Horse Heaven Wind Farm

Washington Energy Facility Site Evaluation Council

APPLICATION FOR SITE CERTIFICATION

EFSEC Docket Number: EF-210011

Submitted by:

Horse Heaven Wind Farm, LLC
5775 Flatiron Parkway, Suite 120
Boulder, CO 80301

February 2021

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Submitted to:
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621 Woodland Square Loop SE
Olympia, WA 98504-3172

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
AAQS	ambient air quality standards
AC	alternating current
ACEC	Area of Critical Environmental Concern
ADLS	aircraft detection lighting system
ADT	average daily traffic
agl	above ground level
ANSI	American National Standards Institute
APLIC	Avian Power Line Interaction Committee
Applicant	Horse Heaven Wind Farm, LLC
ASC	Application for Site Certification
ASOS	Automated Surface Observing Systems
AWWI	American Wind Wildlife Institute
ASTM	American Society for Testing and Materials
BBCS	Bird and Bat Conservation Strategy
BCC	Benton County Code
BCCA	Benton Clean Air Agency
BCCP	Benton County Comprehensive Plan
BCR 9	Great Basin Bird Conservation Region
BDI	Basin Disposal, Inc.
BESS	battery energy storage system
BFCOG	Benton-Franklin Council of Governments
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMP	best management practice
B.P.	Before Present
BPA	Bonneville Power Administration
BPUD	Benton Public Utility District
C&I	Corporate and Industrial
CadnaA	Computer Aided Noise Abatement
CAO	Critical Areas Ordinance
CatEx	Categorical Exclusion
CAA	Clean Air Act
CARA	Critical Aquifer Recharge Area
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CRP	Conservation Reserve Program
CSWGP	Construction Stormwater General Permit
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
CUP	Conditional Use Permit
CWA	Clean Water Act of 1972
DAHP	Washington Department of Archaeology and Historic Preservation

dB	decibel
dBA	A-weighted decibels
DC	direct current
DNR	Washington Department of Natural Resources
DPS	Distinct Population Segment
DoD	Department of Defense
Ecology	State of Washington Department of Ecology
ECPG	Eagle Conservation Plan Guidance
ECSPG	Ecology Construction Stormwater General Permit
EDNA	Environmental Designation for Noise Abatement
EDT	engineering and design team
EFSEC	Washington Energy Facility Site Evaluation Council
EPA	U.S. Environmental Protection Agency
EPC	engineering, procurement, and construction
EPRI	Electric Power Research Institute
ESA	Endangered Species Act
ESCP	Erosion and Sediment Control Plan
ESU	Evolutionarily Significant Unit
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FIRM	Flood Insurance Risk Map
FTE	full-time equivalent
FWHCA	Fish and Wildlife Habitat Conservation Area
GE	General Electric
GHG	greenhouse gas
GMA	Growth Management Act
GMA AG	Growth Management Act Agriculture
GMAAD	Growth Management Act Agricultural District
HCA	Habitat Concentration Area
HCM	Highway Capacity Manual
HCP	Habitat Conservation Plan
HH-E	Horse Heaven East
HH-W	Horse Heaven West
HPA	high probability area
HRA	Historical Research Associates, Inc.
HV	high voltage
Hz	hertz
I	Interstate
IEC	International Electrotechnical Commission
IMPLAN	Impact Analysis for Planning
ISO	International Organization for Standardization (
ITP	Incidental Take Permit
JARPA	Joint Aquatic Resource Permit Application

kHz	kilohertz
kV	kilovolt
L&I	Labor and Industry
LCP	Least Cost Path
LIGO	Laser Interferometer Gravitational-Wave Observatory
L_{eq}	equivalent sound level
L_{max}	maximum sound level
LNTE	low noise trailing edge
LOS	Level of Service
LP	sound pressure level
LW	sound power level
μPa	microPascal
MBTA	Migratory Bird Treaty Act
MDMZ	Mule Deer Management Zone
MPD	Multiple Property Document
MSA	Metropolitan Statistical Area
msl	mean sea level
MW	megawatt
MWac	megawatts output as alternating current
NAAQS	National Ambient Air Quality Standards
NEMA	National Electrical Manufacturers Association
NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
Nez Perce	Nez Perce Tribe
NHD	National Hydrography Dataset
NHPA	National Historic Preservation Act
NLCD	National Land Cover Database
NO_2	nitrogren dioxide
NOAA Fisheries	National Oceanic and Atmospheric Administration National Marine Fisheries Service
NOC	Notice of Construction
NORAD	North American Aerospace Defense Command
NOI	Notice of Intent to Operate
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRO	noise reduced operation
NSR	noise sensitive receptor
NWI	National Wetlands Inventory
O&M	operations and maintenance
O_3	ozone
ODFW	Oregon Department of Fisheries and Wildlife
ODSL	Oregon Department of State Lands
OFM	Office of Financial Management

OHV	off-highway vehicle
OHWL	Ordinary High Water Line
OPRD	Oregon Parks and Recreation Department
pcphpl	passenger cars per hour per lane
pcpmpl	passenger cars per mile per lane
PHS	Priority Habitats and Species
PM	particulate matter
PMT	pad mount transformer
PUD	Public Utility District
Project	Horse Heaven Wind Farm
PV	photovoltaic
PSD	Prevention of Significant Deterioration
QA/QC	quality assurance/quality control
RCCH	RCCH Health Care Partners/Trios
RCW	Revised Code of Washington
REA	Rural Electric Association
RL-5	Rural Lands Five Acre District
RSH	rotor swept height
RV	recreational vehicle
SAT	single-axis tracker
SCADA	supervisory control and data acquisition
SCORP	Washington State Comprehensive Outdoor Recreation Plan
SEPA	State Environmental Policy Act
SMP	Shoreline Master Program
SO2	sulfur dioxide
SPCC	Spill Prevention, Control and Countermeasure
SWPPP	Stormwater Pollution Prevention Plan
TCP	Traditional Cultural Property
TIP	Transportation Improvement Program
TMDL	Total Maximum Daily Load
Turbine	wind turbine generator
U.S.	United States
UFC	Unified Facilities Criteria
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VRM	Visual Resource Management
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WHCWG	Wildlife Habitat Connectivity Working Group
WHR	Washington Heritage Register

WISAARD	Washington Information System for Architectural and Archaeological Records Data
WNHP	Washington Natural Heritage Program
WSDOT	Washington State Department of Transportation
WSP	Washington State Parks
WUTC	Washington Utilities and Transportation Commission
Yakama	Confederated Tribes and Bands of the Yakama Nation

1.0 GENERAL INFORMATION

1.1 ORGANIZATION

WAC 463-60-012: *Except as may be otherwise approved by the council and except as otherwise provided below with respect to applications covering nuclear power plants, the contents of the application shall be organized in the same order as these guidelines.*

(1) To aid in the council's review under SEPA and chapter 463-47 WAC, WAC 463-60-302 through 463-60-372 are similar to the elements required in an environmental impact statement.

(2) In the case of an application covering a nuclear power plant, the environmental report prepared for the nuclear regulatory commission may be substituted for the comparable sections of the site certification application, provided that the environmental report is supplemented as necessary to comply with this chapter and that an index is included listing these guidelines in order and identifying where each applicable guideline is addressed.

This Washington Energy Facility Site Evaluation Council (EFSEC, or Council) Application for Site Certification (ASC) for the Horse Heaven Wind Farm (Project) has been organized according to the order outlined in the regulations. A table of contents is provided above, to identify the requirements and the page locations where they are addressed. This ASC has been organized into five major sections:

- Section 1: General Information
- Section 2: Proposal
- Section 3: Natural Environment
- Section 4: Built Environment
- Section 5: Applications for Permits and Authorizations

1.2 DESCRIPTION OF APPLICANT

WAC 463-60-015: *The applicant shall provide an appropriate description of the applicant's organization and affiliations for this proposal.*

This ASC is made for the construction and operation of the Project. The Applicant is Horse Heaven Wind Farm, LLC and Scout Clean Energy LLC (Scout) is the indirect owner of 100 percent of Horse Heaven.

1.2.1 Scout Clean Energy

Scout (www.scoutcleanenergy.com) is a renewable energy development company headquartered in Boulder, Colorado. Scout owns and operates more than 800 megawatts (MW) of onshore wind energy generating facilities and is actively developing a 4,000-MW portfolio of onshore wind, solar photovoltaic (PV), and battery storage projects across 13 U.S. states. Scout is an owner-operator with expertise in all aspects of renewables project development, permitting, power marketing, finance, construction, and asset management. Scout is a portfolio company of Quinbrook Infrastructure Partners.

1.2.2 Quinbrook Infrastructure Partners

Quinbrook Infrastructure Partners (www.quinbrook.com) is a specialist investment manager focused exclusively on lower carbon, renewable energy infrastructure investment and operational asset management in the United States, United Kingdom, and Australia. Quinbrook is led and managed by a senior team of power industry professionals who have collectively invested over $8 billion in energy infrastructure assets since the early 1990s, representing a total enterprise value of $28.7 billion or 19.5 gigawatts of power supply capacity. Quinbrook's investment and asset management team has offices in Houston, London, Jersey, and the Gold Coast of Australia. Quinbrook's global investment and portfolio company teams are actively developing and constructing a portfolio exceeding 6 gigawatts of onshore wind, solar PV, reserve peaking power, battery storage, grid support infrastructure, Virtual Power Plants, Community Energy Networks, and Demand Response assets and businesses.

1.3 COUNCIL RECOGNIZES PRESSING NEED FOR ENERGY FACILITIES

> ***WAC 463-60-021:*** *RCW 80.50.010 requires the council to "recognize the pressing need for increased energy facilities." For that reason, applications for site certification need not demonstrate a need for the energy facility.*

As indicated in the Washington Administrative Code (WAC), no action is required by the Applicant to meet this regulatory requirement; however, the Project would supply renewable energy to help the state of Washington meet its goal of making its energy supply carbon neutral by 2030 (Senate Bill 2116, enacted into law in 2019). Beyond the growing demand from utilities, non-traditional Corporate and Industrial ("C&I") power buyers (such as Google, IKEA, Apple, eBay, Facebook, General Motors, Johnson & Johnson, Kellogg's, Microsoft, Nike, and Walmart) have announced plans to purchase renewable energy. In fact, over two-thirds of the Fortune 100 companies have sustainability or renewable energy procurement goals, and over 3,800 MW of renewable energy have been purchased by non-utilities as of August 2018 (Business Renewables Center 2018; Advanced Energy Economy 2018). That compares to 2,890 MW procured by non-utilities in 2017 and approximately 1,700 MW in 2016. These businesses have a rapidly growing appetite for affordable clean energy, and wind and solar energy are poised to help meet that demand.

1.4 DESCRIPTION OF AGENT

> ***WAC 463-60-025:*** *The applicant shall designate an agent to receive communications on behalf of the applicant.*

All communications concerning this ASC should be directed to Mr. Dave Kobus, who is the designated agent for the Project:

Dave Kobus
Horse Heaven Wind Farm, LLC
5775 Flatiron Parkway, Suite 120
Boulder, CO 80301

1.5 APPLICATION REVIEW COSTS AND FUNDING

WAC 463-60-035: *The statutory initial charges shall accompany an application and shall be a condition precedent to any action by the council. The initial costs and any additional funds needed for the review of an application, including the method of payment, shall be in accordance with chapter 463-58 WAC.*

A deposit of fifty thousand dollars shall accompany this EFSEC ASC as required by Revised Code of Washington (RCW) 80.50.071; which states that "*Each applicant shall, at the time of application submission, deposit with the utilities and transportation commission an amount up to fifty thousand dollars, or such greater amount as specified by the council after consultation with the applicant*."

1.6 WHERE FILED

WAC 463-60-045: *Applications for site certification shall be filed with the council at the council office.*

This ASC is filed with the Council at the following address:

Washington Energy Facility Site Evaluation Council
621 Woodland Square Loop SE
Olympia, WA 98504-3172

1.7 FORM AND NUMBER OF COPIES

WAC 463-60-055:

(1) Applications shall be on 8-1/2 by 11" sheets, in loose-leaf form with a hard cover binder. The applicants shall supply a sufficient number of copies of the application to the council, the number to be determined by the council in consultation with its staff, consultants and the applicant. The applicants shall also supply two copies to each county, two copies to each city, and one copy to each port district in which the proposed project would be located. In addition, one copy shall be supplied to each intervenor on admission to the proceedings. Information later submitted shall be by page-for-page substitutions suitable for insertion in the application binder, bearing the date of the submission.

(2) An applicant shall also provide the council copies of its application in a digital format for use in personal computers. Digital format shall be determined by the council in consultation with its staff, consultants and the applicant.

(3) At the time of submittal of the application, the applicant shall submit one copy of the applicable land use plans and zoning ordinances for the project site.

In accordance with this requirement, the Applicant is submitting 6 hard copies and 20 electronic copies of this ASC to EFSEC and 2 hard copies to Benton County. In addition, one copy of the Benton County's Comprehensive Plan and Zoning Ordinances has been provided to EFSEC.

1.8 FULL DISCLOSURE BY APPLICANT

WAC 463-60-065: *It is recognized that these guidelines can only be comprehensive in a relative sense. Therefore, and in addition to the other guidelines contained herein, the council adopts the basic guideline that an applicant for site certification must identify in the application all information known to the applicant which has a bearing on site certification.*

The Applicant has provided in this ASC and accompanying documentation all information known to the Applicant that might have a bearing on the applicable site certification for the Project.

1.9 ASSURANCES

> ***WAC 463-60-075:*** *The application shall set forth insurance, bonding or other arrangements proposed in order to mitigate for damage or loss to the physical or human environment caused by project construction, operation, abandonment, termination, or when operations cease at the completion of a project's life. The application shall describe the applicant's commitment to the requirements of chapter 463-72 WAC, Site restoration and preservation.*

The Applicant would establish and maintain several forms of insurance during the construction and operation of the Project. Insurance would be maintained as required by law, customary business practice, and to satisfy third-party participants and lenders. General insurance coverage would include, but may not be limited to, Commercial General Liability Insurance, Automobile Insurance, Property Insurance, and Worker's Compensation and Washington Stop Gap Liability insurance.

At least 90 days prior to beginning construction, the Applicant would provide the Council with a Site Restoration Plan describing measures that would be taken at the conclusion of the Project's operating life. The Project is anticipated to have a useful operating life of 30 years, which may be extended by repowering. The Site Restoration Plan would also address measures to be taken in the event that the Project is terminated or construction is suspended prior to completion. The Site Restoration Plan would include an estimate of the cost of removing the Project components and would provide for bonding to meet restoration costs.

The Applicant will comply with the requirements of WAC 463-72, Site Restoration and Preservation. A preliminary Decommissioning Plan is being submitted with this ASC for the Council's review (see Appendix A), and an initial Site Restoration Plan would be submitted to the Council at least 90 days prior to the beginning of construction.

In order to mitigate for the potential of any damage or loss to the physical or human environment, in accordance with WAC 463-72-020(2), the Applicant would provide evidence of pollution liability insurance coverage, as well as financial assurance sufficient to ensure the restoration and decommissioning of the Project site. The estimated cost of decommissioning and restoration of the Project is provided in the attached Preliminary Decommissioning Plan (see Appendix A). The financial assurance shall be in the form of a site closure bond, sinking fund, or other financial instrument or security deemed satisfactory to, and enforceable by, EFSEC. Such funds shall remain in place until decommissioning is completed to the satisfaction of EFSEC. During construction, the Applicant and/or its engineering, procurement, and construction (EPC) firm, as appropriate, would hold a full suite of insurance products to mitigate risks, including general liability and property insurance, pollution liability insurance, contractor/builder's risk insurance, and worker's compensation.

1.10 MITIGATION MEASURES

WAC 463-60-085:

(1) Mitigation measures summary. The application shall summarize the impacts to each element of the natural or built environment and the means to be utilized to minimize or mitigate possible adverse impacts during construction, operation, and decommissioning of the proposal, all associated facilities, and any alternatives being brought forward.

(2) Fair treatment. The application shall describe how the proposal's design and mitigation measures ensure that no group of people, including any racial, ethnic, or socioeconomic group, bear a disproportionate share of the environmental or socioeconomic impacts resulting from the construction and operation of the proposed facility.

1.10.1 Mitigation Measures Summary

Mitigation measures are detailed for each resource impact analysis provided in Sections 3 and 4 of this ASC. These measures are summarized below.

Earth

The following are mitigation measures proposed and described in detail within Section 3.1 of this ASC.

- The Project will comply with the National Pollutant Discharge Elimination System (NPDES) through pursuance of a Construction Stormwater General Permit from the Washington Department of Ecology (Ecology).
- An Erosion and Sediment Control Plan (ESCP) will be developed and implemented, detailing specific best management practices (BMPs) that will be used and where they will be placed, as well as the total disturbance area. The ESCP includes measures to prevent erosion, contain sediment, and control drainage. The ESCP will also include installation details of the BMPs as well as notes.
- A Stormwater Pollution Prevention Plan (SWPPP) will be required detailing the activities and conditions at the site that could cause water pollution, and the steps the facility will take to prevent the discharge of any unpermitted pollution.
- A stabilized construction entrance/exit will be installed at locations where construction vehicles would access newly constructed roads and/or disturbed areas from paved roads. The stabilized construction entrance/exits would be inspected and maintained for the duration of the Project's lifespan.
- Clearing, excavation, and grading will be limited to those areas of the Project area absolutely necessary for construction of the Project. Areas outside the construction limits will be marked in the field and equipment will not be allowed to enter these areas or to disturb existing vegetation. To the extent practicable, existing vegetation will be preserved. Where vegetation clearing is necessary, root systems will be conserved if possible.
- Vegetated areas that are disturbed or removed during construction will be restored to near as reasonably possible pre-disturbance conditions.

- Excavated soil and rock from grading will be spread across the site to the natural grade and will be reseeded with native grasses to control erosion by water and wind.
- Silt fencing will be installed throughout the Project as a perimeter control, and on the contour downgradient of excavations, the operation and maintenance (O&M) facilities, and substations.
- Straw wattles would be used to decrease the velocity of sheet flow stormwater to prevent erosion. Wattles will be used along the downgradient edge of access roads adjacent to slopes or sensitive areas.
- Mulch will be used to immediately stabilize areas of soil disturbance, and during reseeding efforts.
- Jute matting, straw matting, or turf reinforcement matting will be used in conjunction with mulching to stabilize steep slopes that were exposed during access road installation.
- Soil binders and tackifiers will be used on exposed slopes to stabilize them until vegetation is established.
- Concrete chutes and trucks will be washed out in dedicated areas near the foundation construction locations. This will prevent concrete washout water from leaving a localized area. Soil excavated for the concrete washout area will be used as backfill for the completed footing to ensure that the surface soils maintain infiltration capacity.
- To facilitate installation of the wind turbine generator (Turbine) footings, large excavations will be created. Soil from these excavations will be temporarily stockpiled and used as backfill for the completed footing. Silt fencing will be installed around the stockpile material as a perimeter control. Mulch or plastic sheeting will be used to cover the stockpiled material. Soils will be stockpiled and reused in order to prevent mixing of productive topsoils with deeper subsoils.
- After construction is completed, the site will be revegetated with an approved seed mix. When required, the seed will be applied in conjunction with mulch and/or stabilization matting to protect the seeds as the grass establishes. Revegetation will take place as soon as site conditions and weather allow following construction.
- If water crossings are needed, check dams and sediment traps will be used during the construction of low-impact ford crossings or culvert installations. The check dams and sediment traps will minimize downstream sedimentation during construction of the stream crossings.
- During construction and operations, source control measures will be identified in the Spill Prevention, Control, and Countermeasures (SPCC) Plan to reduce the potential of chemical pollution to surface water or groundwater during construction.
- To the extent practicable, construction activities will be scheduled to occur in the dry season, when soils are less susceptible to compaction. Similarly, soil disturbance should be postponed when soils are excessively wet such as following a precipitation event.
- Equipment oil-filling, fueling, or maintenance activities will take place a substantial distance from waterways or wetlands to prevent water quality impacts in the event of an

accidental release. Any oily waste, rags, or dirty or hazardous solid waste will be collected in sealable drums at the construction yards, to be removed for recycling or disposal by a licensed contractor.

- All structures will be built in accordance with current code requirements and state-of-practice methods to limit potential for issues from slope instability/topography, liquefaction, and geologic hazards including seismic events.

Air

The following are mitigation measures proposed and described in detail within Section 3.2 of this ASC.

- Construction and operations vehicles and equipment will comply with applicable state and federal emissions standards.
- Vehicles and equipment used during construction will be properly maintained to minimize exhaust emissions.
- Operational measures such as limiting engine idling time and shutting down equipment when not in use will be implemented.
- Watering or other fugitive dust-abatement measures will be used as needed to control fugitive dust generated during construction.
- Construction materials that could be a source of fugitive dust will be covered when stored.
- Traffic speeds on unpaved roads will be limited to 25 miles per hour to minimize generation of fugitive dust.
- Truck beds will be covered when transporting dirt or soil.
- Carpooling among construction workers will be encouraged to minimize construction-related traffic and associated emissions.
- Erosion-control measures will be implemented to limit deposition of silt to roadways, to minimize a vector for fugitive dust.
- Replanting or graveling disturbed areas will be conducted during and after construction to reduce wind-blown dust.

Water

The following are mitigation measures proposed and described in detail within Section 3.3 of this ASC.

- Water conservation will be implemented to the extent practicable by use of less water-intensive methods of dust suppression when possible, including use of soil stabilizers, tightly phasing construction activities, staging grading and other dust-creating activities, and/or compressing the entire construction schedule to reduce the time period over which dust suppression measures would be required.
- Impacts to waters of the state may be avoided by spanning (e.g., with the transmission line) or otherwise micrositing away from the streams. If these impacts cannot be

avoided, indirect impacts to water quality can be minimized by working within the Ordinary High Water Line (OHWL) during the dry season when no rain is predicted.

- To control erosion and surface-water runoff during construction and operations, the Applicant will prepare a Construction Stormwater General Permit including an ESCP. Water runoff from the Project will be contained by measures identified in the ESCP to prevent erosion, contain sediment, and control drainage. The ESCP will also include installation details of BMPs to be implemented.
- A SWPPP meeting the conditions of the Stormwater General Permit for Construction Activities will be prepared and implemented prior to construction.
- All final designs will conform to the applicable Stormwater Management Manual.
- An SPCC Plan will be prepared to prevent discharge of oil into navigable waters.

Habitat, Vegetation, Fish and Wildlife

The following are mitigation measures proposed and described in detail within Section 3.4 of this ASC.

- To minimize impacts to wildlife, baseline studies were conducted at the Project consistent with the Washington Department of Fish and Wildlife (WDFW) Wind Power Guidelines (WDFW 2009), the U.S. Fish and Wildlife Service's (USFWS) 2012 Final Land-Based Wind Energy Guidelines (USFWS 2012), the 2013 USFWS Eagle Conservation Plan Guidance Module 1 – Land Based Wind Energy (USFWS 2013), and the USFWS 2016 Eagle Rule Revision (USFWS 2016). In order to mitigate and avoid impacts to wildlife resources, the Applicant used the results of these baseline studies to inform the Project's layout design.
- Project facilities were sited on previously disturbed (e.g., cultivated cropland) areas to the extent feasible to avoid impacts to native habitats and associated wildlife species.
- The Project will use industry standard BMPs to minimize impacts to vegetation, waters, and wildlife.
- The Project was sited outside of wetlands and waters to the extent feasible to avoid and minimize impacts to these resources as described in Section 3.3 and Section 3.5, which will also avoid impacts to fish and minimize impacts to wildlife species that use these habitats.
- If the final design results in impacts to waters of the state that cannot be avoided, the Applicant will work with EFSEC and WDFW to confirm whether a Hydraulic Project Approval is required, and will prepare an application accordingly.
- During construction, WDFW-recommended seasonal buffers (per Larsen et al. 2004) for ferruginous hawk nests will be observed to avoid disturbing nesting ferruginous hawks.
- During construction, WDFW-recommended seasonal buffers (per Larsen et al. 2004) for burrowing owl nests will be observed to avoid disturbing nesting burrowing owls, if present. If impacts to potentially suitable habitat cannot be avoided during final design, the Applicant would consult with WDFW regarding the need for burrowing owl surveys

prior to construction, including surveys to determine habitat suitability for burrowing owls, and surveys for breeding owls if suitable habitat is present.

- The Applicant will minimize bird and bat collision with Project infrastructure by implementing down-shield lighting (e.g., for permanent lighting at the substations and O&M facilities) that will be sited, limited in intensity, and hooded in a manner that prevents the lighting from projecting onto any adjacent properties, roadways, and waterways; lighting will be motion activated where practical (i.e., excluding security lighting);
- All permanent meteorological towers will be unguyed to minimize collision risk for wildlife.
- The Applicant will acquire any required federal approvals as described in Section 2.23 of this ASC. The Applicant will continue ongoing coordination with the USFWS (Matthew Stuber, Eagle Coordinator, Columbia Pacific Northwest Region) regarding an eagle take permit for incidental take of bald and golden eagles, and will continue to evaluate eagle risk to determine if an eagle take permit is appropriate considering the use of the Project by bald and golden eagles. The Applicant does not plan to pursue an eagle take permit for Phase 1 of the Project but will re-evaluate eagle risk and the need for an eagle take permit for Phase 2 of the Project.
- Prior to construction, habitat surveys will be conducted within the Solar Siting Areas and portions of the Micrositing Corridor that were not surveyed in 2020. These habitat surveys will focus on documenting areas of sagebrush shrub-steppe habitat. Sagebrush shrub-steppe habitat would be avoided to the extent possible. If avoidance is not possible, mitigation for impacts to sagebrush shrub-steppe habitat would be developed in consultation with the applicable agencies.
- Prior to construction, special status plant surveys will be conducted within the Solar Siting Areas and portions of the Project Micrositing Corridor that were not surveyed in 2020. If special status plant species are observed during pre-construction surveys, individuals and populations would be avoided to the extent possible. If avoidance is not possible, mitigation measures for impacts would be developed in consultation with the applicable agencies.
- Following construction, temporarily disturbed areas will be revegetated with native or non-invasive, non-persistent non-native plant species as described in the Revegetation and Noxious Weed Management Plan (Appendix N).
- The Applicant does not anticipate using pesticides during Project construction or operation. If unforeseen circumstances arise that require the use of pesticides, the Applicant would consult with WDFW and EFSEC regarding use of pesticides to avoid and minimize impacts to burrowing owl (per Larsen et al. 2004).
- The Applicant will limit construction disturbance by flagging any sensitive areas (e.g., wetlands, rare plant populations) and will conduct ongoing environmental monitoring during construction to ensure flagged areas are avoided.

- The Applicant has prepared a Bird and Bat Conservation Strategy (BBCS) that describes the surveys conducted, avoidance and minimization, and potential impacts to birds and bats and their habitat as a result of construction and operation of the Project (Appendix M).
- The Applicant will conduct 2 years of standardized post-construction fatality monitoring to assess impacts of Turbine operation on birds and bats. Proposed post-construction fatality monitoring is described in the Applicant's BBCS (Appendix M).
- The Applicant will develop a Habitat Mitigation Plan (Appendix L) for the wind energy generation areas of the Project, consistent with the WDFW Wind Power Guidelines (WDFW 2009), where applicable. The Habitat Mitigation Plan will separately address mitigation for the solar and battery storage facility elements, consistent with best available industry practices. The Habitat Mitigation Plan will be provided to EFSEC within approximately one month of submittal of this ASC.

Wetlands

No mitigation measures are proposed because no wetlands are present within the Project Micrositing Corridors or Solar Siting Areas (see Section 3.5).

Energy and Natural Resources

No mitigation measures are proposed because no significant energy and natural resources impacts are anticipated (see Section 3.6).

Noise

The following are mitigation measures proposed and described in detail within Section 4.1.1 of this ASC.

- Maintain all construction tools and equipment in good operating order according to manufacturers' specifications.
- Limit use of major excavating and earth-moving machinery to daytime hours.
- To the extent practicable, schedule construction activity during normal working hours on weekdays when higher sound levels are typically present and are found acceptable. Some limited activities, such as concrete pours, will be required to occur continuously until completion.
- Equip any internal combustion engine used for any purpose on the job or related to the job with a properly operating muffler that is free from rust, holes, and leaks.
- For construction devices that utilize internal combustion engines, ensure the engine's housing doors are kept closed, and install noise-insulating material mounted on the engine housing consistent with manufacturers' guidelines, if possible.
- Limit possible evening shift work to low noise activities such as welding, wire pulling, and other similar activities, together with appropriate material handling equipment.
- Utilize a complaint resolution procedure to address any noise complaints received from residents.

- For the Option 1 layout using General Electric (GE) 2.82-MW Turbines, in order to demonstrate compliance with the applicable nighttime WAC regulatory limits at the Project property boundary adjacent to Class A lands, select Turbines will need to operate in noise reduced operation (NRO)[1] mode. For the Option 1 layout using the GE 3.03-MW Turbine, select Turbines will need to be equipped with low noise trailing edge (LNTE) technology.

Safety

The following are mitigation measures proposed and described in detail within Section 4.1.2 of this ASC.

- All facilities will be designed per recommendations of the Institute of Electrical and Electronics Engineering Guide for Substation Fire Protection (979-2012) and the Unified Facilities Criteria (UFC) for Fire Protection Engineering for Facilities (UFC 3-600-01).
- During construction, trees and vegetation that pose a hazard to the collector lines may be topped or cleared from the right-of-way. During operation and maintenance of the Project, vegetation that is overgrown and could pose a hazard to the transmission line will be topped or cleared on an as-needed basis.
- Battery storage systems will include fire suppression measures.
- Appropriate coordination with local emergency personnel will be conducted.
- Precautionary measures will be taken during construction to reduce fire risk.
- Construction equipment will be monitored where activities may present safety issues.
- A Draft Emergency Response Plan, which addresses fire and other emergency procedures, has been developed and included as part of this ASC (see Appendix P). A finalized plan would be developed and implemented, in coordination with the Benton County Fire Marshal and other appropriate agencies before construction.
- All Project vehicles will be equipped with fire extinguishers.
- Fire station boxes with appropriate fire suppression equipment (e.g., shovels, water tank sprayers, sand) will be installed at multiple locations within the Project.
- No gas-powered vehicles will be allowed outside of graveled areas.
- High clearance vehicles will be used onsite if required to be operated off-road. Low clearance vehicles with catalytic converters will not be parked in tall grasses.
- Any constructing personal required to handle explosives will be state-licensed explosive specialist contractors. All explosives will be secured onsite in compliance with federal, state, and local requirements.

[1] Manufacturers provide options for noise mitigation including the use of LNTE and NRO modes. LNTE consists of the addition of plastic or metal sawtooth serrations that can be affixed to the blade's rear edge to reduce blade trailing edge noise. Application of NRO modes limits the rotational speed of the wind turbines in order to reduce their sound emissions.

- Areas directly surrounding Turbines and substations would be cleared of vegetation and graveled.
- All portable generators would be fitted with spark arrestors on the exhaust system, and not allowed to operate in open grass areas.
- Hazardous material storage, spill prevention, and waste handling BMPs will be implemented and utilized during construction and operation of the Project in compliance with the Construction Phase and an Operational Phase SPCC Plan.

Land-Use Plans and Zoning Ordinances

The following are mitigation measures proposed and described in detail within Section 4.2.1 of this ASC.

- Project construction and operation will follow site-specific BMPs to minimize potential impacts to noise, traffic, vegetation, and air quality, as described in the respective resource sections of this ASC.
- Upon decommissioning of the Project, the Applicant will remove all above-grade infrastructure as well as below-ground infrastructure to 3 feet or more below grade.
- The Applicant will replace topsoil and reseed areas where facilities were located with grasses and/or other vegetation reasonably acceptable to the landowner.

Light and Glare

No mitigation measures are proposed because no significant light and glare impacts are anticipated (see Section 4.2.2 of this ASC).

Aesthetics

The following are mitigation measures proposed and described in detail within Section 4.2.3 of this ASC.

- Active dust suppression will be implemented during construction.
- Following completion of construction, temporarily disturbed areas (e.g., laydown yards, crane paths not used as Project access roads) will be returned to their previous conditions once construction is complete.
- Restoration of the laydown yards will involve preconstruction stripping and storing topsoil, including weed avoidance, and also removing the gravel surface, regrading to preconstruction contours, restoring topsoil and decompacting subsoils as needed, and reseeding with approved seed mixes.
- Following completion of construction, the temporary crane paths will be removed, and the area restored, in accordance with the Project's Revegetation and Noxious Weed Management Plan (Appendix N).
- The Applicant will provide a clean-looking facility free of debris and unused or broken-down equipment by storing equipment and supplies in designated areas within the O&M facilities and promptly removing damaged or unusable equipment from the site.

- The Turbines and solar arrays will be uniform in design to present a trim, uncluttered, aesthetically attractive appearance.
- The only exterior lighting on the Turbines will be aviation warning lights and potentially mid-tower lighting, depending on the size of the tower, as required by the Federal Aviation Administration (FAA).
- The Applicant will construct support facilities with non-reflective materials in muted tones, as well as the use of white or light gray, non-reflective paint to eliminate the need for daytime aviation lighting and eliminate glare from the Turbines.
- Sensors and switches will be used to keep security lighting turned off when not required, and all lights except aviation safety lighting would be hooded and directed downward to minimize light pollution.
- Any perimeter lighting at the O&M facilities and BESS will be activated only during maintenance or emergency activities at night.

Recreation

The following are mitigation measures proposed and described in detail within Section 4.2.4 of this ASC.

- Project construction and operation will follow site-specific BMPs to minimize potential impacts to noise, traffic, and the visual surroundings, as described in the respective resource sections of this ASC. These measures would minimize impacts to recreational users. However, no mitigation measures specific to recreation are proposed.

Historic and Cultural Resources

The following are mitigation measures proposed and described in detail within Section 4.2.5 of this ASC.

- Prior to construction of the Project, a qualified archaeologist will be retained and will provide a cultural resource briefing that includes all applicable laws and penalties pertaining to disturbing cultural resources, a brief discussion of the prehistoric and historic regional context and archaeological sensitivity of the area, types of cultural resources found in the area, instruction that Project workers will halt construction if a cultural resource is inadvertently discovered during construction, and procedures to follow in the event an inadvertent discovery (Inadvertent Discovery Plan discussed below) is encountered, including appropriate treatment and respectful behavior of a discovery (e.g., no posting to social media or photographs). If requested, a local tribal representative(s) shall be invited to participate in the environmental training to discuss or provide text from a tribal cultural perspective regarding the cultural resources within the region.
- The Applicant will retain a qualified archaeologist to prepare and implement a Cultural Resource Preconstruction Survey and Avoidance Plan. The plan will provide protocols for preconstruction surveys of areas that have not been previously surveyed (e.g., during final design, construction needs, etc., extend beyond previously surveyed areas), and

outline cultural resource avoidance measures. Tribal representatives will be invited to monitor the site during construction.

