

Final

October 2009

Lower Snake River Wind Energy Project (Columbia and Garfield Counties)

Environmental Impact Statement

Prepared for:

Garfield County in Consultation
with Columbia County

Prepared by:



ecology and environment, inc.
International Specialists in the Environment



GARFIELD COUNTY PUBLIC WORKS DEPARTMENT

P.O. Box 160, Pomeroy, WA 99347 – Phone: (509)843-1301, Fax: (509)843-1412

October 7, 2009

**Re: Final Environmental Impact Statement (FEIS) to the Lower Snake River
Wind Energy Project Garfield County CUP #012609**

Dear Reader:

In accordance with WAC 197-11-460 and the Garfield County SEPA Ordinance, enclosed for your review is a copy of the Final Environmental Impact Statement (“FEIS”) for the proposed Lower Snake River Wind Energy Project.

The purpose of the previously issued Draft EIS was to identify and evaluate probable significant adverse environmental impacts that could result from the proposed action and the alternative action, and to identify the appropriate measures, to the extent feasible, to mitigate those impacts. The FEIS is a disclosure document. It does not authorize or recommend a specific action or alternative. Rather, it is one of several key documents that will be considered in the decision-making process for the Lower Snake River Wind Energy Project conditional use permit application decisions to be made by Garfield County Hearings Examiner.

The FEIS is the result of the formal public Draft EIS review and comment period that occurred August 17, 2009 to September 16, 2009 and included two public open house meetings on September 9th and September 10th in Pomeroy and Dayton, respectively. Comments postmarked by September 16th have been incorporated into the FEIS. In response to the Draft EIS comments, the FEIS provides additional information and analysis concerning the proposed action, and includes additional and/or revised mitigation measures. As per Garfield County SEPA Ordinance, the FEIS is subject to a 14-day appeal period, which is outlined below.

Columbia County will conduct its own environmental review process as it deems appropriate at such time as an application for development of a wind energy facility is sought by the Applicant in Columbia County.

Project Overview:

The Applicant, Puget Sound Energy, Inc., has requested to build an approximately 1,432-megawatt, wind turbine electrical generation facility with approximately 795 turbine locations in an area of approximately 124,000 acres in Garfield and Columbia Counties. Wind turbines will generally be located along ridge tops to use winds that typically come from the southwest. Supporting infrastructure will include access roads, underground and overhead electric collection system lines, substations, transmission lines, microwave communications, meteorological towers, operations and maintenance centers, and temporary construction access and staging areas. The Project will be built in four or more construction phases, with the first phase scheduled to begin construction in 2010.

Appeal Provisions:

You may appeal the adequacy of the FEIS by filing a notice of appeal; the contents of the appeal as outlined in Section 7.3(3)(b) of the Garfield County SEPA Ordinance (Resolution No. 13870); and a \$200 filing fee plus cost of transcription and actual cost fees (defined as all costs incurred by the County in receiving, reviewing, and processing the appeal), within 14 days after the issue date of this FEIS. **All notices of appeal must be received by 5pm on October 21, 2009.** Appeals shall be filed at the Garfield County Public Works Department, Planning Division, Attn: Walter Grant Morgan, P.E., SEPA Official, PO Box 160, Pomeroy, WA 99347.

For further information regarding this proposal or to request additional copies of this FEIS, you may contact Grant Morgan, Garfield County's SEPA Official, at (509) 843-1301.

Very truly yours,

A handwritten signature in blue ink that reads "Walter Morgan". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Walter Grant Morgan P.E.
Garfield County Engineer
SEPA Responsible Official
Garfield County

**Final Environmental Impact Statement
FACT SHEET**

Title	Lower Snake River Wind Energy Project, Final Environmental Impact State (FEIS)	
Brief Description of Proposed Action	<p>Applicant proposes to construct and operate approximately 795 wind turbines that would generate approximately 1,432 megawatts (MW) of wind power in Garfield and Columbia Counties. The proposed project would occupy approximately 124,000 acres.</p> <p>Wind turbines will generally be located along ridge tops to use winds that typically come from the southwest. Supporting infrastructure will include access roads, underground and overhead electric collection system lines, substations, transmission lines, microwave communications, meteorological towers, operations and maintenance centers, and temporary construction access and staging areas. The project will be built in four or more stages.</p>	
Location	South of Pomeroy, north of the Pataha Creek, between the Pataha Creek and Tucannon River and south of Tucannon River and State Route 261. Detailed maps and tax parcel numbers are available for review at the Garfield County Public Works office listed below.	
Applicant	Puget Sound Energy, Inc.	
Proposed Implementation Date	Construction activities are expected to start during 2010 and last approximately five years. The start of construction depends on the date Garfield County issues a CUP for this project and whether there any appeals associated with the CUP's issuance.	
SEPA Lead Agency	Garfield County Public Works Department P.O. Box 160 Pomeroy, WA 99347 (509) 843-1301	
Responsible Official	Walter Grant Morgan, P.E. Garfield County Engineer Public Works Director	
Contact Person	Garfield County Public Works Department, Planning Division PO Box 160 Pomeroy, WA 99347 (509) 843-1301	
Required Approvals and Certifications	Clean Water Act Section 404 Permit	U.S. Army Corps of Engineers (USACE) – Walla Walla District
	Clean Water Act Section 401 Water Quality Certification	WA Department of Ecology
	National Pollutant Discharge Elimination System (NPDES) Construction General Permit (and State Stormwater Construction General Permit)	WA Department of Ecology

	Sand and Gravel General Permit – Portable Facilities (NPDES and State Waste Discharge General Permit)	WA Department of Ecology
	Hydraulic Project Approval/Joint Aquatic Resource Permit Application	WA Department of Fish and Wildlife
	Well Construction and Operator’s License	WA Department of Ecology
	Federal Aviation Administration (FAA) Form 7460: Notice of Proposed Construction or Alteration	Federal Aviation Administration
	General Order of Approval for Concrete Batch Plants	WA Department of Ecology, Eastern Regional Office
	General Order of Approval for Portable Rock Crushers	WA Department of Ecology
	Highway Access Permit	WA Department of Transportation
	Archaeological Excavation Permit	WA Department of Archaeology and Historic Preservation
	Building Permit	Garfield County Public Works; Columbia County Public Works
	Conditional Use Permit	Garfield County Public Works; Columbia County Planning Department
	Right of Way Permit (includes both access and use)	Columbia County Public Works
	Right of Way Use Permit	Garfield County Public Works
	Right of Way Approach Permit	Garfield County Public Works
	Haul Road Agreement	Garfield County Public Works
	Franchise Agreement/Bonding	Columbia County Public Works
	Critical Areas Review/Determination	Garfield County Public Works; Columbia County Planning Department
	Surface Mining Reclamation Permit	WA Department of Natural Resources
Authors and Principal Contributors	Ecology and Environment, Inc. is the principal author of the FEIS. SWCA Environmental Consultants prepared the cultural resources inventory and the wetlands and water determination for the proposed project. WEST, Inc. prepared the wildlife baseline studies for the proposed project. Mark Bastasch of CH2M Hill prepared the noise analysis for the proposed project.	
Date of Issuance of the FEIS	October 7, 2009	
Final EIS Adequacy Appeal Deadline	October 21, 2009	

Appeal Period	You may appeal the adequacy of the Final EIS by filing a notice of appeal; the contents of the appeal as outlined in Section 7.3(3)(b) of the Garfield County SEPA Ordinance (No. 13870); and a \$200 filing fee plus cost of transcription and actual cost fees (defined as all costs incurred by the County in receiving, reviewing, and processing the appeal), within 14 days after the issue date of this Final EIS. All notices of appeal must be received by the SEPA Responsible Official by 5pm on October 21, 2009.
Date Final Action is Planned	After Garfield County Public Works deliberates on the Applicant's CUP application and the EIS contents, it will send a recommendation to the Garfield County Hearing Examiner to approve or deny the project (expected in November 2009).
Subsequent Environmental Review	<p>Garfield County Hearing Examiner Hearing</p> <p>JARPA Application Review</p> <p>Bonneville Power Administration's NEPA environmental review process for its new Central Ferry Substation</p> <p>Columbia County will conduct its own environmental review process as it deems appropriate at such time as an application for development of a wind energy facility is sought by Applicant in Columbia County</p> <p>Further environmental review of the specific wind turbine locations will be done during the proposed project's micrositing phase</p>
Cost of FEIS Copy to the Public	There will be no cost for obtaining a CD containing an electronic copy of the FEIS; however, if a hard copy is requested, the cost is \$50.00.
Previous Environmental Documents	Lower Snake River Wind Energy Project (Columbia and Garfield Counties) Draft Environmental Impact Statement, August 17, 2009
Location of Background Information	<p>You may access this FEIS and find additional information about the project on the Garfield County's website at www.co.garfield.wa.us.</p> <p>CDs containing the FEIS are available free of charge at the Garfield County Public Works Department and the Columbia County Planning Department. You may also request a hard copy of the FEIS for the cost noted above at either of these two locations.</p> <p>Hard copies of the FEIS are also available for review at the following locations: the Garfield County Public Works Department Office (19th and Arlington, Pomeroy, WA), the Garfield County Library (856 Arlington, Pomeroy, WA), the Garfield County Auditor's Office (PO Box 278, Pomeroy, WA), the Offices of the Garfield County Commissioners (Garfield County Courthouse), the Columbia County Planning Department (11 S.2d St., Dayton, WA), and the Columbia County Library (111 S.3rd Street, Dayton, WA).</p>

**FINAL Environmental Impact
Statement**

**Lower Snake River
Wind Energy Project**

October 2009

Prepared for:

**Garfield County
P.O. Box 160
Pomeroy, WA 99347**

Prepared by:

ECOLOGY AND ENVIRONMENT, INC.
720 Third Avenue, Suite 1700
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List of Abbreviations and Acronyms

Term	Definition
APE	Area of Potential Effect
APLIC	Avian Power Line Interaction Committee
Audubon	National Audubon Society Inc.
AWEA	American Wind Energy Association
BLM	Bureau of Land Management
BMPs	best management practices
BPA	Bonneville Power Administration
CanWEA	Canadian Wind Energy Association
CAO	Critical Areas Ordinances
CPE	Columbia Plateau Ecoregion
CRMMIPD	Cultural Resources Monitoring, Mitigation and Inadvertent Discovery Plan
CRP	Conservation Reserve Program
CTUIR	Confederate Tribes of the Umatilla Indian Reservation
CUP	Conditional Use Permit
DAHP	Department of Archaeology and Historic Preservation
dB	Decibels
DEIS	Draft EIS
Ecology	Washington State Department of Ecology
EDNA	environmental designation for noise abatement
EFSEC	Energy Facility Site Evaluation Council
EIS	Environmental Impact Statement
ESA	Endangered Species Act
ESCP	erosion and sediment control plan
FAA	Federal Aviation Administration
FDCP	Fugitive Dust Control Plan

List of Abbreviations and Acronyms (cont.)

FEIS	Final EIS
FHWA	Federal Highway Administration
GIS	Geographic Information System
HF	high-frequency
HPCRSIT	Historic Properties of Cultural and Religious Significance to Indian Tribes
Hz	Hertz
IRP	Integrated Resource Plan
JARPA	Joint Aquatic Resources Permit Application
kV	Kilovolts
LF	low-frequency
LSRWEPP	Lower Snake River Wind Energy Project
mph	miles per hour
MW	Megawatts
NAP	National Academies Press
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRC	National Research Council
NRHP	National Register of Historic Places
O&M	operations and maintenance
OSHA	Occupational Safety and Health Administration
Phase I ESA	Phase I Environmental Site Assessment
Project	Lower Snake River Wind Energy Project
PSE	Puget Sound Energy Inc.
QA/QC	Quality Assurance/Quality Control
RCW	Revised Code of Washington
ROW	Right-of-way
SEPA	State Environmental Policy Act
SR	State Route
SWPPP	Storm Water Pollution Prevention Plan
TAC	Technical Advisory committee

List of Abbreviations and Acronyms (cont.)

USACE	U.S. Army Corps of Engineers
USFS	United States Forest Service
USFWS	U.S. Fish and Wildlife Service
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington Department of Natural Resources
WIRHS	Wildlife Incident Reporting and Handling System
WRAs	Wind Resource Areas
WSDOT	Washington State Department of Transportation
ZOR	zone of risk
ZVI	Zone of Visual Influence

Executive Summary

ES.1 Introduction

In February 2009, Garfield County initiated the environmental review of the Lower Snake River Wind Energy Project (Project) proposed by Puget Sound Energy Inc. (PSE). The application was originally submitted by Blue Sky, LLC, a subsidiary of RES Americas (RES) and PSE. Since the application was filed, PSE has acquired the entire interest in the Project. For this reason, references to the “Applicant” in this document refer solely to PSE. The Project is a commercial wind farm capable of generating approximately 1,432 megawatts (MW) of electricity proposed for development in Columbia and Garfield Counties on approximately 124,000 acres.

This environmental review process, performed under the authority of Ch. 43.21C RCW (State Environmental Policy Act or SEPA), was triggered when the Applicant submitted a Conditional Use Permit (CUP) application to Garfield County on January 26, 2009. At such time when the Applicant seeks to develop portions of the Project in Columbia County, that county will conduct its own permitting process and associated environmental review.

On February 12, 2009, Garfield County issued a SEPA determination of significance, indicating the County’s intention to prepare an Environmental Impact Statement (EIS) to describe the environmental impacts of the Project in both Garfield and Columbia Counties.

On February 12 and 26, 2009, Garfield County began a scoping process to solicit input from the public on the issues that should be addressed in the environmental review. Fifty-nine comment letters were received and considered. The County prepared a draft EIS that was issued for public comment on August 17, 2009. The County accepted comments postmarked through September 16, 2009. These comments, received, from Tribes, local and state agencies, and the public were considered in the preparation of this FEIS.

An EIS is an informational and evaluative tool. It does not mandate approval or disapproval of a project, but informs the public and decision-makers as to the potential substantial adverse impacts to both the built and natural environment, and suggests to decision-makers the means by which those impacts could be avoided or reduced through mitigation.

This environmental review evaluates approximately 1,000 wind turbine locations in the Project area. After applying mitigation measures, best management practices (BMPs), and micrositing of the individual Project features, approximately 795 turbine locations will be chosen for installation at the Project.

This FEIS is organized as follows.

Chapter 1 describes the purpose of this FEIS in the context of the analyses conducted by Garfield County, in cooperation with Columbia County, to comply with SEPA. Refinements to the proposed action, along with a summary of coordination activities conducted with agencies and tribes, are also included.

Chapter 2 of the FEIS provides updates and text revisions to the analysis described in Chapters 2 and 3 of the Draft EIS.

Chapter 3 of the FEIS includes copies of written comments submitted to Garfield County, as well as responses to those comments prepared by the FEIS authors.

The remaining chapters and appendices of the FEIS provide updated supporting information for the EIS, as required by SEPA.

The draft EIS, and this FEIS, make up the complete Environmental Impact Statement for this Project.

ES.2 Project Objectives, Purpose and Need

As stated in the draft EIS, the Project objective is to develop and construct a commercial wind energy facility in Garfield and Columbia Counties in Southeast Washington that is commercially viable and meets the energy needs of the region. The Applicant is subject to the requirements of the Washington Energy Independence Act, Chapter 19.285 RCW, and needs to obtain mandatory minimum amounts of its energy supply from eligible renewable energy resources. The Applicant's integrated resource plan relies heavily on the increased use of wind power as a principal component of its future generation portfolio. The combination of economic growth and expiring energy supply contracts means that PSE faces large electricity resource needs in the years ahead. This Project addresses the objectives and purposes stated above, and contributes to meeting the needs of PSE and its customer base.

ES.3 Project Alternatives and Review

As stated in the draft EIS, this document evaluates two alternatives: the Preferred Alternative (the Project) and the No Action Alternative. Several potential alternatives were considered during the development of this EIS, but were not analyzed in detail because they were not deemed reasonable, or they did not meet the Project objectives.

The direct and indirect Project impacts are addressed, as well as the cumulative impacts of other reasonably foreseeable projects in the two-county area. Impacts of the Project are evaluated for the construction, project facilities' operations and maintenance, and end of design life stages of the Project.

One of the results of environmental review is the development of potential mitigation measures whose implementation may avoid or reduce impacts to the built and natural environment, as well as help identify significant unavoidable impacts that cannot be mitigated.

Mitigation measures recommended in an EIS are one tool the Applicant uses to refine the ultimate selection of individual turbine locations. Additional processes that are applied to the final site-specific decisions necessary to reduce the project to a final footprint of approximately 795 turbines include both mitigation measures that are inherent in the design of a wind project, and the process of micrositing.

Mitigation measures that are inherent in a wind project design include standards that are applied to the entire Project. An example of a mitigation measure inherent in a wind project design is siting all project elements to avoid sensitive resource areas such as wetlands, streams, or known cultural resource sites. This principle is applied to the specific streams present in the Project area and informs the design engineer of locations where no Project elements can be placed. This reduces the ultimate number of turbines that can be sited.

Micrositing is the final process of assessing site-specific attributes in order to determine the final locations of wind turbine generators, below-ground electrical cables, and above-ground electrical transmission towers. This process occurs after comprehensive environmental and permit review and prior to actual construction. During micrositing, technical and engineering factors, including limitations posed by the terrain, wind data, (e.g., speed, wind shear), wake effects of the turbines, feasibility of access, geotechnical considerations (subsurface conditions), environmental restrictions (avoidance of sensitive habitat), cultural/archeological restrictions (avoidance of cultural resources sites), telecommunications constraints, Federal Aviation Administration (FAA) requirements, and other site-specific criteria are assessed. Based on these site-specific results, further refinement is made to yield a final layout of approximately 795 turbines.

ES.4 Significant Areas of Interest and Issues that Were Considered in the Analysis

Public scoping identified the following significant areas of interest to be considered in this DEIS: impacts to land uses in the area; socioeconomic impacts to the community and the public services afforded the area's citizens; avian and wildlife impacts; visual impacts; and noise impacts. The draft EIS considered the following significant issues to be resolved through environmental and permit review: whether the Project would have significant adverse impacts to wildlife

populations and hunting uses; whether there would be continued viability of agricultural activities; the level of demands placed on public services; calculation and timing of new revenues to taxing districts and the private sector; whether the Project could be sited to meet Washington's adopted noise level standards; and how the Project will affect the viewscape in the Project vicinity.

ES.5 Mitigation Measures and Significant Impacts that are Unavoidable

The draft EIS presented a summary table of all recommended mitigation measures. This table has been revised and updated to reflect additional mitigation measures suggested by the EIS authors to mitigate for the impacts presented in the draft EIS, and otherwise raised in the comments received. As in the draft EIS, major mitigation measures discussed here are reasonably calculated to reduce, at times eliminate, and in several instances, enhance the impacts of the Project to the built and natural environment.

The mitigation measures presented in this analysis have been summarized in Table FES-1. The mitigation measures listed in Table FES-1 are both inherent in project design and for reduction of impacts. Revisions to existing mitigation measures or new mitigation measures are indicated in this table using the following formatting:

Deletions are indicated by text that has been stricken (for example "~~deleted~~") Additions are indicated by underlining the new text (for example "new text").

As described in the draft EIS, avoidance will continue to be utilized to prevent many types of impacts from occurring in the first instance, and Best Management Practices will be applied to minimize impacts where appropriate. Application of all of these measures, following the micrositing of the Project elements within permitting corridors, will limit and in most instances, eliminate the adverse impacts of the Project.

Table FES-1 Summary of Impacts and Mitigation for the Preferred Alternative

Resource	Impact Topics Addressed	Mitigation Measures	Significant and Unavoidable Adverse Impacts
<p>Geology</p>	<ul style="list-style-type: none"> • Impacts associated with seismic effects and volcanic activity • Potential for Project to contribute to slope instability, topographic alterations, and erosion 	<ul style="list-style-type: none"> • Project facilities (turbines, roads, collection systems, and associated facilities) will be sited to avoid potential geologic hazard areas, <u>to the maximum extent practicable</u>, including those identified in the Counties’ Critical Areas Ordinances (“CAO”), slopes greater than 30%, and streamside incision or erosion points. <u>The Counties’ CAO standards and any other applicable state and/or federal regulations will be complied with if geologic hazard areas cannot be avoided.</u> • Project features will be designed and constructed to comply with the performance standards for geologic hazardous areas as specified in Counties’ CAOs, seismic design codes, slope protection measures, and BMPs. • Roads will be designed by a certified engineer and constructed to ensure stability and to reduce wind erosion (including use of a minimum of 15 cm of gravel surface for temporary roads). • Project will comply with specifications and BMPs contained in its NPDES permit and Stormwater Pollution Prevention Plan (SWPPP) to reduce erosion potential. • Blasting activities will be conducted by professionally trained and certified explosive experts and will employ industry-standard techniques. • When possible, roads, collector lines, cabling trenches, and communication lines will share construction corridors to minimize ground disturbance. • During the first year following construction and/or until vegetation has been established in disturbed soil, the Project site will be monitored on a regular basis following large rainfall and snow events, and corrective action will be taken if any erosion occurs. • Maintain widened existing roads and new roads through Project’s life to limit erosion. • When Project facilities are removed, restoration activities could include reclaiming roads, recontouring slopes, grading, ripping compacted areas, filling, excavating, and replanting/reseeding as applicable. Footings and foundations will be removed to a level of 3 feet below the ground surface. • <u>Applicant will obtain reclamation permit from WA DNR as applicable, if reclamation is requested by landowner.</u> • <u>Any Project mitigation should be planned for and implemented for each developmental phase of the Project and not post-construction of the entire Project. (Note: This mitigation measure applies to each element of the environment; however, for purposes of this Table, will only be listed once.)</u> 	<ul style="list-style-type: none"> • Mitigation measures inherent in Project design and identified in the EIS, result in no significant unavoidable adverse impacts

Table FES-1 Summary of Impacts and Mitigation for the Preferred Alternative

Resource	Impact Topics Addressed	Mitigation Measures	Significant and Unavoidable Adverse Impacts
Soils	<ul style="list-style-type: none"> • Temporary and permanent soil disturbance • Soil compaction and erosion • Conversion of natural soils to artificial surfaces • Soil contamination 	<ul style="list-style-type: none"> • Project will limit soil disturbance by: (1) using existing roads wherever feasible, rather than building new roads; (2) clearly identifying work areas; (3) minimizing vegetation removal; and (4) during construction of O&M facilities, limit the disturbed area to the size of the O&M yard. • Applicant will site supporting infrastructure so that adjacent WRAs share facilities <u>to the maximum extent feasible</u>, thereby reducing the total number of facilities constructed within the Project as a whole. • Applicant will properly engineer any cut-and-fill slopes. • Applicant will restore temporary staging areas and temporary shoulders and turn-around areas to pre-Project condition following construction. • Project will install and apply appropriate erosion control measures during and following construction, including silt fences, straw bales, reseeded, water trucks for dust control, monitoring, etc. • Project will install appropriate roadway drainage to control and disperse runoff. • Applicant will require contractors to use BMPs for handling materials to help prevent spills. • <u>Applicant will keep soils covered in construction zones, use dust abatement measures (such as watering trucks) and tackifiers, or timely revegetate disturbed areas to allow for optimal seed germination to prevent erosion.</u> • <u>BMPs will be developed to comply with the Ecology Construction Stormwater NPDES permit from Ecology before construction.</u> • See mitigation measures listed for Geology. 	<ul style="list-style-type: none"> • With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project will have no significant unavoidable adverse impacts
Water Resources	<ul style="list-style-type: none"> • Stormwater runoff effects on water quality • Streambed and stream bank disturbance • Water quality impacts from spills • Water consumption for Project construction and operation • Sedimentation and erosion effects on water quality 	<ul style="list-style-type: none"> • <u>To the maximum extent possible</u>, Project will avoid surface water and groundwater identified during micro-siting. • <u>To the maximum extent possible</u>, Project will adhere to stream buffers and surface water buffers. • Culverts will be installed to facilitate road crossings/road widenings. • Project will adhere to Ecology’s <i>Stormwater Management Manual for Eastern Washington</i>. • Applicant will prepare an Erosion and Sediment Control Plan (ESCP), including details and locations of BMPs to be implemented. • Applicant will prepare a Stormwater Pollution Prevention Plan (SWPPP) for construction and operation of the Project. • Project’s stormwater drainage systems and structural BMPs will be designed to prevent infiltration of liquid contaminants or contaminated runoff into underlying aquifers. 	<ul style="list-style-type: none"> • With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project will have no significant unavoidable adverse impacts

Table FES-1 Summary of Impacts and Mitigation for the Preferred Alternative

Resource	Impact Topics Addressed	Mitigation Measures	Significant and Unavoidable Adverse Impacts
		<ul style="list-style-type: none"> • <u>If work in streams or their buffers can not be avoided, any work in streams or their riparian buffers will only be designed and conducted in accordance with applicable local, state, and federal regulations.</u> • Project will comply with Garfield County CAO requirements and Garfield County Health District for wellhead protection areas/critical aquifer recharge areas. • Project will install and implement sediment and erosion control measures, including, but not limited to, straw mulching and vegetating disturbed surfaces; retaining original vegetation wherever possible; directing surface runoff away from denuded areas; minimizing constructed slope steepness and length to keep runoff velocities low; and maintaining vegetative buffer strips between the affected areas and any nearby waterways. • Excavated materials will be retained for backfilling post-construction and disturbed areas will be brought to natural grade and re-seeded with a native seed mix. • Rock crushers will operate with BMP measures for water runoff. • Project site will be monitored on a regular basis for erosion and corrective action taken as necessary per the Project's NPDES permit requirements. • See mitigation measures listed for Geology and Soils. 	
Wetlands			
7	<ul style="list-style-type: none"> • Impacts to wetlands and Waters of the United States • Impacts to wetland vegetation 	<ul style="list-style-type: none"> • Using existing developed water sources for construction. • <u>To the maximum extent possible</u>, Applicant will locate construction staging areas, stormwater management facilities, roads, underground cables, turbine foundations, transmission poles, and other associated infrastructure outside wetlands and their associated buffers. • <u>If wetlands and their buffers cannot be avoided, Applicant will comply with applicable local, state, and federal regulations.</u> • Applicant will complete a final wetland delineation after completion of micro-siting process and consult with the appropriate state and federal agencies if determination that jurisdictional wetlands may be impacted. • Applicant will minimize the number of stream crossings to the maximum extent possible. • Applicant will conduct a thorough geotechnical analysis of each turbine foundation prior to construction. • Project's clearing and grading activities will be at least 200 feet from all wetlands in the Project area to the maximum extent feasible. • Applicant will evaluate shallow groundwater and impacts thereto and adjust tower locations to avoid impacts when locating Project facilities within the proximity of wetlands. • See mitigation measures listed for Water Resources. 	<ul style="list-style-type: none"> • With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project will have no significant unavoidable adverse impacts

Table FES-1 Summary of Impacts and Mitigation for the Preferred Alternative

Resource	Impact Topics Addressed	Mitigation Measures	Significant and Unavoidable Adverse Impacts
Aquatic Habitat, Fish Species, And Wildlife			
	<ul style="list-style-type: none"> • Impacts to aquatic habitat • Loss of habitat • Wildlife mortality • Streambed and stream bank disturbances • Loss of riparian vegetation • Temporary displacement of big game 	<ul style="list-style-type: none"> • <u>To the maximum extent feasible</u>, Project facilities will be located at least 250 feet from the banks of fish-bearing streams. • <u>Where avoidance of riparian corridors is not possible</u>, stabilized rock construction access roads will be used <u>or other structures designed to be in compliance with local, state, and federal requirements</u>. • Applicant will restore temporarily impacted habitat and Project facility footprints after decommissioning to minimize permanent impacts to wildlife. • Project facilities will be constructed in phases to minimize the amount of area impacted by construction thereby minimizing impacts to burrowing wildlife. • Applicant will implement proper drainage, erosion control plans, and stormwater management practices during the operation of the Project, avoiding impacts on fish and fish habitat downstream of the Project area. • In areas documented as winter range habitat for big game species, the maximum amount of heavy construction, including road and foundation construction and blasting, will occur between April 15 and November 15, outside the critical winter periods. • WDFW and the permitting authority will be consulted and involved with respect to managing the big game populations in the Project area during the construction and operations of the Project. • Consultation with Columbia and Garfield Counties to ensure compliance with their respective CAOs. • Establish a Technical Advisory Committee (TAC) <u>for the Project to formulate and review the results of wildlife monitoring data and formulate recommendations for adaptive management, as described in Bird and Bat Resources mitigation.</u> • Applicant will implement appropriate recommendations provided in the WDFW Wind Power Guidelines (April 2009). • See mitigation measures listed for Water Resources, Wetlands, and Bird and Bat Resources. 	<ul style="list-style-type: none"> • With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project will have no significant unavoidable adverse impacts
Bird And Bat Resources			
	<ul style="list-style-type: none"> • Temporary and permanent loss of habitat • Disturbance and/or displacement of avian and bat species • Avian/bat mortality 	<ul style="list-style-type: none"> • Establish a Technical Advisory Committee (TAC) for the Project to formulate and review the results of wildlife monitoring studies. • <u>The TAC (referenced in the Aquatic Habitat, Fish Species, And Wildlife element of the environment above) above will formulate and review the results of avian and bat monitoring data and formulate recommendation for adaptive management.</u> • The duration and scope of the post-construction monitoring program will be recommended to the appropriate permitting authority by the TAC through consultation with a qualified 	<ul style="list-style-type: none"> • With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project will have no significant unavoidable

Table FES-1 Summary of Impacts and Mitigation for the Preferred Alternative

Resource	Impact Topics Addressed	Mitigation Measures	Significant and Unavoidable Adverse Impacts
		<p>biology consultant familiar with the impacts on birds and bats at wind energy projects.</p> <ul style="list-style-type: none"> • A raptor nesting survey will be conducted in the appropriate season prior to each phase of construction to identify active raptor nest sites in the vicinity of the Project. Disturbance will be minimized during construction <u>in accordance with the maximum setbacks recommended by local regulations through applicable CAO's and other applicable state and federal agencies' recommendations regarding construction activity setbacks from active raptor nests.</u> • Construction personnel will avoid driving over or otherwise disturbing areas outside the designated construction areas. • Applicant will designate an environmental monitor during construction to monitor construction activities and ensure compliance with mitigation measures. • Applicant will implement a wildlife incident reporting and handling system (WIRHS), which will be modeled after the system in place at the Hopkins Ridge project. • Implement the appropriate recommendations for impact avoidance and minimization provided in the Washington Department of Fish and Wildlife Wind Power Guidelines (April 2009). • <u>The Applicant will use un-guyed permanent meteorological towers to minimize adverse avian impacts from these structures, as recommended by the 2009 WDFW Wind Power Guidelines.</u> • <u>Project powerlines will be designed and operated to meet PSE avian protection and the Avian Power Line Interaction Committee (APLIC) standards. At riparian crossings, line protection can include markers and other protection devices to increase visibility of lines to birds.</u> 	<p>adverse impacts</p>
Vegetation			
	<ul style="list-style-type: none"> • Introduction/increase in noxious weed species • Vegetation removal and habitat loss 	<ul style="list-style-type: none"> • Consultation with county weed management authorities for the development of a Project vegetation management plan prior to construction and implementation of construction weed management and revegetation activities to prevent weed spread and the introduction of new weed populations. • Integrated Weed Management control techniques appropriate to individual species and specific sites within areas impacted by the Project will be developed and employed in consultation with the appropriate county Weed Coordinators. • Applicant will monitor known weed populations and check for new introductions within restored areas on a regular schedule throughout post-construction growing seasons. • Application of the mitigation ratios contained in the WDFW Wind Power Guidelines (April 2009) will be imposed post-construction. • Studies will be completed prior to Project ground disturbance activities to identify sensitive 	<ul style="list-style-type: none"> • With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project will have no significant unavoidable adverse impacts

Table FES-1 Summary of Impacts and Mitigation for the Preferred Alternative

Resource	Impact Topics Addressed	Mitigation Measures	Significant and Unavoidable Adverse Impacts
		<p>and special status species to be avoided by Project design and micrositing.</p> <ul style="list-style-type: none"> • The Applicant will implement post-construction weed management, including eradication of incipient weed populations, suppression of existing populations, and restoration of temporarily disturbed existing plant communities. 	
Visual Resources			
	<ul style="list-style-type: none"> • Permanently changed views from residential, recreational, and roadway viewpoints • Light and glare impacts • Cumulative visual impacts of wind energy in the region 	<ul style="list-style-type: none"> • Most of Project’s collector systems will be buried underground; however, where this is not feasible, portions may be carried overhead. • Sensors and switches will be used to keep lights off on Project facilities when not required. • Mitigation for Project lighting will be determined through consultation with FAA during the micrositing process. An effort will be made to limit or minimize the visual effects of lighting, to the maximum extent possible in compliance with FAA requirements. • Project lights typically used to meet FAA requirements will to some extent be shielded from ground level view due to a constrained (3-5 degree) vertical beam. • Turbine towers will be painted white with anti-reflective paint to avoid daytime lighting and reduce glare of the wind turbines. 	<ul style="list-style-type: none"> • No mitigation measures are available which would minimize or eliminate significant unavoidable adverse impacts (refer to Section 2.10 for further discussion)
Noise			
	<ul style="list-style-type: none"> • Noise impacts from the construction and operation of the Project 	<ul style="list-style-type: none"> • Implement work-hour controls so that noise-generating activities occur between 7 a.m. and 10 p.m., to the maximum extent possible • Minimize the number of heavy-duty haul trucks traveling through the area during nighttime hours. • Do not allow haul trucks to park and idle within 100 feet of a residential dwelling. • Maintain equipment in good working order and use adequate mufflers and engine enclosures. • Coordinate construction vehicle travel to reduce the number of passes by sensitive receivers. • Compliance with Garfield and Columbia Counties’ setback standards • The Applicant shall comply with State of Washington noise standards (WAC Chapter 173-60). <u>The Applicant has also voluntarily agreed to meet a residential EDNA standard of 50 dBA at any existing residential receptors of non-participating land owners unless noise easements are obtained.</u> 	<ul style="list-style-type: none"> • With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project will have no significant unavoidable adverse impacts

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Table FES-1 Summary of Impacts and Mitigation for the Preferred Alternative

Resource	Impact Topics Addressed	Mitigation Measures	Significant and Unavoidable Adverse Impacts
Climate And Air Quality			
	<ul style="list-style-type: none"> • Construction and operational impacts on air quality (i.e., particulates/fugitive dust and vehicle emissions) • Greenhouse gas emissions 	<ul style="list-style-type: none"> • Development of a dust control plan (FDCP) identifying all fugitive dust sources and dust control methods and compliances with FDCP’s requirements. • Construction to be completed in phases, minimizing disturbed areas. • Stockpiles of soil will be covered <u>managed with wind impervious fabric</u> to prevent airborne dust <u>using impervious fabric covers, the application of a tackifier, or other appropriate measures.</u> • All vehicles used during construction will comply with applicable federal and state air quality regulations for tailpipe emissions. • Carpooling among construction workers will be encouraged. • When in operation, vehicles will limit engine idling time and equipment will be shut down when not in use. • Limit traffic speeds to the posted speed limits to minimize the generation of dust. • Add surface gravel to reduce the source of dust emission. • Encourage the use of alternate, paved roads, where available. • Water or dust palliatives to be applied as necessary to control road dust from construction vehicles within 500 feet of residences and also to temporary access roads and cleared areas. • Adherence to county dust abatement processes and use of locally approved dust suppressant chemicals. Excessive and repeated applications of dust suppressant chemicals will be avoided, and the application of such chemicals will be timed to avoid or minimize their wash-off by rainfall or irrigation. • Maintaining permanent graveled access roads in compliance with county regulations. • Compliance with fugitive dust control plans and BMPs for concrete batch plants and portable rock crushers. • Project will obtain Temporary Air Quality Permits for concrete batch plants. • See mitigation measures in Geology and Soils. 	<ul style="list-style-type: none"> • With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project will have no significant unavoidable adverse impacts
Public Services And Utilities			
	<ul style="list-style-type: none"> • Increase in demand for public services (police, emergency services, medical services, education) • Increased response time for emergency services • Impacts related to 	<ul style="list-style-type: none"> • Facility personnel will complete regular emergency response and safety training. • Preventative safety measures will be employed to reduce the risk of fires or to safely contain a fire if one should occur. Lightning protection systems will be installed in all turbines and towers to reduce the risk of a lightning-caused fire. • Discussions with local fire districts prior to construction for ongoing fire protection services during construction and operation of the Project. • Preparation of onsite emergency plans, including an Emergency Action Plan, a Fire Prevention Plan, and an Operational Safety Program. Measures in these plans might include: 	<ul style="list-style-type: none"> • With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project will have no significant unavoidable adverse impacts

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Table FES-1 Summary of Impacts and Mitigation for the Preferred Alternative

Resource	Impact Topics Addressed	Mitigation Measures	Significant and Unavoidable Adverse Impacts
	wastewater and solid waste generation	<p>providing detailed maps to local fire and emergency services districts showing all Project access roads, use of spark arrestors on all power equipment during extremely dry conditions when the wildfire risk is elevated; carrying fire extinguishers in construction and maintenance vehicles; and maintaining a water supply or water tender at one or more locations on-site to improve the effectiveness of fire fighting. Such plans will comply with Counties' development standards.</p> <ul style="list-style-type: none"> • Project will provide its own onsite security to be present during construction and operations. • Junction boxes will be constructed with a graveled footprint for fire protection and maintenance. • Sanitary wastes will be collected in portable toilets during construction. Disposal of sanitary wastes will be managed through a contract with a portable toilet waste vendor. • Onsite septic systems will be installed at O&M facilities <u>as required by applicable regulations</u>. The Applicant will consult with the <u>appropriate County Health Department</u> and obtain any required permits prior to construction. • Hazardous materials will be disposed of in accordance with all applicable state and federal laws and regulations. • A private contractor will be hired to transport construction debris to a regional landfill for disposal. • If Project is decommissioned, waste material will be recycled, disposed of onsite, or taken to a regional facility for disposal. • See mitigation measures listed for Health and Safety. 	

Table FES-1 Summary of Impacts and Mitigation for the Preferred Alternative

Resource	Impact Topics Addressed	Mitigation Measures	Significant and Unavoidable Adverse Impacts
<p>Traffic And Transportation</p>	<ul style="list-style-type: none"> • Impacts related to additional traffic trips generated by Project • Impacts on roadways related to construction and delivery of oversized loads • Impacts related to road maintenance and public access • Damage to roadways 	<ul style="list-style-type: none"> • Prior to construction, required road agreements (including Haul and Franchise Agreements) will be prepared in consultation with local and state agencies to address impacts from transporting large equipment to the site. Additionally any bonding requirements will be met prior to construction. • Pilot cars will be used as WSDOT dictates, depending on load size and weight. • Where construction may occur near the roadway, one travel lane shall be maintained at all times. • Provision for advance notification to emergency providers, and hospitals when public roads may be partially or completely closed. • Development of protocols for passage of emergency vehicles. • Coordination of traffic control requests through the WSDOT South Central Region’s Traffic Engineer. • Compliance with seasonal road restrictions as instituted by Garfield and Columbia Counties. • Adherence to FAA guidelines for a wind turbine and meteorological tower lighting and warning system. • New road construction and upgrades to existing roads will be done according to Garfield and Columbia county ordinances and through approval of the respective county engineers and public works directors. • Applicant will develop a Site Access Plan that directs construction and maintenance workers to use existing roads wherever possible. • Access to new, Project-related roads will be solely from county and private roads and not from U.S. Route 12. <u>from state highways will be minimized to the maximum extent feasible.</u> • During construction of temporary access roads, the topsoil will be stripped and stockpiled for restoration once construction is complete. • Develop a Haul and Approach Route in coordination with and approved by the appropriate jurisdictional authorities. • New road construction and improvements to existing roads will be done according to county ordinances and through approval of the county engineers. • Restoration of all temporary roads, temporary shoulders, and disturbed areas to their original condition upon completion of construction. • Implement traffic controls to minimize traffic delays to recreation users. • Permanent roads will be maintained for the life of the Project. • Restrict use by tracked vehicles and heavy trucks to prevent damage to road surface and base. 	<ul style="list-style-type: none"> • With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project will have no significant unavoidable adverse impacts

Table FES-1 Summary of Impacts and Mitigation for the Preferred Alternative

Resource	Impact Topics Addressed	Mitigation Measures	Significant and Unavoidable Adverse Impacts
Land Use And Recreation			
	<ul style="list-style-type: none"> • Impacts related to land disturbance • Temporary curtailment of hunting in Project area • Temporary access delays to recreation sites • Agricultural land impacts • Project’s consistency with existing zoning regulations 	<ul style="list-style-type: none"> • Establishment of a hunting program similar to other existing programs (i.e., Hopkins Ridge and Wild Horse). Rules may include prohibiting access within 300 feet of wind turbines or substations, restriction of vehicle traffic to normally travelled county roads, adherence to WDFW Game Rules and Regulations. • Encourage landowners within the Project area to continue to allow hunting in the Project area by assisting with the development of written agreements to be signed with interested hunters, and the development of maps depicting property boundaries, Project facilities/improvements, and suggested hunting buffer zones around Project facilities/improvements. • Work with WDFW and landowners within the Project area to add opportunities for hunting. • Cooperatively work with WDFW on managing big game populations in the Project. • Coordinate with landowners regarding co-location of facilities on farmland thereby leading to better placement and beneficial impacts for farmland. • Coordinate with landowners to address restoration of land for agricultural production. • See mitigation measures in Traffic and Transportation. 	<ul style="list-style-type: none"> • With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project will have no significant unavoidable adverse impacts
Socioeconomics			
	<ul style="list-style-type: none"> • Increases in population growth • Increases in employment opportunities and wage/payroll impacts • Long-term positive revenue growth with some potential for short-term reduction in state equality payments for schools • Changes to the tax base • Agricultural impacts 	<ul style="list-style-type: none"> • Coordination between the Applicant and counties and school district officials will be maintained so that the counties and school districts are aware of the likely dates of Project phase completion when the assets are commissioned and become part of the tax rolls so that the districts may plan for levy time and rates in order to address the added assets. 	<ul style="list-style-type: none"> • With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project will have no significant unavoidable adverse impacts
Health And Safety			
	<ul style="list-style-type: none"> • Fire/explosion risk due to construction and/or operation of Project • Spill potential during Project construction • Acts of vandalism on 	<ul style="list-style-type: none"> • Project components will be sited in compliance with applicable County setback requirements for residences, property lines, and roads. • Applicant will prepare a Project Health and Safety Plan, which guides responses in the case of a medical emergency and other structural and behavioral issues related to safety. • Applicant will prepare an Emergency Response Plan and a Fire Mitigation Plan. • The turbines include several inherent safety features (i.e., to fully independent braking 	<ul style="list-style-type: none"> • With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project will have no

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Table FES-1 Summary of Impacts and Mitigation for the Preferred Alternative

Resource	Impact Topics Addressed	Mitigation Measures	Significant and Unavoidable Adverse Impacts
	<ul style="list-style-type: none"> Project site Increased traffic accidents as a result of construction Risks associated with Tower structure failure and ice-throw Health risks associated with electromagnetic fields, shadow flicker and other health-related concerns 	<ul style="list-style-type: none"> systems) that provide increased fire protection and reduce the possibility of health and safety risks. Applicant will prepare of a Spill Prevention, Control, and Countermeasures Plan, which ensures that the risk of an accidental release of hazardous materials remains low throughout Project construction and operation. Applicant will complete a Phase I Environmental Site Assessment (ESA) for the Project site. If the ESA reveals the presence or potential presence of any environmental contamination on the Project site that exceed Ecology cleanup levels, the Applicant will coordinate with Ecology to determine the measures to be taken. Applicant will prepare a site security plan to limit access and prevent vandalism. The wind turbines will meet international design and manufacturing safety standards for tower, blade, and generator design, and be certified by a professional engineer. Quality Assurance/Quality Control (QA/QC) inspections will be conducted. Training of staff to recognize the hazards of ice throw. Turbines will be shut down at speeds exceeding 56 mph. See mitigation measures listed for Traffic and Transportation. 	<p>significant unavoidable adverse impacts</p>
Cultural Resources			
<p>15</p> <ul style="list-style-type: none"> Disturbance of archaeological or historical sites Inadvertent discovery of cultural resources during construction 	<ul style="list-style-type: none"> Disturbance of archaeological or historical sites Inadvertent discovery of cultural resources during construction 	<ul style="list-style-type: none"> A pedestrian survey (inventory) of the environmental permitting corridors should be conducted prior to any ground disturbance associated with the Project to document all archaeological sites located in the Project area. Avoidance of archaeological sites is the preferred method of mitigation; sites that cannot be avoided must be evaluated for eligibility to be listed on the NRHP. The DAHP and local tribes must be consulted on appropriate mitigation for sites that cannot be avoided. A cultural resources sensitivity training for personnel working on Project construction should be conducted. During Project construction all sites that have been determined to be eligible for the NRHP must be avoided; coordination of avoidance will be by onsite environmental manager knowledgeable of the resource boundaries. Upon the discovery of human remains, work within 200 feet of the discovery will cease; the local law enforcement and county coroner will be notified. If the remains are determined to be associated with an archaeological site, the DAHP, and affected tribes will be notified. Appropriate measures will be taken to ensure the site is protected from further disturbance until a treatment plan is agreed upon by all involved parties. Upon the discovery of previously unrecorded cultural resources all work in the area will stop within 200 feet of the discovery. DAHP and the affected tribes will be notified within 24 hours of the find. 	<ul style="list-style-type: none"> With mitigation measures identified in the EIS, and mitigation measures inherent in Project design, the Project will have no significant unavoidable adverse impacts)

Table FES-1 Summary of Impacts and Mitigation for the Preferred Alternative

Resource	Impact Topics Addressed	Mitigation Measures	Significant and Unavoidable Adverse Impacts
		<ul style="list-style-type: none"> • <u>Applicant will encourage participation of the Confederate Tribes of the Umatilla Reservation (CTUIR) and the Nez Perce Tribes in the cultural resources inventory. Tribes will be updated on the status of Project on a mutually agreed upon interval.</u> • <u>A pedestrian survey of the APE will be conducted prior to any ground disturbance associated with the Project. The APE is defined to include environmental permitting corridors and the final APE will include any additional areas of ground disturbance identified through micrositeing.</u> • <u>The survey will conform to the Cultural Resources Survey Methodology, Appendix J of the final Environmental Impact Statement (EIS) unless any changes are discussed with DAHP.</u> • <u>The Applicant will submit Archeological Site Inventory Forms to the DAHP and Smithsonian Trinomials will be obtained prior to submittal of the final survey report.</u> • <u>The Applicant will provide the final cultural resources survey report to the respective County, DAHP and the affected Tribes at least 60 days prior to any ground disturbing activity on the project. The survey report will contain the appropriate Smithsonian numbers. The Applicant will provide both complete and redacted versions of the report in order to protect confidential information in accordance with RCW 27.53.070.</u> • <u>Additional surveys performed during micrositeing will conform to the Cultural Resources Survey Methodology, Appendix J of the Final EIS unless any changes are discussed with DAHP. Additional shovel probes will be conducted in High Probability Areas surveyed during micrositeing. If additional cultural resources are identified after the final cultural resources survey is provided according to the fourth measure above, but prior to ground disturbance, then that information and, if appropriate, mitigation measures directed toward those further resources will also be provided to DAHP, affected Tribes and the respective counties prior to ground disturbance activities.</u> • <u>If the Applicant identifies an archaeological resource, the Applicant will make recommendations regarding the following: (1) is the resource assessed as eligible for listing or not on the National Register of Historic Places, (i.e. is it significant); (2) is it an archaeological site or an isolate; and (3) is it a cairn or grave of a Native Indian, or a glyptic or painted record of any Tribe or peoples, or human remains.</u> • <u>Avoidance of archaeological sites is the preferred method of mitigation.</u> 	

Table FES-1 Summary of Impacts and Mitigation for the Preferred Alternative

Resource	Impact Topics Addressed	Mitigation Measures	Significant and Unavoidable Adverse Impacts
		<ul style="list-style-type: none"> • <u>The DAHP and affected Tribes must be consulted on appropriate mitigation for sites that cannot be avoided.</u> • <u>Resources that cannot be avoided will be evaluated for eligibility to be listed on the NRHP. If any cultural resources cannot be avoided, the Applicant will submit the appropriate Determination of Eligibility forms to DAHP for concurrence prior to any ground disturbing activity that would affect those cultural resources, regardless of the Applicant's recommendation for eligibility. A Determination of Eligibility form will be submitted to DAHP for Site WBS004. The Applicant will need to obtain concurrence with the recommendation from DAHP prior to any ground disturbing activity that would affect WBS004.</u> • <u>Under Chapter 27.53 RCW, all precontact archaeological resources are protected. Significance, or eligibility, is not a requirement for protection. All historic resources should be considered potentially eligible and protected until eligibility has been determined.</u> • <u>If DAHP concurs or determines that the resource is eligible or potentially eligible for listing on the National Register of Historic Places (NRHP), whether it is a site or an isolate, then the Applicant will obtain the appropriate archaeological excavation permit from DAHP prior to disturbing the resource if the resource cannot be avoided.</u> • <u>If an archaeological resource is recommended as not eligible for NRHP listing, the Applicant will need to obtain concurrence on this recommendation from DAHP. Avoidance of the resource by the Applicant would not be required if DAHP concurs with the recommendation that the archaeological resource is not eligible or insignificant.</u> • <u>If DAHP concurs or determines the resource is identified as a cairn or grave of a Native Indian, or a glyptic or painted record of any Tribe or people, or human remains, then the Applicant will not knowingly disturb the resource without a permit.</u> • <u>A cultural resources sensitivity training for personnel working on Project construction will be conducted. The purpose of this training will be to instruct Project personnel on the sensitivity of cultural resources in the Project area, and introduce them to the Tribe's perspective on potential impacts. DAHP staff and individuals from the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and the Nez Perce will be invited to contribute to this training.</u> 	

Table FES-1 Summary of Impacts and Mitigation for the Preferred Alternative

Resource	Impact Topics Addressed	Mitigation Measures	Significant and Unavoidable Adverse Impacts
		<ul style="list-style-type: none"> • <u>An on-site environmental manager will coordinate the protection of cultural resources that were identified through pre-construction surveys and that are to be avoided. The on-site environmental manager will know the precise boundaries of the resources. The location of all cultural resources will remain confidential.</u> • <u>The Applicant, in consultation with DAHP and affected Tribes, will prepare a Cultural Resources Monitoring, Mitigation and Inadvertent Discovery Plan (CRMMIDP) prior to the beginning of any earth moving activities at the project site. The CRMMIDP will address the monitoring of construction activities and will guide responses to discoveries during ground disturbance activities. The CRMMIDP will include but not be limited to the following provisions:</u> <ul style="list-style-type: none"> • <u>Upon the discovery of human remains, work within 200 feet of the discovery will cease, the local law enforcement, and county coroner would be notified in the most expeditious manner possible (Chapters 27.44, 68.50, and 68.60 RCW). Efforts would be taken to protect the area of the find from further disturbance. If the remains are determined to be non-forensic, the DAHP, and affected Tribes will be notified. Appropriate measures will be taken to ensure the site is protected from further disturbance until a treatment plan is agreed upon by all involved parties.</u> • <u>Upon the discovery of previously unrecorded cultural resources all work in the area must stop within 200 feet of the discovery. DAHP and the affected Tribes will be notified within 24 hours of the find.</u> • <u>The Applicant has invited members of the Nez Perce Tribe and CTUIR to participate in the cultural resources inventory. The Applicant will ensure that the Tribes are updated on the status of the Project on a mutually agreed upon interval.</u> 	

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ES.6 Major Conclusions

Based on the analyses presented in the draft EIS, and with the updated and revised information presented in this FEIS, the following major conclusions have been drawn by the authors of this environmental impact analysis.

