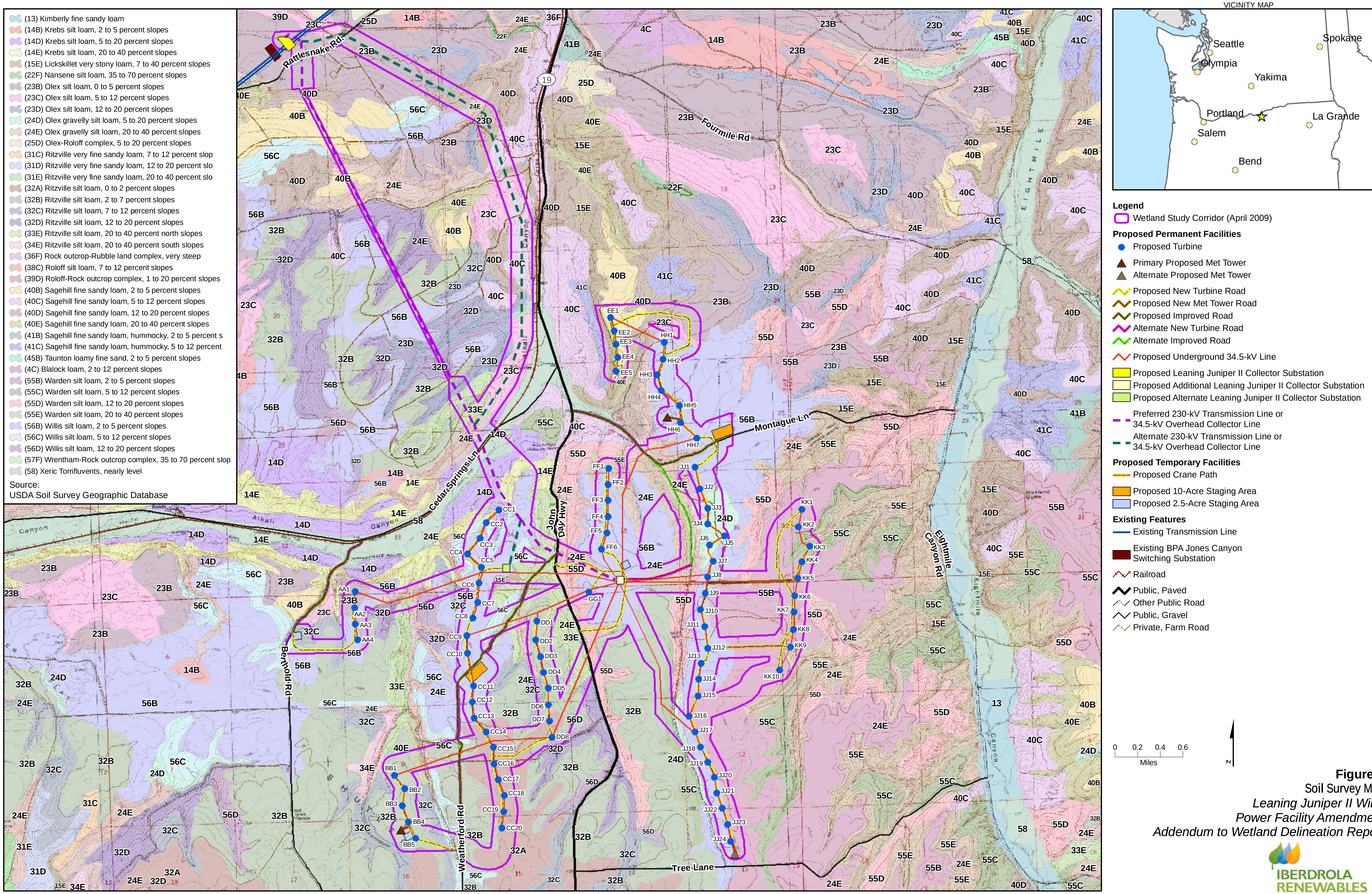

Figure 4
Soil Survey Map
Leaning Juniper II Wind Power Facility Amendment
Addendum to Wetland Delineation Report

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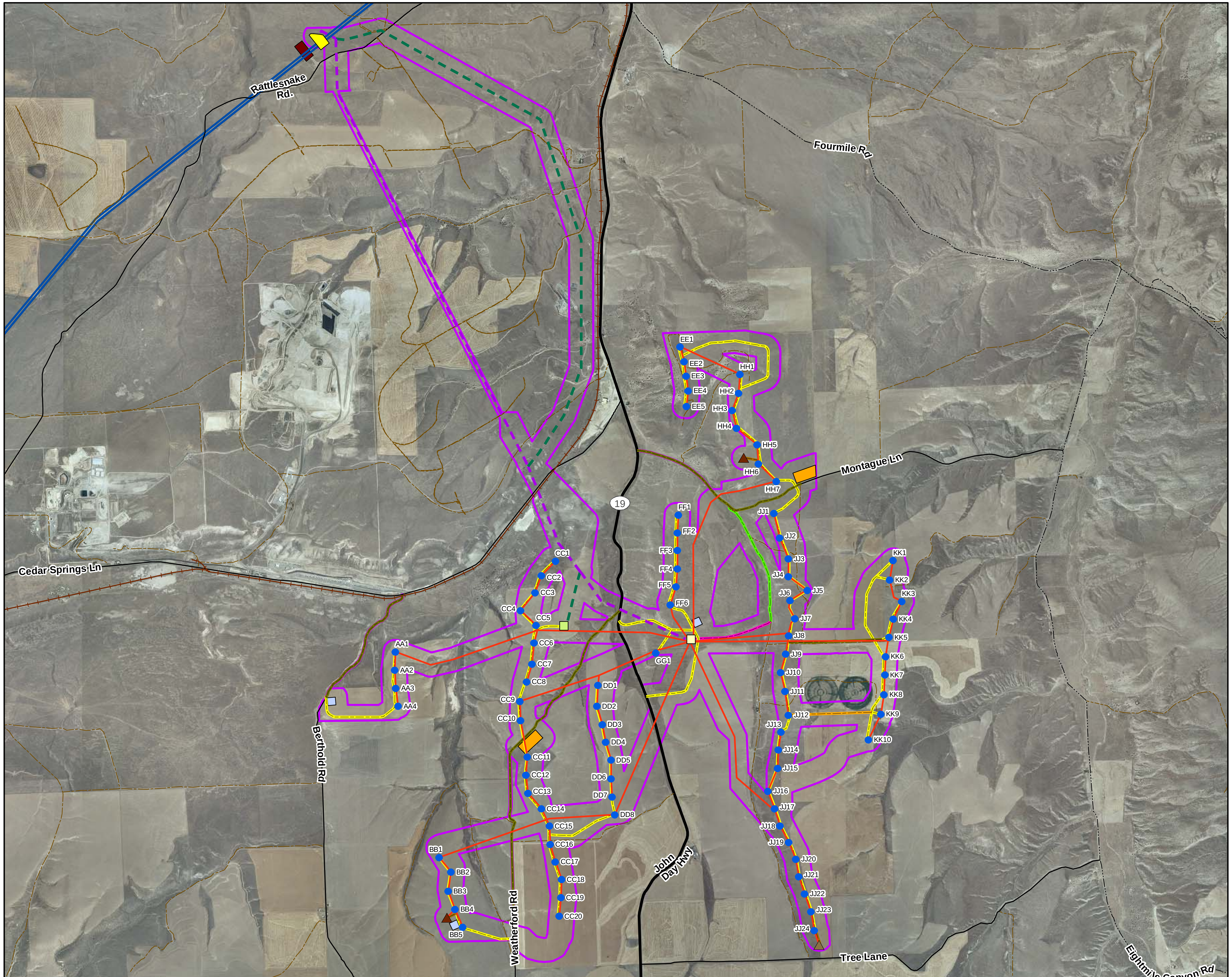

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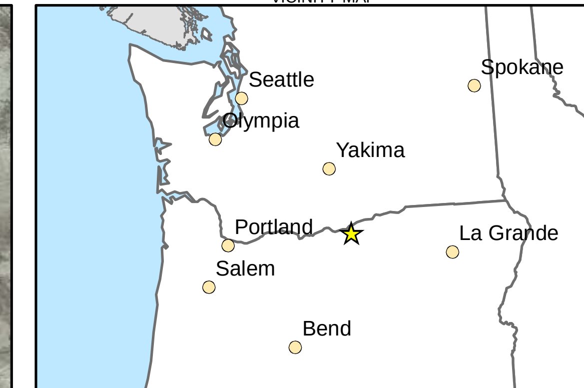

Legend

- Wetland Study Corridor (April 2009)

Proposed Permanent Facilities

- Proposed Turbine
- Primary Proposed Met Tower
- Alternate Proposed Met Tower
- Proposed New Turbine Road
- Proposed New Met Tower Road
- Proposed Improved Road
- Alternate New Turbine Road
- Alternate Improved Road
- Proposed Underground 34.5-kV Line
- Preferred 230-kV Transmission Line or 34.5-kV Overhead Collector Line
- Alternate 230-kV Transmission Line or 34.5-kV Overhead Collector Line
- Proposed Leaning Juniper II Collector Substation
- Proposed Additional Leaning Juniper II Collector Substation
- Proposed Alternate Leaning Juniper II Collector Substation

Proposed Temporary Facilities

- Proposed Crane Path
- Proposed 10-Acre Staging Area
- Proposed 2.5-Acre Staging Area

Existing Features

- Existing Transmission Line
- Existing BPA Jones Canyon Switching Substation
- Railroad
- Public, Paved
- Other Public Road
- Public, Gravel
- Private, Farm Road

Sources:
1. Aerial photograph: 2005 USDA

0 0.2 0.4 0.6
Miles

N

Figure 5
Aerial Photograph Map
Leaning Juniper II Wind Power Facility Amendment
Addendum to Wetland Delineation Report

IBERDROLA RENEWABLES

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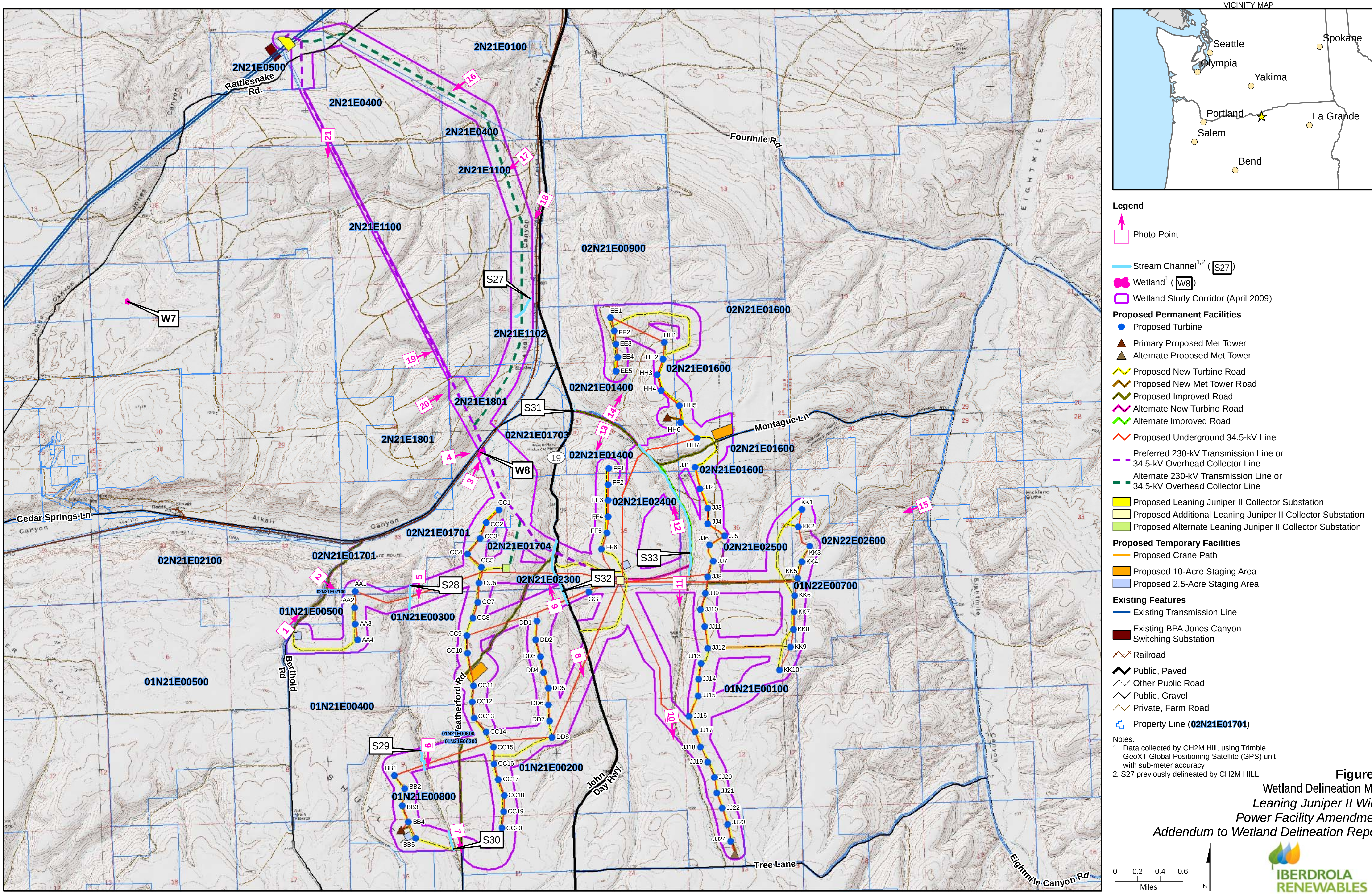
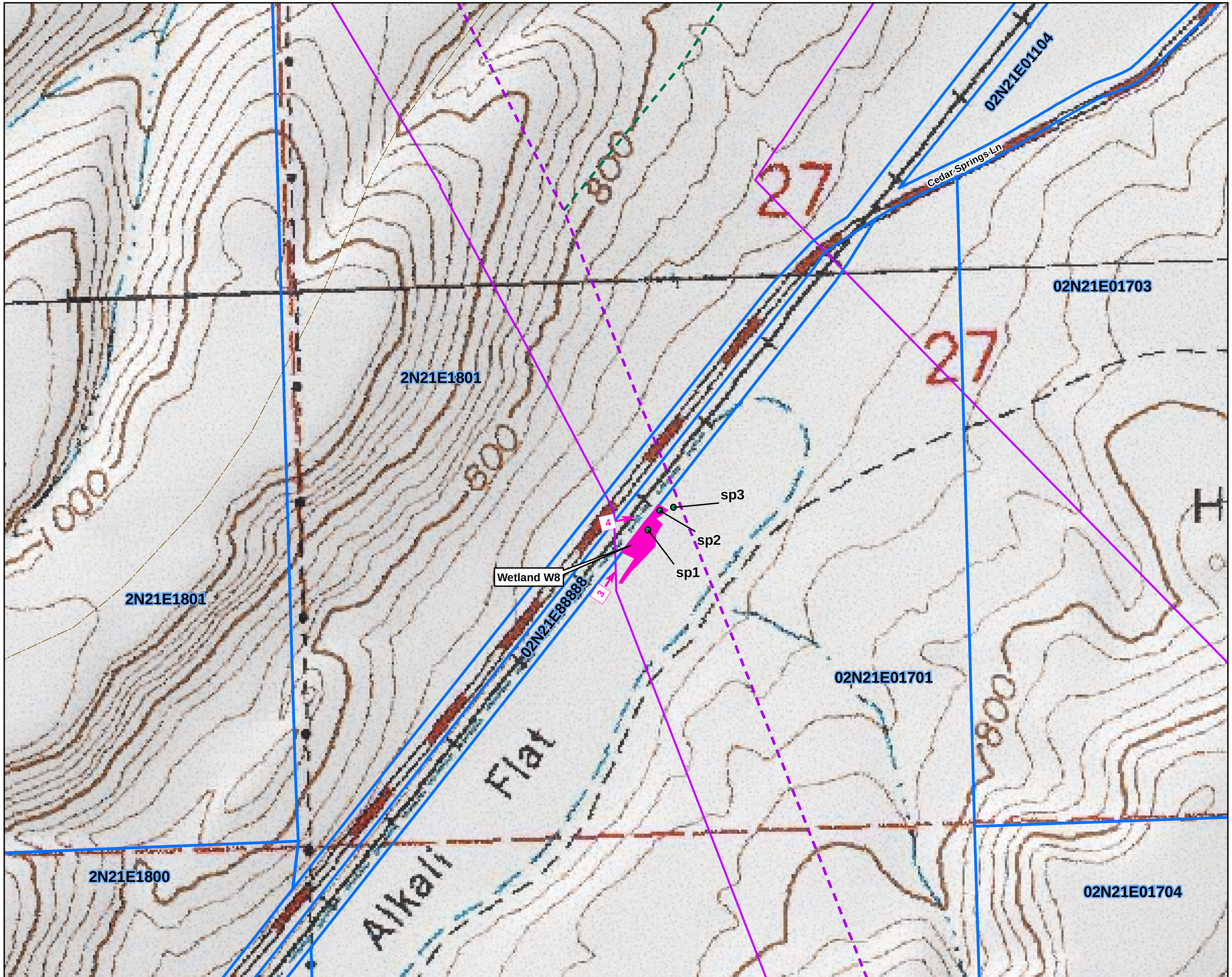
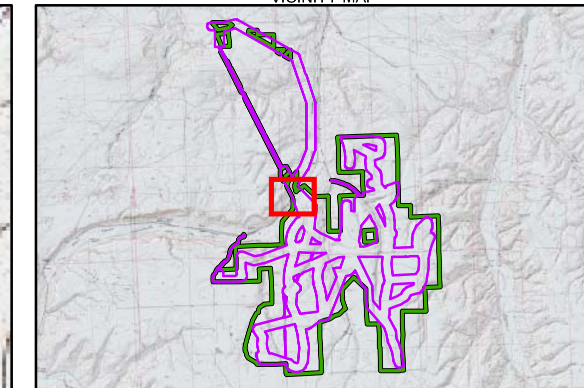


Figure 6
Wetland Delineation Map
Leaning Juniper II Wind Power Facility Amendment
Addendum to Wetland Delineation Report

IBERDROLA RENEWABLES



VICINITY MAP



Legend

Photo Point

Wetland Sample Plots[1]

Wetland Study Corridor (April 2009)

Wetland W8[1] (W8)

Property Line (02N21E01701)

Proposed Permanent Facilities

Preferred 230-kV Transmission Line or 34.5-kV Overhead Collector Line

Alternate 230-kV Transmission Line or 34.5-kV Overhead Collector Line

Existing Facilities

Public, Paved

Private, Farm Road

Notes:
1. Data collected by CH2M Hill, using Trimble GeoXT Global Positioning Satellite (GPS) unit with sub-meter accuracy

Figure 6a
Wetland W8
Leaning Juniper II Wind Power Facility Amendment
Addendum to Wetland Delineation Report

IBERDROLA RENEWABLES

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APPENDIX B

Wetland Sample Plot Data Sheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Leaning Juniper IIB City/County: Gilliam Sampling Date: 4/1/09

Applicant/Owner: Leaning Juniper Wind Power II, LLC State: Oregon Sampling Point: W1 SP1

Investigator(s): Joel Shaich/Renée Storey Section, Township, Range: T2N R21E S27

Landform (hillslope, terrace, etc.): alkaline flat Local relief (concave, convex, none): concave Slope (%): near 0

Subregion (LRR): Columbia/Snake River Plateau (LRR B) Lat: 45.62212372 Long: -120.1796188 Datum: WGS 84

Soil Map Unit Name: Xeric Torrifluvents (58) NWI classification: PUB

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

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

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

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

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

Remarks: Alkaline flats/playas are problematic wetland types. Hydrology can vary greatly seasonally and year-to-year and wet/dry cycles can occur over many years. Varying hydroperiods can allow upland vegetation to colonize sites during seasonal or longer-term dry periods. Alkaline soils can limit the plant species that can grow and/or encourage the growth of halophytic hydrophytes that may or may not be present due to wetland hydrology.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 30 foot radius)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 foot radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: Tree and shrub plot sizes were adjusted due to narrow width of alkaline flat at this location

SOIL

Sampling Point: W1 SP1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 to 16	10 YR 3/2	100					silt loam	upper 4 inches moist to saturated

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

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks: Soil PH not tested

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes X No ______ Depth (inches): 1 inch

Water Table Present? Yes ______ No X Depth (inches): > 16 inches

Saturation Present? (includes capillary fringe) Yes X No ______ Depth (inches): 0 to 4 inches

Wetland Hydrology Present? Yes X No ______

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

USDA 2005 aerial shows gray area indicating past ponding at this location

Remarks:

algal deposits.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Leaning Juniper IIB City/County: Gilliam Sampling Date: 4/1/09

Applicant/Owner: Leaning Juniper Wind Power II, LLC State: Oregon Sampling Point: W1 SP2

Investigator(s): Joel Shaich/Renée Storey Section, Township, Range: T2N R21E S27

Landform (hillslope, terrace, etc.): alkaline flat Local relief (concave, convex, none): concave Slope (%): near 0

Subregion (LRR): Columbia/Snake River Plateau (LRR B) Lat: 45.62232971 Long: -120.1794281 Datum: WGS 84

Soil Map Unit Name: Xeric Torrifluvents (58) NWI classification: PUB

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

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

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

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

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

Remarks: Alkaline flats/playas are problematic wetland types. Hydrology can vary greatly seasonally and year-to-year and wet/dry cycles can occur over many years. Varying hydroperiods can allow upland vegetation to colonize sites during seasonal or longer-term dry periods. Alkaline soils can limit the plant species that can grow and/or encourage the growth of halophytic hydrophytes that may or may not be present due to wetland hydrology.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 20 x 60 feet)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 20 x 60 feet)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 foot radius)			
1. *Blepharipappus scaber*	10	X	NOL
2. *Poa bulbosa*	T		NOL
3.			
4.			
5.			
6.			
7.			
8.			
	10 = Total Cover		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 90 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Tree and shrub plot sizes were adjusted due to narrow width of alkaline flat at this location

SOIL

Sampling Point: W1 SP2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 to 16	10 YR 3/2	100					silt loam	upper ½ inch dry

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

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ______ No X

Remarks: Soil PH not tested

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water Table Present? Yes ______ No X Depth (inches): >16 inches

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): >16 inches

Wetland Hydrology Present? Yes X No ______

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

USDA 2005 aerial shows gray area indicating past ponding at this location

Remarks:

Mostly bare soil. Adjacent area has ponded water and algal deposits.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Leaning Juniper IIB City/County: Gilliam Sampling Date: 4/1/09

Applicant/Owner: Leaning Juniper Wind Power II, LLC State: Oregon Sampling Point: W1 SP3

Investigator(s): Joel Shaich/Renée Storey Section, Township, Range: T2N R21E S27

Landform (hillslope, terrace, etc.): toe slope Local relief (concave, convex, none): none Slope (%): near 0

Subregion (LRR): Columbia/Snake River Plateau (LRR B) Lat: 45.62236023 Long: -120.1792145 Datum: WGS 84

Soil Map Unit Name: Xeric Torrifluvents (58) NWI classification: ______

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

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

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

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

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

Remarks:

Plot just outside alkaline flat.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 20 x 60 feet)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Juniperus occidentalis*	T	X	NOL
2.			
3.			
4.			
	T = Total Cover		
Sapling/Shrub Stratum (Plot size: 20 x 60 feet)			
1. *Artemisia tridentata*	10	X	NOL
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: 5 foot radius)			
1. *Poa bulbosa*	60	X	NOL
2. *Idahoa scapigera*	20	X	NOL
3.			
4.			
5.			
6.			
7.			
8.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: ______)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: Tree and shrub plot sizes were adjusted to document plant community on toe slope

SOIL

Sampling Point: W1 SP3

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

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

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

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): ______
Water Table Present? Yes ______ No X Depth (inches): >16 inches
Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): >16 inches

Wetland Hydrology Present? Yes ______ No X

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

Remarks:

APPENDIX C

Ground Photographs

Photo 1: Upland vegetated swale looking downslope (north) along Berthold Road. 4/1/09.

Photo 2: Upland vegetated swale looking upslope (southeast) from Berthold Road. 4/1/09.

Photo 3: Wetland W8, sample plot SP1, looking northeast. 4/1/09.

Photo 4: Wetland W8, sample plot SP2, looking northeast. 4/1/09.

Photo 5: Unnamed ephemeral channel S28 looking upstream (south). 4/2/09.

Photo 6: Unnamed ephemeral channel S29 looking upstream (south). 4/1/09.

Photo 7: Unnamed ephemeral channel S30 looking upstream (south). 4/1/09.

Photo 8: West Fork Shutler Creek (upland vegetated swale) looking upstream (south). 4/1/09.

Photo 9: West Fork Shutler Creek (ephemeral channel S32) looking downstream (north). 4/1/09.

Photo 10: East Fork Shutler Creek (upland vegetated swale) looking upstream (south). 4/1/09.

Photo 11: East Fork Shutler Creek (upland vegetated swale) looking upstream (south). 4/1/09.

Photo 12: East Fork Shutler Creek (ephemeral channel S33) looking downstream (north). 4/1/09.

Photo 13: Upland vegetated swale looking upslope (south). 4/2/09.

Photo 14: Upland vegetated swale looking upslope (northeast). 4/2/09.

Photo 15: Upland vegetated swale looking upslope (southwest). 4/2/09.

Photo 16: Upland vegetated swale looking upslope (southwest). 4/2/09.

Photo 17: Upland vegetated swale looking upslope (southwest). 4/2/09.

Photo 18: China Creek (upland vegetated swale) looking upslope (southwest). 4/2/09.

Photo 19: Upland vegetated swale looking downslope (east). 4/2/09.

Photo 20: Upland vegetated swale looking downslope (east). 4/2/09.

P21: Upland vegetated swale looking downslope (south). 4/2/09.

APPENDIX D

Literature Citations

APPENDIX D

Literature Citations

CH2M HILL. 2005. Wetlands and Jurisdictional Waters Determination Report, Leaning Juniper Wind Energy Project, Gilliam County, Oregon.

CH2M HILL. 2006. Addendum: Wetlands and Jurisdictional Waters Determination Report, Leaning Juniper Wind Energy Project, Gilliam County, Oregon.

Environmental Laboratory. 1987. *Corps of Engineers Wetland Delineation Manual*. U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS. Technical Report Y-87-1.

Reed, P.B., Jr. 1988. *National List of Plant Species that Occur in Wetlands: 1988 National Summary.* U.S. Fish and Wildlife Service, Washington, DC. 244 pp.

Reed, Porter B., D. Peters, J. Goudzwaard, I. Lines and F. Weimann. 1993. *Supplement to List of Plants that Occur in Wetlands: Northwest (Region 9).* Supplement to Biological Report 88 (26.9). May 1988.

StreamNet. 2009. http://www.streamnet.org. Pacific States Marine Fisheries Commission. Accessed April 2009.

U.S. Army Corps of Engineers (USACE). 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual:Arid West Region (Version 2.0).* ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

Authorization Letter from U.S. Army Corps of Engineers

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, PORTLAND DISTRICT
POST OFFICE BOX 2946
PORTLAND, OREGON 97208-2946

January 24, 2008

REPLY TO
ATTENTION OF:

Operations Division
Regulatory Branch
Corps No.: NWP-2007-168

Ms. Sara McMahon
PPM Energy, Inc.
1125 NW Couch St.
Portland, Oregon 97209

Dear Ms. McMahon:

The U.S. Army Corps of Engineers (Corps) received your permit application requesting Department of the Army authorization to place fill in two unnamed tributaries to the Columbia River. The project is located in Sections 18 and 27, Township 2 North, Range 21 East, near Arlington, Gilliam County, Oregon.

Crossings would be installed at two intermittent streams. At Stream S8, in Jones Canyon, construction of a ford would impact 250 square feet (less than 0.01 acre) and require the placement of 7 cubic yards (CY) of fill within waters of the United States. At Stream S27, in China Ditch, replacement of an existing 24-inch culvert with a longer culvert of the same diameter would impact 450 square feet and require the placement of 29 CY of fill within waters of the U.S. An underground cable crossing to be constructed at Stream S27 would impact an additional 14 square feet below the Ordinary High Water. The utility line crossing would not change pre-construction contours, and access roads will maintain surface flows. Project details are shown in the enclosed drawings (Enclosure 1).

This letter verifies that your project is authorized under the terms and limitations of Nationwide Permit (NWP) Number 12 (Utility Line Activities). Your activities must be conducted in accordance with the conditions found in the NWP General Conditions (Enclosure 2) and the NWP Regional Conditions (Enclosure 3). You must also comply with the Oregon Department of Environmental Quality (DEQ) General and Activity Specific Conditions (Enclosure 4), and the project specific conditions lettered (a) and (b) below. **Failure to comply with any of the listed conditions could result in the Corps initiating an enforcement action.**

a. Archaeological sites in the project area shall be avoided by clearly marking a 50-foot buffer around each site and ensuring that equipment operators are aware of the need to avoid these areas.

b. You shall notify the Regulatory Branch with the start date when the activities authorized in waters of the U.S. are scheduled to begin. Notification shall be sent by email to cenwp.notify@usace.army.mil or mailed to the following address:

U.S. Army Corps of Engineers
CENWP-OD-GC
Permit Compliance, Gilliam County
P.O. Box 2946
Portland, Oregon 97208-2946

The subject line of the message shall contain the name of the county in which the project is located followed by the Corps of Engineers permit number.

We direct your attention to NWP General Condition 25 that requires the transfer of this permit if the property is sold, and to NWP General Condition 26 that requires you to submit a signed certificate when the work is completed. A "Compliance Certification" is provided (Enclosure 5).

This authorization does not obviate the need to obtain other permits where required. Permits, such as those required from the Oregon Department of State Lands (ODSL) under Oregon's Removal /Fill Law, must also be obtained before work begins.

This verification is valid for a period of two years from the date of this letter unless the NWP expires, is modified, or revoked prior to that date. The nationwide permits are scheduled to expire in March 2012. If you commence or are under contract to commence this activity before the date the NWP expires, is modified, or revoked, you will have 12 months from the date of the modification or revocation to complete the activity under the present terms and conditions of the current NWP.

We would like to hear about your experience working with the Portland District Regulatory Branch. Please complete a customer service survey form at the following address: http://per2.nwp.usace.army.mil/survey.html

If you have any questions regarding this NWP verification, please contact Mr. Mike Turaski at the letterhead address, by telephone at (503) 808-4381 or by email at Michael.R.Turaski@nwp01.usace.army.mil.

Sincerely,

Lawrence C. Evans
Chief, Regulatory Branch

Enclosures

Copy Furnished:

State Historic Preservation Office (Manion)
Oregon Department of State Lands (Jordan)
Oregon Department of Environmental Quality (Cyril)

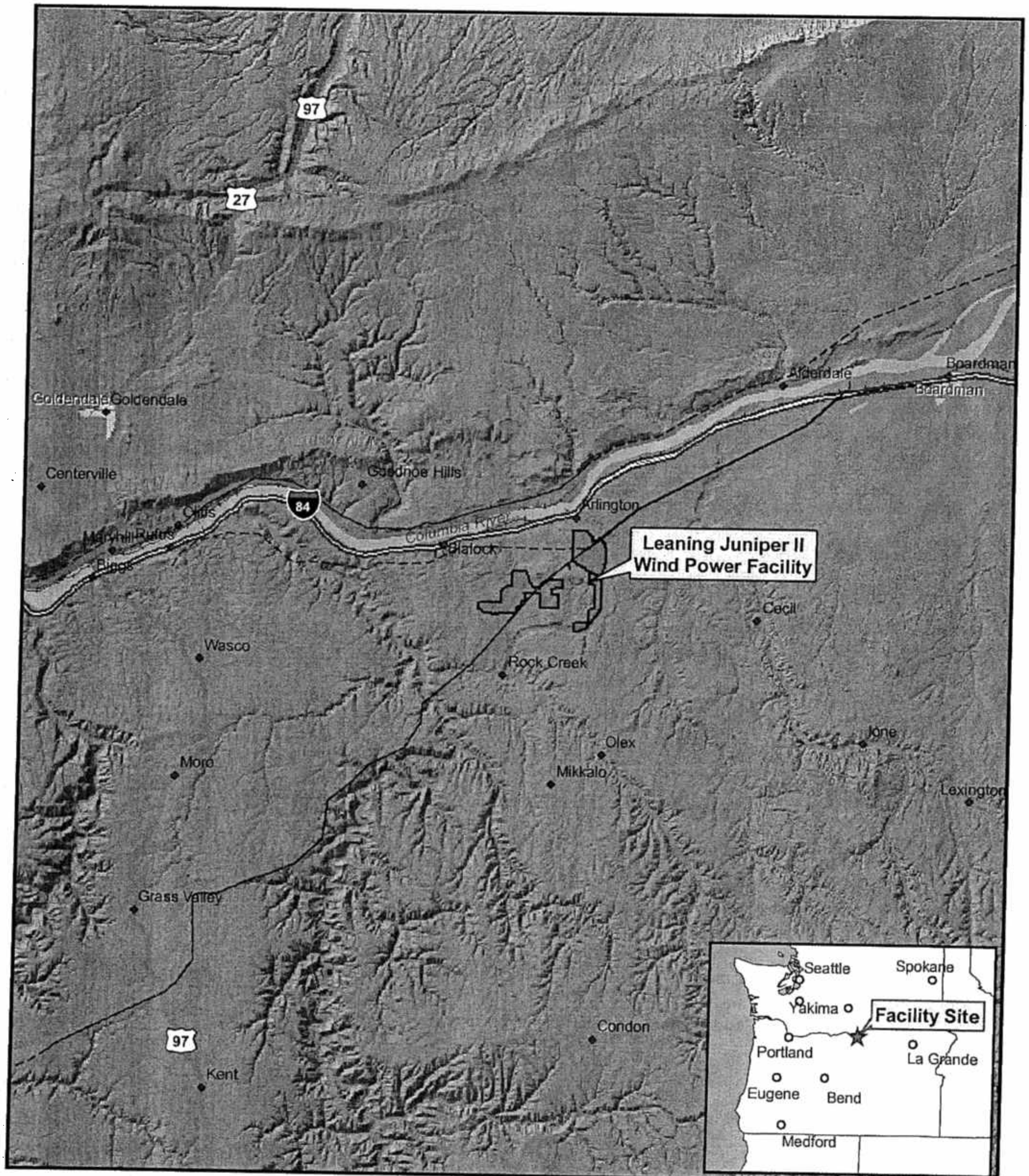


Figure 1

Vicinity Map

Leaning Juniper II
Wind Power Facility

PPM Energy
A ScottishPower Company

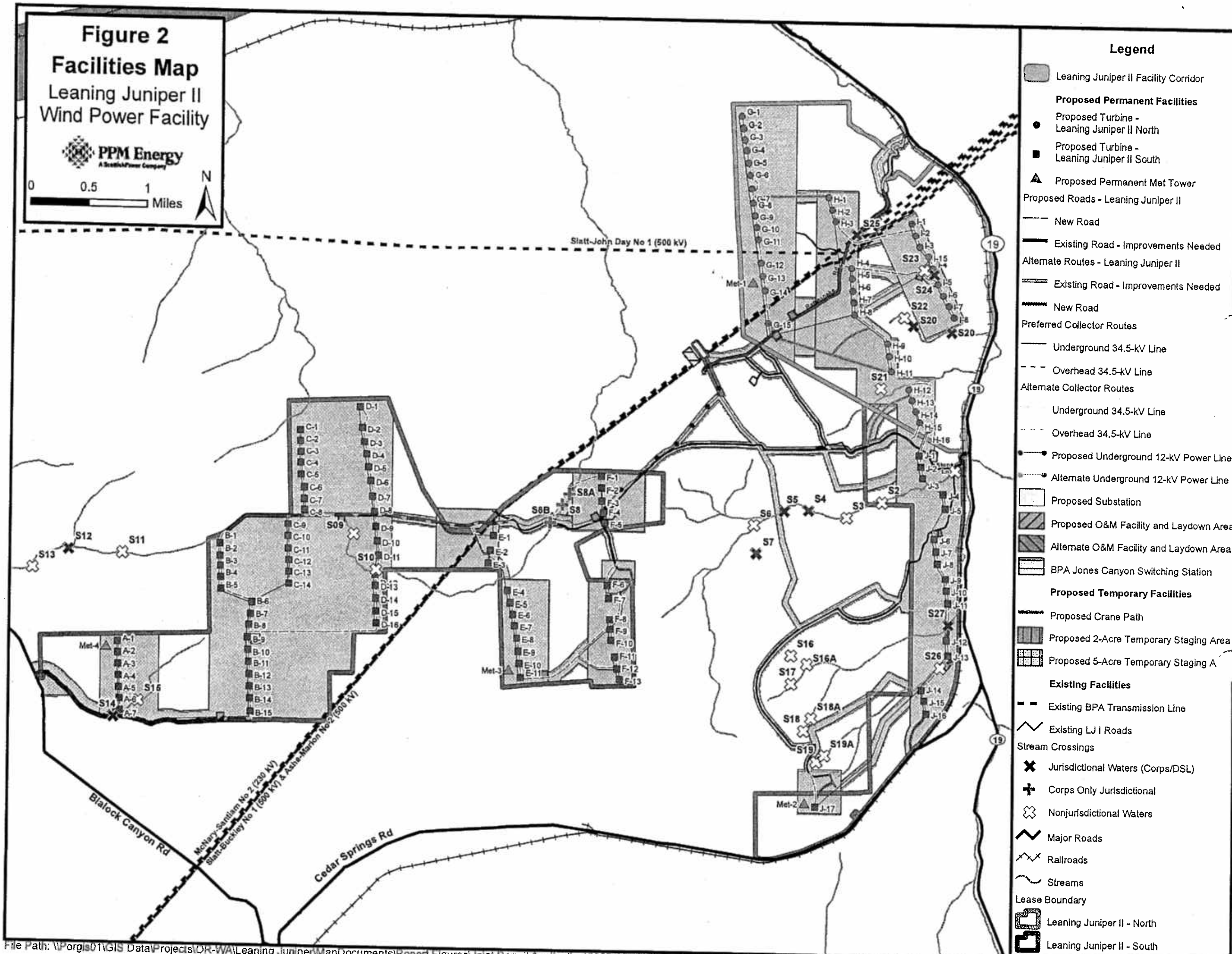
- Cities
- Existing BPA Transmission Line
- Site Boundary

N

0 5 10 15
Miles

File Path: \\Porgis01\GIS Data\Projects\OR-WA\Leaning Juniper\MapDocuments\Report Figures\Joint Permit Application\2006-12-12\Figure 1 - Vicinity Map.mxd, Date: December 12, 2006 11:45:42 AM

ENCLOSURE (1)



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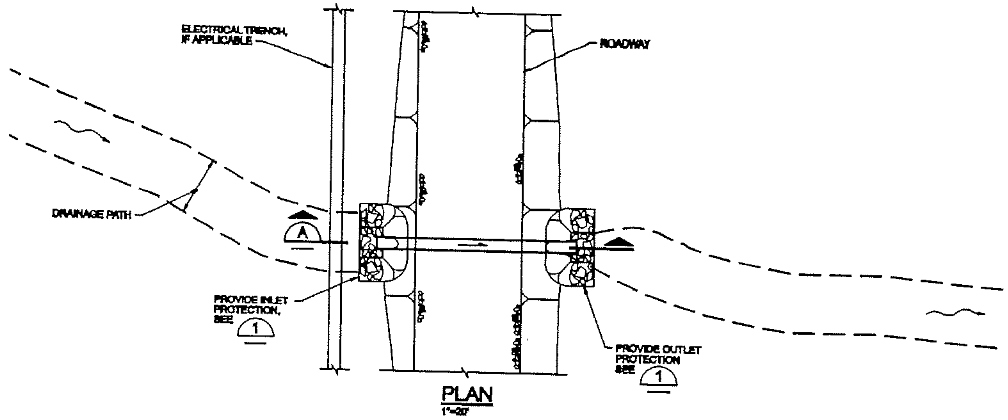
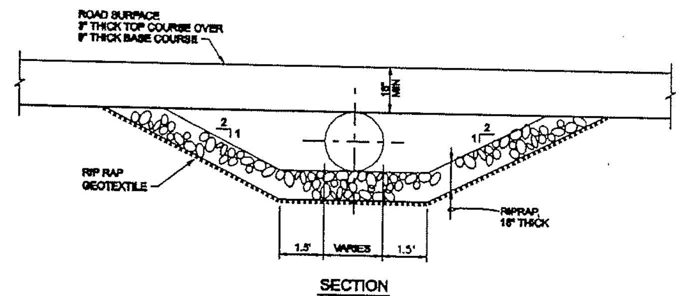
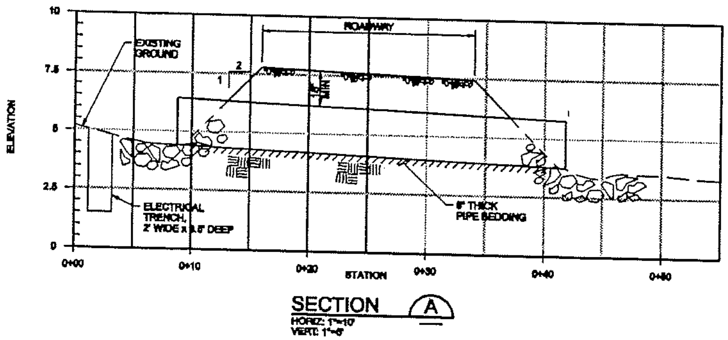
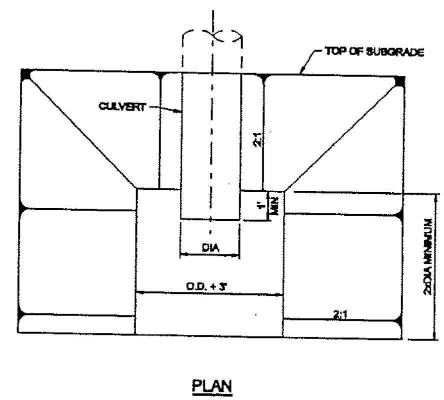








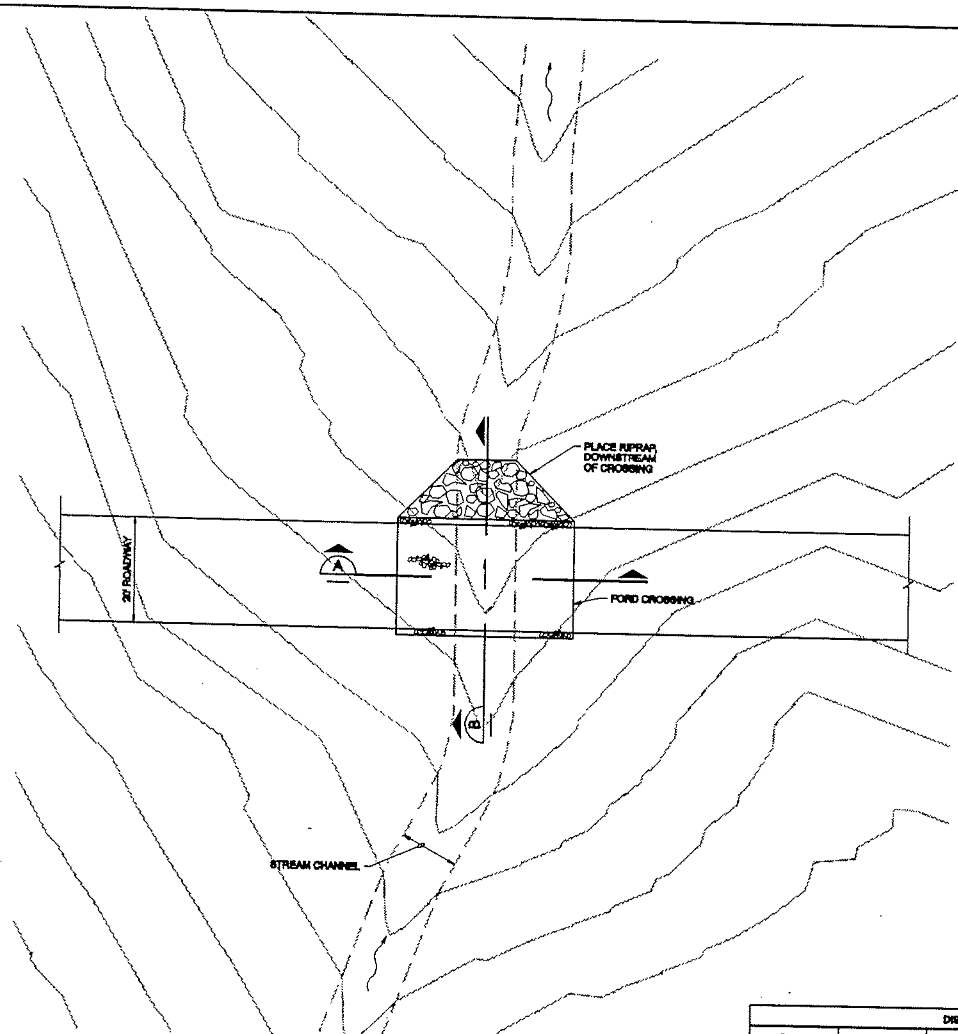
INLET/OUTLET PROTECTION DETAIL 1
1/4"=1'

DISTURBED AREA WITHIN CHANNEL								
CULVERT PLACEMENT:	EXST ROAD WIDTH:	FINISHED ROAD WIDTH:	STREAM CHANNEL WIDTH:	IMPACT AREA WITHIN CHANNEL	REMOVAL (CUT) WITHIN CHANNEL	FILL WITHIN CHANNEL (BELOW OHW)	WETLAND AREA IMPACT	WETLAND VOLUME CUT/ FILL
827	16'	36'	32'	606 S.F.	11.86 C.Y.	26.76 C.Y.	N/A	N/A
ELECTRICAL CROSSING:	TRENCH WIDTH:		STREAM CHANNEL WIDTH:	DISTURBED AREA WITHIN	VOLUME (CUT)	VOLUME (FILL)		
827	2'		7'	14 S.F.	1.8 C.Y.	1.8 C.Y.		

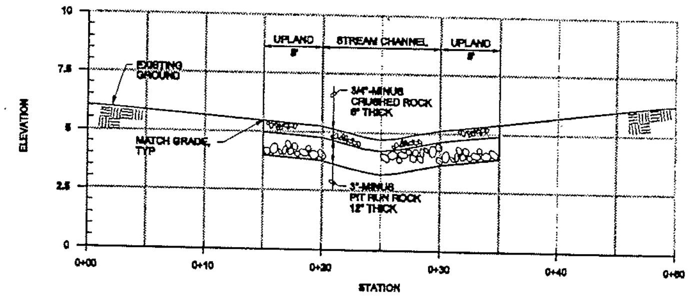
Figure 3A

Typical Culvert Placement
Plan and Cross-Sectional Views
Leaning Juniper II Wind Power Facility

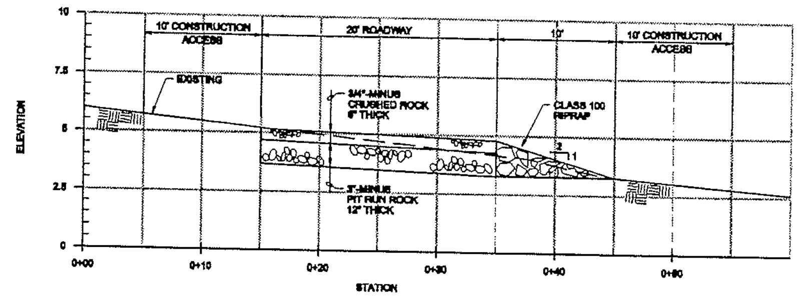
CH2MHILL



PLAN
1"=20'



SECTION A
HORIZ: 1"=10'
VERT: 1"=5'



SECTION B
HORIZ: 1"=10'
VERT: 1"=5'

DISTURBED AREA WITHIN CHANNEL					
FORD CROSSING:	ROAD WIDTH:	STREAM CHANNEL WIDTH:	IMPACT AREA WITHIN CHANNEL	VOLUME (CUT)	VOLUME (FILL)
86A	20'	5'	250 S.F.	7 C.Y.	7 C.Y.

Figure 3B

Typical Stream Crossing
Plan and Cross-Sectional Views
Leaning Juniper II Wind Power Facility

\LEANING JUNIPER\ Crossing_160506.dgn 4/4/2007 12:28:15 PM

CH2MHILL

US Army Corps of Engineers
Portland District

Nationwide (NWP) Permit Conditions

33 CFR Part 330;
Issuance of Nationwide Permits – March 12, 2007

C. General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as appropriate, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of the Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for any NWP.

1. ***Navigation.***

(a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittees' expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure of work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. ***Aquatic Life Movements.*** No activity may substantially disrupt the necessary life cycle of movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.

3. ***Spawning Areas.*** Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. ***Migratory Bird Breeding Areas:*** Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. ***Shellfish Beds.*** No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP's 4 and 48.

6. ***Suitable Material.*** No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. ***Water Supply Intakes.*** No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. ***Adverse Effects From Impoundments.*** If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting it flows must be minimized to the maximum extent practicable.

9. ***Management of Water Flows.*** To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and stormwater management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters, if it benefits the aquatic environment (e.g., stream restoration or relocation activities.)

10. ***Fills Within 100-Year Floodplains.*** The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. ***Equipment.*** Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. ***Soil Erosion and Sediment Controls.*** Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. ***Removal of Temporary Fills.*** Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. ***Proper Maintenance.*** Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety.

15. ***Wild and Scenic Rivers.*** No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g. National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service.)

16. ***Tribal Rights.*** No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

17. ***Endangered Species.***

(a) No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements.

(c) Non-federal permittees shall notify the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the FWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their World Wide Web pages at http://www/fws.gov/ and http://www.noaa.gov/fisheries.html respectively.

18. ***Historic Properties.***

(a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Office or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR.4 (g)). The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NPHA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3 (a)). If NHPA Section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed.

(e) Prospective permittees should be aware that Section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify ACHP and provide documentation specifying the circumstances, explaining the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

19. *Designated Critical Resource Waters.* Critical resource waters include, NOAA-designated marine sanctuaries, National Estuarine Research Reserves, state natural heritage sites, and outstanding national resource waters or other waters officially designated by a state as having particular environmental or ecological significance and identified by the district engineer after notice and opportunity for public comment. The district engineer may also designate additional critical resource waters after notice and opportunity for comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, and 50 for any activity within, or directly affecting critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with General Condition 27, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

20. *Mitigation.* The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that some other form of mitigation would be environmentally appropriate and provides a project-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream restoration, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee arrangements or separate activity-specific compensatory mitigation. In all cases, the mitigation provisions will specify the party responsible for accomplishing and/or complying with the mitigation plan.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

21. ***Water Quality.*** Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see CFR 330.4 (c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

22. ***Coastal Zone Management.*** In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4 (d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

23. ***Regional and Case-By-Case Conditions.*** The activity must comply with any regional conditions that may have been added by the Division Engineer (see CFR 330.4(e)) and with any case-specific conditions added by the Corps or by the state, Indian Tribe, or EPA in its Section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

24. ***Use of Multiple Nationwide Permits.*** The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

25. ***Transfer of Nationwide Permit Verifications.*** If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

____
(Transferee)

____
(Date)

26. ***Compliance Certification.*** Each permittee who received an NWP verification from the Corps must submit a signed certification regarding the completed work and any required mitigation. The certification form must be forwarded by the Corps with the NWP verification letter and will include:

(a) A statement that the authorized work was done in accordance with the NWP authorization, including any general or specific conditions;

(b) A statement that any required mitigation was completed in accordance with the permit conditions; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

27. ***Pre-Construction Notification.***

(a) *Timing.* Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the receipt and, as a general rule, will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity:

(1) Until notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) If 45 calendar days have passed from the district's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to General Condition 17 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to General Condition 18 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see CFR 330.4(g)) is completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee cannot begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d))(2).

(b) *Contents of Pre-Construction Notification*: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided result in a quicker decision);

(4) The PCN must include a delineation of special aquatic sites and other waters of the United States on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters of the United States, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45-day period will not start until the delineation has been submitted to or completed by the Corps, where appropriate;

(5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) *Form of Pre-Construction Notification:* The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) *Agency Coordination:*

(1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP 48 activities requiring pre-construction notification and for other NWP activities requiring pre-construction notification and for other NWP activities requiring pre-construction notification to the district engineer that result in the loss of greater than 1/2-acre of waters of the United States, the district engineer will immediately provide (e.g., via facsimile transmission, overnight mail, or other expeditious manner) a copy of the PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will then have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer that they intend to provide substantive, site-specific comments. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame, but will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps multiple copies of pre-construction notifications to expedite agency coordination.

(5) For NWP 48 activities that require reporting, the district engineer will provide a copy of each report within 10 calendar days of receipt to the appropriate regional office of the NMFS.

(e) *District Engineer's Decision*: In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for projects with smaller impacts. The district engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed work are minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environmental are minimal, after considering mitigation, the district engineer will notify the permittee and include any conditions the district engineer deems necessary. The district engineer must approve any compensatory mitigation proposal before the permittee commences work. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP.

If the district engineer determines that the adverse effects of the proposed work are more than minimal, then the district engineer will notify the applicant either:

(1) That the project does not qualify for authorization under NWP and instruct the applicant on the procedures to seek authorization under an individual permit;

(2) that the project is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level; or

(3) that the project is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period. The authorization will include the necessary conceptual or specific mitigation or a requirement that the applicant submit a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level. When mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan.

28. ***Single and Complete Project:*** The activity must be a single and complete project. The same NWP cannot be used more than once for the single and complete project.

US Army Corps of Engineers
Portland District

Nationwide (NWP) Regional Permit Conditions Portland District

The following Nationwide Permit (NWP) regional conditions are for the Portland District Regulatory Branch boundary. Regional conditions are placed on NWPs to ensure projects result in less than minimal adverse impacts to the aquatic environment and to address local resource concerns.

ALL NWPs –

1. **High Value Aquatic Resources:** Except for NWPs 3, 20, 27, 32, 38, 47 and 48, any activity that would result in a loss of waters of the United States (U.S.) in a high value aquatic resource is not authorized by NWP. High value aquatic resources in Oregon include bogs, fens, wetlands in dunal systems along the Oregon coast, eel grass beds, vernal pools, aspen-dominated wetlands, alkali wetlands, and Willamette Valley wet prairie wetlands.

    Ø Willamette Valley wet prairie wetlands are characterized by high species diversity with a dominance of cespitose graminoids such as tufted hairgrass (*Deschampsia caespitosa*). Plant species associated with Willamette Valley wet prairie wetlands may also include ESA-listed plants such as Bradshaw's lomatium (*Lomatium bradshawii*), Willamette daisy (*Erigeron decumbens* var. *decumbens*), Nelson's checkermallow (*Sidalcea nelsoniana*) and rough popcorn flower (*Plagiobothrys hirtus*). Soil series associated with Willamette Valley wet prairie wetlands may include, but are not limited to, the Dayton, Amity, Bashaw, Natroy, and Waldo series.

2. **In-water Work Window:** All in-water work shall be conducted during the listed in-water work window, as applicable (Refer to Oregon Department of Fish and Wildlife (ODFW) "Oregon Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources" http://www.dfw.state.or.us/lands/inwater/inwater_guide.pdf).

3. **Cultural Resources and Human Burials:** Permittees shall immediately notify the Portland District Regulatory Branch if at any time during the course of the work authorized, human burials, cultural resources, or historic properties, as identified by the National Historic Preservation Act, may be affected (Refer to General Condition 18). Notification shall be by fax (503-808-4375) within 24 hours of the discovery and in writing within 48 hours. Failure to stop work in the area of exposure until such time as the Corps has complied with the provisions of 33 CFR 325, Appendix C, the National Historic Preservation Act and other pertinent regulations, could result in violation of state and federal laws. Violators are subject to civil and criminal penalties.

4. **Erosion Control:** During construction, permittee shall ensure that all practicable erosion and sediment control measures are installed and maintained in good working order to prevent unauthorized discharge of materials carried by precipitation, snow melt, wind or any other conveyance mechanism into any waterways and wetlands. The permittee is referred to Oregon Department of Environmental Quality's (DEQ) *Oregon Sediment and Erosion Control Manual*, April 2005, for proper implementation of practicable sediment and erosion control measures.

5. **Heavy Equipment:** Permittee shall ensure that all heavy equipment is operated from the bank and not placed in the stream unless specifically authorized by the District Engineer. Heavy equipment working in waters of the U.S. shall be placed on removable mats or pads. Following the removal of the mats or pads, the area shall be restored to pre-project conditions.

6. **Deleterious Waste:** All discharge water created during construction (e.g. concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids, etc.) shall be treated to remove debris, sediment, petroleum products, metals, and other pollutants likely to be present.

7. **Fish Passage:** The permittee shall ensure activities authorized by nationwide permit will not restrict passage of aquatic life. Activities such as the installation of culverts, intake structures, diversion structures, or other modifications to channel morphology, must be designed to be consistent with fish passage standards developed by the Oregon Department of Fish and Wildlife (ODFW) and the National Marine Fisheries Service (NMFS). The standards can be found at OAR 635-412-0035. The streambed shall be returned to pre-construction contours after construction unless the purpose of the activity is to eliminate a fish barrier.

8. **Fish Screening:** The permittee shall ensure that all intake pipes utilize fish screening that complies with standards developed by NMFS (Juvenile Fish Screen Criteria (revised February 16, 1995) and Addendum: Juvenile Fish Screen Criteria for Pump Intakes (May 9, 1996)).

9. **Upland Disposal:** Material disposed of in uplands shall be placed in a location and manner that prevents discharge of the material and/or return water into waterways or wetlands unless otherwise authorized by the Corps of Engineers (such as by NWP 16).

10. **Inspection of the Project Site:** The permittee shall allow representatives of the Corps to inspect the authorized activity to confirm compliance with nationwide permit terms and conditions. A request for access to the site will normally be made sufficiently in advance to allow a property owner or representative to be on site with the agency representative making the inspection.

11. **Sale of Property/Transfer of Permit:** The permittee shall obtain the signature(s) of the new owner(s) and transfer this permit in the event the permittee sells the property associated with this permit. To validate the transfer of this permit authorization, a copy of this permit with the new owner(s) signature shall be sent to the Portland District office at the following address: U.S. Army Corps of Engineers, CENWP-OD-G, P.O. Box 2946, Portland, Oregon, 97208-2946.

12. **Activity Specific Conditions:**

<u>NWP 12 – Utility Line Activities</u>

1. The permittee shall ensure that utility lines buried within or adjacent to wetland areas utilize trench-blockers of a type and design sufficient to prevent the drainage of the wetland areas (e.g. bentonite clay plugs, compacted sand bags, etc.).
2. The upper 12 inches of topsoil must be removed and stockpiled separately from subsurface soils and shall be used as the final layer in backfilling the trench.

Appendix

General Conditions

In addition to all USACE permit conditions, the following 401 WQC conditions apply to all NWP categories certified or partially certified by this 401 WQC, unless specified in the condition. Additional 401 WQC Category Specific Conditions follow, which must also be complied with as applicable.

1) **Turbidity:** All practical Best Management Practices (BMPs) on disturbed banks and within the stream shall be implemented to minimize turbidity during in-water work. OAR 340-041-0036 states that turbidity shall not exceed 10% above natural stream turbidities, except where allowed by the rule. This rule also states that limited duration activities necessary to accommodate essential dredging, construction or other legitimate activities and which cause the turbidity standard to be exceeded may be authorized provided all practical turbidity control techniques have been applied and a section 401 water quality certificate has been granted.

   a. **Monitoring:** Turbidity monitoring shall be conducted and recorded as described below. Monitoring shall occur each day during daylight hours when in-water work is being conducted. A properly and regularly calibrated turbidimeter is recommended, however, visual gauging is acceptable.

      i. Representative Background Point: a sample or observation must be taken every four hours at a relatively undisturbed area approximately 100 feet upcurrent from in-water disturbance to establish background turbidity levels for each monitoring cycle. Background turbidity, location, and time must be recorded prior to monitoring downcurrent.

      ii. Compliance Point: Monitoring shall occur every four hours approximately 100 feet down current from the point of discharge and be compared against the background measurement or observation. The turbidity, location, and time must be recorded for each sample.

   b. **Compliance:** Results from the compliance points should be compared to the background levels taken during each monitoring interval. Exceedances are allowed as follows:

MONITORING WITH A TURBIDIMETER		
ALLOWABLE EXCEEDANCE TURBIDITY LEVEL	ACTION REQUIRED AT 1ST MONITORING INTERVAL	ACTION REQUIRED AT 2ND MONITORING INTERVAL
0 to 5 NTU above background	Continue to monitor every 4 hours	Continue to monitor every 4 hours
5 to 29 NTU above background	Modify BMPs & continue to monitor every 4 hours	Stop work after 8 hours at 5-29 NTU above background
30 to 49 NTU above background	Modify BMPs & continue to monitor every 2 hours	Stop work after 2 hours at 30-49 NTU above background
50 NTU or more above background	Stop work	Stop work
VISUAL MONITORING		
No plume observed	Continue to monitor every 4 hours	Continue to monitor every 4 hours
Plume observed	Modify BMPs & continue to monitor every 4 hours	Stop work after 8 hours with an observed plume

ENCLOSURE (4)

When monitoring visually, turbidity that is visible over background is considered an exceedance of the standard.

If an exceedance over the background level occurs, the applicant must modify the activity and continue to monitor every four hours or as appropriate (above). If an exceedance over the background level continues after the second monitoring interval, the activity must stop until the turbidity levels return to background. If, however, turbidity levels return to background at second monitoring level due to implementation of BMPs or natural attenuation, work make continue with appropriate monitoring as above.

If an exceedance occurs at: 50 NTU or more over background; 30 NTU over background for 2 hours; or 5-29 NTU over back ground for 8 hours, the activity must stop immediately for the remainder of that 24-hour period.

c. **Reporting:** Copies of daily logs for turbidity monitoring shall be available to DEQ, USACE, NMFS, USFWS, and ODFW upon request. The log must include: background NTUs, compliance point NTUs, comparison of the points in NTUs, and location, time, and tidal stage (if applicable) for each reading. Additionally, a narrative must be prepared discussing all exceedances with subsequent monitoring, actions taken, and the effectiveness of the actions.

d. **BMPs to Minimize In-stream Turbidity:**
   i. Sequence/Phasing of work – The applicant will schedule work activities so as to minimize in-water disturbance and duration of in-water disturbances;
   ii. Bucket control - All in-stream digging passes by excavation machinery and placement of fill in-stream using a bucket shall be completed so as to minimize turbidity. All practicable techniques such as employing an experienced equipment operator, not dumping partial or full buckets of material back into the wetted stream, adjusting the volume, speed, or both of the load, or by using a closed-lipped environmental bucket shall be implemented;
   iii. Limit the number and location of stream crossing events. Establish temporary crossing sites as necessary at the least impacting areas and supplement with clean gravel or other temporary methods as appropriate;
   iv. Machinery will not drive into the flowing channel;
   v. Excavated material will be placed so that it is isolated from the water edge or wetlands and not placed where it could re-enter waters of the state uncontrolled; and,
   vi. Use of containment measures such as silt curtains, geotextile fabric, and silt fence will be implemented and properly maintained in order to minimize in-stream sediment suspension and resulting turbidity.

2) **Erosion Control:** The applicant is referred to DEQ's *Oregon Sediment and Erosion Control Manual*, April 2005. The following erosion control measures (and others as appropriate) or comparable measures as specified in an NPDES 1200-C permit (if required) shall be implemented during construction/project activities:

a. Filter bags, sediment traps or catch basins, vegetative strips, berms, Jersey barriers, fiber blankets, bonded fiber matrices, geotextiles, mulches, wattles, sediment fences, or other measures used in combination shall be used to prevent movement of soil from uplands into waterways or wetlands;
b. An adequate supply of materials needed to control erosion must be maintained at the project construction site;
c. To prevent stockpile erosion, use compost berms, impervious materials or other equally effective methods, during rain events or when the stockpile site is not moved or reshaped for more than 48 hours;
d. Erosion control measures shall be inspected and maintained daily, or more frequently as necessary, to ensure their continued effectiveness and shall remain in place until all exposed soil is stabilized;
    i. If monitoring or inspection shows that the erosion and sediment controls are ineffective, mobilize work crews immediately to make repairs, install replacements, or install additional controls as necessary.
    ii. Remove sediment from erosion and sediment controls once it has reached 1/3 of the exposed height of the control.
e. Unless part of the authorized permanent fill, all construction access points through, and staging areas in, riparian or wetland areas shall use removable pads, mats, or other methods as necessary to prevent soil compaction, unless doing so would be more impactful to these or surrounding resources.
f. Flag or fence off avoided wetlands and newly planted areas to protect from disturbance and/or erosion.
g. Dredged or other excavated material shall be placed on upland areas with stable slopes to prevent materials from eroding back into waterways or wetlands;
h. Sediment from disturbed areas or in any way able to be tracked by vehicles onto pavement shall not be allowed to leave the site in amounts that would reasonably be expected to enter waters of the state and impair water quality. Placement of clean aggregate at all construction entrances, and other BMPs such as truck or wheel washes if needed, will be used when earthmoving equipment will be leaving the site and traveling on paved surfaces; and,
i. Projects which disturb one acre or more require an NPDES 1200C Storm Water Discharge Permit. Contact the appropriate DEQ regional office for more information (Contact information can be found at: http://www.deq.state.or.us/wq/).

3) **Post-Construction Stormwater Management for NWP activities involving impervious surfaces (NWPs 3, 14, 15, 29, 36, 39, 42)**

Stormwater discharges to waters of the state must not violate state water quality standards, including Oregon Administrative Rule (OAR) 340-041-0004, the Antidegradation Policy for Surface Water. There is a reasonable expectation that runoff from impervious surfaces will carry pollutants toward the lowest point in the landscape, which is generally a water of the state. Low Impact Development (LID) techniques to reduce amounts and concentrations of runoff leaving the project area and Best Management Practices (BMPs) targeting removal of reasonably expected pollutants (sediment, metals, hydrocarbons, nutrients, pesticides, etc.) prior to discharge of stormwater must be incorporated into project designs. A narrative and site sketch describing these LID techniques, BMPs and other stormwater treatment options commensurate with the scale of the project will constitute a post-construction stormwater management plan which must be submitted by the applicant to DEQ for review and approval prior to construction. DEQ's *Stormwater Management Plan Submission Guidelines for Removal/Fill Permit Applications Which Involve Impervious Surfaces* (located under "Removal/Fill" at: http://www.deq.state.or.us/wq/sec401cert/sec401cert.htm) provides information to determine the level of detail required for the plan based on project type, scope, location, and other factors, as well as references to assist in designing the plan. Submission of the plan must include:

a. A site sketch or plan view drawing indicating: the drainage flow directions; discharge locations; contours and spot elevations; location and size of impervious features (e.g., parking lots, driveways, buildings, or roads); nearest downgradient waterbody with direction of stream and surface flow, other physical features of the site, and the location and type of post-construction BMPs;
b. A narrative description of proposed BMPs and a summary of their anticipated operation to insure adequate capacity, proper function, and appropriate design for the site such that quality, quantity, and seasonality of pre-construction hydrologic conditions are mimicked to the maximum extent practicable, based on stormwater anticipated to be generated due to project-related impervious surfaces and delivered to waters of the state. See local jurisdiction regulations and accepted stormwater manuals for detention and capacity requirements;
c. Implementation of the plan must be concurrent with installation of impervious surfaces and include an adequate operation and maintenance plan with documentation of responsibility for maintenance by a qualified entity;
d. If engineered structural BMPs are incorporated into the post construction stormwater management plan they must be prepared and stamped by an Oregon registered Professional Engineer (PE), and specification drawings must be submitted; or
e. In lieu of a complete plan, the applicant may submit:
    i. Documentation of acceptance of the stormwater into a DEQ permitted National Pollutant Discharge Elimination Strategy (NPDES) Phase I or II Municipal Separate Storm Sewer System (MS4); or
    ii. Reference to implementation of a programmatic process developed to achieve these expectations, and acknowledged by DEQ as adequately addressing pollution control or reduction through basin-wide post-construction storrmwater management practices.

4) **Deleterious Materials:** The following conditions relating to control of hazardous, toxic and waste materials shall be observed:

a. **Treated Wood: Ineligibility**- Projects which propose installation of chemically treated wood that will contact surface or ground water or that will be placed over water where it will be exposed to abrasion require individual, site specific review and are, therefore, **not certified by this 401 WQC**.
b. Projects that require removal of chemically treated wood must:
    i. Ensure that no treated wood debris falls into waters of the State. If treated wood debris falls into waters of the State, it must be removed immediately and disposed of properly.

ii. Dispose of all treated wood debris removed during a project, including treated wood pilings, at an upland facility approved for hazardous materials of this classification. Do not leave treated wood pile(s) in the water or stacked on the streambank.
iii. Immediately place removed piling onto an appropriate dry storage site.
iv. Attempt to remove the entire temporary or permanent piling.
v. If complete removal is not possible, ensure that any treated wood piling to remain submerged is broken, cut, or pushed at least 3 feet below the sediment surface.
vi. Fill and cover holes left by each treated timber piling removed with clean, native substrates that match surrounding streambed materials. If chemically treated wood piles are removed using a vibratory hammer, ensure that holes are capped with clean fill as the pile is removed. Surrounding the pile with clean material prior to removal will allow the hole to fill in upon extraction in order to contain any undecomposed chemicals which have pooled beneath the substrate and may tend to escape upon extraction of the pile as they are less dense than the surrounding water. Clean fill must be accounted for in project description and threshold limits.

c. Biologically harmful materials and construction debris including, but not limited to: petroleum products, chemicals, cement cured less than 24 hours, welding slag and grindings, concrete saw cutting by-products, sandblasted materials, chipped paint, tires, wire, steel posts, asphalt and waste concrete shall not be placed in waterways or wetlands. Authorized fill material must be free of these materials. The applicant must remove all foreign materials, refuse, and waste from the project area.
d. An adequate supply of materials needed to contain deleterious materials during a weather event must be maintained at the project site and deployed as necessary.
e. Machinery refueling shall not occur in waterways, wetlands, or riparian areas.

5) **Spill Prevention:** Fuel, operate, maintain, and store vehicles and construction materials in areas that minimize disturbance to habitat and prevent adverse effects from potential fuel spills.

a. Complete vehicle staging, cleaning, maintenance, refueling, and fuel storage in a vehicle staging area placed 150 feet or more from any waters of the state. An exception to this distance can be made if all practicable prevention and containment measures [as in 5) b through e below, or others] are employed and this distance is not possible because of any of the following site conditions:
   i. Physical constraints that make this distance not feasible (e.g., steep slopes, rock outcroppings);
   ii. Natural resource features would be degraded as a result of this setback, or,
   iii. Either no contaminants are present or full containment of potential contaminants to prevent soil and water contamination is provided;
b. Inspect all vehicles operated within 150 feet of any waters of the State daily for fluid leaks before leaving the vehicle staging area. Repair any leaks detected in the vehicle staging area before the vehicle resumes operation;
c. Before operations begin and as often as necessary during operation, steam

clean (or an approved equal) all equipment that will be used below bankfull elevation until all visible external oil, grease, mud, and other visible contaminates are removed;

d. Diaper all stationary power equipment (e.g., generators, cranes, stationary drilling equipment) operated within 150 feet of any waters of the state to prevent leaks, unless other suitable containment is provided to prevent potential spills from entering any waters of the state; and,

e. An adequate supply of materials (such as straw matting/bales, geotextiles, booms, diapers, and other absorbent materials) needed contain spills must be maintained at the project construction site and deployed as necessary.

6) **Spill & Incident Reporting:**

a. In the event that petroleum products, chemicals, or any other deleterious materials are discharged into state waters, or onto land with a potential to enter state waters, the discharge shall be promptly reported to the Oregon Emergency Response Service (OERS, 1-800-452-0311). Containment and cleanup must begin immediately and be completed as soon as possible.

b. If the project operations causes a water quality problem which results in distressed or dying fish, the operator shall immediately: cease operations; take appropriate corrective measures to prevent further environmental damage; collect fish specimens and water samples; and notify DEQ, ODFW, NMFS and USFWS as appropriate.

7) **Vegetation Protection and Restoration:** Riparian, wetland, and shoreline vegetation in the authorized project area shall be protected from unnecessary disturbance to the maximum extent practicable through:

a. Minimization of project and impact footprint;
b. Designation of staging areas and access points in open, upland areas;
c. Fencing or other barriers demarking construction areas; or
d. Use of alternative equipment (e.g., spider hoe or crane)

If authorized work results in unavoidable vegetative disturbance; riparian, wetland, and shoreline vegetation shall be successfully reestablished to function for water quality benefit at pre-project levels or improved, at the completion of the authorized work.

8) **Project Thresholds:**

a. Project applications must be complete and account for total impacts at build-out regardless of construction phasing. Projects may not be phased to avoid exceeding USACE or DEQ imposed threshold limitations of wetland impact or cubic yards of material removal or fill; and,

b. Impacts to wetlands and waters of the state for a project are additive relative to the thresholds for eligibility.

9) DEQ is to have site access upon reasonable request.

10) This WQC is invalid if the project is operated in a manner not consistent with the project description contained in the permit application materials.

11) A copy of this WQC letter shall be kept on the job site and readily available for reference by the USACE, DEQ personnel, the contractor, and other appropriate state and local government inspectors.

12) DEQ reserves the option to modify, amend or revoke this WQC, as necessary, in the event new information indicates that the project activities are having a significant adverse impact on State water quality or critical fish resources.

Activity Specific Conditions

In addition to all conditions of the USACE permit and the 401 WQC General Conditions above, the following conditions apply to specific categories of authorized activities.

NWP 12 – Utility Lines: This WQC does not authorize the construction of substations or permanent access roads for utility lines in waters of the state including wetlands.

1. All stream permanent or temporary crossings must be made perpendicular to the bankline, or nearly so, and at the narrowest, or least sensitive, portion of the wetland or riparian corridor.
2. Directionally bored stream crossings:
   a. Drilling Discharge- All drilling equipment, drill recovery and recycling pits, and any waste or spoil produced, will be completely isolated, recovered, then recycled or disposed of to prevent entry into waters of the state. Recycling using a tank instead of drill recovery/recycling pits, is preferable;
   b. In the event that drilling fluids unavoidably enter a water of the state, the equipment operator must stop work, immediately initiate containment measures and report the spill to the Oregon Emergency Response System (OERS) at 800.452.0311. Prior to cleanup, plans must be submitted and approved by the regulatory agencies;
   c. When drilling is completed, attempts will be made to remove the remaining drilling fluid from the sleeve (e.g., by pumping) to reduce turbidity when the sleeve is removed; and,
   d. An adequate supply of materials needed to control erosion and/or to contain drilling fluids must be maintained at the project construction site and deployed as necessary.
3. Utility lines through wetlands must be fitted with trench plugs to avoid dewatering wetlands.

NWP 13 – Bank Stabilization:

1. **Ineligibility:** The following streambank stabilization activities require individual 401 WQC or additional conditions approved by DEQ.
   a. Bank stabilization projects in excess of 500 feet.
   b. Permanent placement of material in wetlands adjacent to a stabilization project.
   c. Placement of new vertical structures such as retaining walls, bulkheads, gabions or similar structures; or placement of rock in constructed stream channel trenches where bioengineering is not a feature of the project, with the following exceptions:

i. Rock as ballast to anchor or stabilize large woody debris components of an approved bank treatment.
ii. Rock to fill scour holes, as necessary to protect the integrity of the stabilization project, if the rock is limited to the depth of the scour hole and does not extend above the channel bed.
iii. Rock to construct a footing, facing, head wall, or other protection necessary to prevent scouring or downcutting of, or slope erosion or failure at, an existing structure (e.g., culvert, utility line, roadway or bridge support) to be repaired.
iv. Rock or vertical structures in projects maintaining existing transportation related structures when a registered professional engineer identifies these as the only effective method due to site specific geotechnical or hydraulic concerns.

For projects meeting eligibility or an exception as listed above (in 1. i. through iv.), the applicant shall:

2. Identify potential adverse impacts of bank stabilization on water quality parameters and beneficial uses both upstream and downstream of the activity site, and show how these have been avoided, minimized or mitigated.
3. Provide site design and construction features that avoid, then minimize, then mitigate for the adverse impacts of bank stabilization. Appropriate design features include use of biodegradable project materials, riparian vegetation, and woody debris.
4. When rock is necessary, it must be appropriately sized for stability, clean, durable, angular, and include interstitial plantings unless the permittee can demonstrate that such plantings are not practicable.
5. Provide mitigation approved by DEQ for lost or reduced water quality function.

NWP 16 - Return Water from Contained Upland Disposal Areas: Return water from material known to contain contaminants in dissolved form at levels which exceed chronic water quality criteria (OAR 340-041-0033, Tables 20, 33A, and 33B, see: http://www.deq.state.or.us/regulations/rules.htm) are **not certified under this 401 WQC**.

1. For all materials removed from wetlands and waterways during authorized activities which has been determined to be suitable for in-water disposal, all practicable efforts to return to waters or beneficially reuse all excess material shall be undertaken prior to disposing in upland areas.
2. Upland disposal of materials must conform to existing DEQ solid waste and contaminant requirements which include an appropriately located and designed confined disposal facility and implementation of all practicable measures to prevent material discharge and uncontrolled return water discharge to waterways and wetlands.
3. Upland disposal facilities must receive a DEQ Solid Waste Letter of Authorization or written notice of exemption prior to disposal taking place there. Contact DEQ Land Quality in the regional office covering project area (800-452-4011).

NWP 33 – Temporary Construction, Access, and Dewatering: Refer to Appendix D of DEQ's *Oregon Sediment and Erosion Control Manual*, April 2005, for proper dewatering and work area isolation techniques. Minimize general disturbance to existing vegetation and water quality by:

1. Using low impact equipment (e.g., spider hoe, crane);

2. Using existing roadways, travel paths, and drilling pads;
3. Clearing vegetation which must be removed only to ground level (no grubbing);
4. Placing clean gravel over geotextile fabric for access ways;
5. Minimizing the number of temporary stream crossings and locating them in the least impactful areas;
6. Constructing temporary crossings of riparian areas and streams at right angles to the main channel;
7. Obliterating all temporary access roads that will not be incorporated into the permanent structure and restoring those areas;
8. Stabilizing any exposed soil; and,
9. Revegetating the site.

NWP 38 – Cleanup of Hazardous and Toxic Waste:

1. Dewatering of toxic material dredged from in-stream shall not occur over un-isolated waters of the state. Containment of toxics laden return water must be provided such that proper disposal or adequate treatment prior to controlled release back to waters of the state may be accomplished.
2. Upland disposal facilities must receive a DEQ Solid Waste Letter of Authorization or written notice of exemption prior to disposal taking place there. Contact DEQ Land Quality in the regional office covering project area (800-452-4011).

NWP 41 - Reshaping Existing Drainage Ditches: The linear threshold for reshaping drainage ditches under any NWP is 500 feet. **All projects exceeding the 500 feet threshold require individual 401 WQC or additional conditions approved by DEQ.** For projects within the 500 feet threshold, the applicant shall:

1. Work from only one bank in order to minimize disturbance to existing vegetation, preferably the bank with the least existing vegetation;
2. Preserve the existing vegetation to the maximum extent practicable;
3. Establish in-stream and riparian vegetation on reshaped channels and side channels wherever practicable. Such plantings shall be targeted to address water quality parameters (e.g., provide shade to water to reduce temperature or provide bank stability through root systems to limit sediment inputs). Planting options include clustering or vegetating only one side of a channel, preferably the side which provides maximum shade.

<u>Compliance Certification</u>

Project County: **Gilliam**

Permit Number: <u>**NWP-2007-168**</u>

Date of Issuance: ______________________________

Name of Permittee: ______________________________

I hereby certify that the work authorized by the above referenced permit, has been completed in accordance with the terms and conditions of the said permit, and that required mitigation was completed in accordance with the permit conditions, except as described below.

____

Signature of Permittee

Enclosure (5)

ATTACHMENT 10

Addendum to Leaning Juniper II Wind Power Facility Noise Analysis

Addendum to Leaning Juniper II Wind Power Facility Noise Analysis

TO: Sara Parsons/Iberdrola Renewables, Inc.
Jeffrey Durocher/Iberdrola Renewables, Inc.

FROM: Mark Bastasch, P.E./CH2M HILL

COPIES: Linnea Eng/CH2M HILL

DATE: June 19, 2009

Purpose

The purpose of this memorandum is to provide information about the predicted noise levels during the construction and operation of the Leaning Juniper II Wind Power Facility (LJF), as amended, in accordance with OAR 345-021-0010(1)(x)(A), and analyze facility compliance with applicable Oregon Department of Environmental Quality (DEQ) noise regulations per OAR 345-021-0010(1)(x)(B). This noise analysis concludes that applicable DEQ noise regulations will be met for the construction and operation of the amended LJF.

Project Description

As described in the *Request for Amendment No. 1 to the Site Certificate for the Leaning Juniper II Wind Power Facility*, Leaning Juniper Wind Power II, LLC (LJWP) seeks to amend the Site Certificate (SC) for LJF issued on September 21, 2007. The purpose of the amendment request is to expand the LJF site boundary farther to the south to minimize wake impacts from existing nearby wind projects and optimize the use of the wind resource. LJWP is preparing to construct forty-three (43) 2.1-megawatt (MW) turbines with a generating capacity of 90.3 MW under the authority of the SC within the approved site boundary. This first phase of construction is referred to as Leaning Juniper IIA (LJIIA). The subsequent phase of construction within the amended site boundary is referred to as Leaning Juniper IIB (LJIIB). LJIIB will consist of up to 90 turbines with a generating capacity of up to 188.7 MW.

This amendment request does not seek to change the maximum number of turbines, the maximum generating capacity, or the range of turbine types or sizes and corresponding maximum overall and octave band sound power levels originally authorized under the SC. Like the original LJF Application for Site Certificate (ASC), this amendment request analyzes the noise impacts for two turbine types. The turbine types represent a range that encompasses the scale and impacts of the turbines that could potentially be used at LJIIB. The minimum turbine layout for LJIIB consists of sixty-two (62) 3.0-MW turbines. The maximum turbine layout consists of ninety (90) 1.5-MW turbines. The final layout will have 62 to 90 turbines, with a combination of turbines ranging in size up to 3.0 MW and a generating capacity of up to 188.7 MW.

Summary of Regulations

OAR Chapter 340, Division 35, specifically addresses noise from wind energy facilities as follows:

- OAR 340-035-0035(1)(b)(B)(iii)(I) establishes the option for a proposed wind energy facility to assume a background L_{50} ambient noise level of 26 decibels (dBA).
- OAR 340-035-0035(1)(b)(B)(iii)(IV) requires a proposed wind energy facility to satisfy the ambient noise standard, where a landowner has not waived the standard, by predicting facility noise levels at the appropriate measurement point, assuming that all of the proposed wind facility's turbines are operating between cut-in speed and the wind speed corresponding to the maximum sound power level established by IEC 61400-11. These predictions must be compared to the assumed ambient noise level of 26 dBA, or to the actual ambient background L_{10} and L_{50} noise levels, if measured. If this comparison shows that the increase in noise is not more than 10 dBA over this entire range of wind speeds, the facility complies with the ambient background standard.
- OAR 340-035-0035(1)(b)(B)(iii)(VI) requires that a proposed wind energy facility predict compliance with the "Table 8" limits set forth in the regulations (summarized below in Table 1). Compliance must occur at the appropriate measurement point, with reference to the turbine's maximum sound power level, following procedures established by IEC 61400-11, and assuming that all of a facility's turbines are operating at the maximum sound power level.

TABLE 1
State of Oregon Statistical Noise Limits for Industrial and Commercial Sources (OAR-340-35-0035)

Statistical Descriptor	Maximum Permissible Statistical Noise Levels (dBA) Daytime (7:00 a.m. – 10:00 p.m.)	Nighttime (10:00 p.m. – 7:00 a.m.)
L_{50}	55	50
L_{10}	60	55
L_{1}	75	60

Notes:

Based on "Table 8" of OAR-340-0035: New Industrial and Commercial Noise Source. Standards and OAR-340-0035(1)(b)(B(i).

dBA = decibel (A-weighted scale).

Based on the applicable standards, assuming an ambient level of 26 dBA, the maximum allowable noise level produced by a proposed wind facility, as measured at a sensitive receptor such as a home, is an increase of 10 dBA over the ambient level across the entire range of wind speeds between the cut-in wind speed and the wind speed corresponding to the maximum sound power level, or 36 dBA (26 dBA +10 dBA). In accordance with OAR 340-035-0035(1)(b)(B)(iii)(IV), the 36-dBA level must be complied with when all turbines operate at the maximum sound power level established by IEC 61400-11. At wind speeds corresponding to sound power levels less than the maximum (for example, during cut-in wind speeds), the resulting noise level also will be less. Therefore, it is not necessary to predict noise levels for each wind speed between cut-in and the maximum sound power level when assuming an ambient level of 26 dBA.[1]

If a proposed wind facility complies with the OAR 340-035-0035(1)(b)(B)(iii)(IV) limit of 36 dBA at a receptor, it necessarily also complies with OAR 340-035-0035(1)(b)(B)(iii)(VI), namely the OAR "Table 8" limit of 50 dBA, at that same receptor.

In addition to the foregoing limits, OAR 340-035-0035(1)(f) establishes standards that regulate octave band sound pressure levels and audible discrete tones. Such standards can be applied by DEQ when it believes subsections (1)(a), (b), or (c) (summarized in Table 1 above) do not adequately protect the health, safety, or welfare of the public.

Impulse noise is also regulated in OAR 340-35-0035(1)(d), but wind turbines do not generate impulse noise and therefore OAR 345-035-0035(1)(d) does not apply to wind projects.

The noise limits in OAR 340-035-0035(1)(b) apply at "appropriate measurement points" on "noise sensitive property." The "appropriate measurement point" is defined as whichever of the following is farther from the noise source:

- 25 feet (7.6 meters) toward the noise source from that point on the noise sensitive building nearest the noise source; or
- That point on the noise-sensitive property line nearest the noise source.

"Noise-sensitive property" is defined as "real property normally used for sleeping, or normally used as schools, churches, hospitals, or public libraries. Property used in industrial or agricultural activities is not noise-sensitive property unless it meets the foregoing criteria in more than an incidental manner." Residences are the only noise-sensitive property identified within the LJF lease boundary.

Noise Analysis

As described in the Final Order, LJWP seeks micrositing flexibility for the amended LJF with regard to the final layout for turbines. To demonstrate that LJWP has a reasonable likelihood of constructing and operating the proposed facility in compliance with the noise standards, noise analyses were conducted for both the maximum turbine layout and the minimum turbine layout for the overall amended LJF (including both LJIIA and LJIIB). The noise results from these two scenarios are presented below. After the precise turbine locations and type have been selected and prior to LJF construction, LJWP will submit for the Oregon Department of Energy's (Department) review an acoustical analysis of the final LJF design along with evidence, including any noise easements, that demonstrates compliance with OAR 340-035-0035. LJWP will not start construction of major LJF components until the Department is satisfied that LJF satisfies the requirements of OAR 340-035-0035.

The same methods used in the original LJF ASC were used in this noise analysis. Consistent with the requirements of the conditions and previous request from the Department, the

[1] At receptors that have not waived the 10-dBA increment, the 26-dBA "assumed ambient" results in a regulatory limit of 36 dBA under all wind speeds. Therefore, it is necessary to model only the loudest scenario that occurs at the wind speed corresponding to the maximum sound power level.

analysis was completed with CADNA/A by DataKustik GmbH of Munich, Germany, and assumed the following input parameters:

- The overall amended LJF (LJIIA and LJIIB) was analyzed. Noise levels from LJIIA were based on construction of forty-three (43) 2.1-megawatt (MW) turbines with a maximum sound power level of 106 dBA and a generating capacity of 90.3 MW. Both the minimum and maximum turbine layouts for LJIIB were evaluated in conjunction with the anticipated LJIIA turbine layout.
- The maximum sound power level warranted by the manufacturer (106 dBA for LJIIA Suzlon S88, 106 dBA for LJIIB GE 1.5 (maximum turbine layout) and 112 dBA for LJIIB Vestas V90 (minimum turbine layout).

Table 2 presents the summary of the LJIIA (Suzlon S88 2.1-MW) and LJIIB (GE 1.5-MW) maximum turbine layouts. Table 3 presents the result of the LJIIA (Suzlon S88 2.1-MW) and LJIIB (Vestas V90) minimum turbine layouts. Figures 1 and 2 present the noise contours for these layouts, respectively, including the approved and additional LJF collector substations. Transformers are expected to have a National Electrical Manufacturers Association (NEMA) sound rating of 87 dBA.

TABLE 2
Summary of Predicted Noise Levels for Proposed Amended Leaning Juniper II Facility (dBA)
LJIIA* and LJIIB Maximum Turbine Layout—1.5-MW Layout

Receptor ID	Predicted Noise Level (dBA)	Waiver Required (>36 dBA)
R274	50	Yes;
R277	45	Yes
R006	43	Yes
R269	42	Yes
R286	42	Yes
R005	39	Yes
R008	38	Yes
R009	37	Yes
R001	37	Yes

* Noise levels from LJIIA are based on construction of forty-three (43) 2.1-megawatt (MW) turbines with a maximum sound power level of 106 dBA and a generating capacity of 90.3 MW.

TABLE 3
Summary of Predicted Noise Levels for Proposed Amended Leaning Juniper II Facility (dBA)
LJIIA* and LJIIB Minimum Turbine Layout—3.0-MW Layout

Receptor ID	Predicted Noise Level (dBA)	Waiver Required (>36 dBA)
R274	48	Yes
R277	47	Yes
R006	47	Yes
R269	46	Yes
R286	46	Yes
R005	43	Yes
R282	41	Yes
R283	40	Yes
R270	40	Yes
R284	40	Yes
R268	40	Yes
R279	39	Yes
R280	39	Yes
R281	39	Yes
R008	38	Yes
R271	38	Yes
R009	37	Yes
R001	37	Yes

* Noise levels from LJIIA are based on construction of forty-three (43) 2.1-megawatt (MW) turbines with a maximum sound power level of 106 dBA and a generating capacity of 90.3 MW.

Conclusion

The changes proposed in this amendment request do not affect LJWP's ability to comply with the SC. This noise analysis demonstrates that the overall amended LJF (LJIIA and LJIIB) complies with applicable DEQ noise regulations per OAR 345-021-0010(1)(x)(B). In addition, pursuant to OAR 345-021-0010(1)(x)(C) and (D) and Condition 94 of the Final Order, before beginning construction of LJIIB, LJWP will provide an acoustical analysis of the final LJF design along with evidence, including any noise easements, that demonstrates compliance with OAR 340-035-0035, to the Department. For these reasons, OAR 340-035-0035 is met.

Figures

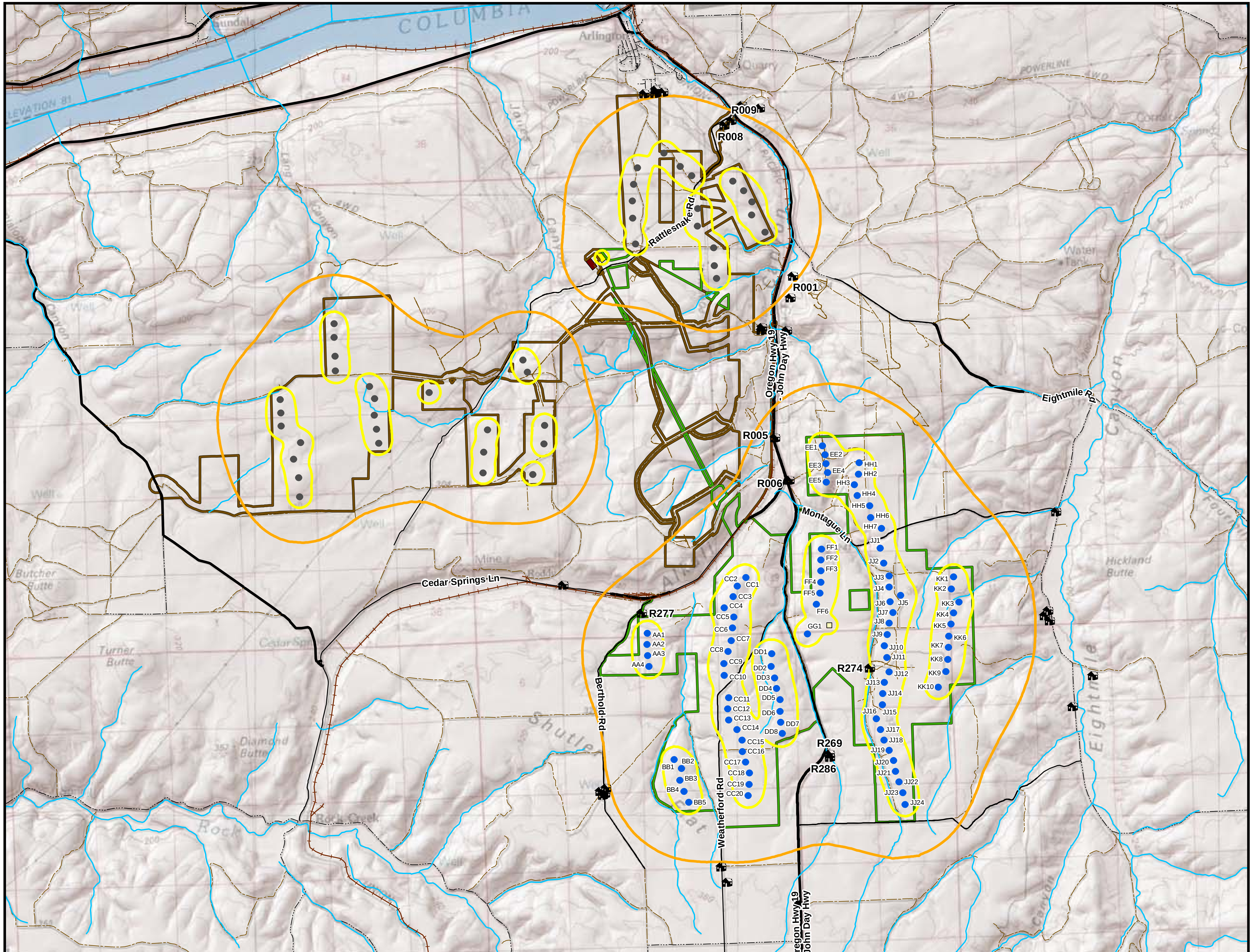


Figure 1

Noise Contours

1.5-MW Turbine Layout
(Maximum Turbine Layout)

Leaning Juniper II
Wind Power Facility Amendment
Noise Analysis Addendum

Legend

- Existing Leaning Juniper II Site Boundary for LJIIA
- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- House
- 36-dBA Noise Contour
- 50-dBA Noise Contour

Proposed Permanent Facilities

- Proposed Turbine for LJIIB
- Planned Turbine for LJIIA
- Proposed Leaning Juniper II Collector Substation
- Proposed Additional Leaning Juniper II Collector Substation

Existing Facilities

- Railroad
- Stream
- Public, Paved
- Other Public Road
- Public, Gravel
- Private, Farm Road
- Existing BPA Jones Canyon Switching Substation

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IBERDROLA RENEWABLES

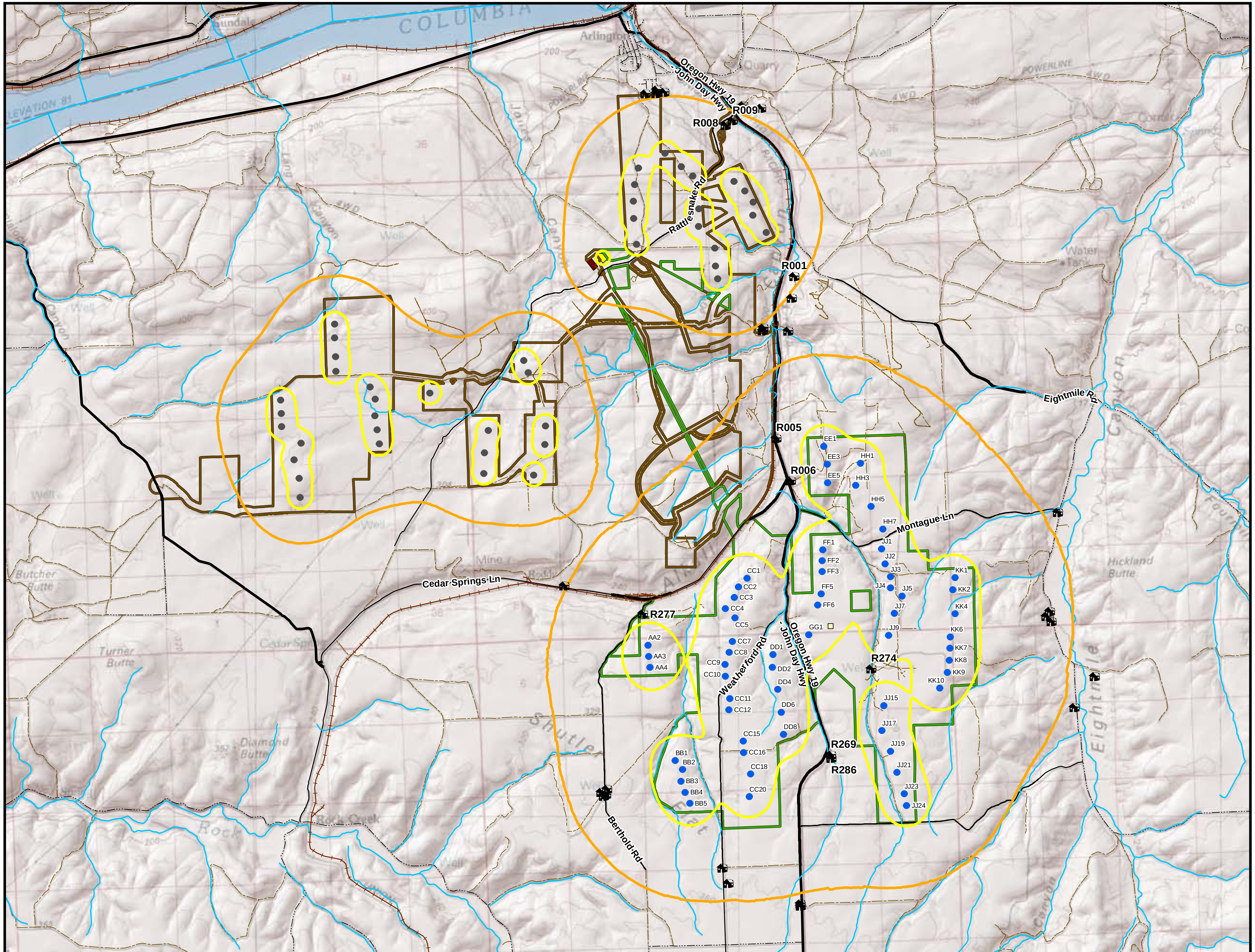

Figure 2

Noise Contours

3.0-MW Turbine Layout
(Minimum Turbine Layout)

Leaning Juniper II
Wind Power Facility Amendment
Noise Analysis Addendum

Legend

- Existing Leaning Juniper II Site Boundary for LJIIA
- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- House
- 36-dBA Noise Contour
- 50-dBA Noise Contour

Proposed Permanent Facilities

- Proposed Turbine for LJIIB
- Planned Turbine for LJIIA
- Proposed Leaning Juniper II Collector Substation
- Proposed Additional Leaning Juniper II Collector Substation

Existing Facilities

- Railroad
- Stream
- Public, Paved
- Other Public Road
- Public, Gravel
- Private, Farm Road
- Existing BPA Jones Canyon Switching Substation

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File: Z:\Projects\OR\Leaning Juniper\MapDocuments\Report Figures\EFSC (LJII)\Amendment (LJIIb)\Figure 2 - Noise Contours (3MW Layout).mxd

Modify Date: 6/15/2009

ATTACHMENT 9

Addendum to Leaning Juniper II Wind Power Facility Exhibit AA Electromagnetic Field Analysis

Addendum to Leaning Juniper II Wind Power Facility Exhibit AA Electromagnetic Field Analysis

PREPARED FOR: Sara Parsons/Iberdrola Renewables, Inc.
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PREPARED BY: Robert Pearson, P.E./CH2M HILL

COPIES: Linnea Eng/CH2M HILL
Nichole Seidell/CH2M HILL

DATE: June 18, 2009

Introduction

This technical memorandum describes the results of a modeling effort conducted to assess potential electromagnetic field (EMF) impacts from the proposed Leaning Juniper IIB (LJIIB) structures that were not evaluated as part of the original Application for Site Certificate (ASC) (September 2006). The rated voltage, load-carrying capacity, type of current, and structure dimensions of the 34.5-kilovolt (kV) collector lines have not changed from what is described in ASC Exhibit AA. The electric and magnetic field modeling that is presented in ASC Exhibit AA for the 34.5-kV collector lines was conducted for two configurations: one 34.5-kV single-circuit monopole line and one 34.5-kV double-circuit monopole line. The central collector system for the LJIIB wind turbines will also consist of those two configurations. Therefore, no additional modeling was conducted for the LJIIB central collector system.