- Recorded cultural and historic resources will be avoided by the Project through modification of Project design to avoid a resource and via avoidance through buffers and protective signage or flagging, as well as monitoring, as appropriate. If a resource cannot be avoided, a qualified archaeologist will develop additional archaeological investigation measures and additional mitigation in coordination with the Department of Archaeology and Historic Preservation (DAHP) and Tribes, as appropriate.
- An Archaeological Excavation and Removal Permit will be pursued if any alteration to any pre-contact archaeological site regardless of the level of disturbance were to occur. For historic-era archaeological sites, permits will be pursued for any removal or excavation of those that are eligible for or listed on the National Register of Historic Places (NRHP).
- The Applicant will retain a qualified archaeologist to prepare an Inadvertent Discovery Plan for the Project and avoidance procedures. During Project-level construction, should subsurface archaeological resources be discovered, all activity in the vicinity of the find shall stop and a qualified archaeologist will be contacted to assess the significance of the find according to Washington Heritage Register (WHR) and NRHP criteria (as applicable). If any find is determined to be significant, the archaeologist will determine, in consultation with the implementing agencies and local Native American groups expressing interest, appropriate avoidance measures or other appropriate mitigation. If a resource cannot be avoided, a qualified archaeologist will develop additional archaeological investigation measures, such as data recovery or other appropriate measures, in consultation with the implementing agency, DAHP and appropriate Native American representatives.
- If evidence of human burials is encountered, all ground-disturbing activity in the vicinity will be halted immediately, and the DAHP, Benton County Planning and Community Development Department, the Benton County Sheriff's Office, Applicant, and the appropriate Tribes will be notified immediately. No work will resume within a 100-foot radius (or appropriate distance) of the find until all the appropriate approvals are received.

Agricultural Crops/Animals

The following are mitigation measures proposed and described in detail within Section 4.2.6 of this ASC.

- Upon Project decommissioning, occupied land will be restored for agricultural use and the Applicant will remove all above-ground infrastructure as well as below-ground infrastructure to 3 feet or more below grade.
- The Applicant will replace topsoil and reseed areas where facilities were located with grasses and/or other vegetation reasonably acceptable to the landowner (see Section 4.2.6).

Transportation

The following are mitigation measures proposed and described in detail within Section 4.3 of this ASC.

- Any road improvements made during the Project's construction will be removed, and the area restored to preconstruction conditions to the extent practical unless otherwise requested by the landowner.
- All road improvement and construction will be done in conjunction with Benton County Public Works requirements following Benton County Standards. The Applicant will maintain new access roads to access the turbine structures during operations.
- Prior to commencement of construction, the Applicant will consult with Washington State Department of Transportation (WSDOT) and Benton County on the development of a construction-phase Traffic Management Plan.
- A detailed haul plan will be developed once Turbines have been selected and construction schedule developed. This haul plan will confirm source locations and routes to be used during Project construction as well as anticipated loads and haul schedule. The Transportation Study provided as Appendix V would be verified and updated to include detailed condition assessments of roads to be used, structural assessments, and plans for improvement and maintenance.
- Ingress and egress points will be located and improved (if needed) in order to ensure adequate capacity for existing and projected traffic volumes and to provide efficient movement of traffic, including existing and anticipated agricultural traffic.
- The Applicant will obtain all necessary WSDOT permits to access, modify ingress and egress to, or transport regulated loads on State managed roadways.
- The Applicant will obtain WSDOT trip permits for oversize and overweight loads.
- The Applicant will coordinate with EFSEC and Benton County, to identify a qualified third-party engineer who will document road conditions prior to construction and again within 30 days after construction is complete or as weather permits.
- A service agreement between the Applicant and Benton County will ensure postconstruction road restoration to conditions as good or better than preconstruction.
- The Applicant or its contractor and EFSEC staff will meet prior to final site plan approval to outline steps for minimizing construction traffic impacts, including conflicts if State imposed roadway restrictions could affect transporter routes.
- The Applicant or its contractor will provide advance notification to adjacent landowners and farmers through mailing, informal meeting, open house or other similar methods, when construction takes place in the vicinity of their homes and farms to help minimize access disruptions.
- All construction vehicles will yield to school-related vehicles (e.g., school busses) and will lower their speed when approaching a school bus or bus stop along the transporter route.

- Advanced warning and proper roadway signage will be placed on major State and County roads to warn motorists of potential Project-related vehicles entering and exiting the roadway.
- When slow or oversized wide loads are being hauled, appropriate vehicle and roadside signing and warning devices will be deployed. Pilot cars will be used as WSDOT dictates, depending on load size and weight.
- Carpooling among the construction workers will be encouraged to reduce traffic volume to and from the Project site.
- Detour plans and warning signage will be provided in advance of any planned traffic disturbances.
- Flaggers will be employed as necessary to direct traffic when large equipment is exiting or entering public roads to minimize risk of accidents. Should the Applicant or its construction contractor receive notice during Project construction of transportation events (e.g., WSDOT or Benton County transportation projects, roadway incident, other traffic events) that give rise to a safety concern, the Project construction manager will review the Traffic Management Plan in coordination with the applicable agency and address additional safety measures, including flagging, as may be appropriate for the situation.
- If lane closure must occur, adequate signage for potential detours or possible delays will be posted.
- Advance notification will be provided to emergency providers and hospitals when public roads may be partially or completely closed.
- Emergency vehicles will be given the right-of-way as required by local, state, and federal requirements.
- Site access roads and an entrance driveway to the O&M facilities on-site will be constructed to service truck movements of legal weight and provide adequate sight distance.
- Traffic control requests will be coordinated through the WSDOT traffic engineer and the Benton County public works department abiding by seasonal County road restrictions.
- A haul and approach route will be developed in coordination with the appropriate jurisdictional authorities.
- Permanent private Project access roads will be maintained by the Applicant for the life of the Project.
- Tracked vehicles and heavy trucks will be restricted to approved transporter roads to prevent damage to surface and base of County roads.
- Turbines and permanent meteorological towers will be lit according to regulations established by the FAA.
- The Applicant will obtain Determinations of No Hazard to Air Navigation from the FAA.
- Advanced warning and proper roadway signage will be placed on highways and County roads to warn motorists of potential vehicles entering and exiting the roadway.

- After construction, all-weather access roads (including graveled roads), suitable to handle emergency equipment, will be provided to within 150 feet of any built structure or surface activity area.

Socioeconomic Impact

The following are mitigation measures proposed and described in detail within Section 4.4 of this ASC.

Socioeconomic impacts are expected to be beneficial in the form of additional jobs, increased economic activity, and increased tax revenues. Temporary increases in population during construction due to non-local workers relocating to the area are not expected to have significant impacts on local housing resources or the provision of public services. Mitigation measures designed to reduce impacts to the socioeconomic environment during construction include the following (note that these measures overlap with others discussed for other resources above).

- Active dust suppression will be implemented during construction.
- Engine idling time will be limited and equipment will be shut down when not in use to limit air emissions.
- Noise mitigation measures will include maintaining all tools and equipment in good operating order, using properly muffled construction equipment, and scheduling construction activity during normal working hours on weekdays to the extent possible.
- Prior to commencement of construction, the Applicant will consult with WSDOT and Benton County on the development of a construction-phase Traffic Management Plan that will be designed to reduce and manage construction-related transportation impacts.
- The Applicant will coordinate with the Benton County Fire Marshal and other appropriate agencies to finalize an Emergency Response Plan, as well as coordinate with local emergency services personnel and provide training where necessary.

1.10.2 Fair Treatment

The following describes how the Project ensures that no group of people, including any racial, ethnic, or socioeconomic group, bears a disproportionate share of the environmental or socioeconomic impacts resulting from the construction and operation of the Project.

Section 4.4.1.1 provides information regarding minority or low-income populations in the Project Lease Boundary, while the following summarizes the information provided there. The Project Lease Boundary coincides with seven census block groups, which together encompass approximately 877 square miles (561,543 acres).[2] Two of the block groups have total minority populations that exceed 50 percent of the total population and, therefore, meet the definition of a minority population according to White House Council on Environmental Quality (CEQ) and

[2] A census block group is a statistical subdivision of a census tract, generally defined to contain between 600 and 3,000 people and 240 and 1,200 housing units.

EPA Guidelines.[3,4] The population in Census Tract 116, Block Group 2 was identified as 100 percent Hispanic or Latino. The total minority population in Census Tract 116, Block Group 1 comprised 52 percent of the total population, with persons of Hispanic or Latino accounting for most of the minority total (Table 4.4-5). Both of these block groups had very low population densities in 2020, 0.3 and 1.8 persons per square mile, compared to respective county and state averages of 121.0 and 115.2 persons per square mile. The Washington State Environmental Justice Task Force (2020: p. 80) defines low-income as individuals and families "who make less than 80 percent of the median family income for the area."[5] None of the census block groups meet this definition; the closest is Census Tract 118, Block Group 4 where the median household income was equivalent to 80.7 percent of the state median and 86.2 percent of the Benton County median.

The demographics of the Project Lease Boundary have been identified and a public involvement effort undertaken to reach all of the surrounding residents, including minority and low-income populations (see Section 1.12.3).

Potential impacts to minority or low-income populations are discussed in detail in Section 4.4.2.1. As shown in Section 4.4.2.1:

- Construction and operation of the Project would not displace any minority or low-income populations.
- Project construction would result in short-term, unavoidable noise impacts within the Project Lease Boundary. However, based on the infrequent nature of loud construction activities, the limited hours of construction, and the implementation of noise mitigation measures, the impact of the temporary increase in construction noise would be less than significant to minority or low-income populations.
- The Project would result in some air quality impacts. The primary sources of construction-related air pollution would be vehicle exhaust emissions and fugitive dust disturbed by construction activities. However, given the relatively low magnitude, localized extent, and temporary duration of construction-related emissions, air quality impacts are not expected to substantially affect minority or low-income populations.
- The Project would result in some short-term increases in traffic level due to the daily movement of construction workers to and from the Project site, as well as daily material and equipment deliveries. Transportation-related impacts and mitigation measures designed to reduce these potential impacts to below significant levels are discussed in Section 4.3.

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[3] Minority populations identified by the U.S. Census include Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, and Other Race, which are considered races, and persons of Hispanic or Latino origin, which is considered an ethnicity.

[4] Guidelines provided by the CEQ (1997) and EPA (1998) indicate that a minority population may be defined as either: 1) where the minority population comprises more than 50 percent of the total population; or 2) where the minority population is meaningfully greater than the minority population in the general population of an appropriate benchmark region used for comparison.

[5] The CEQ (1997) and EPA (1998) guidelines referenced with respect to minority populations do not provide a comparable definition for low-income populations.

Based on these analyses, the Project's construction is not expected to result in significant adverse impacts to nearby communities, including minority and low-income populations, and the potential for construction to have disproportionately high and adverse impacts on minority and low-income populations is considered low.

Operation of the Project would result in a small increase in Project-related vehicle traffic that is not expected to add a noticeable increase to existing traffic flows or air emissions (see Sections 4.3 and 3.2 for more details). Potential impacts to public safety from Project operation, including the risk of fire and explosion as well as the potential for releases to the environment, are discussed in Section 4.1.2.

During operation, the Project would meet all established noise limits for the Project, with received sound levels at NSRs expected to be consistent with sound generated at similar wind facilities elsewhere in Washington state (see Section 4.1.1). Long-term visual effects during operation of the Project would result from the visibility of the aboveground components associated with the Project Turbines, solar arrays, substations, BESS, and transmission line. Impacts would be more noticeable to residences with foreground views (less than 0.5 mile) of Project facilities (Section 4.2.3). These impacts are not expected to disproportionately affect minority or low-income populations relative to other populations with similar views.

1.11 SOURCES OF INFORMATION

> ***WAC 463-60-09:*** *The applicant shall disclose sources of all information and data and shall identify all preapplication studies bearing on the site and other sources of information.*

The following lists the information and data sources used in preparation of this ASC.

1.11.1 Section 1.3, Council Recognizes Pressing Need for Energy Facilities

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1.11.8 Section 3.2, Air

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1.12 CONSULTATION

WAC 463-60-101:

(1) Preapplication consultation. The application shall summarize all consultation that the applicant has conducted with local, state and federal agencies and governments, Indian tribes, nonprofit organizations and community citizen and interest groups prior to submittal of the application to the council.

(2) Meaningful involvement. The application shall describe all efforts made by the applicant to involve the public, regardless of race, ethnicity, or socioeconomic status, prior to submittal of the application to the council. The application shall also set forth information for contacting local interest and community groups to allow for meaningful involvement of all people, regardless of race, ethnicity or socioeconomic status. For example, such information may include contacts with local minority radio stations and news publications.

The Applicant has been actively involved in meeting and consulting with local, state, and federal agency personnel and with Tribal leaders during the preparation of studies supporting this ASC. A summary of key contacts made to date are listed in this section.

1.12.1 Public Engagement

To provide the public with balanced and objective information to assist them in understanding the Project and potential impacts, the Applicant initiated a variety of public engagement activities beginning in February 2020. From this early stage of Project planning, engagement activities served to build awareness, inform, consult, and involve stakeholders and citizens. These efforts sought to cultivate an open and transparent relationship with the community where potentially interested parties were made aware of the proposal, had access to project details, and were provided opportunities to share feedback with the development team.

The COVID-19 outbreak created a new reality for public participation. In adherence to public health guidelines provided by the State Department of Public Health, the Applicant limited in-person meetings and used a combination of traditional and digital media tools to share information and engage with the local population. The various tools described below provided a mechanism for the Applicant to identify and address community concerns and values.

- **Media Releases.** The Applicant maintains a distribution list of local and regional media outlets. Media release are issued to raise awareness of the Project and inform media of Project milestones; and were distributed on May 7, 2020; August 31, 2020; November 6, 2020; and January 8, 2020.
- **Stakeholder Distribution List.** The Applicant maintains a contact list for interested stakeholder groups, including but not limited to business leaders and/or representatives from regional chambers of commerce; elected officials for cities and counties in the Mid-Columbia region; public utility districts; fire district representatives; school district representatives; and environmental advocacy groups (see Appendix U).
- **Advertisements.** Regular print and online advertising has been conducted in local news outlets since February 2020. Monthly print ads run in the *Tri-Cities Area Journal of Business*, which has a targeted readership including business owners, managers, decision makers, and key employees of companies throughout the Mid-Columbia region and a circulation of more than 8,500 companies in Benton and Franklin counties. Print ads also run in the *Tri-City Herald*, the daily newspaper for southeastern Washington State, which estimates daily print circulation at 16,895, and 21,993 on Sunday. Digital traffic to the newspaper website is much higher, with the publisher reporting 607,000 unique visitors to the site per month. Since February 2020, the Applicant has run two print ads per month in the *Tri-City Herald*. The advertising content focused on Project awareness and highlighted issues identified as most important to the local community. Online ads on the *Tri-City Herald* website are sold by number of "impressions" delivered. The Applicant advertises on this platform with the goal of 28,000 digital impressions per month. Since beginning the digital advertising in February 2020, the ad campaign had over 309,000 unique impressions, with an average click through rate of 0.05 percent where traffic is directed to the Project website.
- **Project website.** A dedicated Project website (i.e., www.horseheavenwindfarm.com) was launched on May 4, 2020. The site is regularly updated with Project developments, and includes detailed information on the Project size and scope, community benefits, and wind energy in Washington State. The site also serves as a platform for the community to ask questions about the proposal via the email tool, and has a Q&A page with most commonly posed questions about wind energy and the Horse Heaven proposal specifically. To date, the website has attracted over 16,000 unique visitors.
- **Email Address:** The Applicant maintains a Project email address, which is publicized on the various outreach materials and provides a method for the community to provide feedback and ask questions at any time.
- **Facebook.** A dedicated page (i.e., https://www.facebook.com/HorseHeavenWindFarm) was established in May 2020 using the Facebook platform to share information about the Project and answer questions directly from the community in a public forum. This format allows a broad demographic from the local community to engage with the Project team. Online engagement also enables the community to contribute at a place and time of their choosing. To date, the page has 1,011 "Fans" and an additional 1,037 "Followers" for a total of 2,048 subscribers. To date, the Applicant has shared 65 posts

to the platform on a variety of issues including most commonly posed questions about wind energy and Project specifics. The Applicant has also engaged in paid advertising on the Facebook platform to reach a broader audience and invite new users to follow the Project's Facebook page. Ads placed between May and August 2020 had a total reach of 58,448 Facebook users and resulted in 1,594 individuals clicking to view the Project's Facebook page.

- **Online Display Advertising.** To further build Project awareness to new audiences in the Tri-Cities region, an online ad campaign on Google ran from August 2020 through December 2020 and resulted in a total of 3,190,075 Impressions (viewers) and 2,139 individuals who clicked to view the Project website.
- **Digital Newsletter.** To date, five email newsletters have been distributed to announce details of the Project, significant revisions to Project plans, as well as to address commonly raised issues based on community feedback received. The contact list now has 196 contacts, which include individuals who have subscribed for updates via the Project website, as well as local stakeholder groups and representatives. Newsletters were sent via email on May 15, 2020; July 29, 2020; August 31, 2020; December 15, 2020; and most recently on January 8, 2021.
- **Postcard Mailer.** A mail piece was sent to participating landowners and list of identified local and regional stakeholders (see Appendix U). These were mailed on March 19, 2020 and included a Project overview as well as contact information for the Applicant's development team. A second mail piece is planned for distribution to addresses within a 2-mile radius of the Project site, and includes an overview of the Project, local benefits, and addresses the most commonly asked questions. The second mailing will be timed for delivery in the second week of February 2021 to coincide with filing the application for a Site Certification Agreement.
- **Presentations to local groups and organizations.** Meetings are held to share Project information and receive feedback from interested groups and organizations within the local community, and have primarily been held virtually due to gathering restrictions in Washington State. These included briefings and presentations to the Tri-City Chamber of Commerce (February 11, 2020), Tri-City Development Council, Mid-Columbia Energy Initiative committee (May 19, 2020 and August 25, 2020), Economic Development Council Energy Storage Team (November 13, 2020), Lower Columbia Basin Audubon (September 22, 2020), and Tri-Cities Chapter, Citizens Climate Lobby (October 13, 2020).
- **Virtual Open House:** On January 13, 2021, the Applicant hosted a live-stream meeting to discuss details of the proposal and answer questions directly from attendees. Advertising for the event was promoted to a broad demographic in both print and online local news platforms as well as on social media. Over 75 people participated in the virtual event, where the Project team shared details on the planned design, benefits to the local community, as well as information on the upcoming permitting process. The meeting closed with a Q&A session where some of the most commonly asked questions from attendees were addressed in real time. The meeting was scheduled after traditional work

hours to enable increased potential participation, and a recording of the event is now available on the Project website for those who were unable to attend (see Appendix U).

- **Public Opinion Survey.** A public opinion survey was conducted by EMC Research to help determine community sentiment about the proposal, including specific reasons for support or concerns related to renewable energy facilities, and to identify issues of greatest interest to the local community. The results found that most voters think that government support for renewable energy (80 percent) and wind energy (70 percent) is important. Close to a half of voters are at least somewhat familiar with "the proposed wind energy project in Horse Heaven Hills." Of those who say they are familiar with the Project, most only recall general information. There is strong support for the Horse Heaven Wind Farm both initially and after voters hear arguments for and against the Project. Prior to hearing any messaging about the Project, Benton County voters support the Project by a 19-point margin, 54 percent to 35 percent. After hearing supporters' and opponents' messaging, support for the Project increases to six-in-ten voters (61 percent support) with four-in-ten strongly supporting the Project. Among supporters, environmental benefits are the top reason for their support. Opponents mention that wind farms are not cost-effective and offer aesthetic objections. The live telephone survey of 500 registered voters in Benton County was conducted in December 2020 and carries an overall margin of error of ±4.4 points at the 95 percent confidence interval and is representative of Benton County voters. Demographic questions were included to help identify any inequities in response rates and detect important differences in opinions among groups (see Appendix U).

Throughout the course of the public engagement efforts, over 1,140 messages have been received from local community members and groups through the variety of contact methods offered (e.g., website, Facebook, newsletter, group presentations, phone, and email). The most common concerns are as follows, in order of frequency raised from most common to least:

- Wind energy is inefficient;
- Views will be altered;
- Turbines cannot be recycled and create disposal challenges;
- Wind energy is taxpayer subsidized; and
- Birds and wildlife will be harmed.

In dialogue with residents, we find that most concerns raised are alleviated with facts. There is a split in sensibilities between those who consider Turbines an eyesore and those who appreciate the visual effect of the Turbines and what they represent. For those potential impacts which are not subjective, outreach materials include specific information that is primarily sourced from either state or federal agencies, as well as peer-reviewed scientific journals. Our experience is that credible sourcing of information provides additional assurance to dispel popular myths about wind energy.

Further communications from the Applicant are planned to continue throughout the permitting process, using all platforms described in this section.

1.12.2 Consultation with Indian Tribes and Applicable Agencies

Table 1.12-1 provides dates, participants, and topics discussed during outreach to Tribes and agencies for the Project.

Table 1.12-1. Communications with Applicable Agencies and Tribes

Date	Nature of Communication and Participants	Topics Discussed
9/19/2017	Meeting between Scout Clean Energy, WEST, U.S. Fish and Wildlife Service (USFWS), and Washington Department of Fish and Wildlife (WDFW)	Wildlife agency kick-off meeting for the Project. Topics discussed included a Project overview, wildlife resources of interest, as well as wildlife and habitat surveys methods and preliminary results.
9/21/2017	Email exchange between Stuber/USFWS and Jansen/WEST	Clarification of avian point count placement relative to raptor nests and confirmation of appropriate placement.
6/1/2018	Letter from Snyder/Scout to Lally/Yakama	Project Introduction.
7/27/2018	Email exchange between Lally/ Yakama and Snyder/Scout	Project information request and follow up.
8/9/2018	Meeting between Snyder/Scout and Lally, Meninick/Yakama	Project status, tribal approach to impact avoidance, areas of concern to Yakama Nation.
9/12/2018	Meeting between Penry, Snyder/Scout and Lally, Meninick/Yakama	Project status updates, tribal approach, Scout staff transition.
1/14/2019	Phone call between T Ozbun/AINW (on behalf of Scout) and Lally/Yakama	Discuss approach to surveys and areas of concern to Yakama Nation.
1/18/2019	Transmittal of Draft Record Search and Literature Review to Lally/Yakama	Request comment from the Yakama.
2/22/2019	Email exchange between Lally/Yakama, Kobus/Scout, Lawson/Tetra Tech, Ozbun/AINW	Provide status of permitting and agency contacts.
2/25/2019	Emailed letter from Meninick/Yakama to Kobus/Scout	Provide comments on preliminary record search.
9/3/2019	Meeting between Kobus/Scout, Wardlaw and Hanson/DAHP, and Lawson/Tetra Tech	Provide scope and approach for cultural studies and applicable regulations at the Project site.
1/13/2020	Letter from Benton County Public Works Department to Kobus/Scout	Letter requesting information related to the Project's effects on Benton County's road system.
2/5/2020	Letters and phone calls from Applicant cultural consultant, Ragsdale/Historical Research Associates, Inc. (HRA), to Confederated Tribes and Bands of the Yakama Nation (Yakama), Confederated Tribes of the Umatilla Indian Reservation (CTUIR), Nez Perce Tribe (Nez Perce), and the Wanapum Tribe	Describe updated Project and offer opportunity to participate in site surveys and provide information on resources to be assessed.

Date	Nature of Communication and Participants	Topics Discussed
2/6/2020	Meeting between Scout Clean Energy, WEST, Tetra Tech, USFWS, WDFW, and Audubon Society	Presented the updated proposed Project layout and timeline to the wildlife agencies, as well as the results of the biological surveys completed to date.
1/28/2020	Email from Stuber/WDFW to Jansen/WEST	Clarification provided regarding Ferruginous hawk set-back distance per WDFW recommendations.
1/29/2020 - 2/5/2020	Email between USFWS and WEST	Clarification on eagle risk in the Project area
2/11/2020	Phone call and email between Ragsdale/HRA, Baird/Nez Perce, and Buck/Wanapum Tribe	Invite participation in upcoming surveys.
2/11/2020	Phone call and email between Ragsdale/HRA and Lally/Yakama Nation	Invite participation in upcoming surveys; discuss the Yakama Nation's concerns about viewshed effects.
2/11/2020 – 2/20/2020	Phone call and email between Ragsdale/HRA and Steinmetz/CTUIR	Contracting for CTUIR participation in upcoming surveys; offer for CTUIR to complete a Traditional Cultural Property (TCP) study.
2/20/2020	Phone call and email from Ragsdale/HRA to Baird/Nez Perce	Offer for Nez Perce to complete a TCP study for the Project.
2/20/2020 – 3/3/2020	Phone call and email from Ragsdale/HRA to Lally and Meninick/Yakama	Offer for Yakama Nation to complete TCP study for the Project; follow-up discussions, offer for meeting between Scout and Yakama Nation to meet to discuss Project design and Yakama Nation interest in TCP study.
3/18/2020	Emails from Ragsdale/HRA to Steinmetz/CTUIR and Nez Perce	Provide the results of the recent cultural survey conducted on Washington Department of Natural Resources (DNR) lands.
3/30/2020 – 4/21/2020	Phone calls and emails between Ragsdale/HRA and CTUIR	Discuss subcontract crew position for the upcoming pedestrian cultural surveys.
4/6/2020	Email from Ferman/CTUIR to Ragsdale/HRA	Indicating that the CTUIR crew member would not be able to join the survey this week due to an emergency monitoring need.
4/3/2020	Emails between Ragsdale/HRA, Lally and Meninick/Yakama, and Baird/Nez Perce	Invite participation in the upcoming pedestrian cultural surveys.
4/10/2020	Transmittal of Draft Report to Unland/DNR; Yakama, CTUIR, Nez Perce, Wanapum	Draft report of surveys on DNR land for review and comment provided to the Tribes.
4/13/2020 – 4/17/2020	Emails between Lally/Yakama and Ragsdale/HRA	Report provided for review; discuss upcoming meeting logistics.
4/21/2020	Emails between Ferman/CTUIR and Ragsdale/HRA	Planning related to CTUIR joining the survey crew on 4/27/20 - 4/30/20.
4/21/2020	Email from Chad Unland/DNR to Kobus/Scout and Ragsdale/HRA	Discuss comments on draft cultural resource survey report for DNR lands.
4/27/2020 – 5/27/2020	Emails between Bell/Navitas (on behalf of Scout) and Steinmetz/CTUIR	Traditional Use Study contract agreement; discuss presentation to CTUIR Cultural Resource Committee.
4/28/2020	Email from Baird/Nez Perce to Ragsdale/HRA	Indicating that the Tribe had no comments on archaeological survey findings.

Date	Nature of Communication and Participants	Topics Discussed
5/1/2020 – 5/12/2020	Emails from Ragsdale/HRA to Lally/Yakama	Request comments on archaeological survey report for DNR lands.
5/5/2020	Transmittal of Draft Report to Baird/Nez Perce, CTUIR, and Lally/Yakama	Results of the survey on private lands provided to the Tribes in the form of the draft report.
5/14/2020	Transmittal of Final Report to Lally/Yakama, CTUIR, Baird/Nez Perce, Buck/Wanapum, Unland/DNR, and Hanson/DAHP	Submitted the final archaeological survey report for DNR lands.
5/26/2020	Email between Hanson/DAHP and Wendt/County	DAHP letter of concurrence on HRA's recommendations in the DNR survey report.
5/26/2020	Email between Ragsdale/HRA and Baird-Williamson/Nez Perce	Offer for CTUIR to complete a TCP study, offer to give a presentation of the Project via a virtual meeting.
5/28/2020 – 7/6/2020	Emails between Ragsdale/HRA and CTUIR	Invite participation in upcoming surveys.
7/6/2020 – 7/8/2020	Phone calls and emails between Ragsdale/HRA and Lally/Yakama	Invite participation in upcoming surveys.
8/12/2020	Email between Ragsdale/HRA, Lally/Yakama, CTUIR, and Baird/Nez Perce	Provide an update on the status of resources identified during surveys, as well as to inform the Tribes of additional survey planned in late August/early September 2020.
8/28/2020	Emails between Ragsdale/HRA and CTUIR	Invite participation in upcoming surveys.
9/29/2020	Phone call between Ragsdale/HRA and CTUIR	Update regarding the status of the upcoming survey reports (for work on private land and DNR land); discussion of precontact resources identified in the private lands report.
10/16/20	Transmittal of Draft Report to Lally/Yakama, CTUIR, and Baird/Nez Perce	Draft report for review and comment provided to the Tribes.
10/19/2020	Email from Steinmetz/CTUIR to Ragsdale/HRA	Comments on private lands report.
10/12/2020 – 10/28/2020	Emails from Ragsdale/HRA and CTUIR	Offer of a subcontract crew position for the upcoming pedestrian cultural surveys.
10/30/2020	Email from Ragsdale/HRA to Lally/Yakama and Baird/Nez Perce	Notification of upcoming survey of the solar parcels.
10/19/2020	Email from Lally/Yakama to Ragsdale/HRA	Comments on private lands report.
11/20/2020	Email from Ragsdale/HRA to CTUIR and Baird/Nez Perce	Notification that surveys of a portion of the solar parcels have been completed; an overview of the resources identified during the surveys provided.

1.12.3 Meaningful Involvement

The Applicant has considered all input from persons or groups regardless of race, income status, or other social and economic characteristics. The demographics of the Project study area have been identified and a public involvement effort undertaken to reach surrounding residents, including minority and low-income populations.

The Mid-Columbia has a very diverse population, with 53.6 percent and 22.6 percent Hispanic ethnicity in Franklin and Benton counties respectively, according to the 2019 U.S. Census. Demographic research suggests an integrated Hispanic community that receives most news through English-speaking news outlets including the *Tri-City Herald*, Facebook, and top-40 radio stations. To provide additional engagement opportunities tailored to the Latino residents, public involvement efforts included both paid and earned media strategies to ensure Project information was available to minority communities. Due to public health concerns related to the spread of the coronavirus (COVID-19), these targeted engagement efforts have been limited to radio, print news, and social media.

The media distribution list for Project updates includes both national and local news outlets that serve a diverse linguistic and ethnic populations in the Tri-Cities area:

- Bustos Media Radio Network Stations KZTB 97.9, KMMG 96.7, and KZXR 107.1. Reach in Benton and Franklin Counties is estimated at 52,405 listeners.
- *La Voz* Hispanic newspaper serving Southeast Washington. Published every Thursday, reach is estimated at more than 400,000 Hispanics and more than 180,000 homes.
- Tú Decides is a bilingual weekly newspaper serving Washington State with distribution estimated at 10,000 copies in Eastern Washington.
- Hispanic PR Wire, a news distribution service for U.S. Hispanic media with over 6,000 journalists and bloggers on its press list.

Paid advertising to the local community includes Spanish-language print ads in the *La Voz* Hispanic newspaper and Spanish-language radio spots on Bustos Media stations that serve the Tri-Cities region and have estimated distribution reach as noted above.

1.13 GRAPHIC MATERIAL

> ***WAC 463-60-105:*** *It is the intent that material submitted pursuant to these guidelines shall be descriptive and shall include illustrative graphics in addition to narration. This requirement shall particularly apply to subject matter that deals with systems, processes, and spatial relationships. The material so submitted shall be prepared in a professional manner and in such form and scale as to be understood by those who may review it.*

The Applicant has submitted descriptive materials meant to facilitate EFSEC's review of the Project. As required, this graphic material was prepared in a professional manner, and in such form and scale as to be understood by those who may review it.

1.14 SPECIFIC CONTENTS AND APPLICABILITY

> ***WAC 463-60-115:*** *It is recognized that not all sections of these guidelines apply equally to all proposed energy facilities. If the applicant deems a particular section to be totally inapplicable the applicant must justify such conclusion in response to said section. The applicant must address all sections of this chapter and must substantially comply with each section, show it does not apply or secure a waiver from the council. Information submitted by the applicant shall be accompanied by*

a certification by applicant that all EFSEC application requirements have been reviewed, the data have been prepared by qualified professional personnel, and the application is substantially complete.

The Applicant hereby certifies that all EFSEC ASC requirements have been reviewed, that the data in this ASC have been prepared by qualified professional personnel, and that to the best of our knowledge the ASC is substantially complete.

1.15 AMENDMENTS TO APPLICATIONS, ADDITIONAL STUDIES, PROCEDURE

WAC 463-60-116:

(1) Applications to the council for site certification shall be complete and shall reflect the best available current information and intentions of the applicant.

(2) Amendments to a pending application must be presented to the council at least thirty days prior to the commencement of the adjudicative hearing, except as noted in subsection (3) of this section.

(3) Within thirty days after the conclusion of the hearings, the applicant shall submit to the council, application amendments which include all commitments and stipulations made by the applicant during the adjudicative hearings.

(4) After the start of adjudicative hearings, additional environmental studies or other reports shall be admitted only for good cause shown after petitions to the council or upon request of the council, or submitted as a portion of prefiled testimony for a witness at least thirty days prior to appearance.

The Applicant does not anticipate that amendments will be required to its application.

1.16 APPLICATIONS FOR EXPEDITED PROCESSING

1.16.1 Request for Expedited Processing

WAC 463-60-117:

(1) Request for expedited processing. Requests for expedited processing shall be accompanied by a completed environmental checklist delineated in WAC 197-11-960. The request for expedited processing shall also address the reasons for which the following are not significant enough to warrant a full review of the application for certification under the provisions of chapter 80.50 RCW:

(a) The environmental impact of the proposed energy facility;

(b) The area potentially affected;

(c) The cost and magnitude of the proposed energy facility; and

(d) The degree to which the proposed energy facility represents a change in use of the proposed site.

Pursuant to RCW 80.50.075, RCW 80.50.110, and WAC 463-60-117, the Applicant is requesting expedited consideration by EFSEC for its application to develop, own, and operate the Project. Per RCW 80.50.075(1), EFSEC can grant expedited processing of certification application upon a finding that: 1) the proposed energy facility's environmental impact is not significant or can be mitigated to a non-significant level under the State Environmental Policy Act (SEPA) and 2) the project "*is found under RCW 80.50.090(2) to be consistent and in* *compliance with city, county, or regional land use plans or zoning ordinances*." Section 1.16.1.1 below addresses the first criterion regarding environmental impacts, and Section 1.16.1.2 addresses the second criterion regarding land use consistency.