This Project will utilize an abundant renewable energy resource to generate up to 1,432 megawatts of electricity for consumers. In doing so, it will also contribute to the Applicant's need to meet the requirements of the Washington Energy Independence Act. Operation of the Project will avoid the consumption of fossil fuels used in the generation of equivalent energy through thermal-based power generation systems, and defers the depletion of non-renewable resources.

The Project will generate significant revenues to taxing districts over the life of the Project while avoiding significant demands being placed on the delivery of public services. New sources of revenue will be generated for the private sector through increased sales and use of services, and the creation of an additional source of income for the Project's landowners.

The Project will have nominal effects on water, wetland and fisheries resources; soils, geology, vegetation; climate and air quality; public services, health and safety, land use patterns, and cultural resources. To the extent permissive hunting has traditionally been allowed on private property within the Project, the Applicant's development of a hunting program fosters continued recreational hunting while supporting appropriate big game management. Well over ninety-nine percent of the counties' actively farmed land will remain under cultivation.

The Project will cause avian and bat mortality, although in the context of what is known about those populations, the impacts are not deemed to be significant on total populations of those species. The Project will be subject to continued adaptive wildlife management review, providing monitoring data that may improve wildlife mitigation measures for this Project and future wind farm development.

Project facilities can be sited and operated to meet the applicable Washington State noise standards and, as such, noise impacts from the Project are not expected to be significant.

Significant impacts on the area's visual resources cannot be avoided or mitigated. Numerous turbines will be visible from various locations throughout the region.

With the exception of impacts to visual resources, implementation of major mitigation measures to the Project will avoid nearly all significant adverse impacts to the built and natural environment.

1

Environmental Impact Statement Summary

1.1 How to Use this Document

This document is an abbreviated FEIS. This document, with the draft EIS, constitutes the ‘Environmental Impact Statement’ prepared by Garfield County for the Project. Columbia County has been a cooperating agency throughout this environmental analysis process.

Rather than repeating the extensive analyses presented in the draft EIS, this document presents the updated and revised information to complete the environmental analyses presented in the draft EIS. This document is organized as follows:

Chapter 1 summarizes the environmental review process conducted to date. Chapter 1 describes the purpose of this FEIS in the context of the analyses conducted by Garfield and Columbia Counties to comply with SEPA. Refinements to the proposed action, along with a summary of coordination activities conducted with agencies and tribes, are also included.

Chapter 2 of the FEIS provides updates and text revisions to the analysis of environmental impacts presented for 16 elements of the natural and human environment described in Chapters 2 (Sections 2.2 through 2.17) and the list of potentially required permits and approvals described in Chapter 3 of the draft EIS.

These sections update or revise: the descriptions of the affected environment, or current conditions in the Project area; the impact analyses which describe the effects associated with the Project; and direct, indirect, and cumulative impacts assessed for construction, operation, and end of design life of the Project. Mitigation measures that can reduce or eliminate identified impacts are presented within each resource section.

An updated summary table of mitigation measures is included in the Executive Summary.

Chapter 3 of the FEIS includes copies of written comments submitted to Garfield County, as well as responses to those comments prepared by the FEIS authors.

The remaining chapters and appendices of the FEIS provide updated supporting information for the EIS, as required by SEPA.

1.2 Purpose of the FEIS

1.2.1 Overview of the review process

As described in the draft EIS, Section 1.2, the Project was proposed by the Applicant, Blue Sky Wind LLC and Puget Sound Energy Inc. (PSE). Since filing the application, PSE has acquired the entire interest in the Project that is the subject of this application and in this document reference to the Applicant means reference to PSE.

The Applicant has elected to proceed with local government review and permits to construct the wind farm, rather than to seek approval from the Energy Facility Site Evaluation Council (EFSEC). This Environmental Impact Statement (EIS) is, therefore, being prepared pursuant to Chapter 43.21C RCW and WAC Chapter 197-11 and not the EFSEC SEPA rules found in WAC Chapter 463-47. While the Project includes proposed wind turbine locations in both Garfield County and Columbia County, the first conditional use permit has been filed for turbines in Garfield County. For that reason, Garfield County has assumed lead agency status pursuant to WAC 197-11-050. Columbia County agrees that Garfield County is the appropriate SEPA Lead Agency. Columbia County has been a cooperating agency throughout the development, review, and finalization of the EIS.

Pursuant to those SEPA rules, the Applicant is conducting an environmental review of approximately 1,000 wind turbine locations in the Lower Snake River Project area. After applying mitigation measures, best management practices (BMPs), and site-specific micrositing, approximately 795 turbine locations will be chosen in an area of approximately 124,000 acres under the Applicant's control in Columbia and Garfield Counties. The Project will have a total capacity of approximately 1,432 megawatts (MW).

SEPA provides a way to identify possible environmental impacts that may result from governmental decisions, such as the Garfield County Conditional Use Permit (CUP) for the Project. The SEPA process typically begins when an application is submitted to an agency for the construction of a private project (see DEIS Figure 1-1). This environmental review was triggered by the Applicant's submittal of a CUP application to Garfield County on January 26, 2009, which was deemed complete on February 9, 2009. The Applicant requested that Garfield County, as lead agency, issue a Determination of Significance and prepare an EIS including cumulative impacts associated with other identifiable wind energy development in the proposed Project area. At such time when the Applicant seeks to develop any wind energy facilities in Columbia County, as described in this document, Columbia County will conduct its own permitting process and associated SEPA review. It is anticipated that Columbia County will consider the information contained in this EIS as part of its environmental review for Columbia County permits.

1. Environmental Impact Statement Summary Purpose of the FEIS

SEPA requires evaluation of probable significant adverse impacts of a proposal such as this wind farm project. For projects of this scope, SEPA requires preparation of a draft and final environmental impact statement (DEIS and FEIS, respectively). Public scoping is an integral part of the SEPA process, and is done to assist in identifying key issues for evaluation in the EIS. Scoping for the Project was conducted to obtain public and agency comments on the significant environmental aspects of this Project. In addition to a period for submittal of written comments, informational public open house meetings were held on March 4 and 5, 2009, in Pomeroy and Dayton, Washington, respectively.

Following the review of the scoping comments received, Garfield County issued a letter on April 23, 2009 to the EIS contractor, that summarized the significant EIS scope issues. In addition to those issues, all other statutory elements of the built and natural environment were considered in the DEIS.

On August 17, 2009, the DEIS was issued with public notice of availability and the comment period appearing in local newspapers. Notice of its availability was also mailed to all adjacent property owners within 500 feet of the Project boundary and those who submitted scoping comments and requested notice. Hard copies of the DEIS were sent to all agencies with jurisdiction and the Confederated Tribes of the Umatilla Indian Reservation and the Nez Perce Tribe. Duly noticed public open houses were held on September 9 and September 10, 2009, in Pomeroy and Dayton, Washington respectively. County officials, applicant representatives, and key EIS consultants and section authors were present and available to respond to public questions. DEIS comment sheets were provided to attendees. A copy of the DEIS, including public notices and comment sheets, were also made available on the Garfield County website. The DEIS comment period closed on September 16, 2009.

In addition to the SEPA-related public processes described above, Garfield County made the Applicant's application, and the DEIS available for public review at the following locations:

- Garfield County Public Works Department Office
19th and Arlington, Pomeroy, WA
- Garfield County Library
856 Arlington, Pomeroy, WA
- Garfield County Auditor's Office
P.O. Box 278, Pomeroy, WA
- Offices of the Garfield County Commissioners
Garfield County Courthouse

1. Environmental Impact Statement Summary Summary of Public Involvement, Consultation, and Coordination

- Columbia County Planning Department
11 S. 2nd Street, Dayton, WA
- Columbia County Library
111 S. 3rd Street, Dayton, WA

1.2.2 Purpose of the FEIS

In accordance with WAC 197-11-560, FEIS response to comments, Garfield County, in collaboration with Columbia County, has prepared this FEIS. The FEIS authors have considered the comments to the DEIS and have responded using one or more of the following means:

- (a) Modify alternatives including the proposed action.
- (b) Develop and evaluate alternatives not previously given detailed consideration by the agency.
- (c) Supplement, improve, or modify the analysis.
- (d) Make factual corrections.
- (e) Explain why the comments do not warrant further agency response, citing the sources, authorities, or reasons that support the agency's response and, if appropriate, indicate those circumstances that would trigger agency reappraisal or further response.

The comments to the DEIS and the corresponding responses are included as Chapter 3 of this FEIS.

This EIS, in combination with the DEIS, make up the complete EIS for this Project.

1.3 Summary of Public Involvement, Consultation, and Coordination

As noted above, Garfield and Columbia Counties have solicited public input regarding this Project through numerous means. In addition, the Counties and the Applicant have solicited comments from local, state and Tribal agencies and representatives and, when requested, have participated in meetings.

The Applicant has been communicating and meeting with agencies, Indian Tribes, the public, and nongovernmental organizations throughout the development of the proposed Project and through the EIS process. Local, state, and federal agencies and Tribal representatives the Applicant has consulted with including the following:

Local Agencies

Alan Gould, Pomeroy Mayor

**1. Environmental Impact Statement Summary
Summary of Public Involvement, Consultation, and Coordination**

Alesia Ruchert, Southeast Washington Economic Development Association
Charlie Button, Columbia County Health System
Chris Miller, Columbia County Assessor
Clay Barr, Garfield County Fire District #1/Emergency Management
Colleen Ledgerwood, Garfield County Assessor
Craig George, Dayton Mayor
David Bragg, WSU Extension Agent and Weed Board member
Dick Rubenser, Starbuck Fire Chief
Donna Deal, Garfield County Auditor
Doug Johnson, Dayton School Superintendent
Andrew Craige, Garfield Hospital District CEO
Jennie Dickinson, Columbia County Port Manager
Jim McKerinen, Weed Board
Julie Himmelberger, Columbia County/Walla Walla County FSA Director
Karen Rubenser, Starbuck School Administrator
Kim Spacek, Pomeroy School Superintendent
Larry Bowles, Garfield County Sheriff
Larry Bunch, Garfield County Fire Chief
Lisa Ronneburg, Southeast Washington Economic Development Association
Melissa Cummins, Washington State FSA Environmental Coordinator
Nick Waldher, Garfield County FSA Director
Lora Brazel, Port of Garfield
Reggie Waldher, Weed Board
Rick Turner, Columbia County Fire Chief

State Agencies

Mike Ritter, Washington Department of Fish and Wildlife
Tom Schirm, Washington Department of Fish and Wildlife
Milt Johnston, Washington Department of Natural Resources
Mark Bohnet, Washington Department of Natural Resources
Ryan Cloud, Washington Department of Natural Resources
Stephenie Kramer, DAHP
Russel Holter, DAHP
Gretchen Kahler, DAHP

Federal Agencies

Mellissa Cummins, USDA Farm Service Agency - Washington State Office
Rod Hamilton, FSA USDA Farm Service Agency - Washington State Office

Tribal

Armand Minthorn (CTUIR)
Daniel Jim (CTUIR)
Brooklyn D. Baptiste, Nez Perce Tribal Executive Committee Chairman
McCoy Oatman, Nez Perce Tribal Executive Committee Vice Chairman
Julia A. Davis-Wheeler, Committee Member
Joanna F. Marek, Committee Member

1. Environmental Impact Statement Summary Significant Unavoidable Adverse Impacts

Tonia Garcia, Committee Member
Vera Sonneck, CRC Program Director
Patrick Baird, Tribal Historic Preservation Officer

1.4 Significant Unavoidable Adverse Impacts

As described in the DEIS, and summarized in Table FES-1, the Applicant will provide mitigation for a number of impacts associated with the proposed action. Some of these measures will be incorporated into the design of the Project, and others will be implemented during construction and operation phases. However, even with implementation of mitigation measures proposed by the Applicant, in conjunction with additional mitigation included in this EIS, the following have been identified as potential significant unavoidable adverse impacts of the proposed action.

1.4.1 Visual Impacts

The Project will have probable significant adverse impacts on visual resources that cannot be avoided. Numerous turbines will be visible from various locations throughout the region.

2

Revisions to the DEIS

This section presents revisions to sections within Chapters 1 through 3 of the DEIS. These revisions are based on the following information:

- New or updated information presented in the comments to the DEIS.
- Additional and updated information or corrections provided by the Applicant or Garfield and Columbia Counties.
- Additional information received from agencies that have been consulted throughout the SEPA review process.

Revisions and updates are presented by chapter in the sequence that they appeared in the DEIS.

Executive Summary

The changes made to Table FES-1 have been provided on Section ES5 – Mitigation Measures and Significant Impacts that are Unavoidable.

2.1 Chapter 1 – Draft Environmental Impact Statement Summary

The following text on page 1-5 of the DEIS, second paragraph, has been revised as follows:

~~Micrositing is the process of assessing site specific attributes in order to determine the final locations of wind turbine generators, below ground electrical cables, and above ground electrical transmission towers. This process occurs after comprehensive environmental and permit review and prior to actual construction. All final locations must be within the environmental permitting corridors and study areas reviewed and approved by the counties. During micrositing, the applicant will typically balance a number of technical and engineering factors, including limitations posed by the terrain, wind data (speed, wind sheer, and so forth), wake effects of the turbines, feasibility of access, setbacks (internally established or based on permit requirements), geotechnical considerations (subsurface conditions), environmental restrictions (avoidance of sensitive habitat), cultural/archeological restrictions (avoidance of cultural resources sites), telecommunications constraints (line of sight microwave paths), Federal Aviation Administration (FAA) requirements, and other site specific criteria that are not fully resolved until final engineering is completed.~~

Micrositing is the final process of assessing site-specific attributes in order to determine the final locations of wind turbine generators, below-ground electrical cables, and above-ground electrical transmission towers. This process occurs after comprehensive environmental and permit review and prior to actual construction. Micrositing will occur for each phase of Project construction.

During micrositing, technical and engineering factors, including limitations posed by the terrain, wind data, (e.g., speed, wind shear), wake effects of the turbines, feasibility of access, geotechnical considerations (subsurface conditions), environmental restrictions (avoidance of sensitive habitat), cultural/archeological restrictions (avoidance of cultural resources sites), telecommunications constraints, Federal Aviation Administration (FAA) requirements, and other site-specific criteria are assessed. Based on these site-specific results, further refinement is made to yield a final layout of approximately 795 turbines.

Locations of Project facilities that require temporary or permanent ground disturbance at each phase of construction will be finalized. If any ground disturbance is located in an area that has not yet been surveyed for a specific resource, the appropriate surveys will be conducted. For purposes of this discussion these are referred to as “micrositing surveys.” For example, if the new area of ground disturbance involves work in a stream buffer, and it has not yet been surveyed for cultural sources, both the stream buffer will be assessed and a cultural resources survey will be conducted.

The micrositing surveys will be conducted according to the methodologies set out and used for the surveys documented in this FEIS. The survey results will be summarized in a report consistent with the level of detail in the original survey report. If adverse impacts are anticipated to the protected resource(s) identified, mitigation measures will be applied according to the methodologies and requirements presented in Table FES-1 below and in the mitigation section of each resource section included in Chapter 2 of this document.

The County(ies), and as appropriate to the resource, other regulatory agencies, will review the survey results and the proposed mitigation measures for consistency with local, state and federal regulations and the mitigation measures presented in this EIS. The ground disturbance activity will only proceed once their approval is obtained.

For example, with respect to cultural resources, any new areas identified during the micrositing process that will require ground disturbance and that were not previously surveyed and documented, will be surveyed according to the methodology described in Appendix J of this FEIS. Because these new areas are proposed for the ground disturbance activities, they will be incorporated into the Project’s “Area of Potential Effect” as defined in Appendix J of this FEIS. If any cultural resources are found they will be documented, assessed for eligibility, reported, and mitigation of the resources addressed in coordination with the

respective County, DAHP and the affected Tribes as described in the mitigation measures included in Section 2.17.3.1, “Mitigation.” These actions will occur before any ground disturbance occurs in this newly identified area.

2.2 Chapter 2 – Affected Environment and Impacts

2.2.1 Impact Assessment Overview

The following text on pages 1-1 and 1-2 of the DEIS has been changed as follows:

This EIS is, therefore, being prepared pursuant to Chapter 43.21C RCW, ~~and~~ WAC Chapter 197-11, and Garfield County’s SEPA Ordinance and not the EFSEC SEPA rules found in WAC Chapter 463-47.

The following text on page 1-27 of the DEIS has been changed as follows:

Final turbine selection may not occur until a few months prior to construction of each Project phase.

The following text on page 1-39 of the DEIS has been changed as follows:

Access to the Project will be provided by U.S. Route 12, State Routes (SRs) 127 and 261, and a combination of existing private and County roads, as well as by new roads constructed for Project access (see DEIS Figure 1-16). New road construction and upgrades to existing roads will be done according to Garfield and Columbia County ordinances and through approval of the respective County engineers and public works directors. To the extent that the final project layout has not been finalized, PSE will be required to obtain the appropriate easements and undergo any additional required environmental review if any new access roads need to be constructed outside of the identified project boundary.

The following text on page 1-51 of the DEIS has been changed as follows:

The majority of the collector system will be direct buried cable placed in a trench or constructed overhead. Trenching for underground cabling will include trenches 3 to 4 feet deep and 3 feet wide per cable. The trench may be excavated with a trenching machine if ground conditions permit. If competent rock is encountered at shallow depth, it may be necessary to jack hammer rock locally or drill and blast sections so a trench can be opened up. A backhoe is typically used in more confined spaces adjacent to towers where several underground circuits are run parallel. Selected fill will be used to protect the buried cables. A fiber optic cable will be installed in the trench for the wind turbine SCADA system.

The following paragraph on page 1-53 of the DEIS has been deleted and replaced with the following:

~~Decommissioning will be carried out in compliance with the requirements of the Garfield and Columbia Counties' zoning ordinances and the conditions of approval in the CUPs issued by both counties. Decommissioning typically involves deconstructing the turbines and removing foundations, as requested by the landowner, to a depth required by the respective jurisdictions. Following decommissioning, properties will be returned to agricultural use.~~

Both counties have adopted decommissioning requirements in their respective wind development standards. In compliance therewith, prior to commercial operations, Applicant shall submit decommissioning plans addressing the dismantling and removal of above-ground Project facilities as requested by the underlying Landowner, and shall remove footings to County-required sub-surface depths. Applicant shall repair any damage resulting from such removal and restore the site as is reasonably possible to its pre-Project condition. Applicant must comply with the requirements of each County to ensure there is adequate financial security to discharge future decommissioning obligations.

2.2.2 Geology

The following text on page 2-15 of the DEIS has been changed as follows:

Mitigation

As the Project is unlikely to have significant impacts on geologic resources, no specific mitigation measures beyond those described above developed for the protection of other resources and/or included in the SWPPP are proposed. The Project will incorporate into the final engineering design, plans, BMPs, and specifications the performance standards for geologic hazardous areas as specified in the CAOs for project facilities. To the extent possible micrositing prior to construction will avoid any potential geologic hazard areas, including those identified in the CAOs. If siting facilities in geologically hazardous areas can not be avoided, the facilities will be designed to comply with the counties' critical area ordinances and applicable state and federal requirements. The final engineering plans and specifications will be submitted to Columbia and Garfield counties for review and approval prior to construction, as required by the CAOs. After the conclusion of construction, quarry reclamation permits will be obtained from the Washington State Department of Natural Resources if required.

2.2.3 Soils

The following text on page 2-22 of the DEIS has been added after the first complete paragraph as follows:

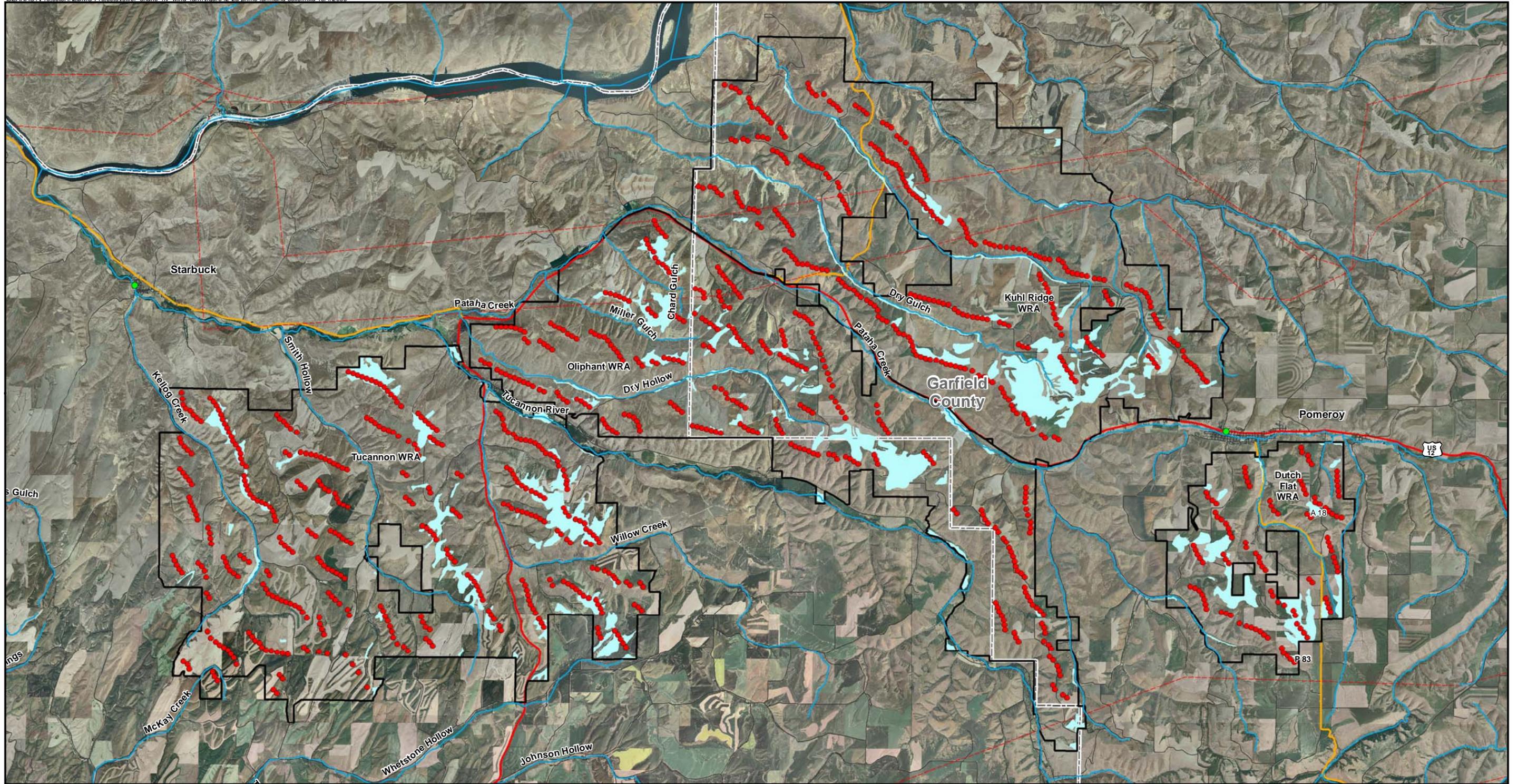
Soils identified as prime farmland or soils of statewide importance are recognized as having the greatest productivity for crop growth. According to the NRCS, prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses (7 CFR 657). In general, prime farmland has an

adequate and dependable water supply, a favorable temperature and growing season, and other acceptable soil factors such as proper acidity or alkalinity, proper salt and sodium content, few or no rocks and are permeable to water and air. Soils of statewide importance have the proper soil quality, growing season, and moisture supply needed to produce economically sustained high yield crops when treated and managed according to acceptable farming practices. Prime farmland and soils of statewide importance are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding.

Approximately 10,113 acres (8%) of soils in the Project area are considered to be Prime Farmland Soils (NRCS 2006a, NRCS 2006, WDOE 2008). Of the approximate 600 acres permanently disturbed by the Project, 559 acres are prime farmland soils. Prime farmland soils in the project area are shown on Figure F2-2a.

The following text on page 2-19 of the DEIS has been changed as follows:

Due to their fine texture, the presence of steep slopes, and the area's climate, Project area soils may be susceptible to wind erosion. Wind erosion can displace topsoil and make revegetation efforts difficult. Based on NRCS soil surveys,



- Legend**
- City
 - Turbine Location
 - Transmission Line
 - US and State Highways
 - State and County Highways
 - Local Rural Road
 - County Lines
 - PRIME FARMLAND
 - Project Area

Lower Snake River Wind Energy Project
Columbia & Garfield Counties
Washington

Figure F2-2a
Project Area Prime Farmland Soils



Source Information:

Project area soils have moderate to low wind erosivity under natural conditions. Furthermore, the potential for wind erosion can be minimized by keeping soils covered in construction zones, using dust abatement measures (such as watering trucks) and tackifiers, ~~and~~ or timely revegetating disturbed areas to allow for optimal seed germination.

The following text on page 2-23 of the DEIS has been changed as follows:

Soil erosion and offsite sedimentation is expected to be moderate, and will be controlled through implementation of erosion control measures to reduce unnecessary impacts and to comply with the appropriate regulations. BMPs will be implemented in conjunction with applicable guidelines. These BMPs will be identified in the SWPPP ~~and in a~~ developed to comply with the Construction Stormwater NPDES permit from Ecology before construction.

2.2.4 Water Resources

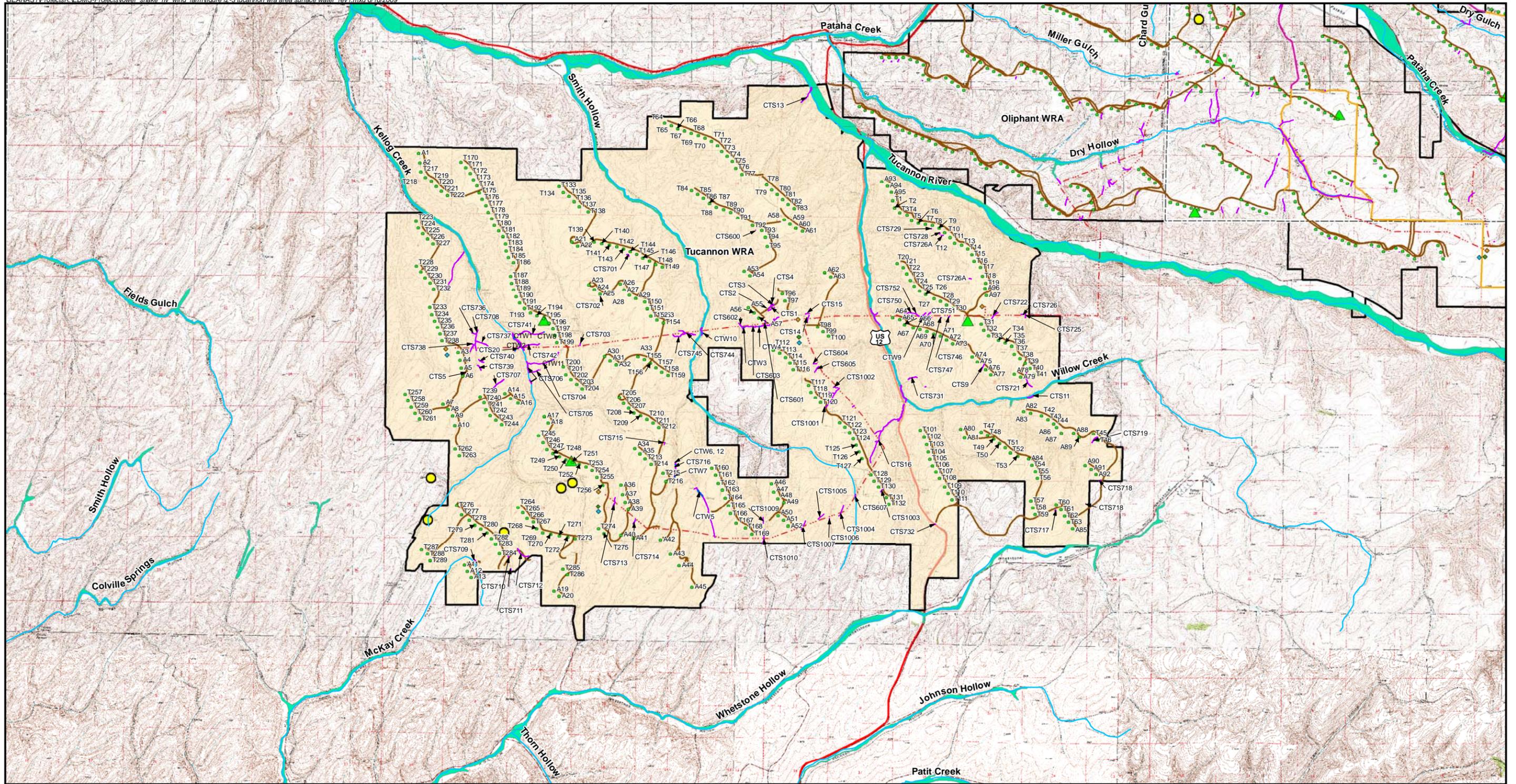
The following text, under the Tucannon WRA heading, on pages 2-47 and 2-48 of the DEIS have been changed.

Stream Crossings

~~Six~~ ~~One~~ streams in this WRA (unnamed streams CTS2, CTS712, CTS711, CTS9, CTS5, and CTS1001) may intersect ~~a~~ new roads and may require ~~a~~ culverts (see Figure F2-3).

Installation of the new overhead 230-kV transmission line will require 10 overhead riparian crossings. Kellogg Creek, Smith Hollow, and Willow Creek will be crossed to facilitate the connections between Project substations (see Figure 2-3). The riparian areas of ~~six~~ 25 unnamed streams will also be crossed: CTS20 (tributary of Kellogg Creek), CTS602, CTS601, CTS14, CTS605, CTS16 and CTS9, CTS607, CTS1004, CTS1007, CTS1010, CTS714, CTS713, CTS726, CTS725, CTS722, CTS708, CTS736, CTS737, CTS738, CTS744, CTS1002, CTS750, CTS751, and CTS752 (see Figure F2-3). In addition, to connect the Tucannon WRA with the Oliphant Ridge WRA, a crossing of the Tucannon River will be necessary for the installation of a new overhead 230-kV transmission line (see Figure F2-3).

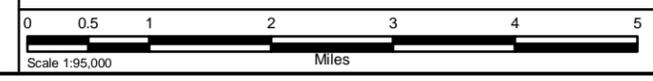
The collector lines that will connect individual turbine strings will be installed parallel to the road system. These lines will be buried underground in a trench approximately 3 feet wide and 3 to 4 feet deep. In addition, required construction ROWs will contribute to additional disturbed areas. If the lines cannot be installed through boring beneath the drainages, the lines will be brought overhead. The



- Legend**
- Turbine Location
 - City
 - ◆ Laydown
 - ◆ Operations & Maintenance
 - ◆ Substation
 - ▲ Met Towners
 - Spring Location
 - Streams
 - County Lines
 - 35 kV Transmission Line
 - 230 kV Transmission Line
 - Existing Roads
 - New Roads
 - Existing Roads to be Upgraded
 - FEMA Special Flood Hazard Area (SFHA)
 - Project Area
 - Wetlands - Streams
 - SWCA Observed Streams
 - SWCA Observed Wetlands

Lower Snake River Wind Energy Project
Columbia & Garfield Counties
Washington

Figure F2-3
Tucannon WRA Surface Water



Source Information:

location of the collector system has not been finalized; the layout will be finalized when the geotechnical analysis and final engineering drawings are available. Additional analyses may be needed to determine site-specific impacts to water resources.

In addition to the streams discussed above, there are also ~~20~~ 49 other streams which are present in the environmental permitting corridor; however, they will not be altered or disturbed under the proposed layouts. These features are listed in Table F2-12 below, and should be taken into consideration during micro-siting.

Table F2-12 Unaltered/Undisturbed Streams Present in Tucannon Environmental Permitting Corridors

Stream	Location Description
CTS6	Flows along western boundary of environmental permitting corridor, west of T231 near Kellogg Creek
CTS609A	Flows within environmental permitting corridor, west of T163
CTS608	Flows within environmental permitting corridor, west of T163
CTS610	Flows within environmental permitting corridor, west of T163
CTS701	Ephemeral stream within environmental permitting corridor, south of T144
CTS12/13	Within environmental permitting corridor in the northeastern corner of the WRA
CTS600	Within environmental permitting corridor, west of T93
CTS603	Flows parallel to eastern boundary of environmental permitting corridor, south of A57
CTS4	Flows adjacent to a new road, parallel to the road, east of A56, A57
CTS3	Within environmental permitting corridor and south of the new road, east of A56, A57
CTS15	Flows into environmental permitting corridor northwest of T98 and the transmission line
CTS604	Within environmental permitting corridor on eastern side, east of T116
CTS607	(same as Smith Hollow) flows across corridor, southwest of T128
CTS15	Within corridor, northeast of transmission line and T127
CTS14	Within corridor, flows along western boundary of corridor, northeast of T127
CTS18	Flows down the center of the corridor, northeast of T127 and west of U.S. Route 12
CTS11	Within corridor, east of U.S. Route 12
CTS10	Within corridor, east of U.S. Route 12
CTS11	(same as Willow Creek) flows across corridor
<u>CTS719</u>	<u>Within corridor; immediately adjacent to T46 and new road</u>
<u>CTS718</u>	<u>Intermittent stream along environmental permitting corridor; immediately adjacent to new road south of A92; another segment located northeast of T61 along corridor boundary</u>
<u>CTS717</u>	<u>Within corridor, south of T60</u>
<u>CTS 732</u>	<u>Along corridor boundary, southwest of T111</u>
<u>CTS1003</u>	<u>Within corridor, south of T130</u>
<u>CTS1006</u>	<u>Within corridor, east of A52</u>
<u>CTS1005</u>	<u>Within corridor, east of A52</u>
<u>CTS710</u>	<u>Within corridor, south of T284</u>

Table F2-12 Unaltered/Undisturbed Streams Present in Tucannon Environmental Permitting Corridors

Stream	Location Description
<u>CTS709</u>	<u>Within corridor, east of A11</u>
<u>CTS715</u>	<u>Within corridor, south of T212</u>
<u>CTS716</u>	<u>Perennial stream, portions on corridor boundary, east of T215</u>
<u>CTS721</u>	<u>Ephemeral stream within corridor, south of A79</u>
<u>CTS745</u>	<u>Within corridor, south of T154</u>
<u>CTS746</u>	<u>Ephemeral stream within corridor, south of T30</u>
<u>CTS747</u>	<u>Ephemeral stream within corridor, south of T30</u>
<u>CTS729</u>	<u>Ephemeral stream within corridor, south of T8</u>
<u>CTS702</u>	<u>Ephemeral stream within corridor, south of A25</u>
<u>CTS707</u>	<u>Ephemeral stream within corridor, northeast of T239</u>
<u>CTS739</u>	<u>Ephemeral stream within corridor, east of A5</u>
<u>CTS740</u>	<u>Ephemeral stream within corridor, east of A5</u>
<u>CTS706</u>	<u>Ephemeral stream within corridor, northeast of A14</u>
<u>CTS705</u>	<u>Within corridor, northeast of A14</u>
<u>CTS704</u>	<u>Within corridor, northeast of A14</u>
<u>CTS703</u>	<u>Ephemeral stream within corridor, east of T199</u>
<u>CTS741</u>	<u>Ephemeral stream within corridor, west of T198</u>
<u>CTS742</u>	<u>Ephemeral stream within corridor, west of T198</u>
<u>CTS745</u>	<u>Ephemeral stream within corridor, south of T154</u>
<u>CTS731</u>	<u>Ephemeral stream within corridor, northeast of T123</u>
<u>CTS605</u>	<u>Within corridor, east of T116</u>

Siting of above-ground Project facilities will not occur within any existing springs.

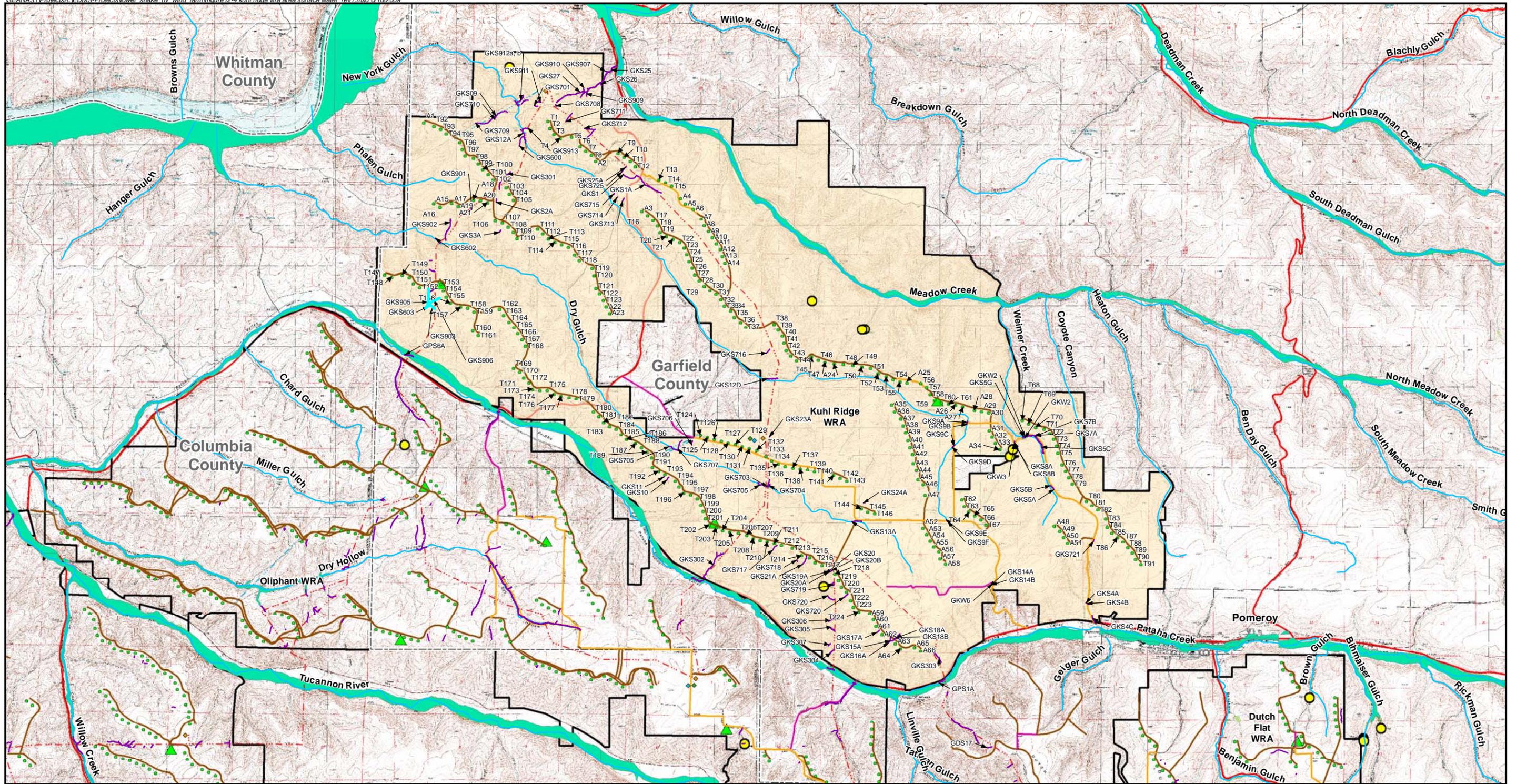
The following text, under the Kuhl Ridge WRA heading, on pages 2-49 and 2-50 of the EIS have been changed.

Stream Crossings

Construction of new roads and alterations to existing roads may result in the alteration of the natural drainage course of Dry Gulch, New York Gulch, and Weimer Creek (see Figure F2-4). Culverts may be installed to facilitate road crossings.

In addition, the natural drainage course of several unnamed streams identified by SWCA may be altered due to construction of new roads and alterations to existing roads, including unnamed streams GKS720, GKS20A, GKS13A, GKS9E, GKS14A, and GKS4A – C (see Figure F2-4).

Installation of the new overhead 230-kV transmission line will require 17 riparian crossings. Pataha Creek, Dry Gulch, and New York Gulch, all perennial streams, will each be crossed twice to facilitate the connections between Project substations (see Figure F2-7). In addition, ~~several~~ 24 unnamed streams identified

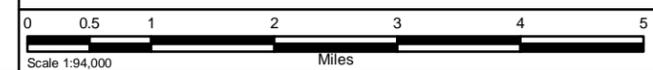


- Legend**
- Turbine Location
 - City
 - Laydown
 - Operations & Maintenance
 - Substation
 - Met Towers
 - Spring Location
 - Streams
 - County Lines
 - 35 kV Transmission Line
 - 230 kV Transmission Line
 - Existing Roads
 - New Roads
 - Existing Roads to be Upgraded
 - Special Flood Hazard Area (SFHA)
 - FEMA Special Flood Hazard Area (SFHA)
 - Project Area
 - Wetlands - Streams
 - SWCA Observed Streams
 - SWCA Observed Wetlands

Source Information:

Lower Snake River Wind Energy Project
Columbia & Garfield Counties
Washington

Figure F2-4
Kuhl Ridge WRA Surface Water



by SWCA will be crossed: GKS2A, GKS12A, GKS1-1A, GKS719, GKS603, GKS701, GKS711, GKS712, GKS725, and GKS716, GKS304, GKS305, GKS306, GKS303, GKS302, GKS912a,b, GKS913, GKS301, GKS901, GKS902, GKS906, GKS905 (see Figure F2-4).

Please refer to the collector line discussion under the Tucannon WRA.

In addition to the streams discussed above, there are also ~~eight~~ 12 other streams which are present in the environmental permitting corridor; however, they will not be altered or disturbed under the proposed layouts. These features are listed in Table F2-13 below, and should be taken into consideration during micrositing.

Siting of above-ground Project facilities will not occur within any existing springs.

Table F2-13 Unaltered/Undisturbed Streams Present in Kuhl Ridge Environmental Permitting Corridors

Stream	Location Description
GKS721	Ephemeral stream within corridor on the eastern side, east of A51
GKS720	Flows across the corridor, perpendicular to the corridor, west of T221
GKS717	Ephemeral stream in corridor west of road, and east of T211
GKS24a	Flows across the eastern boundary of the corridor north of T144
GKS703	Ephemeral stream, flows across eastern corridor boundary, south of T134
GKS707	Ephemeral stream, flows across corridor east of T190
GKS706	Ephemeral stream, flows across corridor west of T124
GKS708	Ephemeral stream within the corridor, northeast of T1
<u>GKS307</u>	<u>Ephemeral stream within the corridor, southwest of T224</u>
<u>GKS911</u>	<u>Ephemeral stream within the corridor, northwest of T1</u>
<u>GKS901</u>	<u>Ephemeral stream within the corridor, north of A19</u>
<u>GKS905</u>	<u>Ephemeral stream within the corridor, south of T152</u>

The following text, under the Oliphant Ridge WRA heading, on pages 2-51 and 2-52 of the EIS have been changed.

Stream Crossings

Improvements to existing roads may result in alterations to Dry Hollow, an ephemeral stream (see Figure 2-6). In addition, three unnamed streams (GOS21A, COS806, and COS812) may be crossed by the construction of a new road west of T123 (see Figure F2-6).

In addition, road widening may alter five unnamed streams identified by SWCA: GOS6A, GOS5D, GOS17C, GOS708, and COS702 (see Figure F2-6).

Installation of the new overhead 230-kV transmission line will require two riparian crossings of Dry Hollow to facilitate the connections between Project

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substations (see Figure F2-6). In addition, to connect this WRA with the Kuhl Ridge WRA, there will be three crossings of Pataha Creek, which are discussed above under that WRA heading (see Figure F2-6). In addition, ~~seven~~ 18 unnamed streams will each be crossed once by the transmission line: GOS704, GOS15A, GOS718, GOS719, GOS720, COS702, GOS13, ~~and~~ GOS715, COS807, COS813, COS814, COS815, COS901, COS808, COS809, COS811, COS810, and COS807 (see Figures F2-4 and F2-6 for the locations of these streams).