Two configurations proposed for LJIIB were not evaluated as part of ASC Exhibit AA or described in the Final Order. These include the potential overhead 34.5-kV lines from LJIIB to the approved collector substation located near the Jones Canyon Switching Station (consisting of two parallel 34.5-kV double-circuit lines), and the potential 230-kV transmission line extending from an additional collector substation near the LJIIB turbines to the approved collector substation near the Jones Canyon Switching Station. These configurations were modeled and the results of this modeling are presented below.

EMF Calculations for Aboveground 34.5-kV or 230-kV Transmission Line

Figure 1 illustrates the typical proposed structural configuration of the 34.5-kV double-circuit line with a shield wire. For this construction, the phase positions on one side of the structure are transposed to achieve better EMF cancellation.

Figure 2 illustrates the typical proposed monopole structural configuration of the 230-kV single-circuit line with a shield wire.

Figure 3 illustrates the typical proposed H-frame structural configuration of the 230-kV single-circuit line with a shield wire.

Both the monopole and the H-frame 230-kV support structures were modeled to represent the range of potential support structures and resulting EMF that could be used in LJIIB.

Line Loads for EMF Calculations

It is important that any discussion of EMF include the assumptions used to calculate these fields. It is also important to remember that EMF in the vicinity of the power lines varies with regard to line design, line loading, distance from the line, and other factors. The electric field depends upon line voltage, which remains nearly constant for a transmission or collector line in normal operation. The magnetic field is proportional to line loading (amperage), which varies as power generation is changed by the wind. Maximum magnetic fields are produced at the maximum (peak) conductor currents.

The two 34.5-kV overhead collector lines are each rated for a nominal voltage of 34.5-kV measured phase to phase. The peak loading value assumed for the system is 188.7 MW. The peak line loading value assumed for each of the four circuits is one fourth of this or 47.2 MW. This results in approximately 800 amperes per phase conductor. This value is used in the EMF study. The conductor is assumed to be a single conductor per phase of 1,590 kcmil ACSR “Falcon” with a diameter of 1.545 inches.

The 230-kV single-circuit overhead transmission line is rated for a nominal voltage of 230-kV measured from phase to phase. The peak line loading value assumed for the circuit is the peak generating capacity of LJIIB or 188.7 MW. This results in approximately 500 amperes per phase conductor. This value is used in the EMF study for both the 230-kV monopole support structure and the 230-kV H-frame support structure. The conductor for both types of support structures is assumed to be a single conductor per phase of 954 kcmil ACSR “Rail” with diameter of 1.165 inches.

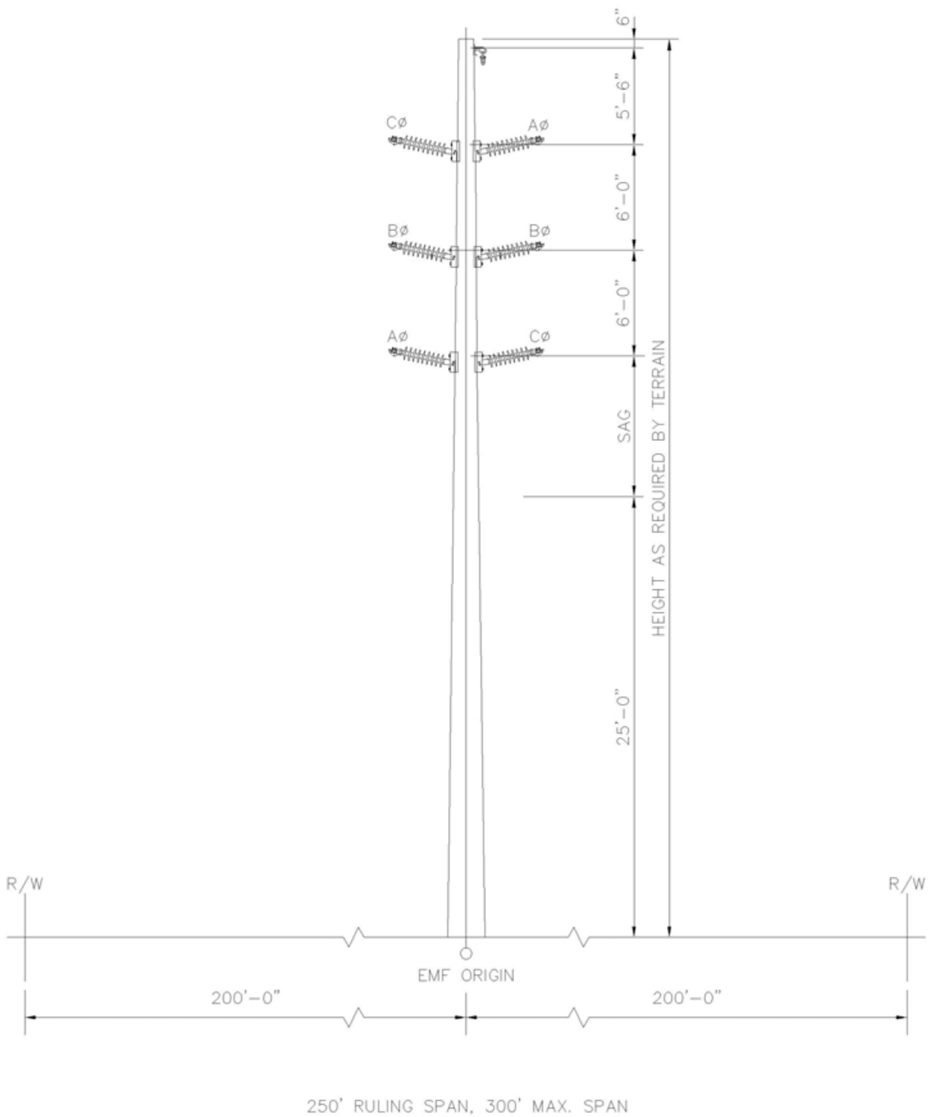

FIGURE 1
Typical 34.5-kV Collector Line Double-Circuit Configuration

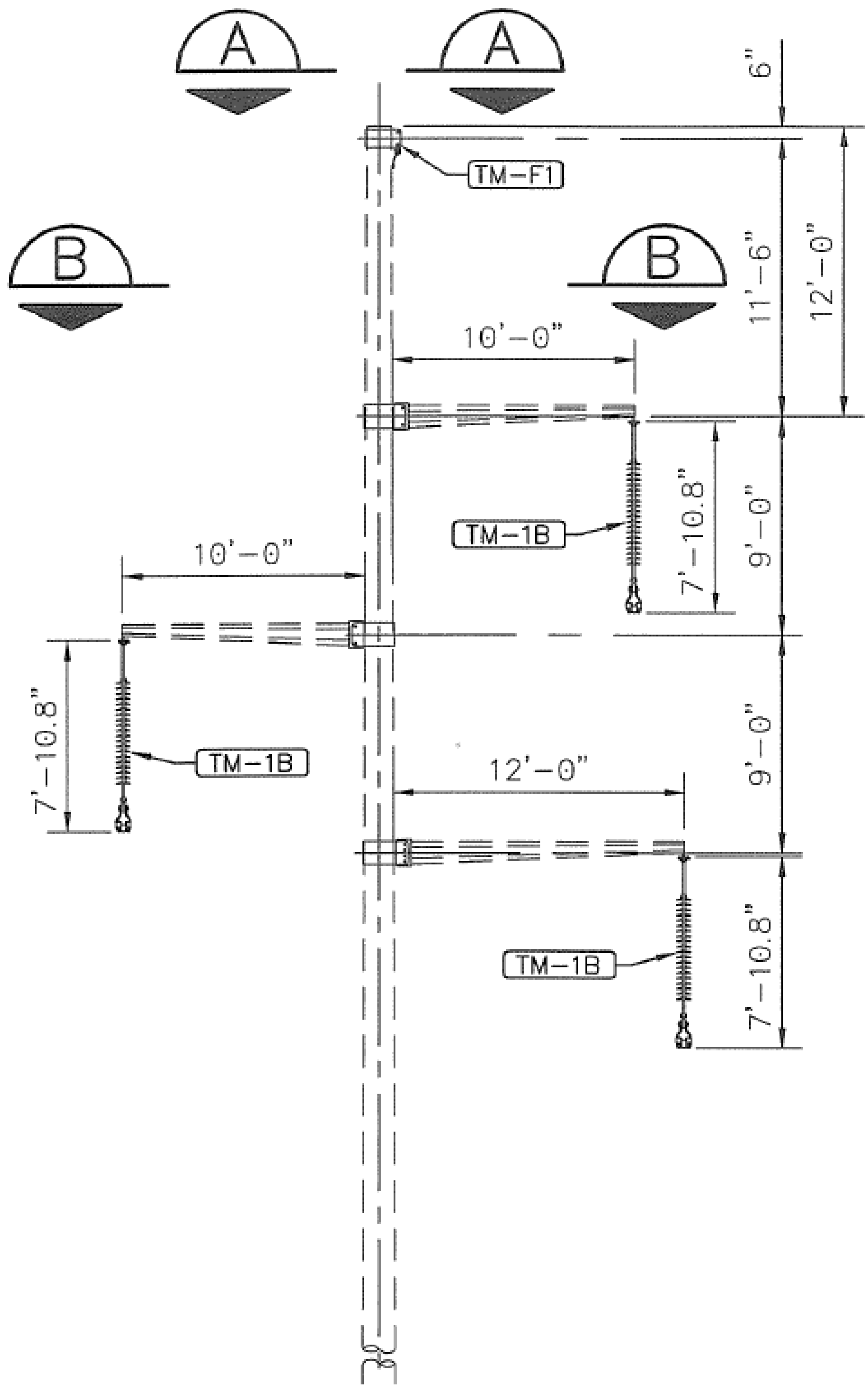

FIGURE 2
Typical 230-kV Transmission Line Single-Circuit Monopole Configuration

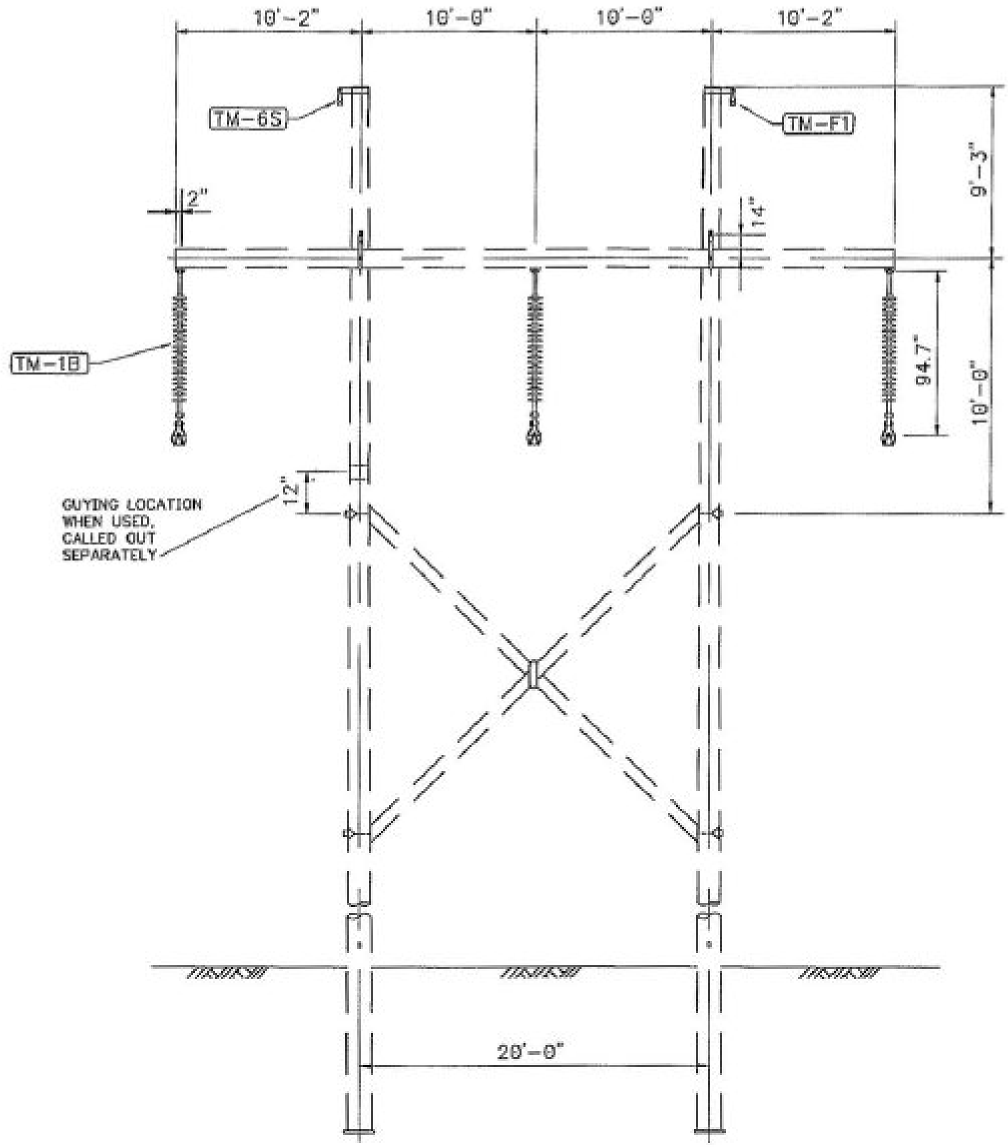

FIGURE 3
Typical 230-kV Transmission Line Single-Circuit H-Frame Configuration

Calculation Methods

The calculation methods used for the analysis are the same as those described in the ASC. The data inputs, assumptions, and results of the ENVIRO Program for the 34.5-kV and 230-kV analyses are provided in Appendixes A and B, respectively.

To estimate the maximum fields, calculations are performed at midspan where the conductor has sagged to its lowest point between structures (the estimated maximum sag point). The 34.5-kV lines were modeled with a minimum clearance of 25 feet from the ground at midspan. The 230-kV line was modeled with a minimum clearance of 30 feet from the ground at midspan for both types of 230-kV support structures. This section addresses the estimates of the maximum possible 60-Hz AC EMF strengths that will be produced by the 34.5-kV and 230-kV lines. These estimates are computed for a height of 1 meter (3.3 feet) above the ground on the line routes.

Results of Two 34.5-kV Double-Circuit Overhead Collector Line EMF Calculations

Table 1 gives the calculated values of the magnetic and the electric field values for the projected maximum currents during peak load at the center and left and right sides of the centerline. The values are computed with conductors at maximum sag (minimum conductor ground clearance) which is at midspan. The actual magnetic field values vary, as load varies daily, seasonally, and as conductor sag changes with ambient temperature and where one is located between the transmission structures (the magnetic fields will be less at the structures since the conductors will be higher off the ground). The levels shown represent the highest magnetic fields expected for the two 34.5-kV overhead collector lines with the turbines operating at maximum capacity. Average fields along the ground between poles, and over a year's time, will be considerably less than the peak values shown since the wind does not blow at the optimal speed for all hours in the year.

TABLE 1
Calculated Maximum Magnetic and Electric Field Values for 34.5-kV Overhead Collector System

		Magnetic Field (mG)			Electric Field (kV/m)		
Figure	**Voltage**	**Left Side (200')**	**Max. on Centerline**	**Right Side (200')**	**Left Side (200')**	**Max. on Centerline**	**Right Side (200')**
4 5	Two 34.5-kV Double-Circuits	0.48	45.31	0.45	0.004	0.208	0.004

As shown in Table 1, magnetic field and electric field values are higher near the center of the lines. The maximum magnetic field on the right-of-way occurs at 35 feet to the right of the centerline. The maximum electric field occurs at 30 feet to the left of the centerline.

These results are plotted on graphs and included here. See Figure 4 for the magnetic field profile and Figure 5 for the electric field profile.

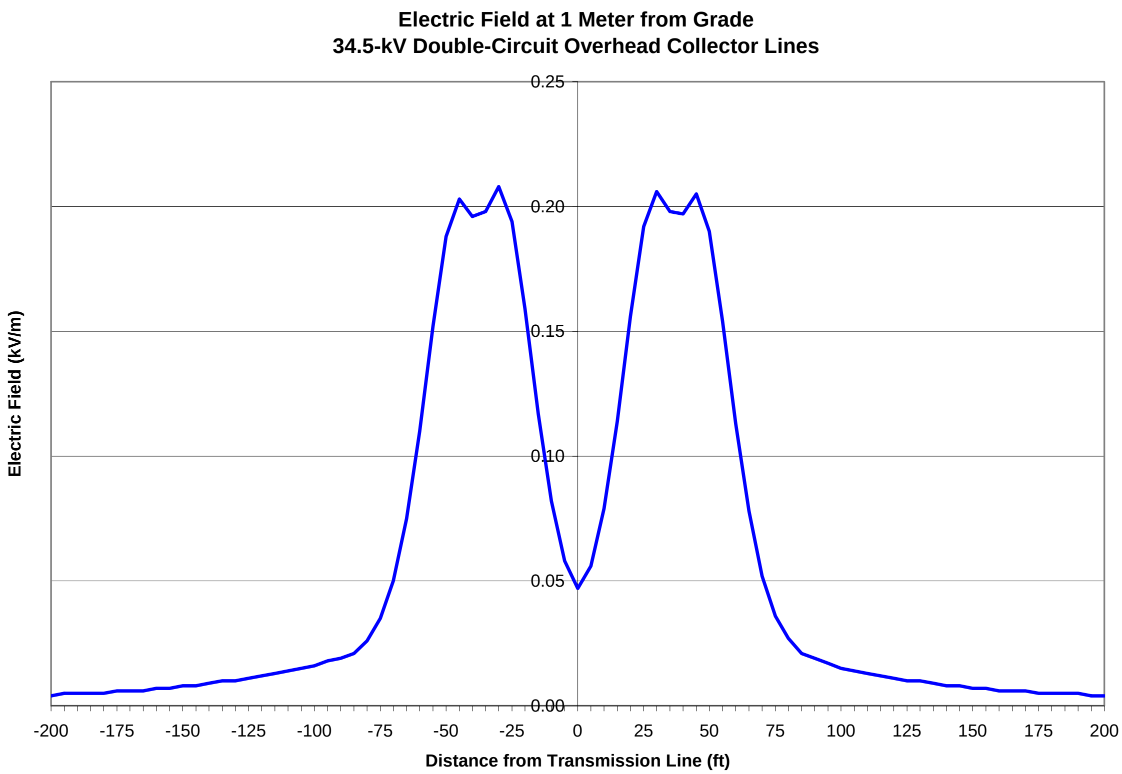

FIGURE 4
Magnetic Field Profile for Two 34.5-kV Double-Circuit Overhead Collector Lines

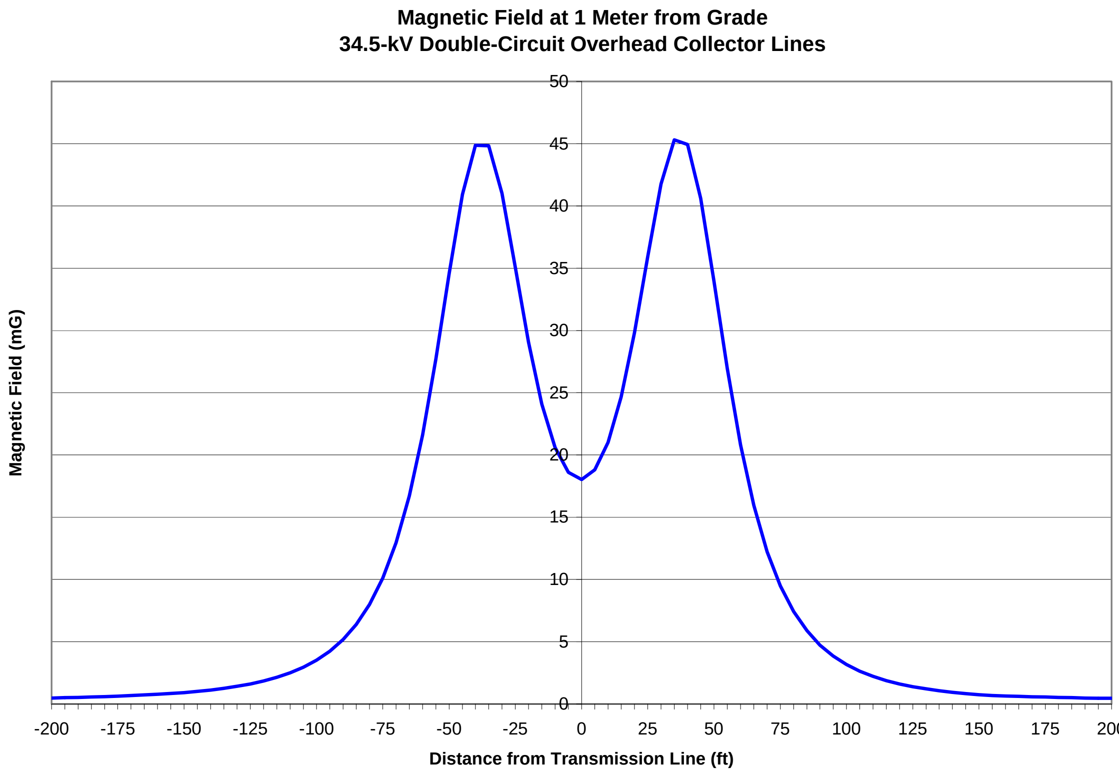

FIGURE 5
Electric Field Profile for Two 34.5-kV Double-Circuit Overhead Collector Lines

Results of 230-kV Overhead Transmission Line EMF Calculations

Table 2 gives the calculated values of the magnetic and the electric fields for the projected maximum currents during peak load to the left and right of the centerline, and the maximum on the centerline. The values are computed with conductors at maximum sag (minimum conductor ground clearance) which is at midspan. The actual magnetic field values vary, as load varies daily, seasonally, and as conductor sag changes with ambient temperature and where one is located between the transmission structures (the magnetic fields will be less at the structures since the conductors will be higher off the ground). The levels shown represent the highest magnetic fields expected for the proposed project with the wind turbines operating at maximum capacity. Average fields along the ground between poles, and over a year’s time would be considerably less than the peak values shown since the wind does not blow at the optimal speed for all hours in the year.

TABLE 2
Calculated Maximum Magnetic and Electric Field Values for 230-kV Overhead Transmission Line

		Magnetic Field (mG)			Electric Field (kV/m)		
Figure	**Voltage**	**Left Side (200')**	**Max. on Centerline**	**Right Side (200')**	**Left Side (200')**	**Max. on Centerline**	**Right Side (200')**
6 7	230-kV Single-Circuit Monopole	1.69	60.68	1.96	0.040	2.253	0.040
8 9	230-kV Single-Circuit H-frame	2.73	94.37	2.57	0.035	2.626	0.035

As shown in Table 2, magnetic field and electric field values are higher near the center of the line than at the sides. The H-frame support structure represents the worst-case EMF results of structures that could be used in LJIIB. The maximum magnetic field of the monopole support structure occurs at 5 feet to the right of the centerline since two of the three phase conductors are hung on the right side of the pole. The maximum magnetic field on the right-of-way of the H-frame support structure occurs at the centerline. This is because the center phase conductor is placed at the centerline and the other two phase conductors are hung on the right and left side of the pole equal distance from the center phase conductor. The maximum electric field of the monopole support structure occurs at 15 feet to the right of the centerline. The maximum electric field of the H-frame support structure occurs at 25 feet to the right and left of the centerline.

These results are plotted on graphs and included here. See Figure 6 for the magnetic field profile; and Figure 7 for the electric field profile for the monopole support structure. See Figure 8 for the magnetic field profile; and Figure 9 for the electric field profile for the H-frame support structure.

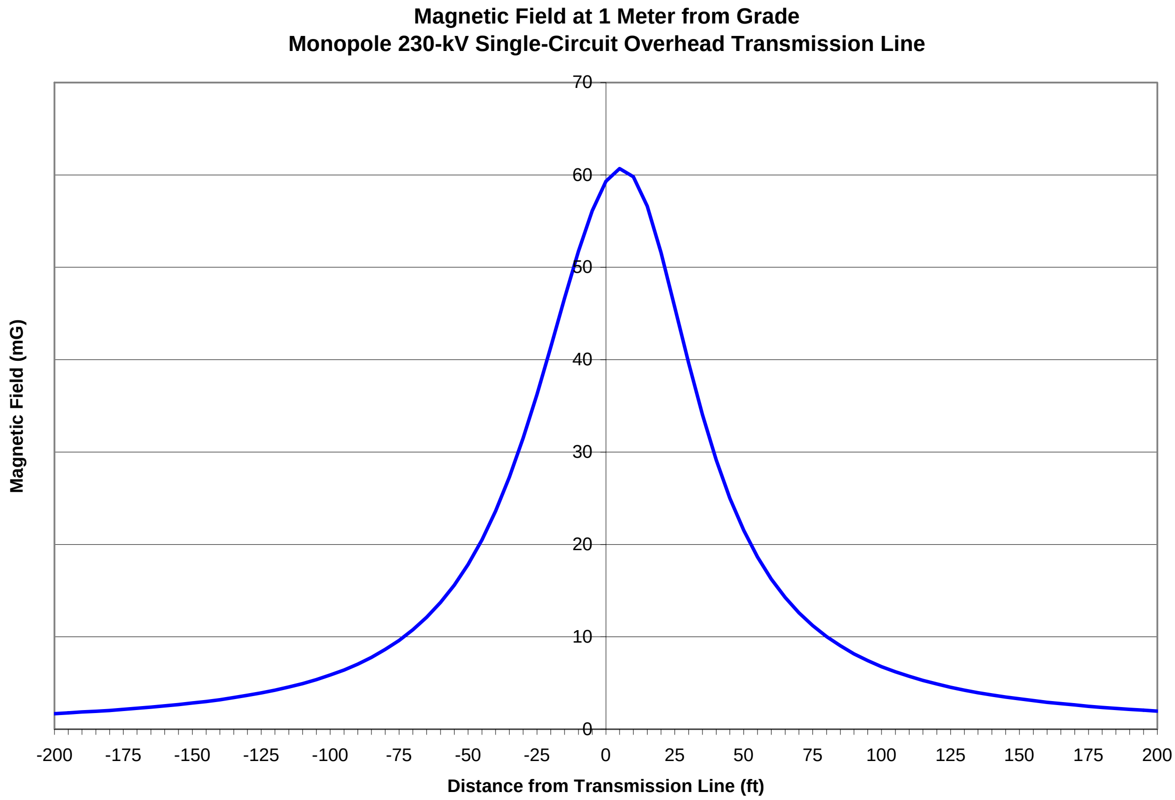

FIGURE 6
Magnetic Field Profile for Monopole 230-kV Overhead Transmission Line

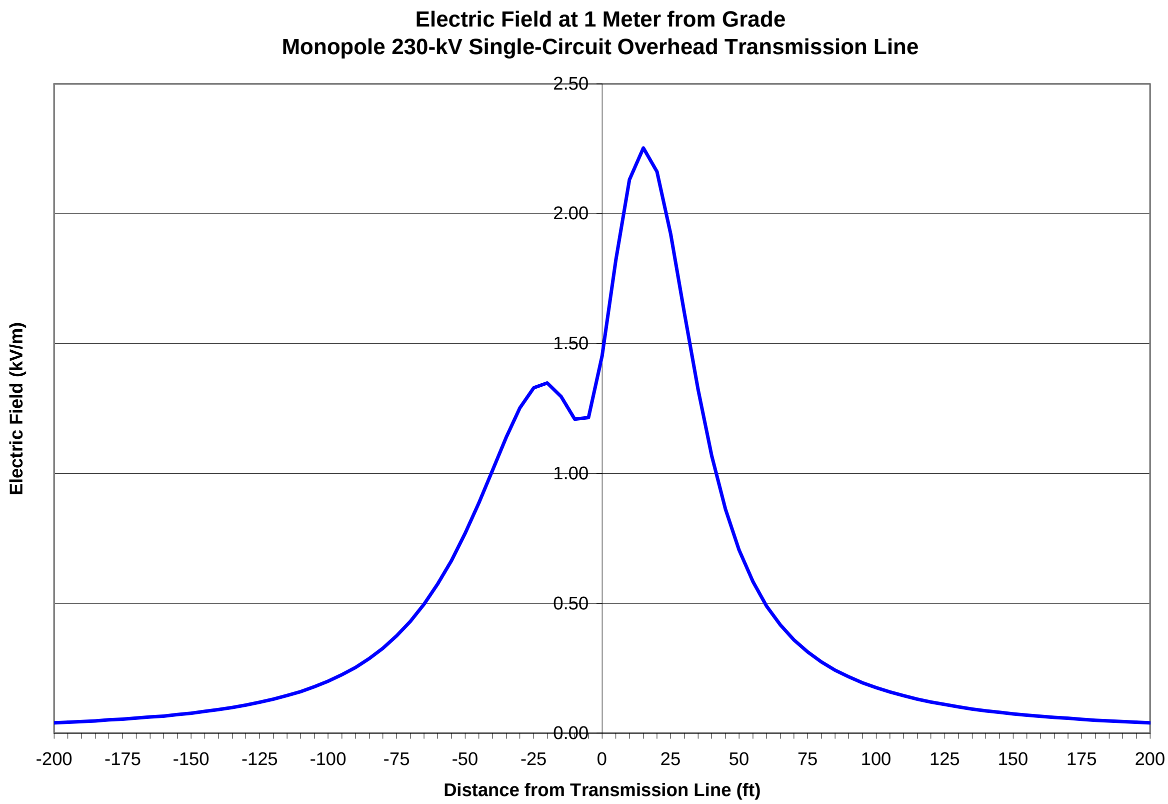

FIGURE 7
Electric Field Profile for Monopole 230-kV Overhead Transmission Line

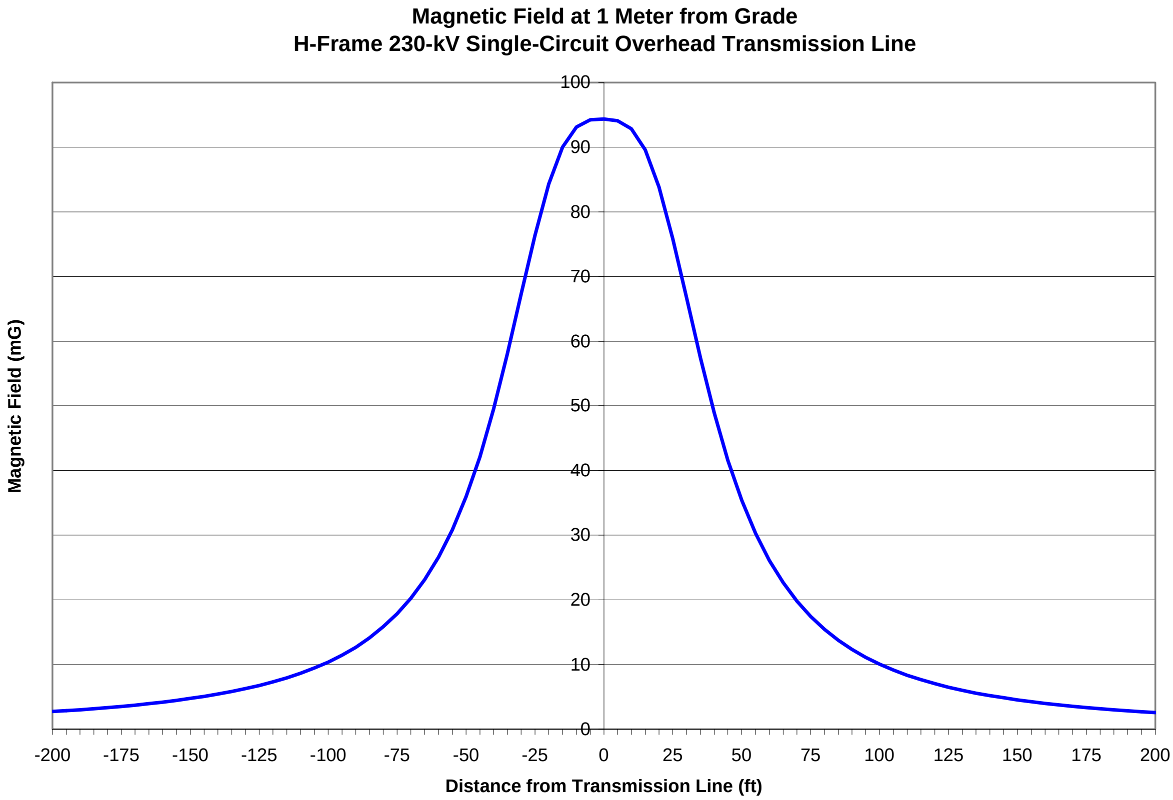

FIGURE 8
Magnetic Field Profile for H-Frame 230-kV Overhead Transmission Line

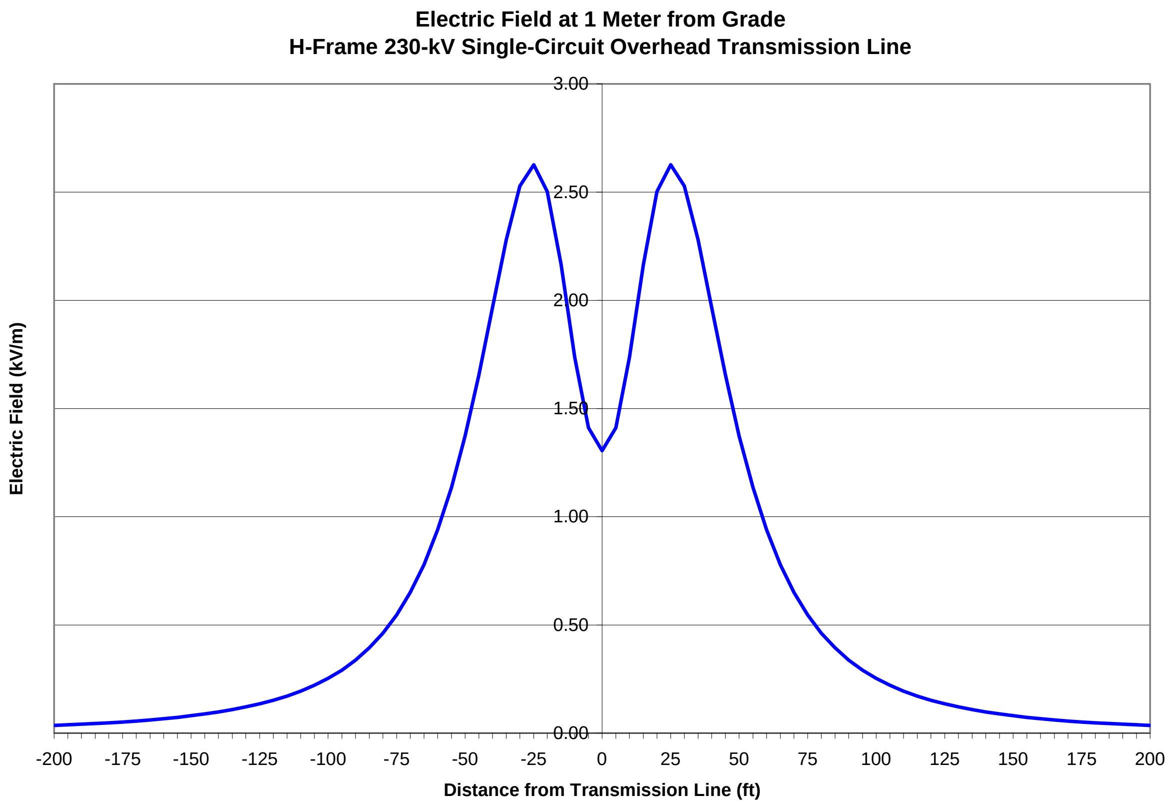

FIGURE 9
Electric Field Profile for H-Frame 230-kV Overhead Transmission Line

Measures Proposed to Reduce Electric or Magnetic Field Levels

There are no occupied buildings, residences, or other sensitive receptors within 200 feet on either side of the proposed centerline of the overhead collector lines or overhead transmission line. In addition, EMF will be reduced by the triangular conductor configuration of the monopole support structure for the overhead transmission line option. For the two 34.5-kV double-circuit overhead collector lines, measures will be taken to reduce EMF. Mitigation of EMF will involve the transposing of conductors to improve the cancellation of fields. Conductors will be arranged, with A, B, and C phases, from top to bottom, on one side of the pole, and with C, B, and A phases, from top to bottom, on the other side of the pole. Construction drawings will clearly designate the intended phase positions and connections. Therefore, the potential for human exposure to EMF from the overhead collector lines or overhead transmission line is negligible.

Alternating Current Electric Fields

The electric fields on the corridor containing either the two 34.5-kV double-circuit overhead collector lines or one single-circuit 230-kV overhead transmission line do not exceed 9 kV per meter (see Figures 5, 7, and 9). These figures demonstrate that the electric field estimated at the center of the line for either option is less than 3 kV per meter. Based on these results, the two 34.5-kV double-circuit overhead collector lines or the one 230-kV single-circuit overhead transmission line will comply with the 9-kV-per-meter standard set forth in OAR 345-024-0090(1).

Induced Voltage and Current

The two 34.5-kV double-circuit overhead collector lines and the 230-kV single-circuit line overhead transmission line will be designed so that induced voltage and current resulting from the lines and related or supporting facilities will be as low as reasonably achievable. Below is an analysis of the risk of induced voltage and current from the lines.

Induced Voltage

A common induced voltage hazard occurs on fences that parallel overhead transmission lines. If the fence is ungrounded, it possesses the voltage of the net electric field of the overhead conductors. A person touching such a fence becomes a conducting path to ground for the current and will feel a momentary shock. The AC static voltage on the fence bleeds off quickly but can be annoying or hazardous. This hazard is easily removed by bonding the fence wires along the length of the fence to grounding rods that are driven into the soil.

Induced Current

Induced currents are not a hazard to people because almost no voltage is involved. However, induced currents are a concern for railroad communications, and pipeline cathodic protection systems that parallel transmission lines.

Sufficient distance occurs from the overhead lines such that induced current will not be an issue.

APPENDIX A

Results of the EPRI EMFWorkstation: ENVIRO Program for Two 34.5-kV Double-Circuit Overhead Collector Lines

RESULTS OF ENVIRO PROGRAM

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LJIIB 34-kV Double Circuit

BUNDLE INFORMATION

BNDL #	CIRC #	VOLTAGE (kV)	VOLTAGE ANGLE (DEG)	LOAD (AMPS)	CURRENT ANGLE (DEG)	# OF COND	COORDINATES X (FT)	COORDINATES Y (FT)	PHASE
1	1	34.5	.0	789.0	.0	1	-42.0	37.0	A
2	2	34.5	240.0	789.0	120.0	1	-42.0	31.0	B
3	3	34.5	120.0	789.0	240.0	1	-42.0	25.0	C
4	4	.0	.0	.0	.0	1	-36.8	43.0	GND
5	5	34.5	.0	789.0	.0	1	-33.0	25.0	A
6	6	34.5	240.0	789.0	120.0	1	-33.0	31.0	B
7	7	34.5	120.0	789.0	240.0	1	-33.0	37.0	C
8	8	34.5	.0	789.0	.0	1	33.0	37.0	A
9	9	34.5	240.0	789.0	120.0	1	33.0	31.0	B
10	10	34.5	120.0	789.0	240.0	1	33.0	25.0	C
11	11	34.5	.0	789.0	.0	1	42.0	25.0	A
12	12	34.5	240.0	789.0	120.0	1	42.0	31.0	B
13	13	34.5	120.0	789.0	240.0	1	42.0	37.0	C
14	14	.0	.0	.0	.0	1	38.3	43.0	GND

MINIMUM GROUND CLEARANCE = 25.000 FT.

SUBCONDUCTOR INFORMATION - REGULAR BUNDLES

BNDL #	DIAMETER (IN)	SPACING (IN)	DC RESIST. (OHMS/MI)	AC RESIST. (OHMS/MI)	AC REACT. (OHMS/MI)
1	1.545	.000	.05810	.06110	.358000
2	1.545	.000	.05810	.06110	.358000
3	1.545	.000	.05810	.06110	.358000
5	1.545	.000	.05810	.06110	.358000
6	1.545	.000	.05810	.06110	.358000
7	1.545	.000	.05810	.06110	.358000
8	1.545	.000	.05810	.06110	.358000
9	1.545	.000	.05810	.06110	.358000
10	1.545	.000	.05810	.06110	.358000
11	1.545	.000	.05810	.06110	.358000
12	1.545	.000	.05810	.06110	.358000
13	1.545	.000	.05810	.06110	.358000
4	.385	.000	2.40000	2.44000	.749000
14	.385	.000	2.40000	2.44000	.749000

MAXIMUM SURFACE GRADIENT (kV/cm)

*   *
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BNDL #	Type	ACrms	PEAK(+)	PEAK(-)
1	AC	2.23	3.15	-3.15
2	AC	2.27	3.21	-3.21
3	AC	2.23	3.16	-3.16
5	AC	2.23	3.15	-3.15
6	AC	2.27	3.21	-3.21
7	AC	2.24	3.17	-3.17
8	AC	2.23	3.15	-3.15
9	AC	2.27	3.21	-3.21
10	AC	2.23	3.15	-3.15
11	AC	2.23	3.15	-3.15
12	AC	2.27	3.21	-3.21
13	AC	2.24	3.16	-3.16
4	Ground Wire	.52	.74	-.74
14	Ground Wire	.53	.74	-.74

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*   *
*   AC ELECTRIC FIELD PROFILE   *
*   at   3.28 feet above ground   *
*   *
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LATERAL DISTANCE (feet)	(meters)	MAXIMUM FIELD (kV/m)	MINOR/MAJOR ELLIPSE AXES (ratio)	VERTICAL (kV/m)	HORIZONTAL (kV/m)	SPACE POTENTIAL (kV)
-200.0	-60.96	.004	.004	.004	.000	.004
-195.0	-59.44	.005	.004	.005	.000	.005
-190.0	-57.91	.005	.004	.005	.000	.005
-185.0	-56.39	.005	.004	.005	.000	.005
-180.0	-54.86	.005	.004	.005	.000	.005
-175.0	-53.34	.006	.004	.006	.000	.006
-170.0	-51.82	.006	.004	.006	.000	.006
-165.0	-50.29	.006	.004	.006	.000	.006
-160.0	-48.77	.007	.004	.007	.000	.007
-155.0	-47.24	.007	.004	.007	.000	.007
-150.0	-45.72	.008	.003	.008	.000	.008
-145.0	-44.20	.008	.003	.008	.000	.008
-140.0	-42.67	.009	.002	.009	.000	.009
-135.0	-41.15	.010	.001	.010	.000	.010
-130.0	-39.62	.010	.001	.010	.001	.010
-125.0	-38.10	.011	.003	.011	.001	.011
-120.0	-36.58	.012	.006	.012	.001	.012
-115.0	-35.05	.013	.011	.013	.001	.013
-110.0	-33.53	.014	.018	.014	.001	.014
-105.0	-32.00	.015	.029	.015	.001	.015
-100.0	-30.48	.016	.045	.016	.001	.016
-95.0	-28.96	.018	.069	.018	.001	.018
-90.0	-27.43	.019	.102	.019	.002	.019
-85.0	-25.91	.021	.139	.021	.004	.022
-80.0	-24.38	.026	.160	.026	.006	.026
-75.0	-22.86	.035	.144	.034	.009	.035
-70.0	-21.34	.050	.099	.049	.014	.050
-65.0	-19.81	.075	.050	.073	.020	.074
-60.0	-18.29	.110	.005	.107	.025	.108
-55.0	-16.76	.152	.038	.150	.027	.149
-50.0	-15.24	.188	.091	.188	.024	.184
-45.0	-13.72	.203	.177	.203	.036	.198

-40.0	-12.19	.196	.288	.196	.057	.192
-35.0	-10.67	.198	.284	.198	.057	.194
-30.0	-9.14	.208	.170	.208	.035	.202
-25.0	-7.62	.194	.085	.194	.023	.190
-20.0	-6.10	.159	.026	.157	.026	.156
-15.0	-4.57	.117	.030	.115	.026	.116
-10.0	-3.05	.082	.107	.080	.021	.081
-5.0	-1.52	.058	.230	.057	.018	.058
.0	.00	.047	.344	.047	.016	.048
5.0	1.52	.056	.256	.055	.018	.055
10.0	3.05	.079	.123	.077	.022	.078
15.0	4.57	.114	.038	.111	.026	.112
20.0	6.10	.156	.022	.154	.027	.153
25.0	7.62	.192	.083	.191	.023	.187
30.0	9.14	.206	.171	.206	.035	.201
35.0	10.67	.198	.285	.197	.057	.193
40.0	12.19	.197	.287	.197	.057	.193
45.0	13.72	.205	.176	.205	.036	.199
50.0	15.24	.190	.092	.190	.024	.186
55.0	16.76	.154	.041	.152	.027	.151
60.0	18.29	.113	.000	.110	.025	.111
65.0	19.81	.078	.040	.075	.020	.077
70.0	21.34	.052	.082	.051	.014	.052
75.0	22.86	.036	.122	.035	.009	.036
80.0	24.38	.027	.142	.026	.006	.027
85.0	25.91	.021	.131	.021	.004	.021
90.0	27.43	.019	.101	.018	.002	.019
95.0	28.96	.017	.071	.017	.002	.017
100.0	30.48	.015	.048	.015	.001	.015
105.0	32.00	.014	.031	.014	.001	.014
110.0	33.53	.013	.020	.013	.001	.013
115.0	35.05	.012	.012	.012	.001	.012
120.0	36.58	.011	.007	.011	.001	.011
125.0	38.10	.010	.003	.010	.001	.010
130.0	39.62	.010	.000	.010	.000	.010
135.0	41.15	.009	.001	.009	.000	.009
140.0	42.67	.008	.003	.008	.000	.008
145.0	44.20	.008	.004	.008	.000	.008
150.0	45.72	.007	.004	.007	.000	.007
155.0	47.24	.007	.004	.007	.000	.007
160.0	48.77	.006	.005	.006	.000	.006
165.0	50.29	.006	.005	.006	.000	.006
170.0	51.82	.006	.005	.006	.000	.006
175.0	53.34	.005	.005	.005	.000	.005
180.0	54.86	.005	.005	.005	.000	.005
185.0	56.39	.005	.005	.005	.000	.005
190.0	57.91	.005	.005	.005	.000	.005
195.0	59.44	.004	.004	.004	.000	.004
200.0	60.96	.004	.004	.004	.000	.004

AC CURRENTS IN EACH BUNDLE:

BNDL #	----- AC CURRENTS (Amperes) ----- REAL	IMAGINARY	TOTAL	BUNDLE POSITION X-COORD	Y-COORD
1	789.00	.00	789.00	-42.00	37.00
2	-394.50	683.29	789.00	-42.00	31.00
3	-394.50	-683.29	789.00	-42.00	25.00
5	789.00	.00	789.00	-33.00	25.00

6	-394.50	683.29	789.00	-33.00	31.00
7	-394.50	-683.29	789.00	-33.00	37.00
8	789.00	.00	789.00	33.00	37.00
9	-394.50	683.29	789.00	33.00	31.00
10	-394.50	-683.29	789.00	33.00	25.00
11	789.00	.00	789.00	42.00	25.00
12	-394.50	683.29	789.00	42.00	31.00
13	-394.50	-683.29	789.00	42.00	37.00
4	-4.05	2.96	5.02	-36.75	43.00
14	-4.07	3.31	5.25	38.25	43.00

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*                                     *
*       MAGNETIC FIELD PROFILE        *
*     at   3.28 feet  above ground    *
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LATERAL DISTANCE (feet)	LATERAL DISTANCE (meters)	AC MAGNETIC FIELD: MAJOR AXIS (mG)	MINOR/ MAJOR (RATIO)	VERTICAL COMP (mG)	HORIZONTAL COMP (mG)	RMS RESULTANT (mG)
-200.0	-60.96	.48	.494	.48	.24	.53
-195.0	-59.44	.50	.512	.50	.26	.56
-190.0	-57.91	.53	.531	.53	.28	.60
-185.0	-56.39	.56	.549	.55	.31	.63
-180.0	-54.86	.59	.566	.59	.34	.68
-175.0	-53.34	.62	.582	.62	.37	.72
-170.0	-51.82	.67	.596	.66	.40	.78
-165.0	-50.29	.72	.608	.71	.45	.84
-160.0	-48.77	.77	.616	.76	.49	.91
-155.0	-47.24	.84	.622	.82	.54	.99
-150.0	-45.72	.92	.623	.90	.60	1.08
-145.0	-44.20	1.01	.621	.98	.67	1.19
-140.0	-42.67	1.12	.615	1.08	.75	1.32
-135.0	-41.15	1.25	.605	1.21	.83	1.47
-130.0	-39.62	1.42	.593	1.36	.93	1.65
-125.0	-38.10	1.61	.578	1.54	1.04	1.86
-120.0	-36.58	1.85	.561	1.76	1.17	2.12
-115.0	-35.05	2.14	.543	2.05	1.31	2.43
-110.0	-33.53	2.50	.525	2.41	1.47	2.82
-105.0	-32.00	2.95	.506	2.86	1.65	3.30
-100.0	-30.48	3.52	.488	3.44	1.85	3.91
-95.0	-28.96	4.24	.470	4.19	2.08	4.68
-90.0	-27.43	5.17	.452	5.16	2.37	5.67
-85.0	-25.91	6.39	.436	6.38	2.79	6.97
-80.0	-24.38	7.99	.420	7.91	3.53	8.66
-75.0	-22.86	10.11	.405	9.71	4.98	10.91
-70.0	-21.34	12.95	.391	11.60	7.66	13.90
-65.0	-19.81	16.71	.376	13.04	12.20	17.86
-60.0	-18.29	21.62	.361	12.97	18.98	22.99
-55.0	-16.76	27.72	.344	10.68	27.30	29.31
-50.0	-15.24	34.58	.326	13.70	33.69	36.37
-45.0	-13.72	40.93	.312	29.10	31.49	42.87
-40.0	-12.19	44.86	.305	43.27	18.08	46.89
-35.0	-10.67	44.83	.310	43.07	18.65	46.94
-30.0	-9.14	41.01	.328	28.64	32.28	43.15
-25.0	-7.62	35.09	.353	13.87	34.53	37.21
-20.0	-6.10	29.04	.379	13.10	28.16	31.06
-15.0	-4.57	24.08	.402	16.69	19.87	25.95

-10.0	-3.05	20.60	.420	18.03	13.19	22.34
-5.0	-1.52	18.61	.429	18.11	9.05	20.25
.0	.00	18.03	.431	18.02	7.77	19.63
5.0	1.52	18.81	.424	18.10	9.47	20.43
10.0	3.05	21.00	.410	18.00	13.83	22.70
15.0	4.57	24.67	.391	16.64	20.62	26.49
20.0	6.10	29.80	.368	13.02	28.96	31.76
25.0	7.62	35.92	.343	13.88	35.35	37.98
30.0	9.14	41.75	.320	28.77	33.09	43.85
35.0	10.67	45.31	.306	43.30	19.23	47.38
40.0	12.19	44.93	.304	43.57	17.50	46.95
45.0	13.72	40.60	.314	29.46	30.71	42.56
50.0	15.24	33.95	.333	13.98	32.94	35.78
55.0	16.76	26.95	.355	10.48	26.61	28.60
60.0	18.29	20.82	.376	12.55	18.37	22.25
65.0	19.81	15.95	.397	12.55	11.70	17.16
70.0	21.34	12.24	.417	11.08	7.29	13.26
75.0	22.86	9.48	.438	9.19	4.77	10.35
80.0	24.38	7.42	.460	7.39	3.48	8.17
85.0	25.91	5.89	.484	5.88	2.86	6.54
90.0	27.43	4.73	.510	4.68	2.52	5.31
95.0	28.96	3.85	.539	3.74	2.27	4.37
100.0	30.48	3.17	.569	3.01	2.05	3.65
105.0	32.00	2.64	.602	2.46	1.85	3.08
110.0	33.53	2.22	.636	2.03	1.67	2.63
115.0	35.05	1.88	.673	1.70	1.50	2.27
120.0	36.58	1.61	.711	1.44	1.35	1.98
125.0	38.10	1.39	.752	1.24	1.22	1.74
130.0	39.62	1.21	.794	1.08	1.10	1.54
135.0	41.15	1.06	.838	.96	.99	1.38
140.0	42.67	.93	.882	.86	.90	1.24
145.0	44.20	.83	.925	.78	.82	1.13
150.0	45.72	.74	.957	.71	.74	1.03
155.0	47.24	.68	.946	.66	.68	.94
160.0	48.77	.64	.909	.61	.62	.87
165.0	50.29	.61	.869	.57	.57	.81
170.0	51.82	.58	.831	.54	.52	.75
175.0	53.34	.55	.794	.51	.48	.70
180.0	54.86	.53	.760	.49	.45	.66
185.0	56.39	.50	.728	.46	.41	.62
190.0	57.91	.48	.698	.44	.38	.59
195.0	59.44	.46	.670	.43	.36	.56
200.0	60.96	.45	.645	.41	.33	.53

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*                               *
*         AUDIBLE NOISE         *
*   GENERATED ACOUSTIC POWER    *
*       (dB above 1uW/m)        *
*                               *
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BNDL #	Type	Summer Fair	L5 RAIN	L50 RAIN
1	AC	******	******	******
2	AC	******	******	******
3	AC	******	******	******
5	AC	******	******	******
6	AC	******	******	******
7	AC	******	******	******
8	AC	******	******	******
9	AC	******	******	******

10	AC	******	******	******
11	AC	******	******	******
12	AC	******	******	******
13	AC	******	******	******
4	Ground Wire	******	******	******
14	Ground Wire	******	******	******

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*******************************************
*                                         *
*              AUDIBLE NOISE              *
*                                         *
* Microphone is   5.00 feet  above ground *
*          Altitude     1000. ft          *
*                                         *
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<------------ HVTRC CALCULATION METHOD ---------->

LATERAL DISTANCE (feet)	(meters)	L50 FAIR (dB(A))	L5 RAIN (dB(A))	L50 RAIN (dB(A))	Leq(24) (dB(A))	Ldn (dB(A))
-200.0	-60.96	.0	.0	.0	.0	.0
-195.0	-59.44	.0	.0	.0	.0	.0
-190.0	-57.91	.0	.0	.0	.0	.0
-185.0	-56.39	.0	.0	.0	.0	.0
-180.0	-54.86	.0	.0	.0	.0	.0
-175.0	-53.34	.0	.0	.0	.0	.0
-170.0	-51.82	.0	.0	.0	.0	.0
-165.0	-50.29	.0	.0	.0	.0	.0
-160.0	-48.77	.0	.0	.0	.0	.0
-155.0	-47.24	.0	.0	.0	.0	.0
-150.0	-45.72	.0	.0	.0	.0	.0
-145.0	-44.20	.0	.0	.0	.0	.0
-140.0	-42.67	.0	.0	.0	.0	.0
-135.0	-41.15	.0	.0	.0	.0	.0
-130.0	-39.62	.0	.0	.0	.0	.0
-125.0	-38.10	.0	.0	.0	.0	.0
-120.0	-36.58	.0	.0	.0	.0	.0
-115.0	-35.05	.0	.0	.0	.0	.0
-110.0	-33.53	.0	.0	.0	.0	.0
-105.0	-32.00	.0	.0	.0	.0	.0
-100.0	-30.48	.0	.0	.0	.0	.0
-95.0	-28.96	.0	.0	.0	.0	.0
-90.0	-27.43	.0	.0	.0	.0	.0
-85.0	-25.91	.0	.0	.0	.0	.0
-80.0	-24.38	.0	.0	.0	.0	.0
-75.0	-22.86	.0	.0	.0	.0	.0
-70.0	-21.34	.0	.0	.0	.0	.0
-65.0	-19.81	.0	.0	.0	.0	.0
-60.0	-18.29	.0	.0	.0	.0	.0
-55.0	-16.76	.0	.0	.0	.0	.0
-50.0	-15.24	.0	.0	.0	.0	.0
-45.0	-13.72	.0	.0	.0	.0	.0
-40.0	-12.19	.0	.0	.0	.0	.0
-35.0	-10.67	.0	.0	.0	.0	.0
-30.0	-9.14	.0	.0	.0	.0	.0
-25.0	-7.62	.0	.0	.0	.0	.0
-20.0	-6.10	.0	.0	.0	.0	.0
-15.0	-4.57	.0	.0	.0	.0	.0
-10.0	-3.05	.0	.0	.0	.0	.0
-5.0	-1.52	.0	.0	.0	.0	.0
.0	.00	.0	.0	.0	.0	.0