1.16.1.1 Mitigated Finding of Non-Significant Environmental Impact

Pursuant to WAC 463-60-117(1), a completed SEPA Environmental Checklist is included as Appendix C to this ASC. The following discussion addresses WAC 462-60-117(1)(a) through (d), demonstrating that the environmental impacts, the areas potentially affected, the cost and magnitude of the proposed energy facilities, and the degree to which the proposed energy facilities represent a change in the use of the proposed sites are not significant enough to warrant a full review. This section, in conjunction with the supporting analyses provided throughout the ASC, supports a finding pursuant to RCW 80.50.075(1) that the proposed Project's environmental impact can be mitigated to a non-significant level under SEPA.

(a) The environmental impact of the proposed energy facility:

The environmental impacts from the Project would not be significant enough to preclude expedited processing. The potential environmental impacts of the Project have been evaluated in detail in Section 3.0 and Section 4.0 of this ASC, including referenced supporting appendices. Below is a summary of the impacts from the construction and operation of the Project. Mitigation measures related to each resource were summarized above in Section 1.10. With the implementation of the identified mitigation measures, the Project would not have probable significant adverse environmental impacts as defined under SEPA.

The Earth resource components would not experience significant impacts from construction or operation of the Project (see Section 3.1). The geology, soils, and topography would see minor impacts from installation of the Project's foundations and the surface disturbance associated with construction. It is the intent of the Applicant that Project components avoid geological hazards. Potential impacts from erosion will be minimal and managed through the implementation of mitigation measures. Mitigation includes compliance under the State Water Pollution Control Act with the NPDES, which would be handled through a Construction Stormwater General Permit (see Section 5.0 of this ASC). As required for the NPDES permit, an ESCP and a SWPPP will be developed and implemented for the Project.

Air resources would experience minimal impacts from construction of the Project (see Section 3.2). The primary sources of air pollution generated by construction of the Project would be vehicle exhaust emissions and fugitive dust particles from disturbed soils that become airborne. A dust control plan that identifies management practices and operational procedures to effectively control fugitive dust emissions will be developed and provided to the Benton Clean Air Agency (BCAA) prior to construction. Once construction is complete, the air impacts would be very low, intermittent, and localized (resulting from O&M vehicle traffic use).

Impacts to water resources would be limited to isolated impacts (see Section 3.3). There are no wetlands within the Micrositing Corridor or Solar Siting Areas; therefore, no impacts to wetlands would occur (see Section 3.5). Project features, such as collection lines, roads, crane paths, and transmission lines, would have temporary impacts on 19 of the 31 mapped ephemeral stream channels and two mapped intermittent streams, while permanent impacts would occur to one ephemeral stream within the Ordinary High Water Level. Indirect impacts to surface water quality would be minimal, if any, due to the mitigation measures (described above in relation to Earth). The Project would have temporary impacts to approximately 0.8 acre of 100 year floodplains/Frequently Flooded Areas, which are associated with Critical Aquifer Recharge Areas; however, no Project components would be placed in 100 year flood zones/Frequently Flooded Areas. Impacts to floodplains would be temporary and minimal due to the mitigation measures described above. Construction and operation of the Project would have minimal to no impacts on groundwater.

The impacts to habitat, vegetation, fish, and wildlife would not be significant due to avoidance, minimization, and mitigation of impacts (see Section 3.4). The vast majority (i.e., over 80 percent) of habitat proposed to be permanently impacted by the Project is agricultural land that has been previously disturbed. The wind energy components of the Project would permanently impact up to approximately 93 acres of grassland and shrubland habitat type, and temporarily impact up to 571 acres of grassland and shrubland habitat type; these impacts would be mitigated consistent with the WDFW Wind Power Guidelines. Approximately 891 acres of grassland and shrubland habitat type would become modified habitat under the solar array that would be revegetated with low-growing vegetation and provide residual habitat value; these impacts would be mitigated to achieve no overall loss of habitat functions and values. An additional 5,382 acres of habitat that is currently agricultural land would also be revegetated with low growing vegetation under the solar array and thus could provide higher quality habitat following revegetation compared to their current condition (i.e., being actively plowed). No known occurrences of special status plant species would be impacted by construction or operation of the Project. As a result of minimization measures and due to the lack of fish-bearing streams within the Project Lease Boundary, no impacts are anticipated to fish, including ESA-listed fish and their critical habitat located outside of the Project Lease Boundary in the Yakima River and Columbia River. No wildlife species currently listed, or candidates for listing, under the federal ESA are expected to occur at the Project; however, 20 special status wildlife species have the potential to occur within the Project Lease Boundary including state listed, candidate, and priority species, as well as federally protected eagles. One documented Townsend's ground squirrel (i.e., a state candidate and state priority species) colony locations would be directly impacted by Project disturbance because it overlaps with the temporary disturbance associated with an intersection improvement within agricultural land; however, impacts to this species would be mitigated through revegetation and compensatory mitigation. The primary anticipated wildlife impact of Project operation is direct fatalities of birds (which may include special status species) and bats due to collision with Turbine blades. Use of the area by ferruginous hawks will likely continue following construction, and impacts from collision or displacement from Project operations could occur. To avoid and minimize potential impacts to ferruginous hawk from human activity, the Applicant would implement spatial and seasonal restrictions on ground disturbing activities near active nests per WDFW recommendations. The risk of eagle electrocution will be avoided and minimized by the application of Avian Power Line Interaction Committee guidelines in the design and construction of electrical systems. Bald and golden eagles will likely continue to occur within the area during Project operations and there would be continued exposure to collision risk. There is some potential for migrating waterfowl, shorebirds, and waterbirds to use the available habitat seasonally as stopover habitats; however, given the limited amount of such habitat, use is not expected to be substantial, and the Project is not anticipated to be used as a concentrated migration pathway.

The Project would not have a significant impact on energy sources, as the Project is not anticipated to place a substantial demand on energy supplies (see Section 3.6 of this ASC). The Project would consume limited amounts of energy and natural resources during construction. During construction, consumption of resources would include limited amounts of nonrenewable resources, such as raw materials used for Turbines, solar panels, and ancillary infrastructure. Energy consumption during construction would include use of gasoline and diesel fuel to operate construction equipment, to transport Project components to the site, and to transport construction workers to and from the site. Water demand would also not impact water sources because the City of Kennewick has no stated limitations of water for purchase, which would indicate that the Project would not impact the city public water supply. The Project would consume low amounts of energy and natural resources while in operation. Operation of the Project would require electric energy for the O&M facilities (i.e., for lighting, heating, and general electrical service), which would be provided by the local utilities. Electrical energy for Turbines (i.e., for heating/cooling, hydraulics, control systems, and lighting) during calm wind periods would be back-fed from the BPA grid.

The construction of the Project may cause short-term, but unavoidable, noise impacts resulting from the construction activities, which would vary significantly depending on several factors such as the type and age of equipment, specific equipment manufacturer and model, the operations being performed, and the overall condition of the equipment and exhaust system mufflers. All reasonable efforts would be made to minimize the impact of noise resulting from construction activities including implementation of standard noise reduction measures. Due to the infrequent nature of loud construction activities at the site, the limited hours of construction and the implementation of noise mitigation measures, the temporary increase in noise due to construction is considered to be a less than significant impact. During operation, the Turbines and equipment for the solar arrays and BESS will radiate sound; however, sound levels will be mitigated and there are no predicted exceedances of the WAC noise regulations at any of the noise sensitive receptors. See Section 4.1.1 for detailed analysis.

Environmental health, including fire risk, spills, and solid waste, would experience only minimal impacts (Section 4.1.2). The Project is situated on vacant land with little vegetation cover and few trees, presenting little to no inherent risk of fire or explosion. All facilities will be designed per recommendations of the Institute of Electrical and Electronics Engineering Guide for Substation Fire Protection (979-2012) and the UFC for Fire Protection Engineering for Facilities (UFC 3-600-01). The Project BESS equipment has fire protection and prevention measures and Project stored water can be diverted for firefighting if needed. Moreover, the risk of explosion is low because fossil fuels would be transported, stored, or used on the Project in small quantities. During construction, small quantities of a few hazardous materials may be utilized or stored in the construction yards. None would be present in substantial, reportable quantities. Fuels would be the only hazardous material that may be stored in substantial quantities on site during construction. Most fuel would be delivered to the construction yard by a licensed specialized tanker vehicle on an as-needed basis. Hazardous materials would be used in a manner that is protective of human health and the environment and would comply with all applicable local, state, and federal environmental laws and regulations. Due to the potential quantities of hazardous materials that may be present during construction, the construction contractor will be required to develop an SPCC Plan prior to beginning construction of the Project. Like fossil fuels, toxic, hazardous, or solid waste materials are unlikely to pose impacts because they would be generated in such small quantities. To the maximum extent possible, these materials would be recycled, and the remainder would be landfilled in compliance with local, state, and federal requirements.

While some land uses and resources (e.g., parking facilities) would see no impacts from the Project, other land uses and resources could experience some non-significant impacts; however, the Project would have no significant impacts related to applicable land use plans and zoning. The Project's permanent footprint would occupy up to approximately 1.1 percent of the existing Growth Management Act Agriculture (GMA AG) / Growth Management Act Agricultural District (GMAAD) area in Benton County. The Project's operation is not expected to affect or be affected by the normal business operations of the surrounding working farm or forest lands. See Section 2.23, Section 4.2.1, Section 4.2.4, and Section 4.2.6 for additional information.

Short-term visual effects would result from construction activities and the presence of equipment and work crews during construction. Long-term visual effects during operation of the Project would result from the visibility of the aboveground components associated with the Project Turbines, solar arrays, substations, BESS, and transmission line. The judgment of visual impact is inherently subjective, and relates to the local visual context in specific landscape settings. The Project is designed to provide setbacks between homes and Turbines in excess of the County's setback standards. Visual impact resulting from the Project would range from low-moderate to high based on the specific viewing location being considered, the subjective judgment of individual viewers, the distance from the Project, and the Project components in the view. While some specific locations are characterized as having a moderate-high to high impact, that impact would be experienced by a relatively small number of individuals and is representative of that location only and does not imply the same level of impact would exist across the entire Project area. The Project will be introduced into a landscape already containing numerous modifications to the natural environment, including roadways, existing electric infrastructure, agricultural production, existing wind facility, and residential and other development. The Project mitigation measures are intended to decrease the aesthetic impacts of construction and operation of the Project where reasonable. Based on the detailed analysis provided in Section 4.2.2 and Section 4.2.3, there is no probable significant adverse environmental impact to aesthetics, light, and glare under the meaning of SEPA.

Construction and operation of the Project would not displace any existing recreational uses within the vicinity of the Project. Furthermore, with the implementation of avoidance, minimization, and mitigation measures discussed for noise, visual, and transportation, impacts to recreational users would be less than significant.

As discussed in Section 4.2.5, with the implementation of avoidance, minimization, and mitigation measures, impacts to architectural and archaeological resources would be less than significant.

Interstate and county roads may be temporarily affected by construction related traffic. The greatest impact would occur during peak construction (up to 2 months during each phase of construction) and would occur primarily during peak times (morning and evening, up to 1 to 2 hours a day). Section 4.3 and Appendix V provide a summary of current and projected traffic volumes and service levels with Project construction traffic on the surrounding road network, and identifies intersections anticipated to require improvement. The intersections of State Route 221 and Sellards Road, as well as State Route 221 and County Well Road, are conservatively forecasted to temporarily reduce the level of service down to LOS D during peak hours of the peak months of construction (1 to 2 months during each phase). The Project would not cause adverse impacts to waterborne, rail, or air traffic. Based on the analysis presented in Section 4.3, incorporating mitigation to reduce effects to traffic and road conditions, the Project is not likely to cause significant adverse environmental impacts to transportation.

Section 4.4 provides an in-depth analysis of the socioeconomic impacts, including economic costs and benefits, of the Project. Construction and operation of the Project would support employment, income, and output elsewhere in the regional economy. Because of the Project's on-site fire prevention and protection measures, the risk and impacts of potential fires are minimal. Impacts on police and law enforcement would be limited to minimal impacts from responding to traffic issues, emergency medical calls, and coordination in the unlikely event of a fire. Finally, no or negligible impacts would occur for other city services, like schools, communications, utilities, maintenance, and sewer and solid waste, because minimal permanent relocations or in-migration are anticipated for the Project (see Section 4.4).

(b) The area potentially affected;

The Project would be located in unincorporated Benton County, Washington within the Horse Heaven Hills area. Most of the Project Lease Boundary is privately owned and actively managed for dryland agriculture and livestock grazing. The Project Lease Boundary encompasses approximately 72,428 acres, of which approximately 11,850 acres are the Wind Energy Micrositing Corridors and 10,755[6] acres are Solar Siting Areas. Of this acreage, 6,869 acres of leased land would be permanently impacted (for the life of the Project). This represents approximately 1.1 percent of the total 649,153 acres of GMAA designation in Benton County. Operation of the Project would not negatively impact land uses beyond its footprint and would be compatible with other uses in the surrounding area. The Project is not anticipated to affect areas beyond the permanent footprint, encompassed within the described 6,869 acres of permanent impacts (see Table 2.1-1); the remaining 65,559 acres of the Project Lease Boundary would remain available for existing land uses to continue. See Sections 2.23, 4.2.1, and 4.2.6 for further supporting information and analysis.

[6] Areas that fall within both the Wind Energy Micrositing Corridor and the Solar Siting Areas (e.g., wind-associated collection lines that pass through the Solar Siting Areas) are included in both the total acres listed for these areas; therefore, the totals reported here for the Wind Energy Micrositing Corridor and the Solar Siting Areas should not be summed.

(c) The cost and magnitude of the proposed energy facility;

The Project is estimated to cost over $1.7 billion to construct, including the Turbines, solar arrays, BESS, transmission infrastructure, and associated equipment. The Applicant estimates that annual operations would cost approximately $17.4 million (see Section 2.3.14). Regarding magnitude, the Project would generate approximately 1,150 MW from a combination of wind and solar energy generation. See Section 2 for more detailed information about the cost and magnitude of the Project. While considered a large-scale commercial energy facility, as a new source of clean, renewable energy with clear environmental and economic benefits, as discussed throughout this ASC, the Project's size and multiple technologies do not inherently preclude expedited processing.

(d) The degree to which the proposed energy facility represents a change in use of the proposed site.

As noted above, most of the Project's Lease Boundary is privately owned and actively managed for dryland agriculture and livestock grazing; portions of this area may also be enrolled in the U.S. Department of Agriculture's Conservation Reserve Program. The Project Lease Boundary also encompasses lands managed by the Washington Department of Natural Resources (DNR) in the state trust land system.

The developed Project Turbines would allow for continued current agricultural uses outside of their relatively small footprint. The solar arrays, BESS, O&M facilities, and substations would reduce the potential for continued agricultural uses; however, this impact represents an overall minor portion of existing agricultural land in Benton County (see Section 2.23 and Section 4.2.6). The developed Project Turbines, one supporting facility, and one possible site for the solar component on DNR lands would change the use on those parcels, which are generally leased for agriculture or have open space; however, Project facilities would generate continuous revenue for DNR through lease agreements, which goes to state land trust beneficiaries. See Section 2.23 for detailed discussion of the Project's compatibility with surrounding land uses. The Project would not have a significant adverse impact on existing land use.

1.16.1.2 Consistency with Land Use Plans and Zoning Ordinances

As noted above, pursuant to RCW 80.50.075(1), to be eligible for expedited processing, an applicant must show "*that the project is consistent with and in compliance with city, county, or regional land use plans or zoning ordinances*." The Project's consistency with the applicable land use plan, the Benton County Comprehensive Plan (Benton County 2020), and compliance with Benton County zoning ordinances and other code provisions, is reviewed in detail in Section 2.23 of this ASC in response to WAC 463-60-297. As described in Section 2.23, the Project complies with all applicable provisions of Benton County Code, and supports implementation of the Benton County Comprehensive Plan by harnessing the County's renewable wind and solar resources for economic and environmental benefits, while minimizing impacts to other natural resource values and agricultural lands of commercial long-term significance. Therefore, the Project meets this criterion for expedited processing.

1.16.2 Expedited Application Content Requirements

***WAC 463-60-117:** (2) Contents. Applications for expediting processing submitted to the council in accordance with the requirements of chapter 463-43 WAC must address all sections of chapters 463-60 and 463-62 WAC.*

All parts of WAC 463-60 are addressed through the organization of this ASC as follows: Section 1.0 addresses WAC 463-60 Subpart A – General; Section 2.0 addresses WAC 463-60 Subpart B – Proposal; Section 3.0 addresses WAC 463-60 Subpart C – Natural Environment; Section 4.0 addresses Subpart D – Built Environment; and Section 5.0 addresses Subpart E – Applications for Permits and Authorizations. The specific WAC language is provided in these sections prior to the Applicant's response (i.e., the applicable information and analysis in response to the specific WAC requirement).

WAC 463-62 outlines the construction and operation standards for energy facilities. The following provides a response to each section.

***WAC 463-62-020: Seismicity.** The seismicity standard for construction of energy facilities shall be the standards contained in the state building code.*

Response: The Applicant will comply with all state building code standards in the design and construction of the Project. As discussed in Section 2.18, based on site-specific analyses, the original Turbine equipment manufacturer will provide the structural engineer with site-specific foundation loads and requirements. The structural engineer will then complete the foundation analyses based on the design site-specific parameters. Generally, these include the following loads for Turbine foundation design: extreme loads, load cases for up-lift, shear failure, tension loads (for pile foundations), earthquake loads, fatigue loads, subsoil properties, spring constants, verification procedures, and maximum allowable inclination. These design parameters will account for protection of the facility from earthquakes, storms, and other natural events. In addition, a qualified engineer will provide oversight and inspection during construction, including foundation inspections by a qualified engineering geologist or geotechnical engineer, to ensure that the Project is built according to plans and specifications, and the stability of the transmission line structures, Turbines, and other infrastructure is not compromised. For these reasons, the Project meets the seismicity standard.

WAC 463-62-030: Noise standards.

Energy facilities shall meet the noise standards established in chapter 70.107 RCW, the Noise Control Act of 1974; and state rules adopted to implement those requirements in chapter 173-60 WAC, Maximum environmental noise levels.

Response: The Project will meet the noise standards established per RCW 70.107 and implemented in WAC 173-60, as demonstrated through detailed analysis of maximum Project noise levels in Section 4.1.1 of this ASC. With the implementation of mitigation measures as listed in Section 1.10 and described in Section 4.1.1, the Project would not exceed any regulatory noise limitations. Therefore, the Project meets the noise standard.

WAC 463-62-040: Fish and wildlife.

The council's intent is to achieve no net loss of habitat functions and values by maintaining the functions and values of fish and wildlife habitat in the areas impacted by energy development.

(1) The council encourages applicants to select sites that avoid impacts to any species on federal or state lists of endangered or threatened species or to priority species and habitats.

(2) Standards.

(a) An applicant must demonstrate no net loss of fish and wildlife habitat function and value.

(b) Restoration and enhancement are preferred over creation of habitats due to the difficulty in successfully creating habitat.

(c) Mitigation credits and debits shall be based on a scientifically valid measure of habitat function, value, and area.

(d) The ratios of replacement habitat to impacted habitat shall be greater than 1:1 to compensate for temporal losses, uncertainty of performance, and differences in functions and values.

(e) Wetlands shall be replaced at ratios following the wetland standard established by the council in WAC 463-62-050.

(f) Fish and wildlife surveys shall be conducted during all seasons of the year to determine breeding, summer, winter, migratory usage, and habitat condition of the site.

Response: There are no wetlands within the Micrositing Corridor and Solar Siting Areas; therefore, no impacts to wetlands would occur. Section 3.4 provides information regarding fish and wildlife surveys conducted for the Project, and a detailed evaluation of potential Project impacts on fish and wildlife resources. Mitigation measures are proposed as noted in Section 1.10, and described in detail in Appendix L, to ensure no net loss of habitat function and value. With the conducted and planned surveys and proposed mitigation plan, the Project meets the fish and wildlife standard.

WAC 463-62-050: Impact and mitigation standards for wetlands.

(1) The council's intent is to achieve no net loss of wetland areas. Wetland impacts shall be avoided wherever possible. Where impacts cannot be avoided, the applicant shall be required to take one or more of the following actions (in the following order of preference): Restore wetlands on upland sites that were formerly wetlands; create wetlands on disturbed upland sites; enhance significantly degraded wetlands; and preserve high-quality wetlands that are under imminent threat.

(2) Wetland mitigation actions proposed to compensate for project impacts shall not result in a net loss of wetland area except when the lost wetland area provides minimal functions and the mitigation action(s) will clearly result in a significant net gain in wetland functions as determined by a site-specific function assessment.

Response: There are no wetlands within the Micrositing Corridor and Solar Siting Areas; therefore, no impacts to wetlands would occur and no mitigation is required. See Section 3.5 for additional information regarding the wetland delineations conducted for the Project. For this reason, the Project would meet the standard for wetlands.

WAC 463-62-060: Water quality.

Waste water discharges from projects under the council's jurisdiction shall meet the requirements of applicable state water quality standards, chapter 173-201A WAC, state groundwater quality standards, chapter 173-200 WAC, state sediment management standards, chapter 173-

204A WAC, requirements of the Federal Water Pollution Control Act as amended (86 Stat 816,33 U.S.C. 1251, et seq.) and regulations promulgated thereunder.

Response: The Applicant's compliance with applicable state and federal water quality standards is demonstrated in Section 2.23, Section 3.1, Section 3.3, and Section 5.0. The Project would comply with all state and federal water quality standards and regulations; therefore, the Project meets the water quality standard.

WAC 463-62-070: Air quality.

Air emissions from energy facilities shall meet the requirements of applicable state air quality laws and regulations promulgated pursuant to the Washington State Clean Air Act, chapter 70.94 RCW, and the Federal Clean Air Act (42 U.S.C. 7401 et seq.), and chapter 463-78 WAC.

Response: The Applicant's compliance with applicable state and federal air quality requirements is demonstrated in Section 2.23 and Section 3.2. As described in Section 3.2, the Project is a proposed renewable energy facility that does not create a new point source of air emissions and would otherwise generate minimal air emissions during construction. The Project would comply with all state and federal air quality laws and regulations; therefore, the Project meets the air quality standard.

1.16.3 Funds for Expedited Application Processing

WAC 463-60-117:

(3) Funds. The applicant shall submit those funds and costs for independent consultant review and application processing pursuant to RCW 80.50.071 (1)(a) and (b) and chapter 463-58 WAC with the understanding that any unexpended portions shall be returned to the applicant at the completion of application processing.

In accordance with WAC 463-58-020, a deposit shall accompany this ASC as required by RCW 80.50.071. The Applicant is providing an initial $50,000 deposit with this ASC for the proposed Project. It is the Applicant's understanding that any unexpended portions shall be returned at the completion of ASC processing. It is also understood that, per WAC 463-58-020(2), if the Applicant files amendments or supplements to the ASC, or should EFSEC find additional study is required, the Applicant may be advised of additional processing costs.

2.0 PROPOSAL

2.1 SITE DESCRIPTION

WAC 463-60-125: *The application shall contain a description of the proposed site indicating its location, prominent geographic features, typical geological and climatological characteristics, and other information necessary to provide a general understanding of all sites involved, including county or regional land use plans and zoning ordinances.*

The Project consists of a renewable energy generation facility, which is located in unincorporated Benton County, Washington, within the Horse Heaven Hills area (see Figure 2.1-1), which is an anticline ridge of the Yakima Folds within the larger Columbia Plateau Ecoregion (Clarke and Bryce 1997). At its closest point, the Project is located approximately 4 miles south/southwest of the city of Kennewick and the larger Tri-Cities urban area, along the Columbia River.

The Project's Lease Boundary (i.e., the extent of parcels in which the Applicant has executed a lease to construct Turbines, the solar array, and associated facilities) encompasses approximately 72,428 acres. The Project's Wind Energy Micrositing Corridor encompasses 11,850 acres and consists of the area in which the Turbines and supporting facilities would be sited during the final design. The Solar Siting Areas (which consist of the three areas under consideration for siting of the proposed solar arrays during the final design) encompass 10,755[7] acres located within the lease boundary. The Micrositing Corridor and the Solar Siting Areas are larger than the Project's final footprint to allow minor rerouting to optimize the design and to avoid resources that may be discovered during the final design and pre-construction process. The Project's total permanent disturbance footprint (i.e., areas where direct permanent disturbances would occur based on the current indicative design layout) is presented in Table 2.1-1. More details regarding the various Project components as well as a detailed Project description can be found in Section 2.3.

[7] Areas that fall within both the Wind Energy Micrositing Corridor and the Solar Siting Areas (e.g., wind-associated collection lines that pass through the Solar Siting Areas) are included in both the total acres listed for these areas; therefore, the totals reported here for the Wind Energy Micrositing Corridor and the Solar Siting Areas should not be summed.

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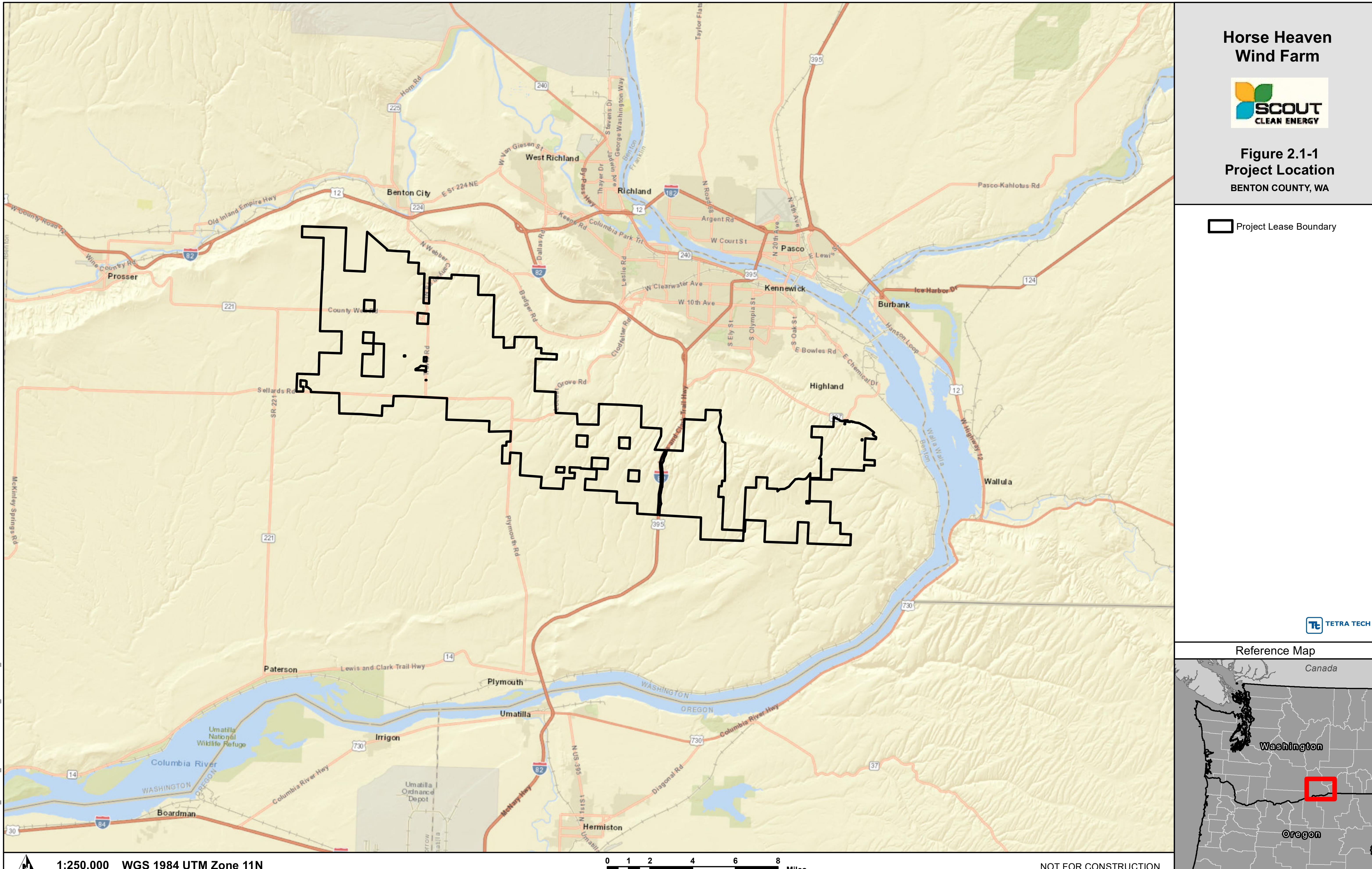
Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 2.1-1 Project Location

BENTON COUNTY, WA



1:250,000 WGS 1984 UTM Zone 11N

0 1 2 4 6 8 Miles

NOT FOR CONSTRUCTION

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Table 2.1-1. Project-Related Impacts

Project Component	Units	Dimensions per Unit	Number of Units	Temporary Disturbance Acres[1/]	Units[2/]	Dimensions per Unit[3/]	Number of Units[4/]	Permanent Disturbance Acres
Wind Turbine Generators	Acres per tower	4.51	244	1,070	Square feet per tower	5,278.0	244	30
Overhead Collector Lines[2/]	Feet of width per linear foot	35	1.8 (mi)	0.5	Square feet per structure	7.1	58	0.01
Underground Collector Lines[2/]	Feet of width per linear foot	30	285.4 (mi)	787	Square feet per structure	25.0	103	0.06
230-kV Transmission Lines	Feet of width per linear foot	100	19.4 (mi)	235	Square feet per structure	4.3	213	0.02
500-kV Transmission Lines	Feet of width per linear foot	200	0.5 (mi)	12	Square feet per structure	4.3	4	<0.01
Meteorological Towers	Acres	1.62	13	21	Square feet per tower	1,764	13	0.5
Meteorological Towers Roads	Feet of width per linear foot	50	2.8 (mi)	17	Feet of width per linear foot	16.0	2.8 (mi)	5
New Access Roads[4/]	Feet of width per linear foot	50	104.5 (mi)	634	Feet of width per linear foot	16	104.5 (mi)	203
Road Modification (Turning Radius Widening)	Each	--	19	3	Acres	--	--	0
Crane Paths	Feet of width per linear foot	36	33.6 (mi)	147	Feet of width per linear foot	--	--	0
Substations[5/]	Acres	--	5	3	Acres	--	5	38
Battery Storage Facilities	Acres	--	3	1	Acres	--	3	18
Laydown Yards	Acres	--	2	48	Acres	--	--	0
O&M Building	Acres	--	2	0.9	Acres	--	2	10

Project Component	Units	Dimensions per Unit	Number of Units	Temporary Disturbance Acres[1/]	Units[2/]	Dimensions per Unit[3/]	Number of Units[4/]	Permanent Disturbance Acres
Solar Array County Well	Acres	--	--	18	Acres	--	--	2,641[6/]
Solar Array Sellards	Acres	--	--	22	Acres	--	--	1,935[6/]
Solar Array East	Acres	--	--	37	Acres	--	--	1,994[6/]
Total Impacts[7/]:			**Temporary**	**2,957**			**Permanent**	**6,869**

1/ Overlapping permanent disturbance area is subtracted from temporary impact corridors/areas (e.g., temporary impact area around a Turbine does not include the Turbine foundation and graveled area; those are shown only in the permanent impact column).

2/ The collector lines within the solar siting area are not included in this row. Collector lines associated with the Project's solar component are within the fenceline and included in the total permanent disturbance reported for the solar arrays. As the entire area is considered permanently disturbed, no temporary impact is estimated for collector lines within the solar siting area.

3/ See Table 2.3-3 for alternates under consideration for transmission lines. The longest potential transmission line alternative would be construction of the intertie between the alternate HH-West substation and the HH-East substation (19.4 miles). Table 2.3-3 describes other potential combinations of transmission line but none would have greater disturbance area than shown here.

4/ As for collector lines, disturbance from construction of new access roads associated with the Project's solar component is included in the total permanent disturbance reported for the solar siting area. As the entire area within the fenceline is considered permanently disturbed, no temporary impact is estimated for new access roads within the solar siting area.

5/ A total of five Project substation locations are under consideration but no more than four substations would be constructed (see Table 2.3-2). The disturbance area associated with all five locations is shown here as a conservative depiction of potential project impacts.

6/ Permanent Disturbance for Solar Arrays is shown here as disturbance of all areas inside the fence line. However, vegetation would remain within the majority of the solar array except for graveled interior access roads, inverter pad placement, and tracker system support posts,

7/ Totals were calculated using consolidated data, with areas of overlap eliminated. Therefore, totals are not a sum of the Project component rows.

2.1.1 Geography and Geology

The elevation within the Project Lease Boundary ranges from 604 to 2,051 feet above mean sea level (msl). The Project Lease Boundary is dominated by rolling hills bisected by meandering canyons, some of which constitute ephemeral or intermittent drainages. The Horse Heaven Hills ridgeline lies along the northern border of the Project, particularly in the western portion of the Project Lease Boundary; on the southern side of this ridge, the landscape transitions to relatively rolling topography with shallow, meandering canyons that drain southwest into the Columbia River. While the majority of this western portion of the Project Lease Boundary drains to the southwest into the Columbia River, a small portion of the Project along the northeastern boundary ultimately drains northwest into the Yakima River and northeast into the Columbia River. The eastern portion of the Project Lease Boundary similarly drains primarily to the south into the Columbia River with a small portion of the Project draining northeast into the Columbia River.

The Project is located in the Columbia Plateau province of the Intermontane Plateaus physiographic region. The Project Lease Boundary is primarily composed of Quaternary-aged loess sedimentary deposits. Miocene-age volcanic rocks (Columbia River Basalt Group) underlie the sedimentary deposits throughout the Project Lease Boundary (USGS 1994).

The Project Lease Boundary includes areas identified as susceptible to erosion, landslides, and bluff failures that may require specialized engineering to develop the area. According to Benton County Ordinance – Geologically Hazardous Areas Map (Benton County 2018), there are areas/drainages identified as combined erosion hazard and steep slopes (15 percent), areas/drainages with steep slopes (15 percent), historic landslides, and areas with moderate to high potential for liquefaction within the Project Lease Boundary. The Applicant will conduct site-specific geotechnical surveys to inform engineering requirements for the final Project design.