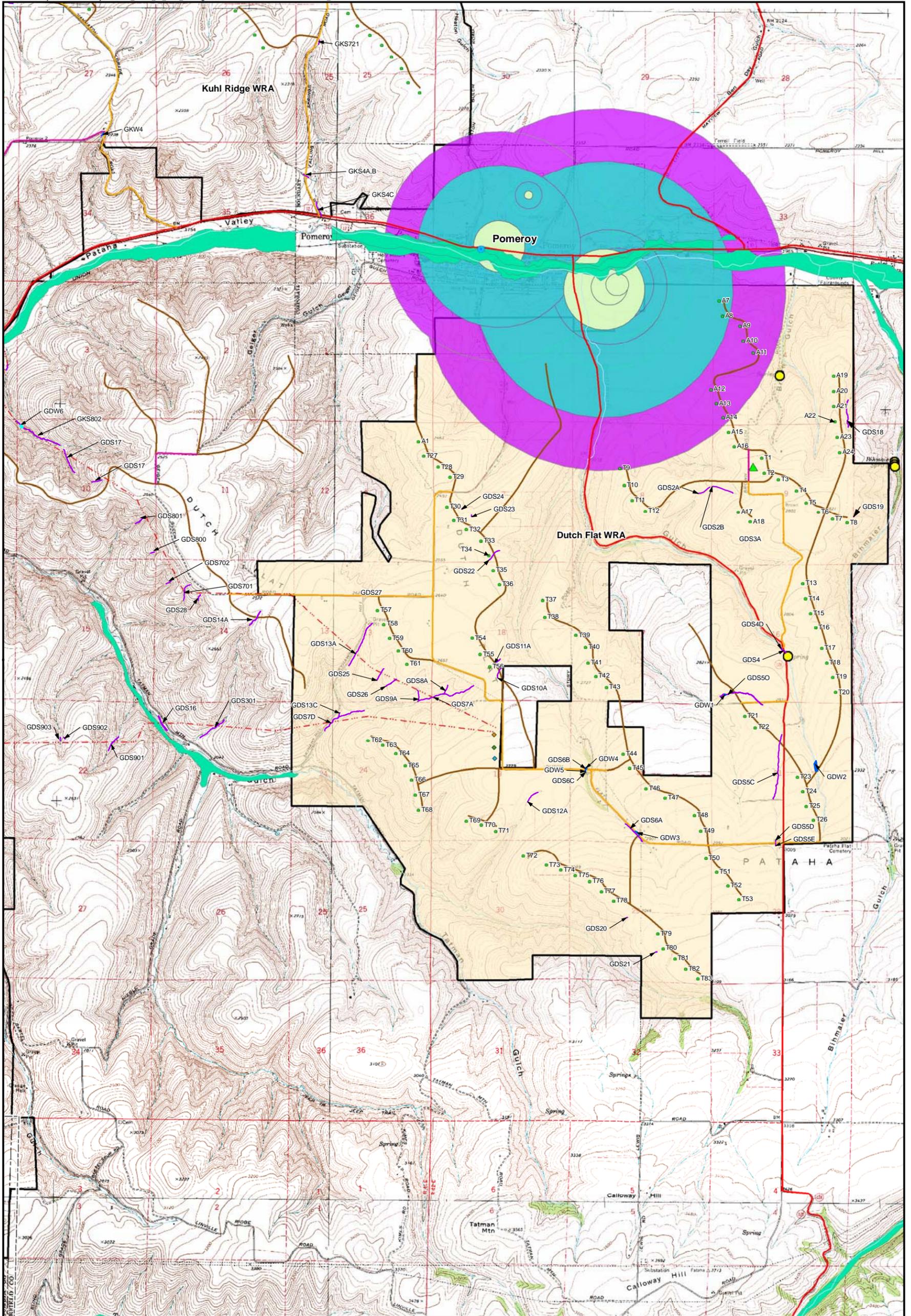
In addition, several unnamed streams will be crossed by the overhead 230-kV transmission line which will connect the Oliphant Ridge and Dutch Flats WRAs (see Figures F2-5 and F2-6).

Please refer to the collector line discussion under the Tucannon WRA.

In addition to the streams discussed above, there are also ~~12~~ 19 other streams which are present in the environmental permitting corridor; however, they will not be altered or disturbed under the proposed layouts. These features are listed in Table F2-15 below, and should be taken into consideration during micro-siting.

Table F2-15 Unaltered/Undisturbed Streams Present in Oliphant Ridge Environmental Permitting Corridors

Stream	Location Description
GOS3A	Crosses the edge of the eastern environmental permitting corridor boundary, east of A144
GOS4A	Crosses the edge of the eastern environmental permitting corridor boundary, east of A144
GOS701	Ephemeral stream within corridor, east of A116
GOS702	Ephemeral stream within corridor, east of A114
GOS14	Within corridor, north of A108
COS701	Farm swale within corridor, northwest of substation
COS703	Ephemeral stream, south of T122
GOS20	In corridor, west of A54
GOS712	Within corridor, parallel to eastern corridor boundary, east of A55
GOS714	Ephemeral stream flowing perpendicular to the corridor, east of A74
GOS22a	Ephemeral stream flowing perpendicular to the corridor, east of A74
GOS24	Flows within corridor, west of T133
COS800	<u>Ephemeral stream in corridor, south of T93</u>
COS801	<u>Ephemeral stream in corridor, south of T91</u>
COS802	<u>Ephemeral stream in corridor, south of T90</u>
COS804	<u>Ephemeral stream in corridor, immediately adjacent to a new road near T109</u>
COS805	<u>Ephemeral stream in corridor, west of T118</u>
COS902	<u>Ephemeral stream east of A78</u>
COS903	<u>Ephemeral stream flowing perpendicular to corridor, east of T48</u>
COS1	<u>Grassed waterway within corridor near A94.</u>



- Legend**
- Turbine Location
 - City
 - ◆ Laydown
 - ◆ Operations & Maintenance
 - ◆ Substation
 - ◆ Met Towners
 - Spring Location
 - County Lines
 - Streams
 - 35 kV Transmission Line
 - 230 kV Transmission Line
 - Existing Roads
 - New Roads
 - Existing Roads to be Upgraded
 - Project Area
 - Special Flood Hazard Area (SFHA)
 - FEMA Special Flood Hazard Area
 - Wetlands - Streams
 - SWCA Observed Streams
 - SWCA Observed Wetlands

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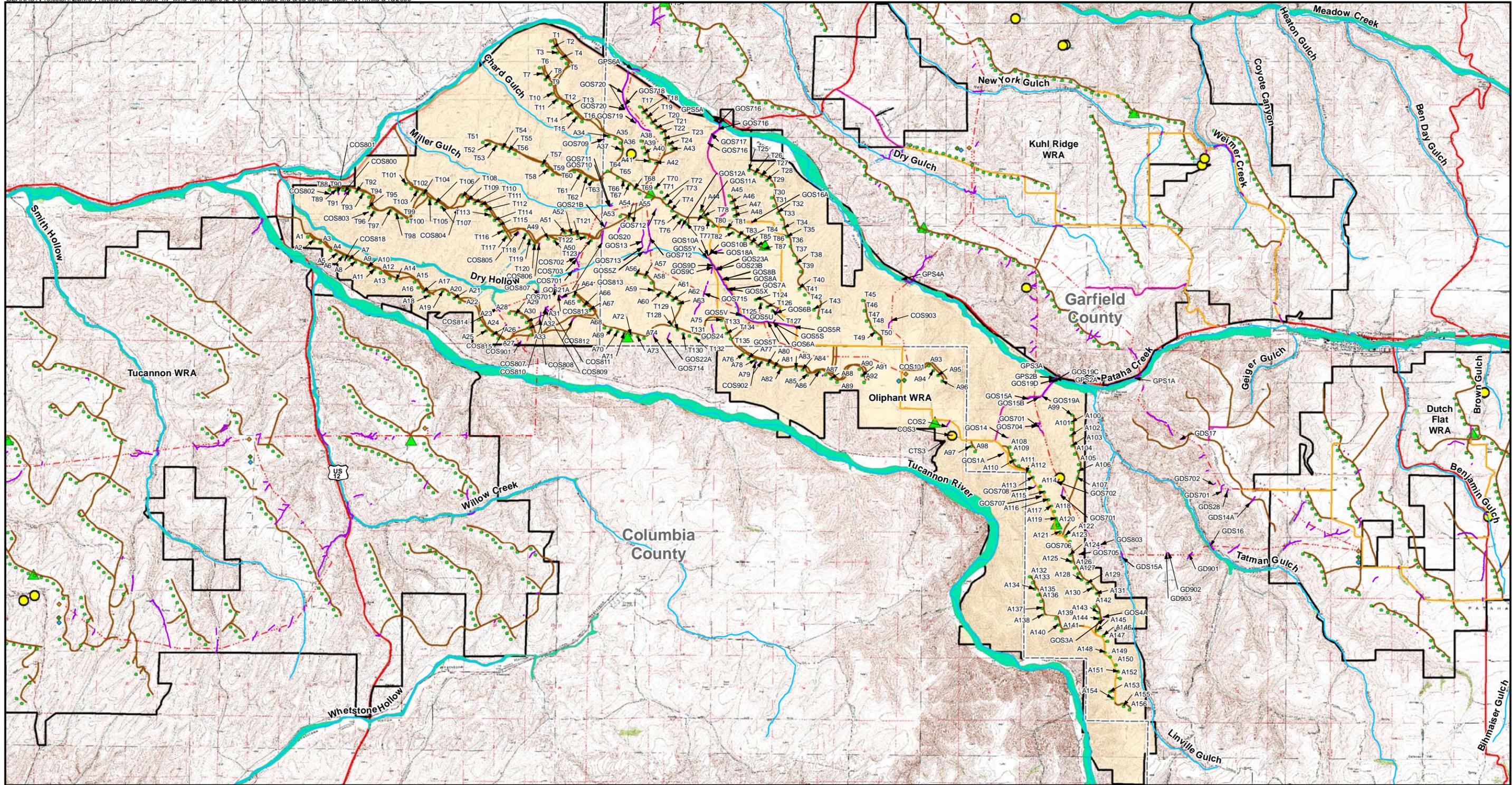
Wellhead Protection Areas

- Wellhead Protection Area (6 month)
- Wellhead Protection Area (5 year)
- Wellhead Protection Area (10 year)

Figure F2-5
Dutch Flat WRA Surface Water

Scale 1:43,000

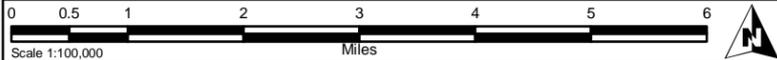
0 0.2 0.4 0.8 1.2
Miles



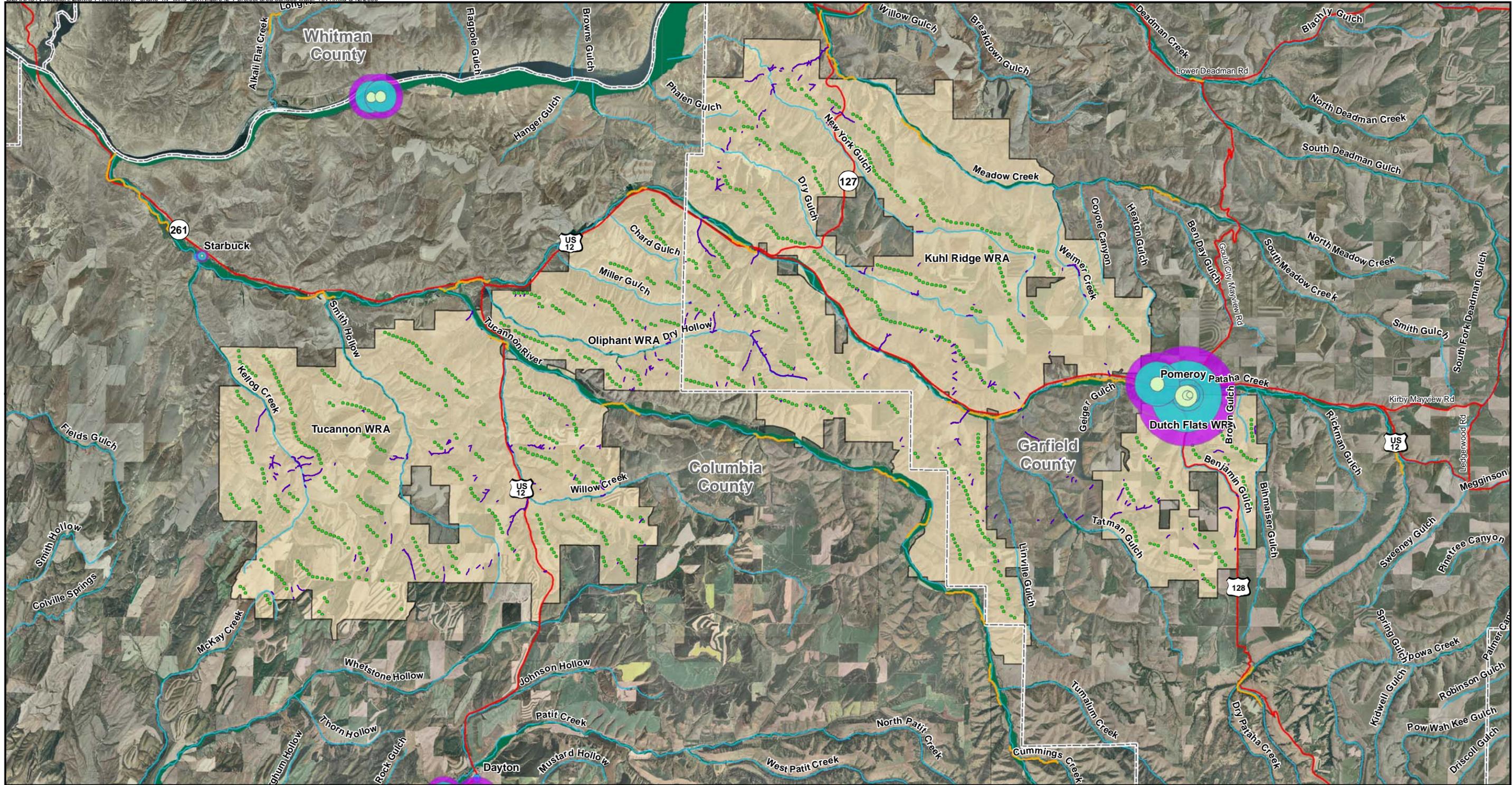
- Legend**
- Turbine Location
 - City
 - ◆ Laydown
 - ◆ Operations & Maintenance
 - ◆ Substation
 - ▲ Met Towners
 - Spring Location
 - Streams
 - County Lines
 - 35 kV Transmission Line
 - 230 kV Transmission Line
 - Existing Roads
 - New Roads
 - Existing Roads to be Upgraded
 - Special Flood Hazard Area (SFHA)
 - FEMA Special Flood Hazard Area (SFHA)
 - Project Area
 - Wetlands - Streams
 - SWCA Observed Streams
 - SWCA Observed Wetlands

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Washington

Figure F2-6
Oliphant WRA Surface Water



Source Information:

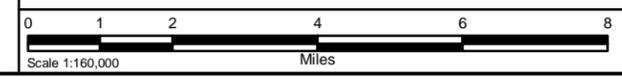


Legend

- Turbine Location
- Spring Location
- City
- Streams
- SWCA Observed Streams
- County Lines
- Project Area
- Impaired Waters (Washington Department of Ecology 303d list)
- Wellhead Protection Area (6 month)
- Wellhead Protection Area (5 year)
- Wellhead Protection Area (10 year)
- Special Flood Hazard Area (SFHA)
- FEMA Special Flood Hazard Area (SFHA)

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Washington

Figure F2-7
Project Area Surface Water Features,
Impaired Waters, and Wellhead Protection Areas



Source Information: Federal Emergency Management Administration (FEMA) Floodplain Management.

Siting of above-ground Project facilities will not occur within any existing springs.

The following text on Page 2-53 of the DEIS has been changed as follows:

Transmission and Collector Lines

Operation of the new 230-kV overhead transmission lines or the collection system will not affect any surface water. To the extent possible, the overhead transmission lines will be installed at least 250 feet from the banks of fish-bearing streams and 200 feet from the banks of any from non-fish-bearing stream, and operation of those lines will not affect any crossed streams. Any work in streams or their riparian buffers will only be conducted in accordance with applicable local, state and federal regulations. Operation of the collection system installed in the trench will not affect any crossed streams. No discharge will result from the operation of the lines; thus, no water quality issues will result.

The following text on Page 2-55 of the DEIS has been changed as follows:

Adherence to Stream Buffers. To the extent possible, construction related to the overhead transmission line will be at least 200 feet from the stream bank on either side, and no heavy equipment will be used in the stream bed or riparian corridor for construction, where avoidance is feasible. Any work in streams or their riparian buffers will only be conducted in accordance with applicable local, state and federal regulations. BMPs will also be implemented onsite to prevent runoff into surface waters. Where avoidance of the riparian corridor is not possible, rock construction access roads will be used, and wheels and tracks will be kept above the ordinary highwater mark (OHW). Existing crossings (County road and farm road crossings) will be used to the maximum extent practicable.

The following text on Page 2-57 of the DEIS has been changed as follows:

A detailed Construction SWPPP will be developed for the Project to minimize the potential for discharge of pollutants from the site during construction activities. The SWPPP will be based on Ecology's *Stormwater Management Manual for Eastern Washington*. The SWPPP will also be prepared to meet the conditions of the Construction Stormwater General Permit (NPDES and State Waste Discharge General Permit for Stormwater Discharges Associated with Construction Activity) and the State Sand and Gravel Permit - Portable Facilities ~~Industrial Stormwater General Permit (NPDES and State Waste Discharge Permit for Stormwater Discharges Associated with Industrial Activities)~~. Water quality monitoring and reporting will be conducted in compliance with permit requirements.

The following text on Page 2-58 of the DEIS has been changed as follows:

Construction Mitigation Measures – Stream Buffers

To the extent possible, Project-related facilities will be located outside of the County-specified stream buffers; refer to DEIS Table 2-4 for a listing of these buffers. If project facilities must be located within stream buffers, they will be designed and constructed in accordance with the applicable County CAO.

2.2.5 WetlandsChanges to the Wetland Section of the LSR DEIS

The following table on Page 2-64 of the DEIS has been changed.

Table F2-17 Wetland Characteristics of Identified Wetlands within the Environmental Permitting Corridors by WRA

Wetland ID	Area*	NWI Mapping ¹	Cowardin Class ²	HGM Class ³	Wetland Rating / Buffer ⁴
Tucannon WRA					
ctw1	807 SF	R4SBC	PEM/PSS	RFT	Category III / 100 Feet
ctw2	279 SF*	None	PEM	S	Category III / 100 Feet
ctw3	56 SF	None	PEM	S	Category IV / 50 Feet
ctw4	7 SF	None	PEM	S	Category IV / 50 Feet
ctw5	1,598 SF	PEM1A	PEM	S	Category IV / 50 Feet
ctw6	14 SF	None	PEM	S	Category III / 100 Feet
ctw7	234 SF	None	PEM	S	Category IV / 50 Feet
ctw8	9 SF	None	PEM	S	Category IV / 50 Feet
ctw9	1,060 SF*	None	PEM	S	Category IV / 50 Feet
ctw10	131 SF*	R4SBC	PEM	S/RFT	Category IV / 50 Feet
ctw11	10 SF	None	PEM	S	Category IV / 50 Feet
ctw12	96 SF	None	PEM	D	Category III / 100 Feet
Dutch Flats WRA					
gdw1	136 SF	None	PEM	S	Category III / 50 Feet
gdw2	2,791 SF*	None	PEM	S	Category IV / 25 Feet
gdw3	289 SF	None	PEM	D	Category III / 50 Feet
gdw4	427 SF*	PFO1A	PFO	S/RFT	Category III / 50 Feet
gdw5	782 SF*	PFO1A	PFO	RFT	Category II / 100 Feet
gdw6	151 SF*	None	PEM	S	Category III / 50 Feet
Kuhl Ridge WRA					
gkw1	553 SF	None	PEM	S	Category IV / 25 Feet
gkw2	60 SF*	None	PEM	S/RFT	Category III / 50 Feet
gkw3	436 SF*	PFO1A	PFO	S/RFT	Category II / 100 Feet
gkw4	67 SF*	None	PEM	S	Category IV / 25 Feet
gkw5	409 SF	None	PEM	S	Category IV / 25 Feet

NOTES:

* Indicates that wetland extends offsite; wetland acreage is within permitting corridor only.

¹NWI Classifications

- PEM1A (Palustrine persistent emergent temporarily flooded)
- PFO1A (Palustrine forested broad-leaved deciduous temporarily flooded)
- R4SBC (Riverine intermittent streambed seasonally flooded)

²Cowardin Classifications

- PEM (Palustrine emergent)
- PSS (Palustrine scrub-shrub)
- PFO (Palustrine forested)

³HGM Classifications

- D (Depressional)
- RFT (Riverine Flow Through)
- S (Slope)

⁴Columbia County buffers are assumed for high intensity land use, as project roads and other development footprints may be considered high intensity.

The following text on Page 2-64, second paragraph, of the DEIS has been changed.

~~Four~~ Twelve small wetlands, ranging from ~~0.001 to 0.06 acres~~ 7 to 1,598 square feet, occur in the environmental permitting corridor at the Tucannon WRA. ~~Three~~ Five wetlands, ranging from ~~0.002 to 0.75 acres~~ 67 to 553 square feet, occur in the environmental permitting corridor at the Kuhl Ridge WRA. ~~Two wetlands, 0.93 and 0.11 acres, occur in the Oliphant WRA. No wetlands occur in the~~ Oliphant WRA. ~~Four~~ Six wetlands, ranging from 0.04 to 1.05 acres 0.136 to 2,791 square feet, occur in the Dutch Flat WRA.

The following text on Page 2-67 of the DEIS has been changed as follows:

To the extent possible, the majority of the clearing and grading activities associated with the Project will be at least 200 feet from all wetlands in the Project area, which exceeds all required buffer widths under the Garfield County CAO and all but the Category I wetland buffers under the Columbia County CAO. No Category I wetlands occur in the Project area. If project facilities must be located within stream buffers, they will be designed and constructed in accordance with the applicable CAO.

The following text on Page 2-68, first paragraph, of the DEIS has been changed.

Tucannon, ~~Kuhl Ridge~~, and Oliphant WRAs

Construction of the Project will not permanently disturb or fill any wetlands in these WRAs during site clearing and grading activities; installation of the electrical collector system in underground trenches; construction of new roads and upgrades to existing roads; construction/installation of the turbines; and the construction of transmission lines. Furthermore, no permanent structures will be placed within wetlands or their designated buffers in these WRAs.

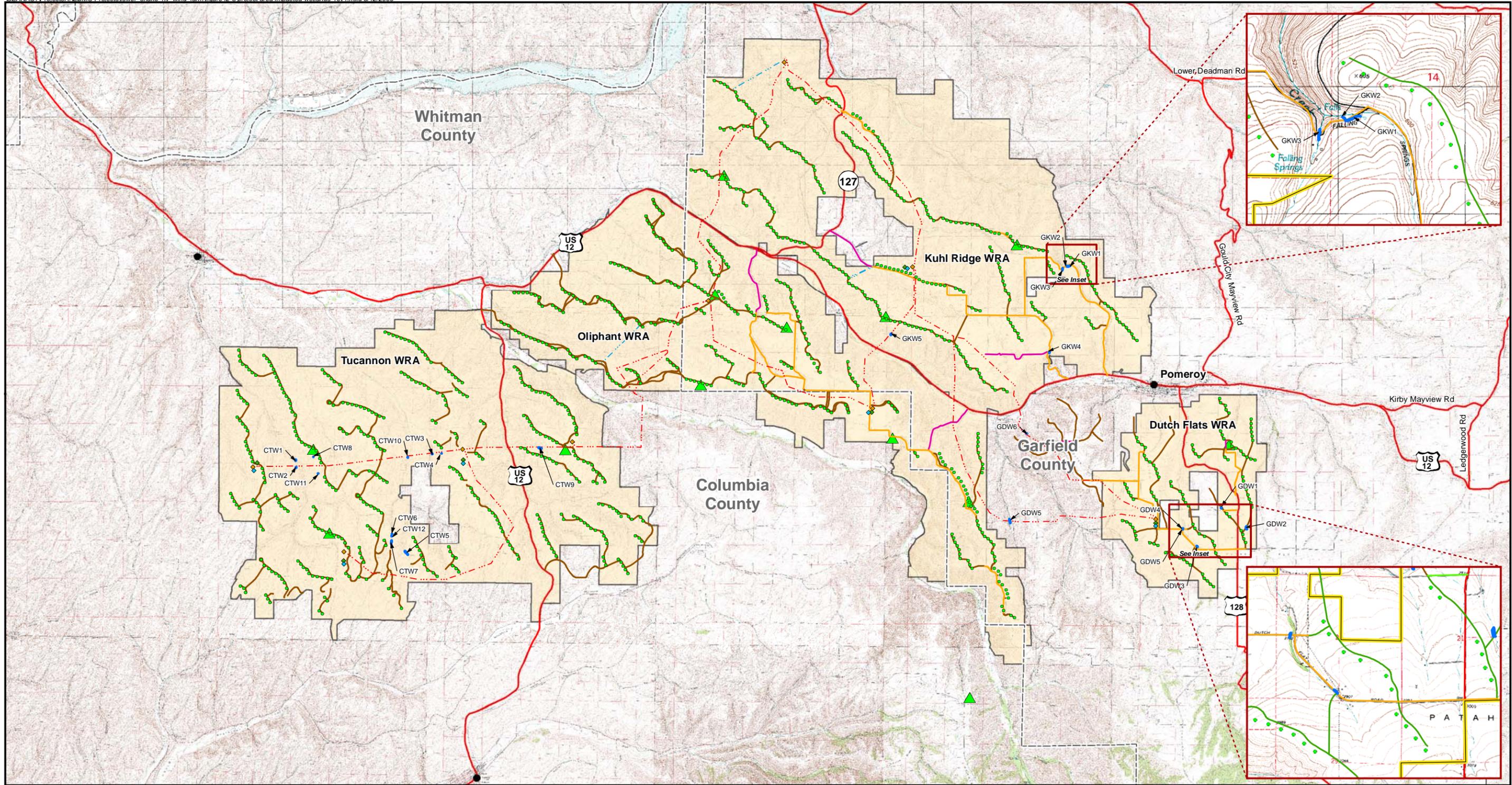
Kuhl Ridge WRA

Four wetlands will be potentially disturbed as a result of this Project. A portion of the 553-square foot wetland (GKW1) wetland, 60-square foot wetland (GKW2), 436-square foot wetland (GKW3) and 67-square foot wetland (GKW4) may be filled as part of the road upgrades (see Figure F2-8).

The following text on Page 2-68, second paragraph, of the DEIS has been changed.

Dutch Flats WRA

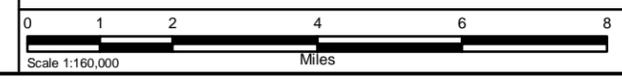
~~Two~~ Three wetlands will be potentially disturbed as a result of this Project. The first is the ~~1.05-acre~~ 2,791-square foot wetland (GDW2) northwest of turbine T-23 (see Figure 2-8). A portion of this wetland may be filled as part of the road development and culvert installation from turbines T-23 to T-20. The second and



- Legend**
- Turbine Location
 - City
 - ◆ Laydown
 - ◆ Operations & Maintenance
 - ◆ Substation
 - ▲ Met Towers
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 - 35 kV Transmission Line
 - 230 kV Transmission Line
 - Existing Roads
 - New Roads
 - Existing Roads to be Upgraded
 - Project Area
 - SWCA Observed Wetlands

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Figure F2-8
Project Area Impacted Wetlands



Source Information: SWCA Environmental Consultants field team.

third wetlands, a 0.07-acre 289-square foot wetland (GDW3) and 782-square foot wetland (GDW5), may be filled as a result of the widening of the Dutch Flat Road and/or installation of a culvert.

The following text on Page 2-69 of the DEIS has been changed as follows:

There are a limited number of Category III and IV wetlands within the Project area (SWCA 2009); however, to the extent possible, the majority of the Project facilities will be located greater than 200 feet from these critical areas to prevent any impacts. If project facilities must be located within stream buffers, they will be designed and constructed in accordance with the applicable County critical areas ordinance. During the design of the Project, Project facilities, including access roads, transmission lines, and turbine strings, were intentionally laid out to avoid, or at least minimize, disturbances to the limited wetland features in each WRA.

2.2.6 Aquatic Habitat, Fish Species, and Wildlife

The following text on Page 2-78 of the DEIS has been changed as follows:

Mitigation Measures Inherent in Project Design

Implementation of BMPs which include measures to reduce erosion and include set backs from fish bearing streams will be implemented where possible. Measures include but are not limited to use of existing roads; minimizing the number of stream crossings; to the extent possible, staying 250 feet from the banks of fish bearing streams; and where avoidance of the riparian corridor is not possible, stabilized rock construction access roads will be used. If project facilities must be located within stream buffers, they will be designed and constructed in accordance with the applicable CAO. Additionally, the appropriate state and local agencies will be consulted on the appropriate permit requirements and associated mitigation measures which pertain to stormwater management, invasive weed management, and hazardous materials. These measures in addition to those discussed in this chapter will reduce or eliminate potential impacts to aquatic habitat and fish species.

The following text on Page 2-79 of the DEIS has been changed as follows:

As currently proposed and to the extent possible, no Project facility, except road crossings, will be located closer than 250 feet from the onsite fish-bearing streams (i.e., Tucannon River, Pataha Creek, Meadow Creek, and Brown Gulch) (refer to Section 2.4 Water Resources for a discussion of potential impacts to streams). If project facilities must be located within stream buffers, they will be designed and constructed in accordance with the applicable CAO.

The following text on Page 2-81 under the Tucannon WRA has been changed as follows:

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Although no fish-bearing streams may be disturbed in this WRA, the crossing of ~~an~~ several unnamed, non fish-bearing streams (~~CTS2~~, CTS712, CTS711, CTS9, CTS5, and CTS1001 ~~east of turbines A56 and A57~~) may occur to facilitate the construction of ~~a~~ new roads and may require ~~a 40-foot~~ culverts (see Figure F2-3). Indirect impacts to aquatic habitats may occur from road crossings over ~~this~~ these non-fish-bearing streams.

Installation of the new overhead 230-kV transmission line will require 10 overhead riparian crossings. The riparian areas of 25 unnamed streams will also be crossed: CTS20 (tributary of Kellogg Creek), CTS602, CTS601, CTS14, CTS605, CTS16, CTS9, CTS607, CTS1004, CTS1007, CTS1010, CTS714, CTS713, CTS726, CTS725, CTS722, CTS708, CTS736, CTS737, CTS738, CTS744, CTS1002, CTS750, CTS751, and CTS752 (see Figure F2-3). In addition, to connect the Tucannon WRA with the Oliphant Ridge WRA, a crossing of the Tucannon River will be necessary for the installation of a new overhead 230-kV transmission line.

Collector lines will be installed parallel to the road system, where possible. Trenching during installation of these lines will occur outside the 250-foot buffer of the Tucannon River, to the extent possible, avoiding degrading this fish-bearing stream. If project facilities must be located within stream buffers, they will be designed and constructed in accordance with the applicable County CAO.

The following text on Page 2-82 of the DEIS under the Kuhl Ridge WRA has been changed as follows:

Although no fish-bearing streams will be disturbed in the Kuhl Ridge WRA, the crossing of several unnamed streams (GKS720, GKS20A, GKS13A, GKS9E, GKS14A, and GKS4A-C) which may intersect ~~a~~ new roads ~~south of turbine T221~~ or alterations to existing roads, have ~~has~~ the potential to impact habitat.

Installation of the new overhead 230-kV transmission line will require four riparian crossings over Pataha Creek, three to Oliphant WRA and one offsite, to facilitate the connections between Project substations (see Figure 2-4). An additional 20 unnamed streams are each crossed once by the transmission line. These streams include: GKS719, GKS603, GKS701, GKS711, GKS712, GKS725, and GKS716, GKS304, GKS305, GKS306, GKS303, GKS302, GKS912a,b, GKS913, GKS301, GKS901, GKS902, GKS906, GKS905 (see Figure F2-4).

Collector lines will be installed parallel to the road system, where possible. Trenching during installation of these lines will occur outside the 250-foot buffer of Pataha Creek, to the extent possible, avoiding degrading this fish-bearing stream. If project facilities must be located within stream buffers, they will be designed and constructed in accordance with the applicable CAO.

The text on Pages 2-83 and 2-84 of the DEIS under the Oliphant Ridge WRA have been changed as follows:

The construction of a new roads, ~~west of turbine T123~~ has have the potential to result in habitat impacts associated with three unnamed streams, GOS21A, COS806, and COS812 (see Figure F2-6). Dry Hollow, an ephemeral, non-fish-bearing stream may also be impacted by construction activities. Road improvements have the potential to directly impact three unnamed streams, identified by SWCA (see Figure F2-6). Streams GOS6A and GOS5D may intersect road widening needed for Oliphant Road and may require culverting. Stream GOS5D flows through the center of the environmental permitting corridor in this area. Additionally, stream GOS17C may need culverting due to the widening of West Oliphant Road. Stream GOS708, an ephemeral stream, may be crossed by the road widening west of turbine A114. Stream COS702 may be crossed by the road widening northwest of turbine A97.

Connecting the Oliphant Ridge WRA with the Kuhl Ridge WRA will require installation of a new overhead 230-kV transmission line. This line system will include three crossings of Pataha Creek, which are discussed above (“Kuhl Ridge WRA”). In addition, 7 18 unnamed streams will each be crossed once by the transmission line: GOS704, GOS15A, GOS718, GOS719, GOS720, COS702, GOS13, and GOS715, COS807, COS813, COS814, COS815, COS901, COS808, COS809, COS811, COS810, and COS807 (see Figures F2-4 and F2-6 for the locations of these streams).

In addition, several unnamed streams will be crossed by the overhead 230-kV transmission line which will connect the Oliphant Ridge and Dutch Flats WRAs (see Figures F2-6 and F2-5).

Construction related to the overhead transmission line will be at least 250 feet from Pataha Creek, to the extent possible, and no heavy equipment will be used in the stream bed or riparian corridor for construction. Collector lines will be installed parallel to the road system. The same BMPs for road installation will protect downstream aquatic habitat at Pataha Creek and the unnamed streams during the line installation. If project facilities must be located within stream buffers, they will be designed and constructed in accordance with the applicable County critical areas ordinance.

The following text on Page 2-85 has been changed as follows:

These potential impacts will be minimized through the following ways:

- Siting all O&M facilities, turbines, and roads 250 feet from existing fish-bearing streams, to the extent possible and if project facilities must be located within stream buffers, they will be designed and constructed in accordance with the applicable County CAO;

- Implementation of proper drainage, erosion control plans, and stormwater management practices during the operation of the Project, avoiding impacts on fish and fish habitat downstream of the Project area; and
- Project operations facilities will be built and operated in accordance with applicable local and state water use and wastewater regulatory requirements.

2.2.7 Bird and Bat Resources

The following text on Page 2-91, fourth paragraph, of the DEIS has been changed.

Passerines represented the most abundant avian group, accounting for ~~65%~~ 80.6% of all observations. Raptors were the second most consistently observed, ranging from 8% to 16% seasonally. Upland game birds contributed up to 5% of avian observations and waterfowl contributed 2% in the winter.

The following text on Page 2-92, fourth paragraph, of the DEIS has been changed.

Upland Gamebirds

Upland gamebirds such as chukar (*Alectoris chukar*), ring-necked pheasant (*Phasianus colchicus*), and California quail (*Callipepla californica*) had the highest use in spring and comprised ~~5%~~ 6% or less of all bird use across all seasons (Appendix C Table 4.3).

The following text on Page 2-92, fifth paragraph, of the DEIS has been changed.

Passerines

Passerines had the highest use by any bird type during all four seasons, with abundance highest in the winter primarily due to most observations being large flocks. Horned lark was the most common passerine and most common bird observed onsite (Appendix C Table 4.3). Passerines made up 52.0% of all bird composition at the Project site in the fall, and more than 65% of all bird composition across ~~all~~ the remaining seasons.

The following text on Page 2-92, seventh paragraph, and page 2-93, first paragraph, of the DEIS has been changed.

Bird Flight Height and Exposure Index

Flight height characteristics were estimated for both individual bird species and bird types (Appendix C Tables 4.4 and 4.5). Percentages of observations below, within, and above the likely zone of risk (ZOR) of 82 to 410 feet (~25 to 125 m) above ground level were reported. Forty-~~nine~~ eight species were observed flying within the likely ZOR. Observations for most species were uncommon and consisted of only one, two, or three groups of flying birds for all seasons, providing little information about the propensity of species to be exposed to turbine rotors. Twenty-~~nine~~ seven species were observed flying in the likely ZOR for at least 50% or greater of the observations. The remaining twenty-one species

were observed flying in the likely ZOR for less than 50% of the observations. Overall, 18.7% of the bird types observed flying were recorded within the ZOR, 80.3% were below the ZOR, and 1.0% were flying above the ZOR.

The following text on Page 2-97, second paragraph, of the DEIS has been changed.

Bald eagle nesting habitat consists of large trees among stands near open water for efficient foraging. In Washington, nearly all bald eagle nests (99%) are within one mile of a lake, river, or marine shoreline (WDFW 2007). Migration occurs from early March to late May (Buehler 2000). No active bald eagle nests were observed in the Project study area during field surveys, however a total of ~~seven~~ three individuals were observed (see Appendix C).

The following text on Page 2-97, fifth paragraph, of the DEIS has been changed.

The two inactive nesting sites (see Appendix C) and the predicted habitat are located within the Tucannon, Oliphant, and Kuhl Ridge Project boundaries (WDFW 1997). Migration occurs from late February to mid-June, and from early August to late November (Bechard and Schmutz 1995). Migrating individuals may pass through the Project area en route to southern wintering grounds. No active ferruginous hawk nests were observed in the Project study area during field surveys, and ~~one~~ two individuals ~~was~~ were observed in-flight (see Appendix C).

The following text on Page 2-98, third paragraph, of the DEIS has been changed.

Merlins are present throughout most of North America. This species prefers open to semi-open areas. Merlins usually nest near forest openings, and often near water (Warkentin et al. 2005). No confirmed breeding sites or predicted habitat are located in or near the Project area (WDFW 1997). This species winters in much of the western U.S., and migration through the Project area is likely (Warkentin et al. 2005). Migration to breeding areas occurs from early February to early May, with peak migration in early April. Return migration occurs from early August to early November (Warkentin et al. 2005). No active merlin nests were observed in the study area during field surveys, although ~~one~~ three individuals ~~was~~ were observed (see Appendix C).

The following text on Page 2-103, Table 2-22 of the DEIS has been changed.

~~(PROVIDED BY WEST, PENDING FINAL REPORT)~~

The following text on Page 2-103, second paragraph, of the DEIS has been changed.

Acoustic bat surveys were conducted at two fixed stations within each of the four wind resource areas within the Project. Bat activity was monitored at eight sampling locations on a total of 185 nights during the period April 30 to October

31, 2008 (DEIS Appendix C Figure 4.3). Overall all sampling nights an average of ~~1.21~~ 1.08 bat passes were recorded per detector-night.

The following text on Page 2-103, third paragraph, of the DEIS has been changed.

Bat activity was highest at Station 2 in the Oliphant WRA, which recorded 5.13 bat passes per detector night (64.5% of all bat passes). Bat activity across the other stations in the Project area was similar, ranging from 0.33 to ~~0.62~~ 0.86 bat passes per detector night. Activity levels were highest from early-June through late-August, then decreased to lower levels through September and October. Overall, more activity was recorded from high-frequency (HF) bats than low-frequency (LF) bats throughout the year (66% to 44%, respectively).

The following text on Page 2-116 of the DEIS has been changed as follows:

4. A raptor nesting survey will be conducted in the appropriate season prior to each phase of construction to identify active raptor nest sites in the vicinity of the Project. The Applicant will minimize disturbance during construction in the vicinity of any active federal or state threatened or endangered raptor nest. A qualified avian biologist will be contracted to determine what measures are appropriate for minimization of impacts. These recommendations will be presented to the County permitting authority prior to initiation of Project construction phase activities. The County will impose mitigation measures in accordance with its wind development standards, its CAO, and any applicable state and federal guidelines. ~~in the case of an identified Federal or State threatened or endangered active raptor nest identification within 1/4 mile of proposed construction activities.~~

2.2.8 Vegetation

The following text on Page 2-122, first paragraph, has been changed.

The Project area lies within the ~~extensive Intermountain Semidesert Province~~ ecoregion (Bailey 1995). ~~This province includes the plains and tablelands of the Columbia-Snake River Plateaus and the Wyoming Basin. The Columbia Plateau ecoregion, which includes the area in eastern Washington and eastern Oregon bounded by the Cascade, Okanogan, Blue, and Rocky Mountains (WDNR 2007, Franklin and Dyrness 1988). It lies in the Cascade Mountains rain shadow and is the driest ecoregion in Washington.~~

Prior to modification by human activities, this region was dominated by sagebrush steppe, comprising sagebrush (primarily *Artemisia tridentata*) or shadscale (*Atriplex* spp.) interspersed with short bunch grasses, including Idaho fescue (*Festuca idahoensis*), bluebunch wheatgrass (*Agropyron spicatum*), and Sandberg bluegrass (*Poa sandbergii*). These dominant shrubs are replaced by greasewood (*Sarcobatus vermiculatus*) in more mesic, alkaline flats. More mesic upland areas

in the Columbia River Basin give way to open cover dominated by the bunchgrasses. Stream corridors are lined with willows (*Salix* spp.), other riparian shrubs such as snowberry (*Symphoricarpos albus*) and Wood's rose (*Rosa woodsii*) and herbaceous, sedge-dominated (*Carex* spp.) wetlands.

The following text on Page 2-122, third paragraph, has been changed.

Agricultural Land – Winter Wheat

Winter wheat cropland is the most extensive vegetation type in the Project area (55% to 76% total area of the Project WRAs). These areas are seeded as monocultures of non-irrigated winter wheat (*Triticum aestivum*) with few fence rows. Fallow fields often support invasive annual grasses and forbs such as cheatgrass (*Bromus tectorum*), yellow starthistle (*Centaurea solstitialis*), Russian-thistle (*Salsola kali*), and other non-native and invasive weed species.

The following text on Page 2-126, second paragraph, has been changed.

CRP Grassland

A very small area of the Kuhl Ridge WRA (1.4 percent) has been seeded under Conservation Reserve Program (CRP) contracts. This grassland includes fields of non-irrigated perennial, non-native bunchgrasses such as crested wheatgrass (*Agropyron cristatum*) and intermediate wheatgrass (*Agropyron intermedium*) or related species. While these plantings do prevent soil erosion and weed invasion, they provide little habitat for native plant species.

The following text on Page 2-126, third paragraph, has been changed.

Disturbed Annual Grassland

Areas dominated by annual grasslands have experienced surface disturbance to such a degree that exotic species such as ~~the annual~~ cheatgrass (*Bromus tectorum*) have been favored during revegetation and has are now established as a dominant cover type. These areas typically support less than 10 percent cover by native grasses and lack a native forb component. In addition to cheatgrass, disturbed grassland areas are dominated by ripgut brome (*Bromus rigidus*), jointed goatgrass (*Aegilops cylindrica*), volunteer rye (*Secale cereale*), yellow starthistle, Russian thistle, prickly lettuce (*Lactuca serriola*), tumble mustard (*Sisymbrium altissimum*), redstem stork's bill (*Erodium cicutarium*), hairy vetch (*Vicia villosa*), and bristly fiddleneck (*Amsinckia tessellata*). ~~areas also support exotic forbs as well, including tall tumbled mustard (*Sisymbrium altissimum*) and Russian thistle (*Salsola australis*).~~ These areas provide little habitat for native plant or wildlife species. Disturbed annual grasslands are the second-most extensive vegetation type in the Oliphant and Kuhl Ridge WRAs, and represent 5.6 percent of the Tucannon WRA and are not present in the Dutch Flats WRA.

The following text on Page 2-126, fourth and fifth paragraphs, has been changed.

Native Bunchgrass Grassland

Native bunchgrass grasslands, including characterized by stands of bluebunch wheatgrass, rough fescue (*Festuca scabrella*), Idaho fescue and Sandberg bluegrass, occur in small, unplowed areas in all but the Tucannon WRA. A sparse but diverse forb component includes gaura (*Gaura coccinea*), scarlet globe mallow (*Sphaeralcea coccinea*), salsify (*Tragopogon dubius*), prairie-turnip (*Psoralidium tenuiflorum*), locoweeds (*Oxytropis* spp.), milk vetches (*Astragalus* spp), woolly plantain (*Plantago patagonica*), serrate balsamroot (*Balsamorhiza serrata*), large-fruited biscuitroot (*Lomatium macrocarpum*), and purple tansy aster (*Macaeranthera pinnatifida*). This community also includes sparsely distributed green rabbitbrush (*Chrysothamnus viscidiflorus*) and blue rabbitbrush (*C. nauseosus*) shrubs on drier south-facing slopes and pockets of Douglas hawthorn (*Crataegus douglasii*), Wood's rose, chokecherry (*Prunus virginiana*), creeping barberry (*Mahonia repens*), and snowberry on more-mesic, north-facing slopes.

This native bunchgrass grassland provides habitat for native plants and wildlife. However, the species-carrying capacity of this type of habitat is reduced due to the very small size of these areas and relatively large edge-effect of nearby modified vegetation types.

Sagebrush Steppe

Sagebrush steppes are dominated by sagebrush (*Artemisia tridentata*.) and rabbitbrush (~~*Chrysothamnus nauseosus*~~), with a grass-dominated herbaceous component similar to the native bunchgrass grassland described above. These very small areas occur along the side-slopes of drainages or ravines with sandy soils, and usually have north aspects. These steppes grade into riparian areas along the bottoms of more mesic drainages, with perennial surface water flow. The Tucannon WRA does not support any of this steppe community, the Kuhl Ridge WRA has less than two percent cover by this type. The Dutch Flats WRA contains over 12 percent, and it comprises almost 19 percent of the Oliphant WRAs. This steppe community provides habitat for native plants.

Steppe habitat (which includes native bunchgrass grassland) is a Washington State Priority 2 Habitat (WDFW 2008) because the vast majority of native grassland habitat in the region has been eliminated or highly modified by a variety of human activities, including conversion to croplands, livestock management practices, habitat fragmentation, and invasion by nonnative plants (Johnson and O'Neil 2001).

The following text on Page 2-127, fifth paragraph, has been changed.

Special Status Plant Species

Based on a review of occurrence databases, a number of special status plant species have the potential to occur within the Project area. Only those listed by the USFWS under the Endangered Species Act (ESA) as endangered, threatened, or candidate species receive regulatory protection. Those species known to occur

in eastern Washington are contained in Appendix D hereto, although no known populations of these species occur in the Project area.

~~However,~~ Based on review of habitat requirements and known locations, it was determined that the Project area contains potential habitat (native bunchgrass grassland; and sagebrush steppe, and riparian/wetland communities) that could support one two of these plants species (SWCA 2009 – Appendix J). could exist in the Project area, based on review of habitat requirements and known locations. These species include Ute ladies’ tresses and Spalding’s catchfly (*Silene spaldingii*) was listed as a threatened species on October 10, 2001 (USFWS 2001). This species is an herbaceous perennial plant in the pink family (*Caryophyllaceae*) that occurs predominantly in bunchgrass grasslands and sagebrush-steppe, and occasionally in open pine communities, in eastern Washington, northeastern Oregon, west-central Idaho, western Montana, and barely extending into British Columbia, Canada. This species inhabits open, mesic (moist) grassland communities or sagebrush-steppe communities. Spalding’s catchfly is most often associated with Idaho fescue, bluebunch wheatgrass, and rough fescue. It occurs at elevations ranging from 1,200 to 5,300 feet (365 to 1,615 meters) in deep, productive loess soils. Plants are generally found in swales or on northwest-to-northeast-facing slopes where soil moisture is relatively higher (USFWS 2007).

Surveys for this species were conducted in suitable potential habitat within the Project area in July and August, 2009. No populations of Spalding’s catchfly were located (SWCA 2009 – Appendix J).

~~Surveys of appropriate habitat for these species are being conducted at this time.~~

The following text on Page 2-129, second paragraph, has been changed.

Construction Impacts

All Four WRAs

There will be approximately 2,750 acres of temporarily disturbed land during the construction of the Project and approximately 600 acres of permanent conversion of vegetation due to the construction of Project facilities.

~~No special-status plant species occur within the Project area. Therefore, no mitigation for impacts will be required for this resource. Studies will be completed prior to Project construction to identify sensitive and special status species to be avoided by Project design and micrositing. Restorative measures and monitoring contained in the Project vegetation management plan will be implemented and no permanent impacts to special status species are anticipated.~~

The following text on Page 2-130, third paragraph, has been changed.

~~No special-status plant species occur within the Project area. Therefore, no mitigation for impacts will be required for this resource. Studies will be completed prior to Project ground disturbance activities to identify sensitive and special status species to be avoided by Project design and micrositing. Restorative measures and monitoring contained in the Project vegetation management plan will be implemented and no permanent impacts to special status species are anticipated.~~

The following text on Page 2-131, last paragraph, has been changed.

Special Status Plant Species

~~While i It is not known whether Ute ladies' tresses and Spalding's catchfly or other federally listed special-status plant species are likely to occur, or are present, within the larger cumulative impacts area. However, because no special status plant species occur within the Project area, there will be no impacts to this resource from the Project cumulative to potential impacts in the larger analysis area. all potential projects should either completely avoid any located populations or undertake Section 7 consultation with USFWS, to enable avoiding any impacts to these species.~~

2.2.9 Visual Resources

The following text on page 2-137 of the DEIS, under Distance Zones has been added:

A Zone of Visual Influence (ZVI) map is a tool that is used to identify and eliminate those areas where a visual item cannot be seen, and enables a visual assessor to focus efforts where there *might* be views. Multiple variables affect visibility of an object. ZVI maps do not indicate the effect of distance on the visual appearance of items, (they fail to address the magnitude of the visual impact because they do not distinguish between areas where turbines are in the background view or in the foreground) nor do they take into account any landscape artifacts such as trees, woodland or buildings, etc. As such, ZVI maps are not used to show the actual visibility of an object. Shown on the ZVI maps are the approximate numbers of turbines visible from any one point in the surrounding landscape. Last, a ZVI map does not depict whether a view is likely to be viewed by several views or not, and fails to account for the duration of view. Consequently, such maps tend to exaggerate the actual visual effect of the wind farm, and are difficult for non-specialists to interpret. A ZVI map is a tool that can be used in the beginning of a visual assessment. It is not a final product and should not be construed as a demonstration of impact.