5.0	1.52	.0	.0	.0	.0	.0
10.0	3.05	.0	.0	.0	.0	.0
15.0	4.57	.0	.0	.0	.0	.0
20.0	6.10	.0	.0	.0	.0	.0
25.0	7.62	.0	.0	.0	.0	.0
30.0	9.14	.0	.0	.0	.0	.0
35.0	10.67	.0	.0	.0	.0	.0
40.0	12.19	.0	.0	.0	.0	.0
45.0	13.72	.0	.0	.0	.0	.0
50.0	15.24	.0	.0	.0	.0	.0
55.0	16.76	.0	.0	.0	.0	.0
60.0	18.29	.0	.0	.0	.0	.0
65.0	19.81	.0	.0	.0	.0	.0
70.0	21.34	.0	.0	.0	.0	.0
75.0	22.86	.0	.0	.0	.0	.0
80.0	24.38	.0	.0	.0	.0	.0
85.0	25.91	.0	.0	.0	.0	.0
90.0	27.43	.0	.0	.0	.0	.0
95.0	28.96	.0	.0	.0	.0	.0
100.0	30.48	.0	.0	.0	.0	.0
105.0	32.00	.0	.0	.0	.0	.0
110.0	33.53	.0	.0	.0	.0	.0
115.0	35.05	.0	.0	.0	.0	.0
120.0	36.58	.0	.0	.0	.0	.0
125.0	38.10	.0	.0	.0	.0	.0
130.0	39.62	.0	.0	.0	.0	.0
135.0	41.15	.0	.0	.0	.0	.0
140.0	42.67	.0	.0	.0	.0	.0
145.0	44.20	.0	.0	.0	.0	.0
150.0	45.72	.0	.0	.0	.0	.0
155.0	47.24	.0	.0	.0	.0	.0
160.0	48.77	.0	.0	.0	.0	.0
165.0	50.29	.0	.0	.0	.0	.0
170.0	51.82	.0	.0	.0	.0	.0
175.0	53.34	.0	.0	.0	.0	.0
180.0	54.86	.0	.0	.0	.0	.0
185.0	56.39	.0	.0	.0	.0	.0
190.0	57.91	.0	.0	.0	.0	.0
195.0	59.44	.0	.0	.0	.0	.0
200.0	60.96	.0	.0	.0	.0	.0

```
*************************
*                       *
*     AUDIBLE NOISE     *
*    (other methods)    *
*                       *
* Altitude     1000. ft *
*                       *
*************************
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LATERAL DISTANCE (feet)	(meters)	<------ BPA METHOD -------> FAIR WEATHER dB(A)	L5 RAIN dB(A)	L50 RAIN dB(A)	Ldn dB(A)	<- CRIEPI --> AVERAGE FAIR dB(A)	L5 RAIN dB(A)	EdF L5 RAIN dB(A)	ENEL L5 RAIN dB(A)	IREQ L5 RAIN dB(A)
-200.0	-60.96	.0	.0	.0	.0	.0	.0	.0	.0	.0
-195.0	-59.44	.0	.0	.0	.0	.0	.0	.0	.0	.0
-190.0	-57.91	.0	.0	.0	.0	.0	.0	.0	.0	.0
-185.0	-56.39	.0	.0	.0	.0	.0	.0	.0	.0	.0
-180.0	-54.86	.0	.0	.0	.0	.0	.0	.0	.0	.0
-175.0	-53.34	.0	.0	.0	.0	.0	.0	.0	.0	.0
-170.0	-51.82	.0	.0	.0	.0	.0	.0	.0	.0	.0
-165.0	-50.29	.0	.0	.0	.0	.0	.0	.0	.0	.0

-160.0	-48.77	.0	.0	.0	.0	.0	.0	.0	.0	.0
-155.0	-47.24	.0	.0	.0	.0	.0	.0	.0	.0	.0
-150.0	-45.72	.0	.0	.0	.0	.0	.0	.0	.0	.0
-145.0	-44.20	.0	.0	.0	.0	.0	.0	.0	.0	.0
-140.0	-42.67	.0	.0	.0	.0	.0	.0	.0	.0	.0
-135.0	-41.15	.0	.0	.0	.0	.0	.0	.0	.0	.0
-130.0	-39.62	.0	.0	.0	.0	.0	.0	.0	.0	.0
-125.0	-38.10	.0	.0	.0	.0	.0	.0	.0	.0	.0
-120.0	-36.58	.0	.0	.0	.0	.0	.0	.0	.0	.0
-115.0	-35.05	.0	.0	.0	.0	.0	.0	.0	.0	.0
-110.0	-33.53	.0	.0	.0	.0	.0	.0	.0	.0	.0
-105.0	-32.00	.0	.0	.0	.0	.0	.0	.0	.0	.0
-100.0	-30.48	.0	.0	.0	.0	.0	.0	.0	.0	.0
-95.0	-28.96	.0	.0	.0	.0	.0	.0	.0	.0	.0
-90.0	-27.43	.0	.0	.0	.0	.0	.0	.0	.0	.0
-85.0	-25.91	.0	.0	.0	.0	.0	.0	.0	.0	.0
-80.0	-24.38	.0	.0	.0	.0	.0	.0	.0	.0	.0
-75.0	-22.86	.0	.0	.0	.0	.0	.0	.0	.0	.0
-70.0	-21.34	.0	.0	.0	.0	.0	.0	.0	.0	.0
-65.0	-19.81	.0	.0	.0	.0	.0	.0	.0	.0	.0
-60.0	-18.29	.0	.0	.0	.0	.0	.0	.0	.0	.0
-55.0	-16.76	.0	.0	.0	.0	.0	.0	.0	.0	.0
-50.0	-15.24	.0	.0	.0	.0	.0	.0	.0	.0	.0
-45.0	-13.72	.0	.0	.0	.0	.0	.0	.0	.0	.0
-40.0	-12.19	.0	.0	.0	.0	.0	.0	.0	.0	.0
-35.0	-10.67	.0	.0	.0	.0	.0	.0	.0	.0	.0
-30.0	-9.14	.0	.0	.0	.0	.0	.0	.0	.0	.0
-25.0	-7.62	.0	.0	.0	.0	.0	.0	.0	.0	.0
-20.0	-6.10	.0	.0	.0	.0	.0	.0	.0	.0	.0
-15.0	-4.57	.0	.0	.0	.0	.0	.0	.0	.0	.0
-10.0	-3.05	.0	.0	.0	.0	.0	.0	.0	.0	.0
-5.0	-1.52	.0	.0	.0	.0	.0	.0	.0	.0	.0
.0	.00	.0	.0	.0	.0	.0	.0	.0	.0	.0
5.0	1.52	.0	.0	.0	.0	.0	.0	.0	.0	.0
10.0	3.05	.0	.0	.0	.0	.0	.0	.0	.0	.0
15.0	4.57	.0	.0	.0	.0	.0	.0	.0	.0	.0
20.0	6.10	.0	.0	.0	.0	.0	.0	.0	.0	.0
25.0	7.62	.0	.0	.0	.0	.0	.0	.0	.0	.0
30.0	9.14	.0	.0	.0	.0	.0	.0	.0	.0	.0
35.0	10.67	.0	.0	.0	.0	.0	.0	.0	.0	.0
40.0	12.19	.0	.0	.0	.0	.0	.0	.0	.0	.0
45.0	13.72	.0	.0	.0	.0	.0	.0	.0	.0	.0
50.0	15.24	.0	.0	.0	.0	.0	.0	.0	.0	.0
55.0	16.76	.0	.0	.0	.0	.0	.0	.0	.0	.0
60.0	18.29	.0	.0	.0	.0	.0	.0	.0	.0	.0
65.0	19.81	.0	.0	.0	.0	.0	.0	.0	.0	.0
70.0	21.34	.0	.0	.0	.0	.0	.0	.0	.0	.0
75.0	22.86	.0	.0	.0	.0	.0	.0	.0	.0	.0
80.0	24.38	.0	.0	.0	.0	.0	.0	.0	.0	.0
85.0	25.91	.0	.0	.0	.0	.0	.0	.0	.0	.0
90.0	27.43	.0	.0	.0	.0	.0	.0	.0	.0	.0
95.0	28.96	.0	.0	.0	.0	.0	.0	.0	.0	.0
100.0	30.48	.0	.0	.0	.0	.0	.0	.0	.0	.0
105.0	32.00	.0	.0	.0	.0	.0	.0	.0	.0	.0
110.0	33.53	.0	.0	.0	.0	.0	.0	.0	.0	.0
115.0	35.05	.0	.0	.0	.0	.0	.0	.0	.0	.0
120.0	36.58	.0	.0	.0	.0	.0	.0	.0	.0	.0
125.0	38.10	.0	.0	.0	.0	.0	.0	.0	.0	.0
130.0	39.62	.0	.0	.0	.0	.0	.0	.0	.0	.0
135.0	41.15	.0	.0	.0	.0	.0	.0	.0	.0	.0
140.0	42.67	.0	.0	.0	.0	.0	.0	.0	.0	.0
145.0	44.20	.0	.0	.0	.0	.0	.0	.0	.0	.0
150.0	45.72	.0	.0	.0	.0	.0	.0	.0	.0	.0

155.0	47.24	.0	.0	.0	.0	.0	.0	.0	.0	.0
160.0	48.77	.0	.0	.0	.0	.0	.0	.0	.0	.0
165.0	50.29	.0	.0	.0	.0	.0	.0	.0	.0	.0
170.0	51.82	.0	.0	.0	.0	.0	.0	.0	.0	.0
175.0	53.34	.0	.0	.0	.0	.0	.0	.0	.0	.0
180.0	54.86	.0	.0	.0	.0	.0	.0	.0	.0	.0
185.0	56.39	.0	.0	.0	.0	.0	.0	.0	.0	.0
190.0	57.91	.0	.0	.0	.0	.0	.0	.0	.0	.0
195.0	59.44	.0	.0	.0	.0	.0	.0	.0	.0	.0
200.0	60.96	.0	.0	.0	.0	.0	.0	.0	.0	.0

Audible noise prediction methods do not apply to all line geometries, voltages, or weather conditions. If a prediction method does not apply, the appropriate output data column will be zeros.

APPENDIX B

Results of the EPRI EMFWorkstation: ENVIRO Program for 230-kV Overhead Transmission Line

RESULTS OF ENVIRO PROGRAM

STUDY FILE NAME: C:\PROGRA~1\EPRI\EMFW_251\ENVIRO\LJIIBREV.I01

DATE: 6/ 4/2009 TIME: 16:49

LJIIB 230-kV Single Circuit H-frame with "Rail" Conductor

BUNDLE INFORMATION

BNDL #	CIRC #	VOLTAGE (kV)	VOLTAGE ANGLE (DEG)	LOAD (AMPS)	CURRENT ANGLE (DEG)	# OF COND	COORDINATES X (FT)	COORDINATES Y (FT)	PHASE
1	1	230.0	.0	474.0	.0	1	-20.0	30.0	A
2	2	230.0	240.0	474.0	120.0	1	.0	30.0	B
3	3	230.0	120.0	474.0	240.0	1	20.0	30.0	C
4	4	.0	.0	.0	.0	1	-10.0	47.0	GND
5	5	.0	.0	.0	.0	1	10.0	47.0	GND

MINIMUM GROUND CLEARANCE = 30.000 FT.

SUBCONDUCTOR INFORMATION - REGULAR BUNDLES

BNDL #	DIAMETER (IN)	SPACING (IN)	DC RESIST. (OHMS/MI)	AC RESIST. (OHMS/MI)	AC REACT. (OHMS/MI)
1	1.165	.000	.09720	.09940	.395000
2	1.165	.000	.09720	.09940	.395000
3	1.165	.000	.09720	.09940	.395000
4	1.165	.000	.09720	.09940	.395000
5	1.165	.000	.09720	.09940	.395000

MAXIMUM SURFACE GRADIENT (kV/cm)

BNDL #	Type	ACrms	PEAK(+)	PEAK(-)
1	AC	14.41	20.38	-20.38
2	AC	15.32	21.67	-21.67
3	AC	14.41	20.38	-20.38
4	Ground Wire	1.04	1.48	-1.48
5	Ground Wire	1.04	1.48	-1.48

AC ELECTRIC FIELD PROFILE
at 3.28 feet above ground

LATERAL DISTANCE (feet)	(meters)	MAXIMUM FIELD (kV/m)	MINOR/MAJOR ELLIPSE AXES (ratio)	VERTICAL (kV/m)	HORIZONTAL (kV/m)	SPACE POTENTIAL (kV)
-200.0	-60.96	.035	.004	.035	.002	.035
-195.0	-59.44	.038	.004	.038	.002	.038
-190.0	-57.91	.041	.004	.041	.002	.041
-185.0	-56.39	.044	.004	.044	.002	.044
-180.0	-54.86	.048	.004	.048	.002	.048
-175.0	-53.34	.052	.004	.052	.003	.052
-170.0	-51.82	.056	.004	.056	.003	.056
-165.0	-50.29	.061	.004	.061	.003	.061
-160.0	-48.77	.067	.004	.067	.004	.067
-155.0	-47.24	.073	.003	.073	.004	.073
-150.0	-45.72	.081	.003	.080	.005	.081
-145.0	-44.20	.089	.003	.089	.006	.089
-140.0	-42.67	.098	.003	.098	.007	.098
-135.0	-41.15	.109	.003	.109	.008	.109
-130.0	-39.62	.121	.003	.121	.009	.121
-125.0	-38.10	.135	.003	.135	.010	.135
-120.0	-36.58	.152	.003	.151	.012	.152
-115.0	-35.05	.171	.002	.171	.014	.171
-110.0	-33.53	.194	.002	.193	.016	.194
-105.0	-32.00	.221	.002	.220	.019	.221
-100.0	-30.48	.253	.002	.252	.023	.253
-95.0	-28.96	.291	.002	.290	.028	.291
-90.0	-27.43	.338	.001	.336	.033	.337
-85.0	-25.91	.394	.001	.392	.040	.393
-80.0	-24.38	.462	.001	.460	.050	.462
-75.0	-22.86	.546	.001	.543	.061	.546
-70.0	-21.34	.650	.001	.646	.076	.649
-65.0	-19.81	.779	.001	.773	.094	.778
-60.0	-18.29	.939	.001	.931	.116	.936
-55.0	-16.76	1.135	.002	1.126	.141	1.132
-50.0	-15.24	1.374	.003	1.363	.170	1.369
-45.0	-13.72	1.655	.006	1.643	.195	1.647
-40.0	-12.19	1.967	.010	1.956	.208	1.956
-35.0	-10.67	2.279	.018	2.271	.192	2.261
-30.0	-9.14	2.528	.031	2.525	.141	2.502
-25.0	-7.62	2.626	.053	2.626	.139	2.590
-20.0	-6.10	2.503	.092	2.497	.284	2.458
-15.0	-4.57	2.165	.160	2.147	.444	2.114
-10.0	-3.05	1.736	.264	1.715	.534	1.688
-5.0	-1.52	1.411	.372	1.403	.545	1.368
.0	.00	1.305	.409	1.305	.534	1.260
5.0	1.52	1.411	.372	1.403	.545	1.368
10.0	3.05	1.736	.264	1.715	.534	1.688
15.0	4.57	2.165	.160	2.147	.444	2.114
20.0	6.10	2.503	.092	2.497	.284	2.458
25.0	7.62	2.626	.053	2.626	.139	2.590
30.0	9.14	2.528	.031	2.525	.141	2.502
35.0	10.67	2.279	.018	2.271	.192	2.261
40.0	12.19	1.967	.010	1.956	.208	1.956
45.0	13.72	1.655	.006	1.643	.195	1.647
50.0	15.24	1.374	.003	1.363	.170	1.369
55.0	16.76	1.135	.002	1.126	.141	1.132
60.0	18.29	.939	.001	.931	.116	.936
65.0	19.81	.779	.001	.773	.094	.778
70.0	21.34	.650	.001	.646	.076	.649
75.0	22.86	.546	.001	.543	.061	.546
80.0	24.38	.462	.001	.460	.050	.462
85.0	25.91	.394	.001	.392	.040	.393
90.0	27.43	.338	.001	.336	.033	.337

95.0	28.96	.291	.002	.290	.028	.291
100.0	30.48	.253	.002	.252	.023	.253
105.0	32.00	.221	.002	.220	.019	.221
110.0	33.53	.194	.002	.193	.016	.194
115.0	35.05	.171	.002	.171	.014	.171
120.0	36.58	.152	.003	.151	.012	.152
125.0	38.10	.135	.003	.135	.010	.135
130.0	39.62	.121	.003	.121	.009	.121
135.0	41.15	.109	.003	.109	.008	.109
140.0	42.67	.098	.003	.098	.007	.098
145.0	44.20	.089	.003	.089	.006	.089
150.0	45.72	.081	.003	.080	.005	.081
155.0	47.24	.073	.003	.073	.004	.073
160.0	48.77	.067	.004	.067	.004	.067
165.0	50.29	.061	.004	.061	.003	.061
170.0	51.82	.056	.004	.056	.003	.056
175.0	53.34	.052	.004	.052	.003	.052
180.0	54.86	.048	.004	.048	.002	.048
185.0	56.39	.044	.004	.044	.002	.044
190.0	57.91	.041	.004	.041	.002	.041
195.0	59.44	.038	.004	.038	.002	.038
200.0	60.96	.035	.004	.035	.002	.035

AC CURRENTS IN EACH BUNDLE:

BNDL #	AC CURRENTS (Amperes) REAL	IMAGINARY	TOTAL	BUNDLE POSITION X-COORD	Y-COORD
1	474.00	.00	474.00	-20.00	30.00
2	-237.00	410.50	474.00	.00	30.00
3	-237.00	-410.50	474.00	20.00	30.00
4	-23.86	-28.49	37.16	-10.00	47.00
5	33.88	15.75	37.36	10.00	47.00

MAGNETIC FIELD PROFILE
at 3.28 feet above ground

LATERAL DISTANCE (feet)	(meters)	AC MAGNETIC FIELD: MAJOR AXIS (mG)	MINOR/ MAJOR (RATIO)	VERTICAL COMP (mG)	HORIZONTAL COMP (mG)	RMS RESULTANT (mG)
-200.0	-60.96	2.73	.008	2.62	.75	2.73
-195.0	-59.44	2.86	.008	2.75	.80	2.86
-190.0	-57.91	3.01	.008	2.88	.86	3.01
-185.0	-56.39	3.17	.008	3.03	.92	3.17
-180.0	-54.86	3.34	.008	3.19	1.00	3.34
-175.0	-53.34	3.53	.008	3.36	1.08	3.53
-170.0	-51.82	3.73	.009	3.54	1.17	3.73
-165.0	-50.29	3.95	.009	3.74	1.27	3.95
-160.0	-48.77	4.19	.010	3.96	1.39	4.19
-155.0	-47.24	4.46	.010	4.19	1.52	4.46
-150.0	-45.72	4.75	.011	4.45	1.67	4.75

-145.0	-44.20	5.07	.011	4.73	1.84	5.08
-140.0	-42.67	5.43	.012	5.04	2.03	5.43
-135.0	-41.15	5.83	.013	5.37	2.26	5.83
-130.0	-39.62	6.27	.014	5.74	2.51	6.27
-125.0	-38.10	6.76	.015	6.15	2.81	6.76
-120.0	-36.58	7.32	.016	6.60	3.16	7.32
-115.0	-35.05	7.94	.017	7.10	3.57	7.94
-110.0	-33.53	8.65	.019	7.65	4.05	8.65
-105.0	-32.00	9.46	.021	8.25	4.63	9.46
-100.0	-30.48	10.39	.023	8.93	5.32	10.39
-95.0	-28.96	11.45	.026	9.67	6.15	11.46
-90.0	-27.43	12.69	.029	10.49	7.15	12.70
-85.0	-25.91	14.14	.032	11.39	8.39	14.15
-80.0	-24.38	15.84	.036	12.36	9.92	15.85
-75.0	-22.86	17.85	.041	13.39	11.82	17.86
-70.0	-21.34	20.25	.046	14.46	14.21	20.27
-65.0	-19.81	23.13	.053	15.48	17.23	23.16
-60.0	-18.29	26.61	.061	16.34	21.06	26.66
-55.0	-16.76	30.83	.071	16.83	25.93	30.91
-50.0	-15.24	35.96	.083	16.57	32.05	36.08
-45.0	-13.72	42.15	.098	15.01	39.60	42.35
-40.0	-12.19	49.52	.117	11.64	48.48	49.86
-35.0	-10.67	58.01	.140	8.36	57.97	58.57
-30.0	-9.14	67.24	.169	15.75	66.35	68.19
-25.0	-7.62	76.39	.205	32.70	70.79	77.98
-20.0	-6.10	84.31	.250	53.25	68.66	86.89
-15.0	-4.57	89.98	.301	72.36	59.97	93.98
-10.0	-3.05	93.10	.356	85.82	48.96	98.81
-5.0	-1.52	94.22	.400	92.58	41.60	101.49
.0	.00	94.37	.418	94.37	39.49	102.30
5.0	1.52	94.08	.400	92.53	41.32	101.34
10.0	3.05	92.82	.355	85.76	48.45	98.51
15.0	4.57	89.59	.301	72.32	59.34	93.55
20.0	6.10	83.82	.249	53.25	68.00	86.37
25.0	7.62	75.84	.204	32.73	70.14	77.40
30.0	9.14	66.66	.167	15.74	65.72	67.58
35.0	10.67	57.42	.138	8.09	57.39	57.96
40.0	12.19	48.94	.114	11.30	47.94	49.25
45.0	13.72	41.59	.095	14.68	39.11	41.77
50.0	15.24	35.42	.080	16.23	31.61	35.53
55.0	16.76	30.32	.068	16.49	25.52	30.39
60.0	18.29	26.12	.058	16.01	20.69	26.16
65.0	19.81	22.67	.050	15.16	16.89	22.70
70.0	21.34	19.81	.043	14.14	13.90	19.83
75.0	22.86	17.44	.037	13.09	11.54	17.45
80.0	24.38	15.44	.033	12.07	9.65	15.45
85.0	25.91	13.77	.029	11.10	8.14	13.77
90.0	27.43	12.34	.025	10.22	6.92	12.34
95.0	28.96	11.12	.022	9.41	5.93	11.12
100.0	30.48	10.06	.020	8.67	5.11	10.07
105.0	32.00	9.15	.018	8.01	4.44	9.15
110.0	33.53	8.36	.016	7.41	3.87	8.36
115.0	35.05	7.66	.015	6.87	3.40	7.66
120.0	36.58	7.05	.013	6.38	2.99	7.05
125.0	38.10	6.50	.012	5.94	2.65	6.50
130.0	39.62	6.02	.011	5.54	2.36	6.02
135.0	41.15	5.59	.010	5.17	2.11	5.59
140.0	42.67	5.20	.010	4.84	1.89	5.20
145.0	44.20	4.85	.009	4.54	1.70	4.85
150.0	45.72	4.54	.009	4.27	1.54	4.54
155.0	47.24	4.25	.009	4.02	1.39	4.25
160.0	48.77	3.99	.008	3.79	1.26	3.99
165.0	50.29	3.76	.008	3.58	1.15	3.76

170.0	51.82	3.54	.008	3.38	1.05	3.54
175.0	53.34	3.34	.008	3.20	.96	3.34
180.0	54.86	3.16	.008	3.04	.88	3.16
185.0	56.39	3.00	.008	2.88	.81	3.00
190.0	57.91	2.84	.008	2.74	.75	2.84
195.0	59.44	2.70	.008	2.61	.69	2.70
200.0	60.96	2.57	.009	2.49	.64	2.57

AUDIBLE NOISE
GENERATED ACOUSTIC POWER
(dB above 1uW/m)

BNDL #	Type	Summer Fair	L5 RAIN	L50 RAIN
1	AC	-77.20	-57.01	-67.34
2	AC	-72.76	-54.26	-63.49
3	AC	-77.20	-57.01	-67.34
4	Ground Wire	******	******	******
5	Ground Wire	******	******	******

AUDIBLE NOISE

Microphone is 5.00 feet above ground
Altitude 1000. ft

<------------ HVTRC CALCULATION METHOD ---------->

LATERAL DISTANCE (feet)	LATERAL DISTANCE (meters)	L50 FAIR (dB(A))	L5 RAIN (dB(A))	L50 RAIN (dB(A))	Leq(24) (dB(A))	Ldn (dB(A))
-200.0	-60.96	24.8	44.1	34.3	32.6	40.3
-195.0	-59.44	24.9	44.2	34.5	32.8	40.5
-190.0	-57.91	25.1	44.4	34.6	32.9	40.6
-185.0	-56.39	25.2	44.5	34.8	33.0	40.7
-180.0	-54.86	25.4	44.7	34.9	33.2	40.9
-175.0	-53.34	25.5	44.8	35.1	33.3	41.0
-170.0	-51.82	25.7	45.0	35.2	33.5	41.2
-165.0	-50.29	25.8	45.1	35.4	33.7	41.4
-160.0	-48.77	26.0	45.3	35.5	33.8	41.5
-155.0	-47.24	26.2	45.5	35.7	34.0	41.7
-150.0	-45.72	26.3	45.6	35.9	34.2	41.9
-145.0	-44.20	26.5	45.8	36.0	34.3	42.0
-140.0	-42.67	26.7	46.0	36.2	34.5	42.2
-135.0	-41.15	26.9	46.2	36.4	34.7	42.4
-130.0	-39.62	27.1	46.4	36.6	34.9	42.6
-125.0	-38.10	27.3	46.6	36.8	35.1	42.8
-120.0	-36.58	27.5	46.8	37.0	35.3	43.0
-115.0	-35.05	27.7	47.0	37.2	35.5	43.2
-110.0	-33.53	27.9	47.2	37.4	35.7	43.4
-105.0	-32.00	28.1	47.4	37.7	35.9	43.6
-100.0	-30.48	28.4	47.7	37.9	36.2	43.9
-95.0	-28.96	28.6	47.9	38.1	36.4	44.1
-90.0	-27.43	28.9	48.2	38.4	36.7	44.4

-85.0	-25.91	29.1	48.4	38.7	37.0	44.6
-80.0	-24.38	29.4	48.7	38.9	37.2	44.9
-75.0	-22.86	29.7	49.0	39.2	37.5	45.2
-70.0	-21.34	30.0	49.3	39.5	37.8	45.5
-65.0	-19.81	30.3	49.7	39.9	38.2	45.9
-60.0	-18.29	30.7	50.0	40.2	38.5	46.2
-55.0	-16.76	31.0	50.4	40.6	38.9	46.6
-50.0	-15.24	31.4	50.7	41.0	39.2	46.9
-45.0	-13.72	31.8	51.1	41.3	39.6	47.3
-40.0	-12.19	32.2	51.5	41.8	40.0	47.7
-35.0	-10.67	32.6	52.0	42.2	40.5	48.2
-30.0	-9.14	33.0	52.4	42.6	40.9	48.6
-25.0	-7.62	33.4	52.7	43.0	41.2	48.9
-20.0	-6.10	33.8	53.0	43.3	41.6	49.3
-15.0	-4.57	34.1	53.3	43.6	41.9	49.5
-10.0	-3.05	34.3	53.5	43.8	42.1	49.8
-5.0	-1.52	34.4	53.6	43.9	42.2	49.9
.0	.00	34.5	53.7	44.0	42.3	50.0
5.0	1.52	34.4	53.6	43.9	42.2	49.9
10.0	3.05	34.3	53.5	43.8	42.1	49.8
15.0	4.57	34.1	53.3	43.6	41.9	49.5
20.0	6.10	33.8	53.0	43.3	41.6	49.3
25.0	7.62	33.4	52.7	43.0	41.2	48.9
30.0	9.14	33.0	52.4	42.6	40.9	48.6
35.0	10.67	32.6	52.0	42.2	40.5	48.2
40.0	12.19	32.2	51.5	41.8	40.0	47.7
45.0	13.72	31.8	51.1	41.3	39.6	47.3
50.0	15.24	31.4	50.7	41.0	39.2	46.9
55.0	16.76	31.0	50.4	40.6	38.9	46.6
60.0	18.29	30.7	50.0	40.2	38.5	46.2
65.0	19.81	30.3	49.7	39.9	38.2	45.9
70.0	21.34	30.0	49.3	39.5	37.8	45.5
75.0	22.86	29.7	49.0	39.2	37.5	45.2
80.0	24.38	29.4	48.7	38.9	37.2	44.9
85.0	25.91	29.1	48.4	38.7	37.0	44.6
90.0	27.43	28.9	48.2	38.4	36.7	44.4
95.0	28.96	28.6	47.9	38.1	36.4	44.1
100.0	30.48	28.4	47.7	37.9	36.2	43.9
105.0	32.00	28.1	47.4	37.7	35.9	43.6
110.0	33.53	27.9	47.2	37.4	35.7	43.4
115.0	35.05	27.7	47.0	37.2	35.5	43.2
120.0	36.58	27.5	46.8	37.0	35.3	43.0
125.0	38.10	27.3	46.6	36.8	35.1	42.8
130.0	39.62	27.1	46.4	36.6	34.9	42.6
135.0	41.15	26.9	46.2	36.4	34.7	42.4
140.0	42.67	26.7	46.0	36.2	34.5	42.2
145.0	44.20	26.5	45.8	36.0	34.3	42.0
150.0	45.72	26.3	45.6	35.9	34.2	41.9
155.0	47.24	26.2	45.5	35.7	34.0	41.7
160.0	48.77	26.0	45.3	35.5	33.8	41.5
165.0	50.29	25.8	45.1	35.4	33.7	41.4
170.0	51.82	25.7	45.0	35.2	33.5	41.2
175.0	53.34	25.5	44.8	35.1	33.3	41.0
180.0	54.86	25.4	44.7	34.9	33.2	40.9
185.0	56.39	25.2	44.5	34.8	33.0	40.7
190.0	57.91	25.1	44.4	34.6	32.9	40.6
195.0	59.44	24.9	44.2	34.5	32.8	40.5
200.0	60.96	24.8	44.1	34.3	32.6	40.3

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*                        *
*     AUDIBLE NOISE      *
*    (other methods)     *
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*                        *
* Altitude     1000. ft *
*                        *
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LATERAL DISTANCE (feet)	LATERAL DISTANCE (meters)	<------ BPA METHOD -------> FAIR WEATHER dB(A)	L5 RAIN dB(A)	L50 RAIN dB(A)	Ldn dB(A)	<- CRIEPI --> AVERAGE FAIR dB(A)	L5 RAIN dB(A)	EdF L5 RAIN dB(A)	ENEL L5 RAIN dB(A)	IREQ L5 RAIN dB(A)
-200.0	-60.96	11.3	39.8	36.3	.0	.0	.0	.0	.0	.0
-195.0	-59.44	11.5	40.0	36.5	.0	.0	.0	.0	.0	.0
-190.0	-57.91	11.6	40.1	36.6	.0	.0	.0	.0	.0	.0
-185.0	-56.39	11.7	40.2	36.7	.0	.0	.0	.0	.0	.0
-180.0	-54.86	11.8	40.3	36.8	.0	.0	.0	.0	.0	.0
-175.0	-53.34	12.0	40.5	37.0	.0	.0	.0	.0	.0	.0
-170.0	-51.82	12.1	40.6	37.1	.0	.0	.0	.0	.0	.0
-165.0	-50.29	12.3	40.8	37.3	.0	.0	.0	.0	.0	.0
-160.0	-48.77	12.4	40.9	37.4	.0	.0	.0	.0	.0	.0
-155.0	-47.24	12.6	41.1	37.6	.0	.0	.0	.0	.0	.0
-150.0	-45.72	12.7	41.2	37.7	.0	.0	.0	.0	.0	.0
-145.0	-44.20	12.9	41.4	37.9	.0	.0	.0	.0	.0	.0
-140.0	-42.67	13.1	41.6	38.1	.0	.0	.0	.0	.0	.0
-135.0	-41.15	13.3	41.8	38.3	.0	.0	.0	.0	.0	.0
-130.0	-39.62	13.4	41.9	38.4	.0	.0	.0	.0	.0	.0
-125.0	-38.10	13.6	42.1	38.6	.0	.0	.0	.0	.0	.0
-120.0	-36.58	13.8	42.3	38.8	.0	.0	.0	.0	.0	.0
-115.0	-35.05	14.0	42.5	39.0	.0	.0	.0	.0	.0	.0
-110.0	-33.53	14.3	42.8	39.3	.0	.0	.0	.0	.0	.0
-105.0	-32.00	14.5	43.0	39.5	.0	.0	.0	.0	.0	.0
-100.0	-30.48	14.7	43.2	39.7	.0	.0	.0	.0	.0	.0
-95.0	-28.96	15.0	43.5	40.0	.0	.0	.0	.0	.0	.0
-90.0	-27.43	15.2	43.7	40.2	.0	.0	.0	.0	.0	.0
-85.0	-25.91	15.5	44.0	40.5	.0	.0	.0	.0	.0	.0
-80.0	-24.38	15.8	44.3	40.8	.0	.0	.0	.0	.0	.0
-75.0	-22.86	16.1	44.6	41.1	.0	.0	.0	.0	.0	.0
-70.0	-21.34	16.4	44.9	41.4	.0	.0	.0	.0	.0	.0
-65.0	-19.81	16.7	45.2	41.7	.0	.0	.0	.0	.0	.0
-60.0	-18.29	17.1	45.6	42.1	.0	.0	.0	.0	.0	.0
-55.0	-16.76	17.5	46.0	42.5	.0	.0	.0	.0	.0	.0
-50.0	-15.24	17.9	46.4	42.9	.0	.0	.0	.0	.0	.0
-45.0	-13.72	18.3	46.8	43.3	.0	.0	.0	.0	.0	.0
-40.0	-12.19	18.8	47.3	43.8	.0	.0	.0	.0	.0	.0
-35.0	-10.67	19.2	47.7	44.2	.0	.0	.0	.0	.0	.0
-30.0	-9.14	19.6	48.1	44.6	.0	.0	.0	.0	.0	.0
-25.0	-7.62	20.0	48.5	45.0	.0	.0	.0	.0	.0	.0
-20.0	-6.10	20.4	48.9	45.4	.0	.0	.0	.0	.0	.0
-15.0	-4.57	20.7	49.2	45.7	.0	.0	.0	.0	.0	.0
-10.0	-3.05	20.9	49.4	45.9	.0	.0	.0	.0	.0	.0
-5.0	-1.52	21.0	49.5	46.0	.0	.0	.0	.0	.0	.0
.0	.00	21.1	49.6	46.1	.0	.0	.0	.0	.0	.0
5.0	1.52	21.0	49.5	46.0	.0	.0	.0	.0	.0	.0
10.0	3.05	20.9	49.4	45.9	.0	.0	.0	.0	.0	.0
15.0	4.57	20.7	49.2	45.7	.0	.0	.0	.0	.0	.0
20.0	6.10	20.4	48.9	45.4	.0	.0	.0	.0	.0	.0
25.0	7.62	20.0	48.5	45.0	.0	.0	.0	.0	.0	.0
30.0	9.14	19.6	48.1	44.6	.0	.0	.0	.0	.0	.0
35.0	10.67	19.2	47.7	44.2	.0	.0	.0	.0	.0	.0
40.0	12.19	18.8	47.3	43.8	.0	.0	.0	.0	.0	.0
45.0	13.72	18.3	46.8	43.3	.0	.0	.0	.0	.0	.0
50.0	15.24	17.9	46.4	42.9	.0	.0	.0	.0	.0	.0
55.0	16.76	17.5	46.0	42.5	.0	.0	.0	.0	.0	.0
60.0	18.29	17.1	45.6	42.1	.0	.0	.0	.0	.0	.0

65.0	19.81	16.7	45.2	41.7	.0	.0	.0	.0	.0	.0
70.0	21.34	16.4	44.9	41.4	.0	.0	.0	.0	.0	.0
75.0	22.86	16.1	44.6	41.1	.0	.0	.0	.0	.0	.0
80.0	24.38	15.8	44.3	40.8	.0	.0	.0	.0	.0	.0
85.0	25.91	15.5	44.0	40.5	.0	.0	.0	.0	.0	.0
90.0	27.43	15.2	43.7	40.2	.0	.0	.0	.0	.0	.0
95.0	28.96	15.0	43.5	40.0	.0	.0	.0	.0	.0	.0
100.0	30.48	14.7	43.2	39.7	.0	.0	.0	.0	.0	.0
105.0	32.00	14.5	43.0	39.5	.0	.0	.0	.0	.0	.0
110.0	33.53	14.3	42.8	39.3	.0	.0	.0	.0	.0	.0
115.0	35.05	14.0	42.5	39.0	.0	.0	.0	.0	.0	.0
120.0	36.58	13.8	42.3	38.8	.0	.0	.0	.0	.0	.0
125.0	38.10	13.6	42.1	38.6	.0	.0	.0	.0	.0	.0
130.0	39.62	13.4	41.9	38.4	.0	.0	.0	.0	.0	.0
135.0	41.15	13.3	41.8	38.3	.0	.0	.0	.0	.0	.0
140.0	42.67	13.1	41.6	38.1	.0	.0	.0	.0	.0	.0
145.0	44.20	12.9	41.4	37.9	.0	.0	.0	.0	.0	.0
150.0	45.72	12.7	41.2	37.7	.0	.0	.0	.0	.0	.0
155.0	47.24	12.6	41.1	37.6	.0	.0	.0	.0	.0	.0
160.0	48.77	12.4	40.9	37.4	.0	.0	.0	.0	.0	.0
165.0	50.29	12.3	40.8	37.3	.0	.0	.0	.0	.0	.0
170.0	51.82	12.1	40.6	37.1	.0	.0	.0	.0	.0	.0
175.0	53.34	12.0	40.5	37.0	.0	.0	.0	.0	.0	.0
180.0	54.86	11.8	40.3	36.8	.0	.0	.0	.0	.0	.0
185.0	56.39	11.7	40.2	36.7	.0	.0	.0	.0	.0	.0
190.0	57.91	11.6	40.1	36.6	.0	.0	.0	.0	.0	.0
195.0	59.44	11.5	40.0	36.5	.0	.0	.0	.0	.0	.0
200.0	60.96	11.3	39.8	36.3	.0	.0	.0	.0	.0	.0

Audible noise prediction methods do not apply to all line geometries, voltages, or weather conditions. If a prediction method does not apply, the appropriate output data column will be zeros.

RESULTS OF ENVIRO PROGRAM

STUDY FILE NAME: C:\PROGRA~1\EPRI\EMFW_251\ENVIRO\LJIIB23B.I01

DATE: 6/ 5/2009 TIME: 14: 9

LJIIB 230-kV Single Circuit Monopole with "Rail" Conductor

BUNDLE INFORMATION

BNDL #	CIRC #	VOLTAGE (kV)	VOLTAGE ANGLE (DEG)	LOAD (AMPS)	CURRENT ANGLE (DEG)	# OF COND	COORDINATES X (FT)	COORDINATES Y (FT)	PHASE
1	1	230.0	.0	474.0	.0	1	10.0	48.0	A
2	2	230.0	240.0	474.0	120.0	1	-10.0	39.0	B
3	3	230.0	120.0	474.0	240.0	1	12.0	30.0	C
4	4	.0	.0	.0	.0	1	.0	67.9	GND

MINIMUM GROUND CLEARANCE = 30.000 FT.

SUBCONDUCTOR INFORMATION - REGULAR BUNDLES

BNDL #	DIAMETER (IN)	SPACING (IN)	DC RESIST. (OHMS/MI)	AC RESIST. (OHMS/MI)	AC REACT. (OHMS/MI)
1	1.165	.000	.09720	.09940	.395000
2	1.165	.000	.09720	.09940	.395000
3	1.165	.000	.09720	.09940	.395000
4	1.165	.000	.09720	.09940	.395000

MAXIMUM SURFACE GRADIENT (kV/cm)

BNDL #	Type	ACrms	PEAK(+)	PEAK(-)
1	AC	14.99	21.21	-21.21
2	AC	14.61	20.66	-20.66
3	AC	15.18	21.47	-21.47
4	Ground Wire	1.15	1.63	-1.63

AC ELECTRIC FIELD PROFILE
at 3.28 feet above ground

LATERAL DISTANCE (feet)	(meters)	MAXIMUM FIELD (kV/m)	MINOR/MAJOR ELLIPSE AXES (ratio)	VERTICAL (kV/m)	HORIZONTAL (kV/m)	SPACE POTENTIAL (kV)

-200.0	-60.96	.040	.009	.040	.002	.040
-195.0	-59.44	.042	.010	.042	.002	.042
-190.0	-57.91	.045	.010	.045	.002	.045
-185.0	-56.39	.047	.010	.047	.002	.047
-180.0	-54.86	.051	.010	.050	.002	.050
-175.0	-53.34	.054	.011	.054	.002	.054
-170.0	-51.82	.058	.011	.058	.003	.058
-165.0	-50.29	.062	.011	.062	.003	.062
-160.0	-48.77	.066	.012	.066	.003	.066
-155.0	-47.24	.072	.012	.072	.004	.072
-150.0	-45.72	.077	.012	.077	.004	.077
-145.0	-44.20	.084	.013	.084	.005	.084
-140.0	-42.67	.091	.013	.091	.005	.091
-135.0	-41.15	.099	.013	.099	.006	.099
-130.0	-39.62	.108	.014	.108	.007	.108
-125.0	-38.10	.119	.014	.119	.008	.119
-120.0	-36.58	.131	.014	.131	.009	.131
-115.0	-35.05	.145	.015	.144	.010	.145
-110.0	-33.53	.160	.015	.160	.011	.160
-105.0	-32.00	.179	.015	.178	.013	.179
-100.0	-30.48	.200	.016	.199	.015	.200
-95.0	-28.96	.225	.016	.224	.018	.224
-90.0	-27.43	.253	.016	.253	.021	.253
-85.0	-25.91	.287	.017	.286	.025	.287
-80.0	-24.38	.327	.017	.326	.029	.327
-75.0	-22.86	.375	.017	.373	.034	.374
-70.0	-21.34	.430	.018	.429	.040	.430
-65.0	-19.81	.496	.018	.494	.048	.496
-60.0	-18.29	.574	.019	.571	.056	.573
-55.0	-16.76	.665	.020	.662	.065	.663
-50.0	-15.24	.769	.021	.766	.074	.767
-45.0	-13.72	.886	.023	.883	.082	.883
-40.0	-12.19	1.012	.026	1.009	.087	1.008
-35.0	-10.67	1.139	.031	1.136	.087	1.134
-30.0	-9.14	1.252	.040	1.251	.081	1.244
-25.0	-7.62	1.330	.057	1.330	.081	1.319
-20.0	-6.10	1.348	.087	1.348	.118	1.334
-15.0	-4.57	1.296	.144	1.295	.195	1.280
-10.0	-3.05	1.209	.235	1.208	.287	1.198
-5.0	-1.52	1.215	.294	1.213	.365	1.210
.0	.00	1.453	.228	1.437	.393	1.431
5.0	1.52	1.822	.139	1.806	.348	1.786
10.0	3.05	2.131	.087	2.126	.239	2.093
15.0	4.57	2.253	.063	2.253	.142	2.218
20.0	6.10	2.162	.055	2.159	.165	2.135
25.0	7.62	1.921	.056	1.912	.213	1.901
30.0	9.14	1.619	.061	1.606	.222	1.605
35.0	10.67	1.323	.067	1.310	.201	1.314
40.0	12.19	1.068	.072	1.058	.167	1.063
45.0	13.72	.863	.074	.855	.133	.860
50.0	15.24	.705	.074	.699	.104	.703
55.0	16.76	.583	.071	.579	.081	.582
60.0	18.29	.489	.067	.487	.063	.489
65.0	19.81	.417	.061	.415	.049	.416
70.0	21.34	.359	.056	.357	.039	.359
75.0	22.86	.313	.050	.312	.031	.312
80.0	24.38	.275	.045	.274	.026	.274
85.0	25.91	.243	.040	.242	.021	.243
90.0	27.43	.217	.036	.216	.018	.217
95.0	28.96	.194	.033	.194	.015	.194
100.0	30.48	.175	.030	.174	.013	.175
105.0	32.00	.158	.027	.158	.011	.158

110.0	33.53	.144	.025	.143	.010	.143
115.0	35.05	.131	.023	.131	.008	.131
120.0	36.58	.120	.021	.119	.007	.120
125.0	38.10	.110	.020	.110	.006	.110
130.0	39.62	.101	.018	.101	.006	.101
135.0	41.15	.093	.017	.093	.005	.093
140.0	42.67	.086	.016	.086	.005	.086
145.0	44.20	.080	.015	.080	.004	.080
150.0	45.72	.074	.014	.074	.004	.074
155.0	47.24	.069	.014	.069	.003	.069
160.0	48.77	.065	.013	.065	.003	.065
165.0	50.29	.061	.012	.060	.003	.060
170.0	51.82	.057	.012	.057	.002	.057
175.0	53.34	.053	.011	.053	.002	.053
180.0	54.86	.050	.011	.050	.002	.050
185.0	56.39	.047	.010	.047	.002	.047
190.0	57.91	.045	.010	.045	.002	.045
195.0	59.44	.042	.009	.042	.002	.042
200.0	60.96	.040	.009	.040	.001	.040

AC CURRENTS IN EACH BUNDLE:

BNDL	----- AC CURRENTS (Amperes) -----			BUNDLE POSITION	
#	REAL	IMAGINARY	TOTAL	X-COORD	Y-COORD
1	474.00	.00	474.00	10.00	48.00
2	-237.00	410.50	474.00	-10.00	39.00
3	-237.00	-410.50	474.00	12.00	30.00
4	-17.30	-12.27	21.21	.00	67.90

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*   *
*   MAGNETIC FIELD PROFILE   *
*   at   3.28 feet above ground   *
*   *
****

LATERAL DISTANCE (feet)	LATERAL DISTANCE (meters)	MAJOR AXIS (mG)	MINOR/ MAJOR (RATIO)	VERTICAL COMP (mG)	HORIZONTAL COMP (mG)	RMS RESULTANT (mG)
-200.0	-60.96	1.69	.544	1.69	.92	1.93
-195.0	-59.44	1.77	.550	1.77	.98	2.02
-190.0	-57.91	1.86	.557	1.85	1.04	2.12
-185.0	-56.39	1.94	.563	1.94	1.10	2.23
-180.0	-54.86	2.04	.568	2.04	1.17	2.35
-175.0	-53.34	2.15	.574	2.14	1.25	2.47
-170.0	-51.82	2.26	.579	2.25	1.33	2.61
-165.0	-50.29	2.38	.584	2.37	1.42	2.76
-160.0	-48.77	2.52	.589	2.49	1.52	2.92
-155.0	-47.24	2.67	.594	2.63	1.64	3.10
-150.0	-45.72	2.83	.598	2.78	1.76	3.30
-145.0	-44.20	3.01	.601	2.95	1.90	3.51
-140.0	-42.67	3.20	.605	3.12	2.06	3.74
-135.0	-41.15	3.42	.608	3.32	2.24	4.00
-130.0	-39.62	3.66	.610	3.53	2.44	4.29

-125.0	-38.10	3.93	.612	3.76	2.67	4.61
-120.0	-36.58	4.23	.613	4.01	2.92	4.96
-115.0	-35.05	4.56	.613	4.28	3.22	5.36
-110.0	-33.53	4.94	.613	4.58	3.56	5.80
-105.0	-32.00	5.37	.613	4.90	3.95	6.30
-100.0	-30.48	5.86	.611	5.26	4.41	6.86
-95.0	-28.96	6.41	.609	5.65	4.94	7.51
-90.0	-27.43	7.05	.605	6.07	5.57	8.24
-85.0	-25.91	7.78	.601	6.52	6.32	9.08
-80.0	-24.38	8.63	.596	7.00	7.20	10.04
-75.0	-22.86	9.61	.590	7.52	8.25	11.16
-70.0	-21.34	10.76	.583	8.06	9.50	12.46
-65.0	-19.81	12.12	.574	8.61	11.01	13.97
-60.0	-18.29	13.71	.565	9.17	12.81	15.75
-55.0	-16.76	15.60	.554	9.73	14.95	17.83
-50.0	-15.24	17.84	.542	10.32	17.47	20.29
-45.0	-13.72	20.49	.529	11.04	20.38	23.18
-40.0	-12.19	23.62	.515	12.16	23.62	26.57
-35.0	-10.67	27.28	.499	14.19	26.99	30.49
-30.0	-9.14	31.50	.483	17.82	30.11	34.99
-25.0	-7.62	36.24	.466	23.58	32.30	39.99
-20.0	-6.10	41.38	.450	31.48	32.68	45.38
-15.0	-4.57	46.66	.436	40.75	30.49	50.89
-10.0	-3.05	51.73	.424	49.74	26.11	56.18
-5.0	-1.52	56.12	.416	56.11	23.40	60.79
.0	.00	59.30	.415	57.42	28.74	64.21
5.0	1.52	60.68	.421	52.33	39.97	65.85
10.0	3.05	59.80	.435	42.04	49.85	65.21
15.0	4.57	56.60	.454	30.97	53.91	62.18
20.0	6.10	51.60	.479	24.83	51.53	57.20
25.0	7.62	45.66	.505	24.39	44.96	51.15
30.0	9.14	39.63	.532	25.28	37.09	44.88
35.0	10.67	34.04	.558	25.11	29.81	38.98
40.0	12.19	29.15	.581	23.78	23.91	33.72
45.0	13.72	25.00	.602	21.81	19.39	29.18
50.0	15.24	21.53	.620	19.63	16.01	25.33
55.0	16.76	18.65	.634	17.51	13.47	22.09
60.0	18.29	16.26	.646	15.56	11.51	19.36
65.0	19.81	14.27	.655	13.84	9.98	17.06
70.0	21.34	12.61	.661	12.34	8.74	15.12
75.0	22.86	11.22	.665	11.04	7.72	13.47
80.0	24.38	10.03	.667	9.92	6.86	12.06
85.0	25.91	9.03	.667	8.95	6.14	10.85
90.0	27.43	8.17	.666	8.11	5.52	9.81
95.0	28.96	7.42	.664	7.39	4.98	8.91
100.0	30.48	6.77	.661	6.75	4.51	8.12
105.0	32.00	6.21	.658	6.20	4.11	7.43
110.0	33.53	5.72	.653	5.71	3.75	6.83
115.0	35.05	5.28	.649	5.27	3.43	6.29
120.0	36.58	4.89	.643	4.89	3.15	5.82
125.0	38.10	4.55	.638	4.54	2.90	5.39
130.0	39.62	4.24	.632	4.24	2.68	5.01
135.0	41.15	3.96	.626	3.96	2.48	4.67
140.0	42.67	3.71	.620	3.71	2.30	4.36
145.0	44.20	3.48	.614	3.48	2.14	4.09
150.0	45.72	3.28	.608	3.28	1.99	3.84
155.0	47.24	3.09	.602	3.09	1.86	3.61
160.0	48.77	2.92	.596	2.92	1.74	3.40
165.0	50.29	2.76	.590	2.76	1.63	3.21
170.0	51.82	2.62	.584	2.62	1.53	3.03
175.0	53.34	2.49	.578	2.48	1.44	2.87
180.0	54.86	2.37	.572	2.36	1.36	2.72
185.0	56.39	2.25	.566	2.25	1.28	2.59

190.0	57.91	2.15	.560	2.14	1.21	2.46
195.0	59.44	2.05	.554	2.05	1.14	2.35
200.0	60.96	1.96	.548	1.96	1.08	2.24

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**********************************
*                                *
*          AUDIBLE NOISE         *
*    GENERATED ACOUSTIC POWER    *
*        (dB above 1uW/m)        *
*                                *
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BNDL #	Type	Summer Fair	L5 RAIN	L50 RAIN
1	AC	-74.30	-55.22	-64.83
2	AC	-76.19	-56.39	-66.47
3	AC	-73.41	-54.67	-64.06
4	Ground Wire	******	******	******

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*                                         *
*              AUDIBLE NOISE              *
*                                         *
* Microphone is   5.00 feet  above ground *
*         Altitude     1000. ft           *
*                                         *
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<------------ HVTRC CALCULATION METHOD ---------->

LATERAL DISTANCE (feet)	(meters)	L50 FAIR (dB(A))	L5 RAIN (dB(A))	L50 RAIN (dB(A))	Leq(24) (dB(A))	Ldn (dB(A))
-200.0	-60.96	25.3	44.4	34.8	33.0	40.7
-195.0	-59.44	25.4	44.6	34.9	33.2	40.9
-190.0	-57.91	25.5	44.7	35.0	33.3	41.0
-185.0	-56.39	25.7	44.8	35.2	33.5	41.1
-180.0	-54.86	25.8	45.0	35.3	33.6	41.3
-175.0	-53.34	26.0	45.1	35.5	33.7	41.4
-170.0	-51.82	26.1	45.3	35.6	33.9	41.6
-165.0	-50.29	26.3	45.4	35.8	34.0	41.7
-160.0	-48.77	26.4	45.6	35.9	34.2	41.9
-155.0	-47.24	26.6	45.7	36.1	34.4	42.0
-150.0	-45.72	26.7	45.9	36.2	34.5	42.2
-145.0	-44.20	26.9	46.1	36.4	34.7	42.4
-140.0	-42.67	27.1	46.2	36.6	34.8	42.5
-135.0	-41.15	27.3	46.4	36.7	35.0	42.7
-130.0	-39.62	27.4	46.6	36.9	35.2	42.9
-125.0	-38.10	27.6	46.8	37.1	35.4	43.1
-120.0	-36.58	27.8	47.0	37.3	35.6	43.3
-115.0	-35.05	28.0	47.1	37.5	35.8	43.5
-110.0	-33.53	28.2	47.3	37.7	36.0	43.7
-105.0	-32.00	28.4	47.6	37.9	36.2	43.9
-100.0	-30.48	28.6	47.8	38.1	36.4	44.1
-95.0	-28.96	28.8	48.0	38.3	36.6	44.3
-90.0	-27.43	29.1	48.2	38.6	36.8	44.5
-85.0	-25.91	29.3	48.5	38.8	37.1	44.8
-80.0	-24.38	29.5	48.7	39.0	37.3	45.0
-75.0	-22.86	29.8	49.0	39.3	37.6	45.3
-70.0	-21.34	30.1	49.2	39.6	37.8	45.5
-65.0	-19.81	30.3	49.5	39.8	38.1	45.8

-60.0	-18.29	30.6	49.8	40.1	38.4	46.1
-55.0	-16.76	30.9	50.1	40.4	38.7	46.4
-50.0	-15.24	31.2	50.4	40.7	39.0	46.7
-45.0	-13.72	31.5	50.7	41.0	39.3	47.0
-40.0	-12.19	31.9	51.0	41.4	39.6	47.3
-35.0	-10.67	32.2	51.4	41.7	40.0	47.7
-30.0	-9.14	32.5	51.7	42.0	40.3	48.0
-25.0	-7.62	32.9	52.0	42.4	40.6	48.3
-20.0	-6.10	33.2	52.3	42.7	41.0	48.7
-15.0	-4.57	33.5	52.6	43.0	41.3	49.0
-10.0	-3.05	33.8	52.9	43.3	41.6	49.3
-5.0	-1.52	34.1	53.1	43.5	41.8	49.5
.0	.00	34.3	53.3	43.7	42.0	49.7
5.0	1.52	34.4	53.5	43.9	42.1	49.8
10.0	3.05	34.4	53.5	43.9	42.2	49.9
15.0	4.57	34.4	53.4	43.8	42.1	49.8
20.0	6.10	34.2	53.2	43.6	41.9	49.6
25.0	7.62	33.9	52.9	43.4	41.6	49.3
30.0	9.14	33.6	52.6	43.0	41.3	49.0
35.0	10.67	33.2	52.2	42.7	40.9	48.6
40.0	12.19	32.8	51.9	42.3	40.6	48.3
45.0	13.72	32.5	51.5	41.9	40.2	47.9
50.0	15.24	32.1	51.2	41.6	39.8	47.5
55.0	16.76	31.8	50.8	41.2	39.5	47.2
60.0	18.29	31.4	50.5	40.9	39.2	46.9
65.0	19.81	31.1	50.2	40.6	38.8	46.5
70.0	21.34	30.8	49.9	40.3	38.5	46.2
75.0	22.86	30.5	49.6	40.0	38.2	45.9
80.0	24.38	30.2	49.3	39.7	38.0	45.7
85.0	25.91	29.9	49.0	39.4	37.7	45.4
90.0	27.43	29.7	48.8	39.1	37.4	45.1
95.0	28.96	29.4	48.5	38.9	37.2	44.9
100.0	30.48	29.2	48.3	38.7	36.9	44.6
105.0	32.00	29.0	48.0	38.4	36.7	44.4
110.0	33.53	28.7	47.8	38.2	36.5	44.2
115.0	35.05	28.5	47.6	38.0	36.3	44.0
120.0	36.58	28.3	47.4	37.8	36.1	43.7
125.0	38.10	28.1	47.2	37.6	35.9	43.5
130.0	39.62	27.9	47.0	37.4	35.7	43.3
135.0	41.15	27.7	46.8	37.2	35.5	43.2
140.0	42.67	27.5	46.6	37.0	35.3	43.0
145.0	44.20	27.3	46.4	36.8	35.1	42.8
150.0	45.72	27.2	46.3	36.6	34.9	42.6
155.0	47.24	27.0	46.1	36.5	34.8	42.4
160.0	48.77	26.8	45.9	36.3	34.6	42.3
165.0	50.29	26.7	45.8	36.1	34.4	42.1
170.0	51.82	26.5	45.6	36.0	34.3	42.0
175.0	53.34	26.4	45.4	35.8	34.1	41.8
180.0	54.86	26.2	45.3	35.7	34.0	41.6
185.0	56.39	26.1	45.1	35.5	33.8	41.5
190.0	57.91	25.9	45.0	35.4	33.7	41.4
195.0	59.44	25.8	44.9	35.2	33.5	41.2
200.0	60.96	25.6	44.7	35.1	33.4	41.1

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*                      *
*     AUDIBLE NOISE    *
*    (other methods)   *
*                      *
* Altitude    1000. ft *
*                      *
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		<------ BPA METHOD		------->	<- CRIEPI	-->	EdF	ENEL	IREQ	
LATERAL DISTANCE (feet)	(meters)	FAIR WEATHER dB(A)	L5 RAIN dB(A)	L50 RAIN dB(A)	Ldn dB(A)	AVERAGE FAIR dB(A)	L5 RAIN dB(A)	L5 RAIN dB(A)	L5 RAIN dB(A)	L5 RAIN dB(A)
-200.0	-60.96	11.7	40.2	36.7	.0	.0	.0	.0	.0	.0
-195.0	-59.44	11.8	40.3	36.8	.0	.0	.0	.0	.0	.0
-190.0	-57.91	11.9	40.4	36.9	.0	.0	.0	.0	.0	.0
-185.0	-56.39	12.1	40.6	37.1	.0	.0	.0	.0	.0	.0
-180.0	-54.86	12.2	40.7	37.2	.0	.0	.0	.0	.0	.0
-175.0	-53.34	12.3	40.8	37.3	.0	.0	.0	.0	.0	.0
-170.0	-51.82	12.5	41.0	37.5	.0	.0	.0	.0	.0	.0
-165.0	-50.29	12.6	41.1	37.6	.0	.0	.0	.0	.0	.0
-160.0	-48.77	12.7	41.2	37.7	.0	.0	.0	.0	.0	.0
-155.0	-47.24	12.9	41.4	37.9	.0	.0	.0	.0	.0	.0
-150.0	-45.72	13.0	41.5	38.0	.0	.0	.0	.0	.0	.0
-145.0	-44.20	13.2	41.7	38.2	.0	.0	.0	.0	.0	.0
-140.0	-42.67	13.4	41.9	38.4	.0	.0	.0	.0	.0	.0
-135.0	-41.15	13.5	42.0	38.5	.0	.0	.0	.0	.0	.0
-130.0	-39.62	13.7	42.2	38.7	.0	.0	.0	.0	.0	.0
-125.0	-38.10	13.9	42.4	38.9	.0	.0	.0	.0	.0	.0
-120.0	-36.58	14.1	42.6	39.1	.0	.0	.0	.0	.0	.0
-115.0	-35.05	14.2	42.7	39.2	.0	.0	.0	.0	.0	.0
-110.0	-33.53	14.4	42.9	39.4	.0	.0	.0	.0	.0	.0
-105.0	-32.00	14.6	43.1	39.6	.0	.0	.0	.0	.0	.0
-100.0	-30.48	14.8	43.3	39.8	.0	.0	.0	.0	.0	.0
-95.0	-28.96	15.1	43.6	40.1	.0	.0	.0	.0	.0	.0
-90.0	-27.43	15.3	43.8	40.3	.0	.0	.0	.0	.0	.0
-85.0	-25.91	15.5	44.0	40.5	.0	.0	.0	.0	.0	.0
-80.0	-24.38	15.8	44.3	40.8	.0	.0	.0	.0	.0	.0
-75.0	-22.86	16.0	44.5	41.0	.0	.0	.0	.0	.0	.0
-70.0	-21.34	16.3	44.8	41.3	.0	.0	.0	.0	.0	.0
-65.0	-19.81	16.6	45.1	41.6	.0	.0	.0	.0	.0	.0
-60.0	-18.29	16.9	45.4	41.9	.0	.0	.0	.0	.0	.0
-55.0	-16.76	17.2	45.7	42.2	.0	.0	.0	.0	.0	.0
-50.0	-15.24	17.5	46.0	42.5	.0	.0	.0	.0	.0	.0
-45.0	-13.72	17.8	46.3	42.8	.0	.0	.0	.0	.0	.0
-40.0	-12.19	18.2	46.7	43.2	.0	.0	.0	.0	.0	.0
-35.0	-10.67	18.5	47.0	43.5	.0	.0	.0	.0	.0	.0
-30.0	-9.14	18.9	47.4	43.9	.0	.0	.0	.0	.0	.0
-25.0	-7.62	19.3	47.8	44.3	.0	.0	.0	.0	.0	.0
-20.0	-6.10	19.6	48.1	44.6	.0	.0	.0	.0	.0	.0
-15.0	-4.57	19.9	48.4	44.9	.0	.0	.0	.0	.0	.0
-10.0	-3.05	20.2	48.7	45.2	.0	.0	.0	.0	.0	.0
-5.0	-1.52	20.5	49.0	45.5	.0	.0	.0	.0	.0	.0
.0	.00	20.7	49.2	45.7	.0	.0	.0	.0	.0	.0
5.0	1.52	20.8	49.3	45.8	.0	.0	.0	.0	.0	.0
10.0	3.05	20.9	49.4	45.9	.0	.0	.0	.0	.0	.0
15.0	4.57	20.8	49.3	45.8	.0	.0	.0	.0	.0	.0
20.0	6.10	20.6	49.1	45.6	.0	.0	.0	.0	.0	.0
25.0	7.62	20.3	48.8	45.3	.0	.0	.0	.0	.0	.0
30.0	9.14	19.9	48.4	44.9	.0	.0	.0	.0	.0	.0
35.0	10.67	19.5	48.0	44.5	.0	.0	.0	.0	.0	.0
40.0	12.19	19.1	47.6	44.1	.0	.0	.0	.0	.0	.0
45.0	13.72	18.7	47.2	43.7	.0	.0	.0	.0	.0	.0
50.0	15.24	18.4	46.9	43.4	.0	.0	.0	.0	.0	.0
55.0	16.76	18.0	46.5	43.0	.0	.0	.0	.0	.0	.0
60.0	18.29	17.6	46.1	42.6	.0	.0	.0	.0	.0	.0
65.0	19.81	17.3	45.8	42.3	.0	.0	.0	.0	.0	.0
70.0	21.34	17.0	45.5	42.0	.0	.0	.0	.0	.0	.0
75.0	22.86	16.7	45.2	41.7	.0	.0	.0	.0	.0	.0
80.0	24.38	16.4	44.9	41.4	.0	.0	.0	.0	.0	.0
85.0	25.91	16.1	44.6	41.1	.0	.0	.0	.0	.0	.0

90.0	27.43	15.9	44.4	40.9	.0	.0	.0	.0	.0	.0
95.0	28.96	15.6	44.1	40.6	.0	.0	.0	.0	.0	.0
100.0	30.48	15.4	43.9	40.4	.0	.0	.0	.0	.0	.0
105.0	32.00	15.1	43.6	40.1	.0	.0	.0	.0	.0	.0
110.0	33.53	14.9	43.4	39.9	.0	.0	.0	.0	.0	.0
115.0	35.05	14.7	43.2	39.7	.0	.0	.0	.0	.0	.0
120.0	36.58	14.5	43.0	39.5	.0	.0	.0	.0	.0	.0
125.0	38.10	14.3	42.8	39.3	.0	.0	.0	.0	.0	.0
130.0	39.62	14.1	42.6	39.1	.0	.0	.0	.0	.0	.0
135.0	41.15	13.9	42.4	38.9	.0	.0	.0	.0	.0	.0
140.0	42.67	13.7	42.2	38.7	.0	.0	.0	.0	.0	.0
145.0	44.20	13.6	42.1	38.6	.0	.0	.0	.0	.0	.0
150.0	45.72	13.4	41.9	38.4	.0	.0	.0	.0	.0	.0
155.0	47.24	13.2	41.7	38.2	.0	.0	.0	.0	.0	.0
160.0	48.77	13.1	41.6	38.1	.0	.0	.0	.0	.0	.0
165.0	50.29	12.9	41.4	37.9	.0	.0	.0	.0	.0	.0
170.0	51.82	12.8	41.3	37.8	.0	.0	.0	.0	.0	.0
175.0	53.34	12.6	41.1	37.6	.0	.0	.0	.0	.0	.0
180.0	54.86	12.5	41.0	37.5	.0	.0	.0	.0	.0	.0
185.0	56.39	12.4	40.9	37.4	.0	.0	.0	.0	.0	.0
190.0	57.91	12.2	40.7	37.2	.0	.0	.0	.0	.0	.0
195.0	59.44	12.1	40.6	37.1	.0	.0	.0	.0	.0	.0
200.0	60.96	12.0	40.5	37.0	.0	.0	.0	.0	.0	.0

Audible noise prediction methods do not apply to all line geometries, voltages, or weather conditions. If a prediction method does not apply, the appropriate output data column will be zeros.

LJWAMD1Doc1

ATTACHMENT 8

Addendum to Leaning Juniper II Wind Power Facility Cultural Resources Survey Report

CONFIDENTIAL

Confidential and Not for Public Distribution

Report

Addendum to the Cultural Resources Survey Report for the Leaning Juniper II Wind Power Facility Gilliam County, Oregon

Prepared for

Iberdrola Renewables, Inc.
Portland, Oregon

Findings (+) 6 historic archaeological sites
(+) 6 historic, 1 prehistoric isolates
County: Gilliam
Township 1N. R.21E, Sec. 1-5, 9-13,15, 16.
Township 1N, R. 22E. Sec. 6
Township 2N. R. 21E. Sec. 23-27, 33-36
Township 2N. R. 22E. Sec. 31
USGS Arlington, Oreg. 1:24,000, 7.5' series
Project Acres: 4553
Acres Surveyed: 4553
Project Type: Survey

June 2009

Prepared by
Robin McClintock, B.S. and Jim Sharpe M.S.

CH2MHILL
2020 SW 4th Avenue
Portland, OR. 97201

ATTACHMENT 7
2008-2009 Supplemental Wildlife Baseline Study

Supplemental 2008–2009 Study to the 2005 Leaning Juniper Wildlife Baseline Study

Conducted for the

Request for Amendment No. 1 to the Site Certificate
for the
Leaning Juniper II Wind Power Facility

(dated June 18, 2009)

Prepared for:

Iberdrola Renewables, Inc.
1125 NW Couch St., Suite 700
Portland, OR 97209

Prepared by:

Northwest Wildlife Consultants, Inc.
815 NW 4th St.
Pendleton, Oregon 97801

June 18, 2009

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1.0 INTRODUCTION

1.1 Project Description

Leaning Juniper Wind Power II, LLC (LJWP) obtained a site certificate (SC) on September 21, 2007, to construct the Leaning Juniper II Wind Power Facility (LJF) in Gilliam County, Oregon, with up to 133 turbines and a generating capacity of up to 279 megawatts (MW). LJWP is preparing to construct forty-three (43) 2.1-MW turbines with a generating capacity of 90.3 MW in 2009 under the authority of the SC. This first phase of construction is referred to as Leaning Juniper IIA (LJIIA). LJIIA will be constructed on both the Leaning Juniper II North and South properties described in the Final Order for LJF (September 2007).

LJWP requests an amendment to the SC to expand the LJF site boundary farther to the south to minimize wake impacts from existing nearby wind projects and optimize the use of the wind resource. Figure 1 shows the LJF site boundary as currently permitted along with the proposed addition to the site boundary. The purpose of the addition is to construct one or more subsequent phases on land immediately southeast of the originally permitted area. The subsequent phase of construction is referred to as Leaning Juniper IIB (LJIIB). LJIIB will consist of up to 90 turbines with a generating capacity of up to 188.7 MW.

1.2 Scope of Supplement to Wildlife Baseline Study

Northwest Wildlife Consultants, Inc. (NWC) was requested by LJWP to conduct biological surveys within the proposed amended site boundary for LJIIB (Figure 1). This 2008–2009 study is a supplement to the 2005 Leaning Juniper Wildlife Baseline Study that was conducted in support of the original SC and was included as Attachment P-2 to Exhibit P in the original Application for Site Certificate (ASC) (LJWP, 2006; Kronner et al., 2005).

This report summarizes all site-specific biological data collected within the amended site boundary for LJIIB during early spring 2008, fall season 2008, winter season 2008-2009, and spring season 2009. It includes the methods and results of information reviews and database inquiries, wildlife habitat mapping, special status plant surveys, two-season site-specific avian use surveys, raptor nest survey, Washington ground squirrel and other special status vertebrate wildlife surveys, and an updated bat review. The avian use study results include a review and comparison of data collected in adjacent and nearby areas including within the original LJF site boundary and study plots within the surrounding area (within 5 miles of LJIIB components).

1.3 Description of Leaning Juniper Facility Modifications

This amendment request does not seek to change the range of turbine types or sizes, maximum number of turbines, or maximum generating capacity of LJF from what was originally authorized in the SC. The total number of turbines at LJF will not exceed 133 and the total MW will not exceed 279. Turbines will not exceed 3.0 MW. The turbine hub-height will not exceed 100 meters (328 feet), and the turbine blade tip height will not exceed 150 meters (492 feet).

The turbine vendor, size, number, and actual generating capacity of LJIIB have not yet been determined. Like the original ASC, this amendment analyzes impacts for two turbine types.

The turbine types represent a range that encompasses the scale and impacts of the turbines potentially used at LJIIB. The minimum turbine layout for LJIIB is 62 3.0-MW turbines. The maximum turbine layout is 90 1.5-MW turbines. The final layout will have 62 to 90 turbines, with any combination of turbines ranging in size up to 3.0 MW and a generating capacity of up to 188.7 MW. The total number of acres within the proposed amended LJF site boundary (including both LJIIA and LJIIB) is approximately 14,366.

Like the first phase of construction (LJIIA), the LJIIB phase will connect to the Federal Columbia River Transmission System (the regional transmission grid) at Bonneville Power Administration's (BPA) existing Jones Canyon Switching Station. Energy generated at the turbines located in the proposed amended site boundary will be collected via collector cables to either the approved collector substation constructed as part of the first phase, which is located within Lot 4 near the Jones Canyon Switching Station, or to a new additional collector substation located within the proposed amended site boundary closer to the LJIIB turbines. If the energy from the LJIIB turbines is collected and transferred to the first collector substation, a 34.5-kV overhead collector system will be constructed between the LJIIB turbines and the collector substation. If engineering analysis determines that it is more efficient to construct an additional collector substation near the LJIIB turbines, a 230-kV overhead transmission line will be constructed between the new collector substation and the first substation constructed. In either case, the overhead line will be a maximum of approximately 7 miles in length.

2.0 METHODS

Methods used in this 2008–2009 study follow the methods used in the 2005 Leaning Juniper Wildlife Baseline Study conducted over the period 2004-2006 (LJWP, 2006; ASC Attachment P-2). The 2005 Leaning Juniper Wildlife Baseline Study covered both the adjacent 100.5 MW operating Leaning Juniper I Wind Power Project (LJI) owned by PacifiCorp and the approved LJF site boundary.

The following reviews and site-specific studies were conducted for LJIIB in 2008–2009. Detailed methods on each can be found in the following sections (2.1.1 through 2.8).

- Pre-field literature review, soil maps review, database queries, site reconnaissance, and agency consultation
- Wildlife habitat mapping and categorization in 2009
- Special status plant surveys, spring 2009
- Avian use surveys: fall season 2008, winter season 2008–2009, spring 2009
- Raptor nest surveys in 2009
- Washington ground squirrel surveys, late winter/early spring 2008 and 2009
- Other special status wildlife species surveys, spring season 2009
- Update of a 2005 bat species review for species occurrence in the general area
- Update to special status wildlife and plant species potential occurrence

2.1 Information Review

2.1.1 *Review of Previous Wind Power Related Studies*

NWC reviewed biological data that collected for LJI and LJF from 2004-2006. These data were previously used and integrated into the analysis for LJF in support of the original ASC, presented in Exhibits P and Q of the in the ASC; ASC Attachment P-2). Results of extensive post-construction avian and bat fatality monitoring and wildlife monitoring at the adjacent 100.5 MW operating LJI wind project owned by PacifiCorp were also reviewed (Gritski et al., 2008a). Additionally, results of pre-construction surveys at other nearby permitted wind projects including Rattlesnake Road, Wheat Field, and Pebble Springs Wind Power Projects were reviewed in detail, and sightings of special status species at these adjacent and nearby projects are noted in this report where relevant (Kronner et al., 2007; Kronner et al., 2008b; PPM, 2006). Results of wildlife fatality monitoring conducted at wind facilities located in the Columbia Basin Ecoregion were reviewed and are presented in the Impacts Discussion section (4.0). For this report, the Columbia Basin Ecoregion (CBE) is defined as the physiographic area with similar biological features reflecting broad ecological patterns in Oregon and Washington; these watersheds drain into the Columbia River.

2.1.2 *Database Searches and Other Information Reviews*

A database search was conducted to ascertain the Endangered, Threatened, and special status species of wildlife and plants likely to be present within and near the proposed amended site boundary for LJIIB (LJIIB area). The U.S. Fish and Wildlife Service (USFWS) maintains lists (by County) of Endangered, Threatened, Proposed, and Candidate species, and species of concern and the electronic file list was accessed for Gilliam County in early April (Appendix A1). In addition, in early April 2009 a list of documented occurrences of Rare, Threatened, and Endangered plant and wildlife species within 5 miles of the amended LJF site boundary (including both LJIIA and LJIIB) was requested by CH2M HILL from the Oregon Natural Heritage Information Center (Appendix A2). The LJIIA database search was originally conducted for LJF (LJWP, 2006, Exhibits P and Q). The USFWS Birds of Conservation Concern list for the Great Basin (applicable to the area in which the LJIIB components are proposed) was also reviewed for species with potential occurrence in the area (USFWS, 2002). Oregon bald eagle and peregrine falcon nesting reports were also reviewed. Special status plant and wildlife species documented in the database searches and literature reviews with potential for occurrence within the amended site boundary for LJIIB and surrounding area are listed in Appendices B and C. Scientific names, status, and status definitions for all special status plant and wildlife species discussed in this report can also be found in Appendices B and C.

Specific historic records for the Washington ground squirrel occurrence in Gilliam County (Betts, 1990) were reviewed. This and other source data for the ORNHIC can sometime supplement the ORNHIC database printout and provide site-specific details not otherwise available.

2.1.3 *Agency Consultation*

In early May 2009, representatives from NWC and LJWP discussed the planned LJF construction schedule and proposed modifications to the permitted facility with Oregon Department of Energy (ODOE) and the Oregon Department of Fish and Wildlife (ODFW) on. Representatives from NWC and LJWP conducted a site visit of the proposed amended site boundary and proposed LJIIB components with ODFW biologist Steve Cherry on May 12, 2009.

2.2 Wildlife Habitat Mapping and Categorization

Historical land cover maps from the Oregon Gap Analysis Program (OGAP) were reviewed to identify the broad habitat cover types at coarse-scale. While this information is useful for gaining a general overview of vegetation cover, more detailed habitat information, with more specific habitat categories at a finer spatial scale, are needed to be relevant to wildlife use.

Fine-scale habitat mapping within the amended site boundary for LJIIB was conducted in January and February of 2009 and was field-verified during April-May 2009 (Figure 2a). Existing habitat data and category ratings within the approved LJF site boundary from the 2005 NWC report were used for the fine-scale habitat mapping around the proposed 230-kV or 34.5-kV routes from the LJIIB turbines to the approved collector substation near the Jones Canyon Switching Station. Some habitat loss likely has occurred since the original mapping due to landfill operations and construction of LJI. However, no new habitat mapping or categorization occurred within the approved site boundary, with one exception. In some locations, the habitat category within the approved site boundary was increased to Category 1 based on the detection of the State Endangered Washington Ground Squirrel (WGS) during field investigations, as further described in Section 3.

This habitat mapping effort characterized vegetation types, based on current vegetation floristics and structure, from the perspective of wildlife use, both general (for species assemblages, i.e. shrub-steppe obligates) and specific (for individual taxa, i.e. special status species). Habitat types were classified into six categories as defined in Oregon Administrative Rule (OAR) 635-415-0025 (see Figure 2b). Conservation Priority Habitat statuses for specific habitat types were attained from the ODFW (2005).

Prior to field surveys, initial habitat boundaries were delineated within the amended site boundary at a scale of 1:5,000 in a digital GIS environment using 1-meter resolution orthophotographs (image dates July 25-26, 2005; USDA-FSA, 2005). Initial boundaries were delineated based on obvious differences in vegetation, land form, and land-use. Overlay of topography, hydrology, and transportation layers aided with these delineations. Field assessments were conducted by a botanist with experience in Columbia Basin Ecoregion habitats, in order to classify the habitat types present, and to ground-truth habitat type boundary location. Any necessary boundary corrections were hand-drawn on orthophoto topographic maps in the field and later transferred to the digital boundary layer. During field visits, dominant, co-dominant, and other common plant species were noted in order to accurately classify and describe habitat types in the site boundaries.

Habitat category ratings were assigned to all lands in the wildlife survey corridors using 2008 and 2009 wildlife survey results. Outside of these survey corridors, but inside the site boundary, biologists conservatively assigned ratings to types that were similar to the surveyed types, consistent with the methodology used in the original ASC.

To derive the habitat category, the experienced biologists used vegetative structure, habitat functionality, and overall ecological condition for wildlife, in particular for special status species, and the results of special status wildlife surveys (as previously stated). Habitat category ratings were assigned to all lands in the wildlife survey corridors using 2008 and 2009 wildlife survey results. Outside of these survey corridors, but inside the amended site boundary, biologists conservatively assigned ratings to types that were similar to the surveyed types, consistent with the methodology used in the original ASC. Narrow linear habitat patches not surveyed for wildlife or rare plants were conservatively assigned a rating consistent with adjacent or nearby habitats. Although small with limited nesting habitat functionality, value to wildlife for fragmented habitat is sometimes challenging to measure. These small areas within an otherwise extensive agricultural (dryland wheat) landscape, become important for wildlife escape cover and predator protection cover while traveling through the area, but not necessarily for nesting or denning habitat. Much of the human-caused impacts in non-disturbed/developed habitats (landowner activities such as weed spraying, mowing, fires) that have occurred along trails and roads were difficult to measure and delineate, and as of winter 2008-2009, were sometimes just several feet in width and not mapped out as Category 6 (Disturbed/Developed).

2.3 Special Status Plant Surveys

Prior to the beginning of field surveys for special status plant species, a list of target special status plant taxa potentially occurring within the amended site boundary for LJIIB was prepared (Appendix B). The target species list is consistent with the LJF list (LJF, Exhibit Q, Table Q-1). Target species for the purposes of this survey included all possible Federal and Oregon Department of Agriculture Candidate, Threatened and Endangered taxa considered likely to occur in the general region around LJIIB. In addition, rare species lacking Federal and State status but which are actively tracked by the ORNHIC were included in the target list. Eleven (11) rare plant taxa were identified as potentially occurring within the amended site boundary and a 5-mile buffer area and assigned “low”, “moderate”, or “high” likelihoods of occurrence. This approach helped guide and prioritize survey efforts through specific knowledge of associated species, preferred habitats and appropriate identification periods for the listed taxa that surveying botanists could potentially encounter within the LJIIB area.

Special status plant surveys were conducted from May 7–June 3, 2009, within survey corridors around all proposed turbine and supporting facility locations (Figure 3). Surveys were conducted in buffer areas extending 500 feet (152 meters) outwards from the centerline of all proposed LJIIB components, creating 1,000 to 2,230 foot (263 to 680 meters) wide survey corridors. In addition to conducting corridor surveys, as field botanists traversed the landscape from one survey corridor to another, they noted any special status plants observed en-route. Any special status plant species encountered outside of survey corridors during transit were also noted and mapped.

Plant field surveys were conducted using methods consistent with established agency rare plant survey protocols (USDA BLM, 1998; Elzinga et al., 1998; USFWS, 2000). Within habitats identified in the pre-field review as suitable for special status plants (i.e. native grasslands/shrublands, sandy soils, vernal pools; see Appendix B), surveyors conducted thorough, intensive searches, following closely spaced transects at a pace slow enough to ensure high visual coverage to scan for potential special status plant taxa. In areas considered unlikely to support listed plants (CRP and other grass plantings, and disturbed areas dominated by non-native plant species) survey efforts were less intense and followed a variable survey path at a faster rate, mainly to ensure that no patches of high-potential native habitat were missed. Areas under active agricultural use were not surveyed. Pairing the survey intensity to habitat conditions allowed surveyors to focus the most effort within habitats considered more likely to support listed plants, while ensuring that all survey corridors were adequately surveyed. In order to maximize the likelihood of detecting and accurately identifying rare plant species, survey dates were scheduled to coincide with the documented identification periods for as many focal rare plant taxa as possible (Appendix B). When potential special status plants were encountered too early in their phenology to be identified definitively, their locations were recorded and these plants were revisited later in the season when definitive identification could be made.

During surveys, field crews were equipped with reference literature, pre-field review data, orthophotographs, and handheld Global Positioning System (GPS) units to ensure adequate survey coverage and to accurately record the locations of any listed species encountered. Digital position data was later uploaded directly from GPS field devices and converted to ArcGIS shapefile format for storage and manipulation within a digital environment. All vascular plant species encountered during surveys were always identified to the taxonomic level necessary to rule out listed status (nearly all were identified to species, and many to subspecies or variety), and a comprehensive plant list compiled for the site. Potential rare taxa were definitively identified on-site or, if necessary, collected and pressed for later identification in the office with a dissecting microscope or through comparison to documented herbarium specimens. For taxonomic identification, the technical keys of Hitchcock and Cronquist (1973) were used, the accepted standard reference for vascular plants of the Pacific Northwest, with frequent reference to the five volume flora upon which this single volume is based (Hitchcock et al., 1955-1969). Currently accepted scientific names were obtained from the US Department of Agriculture's NRCS PLANTS database (USDA, 2009). All plant surveys were conducted by qualified botanists familiar with the flora of the Columbia Basin Ecosystem and with specific pre-field training to ensure accurate identification of all target listed plant taxa.

2.4 Avian Use Surveys

The protocol used for avian use surveys for the amended site boundary for LJIIB was consistent with similar baseline studies conducted at other wind power projects in the Columbia Basin, including: the LJI project owned by PacifiCorp and the approved LJF site boundary (LJWP, 2006; Figure 4a), Klondike I Wind Power Project (Johnson et al., 2002), Klondike III Wind Power Project (Mabee et al., 2005), Vansycle and Stateline (URS and WEST, 2001), Big Horn Wind Project (PPM, 2004; Kronner et al., 2006 a and b), Combine Hills (Young et al., 2002) and others. This pre-construction protocol utilizes a large plot point-count method designed to adequately detect birds of various size and habitat use patterns within structurally complex vegetation types, and rugged terrain (Reynolds and Nussbaum, 1980). Each circular study plot was 800-meter (approximately 0.5 mile) in radius and located to provide good coverage of, and viewing conditions within, project areas proposed for development. Plots were non-overlapping and were chosen to provide excellent viewing conditions and thorough coverage of the survey corridors and topographical features within the proposed wind project (Figure 4b). Experienced avian observers positioned at the center of the plot recorded all wildlife seen or heard over a 20-minute period, noting species, number of individuals, and distance from plot center, flight height, and habitats utilized for each observation. Flight paths of special status species and raptors were hand-plotted on topographic maps in the field to later aid in determination of spatial use of these species in relation to proposed turbine sites. Efforts were made to avoid double counting of individuals; however, given the difficulty in tracking multiple individual birds simultaneously, some double counting was likely. Average weather conditions (wind speed/direction, temperature, cloud cover and level of precipitation) were noted for each survey plot visit. Efforts were made to vary the survey times for individual plots throughout each survey season to provide a full spectrum of avian activity during all daylight hours. While all avian detections were recorded, it should be noted that the survey protocol and plot placements used here emphasize the accurate detection of large, uncommon birds over a large area (i.e. raptors) while still providing a useful, though less precise measure of smaller more abundant bird species (Reynolds and Nussbaum, 1980).

Although biologists focused on observing and recording birds during these surveys, other detected wildlife was recorded, whether inside or outside the fixed point plot and all species observed during surveys as well as their scientific names are listed in Appendix E. Special status species or species of interest (such as raptors) were also recorded while in-transit during the avian surveys.

Point-counts were conducted on a total of twelve study plots. Seven study plots were located within the amended site boundary for LJIIB (plots D, E, F, G, H, I, and L) (Figure 4b). The plot circle extends beyond the amended site boundary for some plots and an additional five study plots were located in the surrounding area within 5 miles and outside of the amended site boundary (plots A, B, C, J, and K). Surveys began September 4, 2008, and continued through May 31, 2009. This report analyzes the fall and winter avian use data, and analysis of the spring avian use survey will be provided upon completion. During the designated fall season (September 4–October 31, 2008) all study plots were surveyed 9 times (approximately once per calendar week) with the exception of plot L, which was surveyed 8 times (this plot was added on September 12, 2008) for a total of 107 plot-surveys (62 within the amended site boundary for LJIIB). During the designated winter season (November 3, 2008–March 11, 2009), weekly visits were continued to all accessible study plots (inclement weather forced survey cancellation at all plots for the weeks of November 23 and December 14, and at plots G, J, K and L for the week of December 28) for a total of 188 surveys (110 within the amended site boundary for LJIIB).

Avian Use Data Analysis

Mean use, percent composition, and frequency of occurrence for avian species within the avian study plots were analyzed for both the study plots within the amended site boundary, as well as for the study plots outside the site boundary in the surrounding area, consistent with other studies in the region (e.g. Kronner et al., 2005; Kronner et al., 2007; Johnson et al., 2002; Mabee et al., 2005). Data from the study plots outside the amended site boundary were analyzed to provide additional information about avian use of areas adjacent to the amended site boundary. In all data analyses, only observations less than or equal to 800 m from the center of the 800-meter study plots were used.

This report analyzes the fall and winter avian use data. The analysis of the spring avian use survey will be provided upon completion. Comparisons were made between the 2008–2009 fall and winter avian use data and the 2004-2005 fall and winter data gathered at the original LJF plots for the original ASC (LJWP, 2006) to look for similarities or indications of unique characteristics or different risks within the amended site boundary for LJIIB. All four seasons and the full analyses of the original 2004-2005 LJF avian use study were reviewed for the impact analysis in this report. Supplemental avian use point counts that were conducted in spring of 2006 at one plot within the approved site boundary (Leaning Juniper II North; LJWP, 2006) were reviewed for records of special status species or differences and similarities to 2004–2005 data for comparison to data collected in the amended site boundary. However, no new special status species were or major differences were found, and those data are not presented in this report due to the fact that it was only one season of data (not the same season of comparison as the 2008-2009 LJIIB data).

The following metrics were calculated from avian point-count data collected within the amended site boundary for LJIIB and the surrounding area (12 plots):

Mean use for a species equals the total number for each species divided by the number of point counts conducted and provides an index of avian relative abundance per survey point. Mean use serves an as index to compare projects to other projects.

Percent composition equals the mean use for a species/total use for all species, multiplied by 100, and provides an estimate of the relative use of a particular species compared with the use of all other species.

Frequency of occurrence equals the percent of surveys in which a species is observed.

Mean use and frequency of occurrence reflect different aspects of abundance, in that mean use is based on the number of individuals (i.e., large flocks can produce high estimates), whereas frequency of occurrence is based on the number of flocks (i.e., it is not influenced by flock size). Together, these two estimates help one discern the importance of high mean use values (e.g., whether high use was caused by a single large flock of birds) and hence, to determine the likelihood of a particular species' being affected by proposed wind power projects. Avoidance behavior also affects the likelihood of a species being affected.

Species were aggregated into larger taxonomic groups to make them comparable to other studies in the region (e.g. Kronner et al., 2005; Kronner et al., 2007; Johnson et al., 2002; Mabee et al., 2005). In this report, raptor is defined as any bird of prey; any member of Falconiformes or Strigiformes including vultures, eagles, buteos, falcons, and owls, although sometimes this word is used by others to indicate diurnal (daytime) birds of prey only. Passerines include any member of Passeriformes, but results are further split into two subsets, songbirds and corvids, for comparative purposes.

2.5 Raptor Nest Survey

The objective of the raptor nest survey is to provide information that can be used to predict potential impacts to nesting raptors and to identify options for avoiding or mitigating impacts. Impacts to nesting raptors can potentially occur during the construction or operations phase of the wind project and may include disturbance during nesting, direct loss of the nest structure, or individual nesting birds colliding with turbines.

One full aerial raptor nest survey was conducted for LJIIB by helicopter on May 6, 2009, to detect raptor nests within the lease boundary and a two-mile buffer of proposed turbine locations (Figure 5). The survey was conducted by an experienced helicopter pilot and wildlife biologist. Known historic nesting locations within the survey buffer were checked during the 2009 aerial and ground-based wildlife surveys. In addition to checking historical nests, all appropriate nesting areas including trees and rock formations were surveyed to provide the most complete coverage of the aerial survey area possible. The survey also involved flying along basalt cliffs in canyons and up side drainages and back down to main drainages, as well as scanning hill tops between drainages to detect isolated trees. The survey covered most of the 33,617-acre (52.53 mile^2) buffer area. However, hazardous areas (deep canyons, etc.) and residential areas or occupied livestock corrals were not flown. During the spring season, ground-based walking transects for special status species and habitat, isolated trees and basalt cliffs were also surveyed from the ground. Additionally, during the April and May 2009 ground-based walking transects for special status species and habitat discussed below, all suitable trees and potential nest structures for raptors were examined from the ground, including isolated trees and basalt cliffs. Escarpments were scanned from above and below. Raptor nests found during the aerial survey and the ground-based special status wildlife surveys are shown on Figure 5.

All potential and confirmed raptor nests were recorded, regardless of activity status. Determination of nest status (active, inactive, unknown) was made using a combination of visual clues such as adult behavior, presence of eggs or young, presence or absence of whitewash (excrement), and/or observational data from the ground-based surveys. Inactive nests (without sign of current year's use) were assessed to determine the type of bird that may have used the nest previously. Stick nests in trees that appeared to have been constructed and may have been used by common ravens, were considered "Inactive" because the structures could be attractive to raptors in future years. All nest locations were recorded using a hand-held GPS unit.

2.6 Special Status Vertebrate Wildlife Surveys

Target special status vertebrate wildlife species that may occur within the amended site boundary include State Endangered, Threatened, Candidate, Sensitive status species, and/or Federal "Species of Concern" (Appendix C) consistent with the original LJF ASC and updated as applicable. Also included in the target list are species that the U.S. Fish and Wildlife Service (USFWS) designate as "Birds of Conservation Concern" (USFWS, 2002).

Methods to confirm the presence or absence of special status species within the amended site boundary follow similar agency-accepted protocols used for the original LJF ASC and also implemented at nearby wind projects (e.g. Kronner et al., 2005; Kronner et al., 2007).

Special status vertebrate wildlife surveys were conducted from April 3 to May 13, 2009. In addition, final delineation of Washington ground squirrel locations was conducted on May 20 and 21 (discussed in Section 2.7). Surveys were conducted in buffer areas extending 1,000 feet (305 meters) outwards from the centerline of all proposed LJIIB components, creating

2,000 to 5,300 foot (526 to 1,616 meters) wide survey corridors (Figures 6a and 6b) and all areas of potentially suitable habitat within these corridors were carefully examined. Surveys were conducted during the morning hours when avian species are most active and during weather conditions suitable for detection and accurate identification of wildlife species. Experienced biologists and technicians walked meandering transect surveys approximately 164 feet (50 meters) apart within the survey corridor. Surveys were not conducted in disturbed areas lacking suitable habitat, such as plowed wheat fields. All suitable trees and potential nest structures for raptors were examined. Escarpments were scanned from above and below. All wildlife observations were recorded (Appendix F). Special status species locations were either recorded with a handheld GPS unit or plotted on USGS topographical maps. Figures illustrating locations were prepared (Figures 6a and 6b).

2.7 Washington Ground Squirrel Surveys

Washington ground squirrel surveys (WGS) were conducted once during the spring of 2008 in specific areas and again in 2009 concurrently (and in the same corridors) with the special status vertebrate wildlife surveys conducted from April 3 to May 13, 2009. The survey for only Washington ground squirrels was conducted on March 20–21 of 2008. Methods are the same as for special status vertebrate wildlife surveys as detailed above in Section 2.6 and as implemented at for the 2004-2006 LJF surveys. If detections of ground squirrels were found, the extent of the colony was delineated and values were given to different types of detections and level of use was determined. The values given followed a system implemented during studies conducted on the Boardman Bombing Range and the adjoining Boardman Conservation Area (Marr, 2004) on Washington ground squirrels. This value system is now known as the "Marr Rating System" and has been accepted by biologists at ODFW and has been employed throughout the Columbia Basin of Oregon and Washington. Washington ground squirrel detections were recorded in field notes as follows:

1 = Holes characteristic of those used by squirrels; droppings, if present are not from current year.
2 = Dropping (scat) of the current year (interior of the dropping is green).
4 = Recognizable calls of Washington ground squirrel.
8 = Visual (actual observation of a Washington ground squirrel)

Field personnel recorded only observations where the cumulative score was at 3 or greater (i.e. dropping plus hole, call or visual was detected). When a call or visual was obtained, efforts were made to find the nearest hole and look for droppings. If a hole with droppings could not be found, the visual detection of the animal or the approximate location of an auditory only detection was marked. To delineate the furthest extent of the active sites, the outside extent of the clusters of active locations (waypoints taken in 2008 and 2009) was walked by an experienced WGS biologist on May 20 and 21. The biologist searched for new sign of activity that may have occurred since the survey day. A boundary line was recorded that enclosed active sites, for use during project facility layout to avoid impacting sites. A 200-foot buffer of all the sites was added as a no-impact zone for project planning purposes. Singular waypoints of active holes that were away from active clusters with more extensive use were mapped as such and also buffered 200 feet. A descriptive table was prepared, consistent with the earlier WGS data presentation (LJF SCA, Exhibit Q, Table Q-2). Data was entered in the project GIS files.

2.8 Bat Review