2.1.2 Climate

Benton County is located within a rain shadow created by the Cascade Mountains, which causes a decrease in precipitation to their east. In this region of Washington, the summers are short, hot, and mostly clear; winters are very cold and partly cloudy; and it is dry year-round. On average, there are nearly 200 days of sunshine. Average annual precipitation at Kennewick, one of the cities closest to the Project, is 7.7 inches. The average seasonal snowfall at Kennewick is 5.2 inches. In normal years, snow remains on the ground for no longer than a few days at a time. In winter, temperatures in Kennewick average a high of 43 degrees Fahrenheit (°F) and a low of 29.6°F, with extreme lows below 10°F. In summer, temperatures average a high of 87.1°F and a low of 59.6°F, with extreme highs above 100°F.

2.1.3 Land Use and Zoning Ordinances

Much of the Project Lease Boundary is privately owned and actively managed for dryland agriculture and livestock grazing; portions of this area may also be enrolled in the U.S. Department of Agriculture's Conservation Reserve Program. The Project Lease Boundary also encompasses lands managed by the DNR (see Figure 2.1-2).

Benton County's land use development regulations were adopted to implement the general policy guidance of the Benton County Comprehensive Plan (Benton County 2020). The Project is located within the Growth Management Act (GMA) Agriculture comprehensive plan land use designation, and outside of any Urban Growth Area (UGA; see Figure 2.1-3). The Project Lease Boundary is zoned as Growth Management Act Agricultural District (GMAAD) (Figure 2.1-4). The intent of this zoning district is to protect agricultural lands "by limiting non-agricultural uses to those compatible with agriculture and by establishing minimum lot sizes in areas where soils, water, and climate are suitable for agricultural purposes" (Benton County Code [BCC] 11.17.010). Certain non-agricultural uses, including wind and solar energy generation as well as battery storage, are permitted in the GMAAD zone as conditional uses.

Horse Heaven Wind Farm

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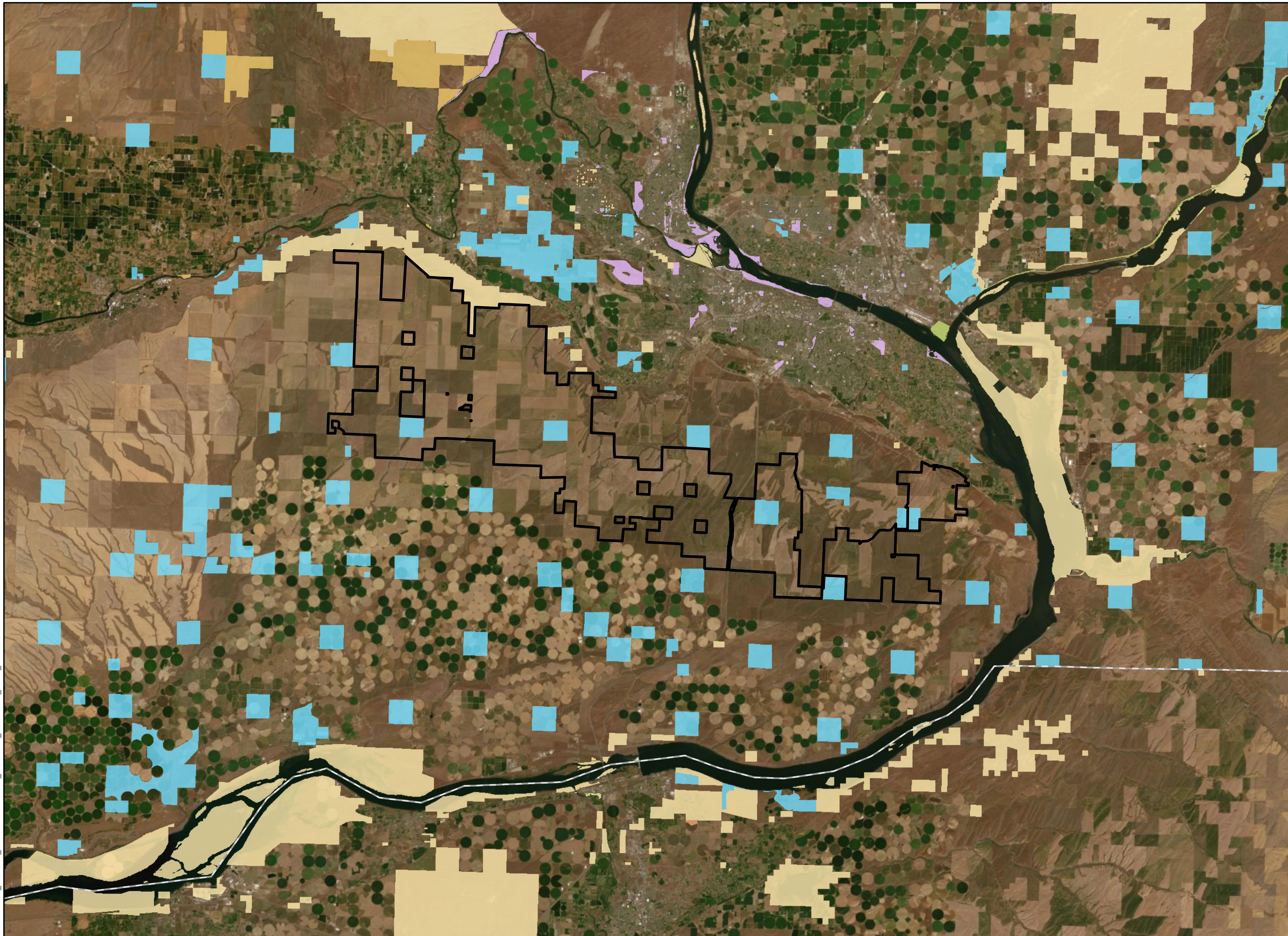
Figure 2.1-2 Land Ownership

BENTON COUNTY, WA



Project Lease Boundary

State Boundary

Washington State Public Lands Inventory 2019

- City and County
- DNR
- Federal
- State Parks
- WDFW

Oregon Land Mangement 2015

- Federal
- State
- Tribal

TETRA TECH

Reference Map

1:250,000 WGS 1984 UTM Zone 11N

0 1 2 4 6 8 Miles

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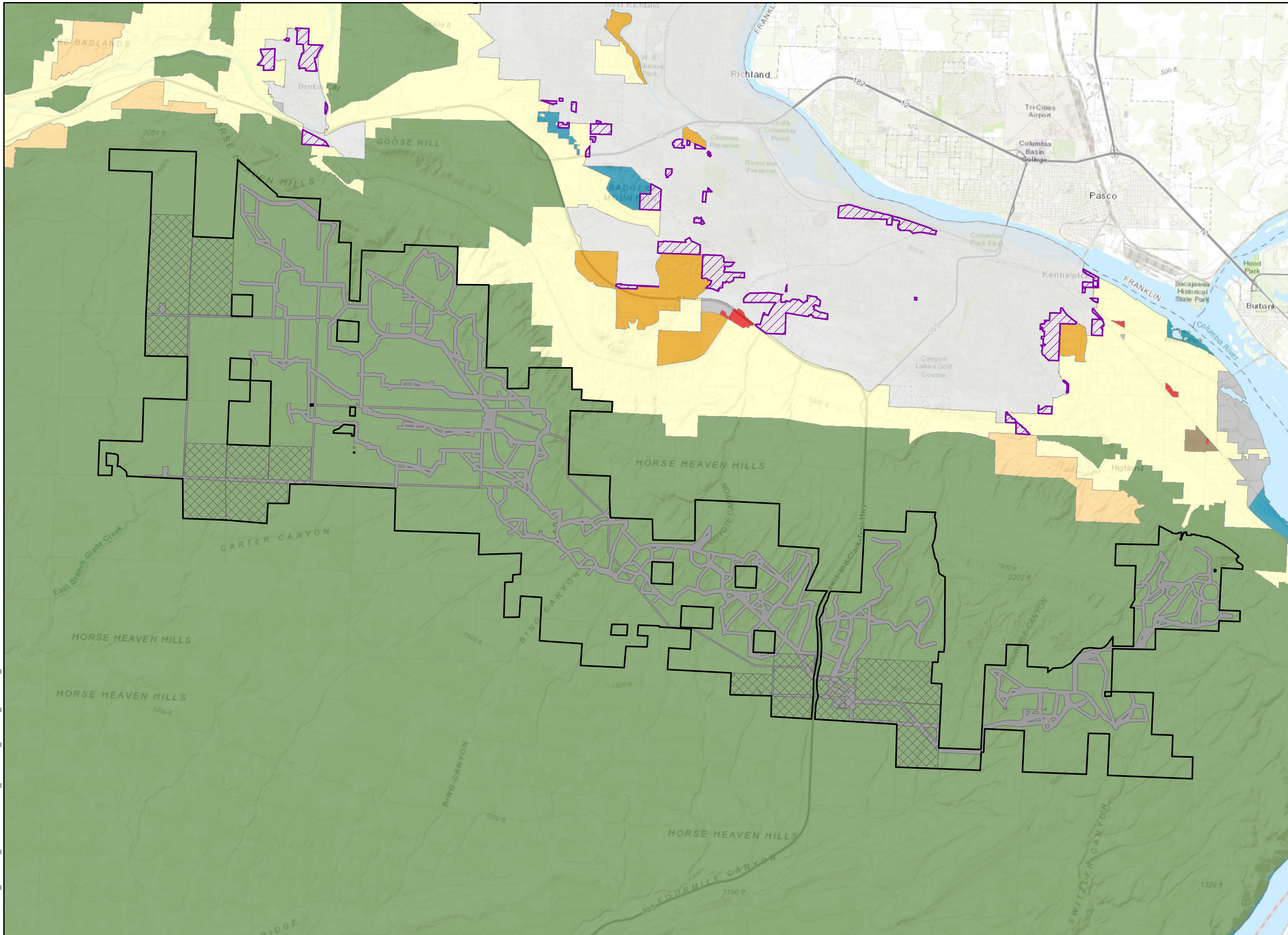

Horse Heaven Wind Farm

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Figure 2.1-3
Growth Management Act Agriculture Comprehensive Land Use Designation

BENTON COUNTY, WA

Project Lease Boundary
Wind Energy Micrositing Corridor
Solar Siting Area
UGA Jurisdiction

Land UseTypes
- GMA AG
- PUBLIC
- RURAL COMMERCIAL
- RURAL COMMUNITY CENTER
- RURAL INDUSTRIAL
- RURAL REMOTE
- RURAL RESOURCE
- RURAL TRANSITION
- URBAN

TETRA TECH

Reference Map

1:140,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

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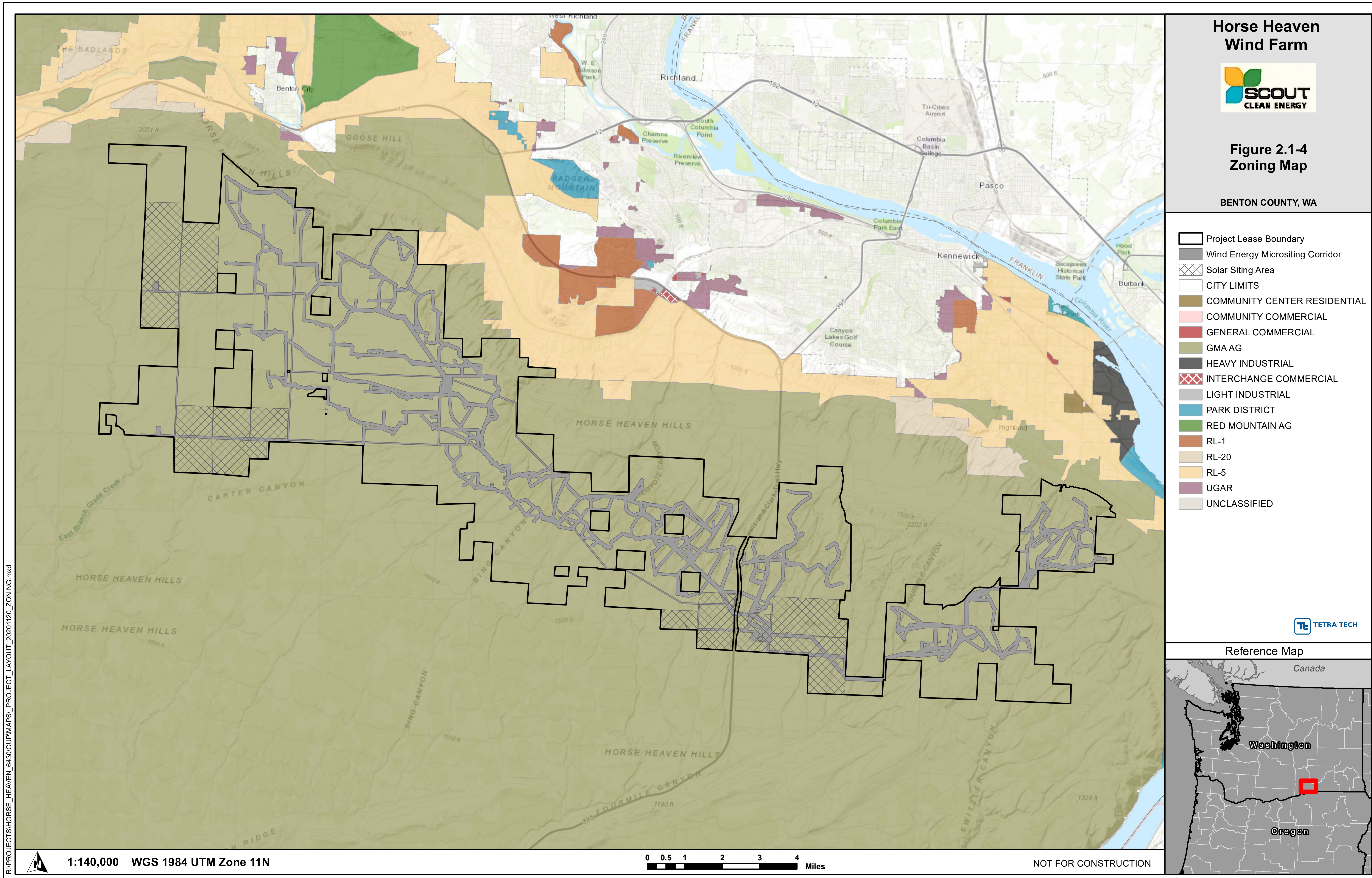

Horse Heaven Wind Farm
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Figure 2.1-4
Zoning Map
BENTON COUNTY, WA
Project Lease Boundary
Wind Energy Micrositing Corridor
Solar Siting Area
CITY LIMITS
COMMUNITY CENTER RESIDENTIAL
COMMUNITY COMMERCIAL
GENERAL COMMERCIAL
GMA AG
HEAVY INDUSTRIAL
INTERCHANGE COMMERCIAL
LIGHT INDUSTRIAL
PARK DISTRICT
RED MOUNTAIN AG
RL-1
RL-20
RL-5
UGAR
UNCLASSIFIED
TETRA TECH
Reference Map
Canada
Washington
Oregon
Richland
West Richland
Benton City
Kennewick
Pasco
Burbank
Highland
HORSE HEAVEN HILLS
BADGER MOUNTAIN
GOOSE HILL
CARTER CANYON
1:140,000 WGS 1984 UTM Zone 11N
0 0.5 1 2 3 4 Miles
NOT FOR CONSTRUCTION
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2.2 LEGAL DESCRIPTIONS AND OWNERSHIP INTERESTS

WAC 463-60-135:

(1) Principal facility. The application shall contain a legal description of the site to be certified and shall identify the applicants and all nonprivate ownership interests in such land.

(2) Associated and transmission facilities. For those facilities described in RCW 80.50.020 (6) and (7) the application shall contain the legal metes and bounds description of the preferred centerline of the corridor necessary to construct and operate the facility contained therein, the width of the corridor, or variations in width between survey stations if appropriate, and shall identify the applicant's and others' ownership interests in lands over which the preferred centerline is described and of those lands lying equidistant for 1/4 mile either side of such center line.

The list of landowners within the Project Lease Boundary, including parcel numbers, parcel acres, and legal descriptions of the overall properties and affected portions of the properties, is provided as Appendix F of this ASC.

2.3 CONSTRUCTION ON SITE

WAC 463-60-145: *The applicant shall describe the characteristics of the construction to occur at the proposed site including the type, size, and cost of the facility; description of major components and such information as will acquaint the council with the significant features of the proposed project.*

The Project is a renewable energy generation facility that would have a nameplate energy generating capacity of up to 1,150 MW for a combination of wind and solar facilities as well as BESS. The number of Turbines and extent of solar arrays that would be used for the Project to generate this energy would depend on the final Turbine models and/or solar modules selected as well as the final array layout options selected (see further discussion below in Sections 2.3.1 and 2.3.2). The ASC is seeking permitting authorization for up to 244 Turbine locations and the maximum extent of solar arrays described in this ASC (see Table 2.3-1), with all possible Turbine locations and solar array extent cumulatively reviewed in the analysis of potential resource impacts, although fewer Turbines and solar arrays may be constructed for this Project. The final layout of Turbines and solar arrays would be determined prior to construction. The Applicant has evaluated impacts for the proposed solar arrays considering different technology options, while limiting the total area to be occupied by the solar arrays to no more than approximately 6,570 acres with a nameplate generating capacity for the solar arrays of up to 800 MW.

Assessing the widest range of possible locations and buildouts will aid in siting flexibility during the final design process while allowing consideration of the full range of potential Project impacts. This approach will allow the Applicant to select the most appropriate system for generating and storing energy available at the time all of the equipment is acquired, so long as the system selected does not result in greater impact than allowed for in the Site Certification Agreement and satisfies all pre-construction conditions of the Site Certification Agreement.

Power generated by the Project would be transmitted to existing BPA transmission lines via two interconnections. Up to 650 MW of power could interconnect to the planned BPA 230-kilovolt (kV) Bofer Canyon substation. Up to 500 MW of power could interconnect to the planned BPA

500-kV Webber Canyon substation. Other Project components would include up to two BESS, underground and limited overhead electrical collection lines, underground communication lines, new Project substations, access roads, O&M facilities, meteorological towers, control houses, and temporary construction yards. The following describes the various components of the Project.

2.3.1 Turbines and Towers

To allow flexibility in the choice of Turbines at the time of construction, the Applicant has analyzed impacts using four different Turbine models across two different Turbine layouts. This approach will allow the Applicant to select the most appropriate Turbine model available at the time the Turbines are acquired, so long as the Turbines selected result in no greater impact than allowed for in the Site Certification Agreement. This flexibility is required because Turbine manufacturers regularly offer new Turbine models with improved technology and retire older models, and because Turbine selection would not occur until nearer the time of construction. Due to the time required to obtain a Site Certification Agreement and other necessary permits, a specific model identified for analysis may not be available at the time of construction. The final Turbine model that would be used for the Project would be a commercial choice based on Turbine availability and other factors present at the time of construction, and is not known at this time. However, any Turbine model used for the Project would be certified to international standards and would be compatible with state-of-the-art grid technology. The impacts resulting from the final selected Turbine model would not exceed those presented in this ASC. The following describes the various Turbine options that will be analyzed to depict the range of potential resource impacts from the Project.

For the purposes of analyzing the potential impacts of the Project, this assessment considers impacts as they would occur based four different Turbine models available at this time (General Electric [GE] 2.82-MW Turbine; GE 3.03-MW Turbine; GE 5.5-MW Turbine; and Siemens Gamesa 6.0-MW Turbine). Table 2.3-1 summarizes the characteristics of these four Turbine models. These models represent a reasonable range of Turbine options and subsequent parameters (e.g., size; rotor swept area; noise output; MW production) of Turbines likely available at the time of construction. As shown in Table 2.3-1, the four Turbine models are grouped into two Turbine array options (i.e., Turbine Layout Option 1 and Turbine Layout Option 2) based on the MW output and overall size of the Turbine models considered. Option 1, shown in Figure 2.3-1, consists of Turbines with a nameplate generating capacity of 2.82 MW and 3.03 MW of energy that would have a maximum blade tip height of about 496-499 feet (151-152 meters). Option 2, shown in Figure 2.3-2, consists of Turbines with a nameplate generating capacity of 5.5 and 6.0 MW of energy and have a maximum blade tip height of about 656-669 feet (200-204 meters). Fewer Turbines are needed in Option 2 to generate the same amount of energy as Option 1 due to the higher energy output per Turbine. As a result, fewer Turbines are included for Option 2. To ensure that the final Turbine model selected for the Project would not exceed the impacts described in this ASC, the resource specific analyses found in this ASC utilized the Turbine model (and associated parameters found in Table 2.3-1) that would have the greatest impact to said resource (see Sections 3 and 4 of this ASC for more details).

Table 2.3-1. Potential Turbine Specifications

Turbine Parameters/Features	Turbine Layout: Option 1		Turbine Layout: Option 2	
	GE 2.82-MW Turbine	GE 3.03-MW Turbine	GE 5.5-MW Turbine	SG 6.0-MW Turbine
Tower Type	Tubular	Tubular	Tubular	Tubular steel / Hybrid
Maximize Number of Turbines considered	244	244	150	150
Turbine Rotor Diameter	127 / 417 *(meters/feet)*	140 / 459 *(meters/feet)*	158 / 518 *(meters/feet)*	170 / 557 *(meters/feet)*
Turbine Hub Height (ground to nacelle)	89 / 292 (meters/feet)	81 / 266 *(meters/feet)*	125 / 411 (*meters/feet*)	115 / 377 (*meters/feet*)
Maximum Total Height (ground to blade tip)	152 / 499 *(meters/feet)*	151 / 496 *(meters/feet)*	204 / 671 (*meters/feet*)	200 / 657 (*meters/feet*)
Tower Base Diameter	4.6 / 15.1 *(meters/feet)*	4.6 / 15.1 *(meters/feet)*	4.6 / 15.1 *(meters/feet)*	4.7 / 15.5 *(meters/feet)*

Note: All values are approximate.

Utilizing this approach allows the Applicant to select the most appropriate Turbine model available at the time the Turbines are acquired, so long as the Turbines selected result in no greater impact than is allowed for in applicable authorizations and permits, and that all the pre-construction conditions of these authorizations/permits are met.

The final number of Turbines that would be used, as well as the specific model used, would be determined near the time of construction and would reflect additional survey data, final engineering design, and the Applicant’s ongoing process of avoiding and minimizing potential impacts. To allow avoidance of resources that may be discovered during the final design and pre-construction process, the Applicant proposes the use of Micrositing Corridors, which consist of corridors around the proposed facilities that would allow minor rerouting of the final position of Project infrastructure during the final design. The width of these Micrositing Corridors varies in places based on the Project feature they are applied to as well as landscape-specific factors, but the corridors generally consist of a 200-foot buffer along either side of the centerline of linear elements such as roads and electrical collector lines (400-foot corridor), with a 250-foot buffer around Turbine locations (500-foot-diameter circle). Figure 2.3-3 displays the extent of these Micrositing Corridors.

All Turbines would be constructed within the Project Micrositing Corridors, and the final Project layout would comply with applicable County setback requirements and commitments. Turbines would be constructed for the most part on privately owned lands; however, up to ten (10) Turbines may be located on lands that would be leased from the DNR.

Turbines would be connected via electrical collection and fiber-optic communication lines, transmitting the Turbine energy output along with data on turbine function to the Project’s substations. The collection and communications lines would be placed primarily underground, but may include some overhead segments to avoid impacts to sensitive resources or where underground cabling is not practicable. At the eastern project substation the voltage would be stepped up to 230 kV for interconnection to the proposed Bofer Canyon BPA substation.

Two locations are under consideration for the Project's western substation. The final location will be selected based on the final configuration of project energy-generating components along with BPA's determination on the final location of their substation. Regardless of which location is selected for the western project substation, the voltage would be stepped up from 34.5 kV to 230 kV. Energy would then be transmitted via a 230-kV transmission line to BPA's proposed Webber Canyon substation, where it would be stepped up further to 500 kV. Note that BPA is currently evaluating two potential locations for its Webber Canyon substation. Therefore, alternate transmission line routes and alternate Project step-up substation locations are indicated and all potential locations and routes are analyzed in this ASC.

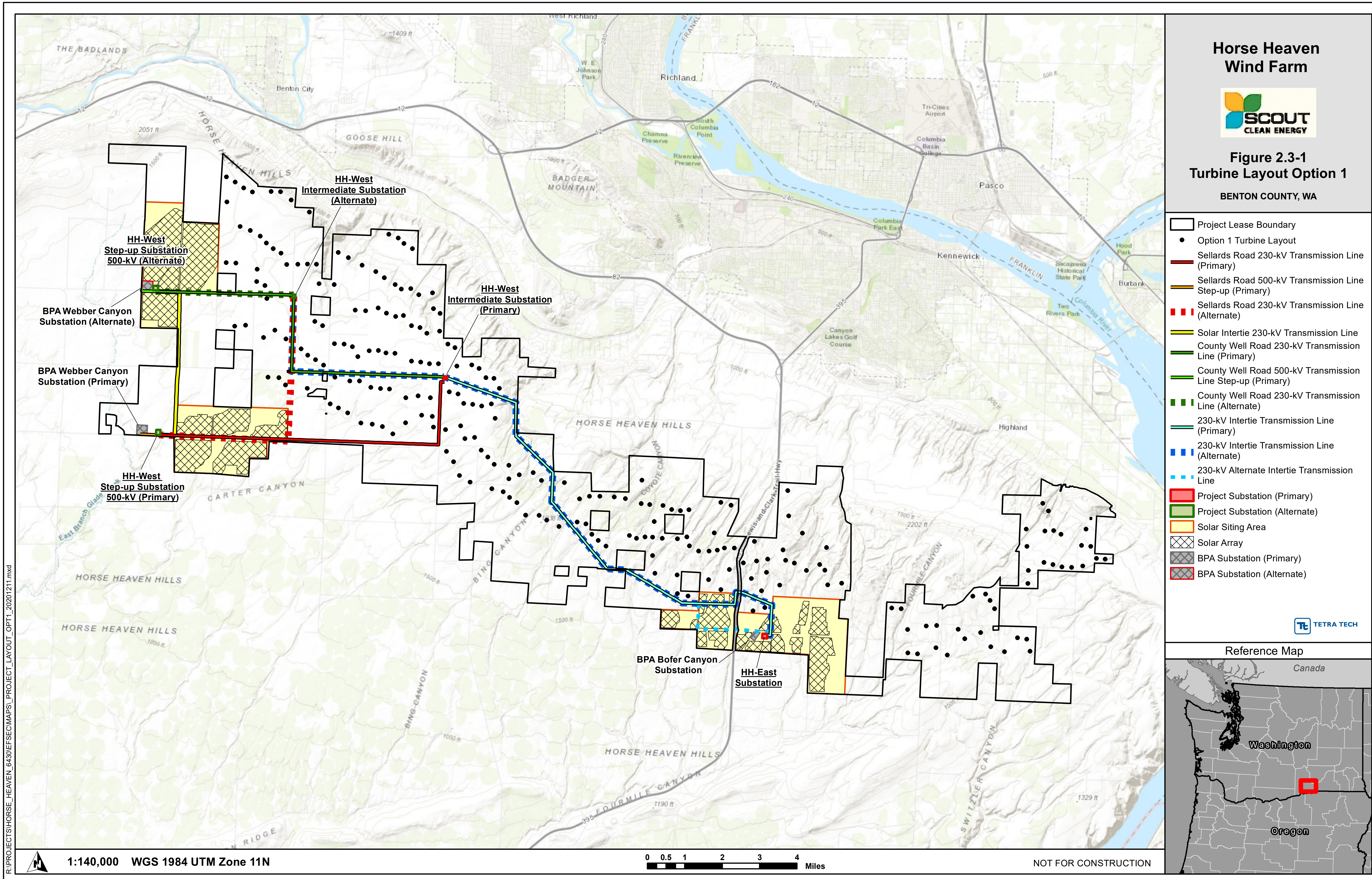


Figure 2.3-1 Turbine Layout Option 1

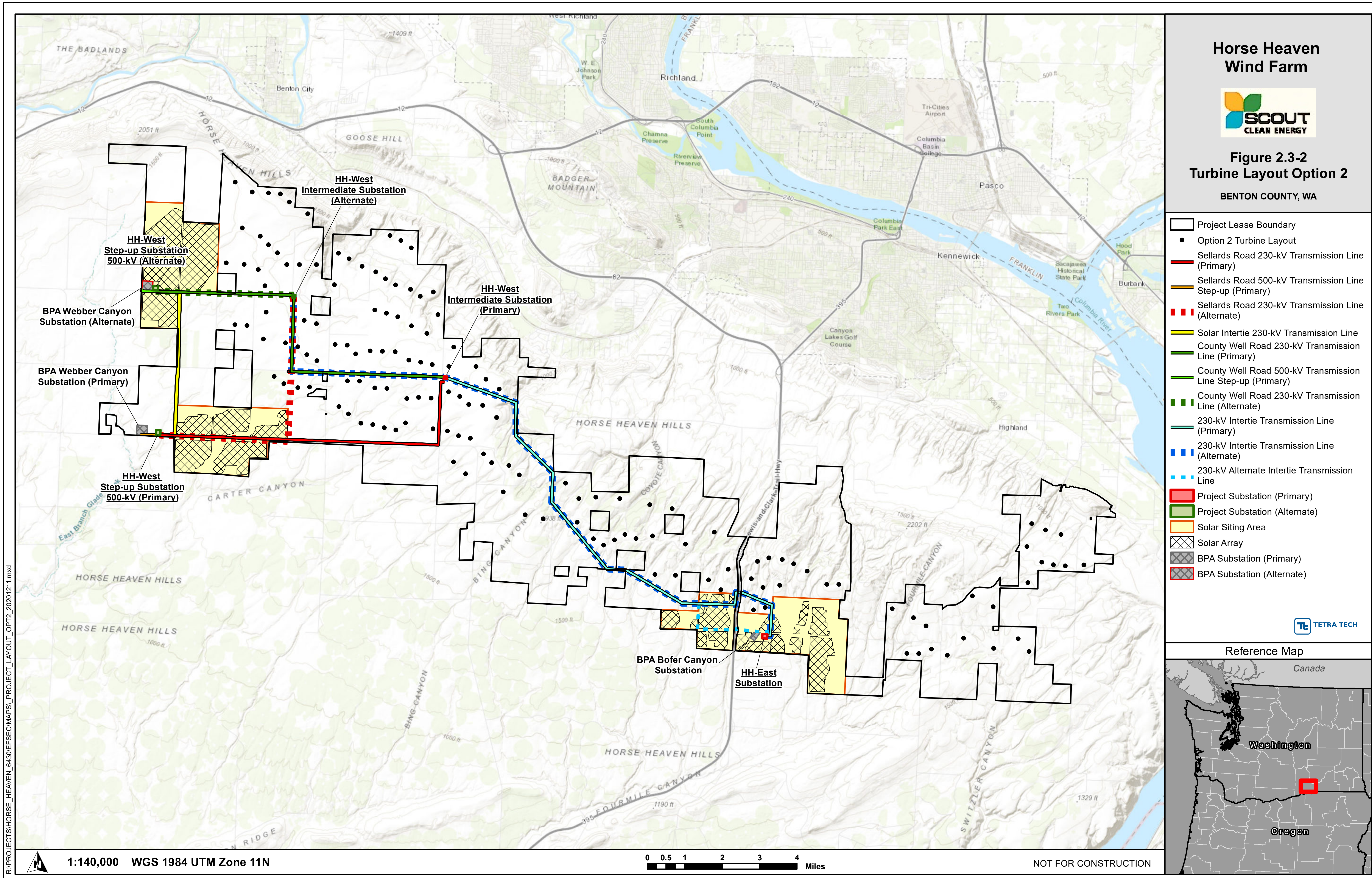


Figure 2.3-2
Turbine Layout Option 2

Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 2.3-3 Micrositing Corridors

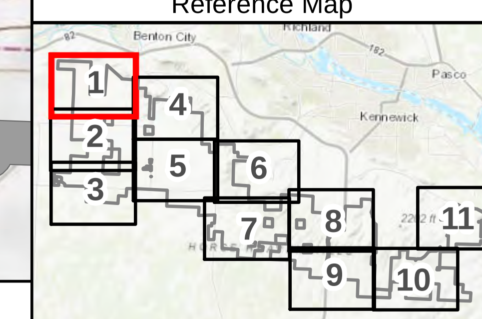
Map 1 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Solar Siting Area

TETRA TECH

Reference Map



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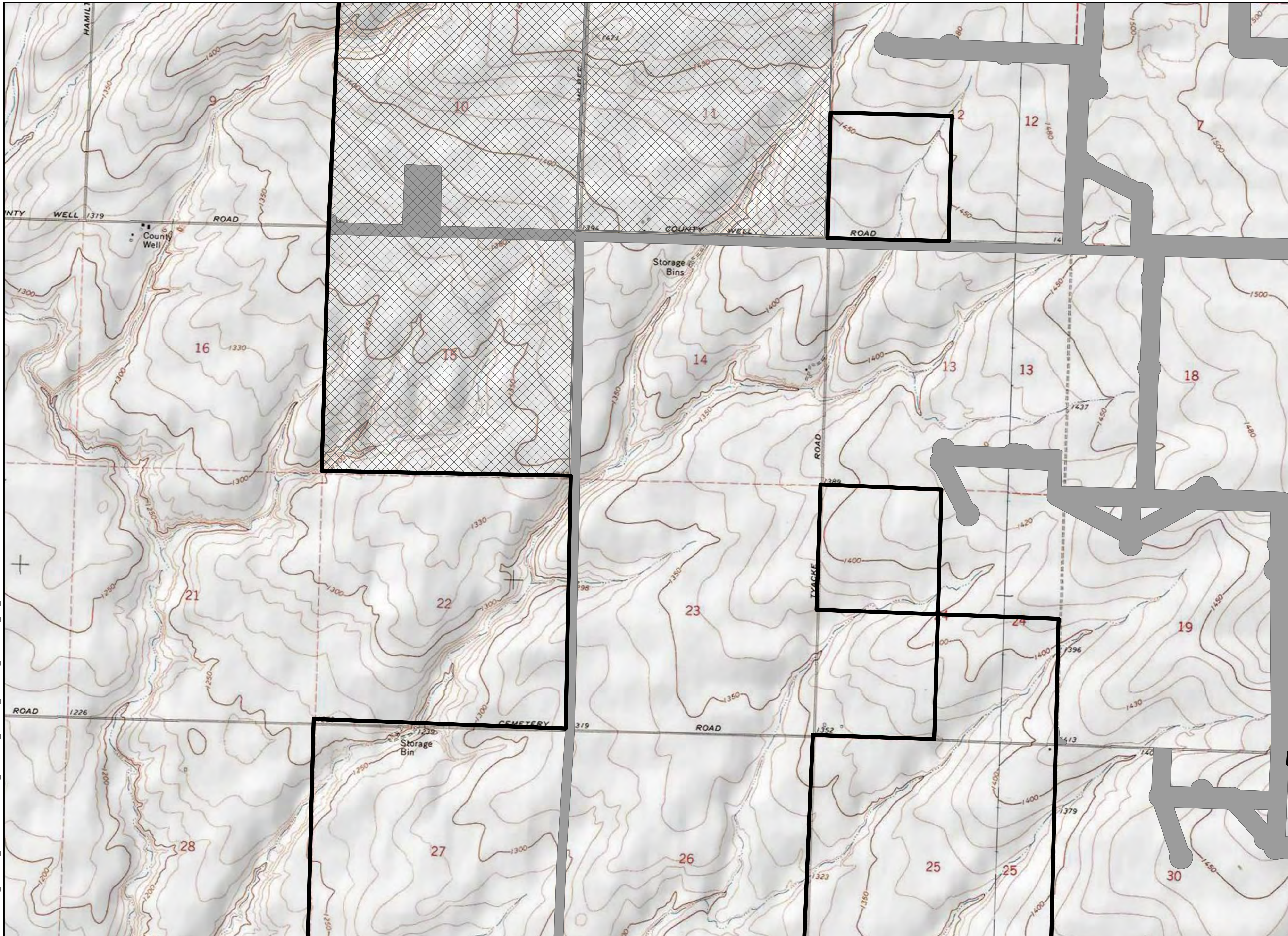


Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 2.3-3 Micrositing Corridors

Map 2 of 11

BENTON COUNTY, WA

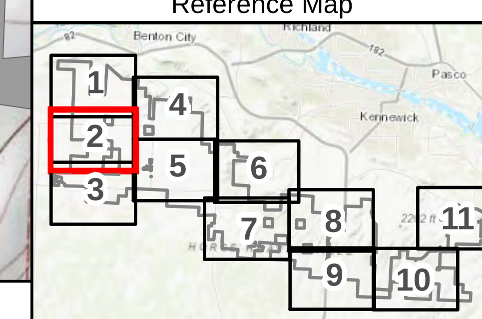
Project Lease Boundary

Wind Energy Micrositing Corridor

Solar Siting Area

TETRA TECH

Reference Map



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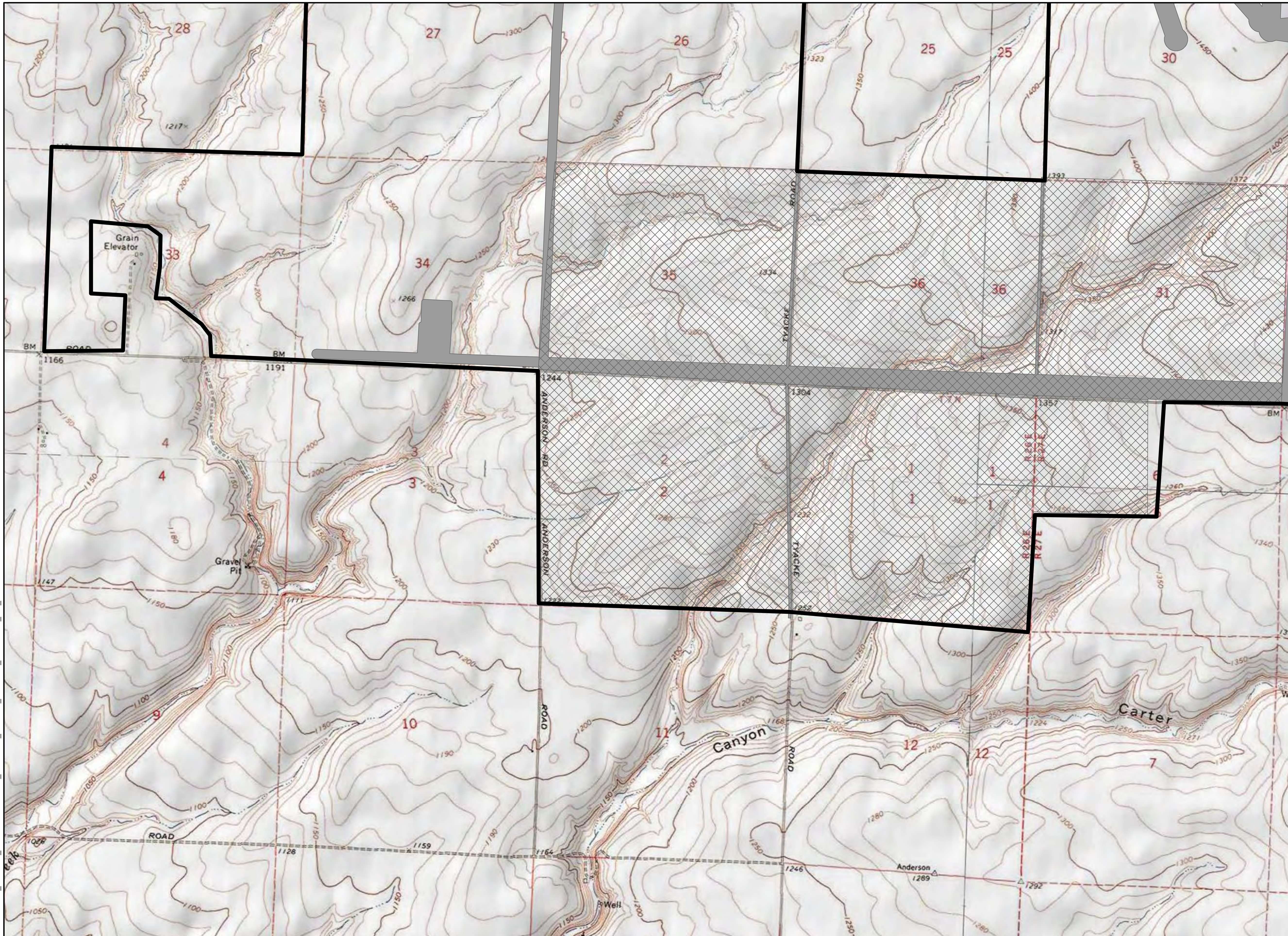


Horse Heaven Wind Farm

Figure 2.3-3
Microsting Corridors

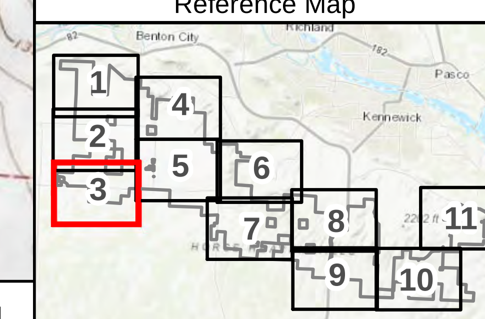
Map 3 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Solar Siting Area

TETRA TECH

Reference Map



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Horse Heaven Wind Farm

Figure 2.3-3
Microsighting Corridors

Map 4 of 11

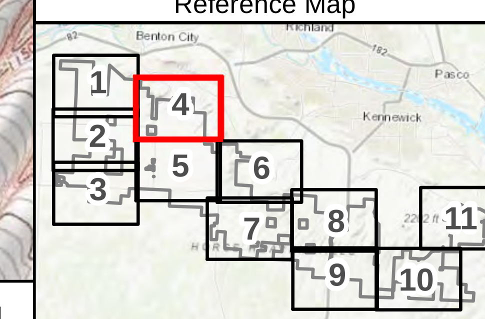
BENTON COUNTY, WA

Project Lease Boundary

Wind Energy Micrositing Corridor

TETRA TECH

Reference Map



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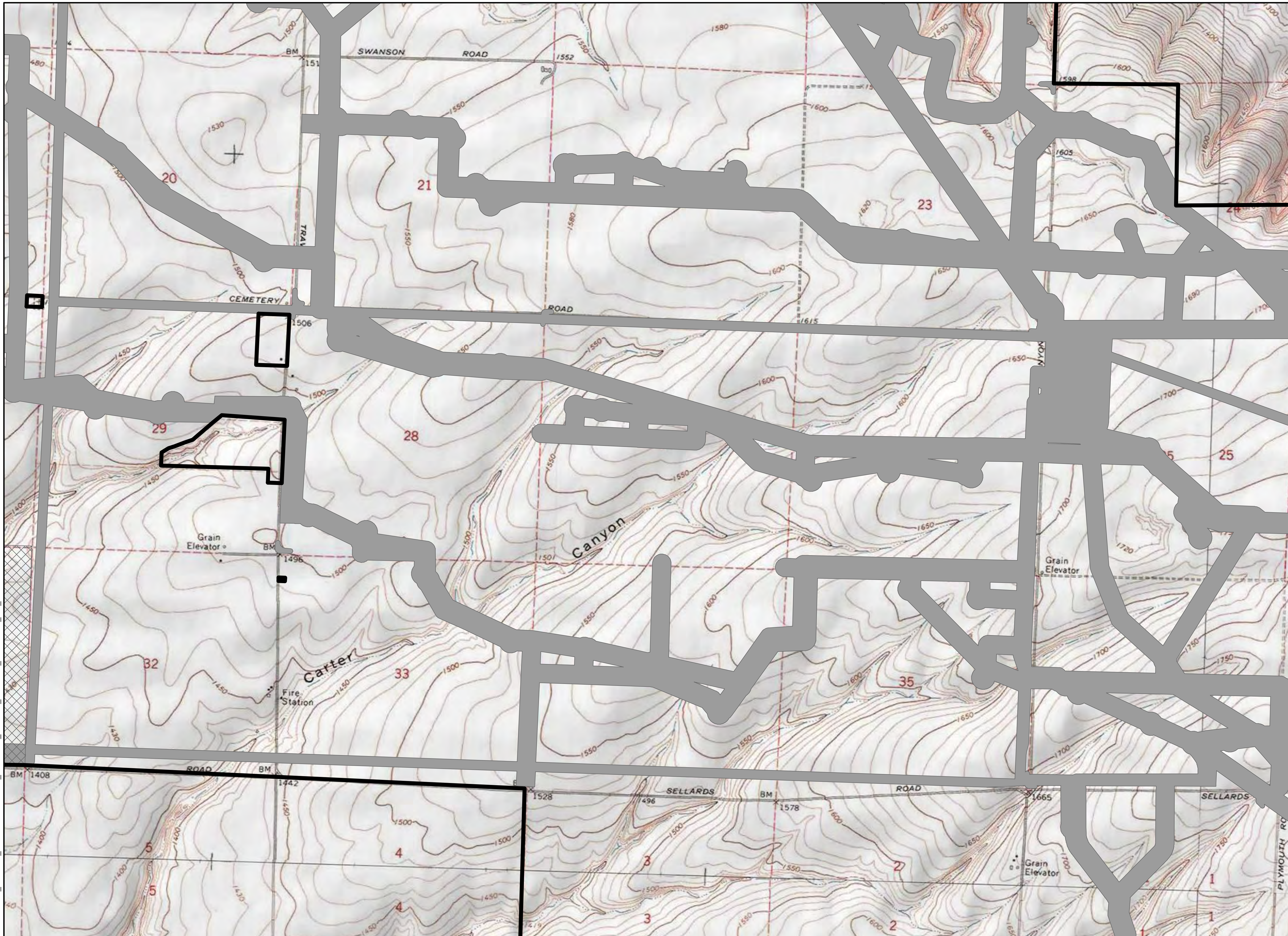

Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 2.3-3 Micrositing Corridors

Map 5 of 11

BENTON COUNTY, WA

Project Lease Boundary

Wind Energy Micrositing Corridor

Solar Siting Area

TETRA TECH

Reference Map

1:24,000 WGS 1984 UTM Zone 11N

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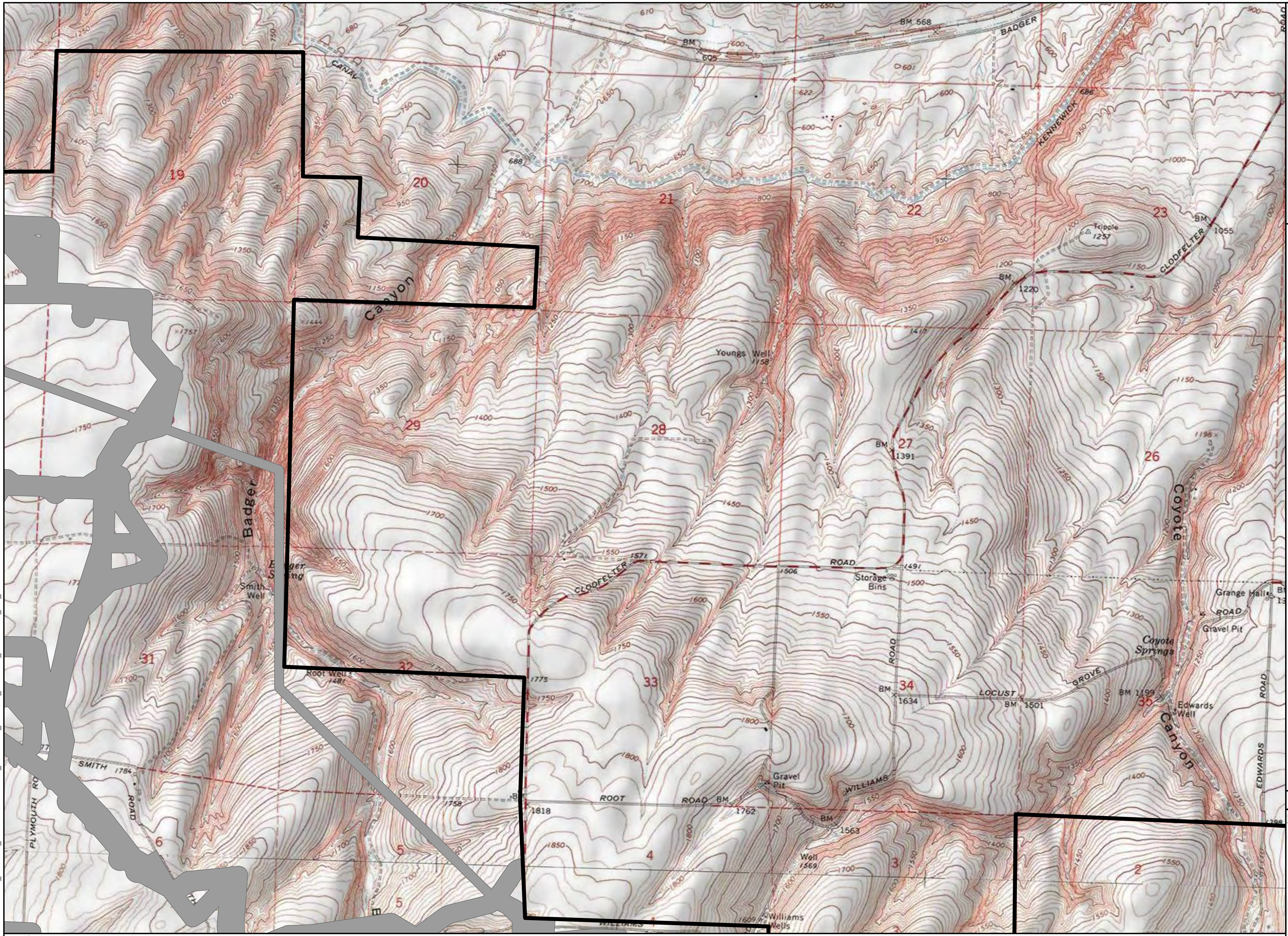
Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 2.3-3 Microsititing Corridors

Map 6 of 11

BENTON COUNTY, WA

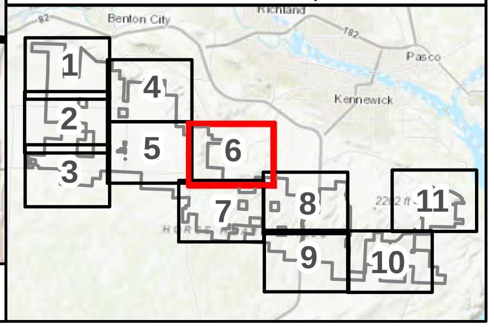


Project Lease Boundary

Wind Energy Micrositing Corridor

TETRA TECH

Reference Map



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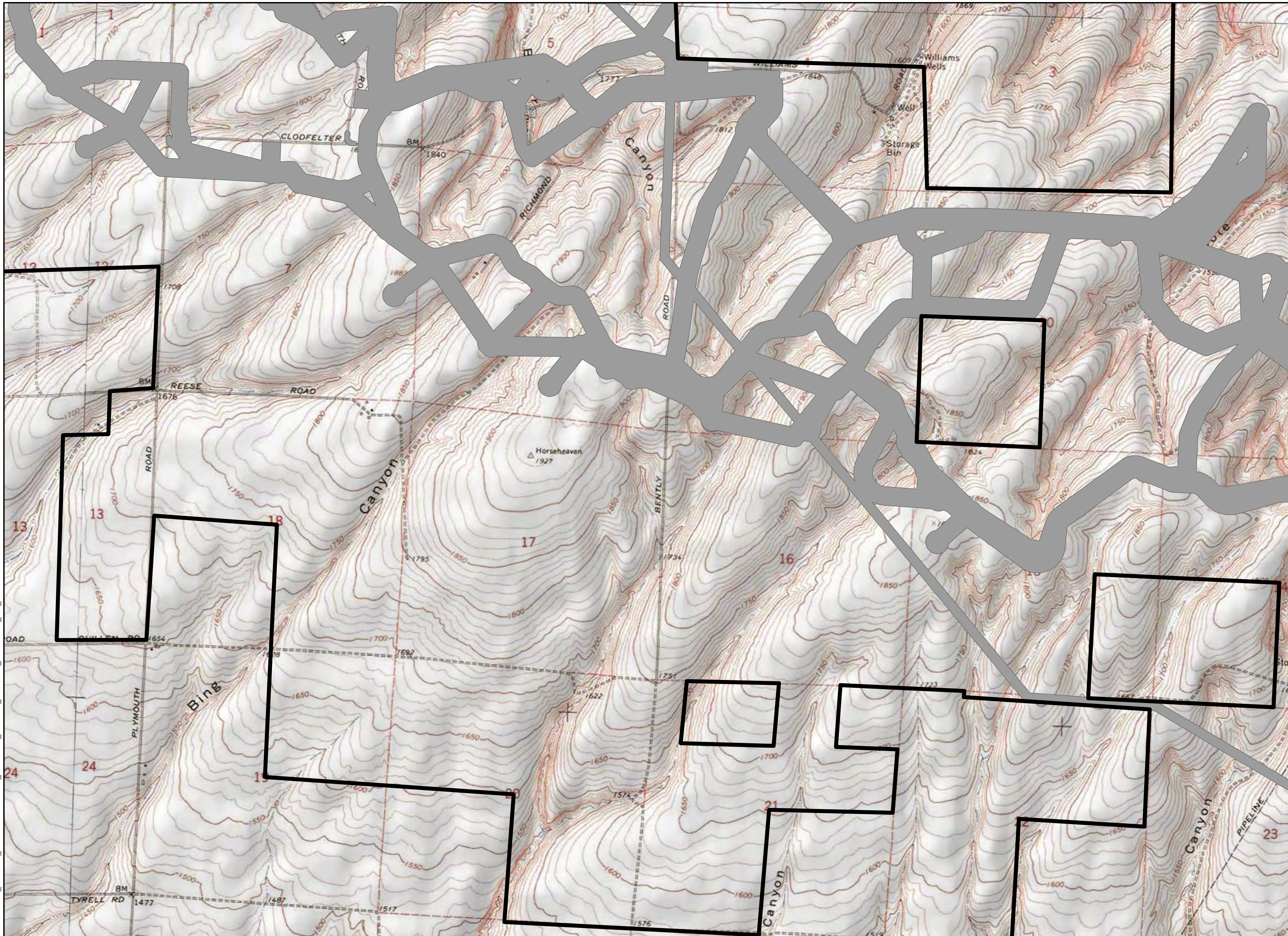
Horse Heaven Wind Farm

Figure 2.3-3
Microspetting Corridors

Map 7 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Wind Energy Micrositing Corridor



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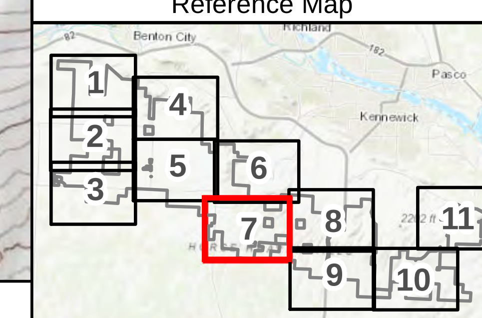
Reference Map



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Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 2.3-3 Micrositing Corridors

Map 8 of 11

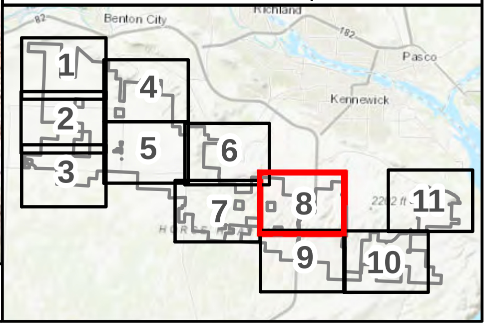
BENTON COUNTY, WA

Project Lease Boundary

Wind Energy Micrositing Corridor

TETRA TECH

Reference Map



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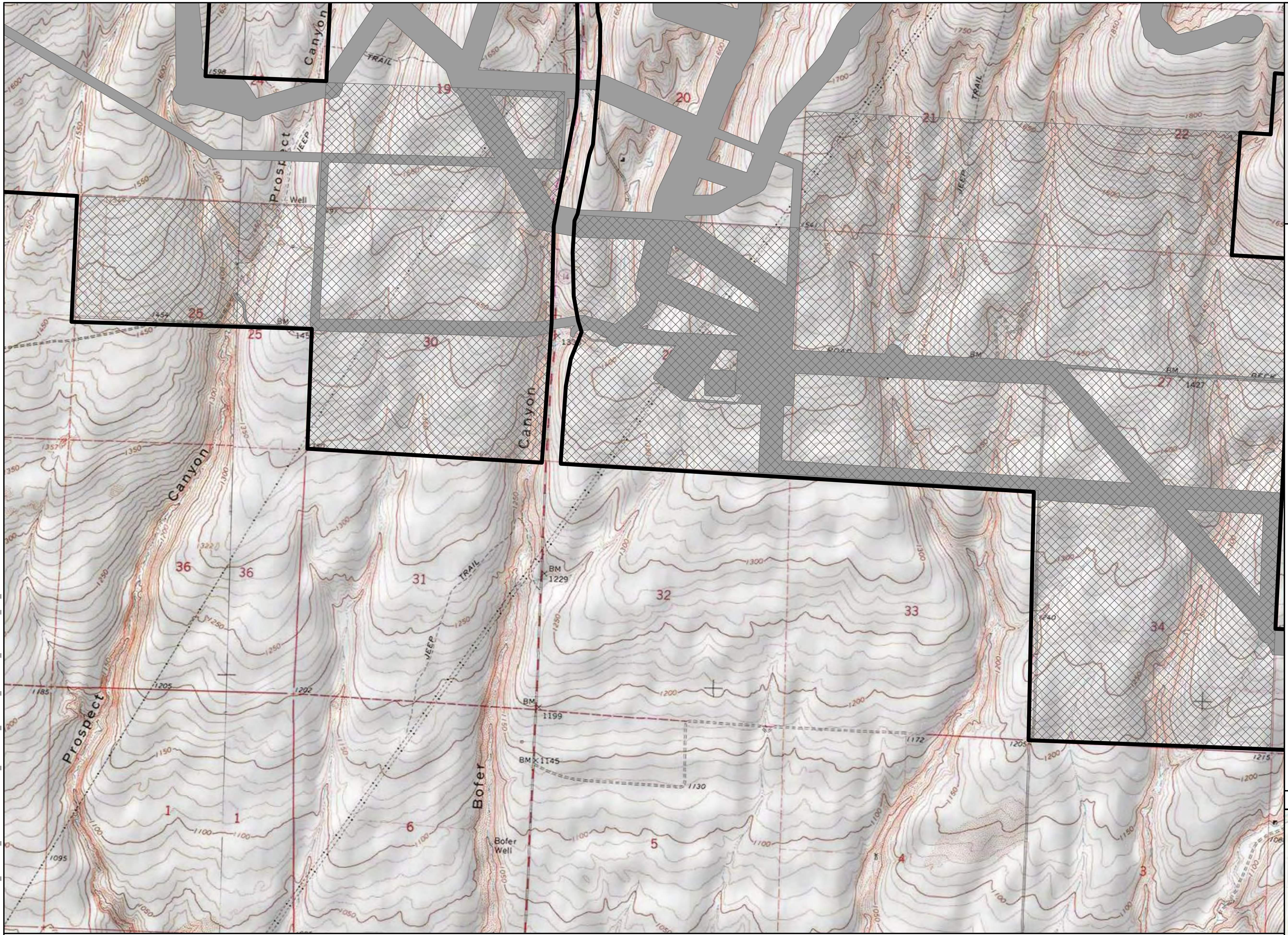
Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 2.3-3 Micrositing Corridors

Map 9 of 11

BENTON COUNTY, WA



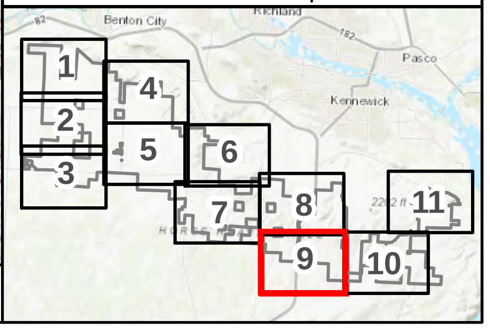
Project Lease Boundary

Wind Energy Micrositing Corridor

Solar Siting Area

TETRA TECH

Reference Map



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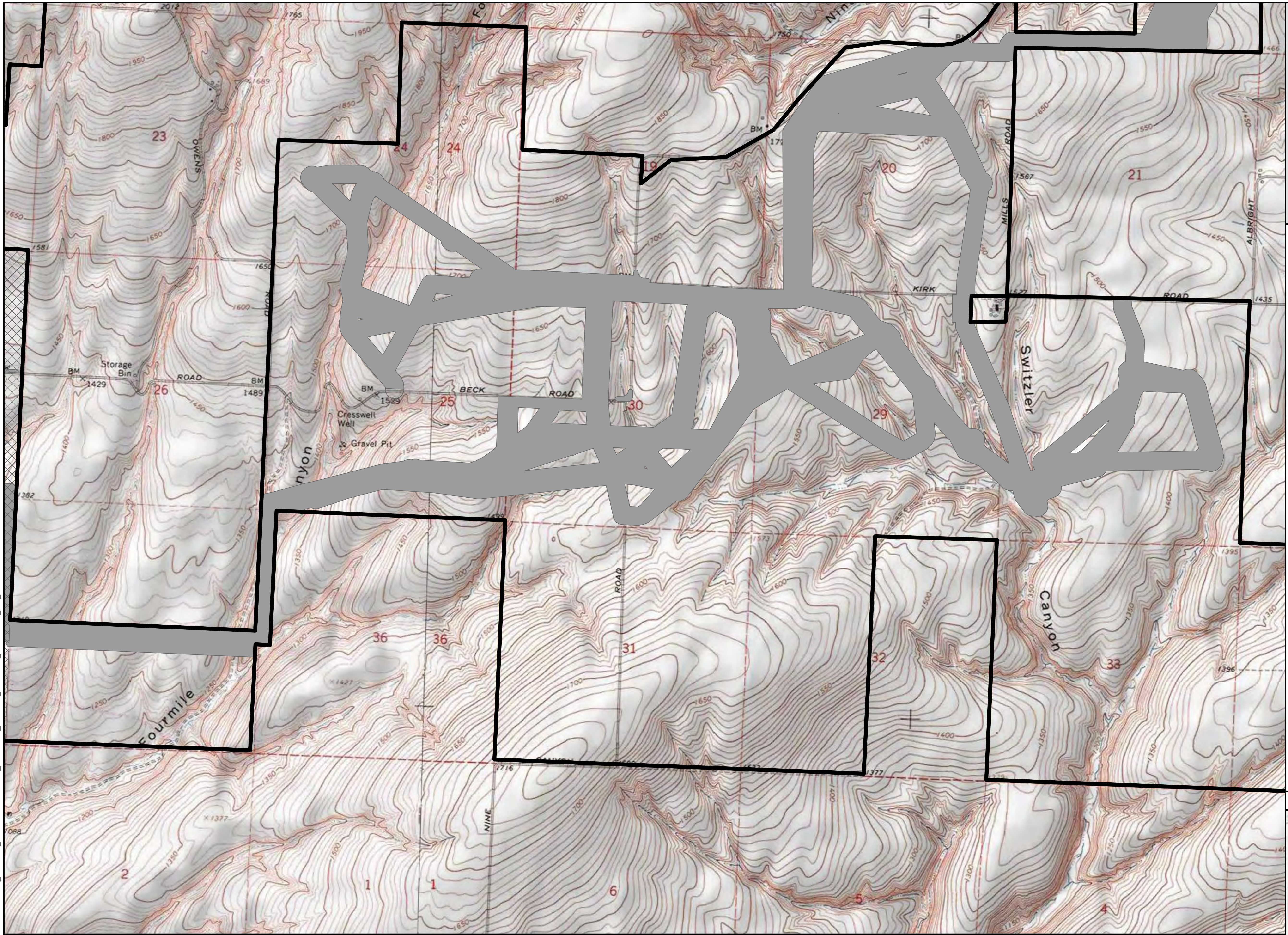
Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 2.3-3
Micrositing Corridors

Map 10 of 11

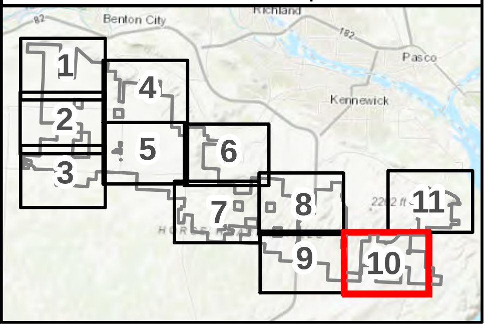
BENTON COUNTY, WA



- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Solar Siting Area

TETRA TECH

Reference Map



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Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 2.3-3 Micrositing Corridors

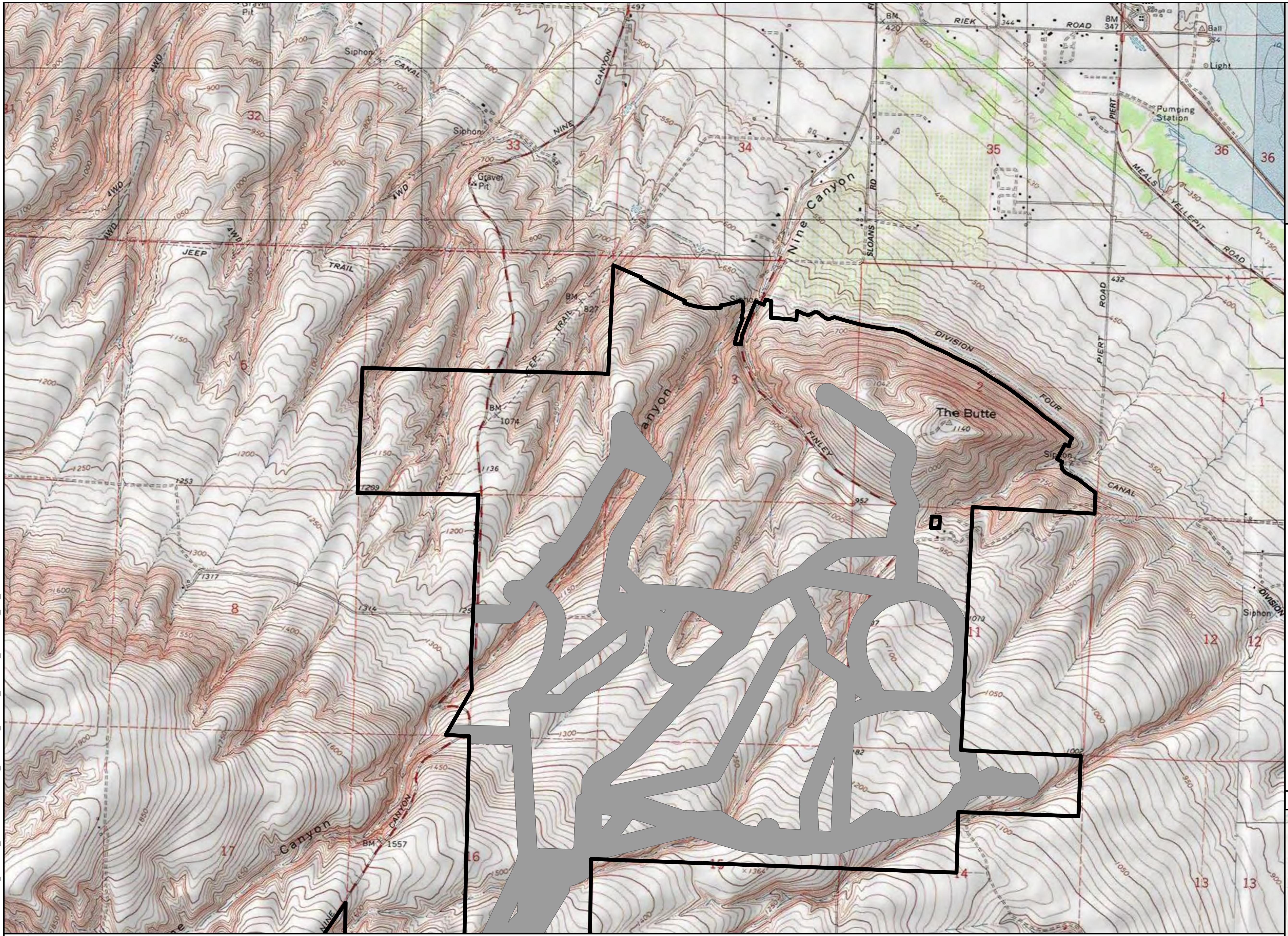
Map 11 of 11

BENTON COUNTY, WA

Project Lease Boundary

Wind Energy Micrositing Corridor

TETRA TECH



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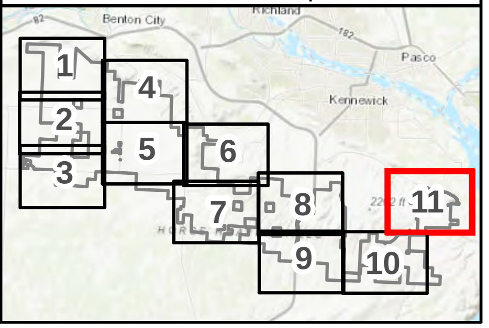

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The Turbines are composed of three major components: the tower, the nacelle, and the blades (Figure 2.3-4). These three components are described in more detail below.