If a ZVI map is used, it is used to eliminate areas that need not be assessed because turbines cannot be seen. From there, observation points that *might* have a view of a project can be selected. To select viewpoints, the visual sensitivity of the viewpoint, the visual contrast seen from a viewpoint and the distance from the viewpoint to the Project component is assessed. The types of viewpoints from

which a project can be seen include areas where people recreate, reside and through which they travel or work. In addition, cultural sites may also be included. Within the residential sector, key observation areas can include both urban and rural settings. A cross-section of each type of viewpoint should be selected from which to conduct a visual impact assessment. A visual assessment can generate various visual figures, including “wireframe” representations of the topography and wire framed turbines superimposed thereon. With more work, actual replications of wind turbines can be superimposed on photomontages that show the view from the viewpoint after the Project is built.

These photomontages are then used through the application of one or more recognized methodologies to assess the visual impact. The National Academies Press (“NAP”) recognizes that professional judgment is involved in making decisions regarding weighting of visual effects. Moreover, the NAP recognizes that more than one methodology may apply to a visual assessment. The BLM methodology is used by a land management agency that has vast tracts of undeveloped and relatively unforested public lands (as opposed to forested areas generally managed by the United States Forest Service and to which a USFS methodology might be more applicable). The land use patterns in Garfield and Columbia Counties present similar open expanses of low density structural development similar to BLM-type lands, although there is considerable agricultural activity. The FHWA methodology addresses viewsapes seen from roads, and which presents a different duration of view than what might be experienced from dwellings.

A ZVI map has been added to Appendix E (Figure F2-21) in response to a request in a DEIS comment letter. The map is not a good indicator of overall visual impacts because it does not address visual sensitivity of viewpoints, does not factor the distance zones from sensitive viewpoints, and does not assess visual contrast levels. Its use of an 8-mile study area follows guidance published in the National Academies Press literature, and guidance published by the Bureau of Land Management Visual Resource Management manuals, as well as results from conducting several other wind energy visual impact assessments. It is often shown that turbines visible at the 8- mile distance or greater have diminished overall visibility due to the inability to perceive details of the turbines from distant viewpoints. Viewpoint selection was based on several factors outlined on page 2-137 of the DEIS.

2.2.10 Noise

On page 2-151, the following text is added after the last paragraph:

Another weighted scale of noise measurement is the dBC-weighted scale. The dBC scale measures low-frequency ranges that the ear does not detect well. Low frequency noise is generally associated with sources such as compressors, pumps and diesel engines. Very high levels of low frequency noise may result in noise induced vibrations that can generate secondary noise such as window rattling. It is

not uncommon for dBC and dBA levels to vary. The difference between dBC and dBA levels within an office building may be 20 dB (for example, 40 dBA and 60 dBC). As discussed in more detail in Section 2.10.2.1 Project Impacts, wind turbines are not a source of significant low-frequency noise.

Additional text is added to the FEIS on page 2-153 after the last paragraph in Sections 2.10 to read as follows:

A noise source reflected off a wall (the so-called “canyon effect”) could result in some increase in decibel level. For example, a perfect reflection would result in a 3 dBA increase (i.e., as if there were two sources of the same level, 40 dBA direct + 40 dBA reflected = 43 dBA overall). However, perfect reflections do not exist when evaluating vertical hard concrete noise walls used along highways and would also not exist in sloping, grass-covered terrain, such as the project site characteristics. Therefore, any expected increase in noise level from a single source due to reflection will be less than 3 dBA.

The model sums the contribution from each source at each receptor and these calculations automatically address the potential for closely spaced point sources to result in a geometric attenuation rate of 3 dB per doubling of distance. Once the project micrositing occurs and final turbine layout and turbine model are arrived at, additional noise modeling will occur to ensure the project complies with the standards discussed in the DEIS. Regardless of the model results, the Applicant must and will ensure that maximum noise levels will meet permit conditions.

Under section 2.10.1 Affected Environment, the text on page 2-154 of the DEIS has been revised as follows:

The total noise that can be perceived is a logarithmic sum of background and projected wind turbine noise. At residences in or near any project proposed for development, there is no single, consistent background noise level. Ambient noise levels are highly variable, and there is no means to accurately depict actual conditions at all times. This is because the factors that contribute to background noise may vary between project areas. Ambient noise is the result of a number of factors including weather, wind conditions and the presence of other noise sources (including, without limitation, agricultural equipment operations, irrigation pumps and equipment, livestock, road, rail and air traffic, wildlife (birds, insects) dogs and routine human activities). Ambient levels may vary between receptors and the level at a single site may vary from one day to the next. This is borne out by measurements made in similar rural areas, which documented a wide range in existing levels, from below 20 dBA to over 40 dBA in areas remote from transportation corridors. In areas closer to transportation corridors, noise levels extended into the mid-60’s dBA (Kittitas Valley Wind Power Project, 2007 and Golden Hills Wind Project 2007). The increased noise level resulting from the operation of any project, including those that emit a constant level, will vary as a result of the varying ambient noise levels. For a wind project, the project’s noise level also varies with wind speed at the turbines. For example, when the winds are

calm the turbines emit very little noise compared to stronger wind conditions when the turbines generate their highest noise levels. A wind project's noise level at a particular receptor is primarily determined by the wind speed occurring at the turbine and the distance to the closest turbines. The Washington Department of Ecology has adopted maximum permissible noise levels that apply to differing types of noise generators and receivers (e.g., residential, commercial and industrial) which are described in Section 2.10.1.1.

An additional paragraph is added to the DEIS on page 2-155 immediately preceding the last sentence in Section 2.10.1.1 to read as follows:

Levels associated with hearing loss are much higher than the 50 dBA nighttime standard in Washington. The Occupational Safety and Health Administration (OSHA) has developed noise standards designed to address worker health and safety risks associated with noise exposure and the potential for noise-induced hearing loss. Action levels under these OSHA standards are 85 dBA. Exposure to sound in excess of this standard requires the employer to initiate a noise conservation program to evaluate the exposure, its duration, possible engineering controls to reduce noise and the provision of hearing protection to employees. The decibel levels covered by the state standards in WAC 173-60-110 are well below OSHA hearing impact standards. As described on page 2-156 through 2-158 of the DEIS, turbines will be sited to meet or exceed the WAC standards at the project boundaries.

Table ES-1 on page 11 of the DEIS, last bullet is revised to read as follows:

- The Applicant shall comply with State of Washington noise standards (WAC Chapter 173-60). The Applicant has also voluntarily agreed to meet a residential EDNA standard of 50 dBA at any existing residential receptors of non-participating landowners unless noise easements are obtained.

At Section 2.10.1.1, Regulatory Standards and Guidance, just prior to the last sentence of this section add the following paragraph:

The A-weighted scale is used for the state standards in WAC 173-60-110 because that standard characterizes the frequency sensitive to the human ear. Those jurisdictions that have a C-weighted scale standard do not apply that standard to wind turbines. There is no Washington State standard associated with the C-weighted scale for low-frequency noise because the C-weighted scale is primarily used as an indicator of low frequency induced noise vibrations. Wind turbines are not a significant emitter of low frequency noise (Hessler et al. 2008; Hessler 2009) and, therefore, a C-weighted scale evaluation is not necessary or appropriate for this Project.

At Section 2.10.2.1, Preferred Alternative, Project facility Impacts, All WRAs, the first full paragraph on page 2-158 is replaced with the following:

An acoustical model will be used to simulate the outdoor propagation of sound generated during operation of the Project based on the final Project layout, turbine model selected and location and size of ancillary facilities (substations). The modeling algorithms are based on the International Organization for Standardization 9613-2, which is coded into several computational packages including CADNA/A, the software used in this analysis. This software and computational methods are routinely used by acoustical professionals to develop sound level predictions from a variety of complex industrial sources, including wind turbines. All calculations are carried out on a frequency basis for the nine standard octave bands ranging from 31.5 Hz to 8000 Hz, and as such, the model calculations are based on a broader set of frequency calculations than either an A-weighted scale or C-weighted scale alone.

Text on page 2-167 of the DEIS, just prior to End of Design Life Impacts, add the following paragraph:

Information regarding potential impacts from exposure to low frequency noise is inconclusive. There are several scientific articles suggesting that low frequency noise does not pose a health risk (Broner 2007; Leventhall 2006). Work by Dr. Nina Pierpont suggests the contrary. That work has not been peer reviewed by any independent group of scientific experts as of the date of publication of this FEIS and is only available through Dr. Pierpont's website. In addition, studies regarding low-frequency noise emissions from wind turbines have determined that the low-frequency noise is more a function of the wind itself, rather than the wind turbines (Hessler et al. 2008; Hessler 2009). The "swoosh" of the turbines, sometimes mistakenly identified as low frequency noise, is actually within the audible range (typically 500-1000 dBA) and, therefore, is not considered low-frequency noise (Leventhall 2006).

There may, however, be some correlation between an individual receptor's psychological sensitivity to the noise source (like or dislike for the noise source) and complaints regarding discomfort from that noise source. These are sometimes associated with complaints regarding sleep disturbance. Because sensitivity to noise can be influenced by such psychological factors and can be deemed significant by an affected individual, regardless of frequency or level, it is difficult to quantify these impacts or to impose mitigation (Fields 1993).

Discussion regarding potential health and safety impacts from low frequency noise and other sources associated with wind turbine operation is also discussed in Section 2.16 Health and Safety, on page 2-290-302.

2.2.11 Climate and Air Quality

Text on page 2-180 of the DEIS is revised as follows:

Stockpiles of soil will be managed covered with wind impervious fabric to prevent airborne dust, using impervious fabric covers, the application of a tackifier, or other appropriate measures (Ecology 2003).

2.2.12 Public Services and Utilities

Text before the first full paragraph on page 2-188 of the DEIS is revised as follows:

The Columbia County Health System serves the entire County and includes Dayton General Hospital, a fully-accredited Critical Access Hospital with 25 combined acute and swing patient beds (Button Pers. Comm. 2009). The hospital's Trauma Center includes one emergency room, and cannot accommodate multiple patients at once. On occasion, it is necessary for the Columbia County Hospital to direct emergency patients to other regional facilities when the Columbia County emergency room is occupied, and mutual aid agreements are in place with other regional providers to receive these overflow patients. There is a proposed project to construct a second emergency room at the hospital; however, funds have not been appropriated for this project (Button Pers. Comm. 2009).

2.2.13 Traffic and Transportation

The text on page 2-208 of the DEIS has been revised as follows.

Construction Impacts

All Four WRAs

New Permanent Roads

The Applicant will prepare a site access plan that designates roads and directs construction and maintenance workers to use existing roads wherever possible.

Approximately 120 miles of new permanent roads will be constructed for the entire Project. In areas where existing roads do not provide access, new graveled roads will be needed. Generally, these new roads will be 20 feet wide, with additional 5-foot permanent shoulders on each side. An additional 5-foot temporary shoulder on each side may be needed during construction. The temporary shoulders will be reclaimed upon completion of construction and returned to their original use. During construction, some roads may need additional temporary shoulders for turn-around areas for larger vehicles. These areas will also be reclaimed upon completion of construction. New roads will be constructed and maintained in compliance with state and County regulations and with approval of the Garfield and Columbia County engineers. The final roads layout will be provided once the final engineering drawings are complete and will

be submitted to Garfield and Columbia counties with the appropriate permit applications. ~~In particular, access to new, Project phase-related roads will solely be from county and private roads and would not be from U.S. Route 12.~~ Access to new Project-related roads would primarily be from County and private roads. New access from state highways will be minimized.

2.2.14 Land Use and Recreation

There are no changes to this section.

2.2.15 Socioeconomics

The text on page 2-276 of the DEIS has been revised as follows.

Aerial Applications

Comments were received concerning the Project's potential to interfere with aerial applications of chemicals in support of agriculture. According to crop consultants in Columbia County (Dayton area), it has been observed that aerial applicators continue to fly and work within the operating wind project areas. Generally, air applicators apply insecticides and herbicides prior to harvest. When crops are small, chemicals are usually applied by ground equipment. This is usually more timely, cost-efficient, and effective than aerial application. But when crops are tall, ground applications are difficult. Timing is critical when applying chemicals. Weather can be a big factor. It varies from year to year and affects the decision on the type of application to be used. Additional safety protocols are needed when the aerial applicators fly near the towers, but they are similar when flying near any structure or wires. Having more structures in an area could increase the risks to the applicator and decrease their efficiency. Aerial application of chemicals occurs at a height of less than 300 feet, which makes the application less effective than ground application. Standard ground application is usually 20 inches from ground level (Fornberg Takemura Pers. Comm. 2009).

2.2.16 Health and Safety

The text on page 2-298 of the DEIS has been revised as follows.

Shadow flicker frequency is related to the rotor speed and number of blades on the rotor, which can be translated into a "blade pass frequency" measured in alternations per second, or hertz (Hz). Although in some instances the flickering of light can induce epileptic seizures in people who are photosensitive (about 3-5% of the 1% of Americans who are epileptic are photosensitive), shadow flicker from wind turbines is too slow to induce epileptic seizures. Whether light flicker will provoke a reaction depends on its frequency, light intensity, visual area, image pattern, and color (Epilepsy Foundation 2009). Flicker frequency due to a turbine is on the order of the rotor frequency, i.e., 0.6-1.0 Hz (NRC/NAS 2007). The flicker frequency that provokes seizures in photosensitive individuals is 5-30 Hz, well above the maximum of approximately 1 Hz for wind turbines. In accord,

there is no scientific data or peer-reviewed studies that suggest a link between epileptic seizures and rotor blade ~~alternatives~~ alternations.

The following text is added on page 2-298 of the DEIS under Other Health and Safety Issues:

A recent theory on adverse health consequences from wind turbines has been propounded by a pediatrician, Dr. Nina Pierpont. The information has not been peer-reviewed by independent scientific experts and is only available through Dr. Pierpont's website. The conclusions in Dr. Pierpont's work have not generally been accepted by the scientific community. See, e.g., Leventhal 2006. The American Wind Energy Association (AWEA) and the Canadian Wind Energy Association (CanWEA), in representing the North American wind energy industry, have established a multidisciplinary scientific advisory panel comprised of medical doctors, audiologists, and acoustical professionals to conduct a review of current scientific literature available on the issue of perceived health effects of wind turbines. Pers. Comm. Bastasch 2009.

Kamperman and James' opinions recommending setbacks in excess of 2 km, as well as their 2008 publication, have not appeared in a scientifically peer-reviewed journal. Kamperman and James' concerns appear to be based primarily on low-frequency noise, and, therefore are not applicable to the Proposed Project, since wind turbines do not generate significant amounts of low-frequency noise. In France, the Agence Française de Sécurité Sanitaire de l'Environnement et du Travail, addressed a similar request for 1.5 km setbacks in their "CONTEXT AND OPINION RELATED TO THE HEALTH EFFECTS OF NOISE GENERATED BY WIND TURBINES", Afsset reference number 2006-005, which states that "A review of the data on noise measured in proximity to windmills, sound propagation simulations and field surveys demonstrates that permanent definition of a minimum 1,500 m installation distance from homes, even when limited to windmills of more than 2.5 MW, does not reflect the reality [sic] exposure to noise and does not seem relevant."

Additional discussion regarding low-frequency noise and wind turbines is found in the revisions to Section 2.2.10, above.

2.2.17 Cultural Resources

The text on page 3-305 of the DEIS has been revised as follows.

Nez Perce

In the early 1860s, gold was discovered on Nez Perce lands and, in violation of the 1855 treaty, Euro-American settlers rushed in and laid claim to key lands and minerals. These settlers and their supporters soon began pressuring the U.S. government to open more tribal territory for mining and settlement. In 1863, the Nez Perce were approached Governor Stevens again approached the Nez Perce

about giving up more tribal lands. Although many Nez Perce leaders refused to negotiate, several others signed a new treaty. This treaty reduced the Nez Perce reservation to 780,000 acres, ~~and the Nez Perce lost their claim to many important traditional areas~~ (Walker 1998).

Upon the death of Old Chief Joseph in 1871, his son, Young Chief Joseph, took over leadership of the Wallowa band. In 1873, the government tried to create a Wallowa reservation for Joseph's band, but abandoned the attempt two years later. Representing his people in a meeting with General Oliver Howard at the Lapwai Council of 1876, Chief Joseph refused to honor the 1863 treaty. ~~The following year, the government gave the tribe 30 days to vacate the Wallowa Valley and move to a reservation near Lapwai, Idaho. Before the move could begin, some young warriors attacked and killed a group of white ranchers, and the U.S. Cavalry was called in, marking the beginning of the Nez Perce War of 1877. Eventually, Chief Joseph and the Nez Perce surrendered to the U.S. Cavalry and lost the Wallowa lands (Walker 1998:434–435). The Wallowa Band of the Nez Perce were ordered to move to the Nez Perce Reservation as defined by the 1863 Treaty. During the move, a conflict occurred between the U.S. Cavalry, a group of white ranchers, and some young Nez Perce warriors. This is considered as the beginning of the Nez Perce War of 1877. Eventually, Chief Joseph and the Nez Perce surrendered to the U.S. Cavalry (Walker 1998:434–435).~~

Palouse (or Palus)

During historic times the Palouse (also spelled Palus) territory centered around the Palouse and Snake rivers between their confluences with the Columbia River to the west and the Clearwater River to the east. In the western portion of their territory, they shared land and access rights with the Wanapam; in the eastern portion, they shared overlapping territories with the Nez Perce. The Palouse spoke a ~~northeastern~~ Sahaptin dialect of the Sahaptian Penutian language family. They cooperatively fished and gathered with neighboring tribes such as the Walla Walla, Yakima, Umatilla, Cayuse, Nez Perce, Spokane, and Coeur d'Alene (Sprague 1998).

The mitigation measures on page 2-318 through 2-319 have been revised as follows.

Mitigation

The following mitigation measures are to be imposed for all four WRAs.

- ~~A pedestrian survey (inventory) of the environmental permitting corridors should be conducted prior to any ground disturbance associated with the Project. The intent of the inventory will be to document all archaeological sites located in the Project area. Avoidance of archaeological sites is the preferred method of mitigation; however sites that cannot be avoided must be evaluated for eligibility to be listed on the NRHP. The DAHP and local~~

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tribes must be consulted on appropriate mitigation for sites that cannot be avoided.

- ~~A cultural resources sensitivity training for personnel working on Project construction should be conducted. The purpose of this training will be to instruct Project personnel on the sensitivity of cultural resources in the Project area, and introduce them to the tribe's perspective on potential impacts. Individuals from the Confederate Tribes of the Umatilla Indian Reservation (CTUIR), the Nez Perce, and DAHP will be invited to contribute to this training.~~
- ~~During Project construction all sites that have been determined to be eligible for the NRHP must be avoided. This will be coordinated by an on-site environmental manager who will know the precise boundaries of the resources. All site locations will remain confidential.~~
- ~~Upon the discovery of human remains, work within 200 feet of the discovery will cease, the local law enforcement, and county coroner would be notified in the most expeditious manner possible (Chapters 27.44, 68.50, and 68.60 RCW). Efforts would be taken to protect the area of the find from further disturbance. If the remains are determined to be associated with an archaeological site, the DAHP, and affected tribes will be notified. Appropriate measures will be taken to ensure the site is protected from further disturbance until a treatment plan is agreed upon by all involved parties.~~
- ~~Upon the discovery of previously unrecorded cultural resources all work in the area must stop within 200 feet of the discovery. DAHP and the affected tribes will be notified within 24 hours of the find.~~
- ~~The Confederate Tribes of the Umatilla Indian Reservation (CTUIR) and the Nez Perce Tribes have requested to be involved in the identification and treatment of cultural resources associated with the Project. The Applicant has invited members of both tribes to participate in the cultural resources inventory. The Applicant will ensure that the tribes are updated on the status of the Project on a mutually agreed upon interval.~~
- The direct Area of Potential Effect (APE) is defined to include the environmental permitting corridors, which contain the proposed wind turbine strings, access roads, utility lines, borrow pits, laydown and staging areas, and other associated infrastructure. The environmental permitting corridors also include the overall footprint of all the "final" proposed ground disturbing activities defined during the micrositing processes. A pedestrian survey of the APE will be conducted prior to any ground disturbance associated with the Project.

- The intent of the survey will be to document all historical and archaeological resources located in the Project area. The survey will generally conform to the Cultural Resources Survey Methodology, Appendix J of the final Environmental Impact Statement (EIS).
- The Applicant will submit Archeological Site Inventory Forms to the DAHP and Smithsonian Trinomials will be obtained prior to submittal of the final survey report.
- The Applicant will provide the final cultural resources survey report to the respective County, DAHP, and the affected Tribes at least 60 days prior to any ground disturbing activity on the project. The survey report will contain the appropriate Smithsonian numbers. The Applicant will provide both complete and redacted versions of the report in order to protect confidential information in accordance with RCW 27.53.070.
- Additional surveys performed during micrositeing will conform to the Cultural Resources Survey Methodology, Appendix J of the FEIS unless any changes are discussed with DAHP. Additional shovel probes will be conducted in High Probability Areas surveyed during micrositeing. If additional cultural resources are identified after the final cultural resources survey is provided according to the fourth measure above, but prior to ground disturbance, then that information and, if appropriate, mitigation measures directed toward those further resources will also be provided to DAHP, affected Tribes and the respective counties prior to ground disturbance activities.
- If the Applicant identifies an archaeological resource, the Applicant will make recommendations regarding the following: (1) is the resource assessed as eligible for listing or not on the National Register of Historic Places, (i.e. is it significant); (2) is it an archaeological site or an isolate; and (3) is it a cairn or grave of a Native Indian, or a glyptic or painted record of any tribe or peoples, or human remains.
- Avoidance of archaeological sites is the preferred method of mitigation.
- The DAHP and local Tribes must be consulted on appropriate mitigation for sites that cannot be avoided.

2. Revisions to the Draft EIS

- Resources that cannot be avoided will be evaluated for eligibility to be listed on the NRHP. If any cultural resources cannot be avoided, the Applicant will submit the appropriate Determination of Eligibility forms to DAHP for concurrence prior to any ground disturbing activity that would affect those cultural resources, regardless of the Applicant's recommendation for eligibility. A Determination of Eligibility form will be submitted to DAHP for Site WBS004. The Applicant will need to obtain concurrence with the recommendation from DAHP prior to any ground disturbing activity that would affect WBS004.
- Under Chapter 27.53 RCW, all precontact archaeological resources are protected. Significance, or eligibility, is not a requirement for protection. All historic resources should be considered potentially eligible and protected until eligibility has been determined.
- If DAHP concurs or determines that the resource is eligible or potentially eligible for listing on the National Register of Historic Places (NRHP), whether it is a site or an isolate, then the Applicant will obtain the appropriate archaeological excavation permit from DAHP prior to disturbing the resource if the resource cannot be avoided. This DAHP archaeological excavation permit allows the Applicant to conduct site testing or data recovery of the archaeological resource prior to its disturbance by pending construction.
- If an archaeological resource is recommended as not eligible for NRHP listing, the Applicant will need to obtain concurrence on this recommendation from DAHP. Avoidance of the resource by the Applicant would not be required if DAHP concurs with the recommendation that the archaeological resource is not eligible or significant.
- If DAHP concurs or determines the resource is identified as a cairn or grave of a Native Indian, or a glyptic or painted record of any tribe or people, or human remains, then the Applicant will not knowingly disturb the resource without a permit.
- A cultural resources sensitivity training for personnel working on Project construction will be conducted. The purpose of this training will be to instruct Project personnel on the sensitivity of cultural resources in the Project area, and introduce them to the tribe's perspective on potential impacts. DAHP staff and individuals from the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and the Nez Perce will be invited to contribute to this training.
- An on-site environmental manager will coordinate the protection of cultural resources that were identified through pre-construction surveys

and that are to be avoided. The on-site environmental manager will know the precise boundaries of the resources. The location of all cultural resources will remain confidential.

- The Applicant, in consultation with DAHP and Tribes, will prepare a Cultural Resources Monitoring, Mitigation and Inadvertent Discovery Plan (CRMMIDP) prior to the beginning of any earth moving activities at the project site. The CRMMIDP will address the monitoring of construction activities and will guide responses to discoveries during ground disturbance activities. The CRMMIDP will include but not be limited to the following provisions:
 - Upon the discovery of human remains, work within 200 feet of the discovery will cease, the local law enforcement, and County coroner would be notified in the most expeditious manner possible (Chapters 27.44, 68.50, and 68.60 RCW). Efforts will be taken to protect the area of the find from further disturbance. If the remains are determined to be non-forensic, the DAHP, and affected Tribes will be notified. Appropriate measures will be taken to ensure the site is protected from further disturbance until a treatment plan is agreed upon by all involved parties.
 - Upon the discovery of previously unrecorded cultural resources all work in the area must stop within 200 feet of the discovery. DAHP and the affected Tribes will be notified within 24 hours of the find.
- The Confederate Tribes of the Umatilla Indian Reservation (CTUIR) and the Nez Perce Tribe have requested to be involved in the identification and treatment of cultural resources associated with the Project. The Applicant has invited members of both Tribes to participate in the cultural resources inventory. The Applicant will ensure that the Tribes are updated on the status of the Project on a mutually agreed upon interval.

2.3 Chapter 3 - Required Permits and Consultation

Table 3-1 of the DEIS provides a list of those permits and approvals that may be required for the Project. The following revisions have been made to this table:

Table 3-1 Permits and Consultation that May be Required for the Project

Permit/Consultation	Agency	Activity	Before Construction	Before Operation	Notes
Clean Water Act Section 404 Permit	U.S. Army Corps of Engineers (USACE) – Walla Walla District	Discharge/impacts to jurisdictional wetlands and/or other waters of the U.S. (i.e., excavation, fill)	Yes	Yes	Detailed project drawings, including the location of the project in relation to wetlands, and other waterbodies are required with application submittal.
Clean Water Act Section 401 Water Quality Certification	WA Department of Ecology	Discharges/impacts to jurisdictional wetlands and/or other waters of the U.S.	Yes	Yes	If applicable, mitigation plans, operation and maintenance plans, stormwater site plans and restoration plans may need to be submitted along with the application.
National Pollutant Discharge Elimination System (NPDES) Construction General Permit (and State Stormwater Construction General Permit)	WA Department of Ecology	Ground disturbance exceeding 1 acre	Yes	Yes	Complete and submit a Notice of Intent (NOI) at least 30 days prior to commencing construction activities. Storm Water Pollution Prevention Plan (SWPPP) must be prepared prior to construction activities. SWPPP must include at a minimum: site description, site map, and a narrative description of BMPs that will be implemented before, during, and after construction.
Sand and Gravel General Permit – Portable Facilities (NPDES and State Waste Discharge General Permit)	WA Department of Ecology	<u>Wastewater discharges, including industrial storm water and process water, associated with portable concrete batch plants, asphalt batch plants, and rock crushers</u>	<u>Yes</u>	<u>N/A</u>	<u>Need to include a list identifying the major components of the portable operation with application. Permit coverage cannot be issued to a new facility unless applicable State Environmental Policy Act requirements have been satisfied.</u>

Table 3-1 Permits and Consultation that May be Required for the Project

Permit/Consultation	Agency	Activity	Before Construction	Before Operation	Notes
Hydraulic Project Approval/Joint Aquatic Resource Permit Application	WA Department of Fish and Wildlife	Activities that use, divert, obstruct, or change the natural flow or bed of any water in the state	Yes	N/A	A complete application package for an HPA must include a completed Joint Aquatic Resource Permit Application (JARPA) form, general plans for the overall project, and complete plans and specifications of the proposed work within the ordinary high water line in fresh waters of the state, complete plans and specifications for the proper protection of fish life, and notice of compliance with any applicable requirements of the State Environmental Policy Act (SEPA).
Well Construction and Operator's License	WA Department of Ecology	Construction of water wells, monitoring wells, geotechnical soil borings	Yes	N/A	A Notice of Intent to construct a well must be submitted to Ecology at least 72 hours prior to well construction.
Section 106 of National Historic Preservation Act	Department of Archaeology and Historic Preservation (DAHP)	Construction activities that may disrupt or destroy cultural or historic resources	Yes – may include potential surveys	N/A	Consultations with DAHP and any affected tribes must be undertaken
Endangered Species Act – Section 7 Consultations	NOAA Fisheries; U.S. Fish and Wildlife Service	Projects requiring Federal 404 permit or with the potential to adversely affect federally-listed species or their habitat	Yes	N/A	USFWS consultation required; potentially conduct biological surveys and prepare a Biological Assessment
Federal Aviation Administration (FAA) Form 7460: Notice of Proposed Construction or Alteration	Federal Aviation Administration	Erecting structures greater than 200 feet tall	Yes	N/A	Latitude and longitude need to be provided for each wind turbine tower, as well as ground elevation

Table 3-1 Permits and Consultation that May be Required for the Project

Permit/Consultation	Agency	Activity	Before Construction	Before Operation	Notes
General Order of Approval for Concrete Batch Plants	WA Department of Ecology, Eastern Regional Office	Operation of temporary onsite concrete batch plant	Yes	N/A	
General Order of Approval for Portable Rock Crushers	WA Department of Ecology	Operation of temporary onsite portable rock crushers	Yes	N/A	
Highway Access Permit	WA Department of Transportation	Any private access to U.S. 12 or SR 127	Yes	N/A	Site plan, vehicle trips generated, drainage plan, and property owner information are required with the permit application
Building Permit	Garfield County Public Works; Columbia County Public Works	Development and facility construction	Yes	N/A	Including other necessary County development approvals, such as water, septic, addressing, etc.
Conditional Use Permit	Garfield County Public Works; Columbia County Planning Department	Construction of a wind energy facility in agriculturally zoned area	Yes	N/A	
Right of Way Permit (includes both access and use)	Columbia County Public Works	Placement of utilities within County right of way and construction/modification of an approach to a County road	Yes	N/A	Requires the submittal of a site plan showing the site location and location of utilities to be installed in relation to the road, as well as right of way limits
Right of Way Use Permit	Garfield County Public Works	Placement of utilities within County right of way	Yes	N/A	Requires the submittal of a site plan showing right of way limits and a plan view
Right of Way Approach Permit	Garfield County Public Works	Construction or modification of an approach to a County road	Yes	N/A	Requires the submittal of a site plan showing right of way limits and a plan view

Table 3-1 Permits and Consultation that May be Required for the Project

Permit/Consultation	Agency	Activity	Before Construction	Before Operation	Notes
Haul Road Agreement	Garfield County Public Works	Hauling operations	Yes	N/A	Requires the completion of a Road Use plan which designates which County roads are to be used, vehicle trips/day, hours and dates of travel, gross weight loadings, vehicle types, etc.
Franchise Agreement/Bonding	Columbia County Public Works	Hauling operations/roadway usage	Yes	N/A	No haul road agreement exists in Columbia County; instead, a bonding requirement is placed. The franchise agreement/bonding are addressed in the CUP.
	Garfield County Public Works	Occupancy and Use Agreement	Yes	N/A	Requires a fully executed Franchise Agreement as per Garfield and Columbia counties' accommodation of utilities policies.
Critical Areas Review/Determination	Garfield County Public Works; Columbia County Planning Department	Working in or near critical areas	Yes	N/A	
<u>Archaeological Excavation Permit</u>	<u>Department of Archaeology & Historic Preservation</u>	<u>Excavating, altering, defacing, or removing archaeological objects or resources or Native Indian graves, cairns, or glyptic records per statutory requirements</u>	<u>Yes</u>	<u>N/A</u>	<u>Provide clear maps and graphics with application.</u>

Table 3-1 Permits and Consultation that May be Required for the Project

Permit/Consultation	Agency	Activity	Before Construction	Before Operation	Notes
<u>Surface Mining Reclamation Permit</u>	<u>WA Department of Natural Resources</u>	<u>A reclamation permit is required for quarries that: (1) results in more than 3 acres of mine-related disturbance, or (2) has a high-wall that is both higher than 30 feet and steeper than 45 degrees</u>	<u>N/A</u>	<u>Yes</u>	<u>The Applicant must submit an application for a surface mining reclamation permit, including a reclamation plan, and the Surface Mining Reclamation Permit Checklist.</u>

2.4 Chapter 4 - List of Preparers

Name	Role
Bill Richards, E & E	Project Manager
Katie Dixon, E & E	Assistant Project Manager Water Resources Land Use and Recreation
Tom Dildine, E & E	Visual Resources
Ashley LaForge, E & E	Geology/Soils
Cameron Fisher, E & E	Wetlands Aquatic Resources, Fish and Wildlife
Stacy Benjamin, SWCA	Wetlands Vegetation
Peter Feinberg, E & E David Young, WEST	Birds and Bats
Maureen O'Shea-Stone, E & E	Vegetation
Tom Seiner, E & E Mark Bastasch, CH2M Hill	Noise
Jessica Forbes, E & E	Climate and Air Quality Public Services and Utilities
Gulsum Rustemoglu, E & E	Traffic and Transportation
Ian Miller, E & E	Socioeconomics
Stephanie Buss, E & E	Health and Safety
Sandra Petney, E & E Stephanie Butler, SWCA	Cultural Resources
Al Hanson, E & E	GIS analyses and figure development
Anita Wahler, E & E	Editor
April Showers, E & E	Graphic Artist

2.5 Chapter 5 – References

Chapter 1

The following references were incomplete at the time of publishing the DEIS, or were added to address comments or other changes to the FEIS.

Energy Information Administration. 2009. Figure ES1. U.S. Electric Power Industry Net Generation, 2007. Available at:
<http://www.eia.doe.gov/cneaf/electricity/epa/figes1.html>

White et al. 1999. Scott. W. White and Gerald L. Kulcinski, Birth to Death Analysis of the Energy Payback Ratio and CO₂ Gas Emission rates form Coal, Fission, Wind and DT Fusion Electrical Power Plants, March 1998, Presented at the 6th IAEA Meeting on Fusion Power Plant Design and technology, Cultham, England, March 23-27, 1998. (Revised February 1999).

Wind Power Maps, 2009.
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Soils

The following references are new references for this section for the FEIS.

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<http://www.ecy.wa.gov/services/gis/maps/county/soils/soils.htm>
(accessed June 9, 2009).

Bird and Bat Resources

The following references were incomplete at the time of publishing the DEIS.

Baker, B.W., B.C. Cade, W.L. Mangus, and J.L. McMillen. 1995. Spatial Analysis of Sandhill Crane Nesting Habitat. *Journal of Wildlife Management* 59: 752-758.

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Bureau of Land Management (BLM). 2005. Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States, Appendix F: Ecoregions of the 11 Western States and Distribution by Ecoregion of Wind Energy Resources on BLM-Administered Lands Within Each State. Available at: http://windeis.anl.gov/documents/fpeis/maintext/Vol2/appendices/appendix_f/Vol2AppF_1.pdf

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Vegetation

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Washington Department of Natural Resources (WDNR). 2007. Natural Heritage Plan. Available at: http://www1.dnr.wa.gov/nhp/refdesk/plan/plan07_5e.pdf

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Noise

The following references are new references for the FEIS.

Bastasch, Mark. 2009. Personal communication to Garfield County and Puget Sound Energy, September 29, 2009.

Broner. 2007. Effects of Infrasound, Low-frequency Noise and ultrasound of People. Handbook of Noise and Vibration Control, Malcolm J. Crocker, ed. 2007

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Leventhall, Geoff. "Infrasound from wind turbines: fact, fiction or deception." Canadian Acoustics, Vol34, 29 – 32, 2006

Climate and Air Quality

The following references were incomplete at the time of publishing the DEIS.

eGrid. 2007. Year 2004 State Resource Mix, eGrid2006 Version 2.1, April 2007. Available at: <http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html>

Public Services and Utilities

The following is a new reference for the FEIS.

Fox, Chris. 2009. Hospital visit information from HR and Marengo construction: personal communication from Chris Fox, RES-Americas, Sept. 24, 2009.

Socioeconomics

The following revision has been made:

~~Tornberg~~ Takemura. 2009. Email correspondence from Jay Takemura, PSE, to Katie Dixon and Ian Miller, Ecology & Environment Inc., July 7, 2009.

The following references were incomplete at the time of publishing the DEIS:

Washington State Office of Financial Management (OFM). 2007. 2007 Data Book, County Profiles. Available at:
<http://www.ofm.wa.gov/databook/county/default.asp>

American Wind Energy Association (AWEA). 2007. U.S. Wind Energy Projects. Available at: <http://www.awea.org/projects>

3

Comments to DEIS and Responses

3.1 Introduction

The Draft Environmental Impact Statement (EIS) for the Project was issued on August 17, 2009. Garfield County invited written comments to the DEIS. The deadline for receipt of comments was a postmark by September 16, 2009.

During the comment period, Garfield County received comments from tribes, agencies, organizations, and individuals. Comments were submitted in letters, on comment sheets made available at the open houses, via the Garfield County website and by e-mail. Together, these are called “comment submissions” throughout this FEIS. A list of those who commented on the DEIS is provided in Table F3-1 at the end of this section. At the end of the DEIS comment period, Garfield County had received a total of 23 comment submissions.

3.2 Organization of this Section

This section contains the comment submissions and corresponding responses to the comments. Each comment submission – whether a letter or email – has been assigned a number (see list of comment submissions in Table F3-1). Within each comment submission, comments on specific issues have been designated using a line and a number in the margin. In most cases, a single comment submission contains numerous comments addressing a variety of topics.

As described in Washington Administrative Code (WAC) 197-11-560, possible options for responding to comments on a DEIS include modifying the alternatives or developing new alternatives, improving or modifying the analysis, making factual corrections, or explaining why the comments do not warrant further agency response citing the sources, authorities, or reasons that support the agency's response and, if appropriate, indicate those circumstances that would trigger agency reappraisal or further response.

In this regard, for each numbered comment we have provided additional information or elaboration on a topic previously discussed in the DEIS; noted how the Environmental Impact Statement (EIS) text has been revised to incorporate new information or factual corrections; referred the reader, when appropriate, to another comment response; explained why the comment does not warrant further response; or simply thanked the commenter when the commenter was stating an opinion.

3. Comments to the Draft EIS and Responses

Table F3-1 List of DEIS Commenters and Assigned Comment Submission Numbers

Name	Submission Number
Tribal	
Nez Perce Tribe, Vera Sonneck	SON1-29
State and Local Agencies	
Department of Archeology and Historic Preservation, Stephenie Kramer	DAH1-12
Washington Department of Fish and Wildlife, Michael Ritter	RIT1-6
Washington Department of Natural Resources, Ryan K. Cloud	CLO1-4
Columbia County Health System, Charles Button	BUT1-2
Individuals and Organizations	
Merle Jackson	JAC1
James L. Peterson Laura M. Peterson	PET1-24
Larabee Miller	MIL1-5
Karla Boggs	BOG1
Warren Talbott	TAL1
Gary L. Troyer	TRO1-6
Richard Ducharme Vicki Ducharme	DUC1-46
Candy Jones	JON1-15
Cecil Bramhall	BRA1
Jennie Dickinson	DIC1
Donald Howard	HOW1
Bob Hutchens	HUT1
Jim Kime	KIM1
Norm Passmore, D.D.S.	PAS1
Val Woodworth	WOD1
Eric Thorn	ETHO1-5
Elizabeth Thorn	ELTH1-18

3.3 Responses to Comments

Following each letter are the corresponding responses prepared by the EIS authors. Each response is numbered to correspond to its applicable comment.

3. Comments to the Draft EIS and Responses



September 15, 2009

Garfield County Public Works Department, Planning Division
Mr. Walker Grant Morgan, P.E., SEPA Official
PO Box 160
Pomeroy, WA 99347

Dear Mr. Morgan,

Thank you for providing the Draft Environmental Impact Statement (DEIS) for the Lower Snake River Wind Energy Project proposed for Garfield and Columbia Counties. The project is within the traditional territory of the Nez Perce Tribe (NPT). As you are aware, the Tribe has rights reserved by treaty, including fishing at all usual and accustomed stations, as well as hunting, gathering, and pasturing animals on open and unclaimed lands. The following comments from the Nez Perce Tribe Cultural Resource Program are preliminary and do not necessarily reflect the views of the Nez Perce Tribe.

SON1 The DEIS attempts to address archaeological and historical cultural resource issues, including historical contexts to evaluate the significance of any resources found within the project area. The Cultural Resource section of the document fails to address Historical Properties of Cultural and Religious Significance to Indian Tribes (HPCRSITs). Other property types, including traditional cultural properties and landscapes, are mentioned but not addressed in any significant way.

SON2 The cultural context provided in the document is completely inadequate to identify Tribal historic resources or evaluate their significance. Five tribes that historically used the project area are identified, including the Nez Perce Tribe, but there is no discussion of how each tribe used the project area, or which portions of the project area are associated with specific tribes. In addition, the ethnographic information provided for each tribe is vague and does not permit the reader to distinguish between them. In short, the cultural context would be greatly improved if it were written by tribal professionals familiar with the tribes and their distinct cultures.

SON3 I have attempted to summarize the major concerns with the cultural resource section of the DEIS below. This includes factual errors, omissions of critical information, and concerns about the general content of the document. I did not provide corrections to the numerous typographical and punctuation errors in this section.

- SON4 1) The proper terminology is Traditional Cultural Property, not traditional cultural place (2.17)
- SON5 2) Are only "identified and documented" historical properties significant? (2.17)



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3. Comments to the Draft EIS and Responses

- SON6 3) It is inappropriate to include an archaeological inventory report in a publicly available document. (2.17)
- SON7 4) The above report is only partial fulfillment of Section 106 compliance activities for BPA. (2.17)
- SON8 5) The report suggests that the entire archaeological survey will be completed and a draft report included with the Final EIS. This time frame is overly optimistic, and no cultural resource inventory report should become a publically available document. (2.17)
- SON9 6) The Cultural Context for the five area Indian tribes (Nez Perce, Palouse, Cayuse, Umatilla, and Walla Walla) is inadequate for the stated purpose. The information in Appendix 1 is only marginally better. (2.17)
- SON10 7) What are the boundaries of the "Environmental Permitting Corridors"? How does this compare with the "APE approximately 1.5 miles from the proposed turbine strings"? (2.17.1)
- SON11 8) How was it determined that the above APE was adequate for viewshed impacts? (2.17.1)
- SON12 9) People have lived on the Columbia Plateau for over 10,000 years – this is not an interpretation of archaeological data. Indigenous oral history states that ancestors of the current Plateau Tribes have occupied the area since time immemorial, not simply "Native people." (2.17.2.1)
- SON13 10) The entire section on the Precontact tribes and Ethnography needs to be expanded to include enough information about each Tribe to differentiate their historic and continuing uses of the project area. The ethnography sections also should provide enough information to make the five tribes culturally distinct. (2.17.2.1)
- SON14 11) Governor Isaac Stevens was not involved in the 1863 Nez Perce treaty, only the 1855 treaty. (2.17.2.1)
- SON15 12) The Nez Perce did not relinquish their claims to usual and accustomed areas in the 1863 treaty. (2.17.2.1)
- SON16 13) The Wallowa Band of Nez Percés were not required to move to "a reservation near Lapwai, Idaho" in 1877. They were ordered to move to the Nez Perce Reservation as defined in the 1863 treaty. (2.17.2.1)
- SON17 14) The 1877 war began after the US Cavalry and volunteers attacked the Wallowa band during the move to the 1863 reservation. (2.17.2.1)
- SON18 15) Chief Joseph was not the leader of the Nez Perce during the 1877 war, and the Wallowa band was not the only group of Nez Percés involved in the conflict. (2.17.2.1)
- SON19 16) The Palouse spoke a Sahaptian dialect of the Penutian language family, like the Nez Perce, Cayuse, Umatilla, and Walla Walla tribes. (2.17.2.1)
- SON20 17) A discussion of the Reservation Era should be expanded beyond the assertion that the tribes in the project area were forced onto reservations to make room for Euroamerican settlement. How did Indians continue to use the project area during the Reservation Era? (2.17.2.2)
- SON21 18) Explain the use of the Nez Perce Trail. According to this document, the trail was used by Euroamericans for 60 years, but there is no mention of earlier or contemporaneous Indian use. Where did the trail go? Is the cultural value of the trail limited to the few meters of tread that still exists? Historic trails were much wider than a single tread, and the trail had many associated resource areas and campsites along its length. Are these identified in the project area? (2.17.2.3)

3. Comments to the Draft EIS and Responses

- SON22 19) In Table 2-67, please explain the difference between "Not visible from aerial" and "No longer visible on aerial".
- SON23 20) Avoidance of known resources may not eliminate the impacts – it depends upon the resource and what conditions contribute to its cultural value. (20.17.3.1)
- SON24 21) The impacts to the Pomeroy Downtown Historic District should not be evaluated based solely on the impacts that could threaten its eligibility. The proposed windmill facilities will impact the viewshed and landscape, regardless of whether or not the impacts rise to the level of threatening the NRHP listing. (20.17.3.1)
- SON25 22) The goal of the cultural resource inventory should be to document all cultural resources within the project area as well as any that might be impacted by the project. It should not be limited to archaeological resources. (20.17.3.1)
- SON26 23) Will DAHP require that all sites be evaluated for NRHP eligibility, not just those that cannot be avoided? (20.17.3.1)
- SON27 24) Please reconcile the statements that "Avoidance of archaeological sites is the preferred method of mitigation; however, sites that cannot be avoided must be evaluated for the eligibility to be listed on the NRHP," with "During the construction all sites that have been determined to be eligible for the NRHP must be avoided." (20.17.3.1)
- SON28 25) In Section 2.17.3, the procedure for treating inadvertent discoveries of human remains needs to be rewritten to accurately reflect Washington State law. Section 2.17.2.4 has a much better discussion of this issue.
- SON29 The above comments addressing the historical and legal misinterpretations of the 1863 Treaty, as well as the circumstances giving rise to the Reservation Era, and the War of 1877 reflect the drafters' fundamental and unacceptable lack of knowledge about those topics, which only further underscores our insistence that Tribal professionals should be substantially involved in drafting those sections. I look forward to seeing these issues addressed before the acceptance of the Final EIS.

Again, thank you for providing the draft EIS for the NPT Cultural Resource Program to review. If you have any questions or concerns, please contact our Tribal Archaeologist, Patrick Baird, at (208) 621-3851, or keithb@nezperce.org.

Sincerely,


Vera Sonneck

Cultural Resource Program Director

Comment Responses:

SON1: Historic Properties of Cultural and Religious Significance to Indian Tribes (HPCRSITs) (NHPA 1992) concerns information that is sensitive and confidential to the Tribe. The Applicant and the Counties are willing to work with the Tribe to address this concern.

SON2: As noted in the previous response, through the consideration of HPCRSITs, the Applicant and the Counties will work with the Tribe to understand the appropriate cultural context.

3. Comments to the Draft EIS and Responses

SON3: See comment responses SON4 through SON29.

SON4: The EIS authors recognize the concept of Traditional Cultural Property. There may also be Traditional Cultural Places.

SON5: The author did not intend to imply that only "identified and documented" historical properties are significant. At DEIS 2-303, reference was made to DAHP's definition of cultural resources.

SON6: Comment noted; the mitigation measures at page 2-319 have been revised to require that a redacted cultural resources report be submitted to local and state agencies to ensure the protection of sensitive information.

SON7: The DEIS addresses environmental review by Garfield and Columbia Counties under the Washington State Environmental Policy Act. BPA remains responsible for its own Section 106 compliance activities.

SON8: Comment noted. See the response to DAHP comment DAHP3 above regarding the timing of the submittal of the report. See the response to SON6 regarding the protection of sensitive information.

SON9: The cultural context contained in the DEIS was written based upon a review of the literature available to the public. See, also, response to Nez Perce comment SON2 above.

SON10: As stated in the DEIS at 2-303, for purposes of analysis the APE for archaeological resources was expanded to include the environmental permitting corridors. The direct APE therefore consists of the environmental permitting corridors, which contain the proposed wind turbine strings, access roads, utility lines, borrow pits, lay down and staging areas, and other associated infrastructure. These are shown on DEIS Figure 1-7. The indirect APE of 1.5 miles from the proposed turbine strings was defined for the assessment of visual impacts to cultural resources. As discussed in the Methodology Technical Memorandum, Appendix J, any new areas added through the micrositing process will be incorporated into the APE for purposes of survey and mitigation.

SON11: Visual impacts for the purposes of the cultural resources assessment in the DEIS were assessed based on the topographical characteristics of the area and took into consideration the physical characteristics of the landforms (rolling hills with deep gulches restricting further views, except directionally along the alignment of creeks and rivers, draws, and seasonal streams) and the diminishing impact upon the viewshed of wind turbines beyond 1.5 miles. This 1.5 mile radius distance has been recommended by DAHP for another project in the same area and has also been used by consultants on similar wind power siting projects in Washington state.