A comprehensive bat species review was conducted in 2005 for LJF in support of the original ASC (LJWP, 2006; Exhibit P). The 2005 bat species review focused on gathering existing information from areas closest to the original site boundary including the general Arlington area in Gilliam County and elsewhere in Gilliam County, Morrow County, Wheeler County, and Sherman County, Oregon and Klickitat County, Washington; and a table of species with potential or documented occurrence was prepared (Kronner et al., 2005, Attachment P-2 to the ASC). There have been no formal bat studies in the immediate area since the 2005 bat review (other than fatality monitoring at LJI) and therefore, the table provided in the original ASC is still applicable (Appendix D-4 of Attachment P-2; Kronner et al., 2005). Supplemental information (informal acoustical monitoring or habitat investigations), where available, was also reviewed in 2009 and used to update species distribution in the general area. Special status bat species that have potential to occur within the amended site boundary are listed in Appendix C. Bat fatality monitoring results at regional and nearby projects (indicating species presence in the area), particularly those from LJI, and any other updates were reviewed and are discussed in the results and impacts discussion (Sections 3.0 and 4.0).

3.0 RESULTS

3.1 Information Review

A request for special status plant and animal records was submitted to Oregon Natural Heritage Information Center (ORNHIC) by CH2M HILL and results were received April 17, 2009. The ORNHIC noted that the data is confidential and requested that the data not be distributed. The data can be provided to the ODFW and Oregon Department of Energy (ODOE) upon request, with the permission of the ORNHIC. Twenty-three records were found by ORNHIC within 5 miles of the amended LJF site boundary (including both LJIIA and LJIIB), including four plant, six mammal, five bird, one amphibian, one invertebrate, and six fish species records. Six of the 23 records were found within 2 miles of the amended site boundary including the following: three records of State Endangered status Washington ground squirrel (individuals and burrows), one record of State Sensitive-Vulnerable status long-billed curlew breeding pairs, one record of State Candidate status plant sessile mousetail, and one record of Watson's desert-parsley.

Other ORNHIC records greater than 2-miles from the amended site boundary, but located within the 5-mile search area include: one record of State Endangered WGS, two records of State Sensitive-Critical species, one of ferruginous hawk and one of western burrowing owl. There were also four State Sensitive-Vulnerable status wildlife species with records including: two records of white-tailed jackrabbit, one record of long-billed curlew, one record of Swainson's hawk, one record of western toad. There were two fish species documented including: 5 records of State Sensitive-Critical status Steelhead (*Oncorhynchus mykiss pop. 28*), and 1 record of State Sensitive-Vulnerable Chinook salmon (*Oncorhynchus tshawytscha, pop 19*). Additionally there was one record of shortface lanx (*Fisherola nuttalli*). Plants found include one record of State Threatened status Laurent's milk-vetch, and one record of State Candidate Sessile mousetail. For scientific names, full status (including ORNHIC tracking and Federal Status), and status definitions of vertebrate wildlife and plant species see Appendices B and C.

The United States Fish and Wildlife Service (USFWS) Gilliam County species list was also reviewed for species with potential for occurrence in the area. All special status vertebrate wildlife and plant species with known or potential for occurrence within the amended site boundary for LJIIB are listed in Appendices B and C. Several species listed on the Gilliam County species list that would not be expected to occur at LJIIB due to lack of suitable habitat are not included in Appendix C such as mountain quail (*Oreotyx pictus*), greater sage grouse (*Centrocercus urophasianus*), yellow breasted chat (*Icteria virens*), and yellow-billed cuckoo (*Coccyzus americanus*), as well as any special status fish species because all planned facilities are in non-aquatic habitats.

Records for the Washington ground squirrel (Betts, 1990) that fell within the LJIIB 2008–2009 amended site LJF site boundary were reviewed. One "large" colony was found during field survey period 1987–1989, near what is currently the proposed LJIIB DD and CC turbine strings. Most of the habitat here is cropland; residual native habitat is found in linear fragmented patches in dry drainages.

3.2 Agency Consultation

During the May 2009 site visit with ODFW, NCW and LJWP, ODFW biologist Steve Cherry indicated his primary concern was that the LJIIB components would be designed and microsited to avoid WGS areas. Mr. Cherry also requested that LJWP avoid widening the existing farm road between Montague Road and the FF turbine string, due to concern for the clearing and loss of quality shrub-steppe habitat (big sagebrush, native bunchgrass) along the road shoulder. That road has since been designated as an alternate route that would only be built if the preferred new access roads from Oregon Highway 19 to the FF string become unfeasible to engineering/constructability issues.

3.3 Wildlife Habitat Mapping and Categorization

The general landscape in the vicinity of the amended site boundary, as with the original LJF site boundary, was formed by the Missoula floods, and consists of moderately-deep to deep soils primarily composed of flood deposited and subsequent wind re-deposited silts and loams. The local vegetation is broadly categorized as Columbia Basin Ecoregion steppe, and shrub-steppe cover types that have often been heavily modified by human activities associated with agricultural development, domestic livestock grazing, and human settlement (Kagan *et al.,* 1999).

Historical land cover maps from the Oregon Gap Analysis Program (OGAP) classify vegetation within the LJIIB area as 'perennial bunchgrass' and 'Basin big sagebrush' cover types (Kagan *et al.,* 1999). However, OGAP's Current Land Cover maps show that much of this area been converted to agricultural use, with native sagebrush-steppe cover type remaining only in portions of the northern LJIIB area, within deeper canyons unsuitable for farming. However, OGAP's vegetation maps were created through photo interpretation of coarse-resolution satellite imagery and, therefore, only present general classification of broad cover type categories at coarse-scale. While this information is useful for gaining a general overview of vegetation cover, more detailed habitat information, with more specific habitat categories at a finer spatial scale, are needed to be relevant to wildlife use.

Four primary types and several subtypes of land cover/habitat were mapped within the amended site boundary (Figure 2a). The general land cover types: Grassland, Shrub-steppe, Woodland, and Developed were similar to those found within the approved site boundary and described in the original LJF ASC (LJWP, 2006). The Sand Dune type present within the approved site boundary was absent in the LJIIB area. Several other habitat sub-types were present within the original site boundary, but are not present in the LJIIB area, including Rabbitbrush-Snakeweed-Eriogonum/bunchgrass, Bitterbrush/Buckwheat Bunchgrass-Annual grass, Eriogonum/*Poa sandbergii*, Exposed Basalt Rock and Escarpment, and Developed- Landfill. Descriptions for each habitat type, along with the conservation status, associated wildlife species, and acreages for each, are summarized in Table 1. Also refer to Exhibit P, Tables P-1 and P-2 as well as text on pages P-5 through P-25, and Attachment P-2 in the original LJF ASC for detailed descriptions and ecological conditions of these habitat types.

3.3.1 Habitat Categories

Primary habitat types, subtypes and descriptions of each category assigned to polygons within the amended site boundary for LJIIB are consistent with categorization for the same habitat subtypes found within the approved site boundary, with one exception. Some of the Rabbitbrush/Snakeweed (code SSB) shrub-steppe found within the amended site boundary was rated as category 4 due to its condition. This habitat is located along a main public highway and a secondary road. Although structurally functional for some native wildlife, due to the human disturbance traveling roads, wildlife use is limited.

Approximately 59 percent of the site boundary consists of disturbed/developed habitat such as agricultural croplands (all Category 6). CRP or other planted grasslands (previously disturbed sites) currently in a Category 3 value for wildlife comprise approximately 6 percent. Other Category 3 habitat such as annual (non-native) grassland), lower quality shrub steppe such as Rabbitbrush/Snakeweed and Sagebrush comprise approximately 14 percent of the site boundary. Category 4 habitats comprise approximately 3 percent. Category 2 native habitats comprise approximately 17 percent of the site boundary and Category 1, less than 1 percent.

Habitat categories are displayed on Figure 2b. For a description of the habitat categories within the approved site boundary, refer to the original ASC, Exhibit P, Table P-1 ("North Analysis Area") on pages P-6 through P-8 and Table P-2 ("South Analysis Area") on pages P-15 through P-17. The number of acres of each habitat category within the amended site boundary for LJIIB and the anticipated worse-case scenario (maximum impact) acres of temporary and permanent impacts by type and category are provided in Table 2.

3.4 Special Status Plant Surveys

All special status and rare plants found are mapped on Figure 3, 3a and 3b. The following five special status plants were found during spring 2009 surveys:

Laurent's milk-vetch (*Astragalus collinus var. laurentii*)
This State Threatened variety of *Astragalus collinus* was found in one area of the surveyed corridors, outside of any known proposed project construction areas.

Sessile mousetail (*Myosurus sessilis*)
This State Candidate species was located just outside the amended site boundary. As is typical for this species, it is restricted to shallow, clay- and mud-lined seasonal pools.

The following three species of rare plants were found. They have no special State or federal status but are tracked by the Oregon Natural Heritage Program (Appendix B) for various reasons and potential conservation concern:

Stalked-pod milk-vetch (*Astragalus sclerocarpus*)
This ORNHIC tracked plant species was found in two areas in the amended site boundary, near the proposed HH turbine string. It is considered by ORNHIC to be List 3, "rare or uncommon but not imperiled".

Columbia milk-vetch (*Astragalus succumbens*)
This ORNHIC tracked plant species was located over a relatively large area in the northern portion of the amended site boundary in the vicinity of the proposed EE and HH turbine strings. It is considered by ORNHIC to be List 4, "Taxa of concern".

Columbia bladderpod (*Lesquerella douglasii*)
This ORNHIC tracked plant was found in two locations in the western portion of the amended site boundary near the CC turbine string and the proposed transmission line. It is considered by ORNHIC to be List 3, "rare or uncommon but not imperiled".

3.5 Avian Use Surveys

This section presents results from the fall and winter 2008–2009 avian use surveys conducted at the 7 study plots within the amended site boundary for LJIIB and the 5 study plots within the 5-mile surrounding area but outside the site boundary. Locations of these study plots are plotted on Figure 4b. Comparisons were made between the 2008–2009 fall and winter avian use data at the 7 LJIIB study plots, and the 2004-2005 fall and winter data gathered at the original LJF plots for the original ASC (LJWP, 2006) to look for similarities or indications of unique characteristics or different risks within the amended site boundary for LJIIB. The original LJF plots (LJIIA) are displayed on Figure 4a.

A total of 14 species of birds were identified during point counts within the 7 LJIIB study plots in fall season 2008 and 13 species were identified during winter season 2008-2009 (Table 3). Nineteen different bird species were observed at these study plots within the amended site boundary. When combining these data with the data from the 5 plots in the surrounding 5 mile area, there were 19 species identified in fall season and 18 in winter season (Table 4) and a total of 24 different birds species observed during the 2008-2009 surveys. Five avian species were found during point counts of the 5 plots in the surrounding area that were not found at the LJIIB plots. Appendix E contains a comprehensive species list from the 2008-2009 surveys, including the 19 species within the LJIIB plots (marked by asterisks) and the additional 5 species observed within the surrounding area. At the 6 plots surveyed in 2004–2005, 24 species were identified in fall season and 19 in winter season (LJWP, 2006). All but two species observed during LJIIB (7 plots) were found during the four seasons of avian use surveys of LJF; the only exceptions were vesper sparrow and California quail (the latter had been observed at LJF during ground surveys.

During the fall 2008 surveys at the 7 LJIIB plots, there were a total of 239 groups (flocks) comprising a total of 442 individual birds observed during 62 surveys. In winter season surveys, there were 341 groups of 692 individual birds observed during 100 surveys (Table 3).

Overall mean use (# birds per 20 minute count) by study plot at all 12 plots (including the 7 LJIIB plots and 5 plots in the surrounding area) ranged from 3.889 at plot E to 11.889 at plot H in fall season (Table 5a). In winter season, overall mean use ranged from 3.313 at plot E 10.188 at plot D (Table 5b). The lowest and highest use of these ranges were at the 7 LJIIB plots. Passerines accounted for the majority of use, and at some plots all of the birds observed were of this group (D and J in fall season, F and H in winter season). No one plot stood out as having significantly higher use during both fall and winter seasons. During each season, 4 of the 12 plots showed no raptor use; these were plots D, F, G, and J in fall season (Table 5a) and plots B, D, F, and H in winter season (Table 5b). Of these plots, D, F, G and H are LJIIB plots located within the site boundary.

Overall mean use was slightly higher in fall season than in winter season at all 12 plots (7.430 fall, 6.080 winter; Table 6); this is also true for the subset of 7 LJIIB plots (fall 7.129, winter 6.291; Table 7). This was unlike 2004–2005 avian use surveys (LJIIA) that covered both the LJI project owned by PacifiCorp and the approved LJF site boundary, which showed higher avian use in winter season (47.244) than fall (19.615). The main reason for the large avian use in winter was high use by horned larks, unidentified passerines, and waterfowl in winter season (Tables 8a and 8b). Overall avian use within the 2004-2005 study area (LJIIA) in both fall and winter seasons was notably higher than at the 7 LJIIB plots and 5 plots in the surrounding area (Table 7) largely due to the presence of large groups of horned larks, which can vary in number largely by year, and common ravens, which occurred in large groups near the landfill adjacent to LJI (Tables 8a and 8b). These fall and winter seasons had the highest use of all four seasons surveyed in 2004–2005 compared to 11.758 in spring and 6.750 in summer (LJWP, 2006).

Passerines, including both songbirds and corvids, were the most abundant group in both fall and winter seasons at the 12 plots, comprising 93.84% of birds in fall season and 96.94 in winter season at the 12 study plots, and 90.00% of birds in fall and 96.24% in winter at the subset of 7 LJIIB plots (Tables 6 and 7). This is similar to 2004–2005 surveys (97.18% fall, 90.66 winter, in that passerines were the most abundant group (Table 7).

Raptor use was lower in fall season at the 7 LJIIB plots within the amended site boundary (0.081) than raptor use at the 5 study plots in the surrounding area. Raptor use at the 7 LJIIB plots was slightly higher in winter season (0.155) than the full 12 plot study area (0.103 fall, 0.112 winter; Tables 6 and 7). The differences between raptor use at the 7 LJIIB plots and the 5 plots in the surrounding area were primarily due to the lack of any raptors observed on several LJIIB plots in fall season (Table 5a), and the presence of American kestrel, northern harrier, red-tailed hawk, and unidentified buteos observed in the winter season at LJIIB plots only (Table 5b).

Raptor use at both the full 12 plots and the subset of 7 LJIIB plots was lower than raptor use observed during the 2004–2005 surveys of LJI and the approved LJF site boundary (0.528

fall, 0.244 winter; Tables 6 and 7). Several species of raptors were observed during 2004–2005 surveys that were not observed at any of the 12 plots surveyed in 2008–2009 including golden eagle, sharp-shinned hawk, and short-eared owl in fall and winter seasons (Tables 6, 8b), and burrowing owl, merlin, and osprey in spring and summer seasons (LJWP, 2006).

Shorebirds were not detected during fall and winter season avian use surveys during either 2004–2005 or 2008–2009 (Tables 6 and 7). The primary shorebird species observed in both the LJIIA and LJIIB areas was long-billed curlew and this species was detected during spring and summer avian use surveys at LJF (LJWP, 2006) and during spring ground transect surveys of LJIIB (Section 3.7).

There were other differences in avian use between the original 2004–2005 surveys and the 2008-2009 surveys conducted at the LJIIB plots and surrounding area. The 2004-2005 surveys showed higher use by waterfowl in winter (4.167 compared to 0.027 at all 12 plots and 0.00 at the 7 LJIIB plots). The 2004-2005 surveys showed lower use of woodpeckers in fall (0.026) and no use by doves and gamebirds in fall or winter season; compared to slightly higher use at the 7 LJIIB plots (woodpeckers 0.048 in fall season, gamebirds 0.016 in fall season, and doves 0.532 in fall and 0.082 in winter at the 7 LJIIB plots with a high of 0.308 in fall at all 12 plots combined) (Tables 6 and 7).

<u>Special Status Species</u>

No Federal or State listed species were observed during the avian use surveys at the 7 survey plots within the amended site boundary or from incidental or in-transit sightings, and the only special status species observed within the LJIIB area at the survey plots or from incidental or in-transit sightings was the prairie falcon (2 sightings, USFWS Bird of Conservation Concern). See Tables 9 and 10.

No special status avian species were observed during the avian use surveys conducted at the 7 plots within the amended site boundary. However, several non-listed special status avian species have been observed at nearby and adjacent survey plots and in-transit to avian use surveys within the original site boundary and within the 5 study plots outside the amended site boundary but within the surrounding area (within 5 miles of LJIIB components). Special status avian species were observed within the original site boundary in 2004–2005 in all four seasons (LJWP, 2006; Attachment P-2) and within the surrounding 5 study plots during the fall and winter 2008-2009 surveys (Tables 9 and 10). At plot C, which is located just west of the LJIIB area (Figure 4b) one ferruginous hawk (State Sensitive-Critical) was observed during winter season (Table 5b). Further to the west, one Swainson's hawk (State Sensitive-Vulnerable) was observed at plot A during winter. One golden eagle (EPA) and one loggerhead shrike (State Sensitive-Vulnerable) were observed in-transit to winter season point count surveys at the 5 plots in the area surrounding LJIIB (Table 10). Special status avian species observed within the original LJF site boundary (LJIIA) during all four seasons (including in-transit observations) include burrowing owl, ferruginous hawk, golden eagle, grasshopper sparrow, loggerhead shrike, long-billed curlew, and Swainson's hawk (Table 9; see LJWP, 2006; Kronner et al., 2005 for details). For species status definitions and scientific names refer to Appendix C.

3.6 Raptor Nest Survey

During the May 2009 raptor nest surveys, 22 active raptor nests were located within the 33,617-acre (52.53 mi^2) raptor nest survey area (two-mile buffer of proposed LJIIB turbine locations) including: ten Swainson's hawk, seven red-tailed hawk, three ferruginous hawk, one long-eared owl, and one prairie falcon nest (Figure 5). One of the ten Swainson's hawk nests was inactive during the aerial survey, but found to be occupied by a late-nesting Swainson's hawk in mid-May during ground-based wildlife surveys. Additionally there were two burrowing owl nests found during ground wildlife surveys, but not observed during the aerial raptor nest survey. A total of five active common raven nests and 56 inactive stick nests were also discovered within the survey area. Some of these inactive nests were likely originally constructed by raptors or corvids such as common ravens or American crows. One of the inactive nests was relatively large and may have been used by ferruginous hawks in the past or will be used in the future. Two inactive nests (could have been raven or raptor in the past) were observed just outside the southeastern edge of the survey area, but were included in the above tally and on Figure 5.

Overall raptor nest density within the 2009 survey area was 0.40 nests per square mile (Swainson's hawk 0.19/mi^2, red-tailed hawk 0.13/mi^2, ferruginous hawk 0.06/mi^2, prairie falcon 0.02/mi^2; Table 11). Burrowing owl and long-eared owl nests were not included in nest density calculations due to the difficulty of finding nests of these species without extensive on-the-ground surveys, and/or for comparison with other sites. Nest density estimates also do not include common raven or inactive nests.

Within the amended site boundary for LJIIB, the following raptor nests were identified: one ferruginous hawk, three Swainson's hawk, one red-tailed hawk, and two burrowing owl nests (Figure 5). Also found within the amended site boundary were two common raven nests and 15 inactive stick nests including one large nest structure (possible ferruginous hawk), and an additional 4 inactive nests right on the site boundary line.

3.7 Special Status Vertebrate Wildlife Surveys

The following summarizes the results of special status vertebrate wildlife species surveys conducted in April and May 2009 at LJIIB. A comprehensive species list from the special status vertebrate wildlife surveys is provided in Appendix F. Sightings below only include those observed during the ground-based surveys. For information on sightings of these species during other field investigations such as the avian use surveys or raptor nest surveys, refer to those sections 3.4 and 3.5 or refer to Appendix C. Special status species are mapped on Figures 6a and 6b. For some species such as grasshopper sparrow, multiple individuals observed in the same location were mapped as a single point on Figure 6a. Raptor species observed flying over during the ground based surveys were assumed to be associated with known nests were not mapped; active nest locations for raptors can be found on Figure 5. Washington ground squirrel (State Endangered) sightings are detailed in Section 3.7.

<u>Burrowing owl</u> (State Sensitive-Critical)
Two dens were found in the same vicinity, in Rabbitbrush/Snakeweed Shrub-steppe habitat near proposed turbine JJ13. One den could possibly be a satellite burrow, used occasionally

but not necessarily for the egg incubation stage. It is likely the dens were used by one breeding pair.

Ferruginous hawk (State Sensitive-Critical)
A pair was observed calling and courtship-displaying while flying. This pair was likely associated with the nest located within the amended site boundary.

Swainson's hawk (State Sensitive-Vulnerable)
Swainson's hawks were seen on several occasions, and were likely associated with nests within the amended site boundary due to observation date and locations.

Grasshopper sparrow (State Sensitive-Vulnerable)
Grasshopper sparrow individuals were seen in four locations in the northern most survey corridor near the alternate 230-kV or 34.5-kV transmission line route, and in eleven locations scattered throughout suitable habitat in the rest of the survey corridors around the main LJIIB components, primarily within the center of the amended site boundary on both sides of Oregon Highway 19. They were found in Rabbitbrush/Snakeweed Shrub-steppe and Sagebrush Shrub-steppe, and bordering Exotic Annual Grassland habitats. They were observed singing and calling, and are assumed to be breeding within the amended site boundary.

Loggerhead shrike (State Sensitive-Vulnerable)
One loggerhead shrike nest was located in a small juniper tree in the survey corridor near the alternate 230-kV or 34.5-kV transmission line route. Eight other observations of this species were recorded within the survey corridor around the preferred and alternate transmission line routes, some singing and calling. Twelve observations of this species were recorded in the rest of the survey corridors around the main LJIIB components. Observations were detected in Juniper Woodland, Sagebrush Shrub-steppe, and Rabbitbrush/Snakeweed Shrub-steppe types. Shrikes near the main LJIIB components were also singing and calling and at least one other nest was suspected, as indicated by the bird's behavior. In addition, two individuals were observed during the 2008 WGS surveys, west of a closest to turbine EE5 and north of turbine FF1. These two observations are also shown on Figure 6a. These surveys were conducted in March before shrikes would have established firm breeding territories.

Long-billed curlew (State Sensitive-Vulnerable)
Long-billed curlews were observed in twelve locations within the center of the amended site boundary, primarily on the east side of Oregon Highway 19. Pairs and individual birds were observed calling and on the ground and were likely nesting within the amended site boundary, but no nests were found. One additional observation of a curlew in flight was noted in one of the southern most survey corridors, and two observations of curlews on the ground and calling were recorded in the eastern most survey corridor.

White-tailed jackrabbit (State Sensitive-Vulnerable)
White-tailed jackrabbits were observed in two locations in the northern most survey corridor near the alternate 230-kV or 34.5-kV transmission line route.

Sagebrush lizard (State Sensitive-Vulnerable)
Sagebrush lizards were recorded in four locations within the amended site boundary to the west of the EE turbine string, in Juniper Woodland habitat.

3.8 Washington Ground Squirrel Surveys

Active WGS areas were discovered in several locations within the survey corridors (Figures 6b and 6b-1, 6b-2, and 6b-3). Table 12 describes each location's characteristics and other pertinent information.

During March 2008 surveys, WGS individuals and holes were noted in four locations within the amended site boundary near the FF turbine string. WGS droppings (scat) were found at some of the burrows indicating very recent use, and a call was heard.

During spring 2009 surveys, WGS holes and burrows were observed in five locations within the northern most survey corridor (Figure 6b-1) near the alternate 230-kV or 34.5-kV transmission line route. One WGS burrow (#12) was also observed along the preferred route (Figure 6b-1). These burrows were found in several habitat types including primarily Rabbitbrush/Snakeweed Shrub-steppe and Sagebrush Shrub-steppe as well as a couple of sightings in Juniper Woodland and at the edge of a Disturbed-Old Field (consisting mostly of non-native vegetation) area. At these locations, holes and fresh droppings were observed; calls were also heard at most of the locations.

During the 2009 surveys, numerous locations of WGS were observed within the survey corridors on the east side of Oregon Highway 19 around the main LJIIB components, within or near the same area surveyed in 2008. There was also one location of WGS burrows (Figure 6b-3, #19) immediately to the west of Oregon Highway 19 and one location of WGS (approximately 10 burrows) observed within the survey corridor along the far western end of the amended site boundary for LJIIB, west of the proposed AA turbine string (Figure 6b-2, #25).

3.9 General Wildlife Observations

Other mammals observed during the course of avian use and special status species surveys include black-tailed jackrabbit, coyote and mule deer. A full list of species including both special status and common species observed during surveys can be found in Appendices E and F.

4.0 IMPACTS DISCUSSION

4.1 Impacts to Wildlife Habitat Types and Categories

Based on the maximum possible area of impact ("worst-case layout"), most temporary and permanent impacts will occur in the Category 6 Developed habitats (active agricultural lands), followed by the Shrub-steppe type, Rabbitbrush/Snakeweed (Table 2). No impacts will occur to Category 1 habitat; avoidance measures were implements during facility layout design to avoid impacts to all known active Washington ground squirrel sites (Figure 6b). There was no Category 5 habitat identified within the analysis area (Table 2).

Impacts to Category 2

A total of 152.60 acres of Category 2 habitat will be temporarily impacted and 19.91 acres will be permanently impacted (worst-case layout). The Category 2 habitat types that will be disturbed temporarily in order of acreage are Shrub-Steppe - Rabbitbrush/Snakeweed (127.45 acres), Juniper Woodland (12.36), Shrub-steppe - Sagebrush (11.89), Disturbed - Other (0.41), Native Perennial Grassland (0.35), and Exotic Annual Grassland (0.14). The Category 2 habitat types that will be permanently impacted include Shrub-steppe Rabbitbrush/ Snakeweed (17.37 acres), Shrub-steppe - Sagebrush (1.53), Juniper Woodland (0.99), and less than 0.01 acres of Disturbed-Other, Annual Grassland, and Native Perennial Grassland will be permanently impacted.

Impacts to Category 3

A total of 153.85 acres of Category 3 habitat will be temporarily impacted and 15.19 acres will be permanently impacted (worst-case layout). The Category 3 habitat types that will be disturbed temporarily in order of acreage are Shrub-Steppe - Rabbitbrush/Snakeweed (85.26 acres), Juniper Woodland (12.36), Disturbed – CRP (67.22), Exotic Annual Grassland (0.94), and Shrub-steppe - Sagebrush. The Category 3 habitat types that will be permanently impacted include Disturbed – CRP or other planted grassland (9.16 acres), Shrub-Steppe Rabbitbrush/Snakeweed (6.02), Exotic Annual Grassland (0.01), and less than 0.01 acre of Shrub-steppe Sagebrush will be permanently impacted.

Impacts to Category 4

A total of 15.26 acres of Category 4 habitat will be temporarily impacted and 2.83 acres will be permanently impacted (worst-case layout). The Category 4 habitat types that will be disturbed temporarily in order of acreage are Exotic Annual Grassland (11.48 acres), Shrub-Steppe - Rabbitbrush/Snakeweed (2.51), Disturbed – Old Field (0.84), and Disturbed – Other (0.43). The Category 4 habitat types that will be permanently impacted include Exotic Annual Grassland (1.73), Shrub-Steppe Rabbitbrush/Snakeweed (1.09), Disturbed – Old Field (0.01), and less than 0.01 acres of Disturbed – Other will be permanently impacted.

Impacts to Category 6

A total of 286.62 acres of Category 6 habitat will be temporarily impacted and 34.82 acres will be permanently impacted (worst-case layout). The Category 6 habitat types that will be disturbed temporarily in order of acreage are Developed – Agriculture (280.38 acres), Disturbed – Other (5.12), Developed – Farmyard Residence (1.01), and Developed – Old Field (0.11). The Category 6 habitat types that will be permanently impacted include Developed – Agriculture (28.02 acres), Disturbed – Other (6.70), Developed – Farmyard Residence (0.10) and less than 0.01 acres of Developed – Old Field will be permanently impacted.

4.2 Impacts to Threatened and Endangered Plant and Wildlife Species

Plants

Laurent's milk-vetch (State Threatened)

The plants are located in an area where no construction is planned, no impacts will occur.

Mammals
For listed mammals, only the State Endangered and Federal Candidate WGS was documented. Active WGS burrows and individual WGS were observed within the amended site boundary for LJIIB during spring 2008 and 2009 surveys. Most of the observations were located within the northern most survey corridor near the alternate transmission line route and within the central portion of LJIIB. There was also one location of WGS activity along the western boundary of the amended site boundary. WGS were also observed during surveys of LJI and the approved survey corridor (LJWP, 2006) and those sites were studied again during post-construction monitoring of LJI (Gritski et al., 2008a). Figures 6b, 6b-1, 6b-2, and 6b-3 show the WGS burrow locations, or colonies consisting of natal sites.

While WGS may be expected within these locations or colony areas during the breeding cycle, not all squirrels remain with the colony throughout the season. For example, adult males may travel more than 150 meters (m) (492 feet) in less than an hour, and adult females about 100 m (328 feet). One adult male was documented to have moved more than 600 m (1,968 feet), returned after a few days, then traversed the distance again to immerge for estivation/hibernation (Delavan, 2005). Juvenile males are known to have dispersed up to 2.25 miles, though the average is about 0.6 mile (0.9 km) (Klein, 2005). Ground squirrels, therefore, may use any parcel within these movement parameters while traveling, conducting daily activities, settling after dispersal, or estivating/hibernating. Some impacts might occur to WGS as a result of accidental injuries or kills caused by construction and operation traffic, but significant impacts that would jeopardize the survival of the recovery of the species are not anticipated from this effect of the project.

The project components have been designed and will be microsited to avoid all known, occupied WGS areas (including revising the potential location of one road), thus keeping direct loss of individual squirrels to a minimum based on current knowledge. Two project-related factors could influence WGS persistence of the currently occupied areas and future use of suitable, unoccupied habitat: disturbance through construction/operation activities and loss or degradation of habitat. Disturbance during construction/operations and permanent or temporary loss or degradation of suitable habitat could temporarily or permanently influence the species' persistence near turbines and new roads. Project construction activities could disturb estivating squirrels or interrupt the WGS daily habits during their above-ground activity period (late January through early June) resulting in increased energy consumption and underweight immergence, respectively, followed by greater over winter mortality. Loss and degradation of occupied habitat would likely result in loss of animals, whereas loss or degradation of suitable, unoccupied areas may reduce the ability of subpopulations to communicate and for the population as a whole to expand as conditions allow.

Little is known about how WGS respond to human activity and no long-term monitoring data are available to aid in understanding how WGS might respond to new gravel roads and presence of wind turbines. Short-term monitoring data recorded for LJI in 2007 during the first year of post-construction monitoring showed that most of the areas of WGS use found during 2005 pre-construction surveys continued to be used following construction (Gritski et al., 2008a). Only one small area showed discontinued use, but ground squirrel species can vary their temporal use over time based on changes in vegetation and other environmental factors and there was no evidence to show that the WGS area had received more intense pressure from construction activities; rather due to its location it was more likely less disturbed by construction than other sites where WGS use remained. Studies from the Stateline Wind Project in Washington also show anecdotal evidence of persistence of WGS in the presence of wind project facilities and human activities related to facility operations (NWC field notes, 2002, 2003, 2004; Erickson et al., 2004). Ground squirrels are known to display population ebbs and flows due to environmental conditions and epizootics (epidemic disease), and interpreting changes in WGS use should take into consideration all known influencing factors. Survey efforts conducted in March through May 2009 in some locations in the Columbia Plateau have indicated that, compared to 2008 and earlier years, spring 2009 was generally a low activity year for the WGS in some areas (Kronner and Marr, field notes 2009), whereas others in parts of Washington within the Columbia Plateau are showing typical activity patterns. Though some are anecdotal, these observations suggest some level of tolerance by WGS to construction and operation activities at wind projects. Construction and operations activities planned at the amended LJF are similar to those that occurred near WGS active sites at Stateline and LJI where the WGS persisted in the area during construction and has persisted through the operations phase.

It is not known how the WGS near the amended LJF will respond to construction and operation. However, based on a visual assessment of vegetation and a review of soil types, suitable habitat is quite extensive both within and outside the amended site boundary. WGS may use nearby suitable habitat temporarily travel to and from one "more-suitable," or permanently depending on the soil types, habitat characteristics and tolerable predator activity level. During micrositing all turbines, roads, and collector lines will be eliminated or relocated outside the occupied ground squirrel areas to prevent placement of permanent facilities within these areas. There is the potential for animals to be struck by vehicles if they should travel outside of identified colonies and into the Facility construction zones during the activities. While some incidental injuries or kills might occur as a result of construction and operation traffic, no impacts will occur that would reduce the likelihood of the survival or recovery of the species.

WGSs were primarily observed within the amended site boundary in Rabbitbrush-Snakeweed Shrub-steppe. A few individual WGS may be living or traveling through areas outside of known colonies. It can reasonably be expected that individuals may move throughout the landscape. There are approximately 2,136 acres of this habitat type present within the amended site boundary (Figure 2b and Table 1). One of these WGS locations was also partially located in a previously disturbed old field. Some of the Rabbitbrush-Snakeweed Shrub-steppe habitat areas are small, scattered patches of shrub-steppe with limited functionality for wildlife due to their size and past use. A lesser number of WGS were observed in Sagebrush Shrub-Steppe habitat; 145 acres of this habitat type occur within the amended site boundary. Based on a maximum possible facility layout, up to 215 acres of Rabbitbrush-Snakeweed Shrub-steppe of variable quality and suitability for the WGS are could be impacted temporarily during construction and approximately 24 acres permanently impacted (project facility footprint). Revegetation of the temporary construction zones with native vegetation species, along with weed and fire management (as required in the SC conditions and Appendix B to the Final Order) and appropriate grazing practices all have the potential to improve the habitat to some degree. Post-construction monitoring of the WGS use near the LJIIB turbines (as required by Appendices A and E in the Final Order and the Incidental Take Permit) could aid in understanding WGS persistence onsite in the presence of wind projects over a longer period than what has been documented at other projects. The habitat mitigation plan would also offset WGS habitat impacts by conserving suitable habitat (as required by Appendix C to the Final Order).

Birds

No birds classified as Threatened or Endangered by the U.S. Fish and Wildlife Service or Oregon Department of Fish and Wildlife were observed within the amended site boundary. Bald eagle (State Threatened) were not observed during the 2004-2005 avian use surveys at LJI and the approved site boundary or during the 2008-2009 surveys within the amended site boundary, but could occasionally occur during winter months as this species winters along the Columbia River. They could also potentially pass through the site very infrequently during spring or fall migration, but are not expected to nest on or near the site (the nearest nest is over 50 miles away from the amended site boundary). One bald eagle was recorded during the winter avian use study at the Rattlesnake Road Wind Power Project to the north of the approved site boundary (Kronner et al., 2007). Bald eagles do not appear susceptible to colliding with wind turbines (unlike golden eagles), likely because of their differences in foraging habits (golden eagles are predators and move through the landscape in search of upland prey whereas bald eagles tend to feed on fish or scavenge). There have been no reported instances of a bald eagle fatality at any U.S. wind farm (Erickson *et al.,* 2001; Table 15). It is unlikely that the amended LJF will have any negative effect on bald eagles.

4.3 Impacts to Special Status (non-listed) Plant Species

Of the four non-listed special status plant species identified within the site boundary, impacts to two of these species will be avoided. However, temporary and permanent impacts may occur to the stalked-pod milk-vetch (ORNHIC List 3) and will likely occur to the Columbia milk-vetch (ORNHIC List 4). Both species were found in a small area at the north end of the amended site boundary site east of Oregon Highway 19. The stalked-pod milk-vetch is considered "Rare or uncommon but not imperiled." A direct impact to these small populations is not likely, given that they are located on side slopes away from the proposed LJIIB components. The Columbia milk-vetch is more extensive than the stalked-pod milk-vetch and overlaps with the EE turbine string road. Due to the plant location and the terrain, the road cannot be designed to avoid the population, and portions of the mapped population will be temporarily and permanently impacted by the road. However, opportunities to minimize impacts will be explored. The Columbia milk-vetch is considered a "taxa of concern". Adverse impacts to either species regionally are not expected from the loss of a small portion of the mapped population.

4.4 Impacts to Avian Species

This section focuses primarily on impacts to birds from the operating turbines. The most probable impact to birds resulting from LJF is direct mortality or injury due to collisions with the turbines. Collisions may occur with resident birds foraging and flying within the area, or with birds migrating through the area. Impacts to birds from disturbance or displacement are discussed in Section 4.4.7. Other potential but infrequent direct impacts could occur such as bird strikes with facility operations vehicles traveling roads away from turbine area but these are not discussed here.

The amended LJF is located within the Columbia Basin Ecoregion (CBE) of the Pacific Northwest, a region where many wind projects have been developed and studied. Pre-construction studies and fatality monitoring have been conducted at eleven wind projects of 25 MW or greater in the CBE including: LJI, Vansycle, Klondike I and II, Biglow Canyon, and Combine Hills in Oregon, and Big Horn, Nine Canyon, Hopkins Ridge and Wild Horse in Washington, and Stateline in both Oregon and Washington (Table 13). Extensive pre-construction studies have been also been conducted at other nearby sites in Oregon including the Rattlesnake Road, Wheat Field, and Pebble Springs Wind Power Projects (Kronner et al., 2007; Kronner et al., 2008b; PPM, 2006) and reports from these and other nearby wind projects have been reviewed for pertinent information.

Results from fatality monitoring data from LJI in particular were reviewed and compared to the amended LJF in the most detail in this report. Due to its proximity to the amended site boundary and LJIIB components, and similar topography, fatality estimates at LJI could provide a fair basis for predicting fatality impacts at the amended LJF. Avian use metrics collected and analyzed for the 2004-2005 study that covered both LJI and the approved LJF site boundary were combined with flight-altitude characteristics (percent of time birds fly, percent of time birds fly within the rotor swept area of a turbine) to produce an exposure index for LJI—a relative measure of the risk of each species' exposure to wind turbine collision risk (Kronner et al, 2005). This combination of metrics is a logical and appropriate component in determining whether certain species are at high risk of collision. However, other facets of a species' natural history and behavior may also influence its susceptibility to collision (e.g., its ability to see and avoid wind turbine blades, whether it is a diurnal or nocturnal migrant) and should also be taken into consideration. For example, horned larks conduct aerial displays during the breeding season (often within the rotor-swept area of the turbine) and hence may be more at risk during this season because of this behavior. However, they spend considerable time on the ground and have very low flight patterns during most of the year because they are ground nesters. In addition, certain species such as ravens, turkey vultures and bald eagles seem to be able to avoid turbines, and as a result their fatality rates have generally been low relative to their exposure (Thelander and Rugge, 2000). Therefore, all behavioral facets of a species and its general biology should be considered before determining its propensity to collide with wind turbines. One way to address this variability is to consider each species' history of collisions in relation to their abundance at other projects in the CBE where they have been documented to occur.

Project and turbine characteristics of eleven CBE wind projects where standardized fatality monitoring has been conducted are described in Table 13. All bird average fatality estimates from these have ranged from 0.6 to 10.0 fatalities/turbine/year or 0.9 to 6.7 fatalities/MW/year (Table 14). The only species represented by more than 10% of the documented fatalities was horned lark, the most commonly observed species at all of the eleven CBE projects during daytime use surveys (Table 15), and also the most common species observed at the LJIIB survey plots (Table 3). Overall bird use within the amended site boundary for LJIIB was not high relative to other open habitat project sites in the CBE, and was lower than overall bird use observed in the 2004-2005 surveys that covered LJI and the approved LJF site boundary, suggesting that fatality estimates observed at these eleven projects provide a fair basis for predicting fatality impacts from the amended LJF, particularly for raptors. Because overall mean use of birds at the LJIIB survey plots was as much as six times lower than at LJI for the fall and winter seasons, a conservative prediction of the annual fatality estimate for all birds (inclusive of non-native species) at the amended LJF could be lower than LJI, and could be 1 to 5 bird fatalities/MW/year and will likely consist of a high percentage of passerines. Spring avian use surveys within the amended site boundary have been completed, but the data had not been analyzed at the time of this report. The data will be reviewed when results are available to determine whether use patterns are similar to the 2008-2009 fall and winter season data and whether they are similar to the spring and summer season avian use data gathered in 2004-2005 at LJI. Other fatality monitoring data from operating wind projects will also be reviewed as they become available (Pebble Springs, Rattlesnake Road Wind Projects).

Further discussions of potential impacts to bird groups including passerines, raptors, and waterbirds (waterfowl, shorebirds, others) as well as a discussion of indirect impacts (displacement) are described in detail below.

4.4.1 Raptors

Factors such as mean use, raptor nest density and existing information (pre- and post-construction avian use and fatalities) at regional wind projects were reviewed to assess potential raptor risk and species at risk for the amended LJF.

The concern for raptor collisions at wind projects arises largely from the fact that red-tailed hawks, northern harriers, golden eagles, American kestrels, prairie falcons, and turkey vultures have all collided with wind turbines at Altamont, California, although most of the raptor fatalities were red-tailed hawks (Erickson et al., 2001). Comparisons with only the Altamont Pass wind project would be misleading, however, because it contains many older generation wind turbines, and many newer generation wind turbines have caused fewer raptor fatalities. For example, the mean raptor fatality estimate from eight new generation wind projects in the Midwest and west (Stateline, OR/WA; Vansycle, OR; Klondike, OR; Nine Canyon, WA; Foote Creek, WY; Buffalo Ridge, MN; Wisconsin; Buffalo Mountain, TN) was 0.04 raptor fatalities/MW/yr compared to up to approximately one raptor fatality/MW/yr (i.e., 25 times greater) at older generation wind projects such as Altamont (NWCC, 2004). At the High Winds Power Project in Solano County, California, raptor use estimates were high compared to other areas studied, particularly for American kestrels and red-tailed hawks. Corresponding to the high use by these species at the High Winds project, and despite newer turbine technology, the avian species with the greatest number of recorded fatalities in the two years after construction were American kestrel (n=45) and red-tailed hawk (n=18) (Kerlinger et al., 2006). Overall, based on regression analysis conducted by others (WEST, Inc. and others using various data sets), it appears that for raptors there is some correlation between avian use metrics from pre-construction surveys and avian fatalities during post-construction surveys (Strickland and Johnson NWCC presentation, 2006).

Overall raptor nest density within the 2009 survey area for the amended LJF (turbines plus a 2-mile buffer) was 0.40/mi^2 (excluding burrowing owl and long-eared owl due to the difficulty of detecting nests from the air and purposes of comparison), which is similar or slightly lower than the raptor nest density at LJI (0.41/mi$^{2)}$ and slightly higher than the average of ten other wind projects in the region (0.26/mi^2; Table 11). The nest density of Swainson's hawk (0.19) within the 2009 survey area is higher than at most regional wind projects, but similar or slightly higher than LJF (0.18) and Rattlesnake Road (0.19; Table 11). Ferruginous hawk nest density within the 2009 survey area was 0.06 and is slightly higher than all other wind projects listed in Table 11, including LJI (0.03). Red-tailed hawk nest density within the 2009 survey area is 0.13, which is slightly lower than LJI (0.16).

Raptor species most at risk of turbine collision at the amended LJF include locally nesting species such as Swainson's hawk, red-tailed hawk, ferruginous hawk, and American kestrel, as these species have been observed within the 2009 survey area for LJIIB and found as fatalities at other wind projects in the CBE (Table 15), and found as fatalities at LJI (Gritski et al., 2008a). Three active Swainson's hawk nests, one active ferruginous hawk nest, and one active red-tailed hawk nest (and one just on the boundary) were located within the amended site boundary for LJIIB during spring season 2009. Several red-tailed hawks and one American kestrel were observed within the amended site boundary during winter season 2009. These four species are the four raptor species with the highest exposure indices during pre-construction avian use analyses conducted for the approved site boundary (Kronner et al., 2005).

Other raptor species with exposure indices greater than 0 for LJF were rough-legged hawk, golden eagle, northern harrier, sharp-shinned hawk, and turkey vulture. Small numbers of fatalities of these species or owls may also occur. Rough-legged hawks were observed during fall and winter 2009 avian use surveys within the amended site boundary. Prairie falcons and burrowing owls were both found nesting within the 2009 raptor nest survey area, although these species were also found within the approved LJF site boundary and determined to have low exposure. No prairie falcons or burrowing owls were found as fatalities during the two year fatality monitoring study at LJI (Gritski et al., 2008a).

Short-eared owls, which were observed during the 2004-2005 surveys that covered both LJI and the approved site boundary, may be found as casualties at the amended LJF, based on avian fatality monitoring results at LJI where one was found as a fatality despite low exposure risk estimates for this species during pre-construction surveys (Gritski et al., 2008a; Kronner et al., 2005). Short-eared owls have also been found as fatalities at other regional wind projects (Erickson, et al., 2004; NWC and WEST, 2007; Table 15). Influencing factors that could affect potential mortality of short-eared owls include the species' year-to-year wintering population fluctuation that may be influenced by prey abundance and/or winter weather patterns (snow depth and length of time of snow cover).

Other species of owl that have been found as fatalities at regional wind projects include barn owl, great-horned owl, and long-eared owl (Table 15). All aforementioned species of owl could be expected to occur at various times of the year in suitable habitats within the amended site boundary (not throughout). One long-eared owl was found nesting outside the amended site boundary but within the raptor nest survey buffer during the spring 2009 surveys. No owls were observed during fall and winter season avian use surveys.

Average annual fatality estimates for raptors (including owls) at the eleven CBE wind projects mentioned above range from 0 to 0.21 per MW/year (Table 14). This estimated range from completed avian fatality monitoring studies in the CBE provides a fair basis for predicting fatality impacts at the amended LJF. However, LJI was on the high end of the regional range both in terms of raptor use and raptor fatalities. The LJI winter raptor mean use was two times higher than the raptor use at the 7 LJIIB survey plots and fall raptor mean use at LJI was around five times higher than recorded for winter and fall at the 7 LJIIB survey plots. At LJI, 7 raptor fatalities (including 3 incidentals) were observed during the two year fatality monitoring study (the estimated annual fatality rate after data analysis was 21.47 raptor fatalities per year) (Gritski et al. 2008a), which is the high end of the range listed for the CBE. Twenty-nine percent of the raptor fatalities occurred in the winter/fall seasons, the seasons analyzed for potential fatality estimates in this report. Despite proximity and similar habitat features at the operating LJI and the amended LJF, fatality rates for the LJIIB turbines would be expected to be lower than recorded at LJI based on lower raptor use for fall 2008 and winter 2008–2009 at both the 7 LJIIB avian study plots and the 5 avian study plots in the surrounding 5-mile area than the fall and winter raptor use recorded in the 2004––2005 study that covered both LJI and the approved LJF site boundary (Tables 6 and 7). Winter would be the season of lowest risk for raptors, as no raptors were found as fatalities at LJI during the winter season (Gritski et al., 2008a). Other factors such as final turbine location distance to nearest active raptor nest site could influence raptor risk.

4.4.2 Passerines

Passerines, often referred to as songbirds, have been the most abundant avian fatality at wind projects in the CBE, comprising >65% of the fatalities overall (Table 15). Passerines include many dozens of species, which generally outnumber other groups (such as raptors), thus their collision rate may not be out of proportion to their overall relative abundance in the landscape. A review of avian fatalities at eight new generation projects in the West and Midwest (Stateline, OR/WA; Vansycle, OR; Klondike, OR; Nine Canyon, WA; Foote Creek, WY; Ponnequin, CO; Buffalo Ridge, MN; Wisconsin) showed that most fatalities are of horned lark (29.6%), followed by sparrows (13.8%), warblers (9.2%), upland game birds (8.8%), and approximately <5% for other groups of birds (Erickson et al., 2001). Overall fatality rates for birds (most presumably passerines) was approximately 3 fatalities/MW/yr in the US (Vansycle, OR; Klondike, OR; Nine Canyon, WA; Foote Creek, WY; Buffalo Ridge, MN; Wisconsin; Buffalo Mountain, TN; Mountaineer, WV; excluding older generation sites in CA; Erickson et al., 2001). One eastern US site (Buffalo Mountain, TN) had unusually high overall avian fatality rates (approximately 11 fatalities/MW/yr).

Estimates of passerine fatalities observed at some newer generation wind power projects in Washington have ranged from approximately 0.63–2.98 birds/turbine/year (Erickson et al. 2004; Erickson et al., 2007; Kronner et al., 2008a). However, at the recently monitored Klondike II Wind Project in Oregon, the estimated number of small bird fatalities per turbine was higher at 4.46 birds/turbine/year. Golden-crowned kinglets and horned larks were the most commonly observed fatalities at Klondike II (eight and six, respectively; NWC and WEST, 2007). The cause for higher fatality rates of migrant passerines at Klondike II is not currently known. At LJI passerine fatalities were even higher with a mean estimate of 9.13 per turbine per year, or 6.09 per MW per year (Gritski et al., 2008a). The majority of passerine fatalities were breeding or wintering birds such as horned lark and European starling and approximately 26% were considered to be migrants (Gritski et al., 2008a). At the Stateline Wind Project, the most commonly observed avian fatalities were horned lark and golden-crowned kinglet with fatality estimates at 0.89 and 0.20 birds per turbine per year, respectively (Erickson et al., 2004). The overall fatality estimate for small birds at Stateline for the two-year study was 1.70 birds per turbine per year (Erickson et al., 2004). A smaller subset of turbines were monitored from January 2006 through December 2006 and the small bird fatalities per turbine for the year was 0.63 (Erickson et al., 2007). At Combine Hills, the average fatality estimate for small birds was 1.89 fatalities per turbine per year, with horned larks the most commonly observed fatality (1.20 per turbine per year; Young et al., 2006).

Passerines were the most abundant avian group observed during both the 2004-2005 survey that covered LJI and the approved LJF and during the 2009 avian use surveys for LJIIB and the surrounding area. Passerine use at the 2009 survey plots was notably lower than at the plots within LJI and the approved LJF site boundary, largely due to the presence of large groups of horned larks, which can vary in number by year, and common ravens, which occurred in large groups near the active landfill adjacent to LJI. Passerines comprised the largest percentage of observed casualties at LJI (78%) as well as estimated casualties (91%; Gritski et al., 2008a). The annual fatality estimate for passerines at LJI (range 3.61–9.67 per MW per year) is higher than the range of estimates at other regional projects (NWC and WEST, 2007; Erickson et al., 2004; Erickson et al., 2003; Johnson et al., 2003). Because overall mean use of birds at the 2009 survey plots within the amended site boundary and surrounding area was as much as six times lower than at LJI for the fall and winter seasons, a conservative prediction of the annual fatality estimate for passerines (inclusive of non-native species) at the amended LJF could be 1 to 4.6 passerine fatalities/MW/year. Due to close proximity and similar habitat features (excluding the large operating landfill), fatality estimates and species composition of the fatalities for the amended LJF may be expected to be similar or less than LJI. Of the passerine fatalities, it is expected that approximately 5% of these fatalities will be non-native species (European starlings, etc.) based on the fatality results at LJI.

Passerine species' exposure indices across all seasons for the amended LJF are expected to be similar to those described in the original LJF ASC. Passerine exposure indices are highest for common raven, unidentified passerine, horned lark, and European starling. It could, therefore, be expected that horned lark would be the primary passerine species most at risk at the amended LJF as it was frequently observed on-site and it was the most common fatality observed at LJI. Common ravens, although they were calculated to have a high exposure indices in the original ASC, may have lower levels of fatalities because their use was lower at the LJIIB study plots, and they appear far less susceptible to collision than would be expected based on their level of use. While ravens are usually within the top five most abundant birds observed at projects and are known to have flight heights in the turbine rotor swept area, only one common raven has been found as a fatality at CBE wind projects at LJI (Gritski et al., 2008, 2007, Table 15). Ravens are known for their relatively high intelligence levels and likely learn very fast to avoid the new structures. European starling (non-native) and dark-eyed junco were two passerine species found as fatalities at LJI. Smaller numbers of migrant species (i.e. golden-crowned kinglet) and species nesting elsewhere in the region will likely also be found as fatalities at the amended LJF based on trends from regional wind projects such as the recently studied Klondike II, Stateline and

Big Horn wind projects. Two golden-crowned kinglet fatalities were observed at LJI (Gritski et al., 2008a).

Actual numbers of passerine fatalities may be higher or lower for each year during the life of the amended LJF due to fluctuation in weather patterns and other environmental events influencing avian activity levels and distribution patterns within the wind project site. In summary, based on the information known to date and taking a conservative approach, passerine fatalities at the amended LJF could be expected to be similar to LJI but not likely to exceed the estimated range recorded in the two-year LJI fatality monitoring study. No impacts to threatened or endangered passerine species are anticipated.

4.4.3 Waterfowl and other Waterbirds

Wind projects with year-round waterfowl use have shown the highest waterfowl fatalities, although levels of waterfowl/waterbird fatalities appear insignificant compared to use of the sites by these groups. Two Canada goose fatalities were documented at the Klondike I (OR) wind project (Johnson et al., 2003), although several Canada goose flocks were observed during pre-construction surveys (Johnson et al., 2002). They are known to forage sprouting wheat in the extensive dryland wheat fields of the Columbia River area. Few Canada goose or other waterbird fatalities have been observed as fatalities at Stateline Wind Project (Erickson et al., 2004) or at other regional wind projects (Table 15). One bufflehead was found at the Klondike II Wind Project (NWC and WEST, 2007). Two great-blue herons have been found as fatalities at regional wind projects (Stateline and Nine Canyon; Erickson et al., 2003; Erickson et al., 2004). Other waterbird species that have been found at regional wind projects include American coot, mallard, ruddy duck, western grebe, bufflehead, and Virginia rail (Table 15).

The Top of Iowa Wind Project is located in cropland between three Wildlife Management Areas (WMAs) with historically high bird use, including migrant and resident waterfowl, shorebirds, raptors, and songbirds. During a recent study, approximately 1 million total goose-use days and 120,000 total duck-use days were recorded in the WMAs during the fall and early winter, and no waterfowl fatalities were documented during concurrent and standardized wind project fatality studies (Koford et al., 2004). Similar findings were observed at the Buffalo Ridge Wind Project in southwestern Minnesota, which is located in an area with relatively high waterfowl/waterbird use and some shorebird use. Snow geese, Canada geese and mallards were the most common waterfowl observed. A total of 55 fatalities were observed during the fatality monitoring studies and these included three species of waterfowl: two mallards, two American coots, and one blue-winged teal (Johnson et al., 2002b). One sandhill crane was recently found as a fatality at a wind project at Altamont Pass, WRA, California (Altamont Pass Avian Monitoring Team, 2008).

One waterfowl/waterbird species was found as a fatality at LJI during the two year monitoring study: an unidentified duck (feather spot) was found in March (Gritski et al., 2008a). In general, low numbers of fatalities of this group have been found regionally, and since waterfowl use at the LJIIB survey plots was relatively low during the season when their presence would be most likely (5 Canada geese observed in winter in the surrounding area), and the estimated fatalities for this group was low at LJI (0.04 mean fatalities per MW per year), waterfowl/waterbirds in general are expected to have low risk of collision at the

LJIIB turbines and turbine strike casualties may only occur infrequently. The waterbird species with the highest exposure index according to the original LJF ASC was Canada goose (Kronner et al., 2005). Since this was the waterbird species observed near the amended site boundary, this species would likely be most at risk.

4.4.4 *Shorebirds*

The only shorebird observed during the 2004-2005 and 2009 avian use surveys was the long-billed curlew, a State Sensitive-Vulnerable species. Long-billed curlews were observed nesting within the approved site boundary during the 2004-2005 surveys, and observed during special status wildlife surveys within the amended site boundary for LJIIB in 2009 during their breeding season, indicating they could be possibly nesting within the amended site boundary as well. The current distribution of this species in North America has changed dramatically from the historical distribution. Within the CBE, this species showed a positive population trend, based on analysis of Breeding Bird Survey (BBS) data collected from 1968 through 2001 (Dobkin and Sauder, 2004). However, suitable resting, staging and nesting habitats are becoming less abundant in the CBE. Population trend data are mixed or unclear, and not necessarily promising for the species (Dobkin and Sauder, 2004). See Section 4.5.7 (special status species) for risk assessment of the long-billed curlew.

Shorebirds as a group are rarely killed at wind projects; of 1036 avian fatalities collected at U.S. wind projects, only one was a shorebird (a killdeer found at Buffalo Ridge, Minnesota) (Erickson *et al.,* 2001), even though shorebirds have been recorded at virtually every wind project evaluated. No long-billed curlew collision fatalities have been found at any existing wind projects even though some wind projects have been constructed at sites where long-billed curlews were recorded during baseline avian-use studies (URS, 2001; FPLE, 2000, 2002a; NWC, 2000). Actual fatality numbers of long-billed curlews may be higher or lower for each year during the life of the project. Small numbers of other shorebirds may be found as fatalities. One killdeer was found as a fatality at LJI (Gritski et al., 2008a).

4.4.5 *Upland Gamebirds*

Some upland game bird mortality has been documented at wind projects (Erickson et al., 2001; Erickson et al., 2004). It is not clear if these mortalities were caused by striking turbine towers or blades, but there are also likely some strikes with vehicles traveling through the wind projects. Based on habitat present, results from other regional wind projects, and the presence of a few gamebirds (California quail) within the approved LJF site boundary and in the 5-mile area surrounding the amended site boundary, there is potential for mortality of some upland gamebirds to occur; however, it is expected to be infrequent. During the two years of fatality monitoring at LJI, one chukar and one ring-necked pheasant were found as fatalities and the estimated mean number of fatalities of this group was 0.07 per MW per year (Gritski et al., 2008a).

4.4.6 *Other Avian Groups*

Small numbers of other avian groups including doves and woodpeckers could be expected to be found as fatalities at the amended LJF. At LJI three doves were found (estimated mean 0.09 per MW per year) and one woodpecker was found as a fatality (estimated mean 0.03 per MW per year; Gritski et al., 2008a). The primary species at risk would be mourning dove and northern flicker, as these species were found as fatalities at LJI and observed during the 2009 surveys at the amended site boundary for LJIIB. Small numbers of other species in these groups such as rock pigeon (found as a fatality at LJI) or small numbers of birds of other species groups may also be found as fatalities.

4.4.7 *Displacement Effects*

Potential displacement effects were discussed previously for LJF (ASC, Exhibit P). This section is inclusive of that background information, and updated where applicable.

Development of wind turbines near raptor nests may result in indirect impacts to the nesting birds such as resulting in the nest site being less attractive for nesting, or displacement of birds during nesting; however, few studies have shown avoidance of wind turbine areas by nesting raptors. One report of avoidance of wind turbines by nesting raptors in the U.S. occurred at Buffalo Ridge (MN). During this study raptor nest density on 101 mi^2 (261 km^2) of land surrounding a wind project was 5.94/39 mi^2 (5.94/100 km^2). No nests were present in the 12 mi^2 (32 km^2) wind project facility itself, even though habitat was similar (Usgaard et al., 1997). A pair of golden eagles successfully nested 0.8 km from the Foote Creek Rim, Wyoming wind plant for three different years after it became operational (Johnson et al., 2000), and a Swainson's hawk nested within 0.8 km of Klondike Wind Project (Johnson et al., 2003). Studies at the Stateline Wind Project in Oregon and Washington have not shown any short-term effects on nesting raptors (Erickson et al., 2004). In 2006 at Stateline II Wind Project (supplemental surveys of a subset of the full Stateline Project), there were fewer active target raptor species (ferruginous hawk and Swainson's hawk) nests within two miles of the project than during the previous years, although some changes may be attributed to various factors such as nest structure degradation and competition with other species (great horned owl) for the limited nest sites (Erickson et al., 2007). Ferruginous hawks appear to continue to nest in the Stateline Oregon/Washington area, given some intermittent competition with great horned owl over the monitored years (2001-2006). One nest within 1,122 feet and approximately 42 feet lower in elevation of the nearest turbine persisted as an active and successful nest site from 2001 (pre-construction) through 2006, the year last studied.

Recent grassland bird study results (Erickson et al., 2007) show a relatively small-scale impact of the Stateline wind facility on grassland nesting passerines. A gradient analysis (Morrison et al., 2001) was used to determine the relationship between density of grassland/steppe avian species and distance from the Vestas 0.660 MW turbines. A "gradient analysis" assesses whether a significant or a biologically substantial relationship exists between distance from project structures and abundance or use of the area. The initial impacts observed during the early years of the study were mostly due to direct loss of habitat due to placement of turbine pads, construction of roads, and some temporary habitat disturbance (Erickson et al., 2004). During the 2006 post-construction study, grasshopper sparrows showed a significant decrease in use when compared to pre-construction use within the first 50 meter (horizontal) sub-segment of the turbines, although sample sizes were very low for grasshopper sparrows. Horned lark, savannah sparrow, and western meadowlark displacement was not apparent. In summary, the data suggests there was a relatively small-scale impact of the wind facility on the grassland passerine species of that project site for the period studied. Grassland species as a whole appear not be have been impacted. Grassland bird displacement studies at the Combine Hills Wind Project also suggest a relatively small-scale impact from the operating wind facility on grassland nesting passerines (Young et al., 2006). Passerine use at survey points offset from the turbines showed a significant increase from pre-construction to post-construction surveys, but there was no change at the turbine points suggesting other factors that could also be involved (Young et al., 2006).