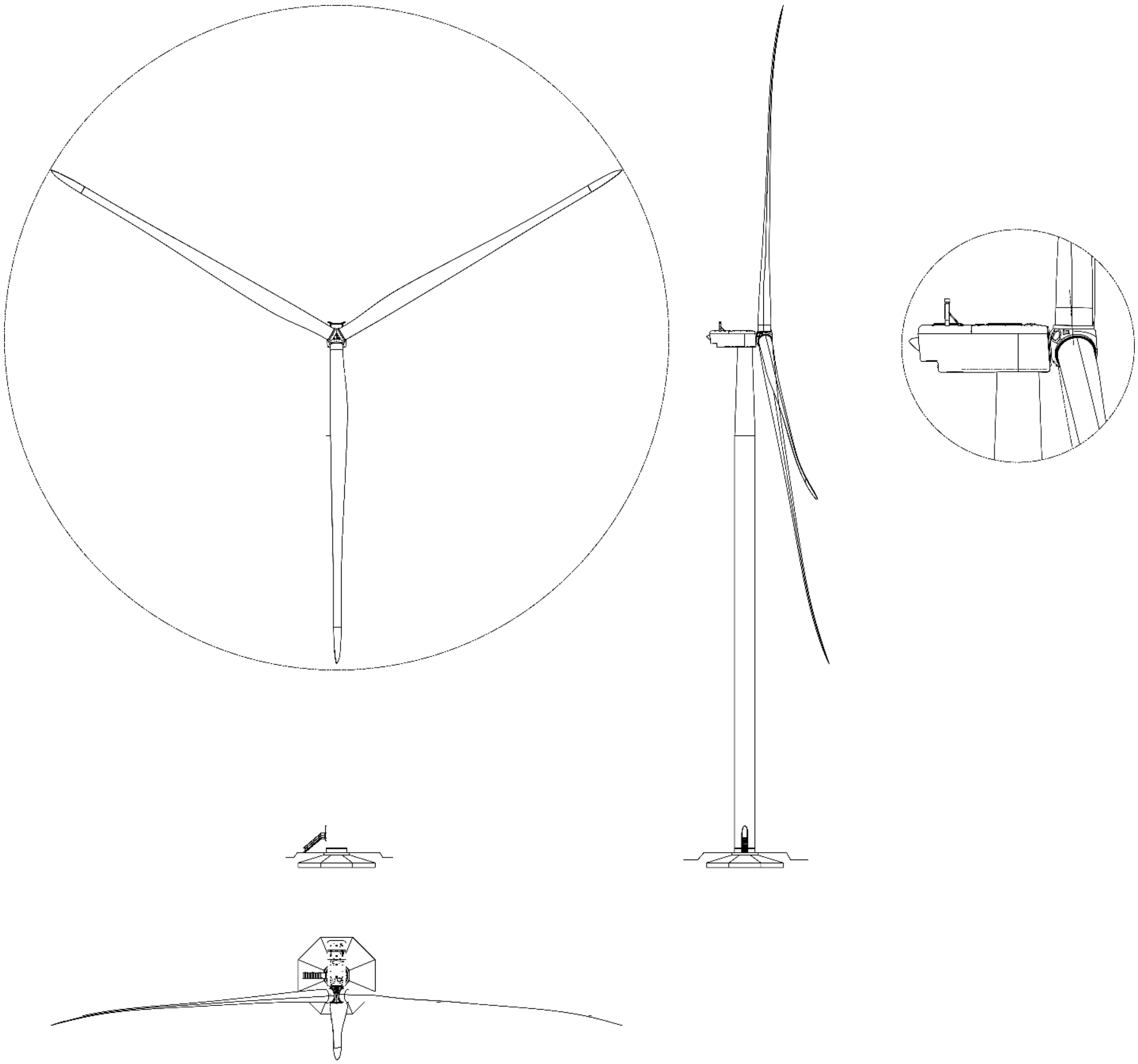


Figure 2.3-4. Turbine Tower and Foundation

The tubular towers proposed for the Project would be conical steel structures or a combination of steel and concrete depending on final Turbine selection. Each tower would have a lockable access door, internal lighting, and an internal ladder and lift to access the nacelle. The towers would be painted off-white in accordance with FAA regulations.

The nacelle sits atop the tower. The main mechanical and electrical components of the Turbine are housed in the nacelle. The nacelle, which is housed in a steel-reinforced fiberglass shell, is mounted on a sliding ring that allows it to rotate, or "yaw," into the wind to maximize energy capture. The housing is designed to allow for adequate ventilation to cool internal machinery. It is externally equipped with a heated anemometer and a wind vane to measure wind speed and direction.

The nacelle components include the drive train, gearbox, and generator. A rotor assembly is mounted on the drive shaft and operates upwind of the tower. The drive shaft is connected to the gearbox and generator contained within the nacelle. Electric motors within the rotor hub vary the pitch of each blade according to wind conditions to maximize Turbine efficiency at varying wind speeds. The generated electricity is conducted through cables within the tower to a switch enclosure mounted at the base of the Turbine tower.

Turbine blades are attached to the rotor hub, which is mounted to the front of the nacelle. The rotor blade is composed of laminated fiberglass and carbon fiber, and is fabricated in two pieces for ease of transport and assembly at the Project (but could be a single fabrication depending on the final Turbine model selected). The rotor diameters under consideration by the Applicant are listed in Table 2.3-1. Aviation lighting would be mounted on Turbine nacelles per FAA requirements.

When operating, the rotor turns at a rate between approximately 5 and 20 revolutions per minute (details vary by manufacturer and turbine design). The area covered by the rotating blades is referred to as the rotor swept area. The Turbine begins generating electricity at wind speeds of approximately 6 to 7 miles per hour, although this wind speed varies by Turbine size and manufacturer. At wind speeds greater than about 67 miles per hour, the Turbine shuts down; the blades are feathered (rotated) so they do not catch the wind, brakes are applied to slow and stop the rotor, and once stopped, the rotor may be locked to prevent damage to the Turbine from excessive wind speeds.

Each Turbine tower would be secured to a foundation. Typical Turbine foundations are reinforced concrete, spread-foot style design. The actual foundation type and design for each tower would be determined after on-site geotechnical studies are completed and define the in-situ soil properties. For purposes of analyzing potential resource impacts, the Applicant conservatively assumes that typical spread-footing foundations would be used (see Figure 2.3-5); typical spread-foot foundations reach a depth of up to 10 feet below grade and can be as large as 50 to 70 feet in diameter. The center of the foundation would be approximately 6 feet thick, tapering to approximately 1 to 2 feet thick at the outer edges. An 18-foot-diameter pedestal, upon which the Turbine tower is mounted, projects from the center of the footing to above ground level. All tower foundations would be below grade with soil and reseeded where applicable in areas that previously contained grass and/or natural vegetation; however, gravel crane pads would be maintained near the towers so that future maintenance can be performed.

Depending on subsurface conditions, blasting may be necessary to loosen rock before excavation. If blasting is necessary, a Blasting Plan would be prepared to identify the locations that are anticipated to require blasting and would be provided to applicable agencies for review. All applicable federal, state, and local regulations and rules regarding blasting would be identified in the Blasting Plan and would be followed during implementation.

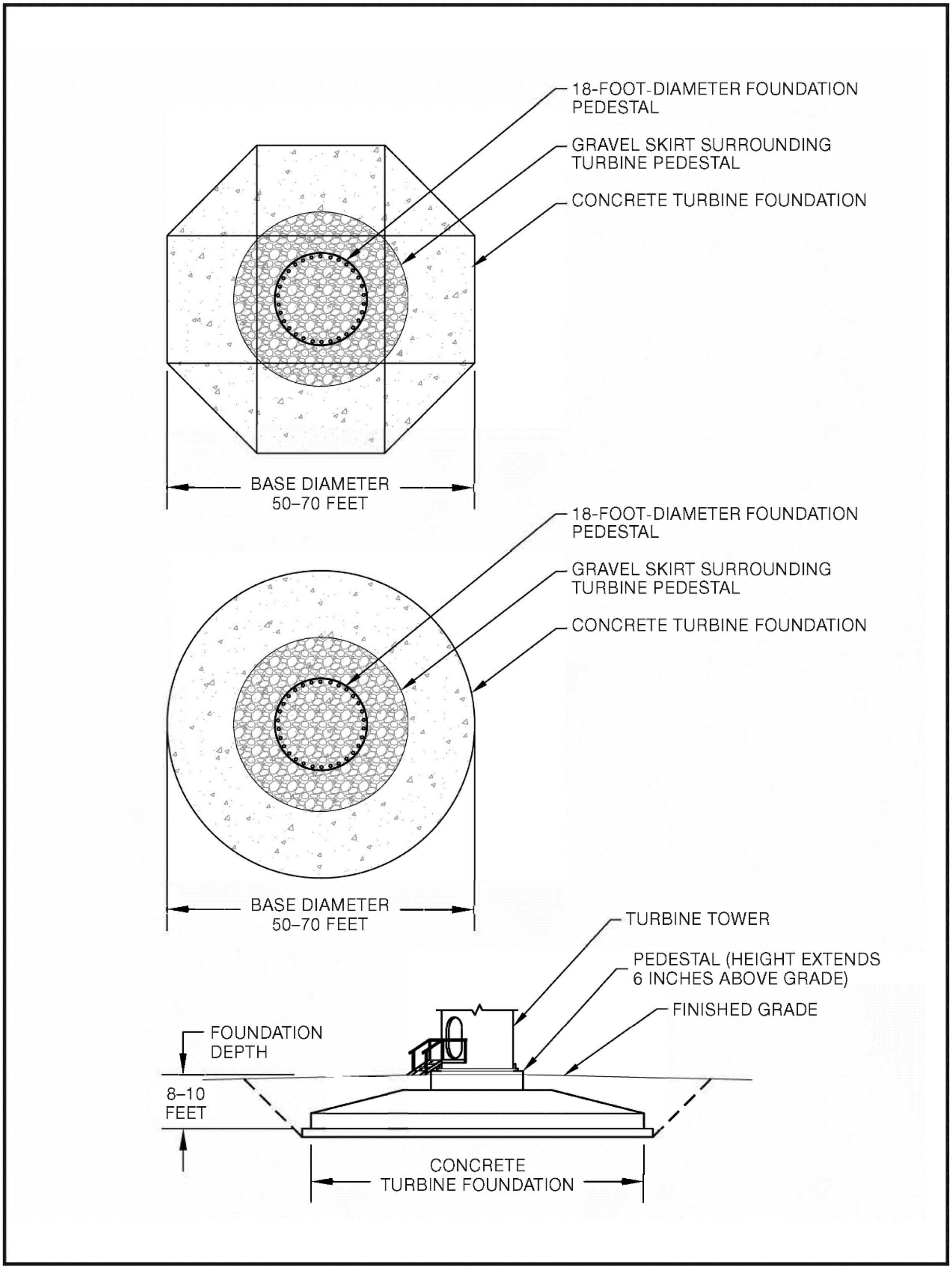


Figure 2.3-5. Typical Wind Turbine Generator Footing Foundation

A transformer is used to step up the output voltage from the Turbines' 690 volts to the 34.5-kV voltage of the collector system (see Section 2.3.3), because the Turbine output voltage would be lower than the collection system voltage; if one is not included with the Turbine, then it would be installed just outside of the Turbine foundation to provide the correct interface via a pad-mount transformer (PMT). Typically, the PMT is a rectangular box with a footprint approximately 4 feet by 8 feet located adjacent to the base of the Turbine tower. Support for the PMT would be provided by a concrete pad or foundation 2 to 6 feet thick. The thickness and extent of the PMT foundation is dependent upon soil conditions at the site, and would not be determined until after the geotechnical study is conducted. Each PMT would be connected to the underground electrical collection system that terminates at the Project's substation.

Turbines and associated electrical infrastructure would be tested prior to energization. This testing entails powering up each Turbine individually to ensure that the Turbines and associated electrical infrastructure are functioning in compliance with all operating and safety parameters. Small generators would be used for temporary power for commissioning activities that do not require the Turbines to be generating power. It is anticipated that this can accomplished at the rate of four Turbines per day (during daylight hours Monday through Friday), utilizing four teams with one generator per team. The anticipated generator size for this activity is 75 kilovolt-amperes.

If backfeed power is not available at the time commissioning needs to be completed, a load bank may be used. The load bank would consist of a trailer-mounted, high-capacity bank of air-cooled resistors contained in a heavy-gauge steel cabinet, typically capable of simulating at least the full power output of the Turbine, to draw power from the Turbine during full load testing.

To emulate a grid interconnection, the load bank would be configured with diesel-powered generators to provide power to the collector system associated with each Turbine during startup, ramping down as the Turbine begins generating power. Generators would be capable of generating up to 2,000 kilowatts of power each, with up to three generators required to generate up to 6 MW of power (depending on the Turbine model selected). Each generator would be supplied in a 40-foot container on a 3-axle chassis, insulated with acoustic glass and covered with galvanized steel. Generators would consume a total of approximately 15,000 gallons of diesel fuel per week during this process. Each generator has a tank that can hold up to 1,250 gallons of fuel, and the tank contains a secondary containment system to minimize the risk of leaks. In addition, a supplemental temporary 3,000-gallon fuel tank with its own secondary containment system would be on site during Turbine commissioning to minimize the need for refueling deliveries. Approximately eight Turbines would be commissioned each week under this system, so commissioning of Phase 1 Turbines could take up to approximately 8 weeks while commissioning of Phase 2 Turbines could take up to approximately 11 weeks, depending on final Turbine size selected and the number of Turbines constructed.

2.3.2 Solar Array

The major components of the proposed solar energy generation systems consist of the solar modules, tracking systems, posts, and related electrical equipment (e.g., inverters and transformers). These components are combined to form a solar array. The layout of the solar arrays can vary depending on project size, technology, topography, and other constraints.

Therefore, as noted earlier, the Applicant seeks to permit a range of technologies to preserve design flexibility. The Applicant is currently studying multiple potential solar array sites: one site on the east side of the Project Lease Boundary (consisting of a 4,450-acre area) and up to two potential sites on the west side (one site 3,347 acres in size and one site 3,045 acres). A determination of which of these potential solar array sites will be chosen has not yet been made. Therefore, the Applicant is submitting all potential solar array sites for review (see Figure 2.3-1 and Figure 2.3-2 for the location of these potential solar array sites). The solar arrays would be enclosed by a 6-foot-tall security fence. For the purpose of impact calculations, it is assumed that all areas within the fenced area would be permanently impacted by construction and operation of the solar arrays (see Table 2.1-1).

During final design, the Applicant would consider all micrositing factors and solar technology available at that time to design the most efficient and effective solar array layouts. However, the actual solar array equipment and layouts selected would not exceed the footprint acreage or impacts described in this ASC. Therefore, the following description of major components is based on the best available design information at this time, and largest anticipated footprint, but may not reflect the final design.

2.3.2.1 Solar Modules

Solar modules use mono- or poly-crystalline cells to generate electricity by converting sunlight into direct current (DC) electrical energy. The electrical generation from a single module varies by module size and the number of cells per module. The crystalline cells are contained within antireflective glass panels and a metal frame, and are linked together with factory-installed wire connectors. The modules would be connected in series to form long rows spaced approximately 15 to 20 feet apart (from the edge of the solar modules). The rows of modules are then connected via combiners, cables, and switchboards. The final configuration of multiple rows, and the strings of electrical cable connecting them, can vary depending on the equipment type and topography. The actual number of modules would vary depending on the module technology, energy output, spacing, mounting equipment (tracker systems), and other design criteria, which are subject to change during final design. Figure 2.3-6 provides an example solar module.

2.3.2.2 Tracking Systems

Rows of solar modules would be mounted on a single-axis tracker (SAT). The SAT system optimizes electricity production by rotating the solar modules to follow the path of the sun throughout the day. The length of each string may vary by topography and the number of modules that the tracking system can hold. The maximum height (as measured from the top edge of the module) would be up to 15 feet above ground. The tracking system, and associated posts, would be specifically designed to withstand wind, snow, and seismic loads anticipated at the site. Figure 2.3-7 provides an example tracking system.

2.3.2.3 Posts

Each tracker would be supported by multiple steel posts, which could be round hollow posts, or pile-type posts (i.e., H-pile, C-pile, S-pile). Post depth may vary depending on soil conditions, but the posts are typically installed 8 to 15 feet below the surface and protrude approximately 6 feet above grade. Posts at the end of tracker rows are usually installed to greater depth to withstand wind uplift. In some soil conditions, concrete backfill is required for each post. The Applicant assumes that up to 325,000 posts would be installed (estimated at 500 posts per MW). The actual number of posts and foundation method may vary depending on the final racking system, topography, height of the solar modules, and site-specific geological conditions. Post locations would be determined by the final layout of the tracking system and geotechnical investigations of the Solar Siting Areas.

2.3.2.4 Cabling

The solar modules produce DC electricity. Cables collect and aggregate the DC electricity before it is converted to alternating current (AC) and sent to the Project's substations (see Section 2.3.4). Within each solar array, approximately 30,000 to 35,000 linear feet of low-voltage cabling would connect the solar modules of each tracker string in series, and likely combine two to three strings to a single combiner box. Cabling from multiple combiner boxes would connect to a single inverter, which would convert the DC to AC and connect to the collection system (see Section 2.3.3). Cabling can be mounted to the tracking system, placed in cable trays, or buried.

2.3.2.5 Inverters and Transformers

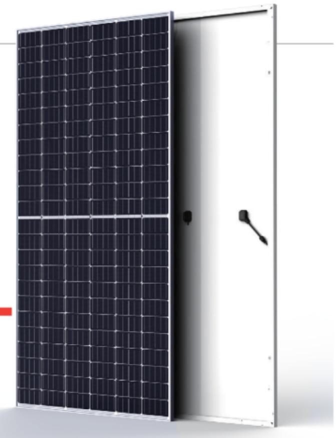
The DC electricity collected from the solar modules via combiner boxes must be converted into AC before connecting to the Project's substations. Inverters serve the function of converting DC to AC in accordance with electrical regulatory requirements. The inverter specifications will comply with the applicable requirements of the National Electrical Code and Institute of Electrical and Electronics Engineers standards. The AC electricity from the inverters will be routed to transformers that will increase the output voltage from the inverter (660 volts per individual unit) to the collection system voltage (34.5 kV). The transformers may be co-located with the inverters or may be centrally located within the solar array. Transformers at these locations will step up the voltage from the inverters.

Mono Multi Solutions

THE

DUOMAX M

DUAL GLASS 144 CELL MODULE



PRODUCTS	POWER RANGE
TSM-DEG15H.20(II)	380-410W

144-Cell
MONOCRYSTALLINE MODULE

380-410W
POWER OUTPUT RANGE

20.0%
MAXIMUM EFFICIENCY

0~+5W
POSITIVE POWER TOLERANCE

Founded in 1997, Trina Solar is the world's leading total solution provider for solar energy. With local presence around the globe, Trina Solar is able to provide exceptional service to each customer in each market and deliver our innovative, reliable products with the backing of Trina as a strong, bankable brand. Trina Solar now distributes its PV products to over 100 countries all over the world. We are committed to building strategic, mutually beneycial collaborations with installers, developers, distributors and other partners in driving smart energy together.

Comprehensive Products and System Certificates

IEC61215/UL1703/IEC61730/IEC61701/IEC62716
ISO 9001: Quality Management System
ISO 14001: Environmental Management System
ISO14064: Greenhouse Gases Emissions Veriÿcation
OHSAS 18001: Occupation Health and Safety Management System

Trinasolar

High power output

- Up to 410W front power and 20.0% module effiiency with half-cut technology enabling higher BOS savings
- Lower resistance of half-cut cells ensures higher power

Certified to perform in highly challenging environments

- High PID resistance through cell process and module material control
- Resistant to salt, acid, sand, and ammonia
- Proven to be reliable in high temperature and humidity areas
- Certified to the best fire class A
- Minimizes micro-crack and snail trails
- Certified to 5400 Pa positive load and 2400 Pa negative load

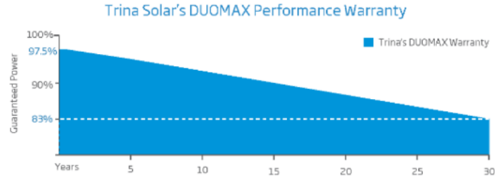
High energy generation, low LCOE

- Excellent 3rd party validated IAM and low light performance with cell process and module material optimization
- Low temp coefficient (-0.35%) and NMOT increases energy production
- Better anti-shading performance and lower operating temperature
- Higher power from same installation footprint as standard modules

Easy to install, wide application

- Frame design enables compatibility with standard installation methods
- Deployable for ground mounted utility, carports, and agricultural projects
- Safe and easy to transport, handle, and install like normal framed modules

Trina Solar's DUOMAX Performance Warranty



From the 2nd year to the 30th year, the average annual power decline will be no more than 0.5%.

Horse Heaven Wind Project

FIGURE 2.3-6

Example Solar Module

BENTON COUNTY, WASHINGTON

SCOUT CLEAN ENERGY

Nextracker NX Gemini

GENERAL AND MECHANICAL	
Tracking type	Horizontal single-axis, independent row
String voltage	1,500 V_{DC}
Typical row size	112 - 120 modules, depending on module string length
Drive type	NX patent-pending self-locking, distributed drive
Motor type	48 V brushless DC motor
Array height	Rotation axis elevation 1.9 to 2.5 m / 6'2" to 8'2"
Ground coverage ratio (GCR)	Typical range 28-50%
Modules supported	Mounting options available for most utility-scale crystalline modules
Bifacial features	Available with optimized central torque tube gap
Tracking range of motion	±50°
Operating temperature range	Array powered: -20°C to 55°C (-4°F to 131°F) AC powered: -40°C to 55°C (-40°F to 131°F)
Module configuration	2 in portrait. 4 x 1,500 strings per standard tracker. Partial length trackers available.
Module attachment	Self-grounding, electric tool-actuated fasteners standard. Clamping system optional.
Materials	Galvanized steel
Allowable wind speed	Configurable up to 235 kph (145 mph) 3-second gust
Wind protection	Intelligent wind stowing with self-locking, distributed drive system for maximum array stability in all wind conditions
Foundations	Standard W8 section foundation posts. Typically ~160 piers / MW.

ELECTRONICS AND CONTROLS	
Solar tracking method	Astronomical algorithm with backtracking. TrueCapture™ upgrades available for terrain adaptive backtracking and diffuse tracking mode
Control electronics	NX tracker controller with inbuilt inclinometer and backup battery
Communications	Zigbee wireless communications to all tracker rows and weather stations via network control units (NCUs)
Nighttime stow	Yes
Power supply	ARRAY POWERED: NX Integrated DC pre-combiner & power supply AC POWERED: Customer-provided AC circuit

INSTALLATION, OPERATIONS AND SERVICE	
PE stamped structural calculations and drawings	Included
Onsite training and systemcommissioning	Included
Installation requirements	Simple assembly using swaged fasteners and bolted connections. No field cutting, drilling or welding.
Monitoring	NX Data Hub™ centralized data aggregation and monitoring
Module cleaning compatibility	Compatible with virtually all standard cleaning systems
DC string monitoring	Available with array-powered option
Warranty	10-year structural, 5-year drive and control components
Codes and standards	UL 3703 / UL 2703 / IEC 62817

Horse Heaven Wind Project

FIGURE 2.3-7

Example Tracking System

BENTON COUNTY, WASHINGTON

SCOUT CLEAN ENERGY

2.3.3 Electrical Collection System

The exact location of the collector system corridors will be finalized based on final Project design once actual Turbine and solar module types are selected. An illustrative Project collector system is used for purposes of impact analysis (see Figure 2.3-8). The final collector system layout will be designed within the micrositing corridors such that impacts will be equal to or less than those depicted in this ASC. The collection lines would be designed for operation at 34.5 kV. The electrical collection system consists primarily of medium-voltage, high-density, insulated cables connecting multiple Turbines and solar strings to the substation. Although electrical collection cables would be installed underground where feasible, in locations where topography is steep or environmental resources need to be avoided, collector lines may be suspended above ground.

The underground collection lines would be installed in a trench approximately 36 inches below ground surface to avoid potential impact from the existing land uses. A fiber-optic cable and an additional separate ground wire would also be installed with the underground collection system. The fiber-optic cable would be used for telemetry, control, and communication purposes. Aboveground junction boxes would be installed as required for connections or splices, approximately every 5,000 to 8,000 feet.

Construction of the underground collection lines would temporarily disturb a 30-foot-wide path (includes trench width, along with room for spoil piles and vehicle movement) for up to approximately 285 miles for the wind facility. Impacts from underground collection line trenches within the solar array are not separately calculated because they would occur within the fence line around the solar arrays and are included in calculations of permanent impacts associated with the solar arrays. The ground surface above the collector lines would be revegetated, but no trees would be permitted above the lines.

Some of the collector lines may need to be installed on above-ground overhead structures in situations where a buried cable would be infeasible, such as at stream or canyon crossings. In such instances, overhead collector lines will be supported by a wooden structure. Each support pole will be buried up to approximately 12 feet in the ground, and will extend to a height of up to approximately 100 feet above ground, depending on the terrain. The structures will be spaced an average of approximately 150 feet apart, depending on specific site conditions.

The majority of collector lines and junction boxes would be placed on privately owned lands; however, a portion (approximately 15.3 miles) of collector cable is proposed to be constructed on DNR lands.

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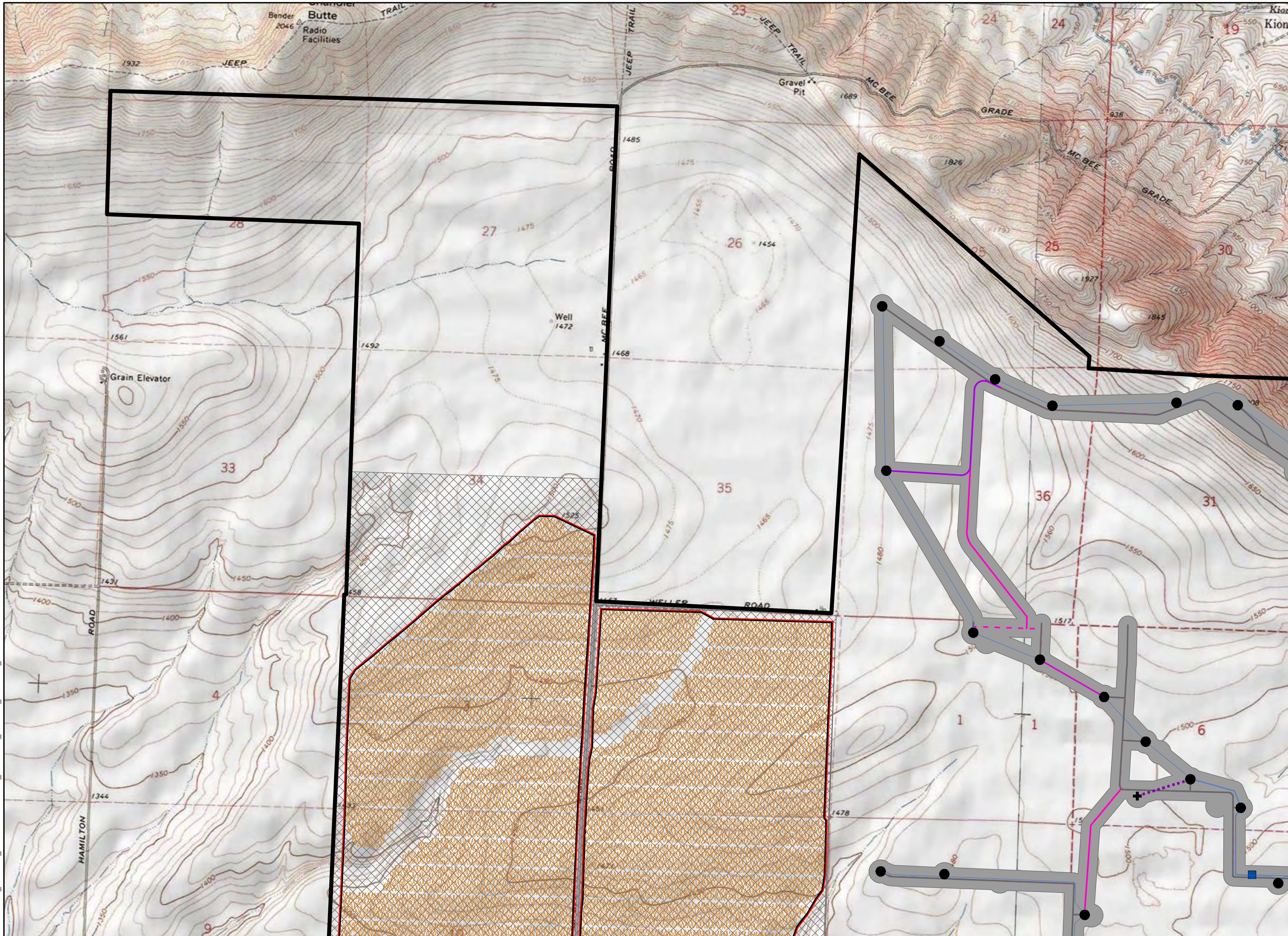


Horse Heaven Wind Farm

Figure 2.3-8
Facility Infrastructure for Turbine Layout Option 1

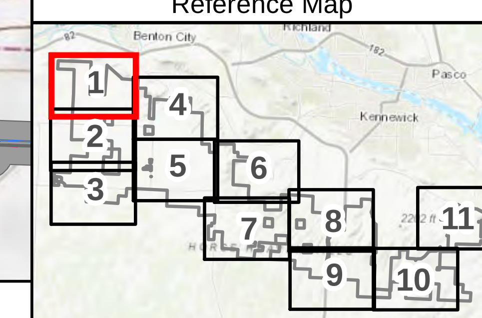
Map 1 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Solar Siting Area
- Option 1 Turbine Layout
- Met Tower
- Met Tower Access Road
- Solar Array
- Solar Array Fencing
- Solar Array Road
- Junction Box
- Collection Line
- CraneCL
- CraneCL_OnRoad
- CraneCL_Alt
- RoadCL
- RoadCL_Alt

TETRA TECH

Reference Map



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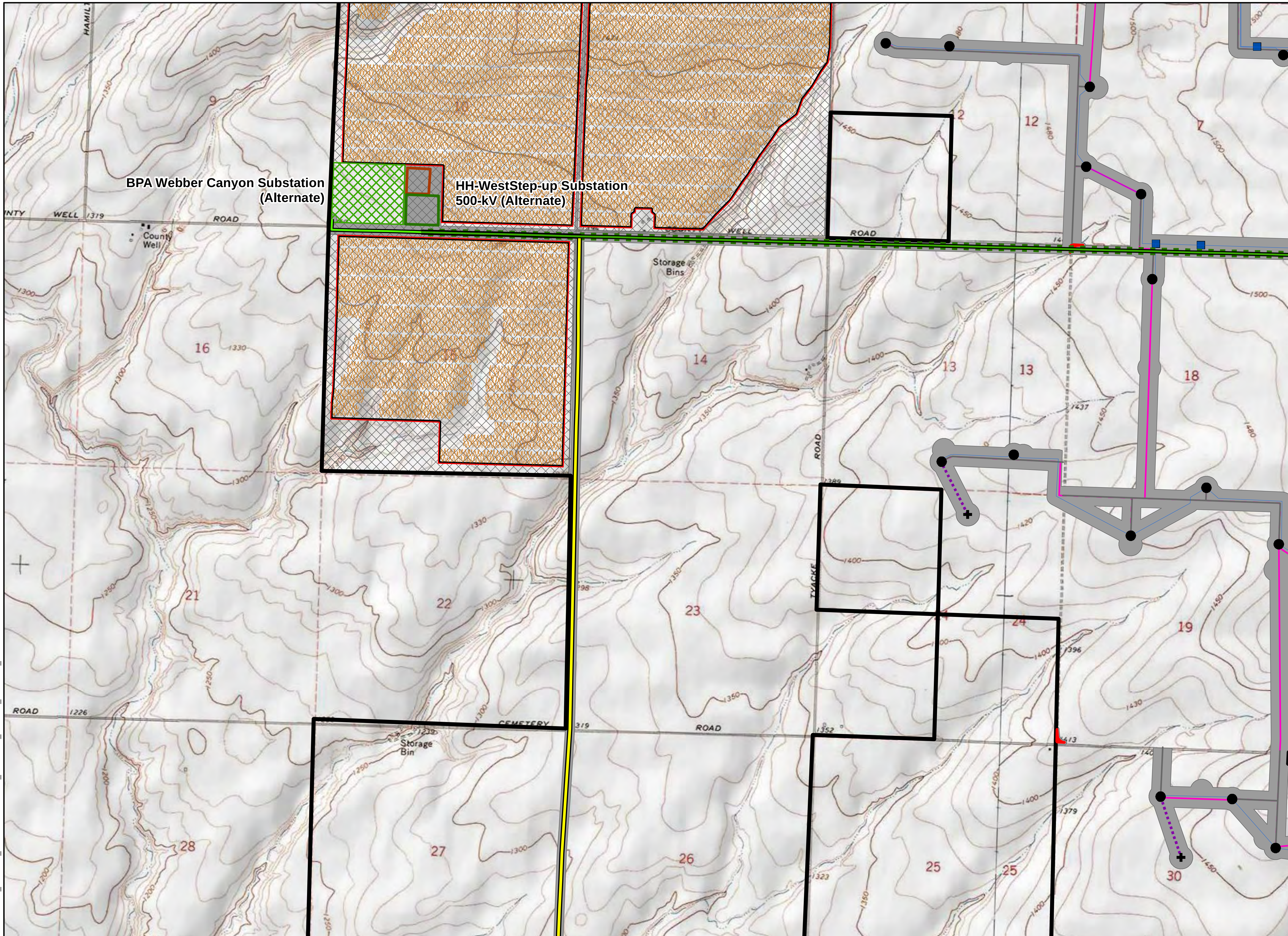
Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 2.3-8
Facility Infrastructure for Turbine Layout Option 1