3. Comments to the Draft EIS and Responses

SON12: Comment noted and this information will be considered.

SON13: See response to Nez Perce comment SON2 and SON 9 above.

SON14: The comment is correct; the DEIS has been corrected.

SON15: The comment is correct; the DEIS has been corrected.

SON16: The comment is correct; the DEIS has been corrected.

SON17: Comment noted; the statement in the DEIS is based on the published literature; we understand that Tribal interpretation of the stated events may differ.

SON18: Comment noted; the statement in the DEIS is based on the published literature; we understand that Tribal interpretation of the stated events may differ.

SON19: Comment noted; the language in the DEIS has been corrected.

SON20: As noted in the previous response, through the consideration of HPCRSITs, the Applicant will work with the Tribe to ensure that an appropriate description of Indian use of the project area during the Reservation Era is developed.

SON21: A field survey of the direct APE will determine if these trails or roads are still in existence. Please see the DEIS page 2-308.

SON22: In DEIS Table 2-67, there is not a difference in meaning between "not visible from aerial" and "no longer visible on aerial". The text throughout the table will be revised to "not visible from aerial".

SON23: Comment noted and as noted previously the Applicant will work with the Tribe to understand cultural context.

SON24: The Applicant shall comply with the regulations of DAHP and any local historic preservation commission as well as the requirements of any subsequent permit. See also response to DAHP11.

SON25: Comment noted. A survey methodology has been included as Appendix J to the FEIS. It clarifies that all types of cultural resources were inventoried.

SON26: Comment noted. Applicant shall consult with DAHP and comply with DAHP requirements.

SON27: The inconsistency reported has been corrected. See responses to DAHP comments DAHP1, and DAHP6 above.

3. Comments to the Draft EIS and Responses

SON28: Comment noted; the procedure in Section 2.17.3 has been revised to correspond to the discussion in Section 2.17.2.4.

SON29: As noted in the previous response, through the consideration of HPCRSITs, the Applicant will work with the Tribe to ensure that appropriate information is developed.

3. Comments to the Draft EIS and Responses



STATE OF WASHINGTON

DEPARTMENT OF ARCHAEOLOGY & HISTORIC PRESERVATION

1063 S. Capitol Way, Suite 106 • Olympia, Washington 98501
Mailing address: PO Box 48343 • Olympia, Washington 98504-8343
(360) 586-3065 • Fax Number (360) 586-3067 • Website: www.dahp.wa.gov

September 8, 2009

Mr. Walter G. Morgan
Garfield County SEPA Official
Garfield County
P.O. Box 160
Pomeroy, WA 99347-0160

Log: 090809-15-GA
Property: Lower Snake River Wind Energy Project Garfield County CUP#012609
Re: Archaeology – DEIS Comments

Dear Mr. Morgan:

We have reviewed the DEIS forwarded to our office for the proposed project referenced above. We offer the following comments:

- DAHP1 1. Please note that under state statute RCW 27.53, *all* pre-contact archaeological resources are protected. Significance, or Eligibility, is not a requirement for protection. If the applicant has identified resources that they feel are not significant, and that will be impacted, they will need to obtain concurrence on the Eligibility/Significance from DAHP **prior to any site disturbance**. In addition, all archaeological site forms must be submitted to DAHP and a Smithsonian Trinomial obtained *before* the report is submitted to us.
- DAHP2 2. We have not yet received the Methodology Memo from SWCA as requested by us in our August 27th phone conversation. At this time, it appears field methodology for the BPA substation portion of the project is substantially different than that used in the remainder of the project. We are unable to comment on the adequacy of field methodology of the larger project at this time, and request time in the future to do so.
- DAHP3 3. Because the archaeological survey report is not yet available, we recommend the following general condition: **DAHP and the affected Tribes must receive the final cultural resources survey report at least 60 days prior to any ground disturbing activity on the project.**
- DAHP4 4. Please note we consider the APE to contain staging and laydown areas as well as roads, utility lines and turbine footprints, and borrow areas. All of these areas should be surveyed for archaeological resources.
- DAHP5 5. Since Site WBS004 is being recommended as not significant, and avoidance is not recommended, we will need to receive a Determination of Eligibility (DOE) form in order to concur with the recommendation. Please send this **prior to any ground disturbing activities**.
- DAHP6 6. Regarding statements on page 2-319, we will need to receive DOE forms for any sites recommended as Not Eligible, if they are not going to be avoided, in order to concur with the recommendation, or inform the applicant of the need for an excavation permit. **An appropriate condition would read: if any cultural resources cannot be avoided, send DOE form(s) to DAHP for concurrence prior to any ground disturbing activity on the project.**



3. Comments to the Draft EIS and Responses

DAHP7 7. In light of the fact that the DEIS contains only "a discussion of impacts of resources identified through background research" (p. 2-303) and does not include a discussion of archaeological and historic sites identified during field survey, we are requesting a condition stating that: **Complete cultural resources survey reports must be sent to DAHP and the affected Tribes prior to the final EIS, and prior to any ground disturbing activities commencing, on any part of the project. Archaeological site inventory forms must be submitted to DAHP in advance of the final report, and Smithsonian numbers incorporated into the report text.**

DAHP8 8. We concur that training for personnel should be conducted. We would like to participate in that training.

DAHP9 9. Please add "DAHP Excavation Permit" to Table 3-1.

DAHP10 10. Section 2.17 indicates that cultural resource inventory work is currently underway. Built environment resources (buildings, structures, districts and objects) including trails, roads, and other linear features that are within the visual area of potential effect (APE) and are over 50 years old must be identified and recorded in DAHP's Historic Property Inventory Database. The database entries should be completed by professionals meeting National Park Service qualifications (see 36 CFR Part 61) for architecture, architectural history, or history.

DAHP11 11. Historic properties 50 years of age and older that are recorded with the database also must be evaluated for eligibility to the National Register of Historic Places, the Washington Heritage Register, and/or the Washington Heritage Barn Register. Since Pomeroy appears to be within the project's visual APE and the City is a Certified Local Government (CLG) with a local historic preservation program, it is recommended that the Pomeroy Historic Preservation Commission be contacted to assess whether the project will affect any locally designated properties in addition to the National Register listed historic district. Once receiving the Historic Property Inventory Database entries mentioned in paragraph 10, DAHP will determine Eligibility for each structure, based upon the provided information.

DAHP12 If any federal funds or permits are involved Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations, 36CFR800, must be followed. This is a separate process from SEPA and requires formal government-to-government consultation with the affected Tribes and this agency. We would appreciate receiving any correspondence or comments from concerned tribes or other parties concerning cultural resource issues that you receive.

These comments are based on the information available at the time of this review and on behalf of the State Historic Preservation Officer. Should additional information become available, our assessment may be revised. Thank you for the opportunity to comment on this project and we look forward to receiving the survey report. Should you have any questions, please feel free to contact me at (360) 586-3088 or Gretchen.Kaehler@dahp.wa.gov.

Sincerely,



Stephenie Kramer
Assistant State Archaeologist
(360) 586-3083
stephenie.kramer@dahp.wa.gov

cc: Keith Patrick Baird, Nez Perce
Stephanie Butler, SWCA



Comment Responses:

DAHP1: The mitigation measures presented on page 2-319 of the DEIS have been revised to include a requirement to request concurrence from DAHP on the eligibility of any resource that may impacted prior to any site disturbance.

DAHP2: Comment noted; the methodology has been included as Appendix J to the FEIS.

3. Comments to the Draft EIS and Responses

DAHP3: The mitigation measures presented on page 2-319 of the DEIS have been revised to include a requirement to submit the cultural resources report at least 60 days prior to any ground disturbing activity on the project. The report is to be submitted to the respective County, DAHP and affected Tribes.

DAHP4: The definition of the APE on page 2-303 has been revised to include all areas of temporary and permanent disturbance.

DAHP5: The mitigation measures presented on page 2-319 of the DEIS have been revised to include the requirements to seek a Determination of Eligibility for site WBSO04 prior to any ground disturbing activity that would affect WBS004.

DAHP6: The mitigation measures presented on page 2-319 of the DEIS have been revised to include a requirement to request concurrence from DAHP on the eligibility of any resource that may impacted prior to any site disturbance.

DAHP7: Comment noted; while we are not able to provide the cultural resource report in this FEIS, as noted in a previous response, a mitigation measure has been added to ensure that the report will be submitted 60 days prior to any ground disturbing activities for the project. Mitigation measures have also been revised to include a requirement for submittal of the Archeological site inventory forms to DAHP in advance of the submittal of the final report, and that the Smithsonian numbers be incorporated into the report text.

DAHP8: The mitigation measure appearing in the DEIS has been revised to include invitation of DAHP to contribute to the sensitivity training.

DAHP9: DEIS Table 3-1 has been revised to include the DAHO Excavation Permit.

DAHP10: Thank you for the comment. The Applicant must satisfy the statutory and regulatory requirements of Department of Archaeological and Historic Preservation regarding its Historic Property Inventory Database applicable to the Project.

DAHP11: Thank you for the comment. The Applicant must satisfy the statutory and regulatory requirements of Department of Archaeological and Historic Preservation regarding its Historic Property Inventory Database applicable to the Project. In response to this comment from DAHP, the Applicant and the County consulted the Pomeroy Historic Preservation Commission, which in a letter dated September 28, 2009, stated that “the proposed setback requirements were deemed sufficient to mitigate any perception of ‘looming’ towers/blades along the ridges bordering the northern and southern boundaries of the Historic District. While it was expected that turbines would be visible at a distance, especially from the east or west viewpoint, it was agreed that the visual impact would be acceptable. Visual simulations provided in Volume 2 of the Lower Snake River Wind Energy Project Environmental Impact Statement have been reviewed and made available

3. Comments to the Draft EIS and Responses

at City Hall. The Pomeroy Historic Preservation Commission has not received any negative feedback regarding the simulations and is in agreement with the turbine placement as agreed to by the Garfield County SEPA Official.”

DAHP12: Comment noted; this document is prepared to comply with Washington State Environmental Policy Act. This Project is not subject to Section 106 review because it is not federally-funded.

3. Comments to the Draft EIS and Responses



State of Washington
Department of Fish and Wildlife
Habitat Program - Major Projects Division - Wind and Water Energy Section

Mailing Address: 2620 North Commercial Avenue (509) 543-3319
Main Office Location: 2620 North Commercial Avenue - Pasco, WA 99301

MWR-16-09

September 16, 2009

Grant Morgan
Garfield County Public Works Department
Planning Division
P.O. Box 160
Pomeroy, WA 99347

SUBJECT: DRAFT Environmental Impact Statement (EIS), Lower Snake River Wind Energy Project, Columbia and Garfield Counties, WA

Dear Mr. Morgan:

The Washington Department of Fish and Wildlife (WDFW) has reviewed the above-referenced documents and offers the following comments at this time. Other comments may be offered as the project progresses.

RIT3 The *Draft* EIS is well written, comprehensive, and sensitive to the natural resources and socio-economic issues related to the development of an extremely large scale wind energy project in rural southeastern Washington. It is also consistent with the methodologies in the 2009 WDFW Wind Power Guidelines. We encourage the developer and counties to continue to utilize these guidelines to avoid, minimize and mitigate for impacts to natural resources.

RIT4 Overall, the project encompasses approximately 124,000 acres in Columbia and Garfield Counties on which approximately 795 turbines totaling 1,432-megawatts are proposed to be constructed. The *Draft* EIS presents four wind resource areas (WRA; Tucannon, Oliphant, Kuhl, Dutch Flats) for the identification of proposed roads, turbines corridors, transmission lines, substations, etc. and subsequent assessment of potential impacts to natural resources. Cumulatively, these four WRAs are comprised of 55-76% cropland (winter wheat). Native habitats (shrubsteppe, bunchgrass, etc.) are present but comprise considerably smaller percentages. With a project of this magnitude, we encourage the developer to site turbines, construct roads, etc., on agricultural lands to minimized

3. Comments to the Draft EIS and Responses

temporary and permanent impacts to native habitats and resident and migratory animal species. As described, the proposed project will result in approximately 2,750 acres of temporary impacts and approximately 600 acres of permanent impacts.

RIT5 We understand that the project will be developed in phases and that one phase may include more than one WRA. We are hopeful that this approach will allow the developer, the counties, WDFW, and other interested stakeholders to cooperatively address and resolve any sensitive issues in this multi-year construction process.

RIT2 Based on our meeting on September 11, 2009, we are in agreement with Blue Mountain Audubon that night-time radar studies be initiated to determine seasonal and migrational use of the project area by bird species. Additionally, we would like to reiterate that mitigation be imposed on a per phase basis and not be imposed post-construction (of the entire project).

RIT1 Hunting is an important wildlife management tool for WDFW and is an integral part of the culture and community experience of the proposed project area. Much of the project area has been open to general hunting and we recommend that the developer work closely with the landowners and WDFW to maintain public hunting on these lands. Allowing public access and continuing to allow hunting in these areas gives continued recreational opportunity to the public to enjoy Washington's natural resources and allows WDFW the ability to manage and control wildlife populations and minimize or control wildlife/human conflict in damage or depredation situations.

RIT6 While the emphasis of nearly all wind power projects is the assessment of potential impacts to birds, bats and vegetation through rigorous data collection and analysis, we continue to be interested in the impacts of wind energy development on deer and elk. The proposed project area and surrounding lands are utilized by some of the most important mule deer populations. We are interested in any opportunity to collaboratively address such issues as population dynamics, displacement, reoccupation, migration, etc. of mule deer in the project area.

We look forward to working with all interested parties through the development of this project.

Sincerely,



Michael Ritter
Wind Mitigation Biologist

Comment Responses:

RIT1: Comment has been noted. The DEIS acknowledges the importance of maintaining hunting access for wildlife management. The Applicant is proposing to implement a hunting program at the LSRWEP, similar to the one's implemented at its other wind projects. Details on continued access for hunting and management are provided in the DEIS at pages 2-230, 2-235, and 2-245.

RIT2: WDFW and Blue Mountain Audubon Society expressed to the applicant and the County their interest in gathering more data regarding nocturnal passerine

3. Comments to the Draft EIS and Responses

migratory habits in the Blue Mountain region of Garfield and Columbia Counties. PSE is willing to participate in such a research study and will coordinate with WDFW and other appropriate agencies/parties in regards to appropriate scope and timing of such research.

Phasing of Project mitigation is discussed at RIT5.

RIT3: Comment has been noted. The Applicant and Counties shall continue to use the 2009 WDFW Wind Power Guidelines to avoid, minimize, and mitigate for impacts to natural resources.

RIT4: Comment noted. As noted in the DEIS in various sections, the Applicant has sited a majority of the Project on agricultural lands and has committed to minimizing temporary and permanent impacts to native habitat and to animal species according to the 2009 WDFW Wind Power Guidelines.

RIT5: PSE agrees that any Project mitigation should be planned for and implemented for each developmental phase of the Project and not post-construction of the entire Project.

RIT6: Figure 2-9 of the DEIS identifies the WDFW priority habitat for mule deer in Garfield and Columbia Counties. Potential impacts to large game are also discussed on DEIS page 2-86. The DEIS did not identify probable significant adverse impacts to the mule deer populations. The Applicant, however, is willing to explore topics related to mule deer and other big game populations with WDFW as noted in the comment letter.

3. Comments to the Draft EIS and Responses



WASHINGTON STATE DEPARTMENT OF
Natural Resources
Peter Goldmark - Commissioner of Public Lands

RECEIVED
9/15/09

Caring for
your natural resources
... now and forever

September 15, 2009

Garfield County Public Works, Planning Division
Atten: Walter Grant Morgan, P.E., SEPA Official
PO Box 160
Pomeroy, WA 99347

RE: **Comments Relating To "Draft Environmental Impact Statement" for CUP #012609**

Dear Mr. Morgan:

CLO1 Thank you for the opportunity to comment on the Lower Snake River Wind Energy Project Garfield County CUP #012609 Draft Environmental Impact Statement. We believe this is an important part of successful growth and planning for alternative energy facilities.

The Washington State Department of Natural Resources (DNR) has been involved with multiple wind power projects through out the State of Washington. The following recommendations are based upon experience we've encountered as a landowner, leasing property for wind power development.

Property Set-Backs

Currently Proposed (Garfield County): Project Area Boundary. Setbacks from Wind Energy Tower project area boundaries shall be the total extended height of the Wind Energy Tower plus hundred feet, unless waived in writing by an affected property owner.

Currently Proposed (Columbia County): Project Area Boundary. Setbacks from Wind Energy Tower project area boundaries shall be 0.25 miles.

CLO2 Recommend: Project Area Boundary. Setbacks from Wind Energy Tower project area boundaries shall be four (4) times the extended height of the Wind Energy Tower, unless waived in writing by an affected property owner.

This change would provide protection to neighboring land owners outside of the project boundary by ensuring a project does not limit or encumber neighboring property owner's wind resources. Wind developers operating in other counties without adequate set-backs have maximized their own project's development by placing turbines adjacent to neighboring property lines. Since wind turbine spacing can require separation of up to 2,000 feet, these placements can render the

3. Comments to the Draft EIS and Responses

neighboring properties worthless for further wind-power development due to the turbulence created from a turbine.

Conditions of Approval (Construction)

CLO3 Recommend: A Reclamation Plan shall be submitted with the following minimum requirements: Reclamation must occur within twelve (12) months of completing construction, repowering, or decommissioning of Project Improvements, and within three (3) months of any ground disturbing activity during the Operation Period, and must be done in accordance with the reclamation plan requirements outlined below, unless otherwise specified in the Reclamation Plan. The plan should identify the type and schedule of reclamation, which shall be done at the completion of each phase of construction and/or development, so as to keep the un-reclaimed area to the minimum necessary for efficient operations. The reclamation plan shall include a soil erosion plan for all disturbed areas within the Premises, including, but not limited to roads, and wind turbine sites. The soil erosion plan should address potential wind and water erosion concerns and shall identify erosion control features (culverts, sealants, catch basins). If wind developer is not a Regulated Utility the reclamation plan must include estimates of reclamation costs, which will be updated once every five (5) years.

1. All topsoil removed for the construction of roads and project improvements will be stockpiled on the Premises in a location where it will not be disturbed. Soil shall be spread no deeper than four (4) feet deep (in low berms) reseeded, and planted to establish growth of native grasses.
2. Reclamation will occur after construction of project improvements, upon completion of repairs, at removal of improvements, and at decommissioning. All reclamation must be begun within 30 days of surface disturbance unless otherwise stated in an agreement.
3. Remove project improvements no longer in use, any garbage, equipment, any oil spilled, asphalt, etc. Underground structures will be removed to four feet below restored grade level. Underground structures below four feet may be left in place.
4. Reclaim all disturbed areas, all associated roads and all disturbed slopes.
5. Return all slopes to a 3:1 slope maximum.
6. After slopes have been returned, a minimum 6" of topsoil comprised of stockpiled native topsoil will be placed on the slope and all disturbed areas.
7. The topsoil will be compacted after placement.

3. Comments to the Draft EIS and Responses

8. The disturbed area will be seeded using a seed mix and rate of application sufficient to provide soil and site protection, in accordance with to Natural Resource Conservation Service (NRCS) standards.
9. All reclamation must be started prior to April 1 or after November 15 to ensure sufficient soil moisture for seedling establishment. The Landowner or County will inspect the site after two years to determine if seedlings have been sufficiently established.

The reclamation plan will ensure that environmental factors such as soil and water will be protected after construction and decommissioning. Soil disturbance allows the opportunity for erosion and an invasion of noxious weeds.

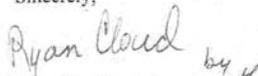
Bonding:

CLO4 Recommend: A bond shall be furnished to the county in the amount sufficient to the amount of decommissioning and road replacement in the event that the developer damages roads during transportation of materials.

This will ensure that the county is protected in the event that roads are damaged during construction activities. In many cases the weight of components transported over county roads has deteriorated the road. A bond secured in place will ensure the ability to rebuild the road as well as to ensure decommissioning and reclamation may take place.

Once again thank you for the opportunity to comment regarding the Draft Environmental Impact Statement. If you have any question please feel to call me at 509-545-8546 ext. 6.

Sincerely,


Ryan K. Cloud
Dayton Unit Land Manager

C: Mark Bohnet, Snake River District Manager
Milt Johnston, Assistant Region Manager
Chad Unland, Special Use Leasing Manager



Comment Responses:

CLO1: Comment has been noted.

CLO2: See response to comment PET6. Garfield County, like Columbia County, has established setbacks through its local legislative process, which are imposed as development standards upon a wind turbine facility project in any conditional use permit.

CLO3: Comment noted. As explained in DEIS Section 2.8.2.1, page 2-129, the Applicant will provide noxious weed management and re-vegetation actions to mitigate impacts to vegetation as a result of the Project construction and operation. In addition, both Garfield and Columbia Counties address decommissioning requirements under their ordinances regulating the development of wind energy projects. Section 1.05.080(8) of the Garfield County Zoning Ordinance requires the Applicant to submit a decommissioning plan prior to the beginning of construction.

3. Comments to the Draft EIS and Responses

Each section of Chapter 2 of the DEIS discusses the Project's end of design life impacts, including decommissioning. The appropriate permitting authorities' shall be consulted regarding development of decommissioning and reclamation plans.

CLO4: Comments noted. Both Garfield and Columbia Counties have requirements for the provision of financial instruments to ensure that monies are available for decommissioning of the Project at the end of its lifetime. See also response to comment DUC6.



3. Comments to the Draft EIS and Responses

SEP-15-2009 10:03 FROM:COLUMBIA COUNTY HEAL 509-382-3200

10:59:15088931912

P. 2/3



September 14, 2009

1012 S. 3rd Street
Dayton, WA 99328

(509) 382-2531
Fax: (509) 382-3209

www.cchd-wa.org

Walter Grant Morgan, P.E., SEPA
Garfield County Public Works Department, Planning Division
P.O. Box 160
Pomeroy, WA 99347

Dear Mr. Morgan and Whomever this Concerns:

Dayton
General Hospital
1012 S. 3rd Street
Dayton, WA 99328

(509) 382-2531
Fax: (509) 382-3209

Columbia County Health System (CCHS) supports the efforts of the Lower Snake River Wind Energy Project to strengthen economic development as well as providing a clean renewable energy source.

BUT 1

Booker Rest Home
1012 S. 3rd Street
Dayton, WA 99328

(509) 382-3212
Fax: (509) 382-3217

CCHS is a healthcare facility which includes a nursing home, two rural health clinics and a hospital. We are situated to provide high quality healthcare to the residents of Columbia and parts of Walla Walla Counties as well as people spending shorter periods of time in our area. Over the last two years, we have worked hard to improve the operations of our public hospital district and have strengthened our support from the community. Our business has increased in many areas and the facilities can handle more volume except in one area which is the emergency room (ER). We currently have only one room and often times we can get two to three patients here at the same time causing the patients to wait for a room or to be moved a significant distance away from the ER location for care. Emergency room care is not a profitable portion of hospital business but is extremely critical to the community.

BUT 2

Columbia
Family Clinic
1012 S. 3rd Street
Dayton, WA 99328

(509) 382-3200
Fax: (509) 382-2748

Waitsburg Clinic
235 Main Street
P.O. Box 247
Waitsburg, WA 99361

(509) 337-6311
Fax: (509) 337-6011

The proposed Lower Snake River wind energy project has the potential to increase the demand for hospital services and in particular for emergency services with increased traffic, including equipment delivery and the influx of workers both for the lengthy construction period and with an increase in permanent maintenance staff. This impact is exacerbated when cumulative impacts are considered such as the Bonneville transmission line project and other wind energy projects. We are fortunate to have a room next to the current ER that could be converted into this second treatment room. Estimated costs to make this space functional and equipped as an ER is \$350,000. While this second emergency room is necessary to maintain an adequate level of service, the public hospital district does not have the resources to add this second room. We have recently spent the remainder of our construction funds on the addition of adding CT and MRI Services which have greatly improved radiology services to the community.

3. Comments to the Draft EIS and Responses

SEP-15-2009 10:03 AM FROM: COLUMBIA COUNTY NEPL 509-382-3200

TO: SP1828@STATE

P.010

CCHS
1012 S. 1st Street
Dayton, WA 99328

(509) 382-2531
Fax: (509) 382-2500

www.cchd.com

Dayton
General Hospital
1012 S. 1st Street
Dayton, WA 99328

(509) 382-2531
Fax: (509) 382-3200

Banker Rest Home
1012 S. 1st Street
Dayton, WA 99328

(509) 382-3212
Fax: (509) 382-3217

Columbia
Family Clinic
1012 S. 1st Street
Dayton, WA 99328

(509) 382-3200
Fax: (509) 382-2700

Wahsbury Clinic
235 Main Street
P.O. Box 242
Wahsbury, WA 99361

(509) 337-6811
Fax: (509) 337-6911

In our opinion, the Draft EIS does not adequately address this gap in the ability to provide the necessary level of emergency services.

CCHS is willing to provide data, including architectural drawings and ER statistics justifying our request.

Sincerely,



Charles Dutton
Chief Executive Officer

Comment Response:

BUT1: Comment has been noted.

BUT2: Following receipt of this comment, data was reviewed from the two-year construction period of three wind projects in Columbia County, including the Hopkins Wind Energy Facility, and the Marengo I and II projects (Fox, 2009). During this two-year period, 114 turbines were installed for an approximate 205 MW. During that time, there were 7 total work-related injury incidents. Of these seven incidents, six of the events resulted in a trip to the Dayton Convenient Care Clinic, and one reported to the Dayton Hospital Emergency Room. Using this data, it is anticipated that the construction of each of the phases for the LSRWEP could result in approximately the same number of incidents. Assuming that four 2-year/250 MW phases will be staggered over a five-year period, it is estimated that approximately 28 incidents could occur over the entire construction period for the Project. Assuming the worst-case and all incidents result in trips to the Dayton Hospital Emergency Room, this could result in an average of 6 trips per

3. Comments to the Draft EIS and Responses

year over the five-year construction period. Given these assumptions, the Project is unlikely to have any adverse impact on the hospital district's ability to deliver emergency medical services that needs to be mitigated.

The DEIS at 2-299 includes the requirement that the Project Applicant develop a Project Emergency Response Plan and Fire and Mitigation Plan in coordination with emergency care responders. The site-specific plans will be coordinated with the local emergency response organizations.

An additional paragraph is added to the FEIS at page 2-193: “Columbia County Health System operates a facility that includes a single emergency room suite. On occasion, it is necessary for the Columbia County Hospital to direct emergency patients to other regional facilities when the Columbia County emergency room is occupied, and mutual aid agreements are in place with other regional providers to receive these overflow patients.”

Also, the DEIS at Table 2-62 estimates Year 1 and steady state (at full build-out) tax revenues to the hospital district as a result of construction of the LSR in Columbia County. Considering the projected \$350,000 capital cost of the addition of an emergency room, the projected revenues to the hospital district as a result of the LSR Project should be adequate to service the debt on any necessary bond to construct the new addition.

3. Comments to the Draft EIS and Responses

RECEIVED
9/10/09

9/17/2009

Walter Grant Morgan, PE.
Garfield County Engineer
Public Works Director

Re: Lower Snake River Wind Energy Project "DEIS"

JAC1

I am in favor of the preferred alternative.
I have reviewed the referenced DEIS and
find it a very thorough and complete
document.

Mark Jackson
402 S 1ST ST
Dayton, WA 99328

Comment Response:

JAC1: Comment has been noted.

3. Comments to the Draft EIS and Responses

September 12, 2009

Garfield County Public Works Department, Planning Division
Walter Grant Morgan, P. S.
SEPA Official
PO Box 160
Pomeroy, WA 99347

Re: Comments on the Lower Snake River Wind Energy Project (LSRWEP) Garfield County CUP #012609

Dear Mr. Morgan,

PET 9

Looking Southeast from our home we see 43 wind turbines from the Hopkins Ridge wind energy project. They are about three miles away. At night the flashing red lights are an ugly demonstration of the industrialization of Columbia County. At our expense and labor we have planted trees all around our property trying to minimize the negative visual impacts of these turbines and those turbines we fear will be coming in the future.

PET 10

The proposed turbine strings for the LSRWEP will completely surround us at 124 Tucannon Road. Many of these turbines appear to be positioned within one half of a mile from our home. We are greatly alarmed about the certain decline of our property value and the negative health and quality of life impacts from noise, shadows, and shadow flicker. The negative health impacts of shadows and shadow flicker are well established and well known to the wind energy development companies. A partial compilation of relevant and essential reference documentation was submitted March 7, 2009. The DEIS Viewpoints on the Tucannon Road southeast of the intersection with U.S. Highway 12 do not display the dominant and intrusive impact of the wind turbines on established residences. This is a critical deficiency, and prevents a thorough impact analysis and/or development of mitigation alternatives. Trees do reduce visual impacts, but acoustic experts say that in these environments, the trees do not do much to eliminate turbine noise.

PET 11

RECOMMENDATION 1. From a viewpoint located at the northeast corner of our property on Tucannon Road, provide photographs, looking directly south, for Existing Condition and Simulated Condition.

PET 22

RECOMMENDATION 2. From the same viewpoint for Recommendation 1, provide photographs, looking directly north, for Existing Condition and Simulated Condition.

PET 23

RECOMMENDATION 3. When the "Degree of Contrast" is "Strong", the applicant shall assist impacted non-participating residents in planting trees to mitigate negative visual impacts.

3. Comments to the Draft EIS and Responses

- PET14 RECOMMENDATION 8. Do not place turbines within raptor hunting ranges of rivers and streams within the LSRWEP.
- PET15 The Technical Advisory Committee for the Hopkins Ridge Project (TAC) has conducted two surveys, has recently discontinued further avian and bat monitoring, and will discontinue meeting until/unless extraordinary events occur. (Hopkins Ridge Project Technical Advisory Committee (TAC) MEETING MINUTES, APRIL 30, 2009). The TAC focused on avian and bat fatalities. Validated census information on the actual populations of the birds and bats in our region has not been presented.
- PET16 The Hopkins Ridge TAC has ceased to function after two surveys. The kill rate of all birds per turbine per year has grown from 2.21 to 5.39, and the kill rate of bats per turbine per year has grown from 1.13 to 2.50. (See references cited above.) This is clear evidence of an alarming, unsustainable and unacceptable trend.
- PET17 RECOMMENDATION 9. Conduct a current avian and bat census within the Hopkins Ridge project area and compare that census with a census taken before the Hopkins Ridge project was developed. This comparative data of actual populations is essential to guide future mitigation activities and needs to be done before construction begins for the LSRWEP.
- PET1 Appendix H of the DEIS acknowledges that the Dayton School District will lose some state funding due to the way Washington state disperses Levy Equalization funds. The DEIS suggests, on page H-63, that "If sufficient notice is provided then school districts can proactively budget to accommodate any future likely changes..." This declaration that the schools should just accept this turbine construction caused loss of income is a major concern. The school districts, at some time in the future will likely get more levy income, but in the meantime, the current kids should not be deprived of educational funds (i.e. punished) with the expectation that future students may receive some benefit.
- PET2 RECOMMENDATION 10. When construction starts for Wind Resource Areas within the LSRWEP, immediately provide mitigation funds to the appropriate school district to at least replace lost Levy Equalization funds.
- PET18 A significant deficiency exists in the DEIS. A critical appendix, Appendix C, dealing with wildlife baseline studies is incomplete, lacks major figures, and omits the sections containing the Executive Summary and Conclusion and Recommendations. In fact, Section C is replete with the declaration "WORKING DRAFT – NOT FOR DISTRIBUTION DO NOT CITE".
- PET19 RECOMMENDATION 11. Because of the importance of Wildlife Baseline Studies, the DEIS comment period shall be extended so that the general public can review and comment on the final revised and distributed Section C. Public comments on the DEIS will be accepted up to 30 days following public distribution of the full and complete Section C.

3. Comments to the Draft EIS and Responses

- PET 3 Washington State counties and cities are denied significant tax revenue because of sales tax exemptions for machinery and equipment used in generating electricity from renewable sources. This is a major loss of revenue. Further revenue loss is incurred because the local value of constructed facilities is arbitrarily reduced by a state agency. This value reduction is a hardship on the local regions because the taxable base for constructed facilities is artificially low, and thus the collectable real estate taxes are lower than those based on true cost. Additional complexities exist regarding the depreciation applied to erected turbines. Even though the turbine value has been marked down, there is a significant increase in the taxable real property in a county. The turbine operators depreciate the turbines over a defined period. In theory, at the end of the defined period the turbine value is essentially zero. Does this mean then, that at the end of the depreciation schedule, the turbine value on the county's roll becomes zero, and the associated real taxes to the county for that turbine also become zero?
- PET 4
- PET 5 RECOMMENDATION 12. For a 25 year period, prepare a tax table that shows by year what the taxable base is for a representative turbine. Fully explain the tax consequences when a turbine is no longer functioning and generating power.
- PET 20 For completeness of an energy flow analysis, information is needed not only for proposed power production, but also for power consumption of the LSRWEP. Power is continuously needed for such things as monitoring and controlling equipment, instrumentation and lighting. At times there will be power consumption not power generation by the LSRWEP.
- PET 21 RECOMMENDATION 13. Describe the operational power requirements for the LSRWEP from total quiet mode to full production mode.

Sincerely,

James L. Peterson,
124 Tucannon Road
Dayton, WA 99328
509-629-2779
509-382-4148

Laura M. Peterson

Comment Responses:

PET1: The DEIS recognizes that there may be state funding short falls in the short-term at page 2-283. However, the school districts have the ability to modify levies to cover short-term losses and recognize long-term gains.

Levy equalization funding is a resource provided to districts that have very low assessed land valuation base. When turbines come on-line, the county assessed value rises, such that the district no longer meets the criteria for levy equalization funding. The gap in funding can be planned for and appropriately addressed to ensure neither a reduction in funding or an inequitable distribution of responsibility for those amounts. Project proponent should work with district administration to schedule and coordinate amounts in levy that are run such that rates/schedules can be set in advance to account for the impending addition of revenue from increased assessed valuation of the project. This reduces the actual amount of levy borne by existing assessed land. PSE will rapidly become the largest single taxpayer in both Columbia and Garfield Counties as a result of the LSR Project.

3. Comments to the Draft EIS and Responses

Furthermore, during the EIS scoping period and during development of the DEIS, both Pomeroy and Dayton School Administrators were directly involved in discussions regarding anticipated short-term funding short falls. Through coordination between school districts, the Counties, and the Applicant, all parties agree that an on-going effort will be made to reduce these impacts by appropriate planning and timing of project assessments and valuation. Because these impacts are viewed by the school districts to be minimal and short-term, no requests for funding those gaps were made.

PET2: See comment response PET1.

PET3: Sales tax exemption of renewable energy-related equipment is a matter reserved for the Washington Legislature and is not within the jurisdiction of Garfield County. See RCW 82.08.02567.

PET4: Under the central assessment method, the Department of Revenue determines the taxable value of the utility's entire portfolio of operating assets within the State. The taxable value of a particular piece of equipment within a particular county is determined by an apportionment process. In its simplest form, the taxable value of the portfolio is assigned to each asset by the following ratio: gross cost of the piece of equipment over the gross cost of the portfolio. Then, the taxable value of the portfolio is multiplied by the ratio to determine the taxable value of the piece of equipment. As this process indicates, the idiosyncrasies of the particular piece of equipment (e.g. age, life, repair history, location, etc.) do not factor into the taxable value in any direct fashion.

On a year-to-year basis, the ratio can fluctuate, but some taxable value will always be assigned to the piece of equipment by virtue of the formula. With plant upgrades and retrofits, new assets put in place and construction work in progress being completed within and without the county, the taxable basis within a given county will fluctuate on a year-to-year basis. However, the value of the tax basis to the county will not fall linearly according to a straight line depreciation of that taxable basis. This is because of the central assessment method that considers the utility's entire portfolio of assets across the entire state and dynamic changes. This effectively means that the turbine value (portion of personal property with the ad valorem tax basis) remains more constant over time (see tables below), and will not be reduced in an accelerated or straight line fashion, but will continue to generate a more constant stream of annual assessed value to the county (both personal and real property) until the assets are completely disposed of in some fashion (i.e., dismantled or decommissioned).

It should be noted that if the turbine is dismantled the owners of the land would still pay property taxes on the real property owned

Table PET 4a Example of Project Value Assessment For a Company Regulated by the Washington State Department of Revenue (DOR) - Central Assessment

Note: All values in Millions of dollars.

Year 0 - Prior to Project Construction			Year 1 of Project Tax Assessment			Year 12 of Project Tax Assessment			Year 25 of Project Tax Assessment		
			* Add \$20M wind farm in County C			* Assumed to be the half way point for wind farm depreciation			* \$20M wind farm is fully depreciated		
DOR appraisal	\$	500	DOR appraisal	\$	520	DOR appraisal	\$	510	DOR appraisal	\$	500
Gross cost	\$	900	Gross cost	\$	920	Gross cost	\$	920	Gross cost	\$	920
	Gross cost	Fair Market Value Allocated		Gross cost	Fair Market Value Allocated		Gross cost	Fair Market Value Allocated		Gross cost	Fair Market Value Allocated
County A	\$ 450	\$ 250	County A	\$ 450	\$ 254.3	County A	\$ 450	\$ 249.5	County A	\$ 450	\$ 244.6
County B	\$ 450	\$ 250	County B	\$ 450	\$ 254.3	County B	\$ 450	\$ 249.5	County B	\$ 450	\$ 244.6
County C	\$ -	\$ -	County C	\$ 20	\$ 11.3	County C	\$ 20	\$ 11.1	County C	\$ 20	\$ 10.9
Total Company	\$ 900	\$ 500	Total Company	\$ 920	\$ 520	Total Company	\$ 920	\$ 510	Total Company	\$ 920	\$ 500

Table PET4b: Example of Project Value Assessment for a Company only Regulated by the Local Government - Local County Assessment

Note: All values in Millions of dollars.

LOCAL ASSESSMENT FOR COUNTY C

Year 0 - Prior to Project Construction		Year 1 of Project Tax Assessment		Year 12 of Project Tax Assessment		Year 25 of Project Tax Assessment	
		* Add \$20M wind farm in County C		* Assumed to be the half way point for wind farm depreciation		* \$20M wind farm is fully depreciated and its value is basically 0	
Gross cost	n/a	Gross cost	\$ 20	Gross cost	\$ 20	Gross cost	\$ 20
Accumulated depreciation	n/a	Accumulated depreciation	\$ -	Accumulated depreciation	\$ 10	Accumulated depreciation	\$ 20
County appraisal	n/a	County appraisal	\$ 20	County appraisal	\$ 10	County appraisal	\$ -

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3. Comments to the Draft EIS and Responses

PET5: See comment response PET4.

PET6: Setbacks in Columbia County are established by county code as developed through the local legislative process and are imposed as development standards upon a Project in any conditional use permit.

PET7: The Department of Ecology noise regulations at WAC Chapter 173-60 apply to noise emission entering another property. OSHA noise standards address safe work exposure limits. The OSHA standards triggering action or response are higher (85 dBA) than the state standards in WAC Chapter 173-60 that will be applied to the project as the mitigation standard. A new paragraph has been added to the FEIS at p. 2-298 that describes why wind turbines are not a significant generator of low-frequency noise and, therefore, low-frequency noise measurements, the C-weighted scale and development of a low-frequency noise standard not appropriate for wind energy facility projects (Hessler et al. 2008; Hessler 2009).

PET8: Wind turbines produce noise. Ambient measurements are not necessary to acknowledge or establish that fact. Further, as described in the DEIS at page 2-154, ambient noise levels can vary greatly at the same location, depending on wind and weather conditions, adjacent agricultural activity and other factors. As described in the DEIS at page 2-158, the modeling uses the maximum turbine sound power level specifications and assumes wind from all directions to predict the distance at which applicable noise standards will not be exceeded in any direction from the turbine. In reality, the wind will more typically be from more limited direction. In addition, the applicable standard in Washington (WAC Chapter 173-60) is not dependent on existing ambient levels. Washington State's noise regulations, which Garfield and Columbia Counties have adopted, require compliance with maximum noise limits, not ambient noise levels. These state standards must be met regarding ambient noise levels.

PET9: Comment noted. The Project is required to comply with FAA requirements for lighting. See discussion in DEIS at page 2-148 through 2-149.

PET10: Regarding the impacts to property values, the DEIS concludes that there will be no significant impacts. See page 2-273 of the DEIS and the discussion of the literature review conducted as part of the DEIS.

Insofar as shadow flicker, see response to comments JON13 and DUC30. See also DEIS pages 2-297 and 2-298. In addition, please see comments PET24 and JON13 for the impacts of shadow flicker and noise on health.

Regarding noise, please see comments PET7 and PET8.

3. Comments to the Draft EIS and Responses

The DEIS at page 2-137 discusses the factors that contributed to the viewpoints selected for simulation. These viewpoints represent a range of sensitivities, distances and impacts.

Consistent with the recommendations of the National Academies Press (and as discussed in the DEIS at 2-136 through 2-137), the viewpoints contain an adequate range of representative views likely to be encountered by an observer when viewing the project. These viewpoints were selected in consultation with and at the direction of the lead agency's SEPA responsible official, as well as consultation with the Columbia County planning director. As noted in the DEIS at 2-136, the views selected for photo montage simulation are principally moderate to highly sensitive viewpoints, which analyze the maximum impact potential. As also noted in the DEIS at page 2-141, in some areas the Project will be visible within the proximate foreground distance zone, where the Project facilities will dominate the view and be impossible to ignore. The DEIS acknowledges that the Project is likely to have significant unavoidable adverse impacts to visual resources. The Washington State Environmental Policy Act recognizes that not all impacts can be mitigated. The DEIS recognizes that the visual impacts of this Project cannot be minimized or eliminated. Trees do not effectively screen the Project turbines.

PET11: Figure 1 in Appendix E to the DEIS depicts turbines viewed from this general area. As noted in the response to PET10, the DEIS acknowledges there are many areas where the Project facilities will dominate the view and be impossible to ignore.

PET12: There are many factors that can lead to the fluctuation of bird presence at a specific location, including, but not limited to, seasonal migration patterns, selection of different nesting sites because of changes in habitat or availability of prey, predation by other wild species, or the incidence of diseases causing mortality. Human use of the environment can also contribute to the death of raptors through poaching, accidental poisoning, collisions with vehicles and structures and predation by domestic animals. The combination of all of these factors leads to a variability in bird populations over time and would need to be considered if one was to scientifically assess changes in bird populations in the area.

Section 2.7.2.1 of the DEIS discusses the potential impact of wind turbines on bird mortality, including raptors. On page 2-111, the DEIS compares the predicted mortality rate to the rates now actually measured at other projects in the region, including the Hopkins Ridge project. After several years of operation of these wind projects in the Eastern Columbia Plateau region, there has not been any evidence of a wind project exterminating or displacing entire bird populations in its immediate vicinity.

3. Comments to the Draft EIS and Responses

The DEIS also cites recent scientific studies estimating the total population of birds in the Columbia Plateau Ecoregion (which includes the LSR Project area), which conclude that the number of birds present greatly outweigh the number of birds killed by wind farms. For example, page 2-118 of the DEIS notes that 22 American kestrel and 14 red tail hawk fatalities have been recorded for all wind projects within the Columbia Plateau Ecoregion. The breeding populations for these species are estimated at 170,000 and 77, 000 individuals respectively. Assuming that one-quarter of fatalities occur during the breeding season, these impacts would be a minor or immeasurable percent of the breeding populations in the CPE. Cumulative impacts to other avian species are also addressed on pages 2-117 and 2-118 of the DEIS.

PET13: The number of individual raptor sightings at the LSR area (approximately 1500 individuals observed over many days of field surveys) reported by WEST does not represent the total number of raptors present at, and using, the entire Project area at any one time, or during an entire year. The number of raptors potentially present in the Project area will fluctuate depending on the timing of migration cycles, and other factors. The exposure of these birds to striking wind turbines will therefore also vary.

Please refer to comment PET12 regarding the commenter's statement that the LSR will cause the extermination of local raptor species. Data collected and analyzed for the Project area by WEST was used to predict raptor collision mortality in the Lower Snake River Wind Resource Areas and yields an estimated fatality rate of 0.09 raptors/MW/year, or nine raptor fatalities per year for each 100 megawatts of wind-energy development. WEST has concluded that overall, results of the studies to date do not suggest that a wind development at the proposed Project site would have significant impacts to avian and bat species.

PET14: Micrositing of turbines will integrate topographic components, streams, rivers and other features into the considerations necessary to locate the turbines to utilize the wind resource while minimizing adverse impacts. Raptor nest surveys will be conducted to locate active nests prior to construction.

PET15: PSE will follow the 2009 Washington State Department of Fish and Wildlife Wind Power Guidelines. These guidelines address the form and function of a Technical Advisory Committee (TAC). The TAC functions as a post-construction advisory committee to the project owner and the permitting authority. The TAC is responsible for reviewing results of post-construction monitoring data and making suggestions to the project owner and permitting authority regarding the need to adjust mitigation and post-construction monitoring requirements based on results of monitoring and other relevant data. Post-construction monitoring data focuses on whether the mortality observed at the project is consistent with the mortality that was predicted as a result of pre-construction surveys. If actual mortality numbers were significantly higher than the predicted rates, the TAC could recommend a number of response measures,

3. Comments to the Draft EIS and Responses

including potentially re-visiting the original bird counts. In the case of the Hopkins Ridge Project, this was not deemed appropriate. TACs generally function for the duration of the operational monitoring period – at least two years per the 2009 WDFW Wind Power Guidelines. However, a TAC may reconvene to address an unforeseen circumstance outside the originally required minimum monitoring schedule. Per federal regulations, all avian casualties found during the life of Hopkins Ridge must be reported. The wildlife baseline studies performed for this Project included fixed-point bird use surveys of the Project area. See DEIS at page 2-91 through 2-93; see also Appendix C.

Similarly, the Applicant will conduct avian and bat monitoring at the proposed Project and form a TAC. Given the number of phases involved in the Project, monitoring will continue in excess of two years, exact length of time to be determined by the TAC. As with the Hopkins Ridge project, all avian casualties found during the Project's lifetime will be reported to comply with federal regulations.

PET16: See responses to Comments PET12 through PET15. Avian mortality is a function of many factors. The increased reported mortality rate of all birds and bats for 2008 as compared to 2007 at Hopkins Ridge is not reflective of actual increased mortality rates. Adjustments were made to the 2008 mortality figures to reflect searcher efficiencies and more accurately projected scavenger removal rates (Young et al. 2009).

PET17: The Applicant will conduct surveys in accordance with the recommendations found in the 2009 WDFW Wind Power Guidelines. Monitoring data is reviewed by the TAC for adaptive management recommendations. See also the response to comment DUC26.

PET18: Appendix C in the FEIS contains the WEST Final Report on the Baseline Wildlife Studies for the Lower Snake River Wind Resource Area, Columbia and Garfield Counties, Washington. This final report updates the draft report contained in the DEIS but does not change any of the conclusions made in the DEIS.

PET19: See the response to PET18 above. The final WEST report has resulted in the same conclusions that were reported in Section 2.7.2.1 of the DEIS and were made available for public comment.

PET20: The commenter is correct that the turbines consume power at the same time that they operate to produce power. The Project, however, will not constitute a "drain" on the electrical grid. In fact, studies have demonstrated that three Midwestern wind farms generated between 17 and 39 times as much energy as was used to both construct and operate them (White et al. 1999).

3. Comments to the Draft EIS and Responses

PET21: Please see response to comment PET20. A detailed analysis of the operational power requirements for the Project is beyond the scope of the analysis required under SEPA. Moreover, neither Garfield County nor Columbia County has the authority or jurisdiction to review the power requirements of the wind facility equipment selected by the Applicant.

PET 22: See response to comment PET11.

PET 23: See response to comment PET10.

PET24: The DEIS describes the phenomenon of shadow flicker at pages 2-297 and 2-298. Shadow flicker has been identified as potentially causing annoyance to people who perceive it within their surroundings. As stated in the DEIS, the frequency of shadow flicker is too slow to induce epileptic seizures. Shadow flicker is not known to cause health effects.

The impact of shadow flicker on a receptor is eliminated as a result of the Counties' setback requirements.

3. Comments to the Draft EIS and Responses

RECEIVED
9/14/09

To whom it may concern:

As a landowner and a "non-participating" resident, I have reviewed the draft EIS document and would like to share the following comments and concerns.