A grassland bird study initiated in 2003 at the South Dakota Wind Energy Center was also conducted to determine if wind turbines constructed in grazed, mixed grass prairie affect the density or species composition of breeding grassland birds. Preliminary results did not detect avoidance patterns for the western meadowlark, thus finding no evidence so far that this species was avoiding wind turbines. However, for grasshopper sparrow, the mean difference between the observed and expected numbers tended to be negative out to about 200m, indicating that this species avoided wind turbines to some degree. Studies at this and other nearby sites are continuing to determine if this pattern persists throughout the study (Johnson and Shaffer, 2008).

Nesting burrowing owls were monitored during construction at Stateline (FPLE, 2002) and although most active nests were not within turbine construction zones, one nest site located 367 feet from a turbine was active through the construction period and successfully produced young (although the nest was not in a direct line of sight to the construction zone). In addition to persistence during construction, burrowing owl nest site monitoring conducted post-construction for 2 to 3 years indicated persistence in the presence of an operating wind turbine facility (Erickson et al., 2004; Kronner, 2004, 2005).

The amended LJF site boundary is utilized by two species that are not documented as nesting within the grassland bird displacement study areas discussed above (Stateline, Combine Hills, South Dakota Wind Energy Center): long-billed curlew and loggerhead shrike. Curlews are also known to be susceptible to human disturbance during the breeding season which can result in nest abandonment or disruption of important parental behaviors (such as brooding chicks; Dugger and Dugger, 2002). Loss of suitable habitat may also reduce social behaviors or reduce nesting opportunities. However, no displacement data are available from other wind projects for these species. During operations, grassland birds may avoid areas of human activity and a perimeter around new roads and turbines. As required by Attachment A to the Final Order for LJF, a grassland nesting bird study will be conducted for LJF.

The grassland bird species nesting closest to proposed LJIIB components is the burrowing owl. Two burrowing owl dens (likely used by one pair) were identified near proposed turbine JJ-13; these burrowing owls may avoid the area during construction, but it is unclear as to what the area of avoidance will be. Direct impacts to the one known nest site near proposed turbine JJ13 will be avoided. Nesting loggerhead shrikes were also found near the alternate transmission line route. If construction occurs during the nesting season, it is not known how construction activity will affect the burrowing owls or other nesting grassland birds. However, no adverse impacts to the regional populations are expected.

4.5 Impacts to Special Status Vertebrate Wildlife Species

This section discusses potential risk of turbine collision for special status avian species and potential impacts of the facility to other species of vertebrate wildlife, with the exception of bats and listed species. For information on potential impacts to bats see Section 4.6. For discussion on potential impacts to threatened or endangered wildlife or plant species see Section 4.2. For full Federal and State status, scientific names, and status definitions, see Appendix C. Text in this section is consistent with LJF SCA and updated where applicable.

Special Status Raptors

The *Golden eagle* (Eagle Protection Act) is considered at *low risk* of collision. One was observed in-transit to the LJIIB avian use plots in winter season. This species was observed infrequently during the avian use study of LJI and the approved site boundary, and elsewhere in the general vicinity (Kronner et al., 2007; PPM, 2006). A few nests are present within the general landscape within 15 miles of the amended site boundary.

Golden eagles are known to collide with turbines at other wind projects (Erickson et al., 2001) and one was recently found as a fatality near Goodnoe Hills in Washington (Lucke, 2009). However, at the Foote Creek Rim Phase II Wind Project in Wyoming, where there is year-round golden eagle use and nesting, only one fatality was documented during a study conducted from July 1999 to December 2000 (Young et al., 2003). In addition, no golden eagle fatalities were found during a one-year carcass survey at the Condon Wind Project in Oregon (Fishman, 2003) or incidentally after the formal survey, even though 25 detections were recorded during the one-year formal pre-construction surveys and nesting occurred in the John Day River Basin within 10 to 12 miles of that project (URS and WEST, 2001). Based on relatively low use of both the approved and amended site boundary by golden eagles, and low eagle mortality at CBE operating wind projects (only 1 known), it is unlikely that the amended LJF will have any significant impact on golden eagle populations in the area. In addition, no nesting habitat will be impacted because nesting habitat is not present within the site boundary.

The *Burrowing owl* (State Sensitive-Critical) is considered at *low risk* of collision. This species was documented nesting near the proposed JJ turbine string during spring 2009 special status wildlife surveys. One individual was also observed during the fall 2005 surveys within the approved LJF site boundary (likely a local or regional migrant) and one confirmed burrowing owl nest was observed at LJI (LJWP, 2006; Kronner et al., 2005); however, no burrowing owls were observed as fatalities at LJI (Gritski et al., 2008a). None of the burrowing owls observed during the 2004-2005 surveys were seen flying within the rotor-swept area of turbines. Nesting has been documented elsewhere in the general vicinity (Kronner et al., 2007; PPM, 2006). Burrowing owl fatalities have been found during fatality monitoring studies at Altamont Pass Wind Resource Area in California (Orloff and Flannery, 1992; Smallwood and Thelander, 2004). One dead burrowing owl was found at the Stateline Wind Project, not near turbines; it collided with an operations maintenance truck (Dominick, C. 2009). Due to the low-flying habits of this species, impacts at wind projects could be turbine strikes or vehicle strikes. The authors of this report are not aware of any other burrowing owl fatalities found at projects in the CBE. Information about nest persistence amidst construction and operation of turbines can be found in Section 4.4.7 (displacement effects).

Ferruginous hawk (State Sensitive-Critical) would be considered at *moderate risk* of collision. Three active nests were identified during the 2009 raptor nest survey within the 2 mile buffer of the amended site boundary; one of these nests was located within the amended site boundary for LJIIB between the JJ and KK turbine strings. An inactive large stick nest that could be used by a ferruginous hawk was also found within the amended site boundary near the north end of proposed CC turbine string. This species was observed within the site boundary during spring season 2009 special status species surveys. One was also observed during winter season at avian use plot C to the west of the amended site boundary. Several ferruginous hawk nests are present in the LJI project area and one was observed colliding with an operating turbine by a maintenance worker at LJI in April 2008 (Gritski et al., 2008a). The 2004-2005 pre-construction avian use study analysis showed this species to have relatively high exposure (Kronner et al., 2005). At the Big Horn Wind Project in WA, one ferruginous hawk fatality was found in early July 2007 and this species is not known to nest within the lease boundary for that wind project (Kronner et al., 2008a). At the Stateline Wind Project, one ferruginous hawk fatality was detected during the fatality monitoring period from July 2001 through December 2003. The nearest nest was 0.5 miles (0.8 km from the turbine), but it was not known whether the fatality was an adult from that nest. A one-year fatality monitoring study was conducted for part of the full Stateline project in 2006; one ferruginous hawk fatality was found in that year as well. In summary, from 2001 through 2009, there are four known ferruginous hawk fatalities at wind projects in the CBE (Table 15).

Swainson's hawk (State Sensitive-Vulnerable) is considered at *moderate to high risk* of collision. Ten active Swainson's hawk nests were found during the 2009 raptor nest survey; three of them were located within the amended site boundary. This species was documented during spring season 2009 special status wildlife surveys and was also observed during 2008-2009 fall and winter season avian use surveys. This species also nests at LJI and within the approved LJF site boundary, and in other locations in the general vicinity in junipers or isolated deciduous trees (Gritski et al., 2008; LJWP, 2006; Kronner et al., 2005; Kronner et al., 2007; Kronner et al., 2008; PPM, 2006). Two Swainson's hawks were found as fatalities at LJI in August 2007 (Kronner et al., 2007). Swainson's hawks nest within the LJI area; had been observed hunting near turbines, and were also observed attempting to nest very near one turbine, where nesting had not been observed in the two years prior to construction of LJI.

At Stateline, one Swainson's hawk fatality was detected; the nearest nest to the fatality was over two miles. It is not known whether it was a local nesting bird or a migrant from further away. Also at Stateline, an injured Swainson's hawk was found at the base of a turbine. It was captured, treated and successfully released (Erickson et al., 2004). At Klondike I, a Swainson's hawk was found as a fatality after the formal monitoring study was complete. Recently, one was found as a fatality at the Klondike III wind project and Pebble Springs wind project (IBR, Pers. Comm., 2009), making the regional total six fatalities and one injured Swainson's hawk (includes incidental findings). The pre-construction avian use study analysis conducted for the original LJF ASC indicated this species had relatively high risk exposure (Kronner et al., 2005).

Peregrine falcon (State Sensitive-Vulnerable) is considered at *very low risk* of collision. This species was not observed within the approved or amended site boundary, or within the 5-

mile surrounding area, but this species has been seen in Arlington area (Morgan, pers. comm., 2004). Basalt cliffs along the Columbia River are potentially suitable for nesting but are less suitable than habitat along the Columbia River further to the west, which is the traditional nesting area for peregrine falcons. Historic nest sites are located approximately 20 to 50 miles from the amended site boundary. No peregrine falcons have been found as fatalities at any of the operational CBE wind projects.

Special Status Passerines

Grasshopper sparrow (State Sensitive-Vulnerable) is considered to be at *low risk* of collision with turbines due to low level flight characteristics of this species. Grasshoppers were observed during spring 2009 special status wildlife surveys throughout native habitat within the amended site boundary and are thought to breed onsite. This species was also observed in during the 2005 nesting season within the approved LJF site boundary. This species occurs throughout much of the CBE on and near wind project sites, but only one has been documented as a fatality at a wind project in the CBE (Table 15). The main concern to grasshopper sparrows is the impact of habitat loss and potential displacement. As previously discussed, Stateline Wind Project (Oregon and Washington) and South Dakota Wind Energy Center displacement study data suggests grasshopper sparrows are displaced during their season of use (nesting season) near turbines, though it may be a temporary affect due to construction disturbance (NWC and WEST, 2007; Johnson and Shaffer, 2008; discussed in detail in Section 4.4.7. on indirect impacts).

Loggerhead shrike (State Sensitive-Vulnerable) is considered to be at *low risk* of collision with turbines due to seeming low susceptibility to turbine collision. This species occurs throughout the U.S. where wind projects have been built, yet only two loggerhead shrikes (both in California) have been reported as fatalities at wind power facilities (Erickson et al., 2001). This species was documented within the amended site boundary in suitable habitat (mature sagebrush, isolated junipers, and juniper woodlands) during spring 2009 special status wildlife surveys and one nest was confirmed in a survey corridor. One loggerhead shrike was also observed in the winter 2009 while in-transit between avian-use plots in the 5-mile surrounding area. Individuals and nests were found in 2004-2005 within the original LJF site boundary in areas with mature sagebrush cover or in juniper woodlands or isolated juniper trees (LJWP, 2006). This species may be more affected by habitat loss and displacement than by turbine collision; however, the affects of indirect impacts such as these are largely unknown as studies of displacement have not been conducted for this species.

Special Status Shorebirds

Long-billed curlew (State Sensitive-Vulnerable) appears to be at *low risk* of collision with turbines due to the fact none have been found as fatalities at regional wind projects (although the only operational wind project with completed fatality monitoring study in the CBE with high densities of this species is LJI). The estimated exposure risk conducted for the original ASC for this species of shorebird was relatively high; however, to date none have been found as fatalities at LJI (Kronner et al., 2005; Gritski et al., 2008a).

Curlews defend a nesting territory (6–14 hectares or 15–35 acres) and typically forage outside the nesting territory (Dugger and Dugger, 2002). Unpaired males establish territories and begin aerial displays (often 30–50 meters above ground level) to attract females.

Curlews are most visible during this arrival and pre-incubation period (mid-March to mid-April; Kronner, pers. field notes). While long-billed curlews may be at risk for collision with turbines whenever they occur, they may be at increased risk during pair formation, when they are performing their aerial displays. One curlew fatality was found at the Pebble Springs Wind Project in spring 2009 (IBR 2009) but no evidence is available to clearly indicate an interaction with a turbine or project vehicle or a predator.

Special Status Mammals

White-tailed jackrabbit (State Sensitive-Vulnerable). This species was recorded within special status wildlife survey corridors for both the approved and amended site boundaries (LJWP, 2006) and observed in the general area (Kronner et al., 2007; PPM, 2006; ORNHIC, 2009). However, temporary and permanent loss of open shrub cover and grassland will not adversely impact this species because this habitat type is extensive where additional jackrabbits may be present.

Other Special Status Wildlife

Sagebrush lizard (State Sensitive-Vulnerable). This species was observed during special status wildlife surveys in spring 2009 to the west of the EE string within the amended site boundary. This species has also been observed near the approved site boundary and in the general vicinity (LJWP, 2006; PPM, 2006). Impacts to this species is not likely, given that they are located on side slopes away from the proposed LJIIB components. No adverse impacts are expected to the regional population.

Western toad (State Sensitive-Vulnerable). There was one ORNHIC record of this species within 5 miles of the site boundary. However, this species was not observed within the approved or amended site boundary, and there is no aquatic habitat and very limited potential for upland movements during wet periods. If present, they are likely restricted to more mesic habitats around ranch yards. Impacts are not expected for this species.

Other Wildlife

Potential impacts to other wildlife, including nonlisted mammals, amphibians, and reptiles are expected to be less than significant. No measurable impacts are anticipated to big game from operations. Construction may result in loss of foraging and breeding habitat for nonlisted small mammals, such as northern pocket gopher (*Thomomys talpoides)*, Ord's kangaroo rat (*Dipodymys ordi)*, and badger (*Taxidea taxus*). Ground-dwelling mammals will lose the use of the permanently affected areas; however, they are expected to repopulate the temporarily affected areas. Some small mammal fatalities can be expected from vehicle activity during operations, but impacts are expected to be very low. No impacts to amphibians are anticipated during operations. Impacts to reptiles during operation are likely to be limited to direct mortality as a result of vehicle collisions and are expected to be low.

4.6 Impacts to Bats

The primary impact to bats will be turbine collision mortality. Available evidence indicates that this will be confined primarily to the migratory species. Throughout the CBE, fatalities have been comprised primarily of silver-haired and hoary bats with fall being the main season of fatalities and spring and summer seasons contributing only small numbers of fatalities (Table 16; Appendix G). Data from eleven CBE wind projects (Appendix G) shows that > 85% of almost 400 total bat fatalities found at these CBE projects to date have been found during the period of August-October (the peak in September) and >95% of all of these bat fatalities were hoary and silver-haired bats.

Although 46 species of bats occur in the U.S., 11 species comprise all known bat fatalities at U.S. wind plants (Johnson, 2005), despite the fact that wind projects occur in several regions of the country in a variety of habitats. The three most common species of migratory bats in the U.S. (hoary, eastern red, and silver-haired bats) comprised 73% of 2,486 bat fatalities identified to species at 14 U.S. wind projects (Kunz et al., 2007).

Because the Townsend's big-eared bat is a State Sensitive-Critical species, other literature was reviewed to more thoroughly understand the biology of this bat species and potential use of habitat near wind turbines. A Biological Assessment recently was prepared to address the potential for a wind project in West Virginia to impact the federally endangered Virginia big-eared bat, a subspecies of Townsend's big-eared bat (Johnson and Strickland, 2003). The Biological Assessment concluded that the collision risk to the Virginia big-eared bat is very low because the species is nonmigratory and forages well below the space occupied by turbine blades. Not much is known about the species daily and seasonal activity patterns in Gilliam County. A roost of 102 Townsend's big-eared bats were found in Rock Creek drainage in Klickitat County, Washington (across the Columbia River from LJF), and a maternity site and foraging by this species has also been documented in the general area, within Klickitat County (Kronner et al., 2005a; Kronner and Gritski, 2007; Appendix C). The Townsend's big-eared bat was detected, among other species, on August 24, 2007 by NWC at the Miller Ranch Wind Facility in Washington (Northwest Wind Partners, 2007). To date greater than 380 bat fatalities have been recorded and identified at CBE Wind Projects and Townsend's big-eared bat has not been found as a fatality at any CBE project.

Bat species composition of fatalities at the amended LJF will likely be similar to fatalities found at LJI. At LJI, silver-haired and hoary bats (both State Sensitive-Vulnerable) comprised most of the fatalities; 7 hoary bats and 13 silver-haired bats were found during standard searches at LJI over a two-year study period (Gritski et al., 2008a). These two species are the most common fatalities at other wind projects in the CBE (Appendix G). Small numbers of other bat species, such as big brown bat (Kronner et al., 2008a), little brown bat (Erickson, et al., 2004), and other *Myotis* species have been found at wind projects in the CBE and may also be found as fatalities at the amended LJF.

As with other CBE projects, most bat mortality would be expected to occur from July through early fall, coinciding with the fall migration period for hoary and silver-haired bats, with the exception of a few fatalities found during May and June (Appendix G). At LJI, 4 silver-haired bats were found as fatalities during May that could represent local breeding individuals or individuals temporarily residing in lower warmer elevation zones before going to mountainous areas for the summer. At the Big Horn Wind Project in Klickitat County, WA, several silver-haired bats were also found during May (Kronner et al., 2008). In December, 1 hoary bat was found as a fatality at LJI as an incidental (Gritski et al., 2008a).

Bat mortality patterns at wind projects in Washington and Oregon have followed patterns similar to the rest of the country, but the average is slightly lower (NWCC, 2004; Arnett et al., 2008). Bat mortality at the amended LJF could be expected to be similar to fatalities at LJI where the estimated range of bat fatalities was 1.2—3.19/MW/year and a mean of 1.98 bats/MW/year or 2.97 bats/turbine/year (Gritski et al., 2008a). The fatality rates at LJI were slightly higher than the average for the CBE projects, which ranged from 0.39 to 2.47/MW/year with a mean of 1.39 (at eleven wind projects; Table 16), but since confidence intervals overlap, there is no significant difference. Actual fatality numbers may be higher or lower for each year for the life of LJF. Bat fatality rates for the amended LJF are expected to be lower than fatalities at many other wind projects in the United States, particularly lower than projects in the eastern U.S. where bat mortality at some projects has ranged from 28 to over 40 per turbine per year (Kerns and Kerlinger, 2004; Nicholson, 2003; Arnett et al., 2008).

Unlike many species of birds, bats typically have low reproductive rates, are not long-lived, and appear to be especially vulnerable to wind turbines (BCI, 2009). Additionally, although most wind projects in the Northwest, Rocky Mountains, and upper Midwest where the habitat is open prairie and farmland have 1–3 bat fatalities/ turbine/year (NWCC, 2004; Arnett, 2005; Johnson, 2005), the number of bat kills becomes more significant as the number of operating turbines increases nationwide into the thousands (Arnett, 2005). Bat Conservation International (BCI), the American Wind Energy Association (AWEA), the USFWS, and the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) have initiated a research effort (the Bat Wind Energy Cooperative) to understand bat and wind turbine interactions and how bat fatalities can be prevented or minimized. Research efforts include improving pre-construction impact predictions for bat fatalities, studying the effectiveness of bat deterrent devices, and studying the effectiveness of changing turbine cut-in speed on reducing bat fatalities (Arnett et al., 2009), as well as other studies that may help to more fully understand impacts to bats from wind projects in the future.

5.0 AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

The same avoidance, minimization and mitigation measures described in the original ASC and Final Order will be implemented for the amended LJF, with some additional measures. Refer to the Site Certificate conditions and Attachments A-E of the Final Order for a detailed description of these measures. A short summary of the avoidance, minimization and mitigation measures is provided below.

Prior to construction, the LJIIB components will be designed to avoid impacts to sensitive species, riparian areas and native habitat.

- Turbine locations, laydown areas, and roads located near WGS locations will be microsited to avoid these areas. No components will be located in Category 1 habitat.
- LJIIB components will be microsited to avoid and minimize both temporary and permanent impacts to high quality native habitat where practicable to retain habitat cover in the general landscape.
- Improvements to the existing farm road between Montague Road and the FF turbine string will be avoided if at all possible, as requested by ODFW, due to concern for the clearing and loss of quality shrub-steppe habitat (big sagebrush, native bunchgrass) along the road shoulder.
- Collector lines will be installed underground where feasible, and overhead lines will be constructed according to the Avian Power Line Interaction Committee (APLIC) recommendations.

During construction, the following measures will be implemented to minimize impacts.

- Construction monitoring
- Exclusion Flagging around wetlands and sensitive species locations
- Environmental Training
- Speed Limits
- Fire Control
- Erosion Control

After construction, the temporary construction zones will be revegetated with native vegetation species as described in the LJF Revegetation Plan (Appendix B to the Final Order). Weed and fire management measures will also be implemented to improve habitat within the site boundary (as required in the SC conditions).

For the impacts that cannot be avoided or minimized, the Wildlife Mitigation and Monitoring Plan and the Habitat Mitigation Plan will be implemented.

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7.0 REFERENCES

(Also includes resources used but not cited in this document)

Altamont Pass Avian Monitoring Team. 2008. Altamont Pass Wind Resource Area bird fatality study. July. (ICF J&S 61119.06) Portland, Oregon. Prepared for Altamont County Community Development Agency.

Arnett, E. B., technical editor. 2005. Relationships Between Bats and Wind Turbines in Pennsylvania and West Virginia: an Assessment of Bat Fatality Search Protocols, Patterns of Fatality, and Behavioral Interactions with Wind Turbines. A final report submitted to the Bats and Wind Energy Cooperative. Bat Conservation International. Austin, Texas.

Arnett, E.B., W. Brown, W. Erickson, J. Fiedler, B. Hamilton, T. Henry, A. Jain, G. Johnson, J. Kerns, R. Koford, C. Nicholson, T. O'Connell, M. Piorkowskis, R. Tankersley. 2008. Patterns of bat fatalities at wind energy facilities in North America. Journal of Wildlife Management. 72 (1): 61-78.

Arnett, E. B., M. Schirmacher, M. M. P. Huso, and J. P. Hayes. 2009. Effectiveness of changing wind turbine cut-in speed to reduce bat fatalities at wind facilities. An annual report submitted to the Bats and Wind Energy Cooperative. Bat Conservation International, Austin, Texas.

Bat Conservation International (BCI). 2009. Bat and wind energy cooperative, key facts. Viewed online in 20009 at: http://www.batcon.org/home/index.asp?idPage=55&idSubPage=32

Betts, B. 1990. Geographic distribution and habitat preferences of Washington ground squirrels (*Spermophilis washingtoni*).

Columbia-Blue Mountain Resource Conservation and Development Area, Inc. and Northwest Power and Conservation Council (CBMRCD/NWPCC). 2004. John Day Subbasin Draft Plan.

Delavan, J. 2005. Home range, movement, and foraging behavior of adult Washington ground squirrels (*Spermophilus washingtoni*). Unpublished progress report, U. S. Fish and Wildlife Service, La Grande, OR.

Dobkin, D., J.D. Sauder. 2004. Shrubsteppe landscapes in Jeopardy. Distributions, abundances, and the uncertain future of birds and small mammals in the Intermountain West. High Desert Ecological Research Institute. Bend, Oregon.

Dominick, C. 2009. Personal communication between K. Kronner, NWC and Cassandra Dominick of FPL Energy in regards to a burrowing owl fatality at Stateline Wind Project in July 2008.

Dugger, B.D. and K.M. Dugger. 2002. Long-billed Curlew (Numenius americanus). In The Birds of North America, No. 628 (A. Poole and F. Gill eds.). The Birds of North America, Inc., Philadelphia, Pennsylvania.

Elzinga, C. L., D. W. Salzer, and J. W. Willoughby. 1998. Measuring and monitoring plant populations. TR 1730-1. USDI Bureau of Land Management, Denver, Colorado. 477pp.

Erickson, W.P., G.D. Johnson, M.D. Strickland, and K. Kronner. 2000. Avian and bat mortality associated with the Vansycle Wind Project, Umatilla County, Oregon. Technical Report prepared by WEST, Inc. for Umatilla County Department of Resource Services and Development, Pendleton, Oregon. 21 pp.

Erickson, W.P., G.D. Johnson, M.D. Strickland, K.J. Sernka, and R.E. Good. 2001. Avian Collisions with Wind Turbines: A Summary of Existing Studies and Comparisons to Other Sources of Avian Collision Mortality in the United States. Prepared for the National Wind Coordinating Committee. Available at http://www.nationalwind.org

Erickson, W.P., B. Gritski, and K. Kronner, 2003. Nine Canyon Wind Power Project Avian and Bat Monitoring Annual Report. Technical report submitted to Energy Northwest and the Nine Canyon Technical Advisory Committee.

Erickson, W.P., D. Young, G. Johnson, J. Jeffrey, K. Bay, R. Good, and H. Sawyer. 2003b. Wildlife Baseline Study for the Wild Horse Wind Project: Summary of Results from 2002-2003 Wildlife Surveys: May 10, 2002-May 22, 2003.

Erickson, W.P., J. Jeffrey, K. Kronner, and K. Bay. 2004. Stateline Wind Project Wildlife Monitoring Final Report, July 2001 – December 2003. Technical report submitted to FPL Energy, the Oregon Energy Facility Siting Council, and the Washington Stateline Technical Advisory Committee.

Erickson, W.P., K. Kronner, K. Bay. 2007. Stateline Wind Project wildlife monitoring annual report, January – December 2006. Technical report prepared by WEST, Inc. and NWC, Inc. and submitted to FPL Energy, the Oregon Energy Facility Siting Council, and the Stateline Technical Advisory Committee.

Erickson, W.P., J.D. Jeffrey, and V.K. Poulton. 2008. Puget Sound Energy Wild Horse Wind Facility post-construction avian and bat monitoring: first annual report, January – December 2007. Prepared by WEST, Inc. for Puget Sound Energy, Ellensburg, Washington.

Fishman, Ecological Services LLC. 2003. Carcass survey results for SeaWest WindPower, Inc., Condon Site 2002-2003. Prepared for SeaWest WindPower, Inc., Condon Wind Project, Gilliam County, Oregon.

FPL Energy Vansycle LLC (FPLE). 2002. Draft SEPA Supplemental Environmental Impact Statement on FPL Energy's Proposal for the Stateline Wind Project 2A Expansion. Lead agency: Walla Walla County Regional Planning Department, Walla Walla, Washington. May 2002.

Gritski, B. K. Kronner, and S. Downes. 2008a. Leaning Juniper Wind Power Project, 2006–2008. Wildlife monitoring final report. Prepared for PacifiCorp Energy, Portland, Oregon. Prepared by Northwest Wildlife Consultants, Inc., Pendleton, Oregon.

Gritski, B., K. Kronner, and S. Downes. 2008b. White Creek Wind I wildlife monitoring annual summary, winter 2007–2008 through fall 2008. Prepared for White Creek Wind I, LLC, Roosevelt, Washington. Prepared by Northwest Wildlife Consultants, Inc., Goldendale, Washington.

Hitchcock, C. Leo, and Arthur Cronquist. 1973. Flora of the Pacific Northwest. University of Washington Press, Seattle, Washington. 730pp.

Hitchcock, C. Leo, Arthur Cronquist, Marion Ownbey, and J.W. Thompson. 1955-1969. Vascular Plants of the Pacific Northwest (5 volumes). University of Washington Press, Seattle, Washington.

Jeffrey, J., W. Erickson, J. Baker. 2008. Elkhorn Wind Project monitoring 2nd quarterly report, 2008. Technical Memorandum prepared for Horizon Wind. Prepared by WEST, Inc. Walla Walla, Washington.

Johnson, G.D. 2005. A Review of Bat Mortality at Wind-energy Developments in the United States. Bat Research News 46:45-49.

Johnson, G.D., W.P. Erickson, and J. White. 2003. Avian and bat mortality at the Klondike, Oregon Phase I Wind Plant, Sherman County, Oregon. Technical report prepared for Northwestern Wind Power by WEST, Inc.

Johnson, G.D., W.P. Erickson, M.D. Strickland, K.J. Sernka, and B. Gritski. 2003. Analysis of potential avian/wind plant interactions in Klickitat County, Washington: Supplement to the Klickitat County Energy Overlay Programmatic Environmental Impact Statement. Klickitat County Resource Department, Goldendale, Washington.

Johnson, G.D., and W.P. Erickson. 2004. Analysis of Potential Wildlife/Wind Plant Interactions, Big Horn Site, Klickitat County, Washington. Prepared for CH2M HILL, Portland, Oregon. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming.

Kerns, J. and P. Kerlinger. 2004. A Study of Bird and Bat Collision Fatalities at the Mountaineer Wind Energy Center, Tucker County, West Virginia: annual report for

2003. Technical report prepared by Curry and Kerlinger, LLC. for FPL Energy and Mountaineer Wind Energy Center Technical Review Committee.

Kerlinger, P., R. Curry, L. Culp, A. Jain, C. Wilkerson, B. Fisher, A. Hasch. 2006. Post-construction Avian and Bat Fatality Monitoring Study for the High Winds Wind Power Project, Solano County, California: Two Year Report.

Klein, K. J. 2005. Dispersal patterns of the Washington ground squirrel on Boardman Naval Weapons Training Facility; MS thesis. Cooperative Fish and Wildlife Research Unit, OSU, Corvallis, OR.

Iberdrola Renewables (IBR). 2009. Personal communication between J. Roppe, IBR and K. Kronner NWC in regards to one long-billed curlew at IBR's Pebble Springs Project

Iberdrola Renewables. 2008. Personal communication with Karen Kronner of NWC, Inc. regarding Swainson's hawk fatality at Klondike III.

Isaacs, F.B. 2008. Results of peregrine falcon breeding area monitoring in Oregon, 2003-2007: Final Report. 6 June 2008. Oregon Cooperative Fish and Wildlife Research Unit, Dept. of Fisheries and Wildlife, Oregon State University, Corvallis, Oregon.

Isaacs, F. B., and R. G. Anthony. 2007. Bald Eagle nest locations and history of use in Oregon and the Washington portion of the Columbia River Recovery Zone, 1971 through 2006. Unpublished report prepared by Oregon Cooperative Fisheries and Wildlife Research Unit, Oregon State University, Corvallis, Oregon.

Jeffrey, J. D., W.P. Erickson, K. Bay, V. Poulton, W. Tidhar, and J. Baker. 2008. Wildlife Baseline Studies for the Golden Hills Wind Resource Area, Sherman County, Oregon, Final Report, May 2006–June 2008. Prepared for BP Alternative Energy North America, Inc., Houston, Texas. Prepared by Western EcoSystems Technology, Inc., Cheyenne, Wyoming.

Jeffrey, J.D., W.P. Erickson, K. Bay, M. Sonneberg, J. Baker, M. Kesterke, JR. Boehrs, and A. Palochak. 2009. Portland General Electric, Biglow Canyon Wind Farm Phase I, post-construction avian and bat monitoring first annual report, January–December 2008. Technical report prepared for Portland General Electric, Portland, Oregon. Prepared by Western EcoSystems Technology, Inc., Cheyenne, Wyoming and Walla Walla, Washington.

Johnson, D., and J. Shaffer. 2008. Northern Prairie Wildlife Research Center Memo on Research on Wind/Grassland Birds on February 20, 2008. U.S. Geological Survey, Northern Prairie Wildlife Research Center, Jamestown, North Dakota.

Johnson, G.D., D.P. Young, Jr., C.E. Derby, W.P. Erickson, M.D. Strickland, and J.W. Kern. 2000. Wildlife monitoring studies, SeaWest Windpower Plant, Carbon County, Wyoming, 1995-1999. Technical Report prepared by WEST, Inc. for SeaWest Energy Corporation and Bureau of Land Management. 195pp.

Johnson, G. D., W.P., Erickson, K. Bay, K. Kronner. 2002. Baseline Ecological Studies for the Klondike Wind Project, Sherman County, Oregon. Prepared for NorthWestern Wind Power. Prepared by WEST, Inc., Cheyenne, Wyoming and Northwest Wildlife Consultants, Inc.

Johnson, G.D., W. P. Erickson, M.D. Strickland, M.F. Shepherd, D.A. Shepherd, and S.A. Sarappo. 2002b. Collision mortality of local and migrant birds at a large-scale wind power development on Buffalo Ridge, Minnesota. Wildlife Society Bulletin 30:879-887.

Johnson, G.D., W.P. Erickson, and J. White. 2003. Avian and Bat Mortality at the Klondike, Oregon Phase I Wind Plant, Sherman County, Oregon. Technical report prepared for Northwestern Wind Power by WEST, Inc.

Kagan, J.S., J.C. Hak, B. Csuti, C.W. Kiilsgaard, and E.P. Gaines. 1999. Oregon Gap Analysis Project Final Report: A geographic approach to planning for biological diversity. Oregon Natural Heritage Program, Portland, Oregon. 72 pp. + appendices.

Kerlinger, P., R. Curry, L. Culp, A. Jain, C. Wilkerson, B. Fisher, A. Hasch. 2006. Post-construction Avian and Bat Fatality Monitoring Study for the High Winds Wind Power Project, Solano County, California: Two Year Report.

Koford, R., A. Jain, G. Zenner and A. Hancock. 2004. Avian mortality associated with the Top of Iowa Wind Farm: Progress Report, Calendar Year 2003. Iowa Cooperative Fish and Wildlife Research Unit, Iowa State University, Ames, Iowa. 9pp.

Kronner, K., B. Gritski, J. Baker, V. Marr, G. Johnson and K. Bay. 2005. Wildlife baseline study for the Leaning Juniper Wind Power Project. Prepared for PPM Energy, Portland, Oregon and CH2M Hill, Portland, Oregon. Prepared by Northwest Wildlife Consultants, Inc., Pendleton, Oregon and WEST, Inc., Cheyenne, Wyoming.

Kronner, K., B. Gritski, and J. Baker. 2006a. Big Horn Wind Power Project Fall 2005 Avian Use Study, Klickitat County, Washington. Prepared for CH2M HILL, Portland, Oregon and PPM Energy, Portland Oregon. Prepared by Northwest Wildlife Consultants, Inc., Goldendale, Washington.

Kronner, K., B. Gritski, and J. Baker. 2006b. Big Horn Wind Power Project Winter 2004-2005 Avian Use Study, Klickitat County, Washington. Prepared for CH2M HILL, Portland, Oregon and PPM Energy, Portland Oregon. Prepared by Northwest Wildlife Consultants, Inc., Goldendale, Washington.

Kronner, K., B. Gritski, M. Darrach, B. Anderson, Z. Ruhlen, T, Ruhlen. 2007. Ecological baseline study for the Rattlesnake Road Wind Power Facility, Arlington, Oregon. Prepared for Arlington Wind Power LLC and Horizon Wind Energy LLC. Prepared by Northwest Wildlife Consultants, Inc., Pendleton, Oregon.

Kronner, K., B. Gritski, and S. Downes. 2008a. Big Horn Wind Power Project wildlife fatality monitoring study, 2006-2007. Report prepared for PPM Energy, Portland, Oregon and the Big Horn Project Technical Advisory Committee. Prepared by Northwest Wildlife Consultants, Inc. Goldendale, Washington.

Kronner K., B. Gritski, M. Darrach, B. Anderson, Z. Ruhlen, and T. Ruhlen. 2008b. Ecological baseline study for the proposed Wheat Field Wind Power Facility, Arlington, Oregon. Prepared for Wheat Field Wind Power Project LLC and Horizon Wind Energy LLC, Portland, Oregon. Prepared by Northwest Wildlife Consultants, Inc., Pendleton, Oregon.

Kronner et al., 2009. White Creek Wind I – Results of monitoring year 2 winter season wildlife monitoring study and the clean-up search prior to formal monitoring of year 2 turbines, November 4, 2008–March 19, 2009. Seasonal summary submitted to White Creek Wind I Technical Advisory Committee. Prepared by Northwest Wildlife Consultants, Inc.

Kronner, K. and S. Downes. 2009. White Creek Wind I – Results of wildlife monitoring year 2 spring season, for the period March 20 through May 25, 2009. Seasonal summary submitted to White Creek Wind I Technical Advisory Committee. Prepared by Northwest Wildlife Consultants, Inc.

Kronner, K. and B. Gritski. 2005–2009. Personal field notes on bat species found in eastern Klickitat County Washington through acoustical monitoring conducted 2005–2007 and along Rock Creek, Gilliam County Oregon 2006–2009.

Kronner, K. 2001. Personal field notes on wildlife observations near Arlington, Oregon.

Kunz, T.H., E. Arnett, W. Erickson, A. Hoar, G. Johnson, R. Larkin, M. Strickland, R. Thresher, M. Tuttle. 2007. Ecological impacts of wind energy development on bats: questions, research needs and hypotheses. Front Ecol. Environ. 5(6): 315-324.

Leaning Juniper Wind Power II LLC (LJWP). 2006. Application for Site Certificate, Leaning Juniper Wind Project. Submitted to the Oregon Energy Facility Siting Council in September 2006.

Lucke, C. 2009. PacifiCorp. Personal communication with Karen Kronner, NWC in regards to PacifiCorp's Goodnoe I Wind Project, Washington and golden eagle.

Mabee, T.J., B.A. Cooper, C. Grinnell, and J. Bana. 2005. Baseline Avian Use at the Proposed Klondike III Wind Power Project, Oregon, Winter 2004 – Spring 2005. Final report prepared for David Evans & Associates, Inc., Portland, Oregon.

Marr, V. 2004. Unpublished Report on Washington Ground Squirrel Monitoring at Boardman Bombing Range and the Boardman Conservation Area. 13 pp.

Morgan, R. 2003. Oregon Dept. of Fish and Wildlife, Heppner, Oregon. Personal communication with Karen Kronner, Northwest Wildlife Consultants, Inc., Pendleton, Oregon. April 7, 2003.

Morrison, M.W. Block, M.D. Strickland and W.L. Kendall. 2001. Wildlife study design. Springer. New York. 210 pp.

National Wind Coordinating Committee (NWCC). 2004. Wind Turbine Interactions with Birds and Bats: A summary of research results and remaining questions.

Nicholson, C.P. 2003. Buffalo Mountain Windfarm Bird and Bat Mortality Monitoring Report: October 2001 - September 2002. Tennessee Valley Authority, Knoxville Tennessee.

NWC and WEST 2001. Pre-construction Wildlife Investigation Stateline Wind Project. Study conducted by Northwest Wildlife Consultants, Inc. Pendleton, OR. Technical support and data analysis provided by WEST, Cheyenne, WY. Prepared for FPL Energy, Inc. and CH2M Hill.

Northwest Wildlife Consultants, Inc. (NWC) and WEST, Inc. 2007. Avian and bat monitoring report for the Klondike II Wind Power Project, Sherman County, Oregon. Prepared for PPM Energy, Portland, Oregon.

Northwest Wind Partners, LLC (NWP). 2007. Miller Ranch Wind Energy Project EOZ Application and SEPA Checklist. Prepared by Tetra Tech EC, Inc. Submitted to Klickitat County Planning Department, Washington. November 2007 and January and February 2008 supplemental documents.

Northwest Wildlife Consultants, Inc. (NWC). 2002, 2003, 2004. Various field investigations for assessing habitat quality on private land within and near Stateline Wind Project, Umatilla County, Oregon.

Oregon Department of Fish and Wildlife (ODFW). 2005. Comprehensive Conservation Strategy. Wildlife Division, Salem, OR.

Oregon Department of Fish and Wildlife (ODFW). 2008. Sensitive species: frequently asked questions and sensitive species list. Available online at: http://www.dfw.state.or.us/wildlife/diversity/species/docs/SSL_by_category.pdf

Orloff, S. and A. Flannery. 1992. Wind turbine effects on avian activity, habitat use, and mortality in Altamont Pass and Solano County Wind Resource Areas, 1989-1991. Final Report to Alameda, Contra Costa and Solano Counties and the California Energy Commission by Biosystems Analysis, Inc., Tiburon, California.

PPM Energy. 2004. Big Horn Energy Project SEPA Expanded Checklist. Prepared by CH2M Hill. Submitted to Klickitat County Planning Department, Washington. December 200

PPM Energy. 2006. Pebble Springs Wind Project. Application for Conditional Use Permit (CUP) presented to the Gilliam County Planning Department, July 28, 2006.

Reynolds, R. T., J. M. Scott, and R. A. Nussbaum. 1980. A Variable Circular-plot Method for Estimating Bird Numbers. Condor 82:309–313.

Smallwood, K. S. and C. G. Thelander. 2004. Developing methods to reduce bird fatalities in the Altamont Wind Resource Area. Final Report by BioResource Consultants to the California Energy Commission, Public Interest Energy Research-Environmental Area, under Contract No. 500-01-019 (L. Spiegel, Project Manager).

Strickland, D., and D. Johnson. 2006. An Overview of Avian/Wind Interaction as of 2004. Presented at the Wildlife Workgroup Research Meeting VI, November 14-16.

Thelander, C. G. and L. Rugge. 2000. Avian Use Behavior and Fatalities at Altamont wind Resource Area. Prepared for National Renewable Energy Laboratory (NREL) by Bio Resource consultants, Ojai California.

URS and WEST. 2001. Avian baseline study for the Stateline project, Vansycle Ridge, Oregon and Washington. Unpublished report prepared for ESI Vansycle Partners, LP by URS, Portland, OR, and WEST, Inc., Cheyenne, Wyoming.

U.S. Department of Agriculture - Farm Service Agency (USDA-FSA). 2005. National Agriculture Imagery Program (NAIP) Gilliam County, Oregon mosaic, 1-meter resolution. Created and distributed by the USDA Aerial Photography Field Office. Salt Lake City, UT.

US Department of Agriculture (USDA). 2009. The PLANTS Database: Version 3.5. National Plant Data Center, Baton Rouge, LA. http://plants.usda.gov

USDA Bureau of Land Management. 1998. Survey Protocols for Survey and Manage Strategy 2: Vascular Plants, Version 2.0. Available online at: http://www.blm.gov/or/plans/surveyandmanage/SP/VascularPlants

U.S. Fish and Wildlife Service. 2000. Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants. Sacramento, California. 2pp. Available online at: http://www.fws.gov/sacramento/es/documents/Listed_plant_survey_guidelines.pdf

U.S. Fish and Wildlife Service (USFWS). 2002. Species of Conservation Concern List (BRC 9, Table 9). http://migratorybirds.fws.gov/reports/reports.html

U.S. Fish and Wife Service (USFWS). 2009. Federally listed, proposed, candidate species, and species of concern under the jurisdiction of the fish and wildlife service which may occur within Gilliam County, Oregon. Available online at: http://www.fws.gov/oregonfwo/Species/Lists/Documents/County/GILLIAM%20COUNTY.pdf

Usgaard, R.E., D.E. Naugle, R.G. Osborn, and K.F. Higgins. 1997. Effects of wind turbines on nesting raptors at Buffalo Ridge in southwestern Minnesota. Proceedings of the South Dakota Academy of Science 76:113-117.

Verts, B. J. and L. N. Carraway. 1998. Land mammals of Oregon. University of California Press.

Young, D. P., W. P. Erickson, J. D. Jeffrey, K. Bay, and M. Bourassa. 2002. Avian and Sensitive Species Baseline Study Plan and Interim Report, TPC Combine Hills Turbine Ranch, Umatilla County, Oregon. Unpublished report prepared for Tomen Power Corporation, San Diego, California, and Aeropower Services, Inc., Portland, Oregon, by WEST, Inc., Cheyenne, Wyoming.

Young, D.P., Jr., W.P. Erickson, R.E. Good, M.D. Strickland, and G.D. Johnson. 2003a. Avian and bat mortality associated with the initial phase of the Foote Creek Rim wind power project, Carbon County, Wyoming: November 1998–June 2002. Tech. Report prepared for SeaWest Energy Corporation and Bureau of Land Management

Young, David P., W. Erickson, K. Bay, J. Jeffrey, B. Lack, R. Good, H. Sawyer. 2003b. Baseline Avian Studies for the Proposed Hopkins Ridge Wind Project, Columbia County, Washington. Report Prepared for RES North America, Portland, Oregon. Prepared by Western EcoSystems Technology, Inc., Cheyenne, Wyoming.

Young, D., J. Jeffrey, W. P. Erickson, K. Bay, V. Poulton, K. Kronner, B. Gritski, J. Baker. 2006. Eurus Combine Hills Turbine Ranch Phase I Post Construction Wildlife Monitoring First Annual Report. Prepared by for Eurus Energy America Corporation by WEST, Inc., Cheyenne, Wyoming and Northwest Wildlife Consultants, Inc., Pendleton, Oregon.

Young, D.P., W.P Erickson, J. Jeffrey, and V. Poulton. 2007. Puget Sound Energy, Hopkins Ridge Wind Project phase 1 post-construction avian and bat monitoring first annual report. Report prepared for Puget Sound Energy, Dayton, Washington.

8.0 TABLES

Table 1. General land cover and wildlife habitat types within the amended site boundary for LJIIB.

General Land Cover Type and Codes	Specific Habitat Type ("subtype") and Mapping Codes	Specific Habitat Type Description	Acres in Amended Site Boundary for LJIIB*
Developed (D)	**Old Field (DB)**	Previously cultivated, currently occupied by a variety of common non-native and native vegetation plants (rabbitbrush shrubs/annual grasses and weeds). Native vegetation is minor component. Common species: horned lark (HOLA), western meadowlark (WEME) foraging, may occasionally include savannah sparrow (SVSP).	5.60
	CRP or Other Planted Grassland (DC)	Planted grassland on previously farmed or other disturbed lands that may be enrolled in the Conservation Reserve Program. Residual (not previously plowed) native vegetation patches in a few locations. Old grass stands contain rabbitbrush or other shrubs but are not dominant (see SSB below). May support white-tailed jackrabbits (WTJ). Common species include WEME and grasshopper sparrow (GRSP) where grassland is mature.	462.91
	Farmyard (DF)	Farmyard, residence, or outbuildings including surrounds.	22.85
	Wheat or Other Small Grain (DW)	Agricultural fields currently in small grain production or fallow. Most is non-irrigated; a few irrigated crop circles are present. Common species include HOLA and mourning dove in winter stubble or when fallow.	4684.83
	Other (DX)	Developed/disturbed areas including roads, right-of-ways, structures, feedlots, pastures and waste areas associated with on-going human use. Not considered of significant value to native wildlife species.	31.66
Grassland (G) Steppe dominated by native and/or non-native grasses (<20% shrub cover)	**Exotic Annual Grassland (GA)**	Dominated by exotic annual grass and/or weeds. May support long-billed curlew (LBCU), Washington ground squirrel (WGS). Common species include HOLA.	252.40
	Native Perennial Grassland (GB)	Dominated by native perennial bunchgrass. Shrubs, if present, are an inconspicuous component. May support WGS, WTJ, burrowing owl. Important nesting habitat for ground-nesting birds such as savannah sparrow (SAVS) and vesper sparrow. Common species include WEME, GRSP and HOLA. This is an *Oregon Conservation Strategy Habitat*.	37.67
Shrub-steppe (SS) Steppe dominated by shrubs (>20% shrub cover)	**Sagebrush Shrub-steppe (SSA)**	Big sage sagebrush/bunchgrass-annual grass. Offers high quality breeding habitat for shrub obligate species including loggerhead shrike (LOSH). May also support WGS and WTJ. Common species include WEME and sage sparrow. This is an *Oregon Conservation Strategy Habitat*.	145.31
	Rabbitbrush-Snakeweed Shrub-steppe (SSB)	Rabbitbrush-snakeweed-buckwheat/bunchgrass-annual grass. Most of these areas are formerly SSA (sagebrush-rabbitbrush-snakeweed/bunchgrass - annual grass) attempting to recover from recent fire or are older CRP with significant shrub component. Can support LBCU, WTJ, and WGS. Common species include HOLA and WEME.	2136.33
Woodland (W) With >10% tree cover	**Juniper Woodland (WJ)**	Open canopy woodland consisting of western juniper. Often with significant big sage and grass understory component. Potential habitat for nesting ferruginous hawk and Swainson's hawk; foraging and nesting loggerhead shrike; foraging and breeding short-horned and sagebrush lizards. Wintering habitat for American robins, Townsend's solitaire, waxwings, and mountain bluebirds.	181.95
		Total Acres	**7961.51**

*as of May 29, 2009

Table 2. **Habitat types and categories within the amended site boundary for LJIIB with maximum possible area of impact—worst-case layout.**

Category and Habitat Description	Habitat Subtype Code	Impacts (Worst Case)		
		Total Acres Within Amended Site Boundary for LJIIB	**Temporary LJIIB[1] Components** (acres disturbed)	**Permanent LJIIB [2] Components** (acres disturbed)
Category 1				
Shrub-steppe – Sagebrush (Big Sage)	SSA	0.02	0.00	0.00
Shrub-steppe – Rabbitbrush/Snakeweed	SSB	5.21	0.00	0.00
Total		**5.23**	**0**	**0**
Category 2				
Disturbed – Other	DX	0.00	0.41	< 0.01
Grassland – Annual Grass	GA	0.00	0.14	< 0.01
Grassland - Native Perennial	GB	37.67	0.35	< 0.01
Shrub-steppe – Sagebrush (Big Sage)	SSA	142.72	11.89	1.53
Shrub-steppe – Rabbitbrush/Snakeweed	SSB	1013.77	127.45	17.37
Juniper Woodland	WJ	181.95	12.36	0.99
Total		**1376.11**	**152.6**	**19.91**
Category 3				
Disturbed - CRP or Other Planted Grassland	DC	462.91	67.22	9.16
Grassland – Annual Grass	GA	19.89	0.94	0.01
Shrub-steppe – Sagebrush (Big Sage)	SSA	2.57	0.43	< 0.01
Shrub-steppe – Rabbitbrush/Snakeweed	SSB	1097.69	85.26	6.02
Total		**1583.06**	**153.85**	**15.19**
Category 4				
Disturbed – Old Field	DB	1.74	0.84	0.01
Disturbed – Other	DX	0.00	0.43	< 0.01
Grassland – Annual Grass	GA	232.51	11.48	1.73
Shrub-steppe – Rabbitbrush-Snakeweed	SSB	19.66	2.51	1.09
Total		**253.91**	**15.26**	**2.83**
Category 5				
None	--	--	--	--
Category 6				
Developed – Old Field	DB	3.86	0.11	< 0.01
Developed – Farmyard Residence	DF	22.85	1.01	0.10
Developed – Agriculture (dryland or irrigated wheat and other small grain)	DW	4684.83	280.38	28.02
Disturbed- Other	DX	31.66	5.12	6.70
Total		**4743.20**	**286.62**	**34.82**
Total for Category 1, 2, 3, 4 and 6		**7961.51**	**608.32**	**72.75**

1 Temporary facilities include access roads, construction areas, access for overhead line construction, installation sites for underground collector cables, and equipment laydown areas for individual turbines, entire strings of turbines, and laydown areas for in-transit towers, cranes, and miscellaneous construction equipment.

2 Permanent facilities include turbine pads and towers, substation, meteorological towers, Operations and Maintenance facility or facilities, and permanent access roads.

Table 3. Number of avian groups and number of individuals by species observed during avian surveys of amended site boundary for LJIIB (7 plots) during fall and winter seasons at all distances during fixed-point surveys.

	Fall			Winter		
	Within Plot <800m		Outside Plot	Within Plot <800m		Outside Plot
	# Group	**# Ind.**	**>800m**	**# Group**	**# Ind.**	**>800m**
Raptors/Vultures	**5**	**5**	**6**	**17**	**17**	**13**
Buteos	**1**	**1**	**3**	**10**	**10**	**13**
red-tailed hawk	0	0	1	5	5	0
rough-legged hawk	1	1	1	4	4	7
unidentified buteo	0	0	1	1	1	6
Harriers	**0**	**0**	**0**	**2**	**2**	**0**
northern harrier	0	0	0	2	2	0
Falcons	**4**	**4**	**1**	**5**	**5**	**0**
American kestrel	2	2	0	4	4	0
prairie falcon	1	1	0	1	1	0
unidentified falcon	1	1	1	0	0	0
Other Raptors	**0**	**0**	**2**	**0**	**0**	**0**
unidentified raptor	0	0	2	0	0	0
Passerines	**222**	**400**	**0**	**321**	**666**	**0**
Songbirds	**184**	**347**	**0**	**273**	**562**	**0**
American robin	0	0	0	3	23	0
barn swallow	1	1	0	0	0	0
dark-eyed junco	0	0	0	2	8	0
horned lark	142	271	0	222	457	0
house finch	1	1	0	0	0	0
mountain bluebird	1	2	0	1	5	0
northern shrike	0	0	0	2	2	0
unidentified passerine	13	44	0	14	38	0
unidentified sparrow	1	1	0	1	1	0
vesper sparrow	4	6	0	0	0	0
western meadowlark	21	21	0	28	28	0
Corvids	**38**	**53**	**0**	**48**	**104**	**0**
black-billed magpie	4	4	0	0	0	0
common raven	34	49	0	48	104	0
Galliformes	**1**	**1**	**0**	**0**	**0**	**0**
California quail	1	1	0	0	0	0
Doves/Pigeons	**8**	**33**	**0**	**3**	**9**	**0**
mourning dove	8	33	0	3	9	0
Woodpeckers	**3**	**3**	**0**	**0**	**0**	**0**
northern flicker	3	3	0	0	0	0
Overall	**239**	**442**	**6**	**341**	**692**	**13**

Leaning Juniper IIB plots include D, E, F, G, H, I, and L (Figure 4b).

*Fall season: September 4–October 31, 2008, total of 62 plot visits
Winter season: November 3, 2008–March 11, 2009; total of 110 plot visits

Table 4. Number of avian groups and number of individuals by species observed during avian surveys of amended site boundary for LJIIB and the surrounding area up to 5 miles (12 plots) during fall and winter seasons* at all distances during fixed-point surveys.

	Fall			Winter		
	Within Plot <800m		Outside Plot	Within Plot <800m		Outside Plot
	# Group	# Ind.	>800m	# Group	# Ind.	>800m
Waterfowl	**0**	**0**	**0**	**1**	**5**	**0**
Canada goose	0	0	0	1	5	0
Raptors/Vultures	**11**	**11**	**6**	**21**	**21**	**17**
Buteos	**3**	**3**	**3**	**13**	**13**	**17**
ferruginous hawk	0	0	0	1	1	0
red-tailed hawk	1	1	1	5	5	3
rough-legged hawk	1	1	1	5	5	7
Swainson's hawk	0	0	0	1	1	0
unidentified buteo	1	1	1	1	1	7
Harriers	**2**	**2**	**0**	**2**	**2**	**0**
northern harrier	2	2	0	2	2	0
Falcons	**5**	**5**	**1**	**6**	**6**	**0**
American kestrel	2	2	0	4	4	0
prairie falcon	1	1	0	2	2	0
unidentified falcon	2	2	1	0	0	0
Other Raptors	**0**	**0**	**2**	**0**	**0**	**0**
unidentified raptor	0	0	2	0	0	0
Vultures	**1**	**1**	**0**	**0**	**0**	**0**
turkey vulture	1	1	0	0	0	0
Passerines	**404**	**746**	**0**	**623**	**1108**	**0**
Songbirds	**337**	**633**	**0**	**523**	**878**	**0**
American robin	0	0	0	5	29	0
barn swallow	1	1	0	0	0	0
dark-eyed junco	1	6	0	2	8	0
European starling	1	15	0	0	0	0
horned lark	251	427	0	429	702	0
house finch	3	3	0	3	3	0
mountain bluebird	2	5	0	1	5	0
northern shrike	0	0	0	2	2	0
unidentified blackbird	2	26	0	0	0	0
unidentified finch	0	0	0	1	4	0
unidentified passerine	23	83	0	23	68	0
unidentified sparrow	6	18	0	1	1	0
vesper sparrow	4	6	0	0	0	0
western meadowlark	43	43	0	56	56	0
Corvids	**67**	**113**	**0**	**100**	**230**	**0**
black-billed magpie	5	5	0	4	5	0
common raven	62	108	0	96	225	0
Galliformes	**2**	**2**	**0**	**0**	**0**	**0**
California quail	2	2	0	0	0	0
Doves/Pigeons	**8**	**33**	**0**	**3**	**9**	**0**
mourning dove	8	33	0	3	9	0
Woodpeckers	**3**	**3**	**0**	**0**	**0**	**0**
northern flicker	3	3	0	0	0	0
Overall	**428**	**795**	**6**	**648**	**1143**	**17**

*Fall season: September 4–October 31, 2008; total of 107 plot visits
Winter season: Nov. 3, 2008–March 11, 2009; total of 188 plot visits

Table 5a. Avian species groups observed and the mean use of each detected within 800m at each avian use study plot during the fall season, September 4–October 31, 2008, within the amended site boundary for LJIIB and the surrounding area up to 5 miles (12 plots).

Species	Fall Season Mean Use by Plot*											
	A 9 surveys	B 9 surveys	C 9 surveys	D 9 surveys	E 9 surveys	F 9 surveys	G 9 surveys	H 9 surveys	I 9 surveys	J 9 surveys	K 9 surveys	L 8 surveys
Raptors	**0.111**	**0.222**	**0.111**	**0.000**	**0.111**	**0.000**	**0.000**	**0.222**	**0.111**	**0.000**	**0.222**	**0.125**
American kestrel	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.111	0.111	0.000	0.000	0.000
northern harrier	0.111	0.000	0.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
prairie falcon	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125
red-tailed hawk	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.111	0.000
rough-legged hawk	0.000	0.000	0.000	0.000	0.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000
turkey vulture	0.000	0.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
unidentified buteo	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.111	0.000
unidentified falcon	0.000	0.111	0.000	0.000	0.000	0.000	0.000	0.111	0.000	0.000	0.000	0.000
Passerines	**7.444**	**8.111**	**9.222**	**8.000**	**3.778**	**4.111**	**5.889**	**11.667**	**5.444**	**7.667**	**6.000**	**6.250**
Songbirds	*5.333*	*5.556*	*7.444*	*6.333*	*3.667*	*3.444*	*5.111*	*10.111*	*4.556*	*7.667*	*5.778*	*6.000*
barn swallow	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.111	0.000	0.000	0.000
dark-eyed junco	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.000
European starling	0.000	1.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
horned lark	3.667	2.222	6.222	4.889	3.667	1.778	4.889	7.111	3.556	2.889	2.333	4.750
house finch	0.000	0.000	0.000	0.000	0.000	0.111	0.000	0.000	0.000	0.000	0.222	0.000
mountain bluebird	0.000	0.000	0.000	0.000	0.000	0.222	0.000	0.000	0.000	0.000	0.333	0.000
unidentified blackbird	0.000	0.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.778	0.000	0.000
unidentified passerine	0.556	1.333	0.889	1.111	0.000	0.333	0.000	2.778	0.222	1.111	0.444	0.500
unidentified sparrow	0.000	0.111	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.111	1.333	0.125
vesper sparrow	0.000	0.000	0.000	0.000	0.000	0.444	0.000	0.000	0.222	0.000	0.000	0.000
western meadowlark	1.111	0.111	0.000	0.333	0.000	0.556	0.222	0.222	0.444	0.778	0.444	0.625
Corvids	*2.111*	*2.556*	*1.778*	*1.667*	*0.111*	*0.667*	*0.778*	*1.556*	*0.889*	*0.000*	*0.222*	*0.250*
black-billed magpie	0.000	0.000	0.000	0.000	0.000	0.111	0.000	0.333	0.000	0.000	0.111	0.000
common raven	2.111	2.556	1.778	1.667	0.111	0.556	0.778	1.222	0.889	0.000	0.111	0.250
Galliformes	**0.111**	**0.000**	**0.000**	**0.000**	**0.000**	**0.111**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
California quail	0.111	0.000	0.000	0.000	0.000	0.111	0.000	0.000	0.000	0.000	0.000	0.000
Doves/Pigeons	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**3.111**	**0.000**	**0.222**	**0.000**	**0.000**	**0.375**
mourning dove	0.000	0.000	0.000	0.000	0.000	0.000	3.111	0.000	0.222	0.000	0.000	0.375
Woodpeckers	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.333**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
northern flicker	0.000	0.000	0.000	0.000	0.000	0.333	0.000	0.000	0.000	0.000	0.000	0.000
Overall All Groups	**7.667**	**8.333**	**9.333**	**8.000**	**3.889**	**4.556**	**9.000**	**11.889**	**5.778**	**7.667**	**6.222**	**6.750**

*Leaning Juniper IIB plots D, E, F, G, H, I, and L are shaded gray.
Fall season: September 4–October 31, 2008; 9 visits to 11 sites (A-K), 8 visits to plot L = 107 surveys

Table 5b. Avian species groups observed and the mean use of each detected within 800m at each avian use study plot during the winter season, November 3, 2008–March 11, 2009, within the amended site boundary for LJIIB and the surrounding area up to 5 miles (12 plots).

Species	Winter Season Mean Use by Plot											
	A 16 surveys	**B** 16 surveys	**C** 16 surveys	**D** 16 surveys	**E** 16 surveys	**F** 16 surveys	**G** 15 surveys	**H** 16 surveys	**I** 16 surveys	**J** 15 surveys	**K** 15 surveys	**L** 15 surveys
Waterfowl	**0.000**	**0.313**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Canada goose	0.000	0.313	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Raptors	**0.063**	**0.000**	**0.063**	**0.000**	**0.250**	**0.000**	**0.200**	**0.000**	**0.438**	**0.067**	**0.067**	**0.200**
American kestrel	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000
ferruginous hawk	0.000	0.000	0.063	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
northern harrier	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.063	0.000	0.000	0.067
prairie falcon	0.000	0.000	0.000	0.000	0.063	0.000	0.000	0.000	0.000	0.067	0.000	0.000
red-tailed hawk	0.000	0.000	0.000	0.000	0.000	0.000	0.067	0.000	0.125	0.000	0.000	0.133
rough-legged hawk	0.000	0.000	0.000	0.000	0.188	0.000	0.067	0.000	0.000	0.000	0.067	0.000
Swainson's hawk	0.063	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
unidentified buteo	0.000	0.000	0.000	0.000	0.000	0.000	0.067	0.000	0.000	0.000	0.000	0.000
Passerines	**4.813**	**7.750**	**6.438**	**10.188**	**3.063**	**6.813**	**5.333**	**5.688**	**4.000**	**4.133**	**5.067**	**7.333**
Songbirds	*3.938*	*4.563*	*4.375*	*9.250*	*2.938*	*5.438*	*4.600*	*5.188*	*3.625*	*3.067*	*4.267*	*4.667*
American robin	0.000	0.000	0.125	0.000	0.000	1.438	0.000	0.000	0.000	0.000	0.267	0.000
dark-eyed junco	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000
horned lark	3.438	3.438	3.875	8.875	2.625	2.313	4.267	4.938	3.000	2.333	2.533	3.000
house finch	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.200	0.000
mountain bluebird	0.000	0.000	0.000	0.000	0.000	0.313	0.000	0.000	0.000	0.000	0.000	0.000
northern shrike	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.333
unidentified finch	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.267	0.000
unidentified passerine	0.000	1.063	0.313	0.188	0.313	0.500	0.200	0.063	0.125	0.067	0.467	1.067
unidentified sparrow	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.067
western meadowlark	0.500	0.063	0.063	0.188	0.000	0.375	0.133	0.188	0.500	0.667	0.533	0.400
Corvids	*0.875*	*3.188*	*2.063*	*0.938*	*0.125*	*1.375*	*0.733*	*0.500*	*0.375*	*1.067*	*0.800*	*2.667*
black-billed magpie	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.067	0.267	0.000
common raven	0.875	3.188	2.063	0.938	0.125	1.375	0.733	0.500	0.375	1.000	0.533	2.667
Doves/Pigeons	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.600**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
mourning dove	0.000	0.000	0.000	0.000	0.000	0.000	0.600	0.000	0.000	0.000	0.000	0.000
Overall All Groups	**4.875**	**8.063**	**6.500**	**10.188**	**3.313**	**6.813**	**6.133**	**5.688**	**4.438**	**4.200**	**5.133**	**7.533**

*Leaning Juniper IIB plots D, E, F, G, H, I, and L are shaded gray.

Winter season: Nov. 3, 2008–March 11, 2009; 16 visits to 8 sites (A-F, H, I), 15 to plots G, J, K, L = 188 surveys

Table 6. Mean bird use, percent composition, and percent frequency of occurrence for avian groups observed within 800 meters during avian use surveys of amended site boundary for LJIIB and the surrounding area up to 5 miles (12 plots), September 4, 2008–March 11, 2009.

Species	Mean Use[1]		% Composition[2]		% Frequency[3]	
	Fall	Winter	Fall	Winter	Fall	Winter
Waterfowl	**0.000**	**0.027**	**0.00**	**0.44**	**0.00**	**0.53**
Canada goose	0.000	0.027	0.00	0.44	0.00	0.53
Raptors	**0.103**	**0.112**	**1.38**	**1.84**	**10.28**	**10.11**
Buteos	*0.028*	*0.069*	*0.38*	*1.14*	*2.80*	*6.91*
ferruginous hawk	0.000	0.005	0.00	0.09	0.00	0.53
red-tailed hawk	0.009	0.027	0.13	0.44	0.93	2.66
rough-legged hawk	0.009	0.027	0.13	0.44	0.93	2.66
Swainson's hawk	0.000	0.005	0.00	0.09	0.00	0.53
unidentified buteo	0.009	0.005	0.13	0.09	0.93	0.53
Harriers	*0.019*	*0.011*	*0.25*	*0.17*	*1.87*	*1.06*
northern harrier	0.019	0.011	0.25	0.17	1.87	1.06
Falcons	*0.047*	*0.032*	*0.63*	*0.52*	*4.67*	*3.19*
American kestrel	0.019	0.021	0.25	0.35	1.87	2.13
prairie falcon	0.009	0.011	0.13	0.17	0.93	1.06
unidentified falcon	0.019	0.000	0.25	0.00	1.87	0.00
Vultures	*0.009*	*0.000*	*0.13*	*0.00*	*0.93*	*0.00*
turkey vulture	0.009	0.000	0.13	0.00	0.93	0.00
Passerines	**6.972**	**5.894**	**93.84**	**96.94**	**98.13**	**91.49**
Songbirds	*5.916*	*4.670*	*79.62*	*76.82*	*94.39*	*87.77*
American robin	0.000	0.154	0.00	2.54	0.00	2.66
barn swallow	0.009	0.000	0.13	0.00	0.93	0.00
dark-eyed junco	0.056	0.043	0.75	0.70	0.93	1.06
European starling	0.140	0.000	1.89	0.00	0.93	0.00
horned lark	3.991	3.734	53.71	61.42	92.52	84.57
house finch	0.028	0.016	0.38	0.26	2.80	1.60
mountain bluebird	0.047	0.027	0.63	0.44	1.87	0.53
northern shrike	0.000	0.011	0.00	0.17	0.00	1.06
unidentified blackbird	0.243	0.000	3.27	0.00	1.87	0.00
unidentified finch	0.000	0.021	0.00	0.35	0.00	0.53
unidentified passerine	0.776	0.362	10.44	5.95	18.69	12.23
unidentified sparrow	0.168	0.005	2.26	0.09	5.61	0.53
vesper sparrow	0.056	0.000	0.75	0.00	2.80	0.00
western meadowlark	0.402	0.298	5.41	4.90	21.50	18.09
Corvids	*1.056*	*1.223*	*14.21*	*20.12*	*40.19*	*32.45*
black-billed magpie	0.047	0.027	0.63	0.44	4.67	2.13
common raven	1.009	1.197	13.58	19.69	39.25	32.45
Galliformes	**0.019**	**0.000**	**0.25**	**0.00**	**1.87**	**0.00**
California quail	0.019	0.000	0.25	0.00	1.87	0.00
Doves/Pigeons	**0.308**	**0.048**	**4.15**	**0.79**	**6.54**	**1.60**
mourning dove	0.308	0.048	4.15	0.79	6.54	1.60

Species	Mean Use[1]		% Composition[2]		% Frequency[3]	
	Fall	Winter	Fall	Winter	Fall	Winter
Woodpeckers	**0.028**	**0.000**	**0.38**	**0.00**	**2.80**	**0.00**
northern flicker	0.028	0.000	0.38	0.00	2.80	0.00
Overall	**7.430**	**6.080**	**---**	**---**	**98.13**	**91.49**

[1]Mean Use: mean number of individuals within 800m plot/20-minute point count for each species or group provides an index of the magnitude of avian use, but it does not describe density.

[2]Percent Composition: mean use for a species/total use across all species, multiplied by 100, providing an estimate of the relative use of any particular species, compared to the use by all other species combined.

[3]Frequency of Occurrence: percentage of surveys in which a species was observed with the survey plot providing an index of how often a species occurs in the project area.

* Seasons:
Fall: September 4 through October 31, 200, total of 107 plot visits
Winter: November 3, 2008 through March 11, 2009, total of 188 plot visits

Table 7. Mean use, percent composition, and percent frequency of occurrence for avian groups during LJIIB (7 plots) and LJIIA (6 plots) fall and winter season avian use surveys based on observations within 800 meters of observer during fixed-point surveys.

Group	Fall		Winter	
	LJIIB*	LJIIA**	LJIIB*	LJIIA**
	Mean Use[1]			
Waterfowl/Waterbirds	0.000	0.000	0.000	4.167
Raptors/Vultures	0.081	0.528	0.155	0.244
Accipiters	0.000	0.026	0.000	0.011
Buteos	0.016	0.151	0.091	0.156
Harriers	0.000	0.026	0.018	0.022
Eagles	0.000	0.026	0.000	0.022
Falcons	0.064	0.233	0.045	0.033
Other Raptors	0.000	0.000	0.000	0.000
Owls	0.000	0.038	0.000	0.000
Vultures	0.000	0.028	0.000	0.000
Passerines	6.452	19.062	6.055	42.833
Upland Gamebirds	0.016	0.000	0.000	0.000
Doves/Pigeons	0.532	0.000	0.082	0.000
Woodpeckers	0.048	0.026	0.000	0.000
Overall	**7.129**	**19.615**	**6.291**	**47.244**
	% Group Composition[2]			
Waterfowl/Waterbirds	0.00	0.00	0.00	8.82
Raptors/Vultures	1.13	2.69	2.46	0.52
Accipiters	0.00	0.13	0.00	0.02
Buteos	0.23	0.77	1.45	0.33
Harriers	0.00	0.13	0.29	0.05
Eagles	0.00	0.13	0.00	0.05
Falcons	0.90	1.19	0.72	0.07
Other Raptors	0.00	0.00	0.00	0.00
Owls	0.00	0.20	0.00	0.00
Vultures	0.00	0.14	0.00	0.00
Passerines	90.50	97.18	96.24	90.66
Upland Gamebirds	0.23	0.00	0.00	0.00
Doves/Pigeons	7.47	0.00	1.30	0.00
Woodpeckers	0.68	0.13	0.00	0.00
	% Frequency of Occurrence[3]			
Waterfowl/Waterbirds	0.00	0.00	0.00	6.67
Raptors/Vultures	8.06	34.10	13.64	18.89
Accipiters	0.00	2.56	0.00	1.11
Buteos	1.61	10.77	9.09	13.33
Harriers	0.00	2.56	1.82	2.22

Group	Fall		Winter	
	LJIIB*	LJIIA**	LJIIB*	LJIIA**
Eagles	0.00	2.56	0.00	1.11
Falcons	6.45	15.64	4.55	3.33
Other Raptors	0.00	0.00	0.00	0.00
Owls	0.00	2.56	0.00	0.00
Vultures	0.00	2.82	0.00	0.00
Passerines	98.39	94.62	89.09	98.89
Upland Gamebirds	1.61	0.00	0.00	0.00
Doves/Pigeons	11.29	0.00	2.73	0.00
Woodpeckers	4.84	2.56	0.00	0.00

[1]Mean Use: mean number of individuals within 800m plot/20-minute point count for each species or group provides an index of the magnitude of avian use, but it does not describe density.
[2]Percent Composition: mean use for a species/total use across all species, multiplied by 100, providing an estimate of the relative use of any particular species, compared to the use by all other species combined.
[3]Frequency of Occurrence: percentage of surveys in which a species was observed with the survey plot providing an index of how often a species occurs in the project area.

* LJIIB fall season dates: September 4–October 31, 2008. Winter season: November 3, 2008–March 11, 2009
** LJIIA fall season dates: August 27–November 30, 2004. Winter Season dates December 1, 2004–March 15, 2005 (LJWP, 2006).

Table 8a. Small bird species observed within 800 meters of observer and estimated mean use and percent frequency based on observations during fixed-point surveys at LJIIA (6 plots) during fall and winter 2004–2005 and at LJIIB (7 plots) during fall and winter 2008-2009.

Fall LJIIA*			Fall LJIIB**		
Species	Mean Use	% Freq.	Species	Mean Use	% Freq.
horned lark	9.464	92.05	horned lark	4.371	90.32
unidentified passerine	3.441	23.33	unidentified passerine	0.710	17.74
European starling	0.962	2.56			
western meadowlark	0.410	19.23	western meadowlark	0.339	20.97
white-crowned sparrow	0.410	2.56			
American pipit	0.154	5.13			
American goldfinch	0.077	2.56			
barn swallow	0.064	1.28	barn swallow	0.016	6.45
unidentified sparrow	0.051	2.56	unidentified sparrow	0.016	1.61
yellow-rumped warbler	0.026	1.28			
dark-eyed junco	0.013	1.28			
northern flicker	0.013	1.28	northern flicker	0.048	4.84
unidentified woodpecker	0.013	1.28			
			mourning dove	0.532	11.29
			vesper sparrow	0.097	4.84
			mountain bluebird	0.032	1.61
			house finch	0.016	1.61
			California quail	0.016	1.61
Winter LJIIA*			**Winter LJIIB****		
Species	**Mean Use**	**% Freq.**	**Species**	**Mean Use**	**% Freq.**
horned lark	21.844	84.44	horned lark	4.155	84.55
unidentified passerine	11.022	18.89	unidentified passerine	0.345	12.73
European starling	1.667	1.11			
western meadowlark	0.344	20.00	western meadowlark	0.255	18.18
American goldfinch	0.289	4.44			
American pipit	0.089	2.22			
mountain bluebird	0.067	3.33	mountain bluebird	0.045	0.91
northern shrike	0.022	2.22	northern shrike	0.018	1.82
			American robin	0.209	2.73
			mourning dove	0.082	2.73
			dark-eyed junco	0.073	1.82
			unidentified sparrow	0.009	0.91

* LJIIA fall season dates: August 27–November 30, 2004. Winter Season dates December 1, 2004–March 15, 2005 (LJWP, 2006).

** LJIIB fall season dates: September 4–October 31, 2008, Winter season: November 3, 2008–March 11, 2009.

Note: blank cell = species not observed

Table 8b. Large bird species, including all raptors and corvids, observed within 800 meters of observer and estimated mean use and percent frequency based on observations during winter season fixed-point surveys at LJIIA (6 plots) and at LJIIB 2008–2009 (7 plots).

Fall LJIIA*			Fall LJIIB**		
Species	**Mean Use**	**% Freq.**	**Species**	**Mean Use**	**% Freq.**
common raven	3.926	54.10	common raven	0.790	41.94
American kestrel	0.221	14.36	American kestrel	0.032	3.23
black-billed magpie	0.051	2.56	black-billed magpie	0.065	6.45
ferruginous hawk	0.046	1.54			
rough-legged hawk	0.038	2.56	rough-legged hawk	0.016	1.61
short-eared owl	0.038	2.56			
Swainson's hawk	0.028	2.82			
turkey vulture	0.028	2.82			
golden eagle	0.026	2.56			
northern harrier	0.026	2.56			
sharp-shinned hawk	0.026	2.56			
unidentified buteo	0.026	2.56			
American crow	0.013	1.28			
prairie falcon	0.013	1.28	prairie falcon	0.016	1.61
red-tailed hawk	0.013	1.28			
			unidentified falcon	0.016	1.61
Winter LJIIA*			**Winter LJIIB****		
Species	**Mean Use**	**% Freq.**	**Species**	**Mean Use**	**% Freq.**
common raven	7.433	72.22	common raven	0.945	29.09
Canada goose	4.167	6.67			
red-tailed hawk	0.122	11.11	red-tailed hawk	0.045	4.55
black-billed magpie	0.033	3.33			
American kestrel	0.022	2.22	American kestrel	0.036	3.64
golden eagle	0.022	1.11			
northern harrier	0.022	2.22	northern harrier	0.289	1.82
northern shrike	0.022	2.22			
rough-legged hawk	0.022	2.22	rough-legged hawk	0.036	3.64
ferruginous hawk	0.011	1.11			
prairie falcon	0.011	1.11	prairie falcon	0.009	0.91
sharp-shinned hawk	0.011	1.11			
			unidentified buteo	0.009	0.91

* LJIIA fall season dates: August 27–November 30, 2004. Winter season dates December 1, 2004–March 15, 2005 (LJWP, 2006)

** LJIIB fall season dates: September 4–October 31, 2008. Winter season: November 3, 2008–March 11, 2009.

Note: blank cell = species not observed