Map 2 of 11

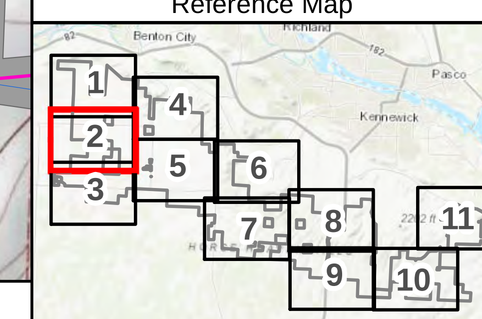
BENTON COUNTY, WA



- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Solar Siting Area
- Option 1 Turbine Layout
- Met Tower
- Met Tower Access Road
- Solar Intertie 230-kV Transmission Line
- County Well Road 230-kV Transmission Line (Primary)
- County Well Road 500-kV Transmission Line Step-up (Primary)
- Battery Storage
- Intersection Improvement Area
- Project Substation (Alternate)
- Solar Array
- Solar Array Fencing
- Solar Array Road
- BPA Substation (Alternate)
- Junction Box
- Collection Line
- CraneCL
- CraneCL_OnRoad
- RoadCL

TETRA TECH

Reference Map



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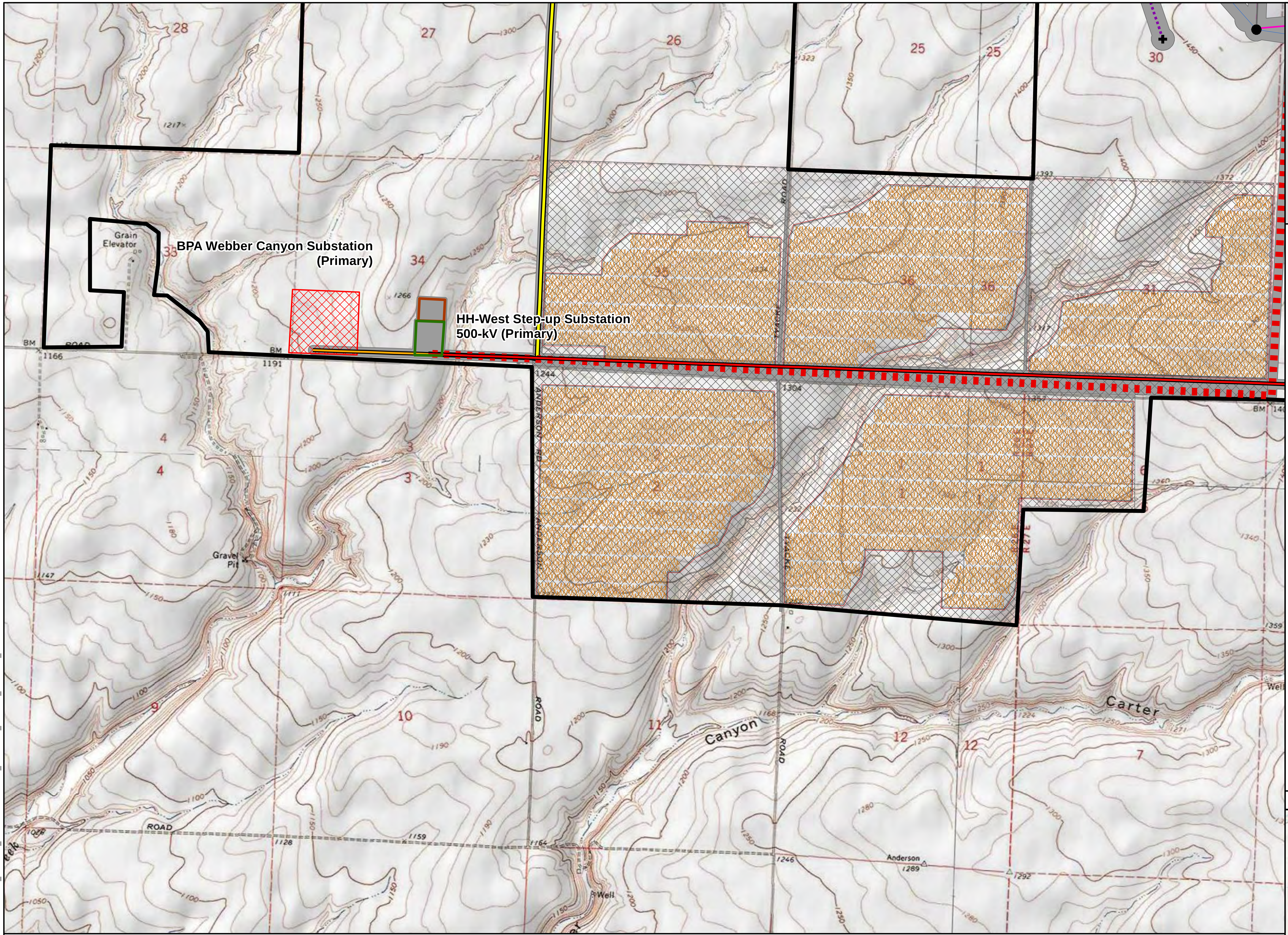

Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 2.3-8
Facility Infrastructure for Turbine Layout Option 1

Map 3 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Solar Siting Area
- Option 1 Turbine Layout
- Met Tower
- Met Tower Access Road
- Sellards Road 230-kV Transmission Line (Primary)
- Sellards Road 500-kV Transmission Line Step-up (Primary)
- Sellards Road 230-kV Transmission Line (Alternate)
- Solar Intertie 230-kV Transmission Line
- Battery Storage
- Project Substation (Alternate)
- Solar Array
- Solar Array Fencing
- Solar Array Road
- Collection Line
- CraneCL
- CraneCL_OnRoad
- RoadCL

TETRA TECH

Reference Map

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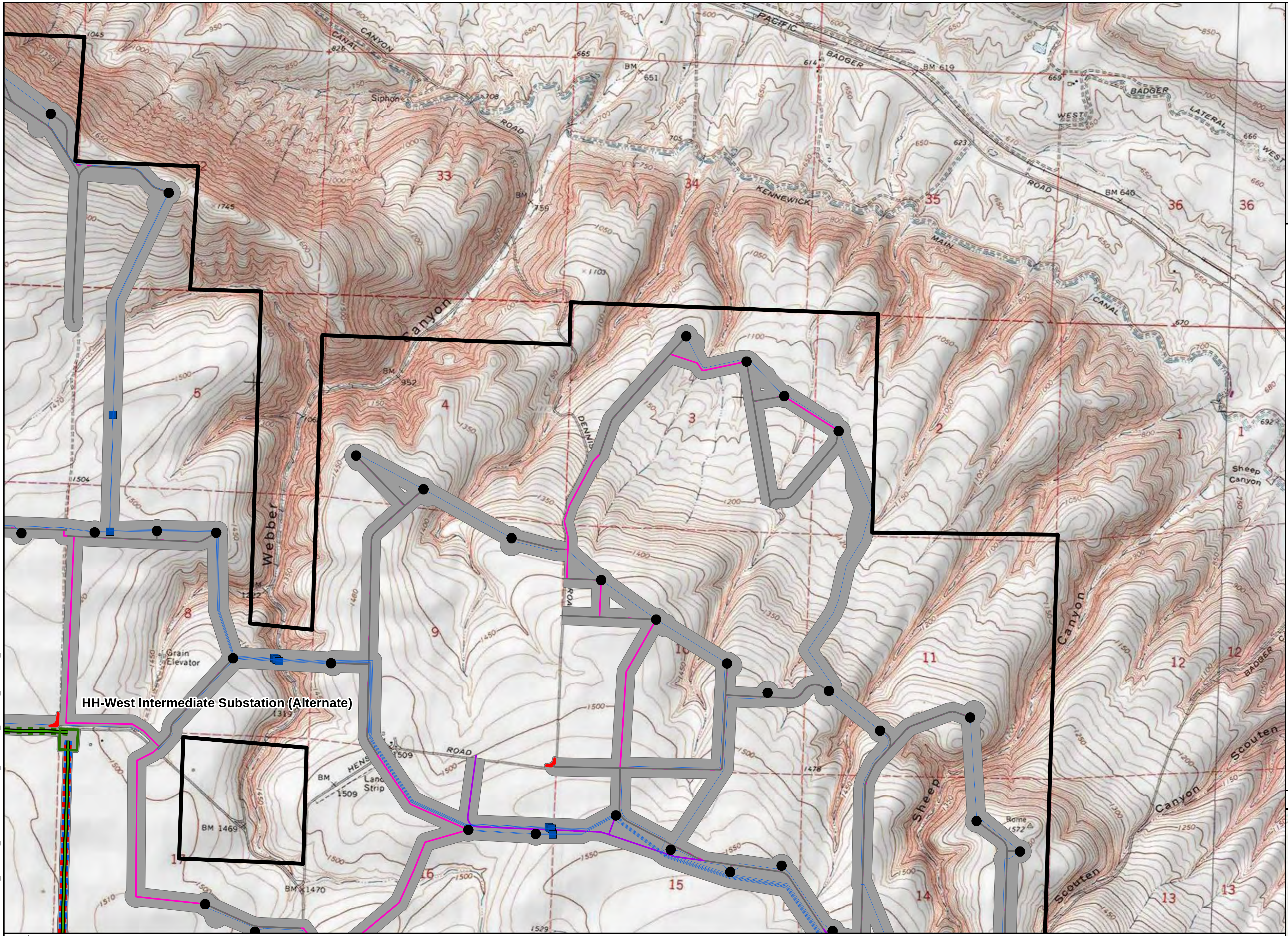


Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 2.3-8
Facility Infrastructure for Turbine Layout Option 1

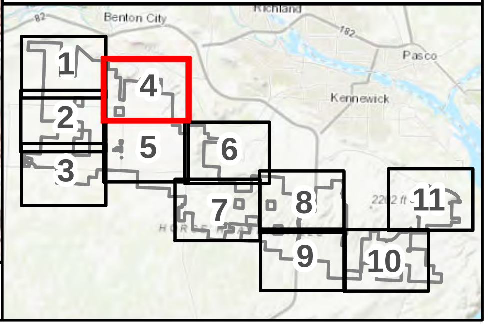
Map 4 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Option 1 Turbine Layout
- Sellards Road 230-kV Transmission Line (Alternate)
- County Well Road 230-kV Transmission Line (Primary)
- Intersection Improvement Area
- Project Substation (Alternate)
- Junction Box
- Collection Line
- CraneCL
- CraneCL_OnRoad
- CraneCL_OnRoad_Alt
- RoadCL
- RoadCL_Alt

TETRA TECH

Reference Map



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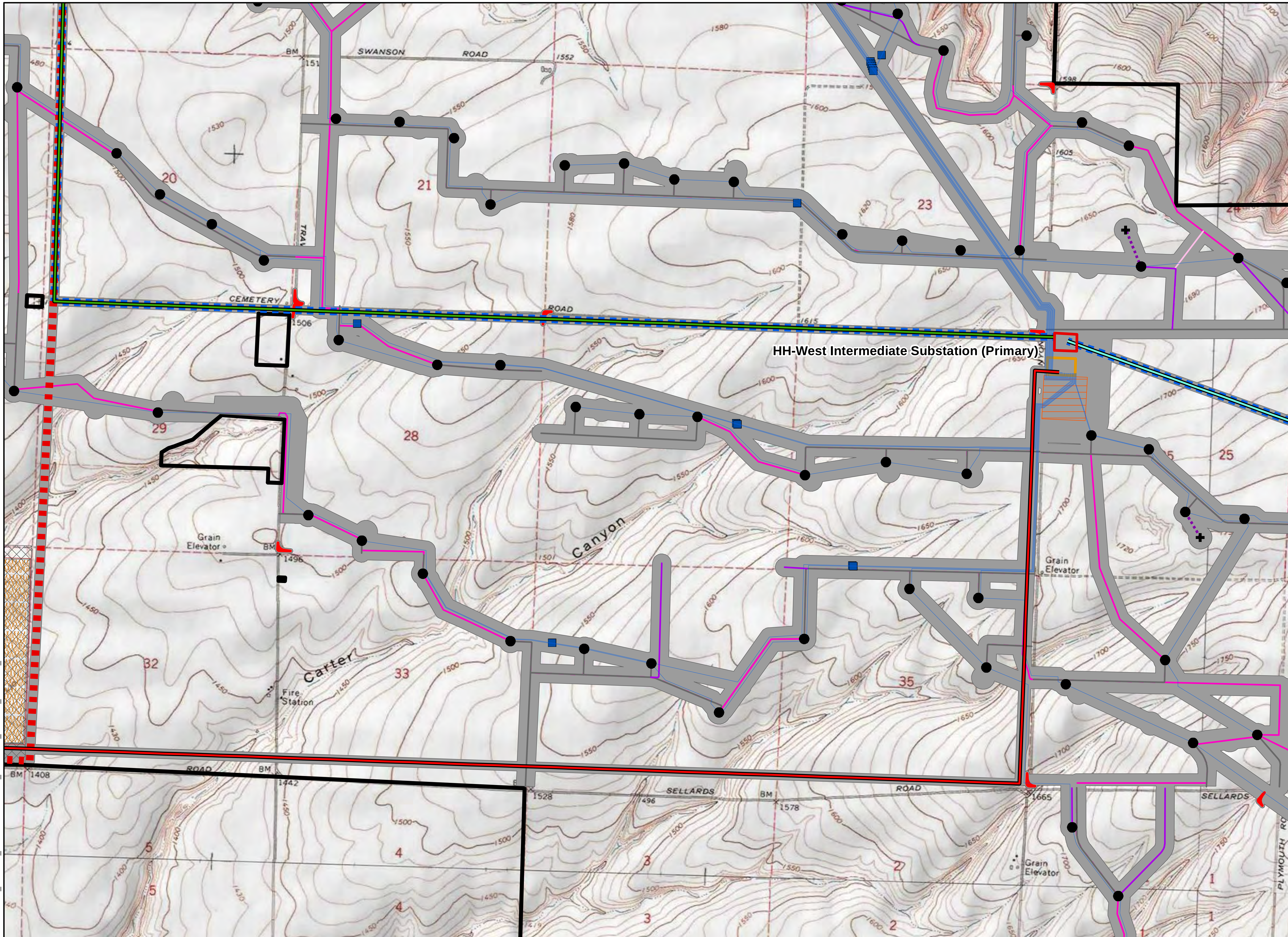

Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 2.3-8 Facility Infrastructure for Turbine Layout Option 1

Map 5 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Solar Siting Area
- Option 1 Turbine Layout
- Met Tower
- Met Tower Access Road
- Sellards Road 230-kV Transmission Line (Primary)
- Sellards Road 230-kV Transmission Line (Alternate)
- County Well Road 230-kV Transmission Line (Primary)
- 230-kV Intertie Transmission Line (Primary)
- O & M Facility
- Intersection Improvement Area
- Laydown Yard
- Project Substation (Primary)
- Solar Array
- Solar Array Fencing
- Solar Array Road
- Junction Box
- Collection Line
- CraneCL
- CraneCL_OnRoad
- CraneCL_Alt
- CraneCL_OnRoad_Alt
- RoadCL
- RoadCL_Alt

TETRA TECH

Reference Map

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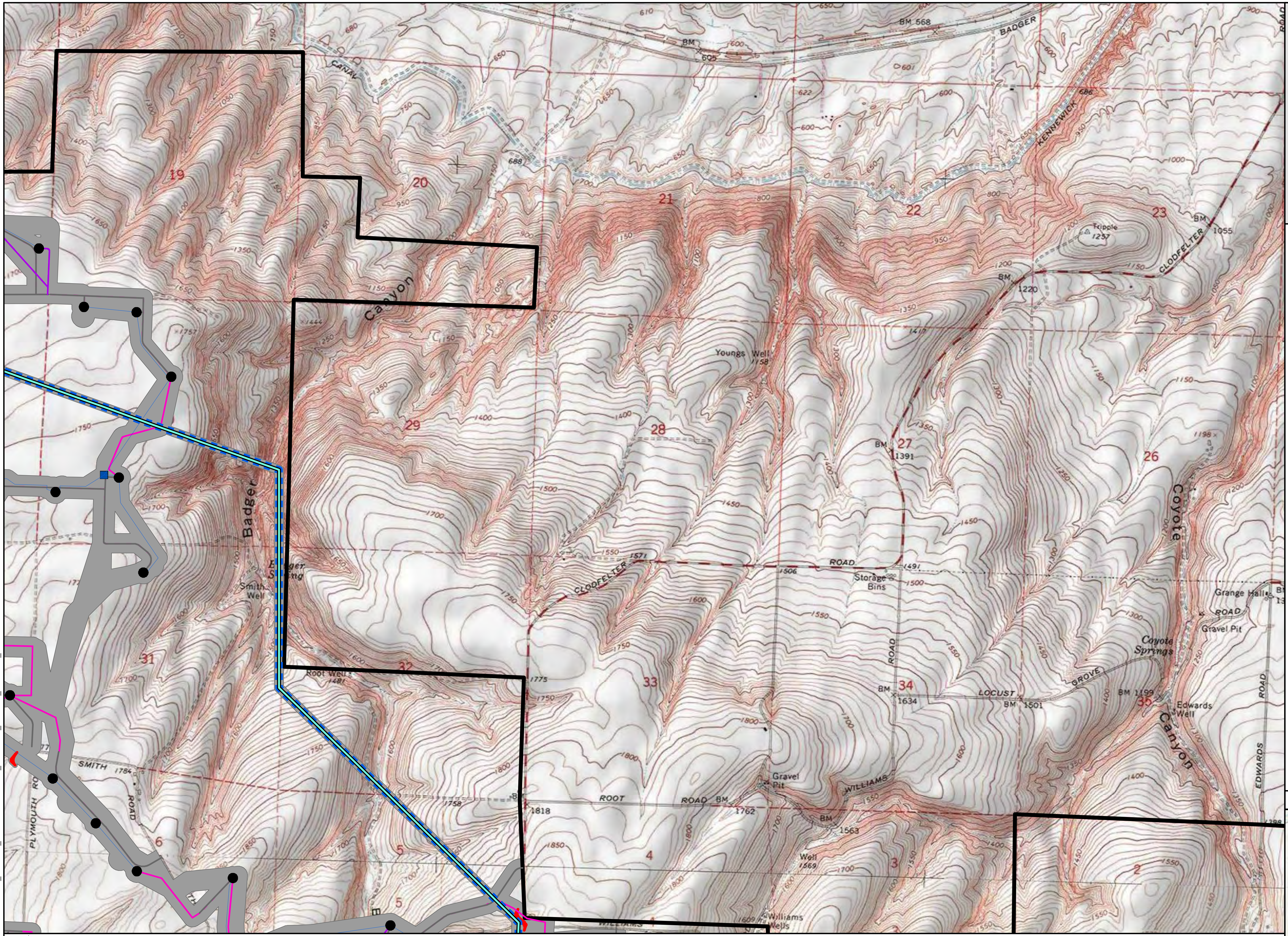


Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 2.3-8
Facility Infrastructure for Turbine Layout Option 1

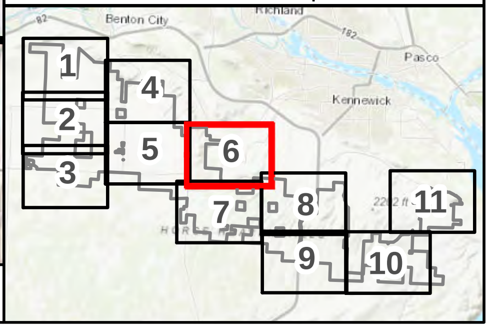
Map 6 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Option 1 Turbine Layout
- 230-kV Intertie Transmission Line (Primary)
- Intersection Improvement Area
- Junction Box
- Collection Line
- CraneCL
- CraneCL_OnRoad
- CraneCL_OnRoad_Alt
- RoadCL
- RoadCL_Alt

TETRA TECH

Reference Map



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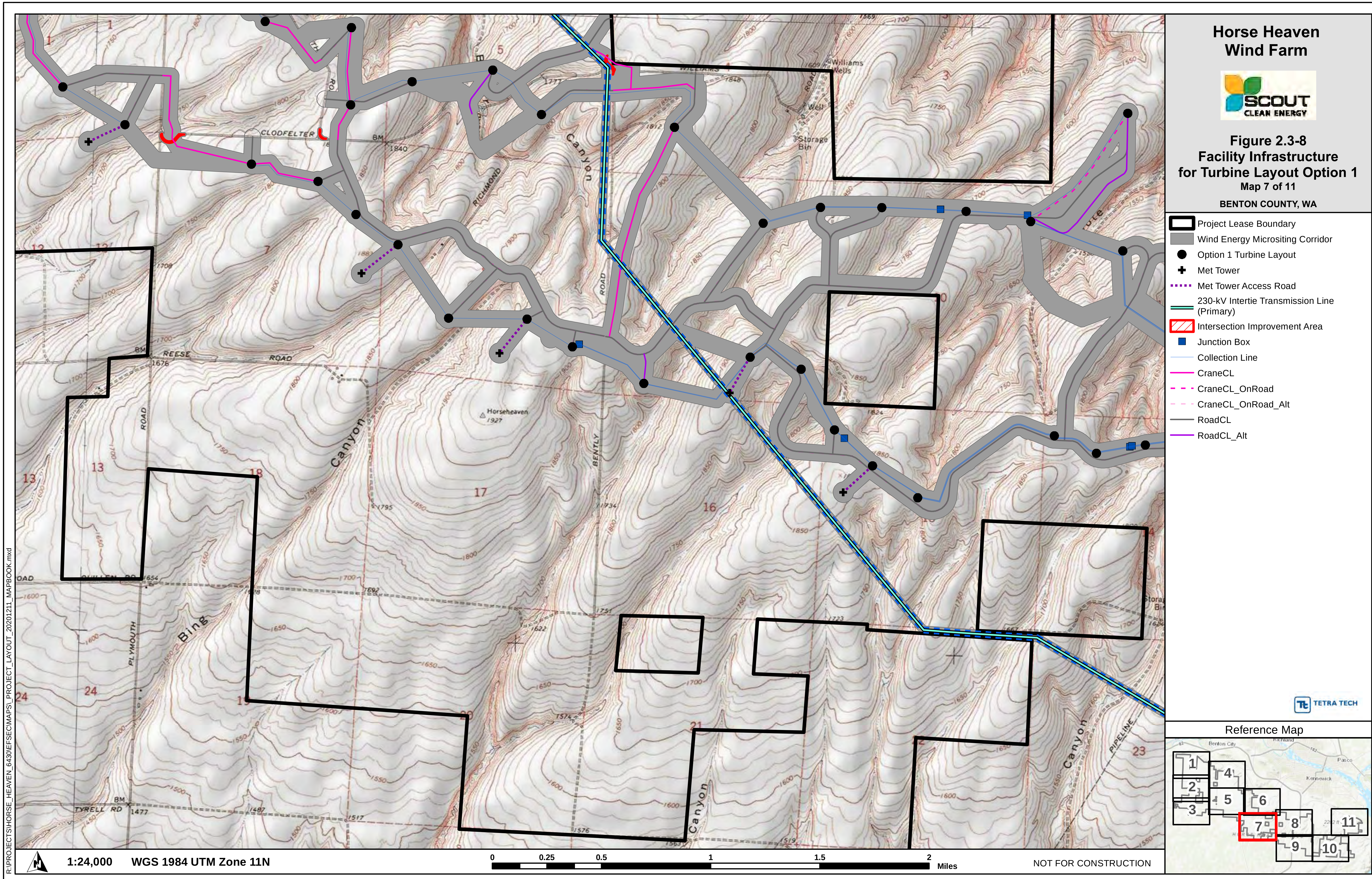

Horse Heaven Wind Farm
SCOUT CLEAN ENERGY
Figure 2.3-8
Facility Infrastructure for Turbine Layout Option 1
Map 7 of 11
BENTON COUNTY, WA
Project Lease Boundary
Wind Energy Micrositing Corridor
Option 1 Turbine Layout
Met Tower
Met Tower Access Road
230-kV Intertie Transmission Line (Primary)
Intersection Improvement Area
Junction Box
Collection Line
CraneCL
CraneCL_OnRoad
CraneCL_OnRoad_Alt
RoadCL
RoadCL_Alt
TETRA TECH
Reference Map
1:24,000
WGS 1984 UTM Zone 11N
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Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 2.3-8
Facility Infrastructure for Turbine Layout Option 1
Map 8 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Option 1 Turbine Layout
- Met Tower
- Met Tower Access Road
- 230-kV Intertie Transmission Line (Primary)
- Junction Box
- Collection Line
- CraneCL
- CraneCL_OnRoad
- CraneCL_Alt
- CraneCL_OnRoad_Alt
- RoadCL
- RoadCL_Alt

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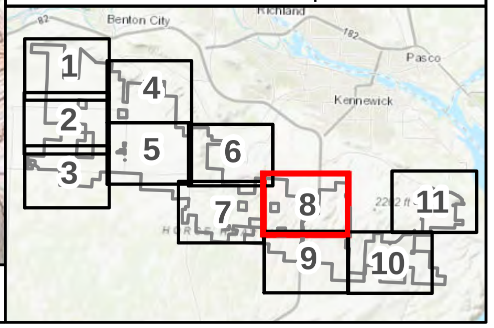

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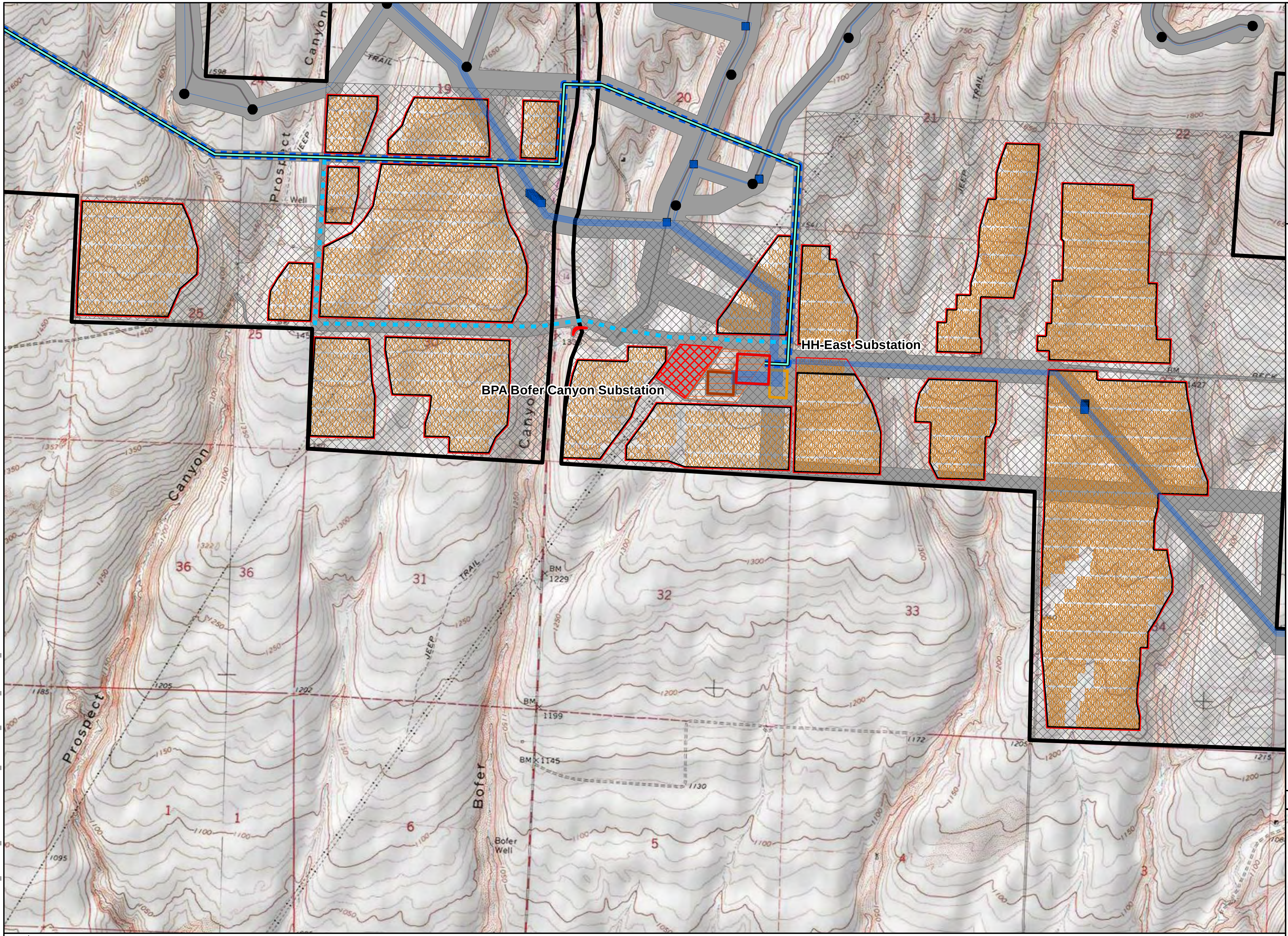


Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

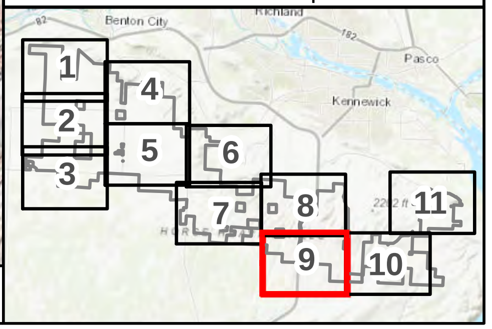
Figure 2.3-8
Facility Infrastructure for Turbine Layout Option 1
Map 9 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Solar Siting Area
- Option 1 Turbine Layout
- 230-kV Intertie Transmission Line (Primary)
- 230-kV Alternate Intertie Transmission Line
- O & M Facility
- Battery Storage
- Intersection Improvement Area
- Laydown Yard
- Project Substation (Primary)
- Solar Array
- Solar Array Fencing
- Solar Array Road
- BPA Substation (Primary)
- Junction Box
- Collection Line
- CraneCL_OnRoad
- RoadCL

TETRA TECH

Reference Map



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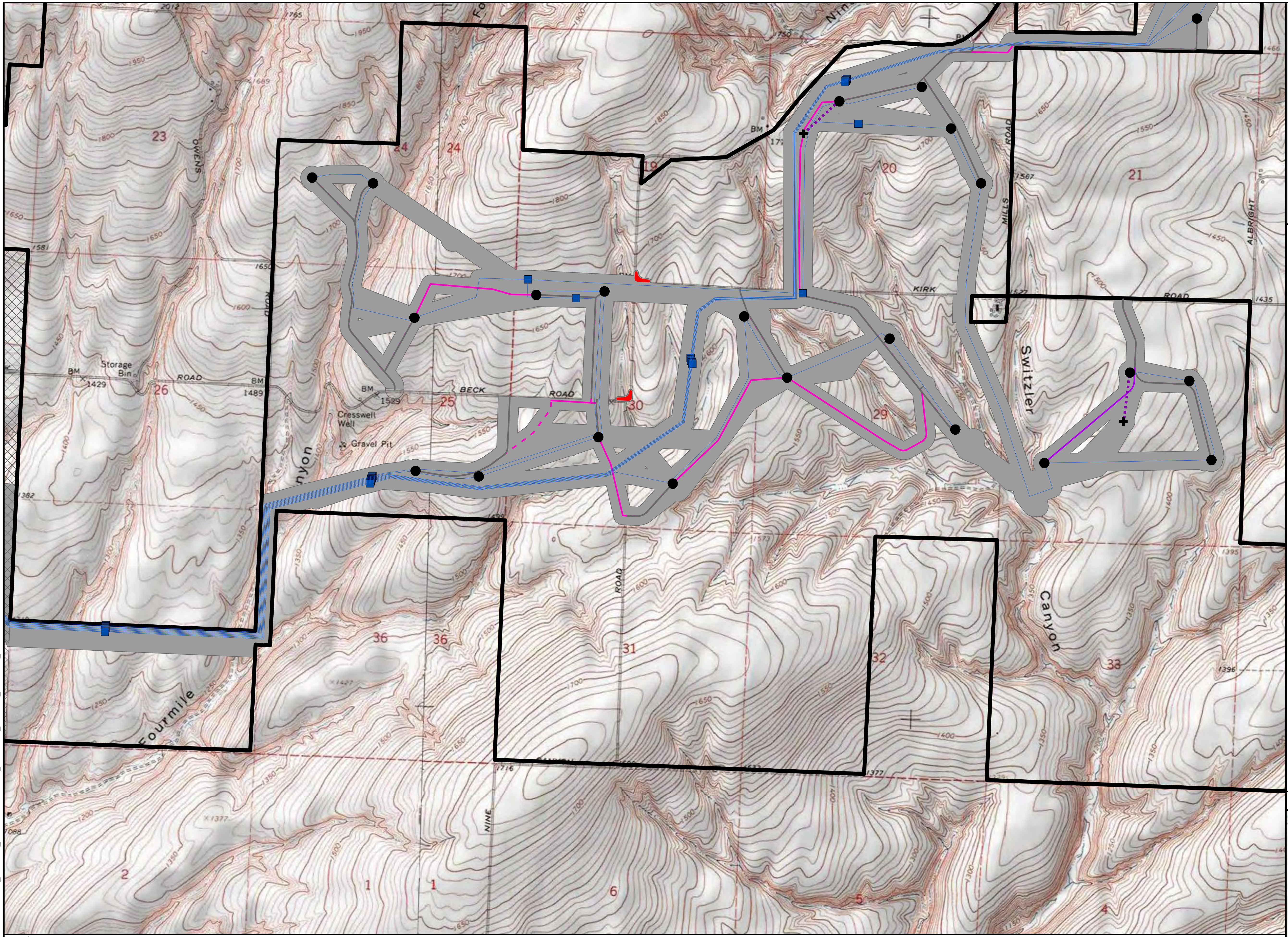
Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 2.3-8
Facility Infrastructure for Turbine Layout Option 1
Map 10 of 11

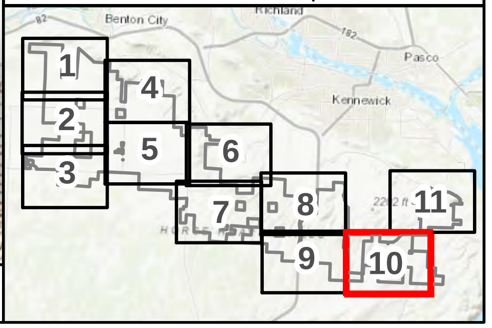
BENTON COUNTY, WA



Project Lease Boundary
Wind Energy Micrositing Corridor
Solar Siting Area
Option 1 Turbine Layout
Met Tower
Met Tower Access Road
Intersection Improvement Area
Junction Box
Collection Line
CraneCL
CraneCL_OnRoad
CraneCL_OnRoad_Alt
RoadCL
RoadCL_Alt