Concerning the impacts of noise directly caused by turbine operation:

- MIL 1 1. The lack of baseline measurements of ambient noise levels before any of the existing projects were brought online is very convenient at best and negligent at the least.
- MIL 2 2. Acoustical Models: A model is only a prediction, not empirical evidence. The results it may give are only as good as the information that is put into it. The amount of variables with topography, wind speed and direction, ect. would lead one to use it as an estimation tool only.
- MIL 3 3. Cumulative impacts: One turbine or ten the noise level is the same, really??? I already have 27 turbines directly to the south of my property that are in operation, logic would dictate that additional turbines to the north would increase noise levels further at my residence. Also, just because the wind is blowing up where the blades are does not mean it blowing down at the level of my home. Therefore saying that the natural noise of the wind may negate the unnatural noise caused by turbine operation is an illogical assumption. After all, if the wind was blowing down here at the same time, with the same constant velocities, the turbines would not require
- MIL 4 4. Distance from turbines: The acoustics of the Tucannon Valley at different areas nullify the blanket assertion that increased distance from the turbines decrease the noise levels experienced at a given point. This situation would likely benefit from the "micro-sitting" process mentioned in the EIS.

Concerning the impacts to visual resources:

- MIL 5 The existing towers from the Hopkins Ridge project drastically altered the view from my home, a view scape that was part of the reason I located my residence here. The lack of development in the area was a primary asset in my investment. The addition of the proposed Oliphant WRA project will give me a 360 degree view of Wind Towers! As a strong proponent of property rights, I begrudge no one the opportunity the benefit financially from the use of their land. However, when their benefit causes me detriment, well, enough is enough. I believe this Draft EIS glosses over the harm this and the previous Industrial Wind Power plants have and will do to the "non-participating residents", who seem to participate in unwanted noise and visual pollution that was not present or anticipated at the time homes were planned and built, without participating in any benefit whatsoever that would justify the losses that I and others are experiencing.

Larabee Miller

804 Tucannon Road

Dayton, WA. 99328

9/13/2009

Comment Responses:

MIL1: See DEIS at page 2-154. Ambient levels are highly variable. Ambient noise is the result of a number of factors, including, wind conditions, and the presence of other noise sources such as agricultural equipment operations, irrigation pumps and equipment, livestock, road, rail and air traffic, wildlife, birds and insects, dogs and routine human activities. There is no way to accurately depict ambient background noise levels at all times. In addition, the applicable standard in Washington (WAC Chapter 173-60) is not dependent on existing

3. Comments to the Draft EIS and Responses

ambient levels. Washington state noise regulations, which Garfield and Columbia Counties have adopted, require compliance with maximum noise limits, not ambient noise levels.

MIL2: The commenter is correct. A model is used (see, e.g., DEIS Figures 2-13, 2-14, 2-15 and 2-16), which is the standard for predicting noise from any new development be it a highway, gas fired power plant or a wind energy project. The Washington State noise standard for noise emissions in an agricultural area is 70 dBA. To depict the worst case impacts to potential noise receptors, the model used to prepare the figures identified above included the most conservative assumptions, including multi-direction wind and no topographic attenuation. Once the Project's micrositing occurs and final turbine layout and turbine model are selected, additional noise modeling will be completed to ensure the Project complies with Washington State's noise regulations. The Applicant has voluntarily agreed to meet a residential EDNA standard of 50 dBA at any existing residential receptors of non-participating land owners unless noise easements are obtained.

MIL3: At page 2-158, the DEIS explains that the models used to estimate Project noise levels at a location include the impacts of all of the Project's turbines. Turbines from other existing projects will also be included in the modeling. At page 2-154, the DEIS also states that "A wind project's noise level at a particular receptor is primarily determined by the wind speed occurring at the turbine and the distance to the closest turbines." At DEIS page 2-153, it is stated that when two sound levels are the same, the increase is 3 dBA. When the difference between the two levels is greater than 10 dBA, the increase is zero. Therefore, the maximum increase resulting from a cumulative assessment from the summation of two projects (i.e., this Project and the existing 27 turbines referenced) is 3 dBA above the greater of the existing project or this Project's level. Once the Project's micrositing occurs and final turbine layout and turbine model are arrived at, additional noise modeling will incorporate turbines from other existing projects to ensure the Washington State noise standards discussed in the DEIS are complied with.

MIL4: The comment writer suggests that there is acoustic amplification greater than the normal mechanics of sound travel due to the funneling effect of noise reflecting off the Project area's valley walls. This acoustic amplification effect is not supported by acoustic principles.

Additional text has been added to the DEIS at page 2-153 discussing acoustical amplification.

MIL5: The DEIS states that there are significant impacts on visual resources as a result of the Project that cannot be mitigated.

3. Comments to the Draft EIS and Responses

RECEIVED
9/15/09

Karla Boggs
PO Box 102
Dayton WA 99328

September 12, 2009

Garfield County Public Works
Planning Division
Walter Grant Morgan, PE. SEPA Official
PO Box 160
Pomeroy WA 99347

Subject: Comments Concerning the Draft Environmental Impact Statement for
Lower Snake River Wind Energy Project

Mr. Morgan

BOG1 I interpret The Draft Environmental Impact Statement, (DEIS) prepared by Ecology and Environment, Inc., as being very misleading. Throughout the DEIS document, the selective environmental issues are down played, and so overshadowed by the blatant support of the project, that I can not possibly view it as being impartial.

In my opinion, "if this project is built, it will drastically & negatively alter Columbia and Garfield Counties, indefinitely; because of its size and magnitude, the destruction will be vast and extensive."

I believe, "as caretakers of God's Earth, the *entire* ecological system must be considered as a whole, with the utmost care and protection of the system being the highest priority."

Sincerely

Karla Boggs



CC Columbia County Planning Department

Comment Response:

BOG1: Garfield County and Columbia County have full oversight responsibility with regard to this EIS's development and Garfield County used contracted land use, SEPA, and legal professionals for consultation and review during all facets of the EIS development thereby ensuring full compliance with SEPA and other land use regulations. The County has required detailed, expert information on all areas of the environment as required by WAC 197-11-400, 197-11-402, and 197-11-440(6). Based on this information, the County has imposed appropriate mitigation conditions. Moreover, the Applicant is required to comply with all federal, state, and local regulations, as well as all permits, approvals, and conditions as set forth by the appropriate and applicable jurisdictions. See also, Table 3-1 to the DEIS, which provides a list of those permits and approvals anticipated for the project.

3. Comments to the Draft EIS and Responses

RECEIVED
9/15/09

PUBLIC COMMENT SHEET
DRAFT Environmental Impact
Statement (DEIS) for the Lower
Snake River Wind Energy Project
Garfield County and Columbia County, Washington



Garfield County, as the lead agency, in association with Columbia County is soliciting written comments on the DEIS for the construction and operation of the Lower Snake River Energy Project. The DEIS was issued to public review on August 17, 2009. The comment period for DEIS closes at 5 p.m. on September 16, 2009.

Interested persons, tribes, agencies as well as federal, state, and local elected officials are encouraged to review the DEIS document and provide comments on environmental concerns they may see in the DEIS. To be most helpful, review comments should clearly describe the specific issue or concern and cite a page and/or section number in the DEIS for reference.

All comments must be postmarked or delivered to Garfield County Public Works at 300 19th St. Pomeroy, WA 99347 by September 16, 2009 in order to be considered.

PLEASE PRINT or Attach separate type written document – ADDITIONAL ROOM IS PROVIDED ON BACK

Name Warren Talbott Warren Talbott
Address 625 N. Willow St Dayton, Wa 99328 625 N. Willow St.
Dayton, WA 99328-1057
Agency/Organization _____

Please drop this comment sheet into a comment box at the Open House or mail to:

Garfield County Public Works
Attn: Grant Morgan
P.O. Box 160
Pomeroy, WA 99347-0160

All comments must be delivered or postmarked no later than September 16, 2009.

3. Comments to the Draft EIS and Responses

PLEASE PRINT or Attach separate type written document.

TAL1

I wish to endorse and recommend
the construction and operation of the
Lower Snake River Energy Project.

I believe it will have a very
favorable impact on our commercial
retail and business sectors of both
the cities of Pomeroy and Dayton

A very beneficial impact will be
additional jobs and retail sales
tax collection of both cities

The Draft EIS prepared by
Ecology and Environment for Garfield
county adequately addresses the
potential impacts of all phases of the
Lower Snake River Wind Project.

Thank you,
Harold Abbott

Comment Response:

TAL1: Comments have been noted.

3. Comments to the Draft EIS and Responses

RECEIVED
9/15/09

PUBLIC COMMENT SHEET
DRAFT Environmental Impact
Statement (DEIS) for the Lower
Snake River Wind Energy Project
Garfield County and Columbia County, Washington

Garfield County



Garfield County, as the lead agency, in association with Columbia County is soliciting written comments on the DEIS for the construction and operation of the Lower Snake River Energy Project. The DEIS was issued to public review on August 17, 2009. The comment period for DEIS closes at 5 p.m. on September 16, 2009.

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ATTACHMENT - 3 PAGES

GRAPHICS - 3 PAGES

PLEASE PRINT or Attach separate type written document - ADDITIONAL ROOM IS PROVIDED ON BACK

Name GARY L. TROYER

Address 614 COTTONWOOD RICHLAND WA 99352

Agency/Organization _____

Please drop this comment sheet into a comment box at the Open House or mail to:

Garfield County Public Works

Attn: Grant Morgan

P.O. Box 160

Pomeroy, WA 99347-0160

All comments must be delivered or postmarked no later than September 16, 2009.

3. Comments to the Draft EIS and Responses

Commentary on

Lower Snake River Wind Energy Project
(Columbia and Garfield Counties)

Executive Summary and the Draft Environmental Impact Statement.

Section ES1

TRO1

Based on averages, it might be possible to provide the 480 aMW with the proposed 1400 MW nameplate capacity of the project in the 3 WRAs shown in the EIS. However, the data in the DEIS are from model projections based on an estimate of wind performance up to 17 mph. Granted, winds do gust above this. But, the real practical situation based on actual performance data show that the current predecessor project on nearby Hopkins Ridge has multiple days of zero output. These gaps in this supplemental energy resource invalidate the attempts by PSE and others in kind to provide reliable energy as assumed via wind. Therefore, the project cannot meet the needs of PSE shortfall without additional conventional balancing energy such as hydro, coal, natural gas, and nuclear equivalent to the projected needs. This is borne out on the world stage. Germany, with area comparable to the combined area of Washington and Oregon, has managed to develop wind power equivalent to 10% of need. However, Germany has not shutdown any fossil fueled plants and has actually seen an increase in fossil fuel emissions. New wind projects are being cancelled because they simply don't provide as promised. The need for and the provision of compensating energy is not identified in the DEIS.

Section ES2

TRO2

The primary basis for the project is the projected immediate need to cover a shortfall of 480 average MW of energy by PSE in the 2008-2012 timeframe. Follow on needs of 1650 aMW starting in 2015 are even more challenging. However, the proposed energy source is supplemental and cannot be relied upon to meet the average need on a day to day basis. With the forced exception of the RCW, I conclude that the objectives need revision.

http://www.co.garfield.wa.us/lower_snake_river_wind_energy_project_cup_0126_09

Executive Summary

10:002764_RE11_02 2

LSR DEIS_8-13-09.doc-8/14/2009

ES.2 Project Objectives, Purpose and Need

The Project objective is to develop and construct a commercial wind energy facility in Garfield and Columbia counties in Southeast Washington that is commercially viable and meets the energy needs of the region. The Applicant is subject to the requirements of the Washington Energy Independence Act, at RCW 19.285 and needs to obtain mandatory minimum amounts of its energy supply

3. Comments to the Draft EIS and Responses

from eligible renewable energy resources. The Applicant's integrated resource plan relies heavily on the increased use of wind power as a principal component of its future generation portfolio. The combination of economic growth and expiring energy supply contracts means that PSE faces large electricity resource needs in the years ahead. This Project addresses the objectives and purposes stated above, and contributes to meeting the needs of PSE and its customer base.

Section 1.4

TRO3 Another major unknown is the assumption that conservation and improvements in efficiency will make up a significant amount of the long term shortfall. To date, there have been no hard data regarding the effectiveness of historical and ongoing Washington State conservation programs. The data have not been accumulated to adequately prove or deny. In addition, these data have been hidden by the overriding gain in energy availability due to the last decade's loss of Northwest aluminum manufacturing and associated jobs. The ICF report to the CAT admits to a paucity of conservation data and therefore folds in endogenous data assumptions in making recommendations. This DEIS is apparently continuing this approach in a risky environment promulgated by imprecise and missing factual assessments which swayed voter initiatives. This is now requiring PSE to launch flawed projects.

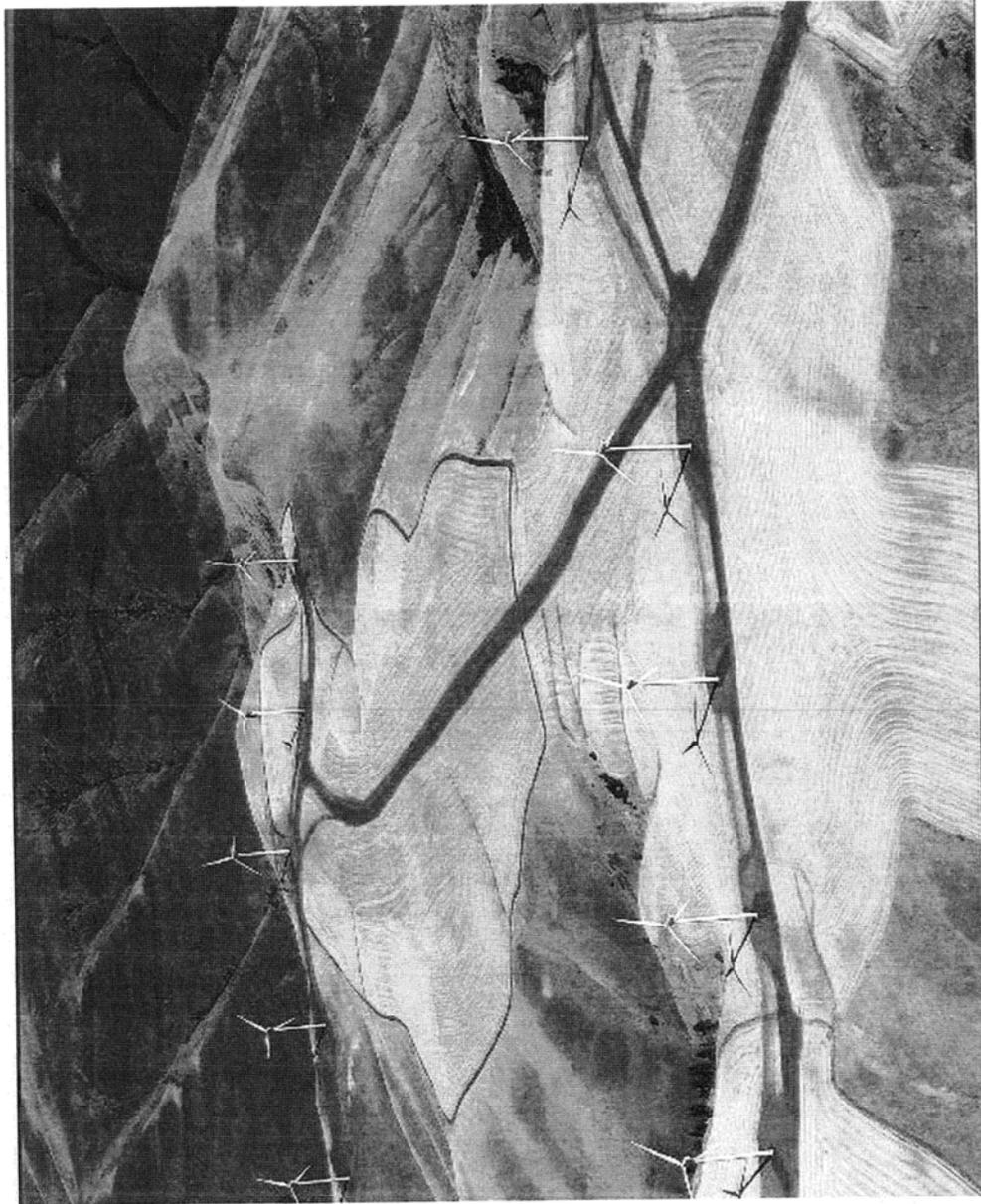
The DEIS and project proposals emphasize installed or nameplate capacities. In practice, the wind industry experience shows that this should be divided by a factor of 3 for an actual average annual performance metric. This is known worldwide and is a huge issue in all wind projects. The 9 Canyon and the Vansycle canyon wind farms show 27-29 per cent production on an annual basis. The Hopkins wind farm is no better and in many cases demonstrably less. Based on the wind map in the EIS, the former sites are better than the latter which speaks to the observations. Without the balancing power of the BPA hydro system, the wind farms would be an abominable bust. Multi-day, zero output from existing 2200 MW nameplate capacity is more routine than can be tolerated. At best this is no more than supplemental energy. It is not an in kind reliable alternative.

TRO4 **Chapter 2.10 and following** makes numerous references to the Entrix 2009 report (Entrix. 2009. Economic Impacts of Wind Energy Projects in Southeast Washington, Prepared for Southeast Washington Economic Development Association by Entrix, Inc., Vancouver, WA, March 6, 2009). There is a statement that the project will have no effect on final ratepayer costs due to energy mix. I can find no evidence of data analysis in this regard. The DEIS merely lifts verbatim the statement from Entrix which has no data. Therefore the statement has no credibility.

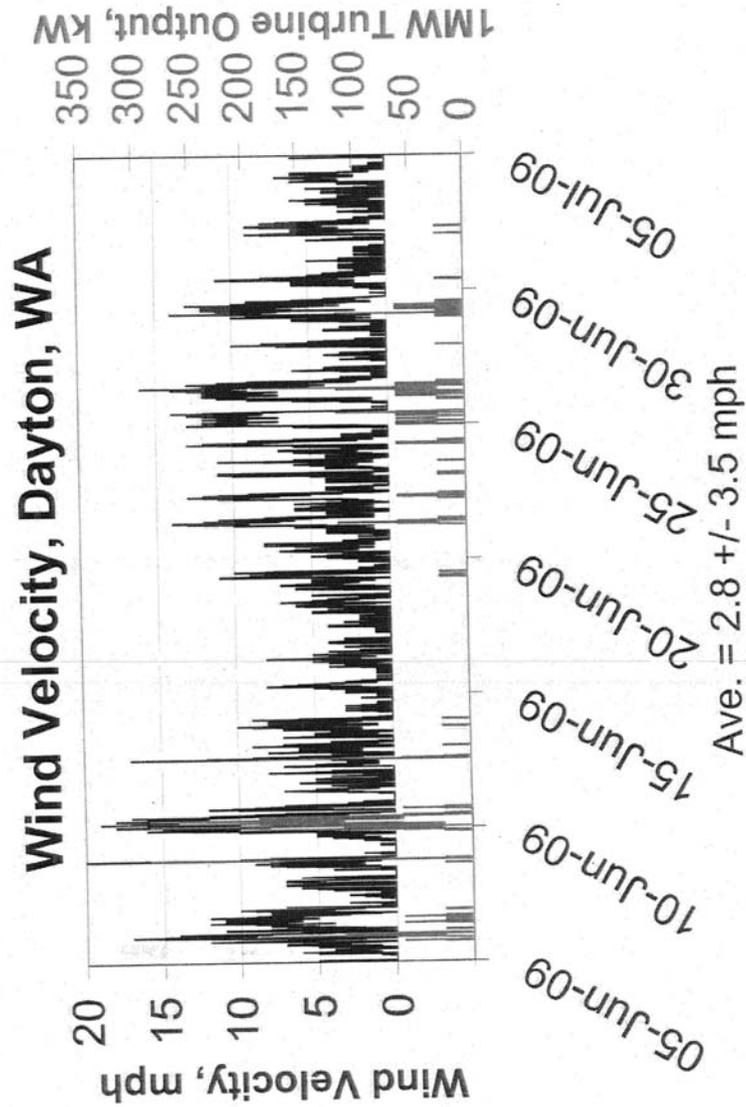
Section 2.14.1 and Appendix H

TRO5 The impact on arable land is stated to be less than one per cent for the counties. This is easily true at the county level. However, the desirable hilltop siting consumes more than one per cent of that arable land. Viewing aerial photos of Hopkins ridge shows that the impact can be on the order of 15-20% when access roads and foot pad areas are considered. The installation also cuts up the farming patterns making it less efficient to till and navigate. So the hand waving on farming impact is not properly addressed. The

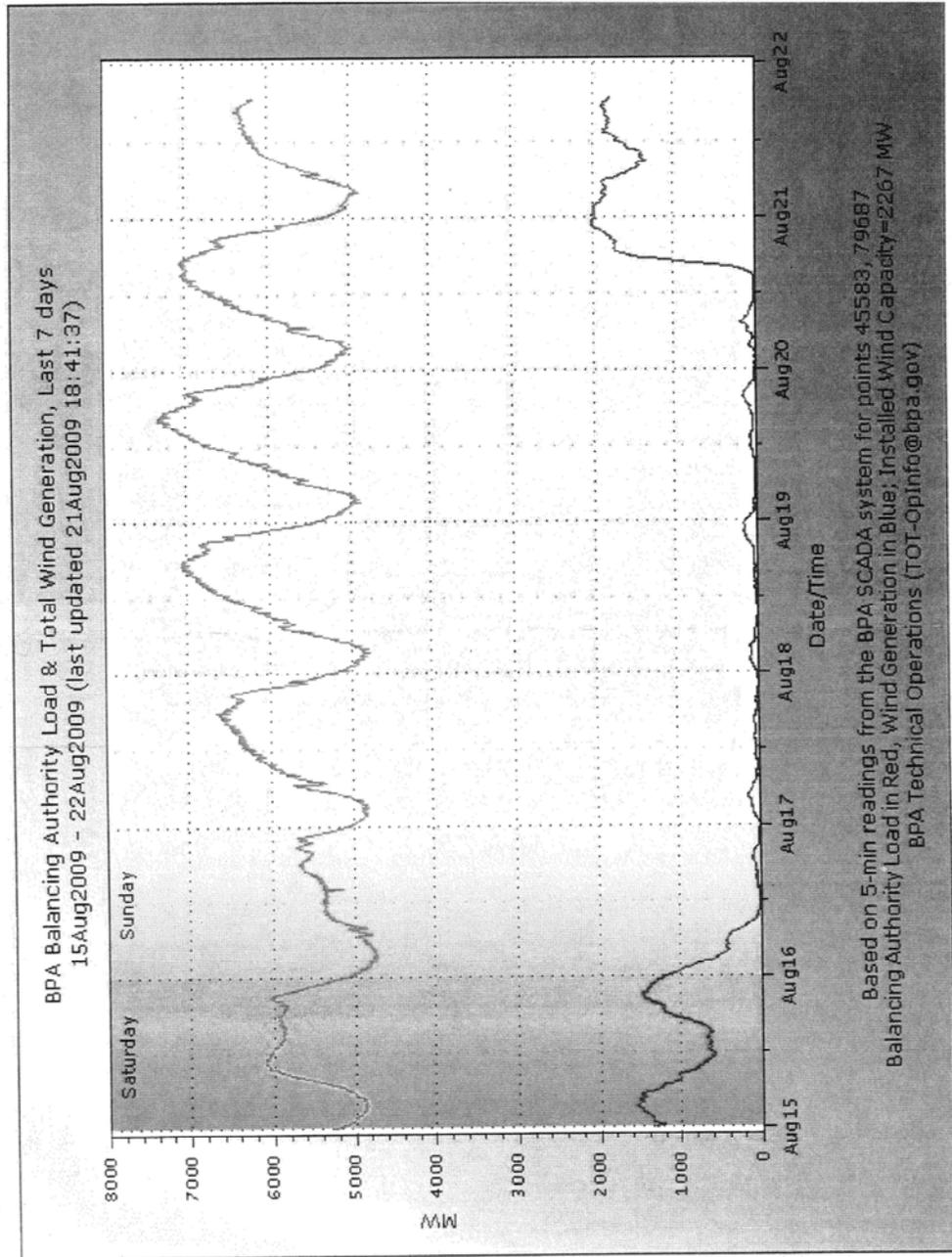
3. Comments to the Draft EIS and Responses



3. Comments to the Draft EIS and Responses



3. Comments to the Draft EIS and Responses



Comment Responses:

TRO1: See responses to comments ETHO4 and TRO3.

TRO2: The Project objective and its purpose, need, and resource planning are addressed at the DEIS at pages 1-6 through 1-11. The purpose is to build a commercially viable wind energy facility to meet future energy demands in the Pacific Northwest and to help meet the requirements of the Washington Energy Independence Act, Chapter 19.285 RCW. The Applicant's Integrated Resource Plan (IRP) includes a combination of resources that will meet the energy needs of the Applicant over the next 20 years. Wind is a component of the Applicant's IRP.

TRO3: Comment has been noted. The success of conservation programs in Washington State and efficiency are beyond the scope of the analysis required under SEPA for this Project. SEPA requires evaluation of impacts from this Project at the location proposed. Neither Garfield County nor Columbia County have jurisdiction to evaluate or regulate decisions regarding energy efficiency of the utility industry.

It is correct that this Project will not generate its rated electrical capacity of 1.8 - 2.3 MW at all times because the wind resource is not available all the time, or the wind speed is lower than the required to reach the turbine's rated generation capacity. However, Garfield County and Columbia County do not have jurisdiction to evaluate or regulate the type of wind energy equipment selected by the Project proponent provided the Project meets applicable permit conditions. The Counties also do not have jurisdiction to evaluate the relative merit of the renewable energy source being proposed. Please refer to response to comment ETH04 regarding the quality of the wind resource in the Project area.

TRO4: Comment is noted; however, it is outside the scope of the DEIS. Neither Garfield County nor Columbia County has jurisdiction to regulate the cost of wind power or electricity and its effect on ratepayers.

TRO5: In response to this comment, the authors have verified the acreages in DEIS tables. Disturbed area calculations include access roads and turbine pads. Project roads can provide farms with additional access that could prove to be useful to the landowner. The location of access roads will be designed in coordination with the landowner to minimize impacts from potential fragmentation. For further discussion, see DEIS pages 2-234 and 2-235. Both Garfield and Columbia Counties have adopted, through their respective legislative processes, zoning provisions that conditionally allow renewable energy uses to be

3. Comments to the Draft EIS and Responses

co-located on actively farmed land provided projects are conditioned to comply with wind energy facility development standards adopted by each county.

TRO6: Comment noted. Energy delivery is beyond the scope of the analysis required under SEPA for this Project. Power generated by wind projects throughout areas east of the Cascade range is successfully delivered to end users. All power transmission lines experience line losses regardless of the power source of the electricity generated. As a transmission provider, the BPA has already conducted its own programmatic environmental impact statement on its business plan for construction of new transmission lines to create new transmission capacity for the entire region.

3. Comments to the Draft EIS and Responses

RECEIVED
9/16/09

September 16, 2009

Garfield County Public Works Department, Planning Division
Walter Grant Morgan, P.S.
SEPA Official
PO Box 160
Pomeroy, WA 99347

Re: Comments on the Lower Snake River Wind Energy Project (LSRWEP)
Garfield County CUP #012609

Attached are comments provided by us regarding the Draft Environmental Impact Statement for the Lower Snake River Wind Energy Project Garfield County CUP #012609.

You will also find attached certain referenced articles.

Sincerely,



Richard Ducharme



Vicki Ducharme

3. Comments to the Draft EIS and Responses

2.7 Bird and Bat Resources

- DUC34 1. The failure to conduct subsequent population surveys of birds and bats after establishing the baseline population prevents any scientific analysis of the long term effect of industrial wind turbine projects on bird populations. The reason for establishing a baseline is to make future comparisons to it. Mortality counts have no relationship to actual populations unless the total population is calculated annually using the same methodology as was used to determine the original baseline population.
- The permitting agency needs to require annual population surveys using the same methodology as was used to establish the baseline population.
- DUC22 2. On page 2-92 it states flocks of geese and swan were recorded flying over the site. These two species are protected by the Migratory Bird Act and some if not all swan under the Endangered Species Act. Wind generation projects have potential liability under both these Acts. (See Wall Street Journal article attached) There is no further mentioning of Swan as a listed avian species. The Snake River and its tributaries are known migrating routes for waterfowl. Hopkins Ridge mortality is 37 to 43% nocturnal migrants.
- It is an error to not discuss adverse effects on migrating waterfowl. (see Wall Street Journal article attached.)
- DUC23 3. The EIS states there are 85 miles of overhead power lines and 11 meteorological towers to be constructed. The power lines will have a total of 34 riparian area crossings. The EIS further states the majority of raptor nests are located in the riparian corridors. There is no discussion or estimate of power line or meteorological tower avian mortality.
- A mortality analysis that fails to consider power line construction is faulty.
- DUC24 4. There is no mention of doves (pigeons?) in the survey. Doves are one of the most numerous avians in the WRA's and have established flyways in the hearts of the WRA's where they are hunted in the Fall.
- Why is there no mention of this population?
- DUC25 5. A one half mile buffer from nesting raptor sites is inadequate. Disturbance of the nesting site is not the only consideration. Young raptors require constant hunting by the adults. The hunting range

3. Comments to the Draft EIS and Responses

- will cover a much larger area than a one half mile radius from the nest site. Project facilities will subject them to high mortalities.
- The one half mile buffer range for raptor nests is inadequate and should be extended to at least one and one half miles.
- DUC 26 6. The statement that the proposed wind energy facility is not located near any known bat colonies (page 2-113) means they didn't look very hard or didn't know where to look. Barns adjacent to the WRA's are known to have large colonies of bats. The potential impact estimated for bats is incorrect because the assumptions on colonies are in error.
- The bat study is admittedly based on incomplete information. To make assumptions as to impacts based on incomplete data is unacceptable. More study of bat populations is required.
- DUC 27 7. Section 2.7.2.3 states that the information from monitoring will be reviewed by the Technical Advisory Committee and may lead to future modification in guidelines for "future" wind farm development "potentially" reducing future impacts. That this statement constitutes an analysis of Probable Significant and Unavoidable Adverse Impacts would be laughable if it wasn't so seriously deficient. As already pointed out there can be no meaningful assessment of populations without future population studies. None are provided for. Hopkins Ridge mortality studies have shown a decrease in raptor deaths and increase in mortality of other avian species that are raptor prey, which could logically lead to the conclusions that the raptor population is being killed off. The EIS neglects to comment on that or offer any suggested mitigation. Since the majority of the TAC seems to be landowners and utility personnel both of whom have a financial stake in killing birds, it seems unlikely they will favor any modifications to the proposed projects.
- DUC 46 8. In measuring the cumulative impact of birds, the analysis compares the impacts of the wind projects to the entire Columbian Plateau Ecoregion. If you really want to minimize the impacts, why not compare it to the impacts on the populations for North America or the world. Using a comparison of the projected deaths for the project to the nesting population for the CPE is done for the purpose of attempting to minimize the impact. No where do you find a description of the size of the CPE and the percentage of the ECP that is comprised by the 124,000 acres of the Lower Snake River project. We are concerned with the impact in Columbia and Garfield County not the ECP.
- The methodology is flawed and does not accurately describe the cumulative impact in the area of concern.



3. Comments to the Draft EIS and Responses

DUC 28 9. In determining the cumulative impact on bats, the EIS states there is "sparse" information on bat populations and then draws a conclusion they won't be negatively impacted by wind turbines. An honest answer would be "we don't know without further study what the impact will be." (See also 6. under 2.7 above.)

DUC 29 10. Models predicting bird kills and particularly raptor kills have been woefully inaccurate. The prediction for raptor kills at the Big Horn Project, referenced in this EIS, was for 3 to 4 raptor kills from collisions per year. The wind project's wind consultant now estimates 31 kills annually. An independent consultant estimates the number at 49. The prediction was wrong by a factor of ten. Was the methodology at Big Horn the same as used in this EIS? Were the consultants the same? (See "Clark County" story in attachments.)

There is a need to compare current methodology with that used at Big Horn.

3. Comments to the Draft EIS and Responses

Section 2.9 Visual Resource:

This section ignores some of the most rudimentary requirements of EIS requirements for an analysis of visual impacts.

- DUC 35 1. There is no visual simulation map for the entire project area showing the number of turbines visible from any point in Columbia and Garfield County. Every project requires such maps. Even the Dayton project provided such maps to get a designation of non significance. By not providing such a simulation it is impossible to evaluate the visual impact of almost 1,000 towers and turbines. Viewshed analysis maps are easily produced using computer simulations. Failure to provide this elementary requirement is due either to incompetence or is a deliberate attempt to minimize the projects visual impacts. In either case, it is unacceptable.
- DUC 36 2. The viewpoints chosen for simulation seem to have been selected to minimize the projects visual effects. Nineteen sites were chosen and only three were of foreground views. The angles included are about 30 degrees instead of 180 degrees or more to give the total effect of the impact. If you look at the towers planned along highway 12 from Dodge Junction to Pomeroy, it is clear that this designated scenic highway is lined on both sides with towers. The simulations for the Tucannon road ignore the fact that the north side of the highway is already lined with towers from the Hopkins Ridge Project. There is no way to visualize the impact from the Tucannon Wilderness area. In short, the produced data has been used to minimize in the EIS the visual impacts of this huge project. Much more visual simulation is required to adequately assess the impacts of this project.
- DUC 37 3. The cumulative impacts of the proposed project combined with the existing Hopkins Ridge, Marengo and Dayton (or Marengo II) projects have been ignored. The completed projects about the new project in many areas and could be said to be earlier phases of a much larger project. No where in the EIS is there a map showing the extent of all the wind projects in Columbia County or where they abut Garfield County. This appears to be another attempt to minimize the visual impact of these projects.
- DUC 38 4. In assessing visual impacts more than the distance and contrast factors discussed in the EIS need to be considered. The National Research Council of the National Academy of Science report on the Ecological Effect of Wind-Energy Development (2007) says the additional factors that need to be considered are:
- DUC 39 A. View duration – particularly a factor when driving on a road or highway. None of this is mentioned in the EIS.
- DUC 40 B. Angle of view – whether seen from the side, above or directly in front influences whether it is a focal point or not. Without a Countywide view simulation map, it is impossible for impacted citizens to assess the angles that will affect them.
- DUC 41 C. Panoramic versus narrow view – determines extent of focal point.

3. Comments to the Draft EIS and Responses

- DUC42 D. Scenic Quality of View – Panoramic views of high scenic quality are considered to be visually sensitive. Apparently, the EIS find no scenic views in or adjacent to the project area.
- DUC43 E. Focal point with a view
- DUC44 F. Number of observers – Highways and roads such as Highway 12, Highway 261, and the Tucannon Road have thousands of drivers who will see the turbines.
- DUC45 5. Distance Zone Descriptions – The National Academy of Science Report (referenced in 4. above) states "Because of the larger scale – both vertical and horizontal – of more recent wind energy projects, distance zones may need to be extended, with 2-3 miles considered a "foreground" area of greater potential visual effects." The EIS fails to recognize that the size of the proposed towers and generators are among the largest offered while using visual effect criteria that was developed to assess earlier much smaller wind generation facilities. It is improper not to recognize that increased size has increased visual consequences.

3. Comments to the Draft EIS and Responses

2.10 Noise

DUC7

1. Reliance on only compliance with the State of Washington Noise regulations to regulate the effect Industrial Wind Projects have on human health from the project's noise emissions is inadequate. It is improper to only use the A weighted scale because it was adopted by Governments in the 1930's to protect workers from hearing loss. The health problems associated with wind turbine noise, other than experienced by maintenance workers, relates to "annoyance" caused by low frequency noise that is better measured using the C weighted scale. The World Health Organization states the following:

"It should be noted that a large proportion of low frequency noise may increase considerably the adverse effects on health."

"The evidence of low frequency noise is sufficiently strong to warrant immediate concern."

"When prominent low frequency components are present, noise measures based on A-weighting are inappropriate."

"Since A-weighting underestimates the sound pressure level of noise with low frequency components, a better assessment of health effects would be to use C-weighting."

The following is some of what the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA) has to say about A Scale and C scale noise measuring networks:

The very low frequencies are attenuated greatly by the A-network, moderately by the B-network, and minimally by the C-network. Example: If the measured sound level of a noise is much higher on C-weighting than on A-weighting, much of the noise energy is probably low frequency.

It has been found that the A-network gives a better estimation of the threat to human hearing than the other networks.

The C-network is sometimes used to in conjunction with the A-network to determine if a sound is predominately low frequency in nature. If the noise has significant low frequency components, the C reading will be higher than the A.
(OSHA's Noise and Hearing Conservation Technical Manual: Appendix I)

DUC8

It is clear that the dBA standard adopted by Washington State was to protect against hearing loss and does not address the adverse health consequences of the low frequency noise produced by industrial wind projects. Noise measurements should be taken at the site of the emitter and receptor in both the



3. Comments to the Draft EIS and Responses

A and C scales. C levels should be no higher than 50 dBC in the daytime and 40 dBC at night. It is unacceptable to use an antiquated noise standard promulgated to protect against hearing loss to protect against the known health hazards associated with low frequency noise. New criteria must be adopted that recognize the impact of low frequency noise.

- DUC9 2. Any model should use sound pressure levels that have been obtained using data from the Hopkins Ridge Project that is line of sight and down-wind from multiple turbine sites using both A and C weighted scales.
- DUC10 3. Animal Health – As reported in the July 2009 edition of Wheat Life Magazine.
Windmills generate sleeplessness
"It took Taiwan's Council of Agriculture Inspectors 3 years to figure out why 400 goats on a wind-swept archipelago have died: it was terminal insomnia. Apparently, the whirling of the large wind turbines located on the islands kept the animals awake. "If noise at night can keep people awake, then it could also keep the goats awake, said a spokesman for the council."
- DUC11 4. Section 2.10.1 – Wrongly assumes noise levels will be less when wind speed is low rather than when wind speed is elevated. Local residents living adjacent to existing projects have found the exact opposite to be true. Nighttime with low wind speeds in the valleys and moderate wind speeds on the ridges create the maximum noise annoyance. This can be easily verified with further study. It is likely due to the low frequency noise produced by the turbines.
- DUC12 5. Just because there is no consistent ambient noise background for any residence is no reason to not do background noise studies at residences that will be affected by noise from the projects. It is false to state there is no means to accurately depict actual conditions at all times. In fact, the EIS states studies in similar rural areas documented a wide range in similar areas from below 20 dBA to over 40 dBA. That statement is proof that baseline studies at existing property lines need to be done to document noise levels in the daytime, nighttime, and seasonal, whether intermittent or constant and other variables. State of Washington Noise Regulations sets forth permissible levels of noise originating from an industrial site specifying different levels for daytime and nighttime as well as for time periods varying from 1.5 minutes per hour to an hourly average. Background studies must be done prior to construction and operation of the industrial site.

3. Comments to the Draft EIS and Responses

- DUC13 6. Consideration must be given to not allowing turbine noise to add to background noise to create unacceptable noise for human habitation. For example if background noise is 40 dBA (quiet library) and the turbine raises the total 50 dBA to 90dBA (heavy truck at 15 meters) that is unacceptable.
- DUC14 7. Prevailing winds will have a significant effect on both ambient noise and turbine noise and their impact on various receptors. The applicant has had wind measuring devices in each WRA for a number of years as well as operational data from the Hopkins Ridge Project. It is generally known that prevailing winds in the area are from the southwest but no data is found in the report. The 50 dBA indicated boundary surrounding each proposed turbine site is equidistant in every direction presupposing that the wind operating the turbine comes from every direction at the same time? I think not. Each side of the boundary should be calculated with the wind from the opposite direction which will expand the boundary. Likewise, the ambient noise at the receptor will be affected by wind direction. Each boundary should also incorporate a C scale level.
- DUC15 8. It appears that there was no attempt to measure the cumulative impact of multiple turbines. Three of the four WRA's have more than 200 turbines and each additional turbine adds 3 dBA to the turbine's sound that is being measured with some attention for distance. The projected 50 dBA buffers depicted are incorrect and there is no dBC measurement.
- DUC16 9. The project needs to comply with correctly set dBA and dBC residential emission limits measured from any property line where a residential structure is legally allowed by the zoning in effect at the time the project is approved. Noise from the projects not only negatively affects existing land uses but also any allowed future land uses of adjoining properties. Allowing nuisance levels of noise at the boundaries of property with future possible use as a residence takes from the property owner's future possible enjoyment and use of his property and thus constitutes a taking.
- DUC17 10. It is not acceptable to wait until micro-siting to assess impacts of noise on the location of homes that have already been identified to the applicant by Garfield and Columbia County governments. The applicant has the ability to have already begun baseline studies which it has failed to do. The applicant has already enough information to do the micro-siting now as it relates to any adjoining properties. The applicant wants to withhold this information from negatively effected parties until after it gets its EIS and associated permits approved by the appropriate governmental agencies and seeks Garfield County's assistance in its endeavor.
- DUC18 11. The applicant states it will provide an acoustical model after permits are approved. It doesn't state what the model will be only that the modeling

3. Comments to the Draft EIS and Responses

algorithms are to be based on a standard that is 12 years old. The public does not know whether this standard only uses a dBA weighted scale to measure expected noise. If it does not also incorporate the dBC scale it is a faulty model. These calculations can be done now and should be done by the consultant for the County and paid for by the applicant. To favor the applicant over County residents who will be negatively affected by this project is inconceivable.

DUC19

12. Mitigation – Noise mitigation for the project is the shortest section in the chapter. There is no attempt to mitigate any noise impact beyond what is permitted by State Regulations which were promulgated before 128,000 acre industrial wind facilities were contemplated. Some suggested mitigation would be to specify the turbine noise standards that would be met by the quietest currently being manufactured. This information is readily available to the consultant. Provision could require siting of towers to reduce line of sight to receptors whenever possible not only to meet state standards but go beyond them. Turbine height might also be lowered in some instances to reduce both noise and visual impact if there was no appreciable loss of generating capacity. The argument that specifying quieter turbines would only allow them to be closer to residents is invalid if the minimum setbacks remain in place. It seems mitigation is a foreign concept in the EIS. It may be a fatal flaw. (See paper #14 of the 3rd International Conference on Wind Turbine Noise 2009 – attached.)

DUC 3a

13. Health considerations are now coming to the forefront as a consequence of turbine noise, especially in Europe where they have had turbines longer. In a report by Dr. Christopher Hanning in England on sleep disturbance and wind turbine noise he reports comments from the following excerpts:

DUC20

- George Kamperman, (2008 personal communication) a distinguished US noise engineer, is quoted in Pierpont's book as saying, "After the first day of digging into the wind turbines noise impact problems in different countries, it became clear the health impact on persons living within about two miles from 'wind farms' all had similar complaints and health problems. I have never seen this type of phenomenon (in) over fifty plus years of consulting on industrial noise problems. The magnitude of the impact is far above anything I have seen before at such relatively low sound levels. I can see the devastating health impact from wind turbine noise but I can only comment on the physical noise exposure. From my viewpoint we desperately need noise exposure level criteria." Kamperman's recommended setback of at least 1km (Kamperman & James 2008) has changed to at least 2km as a result of Dr. Pierpont's evidence (Kamperman 2008 personal communication). He has recently published a more detailed set of



3. Comments to the Draft EIS and Responses

recommendations to determine setback distances (Kamperman & James 2008).

- a. Schneider found that night time turbine noise was between 3 and 7dBA greater than predicted and, during periods of atmospheric stability, turbine noise was 18.9 to 22.6dBA above ambient. In addition, as noted above, the characteristics of wind turbines noise are such that it can be heard despite road noise. It should be noted that as the decibel scale is logarithmic, a 6dB increase is equivalent to a **doubling** in sound pressure level and a 12dB change is a **quadrupling**.
- b. Van den Berg, in a paper presented at Eurnoise 2003, investigated the relationship between calculated noise generated by wind turbines and that actually measured. He confirmed that the turbines were more audible at night principally due to amplitude modulation. To quote his paper: "As measured emission levels near the wind park Rhede show, the discrepancy may be very large: sound levels are up to 15dB (!) higher than expected at 400 m from the wind park. At a distance of 1500 M actual sound levels are 18dB higher than expected, 15 dB of this because of the higher sound emission and 3 dB because sound attenuation is less than predicted by the sound propagation model." An 18dB increase is equivalent to an 8 fold increase in sound pressure and a 15dB change is a 6 fold increase. An 18dB increase is a close to a three fold increase in perceived loudness. Calculated measures of wind turbine noise are woefully inadequate.

DUC.21

3. Comments to the Draft EIS and Responses

Section 2.15 Socioeconomic Impacts

- DUC 1
- DUC 3
- DUC 2
- DUC 4
- DUC 5
1. While the section on the socioeconomic impacts points out the State of Washington has exempted the costs of construction from the sales and use taxes imposed by the state and local governments, it fails to point out the magnitude of this taxpayer subsidy when applied to the EIS estimated construction costs at the Garfield County rate of 7.9%. It amounts to \$212,600,000. The EIS also fails to explain that the wind projects are mostly assessed as personal property by the State at a value the local assessors calculate is one third of their true and fair value as a real estate improvement. Using the EIS annual property tax estimate of approximately \$8.6 million that means the Washington taxpayer subsidy is about \$17.2 million annually. This is particularly relevant because PSE has sold the wind energy from two existing Washington projects including Hopkins Ridge, to California utilities for at least the next two years. That means Washington taxpayers are subsidizing California ratepayers. How good is that? The EIS point out there is the "potential" that there could be "a short-term financial impact to local school districts". Interpreted, it means the impact is negative and they will get less money. There is no mention of any attempt to mitigate any shortfall. Any shortfall in school revenues should be mitigated by an appropriate impact fee before any project permit is issued.
 2. The EIS points out in several sections wind power advantages over other forms of electrical generation. Many of the conclusions are in error and much comparative information is omitted. In 2008, the U.S. Energy Administration reported the following relative subsidies, on a dollar – per – megawatt – hour basis, for 2007: Natural gas at \$.25, coal at \$.44, hydro at \$.67, nuclear at \$1.59 – and wind at \$23.37. (See Financial Post opinion piece attached.)
 3. Wind power is touted as solving the greenhouse gas problem but Denmark, which produces 20 percent of their power from wind has the highest electricity costs in Europe, has yet to close a fossil fuel plant and has lost 2.2 jobs for every one they created. No where in this EIS is there a discussion of the true unsubsidized cost of the power generated by this project and how wind power will increase electricity costs and thus hinder the economy.
4. End of Design Life Impacts
- There is no discussion of the possibility the PSE may not be around when it comes time to decommission these projects. Vestas wind Systems, the largest manufacturer of wind systems in the world, went bankrupt in the 1980'. (See Forbes Magazine, April 27, 2009)

3. Comments to the Draft EIS and Responses

DUC 6 PSE is now owned by a private equity company located in Australia. To not discuss various options to guarantee there will be money available for decommissioning is in error.



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Local News

Washington wind turbines claim first known eagle victim

Monday, May 18 | 8:33 p.m.

BY KATHIE DURBIN

COLUMBIAN STAFF WRITER

A golden eagle died last month when it collided with a wind turbine blade at a 47-turbine wind farm in Klickitat County.

The April 27 collision at the Goodnoe Hills Wind Project southeast of Goldendale was the first known eagle casualty caused by a Washington wind project.

"I don't know of any other eagle fatalities in the state in connection with colliding with a turbine blade," said Travis Nelson, the state's lead wildlife biologist on wind power issues. He called the incident "unfortunate."

Nelson said X-rays of the carcass conducted at a Washington State University wildlife laboratory in Pullman showed the 10-pound bird had a broken wing and two broken legs. The mature golden eagle has a six-foot wingspan.

The Washington Department of Fish and Wildlife is convening a group of stakeholders to review the incident and discuss how to prevent or minimize future eagle deaths, Nelson said.

"This is certainly not the outcome that anyone who was involved in planning and permitting this operation would have wanted, especially the project owner," he said. "We have convened a small review group internally to discuss how we can avoid this in the future."

The dead bird was found by the crew of URS Corp., a contractor for PacifiCorp, the Portland-based utility that owns the 94-megawatt Goodnoe Hills project. The wind farm began operating on June 30 of last year.

The golden eagle, dark brown with a golden sheen on its head and a large hooked bill, is common in Washington and throughout western North America. Though not listed as a threatened or endangered species, it is protected by the federal Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Both laws prohibit infliction of intentional harm on the raptor.

New guidelines

In April, state and federal wildlife officials, environmental groups and utilities completed a new set of guidelines intended to reduce the impact on birds, wildlife and other natural resources as new wind project proposals proliferate. About 20 groups and agencies took part.

The new guidelines call for extensive surveys of proposed wind farms before they are permitted, including monitoring of bird activity during different seasons and in multiple years. They also recommend surveying for raptor nests within a two-mile buffer area around proposed wind projects before those projects are built.

Operators of wind projects are required to document bird kills and report them to state authorities. The death of the golden eagle was promptly reported to WDFW, as well as the U.S. Fish and Wildlife Service and PacifiCorp, Nelson said.

No public announcement of the eagle's death has been made.

"We're participating in a full review of the incident and working with WDFW and USFWS," said PacifiCorp spokeswoman Jan Mitchell. "We have a robust avian protection program and we proactively take steps to assure compliance with all regulations."