Table 9. Special status avian species observed during avian use surveys (including incidental observations and in-transit) at: the amended site boundary for LJIIB (7 plots); in the 5 additional study plots in the surrounding area up to 5 miles (SA) during fall and winter; and at LJIIA (6 plots) in all four seasons in 2004–2005.

Species	Status	LJIIB	SA	LJIIA
burrowing owl	SC, BoCC			X
ferruginous hawk	SC, BoCC	X	X	X
golden eagle	EPA, BoCC		X	X
grasshopper sparrow	SV			X
loggerhead shrike	SV, BoCC		X	X
long-billed curlew	SV, BoCC			X
Swainson's hawk	SV, BoCC	X	X	X

* This table does not include sightings of special status wildlife observed during ground transect surveys. For more details on all sightings of special status wildlife see Appendix C.

Status Key:

Oregon (ORNHIC, 2008):

SC = "Critical" sensitive species are those for which listing as Threatened or Endangered would be appropriate if immediate conservation actions were not taken. Some peripheral species which are at risk throughout their range and some disjunct populations (those that are geographically isolated from other populations) area also considered "Critical."

SV = "Vulnerable" sensitive species are not in imminent danger of being listed as Threatened or Endangered, but could become sensitive-critical, Threatened, or Endangered with changes in populations, habitats or threats.

Federal:

EPA Bald and Golden Eagle Protection Act (16 U.S.C. §§ 668-668d, June 8, 1940, as amended 1959, 1962, 1972, 1978).

BoCC USFWS Birds of Conservation Concern (USFWS, 2002; Table BCR 9, Great Basin Region).

Note: blank cell = species not observed.

Table 10. Avian species and number of observations recorded onsite while in-transit to avian use surveys at the amended site boundary for LJIIB (7 plots) and within the surrounding area up to 5 miles (SA; 5 plots) from September 4, 2008, through March 11, 2009.

Species	Species Status	Observed Only In-Transit	Fall Number		Winter Number	
			LJIIB	SA	LJIIB	SA
American kestrel	none		6	0	1	4
golden eagle	EPA, BoCC	x	0	0	0	1
loggerhead shrike	SV, BoCC	x	0	0	0	1
northern harrier	none		0	1	0	0
prairie falcon	BoCC		0	0	1	0
red-tailed hawk	none		2	0	3	2
rough-legged hawk	none		0	0	1	0

*Table includes only raptors and other species of potential interest that were observed incidentally while traveling in-transit near survey plots. Individuals may have been counted more than once.

Species Status Codes:
EPA = Bald and Golden Eagle Protection Act
BoCC = Bird of Conservation Concern (USFWS 2002)
SV = State of Oregon "Sensitive Vulnerable" (ORNHIC, 2008)

Table 11. Estimated raptor nest densities from proposed amended site boundary for Leaning Juniper IIB and other regional proposed and existing wind projects located primarily in comparable Columbia Basin environments*.

Project Site**	Raptor Nest Density (#/mi^2), rounded							
	All Raptor Species Combined	Buteos				Eagle	Falcon	Owl
		SWHA	RTHA	FEHA	UNBU	GOEA	PRFA	GHOW
Leaning Juniper IIB, OR	0.40	0.19	0.13	0.06	0.00	0.00	0.02	0.00
Leaning Juniper IIA, OR	0.41	0.18	0.16	0.03	0.00	0.00	0.02	0.02
Rattlesnake Road, OR	0.45	0.19	0.13	0.05	0.00	0.00	0.08	0.00
Hopkins Ridge, WA	0.42	0.01	0.27	0.01	0.05	0.00	0.00	0.08
Golden Hills, OR	0.25	0.04	0.16	0.00	0.00	0.00	0.00	0.05
Stateline OR/WA	0.21	0.03	0.08	0.03	0.00	0.00	0.00	0.07
Klondike I and II, OR	0.23 (5 mile radius survey area)	0.07	0.11	0.00	0.00	0.01	0.00	0.04
Klondike III, OR	0.20	0.04	0.11	0.00	0.01	0.00	0.00	0.03
Wild Horse, WA	0.16	0.00	0.12	0.00	0.00	0.00	0.02	0.02
Klickitat County, WA	0.12	0.00	0.09	0.00	0.00	0.00	0.01	0.03
Big Horn, WA	0.11	0.00	0.06	0.00	0.00	0.00	0.01	0.04
AVERAGE of Other Projects (excluding LJIIB)	0.26							

Codes:

SWHA = Swainson's hawk
RTHA = red-tailed hawk
FEHA = ferruginous hawk
GOEA = golden eagle
PRFA = prairie falcon
GHOW = great-horned owl
UNBU = unknown species of the genus *Buteo*

*Arid grassland and shrub-steppe environments with extensive dryland wheat, non-native grassland (CRP), and narrow riparian corridors in some drainages.

**References for projects: Big Horn (Johnson and Erickson, 2004), Leaning Juniper II (LJWP, 2006; Kronner et al., 2005), Klondike I and II (Johnson et al., 2002a), Klondike III (Mabee et al., 2005), Golden Hills (Jeffrey et al., 2008), Stateline (Erickson et al., 2004; NWC and WEST, 2001), Klickitat County (Johnson et al., 2003a), Hopkins Ridge (Young et al., 2003b), Wild Horse (Erickson et al., 2003b), Rattlesnake Road (Kronner et al., 2007a).

American kestrel, short-eared owl, long-eared owl, and burrowing owl are omitted due to difficulty in determining nesting of these species with the raptor nest survey method (helicopter survey) employed in this and other studies

Table 12. Washington Ground Squirrel Patches or Colonies within the Proposed Amended Site Boundary for LJIIB.

WGS Colony# *	Soils	Mapped Habitat (2009)	Overall Density	Patch or Colony Size and Acres (rounded)	General Notes	Proximity to Facilities
5	23B, 33E	SSA, SSB	Inactive in 2009, not active in 2007	Very Small, 1 ac	#5 of 7 total, see original 2005 NWC survey**	West of proposed alternate 230-kVtransmission line.
6	14D, 58	GA, WJ	Inactive in 2009, Active in 2007	Small, 7 ac	#6 of 7 total, see original 2005 NWC survey**	East of proposed alternate 230-kV transmission line.
8	40D	SSB	Very Low	Very Small, < 1 ac	Single hole	East of proposed alternate 230-kV transmission line.
9	40C	SSA	Very Low	Very Small, < 1 ac	Single hole	East of proposed alternate 230-kV transmission line.
10	40C, 40D	SSA, SSB, WJ	Low	Very Small, < 1 ac	Several holes	East of proposed alternate 230-kV transmission line.
11	23C, 23D	SSA, SSB, DX	Medium	Very Small, 2 ac	Numerous holes	West of proposed alternate 230-kV transmission line.
12	32B	SSB	Very Low	Very Small, < 1 ac	Single hole	East of proposed preferred 230-kV transmission line.
13	55E	SSB	Very Low	Very Small, < 1 ac	Single hole, 2008	Northwest of proposed turbine FF1.
14	56B	SSB	Very Low	Very Small, < 1 ac	Single hole, 2008	Northwest of proposed turbine FF3; west of proposed new turbine road.
15a	56B	SSB	Low	Very Small, < 1 ac	Several holes, 2008	East of proposed turbine FF3.
15b	56B	SSB	Low	Very Small, < 1 ac	Several scattered holes	East of proposed turbine FF3.
16	24D	SSB	Low	Very Small, 1 ac	Several scattered holes	Northeast of proposed turbine JJ3; east of proposed new turbine road and proposed underground line.
17	24D	SSB	Very Low	Very Small, < 1 ac	Single hole	East of proposed turbine JJ3.
18	56B	SSB	Very Low	Small, 3 acres	Numerous scattered holes	Between proposed turbine strings FF and JJ.
19	33E	SSA	Very Low	Very Small, < 1 ac	Single hole	North of proposed preferred 23-kV transmission line.
20a	24E	SSB	Very Low	Very Small, < 1 ac	Single hole	Between proposed turbine strings FF and JJ.
20b	56B	SSB	Very Low	Very Small, < 1 ac	Several holes	Between proposed turbine strings FF and JJ.
21	56B	SSB	Very Low	Very Small, < 1 ac	Several holes, extends across boundary	Between proposed turbine strings FF and JJ; west of proposed alternate improved road.
22a	24D	SSB	Very Low	Very Small, < 1 ac	Single hole	Southeast of proposed turbine JJ6.
22b	56B	SSB	Low	Very Small, < 1 ac	Single hole	Northeast of proposed turbine JJ7.
23	56B	SSB	Very Low	Very Small, < 1 ac	Two holes	Southeast of proposed turbine FF6; west and south of proposed new turbine road; east of proposed underground line.
24	56B	SSB	Very Low	Very Small, < 1 ac	Single hole, 2008	Southeast of proposed turbine JJ7.
25	56B, 56C	SSB	Very Low	Very Small, < 1 ac	Single hole	Southwest of proposed new turbine road and proposed 2.5-acre staging area. Near Southwest corner of proposed amended LJIIB site boundary.

* Table includes only those patches/colonies located near Leaning Juniper IIB Facility components (this 2008–2009 study).

** Active sites discovered during first survey conducted in 2005 (LJF SCA, Exhibit Q, Table Q-2).

Estimated size (based on general observations).
Very Small = < 10 individuals, usually single to several holes, may be one or a few individuals. Small = 10 to 30 individuals. Medium = 30 to 40 individuals. Large = 40 to 100+ individuals.

Soils
14D – Krebs silt loam, 5-20% slopes
23B – Olex silt loam, 0-5% slopes
23C – Olex silt loam, 5-12% slopes
23D – Olex silt loam, 12-20% slopes
24D and 24E – Olex gravelly silt loam
32B – Ritzville silt loam, 2-7% slopes
33E – Ritzville silt loam, 20-40% north slopes
40C and 40D – Sagehill fine sandy loam
56B and 56C – Willis silt loam

Footnotes for Table 12 continued

Mapped Habitat Types

SSA – Shrub-steppe, Sagebrush
SSB – Shrub-steppe, Rabbitbrush/Snakeweed
GA – Grassland, Annual Grass
WJ – Woodland, Juniper
DX – Disturbed - Other

Table 13. Project and turbine characteristics of regional wind energy facilities where fatality monitoring studies* have been completed.

Columbia Basin Ecoregion Wind Project**	Project Size		Turbine Characteristics		
	# Turbines	MW	RD (m)	Tip Height (m)	MW
Hopkins Ridge, WA	83	150	80	107	1.80
Wild Horse, WA	127	229	80	107	1.80
Biglow Canyon Phase I	76	125.4	90	121	1.65
Big Horn, WA	133	199.5	77	118.5	1.50
Klondike I, OR	16	24	65	100	1.50
Klondike II, OR	50	75	77	118.5	1.50
Leaning Juniper, OR	67	100.5	77	118.5	1.50
Nine Canyon I, WA	37	48	62	91	1.30
Combine Hills I, OR	41	41	61	84	1.00
Stateline, OR/WA	454	300	47	74	0.66
Vansycle, OR	38	25	47	74	0.66

* Similar study methods. Condon Wind Project Carcass Study omitted due to differences in study methods
** Projects are sorted by MW of turbine type.

Table 14. Annual fatality estimates on a per turbine and per MW nameplate basis for all birds and for all raptors in the Columbia Basin Ecoregion where fatality monitoring studies have been completed.

Columbia Basin Ecoregion Wind Project [1]	All Bird Fatality Rates		Raptor Fatality Rates [2]	
Listed in order of highest to lowest All Bird Fatality Rate per MW/Year	#/ MW	#/ Turbine	#/ MW	#/ Turbine
Leaning Juniper, OR	6.7	10.0	0.21	0.32
Klondike II, OR	3.1	4.7	0.11	0.17
Stateline I and II, WA/OR	2.9	1.9	0.09	0.06
Nine Canyon I[3], WA	2.8	3.6	0.05	0.07
Combine Hills, OR	2.6	2.3	0.00	0.00
Big Horn	2.5	3.8	0.15	0.23
Biglow Canyon Phase I[4]	1.8	2.9	0.03	0.06
Wild Horse[4], WA	1.6	2.8	0.09	0.17
Hopkins Ridge, WA	1.2	2.2	0.14	0.25
Vansycle, OR	1.0	0.6	0.00	0.00
Klondike I, OR	0.9	1.4	0.00	0.00
Mean	**2.46**	**3.29**	**0.08**	**0.12**

[1] References for projects: Stateline I and II-partial (Erickson et al., 2004); Vansycle (Erickson et al., 2000); Klondike I (Johnson et al., 2003); Klondike II (NWC and West, 2007); Combine Hills (Young et al., 2006); Nine Canyon (Erickson et al., 2003); Hopkins Ridge (Young et al., 2007); Big Horn (Kronner et al., 2008a); Wild Horse (Erickson et al., 2008); Leaning Juniper I (Gritski et al., 2008a), Biglow Canyon (Jeffrey et al., 2009).

[2] Raptor estimates include diurnal raptors and owls.

[3] Nine Canyon II monitored only part-year.
[4] Wild Horse and Biglow Canyon estimates include only data for the first year of a 2-year study.

Table 15. Number and species composition of bird fatalities found at Columbia Basin Ecoregion wind projects where fatality monitoring studies* have been completed or are in progress (data obtained from public files).

Species	% Composition (Includes Scheduled Searches Only)	Number of Fatalities on Scheduled Searches	Number of Fatalities Found as Incidentals**
horned lark	33.6	245	18
golden-crowned kinglet	6.2	45	3
gray partridge (n)	5.5	40	2
ring-necked pheasant (n)	5.1	37	7
chukar (n)	3.6	26	4
western meadowlark	3.6	26	0
American kestrel	3.2	23	5
European starling (n)	3.2	23	4
unidentified passerine	3.0	22	2
mourning dove	2.1	15	1
dark-eyed junco	1.9	14	4
white-crowned sparrow	1.8	13	3
yellow-rumped warbler	1.5	11	1
red-tailed hawk	1.4	10	7
rock pigeon (n)	1.4	10	0
unidentified bird	1.4	10	1
winter wren	1.2	9	0
northern flicker	1.1	8	0
ruby-crowned kinglet	1.1	8	2
short-eared owl	1.0	7	1
Townsend's warbler	1.0	7	0
black-billed magpie	0.8	6	0
house wren	0.8	6	0
red-breasted nuthatch	0.8	6	0
unidentified kinglet	0.8	6	0
golden-crowned sparrow	0.7	5	0
unidentified sparrow	0.7	5	0
American robin	0.5	4	1
savannah sparrow	0.5	4	0
Canada goose	0.4	3	1
common nighthawk	0.4	3	5
great-horned owl	0.4	3	0
mallard	0.4	3	0
song sparrow	0.4	3	1
American coot	0.3	2	0
Brewer's sparrow	0.3	2	4
Cassin's vireo	0.3	2	0
downy woodpecker	0.3	2	0
ferruginous hawk	0.3	2	2
great blue heron	0.3	2	0
northern harrier	0.3	2	0
orange-crowned warbler	0.3	2	0
rough-legged hawk	0.3	2	3
spotted towhee	0.3	2	0
Swainson's hawk	0.3	2	3
vesper sparrow	0.3	2	1
American goldfinch	0.1	1	0
American pipit	0.1	1	0
barn owl	0.1	1	0

Species	% Composition (Includes Scheduled Searches Only)	Number of Fatalities on Scheduled Searches	Number of Fatalities Found as Incidentals**
black-throated sparrow	0.1	1	0
brown-headed cowbird	0.1	1	0
California quail	0.1	1	0
common raven	0.1	1	0
Cooper's hawk	0.1	1	0
grasshopper sparrow	0.1	1	0
hairy woodpecker	0.1	1	0
house finch	0.1	1	1
house sparrow (n)	0.1	1	1
killdeer	0.1	1	0
Lewis's woodpecker	0.1	1	0
long-eared owl	0.1	1	0
MacGillivray's warbler	0.1	1	1
merlin	0.1	1	0
mountain bluebird	0.1	1	0
red-winged blackbird	0.1	1	0
ruddy duck	0.1	1	0
sage thrasher	0.1	1	0
Swainson's thrush	0.1	1	0
Townsend's solitaire	0.1	1	0
tree swallow	0.1	1	0
unidentified accipiter	0.1	1	0
unidentified buteo	0.1	1	0
unidentified duck	0.1	1	0
unidentified flycatcher	0.1	1	0
unidentified owl	0.1	1	0
unidentified vireo	0.1	1	0
unidentified warbler	0.1	1	0
Vaux's swift	0.1	1	1
Virginia rail	0.1	1	0
warbling vireo	0.1	1	0
western grebe	0.1	1	1
western kingbird	0.1	1	0
western tanager	0.1	1	0
white-throated swift	0.1	1	1
unidentified thrush	0.1	1	0
varied thrush	0.1	1	0
yellow warbler	0.1	1	0
American crow	0.0	0	1
bufflehead	0.0	0	1
gray catbird	0.0	0	1
hermit thrush	0.0	0	1
prairie falcon	0.0	0	1
sage sparrow	0.0	0	1
Williamson's sapsucker	0.0	0	1
Total (82 species identified) (76 native identified, 6 non-native)	**100.0**	**730**	**99**

* with similar study protocols
**not verified
[1] Data from the following formal monitoring studies during the monitoring periods stated below. Includes one incidental found after monitoring was complete. For full reference, see reference Section 7.0. These are observed fatalities and not final estimates of fatalities, which are higher.

Erickson et al. 2000. Avian and bat mortality associated with the Vansycle Wind Plant, Umatilla County Oregon. 1999 study year.

Species	**% Composition** (Includes Scheduled Searches Only)	Number of Fatalities on Scheduled Searches	Number of Fatalities Found as Incidentals**

Erickson et al. 2003. Nine Canyon Wind Power Project Avian and Bat Monitoring Report, September 2002–August 2003.

Erickson et al. 2004. Stateline Wind Project Wildlife Monitoring Final Report, July 2001–December 2003.

Erickson et al. 2007. Stateline Wind Project Wildlife Monitoring Annual Report, January–December 2006.

Erickson et al., 2008. Wild Horse Wind Facility Construction Avian and Bat Monitoring First Annual Report, January–December, 2007.

Gritski et al., 2008a. Leaning Juniper Wind Power Project, 2006–2008. Wildlife monitoring final report.

Gritski et al., 2008b. White Creek Wind I wildlife monitoring annual summary, winter 2007–2008 through fall 2008.

Iberdrola Renewables. 2008. Personal communication regarding Swainson's hawk fatality at Klondike III.

Jeffrey et al., 2008. Elkhorn Wind Project monitoring 2nd quarterly report, 2008.

Jeffrey, et al., 2009. Biglow Canyon Wind Farm Phase I post-construction avian and bat monitoring first annual report, January 2008–December 2008

Johnson, et al. 2003b. Avian and bat mortality at the Klondike, Oregon Phase I Wind Plant, Sherman County, Oregon. February 2002–February 2003.

Kronner et al., 2008. Big Horn Wind Power Project Wildlife Monitoring Study, 2006–2007.

Kronner et al., 2009a. White Creek Wind I – Results of monitoring year 2 winter season wildlife monitoring study and the clean-up search prior to formal monitoring of year 2 turbines, November 4, 2008–March 19, 2009.

Kronner et al., 2009b. White Creek Wind I – Results of wildlife monitoring year 2 spring season, for the period April 6 through May 22, 2009.

NWC and WEST 2007. Avian and Bat Monitoring Report for the Klondike II Wind Power Project, Sherman County, Oregon. August 2005–August 2006.

Young et al. 2006. Eurus Combine Hills Turbine Ranch Phase 1 Post Construction Wildlife Monitoring First Annual Report February 2004–February 2005.

Young et al. 2007. Puget Sound Energy, Hopkins Ridge Wind Project Phase 1 Post-Construction Avian and Bat Monitoring First Annual Report. January–December 2006.

Includes most, but not all incidentals found during formal monitoring studies, and one incidental found after monitoring was complete.

n = non-native species

Table 16. Annual bat mortality estimates at existing wind projects in the Columbia Basin Ecoregion with completed fatality monitoring studies (data obtained from public files).

Wind Project [1]	**Number of Bat Fatalities Found**	**Annual Fatality Estimate** (number of bats)	**Number of Bat Fatalities per Turbine per Year** (mean)	**Number of Bat Fatalities per MW per Year** (mean)
Listed in order of highest to lowest Bat Fatality Rate per MW/Year (last column)				
Nine Canyon I [2]	27	119	3.21	2.47
Biglow Canyon Phase I	39	250	3.29	1.99
Leaning Juniper	20	199	2.97	1.98
Big Horn	59	380	2.86	1.90
Combine Hills	21	77	1.88	1.88
Stateline I and II	128	500	1.12	1.70
Vansycle	10	28	0.74	1.12
Klondike I	6	19	1.16	0.77
Hopkins Ridge	19	94	1.13	0.63
Klondike II	5	31	0.63	0.41
Wild Horse	17	89	0.70	0.39
Mean			**1.49**	**1.25**

[1] References for projects: Stateline I and II-partial (Erickson et al. , 2004); Vansycle (Erickson et al., 2000); Klondike I (Johnson et al., 2003); Klondike II (NWC and West, 2007); Combine Hills (Young et al., 2006); Nine Canyon (Erickson et al., 2003); Hopkins Ridge (Young et al., 2007); Big Horn (Kronner et al., 2008); Wild Horse (Erickson et al., 2008); Leaning Juniper I (Gritski et al., 2008a), Biglow Canyon (Jeffrey et al., 2009).

[2] Nine Canyon II monitored only part-year (July 25 through November 2, 2004).

9.0 APPENDICES

Appendix A1. United States Fish and Wildlife Service Gilliam County species list

FEDERALLY LISTED, PROPOSED, CANDIDATE SPECIES
AND SPECIES OF CONCERN
UNDER THE JURISDICTION OF THE FISH AND WILDLIFE SERVICE
WHICH MAY OCCUR WITHIN GILLIAM COUNTY, OREGON

PROPOSED SPECIES

None

No Proposed Endangered Species		PE
No Proposed Threatened Species		PT

CANDIDATE SPECIES

Mammals
Terrestrial:

Washington ground squirrel	*Spermophilus washingtoni*

SPECIES OF CONCERN

Mammals

Pallid bat	*Antrozous pallidus pacificus*
Spotted bat	*Euderma maculatum*
Silver-haired bat	*Lasionycteris noctivagans*
Small-footed myotis bat	*Myotis ciliolabrum*
Yuma myotis bat	*Myotis yumanensis*

Birds

Western burrowing owl	*Athene cunicularia hypugaea*
Ferruginous hawk	*Buteo regalis*
Greater sage-grouse	*Centrocercus urophasianus*
Yellow-breasted chat	*Icteria virens*
Lewis' woodpecker	*Melanerpes lewis*
Mountain quail	*Oreortyx pictus*

Reptiles and Amphibians

Northern sagebrush lizard	*Sceloporus graciosus graciosus*

Fish

Pacific lamprey	*Lampetra tridentata*

Invertebrates
Insects:

Lynn's clubtail dragonfly	*Gomphus lynnae*

Plants

Robinson's onion	*Allium robinsonii*
Laurence's milk-vetch	*Astragalus collinus var. laurentii*
Dwarf evening-primrose	*Camissonia pygmaea*
disappearing monkeyflower	*Mimulus evanescens*
Sessile mousetail	*Myosurus sessilis*

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FEDERALLY LISTED, PROPOSED, CANDIDATE SPECIES AND SPECIES OF CONCERN UNDER THE JURISDICTION OF THE FISH AND WILDLIFE SERVICE WHICH MAY OCCUR WITHIN GILLIAM COUNTY, OREGON

DELISTED SPECIES

Birds

American Peregrine falcon	*Falco peregrinus anatum*
Bald eagle	*Haliaeetus leucocephalus*

Definitions:

Listed Species: An endangered species is one that is in danger of extinction throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered in the foreseeable future.

Proposed Species: Taxa for which the Fish and Wildlife Service or National Marine Fisheries Service has published a proposal to list as endangered or threatened in the Federal Register.

Candidate Species: Taxa for which the Fish and Wildlife Service has sufficient biological information to support a proposal to list as endangered or threatened.

Species of Concern: Taxa whose conservation status is of concern to the U.S. Fish and Wildlife Service (many previously known as Category 2 candidates), but for which further information is still needed. Such species receive no legal protection and use of the term does not necessarily imply that a species will eventually be proposed for listing.

Delisted Species: A species that has been removed from the Federal list of endangered and threatened wildlife and plants.

Key:

E	Endangered
T	Threatened
CH	Critical Habitat has been designated for this species
PE	Proposed Endangered
PT	Proposed Threatened
PCH	Critical Habitat has been proposed for this species

Notes:

Marine & Anadromous Species: Please consult the National Marine Fisheries Service (NMFS) (http://www.nmfs.noaa.gov/pr/species/) for marine and anadromous species. The National Marine Fisheries Service (NMFS) manages mostly marine and anadromous species, while the U.S. Fish and Wildlife Service manages the remainder of the listed species, mostly terrestrial and freshwater species.

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Appendix A2. Oregon Natural Heritage Information Center response letter

OREGON NATURAL HERITAGE INFORMATION CENTER

OSU
Oregon State

Institute for Natural Resources
1322 SE Morrison Street
Portland, Oregon 97214-2423
503.731.3070
http://oregonstate.edu/ornhic

Friday, April 17, 2009

Patrick Gronli
CH2M Hill
2020 SW 4th Ave, 3rd Floor
Portland, OR 97201-4958

Dear Mr. Gronli:

Thank you for requesting information from the Oregon Natural Heritage Information Center (ORNHIC). We have conducted a data system search for rare, threatened and endangered plant and animal records for your Leaning Juniper II Project at Boardman area.

Twenty-three (23) records total were noted within a five-mile radius of your project site and are included on the enclosed computer printouts.

Please remember that the lack of rare element information from a given area does not mean that there are no significant elements there, only that there is no information known to us from the site. To assure that there are no important elements present, you should inventory the site, at the appropriate season.

This data is confidential and for the specific purposes of your project and is **not to be distributed** Please also note that as our database is continually updated, the data in this report should be considered current for one year from the date it was generated and should not be cited after **April 2010**.

Please forward the included invoice to the appropriate party in your organization.

If you need additional information or have any questions, please do not hesitate to contact me.

Sincerely,

Lindsey Koepke

Lindsey Koepke
Assistant Information Manager
lindsey.koepke@oregonstate.edu
503.731.3070 x104

encl.: **invoice (H-041709-LAK1)**
computer printouts and data key

Appendix B. Rare plant species with potential for occurrence within the amended site boundary for Leaning Juniper IIB (LJIIB).

Name	Status	Typical Habitat	Likelihood of Occurrence	Identification Period
Allium robinsonii **Robinson's onion**	OR Rank: G3SH ONHP: 2-EX	Sand and gravel deposits along bottom and lower benches of Columbia River. Elevation: 60 - 650 ft.	Low	April - May
Astragalus collinus var. laurentii **Laurent's milk-vetch**	USFWS: SC ODA: LT OR Rank: G5T1S1 ONHP: 1	Basaltic grassland and sagebrush desert.	Moderate	May - June
Astragalus sclerocarpus **Stalked-pod milk-vetch**	OR Rank: SNR ONHP: 3	Dunes and sandy barrens. Elevation: 200-600 ft.	Moderate	April - June
Astragalus succumbens **Columbia milk-vetch**	OR Rank: G4G5S4 ONHP: 4	Sandy places and rocky sagebrush desert, from the Columbia River to the lower foothills. Elevation: 300-700 ft.	Moderate	April - June
Carex hystericina **Porcupine sedge**	OR Rank: G5S3 ONHP: 4	Wet depressions, along creek drainages and along hillside seeps. Elevation: 500-2600 ft.	Low	May - June
Cryptantha leucophaea **Gray cryptantha**	OR Rank: G2G3H ONHP: 2-EX	Sandy substrates mostly along the Columbia River.	Low	May - June
Hackelia diffusa var. cottonii **Creamy stickseed**	OR Rank: G4T4S3 ONHP: 2-EX	On steep talus slopes or on cliffs. Elevation: 100-3000 ft.	Low	May - June
Lesquerella douglasii **Columbia bladderpod**	OR Rank: G4?SNR ONHP: 3	sandy and gravelly soils in sagebrush and into arid juniper or ponderosa pine woodlands. Elevation: 200-800 ft.	Moderate	April - May
Lomatium watsonii **Watson's desert-parsley**	OR Rank: G4S1 ONHP: 2	Arid, open, often rocky hillsides often within sagebrush.	Low	May
Mimulus jungermannioides **Hepatic monkeyflower**	ODA: C OR Rank:G3S3 ONHP: 4	Basalt crevices in seepage zones in vertical cliff faces and canyon walls. Elevation: 500-3300 ft.	Low	May - Late August
Myosurus sessilis **Sessile mousetail**	USFWS: SC ODA: C OR Rank:G2S1 ONHP: 1	Drying vernal pools and alkali flats. Elevation: 50-5200 ft.	High	May - July

Name	Status	Typical Habitat	Likelihood of Occurrence	Identification Period

USFWS (US Fish and Wildlife Service) Ranking Key:

LE = Listed Endangered. Taxa in danger of Extinction throughout all or a significant portion of their range.
LT = Listed Threatened. Taxa likely to be classified as Endangered within the foreseeable future throughout all or a significant portion of their range.
PE = Proposed Endangered. Taxa proposed to be listed as Endangered (formal rulemaking in progress).
PT = Proposed Threatened. Taxa proposed to be listed as Threatened (formal rulemaking in progress).
C = Candidate Species. Taxa for which sufficient threats exist to warrant a proposal to list the species/subtaxon as Threatened or Endangered
SC = Species of Concern. Available information supports tracking the status and threats to species/subtaxon.

ODA (Oregon Department of Agriculture) Ranking Key:

LE = Listed Endangered.
LT = Listed Threatened.
C = Candidate for listing as Threatened or Endangered.

OR Rank (Oregon Natural Heritage Program) Categories Key:

G = Global rank indicator; denotes rank based on range wide status.
T = Trinomial rank indicator; denotes range wide status of infraspecific taxa.
S = State rank indicator; denotes rank based on status within Oregon.
1 = Critically imperiled because of extreme rarity or because some factor of its biology makes it especially vulnerable to extinction (typically 5 or fewer occurrences).
2 = Imperiled because of rarity or because other factors demonstrably make it very vulnerable to extinction (typically 6 to 20 occurrences).
3 = Rare or uncommon but not imperiled (typically 21 to100 occurrences).
4 = Not rare and apparently secure, but with cause for long-term concern (usually more than 100 occurrences).
5 = Demonstrably widespread, abundant, and secure.
E = Exotic or introduced.
U = Unknown.
H = Historical occurrence (i.e., formerly part of the native biota with the implied expectation that it might be rediscovered).
X = Presumed extinct or extirpated.
Q = Indicates uncertainty about taxonomic status.
? = Not yet ranked.

ONHP (Oregon Natural Heritage Program) Rare Plant Lists Key:

1 = List 1 taxa are Endangered or Threatened throughout their range or are presumed extinct.
2 = List 2 taxa are Threatened, Endangered, or possibly extirpated from Oregon, but are more stable elsewhere.
3 = List 3 contains taxa for which more information is needed before status can be determined, but which may be Threatened or Endangered in Oregon or throughout their range.
4 = List 4 contains taxa of concern which are not currently Threatened or Endangered
EX = Thought to be extirpated from Oregon

Appendix C. Special status/sensitive vertebrate wildlife species of known or potential occurrence within the amended site boundary for Leaning Juniper IIB and surrounding area.

Common Name and Scientific Name	Federal Status	ODFW Status*	Occurrence Within or Near the Facility Site Boundaries (includes LJF site) D = Documented N = Not Documented
		Mammals	
Washington ground squirrel *Urocitellus washingtoni (formerly Spermophilus washingtoni)*	C Priority List 2	E	**D**—Active burrows confirmed onsite LJIIB (Figure 6b). ORNHIC records (3) of individuals and burrows within 2-miles of LJIIB. Active WGS colonies at the original LJF and Pebble Springs Wind Project (LJWP, 2006; PPM, 2006). Most sites at LJF were in shrub-steppe, in particular, rabbitbrush-snakeweed-buckwheat/bunchgrass and the colony at Pebble Springs was in CRP habitat adjacent to native habitat.
white-tailed jackrabbit *Lepus townsendii*	–	SV	**D**—Observed during special status wildlife surveys in 2009 (Figure 6a). Recorded at the original LJF (LJWP, 2006). Observed in the general area (Kronner et al., 2007; PPM, 2006; ORNHIC, 2009). Observed 1-2 miles south of LJF in 2001 and at the intersection of Oregon Highway 19 and Cedar Springs Rd. (Kronner, personal field notes). Prefers open, bunchgrass steppe and frequents Conservation Reserve Program (CRP) grasslands.
		Note for all bat species listed below: no bat surveys were conducted in the LJIIB area	
pallid bat *Antrozous pallidis*	SoC	SV	**N**—Roosts in rock crevices, tree hollows, mines, caves, buildings and forages in rocky deserts, grasslands; take large insects, often from the ground. Presence will depend on availability of deep rock crevices as other roost types are mostly lacking.
spotted bat *Euderma maculatum*	SoC	SV	**N**—Roosts in rock crevices in cliff faces. Nearest record is Cottonwood Creek at the John Day River. Forages in riparian areas, meadows, old agricultural fields, forest openings. This species has very patchy distribution; it is hard to capture and many "sightings" are based on its audible echolocation signal.
Townsend's big-eared bat *Corynorhinus townsendii*	SoC	SC	**N**—Habitat is typically coniferous forests, desert scrub, pinyon-juniper, sometimes found in arid grassland and agricultural areas. Appropriate roost sites (mines, caves, building) are mostly lacking with the exception of farm buildings, suitability unknown. One record for Gilliam County (although not an easily detected species), approx. six miles south of LJIIB (Kronner and Gritski, field notes 2006–2009). Closest known breeding population in Klickitat County, WA.
hoary bat *Lasiurus cinereus*	–	SV	**N**—Foraging habitat includes riparian areas, grasslands, shrub-stepped, forest edges and opening, urban areas. Roosts in coniferous and deciduous trees. Likely to occur during fall migration, based on fatality records at regional and nearby wind projects and acoustical monitoring approx. six miles from LJIIB (Kronner and Gritski, field notes 2006–2009).
silver-haired bat *Lasionycteris noctivagans*	SoC	SV	**N**—Area lacks tree roost sites. Likely to occur during fall migration based on fatality records at regional and nearby wind projects and acoustical monitoring approx. six miles from LJIIB (Kronner and Gritski, field notes 2006–2009).

Common Name and Scientific Name	Federal Status	ODFW Status*	Occurrence Within or Near the Facility Site Boundaries (includes LJF site) D = Documented N = Not Documented
western small-footed myotis *Myotis ciliolabrum*	SoC	–	**N**—Roosts in rock crevices, caves, mines, talus slopes and buildings. Forages in desert, semi-arid shrubland, riparian areas, and coniferous forest habitat. Known to occur in Rock Creek area, approx. six miles south of LJIIB (Kronner and Gritski, field notes 2006–2009).
long-eared myotis Myotis evotis	SoC	–	**N**—More common in forests than arid grassland and shrub-steppe. Roosts in rock crevices, tree cavities, under loose bark, tree stumps, caves, mines, buildings.
fringed myotis *Myotis thysanodes*	SoC	SV	**N**—Most common roosts are in caves, mines, and snags; there are no records of this species for the Columbia Basin.
long-legged myotis *Myotis volans*	SoC	SV	**N**—More common in forests than arid grassland and shrub-steppe. Roosts in tree cavities, under loose bark, rock crevices, and buildings.
yuma myotis *Myotis yumanensis*	SoC	–	**N**—Might roost in rock crevices or old abandoned buildings, but would most likely forage near or over the Columbia River. Documented August 25, 2005, through acoustical monitoring at the town of Arlington (Kronner and Gritski, personal field notes 2005).
		Birds	
greater sandhill crane *Grus canadensis tabida*	–	SV	**N**—Not observed. May occur as migrant during migration seasons. Usually flies higher than rotor swept area during migration.
long-billed curlew *Numenius americanus*	BoCC	SV	**D**—Documented at LJIIB in spring 2009 during special status wildlife surveys. Recorded at LJIIA (LJWP, 2006) frequently in a few specific areas and 3 nests were documented. Also observed frequently elsewhere in the general vicinity (Kronner et al., 2007; Kronner et al., 2008, PPM, 2006). Most observations were on open low/shrub grassland gentle terrain. Nests in grassland flats and plateaus documented within 2-miles of LJIIB (ORNHIC, 2009). Considered “Highly Imperiled” (U.S. and Canadian shorebird conservation plans) due to declines throughout its geographic range.
bald eagle *Haliaeetus leucocephalus*	NW EPA	T	**N**—May occasionally occur during winter months. Wintering population in the Columbia Basin, primarily along watercourses. Known to hunt uplands for carrion and small mammals. Nearest known nest is >50 miles from LJIIB. One recorded in winter during avian use study at Rattlesnake Road Wind Power Facility (Kronner et al., 2007).
golden eagle *Aquila chrysaetos*	EPA BoCC	–	**D**—One observed in-transit to avian use plots near LJIIB in winter. Observed infrequently during avian use study of the original LJF and elsewhere in the general vicinity (Kronner et al., 2007; PPM, 2006). A few nests are present within the general landscape within 15 miles of LJIIB.
American peregrine falcon *Falco peregrinus anatum*	NW BoCC	SV	**N**—Has been seen in Arlington area (Morgan, pers. comm., 2004). Basalt cliffs along Columbia River are potentially suitable for nesting but lesser quality than further west along the Columbia River, further from LJIIB. Historic nest sites are present within 20 to 50 miles of LJIIB.

Common Name and Scientific Name	Federal Status	ODFW Status*	Occurrence Within or Near the Facility Site Boundaries (includes LJF site) D = Documented N = Not Documented
ferruginous hawk *Buteo regalis*	SoC BoCC	SC FS	D—A total of 3 nests found within the raptor nest survey buffer within 2-miles of proposed turbines. Documented during spring 2009 special status wildlife surveys. One observed at plot C just west of LJIIB during avian use surveys in winter. Nests in and near the original LJF site (Gritski et al., 2008; LJWP, 2006; Kronner et al., 2007). Nests in juniper trees.
Swainson's hawk *Buteo swainsoni*	BoCC	SV	D—A total of 10 active nests found within the raptor nest survey buffer within 2-miles of proposed turbines (3 within the site boundary). Documented during spring 2009 special status wildlife surveys. Observed during fall and winter season avian use surveys. Nests onsite the original LJF and in the general vicinity in junipers or isolated deciduous trees (Gritski et al., 2008; LJWP, 2006; Kronner et al., 2007; Kronner et al., 2008; PPM, 2006).
western burrowing owl *Athene cunicularia*	SoC BoCC	SC	D—Two active burrows (one possibly a satellite burrow) documented at LJIIB during spring 2009 special status wildlife surveys. One confirmed nest observed nearby the original LJF in 2005 (LJWP, 2006). One observed during fall season at LJF. Nesting in the general vicinity (Kronner et al., 2007; PPM, 2006).
loggerhead shrike *Lanius ludovicianus*	BoCC	SV	D—Individuals, pairs, and one nest documented onsite LJIIB during spring 2009 special status wildlife surveys. One observed near LJIIB while in-transit between avian use plots of the surrounding area in winter season; however, not typically found in the Columbia Basin in winter. Individuals and nests were found at the original LJF and the general vicinity in areas with mature sagebrush cover or in juniper woodlands or isolated juniper trees (LJWP, 2006; Kronner et al., 2007; Kronner et al., 2008; PPM, 2006).
sage sparrow *Amphispiza belli*	BoCC	SC FS	N—May occur during migration. Sagebrush shrub habitat onsite very limited and likely not extensive to support breeding populations. Breeds at Boardman Conservation Area.
grasshopper sparrow *Ammodramus savannarum*	–	SV FS	D—Documented during special status wildlife surveys at LJIIB in spring 2009 (Figure 6a). Observed within the analysis area for LJF during 2006 surveys during the nesting season and in the general vicinity (LJWP, 2006; Kronner et al., 2007; Kronner et al., 2008; PPM, 2006). Requires sufficient grassland with good vertical structure for nesting cover and perching.
Reptiles and Amphibians			
northern sagebrush lizard *Sceloparus graciosus graciosus*	SoC	SV	D—Documented at LJIIB during spring 2009 special status wildlife surveys in suitable habitat where there is less dense grass cover; also found in sandy soils with sagebrush and juniper or sagebrush. Observed within the analysis area for the original LJF during 2005 surveys and in the general vicinity (PPM, 2006).
western toad *Bufo boreus*	–	SV	N—No aquatic habitat, very limited potential for upland movements during wet periods. ORNHIC record within 5 miles of LJIIB. Known to occur along perennial streams such as Rock Creek, approximately six miles from LJIIB (Kronner and Gritski, field notes 2006–2009).

Status Key:

Federal:

T	Threatened	SoC	Species of Concern
E	Endangered	NW	Not Warranted; delisted

Common Name and Scientific Name	Federal Status	ODFW Status*	Occurrence Within or Near the Facility Site **Boundaries** (includes LJF site) D = Documented N = Not Documented

Status Key continued:

C Candidate

EPA Eagle Protection Act (16 U.S.C. 668-668d, June 8, 1940, as amended 1959, 1962, 1972, 1978)

BoCC USFWS Birds of Conservation Concern (Table BCR 9, Great Basin Region).

Note: All migratory birds are protected by the Migratory Bird Treat Act (MBTA).

Oregon:

T Threatened

E Endangered

SC "Critical" sensitive species are those for which listing as Threatened or Endangered would be appropriate if immediate conservation actions were not taken. Some peripheral species which are at risk throughout their range and some disjunct populations (those that are geographically isolated from other populations) area also considered "Critical."

SV "Vulnerable" sensitive species are not in imminent danger of being listed as Threatened or Endangered, but could become sensitive-critical, Threatened, or Endangered with changes in populations, habitats or threats.

FS Focal Species highlighted in the Draft John Day Subbasin Plan (CBMRCD/NWPPC, 2004)

Sources for status = CBMRCD/NWPPC, 2004; ODFW, 2008; ORNHIC, 2008, USFWS, 2002; USFWS, 2009

Appendix D. Comprehensive plant species list for the amended site boundary for Leaning Juniper IIB, 2009

Ab	Accepted Scientific Name	Common Name	Family	Nativity	Hitchcock & Cronquist Synonym	Notes
2	*Achillea millefolium*	yarrow	*Asteraceae*	N		
2	*Agoseris heterophylla*	annual agoseris	*Asteraceae*	N		
4	*Agropyron cristatum*	crested wheatgrass	*Poaceae*	I	*Agropyron cristatum*	planted on revegetated sites
5	*Allium acuminatum*	taper tip onion	*Lilaceae*	N		
7	*Amelanchier alnifolia*	Saskatoon serviceberry	*Rosaceae*	N		
1	*Amsinckia lycopsoides*	fiddleneck tarweed	*Boraginaceae*	N		
5	*Amsinckia menziesii*	Menzie's fiddleneck	*Boraginaceae*	N	*Amsinckia retrorsa*	
7	*Angelica arguta*	Lyall's angelica	*Apiaceae*	N		
4	*Antennaria dimorpha*	low pussytoes	*Asteraceae*	N		
4	*Artemisia tridentata ssp. tridentata*	big basin sagebrush	*Asteraceae*	N		
7	*Astragalus collinus*	hillside milkvetch	*Asteraceae*	N		
5	*Astragalus sclerocarpus*	woodypod milkvetch	*Fabaceae*	N		OR State Review List
5	*Astragalus succumbens*	Columbia milkvetch	*Fabaceae*	N		OR State Watch List
2	*Astragalus purshii*	woollypod milkvetch	*Fabaceae*	N		
4	*Astragalus tweedyii*	Tweedy's milkvetch	*Fabaceae*	N		
4	*Balsamorhiza careyana*	Carey's balsamroot	*Asteraceae*	N		
4	*Bromus arvensis*	field brome	*Poaceae*	I	*Bromus japonicus*	invasive
1	*Bromus tectorum*	cheat grass	*Poaceae*	I		invasive
4	*Buglossoides arvensis*	corn gromwell	*Boraginaceae*	I	*Lithospermum arvense*	
5	*Calochortus macrocarpus*	sagebrush mariposa lily	*Lilaceae*	N		
5	*Centaurea diffusa*	diffuse knapweed	*Asteraceae*	I		
4	*Ceratocephala testiculata*	bur-buttercup	*Ranunculaceae*	I		
5	*Chaenactis douglasii*	Douglas's dusty maiden	*Asteraceae*	N		
7	*Chenopodium album*	lambsquarters	*Chenopodiaceae*	I		
5	*Chorispora tenellus*	crossflower	*Brassicaceae*	I		invasive
4	*Chrysothamnus viscidiflorus*	green rabbitbrush	*Asteraceae*	N		
5	*Cirsium arvense*	Canada thistle	*Asteraceae*	I		
4	*Claytonia perfoliata*	miner's lettuce	*Portulacaceae*	N	*Montia perfoliata*	
3	*Collinsia parviflora*	maiden blue-eyed Mary	*Scrophulariaceae*	N		
5	*Collomia grandiflora*	grand colomia	*Polemoniaceae*	N		
7	*Collomia linearis*	tiny trumpet	*Polemoniaceae*	N		
4	*Convolvulus arvensis*	field bindweed	*Convolvulaceae*	I		

Ab	Accepted Scientific Name	Common Name	Family	Nativity	Hitchcock & Cronquist Synonym	Notes
2	*Crepis atrabarba*	slender hawksbeard	*Asteraceae*	N		
3	*Delphinium nuttallianum*	twolobe larkspur	*Ranunculaceae*	N		
2	*Descurainia pinnata*	western tansymustard	*Brassicaceae*	N		
3	*Descurainia sophia*	herb sophia	*Brassicaceae*	I		disturbed localities around homesteads
5	*Dodecatheon pulchellum*	darkthroat shooting star	*Primulaceae*	N		
4	*Draba verna*	spring whitlow grass	*Brassicaceae*	N		
6	*Elaeagnus angustifolia*	Russian olive	*Elaeagnaceae*	I		
5	*Elymus elymoides*	squirrel tail grass	*Poaceae*	N	*Sitanion hystrix*	
2	*Epilobium brachycarpum*	desert willow-herb	*Onagraceae*	N	*Epilobium paniculatum*	
2	*Ericameria nauseosa*	rubber rabbitbrush	*Asteraceae*	N	*Chrysothamnus nauseosus*	
5	*Erigeron linearis*	desert yellow fleabane	*Asteraceae*	N		
5	*Erigeron pumilus*	shaggy fleabane	*Asteraceae*	N		
4	*Eriogonum heracleoides*	cream buckwheat	*Polygonaceae*	N		
4	*Eriogonum strictum*	strict buckwheat	*Polygonaceae*	N		
2	*Erodium cicutarium*	storksbill geranium	*Geraniaceae*	I		
5	*Erysimum asperum*	western wallflower	*Brassicaceae*	N		
5	*Festuca idahoensis*	Idaho fescue	*Poaceae*	N		
6	*Fritillaria pudica*	yellow-bells	*Lilaceae*	N		
5	*Galium aparine*	sticky willy	*Rubiaceae*	N		
4	*Gutierriezia sarothrae*	snakeweed	*Asteraceae*	N		
2	*Holosteum umbellatum*	jagged chickweed	*Caryophyllaceae*	I		
5	*Idahoa scapigera*	spectacle pod	*Brassicaceae*	N		
5	*Juniperus occidentalis*	western juniper	*Cupressaceae*	N		
2	*Lactuca serriola*	prickly lettuce	*Asteraceae*	I		invasive
3	*Lagophylla ramosissima*	rabbit-leaf	*Asteraceae*	N		
5	*Lepidium perfoliatum*	clasping pepperweed	*Brassicaceae*	I		
7	*Lesquerella douglasii*	Douglas' bladderpod	*Brassicaceae*	N		OR State Review List
5	*Leymus cinereus*	basin wildrye	*Poaceae*	N	*Elymus cinereus*	
5	*Linum perenne*	blue flax	*Linaceae*	N		
3	*Lithophragma parviflora*	smallflower woodland star	*Saxifragaceae*	N		
5	*Lithospermum ruderale*	stoneseed	*Boraginaceae*	N		
3	*Lomatium grayii*	Gray's desert parsley	*Apiaceae*	N		
2	*Lomatium macrocarpum*	big-seed biscuitroot	*Apiaceae*	N		
3	*Lomatium triternatum*	nine-leaf biscuitroot	*Apiaceae*	N		

Ab	Accepted Scientific Name	Common Name	Family	Nativity	Hitchcock & Cronquist Synonym	Notes
4	*Lupinus argenteus ssp. argenteus var. laxiflorus*	longspur lupine	*Fabaceae*	N	*Lupinus laxiflorus var. laxiflorus*	
4	*Lupinus aridus ssp. aridus*	desertt lupine	*Fabaceae*	N		
6	*Malva neglecta*	common mallow	*Malvaceae*	I		
4	*Medicago sativa*	alfalfa	*Fabaceae*	I		mostly in revegetated fields
4	*Microsteris gracilis var. humilior*	slender phlox	*Polemoniaceae*	N		
7	*Myosurus sessilis*	sessile mousetail	*Ranunculaceae*	N		OR State Candidate
6	*Myosurus minimus*	tiny mousetail	*Ranunculaceae*	N		
4	*Nothocalais troximoides*	sagebrush false dandelion	*Asteraceae*	N	*Microseris troximoides*	
5	*Olsynium sp.*	grass widow	*Iridaceae*	N	*Sisyrhynchium sp.*	
5	*Phacelia hastata*	silverleaf phacelis	*Hydrophyllaceae*	N		
2	*Phlox longifolia*	longleaf phlox	*Polemoniaceae*	N		
5	*Pinus ponderosa*	ponderosa pine	*Pinaceae*	N		
2	*Plagiobothyrs tenellus*	Pacific popcorn flower	*Boraginaceae*	N		
5	*Plantago patagonica*	woolly plantain	*Plantaginaceae*	N		
4	*Plectritus macrocera*	longhorn plectritis	*Valerinaceae*	N		
1	*Poa bulbosa*	bulbous bluegrass	*Poaceae*	I	*Poa bulbosa*	
1	*Poa secunda*	Sandberg's bluegrass	*Poaceae*	N	*Poa sandbergii*	
4	*Poa secunda (ampla)*	Sandberg's bluegrass	*Poaceae*	I	*Poa ampla*	Non-native variety of P. secunda (CRP only)
6	*Polygonum aviculare*	prostate knotweed	*Polygonaceae*	I		
5	*Potentilla sp.*	cinquefoil	*Rosaceae*	N		
1	*Pseudoroegneria spicata*	bluebunch wheatgrass	*Poaceae*	N	*Agropyron spicatum*	deep soils / revegetated fields
4	*Purshia tridentata*	antelope bitterbrush	*Rosaceae*	N		
1	*Sisymbrium altissimum*	tall tumble mustard	*Brassicaceae*	I		invasive
6	*Taraxacum officinale*	common dandelion	*Asteraceae*	I		
4	*Thinopyrum intermedium*	intermediate wheatgrass	*Poaceae*	N	*Agropyron intermedium*	planted
4	*Thysanocarpus curvipes*	sand fringepod	*Brassicaceae*	N		
4	*Tragopogon dubius*	yellow salsify	*Asteraceae*	I		
2	*Triteleia grandiflora var. howellii*	Howell's cluster lily	*Lilaceae*	N	*Brodiaea howellii*	
6	*Typha latifolia*	broadleaf cattail	*Typhaceae*	N		
5	*Verbascum thapsus*	common mullein	*Scrophulariaceae*	I		
2	*Vulpia bromoides*	brome fescue	*Poaceae*	I	*Festuca bromoides*	

Ab = Abundance Codes:
1 = abundant in multiple plant communities   2 = common in multiple plant communities   3 = uncommon in multiple plant communities   4 = abundant in specific plant communities
5 = common in specific plant communities   6 = uncommon in specific plant communities   7 = rare with 3 or fewer separate occurrences on the project area surveyed

Appendix E. Comprehensive species list from avian use surveys (12 plots) conducted September 4, 2008 through March 11, 2009 at the amended site boundary for Leaning Juniper IIB and the surrounding area (within 5 miles).

COMMON NAME (listed alphabetically)	**SCIENTIFIC NAME**
Birds	
American kestrel*	*Falco sparverius*
American robin*	*Turdus migratorius*
barn swallow*	*Hirundo rustica*
black-billed magpie*	*Pica hudsonia*
California quail*	*Callipepla californica*
Canada goose	*Branta canadensis*
common raven*	*Corvus corax*
dark-eyed junco*	*Junco hyemalis*
European starling	*Sturnus vulgaris*
ferruginous hawk	*Buteo regalis*
house finch*	*Carpodacus mexicanus*
horned lark*	*Eremophila alpestris*
mountain bluebird*	*Sialia currucoides*
mourning dove*	*Zenaida macroura*
northern flicker*	*Colaptes auratus*
northern harrier*	*Circus cyaneus*
northern shrike*	*Lanius excubitor*
prairie falcon*	*Falco mexicanus*
red-tailed hawk*	*Buteo lineatus*
rough-legged hawk*	*Buteo lagopus*
Swainson's hawk	*Buteo swainsoni*
turkey vulture	*Cathartes aura*
unidentified blackbird	
unidentified buteo*	
unidentified falcon*	
unidentified finch	
unidentified passerine*	
unidentified raptor*	
unidentified sparrow	
vesper sparrow*	*Pooecetes gramineus*
western meadowlark*	*Sturnella neglecta*
Mammals	
black-tailed jackrabbit	*Lepus californicus*
white-tailed jackrabbit	*Lepus townsendii*
coyote*	*Cannis latrans*
mule deer*	*Odocoileus hemionus*

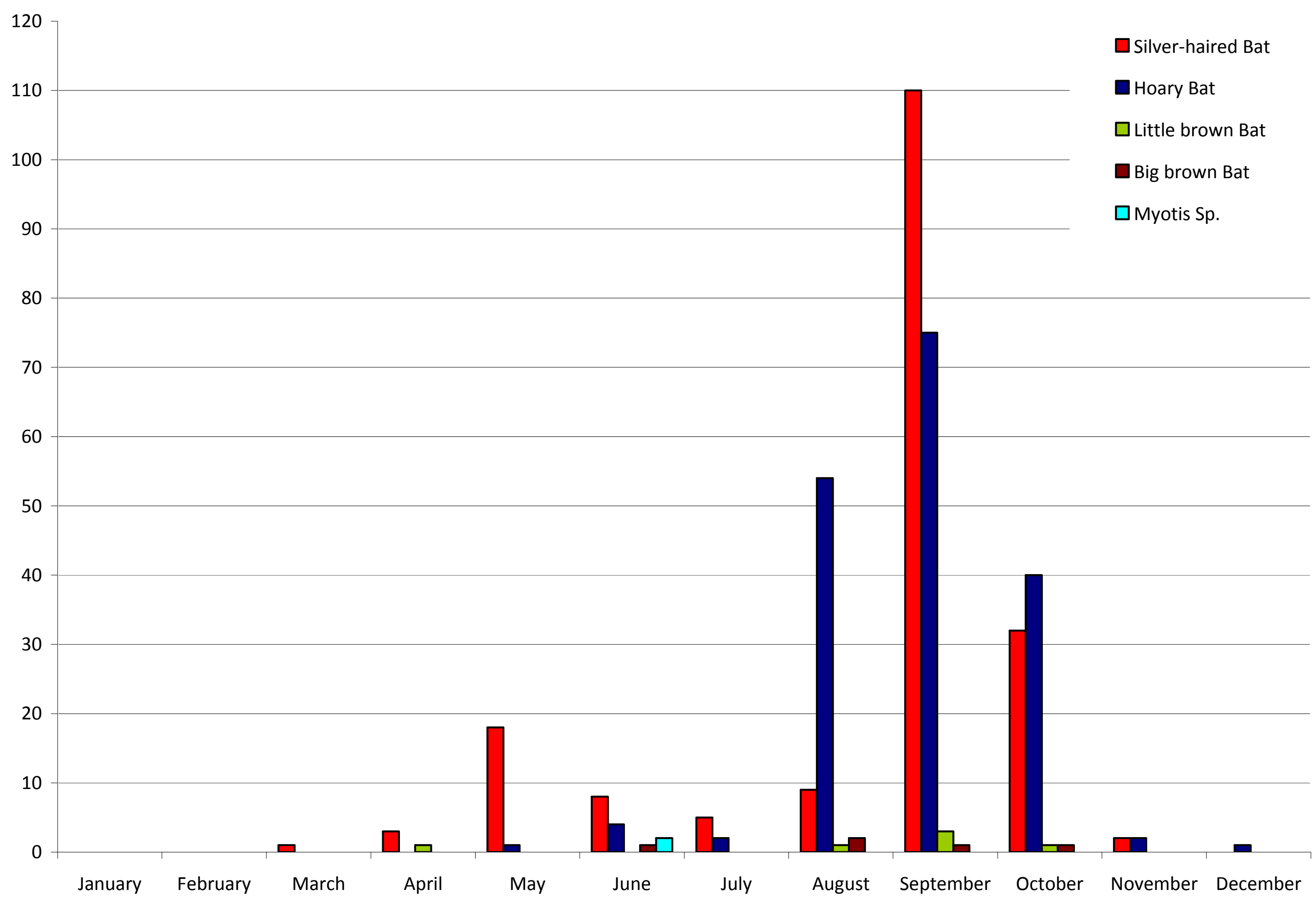
Note: Includes all species at all distances, includes birds observed but unidentifiable due to various reasons.

*Indicates species observed at LJIIB plots: D, E, F, G, H, I, and L

Appendix F. Comprehensive species list from special status vertebrate wildlife surveys at the amended site boundary for Leaning Juniper IIB, spring 2009.

COMMON NAME (listed alphabetically)	SCIENTIFIC NAME
Birds	
American crow	*Corvus brachyrhunchos*
American robin	*Turdus migratorius*
black-billed magpie	*Pica hudsonia*
Brewer’s blackbird	*Euphagus cyanocephalus*
common raven	*Corvus corax*
dark-eyed junco	*Junco hyemalis*
European starling	*Sturnus vulgaris*
ferruginous hawk	*Buteo regalis*
grasshopper sparrow	*Ammodramus savannarum*
gray partridge	*Perdix perdix*
horned lark	*Eremophila alpestris*
loggerhead shrike	*Lanius ludovicianus*
long-billed curlew	*Numenius americanus*
mourning dove	*Zenaida macroura*
northern flicker	*Colaptes auratus*
red-tailed hawk	*Buteo lineatus*
rough-legged hawk	*Buteo lagopus*
Say’s phoebe	*Sayornis saya*
Spotted towhee	*Pipilo maculatus*
Swainson's hawk	*Buteo swainsoni*
Tri-colored blackbird	*Agelaius tricolor*
western burrowing owl	*Athene cunicularia*
western meadowlark	*Sturnella neglecta*
lark sparrow	*Chondestes grammacus*
white-crowned sparrow	*Xonotrichia leucophyrys*
Other Wildlife	
black-tailed jackrabbit	*Lepus californicus*
white-tailed jackrabbit	*Lepus townsendii*
coyote	*Cannis latrans*
mule deer	*Odocoileus hemionus*
northern sagebrush lizard	*Sceloparus graciosus graciosus*
Washington ground squirrel	*Urocitellus washingtoni*

Appendix G. Bat fatalities by month at eleven existing wind projects in the Columbia Basin Ecoregion.



Data used are dates when bat fatality was discovered with no adjustment for age of carcass when found. References for projects included: Stateline I and II-partial (Erickson et al., 2004); Vansycle (Erickson et al., 2000); Klondike I (Johnson et al., 2003); Klondike II (NWC and West, 2007); Combine Hills (Young et al., 2006); Nine Canyon I (Erickson et al., 2003); Hopkins Ridge (Young et al., 2007); Big Horn (Kronner et al., 2008a); Wild Horse Year 1 (Erickson et al., 2008); Leaning Juniper II (Gritski et al., 2008a); Biglow Canyon (Jeffrey et al., 2009).

10.0 FIGURES

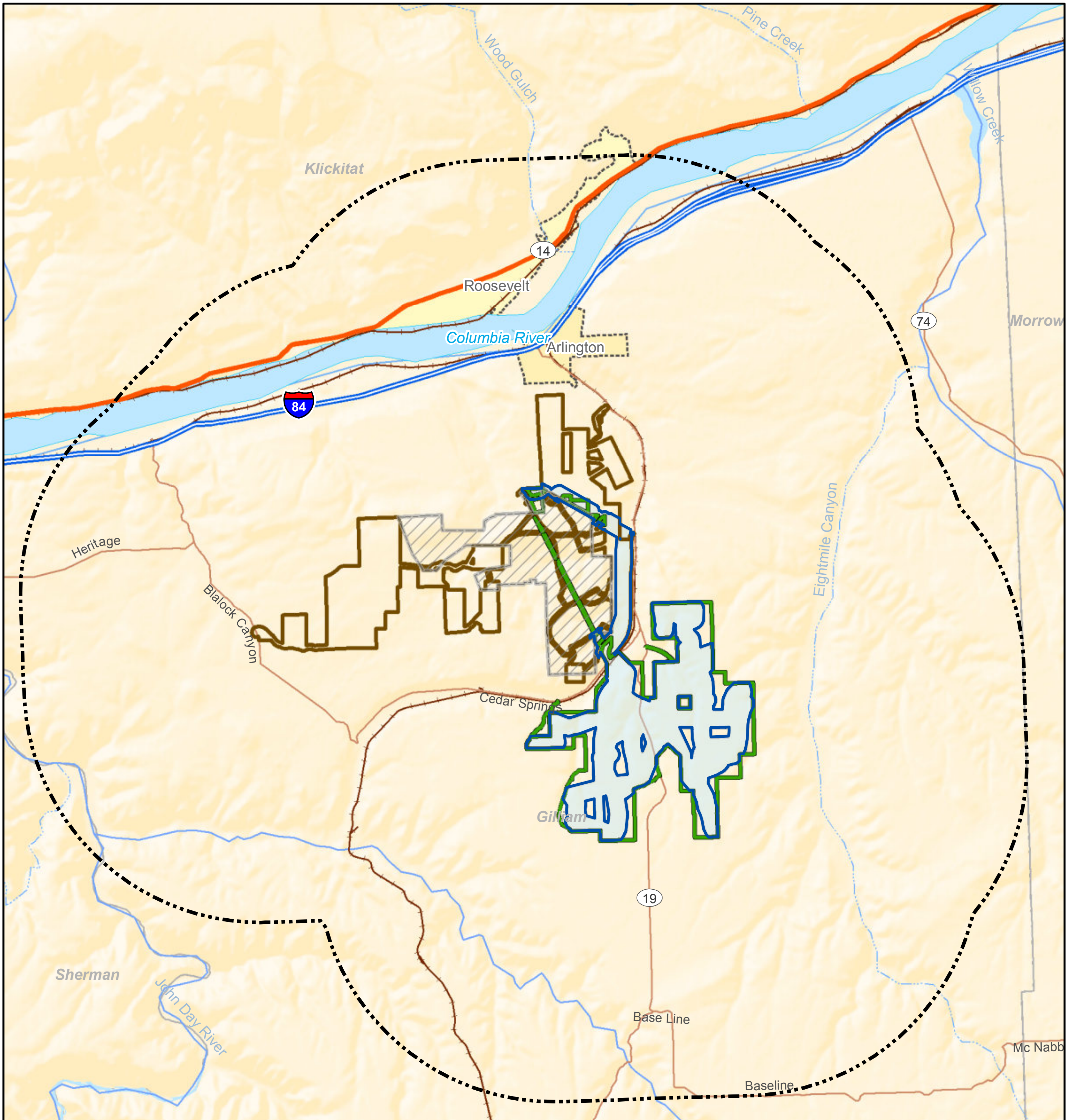


Figure 1. Leaning Juniper IIB Project Overview

Legend

- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- Existing Leaning Juniper II Site Boundary for LJIIA
- Leaning Juniper I Facility - owned and operated by PacifiCorp
- T & E Analysis Area
- Special Status Wildlife Survey Corridor - surveys conducted in suitable habitat only

N W E S

Study Conducted By
Northwest Wildlife Consultants, Inc.
Map Date: June 15, 2009

0 0.5 1 2 3 4 5 6 Miles

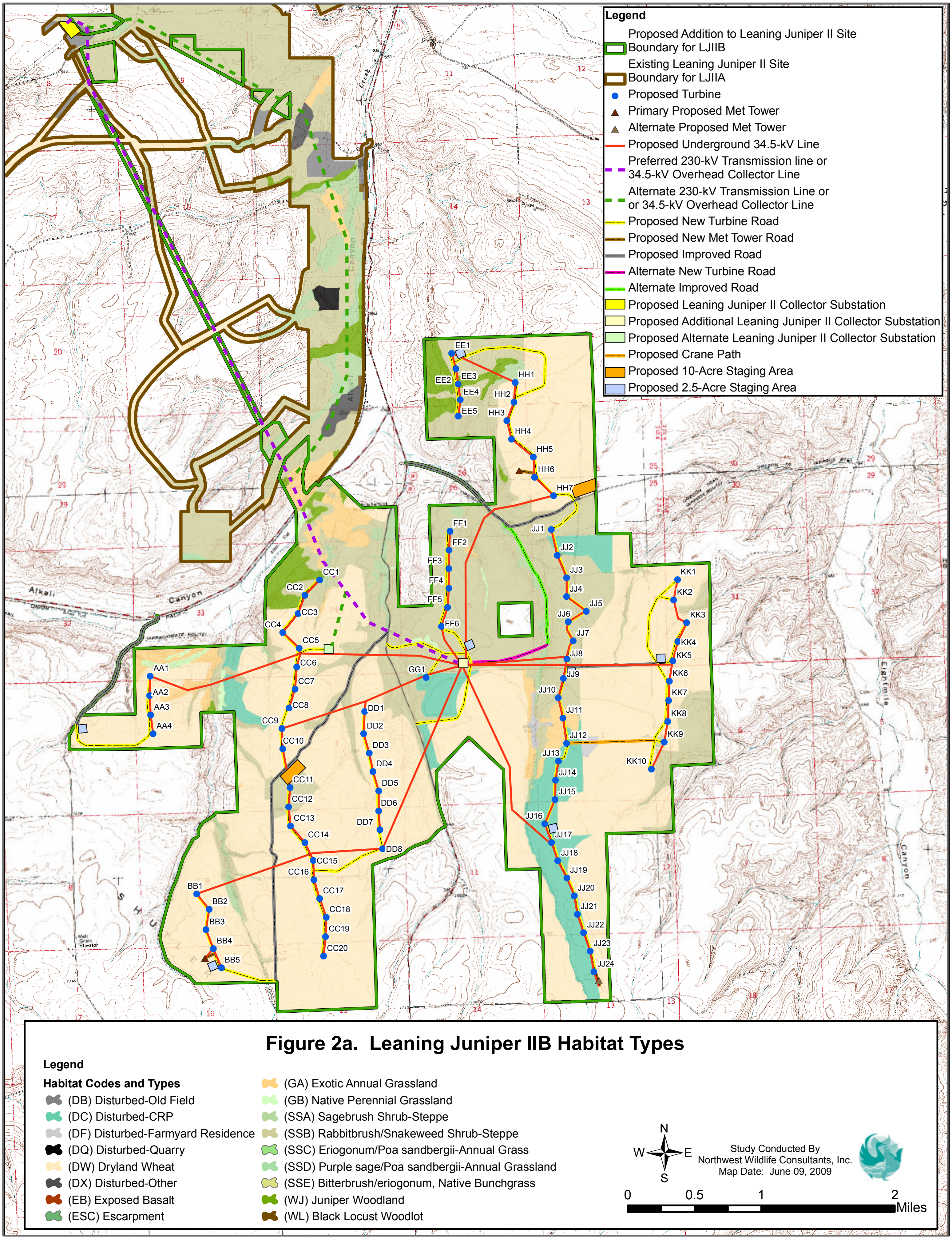


Figure 2a. Leaning Juniper IIB Habitat Types

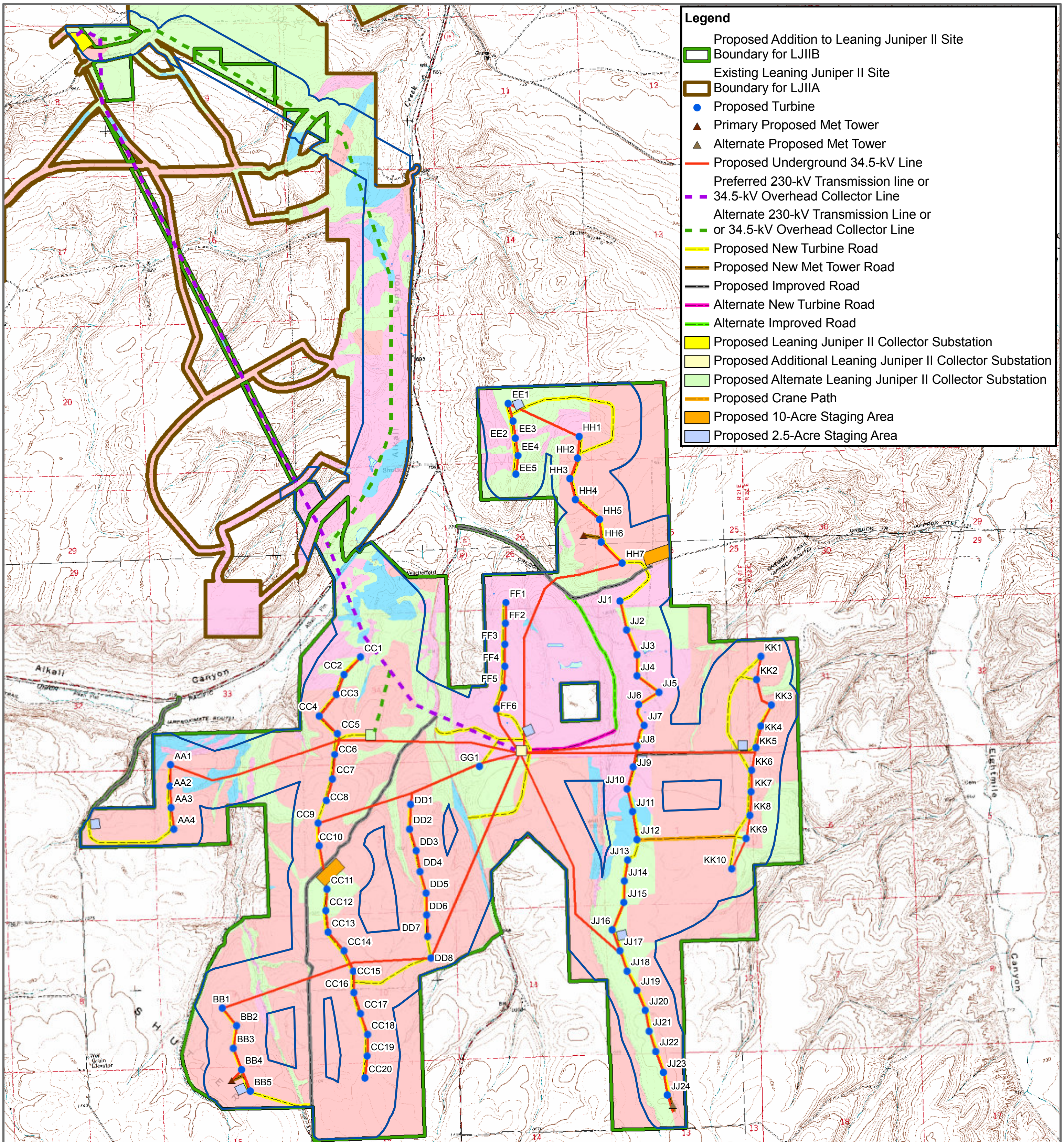


Figure 2b. Leaning Juniper IIB Habitat Categories

Legend

Special Status Wildlife Survey Corridor - surveys conducted in suitable habitat only

Habitat Categories

- Category 1 (DX, ESC, GA, SSA, SSB,WJ)
- Category 2 (DX, ESC, GA, GB, SSA, SSB, SSD, SSE, WJ, WL)
- Category 3 (DB, DC, GA, SSA, SSB, SSC, SSD)
- Category 4 (DB, DX, EB, GA, SSB, SSC)
- Category 5 (DB)
- Category 6 (DB, DF, DQ, DW, DX)

N W E S

0 0.5 1 2 Miles

Study Conducted By
Northwest Wildlife Consultants, Inc.
Map Date: June 15, 2009

On 4/25/18, the confidential information submitted with this RFA was printed out and filed in the Leaning Juniper IIB (LJWb) confidential material file. Once filed (as a printed hard copy), the confidential material was removed from this document. The removed material included;

- *“***Figures 3, 3a, 3b, 5, 6a, 6b, 6b-1, 6b-2, and 6b-3** – (Attachment 7: 2008-2009 Supplemental Wildlife Baseline Study): Northwest Wildlife Consultants (NWC). 2009. *Supplemental 2008–2009 Study to the 2005 Leaning Juniper Wildlife Baseline Study Conducted for the Request for Amendment No. 1 to the Site Certificate for the Leaning Juniper II Wind Power Facility*. Prepared for Iberdrola Renewables, Inc.*”*

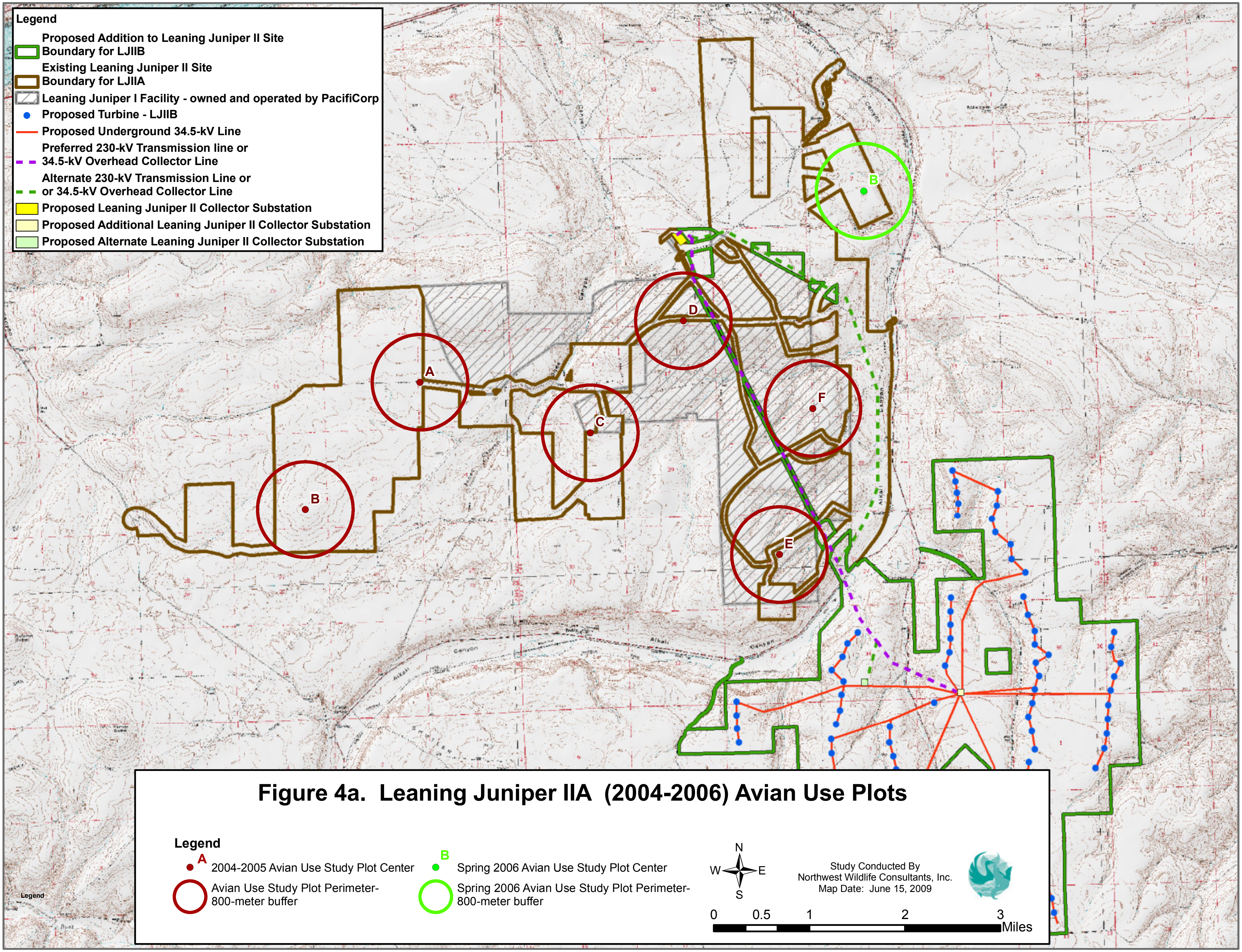


Figure 4a. Leaning Juniper IIA (2004-2006) Avian Use Plots

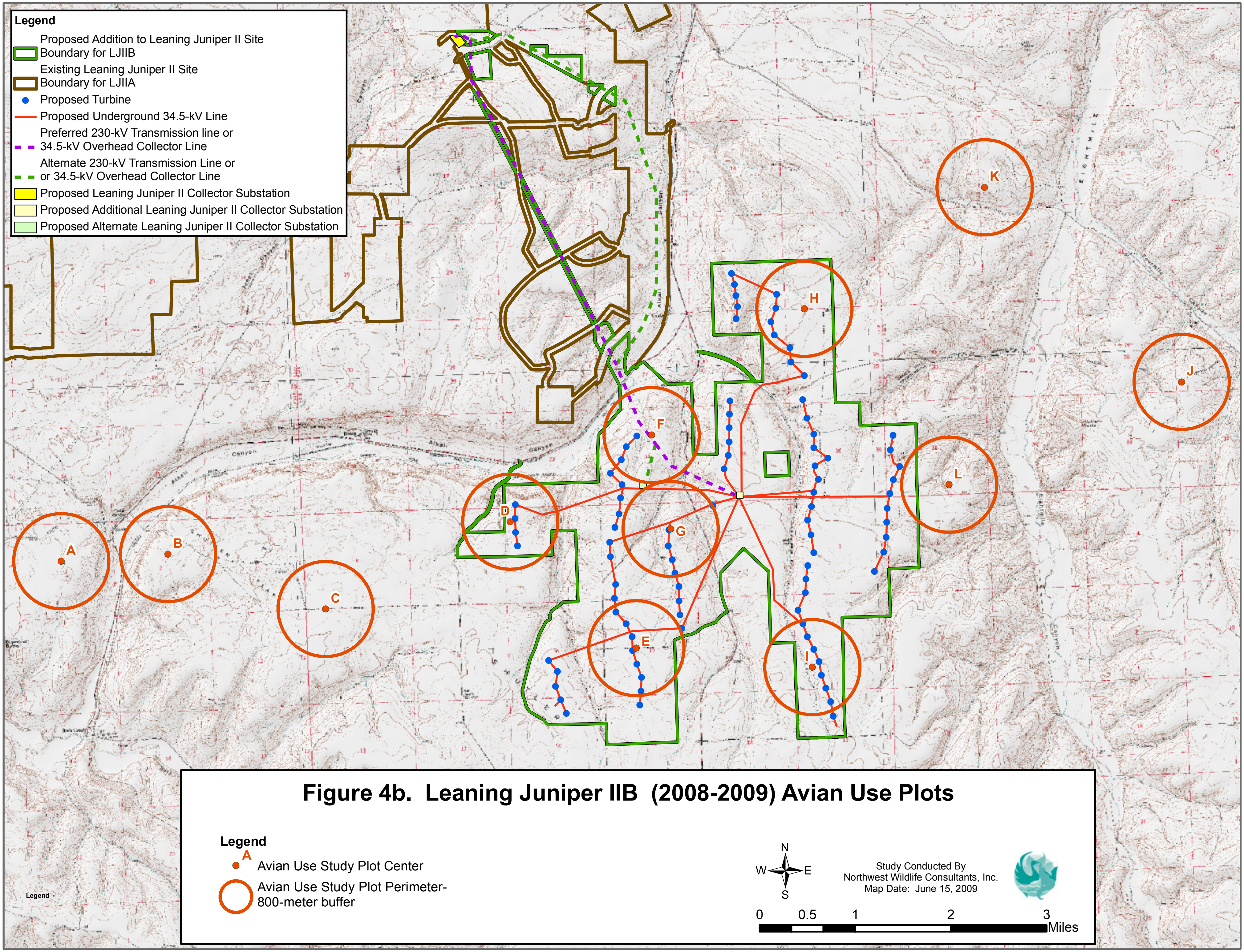


Figure 4b. Leaning Juniper IIB (2008-2009) Avian Use Plots

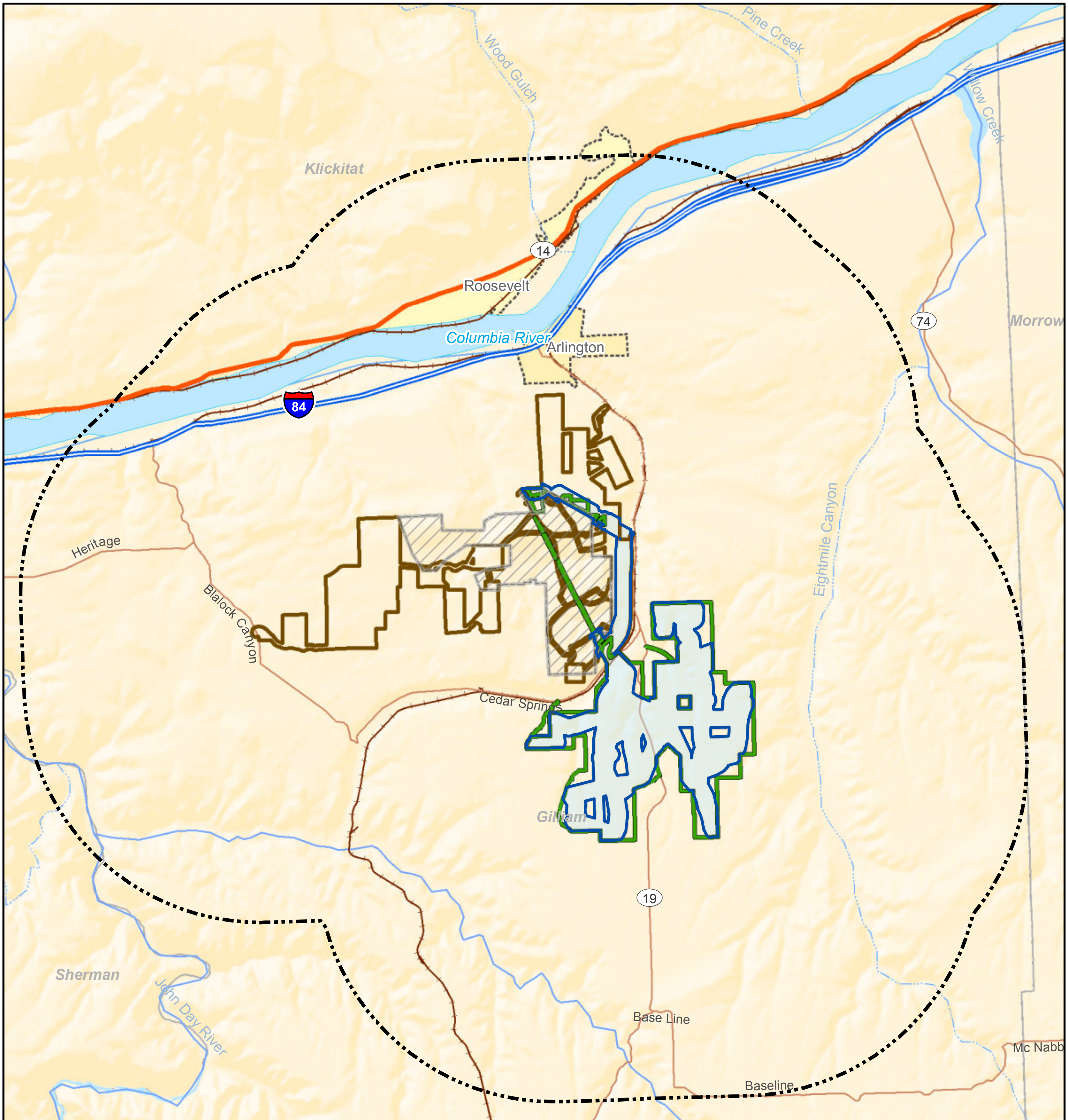


Figure 1. Leaning Juniper IIB Project Overview

Legend

- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- Existing Leaning Juniper II Site Boundary for LJIIA
- Leaning Juniper I Facility - owned and operated by PacifiCorp
- T & E Analysis Area
- Special Status Wildlife Survey Corridor - surveys conducted in suitable habitat only

N
W E
S

Study Conducted By
Northwest Wildlife Consultants, Inc.
Map Date: June 15, 2009

0 0.5 1 2 3 4 5 6 Miles

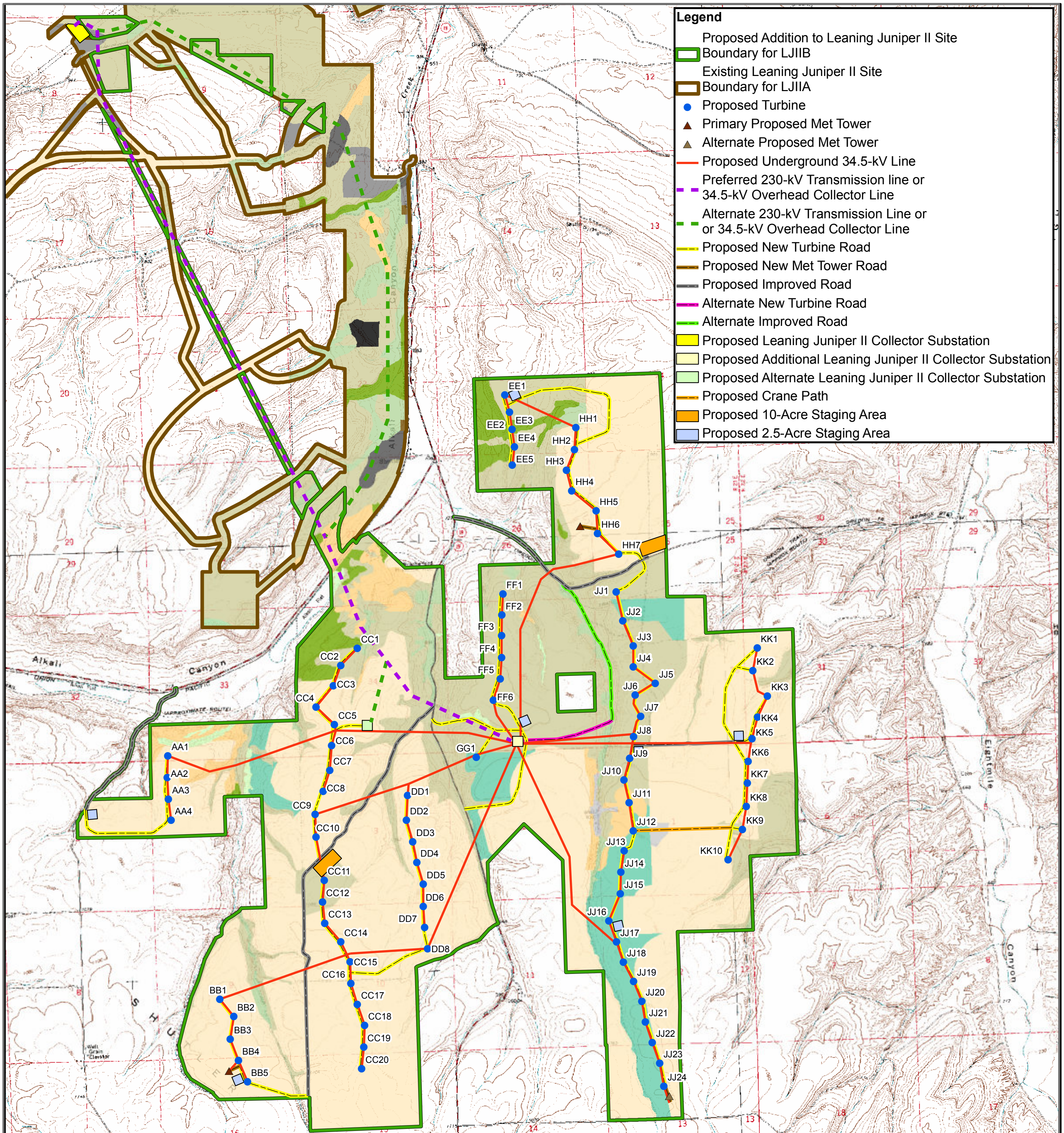


Figure 2a. Leaning Juniper IIB Habitat Types

Legend

Habitat Codes and Types

- (DB) Disturbed-Old Field
- (DC) Disturbed-CRP
- (DF) Disturbed-Farmyard Residence
- (DQ) Disturbed-Quarry
- (DW) Dryland Wheat
- (DX) Disturbed-Other
- (EB) Exposed Basalt
- (ESC) Escarpment
- (GA) Exotic Annual Grassland
- (GB) Native Perennial Grassland
- (SSA) Sagebrush Shrub-Steppe
- (SSB) Rabbitbrush/Snakeweed Shrub-Steppe
- (SSC) Eriogonum/Poa sandbergii-Annual Grass
- (SSD) Purple sage/Poa sandbergii-Annual Grassland
- (SSE) Bitterbrush/eriogonum, Native Bunchgrass
- (WJ) Juniper Woodland
- (WL) Black Locust Woodlot

N W E S

Study Conducted By
Northwest Wildlife Consultants, Inc.
Map Date: June 09, 2009

0 0.5 1 2 Miles

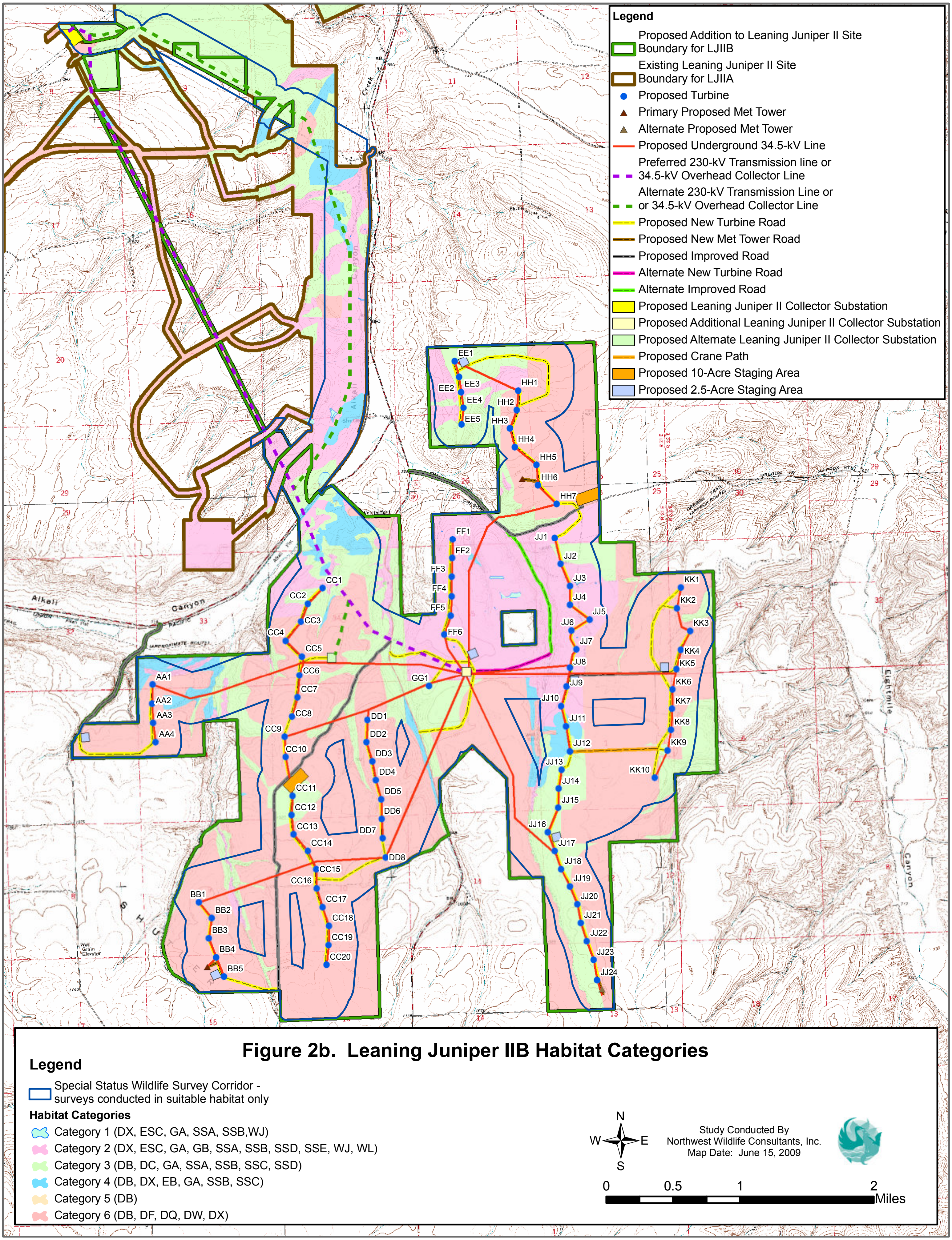


Figure 2b. Leaning Juniper IIB Habitat Categories

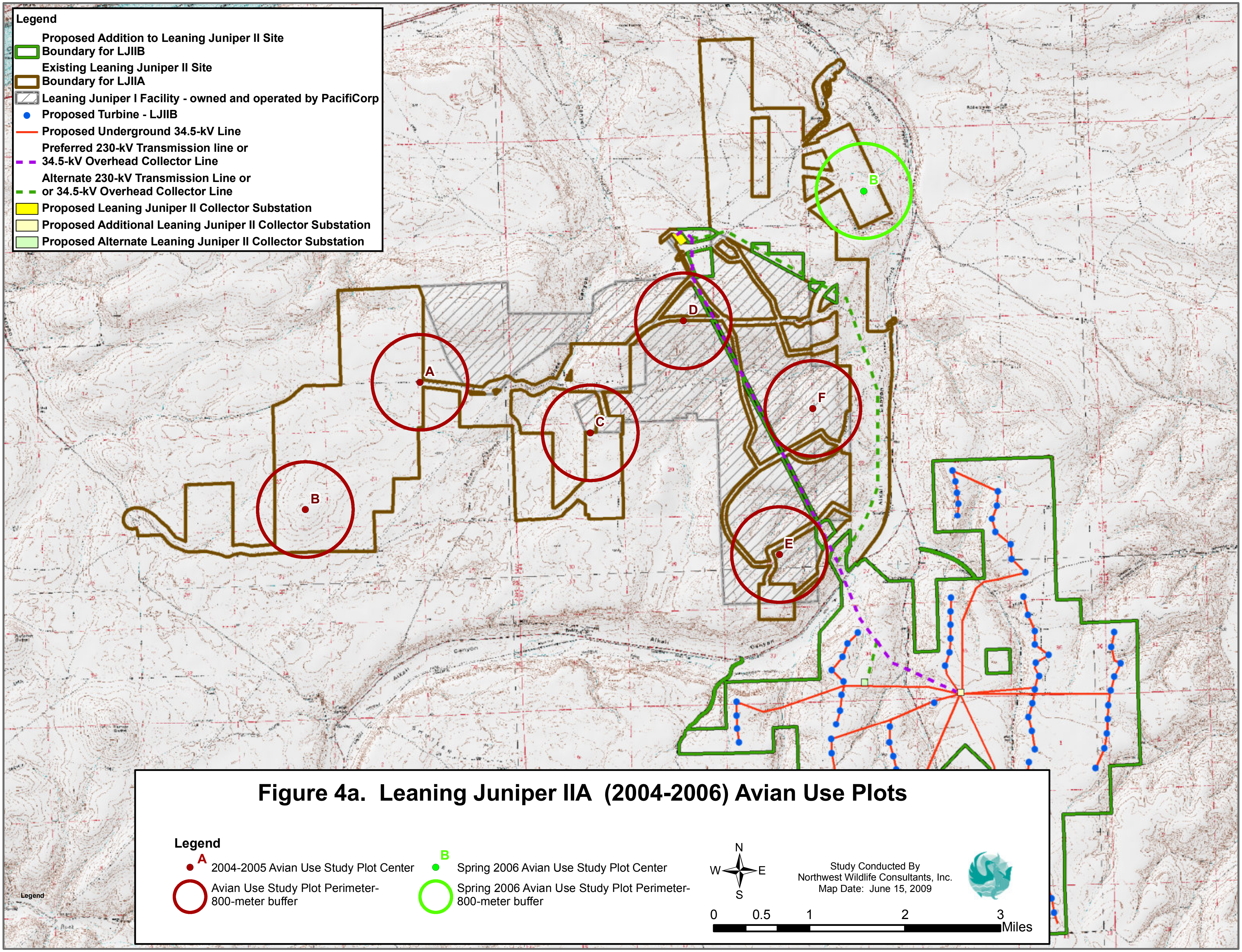


Figure 4a. Leaning Juniper IIA (2004-2006) Avian Use Plots

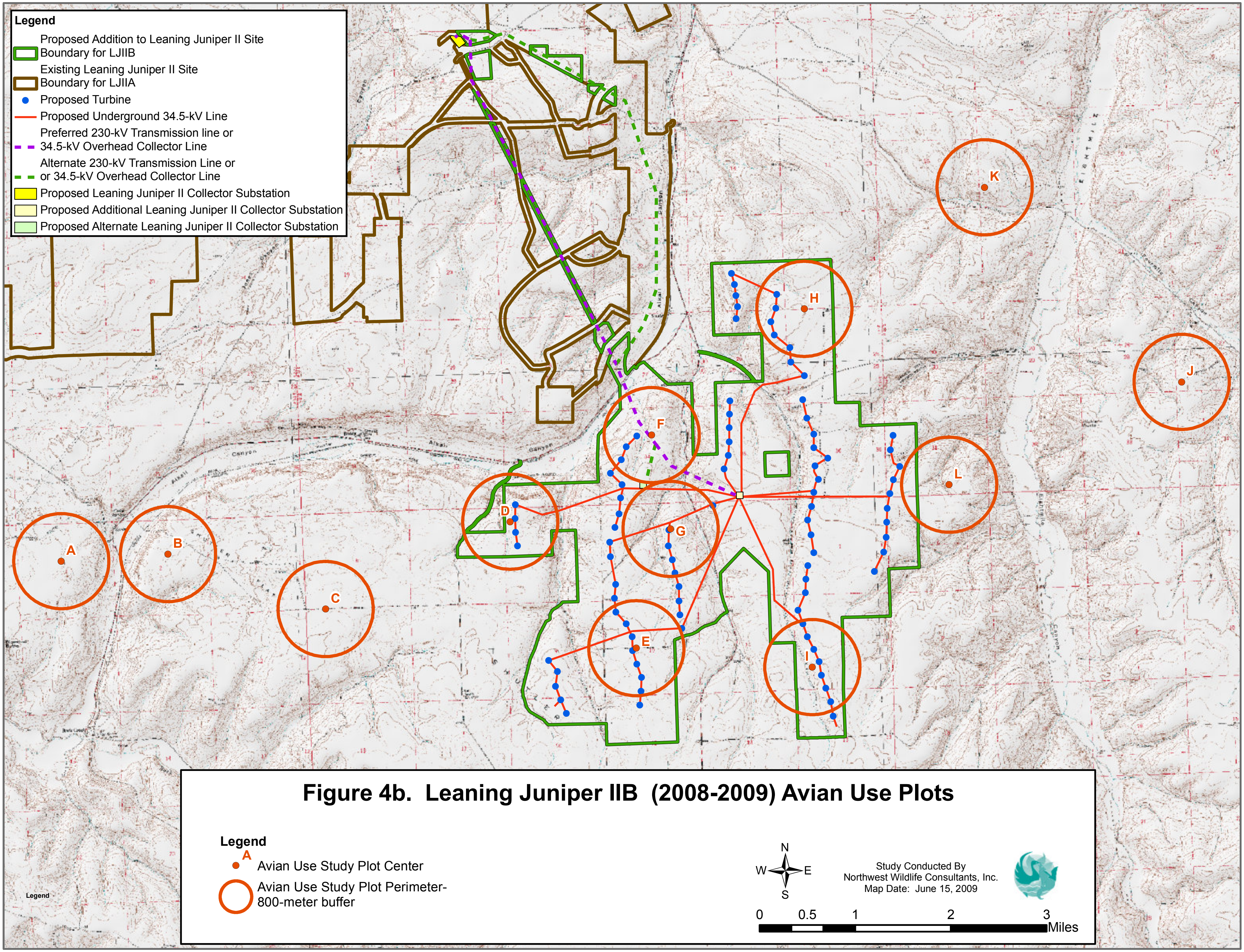


Figure 4b. Leaning Juniper IIB (2008-2009) Avian Use Plots

ATTACHMENT 6

Site Restoration Cost Estimate

ATTACHMENT 6

Site Restoration Cost Estimate (2nd Quarter 2009 Dollars)

Request for Amendment No. 1 to the Site Certificate for the Leaning Juniper II Wind Power Facility

Cost Estimate Component	Quantity	Unit Cost	Extension
Turbines and Towers			
Disconnect electrical and ready for disassembly (per tower)	90	$1,041	$93,690
Remove turbine blades and hubs (per tower)	90	$4,074	$366,660
Remove turbine nacelles and towers (per net ton of steel)	19,800	$78.09	$1,546,182
Foundation and Pad Areas			
Remove and load pad transformers (per tower)	90	$2,463	$221,670
Remove turbine foundations (per cubic yard of concrete)	24,750	$33.69	$833,828
Restore turbine turnouts (per tower)	90	$989	$89,010
Met Towers			
Dismantle and dispose of met towers (per tower)	2	$9,000	$18,000
Collector Substation			
Dismantle and dispose of collector substation	1	$117,774	$117,774
Transmission Line			
Remove 230-kV transmission line (per mile)	7	$29,290	$205,030
Remove above-ground 34.5-kV collector (per mile)	7.65	$3,582	$27,402
Remove below-ground 34.5-kV collector and junction boxes (per mile)	25.5	$1,405	$35,828
Access Roads			
Road removal, grading and seeding (per mile)	24.5	$49,183	$1,204,984
Temporary Areas			
Seed temporarily disturbed areas (per acre)	630.71	$2,950	$1,860,595
General Costs			
Permits, mobilization, engineering, overhead, utility disconnects (unit cost)	1	$471,854	$471,854
Subtotal			**$7,092,505**
Performance Bond		1%	$70,925
Gross Cost			**$7,163,430**
Administration and Project Management		10%	$716,343
Future Developments Contingency		10%	$716,343
Total Site Restoration Cost			**$8,596,116**
Total Site Restoration Cost (Rounded To Nearest $1,000)			**$8,596,000**

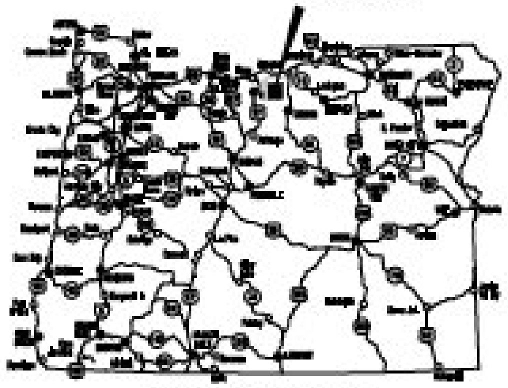
ATTACHMENT 5

Erosion and Sediment Control Plan

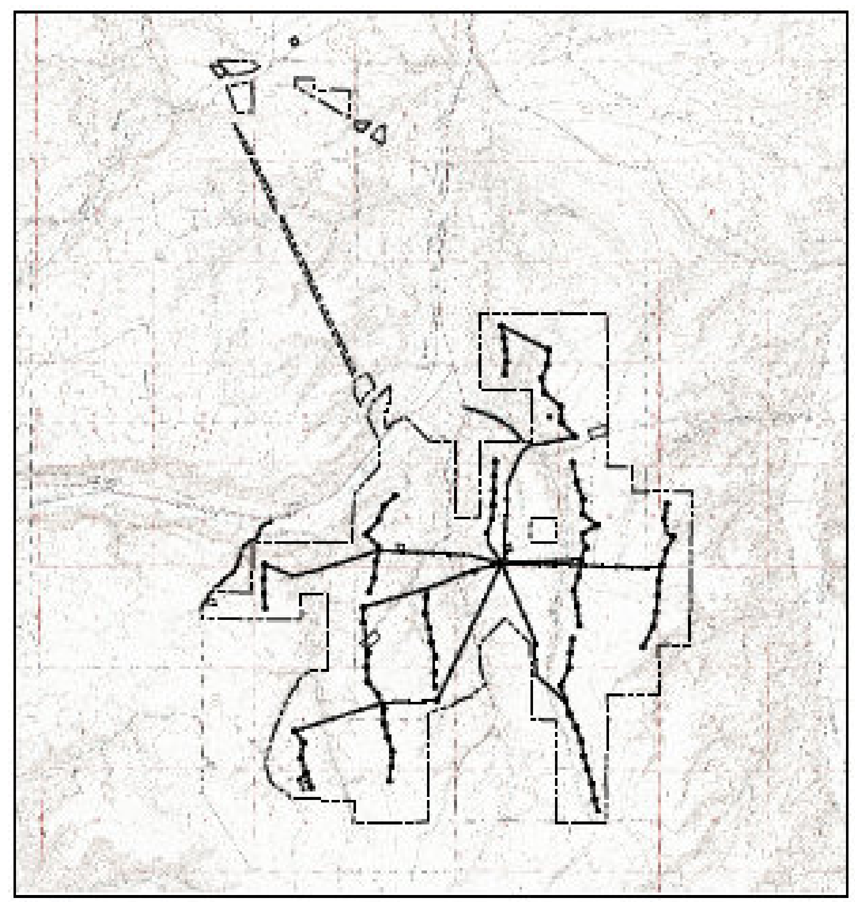
LEANING JUNIPER II WIND POWER FACILITY
LEANING JUNIPER WIND POWER II, LLC
ARLINGTON, OREGON

EROSION AND SEDIMENT CONTROL PLAN
ADDENDUM TO 1200-C NPDES GENERAL PERMIT #116681
JUNE 2009

PROJECT LOCATION



VICINITY MAP



LOCATION MAP

PROJECT LOCATION

THE FACILITY IS LOCATED APPROXIMATELY 1 MILE SOUTH OF ARLINGTON, OREGON, IN GILLIAM COUNTY.

LAT 45°65'54.8"
LONG 120°24'78.8"

DEVELOPER

LEANING JUNIPER WIND POWER II, LLC
CONTACT: SARAH PARSONS
1125 NW COUCH STREET, SUITE 700
PORTLAND, OR 97209
TELEPHONE: (503) 796-7732
EMAIL: SARA.PARSONS@IBERDROLAUSA.COM

PLANNING FIRM

CH2M HILL
CONTACT: LINNEA ENG
1100 12TH AVENUE NE, SUITE 400
BELLEVUE, WA 98004
TELEPHONE: (425) 241-0042
FAX: (425) 468-3021
EMAIL: LINNEA.ENG@CH2M.COM

NARRATIVE DESCRIPTION - EXISTING SITE CONDITIONS

THE LEANING JUNIPER IIB WIND ENERGY GENERATION FACILITY WILL BE CAPABLE OF GENERATING UP TO 188.7 MEGAWATTS (MW) AND CONSISTING OF UP TO 90 TURBINES (DEPENDING ON FINAL TURBINE SIZE AND VENDOR). DEFINABLE ASPECTS OF CONSTRUCTION INCLUDE THE CONSTRUCTION OF NEW SITE ACCESS ROADS, TEMPORARY ROAD CONSTRUCTION FOR CONSTRUCTION VEHICLE ACCESS, INSTALLATION OF AN UNDERGROUND 34.5 KV ELECTRICAL COLLECTION SYSTEM, CONSTRUCTION OF OVERHEAD 34.5 KV AND 230 KV TRANSMISSION SYSTEM, AND POTENTIAL CONSTRUCTION OF A NEW SUBSTATION. THIS PROJECT IS THE SECOND PHASE OF THE LEANING JUNIPER II WIND POWER FACILITY, A WIND ENERGY PROJECT WITH A PROPOSED NAMEPLATE CAPACITY OF APPROXIMATELY 280 MW, LOCATED IN GILLIAM COUNTY, OREGON.

TOTAL AREA DISTURBED

642 ACRES TEMPORARILY
73 ACRES PERMANENTLY

RECEIVING WATER BODIES

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

PERMITTEE'S SITE INSPECTOR

NATHAN WILLIAMS
CH2M HILL
2020 SW 4TH AVE., 3RD FLOOR
PORTLAND, OR 97202
PHONE: (503) 736-4157
E-MAIL: NATHAN.WILLIAMS@CH2M.COM

DRAWING INDEX

REGISTERED PROFESSIONAL ENGINEER 61700PE OREGON JAN 08, 2009 NATHAN PATRICK WILLIAMS
EXP. 06-30-10

DSGN	N WILLIAMS
DR	T LANEY
CHK	R ATTANASIO
APVD	M LEECE

NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE HALF INCH ON ORIGINAL DRAWING.
0 1/2"
IF NOT ONE HALF INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL

1200-C NPDES GENERAL PERMIT
EROSION CONTROL
COVER SHEET AND
DRAWING INDEX

SHEET	EC-1
DWG	1 OF 8
DATE	12-JUNE 2009
PROJ	371832

NATURE OF CONSTRUCTION ACTIVITY AND ESTIMATED TIME TABLE

CLEARING (7/2010 – 9/2010)
  CLEARING FOR ROAD CONSTRUCTION (7/2010 – 8/2010)
  CLEARING FOR TURBINE FOUNDATIONS (7/2010 – 9/2010)
MASS GRADING (8/2010 – 10/2010)
  GRADING FOR ROAD CONSTRUCTION (8/2010 – 8/2010)
  GRADING FOR TURBINE FOUNDATIONS (8/2010 - 10/2010)
UTILITY INSTALLATION (10/2010 – 12/2010)
  ELECTRICAL DISTRIBUTION SYSTEM INSTALLATION (10/2010 – 11/2010)
  WIND TURBINE ASSEMBLY AND CONSTRUCTION (10/2010 – 12/2010)
STREET CONSTRUCTION
  ROAD CONSTRUCTION (8/2010 – 9/2010)
  FINAL STABILIZATION (12/2010 – 2/2011)

INSPECTION FREQUENCY

- ONCE PER WEEK ON ACTIVE SITES
- ONCE EVERY TWO WEEKS ON INACTIVE SITES
- WITHIN 24 HOURS OF A RAIN EVENT THAT PRODUCES RUNOFF

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

SOIL TYPES

THE MAJORITY OF THE FACILITY COMPONENTS ARE LOCATED ON FIVE PRIMARY SOIL TYPES: THE RITZVILLE UNIT, WILLIS UNIT, WARDEN UNIT, OLEX UNIT, AND KREBS UNIT. APPROXIMATELY 30 PERCENT OF THE FACILITY SITE BOUNDARY IS LOCATED IN EACH THE RITZVILLE AND WILLIS UNITS, 24 PERCENT IN THE WARDEN UNIT, AND LESS THAN 10 PERCENT IN EACH THE OLEX AND KREBS UNITS. SOILS ARE TYPICALLY LOESS FORMATIONS OF WELL-DRAINED, MODERATELY PERMEABLE, FERTILE SILT LOAMS OVER BASALT. BELOW ARE DETAILED DESCRIPTIONS OF THE FIVE MAJOR SOIL UNITS IN WHICH PROPOSED TURBINES WILL BE LOCATED OR SURROUND THE FACILITY AREA.

RITZVILLE–THE RITZVILLE SERIES CONSISTS OF VERY DEEP AND DEEP TO DURIPAN, WELL-DRAINED SOILS FORMED IN LOESS. RITZVILLE SOILS ARE ON UPLANDS INCLUDING PLATEAUS, BENCHES, AND CANYON SIDE SLOPES. 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.

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 LIME-SILICA INDURATED DURIPAN. THE WILLIS SOILS ARE ON UPLANDS, ALLUVIAL FAN TERRACES, AND TERRACES. 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.

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 LOCATED ON TERRACES AND TERRACE ESCARPMENTS, AND TYPICALLY HAVE SLOPES RANGING BETWEEN 0 AND 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.

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. SLOPES ARE 0 TO 65 PERCENT. THEY ARE WELL DRAINED WITH SLOW RUNOFF AND MODERATE PERMEABILITY.

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 WITH SLOPES OF 2 TO 40 PERCENT. THEY ARE WELL DRAINED WITH MEDIUM TO RAPID RUNOFF AND SLOW PERMEABILITY.

STANDARD EROSION AND SEDIMENT CONTROL PLAN DRAWING NOTES

1. HOLD A PRE-CONSTRUCTION MEETING OF PROJECT CONSTRUCTION PERSONNEL THAT INCLUDES THE INSPECTOR TO DISCUSS EROSION AND SEDIMENT CONTROL MEASURES AND CONSTRUCTION LIMITS. (SCHEDULE A.8.B.I.(3))
2. THE ESCP MUST BE KEPT ONSITE AND ALL EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THE PLAN MUST BE INSTALLED IN SUCH A MANNER TO ENSURE THAT SEDIMENT OR SEDIMENT LADEN WATER THAT ENTERS OR IS LIKELY TO ENTER SURFACE WATERS OR CONVEYANCE SYSTEMS LEADING TO SURFACE WATER, ROADWAY, OR OTHER PROPERTIES DOES NOT OCCUR. (SCHEDULE A.3.A.) AND (SCHEDULE B.3.B.)
3. THE IMPLEMENTATION OF THE ESCP AND CONSTRUCTION, MAINTENANCE, EPLACEMENT, AND UPGRADING OF THE EROSION AND SEDIMENT CONTROL MEASURES IS THE RESPONSIBILITY OF THE PERMIT REGISTRANT UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED BY THE LOCAL DEVELOPMENT AGENCY AND VEGETATION/LANDSCAPING IS ESTABLISHED. THE PERMIT REGISTRANT SHALL BE RESPONSIBLE FOR MAINTENANCE UNTIL THE 1200-C PERMIT IS TERMINATED. (SCHEDULE A.4.A.) AND (SCHEDULE D.3.)
4. THE PERMIT REGISTRANT MUST BE RESPONSIBLE FOR PROPER INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES, IN ACCORDANCE WITH LOCAL, STATE, OR FEDERAL REGULATIONS. (SCHEDULE A.5.A.) AND (SCHEDULE A. 6.A.)
5. EROSION AND SEDIMENT CONTROL MEASURES INCLUDING PERIMETER SEDIMENT CONTROL MUST BE IN PLACE BEFORE VEGETATION IS DISTURBED AND MUST REMAIN IN PLACE AND BE MAINTAINED, REPAIRED, AND PROMPTLY IMPLEMENTED FOLLOWING PROCEDURES ESTABLISHED FOR THE DURATION OF CONSTRUCTION, INCLUDING PROTECTION FOR ACTIVE STORM DRAIN INLETS AND CATCH BASINS AND APPROPRIATE NON-STORMWATER POLLUTION CONTROLS. (SCHEDULE A.8.B.I.(2)), (SCHEDULE A.8.B. II.(7)), (SCHEDULE A.7.D.I.(2)) & (SCHEDULE A.7.F.)
6. BEGIN LAND CLEARING, EXCAVATION, TRENCHING, CUTTING OR GRADING AND EARTHWORK-SURFACE ROUGHING AFTER INSTALLING APPLICABLE SEDIMENT, EROSION PREVENTION AND RUNOFF CONTROL MEASURES NOT IN THE DIRECT PATH OF WORK. (SCHEDULE A.8.B.II.(5)(A)), (SCHEDULE A.7.C.I.(1)) AND (SCHEDULE A.7.C.II.(1))
7. APPLY TEMPORARY AND/OR PERMANENT SOIL STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS AS GRADING PROGRESSES AND FOR ALL ROADWAYS INCLUDING GRAVEL ROADWAYS. (SCHEDULE A.8.B.II.(5),(B)), (SCHEDULE A.8.B.II.(5)(C) & SCHEDULE A.8.B.II.(6).)
8. WET WEATHER BMPS: CONSTRUCTION ACTIVITIES MUST AVOID OR MINIMIZE EXCAVATION AND THE CREATION OF BARE GROUND ON SLOPES GREATER THAN FIVE (5) PERCENT FROM OCTOBER 1 THROUGH MAY 31 EACH YEAR. (SCHEDULE A.7.A.I.)
9. WET WEATHER BMPS: TEMPORARY STABILIZATION OF THE SITE MUST BE INSTALLED AT THE END OF THE SHIFT BEFORE A HOLIDAY OR WEEKEND OR AT THE END OF EACH WORKDAY IF RAINFALL IS FORECAST IN THE NEXT 24 HOURS AND EACH WEEKEND AND HOLIDAY. (SCHEDULE A.7.A.II.)
10. IDENTIFY, MARK, AND PROTECT (BY FENCING OFF OR OTHER MEANS) CRITICAL RIPARIAN AREAS AND VEGETATION INCLUDING IMPORTANT TREES AND ASSOCIATED ROOTING ZONES AND VEGETATION AREAS TO BE PRESERVED. IDENTIFY VEGETATIVE BUFFER ZONES BETWEEN THE SITE AND SENSITIVE AREAS (E.G., WETLANDS), AND OTHER AREAS TO BE PRESERVED, ESPECIALLY IN PERIMETER AREAS. PRESERVE EXISTING VEGETATION AND REVEGETATE OPEN AREAS WHEN PRACTICABLE BEFORE AND AFTER GRADING OR CONSTRUCTION. (SCHEDULE A.8.B.I.(1) & (2)) AND (SCHEDULE A.7.C.II.(1))
11. PROVIDE PERMANENT EROSION PREVENTION MEASURES ON ALL EXPOSED AREAS TO PREVENT FROM BECOMING A SOURCE OF EROSION AND REMOVE ALL TEMPORARY CONTROL MEASURES, UNLESS LOCAL ORDINANCES REQUIRE OTHERWISE, AS AREAS ARE STABILIZED. (SCHEDULE A.8.B.II.(8)) AND (SCHEDULE A.7.C.II.(2))
12. ALL TEMPORARY SEDIMENT CONTROLS MUST REMAIN IN PLACE UNTIL PERMANENT VEGETATION OR OTHER PERMANENT COVERING OF EXPOSED SOIL IS ESTABLISHED. IDENTIFY THE TYPE OF VEGETATIVE SEED MIX USED. (SCHEDULE A.7.C.II.(3)) & (SCHEDULE A.7.C.II.(4))
13. SEDIMENT CONTROLS MUST BE INSTALLED AND MAINTAINED ALONG THE SITE PERIMETER ON ALL DOWN GRADIENT SIDES OF THE CONSTRUCTION SITE AND AT ALL ACTIVE AND OPERATIONAL INTERNAL STORM DRAIN INLETS AT ALL TIMES DURING CONSTRUCTION. (SCHEDULE A.7.D.I.(1) – (2))
14. PRIOR TO ANY LAND DISTURBING ACTIVITIES EACH SITE MUST HAVE GRAVELED, PAVED, OR CONSTRUCTED ENTRANCES, EXITS AND PARKING AREAS WITH EXIT TIRE WASH TO REDUCE THE TRACKING OF SEDIMENT ONTO PUBLIC OR PRIVATE ROADS. (SCHEDULE A.7.D.II.(1))
15. WHEN TRUCKING SATURATED SOILS FROM THE SITE, EITHER WATER-TIGHT TRUCKS MUST BE USED OR LOADS MUST BE DRAINED ON-SITE UNTIL DRIPPING HAS BEEN REDUCED TO MINIMIZE SPILLAGE ON ROADS. (SCHEDULE A.7.D.II.(3))
16. TEMPORARY STABILIZATION OR COVERING OF SOIL STOCKPILES AND PROTECTION OF STOCKPILES LOCATED AWAY FROM CONSTRUCTION ACTIVITY MUST OCCUR AT THE END OF EACH WORKDAY OR OTHER BMPS, SUCH AS DIVERSION OF UNCONTAMINATED FLOWS AND INSTALLATION OF SEDIMENT FENCES AROUND STOCKPILES, MUST BE IMPLEMENTED TO PREVENT TURBID DISCHARGES TO SURFACE WATERS. (SCHEDULE A.7.E.I.(1)) & (SCHEDULE A.7.E.II.(1) – (3))
17. BMPS THAT WILL BE USED TO PREVENT OR MINIMIZE STORMWATER FROM BEING EXPOSED TO POLLUTANTS FROM SPILLS, NO DISCHARGE OF CONCRETE TRUCK WASH WATER, VEHICLE AND EQUIPMENT CLEANING, VEHICLE AND EQUIPMENT FUELING, MAINTENANCE, AND STORAGE, OTHER CLEANING AND MAINTENANCE ACTIVITIES, AND WASTE HANDLING ACTIVITIES. THESE POLLUTANTS INCLUDE FUEL, HYDRAULIC FLUID, AND OTHER OILS FROM VEHICLES AND MACHINERY, AS WELL AS DEBRIS, LEFTOVER PAINTS, SOLVENTS, AND GLUES FROM CONSTRUCTION OPERATIONS. (SCHEDULE A.7.E.I.(2))
18. ANY USE OF TOXIC OR OTHER HAZARDOUS MATERIALS MUST INCLUDE PROPER STORAGE, APPLICATION, AND DISPOSAL. (SCHEDULE A.7.E.II.(2))
19. SOLID WASTE AND HAZARDOUS MATERIALS MANAGEMENT. FOLLOW PROJECT WRITTEN SPILL PREVENTION AND RESPONSE PROCEDURES, EMPLOYEE TRAINING ON SPILL PREVENTION AND PROPER DISPOSAL PROCEDURES; REGULAR MAINTENANCE SCHEDULE FOR VEHICLES AND MACHINERY; AND MATERIAL DELIVERY AND STORAGE CONTROLS, TRAINING AND SIGNAGE, MATERIAL USE, COVERED STORAGE AREAS FOR WASTE AND SUPPLIES. (SCHEDULE A.7.E.III(3))
20. THE PERMITTEE MUST PROPERLY MANAGE HAZARDOUS WASTES, USED OILS, CONTAMINATED SOILS, CONCRETE WASTE, SANITARY WASTE, LIQUID WASTE, OR OTHER TOXIC SUBSTANCES DISCOVERED OR GENERATED DURING CONSTRUCTION AND MEET ALL STATE AND FEDERAL REGULATIONS AND APPROVALS. (SCHEDULE A.7.E.III.(4))
21. THE ESCP MEASURES SHOWN ON THIS PLAN ARE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE MEASURES MUST BE UPGRADED AS NEEDED TO COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL EROSION AND SEDIMENT CONTROL REGULATIONS. CHANGES TO THE ESCP MUST ALSO BE SUBMITTED IN THE FORM OF AN ACTION PLAN TO DEQ OR ITS AGENT FOR APPROVAL. (SCHEDULE A.7.F.)
22. SIGNIFICANT AMOUNTS OF SEDIMENT, WHICH LEAVES THE SITE, MUST BE CLEANED UP WITHIN 24 HOURS AND PLACED BACK ON THE SITE AND STABILIZED OR PROPERLY DISPOSED. THE CAUSE OF THE SEDIMENT RELEASE MUST BE FOUND AND PREVENTED FROM CAUSING A RECURRENCE OF THE DISCHARGE WITHIN THE SAME 24 HOURS. ANY IN-STREAM CLEAN UP OF SEDIMENT SHALL BE PERFORMED ACCORDING TO THE OREGON DIVISION OF STATE LANDS REQUIRED TIME FRAME. (SCHEDULE A.7.F.I.(1))
23. VACUUMING OR DRY SWEEPING MUST BE USED TO CLEAN-UP RELEASED SEDIMENT AND MUST NOT BE INTENTIONALLY WASHED INTO STORM SEWERS, DRAINAGE WAYS, OR WATER BODIES. (SCHEDULE A.7.F.I.(2))
24. THE APPLICATION RATE OF FERTILIZERS USED TO REESTABLISH VEGETATION MUST FOLLOW MANUFACTURER'S RECOMMENDATIONS TO MINIMIZE NUTRIENT RELEASES TO SURFACE WATERS. TIME RELEASE FERTILIZERS SHOULD BE USED WITH CARE WITHIN ANY WATER WAY RIPARIAN ZONE. (SCHEDULE A.7.F.I.(3))
25. SEDIMENT MUST BE REMOVED FROM BEHIND A SEDIMENT FENCE WHEN IT HAS REACHED A HEIGHT OF 1/3 THE HEIGHT OF THE FENCE ABOVEGROUND AND BEFORE FENCE REMOVAL. (SCHEDULE A.7.F.II.(1))
26. SEDIMENT MUST BE REMOVED FROM BEHIND BIO BAGS AND OTHER BARRIERS IT HAS REACHED A HEIGHT OF TWO (2) INCHES AND BEFORE BMP REMOVAL. (SCHEDULE A.7.F.II.(2))
27. REMOVAL OF TRAPPED SEDIMENT IN A SEDIMENT BASIN OR SEDIMENT TRAP OR CATCH BASINS MUST OCCUR WHEN THE SEDIMENT RETENTION CAPACITY HAS BEEN REDUCED BY FIFTY (50)% AND AT COMPLETION OF PROJECT. (SCHEDULE A.7.F.II.(3) & (4))
28. DEQ MUST APPROVE OF ANY TREATMENT SYSTEM AND OPERATIONAL PLAN THAT MAY BE NECESSARY TO TREAT CONTAMINATED CONSTRUCTION DEWATERING OR SEDIMENT AND TURBIDITY IN STORMWATER RUNOFF. (SCHEDULE A.7.F.III.)
29. SHOULD ALL CONSTRUCTION ACTIVITIES CEASE FOR THIRTY DAYS OR MORE, THE ENTIRE SITE MUST BE TEMPORARILY STABILIZED USING VEGETATION OR A HEAVY MULCH LAYER, TEMPORARY SEEDING, OR OTHER METHOD. (SCHEDULE A.8.A.)
30. SHOULD CONSTRUCTION ACTIVITIES CEASE FOR FIFTEEN (15) DAYS OR MORE ON ANY SIGNIFICANT PORTION OF A CONSTRUCTION SITE TEMPORARY STABILIZATION IS REQUIRED FOR THAT PORTION OF THE SITE WITH STRAW, COMPOST, OR OTHER TACKIFIED COVERING THAT PREVENT SOIL OR WIND EROSION UNTIL WORK RESUMES ON THAT PORTION OF THE SITE. (SCHEDULE A.8.B.)
31. DAILY INSPECTIONS WHEN RAINFALL AND RUNOFF OCCURS OF THE BMPS AND DISCHARGE OUTFALLS MUST BE THE PROJECT ESCP INSPECTOR. THESE INSPECTIONS AND OBSERVATIONS MUST BE RECORDED IN A LOG THAT IS AVAILABLE ON SITE. (SCHEDULE A.8.B.I.) & (SCHEDULE B.1.B.(1))
32. BMPS MUST BE INSPECTED BEFORE, DURING, AND AFTER SIGNIFICANT STORM EVENTS. (SCHEDULE A.7.F.)
33. ALL ESCP CONTROLS AND PRACTICES MUST BE INSPECTED VISUALLY ONCE TO ENSURE THAT BMPS ARE IN WORKING ORDER PRIOR TO THE SITE BECOMING INACTIVE OR IN ANTICIPATION OF SITE INACCESSIBILITY AND MUST BE INSPECTED VISUALLY ONCE EVERY TWO (2) WEEKS DURING INACTIVE PERIODS GREATER THAN SEVEN (7) CONSECUTIVE CALENDAR DAYS. (SCHEDULE B.1.B.(2)-(3))
34. IF PRACTICAL, INSPECTIONS MUST OCCUR DAILY AT A RELEVANT AND ACCESSIBLE DISCHARGE POINT OR DOWNSTREAM LOCATION DURING PERIODS WHICH THE SITE IS INACCESSIBLE DUE TO INCLEMENT WEATHER. (SCHEDULE B.1.B.(4))

BMP MATRIX FOR CONSTRUCTION PHASES

	CLEARING	MASS GRADING	UTILITY INSTALLATION	STREET CONSTRUCTION	FINAL STABILIZATION	WET WEATHER (OCT 1 – MAY 31)
EROSION PREVENTION						
PRESERVE NATURAL VEGETATION	X**	X	X	X	X	X
GROUND COVER						
HYDRAULIC APPLICATIONS						
PLASTIC SHEETING	X	X	X	X		X
DUST CONTROL	X	X	X	X		X
TEMPORARY/ PERMANENT SEEDING	X	X	X	X	X	X
BUFFER ZONE						
OTHER: MULCH	X	X	X	X	X	X
SEDIMENT CONTROL						
FILTER BERM/SOCK						
SILT FENCE	X**	X	X	X		X
STRAW WATTLES						
FILTER BERM						
INLET PROTECTION						
DEWATERING						
SEDIMENT TRAP	X	X	X	X		X
OTHER: SOIL BINDER & TACKIFIER					X	X
RUN OFF CONTROL						
CONSTRUCTION ENTRANCE	X	X	X	X	X	X
PIPE SLOPE DRAIN						
OUTLET PROTECTION						
SURFACE ROUGHENING	X	X	X	X		X
CHECK DAMS	X	X	X	X		X
OTHER:						
POLLUTION PREVENTION						
PROPER SIGNAGE	X	X	X	X	X	X
HAZ WASTE MGMT	X	X	X	X	X	X
SPILL KIT ON-SITE	X	X	X	X	X	X
CONCRETE WASHOUT AREA			X	X		X
OTHER: TRUCK WHEEL WASH	X**	X	X	X	X	X

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

RATIONALE STATEMENT

A COMPREHENSIVE LIST OF AVAILABLE BEST MANAGEMENT PRACTICES (BMP) OPTIONS BASED ON DEQ'S 1200-C PERMIT APPLICATION AND ESCP GUIDANCE DOCUMENT HAS BEEN REVIEWED TO COMPLETE THIS EROSION AND SEDIMENT CONTROL PLAN. SOME OF THE ABOVE LISTED BMPS WERE NOT CHOSEN BECAUSE THEY WERE DETERMINED TO NOT EFFECTIVELY MANAGE EROSION PREVENTION AND SEDIMENT CONTROL FOR THIS PROJECT BASED ON SPECIFIC SITE CONDITIONS, INCLUDING SOIL CONDITIONS, TOPOGRAPHIC CONSTRAINTS, ACCESSIBILITY TO THE SITE, AND OTHER RELATED CONDITIONS. AS THE PROJECT PROGRESSES AND THERE IS A NEED TO REVISE THE ESCP, AN ACTION PLAN WILL BE SUBMITTED.

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

________ INITIAL

LOCAL AGENCY-SPECIFIC EROSION CONTROL NOTES

GILLIAM COUNTY HAS NO SPECIFIC EROSION CONTROL REQUIREMENTS BEYOND THOSE ALREADY LISTED.

ATTENTION EXCAVATORS

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

REGISTERED PROFESSIONAL ENGINEER
81700PE
OREGON
JAN 08, 20
NATHAN PATRICK WILLIAMS
EXP. 06-30-10

DSGN	N WILLIAMS			
DR	T LANEY			
CHK	R ATTANASIO			
APVD	M LEECE	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE HALF INCH ON ORIGINAL DRAWING.
0 1/2"
IF NOT ONE HALF INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL

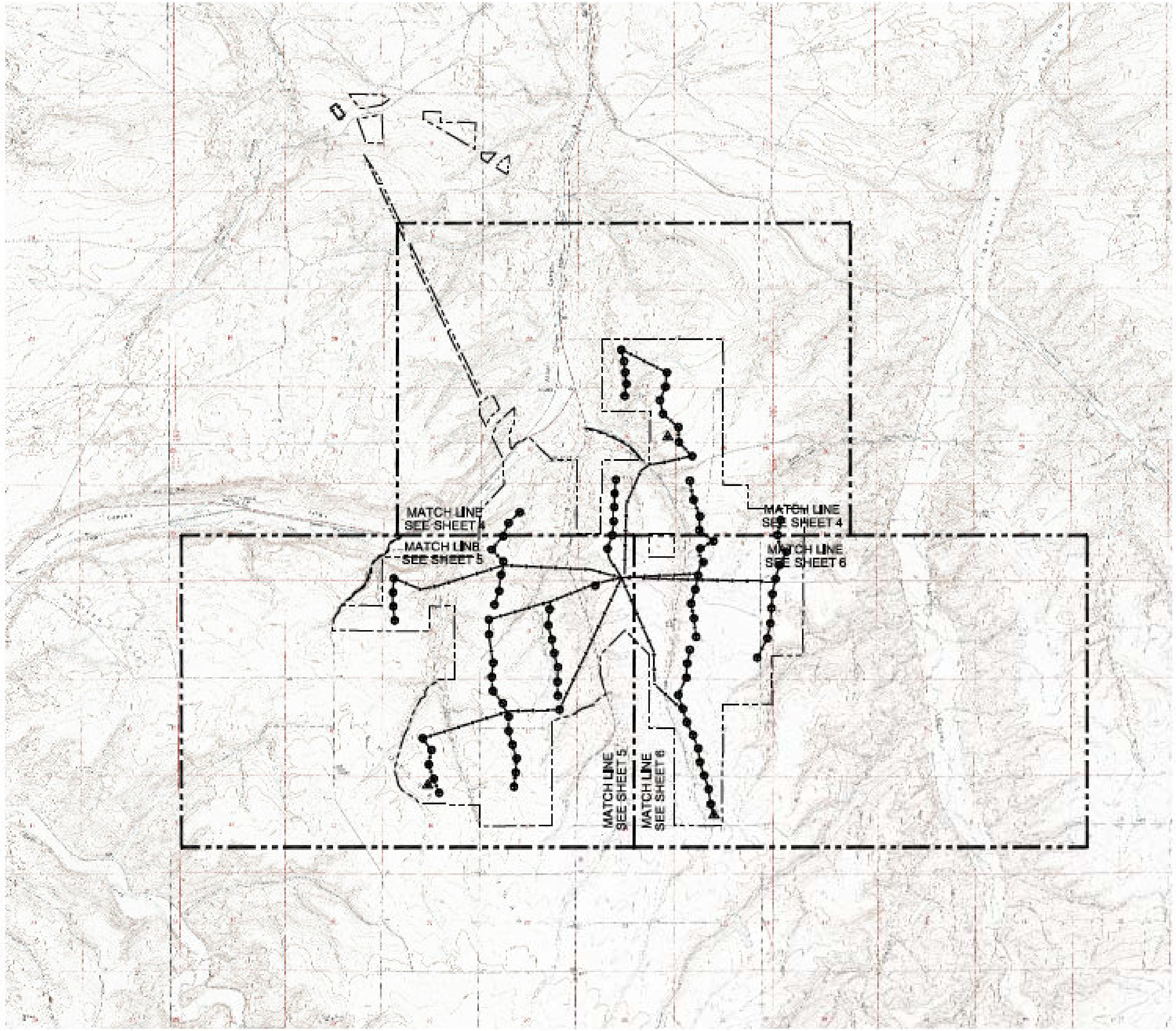
1200-C NPDES GENERAL PERMIT

GENERAL NOTES

SHEET EC-2
DWG 2 OF 8
DATE 12-JUNE 2009
PROJ 371832

FILENAME: \\ROSA\PROJ\IBERDROLA\371832\CAD\DRAWINGS\EROSION CONTROL PLANSET_371832.DWG PLOT DATE: 12-Jun-09 PLOT TIME: 4:26:00 PM

USER: TLANEY TAB:02 GENERAL NOTES LAST SAVED:6/12/2009 4:25:00 PM



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SCALE IN FEET

3000 0 3000 6000

LEGEND

- ● NEW WIND TURBINE
- ▲ NEW METEROLOGICAL TOWER
- SITE BOUNDARY
- NEW TRANSMISSION LINE
- EXISTING ROAD
- PROPOSED TRANSMISSION LINE

USER: TLANEY TAB:03 SITE PLAN LAST SAVED:6/12/2009 4:59:53 PM

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CHK R ATTANASIO						
APVD M LEECE	NO.	DATE	REVISION	BY	APVD	

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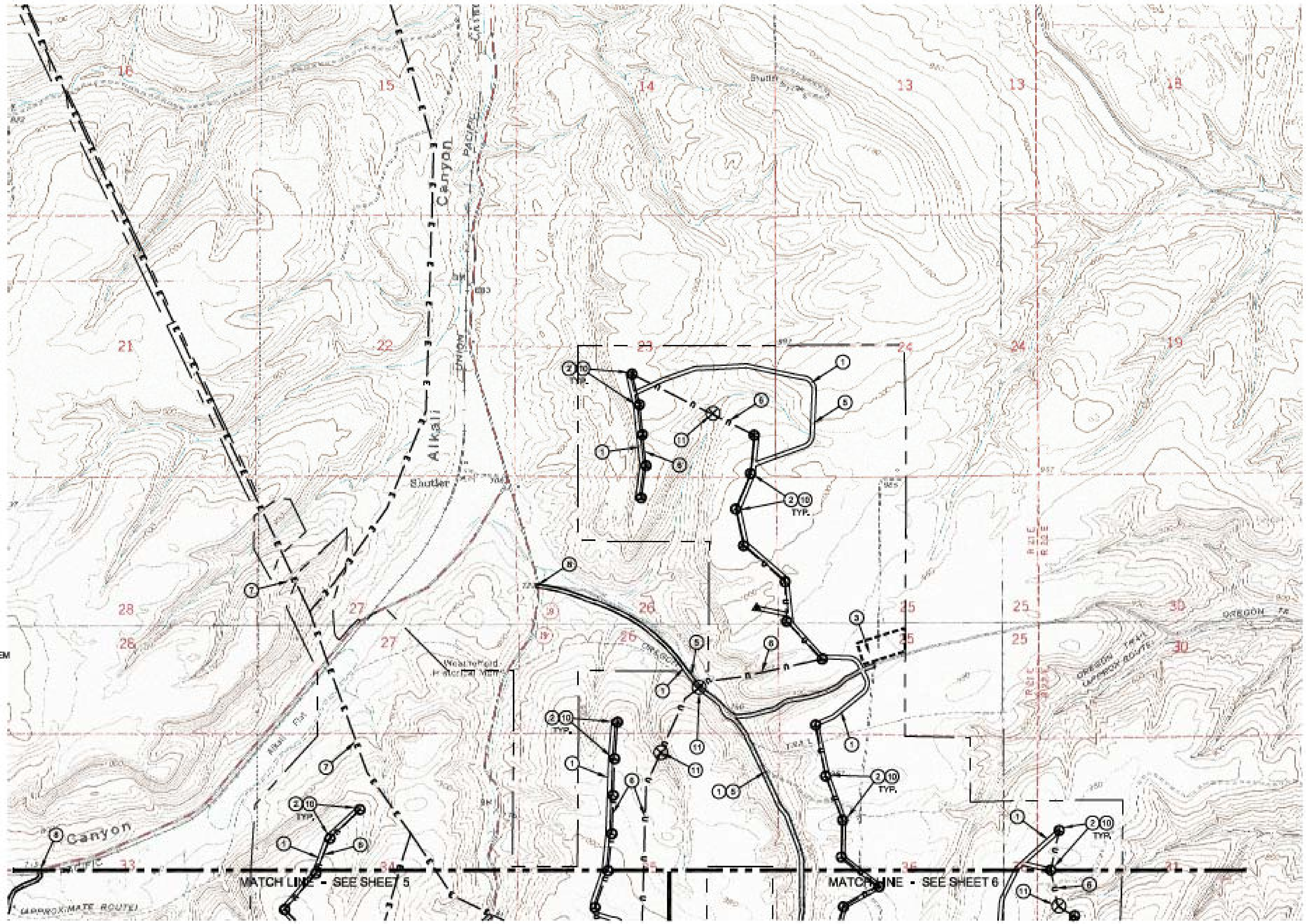
EROSION CONTROL
OVERALL SITE PLAN

SHEET	EC-3
DWG	3 OF 8
DATE	12-JUNE 2009
PROJ	371832

FILENAME: \\ROSA\PROJ\IBERDROLA\371832\CAD\DRAWINGS\EROSION CONTROL PLANSET_371832.DWG PLOT DATE: 12-Jun-09 PLOT TIME: 4:25:42 PM



SCALE IN FEET

1000 0 1000 2000

LEGEND

- NEW WIND TURBINE
- NEW METEROLOGICAL TOWER
- NEW ACCESS ROAD
- EXISTING ROAD
- LEASED PROPERTY BOUNDARY
- OVERHEAD TRANSMISSION LINE
- UNDERGROUND COLLECTION SYSTEM
- EXISTING STREAM
- STREAM CROSSING
- KEYED NOTES ON PLAN. REFER TO EROSION CONTROL NOTES. SEE DRAWING EC-7 FOR CORRESPONDING NOTES.
- PROPOSED SWITCHING STATION
- PROPOSED STAGING AREA

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APVD	M LEECE	NO.	DATE	REVISION	BY	APVD	

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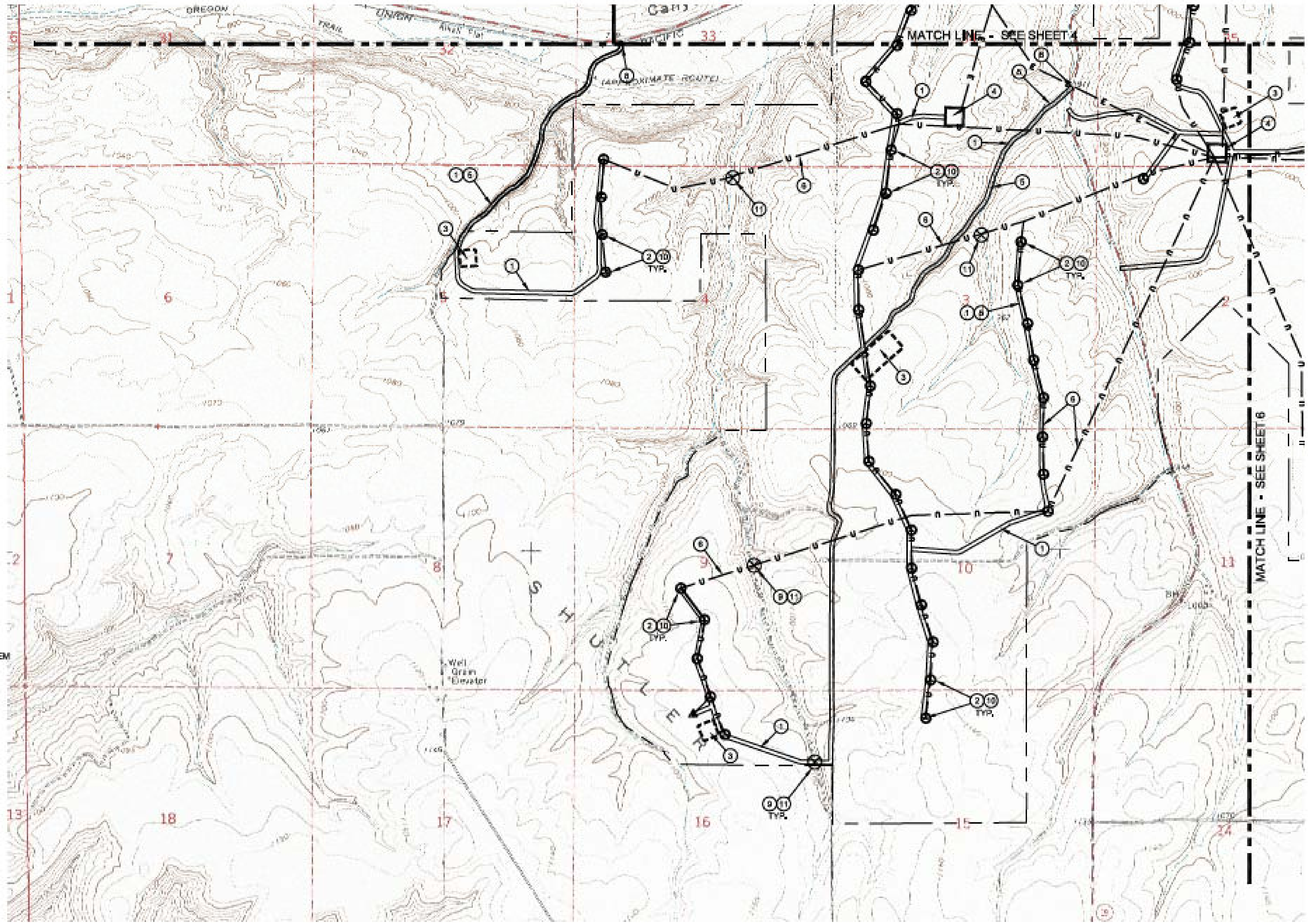
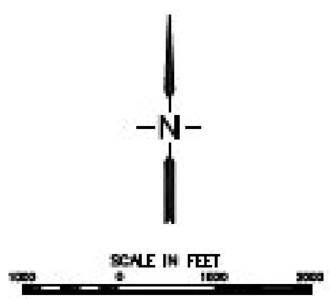
EROSION CONTROL
SITE PLAN - NORTH

SHEET	EC-4
DWG	4 OF 8
DATE	12-JUNE 2009
PROJ	371832

FILENAME: \\ROSA\PROJ\IBERDROLA\371832\CAD\DRAWINGS\EROSION CONTROL PLANSET_371832.DWG PLOT DATE: 12-Jun-09 PLOT TIME: 4:26:49 PM

USER: TLANEY TAB: 04 PLAN NORTH LAST SAVED: 6/12/2009 4:09:53 PM





LEGEND

- NEW WIND TURBINE
- NEW METEROLOGICAL TOWER
- NEW ACCESS ROAD
- EXISTING ROAD
- LEASED PROPERTY BOUNDARY
- OVERHEAD TRANSMISSION LINE
- UNDERGROUND COLLECTION SYSTEM
- EXISTING STREAM
- STREAM CROSSING
- KEYED NOTES ON PLAN. REFER TO EROSION CONTROL NOTES. SEE DRAWING EC-7 FOR CORRESPONDING NOTES.
- PROPOSED SWITCHING STATION
- PROPOSED STAGING AREA

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EROSION CONTROL
SITE PLAN - SOUTHWEST

SHEET	EC-5
DWG	5 OF 8
DATE	12-JUNE 2009
PROJ	371832

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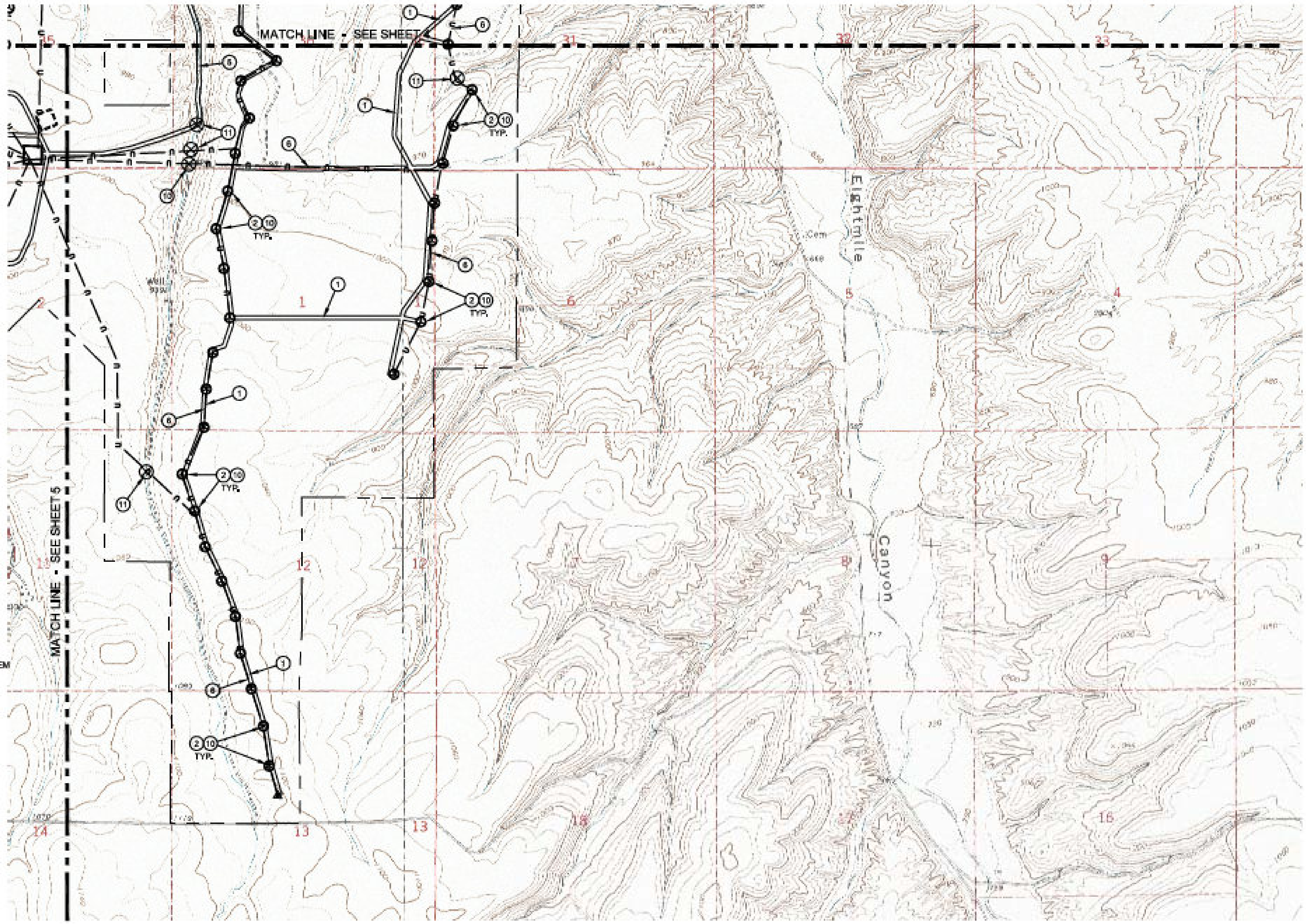
USER: TLANEY TAB: 05 PLAN SOUTHWEST LAST SAVED: 6/12/2009 4:25:33 PM



SCALE IN FEET
1000 0 1000 2000

LEGEND

- NEW WIND TURBINE
- NEW METEROLOGICAL TOWER
- NEW ACCESS ROAD
- EXISTING ROAD
- LEASED PROPERTY BOUNDARY
- OVERHEAD TRANSMISSION LINE
- UNDERGROUND COLLECTION SYSTEM
- EXISTING STREAM
- STREAM CROSSING
- KEYED NOTES ON PLAN, REFER TO EROSION CONTROL NOTES, SEE DRAWING EC-7 FOR CORRESPONDING NOTES.
- PROPOSED SWITCHING STATION
- PROPOSED STAGING AREA

USER: TLANEY TAB:06 PLAN SOUTHEAST LAST SAVED: 6/12/2009 4:26:53 PM

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EROSION CONTROL
SITE PLAN - SOUTHEAST

SHEET	EC-6
DWG	6 OF 8
DATE	12-JUNE 2009
PROJ	371832

FILENAME: \\ROSA\PROJ\IBERDROLA\371832\CAD\DRAWINGS\EROSION CONTROL PLANSET_371832.DWG PLOT DATE: 12-Jun-09 PLOT TIME: 4:30:10 PM

EROSION CONTROL NOTES

GENERAL NOTES

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

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

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

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

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

SEED MIXTURE: TEMPORARILY DISTURBED UPLAND AREAS

SPECIFIC SEED MIX		Minimum lbs/ac Pure Live Seed (PLS)*
COMMON NAME	SCIENTIFIC NAME	
Secar Blue Bunch Wheat Grass		5
SHERMAN Big Bluegrass		2
Critana Thickspike Wheatgrass		2.5
Whitmar Beardless Wheatgrass		5
Alfalfa		0.5

6. THE CONSTRUCTION MANAGER IS RESPONSIBLE FOR LOCATING ANY NECESSARY DISPOSAL SITES. TO CONTROL THE RELEASE OF SEDIMENT FROM THE SITES, SILT FENCE SHALL BE INSTALLED ON THE DOWNSLOPE SIDE OF ALL DISPOSAL AREAS ON CONTOUR. SEE DETAIL ON FIGURE EC-8. IF ADDITIONAL SEDIMENT OR EROSION CONTROL MEASURES ARE DETERMINED TO BE NECESSARY TO CONTROL THE RELEASE OF SEDIMENT FROM THE DISPOSAL SITES, THE CONSTRUCTION MANAGER SHALL BE RESPONSIBLE FOR IMPLEMENTING ADDITIONAL MEASURES.

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

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

KEYED NOTES

(1) TOWER STRING SERVICE ROADS TO TURBINES TO BE GRADED AND ROCKED APPROXIMATELY LEVEL WITH EXISTING GROUND SO RUNOFF FROM UPSLOPE SHEET FLOWS ACROSS ROAD. FOR IMPACTED AREAS ADJACENT TO THE ROADWAY, SURFACE ROUGHENING TECHNIQUES WILL BE EMPLOYED PRIOR TO APPLICATION OF MULCH AND SEEDING PER GENERAL NOTE 5. SEE DETAIL ON FIGURE EC-8.

(2) TOWER SERVICE AREAS. FOR IMPACTED AREAS ADJACENT TO THE PADS, SPREAD MULCH AND SEED ACCORDING TO GENERAL NOTE 5. EXCAVATION MATERIALS TO BE STORED ADJACENT TO PADS FOR 14-28 DAYS WHILE CONCRETE CURES, PRIOR TO BACKFILL. INSTALL SEDIMENT FENCE ON DOWNSLOPE SIDE OF SOIL STOCKPILES. PROMPTLY DISPOSE OF EXCESS EXCAVATION SPOILS IN DESIGNATED LOCATIONS. SEE DETAIL ON FIGURE EC-8.

(3) INSTALL SILT FENCE ON CONTOUR ON THE DOWNSLOPE SIDE OF THE STAGING AREA. SEE DETAIL ON FIGURE EC-8.

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

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

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

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

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

(9) PROTECT WETLANDS AND CRITICAL HABITAT AREAS WITH HIGHLY VISIBLE FENCE WITHIN CONSTRUCTION AREA PRIOR TO CONSTRUCTION.

(10) WASH CONCRETE OUT OF THE CONCRETE TRUCK CHUTES INTO THE DEDICATED CONCRETE WASHOUT AREA LOCATED AT EACH COMPLETED TURBINE FONDATION. THE CONCRETE WASHOUT AREA WILL BE CONSTRUCTED WITHIN A CORNER OF THE FOUNDATION EXCAVATION. THE BOTTOM WILL CONSIST OF THE COMPACTED FOUNDATION SUBGRADE AND THE SIDES WILL CONSIST OF THE EXCAVATION SIDE CUT, HARDENED CONCRETE FOUNDATION, AND SOIL BERMS AT EACH END TO CONSTRUCT A CONFINED AREA. THE SOIL USED TO CONSTRUCT THE WASHOUT AREA BERMS (ALONG WITH ANY CONCRETE SOLIDS) WILL BE BURIED AS PART OF THE TURBINE FOUNDATION BACKFILL. SEE DETAIL ON EC-8.

(11) INSTALL CHECK DAM AND ROAD FORD OR CULVERT CROSSINGS AS SHOWN ON EC-8. THE CHECK DAM WILL BE INSTALLED IN CONJUNCTION WITH LOW IMPACT FORD ROAD CROSSINGS OR CULVERTS TO MINIMIZE SEDIMENTATION IN EPHERAL OR SEASONAL STREAMS OR WETLANDS. INSTALL CHECK DAM DOWNSTREAM OF ELECTRICAL CROSSINGS.

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APVD M LEECE	NO.	DATE	REVISION	BY	APVD	

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EROSION CONTROL NOTES

SHEET	EC-7
DWG	7 OF 8
DATE	12-JUNE 2009
PROJ	371832

USER: TLANEY TAB: 07 EC NOTES LAST SAVED: 6/12/2009 4:29:50 PM

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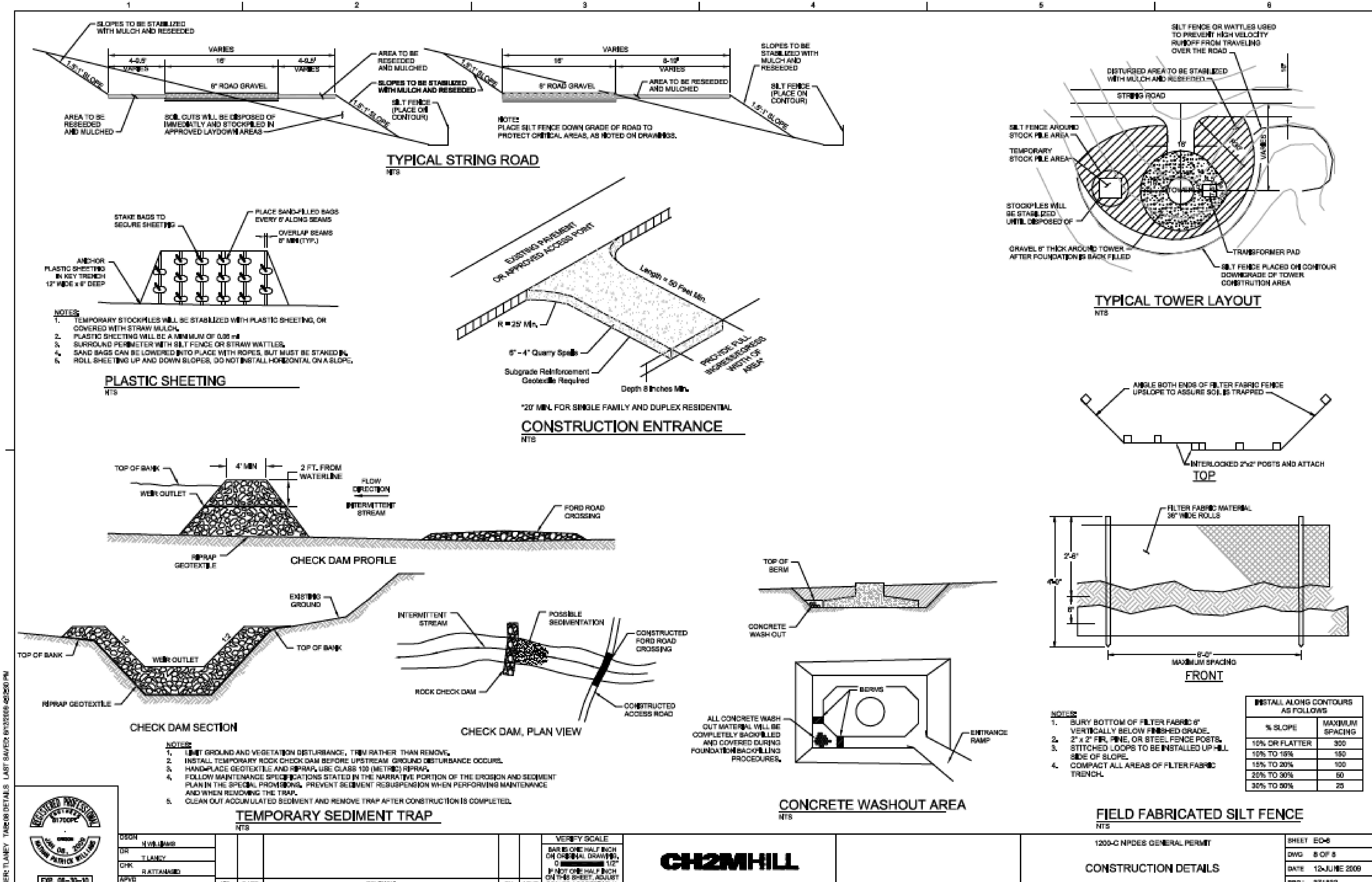

SLOPES TO BE STABILIZED WITH MULCH AND RESEEDED
VARIES
4-0.5' VARIES
16'
4-0.5' VARIES
6" ROAD GRAVEL
1.5:1 SLOPE
AREA TO BE RESEEDED AND MULCHED
SOIL CUTS WILL BE DISPOSED OF IMMEDIATLY AND STOCKPILED IN APPROVED LAYDOWN AREAS
AREA TO BE RESEEDED AND MULCHED
SLOPES TO BE STABILIZED WITH MULCH AND RESEEDED
SILT FENCE (PLACE ON CONTOUR)
8-10' VARIES
AREA TO BE RESEEDED AND MULCHED
SLOPES TO BE STABILIZED WITH MULCH AND RESEEDED
NOTE: PLACE SILT FENCE DOWN GRADE OF ROAD TO PROTECT CRITICAL AREAS, AS NOTED ON DRAWINGS.
TYPICAL STRING ROAD
NTS
SILT FENCE OR WATTLES USED TO PREVENT HIGH VELOCITY RUNOFF FROM TRAVELING OVER THE ROAD
DISTURBED AREA TO BE STABILIZED WITH MULCH AND RESEEDED
STRING ROAD
SILT FENCE AROUND STOCK PILE AREA
TEMPORARY STOCK PILE AREA
STOCKPILES WILL BE STABILIZED UNTIL DISPOSED OF
GRAVEL 6" THICK AROUND TOWER AFTER FOUNDATION IS BACK FILLED
TRANSFORMER PAD
SILT FENCE PLACED ON CONTOUR DOWNGRADE OF TOWER CONSTRUCTION AREA
TYPICAL TOWER LAYOUT
NTS
STAKE BAGS TO SECURE SHEETING
PLACE SAND-FILLED BAGS EVERY 6' ALONG SEAMS
OVERLAP SEAMS 6" MIN (TYP.)
ANCHOR PLASTIC SHEETING IN KEY TRENCH 12" WIDE x 6" DEEP
NOTES:
1. TEMPORARY STOCKPILES WILL BE STABILIZED WITH PLASTIC SHEETING, OR COVERED WITH STRAW MULCH.
2. PLASTIC SHEETING WILL BE A MINIMUM OF 0.06 mil
3. SURROUND PERIMETER WITH SILT FENCE OR STRAW WATTLES.
4. SAND BAGS CAN BE LOWERED INTO PLACE WITH ROPES, BUT MUST BE STAKED IN.
5. ROLL SHEETING UP AND DOWN SLOPES, DO NOT INSTALL HORIZONTAL ON A SLOPE.
PLASTIC SHEETING
NTS
EXISTING PAVEMENT OR APPROVED ACCESS POINT
Length = 50 Feet Min.
R = 25' Min.
6" - 4" Quarry Spalls
Subgrade Reinforcement Geotextile Required
Depth 8 Inches Min.
PROVIDE FULL INGRESS/EGRESS WIDTH OF AREA*
*20' MIN. FOR SINGLE FAMILY AND DUPLEX RESIDENTIAL
CONSTRUCTION ENTRANCE
NTS
ANGLE BOTH ENDS OF FILTER FABRIC FENCE UPSLOPE TO ASSURE SOIL IS TRAPPED
INTERLOCKED 2"x2" POSTS AND ATTACH
TOP
TOP OF BANK
4' MIN
2 FT. FROM WATERLINE
WEIR OUTLET
FLOW DIRECTION
INTERMITTENT STREAM
FORD ROAD CROSSING
RIPRAP GEOTEXTILE
CHECK DAM PROFILE
EXISTING GROUND
TOP OF BANK
WEIR OUTLET
RIPRAP GEOTEXTILE
CHECK DAM SECTION
INTERMITTENT STREAM
POSSIBLE SEDIMENTATION
CONSTRUCTED FORD ROAD CROSSING
ROCK CHECK DAM
CONSTRUCTED ACCESS ROAD
CHECK DAM, PLAN VIEW
NOTES:
1. LIMIT GROUND AND VEGETATION DISTURBANCE, TRIM RATHER THAN REMOVE.
2. INSTALL TEMPORARY ROCK CHECK DAM BEFORE UPSTREAM GROUND DISTURBANCE OCCURS.
3. HAND-PLACE GEOTEXTILE AND RIPRAP, USE CLASS 100 (METRIC) RIPRAP.
4. FOLLOW MAINTENANCE SPECIFICATIONS STATED IN THE NARRATIVE PORTION OF THE EROSION AND SEDIMENT PLAN IN THE SPECIAL PROVISIONS. PREVENT SEDIMENT RESUSPENSION WHEN PERFORMING MAINTENANCE AND WHEN REMOVING THE TRAP.
5. CLEAN OUT ACCUMULATED SEDIMENT AND REMOVE TRAP AFTER CONSTRUCTION IS COMPLETED.
TEMPORARY SEDIMENT TRAP
NTS
TOP OF BERM
CONCRETE WASH OUT
BERMS
ALL CONCRETE WASH OUT MATERIAL WILL BE COMPLETELY BACKFILLED AND COVERED DURING FOUNDATION BACKFILLING PROCEDURES.
ENTRANCE RAMP
CONCRETE WASHOUT AREA
NTS
FILTER FABRIC MATERIAL 36" WIDE ROLLS
2'-6"
4'-0"
6"
6'-0" MAXIMUM SPACING
FRONT
NOTES:
1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. 2" x 2" FIR, PINE, OR STEEL FENCE POSTS.
3. STITCHED LOOPS TO BE INSTALLED UP HILL SIDE OF SLOPE.
4. COMPACT ALL AREAS OF FILTER FABRIC TRENCH.
INSTALL ALONG CONTOURS AS FOLLOWS
% SLOPE / MAXIMUM SPACING
10% OR FLATTER 300
10% TO 15% 150
15% TO 20% 100
20% TO 30% 50
30% TO 50% 25
FIELD FABRICATED SILT FENCE
NTS
EXP. 06-30-10
DSGN N WILLIAMS
DR T LANEY
CHK R ATTANASIO
APVD M LEECE
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CONSTRUCTION DETAILS
SHEET EC-6
DWG 6 OF 6
DATE 12-JUNE 2009
PROJ 371832
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ATTACHMENT 4

Addendum to Leaning Juniper II Wind Power Facility Geology Analysis

Addendum to Leaning Juniper II Wind Power Facility Geology Analysis: Preliminary Geotechnical and Geological Reconnaissance Summary

PREPARED FOR:	Sara Parsons/Iberdrola Renewables, Inc. Jeffrey Durocher/Iberdrola Renewables, Inc.
PREPARED BY:	Josh Butler/CH2M HILL Greg Warren/CH2M HILL
COPIES:	Linnea Eng/CH2M HILL Nichole Seidell/CH2M HILL
DATE:	June 18, 2009

Introduction

This purpose of this memorandum is to describe the soil and geologic conditions observed within the proposed amended site boundary for Leaning Juniper IIB (LJIIB area), and the geotechnical design implications for the proposed facility locations.

Background

CH2M HILL performed a literature review to evaluate site geologic and soil conditions and potential geologic hazards within the LJIIB area. On the basis of this literature review, a geologist and a geotechnical engineer conducted a site reconnaissance. The reconnaissance was performed by driving existing roads on and around the LJIIB area, and observing road cuts, land forms, existing slopes, and exposures. The site reconnaissance was performed on May 8, 2009. No subsurface exploration was performed as part of the scope of work.

Geotechnical and Geological Conditions

Site Conditions

Geologic units in the LJIIB area are shown in Appendix A, Figure 1, adapted from Bela (1982). Site conditions generally consist of loess and weak sedimentary rock overlying basalt. In some locations, catastrophic flood deposits (gravel and cobble bars) mantle the surface. Site observations are also summarized in the photographic log (Appendix B). Typically, loess deposits dominate the surface in the southern half of the LJIIB area. These areas consist of less topographic relief (less than 50 to 100 feet) and are actively cultivated. The northern portion of the site has been downcut and eroded by several streams and ephemeral drainages and therefore exhibits more topographic relief (100 to 250 feet). The loess deposits are less prominent in the northern portion of the LJIIB area, and the surface is dominated by weakly cemented sedimentary rock. The only basalt exposures observed within the LJIIB area were in the slopes along the Alkali Canyon creek bed that parallels Oregon Highway 19, approximately 1 mile north of the intersection with Montague Lane.

Based on observations made during the site reconnaissance, the thickness of the loess in the northern portion of the LJIIB area is thin to nonexistent. Exposures in gravel pits and road cuts along Montague Lane showed that the loess is very thin to absent. In addition, on the plateau in the vicinity of the proposed JJ string, stony soils were observed at the surface. Loess is absent from most side slopes, either from lack of deposition on slopes or from removal by erosion. In the southern, cultivated areas of the LJIIB area, the thickness of the loess is unknown and no good exposures in cuts were located. However, based on geologic literature and site observations, the thickness is anticipated to be less than 10 feet.

Geologic Units

The LJIIB area is underlain by basalt flows, weakly cemented sedimentary rocks, and wind-blown loess. The geologic descriptions are summarized from the geologic map prepared by Bela (1982), and site observations made during the site reconnaissance. The distribution of geologic units in the LJIIB area, based on Bela's (1982) geologic map, is shown on Figure 1 in Appendix A.

A basalt flow is exposed in the valley along State Highway 19 north of the LJIIB area. This basalt flow is mapped as the Pomona Member of the Columbia River Basalt Group. The Pomona Member is described as a slightly phyric basalt flow with small phenocrysts and is about 100 feet thick. No outcrops of the Pomona Member were observed within the LJIIB area; across the entire LJIIB area this basalt flow appears to be either discontinuous or buried beneath the Selah Member and the Alkali Canyon Member (described below).

The Selah Member of the Ellensburg Formation is exposed in valleys in the vicinity of the LJIIB area, primarily along State Highway 19 and along Cedar Springs Lane (see Appendix B photo log). This unit is described as poorly indurated, massive, greenish-white, yellow- and buff-colored tuff occurring in Arlington, Oregon. This unit was deposited as a thick interbed that overlies the Pomona Member. This unit parallels the Dalles-Umatilla Syncline, and the thickness ranges from 30 to 350 feet, with the thickest area in a north-south area centered on Arlington. This unit is concealed by landslides in the vicinity, primarily north of the Columbia River. Within the LJIIB area, this geologic unit is exposed in slopes along creek valleys, and is mostly overlain on the flat plateaus by the Alkali Canyon Formation.

The Alkali Canyon Formation of the Dalles Group underlies most of the LJIIB area. This formation consists of imbricated, basaltic cobble gravel with interbedded tuffaceous sands and silts that are weakly cemented in places. This unit ranges from approximately 30 to 130 feet thick in the area. The unit was exposed in primarily in-road cuts and erosional gullies in the LJIIB vicinity (see Appendix B photo log).

Catastrophic flood deposits were deposited in the vicinity of the LJIIB area during the late Pleistocene. These consist of coarse, unsorted, poorly bedded basalt gravel and sand. Gravels are partially openwork, and foreset beds are common along the southern side of the Columbia River. Flood deposits of this type were exposed in the LJIIB area in a gravel pit near Montague Lane (see Appendix B photo log). The exposure of flood deposits is 30 feet thick at a minimum.

Loess deposits mantle the flatter plateau areas. Loess consists of wind-deposited fine sand and silt and mantles much of the Columbia Plateau. The loess is typically 15 to 30 feet thick, but thins to less than 3 feet thick in upland areas. Figure 1 (in Appendix A) does not show loess in the LJIIB vicinity, primarily because the map is intended to show structural and stratigraphic relationships (as noted by Bela [1982]). However, loess deposits were observed during the site visit on flat plateau areas on the southern half of the LJIIB area.

Structural Geologic Features

The Shutler Lineament, which consists of a northwest-trending combination of anticlines and normal faults, is mapped northeast of the LJIIB area. The northwest-trending Turner Butte anticline is mapped west of the LJIIB area. The Willow Creek Monocline is an east-northeast trending fold that is mapped to the south and southeast of the LJIIB area. No faults are mapped within the site boundaries (Bela, 1982).

Surficial Soils

The near-surface soils within and in the vicinity of the LJIIB area were identified using the Natural Resources Conservation Service (NRCS) Soil Survey of Gilliam County, Oregon (SSURGO, 2004). 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 LJIIB area.

General descriptions of the soil units that underlie the LJIIB area are provided below. Figure 2 is a Soil Survey Map of the LJIIB area with the distribution of surface soils.

<u>Krebs</u>. The Krebs series consists of deep, well-drained soils that formed in loess and water-lain sediments. Krebs soils are on uplands at elevations of 500 to 900 feet with slopes of 2 to 40 percent. The soils are well drained with medium to rapid runoff and slow permeability.

<u>Olex</u>. The Olex series consists of very deep, well-drained soils that formed in loess and very gravelly alluvial material. The Olex soils are on uplands including terraces and terrace escarpments, with slopes that range from 0 to 65 percent. The soils are well drained with slow runoff and moderate permeability.

<u>Ritzville</u>. The Ritzville series consists of very deep and deep to duripan, well-drained soils formed in loess. Ritzville soils are on uplands including plateaus, benches, and canyon side slopes, with slopes that range from 0 to 70 percent. Permeability of the Ritzville soil is moderate with medium runoff.

<u>Sagehill</u>. The Sagehill series consists of very deep and deep, well-drained soils formed in lacustrine deposits with a mantle of loess or eolian deposits. Sagehill soils are on terraces and terrace escarpments with slopes that range from 0 to 60 percent. These soils are well drained with very slow to medium runoff and moderate permeability.

<u>Warden</u>. 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 with slopes that range from 0 to 65 percent. Warden soils are well drained with very slow to rapid runoff and moderate permeability.

Willis. The Willis series consists of moderately deep to duripan, well-drained soils formed in loess containing volcanic ash. The Willis soils are on uplands, alluvial fan terraces, and terraces with slopes that range from 0 to 65 percent. These soils are well drained with slow or medium runoff and moderate permeability above the lime-silica cemented layer.

Lickskillet. The Lickskillet series consists of shallow, well-drained, stoney and gravelly loams that formed in hill slopes. Within the LJIIB area, Lickskillet soils are found on south- and west-facing slopes near the crest of sloping areas at elevations between 500 and 1,000 feet, with slopes of 7 to 40 percent. Permeability is high with high runoff.

Geologic Hazards

Potential geologic hazards within the LJIIB area include slope instability and collapse potential of loess, as summarized in the following sections.

Slope Instability

Areas of prehistoric slope instability were observed during the May 8, 2009, site visit, primarily in the form of large prehistoric landslides. These landslides range in size from relatively small slumps up to very large landslides (up to a half-mile across). The largest observed landslides were located along Cedar Springs Lane near the intersection with Berthold Road, in the slopes along both sides of the existing drainage. Large prehistoric landslides were also observed near the intersection of State Highway 19 and Montague Lane.

Based on site observations and the literature review, it is inferred that these landslides were triggered by saturation and subsequent rapid drawdown resulting from periodic and repeated inundation during catastrophic flooding that occurred between 12,000 and 15,000 years ago (Allen and Burns, 1986). The present-day crest elevation of many of these slides is approximately 1,100 feet; the crest of catastrophic floods in the Arlington area is estimated to have been approximately 1,180 feet, which supports the inference that the slides were caused by saturation of the sediments. The landslides are not anticipated to be active, primarily because of the unsaturated conditions that currently exist. Although the landslides are not anticipated to be active, soil strength can be reduced in areas where landslides have occurred, or slopes can become less stable due to over-steepening caused by relic landslides. There are also instances where other prehistoric landslides near the Columbia River Gorge have been reactivated either by human activity, a record rainfall event, or a large earthquake. Therefore, it is recommended that slope stability be addressed during design. Slope stability evaluation should involve determination of site-specific soil strength properties by a qualified geotechnical engineer and engineering geologist.

Collapse Potential of Loess

Because of the nature of its depositional formation, loess has a structure that is sometimes susceptible to collapse or swelling. This occurs from saturation and rearrangement of the soil particles, and can have a detrimental effect on embankments or foundations constructed on loess. Although loess soils within the LJIIB area may become temporarily saturated near the ground surface during spring thaw or a heavy rainstorm, the overall stratum of loess soils are unlikely to maintain long-term saturation because of their position above the groundwater table and floodplain. Construction of the LJIIB components is not expected to cause saturation of materials that have not previously experienced saturation. In addition, loess materials used for construction of embankments are not expected to retain a high void ratio structure that is subject to collapse or swell after excavation, placement, and compaction. Therefore, the collapse and swell potential is anticipated to be minimal for the loess soils. However, during design the collapse and swell potential of the loess must be further evaluated through laboratory testing and analysis.

Other Geologic Hazards

Seismic-induced hazards, erosion, flood, and tsunami hazards were addressed as part of the LJII geologic hazards evaluation and are not anticipated to change significantly for the amended LJF site boundary.

Geotechnical Design Implications

Foundations for LJIIB components are unlikely to encounter rock. Subsurface conditions for foundation design are anticipated to be dominated by silts, sands, and gravels (that is, no shallow rock is anticipated to be present within the LJIIB area). Slope stability within the alluvial soils at the LJIIB area is dominated by weakly cemented, erodible soils that display prehistoric potential for landslides.

Conclusions

Based on the literature review and site reconnaissance, there was no evidence of recent (historic) slope instability, faulting, or ground rupture within the LJIIB area. The potential for ground rupture, earthquake-induced landslides and slope instability, lateral spreading, liquefaction, and settlement or subsidence within the LJIIB area is low. LJWP can design, engineer, and construct the amended LJF to avoid dangers to human safety presented by such hazards.

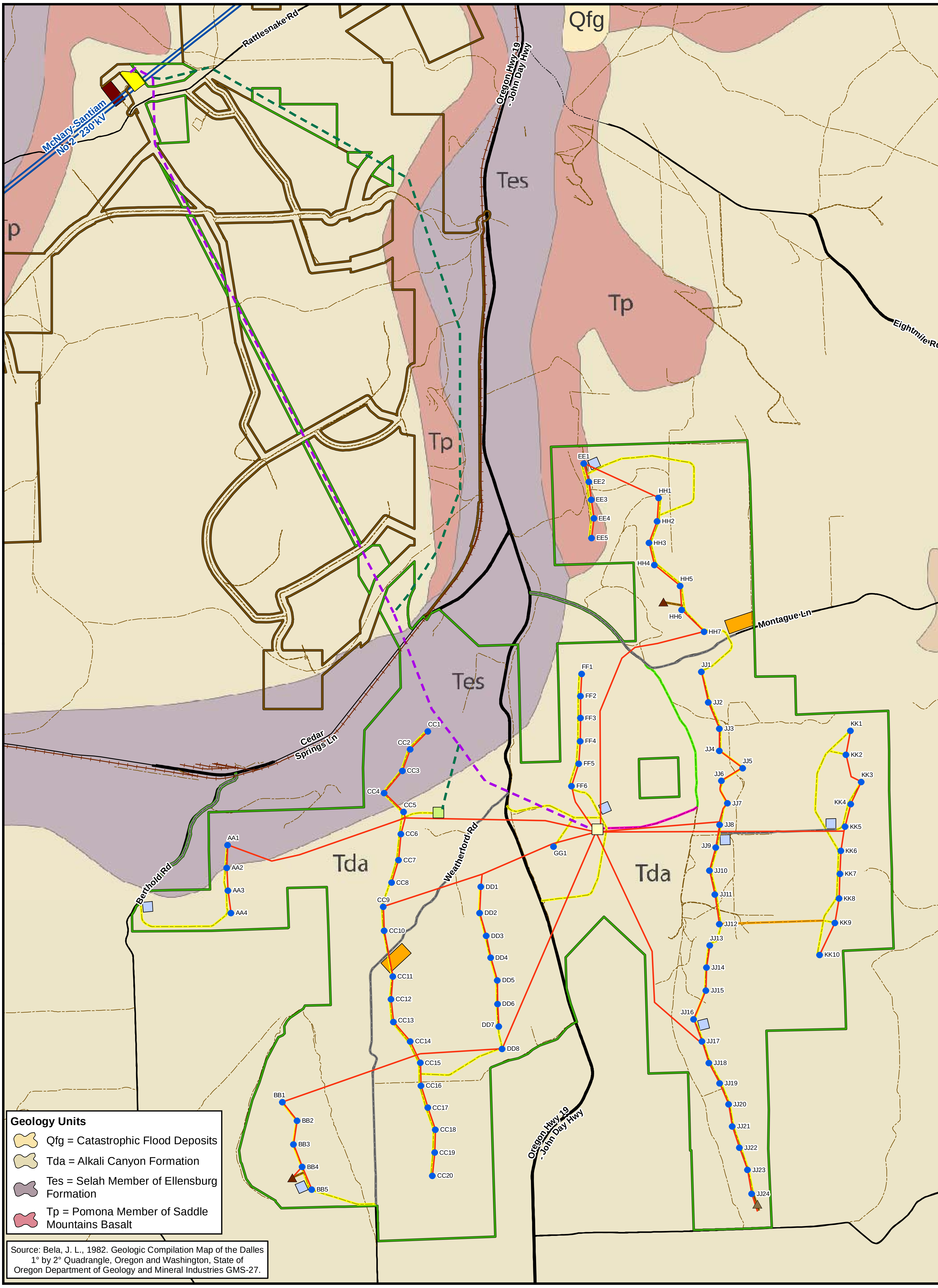
References

Allen, J.E., and M. Burns. 1986. *Cataclysms on the Columbia*. Timber Press, Oregon.

Bela, J. L. 1982. Geologic Compilation Map of the Dalles 1° by 2° Quadrangle, Oregon and Washington, State of Oregon Department of Geology and Mineral Industries GMS-27.

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

APPENDIX A
Figures



Legend

- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- Existing Leaning Juniper II Site Boundary for LJIIA

Proposed Permanent Facilities

- Proposed Turbine
- Primary Proposed Met Tower
- Alternate Proposed Met Tower
- Preferred 230-kV Transmission Line or 34.5-kV Overhead Collector Line
- Alternate 230-kV Transmission Line or 34.5-kV Overhead Collector Line
- Proposed Underground 34.5-kV Line
- Proposed New Turbine Road
- Proposed New Met Tower Road
- Proposed Improved Road
- Alternate New Turbine Road
- Alternate Improved Road
- Proposed Leaning Juniper II Collector Substation
- Proposed Additional Leaning Juniper II Collector Substation
- Proposed Alternate Leaning Juniper II Collector Substation

Proposed Temporary Facilities

- Proposed Crane Path
- Proposed 10-Acre Staging Area
- Proposed 2.5-Acre Staging Area

Existing Facilities

- Existing Transmission Line
- Railroad
- Stream
- Existing BPA Jones Canyon Switching Station
- Public, Paved
- Other Public Road
- Public, Gravel
- Private, Farm Road

N

0 0.5 1

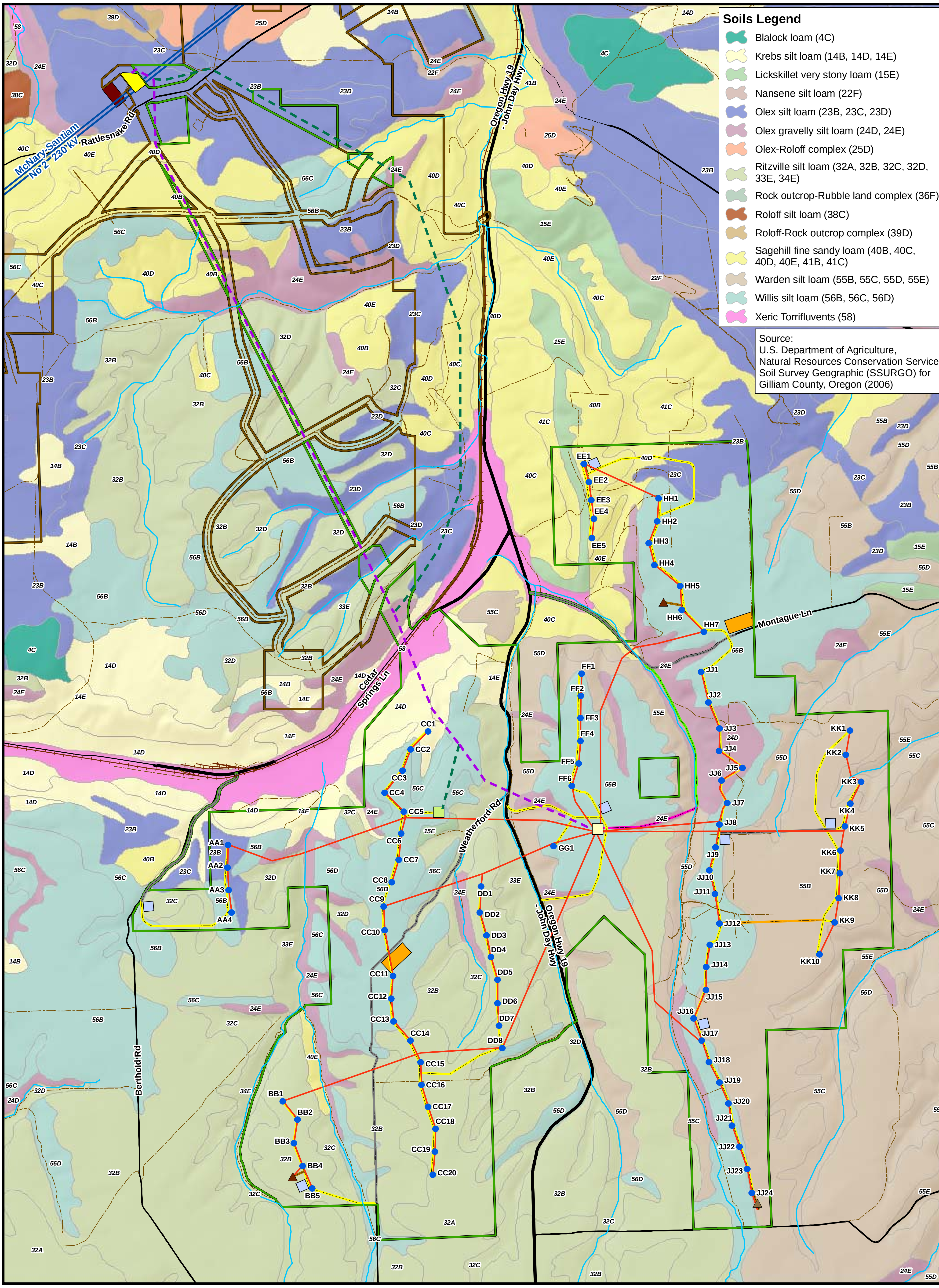
Miles

Figure 1
Geology Map

1.5-MW Turbine Layout
(Maximum Turbine Layout)

Leaning Juniper II Wind Power Facility Amendment Geotechnical Addendum

IBERDROLA RENEWABLES



Legend

- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- Existing Leaning Juniper II Site Boundary for LJIIA

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- Proposed Underground 34.5-kV Line
- Proposed New Turbine Road
- Proposed New Met Tower Road
- Proposed Improved Road
- Alternate New Turbine Road
- Alternate Improved Road
- Proposed Leaning Juniper II Collector Substation
- Proposed Additional Leaning Juniper II Collector Substation
- Proposed Alternate Leaning Juniper II Collector Substation

Proposed Temporary Facilities

- Proposed Crane Path
- Proposed 10-Acre Staging Area
- Proposed 2.5-Acre Staging Area

Existing Facilities

- Existing Transmission Line
- Railroad
- Stream
- Existing BPA Jones Canyon Switching Station
- Public, Paved
- Other Public Road
- Public, Gravel
- Private, Farm Road

N

0 0.5 1

Miles

Figure 2

Soils Map

1.5-MW Turbine Layout
(Maximum Turbine Layout)

Leaning Juniper II Wind Power Facility Amendment Geotechnical Addendum

IBERDROLA RENEWABLES

File: Z:\Projects\OR\Leaning Juniper\MapDocuments\Report Figures\EFSC (LJII)\Amendment (LJIIb)\Figure 2 - Soils Map.mxd

Modify Date: 6/17/2009

APPENDIX B
Photographic Log

Typical terrain on top of the plateau north of Tree Lane where the proposed turbine string JJ will be constructed. The scene is underlain by the Dalles Formation, which is too rocky for farming; no loess is present in this area.

Typical terrain on top of the plateau near Weatherford Road where the proposed turbine string GG will be constructed. The scene is underlain by wind-blown, silty loess and is thus well-suited for agriculture.

Typical exposure of the Dalles Formation, which consists of weakly cemented, gravelly sand to gravel and thinly bedded, very weak sandstone and siltstone.

Exposure of the Dalles Formation along Montague Lane. The formation consists of weakly cemented, gravelly sand to sandy gravel with caliche layers. Note the absence of silty loess cover at this location.

Exposure of catastrophic flood deposits in a gravel pit near Montague Lane. The bedding dips west (toward the left side of the photo). Exposure is approximately 25 to 30 feet high. Note the lack of loess deposits at the surface.

Exposure of catastrophic flood deposits in a gravel pit near Montague Lane. The bedding dips west (toward the right side of the photo) which indicates a westward flow of floodwaters. Deposits consist of matrix-free layers of poorly graded, fine gravels to small cobbles separated by gravelly sand to sandy gravel layers. Note the lack of loess deposits. Exposure is approximately 25 feet high.

Possible prehistoric landslide deposit on hillside near Montague Lane. Note the large lobe in the foreground that curves up around behind three juniper trees.

Possible prehistoric landslide deposit on slope east of the proposed EE turbine string north of Montague Lane. Slope is irregular (versus planar) with lobate bulge on lower slope up and left of the largest juniper tree.

Narrow ridge where the proposed EE string will be constructed. The ridge is underlain by Dalles Formation and Selah Interbed. Topography on side slopes of the ridge is irregular and potentially may represent prehistoric landslide activity.

Irregular topography on slopes west of the ridge where the proposed turbine string EE will be constructed. Hummocks in front of the ridge may possibly represent prehistoric landslide topography.

Possible large landslide south of Cedar Springs Lane near the intersection of Berthold Lane. The north end of the proposed turbine string AA will be constructed on the plateau behind the top of this slope.

Large prehistoric landslide observed on the north side of Cedar Springs Lane. Berthold Lane is in the foreground. Although this landslide is not within the LJIIB area, the geologic setting where this landslide occurred is similar to the LJIIB area.

ATTACHMENT 3

Addendum to Temporary and Permanent Impact Calculations

TABLE 1

Disturbance Calculations—Temporarily Disturbed Areas in the Amended Site Boundary for LJIIB

Request for Amendment No. 1 to the Site Certificate for the Leaning Juniper II Wind Power Facility

Impact Calculation Addendum

Facilities	Notes	Units of Measurement	LJIIB Components Dimensions per Unit	LJIIB Components Number of Units	LJIIB Components Acres
Substation/Station/O&M Building					
Collector Substation	1	Acres	0	1	0
Meteorological Towers (self-supporting)	2	Square feet per tower	1600	2	0.07
Tower Construction/Laydown Areas					
Central laydown and storage areas for collector lines and other equipment	3	Acres	10	2	5
Laydown areas (usually 1 per string)	4	Acres	2.5	7	17.5
Laydown areas at each tower site	5	Square feet per tower site	158,340	90	327.1
Central Electrical System					
Underground collector lines					
1 Collector	6	Feet of width per linear foot	24	131,065	72.21
2 Collectors	6	Feet of width per linear foot	32	3,717	2.73
3 Collectors	6	Feet of width per linear foot	40	0	0.00
4 Collectors	6	Feet of width per linear foot	48	0	0.00
5 Collectors	6	Feet of width per linear foot	56	0	0.00
Temporary access for overhead 34.5-kV Collector Line	10,14	Feet of width per linear foot	12	40,435	11.14
Temporary disturbance around overhead 34.5-kV poles	12,14	Square feet per 2-pole location	1576	202	7.31
"Home Run" from LJIIB turbines to Interconnection (either 34.5 kV or 230 kV route)					
Temporary Access for Overhead 230-kV or 34.5 kV Line	11	Feet of width per linear foot	12	36,312	10.00
Temporary Disturbance Around Overhead 34.5-kV Collector Line Structures	12	Square feet per 2-pole location	1576	182	6.58
Temporary Disturbance Around Overhead 230-kV Collector Line Structures	13	Square feet per 2-pole location	1560	73	2.61
Roads					
Temporarily disturbed area during road construction					
Existing road improvements, except county roads (temporarily widened to 80 feet)	7	Feet of width per linear foot	60	9,211	12.69
Existing county road improvements (temporarily widened to 60 feet, within county ROW)	16	Feet of width per linear foot	30	29,282	20.17
New 20-foot turbine string roads and road to met tower(s) (temporarily widened to 80 feet)	8	Feet of width per linear foot	60	85,960	118.40
New 32-foot turbine string roads and road to met tower (temporarily widened to 80 feet)	9	Feet of width per linear foot	48	21,310	23.48
Crane Paths	15	Feet of width per linear foot	55	3,438	4.34
Total Temporarily Disturbed Area			**641.39 acres**		

Notes: The calculations shown in this table are based on the worst-case locations for LJIIB components, as illustrated in request for amendment Attachment 1, Figure 2 and Attachment 3, Figure 3.

1 Assumes contractor will permanently impact entire substation/station area. Therefore, no temporary impacts will occur.

2 Assumes contractor will temporarily disturb a total of up to 2,500 square feet during construction, of which 900 square feet will remain permanently impacted. The 1,600 square feet represents 2,500 square feet minus 900 square feet.

3 Central laydown and storage area.

4 Laydown areas at each turbine string.

5 Assumes a worst-case area of disturbance around towers of approximately 160,000 square feet at each of the turbine locations minus the permanent graveled area included in Table 4. This worst-case disturbance area is larger than the typical staging area and represents the worst-case scenario. The typical disturbance area measures approximately 53,000 square feet around the 1.5-MW turbines (130-foot radius for the 77-meter/25[illegible] foot-diameter blades) or approximately 85,000 square feet around the 3.0-MW turbines (164-foot radius for the 100-meter/328-foot-diameter blades), as shown on Figure B-4 in the original ASC.

6 Assumes 12 feet on either side of the collector line trench for spoil and travel paths. Trenches are separated by 8 feet for heat dissipation. This distance includes the width of the actual collector line trenches.

7 Assumes the 10-foot existing road will be temporarily widened to 80 feet. The temporary disturbance will be equal to 80-foot total width during construction (for crane path plus access road) minus the 20-foot permanent width.

8 The temporary disturbance will be equal to 80-foot total width during construction (for crane path plus access road) minus the 20-foot permanent width.

9 The temporary disturbance will be equal to 80-foot total width during construction (for crane path plus access road) minus the 32-foot permanent width.

10 Temporary disturbance will be an average of 12 feet wide.

11 Temporary disturbance will be an average of 12 feet wide. This calculation is based on the maximum length of the "home run" (the alternate route).

12 Assumes pole spacing as close as 200 feet, and a temporary disturbance of 40x40 ft at each 2-pole location minus the 24-square-foot permanent impact.

13 Assumes pole spacing as close as 500 feet, and a temporary disturbance of 40x40 ft at each 2-pole location minus the 40-square-foot permanent impact. This calculation is based on the maximum length of the "home run" (the alternate route).

14 Assumes worst-case scenario with 7.7 miles of overhead collectors, which is equal to 30 percent of the total miles of collector cable. Including the worst-case value results in doublecounting of collector impacts because underground temporary disturbance also assumes the worst-case scenario. These miles are not shown on Amendment Request Attachment 1, Figure 2, and Attachment 3, Figure 2, or included in Attachment 3, Table 4, which is based on the GIS program.

15 Crane path disturbances for locations where crane paths do not parallel access roads.

16 Assumes the 16-foot existing road will be temporarily widened to a maximum of 60 feet within the County ROW. The County roads will be widened up to 60 feet for portions of the road to allow for wider turning radii or straightening of tight corners. The temporary disturbance will be equal to 60-foo total width during construction minus the 30-foot permanent width.

TABLE 2

Disturbance Calculations—Permanently Disturbed Areas in the Amended Site Boundary for LJIIB

Request for Amendment No. 1 to the Site Certificate for the Leaning Juniper II Wind Power Facility

Impact Calculation Addendum

Facilities	Notes	Units of Measurement	LJIIB Components: Dimensions per Unit	LJIIB Components: Number of Units	LJIIB Components: Acres
Turbine Pads/Towers	1	Square feet per tower	1,660	90	3.43
Collector Substation	2	Acres	3	1	3
Meteorological Towers (self-supporting)	3	Square feet per tower	900	2	0.04
Central Electrical System					
Overhead 34.5-kV Collector Line Structures	4,5	Square feet per 2-pole location	24	202	0.111
"Home Run" from LJIIB Turbines to Interconnection (either 34.5-kV or 230-kV route)					
Overhead 34.5-kV Collector Line Structures	6	Square feet per 2-pole location	24	182	0.100
Overhead 230-kV Collector Line Structures	6	Square feet per 2-pole location	40	73	0.067
Access Roads and Turnarounds					
Improved Existing Roads to 20 feet (except county roads)	7	Square feet disturbed area per linear foot of road	10	9,211	2.11
Improved Existing County Roads to 30 feet (within county ROW)	8	Square feet disturbed area per linear foot of road	14	29,282	9.4
New 20-foot turbine string roads and road to met tower(s)	9	Square feet disturbed area per linear foot of road	20	85,960	39.5
New 32-foot turbine string roads and road to met tower	10	Square feet disturbed area per linear foot of road	32	21,310	15.7
Total Permanently Disturbed Area				**73.4**	**acres**

Notes: The calculations shown in this table are based on the worst-case locations for LJIIB components, as illustrated in request for amendment Attachment 1, Figure 2 and Attachment 3, Figure 3.

1 Graveled area of pad, transformer, and disturbed area for each tower, excluding access road. The dimensions are based on a circular area of disturbance with a radius of 23 feet (includes a turbine tower with a radius of up to 8 feet and surrounding gravel area with a radius of up to 15 feet). These dimensions represent the worst-case maximum graveled area.

2 Energy generated at the LJIIB turbines will be connected to either the approved collector substation near the BPA Switching Station constructed as part of the first phase, or to a new collector substation located closer to the LJIIB turbines. If engineering analysis determines that it is more efficient to construct a new collector substation near the LJIIB turbines, a new area will be disturbed. These impacts include the substation and surrounding gravel within the fenced property. No temporary disturbance will occur outside the fenced area.

3 Includes met tower measuring approximately 23 feet wide and surrounding gravel area.

4 Assumes poles are spaced an average of 200 feet apart. Disturbance area is also presented in square feet.

5 Assumes worst-case scenario with 7.7 miles of overhead collectors, which is equal to 30 percent of the total miles of collector cable. Including the worst-case value results in doublecounting of collector impacts because underground temporary disturbance also assumes the worst-case scenario. These miles are not shown on amendment request Attachment 1, Figure 2, and Attachment 3, Figure 3, or included in Attachment 3, Table 4, which is based on the GIS program.

6 If the energy from the LJIIB turbines is collected and transferred to the first collector substation, a 34.5-kV overhead collector system will be constructed between the LJIIB turbines and the collector substation. If engineering analysis determines that it is more efficient to construct an additional collector substation near the LJIIB turbines, a 230-kV overhead transmission line will be constructed between the new collector substation and the first substation constructed. In either case, the overhead line will be a maximum of 7.65 miles in length. The impacts for the 34.5-kV route assumes poles would be placed as close as 200 feet. The impacts for the 230-kV route assumes poles would be placed as close as 500 feet. Disturbance area is also presented in square feet. These miles are not shown on amendment request Attachment 1, Figure 2 and Attachment 3, Figure 3, or included in Attachment 3, Table 4, which is based on the GIS program.

7 Assumes maximum of 20 feet of travel lanes or 10 feet of improvements to existing 10-foot road. For roads that are already 20 feet in width, there will be no permanent impacts beyond this width. These roads will only be temporarily widened for construction. Therefore, the length of existing roads needing improvements is greater for temporary impacts than permanent impacts.

8 Assumes maximum of 30 feet of travel lanes or 14 feet of improvements to existing 16-foot road.

9 Assumes maximum of 20 feet of travel lanes.

10 Assumes maximum of 32 feet of travel lanes.

TABLE 3
Habitat Types and Categories in the Amended Site Boundary for Leaning Juniper IIB with Area of Impact
Request for Amendment No. 1 to the Site Certificate for the Leaning Juniper II Wind Power Facility
Impact Calculations Addendum

		Impacts			
Category and Habitat Description	Habitat Subtype	Total Acres Within Existing and Additional Site Boundary	Total Acres Within Addition to Site Boundary for LJIIB	Temporary[1] LJIIB Components (Acres Disturbed)	Permanent[2] LJIIB Components (Acres Disturbed)
Category 1					
Disturbed - Other	DX	0.60	0.00	0.00	0.00
Escarpment	ESC	< 0.01	0.00	0.00	0.00
Exotic Annual Grassland	GA	4.18	0.00	0.00	0.00
Sagebrush Shrub-Steppe	SSA	22.16	0.02	0.00	0.00
Rabbitbrush/Snakeweed Shrub-Steppe	SSB	72.56	5.21	0.00	0.00
Juniper Woodland	WJ	0.11	0.00	0.00	0.00
Total Category 1		**99.61**	**5.23**	**0.00**	**0.00**
Category 2					
Disturbed - Other	DX	3.61	0.00	0.41	< 0.01
Escarpment	ESC	24.52	0.00	0.00	0.00
Exotic Annual Grassland	GA	1.43	0.00	0.14	< 0.01
Native Perennial Grassland	GB	70.18	37.67	0.35	< 0.01
Sagebrush Shrub-Steppe	SSA	438.41	142.72	8.03	1.11
Rabbitbrush/Snakeweed Shrub-Steppe	SSB	1903.07	1013.77	109.14	16.77
Purple sage/*Poa sandbergii* - Annual Grassland	SSD	6.05	0.00	0.00	0.00
Bitterbrush/*Eriogonum*, Native Bunchgrass	SSE	193.71	0.00	0.00	0.00
Juniper Woodland	WJ	251.38	181.95	7.75	0.53
Black Locust Woodlot	WL	3.37	0.00	0.00	0.00
Total Category 2		**2895.74**	**1376.11**	**125.83**	**18.41**
Category 3					
Disturbed - Old Field	DB	2.15	0.00	0.00	0.00
Disturbed - CRP	DC	462.91	462.91	62.21	7.79
Exotic Annual Grassland	GA	41.65	19.89	0.94	0.01
Sagebrush Shrub-Steppe	SSA	58.57	2.57	0.43	< 0.01
Rabbitbrush/Snakeweed Shrub-Steppe	SSB	2773.16	1097.69	71.57	5.51
Eriogonum/Poa sandbergii - Annual Grass	SSC	4.94	0.00	0.00	0.00
Purple sage/*Poa sandbergii* - Annual Grassland	SSD	0.18	0.00	0.00	0.00
Total Category 3		**3343.56**	**1583.07**	**135.15**	**13.31**
Category 4					
Disturbed - Old Field	DB	85.21	1.74	0.84	0.01
Disturbed - Other	DX	29.62	0.00	0.43	< 0.01
Exposed Basalt	EB	43.83	0.00	0.00	0.00
Exotic Annual Grassland	GA	342.77	232.51	11.69	2.01
Rabbitbrush/Snakeweed Shrub-Steppe	SSB	19.66	19.66	2.51	1.09
Eriogonum/*Poa sandbergii* - Annual Grass	SSC	5.46	0.00	0.00	0.00
Total Category 4		**526.54**	**253.91**	**15.46**	**3.11**
Category 5					
Disturbed - Old Field	DB	74.68	0.00	0.00	0.00
Total Category 5		**74.68**	**0.00**	**0.00**	**0.00**
Category 6					
Disturbed - Old Field	DB	44.38	3.86	0.11	< 0.01
Disturbed - Farmyard Residence	DF	48.51	22.85	1.02	0.10
Disturbed - Quarry	DQ	29.84	0.00	0.00	0.00
Dryland Wheat	DW	7252.57	4684.83	327.84	31.73
Disturbed - Other	DX	55.81	31.66	5.13	6.71
Total Category 6		**7431.11**	**4743.20**	**334.10**	**38.54**
Total All Categories		**14371.25**	**7961.51**	**610.54**	**73.38**

[1] See Table 1 for a list of temporary components and their impacts.
[2] See Table 2 for a list of permanent components and their impacts.

TABLE 4

Habitat Types and Categories in the Amended Site Boundary for Leaning Juniper IIB with Maximum Possible Area of Impact

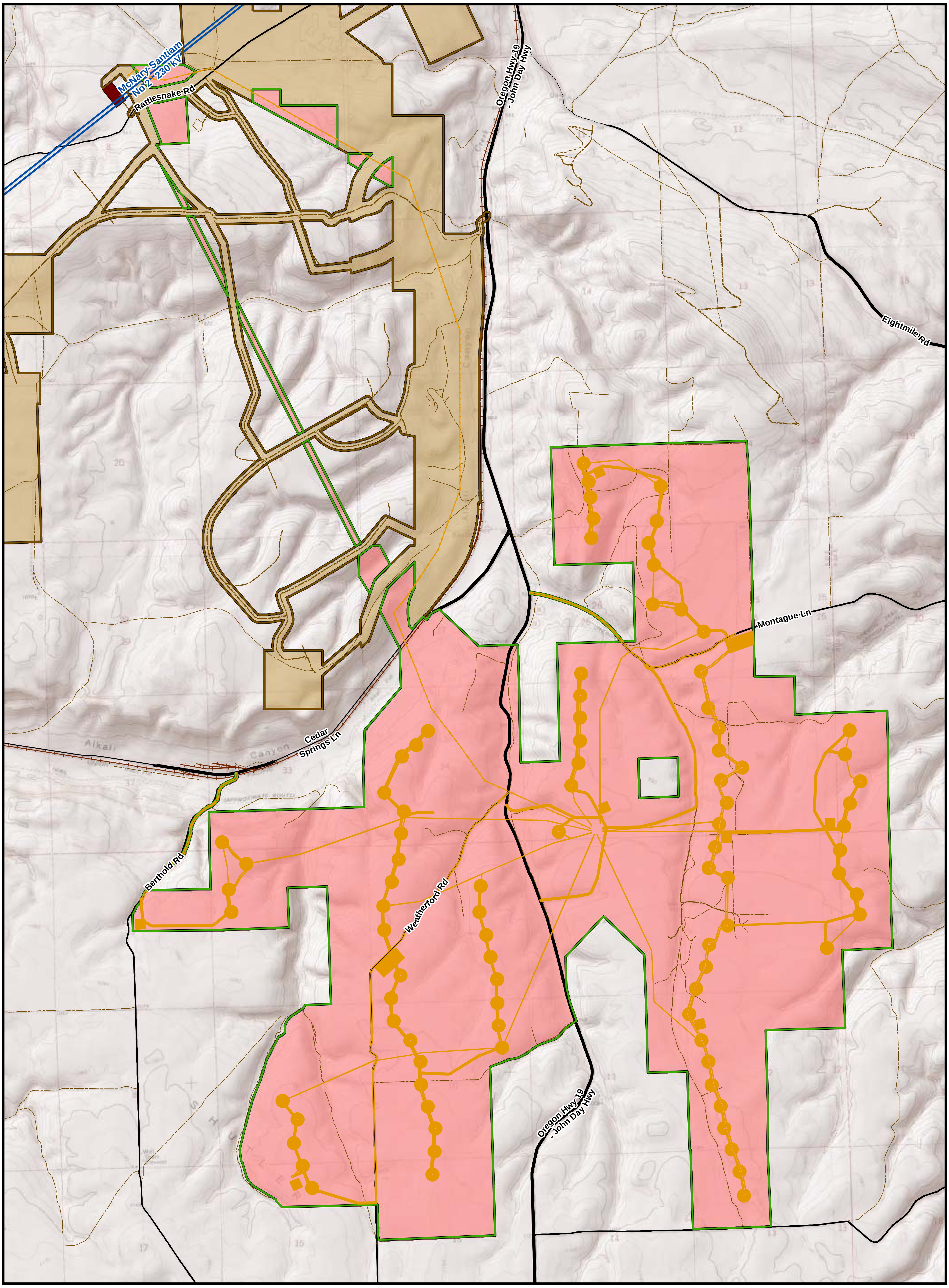
Request for Amendment No. 1 to the Site Certificate for the Leaning Juniper II Wind Power Facility

Impact Calculations Addendum

		Impacts (Worst Case)			
Category and Habitat Description	**Habitat Subtype**	**Total Acres Within Existing and Additional Site Boundary**	**Total Acres Within Addition to Site Boundary for LJIIB**	**Temporary[1] LJIIB Components (Acres Disturbed)**	**Permanent[2] LJIIB Components (Acres Disturbed)**
Category 1					
Disturbed - Other	DX	0.60	0.00	0.00	0.00
Escarpment	ESC	< 0.01	0.00	0.00	0.00
Exotic Annual Grassland	GA	4.18	0.00	0.00	0.00
Sagebrush Shrub-Steppe	SSA	22.16	0.02	0.00	0.00
Rabbitbrush/Snakeweed Shrub-Steppe	SSB	72.56	5.21	0.00	0.00
Juniper Woodland	WJ	0.11	0.00	0.00	0.00
Total Category 1		**99.61**	**5.23**	**0.00**	**0.00**
Category 2					
Disturbed - Other	DX	3.61	0.00	0.41	< 0.01
Escarpment	ESC	24.52	0.00	0.00	0.00
Exotic Annual Grassland	GA	1.43	0.00	0.14	< 0.01
Native Perennial Grassland	GB	70.18	37.67	0.35	< 0.01
Sagebrush Shrub-Steppe	SSA	438.41	142.72	11.89	1.53
Rabbitbrush/Snakeweed Shrub-Steppe	SSB	1903.07	1013.77	127.45	17.37
Purple sage/*Poa sandbergii* - Annual Grassland	SSD	6.05	0.00	0.00	0.00
Bitterbrush/*Eriogonum*, Native Bunchgrass	SSE	193.71	0.00	0.00	0.00
Juniper Woodland	WJ	251.38	181.95	12.36	0.99
Black Locust Woodlot	WL	3.37	0.00	0.00	0.00
Total Category 2		**2895.74**	**1376.11**	**152.60**	**19.89**
Category 3					
Disturbed - Old Field	DB	2.15	0.00	0.00	0.00
Disturbed - CRP	DC	462.91	462.91	67.22	9.16
Exotic Annual Grassland	GA	41.65	19.89	0.94	0.01
Sagebrush Shrub-Steppe	SSA	58.57	2.57	0.43	< 0.01
Rabbitbrush/Snakeweed Shrub-Steppe	SSB	2773.16	1097.69	85.26	6.02
Eriogonum/Poa sandbergii - Annual Grass	SSC	4.94	0.00	0.00	0.00
Purple sage/*Poa sandbergii* - Annual Grassland	SSD	0.18	0.00	0.00	0.00
Total Category 3		**3343.56**	**1583.07**	**153.85**	**15.19**
Category 4					
Disturbed - Old Field	DB	85.21	1.74	0.84	0.01
Disturbed - Other	DX	29.62	0.00	0.43	< 0.01
Exposed Basalt	EB	43.83	0.00	0.00	0.00
Exotic Annual Grassland	GA	342.77	232.51	11.48	1.73
Rabbitbrush/Snakeweed Shrub-Steppe	SSB	19.66	19.66	2.51	1.09
Eriogonum/Poa sandbergii - Annual Grass	SSC	5.46	0.00	0.00	0.00
Total Category 4		**526.54**	**253.91**	**15.25**	**2.83**
Category 5					
Disturbed - Old Field	DB	74.68	0.00	0.00	0.00
Total Category 5		**74.68**	**0.00**	**0.00**	**0.00**
Category 6					
Disturbed - Old Field	DB	44.38	3.86	0.11	< 0.01
Disturbed - Farmyard Residence	DF	48.51	22.85	1.01	0.10
Disturbed - Quarry	DQ	29.84	0.00	0.00	0.00
Dryland Wheat	DW	7252.57	4684.83	280.38	28.02
Disturbed - Other	DX	55.81	31.66	5.12	6.70
Total Category 6		**7431.11**	**4743.20**	**286.62**	**34.83**
Total All Categories		**14371.25**	**7961.51**	**608.32**	**72.75**

[1] See Table 1 for a list of temporary components and their impacts.

[2] See Table 2 for a list of permanent components and their impacts.



Legend

- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- Proposed Addition to Leaning Juniper II Micrositing Corridor for LJIIB
- Existing Leaning Juniper II Site Boundary for LJIIA
- Existing Leaning Juniper II Micrositing Corridor for LJIIA
- Worst-Case Scenario Footprint (Temporary)

Existing Facilities

- Existing Transmission Line
- Railroad
- Public, Paved
- Other Public Road
- Public, Gravel
- Private, Farm Road
- Existing BPA Jones Canyon Switching Substation

N

0 0.5 1

Miles

Figure 1

Temporarily Disturbed Areas

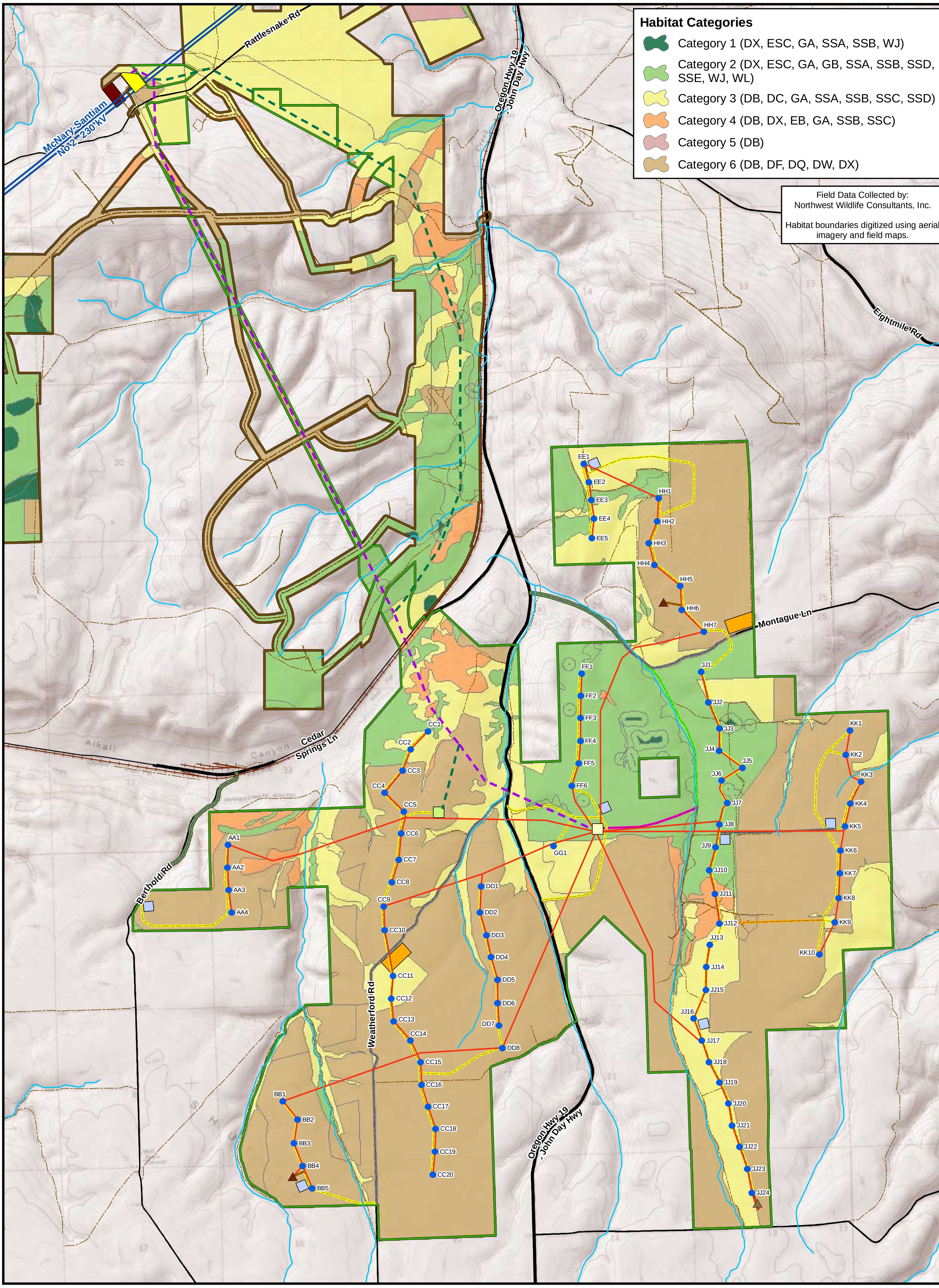
1.5-MW Turbine Layout
(Maximum Turbine Layout)

Leaning Juniper II Wind Power Facility Amendment Impact Calculations Addendum

IBERDROLA RENEWABLES

File: Z:\Projects\OR\Leaning Juniper\MapDocuments\Report Figures\EFSC (LJII)\Amendment (LJIIb)\Figure 1 - Temporarily Disturbed Areas.mxd

Modify Date: 6/15/2009



Legend

Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
Existing Leaning Juniper II Site Boundary for LJIIA

Proposed Permanent Facilities

Proposed Turbine
Primary Proposed Met Tower
Alternate Proposed Met Tower
Proposed Underground 34.5-kV Line
Preferred 230-kV Transmission Line or 34.5-kV Overhead Collector Line
Alternate 230-kV Transmission Line or 34.5-kV Overhead Collector Line
Proposed New Turbine Road
Proposed New Met Tower Road
Proposed Improved Road
Alternate New Turbine Road
Alternate Improved Road
Proposed Leaning Juniper II Collector Substation
Proposed Additional Leaning Juniper II Collector Substation
Proposed Alternate Leaning Juniper II Collector Substation

Proposed Temporary Facilities

Proposed Crane Path
Proposed 10-Acre Staging Area
Proposed 2.5-Acre Staging Area

Existing Facilities

Existing Transmission Line
Existing BPA Jones Canyon Switching Substation
Stream
Railroad
Public, Paved
Other Public Road
Public, Gravel
Private, Farm Road

N

0 0.5 1
Miles

Figure 2

Habitat Categories

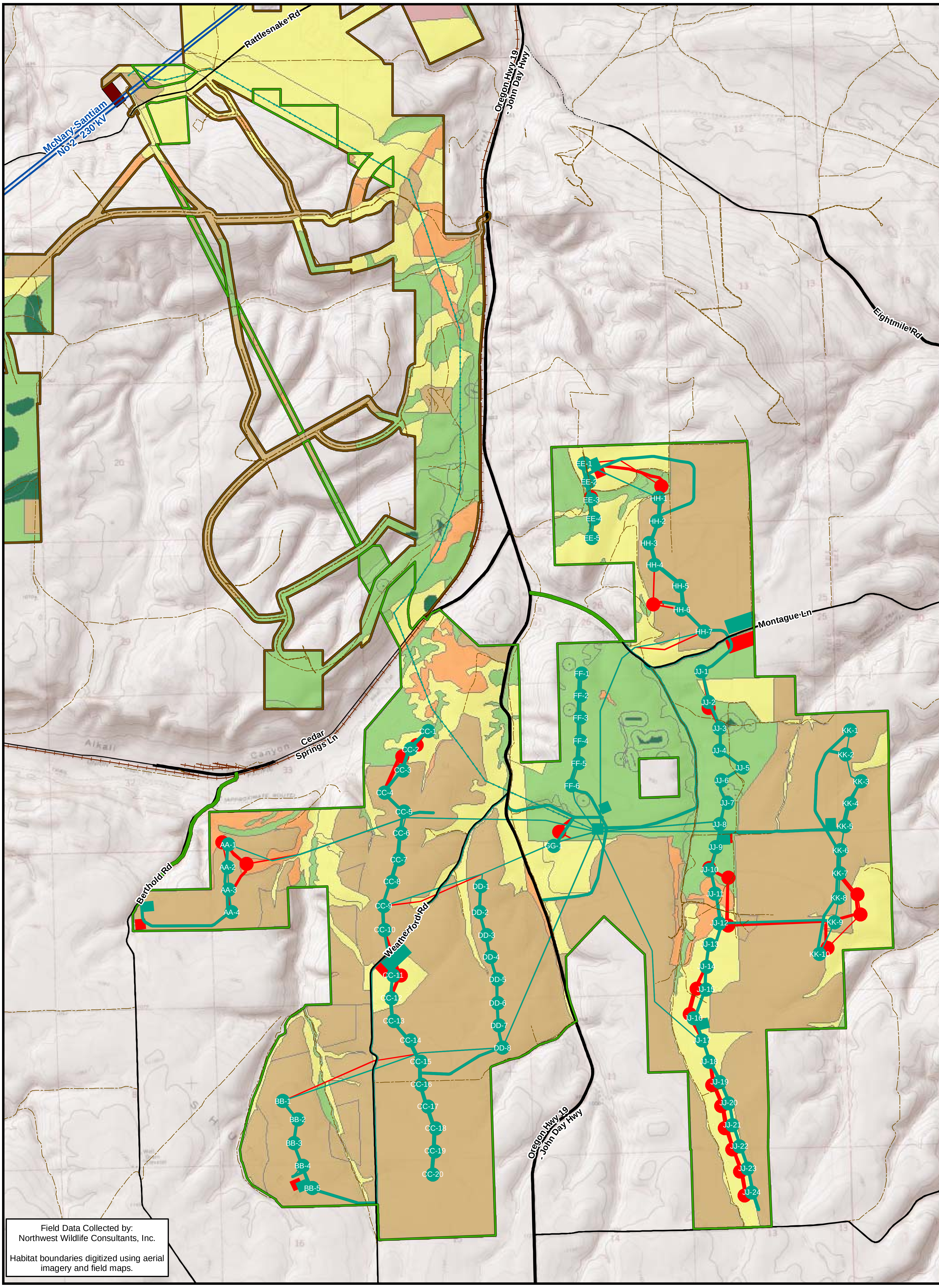
1.5-MW Turbine Layout
(Maximum Turbine Layout)

Leaning Juniper II Wind Power Facility Amendment Impact Calculations Addendum

IBERDROLA RENEWABLES

File: Z:\Projects\OR\Leaning Juniper\MapDocuments\Report Figures\EFSC (LJII)\Amendment (LJIIb)\Figure 2 - Habitat Categories.mxd

Modify Date: 6/15/2009



Legend

- Worst-Case Scenario Footprint (Permanent and Temporary)
- Current Footprint (Permanent and Temporary)
- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- Existing Leaning Juniper II Site Boundary for LJIIA

Habitat Categories

- Category 1 (DX, ESC, GA, SSA, SSB, WJ)
- Category 2 (DX, ESC, GA, GB, SSA, SSB, SSD, SSE, WJ, WL)
- Category 3 (DB, DC, GA, SSA, SSB, SSC, SSD)
- Category 4 (DB, DX, EB, GA, SSB, SSC)
- Category 5 (DB)
- Category 6 (DB, DF, DQ, DW, DX)

Existing Facilities

- Existing Transmission Line
- Railroad
- Public, Paved
- Other Public Road
- Public, Gravel
- Private, Farm Road
- Existing BPA Jones Canyon Switching Substation

N

0 0.5 1

Miles

Figure 3

Habitat Impacts: Maximum Possible Impact for Leaning Juniper IIB

1.5-MW Turbine Layout
(Maximum Turbine Layout)

Leaning Juniper II Wind Power Facility Amendment Impact Calculations Addendum

IBERDROLA RENEWABLES

File: Z:\Projects\OR\Leaning Juniper\MapDocuments\Report Figures\EFSC (LJII)\Amendment (LJIIb)\Figure 3 - Habitat Impacts - Maximum Possible Impact.mxd Modify Date: 6/15/2009

ATTACHMENT 2

Redline Site Certificate

ENERGY FACILITY SITING COUNCIL
OF THE
STATE OF OREGON

Amended Site Certificate
for the
Leaning Juniper II Wind Power Facility

~~September 21, 2007~~

[add date]

The Oregon Energy Facility Siting Council

AMENDED SITE CERTIFICATE FOR THE LEANING JUNIPER II WIND POWER FACILITY

I. INTRODUCTION

The Oregon Energy Facility Siting Council (Council) issues this ~~site certificate~~Amended Site Certificate for the Leaning Juniper II Wind Power Facility (the facility) in the manner authorized under ORS Chapter ~~469.~~469 (hereinafter "site certificate"). This site certificate is a binding agreement between the State of Oregon (State), acting through the Council, and Leaning Juniper Wind Power II LLC (certificate holder) authorizing the certificate holder to construct and operate the facility in Gilliam County, Oregon.

The findings of fact, reasoning and conclusions of law underlying the terms and conditions of this site certificate are set forth in the following documents related to the facility, which are incorporated herein by reference: (a) the Council's Final Order on the Application for the facility issued on September 21, 2007, and ~~incorporated herein by this reference.~~(b) the Council's Final Order on Amendment 1. In interpreting this site certificate, any ambiguity will be clarified by reference to the following, in order of priority: (1) this Amended Site Certificate, (2) the Final Order on Amendment 1, (3) the Final Order on the Application, and ~~(3~~ (4) the record of the proceedings that led to the Final ~~Order~~Orders on the Application~~.~~ and Amendment 1.

The definitions in ORS 469.300 and OAR 345-001-0010 apply to terms used in this site certificate, except where otherwise stated or where the context clearly indicates otherwise.

II. SITE CERTIFICATION

1. To the extent authorized by state law and subject to the conditions set forth herein, the State authorizes the certificate holder to construct, operate and retire a wind energy facility, together with certain related or supporting facilities, at the site in Gilliam County, Oregon, as described in Section III of this site certificate. ORS 469.401(1).

2. This site certificate is effective until it is terminated under OAR 345-027-0110 or the rules in effect on the date that termination is sought or until the site certificate is revoked under ORS 469.440 and OAR 345-029-0100 or the statutes and rules in effect on the date that revocation is ordered. ORS 469.401(1).

3. This site certificate does not address, and is not binding with respect to, matters that were not addressed in the Council's Final Order on the Application for the facility. Such matters include, but are not limited to: building code compliance, wage, hour and other labor regulations, local government fees and charges and other design or operational issues that do not relate to siting the facility (ORS 469.401(4)) and permits issued under statutes and rules for which the decision on compliance has been delegated by the federal government to a state agency other than the Council. 469.503(3).

4. Both the State and the certificate holder shall abide by local ordinances, state law and the rules of the Council in effect on the date this site certificate is executed. ORS 469.401(2). In addition, upon a clear showing of a significant threat to public health, safety or the environment that requires application of later-adopted laws or rules, the Council may require compliance with such later-adopted laws or rules. ORS 469.401(2).

5. For a permit, license or other approval addressed in and governed by this site certificate, the certificate holder shall comply with applicable state and federal laws adopted in the future to the extent that such compliance is required under the respective state agency statutes and rules. ORS 469.401(2).

6. Subject to the conditions herein, this site certificate binds the State and all counties, cities and political subdivisions in Oregon as to the approval of the site and the construction, operation and retirement of the facility as to matters that are addressed in and governed by this site certificate. ORS 469.401(3).

7. Each affected state agency, county, city and political subdivision in Oregon with authority to issue a permit, license or other approval addressed in or governed by this site certificate shall, upon submission of the proper application and payment of the proper fees, but without hearings or other proceedings, issue such permit, license or other approval subject only to conditions set forth in this site certificate. ORS 469.401(3).

8. After issuance of this site certificate, each state agency or local government agency that issues a permit, license or other approval for the facility shall continue to exercise enforcement authority over such permit, license or other approval. ORS 469.401(3).

9. After issuance of this site certificate, the Council shall have continuing authority over the site and may inspect, or direct the Oregon Department of Energy (Department) to inspect, or request another state agency or local government to inspect, the site at any time in order to ensure that the facility is being operated consistently with the terms and conditions of this site certificate. ORS 469.430.

III. DESCRIPTION

1. The Facility

(a) The Energy Facility

The energy facility is an electric power generating plant with an average electric generating capacity of approximately 93 megawatts and a peak generating capacity of not more than 279 megawatts that produces power from wind energy~~. ~~, to be constructed in two or more phases. LJWP is preparing to construct forty-three (43) 2.1-MW turbines with a generating capacity of 90.3 MW under the authority of the site certificate. This first phase of construction is referred to as Leaning Juniper IIA (LJIIA). The subsequent phase(s) of construction is referred to as Leaning Juniper IIB (LJIIB). LJIIB will consist of up to 90 turbines with a generating capacity of up to 188.7 MW. The facility consists of not more than 133 wind turbines. The maximum peak generating capacity of each turbine is not more than 3.0 megawatts. The energy facility is described further in the Final Order on ~~the Application on the facility.~~Amendment #1.

(b) Related or Supporting Facilities

The facility includes the following related or supporting facilities described below and in greater detail in the Final Order on the Application on the facility:

- Power collection system
- Substations and interconnection system
- Meteorological towers
- Operations and maintenance facilities
- Control system
- Access roads
- Temporary construction areas

Power Collection System

A power collection system operating at 34.5 kilovolts (kV) transports power from each turbine to a collector substation. To the extent practicable, the collection system is installed underground at a depth of at least three feet. Not more than 30 percent of the collector system is installed aboveground.

Substations and Interconnection System

The facility includes ~~a substation~~up to two substations. The first will be located ~~adjacent to~~near the Bonneville Power Administration (BPA) Jones Canyon Switching Station. An aboveground transmission line ~~less than 400 feet in length~~ carries the power from the substation to a BPA switching station and an interconnection with the regional transmission grid through BPA's McNary-Santiam 230-kV transmission line. A potential second substation may be located near the LJIIB turbines.

Meteorological Towers

The facility includes four permanent meteorological (met) towers. The met towers are non-guyed steel towers approximately 80 meters in height.

Operations and Maintenance Facilities

The facility includes one or two operations and maintenance (O&M) buildings with approximately 2.5 acres of fenced, graveled parking and storage area adjacent to each building.

Control System

A fiber optic communications network links the wind turbines to a central computer at the O&M buildings. A "supervisory, control and data acquisition" (SCADA) system collects operating and performance data from each wind turbine and from the project as a whole and allows remote operation of the wind turbines.

Access Roads

The facility includes access roads to provide access to the turbine strings.

Temporary Construction Areas

During construction, the facility includes temporary laydown areas used to stage construction and store supplies and equipment. Construction crane paths are used to move construction cranes between turbine strings.

2. Location of the Proposed Facility

The facility is located southwest of Arlington, in Gilliam County, Oregon. The site is in Townships ~~2~~1, 2, and 3 North and Ranges ~~20~~20, 21, and ~~21~~22 East. The facility is located on land subject to lease agreements with landowners.

IV. CONDITIONS REQUIRED BY COUNCIL RULES

This section lists conditions required by OAR 345-027-0020 (Mandatory Conditions in Site Certificates), OAR 345-027-0023 (Site Specific Conditions), OAR 345-027-0028 (Monitoring Conditions) and OAR Chapter 345, Division 26 (Construction and Operation Rules for Facilities). These conditions should be read together with the specific facility conditions listed in Section V to ensure compliance with the siting standards of OAR Chapter 345, Divisions 22 and 24, and to protect the public health and safety. In these conditions, "Office of Energy" means the Oregon Department of Energy, and the other definitions in OAR 345-001-0010 apply.

The obligation of the certificate holder to report information to the Department or the Council under the conditions listed in this section and in Section V is subject to the provisions of ORS 192.502 *et seq*. and ORS 469.560. To the extent permitted by law, the Department and the Council will not publicly disclose information that may be exempt from public disclosure if the certificate holder has clearly labeled such information and stated the basis for the exemption at the time of submitting the information to the Department or the Council. If the Council or the Department receives a request for the disclosure of the information, the Council or the Department, as appropriate, will make a reasonable attempt to notify the certificate holder and will refer the matter to the Attorney General for a determination of whether the exemption is applicable, pursuant to ORS 192.450.

In addition to these conditions, the site certificate holder is subject to all conditions and requirements contained in the rules of the Council and in local ordinances and state law in effect on the date the certificate is executed. Under ORS 469.401(2), upon a clear showing of a significant threat to the public health, safety or the environment that requires application of later-adopted laws or rules, the Council may require compliance with such later-adopted laws or rules.

The Council recognizes that many specific tasks related to the design, construction, operation and retirement of the facility will be undertaken by the certificate holder's agents or contractors. Nevertheless, the certificate holder is responsible for ensuring compliance with all provisions of the site certificate.

1. OAR 345-027-0020(1): The Council shall not change the conditions of the site certificate except as provided for in OAR Chapter 345, Division 27.

~~10.~~2. OAR 345-027-0020(2): The certificate holder shall submit a legal description of the site to the Department of Energy within 90 days after beginning operation of the facility. The legal description required by this rule means a description of metes and bounds or a description of the site by reference to a map and geographic data that clearly and specifically identifies the outer boundaries that contain all parts of the facility.

~~11.~~3. OAR 345-027-0020(3): The certificate holder shall design, construct, operate and retire the facility:

(a) Substantially as described in the site certificate;

(b) In compliance with the requirements of ORS Chapter 469, applicable Council rules, and applicable state and local laws, rules and ordinances in effect at the time the site certificate is issued; and

(c) In compliance with all applicable permit requirements of other state agencies.

~~12.~~4. OAR 345-027-0020(4): The certificate holder shall begin and complete construction of the facility by the dates specified in the site certificate. (*See conditions 25 and 26.*)

~~13.~~5. OAR 345-027-0020(5): Except as necessary for the initial survey or as otherwise allowed for wind energy facilities, transmission lines or pipelines under this section, the certificate holder shall not begin construction, as defined in OAR 345-001-0010, or create a clearing on any part of the site until the certificate holder has construction rights on all parts of the site. For the purpose of this rule, "construction rights" means the legal right to engage in construction activities. For wind energy facilities, transmission lines or pipelines, if the certificate holder does not have construction rights on all parts of the site, the certificate holder may nevertheless begin construction, as defined in OAR 345 001-0010, or create a clearing on a part of the site if the certificate holder has construction rights on that part of the site and:

(a) The certificate holder would construct and operate part of the facility on that part of the site even if a change in the planned route of a transmission line or pipeline occurs during the certificate holder's negotiations to acquire construction rights on another part of the site; or

(b) The certificate holder would construct and operate part of a wind energy facility on that part of the site even if other parts of the facility were modified by amendment of the site certificate or were not built.

~~14.~~6. OAR 345-027-0020(6): If the Council requires mitigation based on an affirmative finding under any standards of Division 22 or Division 24 of this chapter, the certificate holder shall consult with affected state agencies and local governments designated by the Council and shall develop specific mitigation plans consistent with Council findings under the relevant standards. The certificate holder must submit the mitigation plans to the Office and receive Office approval before beginning construction or, as appropriate, operation of the facility.

~~15.~~7. OAR 345-027-0020(7): The certificate holder shall prevent the development of any conditions on the site that would preclude restoration of the site to a useful, non-hazardous condition to the extent that prevention of such site conditions is within the control of the certificate holder.

~~16.~~8. OAR 345-027-0020(8): Before beginning construction of each respective phase of the facility, the certificate holder shall submit to the State of Oregon, through the Council, a bond or letter of credit in a form and amount satisfactory to the Council to restore the site to a useful, non-hazardous condition. The certificate holder shall maintain a bond or letter of credit in effect at all times until the facility has been retired. The Council may specify different amounts for the bond or letter of credit during construction and during operation of the facility. (*See Condition 30.*)

~~17.~~9. OAR 345-027-0020(9): The certificate holder shall retire the facility if the certificate holder permanently ceases construction or operation of the facility. The certificate holder shall retire the facility according to a final retirement plan approved by the Council, as described in OAR 345 027 0110. The certificate holder shall pay the actual cost to restore the site to a useful, non-hazardous condition at the time of retirement, notwithstanding the Council's approval in the site certificate of an estimated amount required to restore the site.

~~18.~~10. OAR 345-027-0020(10): The Council shall include as conditions in the site certificate all representations in the site certificate application and supporting record the Council deems to be binding commitments made by the applicant.

~~19.~~11. OAR 345-027-0020(11): Upon completion of construction, the certificate holder shall restore vegetation to the extent practicable and shall landscape all areas disturbed by construction in a manner compatible with the surroundings and proposed use. Upon completion of construction, the certificate holder shall remove all temporary structures not required for facility operation and dispose of all timber, brush, refuse and flammable or combustible material resulting from clearing of land and construction of the facility.

~~20.~~12. OAR 345-027-0020(12): The certificate holder shall 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.

~~21.~~13. OAR 345-027-0020(13): The certificate holder shall notify the Department, the State Building Codes Division and the Department of Geology and Mineral Industries promptly if site investigations or trenching reveal that conditions in the foundation rocks differ significantly from those described in the application for a site certificate. After the Department receives the notice, the Council may require the certificate holder to consult with the Department of Geology and Mineral Industries and the Building Codes Division and to propose mitigation actions.

~~22.~~14. OAR 345-027-0020(14): The certificate holder shall notify the Department, the State Building Codes Division and the Department of Geology and Mineral Industries promptly if shear zones, artesian aquifers, deformations or clastic dikes are found at or in the vicinity of the site.

~~23.~~15. OAR 345-027-0020(15): Before any transfer of ownership of the facility or ownership of the site certificate holder, the certificate holder shall inform the Department of the proposed new owners. The requirements of OAR 345-027-0100 apply to any transfer of ownership that requires a transfer of the site certificate.

~~24.~~16. OAR 345-027-0020(16): If the Council finds that the certificate holder has permanently ceased construction or operation of the facility without retiring the facility according to a final retirement plan approved by the Council, as described in OAR 345 027 0110, the Council shall notify the certificate holder and request that the certificate holder submit a proposed final retirement plan to the Office within a reasonable time not to exceed 90 days. If the certificate holder does not submit a proposed final retirement plan by the specified date, the Council may direct the Department to prepare a proposed a final retirement plan for the Council's approval. Upon the Council's approval of the final retirement plan, the Council may draw on the bond or letter of credit described in section (8) to restore the site to a useful, non-hazardous condition according to the final retirement plan, in addition to any penalties the Council may impose under OAR Chapter 345, Division 29. If the amount of the bond or letter of credit is insufficient to pay the actual cost of retirement, the certificate holder shall pay any additional cost necessary to restore the site to a useful, nonhazardous condition. After completion of site restoration, the Council shall issue an order to terminate the site certificate if the Council finds that the facility has been retired according to the approved final retirement plan.

~~25.~~17. OAR 345-027-0023(4): If the facility includes any transmission line under Council jurisdiction:

(a) The certificate holder shall design, construct and operate the transmission line in accordance with the requirements of the National Electrical Safety Code (American National Standards Institute, Section C2, 1997 Edition); and

(b) The certificate holder shall develop and implement a program that provides reasonable assurance that all fences, gates, cattle guards, trailers, or other objects or structures of a permanent nature that could become inadvertently charged with electricity are grounded or bonded throughout the life of the line.

~~26.~~18. OAR 345-027-0023(5): If the proposed energy facility is a pipeline or a transmission line or has, as a related or supporting facility, a pipeline or transmission line, the Council shall specify an approved corridor in the site certificate and shall allow the certificate holder to construct the pipeline or transmission line anywhere within the corridor, subject to the conditions of the site certificate. If the applicant has analyzed more than one corridor in its application for a site certificate, the Council may, subject to the Council's standards, approve more than one corridor.

~~27.~~19. OAR 345-027-0028: The following general monitoring conditions apply:

(a) The certificate holder shall consult with affected state agencies, local governments and tribes and shall develop specific monitoring programs for impacts to resources protected by the standards of Divisions 22 and 24 of this chapter and resources addressed by applicable statutes, administrative rules and local ordinances. The certificate holder must submit the monitoring programs to the Department of Energy and receive Department approval before beginning construction or, as appropriate, operation of the facility.

(b) The certificate holder shall implement the approved monitoring programs described in section (a) and monitoring programs required by permitting agencies and local governments.

(c) For each monitoring program described in sections (1) and (2), the certificate holder shall have quality assurance measures approved by the Department before beginning construction or, as appropriate, before beginning commercial operation.

(d) If the certificate holder becomes aware of a significant environmental change or impact attributable to the facility, the certificate holder shall, as soon as possible, submit a written report to the Department describing the impact on the facility and any affected site certificate conditions.

~~28.~~20. OAR 345-026-0048: Following receipt of a site certificate or an amended site certificate, the certificate holder shall implement a plan that verifies compliance with all site certificate terms and conditions and applicable statutes and rules. As a part of the compliance plan, to verify compliance with the requirement to begin construction by the date specified in the site certificate, the certificate holder shall report promptly to the Department of Energy when construction begins. Construction is defined in OAR 345-001-0010. In reporting the beginning of construction, the certificate holder shall describe all work on the site performed before beginning construction, including work performed before the Council issued the site certificate, and shall state the cost of that work. For the purpose of this exhibit, "work on the site" means any work within a site or corridor, other than surveying, exploration or other activities to define or characterize the site or corridor. The certificate holder shall document the compliance plan and maintain it for inspection by the Department or the Council.

~~29.~~21. OAR 345-026-0080: The certificate holder shall report according to the following requirements:

(a) General reporting obligation for energy facilities under construction or operating:

(i) Within six months after beginning construction, and every six months thereafter during construction of the energy facility and related or supporting facilities, the certificate holder shall submit a semiannual construction progress report to the Department of Energy. In each construction progress report, the certificate holder shall describe any significant changes to major milestones for construction. The certificate holder shall include such information related to construction as specified in the site certificate. When the reporting date coincides, the certificate holder may include the construction progress report within the annual report described in this rule.

(ii) By April 30 of each year after beginning construction, the certificate holder shall submit an annual report to the Department addressing the subjects listed in this rule. The Council Secretary and the certificate holder may, by mutual agreement, change the reporting date.

(iii) To the extent that information required by this rule is contained in reports the certificate holder submits to other state, federal or local agencies, the certificate holder may submit excerpts from such other reports to satisfy this rule. The Council reserves the right to request full copies of such excerpted reports.

(b) In the annual report, the certificate holder shall include the following information for the calendar year preceding the date of the report:

(i) Facility Status: An overview of site conditions, the status of facilities under construction and a summary of the operating experience of facilities that are in operation. In this section of the annual report, the certificate holder shall describe any unusual events, such as earthquakes, extraordinary windstorms, major accidents or the like that occurred during the year and that had a significant adverse impact on the facility.

(ii) Reliability and Efficiency of Power Production: For electric power plants, the plant availability and capacity factors for the reporting year. The certificate holder shall describe any equipment failures or plant breakdowns that had a significant impact on those factors and shall describe any actions taken to prevent the recurrence of such problems.

(iii) Fuel Use: For thermal power plants:

(A) The efficiency with which the power plant converts fuel into electric energy. If the fuel chargeable to power heat rate was evaluated when the facility was sited, the certificate holder shall calculate efficiency using the same formula and assumptions, but using actual data; and