U.S. Fish and Wildlife Service spokeswoman Joan Jewett said her agency has an agreement with wind power operators who voluntarily report birds killed by power lines or wind turbines.

The agency issues carcass salvage permits to operators who agree to develop avian protection plans, report bird fatalities and agree to take steps to reduce them, Jewett said.

"If it's an eagle, the bird is sent to the National Eagle Repository north of Denver," she said. That federal repository provides feathers to members of recognized Indian tribes for ceremonial purposes.

Though the golden eagle death is the first reported in Washington, raptor deaths have been common at wind projects elsewhere. Between 570 and 835 raptors are killed annually in wind turbines at California's Altamont Pass Wind Power Resource Area, the world's largest.

Common in Gorge

Raptors are common in the eastern half of the Columbia River Gorge, where shrub steppe and grasslands offer prime habitat for prey such as ground squirrels and pocket gophers. The big birds typically soar at an elevation of 300 to 400 feet — about the same height as the rotating wind turbine blades.

Wind energy development gained momentum in the Northwest after both Washington and Oregon



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Washington wind turbines claim first known eagle victim - Columbian.com

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adopted requirements that utilities meet gradually increasing proportions of their energy loads with wind, solar and other renewable sources.

Klickitat County, which issued the permit for the Goodnoe Hills project, has been actively marketing itself as a site for wind development since 2005, when it adopted the nation's first energy overlay zone to speed the granting of wind power permits. Three wind projects currently operate in the county, five others are under construction and three more are proposed. SDS Lumber Co. is proposing to develop yet another wind project on its timberland in east Skamania County, near Underwood.

* Klickitat's first wind project, the 200-megawatt Big Horn Wind Energy Project, began operating in 2007. Raptor mortality due to wind turbine collisions at the project has been far higher than predicted. Iberdrola Renewables, the project's owner, originally predicted a toll of three to four raptors annually from collisions with wind turbines. The company's wildlife consultant now estimates that the project kills 31 raptors annually. Independent consultant Shawn Smallwood estimates the number at 49.

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Wall Street
Journal Sept. 8
2009

By Robert Bryce

On Aug. 13, ExxonMobil pleaded guilty in federal court to killing 85 birds that had come into contact with crude oil or other pollutants in uncovered tanks or waste-water facilities on its properties. The birds were protected by the Migratory Bird Treaty Act, which dates back to 1918. The company agreed to pay \$600,000 in fines and fees.

ExxonMobil is hardly alone in running afoul of this law. Over the past two decades, federal officials have brought hundreds of similar cases against energy companies. In July, for example, the Oregon-based electric utility PacifiCorp paid \$14 million in fines and restitution for killing 232 eagles in Wyoming over the past two years. The birds were electrocuted by poorly-designed power lines.

Yet there is one group of energy producers that are not being prosecuted for killing birds: wind-powered companies. And wind-powered turbines are killing a vast number of birds every year.

A July 2008 study of the wind farm at Altamont Pass, Calif., estimated that its turbines kill an average of 80 golden eagles per year. The study, funded by the Alameda County Commu-

nity Development Agency, also estimated that about 10,000 birds—nearly all protected by the migratory bird act—are being whacked every year at Altamont.

Altamont's turbines, located

One standard for oil companies, another for green energy sources.

about 30 miles east of Oakland, Calif., kill more than 100 times as many birds as Exxon's tanks, and they do so every year. But the Altamont Pass wind farm does not face the same threat of prosecution, even though the bird kills at Altamont have been repeatedly documented by biologists since the mid-1990s.

The number of birds killed by wind turbines is highly variable. And biologists believe Altamont, which uses older turbine technology, may be the worst example. But that said, the carnage there likely represents only a fraction of the number of birds killed by windmills. Michael Fry of the American Bird Conservancy estimates that U.S. wind turbines kill between 75,000 and 275,000 birds per year. Yet the Justice Department is not bring-

Windmills Are Killing Our Birds

ing cases against wind companies.

"Somebody has given the wind industry a get-out-of-jail-free card," Mr. Fry told me. "If there were even one prosecution, he added, the wind industry would be forced to take the issue seriously.

According to the American Wind Energy Association, the industry's trade association, each megawatt of installed wind-power results in the killing of between one and six birds per year. At the end of 2008, the U.S. had about 25,000 megawatts of wind turbines.

By 2030, environmental and lobby groups are pushing for the U.S. to be producing 20% of its electricity from wind. Meeting that goal, according to the Department of Energy, will require the U.S. to have about 300,000 megawatts of wind capacity, a 12-fold increase over 2008 levels. If that target is achieved, we can expect some 300,000 birds, at the least, to be killed by wind turbines each year.

On its Web site, the Wind Energy Association says that bird kills by wind turbines are a "very small fraction of those caused by other commonly accepted human activities and structures—house cats kill an estimated one billion birds annually." That may be true, but it is

not much of a defense. When cats kill birds, federal law doesn't require marching them to our courthouses to hold them responsible.

During the late 1980s and early '90s, Rob Lee was one of the Fish and Wildlife Service's lead law-enforcement investigators on the problem of bird kills in Western oil fields. Now retired and living in Lubbock, Texas, Mr. Lee tells me that solving the problem in the oil fields "was easy and cheap." The oil companies only had to put netting over their tanks and waste facilities.

Why aren't wind companies prosecuted for killing eagles and other birds? "The fix here is not easy or cheap," Mr. Lee told me. He added that he doesn't expect to see any prosecutions of the politically correct wind industry. This is a double standard that more people—and not just bird lovers—should be paying attention to. In protecting America's wildlife, federal law-enforcement officials are turning a blind eye to the harm done by "green" energy.

Mr. Bryce is the managing editor of Energy Tribune. His latest book is "Gusher of Lies: The Dangerous Delusions of Energy Independence" (PublicAffairs, 2008).



3. Comments to the Draft EIS and Responses



May 6, 2009
Events, Meetings, Noise, Publications

Wind Turbine Noise 2009: List of Accepted Papers

As of 25 April, papers accepted for the 3rd International Conference on Wind Turbine Noise ^[1], 17th-19th June 2009, Aalborg, Denmark:

1. Monitoring, Analyzing and Adjusting Wind Turbine Systems
- Allaei, Tarnowski (USA)
2. Sound Emission and Sound Propagation for Wind Turbines in Forest Terrains
- Almgren (Sweden)
3. Long Distance Sound Propagation Over a Sea Surface
- Andersson, Bolin, Cederholm, Karasal (Sweden)
4. Design of Low Noise Airfoil with High Aerodynamic Performance
- Bak, Bertagnolio, Madsen (Denmark)
- ✓ 5. Seismic Effect on Residents from 3 MW Wind Turbines
- Bakker, Bennett, Rapley, Thorne (New Zealand)
6. Optimization of Energy Production of a Large Windfarm with Noise Constraints: A Numerical Toolkit
- Bartolazzi, Mariani (Italy)
7. Oregon's Noise Regulations for Wind Turbines
- Bastasch (USA)
8. Comparison and Validation of Trailing Edge Noise Models
- Bertagnolio, Madsen, Bak (Denmark)
- ✓ 9. Loudness of Wind Turbines in Relation to Ambient Sound
- Bolin, Nilsson (Sweden)
10. Assessment of Acoustic Emissions of a Wind Turbine in India
- Boopathi, Kurup, Katyal, Gomathinay (India)
- ✓ 11. Wind Farm Limits Based on Background Noise Measurements
- Botha (New Zealand)
12. Wind Shear and its Effect on Noise Assessment
- Bowdler (UK)
13. Unsteady Aerodynamics and Inflow Noise
- Broe (Denmark)
- ✓ 14. Comparison of Wind Turbine Manufacturers' Noise Data
- Broneske (UK)
15. Wind Farm Noise Predictions and Comparison with Measurements
- Cand (UK)
- ✓ 16. Wind Turbine Noise in the United States: The Environmental Speed Limit vs. Worst Case Noise Analyses
- Casey (USA)
17. A Risk Management Strategy Related to Wind Farm Noise Emissions
- Costes (France)
18. Investigation into Onshore Noise Eminating from Piling Operations During the Construction Phase of Gunfleet Sands Offshore Wind Farm
- Court, Rutson-Edwards (UK)

<http://www.wind-watch.org/events/2009/05/06/wind-turbine-noise-2009/>

3. Comments to the Draft EIS and Responses

» Wind Turbine Noise 2009: List of Accepted Papers » Print

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- ✓19. Noise Produced by Wind Turbine Generators: ISPRA Monitoring Project
- Curcuruto, Cammarata, Betti, Marsico, Sacchetti, Silvaggio (Italy)
- 20. A Comparison of Background Noise Levels Collected at the Portland Wind Energy Project in Victoria, Australia
- Delaire, Walsh (Australia)
- ✓21. Case Study: Wind Turbine Noise in a Small and Quiet Community in Finland
- Di Napoli (Finland)
- 22. The Applicability of the Revised French Method for Noise Prediction to Wind Turbine Noise
- Dutilleux (France)
- 23. The Parabolic Microphone for Directional Measurements on Wind Turbines
- Enggaard (Denmark)
- ✓24. Self Noise Measurement of Large Chord Wind Turbine Airfoils and Comparison to Semi-empirical Predictions
- Errasquin, Burdisso, Devenport (USA)
- 25. A Study of the Seismic Disturbances Produced by the Wind Park Near the Gravitational Waves Detector
- GEO-600 Fiori, Paoletti (Italy)
- 26. Practical Effects of Atypical Divided Rotor Blades on Aerodynamic Noise: A Glimpse on Future Prospects for Wind Farms and Micro Turbines
- Gadaix (Thailand)
- 27. Vibration and Noise of a Horizontal Axis Wind Turbine
- Golec, Golec (Poland)
- 28. Wind Turbine and Noise
- Hemami (USA)
- ✓29. Using the Noise Perception Index for Assessing Wind Turbine Noise
- Hessler (USA)
- ✓30. Wind-induced Turbulence and Windscreen Attenuation Effects on Microphone Response Applied to Environmental Background Sound Measurements for Wind Turbine Projects
- Hessler (USA)
- ✓31. Recent Developments in Assessment Guidelines for Sound from Wind Power Projects in Ontario, Canada with a Comparison to Acoustic Audit Results
- Howe, McCabe (Canada)
- ✓32. The Use of Noise Perception Index for Setting Wind Farm Noise Limits
- Hunt (NZ)
- 33. NWCT's Past and Current Testing Activities in Testing Small Wind Turbines
- Huskey (USA)
- 34. Impact of Wind Turbine Noise in The Netherlands
- Jabben, Verheijen, Schreurs, Koeman (The Netherlands)
- 35. Measurement and Assessment of WT Noise in Czech Republic
- Jiraska (Czech Republic)
- 36. Wind Turbine Acoustic Modeling with the ISO 9613-2 Standard: Developing Methodologies to Address Constraints
- Kalapinski, Pellerin (USA)
- 37. Comprehensive Evaluation and Assessment of Trailing Edge Noise Prediction Based on Dedicated Measurements
- Kamruzzaman, Herrig, Lutz, Wurz, Kramer, Wagner (Germany)
- ✓38. An Estimation Method of the Amplitude Modulation in Wind Turbine Noise for Community Response Assessment
- Lee, Kim, Lee, Kim, Lee (Korea)

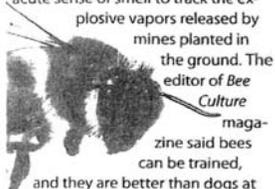
<http://www.wind-watch.org/lists/2009/05/06/wind-turbine-noise-2009/>

3. Comments to the Draft EIS and Responses

and entrepreneurs. That also means connecting them to market opportunities around the world. We have a lot of commercial service officers in the United States who can hook up US companies to business opportunities in other countries. We need to advertise, and we need to let American mainstream businesses know of these incredible resources available." Locke said his goal is to break down the silos within the Department of Commerce and put them all together so a person looking for help "can almost go to one stop, one place, to get all this information."

Colony collapse, now this

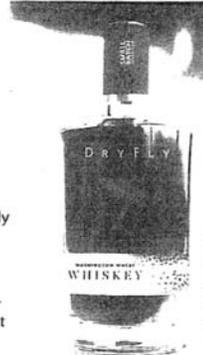
A government-funded research team is looking at using bees and their acute sense of smell to track the explosive vapors released by mines planted in the ground. The editor of *Bee Culture* magazine said bees can be trained, and they are better than dogs at the task of detecting mines because they can hover over them. ■



Wheat 17th July 2009

Get in line

Eighty-proof Washington Wheat Whiskey, made by **Dry Fly Distilling** of Spokane will become the first all-wheat whiskey commercially made in the US in 150 years. Most commercial whiskeys are made from barley, rye, corn and other grains. One distiller in Kentucky makes a 60 percent wheat blend called Bernheim Original but there's nothing on the market that is entirely wheat-based. Kent Fleischmann, co-owner of Dry Fly, said the wheat whiskey has a bourbon-like sweetness. The first batch—80 barrels—will be shipped to restaurants and bars around the state this month. The remainder will go to 260 state liquor stores. It is also available at the Dry Fly office at 1003 East Trent in Spokane. ■

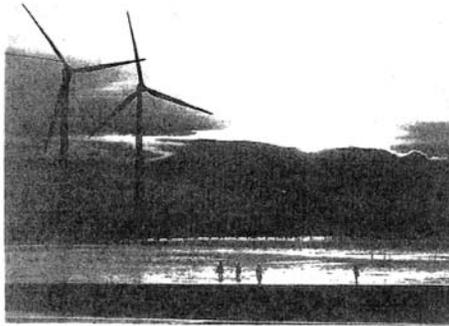


Heading west

Anyone in eastern Washington agriculture knows the Hutterites. The religious group, which originated in Germany, has several colonies in the region. Another community of religious farmers, the Amish, are known for their farms in Pennsylvania, Ohio and Indiana; but high land costs and population pressures are driving them westward. Colorado is the new land of opportunity, with the Amish population there growing from 0 to 400 between 2002 and 2008. Unlike the Hutterites, who buy the latest farming tools including pick-ups, the Amish avoid modern conveniences because they do not want to depend on the outside world. Horse-drawn carriages are still their preferred mode of travel. ■

Windmills generate sleeplessness

It took Taiwan's Council of Agriculture inspectors 3 years to figure out why 400 goats on a wind-swept archipelago have died: it was terminal insomnia. Apparently, the whirling of the large wind turbines located on the islands kept the animals awake. "If noise at night can keep people awake, then it could also keep the goats awake," said a spokesman for the council.



How do you spell I-r-o-n-y?

At the same time the Pew Charitable Trust released a study showing that companies involved in renewable energy have grown steadily over the last 10 years, expanding their workforce by 9.1 percent, Iowa State University has reported trends that appear to show wind—a favorite of green energy backers—is slowing down in the United States. Although the idea is still speculative and scientists are not in agreement over the conclusion, research indicates a drop of 10 percent or more in wind speed in some places in the Midwest over the last decade. States such as Montana, Kansas, Ohio, Indiana, Michigan and Illinois show some of the biggest drops in wind speed. The hypothesis is that winds may be slowing due to global warming—the very thing wind power was suppose to help alleviate. ■

3. Comments to the Draft EIS and Responses

The myth of the Danish green energy 'miracle'

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OPINION

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The myth of the Danish green energy 'miracle'

Michael Trebilcock, Financial Post
 Published Tuesday, May 12, 2009

Transposing the Danish experience to an Ontario context, in 2008, 75% of Ontario's electricity generation output was produced by carbon-free hydro and nuclear generation (unlike Denmark), and about 15% by coal-fired generation. In this context, wind power is likely to displace lower-cost, carbon-free base-load generation, or will be scheduled in addition to it and sold to the U. S. at a loss, leaving Ontarians to foot the difference.

Next time readers see an ad from Vestas inviting them to "Believe in the wind," they should ask themselves: If wind power has no significant impact on the problem we are trying to solve (i. e., CO₂ emissions), if wind power costs two to three times as much as conventional sources of energy; if wind power kills twice as many jobs as it creates through its higher costs (except in the home countries of the major wind turbine manufacturers), then why would any right-minded person accept this invitation? We should also ask our politicians this question. - Michael Trebilcock is Professor of Law and Economics, Faculty of Law, University of Toronto.

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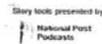
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Edmunds spends a few days with the Honda FCX Clarity

An expensive job killer

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OPINION

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An expensive job killer

Michael J. Trebilcock, Financial Post
 Published Saturday, June 13, 2009

In response to Mr. Lovins' comments, let me pose the following questions:

1 If electricity generated by wind power is competitive with other forms of electricity generation, why does it require such large subsidies? In 2008, the U. S. Energy Information Administration reported the following relative subsidies, on a dollar-per-megawatt-hour basis, for 2007: natural gas at 25¢, coal at 44¢, hydro at 67¢, nuclear at \$1.59 -- and wind at \$23.37. And why is the proposed feed-in tariff for wind power in Ontario (\$13.5 per kilowatt hour) and related costs at least twice the prevailing price for electricity in the province? If wind power is competitive, why doesn't the wind industry renounce all subsidies?

2 If wind power has had such a dramatic impact on carbon emissions in Denmark, why is it that European Environment Agency data show that carbon emissions in Denmark have been essentially flat over the period 1990-2007 (with some year-to-year variation), while wind production has increased dramatically over this period? Why "adjust" these emission figures downwards to reflect electricity exports (sold at a substantial loss) when these are displacing carbon-free hydro and nuclear power in neighbouring countries?

3 Given the meagre and intermittent electricity output from wind turbines, how can it possibly displace most conventional sources of power? In his recent book, Sustainable Energy -- Without the Hot Air (UIT), reviewed by The Economist magazine, David Mackay's estimates imply that to replace 90% of existing electricity generation in the U. K. with wind power, the entire country would have to be blanketed with wind turbines. Even if wind turbines displace some conventional sources of electricity, what is gained by this when, as in Ontario, 75% of current generation output is already carbon-free and when hydro-abundant provinces could substantially increase clean electricity exports to the United States (displacing dirty electricity there) if domestic electricity were priced at its opportunity costs (with rebates to low-income consumers)?

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3. Comments to the Draft EIS and Responses

An expensive job killer

4 How credible are claims that wind power can create significant new "green" jobs, when either higher production costs to electricity-intensive industries, or higher subsidies and hence tax burdens, are likely to kill far more jobs?

Here are my predictions:

1 The expansion of wind power in Ontario will significantly increase overall electricity costs;

2 Wind power will have no significant impact on carbon emissions in the province;

3 Wind power will create no net new employment in the province but will kill jobs through higher electricity costs.

I assume that Mr. Lovins makes the opposite predictions. Let us revisit these issues several years from now in the light of the empirical evidence (rather than mere conjecture) and see who is right. I am confident that my scholarly reputation, which Mr. Lovins believes is in jeopardy, will survive this test unblemished. In this respect, I am in distinguished company. In *The Vanishing Face of Gaia: A Final Warning* (Allen Lane), James Lovelock, one of the world's most distinguished Earth scientists, writes that "Europe's massive use of wind as a supplement to base-load electricity will probably be remembered as one of the great follies of the 21st century" -- probably along with ethanol (which the Ontario government has also chosen to subsidize heavily despite high costs and negative environmental impacts).

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3. Comments to the Draft EIS and Responses

2.16 Health and Safety

DUC 33 The EIS minimizes any adverse health and safety impacts just as it has any other adverse impacts.

DUC 30

1. There is no attempt to mitigate any impact from shadow flicker. This phenomenon is increasingly being recognized as a health issue. There are several residences that are northeast of the proposed turbine locations. Because the prevailing winds are from the southwest these residences could be subjected to shadow flicker. First, identify any residences that will be subjected to shadow flicker. Second, turbines should be sited to avoid subjecting any residences to shadow flicker as reasonable mitigation.

DUC 31

2. The statement that there is no reliable evidence that sound from wind turbines presents a worker or community health or safety issue is incorrect. The EIS states the turbines produce 104 – 108 dBA. If a worker does not have the proper safety equipment, it is a health hazard. More and more information is becoming available regarding the adverse health affects of low frequency sound. The wind industry doesn't want there to be such evidence, but there is. (See comments on noise.)

Comment Responses:

DUC1: Washington State regulations dictate the construction exemption for wind farms, and is, therefore, outside the control of either Garfield County and Columbia County. Nevertheless, costs of construction, to the extent there are services provided during construction, are addressed by the State of Washington's business and occupation tax structure at Chapter 82.04 RCW, not the sales tax structure at RCW 82.08.02567. Wind energy project-related services are not afforded an exemption under the B&O tax regime.

DUC2: Levy equalization funding is a resource provided to school districts that have very low assessed land value base. When turbines come online, the county assessed value rises such that the district no longer meets the criteria for levy equalization funding. The gap in funding can be planned for and appropriately addressed to ensure that a reduction in funding is avoided and to avoid an inequitable distribution of responsibility for those amounts.

DUC3: We acknowledge your comment reflecting disagreement with Washington State's required method of tax assessment for wind farms. Tax structures, exemptions thereto and matters of assessment are established by the Washington Legislature and to a lesser degree, local taxing authorities.

DUC4: Comment is noted. An evaluation of federal energy subsidies and the relative merit of the renewable energy source being proposed is outside the scope of this EIS, which is limited to evaluation of environmental impacts from siting the proposed wind energy facility at the location proposed. Neither Garfield

3. Comments to the Draft EIS and Responses

County nor Columbia County has jurisdiction to evaluate or regulate decisions regarding energy subsidies.

DUC5: An evaluation of the cost of wind power and impacts on electricity rates is outside the scope of this EIS, which is limited to evaluation of impacts from siting the proposed wind energy facility at the location proposed.

DUC6: Both Garfield and Columbia Counties development standards require decommissioning security for the Project. Both Counties require that prior to operations in their respective jurisdictions, the Applicant submit a decommissioning plan. The cost of decommissioning in Year 25 of operations, reduced to present value, shall be included in the plan along with a credit for salvage value. Within one year of the start of operations, the Applicant must provide each of the Counties with a form of security device identified by each county to be a satisfactory mechanism to ensure available funds for the costs of decommissioning.

DUC7: See response to Jim Peterson/Laura Peterson comment PET7. As the DEIS notes at 2-154, Washington's noise standards in WAC 173-60-040 address environmental noise levels. Environmental noise levels limits are established to minimize, not eliminate, the potential subjective impacts of annoyance, nuisance and dissatisfaction. The Project must comply with the Washington's applicable noise standards. See also DEIS at 2-152. For example under Washington State noise regulations, Class A EDNA designations apply to lands where people reside and sleep and Class B EDNA designations apply to lands requiring protection against noise interference with speech. Health impacts due to noise emissions are regulated through OSHA regulations. These are the regulations that protect against hearing loss in intensive noise environments. The low frequency noise comments are addressed at the response to comment PET7. Additionally, the World Health Organization publication "Guidelines for Community Noise" evaluates community noise such as rail, road, air and traffic, industry, construction, public works, and the neighborhood. The report does not examine noise from wind turbines.

As noted in response to comment PET7 regarding low frequency noise, wind turbines do not emit significant amounts of low frequency noise.

The World Health Organization study cited by the commentor does not examine noise from wind turbines. As noted in response to comment PET7, "wind turbines are widely, but mistakenly, believed to be significant sources of low frequency noise" (Hessler et al. 2008; Hessler 2009; see above).

An additional paragraph has been added to the FEIS at 2-151, bottom of the page, to read as follows:

3. Comments to the Draft EIS and Responses

Another weighted scale of noise measurement is the dBC-weighted scale. The dBC scale measures low-frequency ranges that the ear does not detect well. Low frequency noise is generally associated with sources such as compressors, pumps and diesel engines. Very high levels of low frequency noise may result in noise induced vibrations that can generate secondary noise such as window rattling. It is not uncommon for dBC and dBA levels to vary. The difference between dBC and dBA levels within an office building may be 20 dB (for example, 40 dBA and 60 dBC). As discussed in more detail in Section 2.10.2.1 Project Impacts, wind turbines are not a source of significant low-frequency noise.

DUC8: Environmental noise is most commonly measured using the A-weighted scale (dBA) because it reflects the human ear's response to sound and high levels (generally 85 dBA or greater) are considered indicators for noise induced hearing loss. Other metrics, such as C-weighted (dBC) may be appropriate when the noise contains significant low frequency components. However, as discussed in the response to comment PET7, wind turbines do not generate significant amounts of low frequency noise.

An additional paragraph is added to the FEIS at 2-155 immediately preceding the ultimate sentence in Section 2.10.1.1 to read as follows:

Levels associated with hearing loss are much higher than the 50 dBA nighttime standard in State Washington. The Occupational Safety and Health Administration (OSHA), has developed noise standards designed to address worker health and safety risks associated with noise exposure and the potential for noise-induced hearing loss. Action levels under these OSHA standards are 85 dBA. Exposure to sound in excess of this standard requires the employer to initiate a noise conservation program to evaluate the exposure, its duration, possible engineering controls to reduce noise and the provision of hearing protection for employees. The decibel levels covered by the state standards in WAC 173-60-110 are well below OSHA hearing impact standards. As described at p. 2-156 through 2-158 of the DEIS, turbines will be sited to meet or exceed the WAC standards at the project boundaries.

While several states do have regulations that specifically regulate low frequency noise (either in terms of specific frequency bands or using the overall dBC rating), the levels stated typically indicate that exceedences of 65 dBC *may* indicate there is a potential low frequency concern. For example - Division 404, Regulation 1, Section 802 of the Colorado Code of Regulations (CCR) establishes allowable noise levels for oil and gas facilities. These limits are similar to those in WAC 173-60, including 50 dBA nighttime at residential uses. However, given that oil and gas facilities may generate significant levels of low frequency noise, 802 (d) also establishes a low-frequency noise limit that triggers additional low-frequency noise evaluation for those sources. Since wind turbines are not a source of significant low-frequency noise, the low-frequency noise standard in the Colorado regulations is not relevant to this wind turbine project.

3. Comments to the Draft EIS and Responses

The potential swishing noise associated with the rotation of turbine blades is often mistaken for low frequency noise. The frequency content of the swish is typically within the 500 to 1000 Hz range, which is within the audible range and appropriately characterized by the A-weighting used by the Washington Department of Ecology in WAC Chapter 173-60, which is the standard because it characterizes the frequency sensitive of the human ear. The scientific peer reviewed journals do not support the hypothesis that there are harmful levels of low frequency noise from wind turbines (Hessler et al. 2008; Hessler 2009). AWEA and CanWEA have convened a panel of experts to conduct a scientific literature review of this issue to provide additional information regarding low frequency noise from wind energy facilities.

DUC9: The sound pressure levels that will be modeled for the Project will correspond to the specific turbine model used for this Project, which may be different from that at Hopkins Ridge. Insofar as the line of sight downwind from multiple turbine sites, the modeling used assesses the cumulative impacts of multiple wind turbines at a location. Regardless of the model results, the Applicant must ensure that the Project complies with the Washington State's applicable noise standards. The Applicant has voluntarily agreed to meet a residential EDNA standard of 50 dBA at any existing residential receptors of non-participating land owners unless noise easements are obtained.

DUC10: As noted in response to comment PET7, wind turbines do not generate significant amounts of low frequency noise. In the case cited by the comment writer, a farmer offered his opinion that wind turbines 40 meters from his goats kept them awake, and they ultimately expired from terminal insomnia, i.e., exhaustion. The Taiwanese Secretary of Agriculture agreed the farmer's theory may be plausible. To the author's knowledge, it is not known whether this theory has been subjected to any epidemiological or empirical testing or review. Our research has revealed no study or results to support this conclusion. Wind energy facility operations are widespread, and the author has identified no other similar occurrences in either domestic or wild animal populations.

DUC11: Noise levels emitted from the wind turbine is primarily determined by wind speed. See DEIS discussion at p. 2-154. The state standards for noise are not based on ambient noise levels at the receptors, particularly since ambient levels at the receptors can vary significantly from time to time. Given the variability in levels at a particular residence, the degree of audibility will vary depending on the residential noise level occurring at that particular instance. It is important to note, however, that how much a receptor might notice the noise is not the standard. WAC 173-60-040 sets the permissible noise level at 70 dBA for agricultural areas. For residential areas, the permissible daytime noise level is 60 dBA. At night, that noise level is reduced by 10 dBA to 50 dBA. The Applicant has voluntarily agreed to meet a residential EDNA standard of 50 dBA at any existing residential receptors of non-participating land owners unless noise

3. Comments to the Draft EIS and Responses

easements are obtained. Also see response to comment PET7. Wind turbines do not emit significant amounts of low frequency noise.

DUC12: See responses to comment PET8 regarding request for ambient noise studies and applicable noise levels. See also, DEIS discussion regarding ambient noise at p. 2-154. Moreover, regardless of the ambient background levels of noise at any receptor at any time, the Washington State noise standards established in WAC Chapter 173-60 must be met by this Project. The DEIS has correctly noted that the Project is likely to increase existing ambient noise levels, but will not be permitted to exceed state noise standards.

DUC13: Decibel noise levels are not directly added to each other as a linear function. See DEIS at 2-153: "It is also important to note that decibels cannot be directly added, that is, 50 dBA + 50 dBA does not equal 100 dBA. When two sources of equal level are added together, the result will always be 3 dB greater; that is, 50 dBA + 50 dBA = 53 dBA and 70 dBA + 70 dBA = 73 dBA. If the difference between the two sources is 10 dBA, the level will not increase, that is, 40 dBA + 50 dBA = 50 dBA and 60 dBA + 70 dBA = 70 dBA".

DUC14: The noise contour maps (DEIS Figures 2-13 through 2-16) depict where the noise levels are expected to meet 50 dBA. The contours are illustrative based on conservative inputs (e.g., maximum turbine sound power level and no topographic attenuation). An additional conservative assumption used in this analysis is that of an omni-directional wind assuming downwind conditions from all turbines simultaneously. Therefore, the contours will only shrink in the upwind direction and will not expand beyond the omni-directional downwind condition which is presented in these figures. The Applicant has voluntarily agreed to meet a residential EDNA standard of 50 dBA at any existing residential receptors of non-participating land owners unless noise easements are obtained. See also, response to comment PET7 about the C-weighted scale.

DUC15: All of the Project's potential turbines have been included in the analysis presented (including DEIS Figures 2-13 through 2-16). The model used for the DEIS analysis takes into account multiple turbine noise sources. Additional text has been added to the DEIS at p. 2-153 regarding the modeling. See also, responses to comments DUC9 and DUC13 about cumulative noise, dBC scale (PET7), and Washington State noise regulations (PET7).

DUC16: Comment noted. Washington State noise standards require that noise generators in agricultural zones not exceed 70 dBA at the property lines of an adjacent property owner. See WAC Chapter 173-60. In contrast, Washington State noise standards limit noise generators in residential zones to 60 dBA during the day and 50 dBA at night. Washington State noise standards do not limit dBC emissions in any zone. *Id.* This Project is located within an agricultural zone and is therefore subject to Washington's 70 dBA noise limit; however, the Applicant has voluntarily agreed to meet a residential EDNA standard of 50 dBA at any

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existing residential receptors of non-participating land owners unless noise easements are obtained. See also responses to comment PET7 regarding dBA and dBC scales and Washington State noise regulations.

DUC17: The preliminary assessment of noise impacts has begun and is depicted in the DEIS in Figures 2-13 through 2-16. As the second paragraph on DEIS page 1-5 notes, a variety of factors in addition to noise inform the final location of turbines. Those factors are assessed through micro-siting. The Applicant has voluntarily agreed to meet a residential EDNA standard of 50 dBA at any existing residential receptors of non-participating land owners unless noise easements are obtained.

DUC18: The modeling of potential noise impacts has already begun. The same model used to develop Figures 2-13 through 2-16 will be used in the micro-siting process. Regardless of any model's results, the Applicant has voluntarily agreed to meet a residential EDNA standard of 50 dBA at any existing residential receptors of non-participating land owners unless noise easements are obtained.

An additional paragraph discussing the Project's noise modeling software is added to the FEIS at 2-158 immediately following the first sentence of the first complete paragraph, to read as follows:

An acoustical model will be used to simulate the outdoor propagation of sound generated during operation of the Project based on the final Project layout, turbine model selected and location and size of ancillary facilities (substations). The modeling algorithms are based on the International Organization for Standardization 9613-2 which is coded into several computational packages including CADNA/A, the software used in this analysis. This software and computational methods are routinely used by acoustical professionals to develop sound level predictions from a variety of complex industrial sources, including wind turbines. All calculations are carried out on a frequency basis for the nine standard octave bands ranging from 31.5 Hz to 8000 Hz and as such the model calculations are based on a broader set of frequency calculations than either an A-weighted scale or C-weighted scale alone.

DUC19: The Project must be designed and operated in compliance with Washington State's noise standards regardless of the make/model or sound power level of the turbine ultimately selected. This will address the issues raised by reference to Paper #14 of the 3rd International Conference on Wind Turbine Noise. The Applicant has voluntarily agreed to meet a residential EDNA standard of 50 dBA at any existing residential receptors of non-participating land owners unless noise easements are obtained. Selection of wind turbine models takes into consideration a variety of factors, a decision that is proprietary to the Applicant provided that the Project meets the applicable Project conditions.

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DUC20: Studies regarding health impacts from wind turbine noise (at levels below state standard or, from low-frequency noise) are inconclusive. In addition, as discussed in the revisions to DEIS at p.2-298, recent studies suggest that wind turbines are not a significant source of low-frequency noise.

DUC21: The discrepancies between modeled and measured levels noted by Van den Berg in 2003 occurred because the turbines' maximum sound power levels were not used in the calculations or modeling. These pitfalls have been and will be avoided by using the turbines' maximum sound power levels when evaluating compliance with Washington State noise standards for this Project because the modeling used in DEIS Figures 2-13 through 2-16 and to be used in micrositeing assume maximum sound power levels. Regardless of any model's results, the Applicant has voluntarily agreed to meet a residential EDNA standard of 50 dBA at any existing residential receptors of non-participating land owners unless noise easements are obtained.

DUC22: Comment noted. The Special Status Species Observations are described at page 2-94 and in Table 2-20 of the DEIS. Although swan species are afforded protection under the Migratory Bird Treaty Act, and may be protected under state and federal laws and regulations, they are not listed by WDFW as occurring in the Project area. Please also reference the WEST Final Report on the Baseline Wildlife Studies for the Lower Snake River Wind Resource Area, Columbia and Garfield Counties, which is Appendix C in this FEIS. In the second annual Hopkins Ridge Post-Construction Avian and Bat Monitoring Report (January – December 2008), 21 casualties of nocturnal migrants are reported. The estimated number of nocturnal migrant fatalities per turbine per year and associated 90% confidence limits for second year of study was 2.45 (1.30, 4.82), or 1.36 fatalities/MW/year. The percentages of birds quoted in the comment (37-43%) for the Hopkins Ridge Project represents all migratory birds, including passerines, and not just waterfowl. The impacts to waterfowl are addressed on page 55 of Appendix C, which states that these species are unlikely to be affected by the proposed wind energy facility either directly or indirectly because of their low use of the area.

DUC23: PSE has an Avian Protection Program and staff that work closely with state and federal agencies on these issues. Project powerlines will be designed to meet PSE avian protection and the Avian Power Line Interaction Committee (APLIC) standards (APLIC 2006). PSE will incorporate APLIC's suggested practices into the design and operation of the facilities as recommended by the 2009 WDFW Wind Power Guidelines. At riparian crossings, line protection can include markers and other protection devices to increase the visibility of lines to birds. As described on page 1-34 of the DEIS, PSE will use un-guyed permanent meteorological towers to minimize adverse avian impacts from these structures, as recommended by WDFW Wind Power Guidelines. There have been no known avian mortalities at the permanent meteorological towers at the Hopkins Ridge Project. Crossings located within shorelines of the state or other critical areas will

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be designed to comply with the applicable local, state or federal development standards.

DUC24: Studies by WEST as reported in the DEIS and appended to this FEIS as Appendix C state that eighty-nine unique bird species were observed over the course of all fixed-point bird use surveys in the Project area. Table 4.2 of the Final Report, Appendix C, specifically lists information on doves/pigeons and their distribution by season.

DUC25: The County will impose mitigation measures relating to raptor nests in accordance with its wind development standards, its critical areas ordinance, and any applicable state and federal guidelines.

DUC26: Acoustic bat surveys were conducted (see WEST study report, Appendix C to this FEIS) to estimate the seasonal and spatial use of the Project area by bats. Bat activity was monitored using Anabat SD-1 ultrasonic detectors at eight sampling locations on a total of 185 nights during the period April 30 to October 31, 2008. A total of 1,472 bat passes were recorded during 1,219 detector nights. Activity levels for bat passes peaked in mid-July to mid-August, with another smaller peak occurring in September. The mean number of bat passes per detector per night was compared to existing data at six wind energy facilities where both bat activity and mortality levels have been measured. The level of bat activity documented at the Lower Snake River Wind Resource Areas was lower than activity observed at facilities in Minnesota and Wyoming, where bat mortality was relatively low, and was much lower than activity recorded at facilities in West Virginia, Iowa, and Tennessee, where bat mortality was highest. Assuming there is a relationship between bat activity and bat mortality, relatively low levels of bat mortality can be expected to occur in the Project area. For more information see the WEST report appended herein as Appendix C.

DUC27: The EIS identifies potential adverse impacts to avian populations and recommends mitigation where identified as necessary. In addition, technical advisory committees are recommended in the 2009 WDFW Wind Power Guidelines as post-construction advisory committees to review monitoring data and make adaptive management recommendations to project owners and permitting authorities for mitigation and monitoring adjustments as needed. They are also a repository of data that can be accessed by WDFW to inform the agency of potential areas requiring modification when it periodically reviews and revises its WDFW Wind Power Guidelines, which were most recently updated in 2009. See also response to comment PET12.

DUC28: The EIS identifies potential adverse impacts to bat populations and recommends mitigation where identified as necessary. In addition, as noted in DUC27, the Project technical advisory committee will review monitoring data and make adaptive management recommendations. See also comment response DUC26.

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DUC29: This DEIS projects mortality rates at this Project. There is a TAC that will review data collected at this Project. The Applicant will comply with the 2009 WDFW Wind Power Guidelines. The methodology used for this Project was tailored to be appropriate to these WRAs. The project to which the comment writer refers is in Klickitat County and is comprised of habitat specific to that project area.

DUC30: The DEIS describes the phenomenon of shadow flicker at pages 2-297 and 2-298. Shadow flicker has been identified as potentially causing annoyance to people who perceive it within their surroundings. As stated in the DEIS, the frequency of shadow flicker is too slow to induce epileptic seizures. Shadow flicker is not known to cause health effects.

Shadow flicker effects only occur when a receptor is within the line of sight and oriented towards a turbine, and the sun is located low in the sky without any weather conditions that obscure it. The County setbacks applicable to this Project are reasonably calculated to prevent any shadow flicker issues.

DUC31: OSHA standards will regulate Project workers' health and safety, including noise exposure limits. The DEIS, at 2-152 through 153, discusses the difference between sound power level and sound pressure level (noise). As the comment writer notes, the anticipated sound power level for individual turbines is projected to be 104 to 108 dBA. Sound power is not the same as sound pressure (noise). Sound power level is analogous to the wattage of a light bulb. Sound pressure level (noise one hears or measures) is analogous to the brightness or intensity of light experienced at a specific distance from a source and is measured directly with a sound level meter. See also responses to comments PET7, PET8, and DUC7. See also response to comment PET7 citing Hessler et al. 2008 and Hessler 2009. Meeting Washington State noise standards for the receptors (WAC Chapter 173-60) plus OSHA standards for workers will address potential noise impacts from the Project.

DUC32: Turbines have been operating in the United States for many years. In the Pacific Northwest, the Stateline Project has been operational since 2001. Additional discussion regarding noise impacts has been added to the DEIS at page 2-167. The Kamperman, Pierpont and Hanning articles cited by the comment writer, have not been published in a peer-reviewed scientific journal. Negative perception (annoyance) and sleep disturbance have been noted to increase with increasing sound level; however, sleep disturbance was not distinguished by source and was indicated in a self-reporting questionnaire if it occurred once per month. Annoyance was also noted to be moderated by attitudinal factors towards the source and the environment. See, e.g., Field 1993.

DUC33: Comment noted. See response to DUC30 and DUC31.

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DUC34: Comment noted. The Applicant will provide subsequent monitoring data regarding avian and bat populations to the TAC for review and recommendations relating to adaptive management. Please also refer to the response to comments, such as PET17.

DUC35: The purpose of SEPA is to identify whether there are probable significant adverse unavoidable impacts. This conclusion can be reached using a variety of methods, possibly including Zone of Visual Influence (ZVI) maps or application of visual impact assessment methodologies like those used in the DEIS. The DEIS has concluded that visual impacts are significant and unmitigatable.

The visual analysis contained in the DEIS conforms to the criteria recommended by the National Academy of Sciences. See DEIS at 2-135 through 139, which explains the three models used for visual assessment, the utility and application for each, and applied discussion of the usefulness of each on this Project site. The elements comprising visual sensitivity, visual contrast, and distance from the viewpoint to the closest Project component are defined. These elements are combined to assess visual impact. The weighting assigned to each element is explained by the FEIS author in accordance with the recommendations of the National Academy of Sciences. The FEIS author's analysis of each of these factors is set forth in table, narrative, wireframe, and photo montage forms in Chapter 2.2.9 of the FEIS.

DUC36: Photographic views of the Project represent a 56 degree viewing angle, which is equivalent to the human perspective without turning one's head. One panoramic viewpoint was developed due to the expansive viewing opportunity from the Pomeroy Historic District (DEIS Figures 19 and 20). The DEIS author agrees that there may be locations within the Project area that could have 180 degree views of turbines. This does not alter the author's conclusions as to the impacts to visual resources: the DEIS concludes that there are probable significant adverse impacts that cannot be mitigated as a result of this Project.

Views from the Wenaha Tucannon Wilderness Area already contain views of the existing wind farms. The Tucannon WRA would be the next closest element of the Project visible from the wilderness area. Turbines would appear smaller than existing wind farms in the area due to their planned location further from the wilderness area.

A ZVI map is attached hereto in response in a DEIS comment letter. It is not a good indicator of overall visual impacts because it does not address visual sensitivity of viewpoints, does not factor the distance zones from sensitive viewpoints, or assess visual contrast levels. Its use of an 8-mile study area follows guidance published in the National Academies Press literature, and guidance published by the Bureau of Land Management Visual Resource Management manuals, as well as results from conducting several other wind energy visual

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impact assessments. It is often shown that turbines visible at the 8-mile distance or greater have diminished overall visibility due to the inability to perceive details of the turbines from distant viewpoints. Viewpoint selection was based on several factors outlined on page 2-137 of the DEIS under Analysis, including input from the SEPA officials of both Garfield County and Columbia County.

DUC37: Cumulative impacts are addressed in DEIS Section 2.9.2.4. There will be areas within the Project area where the Project and the other two existing wind farms would be seen together from one viewpoint. An example of cumulative impacts simulation is included at DEIS Figure 16, Appendix E.

See also DEIS Figure 2-1, which indicates the location of the existing Hopkins Ridge and Marengo projects, and their proximity to this Project.

DUC38: The DEIS describes the methodologies used for the visual analysis, why they are recognized methodologies for conducting visual impact assessments (see page 2-135) and consistent with the National Academy of Science's recommendations.

The methodology used includes the consideration of duration of view (DEIS page 2-136); panoramic views (see DEIS Figures 19 and 20, Appendix E); focal points (see DEIS Figures 1, 2, 4, 8, 13, 14, and 18 in Appendix E); and number of observers (see DEIS 2-136 and figures of viewpoints completed from high use roadways in the Project area, Appendix E).

As noted in the comment above, the DEIS author acknowledges that turbines will be visible within the proximate foreground distance zone where they may dominate the view and be impossible to ignore.

DUC39: See response to comment DUC38. A factor in calculation of visual sensitivity includes duration of view. A higher visual sensitivity is assigned to long duration views from residential and recreational areas; a moderate visual sensitivity is assigned to views from highways and local roads where the duration of view is short to moderate, and many of the viewers are frequent users of the travel route. A low visual sensitivity is assigned to views where the duration of the view is short. The DEIS includes application of visual sensitivity related to view duration at pages 2-141 through 2-148.

DUC40: See discussion of ZVI maps above in response to comment DUC36.

DUC41: Photographic views of the Project represent a 56 degree viewing angle, which is equivalent to the human perspective without turning one's head. One panoramic viewpoint was developed due to the expansive viewing opportunity from the Pomeroy Historic District (DEIS Figures 19 and 20). Most if not all of the viewpoints used in the DEIS visual analysis are constrained by topography typically found throughout the Project area and region. Selecting specific

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vantage points with 180 degree views is difficult given the location/distribution of sensitive viewpoints in the Project area.

DUC42: See response to comment DUC38. Different viewpoints users have different expectations about the scenic nature of the view. For example, in areas seen from a resident's front porch, and considering the long duration of that view, the expectation of a consistent view is elevated. Drivers traveling on a road may have a different expectation of scenic view, and a hiker on a trail may yet have a different expectation. These different expectations and viewer attitudes toward scenic view comprise an element of visual sensitivity. See DEIS as page 2-136 for further discussion.

DUC43: See response to comment DUC38. Viewpoints with focal points were developed and utilized in the visual analysis contained within the DEIS. Focal points were found to occur in canyon-type topographic areas where the views were constrained and focused. See Appendix E, DEIS Figures 1, 2, 4, 8, 13, 14, and 18.

DUC44: See response to comment DUC38. The DEIS visual analysis included use volume in its consideration of visual sensitivity. See DEIS page 2-136. Furthermore, several visual simulations were completed from various high-use Project roadways in the Project area (see DEIS Appendix E, Figures 4-8).

DUC45: Comment noted. Expanded distance zones would yield the same conclusion about significant adverse visual impacts as is drawn in the EIS.

DUC46: Comment noted. The Columbia Plateau Ecoregion, which covers about 32,100 mi² (83,139 km²), occurs in portions of Idaho, Oregon, and Washington. The study cited to in the DEIS is the most up-to-date assessment of the impact of cumulative wind energy project development in the Pacific Northwest region (BLM 2005).

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September 13, 2009

Garfield County Public Works Department, Planning Division
Walter Grant Morgan, P. S.
SEPA Official
PO Box 160
Pomeroy, WA 99347

Re: Comments on the Lower Snake River Wind Energy Project (LSRWEP) Garfield County CUP #012609

Dear Mr. Morgan,

JON13 As a business owner in Dayton, I am extremely concerned about the 800 additional turbines that are proposed for the area East of Dayton. As a former Special Education teacher, I am concerned about the turbines for several reasons, primarily health (noise and flickering lights). I believe it is imperative that the turbines be placed 1 mile from existing residences. Following are some recommendations:

JON14 RECOMMENDATION 1. All turbines should be placed 1 mile from existing residences and $\frac{1}{4}$ of a mile (9 blocks) from highways.

JON7 RECOMMENDATION 2. If a 'view' is disturbed by turbines, non-participating residents will be assisted in planting trees to mitigate negative visual impacts.

JON5 RECOMMENDATION 3. Define safe standards for noise, especially low frequency, propagation at non-participating resident's property lines. These standards need to be established before micrositing is undertaken. A readily available internet link to just some of the potential health hazards is "betterplan.squarespace.com/frey-hadden-health-effects-wi". There is overwhelming evidence of harm caused by low frequency sound. State law is known to be deficient when addressing low frequency harm to humans. The reliance upon known insufficient standards creates a clear liability for the creators of the harm and for the officials who knowingly endorse the harm causing agent.

JON2 RECOMMENDATION 4. Define standards for turbine setbacks from residences. Changing standards within Columbia County are dismaying. When the Hopkins Ridge CUP was approved, a turbine setback from residences was established at 1,640 feet. Since then, Columbia County has modified that standard to 1320 feet from a participating neighbor's property line. If a non-participating residence is at the property line, the Columbia County's newer guidelines have essentially moved the turbines 20% closer to residences.

3. Comments to the Draft EIS and Responses

JON6 RECOMMENDATION 5. Perform background and ambient noise studies at non-participating residences. These assessments are needed to evaluate turbine induced noise and must include measurements of low frequencies.

JON15 RECOMMENDATION 6. The applicant/operator shall be required to shut down any turbine that imposes shadows or shadow flicker on a non-participating residence. This is an essential health and safety issue and has been recognized as such in Kittitas County by the Washington State Energy Facility Site Evaluation Council.

JON9 RECOMMENDATION 7. Do not place turbines within raptor hunting ranges of rivers and streams within the LSRWEP.

JON10 The Technical Advisory Committee for the Hopkins Ridge Project (TAC) has conducted two surveys, has recently discontinued further avian and bat monitoring, and will discontinue meeting until/unless extraordinary events occur. (Hopkins Ridge Project Technical Advisory Committee (TAC) MEETING MINUTES, APRIL 30, 2009). The TAC focused on avian and bat fatalities. Validated census information on the actual populations of the birds and bats in our region has not been presented.