(B) The facility's annual hours of operation by fuel type and, every five years after beginning operation, a summary of the annual hours of operation by fuel type as described in OAR 345-024-0590(5).

(iv) Status of Surety Information: Documentation demonstrating that bonds or letters of credit as described in the site certificate are in full force and effect and will remain in full force and effect for the term of the next reporting period.

(v) Monitoring Report: A list and description of all significant monitoring and mitigation activities performed during the previous year in accordance with site certificate terms and conditions, a summary of the results of those activities and a discussion of any significant changes to any monitoring or mitigation program, including the reason for any such changes.

(vi) Compliance Report: A description of all instances of noncompliance with a site certificate condition. For ease of review, the certificate holder shall, in this section of the report, use numbered subparagraphs corresponding to the applicable sections of the site certificate.

(vii) Facility Modification Report: A summary of changes to the facility that the certificate holder has determined do not require a site certificate amendment in accordance with OAR 345-027-0050.

(viii) Nongenerating Facility Carbon Dioxide Emissions: For nongenerating facilities that emit carbon dioxide, a report of the annual fuel use by fuel type and annual hours of operation of the carbon dioxide emitting equipment as described in OAR 345-024-0630(4).

~~30.~~22. OAR 345-026-0105: The certificate holder and the Department of Energy shall exchange copies of all correspondence or summaries of correspondence related to compliance with statutes, rules and local ordinances on which the Council determined compliance, except for material withheld from public disclosure under state or federal law or under Council rules. The certificate holder may submit abstracts of reports in place of full reports; however, the certificate holder shall provide full copies of abstracted reports and any summarized correspondence at the request of the Department.

~~31.~~23. OAR 345-026-0170: The certificate holder shall notify the Department of Energy within 72 hours of any occurrence involving the facility if:

(a) There is an attempt by anyone to interfere with its safe operation;

(b) A natural event such as an earthquake, flood, tsunami or tornado, or a human-caused event such as a fire or explosion affects or threatens to affect the public health and safety or the environment; or

(c) There is any fatal injury at the facility.

V. SPECIFIC FACILITY CONDITIONS

The conditions listed in this section include conditions based on representations in the site certificate application and supporting record. The Council deems these representations to be binding commitments made by the applicant. These conditions are required under OAR 345-027-0020(10). The certificate holder must comply with these conditions in addition to the conditions listed in Section IV. This section includes other specific facility conditions the Council finds necessary to ensure compliance with the siting standards of OAR Chapter 345, Divisions 22 and 24, and to protect public health and safety. For conditions that require subsequent review and approval of a future action, ORS 469.402 authorizes the Council to delegate the future review and approval to the Department if, in the Council's discretion, the delegation is warranted under the circumstances of the case.

1. Certificate Administration Conditions

24. The certificate holder shall request an amendment of the site certificate if the LJ-North components are built or operated as part of the Pebble Springs Wind Project under the authority of a Gilliam County Conditional Use Permit.

25. The certificate holder shall begin construction of the facility within three years after the effective date of the original site certificate~~.~~ or by September 2010. Under OAR 345-015-0085(9), a site certificate is effective upon execution by the Council Chair and the applicant. The Council may grant an extension of the deadline to begin construction in accordance with OAR 345-027-0030 or any successor rule in effect at the time the request for extension is submitted.

26. The certificate holder shall complete construction of the facility within four years after the effective date of ~~the~~this site certificate~~.~~ or September 2013. Construction is complete when: 1) the facility is substantially complete as defined by the certificate holder's construction contract documents, 2) acceptance testing has been satisfactorily completed and 3) the energy facility is ready to begin continuous operation consistent with the site certificate. The certificate holder shall promptly notify the Department of the date of completion of construction. The Council may grant an extension of the deadline for

completing construction in accordance with OAR 345-027-0030 or any successor rule in effect at the time the request for extension is submitted.

27. The certificate holder shall construct a facility substantially as described in the site certificate and may select turbines of any type, subject to the following restrictions:

(a) The total number of turbines at the facility must not exceed 133 turbines.

(b) The peak generating capacity of each turbine must not exceed 3.0 megawatts.

(c) The combined peak generating capacity of the facility must not exceed 279 megawatts.

(d) The turbine hub height must not exceed 100 meters, and the turbine blade tip height must not exceed 150 meters.

(e) The minimum blade tip clearance must be 30 meters above ground.

(f) The certificate holder shall request an amendment of the site certificate to increase the combined peak generating capacity of the facility or to increase the number of wind turbines or the dimensions of wind turbines at the facility.

28. The certificate holder shall obtain all necessary federal, state and local permits or approvals required for construction, operation and retirement of the facility or ensure that its contractors obtain the necessary federal, state and local permits or approvals.

29. Before beginning construction of each respective phase of the facility, the certificate holder shall notify the Department in advance of any work on the site that does not meet the definition of "construction" in OAR 345-001-0010 or ORS 469.300 and shall provide to the Department a description of the work and evidence that its value is less than $250,000.

30. Before beginning construction of each respective phase of the facility, the certificate holder shall submit to the State of Oregon through the Council a bond or letter of credit in the amount described herein naming the State of Oregon, acting by and through the Council, as beneficiary or payee. The initial bond or letter of credit amount is $8.847 million (in 2006 dollars) for LJIIA, adjusted to the date of issuance as described in (b), or the amount determined as described in (a). The supplemental bond or letter of credit amount is $8.6 million (in 2nd quarter 2009 dollars) for LJIIB, adjusted to the date of issuance as described in (b), or the amount determined as described in (a). The certificate holder shall adjust the amount of the ~~bond~~bonds or ~~letter~~letters of credit on an annual basis thereafter as described in (b).

(a) The certificate holder may adjust the amount of the ~~bond~~bonds or ~~letter~~letters of credit based on the final design configuration of the facility by applying the unit costs and general costs illustrated in Table 2 and Table 3 of the Final Order on the Application to the final design and calculating the financial assurance amount as described in that order, adjusted to the date of issuance as described in (b) and subject to approval by the Department.

(b) The certificate holder shall adjust the amount of the ~~bond~~bonds or ~~letter~~letters of credit, using the following calculation and subject to approval by the Department:

(i) Adjust the gross cost component of the bond or letter of credit amount (expressed in 2006 dollars) to present value, using the U.S. Gross Domestic Product Implicit Price Deflator, Chain-Weight, as published in the Oregon Department of Administrative Services' "Oregon Economic and Revenue Forecast" or by any successor agency (the "Index") and using the annual average index value for 2006 dollars and the quarterly index value for the date of issuance of the new bond or letter of credit. If at any time the Index is no longer published, the Council shall select a comparable calculation to adjust 2006 dollars to present value.

(ii) Add 1 percent of the adjusted gross cost (i) for the adjusted performance bond amount, 10 percent of the adjusted gross cost for the adjusted administration and project management costs and 10 percent of the adjusted gross cost for the adjusted future developments contingency.

(iii) Add the adjusted gross cost (i) to the sum of the percentages (ii) and round the resulting total to the nearest $1,000 to determine the adjusted financial assurance amount.

(c) The certificate holder shall use a form of bond or letter of credit approved by the Council.

(d) The certificate holder shall use an issuer of the bond or letter of credit approved by the Council.

(e) The certificate holder shall describe the status of the ~~bond~~bonds or ~~letter~~letters of credit in the annual report submitted to the Council under Condition 21.

(f) The ~~bond~~bonds or ~~letter~~letters of credit shall not be subject to revocation or reduction before retirement of the facility site.

31. If the certificate holder elects to use a bond or bonds to meet the requirements of Condition 30, the certificate holder shall ensure that the surety is obligated to comply with the requirements of applicable statutes, Council rules and this site certificate when the surety exercises any legal or contractual right it may have to assume construction, operation or retirement of the energy facility. The certificate holder shall also ensure that the surety is obligated to notify the Council that it is exercising such rights and to obtain any Council approvals required by applicable statutes, Council rules and this site certificate before the surety commences any activity to complete construction, operate or retire the energy facility.

32. Before beginning construction, the certificate holder shall notify the Department of the identity and qualifications of major construction contractor(s) for specific portions of the work. The certificate holder shall select contractors that have substantial experience in the design and construction of similar facilities. The certificate holder shall report to the Department any change of major construction contractors.

33. The certificate holder shall contractually require all construction contractors and subcontractors involved in the construction of the facility to comply with all applicable laws and regulations and with the terms and conditions of the site certificate. Such contractual provisions shall not operate to relieve the certificate holder of responsibility under the site certificate.

34. During construction, the certificate holder shall have an on-site assistant construction manager who is qualified in environmental compliance to ensure compliance with all construction-related site certificate conditions. During operation, the certificate holder shall have a project manager who is qualified in environmental compliance to ensure compliance with all ongoing site certificate conditions. The certificate holder shall notify the Department of the name, telephone number, fax number and e-mail address of these managers and shall keep the Department informed of any change in this information.

35. Within 72 hours after discovery of conditions or circumstances that may violate the terms or conditions of the site certificate, the certificate holder shall report the conditions or circumstances to the Department.

2. Land Use Conditions

36. The certificate holder shall cooperate with the Gilliam County Road Department to ensure that any unusual damage or wear to county roads that is caused by construction of the facility is repaired by the certificate holder. Upon completion of construction, the certificate holder shall restore county roads to pre-construction condition or better, to the satisfaction of the County Road Department.

37. Before beginning construction of a new highway approach or approaches authorized by the Final Order on Amendment 1, the certificate holder shall obtain a permit or permits from ODOT after submitting the necessary application or applications in a form satisfactory to ODOT and the Department and subject to conditions required by OAR chapter 734, division 51, authorizing the location, construction and maintenance of an approach or approaches to State Highway 19 for access to the site. Before construction of collector cables or transmission lines crossing Highway 19 authorized by the Final Order on Amendment 1, the certificate holder shall obtain a permit or permits from ODOT after submitting the necessary application or applications in a form satisfactory to ODOT and the Department and subject to conditions required by OAR chapter 734, division 55, authorizing the location, construction and maintenance of collector cables or transmission lines crossing Highway 19. [Amendment #1]

38. ~~37.~~ During construction, the certificate holder shall implement measures to reduce traffic impacts, including:

(a) Providing notice to adjacent landowners when heavy construction traffic is anticipated.

(b) Providing appropriate traffic safety signage and warnings.

(c) Requiring flaggers to be at appropriate locations at appropriate times during construction to direct traffic reduce accident risks.

(d) Using traffic diversion equipment (such as advanced signage and pilot cars) when slow or oversize construction loads are anticipated.

(e) Maintaining at least one travel lane at all times to the extent reasonably possible so that roads will not be closed to traffic because of construction vehicles.

(f) Encouraging carpooling for the construction workforce.

(g) Including traffic control procedures in contract specifications for construction of the facility.

(h) Keeping the access from Highway 19 free of gravel that tracks out onto the highway.

39. ~~38.~~ The certificate holder shall ensure that no equipment or machinery is parked or stored on any county road except while in use.

40. ~~39.~~ The certificate holder shall construct all facility components in compliance with the following setback requirements:

~~(i)~~(a) ~~Facility~~All facility components must be at least 3,520 feet from the property line of properties zoned residential use or designated in the Gilliam County Comprehensive Plan as residential.

~~(j)~~(b) ~~The distance from any~~Where (a) does not apply, the certificate holder shall maintain a minimum distance of 110-percent of maximum blade tip height, measured from the centerline of the turbine tower to the nearest ~~residence or public road (except Rattlesnake Road and Stone Lane) must be no less than the maximum blade tip height of the turbine plus 50 feet.~~edge of any public road right-of-way. The certificate holder shall assume a minimum right-of-way width of 60 feet.

(c) Where (a) does not apply, the certificate holder shall maintain a minimum distance of 1,320 feet, measured from the centerline of the turbine tower to the center of the nearest residence existing at the time of tower construction. .

(d) Where (a) does not apply, the certificate holder shall maintain a minimum distance of 110-percent of maximum blade tip height, measured from the centerline of the turbine tower to the nearest boundary of the certificate holder's lease area.

(e) ~~(c)~~ Except where (a) ~~or~~, (b), (c), or (d) apply, turbines and meteorological towers must be at least 250 feet from any ~~public road right-of-way,~~ railroad right-of-way~~, exterior lot line~~ or electrical substation.

(f) ~~(d)~~ Except where (a) ~~applies~~or (d) apply, any facility building or substation must be at least 50 feet from any public road right-of-way, railroad right-of-way or exterior lot line.

41. ~~40.~~ The certificate holder shall consult with area landowners and lessees during construction and operation of the facility and shall implement measures to reduce or avoid any adverse impacts to farm practices on surrounding lands and to avoid any increase in farming costs.

42. ~~41.~~ The certificate holder shall locate access roads and temporary construction laydown and staging areas to minimize disturbance with farming practices and, wherever feasible, shall place turbines and transmission interconnection lines along the margins of cultivated areas to reduce the potential for conflict with farm operations.

43. ~~42.~~ Before beginning construction of each respective phase of the facility, the certificate holder shall record in the real property records of Gilliam County a Covenant Not to Sue with regard to generally accepted farming practices on adjacent farmland consistent with Gilliam County Zoning Ordinance 7.020(T)(4)(a)(5).

44. ~~43.~~ The certificate holder shall install lockable gates at the substation and on private access roads.

45. ~~44.~~ Within 90 days after beginning operation, the certificate holder shall provide to the Department and to the Gilliam County Planning Director the actual latitude and longitude location or Stateplane NAD 83(91) coordinates of each turbine tower, connecting lines and transmission lines. In addition, the certificate holder shall provide to the Department and to the Gilliam County Planning Director, a summary of as-built changes in the facility compared to the original plan, if any.

3. Cultural Resource Conditions

46. ~~45.~~ Before beginning construction of the LJIIA phase of the facility, the certificate holder shall provide to the Department a map showing the final design locations of all components of ~~the facility~~LJIIA , as appropriate, and areas that would be disturbed during construction and also showing the areas that were surveyed for LJIIA in 2004, 2005 and 2006 as described in the site certificate application. If areas to be disturbed during construction lie outside of the surveyed areas, the certificate holder shall hire qualified personnel to conduct field investigation of those areas. The certificate holder shall provide a written report of the field investigation to the Department and to the State Historic Preservation Office (SHPO). If any historic, cultural or archaeological resources are found during the field investigation, the certificate holder shall ensure that construction and operation of the facility will have no impact on the resources. The certificate holder shall instruct all construction personnel to avoid the areas where resources identified for LJIIA in the 2004-2006 surveys or found during pre-construction investigations, and shall implement other appropriate measures to protect the resources. Before beginning construction of LJIIB, the certificate holder shall provide to the Department a map showing the final design locations of all components of LJIIB, as appropriate, the areas that would be disturbed during construction and areas that were surveyed for LJIIB for 2009 as described in the *Addendum to the Cultural Resources Survey Report for the Leaning Juniper II Wind Power Facility, Gilliam County, Oregon* (CH2M HILL, June 2009). The certificate holder shall hire qualified personnel to conduct field investigation of all areas to be disturbed during construction that lie outside the previously-surveyed areas. The certificate holder shall provide a written report of the field investigation to the Department and to the Oregon State Historic Preservation Office (SHPO). If any potentially significant historic, cultural, or archaeological resource sites are found during the field investigation, the certificate holder shall instruct all construction personnel to avoid the identified sites and shall implement appropriate measures to protect the sites, including the measures described in Condition 48.

47. ~~46.~~ The certificate holder shall ensure that a qualified person instructs construction personnel in the identification of cultural materials and avoidance of accidental damage to identified resource sites.

48. ~~47.~~ The certificate holder shall ensure that construction personnel cease all ground-disturbing activities in the immediate area if any archaeological or cultural

resources are found during construction of the facility until a qualified archaeologist can evaluate the significance of the find. The certificate holder shall notify the Department and the State Historic Preservation Office (SHPO) of the find. If the archaeologist determines that the resource is significant, the certificate holder shall make recommendations to the Council for mitigation, including avoidance or data recovery, in consultation with the Department, SHPO and other appropriate parties. The certificate holder shall not restart work in the affected area until the certificate holder has demonstrated to the Department that it has complied with the archaeological permit requirements administered by SHPO.

49. ~~48.~~ During construction of LJIIA phase of the facility, the certificate holder shall label all identified historic, cultural or archaeological resource sites on construction maps and drawings as "no entry" areas, and if construction activities will occur within 200 feet of an identified site, the certificate holder shall flag a 50-foot buffer around the site. During construction of LJIIB, the certificate holder shall label archaeologist site LJ-4/10/09-8 on construction maps and drawings as "no entry" areas, and if construction activities will occur within 200 feet of an identified site, the certificate holder shall flag a 50-foot buffer around the site.

50. The certificate holder shall comply with the following requirements for LJIIB with respect to the Oregon Trail:

(a) The certificate holder shall not locate facility components on visible remnants of the Oregon Trail and shall avoid any construction disturbance to those remnants.

(b) The certificate holder shall not locate facility components on undeveloped land where the trail alignment was marked by existing Oregon-California Trail Association markers, as described in the *Addendum to the Leaning Juniper II Wind Power Facility* (CH2M HILL, June 2009).

(c) Before beginning construction of LJIIB, the certificate holder shall provide to SHPO and the Department photographic documentation of the presumed Oregon Trail alignments within the site boundary.

(d) The certificate holder shall ensure that construction personnel proceed carefully in the vicinity of the presumed alignments of the Oregon Trail within the site boundary. If any intact portion of the Oregon Trail is discovered that was not identified during the 2009 field survey, the certificate holder shall avoid any disturbance to the intact segment by redesigning, re-engineering, or restricting the area of construction activity. The certificate holder shall promptly notify SHPO and the Department of the discovery and shall consult with SHPO and the Department to determine appropriate mitigation measures.

4. Geotechnical Conditions

51. ~~49.~~ Before beginning construction of each respective phase of the facility, the certificate holder shall conduct site-specific geotechnical investigation and shall report its findings to the Oregon Department of Geology & Mineral Industries (DOGAMI). The certificate holder shall conduct the geotechnical investigation after consultation with DOGAMI and

in general accordance with DOGAMI open file report 00-04 "Guidelines for Engineering Geologic Reports and Site-Specific Seismic Hazard Reports."

52. ~~50.~~ The certificate holder shall design and construct the facility in accordance with requirements set forth by the State of Oregon's Building Code Division and any other applicable codes and design procedures. The certificate holder shall design all components of the facility to meet or exceed the minimum standards required by the 2003 International Building Code.

53. ~~51.~~ The certificate holder shall design, engineer and construct the facility to avoid dangers to human safety presented by non-seismic hazards. As used in this condition, "non-seismic hazards" include settlement, landslides, flooding and erosion.

5. Hazardous Materials, Fire Protection & Public Safety Conditions

53. ~~52.~~ The certificate holder shall notify the Department within 72 hours of any accidents including mechanical failures on the site associated with construction or operation of the facility that may result in public health and safety concerns.

54. ~~53.~~ Before beginning construction of each respective phase of the facility, the certificate holder shall submit a Notice of Proposed Construction or Alteration to the Federal Aviation Administration (FAA) identifying the proposed final locations of the turbines and related or supporting facilities. The certificate holder shall notify the Department of the FAA's response as soon as it has been received.

55. ~~54.~~ To protect the public from electrical hazards, the certificate holder shall enclose the facility substations with appropriate fencing and locked gates.

56. ~~55.~~ The certificate holder shall construct turbine towers that are smooth steel structures with no exterior ladders or access to the turbine blades and shall install locked access doors accessible only to authorized personnel.

57. ~~56.~~ The certificate holder shall follow manufacturers' recommended handling instructions and procedures to prevent damage to towers or blades that could lead to failure.

58. ~~57.~~ The certificate holder shall have an operational safety monitoring program and shall inspect turbine blades on a regular basis for signs of wear. The certificate holder shall repair turbine blades as necessary to protect public safety.

59. ~~58.~~ The certificate holder shall install and maintain self-monitoring devices on each turbine, linked to sensors at the operations and maintenance building, to alert operators to potentially dangerous conditions, and the certificate holder shall immediately remedy any dangerous conditions. The certificate holder shall maintain automatic equipment protection features in each turbine that would shut down the turbine and reduce the chance of a mechanical problem causing a fire.

60. ~~59.~~ The certificate holder shall install generator step-up transformers at the base of each tower in locked cabinets designed to protect the public from electrical hazards and shall design the cabinets to avoid creation of artificial habitat for raptor prey.

61. ~~60.~~ The certificate holder shall construct turbines on concrete pads with a minimum of 10 feet of non-flammable and non-erosive ground cover on all sides. The certificate holder shall cover turbine pad areas with non-erosive material immediately following exposure during construction and shall maintain the pad area covering during operation of the facility.

62. ~~61.~~ During construction and operation of the facility, the certificate holder shall develop and implement fire safety plans in consultation with the North Gilliam County Rural Fire Protection District and the Arlington Fire Department to minimize the risk of fire and to respond appropriately to any fires that occur on the facility site. In developing the fire safety plans, the certificate holder should take into account the dry nature of the region and should address risks on a seasonal basis. The certificate holder shall meet annually with District and Fire Department personnel to discuss emergency planning and shall invite District and Fire Department personnel to observe any emergency drill or tower rescue training conducted at the facility.

63. ~~62.~~ During construction and operation of the facility, the certificate holder shall ensure that the O&M buildings and all service vehicles are equipped with shovels and portable fire extinguishers of a 4A5OBC or equivalent rating.

64. ~~63.~~ During construction, the certificate holder shall ensure that construction vehicles and equipment are operated on graveled areas to the extent possible and that open flames, such as cutting torches, are kept away from dry grass areas.

65. ~~64.~~ Upon the beginning of operation of the facility, the certificate holder shall provide to North Gilliam County Rural Fire Protection District and the Arlington Fire Department a site plan indicating the identification number assigned to each turbine and the location of all facility structures. During operation, the certificate will ensure that appropriate District and Fire Department personnel have an up-to-date list of the names and telephone numbers of facility personnel available to respond on a 24-hour basis in case of an emergency on the facility site.

66. ~~65.~~ During operation, the certificate holder shall ensure that all on-site employees receive annual fire prevention and response training, including tower rescue training, by qualified instructors or members of the local fire department and that all employees are instructed to keep vehicles on roads and off dry grassland, except when off-road operation is required for emergency purposes.

67. ~~66.~~ During construction, the certificate holder shall require that all on-site construction contractors develop and implement a site health and safety plan that informs workers and others on-site what to do in case of an emergency and that includes the locations of fire extinguishers and nearby hospitals, important telephone numbers and first aid techniques.

The certificate holder shall ensure that construction contractors have personnel on-site who are trained and equipped for tower rescue and who are first aid and CPR certified.

68. ~~67.~~ During operation, the certificate holder shall develop and implement a site health and safety plan that informs employees and others on-site what to do in case of an emergency and that includes the locations of fire extinguishers and nearby hospitals, important telephone numbers and first aid techniques.

69. ~~68.~~ The certificate holder shall handle any hazardous materials used on the site in a manner that protects public health, safety and the environment and shall comply with all applicable local, state and federal environmental laws and regulations.

70. ~~69.~~ If a spill or release of hazardous materials occurs during construction or operation of the facility, the certificate holder shall notify the Department within 72 hours and shall clean up the spill or release and dispose of any contaminated soil or other materials according to applicable regulations. The certificate holder shall make sure that spill kits containing items such as absorbent pads are located on equipment and storage facilities to respond to accidental spills and shall instruct employees handling hazardous materials in the proper handling, storage and cleanup of these materials.

6. Water, Soils, Streams & Wetlands Conditions

71. ~~70.~~ The certificate holder shall conduct all construction work in compliance with an Erosion and Sediment Control Plan (ESCP) satisfactory to the Oregon Department of Environmental Quality and as required under the National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge General Permit #1200-C. The certificate holder shall include in the ESCP any procedures necessary to meet local erosion and sediment control requirements and storm water management requirements.

72. ~~71.~~ During construction, the certificate holder shall limit truck traffic to designated existing and improved road surfaces to avoid soil compaction, to the extent possible.

73. ~~72.~~ During construction, the certificate holder shall avoid impacts to waters of the state in the following manner:

(a) The certificate holder shall avoid any disturbance, including the placement of poles for the collector line, within 25 feet of the stream channel in the area identified as "S5" on Figure J 1 of the Site Certificate Application.

(b) The certificate holder shall avoid any disturbance to the six wetland areas identified as "W1" through "W6" on Figure J-1 of the Site Certificate Application and the wetland area identified as "W-8" on Figure 6 of the *Addendum to Leaning Juniper II Wind Power Facility Wetlands and Waters Delineation Report (CH2M HILL, June 3, 2009)*.

(c) The certificate holder shall avoid any disturbance to the stream channels identified as "S24" and "S25" on Figure J-1 of the Site Certificate Application.

(d) Before beginning construction affecting the location identified as "S27" on Figure J-1 of the Site Certificate Application, the certificate holder shall apply for and obtain a Removal/Fill Permit from the Department of State Lands, which, in accordance with ORS 469.401, shall issue the permit substantially in the form of Attachment F of the

Final Order on the Application and subject only to the conditions of this site certificate including substantive requirements listed in that attachment.

(e) Before beginning construction of each respective phase of the facility, the certificate holder shall determine whether any construction disturbance would occur in locations not previously investigated for potential jurisdictional waters as described in the Final Order on the Application. The certificate holder shall conduct a pre-construction investigation to determine whether any jurisdictional waters exist in those locations. The certificate holder shall submit a written report on this pre-construction investigation to the Department of Energy and to the Department of State Lands for approval before beginning construction of each respective phase of the facility and shall ensure that construction of the facility would have no impact on any jurisdictional water identified in the report.

74. ~~73.~~ During construction, the certificate holder shall ensure that the wash down of concrete trucks occurs only at a contractor-owned batch plant or at a dedicated concrete washout area located at each completed tower foundation ~~locations~~location. If such wash down occurs at a tower foundation ~~locations~~location, then the certificate holder shall ensure that wash down wastewater does not run off the construction site into otherwise undisturbed areas and that the ~~wastewater is disposed of on backfill piles and buried underground with the backfill over the tower~~rinse water is discharged into foundation holes and that other concrete waste is buried as a part of backfilling the turbine foundation.

75. ~~74.~~ The certificate holder shall restore areas outside the permanent footprint that are disturbed during construction according to the methods and monitoring procedures described in the Revegetation Plan that is incorporated in the Final Order on the Application as Attachment B and as amended from time to time.

76. ~~75.~~ During facility operation, the certificate holder shall routinely inspect and maintain all roads, pads and trenched areas and, as necessary, maintain or repair erosion control measures. The certificate holder shall restore areas that are temporarily disturbed during facility maintenance or repair activities to pre-disturbance condition or better.

77. ~~76.~~ During facility operation, the certificate holder shall obtain water for on-site uses from one or more on-site wells, subject to compliance with any applicable permit requirements, not exceeding 5,000 gallons per day. The certificate holder shall not change the source of water for on-site uses without prior Department approval.

78. ~~77.~~ During facility operation, if blade-washing becomes necessary, the certificate holder shall ensure that there is no runoff of wash water from the site or discharges to surface waters, storm sewers or dry wells. The certificate holder shall not use more than 50 gallons of water per blade and shall not wash more than eight turbines (24 blades) per week. The certificate holder shall not use acids, bases or metal brighteners with the wash water. The certificate may use biodegradable, phosphate-free cleaners sparingly.

7. Transmission Line & EMF Conditions

79. ~~78.~~ The certificate holder shall install the 34.5-kV collector system underground to the extent practical. Where geotechnical conditions or other engineering considerations

require, the certificate holder may install segments of the collector system but the total length of aboveground segments must not exceed 9.9 miles for LJIIA and 14.7 miles for LJIIB. The certificate holder shall construct aboveground segments of the collector system using single or double circuit monopole design as described in the site certificate application.

80. ~~79.~~ At least 30 days before beginning preparation of detailed design and specifications for the electrical transmission lines, the certificate holder shall consult with the Oregon Public Utility Commission staff to ensure that transmission line designs and specifications are consistent with applicable codes and standards.

81. ~~80.~~ To protect public safety, the certificate holder shall design and maintain the transmission lines so that:

(a) Alternating current electric fields during operation do not exceed 9 kV per meter at one meter above the ground surface in areas accessible to the public.

(b) Induced voltages during operation are as low as reasonably achievable.

82. ~~81.~~ The certificate holder shall take reasonable steps to reduce or manage human exposure to electromagnetic fields, including but not limited to:

~~(c)~~(a) Constructing all aboveground transmission lines at least 200 feet from any residence or other occupied structure.

~~(d)~~(b) Ensuring that the area near the facility substation is inaccessible to the public by fencing the area.

~~(e)~~(c) Constructing aboveground 34.5-kV transmission lines with a minimum clearance of 25 feet from the ground.

(d) Constructing all aboveground 230-kV transmission lines with a minimum clearance of 30 feet from the ground.

(e) ~~(d)~~ Providing to landowners a map of underground and overhead transmission lines on their property and advising landowners of possible health risks.

8. Plants, Wildlife & Habitat Protection Conditions

83. ~~82.~~ During construction and operation of the facility, the certificate holder shall implement a plan to control the introduction and spread of noxious weeds. The certificate shall develop the weed control plan in consultation with the Gilliam County Weed Control Board.

84. ~~83.~~ The certificate holder shall design all aboveground transmission line support structures following the practices suggested by the Avian Powerline Interaction Committee (1996) and shall install anti-perching devices on transmission pole tops and cross arms where the poles are located within 1/2 mile of turbines.

85. ~~84.~~ The certificate holder may construct turbines and other facility components within the micrositing areas identified in Attachment D of the Final Order on the Application and Attachment ___ of the Final Order on the Request for Amendment, subject to the following requirements addressing potential habitat impact:

(a) The certificate holder shall not construct any facility components within areas of Category 1 habitat and shall avoid temporary disturbance of Category 1 habitat.

(b) The certificate holder shall design and construct facility components that are the minimum size needed for safe operation of the energy facility.

(c) In the final design of the facility within micrositing areas, the certificate holder shall reduce impact on essential or important habitat (Category 4 and above) to the extent practical.

(d) As a protective measure during construction, the certificate holder shall install exclusion fencing around confirmed populations of sessile mousetail (identified in Figure Q 3 of the site certificate application)]. The certificate holder shall not install facility components or cause temporary disturbance within these areas. Before beginning construction, the certificate holder shall verify the protected status of sessile mousetail and notify the Department. If the species has been upgraded to threatened or endangered under State or federal law, the certificate holder shall take appropriate mitigation actions, subject to Department approval.

(e) If construction would affect locations within the micrositing areas that were not surveyed in 2005 and 2006 for LJIIA or subsequent years for LJIIB for the occurrence of State or federal threatened or endangered species, the certificate holder shall conduct additional pre-construction surveys of those locations, notify the Department of the findings and implement appropriate avoidance or mitigation measures for any threatened or endangered species detected, subject to Department approval.

86. ~~85.~~ The certificate holder shall implement measures to mitigate impacts to sensitive wildlife habitat during construction and operation including, but not limited to, the following:

~~(f)~~(a) Preparing maps to show sensitive areas, such as nesting or denning areas for sensitive wildlife species, that are off limits to construction personnel.

~~(g)~~(b) Before construction begins of each respective phase of the facility, the certificate holder shall have a qualified biologist place exclusion markers around sensitive wildlife habitat areas, including Category 1 Washington ground squirrel (WGS) areas and an appropriate buffer around these areas. The certificate holder shall maintain the exclusion markings until construction has been completed.

~~(h)~~(c) Ensuring that a qualified person instructs construction and operations personnel to be aware of wildlife in the area and to take precautions to avoid injuring or destroying wildlife or sensitive wildlife habitat.

~~(i)~~(d) Avoiding unnecessary road construction, temporary disturbance and vehicle use.

~~(j)~~(e) Posting and maintaining speed limit signs (not to exceed 20 miles per hour) on access roads throughout the site. The certificate holder shall ensure that all construction and operations personnel are instructed to observe caution when driving in the facility area to avoid injury or disturbance to wildlife enforce and for personal safety.

87. ~~86.~~ During construction of each respective phase of the facility, the certificate holder shall protect the area within a 1300-foot buffer around active nests of the following species during the sensitive period, as provided in this condition:

Species	Sensitive Period	Early Release Date
Swainson's hawk	April 1 to August 15	May 31
Ferruginous hawk	March 15 to August 15	May 31
Burrowing owl	April 1 to August 15	July 15

During the year in which construction occurs of each respective phase of the facility, the certificate holder shall use a protocol approved by the Oregon Department of Fish and Wildlife (ODFW) to determine whether there are any active nests of these species within a half-mile of any areas that would be disturbed during construction. If a nest is occupied by any of these species after the beginning of the sensitive period, the certificate holder shall not engage in high-impact construction activities (activities that involve blasting, grading or other major ground disturbance) or allow high levels of construction traffic within 1300 feet of the nest site. In addition, the certificate holder will flag the boundaries of the 1300-foot buffer area and shall instruct construction personnel to avoid any unnecessary activity within the buffer area. The certificate holder shall hire an independent biological monitor to observe the active nest sites during the sensitive period for signs of disturbance and to notify the Department of any non-compliance with this condition. If the monitor observes nest site abandonment or other adverse impact to nesting activity, the certificate holder shall implement appropriate mitigation, in consultation with ODFW and subject to the approval of the Department, unless the adverse impact is clearly shown to have a cause other than construction activity. The certificate holder may begin or resume high-impact construction activities before the ending day of the sensitive period if any known nest site is not occupied by the early release date. If a nest site is occupied, then the certificate holder may begin or resume high-impact construction before the ending day of the sensitive period with the approval of ODFW, after the young are fledged. The certificate holder shall use a protocol approved by ODFW to determine when the young are fledged (the young are independent of the core nest site).

88. ~~87.~~ The certificate holder shall conduct wildlife monitoring as described in the Wildlife Monitoring and Mitigation Plan that is incorporated in the Final Order on the Application as Attachment A and as amended from time to time.

89. ~~88.~~ Before beginning construction, the certificate holder shall obtain an Incidental Take Permit (ITP) letter from the Oregon Department of Fish and Wildlife (ODFW) that incorporates the terms and commitments of the ITP application as set forth in Attachment E of the Final Order on the Application. [TO ODOE: LJWP will consult with ODOE and ODFW regarding an amendment to the ITP letter to reflect revised LJF layout]

90. ~~89.~~ The certificate holder shall acquire the legal right to create, enhance, maintain and protect a habitat mitigation area as long as the site certificate is in effect by means of an outright purchase, conservation easement or similar conveyance and shall provide a copy of the documentation to the Department. Within the habitat mitigation area, the certificate holder shall improve the habitat quality as described in the Habitat Mitigation Plan that is incorporated in the Final Order on the Application as Attachment C and as amended from time to time.

9. Visual Effects Conditions

91. ~~90.~~ To reduce the visual impact of the facility, the certificate holder shall:

(a) Mount nacelles on smooth steel towers, painted uniformly in a neutral white color.

(b) Paint substation structures in a neutral color to blend with the surrounding landscape.

(c) Not allow any advertising on any part of the facility.

(d) Use only those signs required for facility safety or required by law, except that the certificate holder may erect a sign to identify the facility.

(e) Maintain any signs allowed under this condition in good repair.

92. ~~91.~~ The certificate holder shall design and construct the operation and maintenance buildings to be generally consistent with the character of similar buildings used by commercial farmers or ranchers in the area and shall paint the building in a neutral color to blend with the surrounding landscape.

93. ~~92.~~ The certificate holder shall not use exterior lighting at the facility except:

~~(f)~~(a) The minimum turbine tower lighting required or recommended by the Federal Aviation Administration.

~~(g)~~(b) Security lighting at the operations and maintenance buildings and at the substations, provided that such lighting is shielded or downward-directed to reduce glare.

~~(h)~~(c) Minimum lighting necessary for repairs or emergencies.

10. Noise Control Conditions

94. ~~93.~~ To reduce noise impacts at nearby residential areas, the certificate holder shall:

(a) Confine the noisiest operation of heavy construction equipment to the daylight hours.

(b) Require contractors to install and maintain exhaust mufflers on all combustion engine-powered equipment; and

(c) Establish a complaint response system at the construction manager's office to address noise complaints.

95. ~~94.~~ Before beginning construction of each respective phase of the facility, the certificate holder shall provide to the Department:

~~(d)~~(a) Information that identifies the final design locations of all turbines to be built at the facility.

~~(e)~~(b) The maximum sound power level of the turbines and substation transformers based on manufacturers' warranties or confirmed by other means acceptable to the Department.

~~(f)~~(c) The results of noise analysis of the facility to be built according to the final design performed in a manner consistent with the requirements of OAR 340-035-0035(1)(b)(B)(iii)(IV) and (vi) demonstrating to the satisfaction of the Department that the total noise generated by the facility (including the noise from turbines and substation transformers) would meet the ambient noise degradation test and maximum allowable test at the appropriate measurement point for all potentially-affected noise sensitive properties.

~~(g)~~(d) For each noise-sensitive property where the certificate holder relies on a noise waiver to demonstrate compliance in accordance with OAR 340-035-0035(1)(b)(B)(iii)(III), a copy of the a legally effective easement or real covenant pursuant to which the owner of the property authorizes the certificate holder's operation of the facility to increase ambient statistical noise levels L_{10} and L_{50} by more than 10 dBA at the appropriate measurement point. The legally-effective easement or real covenant must: include a legal description of the burdened property (the noise sensitive property); be recorded in the real property records of the county; expressly benefit the certificate holder; expressly run with the land and bind all future owners, lessees or holders of any interest in the burdened property; and not be subject to revocation without the certificate holder's written approval.

96. ~~95.~~ During operation, the certificate holder shall maintain a complaint response system to address noise complaints. The certificate holder shall promptly notify the Department of any complaints received regarding facility noise and of any actions taken by the certificate holder to address those complaints.

11. Waste Management Conditions

97. ~~96. 96~~ The certificate holder shall provide portable toilets for on-site sewage handling during construction and shall ensure that they are pumped and cleaned regularly by a licensed contractor who is qualified to pump and clean portable toilet facilities.

98. ~~97.~~ During operation, the certificate holder shall discharge sanitary wastewater generated at the O&M building to a licensed on-site septic system in compliance with county permit requirements. The certificate holder shall design the septic system design with a capacity that is less than 2,500 gallons per day.

99. ~~98.~~ The certificate holder shall implement a waste management plan during construction that includes but is not limited to the following measures:

(a) Training construction personnel to minimize and recycle solid waste.

(b) Minimizing the generation of wastes from construction through detailed estimating of materials needs and through efficient construction practices.

(c) Recycling steel and other metal scrap.

(d) Recycling wood waste.

(e) Recycling packaging wastes such as paper and cardboard.

(f) Collecting non-recyclable waste for transport to a landfill by a licensed waste hauler.

(g) Segregating all hazardous wastes such as used oil, oily rags and oil-absorbent materials, mercury-containing lights and lead-acid and nickel-cadmium batteries for disposal by a licensed firm specializing in the proper recycling or disposal of hazardous wastes.

100. ~~99.~~ The certificate holder may dispose of waste concrete on site with the permission of the landowner and in accordance with OAR 340-093-0080 and other applicable regulations. The certificate holder shall dispose of waste concrete on site by placing the material in an excavated hole, covering it with at least three feet of topsoil and grading the area to match existing contours. If the waste concrete is not disposed of on site, the certificate holder shall arrange for proper disposal in a landfill.

101. ~~100.~~ The certificate holder shall implement a waste management plan during operation that includes but is not limited to the following measures:

~~(h)~~(a) Training employees to minimize and recycle solid waste.

~~(i)~~(b) Recycling paper products, metals, glass and plastics.

~~(j)~~(c) Recycling used oil and hydraulic fluid.

~~(k)~~(d) Collecting non-recyclable waste for transport to a landfill by a licensed waste hauler.

~~(l)~~(e) Segregating all hazardous, non-recyclable wastes such as used oil, oily rags and oil- absorbent materials, mercury-containing lights and lead-acid and nickel-cadmium batteries for disposal by a licensed firm specializing in the proper recycling or disposal of hazardous wastes.

VI. SUCCESSORS AND ASSIGNS

To transfer this site certificate or any portion thereof or to assign or dispose of it in any other manner, directly or indirectly, the certificate holder shall comply with OAR 345 -027~~-0~~ ~~100.~~-0100.

VII. SEVERABILITY AND CONSTRUCTION

If any provision of this agreement and certificate is declared by a court to be illegal or in conflict with any law, the validity of the remaining terms and conditions shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if the agreement and certificate did not contain the particular provision held to be invalid.

VIII. GOVERNING LAW AND FORUM

This site certificate shall be governed by the laws of the State of Oregon. Any litigation or arbitration arising out of this agreement shall be conducted in an appropriate forum in Oregon.

IX. EXECUTION

This site certificate may be executed in counterparts and will become effective upon signature by the Chair of the Energy Facility Siting Council and the authorized representative of the certificate holder.

IN WITNESS WHEREOF, this site certificate has been executed by the State of Oregon, acting by and through its Energy Facility Siting Council, and by Leaning Juniper Wind Power II LLC.

ENERGY FACILITY SITING COUNCIL LEANING JUNIPER WIND POWER II LLC

By: ________________________________
~~David Ripma~~Robert R. Shiprack, Chair
Oregon Energy Facility Siting Council

Date: ________________________________

By: ________________________________

Print: ________________________________

Date: ________________________________

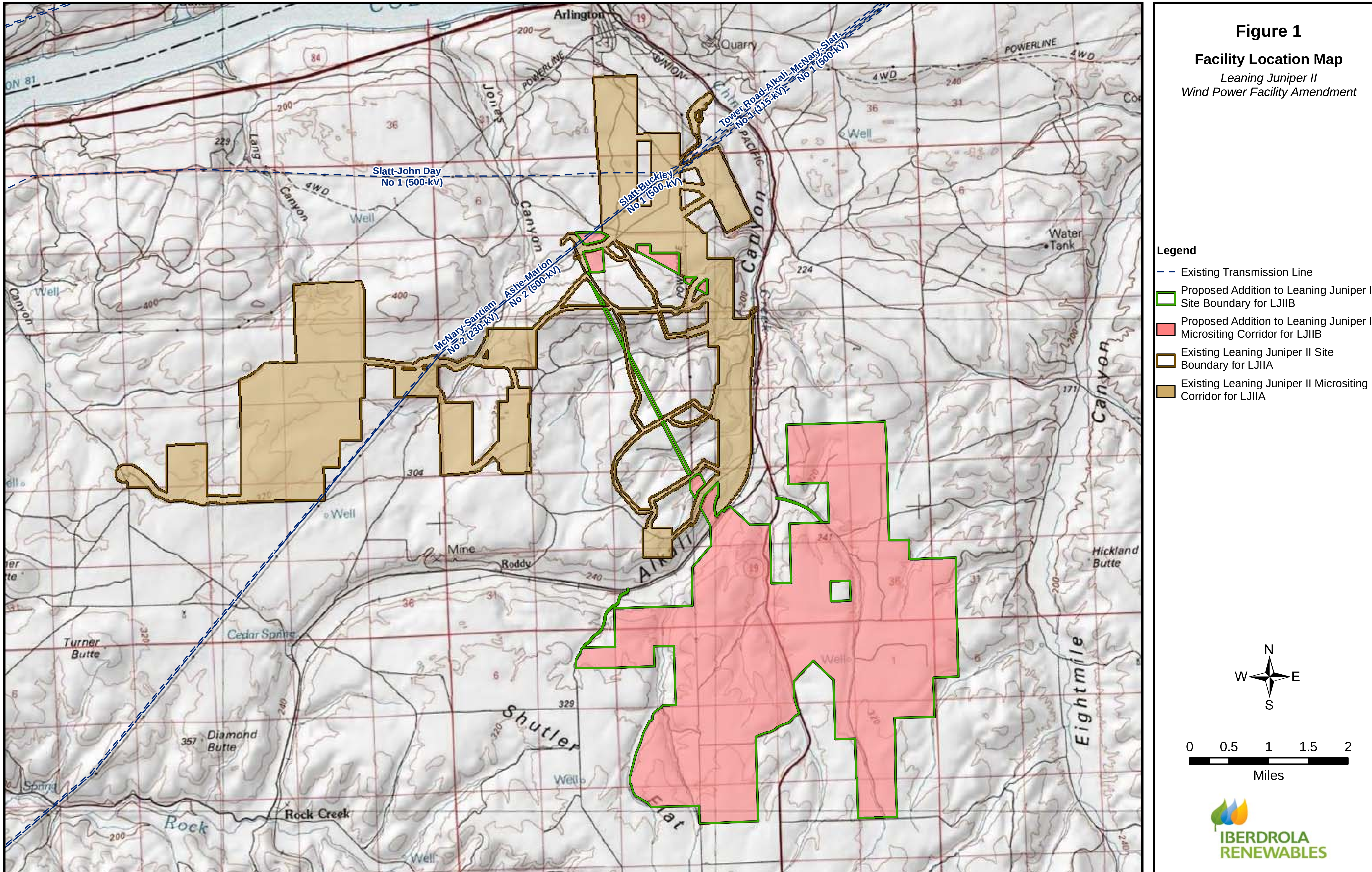
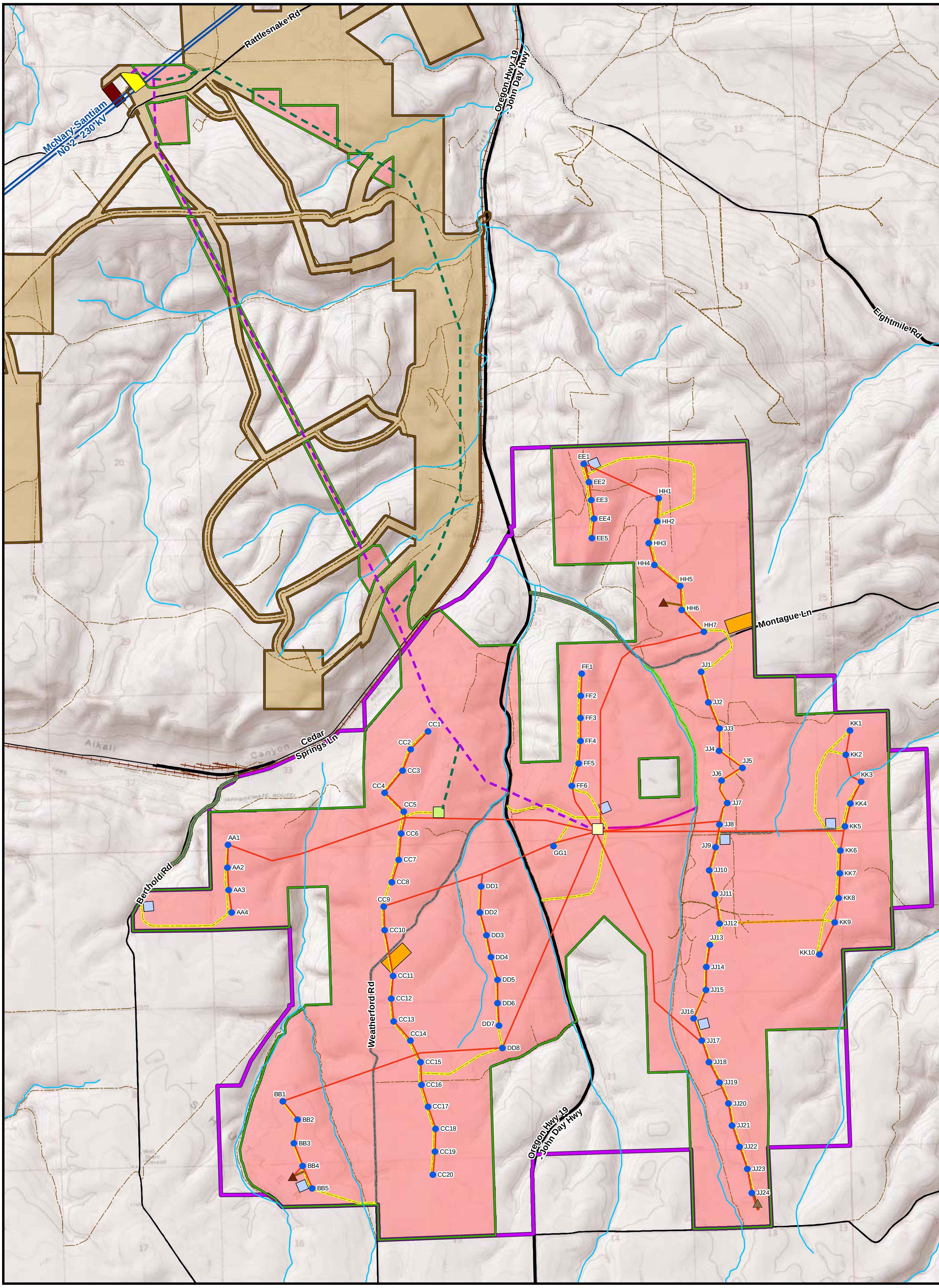


Figure 1
Facility Location Map
Leaning Juniper II
Wind Power Facility Amendment
Legend
Existing Transmission Line
Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
Proposed Addition to Leaning Juniper II Micrositing Corridor for LJIIB
Existing Leaning Juniper II Site Boundary for LJIIA
Existing Leaning Juniper II Micrositing Corridor for LJIIA
N
W
E
S
0 0.5 1 1.5 2
Miles
IBERDROLA RENEWABLES
Arlington
Slatt-John Day No 1 (500-kV)
Slatt-Buckley No 1 (500-kV)
Tower Road-Alkali No 1 (115-kV)
McNary-Slatt No 1 (500-kV)
McNary-Santiam No 2 (230-kV)
Ashe-Marion No 2 (500-kV)
Quarry
Water Tank
Hickland Butte
Turner Butte
Diamond Butte
Cedar Spring
Rock Creek
Shutler Flat
Eightmile Canyon
Alkali Canyon
POWERLINE
4WD
Well
Mine
Roddy



Legend

- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- Proposed Addition to Leaning Juniper II Micrositing Corridor for LJIIB
- Proposed Addition to Leaning Juniper II Lease Boundary for LJIIB
- Existing Leaning Juniper II Site Boundary for LJIIA
- Existing Leaning Juniper II Micrositing Corridor for LJIIA

Proposed Permanent Facilities

- Proposed Turbine
- Primary Proposed Met Tower
- Alternate Proposed Met Tower
- Proposed New Turbine Road
- Proposed New Met Tower Road
- Proposed Improved Road
- Alternate New Turbine Road
- Alternate Improved Road
- Proposed Underground 34.5-kV Line
- Preferred 230-kV Transmission Line or 34.5-kV Overhead Collector Line
- Alternate 230-kV Transmission Line or 34.5-kV Overhead Collector Line
- Proposed Leaning Juniper II Collector Substation
- Proposed Additional Leaning Juniper II Collector Substation
- Proposed Alternate Leaning Juniper II Collector Substation

Proposed Temporary Facilities

- Proposed Crane Path
- Proposed 10-Acre Staging Area
- Proposed 2.5-Acre Staging Area

Existing Facilities

- Existing Transmission Line
- Existing BPA Jones Canyon Switching Station
- Stream
- Railroad
- Public, Paved
- Other Public Road
- Public, Gravel
- Private, Farm Road

N

0 0.5 1

Miles

Figure 2

Facility Components

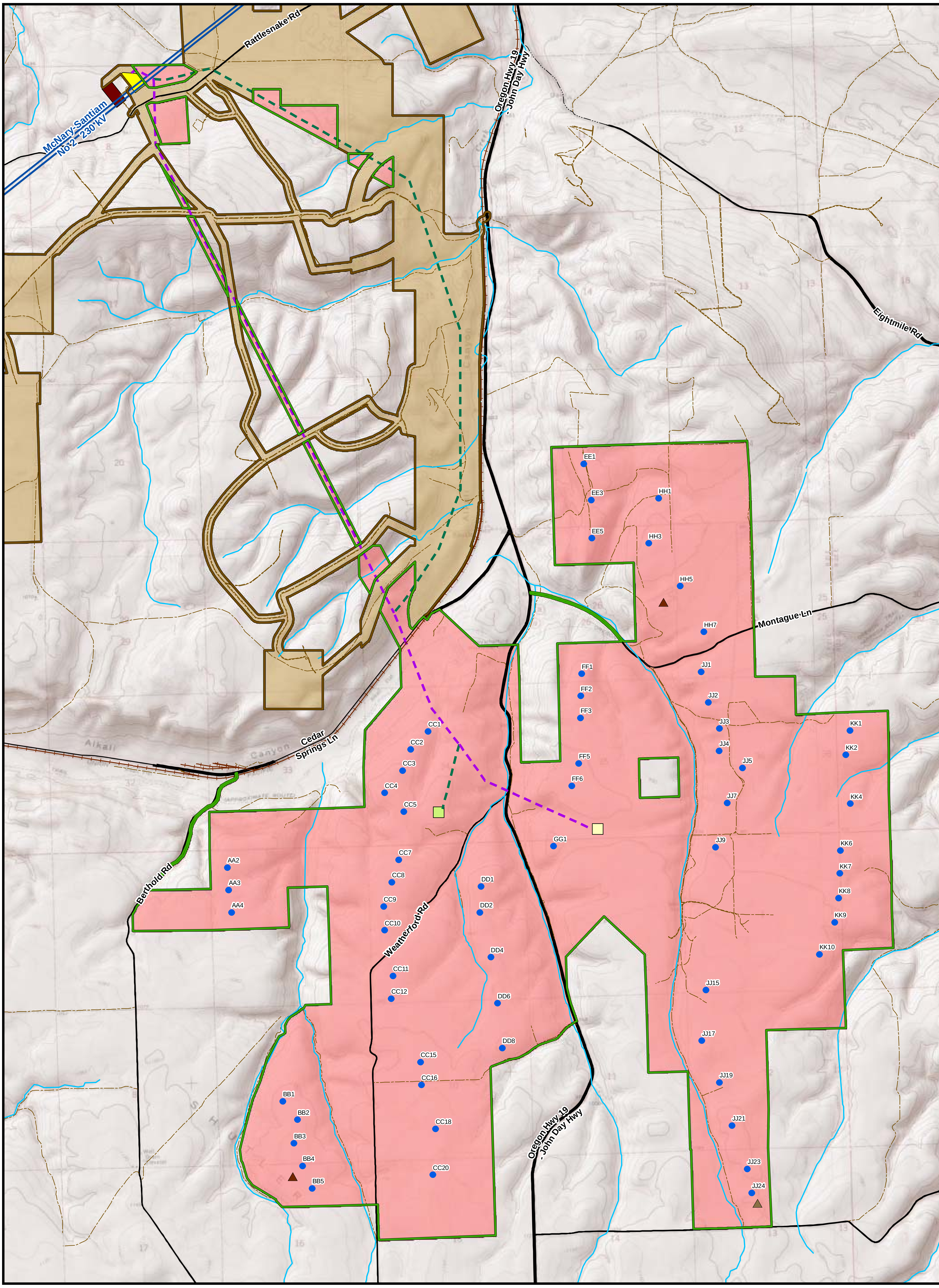
1.5-MW Turbine Layout
(Maximum Turbine Layout)

Leaning Juniper II Wind Power Facility Amendment

IBERDROLA RENEWABLES

File: Z:\Projects\OR\Leaning Juniper\MapDocuments\Report Figures\EFSC (LJII)\Amendment (LJIIb)\Figure 2 - Facility Components (15MW Layout).mxd

Modify Date: 6/17/2009



Legend

- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- Proposed Addition to Leaning Juniper II Micrositing Corridor for LJIIB
- Existing Leaning Juniper II Site Boundary for LJIIA
- Existing Leaning Juniper II Micrositing Corridor for LJIIA

Proposed Permanent Facilities

- Proposed Turbine
- Primary Proposed Met Tower
- Alternate Proposed Met Tower
- Preferred 230-kV Transmission Line or 34.5-kV Overhead Collector Line
- Alternate 230-kV Transmission Line or 34.5-kV Overhead Collector Line
- Proposed Leaning Juniper II Collector Substation
- Proposed Additional Leaning Juniper II Collector Substation
- Proposed Alternate Leaning Juniper II Collector Substation

Existing Facilities

- Existing Transmission Line
- Existing BPA Jones Canyon Switching Station

- Railroad
- Stream
- Public, Paved
- Other Public Road
- Public, Gravel
- Private, Farm Road

N

0 0.5 1
Miles

Figure 3

Facility Components

3.0-MW Turbine Layout (Minimum Turbine Layout)

Leaning Juniper II Wind Power Facility Amendment

IBERDROLA RENEWABLES

File: Z:\Projects\OR\Leaning Juniper\MapDocuments\Report Figures\EFSC (LJII)\Amendment (LJIIb)\Figure 3 - Facility Components (3MW Layout).mxd

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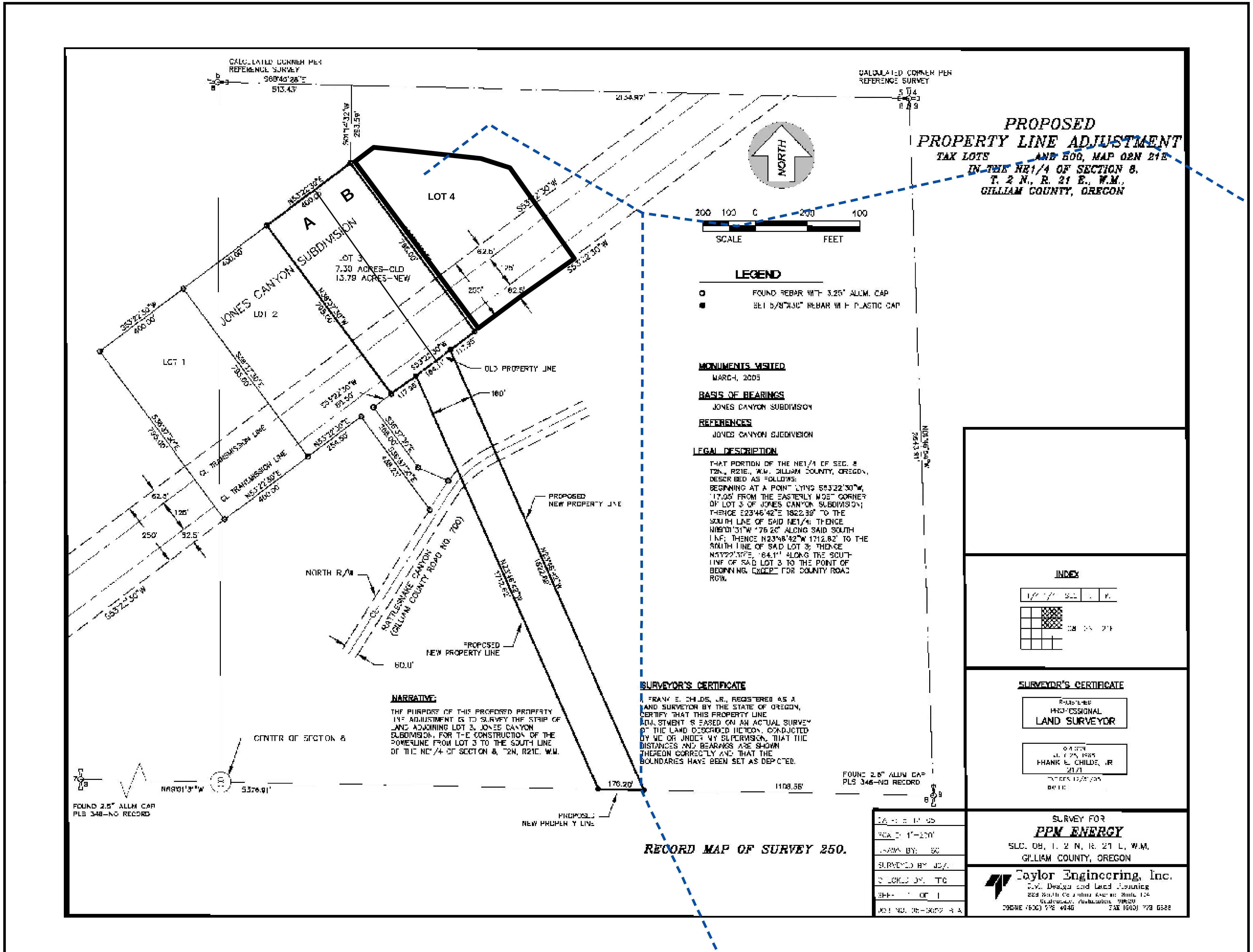


Figure 4

Facility Substation and Interconnection

Leaning Juniper II
Wind Power Facility Amendment

Legend

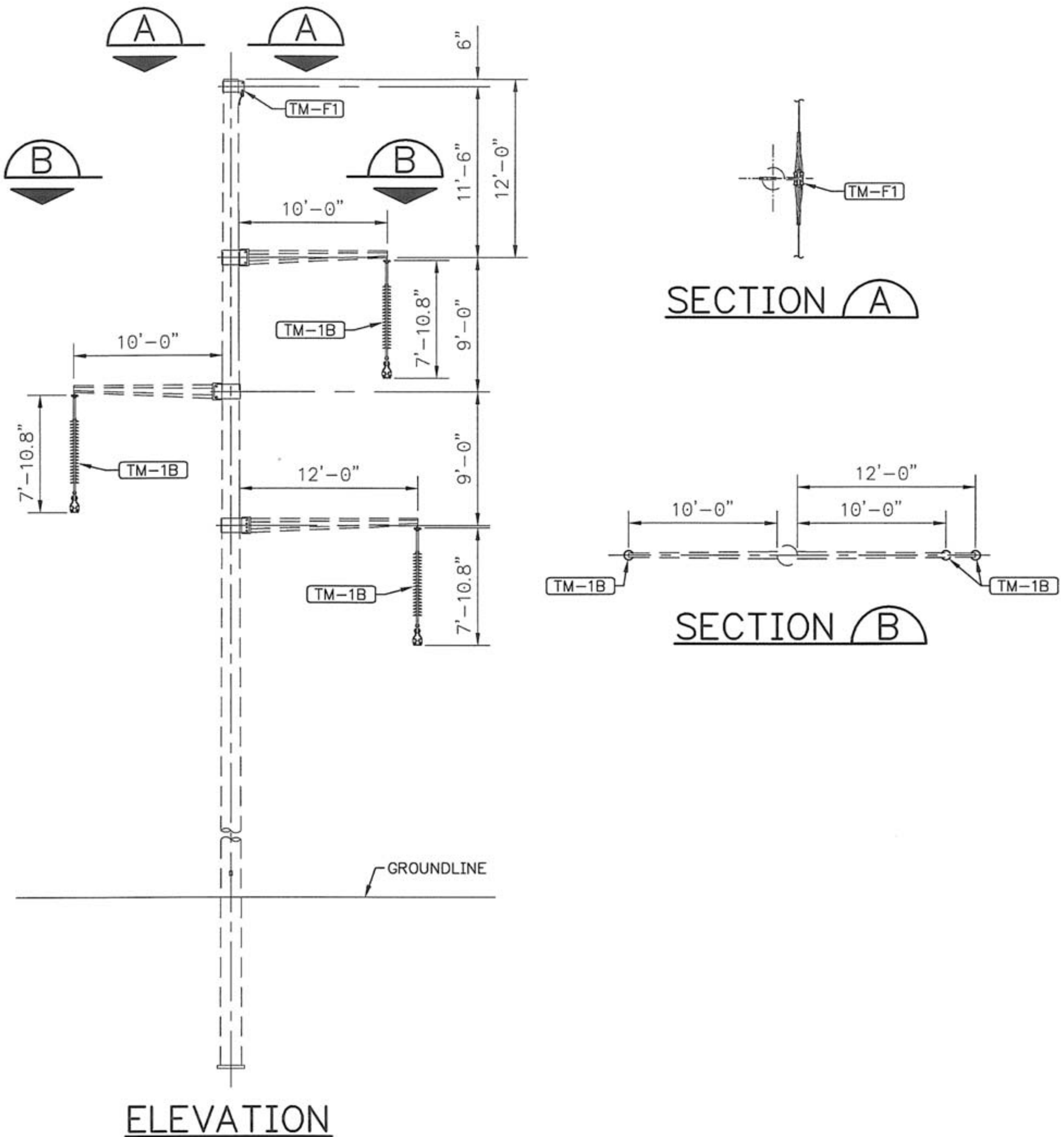
Lot 1 -	Horizon Rattlesnake Road Collector Substation
Lot 2 -	BPA Jones Canyon Switching Station
Lot 3A -	Leaning Juniper I Substation
Lot 3B -	Pebble Springs Substation
Lot 4 -	Leaning Juniper II Substation

Proposed 230-kV Transmission Line or 34.5-kV Overhead Collector Line - Leaning Juniper II

N
W E
S

0 100 200 400 600
Feet

IBERDROLA RENEWABLES

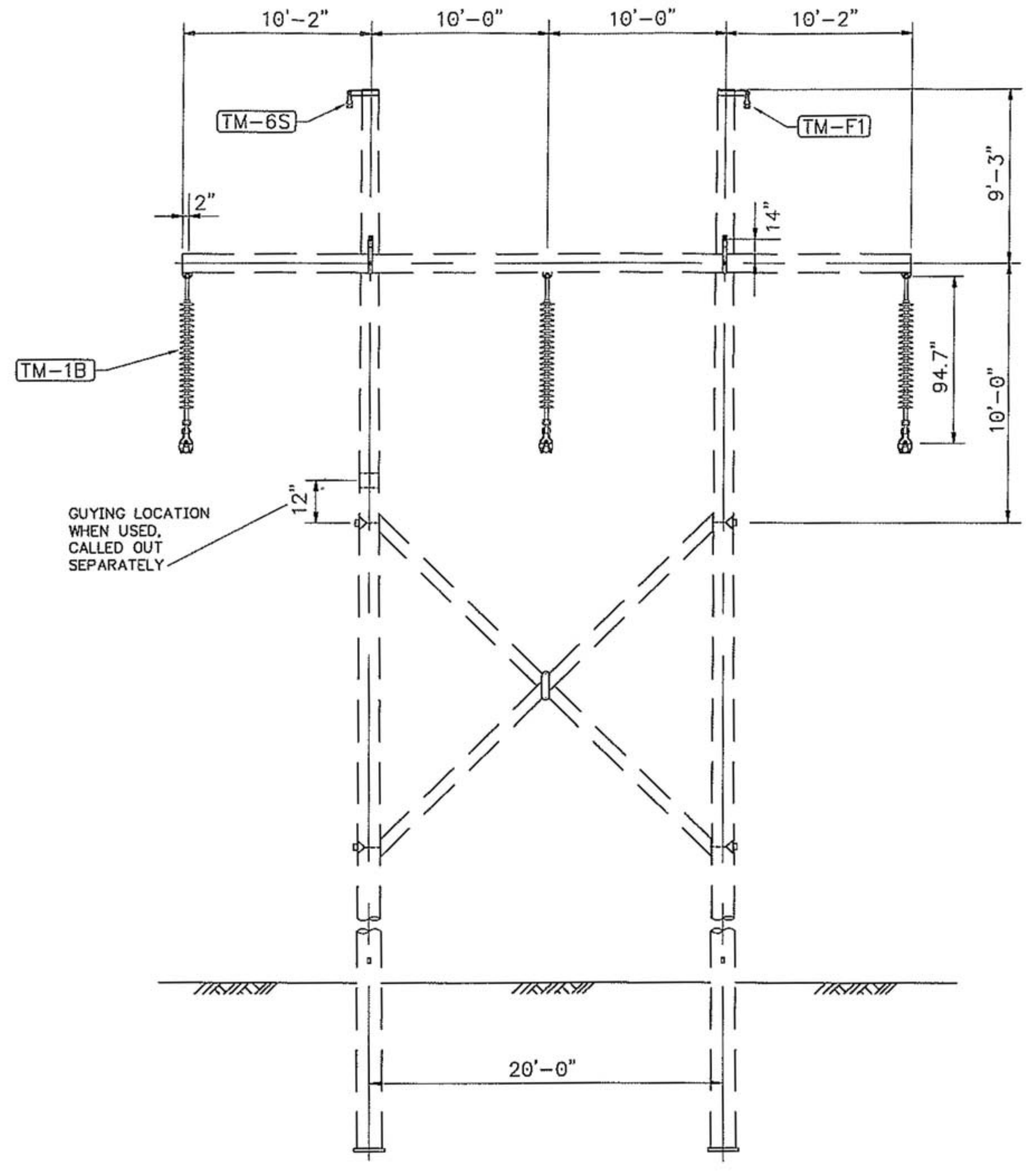


ITEM	QTY	DESCRIPTION
TM-1B	3	230-KV SUSPENSION INSULATOR WITH ARMOR ROD
TM-F1	1	FIBEROPTIC TANGENT SUPPORT ASSEMBLY

IBERDROLA RENEWABLES

FIGURE 5
Typical 230-kV Monopole Support Structure
LEANING JUNIPER II WIND POWER FACILITY AMENDMENT

CH2MHILL



ITEM	QTY	DESCRIPTION
TM-6S	1	SHIELD WIRE SUPPORT ASSEMBLY
TM-F1	1	FIBEROPTIC SUPPORT ASSEMBLY
TM-1B	3	230-KV SUSPENSION INSULATOR WITH ARMOR ROD

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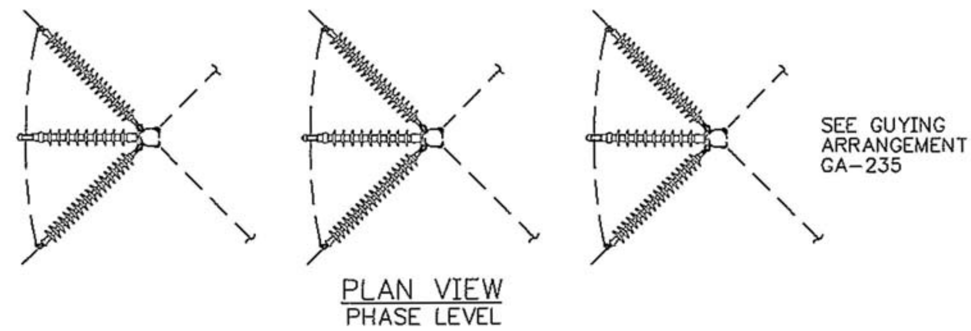
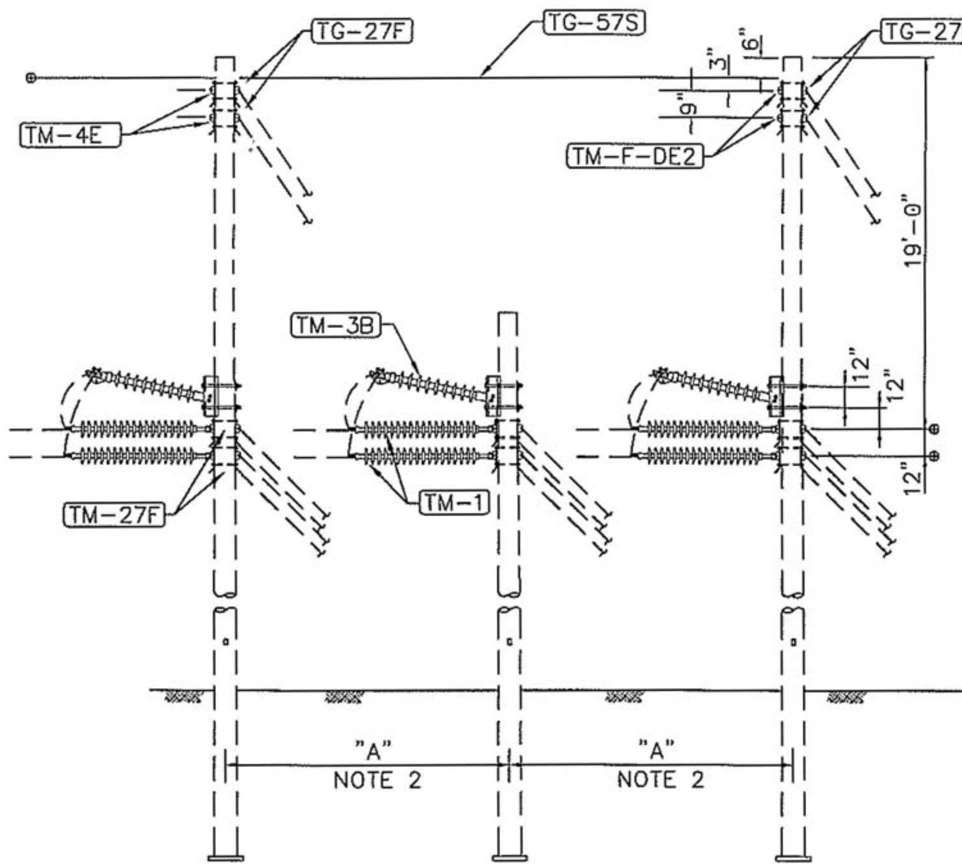
FIGURE 6
Typical 230-kV H-Frame Support Structure
LEANING JUNIPER II WIND POWER FACILITY AMENDMENT





ITEM	QTY	DESCRIPTION
TG-27F	10	TRANSMISSION DEADEND & GUYING TEE ASSEMBLY (DOUBLE)
TG-57S	1	SPAN GUY POLE TIE – DEADEND STRUCTURE
TM-1	6	230-KV INS. TENSION DEADEND ASSEMBLY
TM-3B	3	230-KV HORIZONTAL JUMPER INSULATOR ASSEMBLY
TM-4E	2	SHIELD WIRE DEADEND ASSEMBLY
TM-F-DE2	1	FIBEROPTIC DEADEND ASSEMBLY (DOUBLE)

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FIGURE 7
Typical 230-kV Transition Support Structure
LEANING JUNIPER II WIND POWER FACILITY AMENDMENT

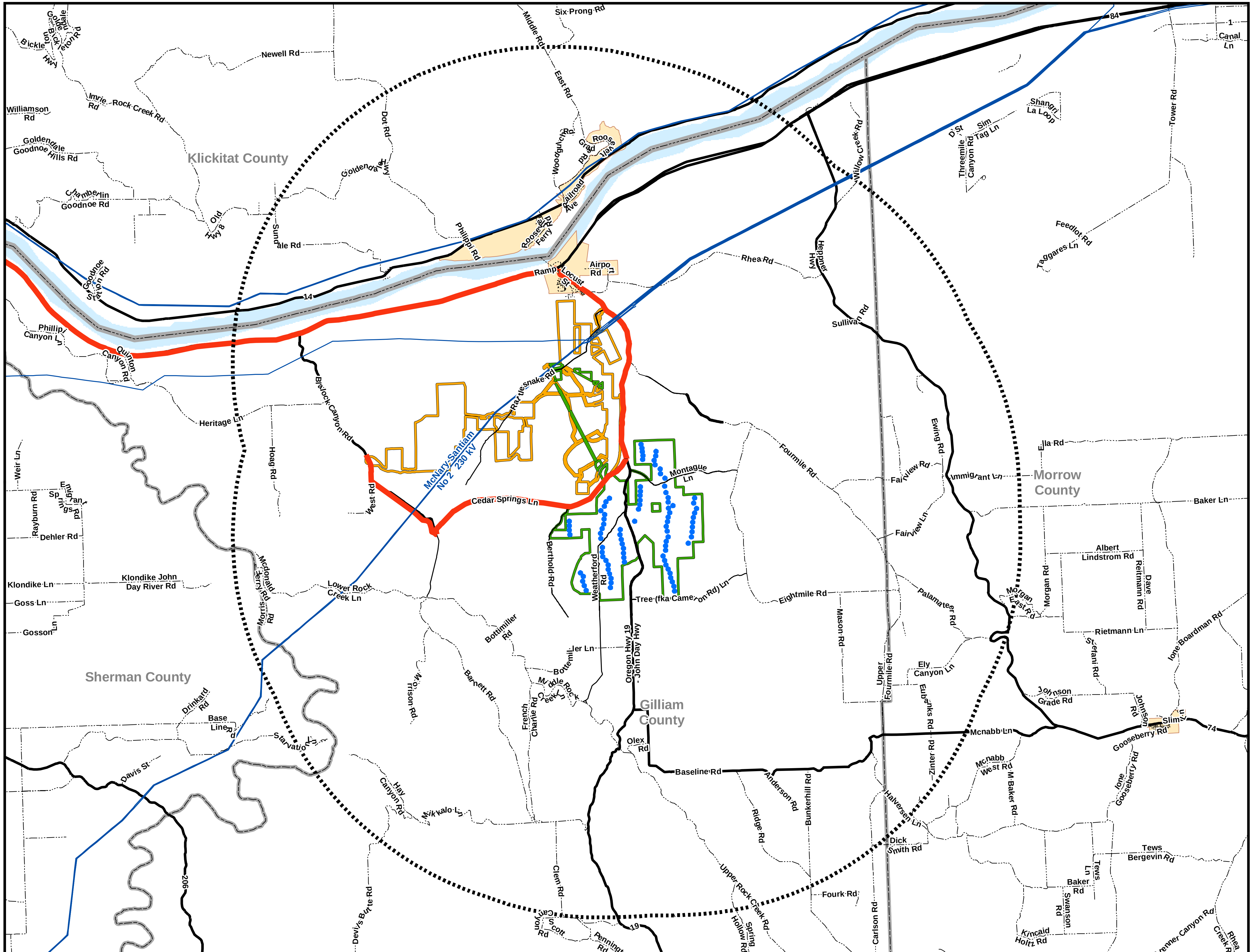


Figure 8
Major Transporter Routes

1.5-MW Turbine Layout
(Maximum Turbine Layout)

Leaning Juniper II
Wind Power Facility Amendment

Legend

- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- Existing Leaning Juniper II Site Boundary for LJIIA
- Permitted Major Transporter Route - Primary
- 10-mile Analysis Area
- Proposed Turbine
- Existing Transmission Line
- Public, Paved
- Other Public Road
- Public, Gravel
- State Boundary
- County Line
- City Limits
- Lakes & Rivers

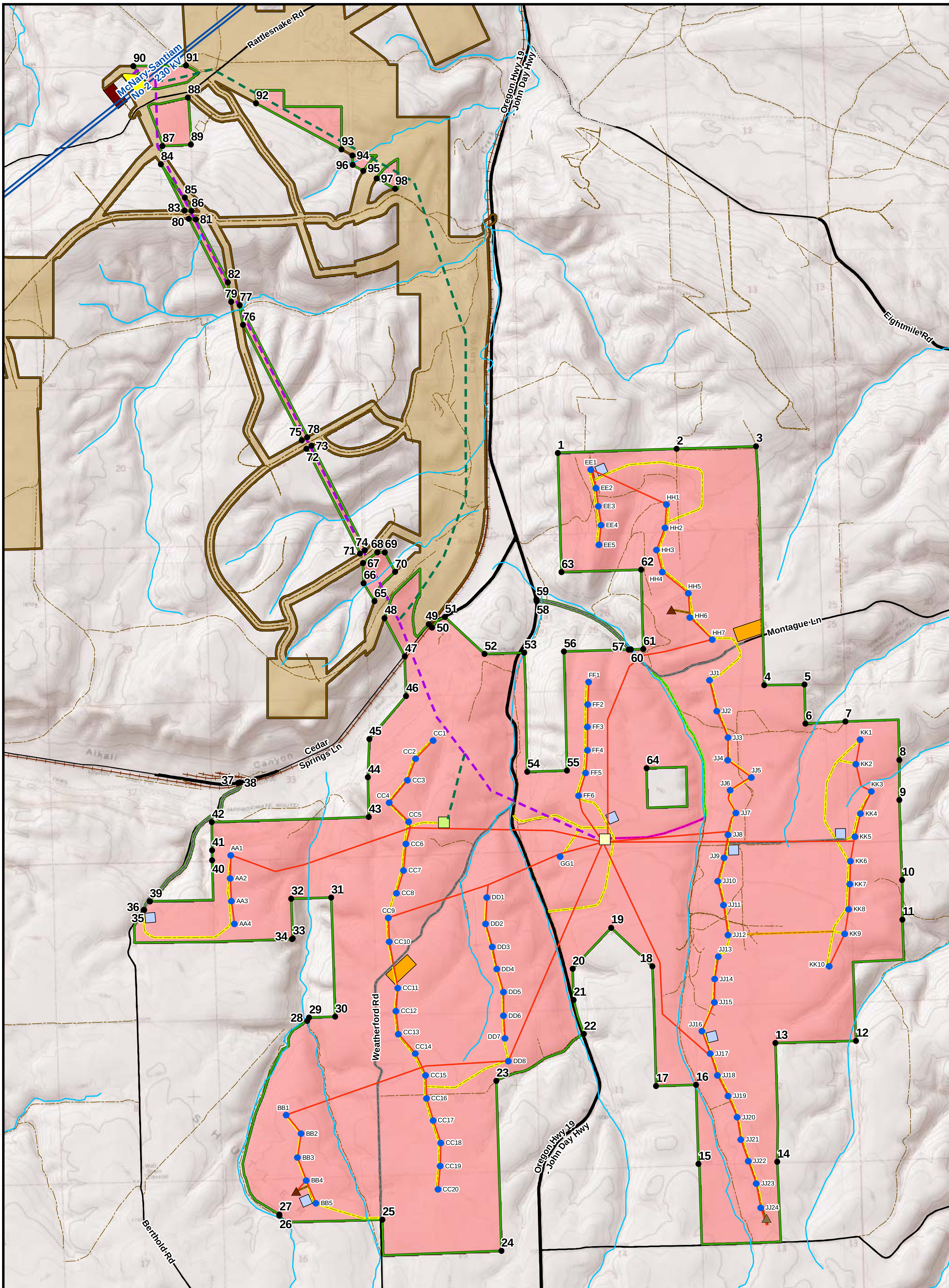
N
W E
S

0 1 2 3 4 5
Miles

IBERDROLA RENEWABLES

File: Z:\Projects\OR\Leaning Juniper\MapDocuments\Report Figures\EFSC (LJII)\Amendment (LJIIb)\Figure 8 - Major Transporter Routes.mxd

Modify Date: 6/15/2009



Legend

- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- Proposed Addition to Leaning Juniper II Micrositing Corridor for LJIIB
- Existing Leaning Juniper II Site Boundary for LJIIA
- Existing Leaning Juniper II Micrositing Corridor for LJIIA
- Boundary Description Point

Proposed Permanent Facilities

- Proposed Turbine
- Primary Proposed Met Tower
- Alternate Proposed Met Tower
- Proposed New Turbine Road
- Proposed New Met Tower Road
- Proposed Improved Road
- Alternate New Turbine Road
- Alternate Improved Road
- Proposed Underground 34.5-kV Line
- Preferred 230-kV Transmission Line or 34.5-kV Overhead Collector Line
- Alternate 230-kV Transmission Line or 34.5-kV Overhead Collector Line
- Proposed Leaning Juniper II Collector Substation
- Proposed Additional Leaning Juniper II Collector Substation
- Proposed Alternate Leaning Juniper II Collector Substation

Proposed Temporary Facilities

- Proposed Crane Path
- Proposed 10-Acre Staging Area
- Proposed 2.5-Acre Staging Area

Existing Facilities

- Existing Transmission Line
- Existing BPA Jones Canyon Switching Station
- Railroad
- Stream
- Public, Paved
- Other Public Road
- Public, Gravel
- Private, Farm Road

N

0 0.5 1

Miles

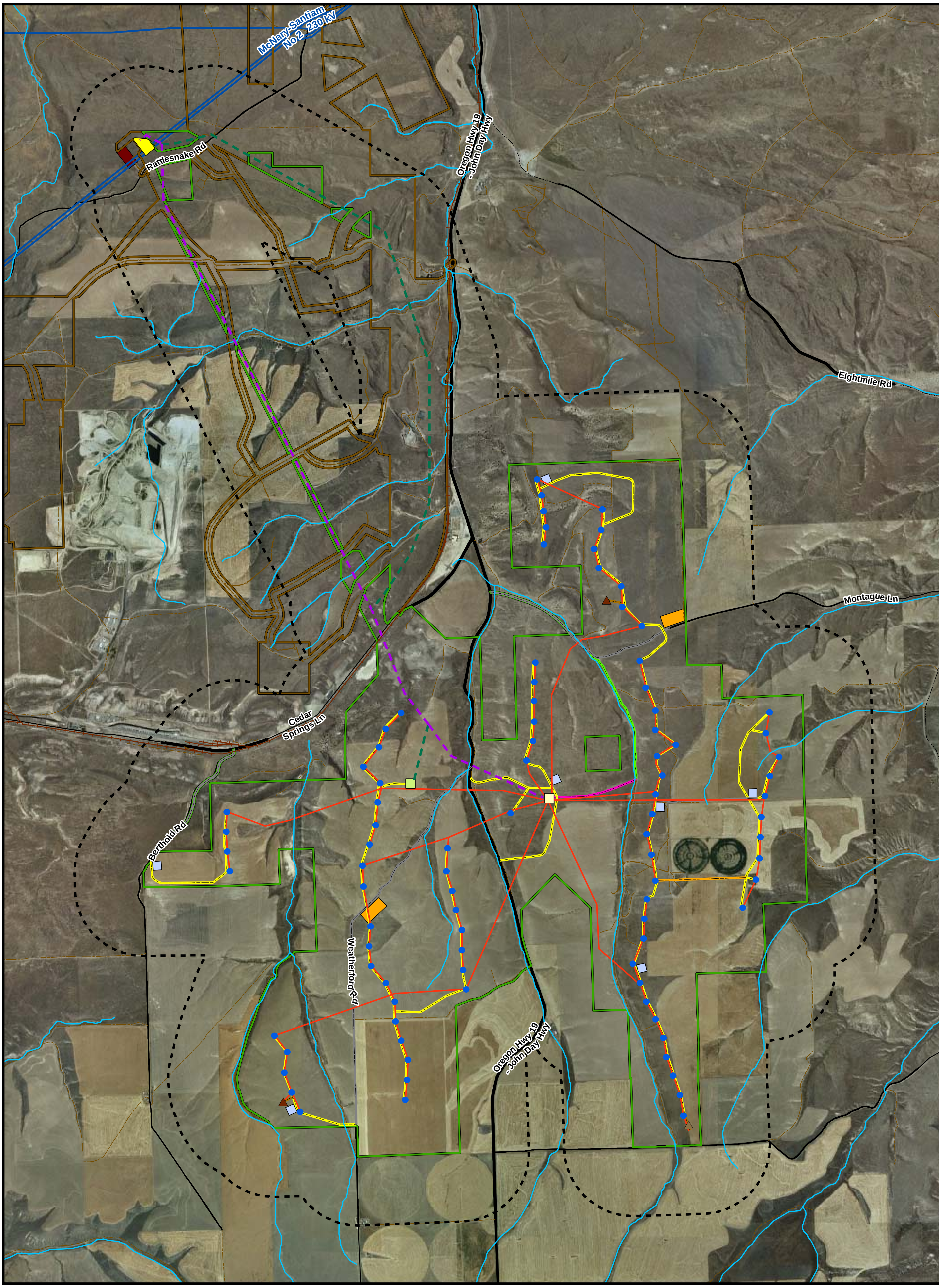
Figure 9

Micrositing Corridors Correlated to Amendment Request Table 1

1.5-MW Turbine Layout
(Maximum Turbine Layout)

Leaning Juniper II Wind Power Facility Amendment

IBERDROLA RENEWABLES



Legend

- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- Existing Leaning Juniper II Site Boundary for LJIIA
- Half-Mile Analysis Area

Proposed Permanent Facilities

- Proposed Turbine
- Primary Proposed Met Tower
- Alternate Proposed Met Tower
- Proposed Underground 34.5-kV Line
- Proposed New Turbine Road
- Proposed New Met Tower Road
- Proposed Improved Road
- Alternate New Turbine Road
- Alternate Improved Road
- Preferred 230-kV Transmission Line or 34.5-kV Overhead Collector Line
- Alternate 230-kV Transmission Line or 34.5-kV Overhead Collector Line
- Proposed Leaning Juniper II Collector Substation
- Proposed Additional Leaning Juniper II Collector Substation
- Proposed Alternate Leaning Juniper II Collector Substation

Proposed Temporary Facilities

- Proposed Crane Path
- Proposed 10-Acre Staging Area
- Proposed 2.5-Acre Staging Area

Existing Facilities

- Existing Transmission Line
- Railroad
- Stream
- Existing BPA Jones Canyon Switching Station
- Public, Paved
- Other Public Road
- Public, Gravel
- Private, Farm Road

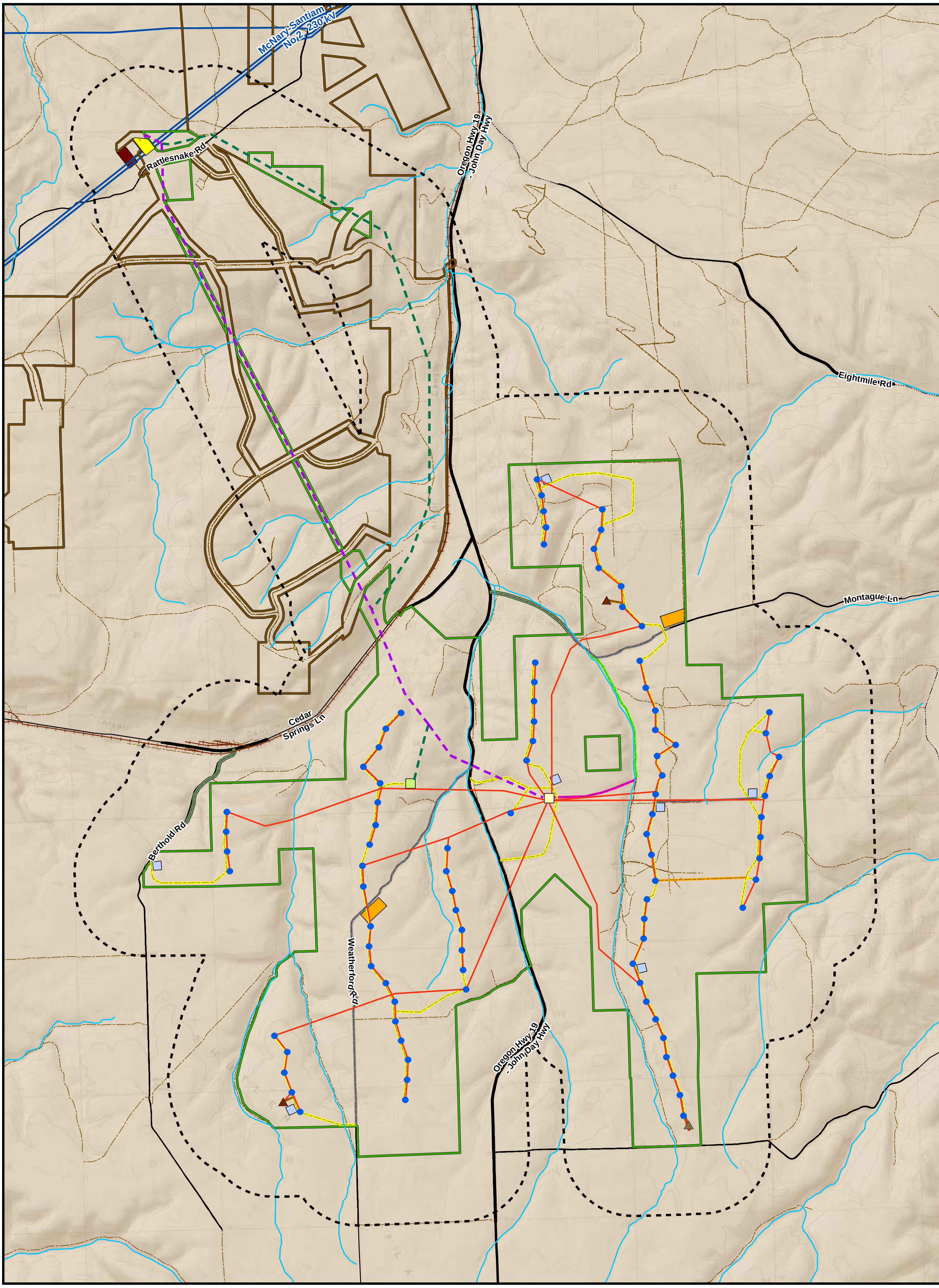
Figure 10

Aerial Photograph

1.5-MW Turbine Layout (Maximum Turbine Layout)

Leaning Juniper II Wind Power Facility Amendment

IBERDROLA RENEWABLES



Legend

- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- Existing Leaning Juniper II Site Boundary for LJIIA
- Half-Mile Analysis Area
- Exclusive Farm Use (EFU) Zone, Agricultural Comprehensive Plan Designation

Proposed Permanent Facilities

- Proposed Turbine
- Primary Proposed Met Tower
- Alternate Proposed Met Tower
- Proposed Underground 34.5-kV Line
- Proposed New Turbine Road
- Proposed New Met Tower Road
- Proposed Improved Road
- Alternate New Turbine Road
- Alternate Improved Road
- Preferred 230-kV Transmission Line or 34.5-kV Overhead Collector Line
- Alternate 230-kV Transmission Line or 34.5-kV Overhead Collector Line
- Proposed Leaning Juniper II Collector Substation
- Proposed Additional Leaning Juniper II Collector Substation
- Proposed Alternate Leaning Juniper II Collector Substation

Proposed Temporary Facilities

- Proposed Crane Path
- Proposed 10-Acre Staging Area
- Proposed 2.5-Acre Staging Area

Existing Facilities

- Existing Transmission Line
- Railroad
- Stream
- Existing BPA Jones Canyon Switching Station
- Public, Paved
- Other Public Road
- Public, Gravel
- Private, Farm Road

N

0 0.5 1

Miles

Figure 11

Zoning

1.5-MW Turbine Layout (Maximum Turbine Layout)

Leaning Juniper II Wind Power Facility Amendment

IBERDROLA RENEWABLES

File: Z:\Projects\OR\Leaning Juniper\MapDocuments\Report Figures\EFSC (LJII)\Amendment (LJIIb)\Figure 11 - Zoning Map.mxd

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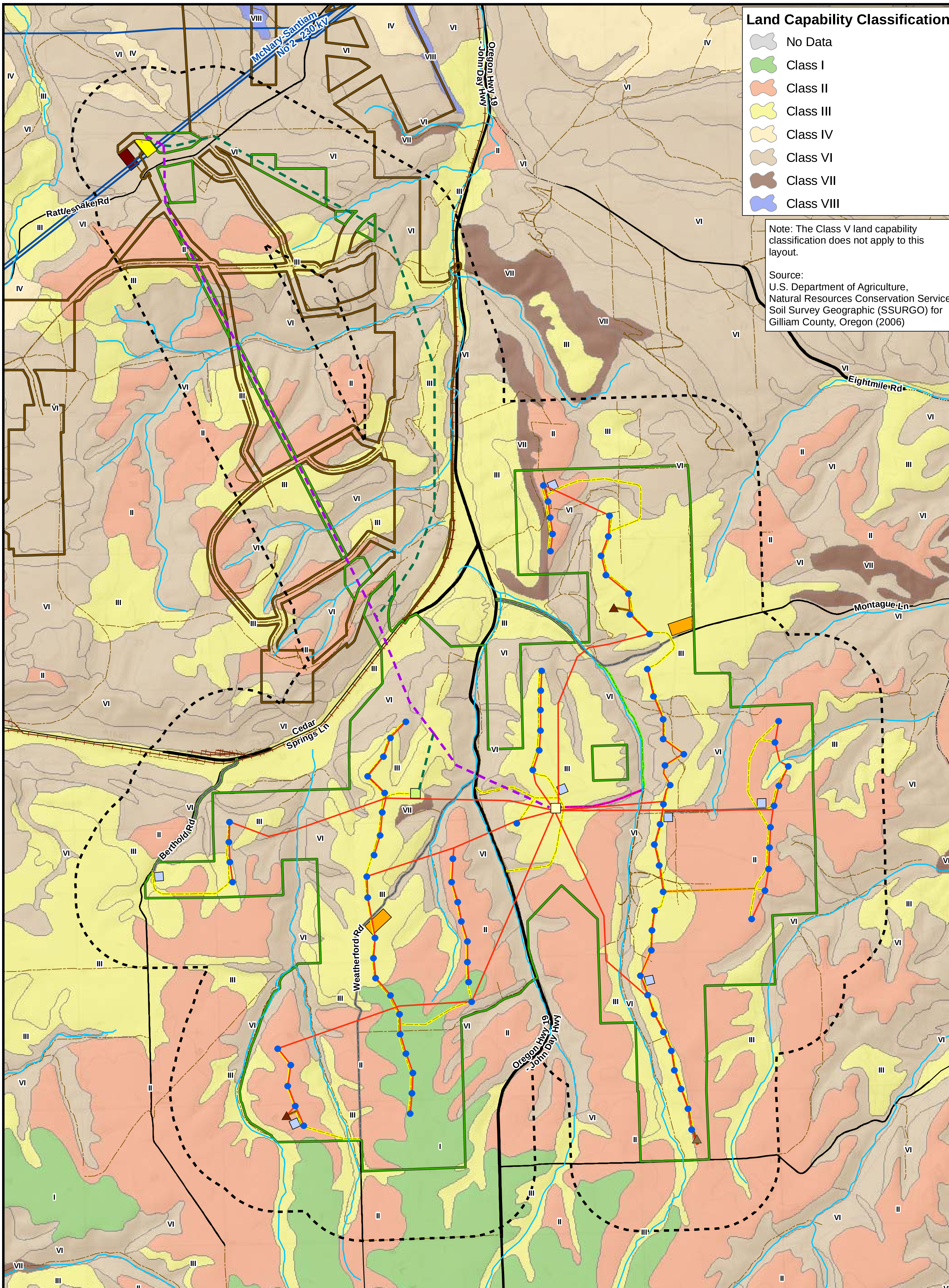


Legend

- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- Existing Leaning Juniper II Site Boundary for LJIIA
- Half-Mile Analysis Area

Proposed Permanent Facilities

- Proposed Turbine
- Primary Proposed Met Tower
- Alternate Proposed Met Tower
- Preferred 230-kV Transmission Line or 34.5-kV Overhead Collector Line
- Alternate 230-kV Transmission Line or 34.5-kV Overhead Collector Line
- Proposed Underground 34.5-kV Line
- Proposed New Turbine Road
- Proposed New Met Tower Road
- Proposed Improved Road
- Alternate New Turbine Road
- Alternate Improved Road
- Proposed Leaning Juniper II Collector Substation
- Proposed Additional Leaning Juniper II Collector Substation
- Proposed Alternate Leaning Juniper II Collector Substation

Proposed Temporary Facilities

- Proposed Crane Path
- Proposed 10-Acre Staging Area
- Proposed 2.5-Acre Staging Area

Existing Facilities

- Existing Transmission Line
- Existing BPA Jones Canyon Switching Station
- Railroad
- Stream
- Public, Paved
- Other Public Road
- Public, Gravel
- Private, Farm Road

N

0 0.5 1
Miles

Figure 12
Land Capability Classification

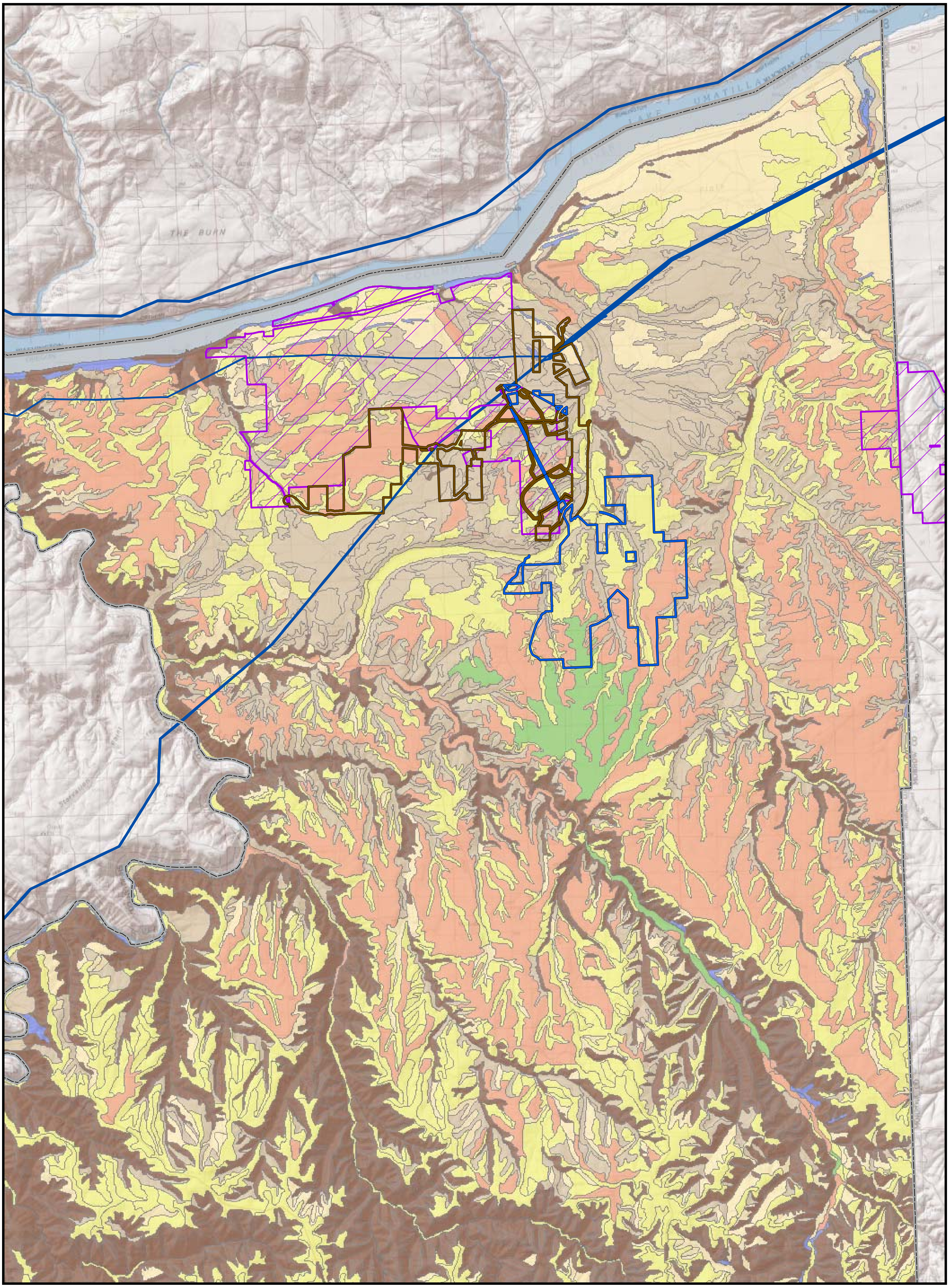
1.5-MW Turbine Layout (Maximum Turbine Layout)

Leaning Juniper II Wind Power Facility Amendment

IBERDROLA RENEWABLES

File: Z:\Projects\OR\Leaning Juniper\MapDocuments\Report Figures\EFSC (LJII)\Amendment (LJIIb)\Figure 12 - Land Capability Classification.mxd

Modify Date: 6/17/2009



Legend

- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- Existing Leaning Juniper II Site Boundary for LJIIA
- Approximate Boundary of Nearby Wind Energy Facilities
- Existing Transmission Line

Land Capability Classification

- No Data
- Class I
- Class II
- Class III
- Class IV
- Class VI
- Class VII
- Class VIII

Note: The Class V land capability classification does not apply to this layout.

Source:
U.S. Department of Agriculture, Natural Resources Conservation Service Soil Survey Geographic (SSURGO) for Gilliam County, Oregon (2006)

N

0 1 2 3 4
Miles

Figure 13

Land Capability Classification

Gilliam County, OR

Leaning Juniper II Wind Power Facility Amendment

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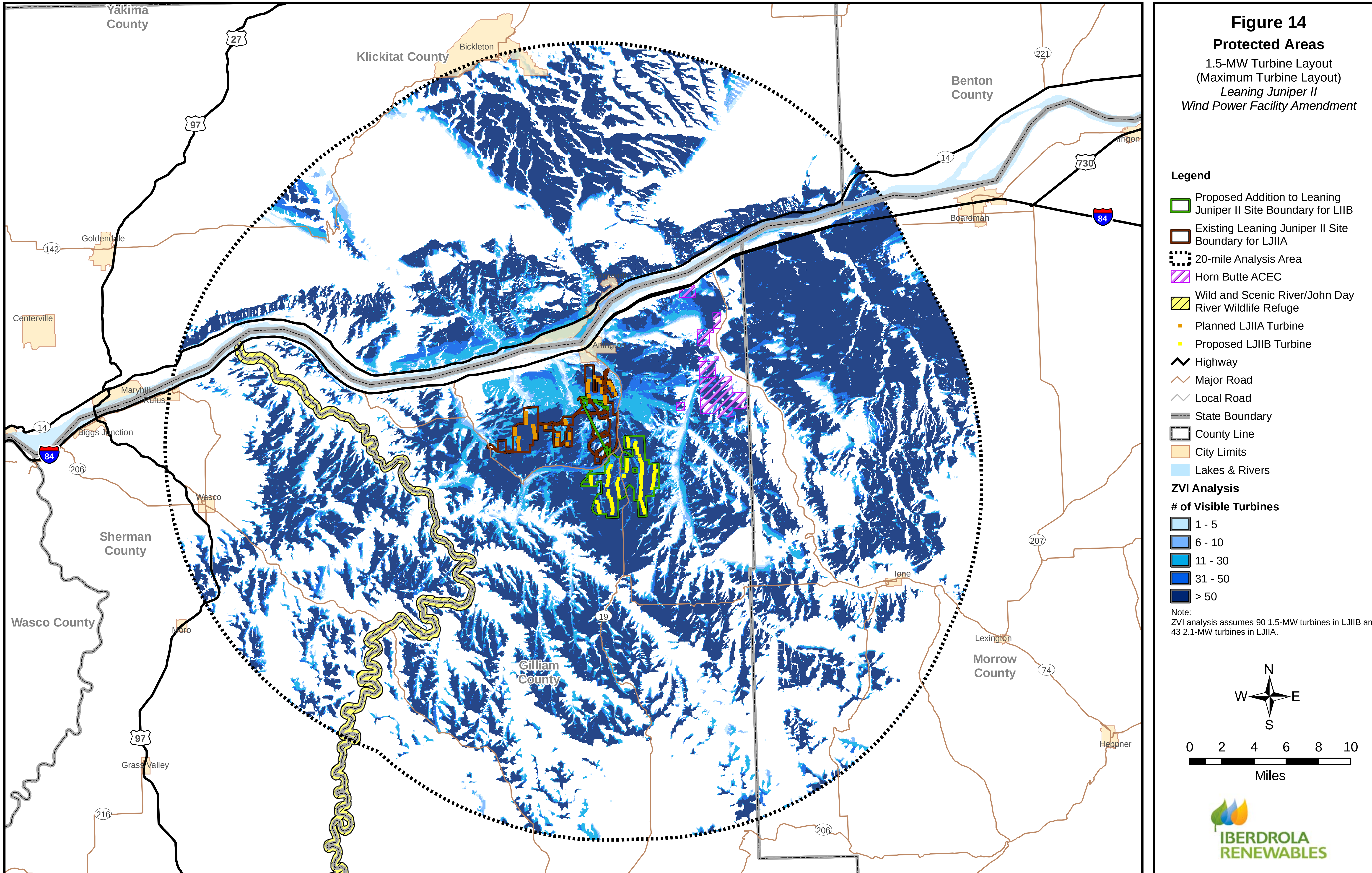
Modify Date: 6/17/2009

File: Z:\Projects\OR\Leaning Juniper\MapDocuments\Report Figures\EFSC (LJII)\Amendment (LJIIb)\Figure 13 - Land Capability Classification in Northern Gilliam County.mxd



File: Z:\Projects\OR\Leaning Juniper\MapDocuments\Report Figures\EFSC (LJII)\Amendment (LJIIb)\Figure 14 - Protected Areas (15MW Layout).mxd

Modify Date: 6/15/2009

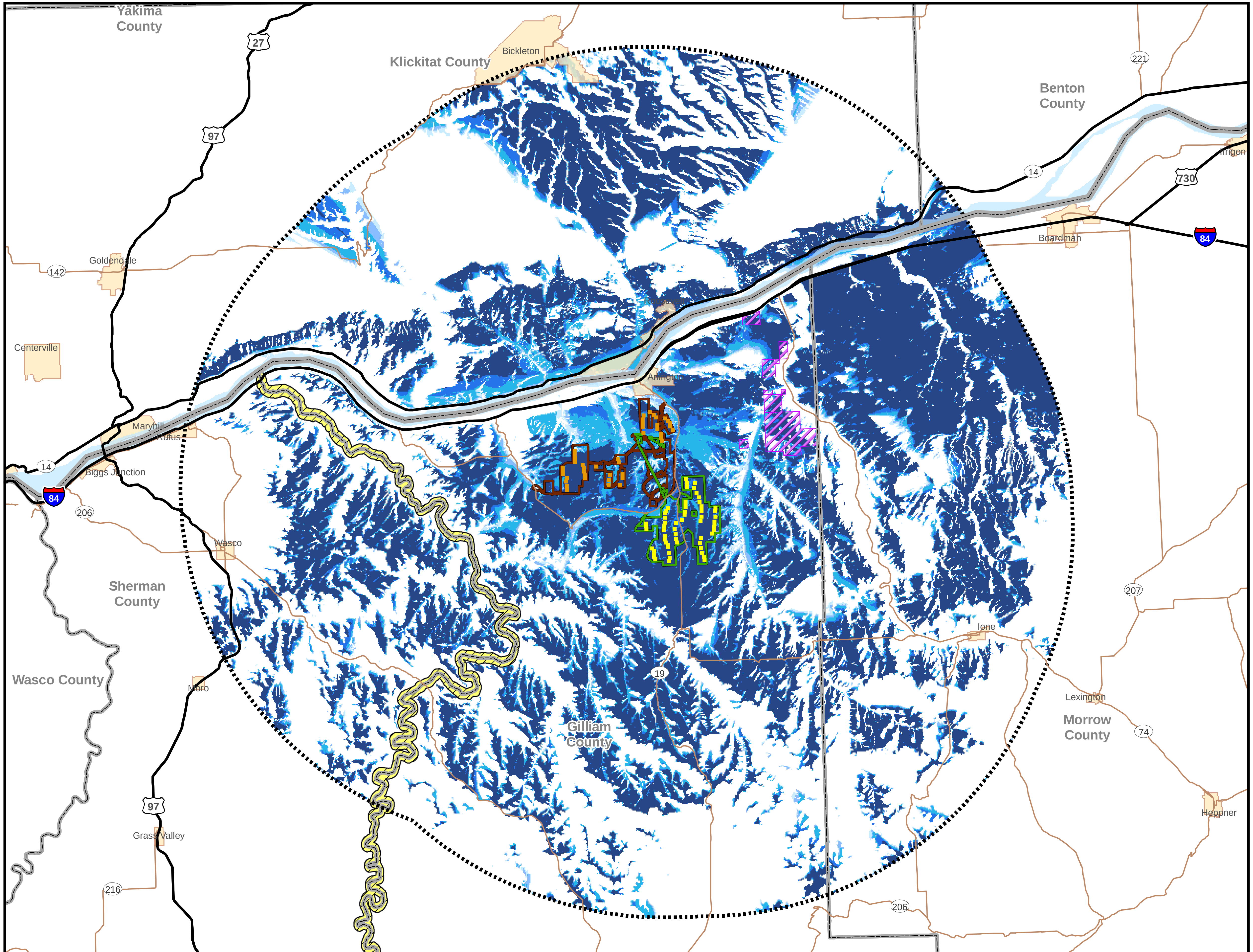


Figure 15

Protected Areas

3.0-MW Turbine Layout
(Minimum Turbine Layout)
Leaning Juniper II
Wind Power Facility Amendment

Legend

- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- Existing Leaning Juniper II Site Boundary for LJIIA
- 20-mile Analysis Area
- Horn Butte ACEC
- Wild and Scenic River/John Day River Wildlife Refuge
- Planned LJIIA Turbine
- Proposed LJIIB Turbine
- Highway
- Major Road
- Local Road
- State Boundary
- County Line
- City Limits
- Lakes & Rivers

ZVI Analysis

# of Visible Turbines

- 1 - 5
- 6 - 10
- 11 - 30
- 31 - 50
- > 50

Note:
ZVI analysis assumes 62 3.0-MW turbines in LJIIB and 43 2.1-MW turbines in LJIIA.

N W E S

0 2 4 6 8 10
Miles

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File: Z:\Projects\OR\Leaning Juniper\MapDocuments\Report Figures\EFSC (LJII)\Amendment (LJIIb)\Figure 15 - Protected Areas (30MW Layout).mxd

Modify Date: 6/15/2009

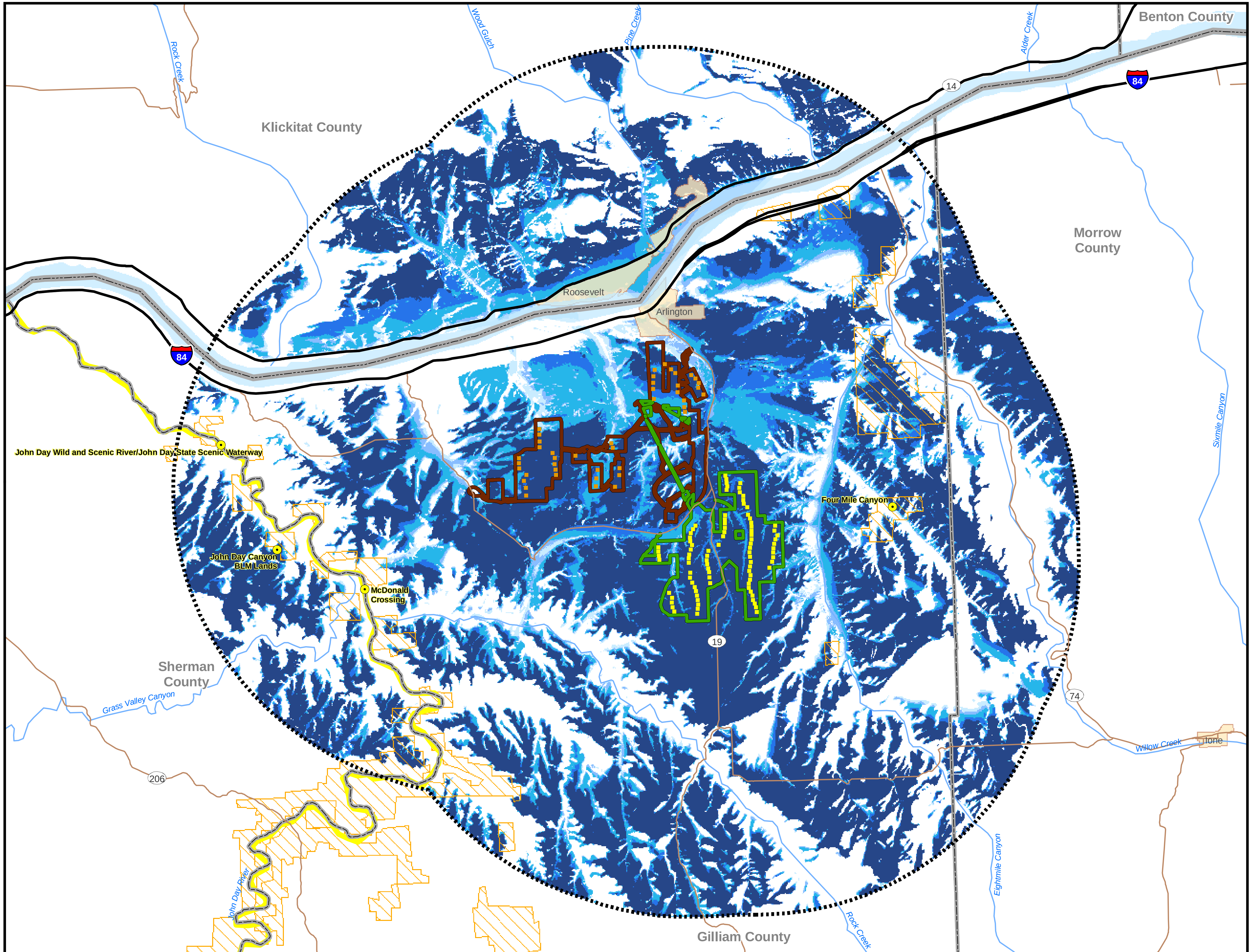


Figure 16

Scenic & Aesthetic Areas

1.5-MW Turbine Layout
(Maximum Turbine Layout)
Leaning Juniper II
Wind Power Facility Amendment

Legend

- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- Existing Leaning Juniper II Site Boundary for LJ2A
- 10-mile Analysis Area
- Scenic and Aesthetic Areas
- Wild and Scenic Rivers
- BLM Land
- Planned LJIIA Turbine
- Proposed LJIIB Turbine
- Highway
- Major Road
- Local Road
- State Boundary
- County Line
- City Limits
- Lakes & Rivers

ZVI Analysis

# of Visible Turbines

- 1 - 5
- 6 - 10
- 11 - 30
- 31 - 50
- > 50

Note:
ZVI analysis assumes 90 1.5-MW turbines in LJIIB and 43 2.1-MW turbines in LJIIA.

N W E S

0 1 2 3 4 5
Miles

IBERDROLA RENEWABLES

File: Z:\Projects\OR\Leaning Juniper\MapDocuments\Report Figures\EFSC (LJII)\Amendment (LJIIb)\Figure 16 - Scenic & Aesthetic Areas (15MW Layout).mxd

Modify Date: 6/15/2009

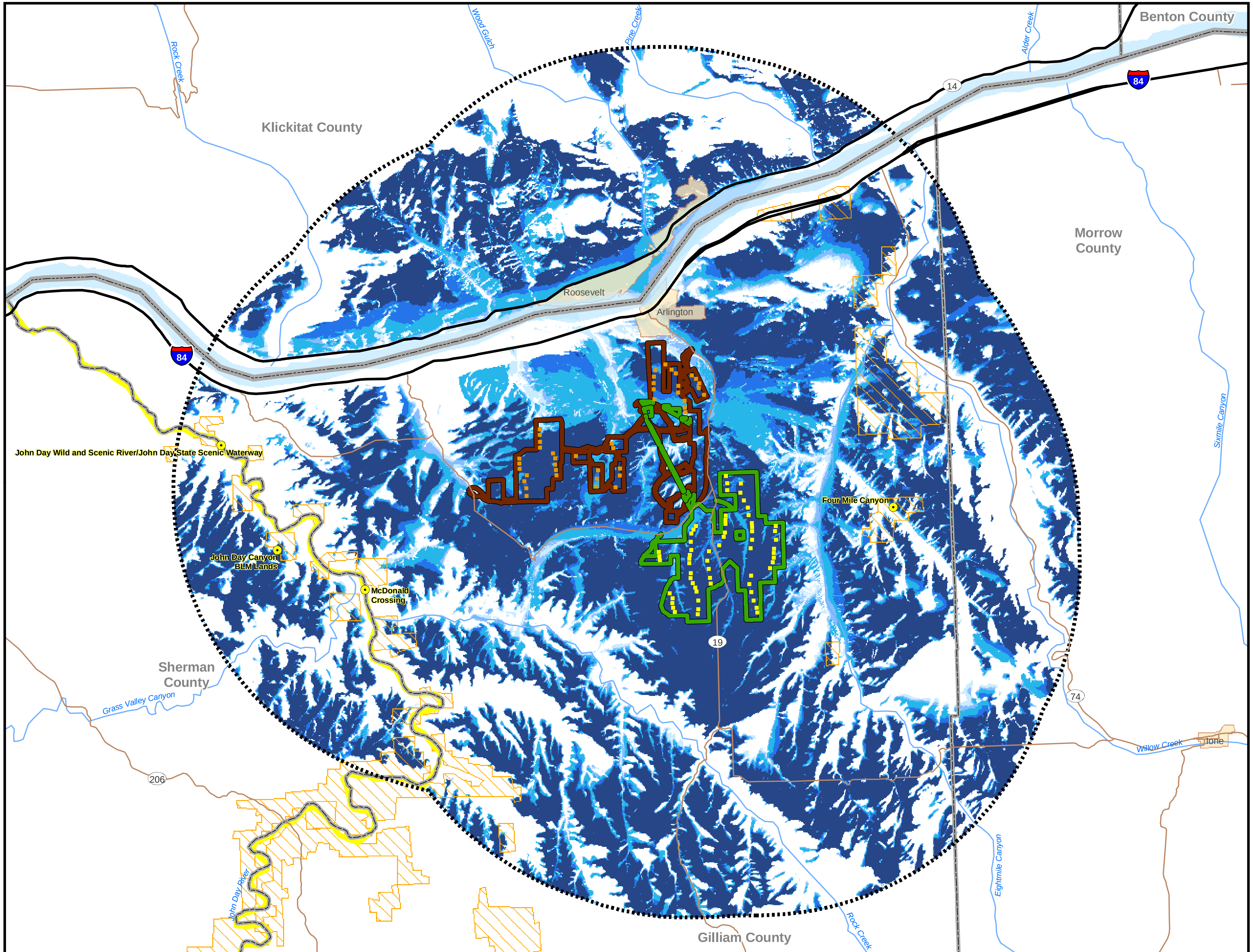


Figure 17
Scenic & Aesthetic Areas

3.0-MW Turbine Layout
(Minimum Turbine Layout)
Leaning Juniper II
Wind Power Facility Amendment

Legend

- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- Existing Leaning Juniper II Site Boundary for LJIIA
- 10-mile Analysis Area
- Scenic and Aesthetic Areas
- Wild and Scenic Rivers
- BLM Land
- Planned LJIIA Turbine
- Proposed LJIIB Turbine
- Highway
- Major Road
- Local Road
- State Boundary
- County Line
- City Limits
- Lakes & Rivers

ZVI Analysis

# of Visible Turbines

- 1 - 5
- 6 - 10
- 11 - 30
- 31 - 50
- > 50

Note:
ZVI analysis assumes 62 3.0-MW turbines in LJIIB and 43 2.1-MW turbines in LJIIA.

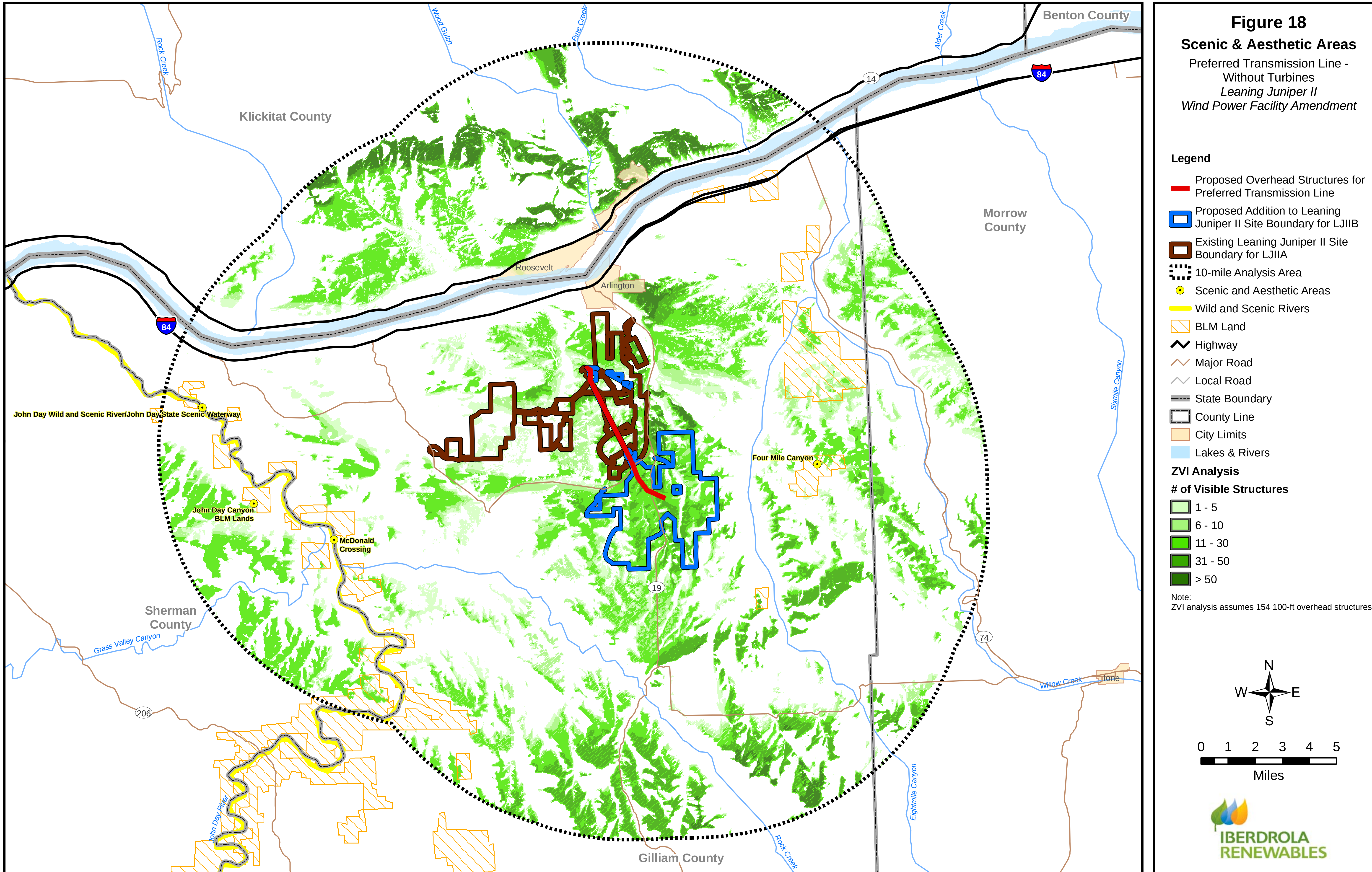
N
W E
S

0 1 2 3 4 5
Miles

IBERDROLA RENEWABLES

File: Z:\Projects\OR\Leaning Juniper\MapDocuments\Report Figures\EFSC (LJII)\Amendment (LJIIb)\Figure 17 - Scenic & Aesthetic Areas (3MW Layout).mxd

Modify Date: 6/15/2009



File: Z:\Projects\OR\Leaning Juniper\MapDocuments\Report Figures\EFSC (LJII)\Amendment (LJIIb)\Figure 18 - Scenic & Aesthetic Areas (Preferred Transmission Line).mxd

Modify Date: 6/15/2009

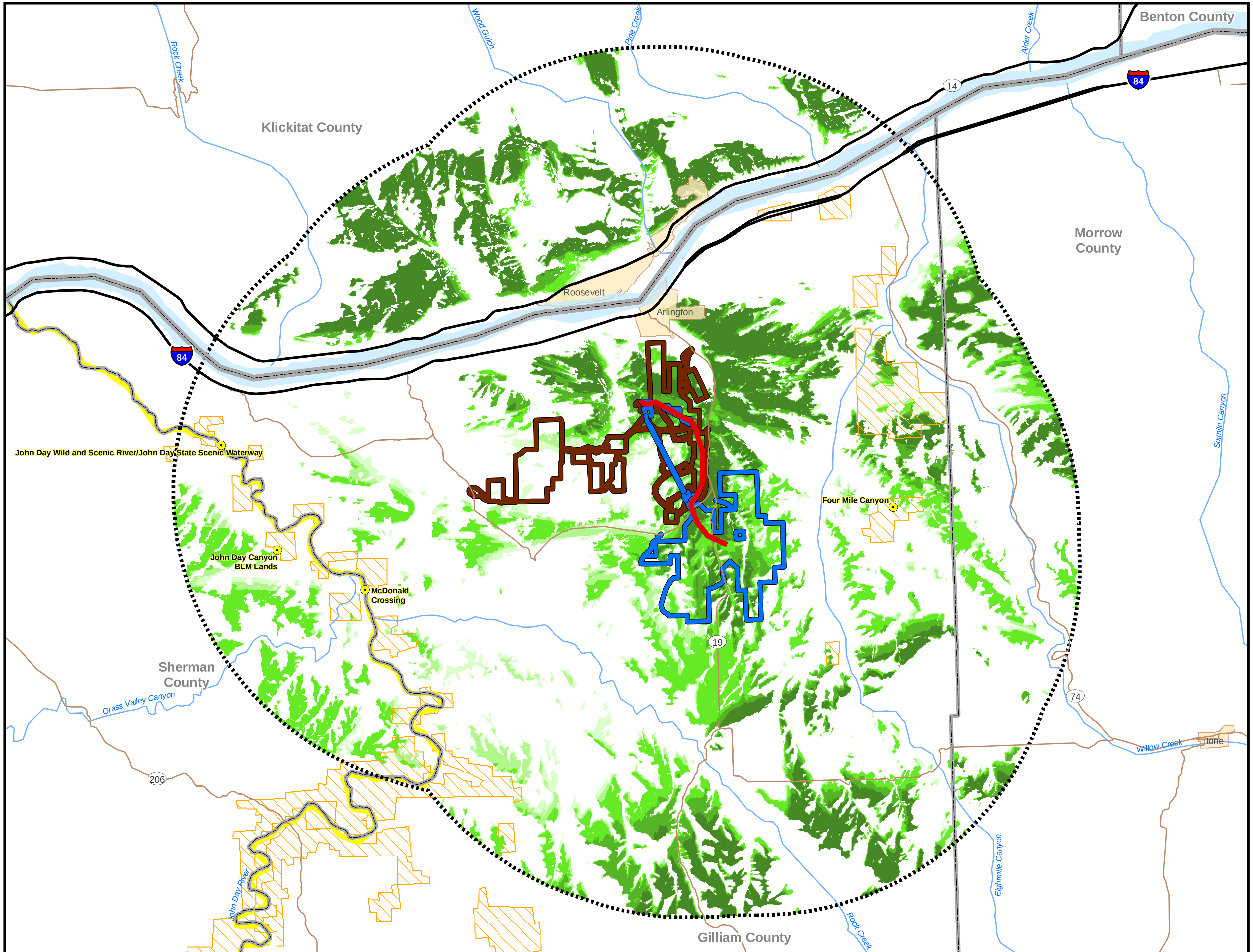


Figure 19

Scenic & Aesthetic Areas

Alternate Transmission Line - Without Turbines

Leaning Juniper II Wind Power Facility Amendment

Legend

- Proposed Overhead Structures for Alternate Transmission Line
- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- Existing Leaning Juniper II Site Boundary for LJIIA
- 10-mile Analysis Area
- Scenic and Aesthetic Areas
- Wild and Scenic Rivers
- BLM Land
- Highway
- Major Road
- Local Road
- State Boundary
- County Line
- City Limits
- Lakes & Rivers

ZVI Analysis

# of Visible Structures

- 1 - 5
- 6 - 10
- 11 - 30
- 31 - 50
- > 50

Note:
ZVI analysis assumes 182 100-ft overhead structures.

N W E S

0 1 2 3 4 5
Miles

IBERDROLA RENEWABLES

File: Z:\Projects\OR\Leaning Juniper\MapDocuments\Report Figures\EFSC (LJII)\Amendment (LJIIb)\Figure 19 - Scenic & Aesthetic Areas (Alternate Transmission Line).mxd

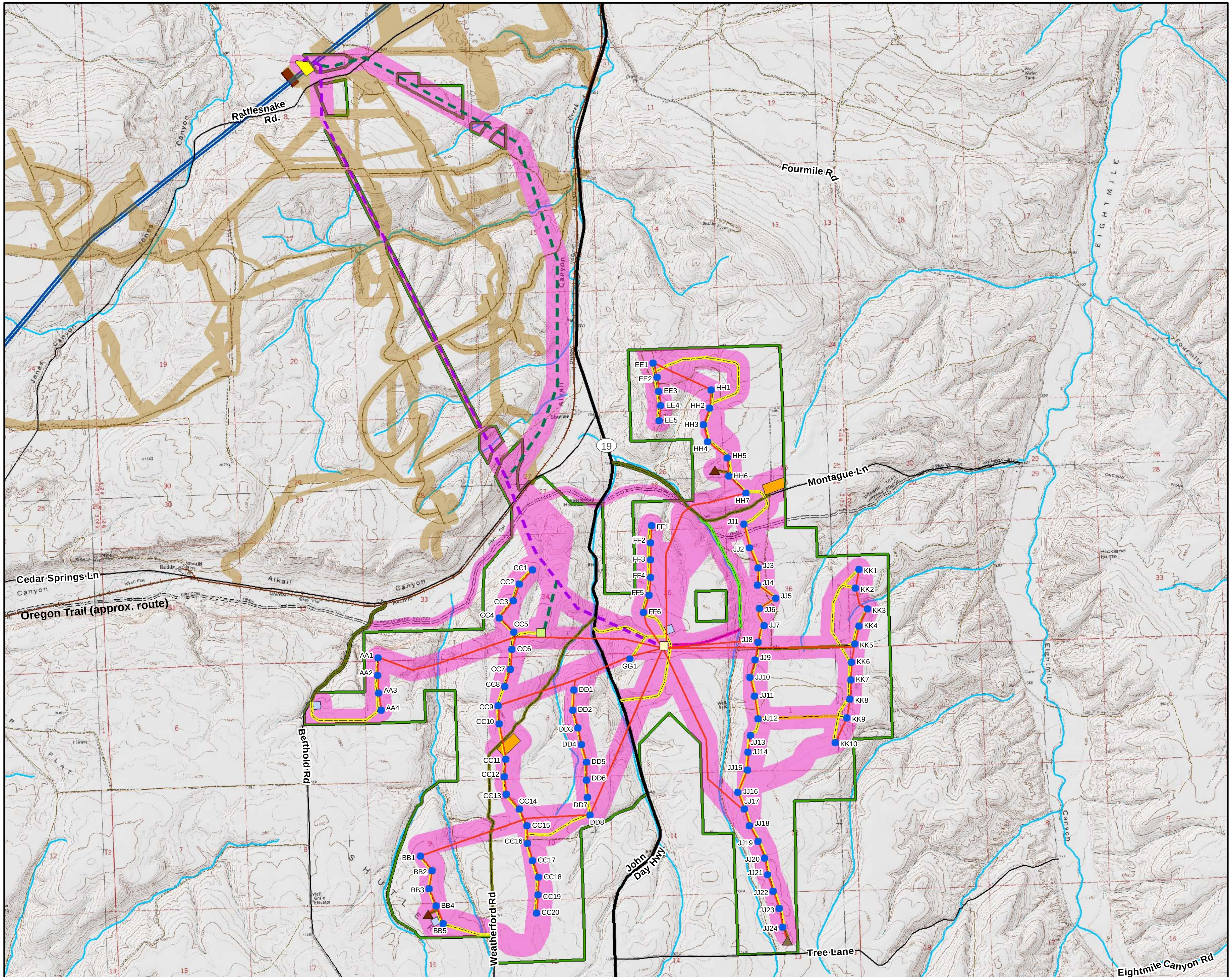
Modify Date: 6/15/2009

Figure 20. Existing Views East Toward Leaning Juniper from John Day River Crossing (McDonald Crossing)

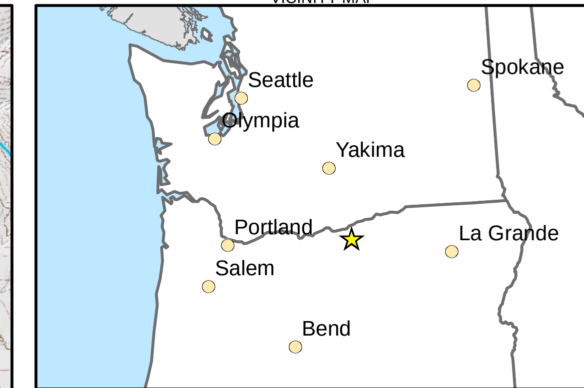
Figure 21. Existing Views West Toward Leaning Juniper from Fourmile Canyon

Figure 22. Existing Views Southwest Toward Leaning Juniper from Horn Butte Area of Critical Environmental Concern

Figure 23. Existing Views Southwest Toward Leaning Juniper from Intersection of Oregon Highway 19 and Weatherford Road



VICINITY MAP



Legend

- Area Previously Surveyed for Cultural Resources (2005)
- Cultural Survey Area (April-May 2009)
- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB

Proposed Permanent Facilities

- Proposed Turbine
- Primary Proposed Met Tower
- Alternate Proposed Met Tower
- Proposed New Turbine Road
- Proposed New Met Tower Road
- Proposed Improved Road
- Alternate New Turbine Road
- Alternate Improved Road
- Proposed Underground 34.5-kV Line
- Preferred 230-kV Transmission Line or 34.5-kV Overhead Collector Line
- Alternate 230-kV Transmission Line or 34.5-kV Overhead Collector Line
- Proposed Leaning Juniper II Collector Substation
- Proposed Additional Leaning Juniper II Collector Substation
- Proposed Alternate Leaning Juniper II Collector Substation

Proposed Temporary Facilities

- Proposed Crane Path
- Proposed 10-Acre Staging Area
- Proposed 2.5-Acre Staging Area

Existing Facilities

- Oregon Trail (approx. route)
- Existing Transmission Line
- Existing BPA Jones Canyon Switching Station
- Stream
- Railroad
- Public, Paved
- Other Public Road
- Public, Gravel
- Private, Farm Road

0 4,000
Feet

N

Figure 24
Cultural Survey Areas, April-May 2009
Leaning Juniper II Wind Power Facility Amendment

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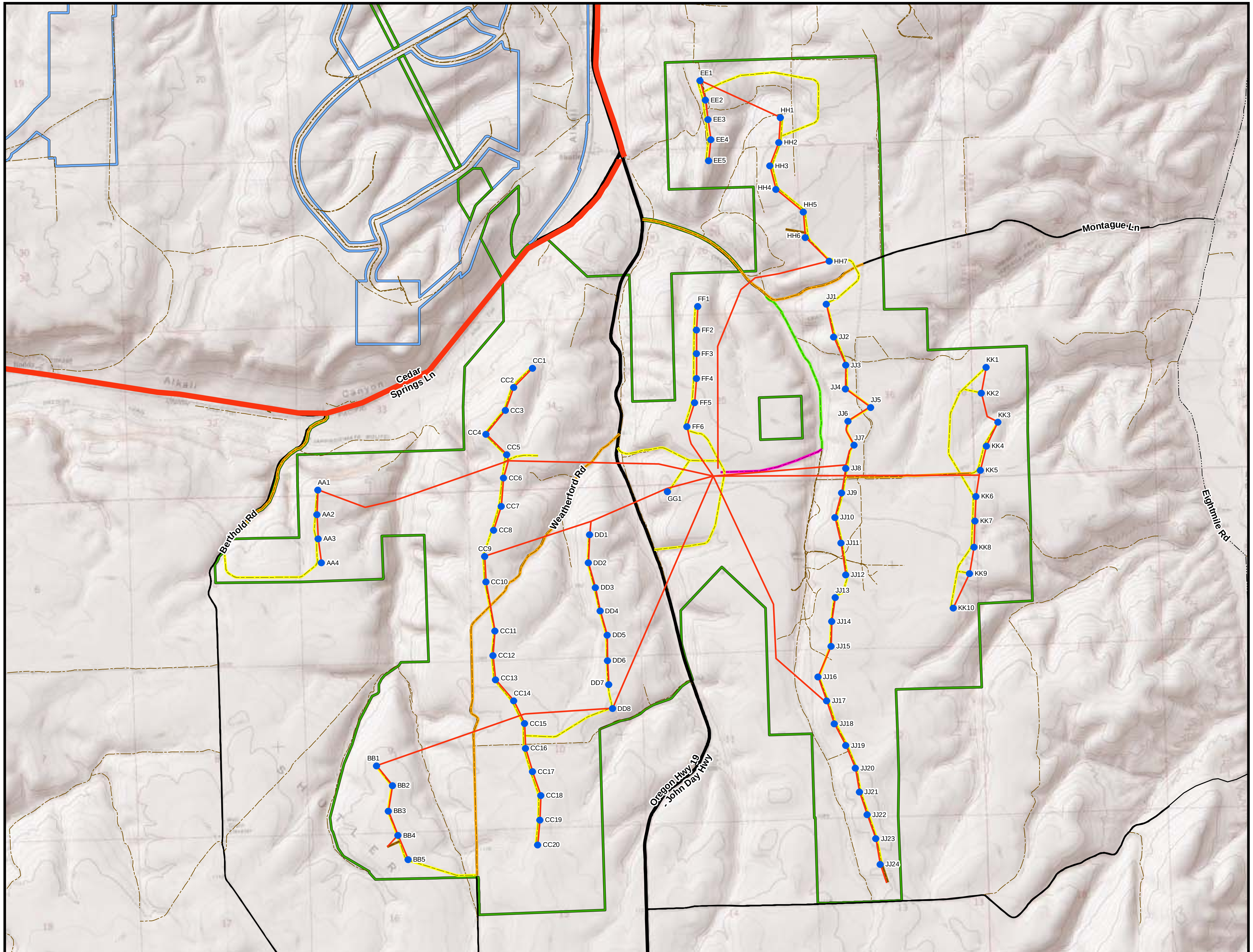

Figure 25

Major Transporter Routes - Detailed View

1.5-MW Turbine Layout
(Maximum Turbine Layout)
Leaning Juniper II
Wind Power Facility Amendment

Legend

- Proposed Addition to Leaning Juniper II Site Boundary for LJIIB
- Existing Leaning Juniper II Site Boundary for LJIIA
- Permitted Major Transporter Route - Primary

Proposed Permanent Facilities

- Proposed Turbine
- Proposed New Turbine Road
- Proposed New Met Tower Road
- Proposed Improved Road
- Alternate New Turbine Road
- Alternate Improved Road
- Proposed Underground 34.5-kV Line

Existing Facilities

- Existing Transmission Line
- Public, Paved
- Other Public Road
- Public, Gravel
- Private, Farm Road
- City Limits
- Lakes & Rivers

N W E S

0 0.5 1
Miles

IBERDROLA RENEWABLES

File: Z:\Projects\OR\Leaning Juniper\MapDocuments\Report Figures\EFSC (LJII)\Amendment (LJIIb)\Figure 25 - Major Transporter Routes - Detailed View.mxd

Modify Date: 6/15/2009