JON11 The Hopkins Ridge TAC has ceased to function after two surveys. The kill rate of all birds per turbine per year has grown from 2.21 to 5.39, and the kill rate of bats per turbine per year has grown from 1.13 to 2.50. This is clear evidence of an alarming, unsustainable and unacceptable trend.

JON12 RECOMMENDATION 8. Conduct a current avian and bat census within the Hopkins Ridge project area and compare that census with a census taken before the Hopkins Ridge project was developed. This comparative data of actual populations is essential to guide future mitigation activities and needs to be done before construction begins for the LSRWEP.

JON4 RECOMMENDATION 9. When construction starts for Wind Resource Areas within the LSRWEP, immediately provide mitigation funds to the appropriate school district to at least replace lost Levy Equalization funds.

JON1 RECOMMENDATION 10. Because of the importance of Wildlife Baseline Studies, the DEIS comment period shall be extended so that the general public can review and comment on the final revised and distributed Section C. Public comments on the DEIS will be accepted up to 30 days following public distribution of the full and complete Section C.

JON3 RECOMMENDATION 11. For a 25 year period, prepare a tax table that shows by year what the taxable base is for a representative turbine. Fully explain the tax consequences when a turbine is no longer functioning and generating power.

JON8 I believe the excess turbines discourage hunters and city folks who love to visit the country and mountains for the peace and quiet they offer from coming to our area.

3. Comments to the Draft EIS and Responses

Should the turbines continue to infringe on our community and be visible from town, I shall leave Dayton, closing yet again, one more store.

Sincerely,



Candy Jones
403 E. Dayton Ave.
Dayton, WA 99328

509 382-4609

Comment Responses:

JON1: See comment response PET19.

JON2: See comment response PET6.

JON3: See comment response PET4.

JON4: See comment response PET1.

JON5: See comment responses PET7 and PET8.

JON6: See comment responses MIL1.

JON7: Given the height of the Project's turbines and their proposed siting on ridgetops in order to capture the wind resource, it is impossible to effectively screen the view of turbines by trees or any other method.

JON8: The DEIS, at 2-230 and at 2-277 through 2-280, addresses the Applicant's hunting programs at its other wind projects, and mitigation measures are contained in the DEIS and this FEIS to implement a hunting program at this Project. At the DEIS 2-277 through 280, it is noted that evidence regarding existing wind farms demonstrates that they do not deter, and in some instances, attract and promote tourism and associated activities. The Project is not expected to be visible from the city of Dayton.

JON9: See comment response to PET14.

JON10: See comment response to PET15.

JON11: See comment response to PET16.

3. Comments to the Draft EIS and Responses

JON12: See comment response to PET17.

JON13: As the DEIS notes at 2-154, Washington's noise standards in WAC 173-60-040 address environmental noise levels. Environmental noise levels limits are established to minimize, not eliminate, the potential subjective impacts of annoyance, nuisance and dissatisfaction. The Project must comply with Washington State noise standards. As discussed in the DEIS on page 2-157, it is anticipated that 50dBA would be achieved within approximately 1500 feet of turbines, which is generally consistent with County setback requirements. One mile setbacks are not required to meet state noise standards. See also responses to comments PET7 and DUC7. As discussed in the DEIS at 2-148, the Project will be constructed and operated in accordance with FAA regulations for turbine lighting, locations and height. Lights typically used to meet FAA requirements would be to some extent to shielded from ground level view due to a constrained (3-5 degree) vertical beam. Daytime lighting of the turbines will not be necessary if the turbines are painted white. See also response to JON14 below. In regards to shadow flicker, please see discussion in DEIS 2-297 and 2-298 and response to comment DUC30.

JON14: Comment noted. The Project must comply with the respective county's setback standards, which were determined through the local legislative process. As described in the DEIS at p. 2-158, the preliminary noise modeling, assuming maximum wind conditions and maximum turbine noise per the equipment specifications identifies the expected location of the 50 dBA noise contours and how state standards are expected to be achieved at the project boundaries, taking into consideration the existing setbacks in local regulations.

JON15: See response to JON13. Conditions imposed by EFSEC are developed in response to the particular facts of individual projects brought before it based on EFSEC's SEPA rules and other substantive authority. EFSEC's project-specific conditions do not constitute state regulations. See also discussion of shadow flicker at DEIS pages 2-297 and 2-298.

3. Comments to the Draft EIS and Responses

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Statement (DEIS) for the Lower
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Garfield County and Columbia County, Washington

Garfield County



Garfield County, as the lead agency, in association with Columbia County is soliciting written comments on the DEIS for the construction and operation of the Lower Snake River Energy Project. The DEIS was issued to public review on August 17, 2009. The comment period for DEIS closes at 5 p.m. on September 16, 2009.

Interested persons, tribes, agencies as well as federal, state, and local elected officials are encouraged to review the DEIS document and provide comments on environmental concerns they may see in the DEIS. To be most helpful, review comments should clearly describe the specific issue or concern and cite a page and/or section number in the DEIS for reference.

All comments must be postmarked or delivered to Garfield County Public Works at 300 19th St. Pomeroy, WA 99347 by September 16, 2009 in order to be considered.

BRA1

The Economic benefit To The counties is
A Huge Asset. The Negative Aspects seem
To be minor.

PLEASE PRINT or Attach separate type written document – ADDITIONAL ROOM IS PROVIDED ON BACK

Name CECIL BRAMHALL

Address 338 E. BRAMHALL RD. DAYTON, WA 99328

Agency/Organization _____

Please drop this comment sheet into a comment box at the Open House or mail to:

Garfield County Public Works

Attn: Grant Morgan

P.O. Box 160

Pomeroy, WA 99347-0160

All comments must be delivered or postmarked no later than September 16, 2009.

Comment Response:

BRA1: Comment has been noted.

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DIC1

My comments are related to the
Table ES-1 in the executive
summary, in volume 1.

* Noise: I am pleased to see
reference to compliance w/ county

PLEASE PRINT or Attach separate type written document - ADDITIONAL ROOM IS PROVIDED ON BACK

Name Jennie Dickinson

Address 252 N. Touchet Rd, Dayton

Agency/Organization CFED (Citizens for Economic Diversity)

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Attn: Grant Morgan

P.O. Box 160

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Zoning ordinance setbacks and WA state noise standards. I believe the EIS addresses noise adequately.

* Land Use, ^{Recreation,} & Economic Development:

Recreation measures appear acceptable. The positive ability of farming + wind energy to co-exist may have been understated. They have proven to be well-suited as a resource land use.

Positive economic benefits have also been understated. More emphasis should be placed on the importance of the economic benefits to our rural communities, and that those benefits may outweigh other adverse impacts.

* Visual: my comments here are related to the photos + line drawings shown at the open houses + in the study. Nice job presenting the possibilities. I see no adverse impacts that outweigh the positive benefits of the project.

Comment Response:

DIC1: Comments have been noted.

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PLEASE PRINT or Attach separate type written document – ADDITIONAL ROOM IS PROVIDED ON BACK

Name Donald Howard

Address 1420 Tucannon Rd. Pomeroy, WA 99347

Agency/Organization Rancher / Landowner

Please drop this comment sheet into a comment box at the Open House or mail to:
Garfield County Public Works
Attn: Grant Morgan
P.O. Box 160
Pomeroy, WA 99347-0160

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WA Energy Independence Act (RCW 19.285 calls for using renewable energy sources. I am in favor of the DEIS Preferred Alternative for the Lower Snake River Wind Project.

HOW1 The project will lower property taxes in our counties, create new jobs and bring new revenue to businesses. Wind power is a new crop option for the family farm.

I live among wind towers from other projects, I find that noise, lights, and structures are not a problem to myself and family.

Garfield and Columbia counties need the economical boost that wind farms will provide.

It's time to get the DEIS completed and the Lower Snake River Wind Project started.

Sincerely



Donald Howard

Comment Response:

HOW1: Comment has been noted.

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Please see attached sheet.

PLEASE PRINT or Attach separate type written document – ADDITIONAL ROOM IS PROVIDED ON BACK

Name Bob Hutchens

Address 142 Fullerton Road Dayton, WA 99228

Agency/Organization Self

Please drop this comment sheet into a comment box at the Open House or mail to:

Garfield County Public Works

Attn: Grant Morgan

P.O. Box 160

Pomeroy, WA 99347-0160

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HUT1

Having reviewed the Draft Environmental Impact Statement for the Lower Snake River Wind Project, I feel that the project will be beneficial for Columbia and Garfield citizens.

A project such as this will provide immediate and long-term employment for many people in the area. The families it will support will, in turn, support our schools and hospitals. The increased tax base will be beneficial to all property owners. The industry is clean and is part of a greater effort of combating global warming and increasing energy independence for the United States.

As the process continues for advancing the project, I would encourage the governments of both counties to be aware of citizens concerns and accommodate as many as practical and still move forward.

Thank you for accepting my input.

Sincerely,



Robert A. Hutchens
142 Fullerton Road
Dayton, WA 99328

Comment Response:

HUT1: Comment has been noted.

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*There is great financial benefit to the County resulting
KIM1 From the construction of these wind turbines in
Columbia County. Given the setbacks & other safe
guards, this project will be a welcomed asset
to this community.*

PLEASE PRINT or Attach separate type written document – ADDITIONAL ROOM IS PROVIDED ON BACK

Name Jim Kim e

Address 501 E. Richmond Ave.; Dayton, WA 99328

Agency/Organization Citizens for Economic Diversity

Please drop this comment sheet into a comment box at the Open House or mail to:

Garfield County Public Works

Attn: Grant Morgan

P.O. Box 160

Pomeroy, WA 99347-0160

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Comment Response:

KIM1: Comment has been noted.

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PAS1

The windmills in Columbia Co. have had
a major positive impact on our community.
The taxes generated by the projects have
helped the hospital reach a positive cash
flow that we have not seen in a long time.

PLEASE PRINT or Attach separate type written document – ADDITIONAL ROOM IS PROVIDED ON BACK

Name Norm Passmore D.D.S.

Address 270 E. Main. Dayton WA. 99328

Agency/Organization Hospital Commissioner CCHS

Please drop this comment sheet into a comment box at the Open House or mail to:

Garfield County Public Works

Attn: Grant Morgan

P.O. Box 160

Pomeroy, WA 99347-0160

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Comment Response:

PAS1: Comment has been noted.

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*My name is Val Woodworth, I own + operate an
Aerial Application Business in Columbia Cty. which
was started in 1940's by my father. My father (Harley Woodworth)
started flying in 1948 in Columbia Cty. Now since the
wind turbines I have realized a loss of income every year.*

PLEASE PRINT or Attach separate type written document - ADDITIONAL ROOM IS PROVIDED ON BACK

Name Val N. Woodworth
Address 341 West Bramhall Rd. Dayton WA 99328
Agency/Organization Cropland Air Serv, Inc.

Please drop this comment sheet into a comment box at the Open House or mail to:
Garfield County Public Works
Attn: Grant Morgan
P.O. Box 160
Pomeroy, WA 99347-0160

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WOD1 The loss has increased every year. Now about \$50k+.
About May of 2005 my wife and I purchased our
dream home in the country with no ~~neighbors~~ neighbors
in sight with views as far away as Steptoe Butte.
We are going to be surrounded by Aprox. 240 Turbines
in the Taccannon phase which will, I believe devalue
our investments. I hope some one will come by
and consult with us about our options!

Comment Response:

WOD1: Aerial crop dusting routinely occurs in and around agricultural lands that include wind turbines. Safety protocols for aerial crop dusting in wind turbine areas are similar to safety measures in other areas with structures (see DEIS at page 2-276). Property values are addressed in the DEIS at page 2-273. Appendix H, at page 44, contains an analysis of the peer-reviewed studies to date, which

3. Comments to the Draft EIS and Responses

conclude that proximity to wind turbines in rural communities does not cause a diminution in property values.

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See attached!

PLEASE PRINT or Attach separate type written document – ADDITIONAL ROOM IS PROVIDED ON BACK

Name ERIC THORN
Address BOX 207, DAYTON, WA 99328
Agency/Organization _____

Please drop this comment sheet into a comment box at the Open House or mail to:
Garfield County Public Works
Attn: Grant Morgan
P.O. Box 160
Pomeroy, WA 99347-0160

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3. Comments to the Draft EIS and Responses

September 15, 2009

Garfield County Public Works Department, Planning Division
Walter Grant Morgan, P.S
SEPA Official
P.O. Box 160
Pomeroy, WA 99347

Re: Comments on the Lower Snake River Wind Energy Project (LSRWEP) Garfield County CUP #012609

Dear Mr. Morgan,

I am very disappointed that the DIES is so obviously a very blatant pro industrial wind document. I am especially concerned with three areas: people, land and actual energy production. Without a fair assessment, we, the people, cannot make an objective judgment as to this project's merit.

- ETHO1 I. People are our most important natural resource. In addition to plant and wildlife consequences, the adverse effects to humans must be considered and documented. The land area under consideration is considered rural, but the people who live there are entitled to as much consideration as those who live in an urban setting. Turbines would never be placed in urban areas while the setback established from rural homes is totally inadequate for safety-- let alone a peaceful environment and for health.
- ETHO2 II. Land is essential for human food production, especially productive farm land. One of the most comprehensive methods of evaluating land is the capability class system employed in the published Soil Surveys of the Natural Resources Conservation Service. Other than noting capability class files are at the Soil Conservation Office, I see no reference to capability class when reviewing the land area under consideration for this project. Capability Class information needs to be coordinated with the turbine and road site maps and a composite map made readily available in the EIS documents.
- ETHO3 Reference is made several times to 600 acres permanently ruined by towers and roads. The inference is that this is only a small percentage of total crop land. The emphasis should be on the actual acres. Six hundred acres lost to food production is not acceptable. Again, it is very important that the DEIS include not only maps of the projected roads and towers but the capability class of all the land permanently lost.
- ETHO4 III. Industrial use of agricultural land is by definition not compatible with agriculture. That is why industrialization is allowed only by exception and why an EIS is mandatory. Exceptions should be made only for compelling arguments or reasons. I was, therefore, pleased to see that a wind map was included in the DIES. Unfortunately, I was unable to determine actual potential power production. It is well known that average wind speeds in

3. Comments to the Draft EIS and Responses

excess of fourteen and one half miles per hour are necessary to produce more power than the turbines consume. (Vestas power curve for 1.8 Mw turbines) Yet, the wind map indicates that practically the entire project area is below this threshold. The DEIS must point this out emphatically.

- ETHO5 IV. In addition, a section of the DEIS must explain the subsidy system available to industrial wind systems. The construction viability of a project and its useful life expectancy are tied to these non permanent dollars. Our tax dollars are subsidizing 40-60% of the construction costs of the project – a project which ruins our agricultural land and produces no usable electricity.

Thank you for this opportunity to point out deficiencies in the DEIS. It is very important that we people have the entire facts at hand so that we may judge for ourselves what we are losing and may lose in the near future.

Sincerely,



Eric Thorn
PO Box 207
Dayton, WA 99328
509-382-4820

Comment Responses:

ETHO1: Comment noted. Garfield and Columbia Counties are the appropriate regulatory agencies to establish setbacks within their respective jurisdictions. This Project shall comply with the setbacks established by the local legislative processes of both counties.

ETHO2: Land capability classification is a system of grouping soils primarily on the basis of their capability to produce common cultivated crops and pasture plants without deteriorating over a long period of time. In addition to land capability classification, NRCS also has a classification system for soils, including a designation of “prime farmlands.” See FEIS discussion in Section 2.2.3 and FEIS Figure F2-2a. Section 2.14.2.1 of the DEIS acknowledges the loss of 600 acres of productive agricultural areas in the Project area. Of the 600 acres, 93% is designated as prime farmlands. This small amount of permanently impacted prime farmland will not have a significant adverse impact on agricultural land use in either of the counties.

ETHO3: See comment response ETHO2.

ETHO4: The commenter is correct that wind turbines produce different amounts of power at different wind speeds. As described in the DEIS at Section 1.5.3.1, the turbines will begin to generate electricity at winds speeds of approximately 9 miles per hour (mph). Electricity generation will increase with wind speed (as illustrated in a typical power curve as being referred to by the commenter (AWEA 2005)) until the turbine reaches it rated capacity. Although it is difficult to see in

3. Comments to the Draft EIS and Responses

the map depicted in DEIS Figure 1-4, *average* wind speeds in the Project area actually range from 14.5 through 17.9 mph.

ETHO5: See comment responses DUC1 and DUC3.

3. Comments to the Draft EIS and Responses

September 16, 2009
Garfield County Public Works
Grant Morgan, P.S.
PO Box 160
Pomeroy, WA 99347-0160

Re: Comments on the Lower Snake River Wind Energy Project

Dear Mr. Morgan and County Officials,
Thank you for following necessary procedure to produce a draft Environmental Impact Statement and allowing a public comment period. The consultants have, however, returned a woefully inadequate document that is openly biased in favor of industrial wind development. The included "evidence" is unbalanced in many areas since only studies which support wind proposals are cited or negative impacts are downplayed. Some data is outdated; data is also presented that has little relevance or obscures impacts if applied to this project appropriately.

My response is to the document overall including the overview summary, individual sections, charts and appendices. So, rather than citing each instance by section number I have grouped my concerns by topic. For example:

ELTH1

Noise: The standards for measuring noise impacts are outdated. These standards were developed for other applications and copied over to wind turbines assuming the issues would be the same. At that time turbines were also much smaller in size and numbers per project were also much lower. Evidence from around the world strongly indicates that commonly applied measurement parameters are inappropriate and inadequate to truly reflect the multiple impacts of industrial turbine projects on living beings. Attention must be paid to very low frequency emissions in addition to audible sound – both in baseline and for mitigation studies.

ELTH1

Please see the attached 8 page siting summary guidelines developed by Kamperman and James. The full manuscript is available online at www.windturbinesyndrome.com "The "how to" Guide to Siting Wind Turbines to Prevent Health Risks from Sound". The recommendations are continually updated. For example, when turbines are installed along ridgelines, impacts are multiplied. This team now recommends a setback of 2 miles (10,560 feet) from homes in such instances. Compare this to the project proposed setback of of ¼ mile (1320 feet) or 4x the extended height of the tower.

ELTH2

Washington State guidelines are only minimum standards and must be applied with judicious respect to each individual project.

ELTH3

The cumulative affects of turbine noise and shadow flicker are downplayed throughout the document. For example, sleep disturbance is not a minor inconvenience. It has known and serious health ramifications such as confusion, memory loss, increased risk for stroke, heart disease, diabetes, even obesity. Sleep deprivation badly affects a

3. Comments to the Draft EIS and Responses

- ELTH4 Mitigation of Noise: First of all each family, even if agreeing to participate as property owners, must be made aware of the possible consequences. There are multiple sources on the web discussing these issues, complete with video of shadow flicker, and audio noise—real time, real people, real turbines.
- ELTH5 Secondly, there must be a provision to ensure that turbine developers/turbine project owners will buy out any affected family at the full pre-turbine value of their home and property. This is to prevent them from being trapped in an unbearable, unlivable place or facing the heavy financial loss of having to abandon their home and property. It is difficult to predict how noise and flicker will affect any individual location, so even if a person thinks they will be OK, an escape clause must be allowed.
- ELTH6 Thirdly, noise studies done for mitigation purposes must rely on properly done baseline studies and must be done so as replicate the complaint conditions.
- ELTH7 Birds and Bats:
Using the collision incident report and the bird population numbers it becomes clear that raptor populations may well be obliterated (8-10 years) before the projected useful life of the project has been reached (15 years).
- ELTH7 Collision fatalities are not the only damage inflicted by industrial turbine projects. As with humans, the full spectrum of “noise/sound” has multiple impacts on wildlife and birds. A significant bat study implicates cell tissue damage to the lungs of bats that resulted in deaths first thought to be attributable to collision. (Human lung tissue is also exquisitely sensitive.)
- ELTH8 Low population counts mean that the need for protecting species is even more important. This report implies that low population means a species does not matter. Consider the lynx example. We have seen a bobcat on our property twice in 25 years with one additional independent sighting of tracks. This does not mean bobcats are not living here. Native or not, they are here. The same goes for eagles, if it is flying through rather than nesting, it could still be impacted.
- ELTH9 Global Warming: This is a very prejudicial section that has no place in this draft EIS. The debate on the cause(s) of global warming is far from over. Scientists do not agree. Moreover, wind power has an especially tenuous reputation for being able to even remotely mitigate climate change. Charts showing the replacement of CO2 are misleading. It has not been shown that manufacturing, shipment, installation (construction) and operational energy needs are offset by the energy produced—especially in our immediate area.
- ELTH10 Our area is providing the very best clean energy through our hydro system. Wind power is both unreliable and unproven which will necessitate more power generation

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plants be provided, i.e. built as backup. Wind energy has not proven itself to be cost effective.

ELTH 11

Right now, development companies are rushing ahead to take advantage of subsidies and stimulus funds. We must remember these monies are not "free" – they come from our tax dollars. Nor are these monies guaranteed. When a project proves not to be cost effective, who will foot the bill? It is already estimated that alternative energy state and federal requirements will increase a household's yearly utility bill by \$1200.00.

ELTH 12

Another point: power generation in the United States is not dependent on foreign oil (less than 2%).

ELTH 13

Power Generation: The statement that this project provides local power is misleading. Most of the power generated in Columbia County has already been sold or is committed to other areas including California. Turbines turning on a nearby hill do not send electricity to local homes. Flipping a switch does not bring local power to any home on demand.

Energy production figures and numbers of homes powered, etc, are based on projected figures. Capacity projections do not equal production. Correlating wind data with the number of turbines in Columbia County yields a net loss....3.8% gross capacity for 2008.

ELTH 14

Agriculture land: The project area is huge and 600 acres will be irretrievably lost to towers and roads. The world has another crisis besides an energy crisis: a food crisis. Taking basic food (grain) acres out of production is unconscionable. This is a social issue we can immediately and productively address – far more meaningful than chasing "green" theoretical change. Farming around turbines is inefficient and therefore more costly which in turn raises the cost of food produced and tempts operators to take even more land out of crops to save their bottom line. Land placed in CRP will impact the number of agriculture jobs and the jobs and bottom line of agriculture support businesses such as equipment dealers, parts, fuel, spray and fertilizer.

ELTH 15

Other economic impacts: There are many factors contributing to the employment and income figures of both Columbia and Garfield counties. A direct or lasting correlation cannot yet be attributed to wind energy projects. Dayton schools have been negatively impacted....this should be mitigated prior and during any future occurrence. We have yet to see how the economics play out long term..

ELTH 16

Culture and Visual: Garfield County has made real progress preserving and promoting its rural history. (restoration of the courthouse, historic building preservation, Garfield County Museum and the new ag museum) Make no mistake, a town surrounded by towers is not going to have the ambiance you now enjoy. Visual impacts are important to residents and tourists alike.

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These towers aren't going away anytime soon....plus noise and lights will permeate your environment. People move here and visit here for open space, open vistas and peace and quiet.

ELTH 17 Visual Simulations: I was glad to see that the Patit Creek campsite will not be affected (provided the visual simulation is accurate.) The Tucannon lunch site has already been compromised. Why wasn't it included to show the cumulative impact? Surely you have favorite views of the Blue Mountains you would like to protect.

ELTH 18 Please don't destroy what is working in your community by listening to the siren song of temporary economic impact. The turbines may look like they are spinning dollars. But, so far worldwide, turbines are spinning off economic and personal woe and the long term effects aren't even kicking in yet.



Wind energy is being promoted on a colossal scale worldwide. Wind development companies, generally owned and capitalized by powerful investors, are conducting intense lobbying at every national, state and local government level. They are pleading for subsidies and tax write-offs while at the same time selling carbon credits to companies who either cannot or will not clean up their own act. It is a shell game that will eventually collapse. The tax payer will pay first and then every single utility user will end up paying the piper.

Also remember that since large industrial projects do not have a long or proven track record, anecdotal evidence must be considered. Reports are everywhere from real people about real issues from real turbines. When we ourselves or one of ours is hurting, yes, it becomes an emotional issue — precisely because we are human.

I strongly urge you to do further study and especially to apply a more reasonable setback standard from homes.

Please protect prime agriculture land for long term production of much needed food.

Please consider careful siting to protect wildlife, birds and bats.

Please do not proceed to the permitting stage without regard to these issues. Set aside the "promised" dollars during deliberations for awhile, carefully consider the long term meaning of all the data provided, research areas of concern, do the calculations, and project the long term hard and soft costs. Is it worth it?

Look at all the fine print and generalizations. Can a developer who does not have a long term interest be trusted to provide the real picture?

Without taking a cautious broader perspective, this situation is much like the Titanic. The shipping line company compromised safety in design. The number of life boats

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was approved based on archaic standards for much smaller vessels with far fewer passengers. The ship's command ignored the ice warnings of vessels which had gone before. All in the name of speed, competitive advantage and greed. Take heed.

The Lower Snake River Energy Project as it is presented is incompatible with the vision statement included in the Garfield County & City of Pomeroy Comprehensive Plan. In the Vision Statement you as a community are charged (among other things) to enhance the opportunities for recreation and cultural activities.....; to encourage changes that promote livability...protection of cultural resources and high quality design and limit stress factors such as noise pollution...; and provide effective stewardship for the environment, to protect critical areas, and conserve land, air, water, and energy resources.

The lower Snake River Energy Project compromises the delicate ecological balance of our counties. Above all do no harm.

Sincerely,



Elizabeth Thorn
PO Box 207
Dayton, WA 99328
509-382-4820



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Kamperman & James

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Why Noise Criteria Are Necessary for Proper Siting of Wind Turbines

Date: November 02, 2008

By:

George W. Kamperman, INCE Bd. Cert. Emeritus
Kamperman Associates, Inc.

And,

Richard R. James, INCE
E-Coustic Solutions

Introduction

Although industrial-scale wind turbines are now a familiar sight in many countries, they are only now becoming common in the USA and Canada. If the past few years are any guide, industrial "wind farms" will become very common indeed in North America, especially considering the robust government incentives for renewable energy.

Nina Pierpont's foregoing report injects an element of caution, perhaps even alarm, into this enterprise. Her research reveals significant health effects associated with living in the vicinity of industrial wind turbines. As a result of her research and that of others, we have reviewed sound studies conducted by consultants for governments, wind turbine owners, and local residents for a number of sites with known health or annoyance problems. (We included the homes of some of Pierpont's study subjects in our review.)

It is clear from Pierpont's report that turbine noise is a major issue for virtually all of her subjects. That wind turbine noise might be responsible for the majority of ailments identified by Pierpont as Wind Turbine Syndrome should not be a surprise. Sound levels of the type and level of those found on properties and inside homes of people living near operating turbines are often associated with sleep disturbance and the vast set of pathologies known to be caused by noise-induced sleep problems. In Pierpont's work builds upon a foundation of well accepted health risks documented by the World Health Organization (WHO) and other health standards organizations.

Building on Pierpont's work and that of other clinicians, we have developed a set of simple guidelines, using dBA and dBC sound levels, for communities to use in maintaining turbine

noise emissions within healthy limits. The following is a synopsis of a much longer report presenting measurement procedures and noise standards for use by towns in drafting responsible wind laws.¹

Background

Wind farms using the newer 1.5 to 3 MW (megawatt) turbines have resulted in numerous complaints from people who find they no longer live in the quiet rural community they enjoyed before the turbines went online. Questions have been raised about whether the current siting guidelines used in the USA are sufficiently protective for people living closest to the developments. Research into the computer models used to determine the layout of industrial wind farms and the distances from residents nearest the turbines show that models are not accurate enough to be used as the sole basis for making siting decisions without corrections for known errors and unaccounted for weather conditions. The models fail to account for increased sound output from turbines, and the effects on sound propagation, under certain weather conditions. In addition, the models fail to disclose the known errors of the underlying algorithms that are given as ± 3 dB for ISO 9613-2 based computer models. Other tolerances for the input data and turbulence in the wind are also not disclosed, yet they can add another 3 dB to the wind turbine's sound levels at a receiving property under common weather conditions.

We also reviewed noise criteria from other countries used for siting wind turbines. Current standards for turbine siting rely either on not-to-exceed dBA sound levels, such as the 50 dBA limit promoted by the wind industry in the USA, or on not-to-exceed limits based on the pre-construction background sound level plus an add-on (e.g., $L_{eq} + 5$ dBA). Nearly all countries rely on A-weighted sound. Only Germany has an explicit limit for C-weighted sound levels.

Discussion

Our study revealed that some people living as far as 3 km (1.9 miles) from a wind farm complain of sleep disturbance from turbine noise. Many people living one-tenth this distance

¹See www.windturbinesyndrome.com

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1300 meters, or 984 feet) from turbines reported major sleep disruption and other serious medical problems from nighttime turbine noise. It is important to realize that the peculiar acoustic characteristics of wind turbine noise immissions cause the sounds heard at receiving properties to be far more annoying and troubling than the more familiar noise from traffic, industrial factories, and even aircraft.² Hence, the common community noise limits and "rules-of-thumb" used for the more common community noise sources are clearly not appropriate for siting industrial wind turbines.

It is worth noting, furthermore, that rural communities located at a distance from industry, highways, and airport-related noise emitters are much quieter than what is normally classified as "rural" in other community noise standards. Our studies show that the A-weighted Leq background sound level in rural communities is often between 20 and 30 dBA, sometimes lower. For communities a mile or more from major roadways, nighttime background sound levels of less than 20 dBA are not uncommon. This also results in much lower dBC values than for other suburban or rural communities nearer major roadways. Our research shows that low frequency sound is often in the range of 25 to 40 dBC for communities a mile or more from highways. Thus, a new noise source with strong low frequency content is more significant when in an isolated rural community than in a suburban or urban area with more traffic and other man-made noises.

In general, the further away from major roadways, airports, or industry the lower the low frequency background sound levels. Thus, C-weighted criteria are more necessary in these communities to avoid problems inside homes, especially during late evening and nighttime.

We pose, below, some frequently asked questions, together with our responses. (The complete list can be found in the fuller version of our report at www.windturbinesyndrome.com)

Do national, international, or state and local community noise standards for siting wind turbines near dwellings address the low frequency portion of the wind turbine's sound immissions? No, they do not. Although state and local governments are in the process of establishing wind farm noise limits or wind turbine setbacks from nearby residents, these

² Sound "immissions" refer to sounds as heard at the receiving location. "Emissions" refer to the sound from the perspective of the sound source.

standards incorrectly assume that limits based on dBA levels alone are sufficient to protect residents.

Do wind farm developers have noise limit criteria or wind turbine setback criteria that apply to nearby residents? Yes. However, the wind industry routinely recommends residential wind turbine noise level limits of 50-55 dBA at the nearest home. These levels are far too high for the quiet nature of rural communities and pose health risks for the nearest residents, according to research like Dr. Pierpont's. An additional concern is that some of the methods for implementing computer models to predict operational sound levels at locations in the community report sound levels that are lower than what will occur in real operation. These two factors in combination can lead to post-construction complaints and health risks from locating wind turbines too close to people.

How does wind turbine noise impact nearby residents? Usually, the most common problem is chronic nighttime sleep deprivation. According to the reviewed medical research, this may develop into far more serious physical, psychological, and cognitive problems.

What are the technical options for reducing (mitigating) wind turbine noise immission at residences? There are only three: 1) increase the distance between source and receiver, 2) prohibit nighttime operation, or 3) reduce the source sound power immission.

Is wind turbine noise at a residence more annoying than traffic noise? Absolutely. Studies show that wind turbine noise was perceived by roughly 89% of respondents even when the A-weighted sound level were as low as 35.0-37.5 dB. Traffic and other common community noise levels seldom cause similar responses for perception, annoyance or sleep disturbance at such low sound levels.

Why do wind turbine noise immissions of only 35 dBA disturb sleep? The assumptions about wall and window attenuation being 15 dBA, or more, that are commonly applied to outdoor noise sources may not be sufficiently protective, considering the relatively high amplitude of the wind turbine's low frequency immission spectra. When evaluating sound penetration through a modern wood frame home all frequencies, including the lower frequencies, must be considered, not just the A-weighted levels. The reduction may be 15 dBA or more, but that is



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not the proper criteria for preventing sleep disturbance. When considered as C-weighted values the difference from outside to inside the home may be only 0 dB or less. It is the low frequency aspect of wind turbine immissions that creates the "rumbic problem" indoors, plus building vibration, and this can be addressed solely with C-weighted criteria.

What are typical wind farm noise immission criteria or standards? Limits are not consistent and may vary even within a particular country. For example:

- a) Australia: the greater of 35 dBA or $L_{90s} + 5$ dBA
- b) Denmark: 40 dBA
- c) France: $L_{90s} + 3$ (night), $L_{90s} + 5$ (day)
- d) Germany: 40 dBA
- e) Holland: 40 dBA
- f) United Kingdom: 40 dBA (day), 43 dBA (night) or $L_{90s} + 5$ dBA
- g) United States:
 - a. Illinois: 55 dBA (day), 51 dBA (night)
 - b. Wisconsin: 50 dBA
 - c. Michigan: 55 dBA

What is a reasonable wind farm sound immission limit to protect the health of residents? We propose a maximum property line immission limit of 35 dBA (L_{90s}) and that the post construction L_{90s} with turbines operating not exceed the pre-existing background $L_{90s} + 5$ dBA. We also include C-weighted criteria to address people's complaints of low frequency noise. The dBC (L_{01s}) operating immission limit shall not be more than 20 dB above the measured dBA (L_{90s}) pre-construction nighttime background sound level plus 5 dB. A maximum not-to-exceed limit of 55 dBC (L_{01s}) is also proposed with adjustments if there are near-by heavily traveled major roads.

Why should the dBC immission limit not be more than 20 dB above the background dBA ($L_{90s} + 5$)? The World Health Organization (WHO) and others have determined that a sound emitter's noise, which results in a difference between a dBC and dBA value greater than 20 dB, will be a troubling low frequency issue.

Is not L_{10s} the minimum dBA background noise level? L_{10s} is the statistical descriptor representing the quietest 10% of the time. It is not the minimum noise level. It may be understood as the sounds one hears when there are no nearby or short-term sounds from man-made or natural sources. It excludes sounds that are not part of the soundscape during all



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seasons including wind generated noise. It is very important to establish the statistical average background noise environment outside for a potentially impacted residence during the quietest sleeping hours of the night (typically 10 PM to 4 AM). Nighttime sleep disturbance has generated the majority of wind farm noise complaints throughout the world. The basis for a community's wind turbine sound immission limits would be the minimum 10 minute nighttime L_{Aeq} plus 5 dB for the period of 10 pm to 7 am. This would become the Immission Limit for the proposed wind farm during the night. This can be accomplished with one or more ten (10) minute measurements during any night when the atmosphere is classified stable with a light wind from the area of the proposed wind farm. The Daytime Limits (7 am to 10 pm) could be set 10 dB above the minimum nighttime L_{Aeq} measured noise, but with 24 hour operation of the wind facility the nighttime criteria will always be the limiting sound levels.

Doesn't wind noise mask the sound of wind turbines? It is true that the sound level can increase over the L_{Aeq} background sound level as surface wind speeds increase, but it is not true that wind masking is always present when wind speeds at the hub are sufficient to power the turbines. Nighttime weather conditions, especially in warm seasons, often result in wind velocities at the turbine hubs sufficient to power the turbines, while at ground level there is little or no wind. The result is the turbines can be operating at (or close to) full capacity while it is otherwise very quiet outside the nearby dwellings. These conditions exist frequently on clear nights when there is the vertical heat radiation from the surface of the earth decreases after sunset and the atmosphere becomes "stable." This condition is the focus of the "wind turbine noise problem" for many people. On nights like this, in the quiet of a remote rural community, turbine noise can be disturbing for miles (reports mention 3 km, nearly 2 miles).

Proposed Sound Limits

The simple fact that so many residents complain of low frequency noise from wind turbines is clear evidence that the single, A-weighted (dBA) noise descriptor used in most regions for siting turbines is not adequate. The only other simple audio frequency weighting which is standardized and available on all sound level meters is the C weighting, or dBC. A standard sound level meter set to measure dBA is increasingly less sensitive to low frequency sound below 500 Hz. This is equivalent to one octave above middle-C on the piano. The same sound

level meter set to measure dBC is equally sensitive to all frequencies down to 32 Hz (lowest note on a grand piano). It is generally accepted that dBC readings are more predictive of perceptual loudness than dBA readings whenever low frequency sounds are significant.

Based on the above evidence, we recommend that wind turbine noise be measured using a) the commonly accepted criteria, which are based on pre-existing background sound levels in dBA and dBC, with b) a maximum 5 dB allowance for wind turbine immission – that is, 5 dB maximum for the audible sounds from wind turbines, over and above existing background sound levels. In other words, we recommend $L_{90} +5$ and $L_{50} +5$. To address excessive low frequency sound, we add criteria for low frequency noise out of balance with higher frequency sound.

We summarize the wind turbine sound limits as follows:

Wind Turbine Sound Limits to Protect Public Health

1. Establishing Long-Term Background Noise Level

- a. Instrumentation: ANSI or IEC Type 1 Precision Integrating Sound Level Meter plus meteorological instruments to measure wind velocity, temperature and humidity near the sound measuring microphone. Measurement procedures must meet ANSI S12.9 Part 3.
- b. Measurement location(s): Nearest property line(s) from proposed wind turbines representative of all non-participating residential property within 2.0 miles of project boundary.
- c. Time of measurements and prevailing weather: The atmosphere must be classified as stable with no vertical heat flow to cause air mixing. Stable conditions occur in the evening and middle of the night with a clear sky and very little wind near the surface. Sound measurements are only valid when the measured wind speed at the microphone does not exceed 2 m/s (4.5 mph).
- d. Long-Term Background sound measurements: All data recording shall be a series of contiguous ten (10) minute measurements. The measurement objective is to determine the quietest ten minute period at each location of interest. Nighttime test periods are preferred unless daytime conditions are quieter. The following data shall be recorded

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simultaneously for each ten (10) minute measurement period: dBA data includes L_{A90} , L_{A10} , L_{Aeq} and dBC L_{C90} , L_{C10} , L_{Ceq} . Also record, maximum wind speed at the microphone during the ten minutes and a single measurement of temperature and humidity at the microphone for each new location or each hour whichever is more often. A ten-minute measurement contains valid data provided: Both L_{A10} minus L_{A90} and L_{C10} minus L_{C90} are not greater than 10 dB and the maximum wind speed at the microphone did not exceed 2 m/s during the same ten-minute period as the acoustic data.

2. Wind Turbine Sound Immission Limits

No wind turbine or group of turbines shall be located to cause wind turbine sound immission at any location on non-participating property containing a residence in excess of the limits in the following table:

Table of Not-to-Exceed Property Line Noise Immission Limits ¹			
Criteria		dBA	dBC
A	Immission above pre-construction background:	$L_{Aeq} = L_{A90} + 5$	$L_{Ceq} = L_{C90} + 5$
B	Maximum immission:	35 L_{Aeq}	55 L_{Ceq} for quiet ² rural environment 60 L_{Ceq} for rural-suburban environment
C	Immission spectra imbalance	L_{Ceq} (immission) minus ($L_{A90} + 5$ (background)) \leq 20 dB	
D	Prominent tone penalty:	5 dB	5 dB
Notes			
1	Each Test is independent and exceedances of any test establishes non-compliance Sound "immission" is the wind turbine noise emission as received at a property		
2	A "Quiet rural environment" is a location 2 miles from a state road or other major transportation artery without high traffic volume during otherwise quiet periods of the day or night.		
3	Prominent tone as defined in IEC 61400-11. This Standard is not to be used for any other purpose.		
¹ The procedures amending ANSI S12.9, Part 3 provided in the most recent version (2.1 or later) of the "THE "HOW TO" GUIDE TO SITING WIND TURBINES TO PREVENT HEALTH RISKS FROM SOUND" by Kamperman and James apply for this table.			

3. Wind Farm Noise Compliance Testing

All of the measurements outlined above in 1. Establishing Long-Term Background Noise Level must be repeated to determine compliance with 2. Wind Turbine Sound Immission Limits. The compliance test location is to be the pre-turbine background noise measurement location nearest to the home of the complainant in line with the wind farm and nearest the wind farm. The time of day for the testing and the wind farm operating conditions plus wind speed and direction must replicate the conditions that generated the complaint. Procedures of ANSI S12.9-Part 3 apply as amended and the effect of instrumentation limits for wind and other factors must be recognized and followed.

We have based our recommendations in this report on our present understanding of wind turbine sound emissions, land-use compatibility, and the effects of sound on health. Anyone choosing to follow these recommendations must assume all risks. Please seek professional assistance in applying these recommendations to any specific community or Wind Energy Conversion System (WECS) development.

For the most current version of the recommended criteria (2.1 or later), a sample noise ordinance and an explanation supporting the need for and basis of the criteria, please retrieve the full manuscript from: www.windturbinesyndrome.com.

Comment Responses:

ELTH1: Please see responses to comments DUC7, DUC16, and DUC19 regarding Washington State noise standards. Please see responses to comments DUC8, DUC13, DUC14, and DUC15 regarding noise emissions limits for this Project. Please see responses to comments DUC32 regarding the Kamperman and James study. Please also see responses to comments PET6, CLO2, and JON14

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regarding setbacks. The impacts of noise from multiple turbines are addressed in response to comment MIL3.

ELTH2: The Washington State noise regulations are not guidelines or minimum standards; they are state requirements that must be met. As demonstrated in Section 2.10.1.1 (page 2-155 of the DEIS) and Section 2.10.2 (page 2-157 of the DEIS), the Applicant has voluntarily agreed to meet a residential EDNA standard of 50 dBA at any existing residential receptors of non-participating land owners unless noise easements are obtained.

ELTH3: Please see response to comment DUC20 regarding sleep deprivation and health effects. Additional information has been added regarding these topics in FEIS Section 2.2.16. Please see response to comment PET24 regarding shadow flicker. Cumulative noise impacts are addressed in response to comments DUC9, DUC13, DUC15, and MIL3. Additional discussion regarding cumulative noise impacts has been added to FEIS Section 2.2.10.

ELTH4: The purpose of the SEPA environmental review process is to disclose the probable environmental impacts of a project. Garfield and Columbia Counties have complied with the public participation provisions of SEPA by making the DEIS available for public comment and by conducting open houses on September 9th and 10th in Pomeroy and Dayton in order to provide an additional opportunity for the submittal of public comments. This EIS discloses the impacts associated with noise and shadow flicker. See discussion in DEIS Sections 2.10 and 2.16 and FEIS Sections 2.2.10 and 2.2.16.

ELTH5: The comment writer seeks a condition that would force the Applicant to buy out non-participating landowners if, after the Project is built, the non-participant landowners are dissatisfied with the Project. Code enforcement is the appropriate county mechanism for addressing future assertions of Project non-compliance with Project conditions. Please also see discussion of this Project's potential impact on property values at DEIS page 2-273 and Appendix H to the DEIS, page 44 and following.

ELTH6: The Washington State noise standards do not rely on the measurement of ambient noise levels, but instead require compliance with maximum noise levels. The respective counties have code enforcement authority to address assertions of Project non-compliance with the Washington State noise standards..

ELTH7: See the response to PET 12 and PET13 regarding bird population numbers and the potential obliteration of raptor populations in the Project area.

The impacts of noise on wildlife, especially big game were considered at DEIS pages 2-80 and 2-85 through 2-86 for construction and Project operation activities respectively. As noted in the discussion, recent studies and anecdotal observations have shown that some avoidance behavior by big game can be observed,

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especially in the vicinity of more heavily travelled roads. However, the impacts of noise are more directly associated with the presence of human activity in general.

Noise impacts to birds are still not very well understood. Appendix C to the DEIS identified that there is still a lack of understanding in the scientific community as to all of the causes of bat mortality from wind power projects (see page 58 of Appendix C to the FEIS also). This appendix also cites the study to which the commenter is referring, “Barotrauma is a significant cause of bat fatalities at wind turbines” (Baerwald et al., 2008), the study hypothesized that that bats are killed by barotrauma caused by rapid air-pressure reduction near moving turbine blades. Barotrauma involves tissue damage to air-containing structures caused by rapid or excessive pressure change; pulmonary barotrauma is lung damage due to expansion of air in the lungs that is not accommodated by exhalation. The study authors reported the first evidence that barotrauma is the cause of death in a high proportion of bats found at wind energy facilities. They found that 90% of bat fatalities involved internal hemorrhaging consistent with barotrauma, and that direct contact with turbine blades only accounted for about half of the fatalities. Air pressure change at turbine blades is an undetectable hazard and helps explain high bat fatality rates. The authors suggested that one reason why there are fewer bird than bat fatalities is that the unique respiratory anatomy of birds is less susceptible to barotrauma than that of mammals. Residents in the vicinity of the Project will not be exposed to the specific conditions that might cause barotrauma in bats, and there is no evidence that such conditions will affect human physiology.

ELTH8: The methodologies used to assess the use of the area by wildlife species (including avian species) are consistent with the 2009 WDFW Wind Power Guidelines and other wildlife biology analysis standards. Sections 2.6.1.2 and 2.7.1.1 of the DEIS specifically identify wildlife and avian species that are protected under state and federal laws and regulations. The DEIS considers the potential impacts to each of these species if the species has the potential to occur in the Project area. Protection is typically afforded to these species as a result of low population numbers.

ELTH9: Please refer to the response to comment PET20 regarding the amount of energy produced by a wind project related to the amount of energy needed to construct and operate it. The commentor’s disagreement with the discussion about climate change is noted. As described on page 2-179 of the DEIS, the State of Washington has passed several regulations requiring reduction of GHG emissions, including a statute requiring large utilities, such as PSE, to obtain 15% of their electricity from new renewable energy sources, such as this Project. Wind energy forms a component of the Applicant’s Integrated Resource Plan.

ELTH10: Comment noted. Please refer to response to comment ETH04 regarding the viability of the wind power resource in the Project areas. There is a diversity of generation sources within the region to integrate wind power and

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other new generation sources into the power transmission system. The “cost-effectiveness” of wind power is outside the scope of this EIS because Garfield County does not have the authority or jurisdiction to regulate the cost of energy production.

ELTH11: Comment noted. Please see response to comment DUC1 and DUC3 regarding wind energy subsidies.

ELTH12: The commenter is correct. According to the Energy Information Administration, in 2007 1.6% of the electricity generated in the U.S. was from petroleum products, both produced within the U.S. or imported. Regardless of whether the U.S. is dependent on foreign oil or not PSE must comply with the Washington State Renewable Portfolio Standard, and must produce 15% of its electricity for sale to its customers from renewable sources (Energy Information Administration 2009).

ELTH13: The commenter is correct that once delivered to the electrical transmission system, the power generated at the Project will not necessarily be used locally. However, PSE is required to meet its growing demand for electricity in its service area. PSE’s strategy to accomplish this includes increasing demand-side resources, and acquiring new generation sources such as wind power facilities and gas-fired generation. The commenter is also correct that at this stage of environmental review the expected energy production is based on the expected capacity of the Project. Nevertheless, the data available at this stage is sufficiently representative to allow a reasonable prediction of the potential generation capacity of the Project. Also see the response to comment TRO6.

ELTH14: Comment noted. The DEIS discusses the potential for the creation of fragmentation when developing Project components. However, coordination with landowners regarding the co-location of facilities on farmland can lead to better placement and beneficial impacts. This coordination is a proposed mitigation measure for the Project. See DEIS page 2-235 for a complete discussion.

ELTH15: Comment noted. See response to comment PET1.

ELTH16: See response to comments DUC35, DUC36, DUC37, DUC38, DUC39, DUC40, DUC41, DUC42, DUC43, DUC44, and DUC45.

ELTH17: Comment noted. As noted on page 2-137 of the DEIS, several types of viewpoints were selected for representative assessment and visual simulation. These types of viewpoints were selected based on the viewers being representative of individuals or groups particularly focused on changes to the aesthetics of the Project area or the surrounding area. Appendix E of the DEIS presents these simulations. DEIS Figure 14 is representative of a view from a recreational area (the Patit Campsite), and Figure 16 is representative of a view where cumulative impacts of new and existing turbines would be seen.

3. Comments to the Draft EIS and Responses

ELTH18: The commenter's request for an in-depth study and call to a specific action on this Project by decision makers are noted. The DEIS and this FEIS have considered the short- and long-term economic impacts to the community (see Appendix H of the DEIS), whether wind projects are being subsidized (see response to comments DUC1 and DUC3), setbacks (see responses to comments PET6, JON2, and CLO2), impacts to agricultural lands (see responses to comments TRO5 and ETHO3), impacts to birds and wildlife (see Sections 2.6, 2.7, and 2.8 of the DEIS and multiple responses to comments in Chapter 3 of the FEIS), and finally to compliance with Garfield and Columbia Counties comprehensive plans (see Section 2.14 of the DEIS).