TETRA TECH

Reference Map



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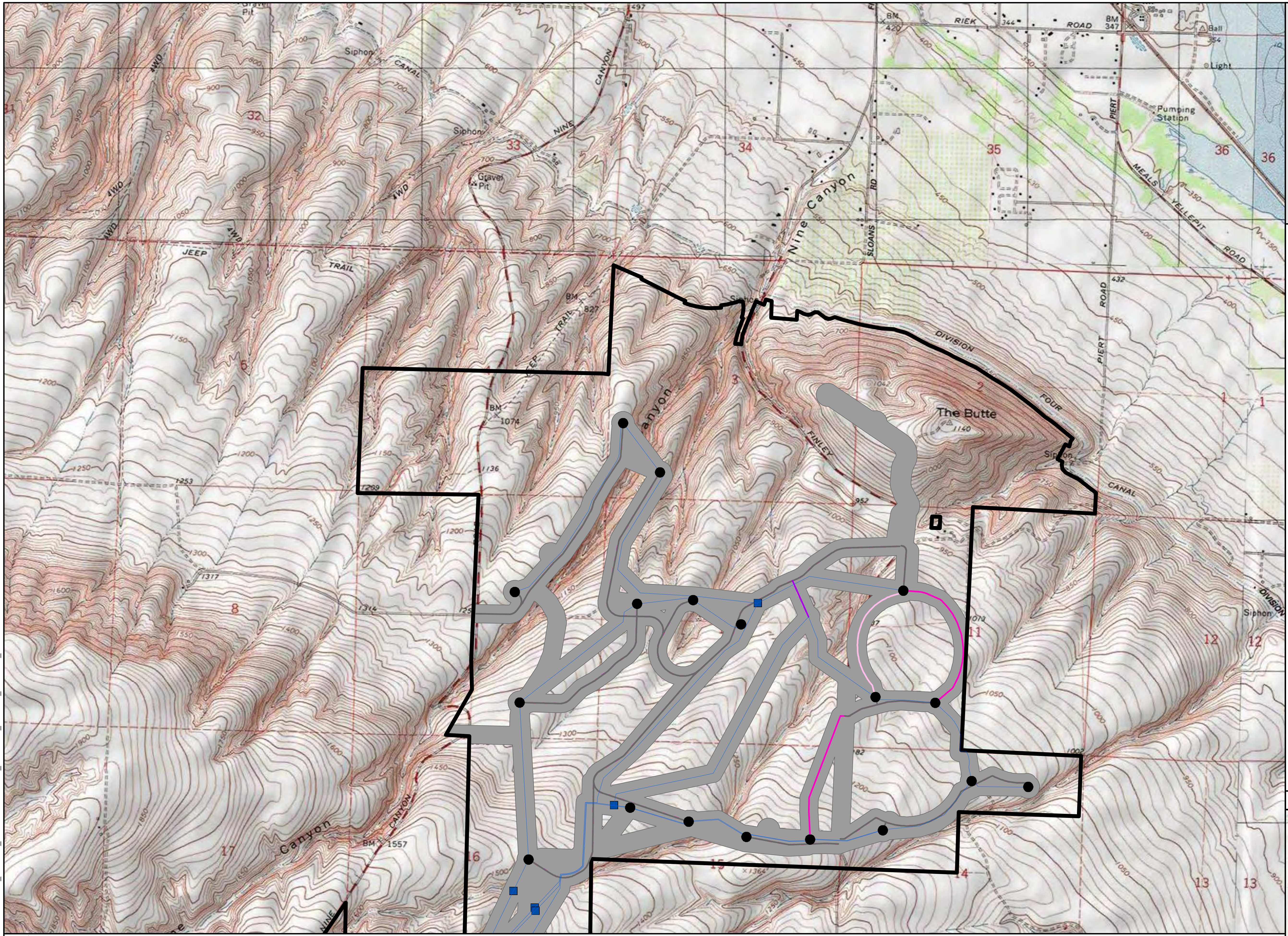


Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

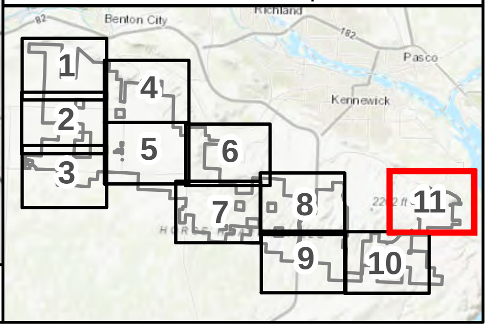
Figure 2.3-8
Facility Infrastructure for Turbine Layout Option 1
Map 11 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Option 1 Turbine Layout
- Junction Box
- Collection Line
- CraneCL
- CraneCL_OnRoad
- CraneCL_Alt
- CraneCL_OnRoad_Alt
- RoadCL
- RoadCL_Alt

TETRA TECH

Reference Map



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2.3.4 Project Substations

The Project would include up to four Project substations. The eastern Project substation for wind and solar would connect to BPA's planned Bofer Canyon substation via a short (approximately 500-foot) 230-kV transmission line. On the western side of the Project, power would be conveyed to BPA's planned Webber Canyon substation by way of two western Project substations. The first western Project substation will be an intermediate collector substation (Horse Heaven West [HH-West] Intermediate Substation), increasing voltage from Turbines from 34.5 kV to 230 kV. Power would then be conveyed via 230-kV transmission lines to a second western Project substation (HH-West Step-Up Substation) in proximity to BPA's Webber Canyon substation. At the HH-West Step-Up Substation, power would be stepped up from 230 kV to 500 kV for interconnection to BPA's system. Depending where BPA elects to build their Webber Canyon substation, a third Project substation may be required for a western Project solar array that gets built but is not adjacent to the Webber Canyon substation.

Potential alternative locations for the Project substations are being considered in the western portion of the Project Lease Boundary. The Primary and Alternate substation locations, as well as the associated transmission lines that would connect these substations to the grid, are shown on Figures 2.3-1 and 2.3-2. Table 2.3-2 provides the name and specific purpose of each of these substation locations.

Table 2.3-2. Primary and Alternate Substation Descriptions

Project Region	Substation Name	Purpose
Eastern Project Area	HH-East Substation	Connect the eastern portion of the Project to the grid via the existing 230-kV BPA transmission line.
Western Project Area	HH-West Intermediate Substation (Primary – Badger Canyon Road)	An intermediate western substation, connected to the electrical collection system, which would step-up the voltage of the 34.5-kV collection system to 230 kV, before sending the power to the secondary substation.
	HH-West Intermediate Substation (Alternate – County Well Road)	An alternate location for the intermediate western substation (located east of the primary substation; see Figures 2.3-1 and 2.3-2) that would connect to the electrical collection system, and step-up the voltage of the 34.5-kV collection system to 230 kV, before sending the power to the HH-West Step-Up Substation.
	HH-West Step-Up Substation 500 kV (Primary – Sellards Road)	The primary location for the HH-West Step-Up Substation which would step-up the voltage from 230 kV to 500 kV, before connecting to the grid, via an existing 500-kV transmission line to BPA's proposed Webber Canyon substation (if BPA substation is located on Sellards Road).
	HH-West Step-Up Substation 500 kV (Alternate – County Well Road)	An alternate location for the HH-West Step-Up Substation (located north of the primary HH-West Step-Up Substation; see Figures 2.3-1 and 2.3-2), which would step-up the voltage from 230 kV to 500 kV, before connecting to the grid via an existing 500-kV transmission line to BPA's proposed Webber Canyon substation (if BPA substation is located on County Well Road).

Project Region	Substation Name	Purpose
	HH-West Alternate Solar Substation	Depending where BPA elects to build their Webber Canyon substation, a third Project substation may be required for a western Project solar array that gets built but is not adjacent to the Webber Canyon substation.

These Project substations would be co-located with the Project's O&M facilities (discussed in more detail in Section 4.3.6). The Project's substations each would permanently occupy a 4-acre site, be fenced, and consist of substation transformers, circuit breakers, switching devices, auxiliary equipment, a control enclosure (containing equipment for proper control, protection, monitoring, and communications), and associated equipment and facilities. The area within the Project substations' fence line would be graded/flattened and contain a bed of crushed rock. The Project substations would be enclosed by a security wire mesh fence designed in accordance with industry standards to provide safety and security.

2.3.5 Battery Storage Facility

Two BESS may be developed for the Project. The BESS would be capable of storing and later deploying up to 300 MW of energy generated by the Project using lithium-ion batteries. The BESS would use a series of self-contained containers and would be placed adjacent to the Horse Heaven East (HH-East) substation and the 500-kV step-up substation near BPA's Webber Canyon interconnect (see Section 2.3.4) and enclosed within a separate fence.

Lithium-ion batteries are the most common type of utility-scale technology used for battery storage systems. Lithium-ion batteries are a type of solid-state rechargeable battery in which lithium ions, suspended in an electrolyte, move from negative to positive electrodes and back when charging and recharging. A variety of chemistries fall under the "lithium-ion" term, each with varying performance, cost, and safety characteristics (Energy Storage Association 2020). Lithium-ion batteries have a typical lifespan of 5 to 10 years and will experience a gradual degradation of performance over that time. The lithium-ion battery technology under consideration for this project will be maintained and periodically replaced over time to maintain useable capacity for the Project lifetime. Lithium-ion batteries are generally used in utility-scale applications when rapid, short-term (minute) deployments of power are needed. For example, lithium-ion batteries can smooth the fluctuating generation from solar arrays, which can vary based on time of day and cloud cover, to deliver consistent and predictable power to the grid.

The battery storage design will include, but not be limited to, the following elements. The details and complexity of these elements depend on the final system selected.

- Battery storage equipment, including batteries and racks or containers, inverters, isolation transformers, and switchboards;
- Balance of plant equipment, which may include medium-voltage and low-voltage electrical systems, fire suppression, heating, ventilation, and air-conditioning systems, building auxiliary electrical systems, and network/ supervisory control and data acquisition systems;

- Cooling system, which may include a separate chiller plant located outside the battery racks with chillers, pumps, and heat exchangers; and
- High-voltage (HV) equipment, including a step-up transformer, HV circuit breaker, HV current transformers and voltage transformers, a packaged control building for the HV breaker and transformer equipment, HV towers, structures, and HV cabling.

The lithium-ion technologies are often placed in standard-sized shipping containers on a concrete slab. Each container holds the batteries, a supervisory and power management system, cooling system (if needed), and a fire prevention system. By connecting multiple containers, the battery storage system can be scaled to the desired capacity. Containers may be stacked up to two levels with an estimated maximum height of approximately 40 feet.

2.3.6 Access Roads

Construction material and equipment would be transported to the site primarily via road systems. The primary transportation route would likely follow highways Interstate (I)-82 before reaching local and county roads that lead into the Project Lease Boundary (see Section 4.3). During construction, portions of existing roads may need to be improved, resulting in the temporary widening and increased turning radii of some public and private roads. These improvements would be removed, and the area restored to preconstruction conditions to the extent practical unless otherwise requested by the landowner.

Where necessary, new access roads would be constructed between existing roadways and Project components such as Turbine sites, solar arrays, construction yard, Project substations, O&M facilities, and transmission line towers. The permanent access roads would be all-weather, gravel surfaced, and generally 16 feet in width for the drivable area and additional width for the shoulder and drainage (if necessary). Figure 2.3-8 shows preliminary locations for new access roads.

2.3.6.1 Wind Facility

Access to the Turbine sites, construction yard, Project substation, O&M facilities, and transmission line towers would be provided via up to approximately 105 miles of new access roads. These new access roads would result in a 50-foot-wide temporary disturbed area along the roadbed during initial construction in addition to the permanent road width of 16 feet. New roads and associated temporary disturbance would be constructed within the micrositing corridors shown on Figure 2.3-3.

Separate access may be required for the cranes used to erect the Turbines. In such cases, temporary 36-foot-wide crane paths would be constructed between Turbine locations. Following completion of construction, the temporary crane paths would be removed (if required), and the area restored (as needed), in accordance with industry standards. For the purposes of calculating crane path impacts in this ASC, the Applicant has conservatively assumed up to approximately 34 miles of crane paths for construction of all Turbines. Preliminary crane path routes are shown on Figure 2.3-8. Crane paths would be placed within the micrositing corridors shown on Figure 2.3-3.

2.3.6.2 Solar Facility

All access roads for maintenance of solar panels would be entirely encompassed by the fenced area surrounding the solar array, and all impacts from these roads are included in the values reported for the fenced solar array area (see Table 2.1-1).

2.3.7 O&M Facilities

The Project would require two O&M facilities, each of which would be located directly adjacent to the Project's substations. One O&M facility would be located adjacent to the Project's eastern substation, while a second facility would be located adjacent to the one of the western Project substations. Each facility would comprise a single- or two-story building, which would house operating personnel, offices, operations and communication equipment, parts storage and maintenance activities, and a vehicle parking area. An area for outdoor storage of larger equipment and materials would also be included within a fenced area for safety and security. Each facility would permanently occupy approximately 4 acres.

2.3.8 Meteorological Towers

Up to four permanent meteorological towers would be installed as part of the Project; however, up to 13 possible locations are currently being assessed and included in the impact values (in order to ensure flexibility in the selection of the final location). These meteorological towers are used to obtain wind data for performance management once the Project is operational. The Applicant requests that the Site Certification Agreement allow up to four meteorological towers to be located within the Project Lease Boundary as needed, as long as the final locations are within the Micrositing Corridor on land leased for the Project and all other applicable regulations and requirements are met.

The meteorological towers would be free-standing, with heights not to exceed the maximum hub height of the Turbines (up to 411 feet). The permanent meteorological towers would be marked and lighted as specified by the FAA. Construction of each meteorological tower would temporarily disturb a 150-foot radius area, and each meteorological tower and its foundation would occupy a permanent footprint of up to approximately 42 by 42 feet for the tower for a total of 1,764 square feet for each tower.

2.3.9 SCADA System and Communications Systems

Safety and control mechanisms are included in the Project design. These mechanisms are generally monitored using a supervisory control and data acquisition (SCADA) system. Turbines, meteorological towers, solar array, BESS, and Project substations are connected to the SCADA system via fiber-optic cable, which allows the energy generation, storage, and electrical systems to be monitored in real time by the O&M staff as well as remotely. The fiber-optic cable would run with the collection lines, either underground (in the same trench) or overhead. The SCADA system allows the Project components to be remotely monitored for safety, performance, and reliability. This system monitors Project systems for variables such as meteorological conditions, critical operating parameters, and power output. The SCADA system would provide both the Project O&M office and a round-the-clock remote operations facility with full data and control of the energy generation and storage systems. These two teams coordinate to operate the Project components safely and efficiently.

2.3.10 Transmission Line

A new 230-kV single-circuit transmission line would be constructed to connect the Project's substations to the grid. There are six possible transmission line routes being considered in the western portion of the Project in order to connect the primary and alternate substation locations to the grid (also see Section 2.3.4 and Figures 2.3-1 and 2.3-2). Table 2.3-3 depicts the various anticipated configurations.

Table 2.3-3. Primary and Alternate Transmission Line Descriptions

BPA Webber Canyon Location	HH-West Step-up Project Substation (230 kV – 500 kV)	HH-West Intermediate Project Substation (34.5 kV – 230 kV)	230-kV Transmission Line	500-kV Transmission Line[1/]
Primary (Sellards Road)	Primary (Sellards Road)	Primary (Badger Canyon Road)	9.3 miles Optional solar intertie: 4.9 miles[2/]	0.5 mile
		Alternate (County Well Road)	7.3 miles Optional solar intertie: 4.9 miles[2/]	0.5 mile
Alternate (County Well Road)	Alternate (County Well Road)	Primary (Badger Canyon Road)	9.8 miles Optional solar intertie: 4.9 miles[2/]	None
		Alternate (County Well Road)	3.7 miles Optional solar intertie: 4.9 miles[2/]	None
None	None	Primary (Badger Canyon Road)	13.3 miles (intertie)[3/]	None
		Alternate (County Well Road)	19.4 miles (intertie)[3]	None

Notes:

1/ At the Sellards Road location, BPA's Webber Canyon substation and the Project substation would not be immediately adjacent to each other due to topographic constraints. An 0.5-mile segment of 500-kV transmission line would be required in order to interconnect the Project to the grid at this location.

2/ If BPA constructs its substation at Sellards Road, construction of the northern solar array along County Well Road would require construction of a fourth solar substation (see Section 2.3) at the County Well Road location and an additional 230-kV "solar intertie" in order to transmit power to the point of interconnect.

3/ Two minor alternatives are considered along the 230-kV intertie route. The primary route would be directionally drilled to cross I-82 approximately 1 mile north of Beck Road. An alternate route would be attached to the Beck Road bridge and would cross I-82 approximately 1 mile west of BPA's planned Bofer Canyon substation.

The 230-kV transmission lines would be suspended above ground on either single steel monopole structures or wooden H-frame structures:

- The single steel monopole structures would be directly embedded in the ground. The structures would be either buried in the ground to a depth of approximately 18 feet, or may have concrete foundations, and the structure height would be approximately 110 feet above grade. The structures would be spaced an average of approximately 600 feet apart, and the conductor would be located approximately 30 feet above the ground. Guy wires would secure turning structures (angles) and dead-ends for safety.

- The wooden H-frame structures would have two posts buried in the ground to a depth of approximately 15 feet and may have concrete foundations, and the structure height would be up to approximately 135 feet above grade. The two posts would be approximately 45 feet apart, and the top cross bar would be up to approximately 108 feet long. Structures would be spaced an average of approximately 600 feet apart with conductors approximately 100 feet above ground.

The final right-of-way for the 230-kV transmission line would be 100 feet wide. The 230-kV intertie line would cross I-82 at one of two locations as shown on Figure 2.3-1. At the northern location, approximately 1 mile north of Beck Road, the line would be directionally drilled underneath I-82. An alternate route runs along Beck Road and would cross I-82 overhead by being attached to the overpass along Beck Road.

A short segment (0.5 mile) of 500-kV transmission line may be installed to connect the Project step-up substation to BPA's Sellards Road substation. Construction of that line may require installation of up to three H-frame support structures (with similar pole sizing, spacing, and foundations as described above). The right-of-way for the 500-kV transmission line segment would be 200 feet wide.

The transmission lines would be constructed in compliance with codes and standards from the following: National Electrical Safety Code (NESC; 2017 Edition, Grade B Construction), WAC, American National Standards Institute (ANSI), National Electrical Manufacturers Association (NEMA), American Society for Testing and Materials (ASTM), Avian Power Line Interaction Committee (APLIC), as well as other applicable and known local laws and construction codes. Ground clearances for the suspended portion of the line would conform to the NESC standards. A 30-foot minimum clearance between the line and the ground (including local roadways and land used for agriculture) would be used in all areas.

2.3.11 Temporary Laydown Yard

Up to two laydown yard areas would be established within the Project Lease Boundary to facilitate the delivery and assembly of materials and equipment. The yards would be located within the identified Micrositing Corridors. The laydown yards would be graded, surfaced with gravel, and marked with a "no trespassing" sign. Each yard would be restored to preconstruction conditions to the extent practical following construction. Restoration would include the removal of the gravel surface, regrading to preconstruction contours, restoring topsoil and decompacting subsoils as needed, and reseeding with approved seed mixes.

2.3.12 Restoration

Construction disturbance would be limited to the extent practicable in accordance with BMPs and the Project's permit conditions. After construction is completed, disturbed areas would be restored as nearly as practicable to their original condition.

The Applicant or its contractor would contact each property owner after construction is completed to identify and address any damage that may have occurred as a result of the construction of Project components. If damage were to occur to crops, fences, or the property, the Applicant would repair or fairly compensate the landowner for the damages sustained in accordance with the terms and conditions agreed upon in the lease or other agreement entered into by the Applicant and the landowner.

In general, vegetated areas that are disturbed or removed during construction of the Project would be restored to near as reasonably possible pre-disturbance conditions. Areas with significant soil compaction and disturbance from construction activities would require assistance in reestablishing vegetation and controlling soil erosion. Commonly used BMPs to control soil erosion and assist in reestablishing vegetation include, but are not limited to, the use of:

- A Weed Management Plan, which would be developed to limit the spread of noxious and invasive weeds during construction and ongoing operations;
- Erosion control blankets with embedded seeds;
- Silt fences;
- Hay bales;
- Hydro seeding; and
- Planting individual seeds or seedlings of non-invasive native species.

2.3.13 Decommissioning

The Project is expected to have an operational life of 35 years. Following this period, it is anticipated that the Applicant would either repower the facility with newer models of Turbines and solar modules, or decommission the Project. Decommissioning would be in accordance with EFSEC's rules and prior Site Certification Agreements and include dismantling and removing aboveground improvements including Turbines and solar modules, step-up transformers, substations, BESS systems, overhead generator tie lines and support structures, control hardware, and meteorological towers. Foundations would be removed to a level of no less than 3 feet below the surface of the ground unless requested to be maintained by the landowner. In areas where the foundations are removed, the surface would be restored and contoured to a condition reasonably similar to that prior to construction, and the area would be reseeded with vegetation reasonably acceptable to the landowner. Cables, lines, or conduit that are buried more than 3 feet below grade may not be removed. Any access roads constructed as part of the Project may remain, unless the landowner specifically requests their removal. During decommissioning, the Applicant would adhere to all federal, state, and local requirements, including obtaining and adhering to all applicable permits and authorizations. Section 1.9 and Appendix A discuss the Decommissioning Plan in more detail.

2.3.14 Costs

The total estimated cost of the Project at the completion of construction would be over $1,727,000,000, which includes the Turbines, solar arrays, BESS, transmission infrastructure, and associated equipment. The Applicant estimates that the annual O&M costs would be approximately $17,452,000, including the following:

- Wages and salaries of operation, maintenance, and administrative personnel;
- Procurement of goods and services;
- Insurance; and
- Sales and other state and local taxes.

2.4 ENERGY TRANSMISSION SYSTEMS

WAC 463-60-155: *The application shall identify the federal, state, and industry criteria used in the conceptual design, route selection, and construction for all facilities identified in RCW 80.50.020 (6) and (7), and shall indicate how such criteria are met.*

RCW 80.50.020 has been reorganized since this WAC language was prepared. The current organization of this section provides for a description of 'Associated Facilities' under subpart (4), which includes "…related and supporting facilities connecting an energy plant with the existing energy supply, processing, or distribution system…and new transmission lines constructed to operate at nominal voltages of at least 115,000 volts to connect a thermal power plant or alternative energy facilities to the northwest power grid." The Project's electrical system would consist of three key elements: (1) an electrical collector system, which would collect energy generated at the Turbines and solar array, transform the voltage to using a pad-mounted transformer, and deliver the energy via cables to (2) the Project substations, which would deliver it into the regional transmission system; and (3) a BESS, which would be capable of storing and later deploying up to 300 MW of energy generated by the Project to the grid. The design, route selection, and construction of the generation tie lines have been selected to meet the following criteria: (1) safety; (2) minimal environmental impact by locating such lines, where possible, within existing distribution line corridors or along existing right-of-way; (3) shortest possible route to proposed point of interconnection and along property boundaries where practical; (4) available access across landowners' properties; and (5) overall construction impacts. Section 2.3 contains more details regarding the electrical collector system, substations, and BESS.

2.5 ELECTRICAL TRANSMISSION FACILITIES

WAC 463-60-160:

(1) Prior to submitting an application for site certification for an electric transmission facility under RCW 80.50.060(3) an applicant shall follow the procedure as set in chapter 463-61 WAC.

(2) An application for an electric transmission facility shall include the information required by this chapter unless the requirement may not be applicable to such a facility.

(3) An application for an electrical transmission facility shall include the results of any preapplication negotiations including any agreements between the applicant and cities, towns, or counties where the electrical transmission facility is proposed to be located.

This section is not applicable to this proposal, as the Project is an alternative energy generation facility. Proposed transmission lines are related and supporting facilities and not a stand-alone electrical transmission facility located in more than one jurisdiction that has promulgated land use plans or zoning ordinances per RCW 80.50.060(3). Electrical transmission lines associated with the Facility are described above in Section 2.4.

2.6 WATER SUPPLY

WAC 463-60-165:

(1) Water intake and conveyance facilities. The application shall describe the location and type of water intakes, water lines, pipelines and water conveyance systems, and other associated facilities required for providing water to the energy facility for which certification is being requested.

(2) Water supply and usage alternatives.

(a) The applicant shall consider water supply alternatives, including use of reclaimed water, water reuse projects, and conservation methods. The application shall describe all supply alternatives considered, including the associated cost of implementing such alternatives, and the resulting benefits and penalties that would be incurred.

(b) The application shall include detailed information regarding using air cooling as an alternative to consumptive water use, including associated costs.

(c) The application shall describe water conservation methods that will be used during construction and operation of the facility.

(3) Water rights and authorizations. An applicant proposing to use surface or groundwater for the facility shall describe the source and the amount of water required during construction and operation of the energy facility and shall do one or more of the following:

(a) Submit a water use authorization or a contractual right to use water supplied by a municipal corporation or other water purveyor; or

(b) Submit a water right permit or water right certificate issued by the department of ecology for the proposed facility in an amount sufficient to meet the need of the facility. If the permit and/or certificate has been issued five years prior to the submittal date, the applicant shall provide evidence that the water right permit is in good standing, or that the certificate has not relinquished through nonuse; or

(c) For applications for new surface or groundwater withdrawals, or applications for water right changes or transfers of existing rights or certificates for withdrawal, the applicant shall submit appropriate application(s) for such rights, certificates or changes in rights and certificates, to the department of ecology prior to submittal of the application for site certification to the council. The application for site certification shall include report(s) of examination, identifying the water rights, or water right changes, submitted to and under review by the department of ecology, the quantities of water in gallons per minute and acre feet per year that are eligible for change, together with any limitations on use, including time of year. The report(s) of examination shall also include comments by the Washington state department of fish and wildlife with respect to the proposed water right applications under review by the department of ecology.

(d) Mitigation. The application shall contain a description of mitigation proposed for water supply, and shall include any and all mitigation required by the department of ecology

pursuant to the review of water rights or certificates, or changes to water rights or certificates required in (c) of this subsection.

2.6.1 Water Intake and Conveyance

2.6.1.1 Construction Water Use

During construction, water would be used to mix concrete for structural foundations and to suppress fugitive dust during grubbing, clearing, grading, trenching, and soil compaction. In addition, non-toxic soil binding agents may be employed to help with soil stabilization during construction. Water trucks will be used to control dust generation in all disturbed areas during road construction; foundation installation; turbine and transmission structure erection; and final cleanup, reclamation, and restoration. Fire prevention represents a minor water use; this would involve stationing a water truck at the job site to keep the ground and vegetation moist during extreme fire conditions. Construction activities are conservatively estimated to generate an average water demand of 220,000 gallons per day. The daily water demand estimate assumes that, on an average construction day, 60 acres of the Project are in active construction, requiring 10 continuous hours of water (see Section 2.15 for details regarding the construction schedule). Based upon these parameters and the anticipated schedule presented in Section 2.15, the total construction water demand for the proposed Project is estimated to be 120 million gallons.

2.6.1.2 Operational Water Use

Project operations would require water for the limited needs of the O&M facilities, and for solar panel washing. There would be no industrial wastewater stream from the Project. Wastewater discharge would come from the O&M facilities discharging to an on-site septic system. The anticipated use is expected to be less than 5,000 gallons per day for kitchen and bathroom use. In addition, solar modules would be washed once per year during operations. An estimated 2,025,000 gallons of water per year would be required for solar panel washing.

2.6.2 Water Supply and Usage Alternatives

2.6.2.1 Construction Water Supply

Construction water would be supplied by the City of Kennewick Public Works. Water conservation will be implemented to the extent practicable by use of less water-intensive methods of dust suppression, including use of soil stabilizers, tightly phasing construction activities, staging grading and other dust-creating activities, and/or compressing the entire construction schedule to reduce the time period over which dust suppression measures would be required.

2.6.2.2 Operational Water Supply

Water used during operation would be trucked to the site and stored in a water storage tank for use at the O&M facilities. A contractor such as Wing Air would be used to supply water during operations. Wing Air, which has experience working in the region on other wind and solar projects, has submitted a letter to the Applicant indicating that if they are selected to provide water during operations, they would obtain this water from the City of Kennewick (Appendix J).

Water for panel washing would be trucked to the site from a municipal or private source. Water cooling is not a part of operations for wind and solar facilities. During operations, water use would be minimized by using solar panel wash methods that reduce the required amount of water, such as robotic panel washing equipment. No new water rights or water right changes are anticipated to be required for the Project.

2.6.3 Water Rights and Authorizations

No water rights are anticipated to be needed. The Project plans to use water trucked to the site and stored in a water storage tank installed at the O&M facilities.

2.6.4 Mitigation

No mitigation is proposed or required based on identified water demand and water sources.

2.7 SYSTEM OF HEAT DISSIPATION

WAC 463-60-175: *The application shall describe both the proposed and alternative systems for heat dissipation from the proposed facilities*

Not applicable to this proposal, as the Project would not include a heat dissipation system. Heat dissipation from the Turbines and solar arrays is minimal, and air cooling would be used to cool the operating machinery.

2.8 CHARACTERISTICS OF AQUATIC DISCHARGE SYSTEMS

WAC 463-60-185:

(1) Where discharges into a watercourse are involved, the applicant shall identify outfall configurations including:

- *(a) Location(s) of water discharge pipeline or conveyance system, the outfall, and any associated dilution systems;*
- *(b) Average and maximum discharge rate;*
- *(c) Extent of the dilution zone if necessary;*
- *(d) Width of the receiving water body at the outfall location;*
- *(e) Dimension(s), and rated and maximum carrying capacity of the water discharge pipeline or conveyance system, the outfall structure and any associated dilution systems;*
- *(f) Depth and width of the receiving water body at the discharge point;*
- *(g) Average, minimum and maximum water velocity of the receiving water body at the discharge point, and the times when the maximum and minimum flows occur.*

(2) Where discharges are into a watercourse via an existing discharge system for which certification is not being sought, the applicant shall also provide the following information:

- *(a) Ownership of the discharge conveyance system;*
- *(b) A description of, and the terms and duration contained in, the use agreement that allows the applicant to use the discharge conveyance system;*
- *(c) Identification of the party responsible for operation and maintenance of the discharge conveyance system;*

(d) NPDES or state wastewater discharge permit number for the existing system discharge;

(e) Location of connection point into the existing discharge system;

(f) Diameter and rated and maximum volume capacity of the wastewater line or conveyance system into which discharge is being proposed;

(g) Existing, rated and maximum flow levels in the wastewater line or conveyance system into which the discharge is being proposed;

(h) Where a discharge is proposed to a publicly owned treatment works, in addition to the items provided in subsections (1) and (2) of this section, the applicant shall provide an engineering analysis showing that the proposed discharge will not cause the waste treatment facility to exceed capacities or to violate its authorized discharge limits, including both the quality of the discharge and the volume of the discharge, or to violate the permits governing its operation.

Not applicable to this proposal, as no discharges to waterbodies would occur as part of this Project.

2.9 WASTEWATER TREATMENT

WAC 463-60-195:

(1) The application shall describe each wastewater source associated with the facility and for each source, the applicability of all known, available, and reasonable methods of wastewater control and treatment to ensure it meets current waste discharge and water quality regulations.

(2) Where wastewater control involves collection and retention for recycling and/or resource recovery, the applicant shall show in detail the methods selected, including at least the following information:

(a) Waste source(s);

(b) Average and maximum daily amounts and composition of wastes;

(c) The type of storage vessel and the storage capacity and duration; and

(d) Any bypass or overflow facilities to the wastewater treatment system(s) or the receiving waters.

(3) Where wastewaters are discharged into receiving waters, the applicant shall provide a detailed description of the proposed treatment system(s), including:

(a) Appropriate flow diagrams and tables showing the sources of all tributary waste streams:

(b) Their average and maximum daily amounts and composition;

(c) Individual treatment units and their design criteria;

(d) Major piping (including all bypasses); and

(e) Average and maximum daily amounts and composition of effluent(s).

Not applicable to this proposal, as no wastewater would be discharged by the Project. The Project would include a septic system for the O&M facilities, which would be permitted and installed according to County requirements and standards. Solar panel wash water would not contain additives and would be allowed to infiltrate into the ground surface at and near the point of application and would not be discharged into nearby water bodies.

2.10 SPILLAGE PREVENTION AND CONTROL

WAC 463-60-205: *The application shall describe all spillage prevention and control measures to be employed regarding accidental and/or unauthorized discharges or emissions, relating such information to specific facilities, including but not limited to locations, amounts, storage duration, mode of handling, and transport. The application shall describe in general detail the content of a Construction Phase and an Operational Phase Spill Prevention, Control and Countermeasure Plan (chapter 40 C.F.R. Part 112 and Hazardous Waste Management Plan) that will be required prior to commencement of construction.*

2.10.1 Spill Prevention during Construction

During construction, small quantities of a few hazardous materials may be utilized or stored in the construction yards. Such materials may include cleaners, insecticides or herbicides, paint, or solvents. None would be present in substantial, reportable quantities[8]; the amounts present (if any) would be no greater than household quantities[9] of up to a few gallons each. When not in use, these materials would be stored in a secure location within the construction yards.

Fuels would be the only hazardous material that may be stored in substantial quantities on site during construction; the Applicant anticipates that up to 500 gallons of diesel fuel and 200 gallons of gasoline may be kept on site for fueling of construction equipment. These would both be stored in temporary above-ground tanks in the construction yard(s), within an area that provides for secondary containment. In addition, if backfeed power is not available during Turbine commissioning, up to three diesel-powered generators may be required (see Section 2.3.1). Each generator can hold up to 1,250 gallons of fuel in a tank within a secondary containment system. Supplementing the generator tanks, a 3,000-gallon diesel fuel tank with its own secondary containment system may be on-site during Turbine commissioning (approximately 19 weeks total) to minimize the need for refueling deliveries. Most fuel would be delivered to the construction yard by a licensed specialized tanker vehicle on an as-needed basis. There would be no substantial quantities of lubricating oils, hydraulic fluid for construction equipment, or other hazardous materials maintained on-site during construction. Lubricating oil or hydraulic fluids for construction equipment would similarly be brought in on an as-needed basis for equipment maintenance by a licensed contractor using a specialized vehicle, and waste oils removed by the same maintenance contractor. Hydraulic oils for the Turbines and dielectric oils for the transformers would similarly arrive on an as-needed basis and be transferred into the receiving components; none would be stored on site.

Hazardous materials would be used in a manner that is protective of human health and the environment and would comply with all applicable local, state, and federal environmental laws and regulations. Due to the potential quantities of hazardous materials that may be present

[8] "Reportable quantity" refers to the amount of hazardous substance that has to be released into the environment before the EPA requires notification of the release to the National Response Center pursuant to the Comprehensive Environmental Release, Compensation, and Liability Act, also known as Superfund. These numerical designations are listed under 49 CFR 172.101 Appendix A, Table 1 and Table 2.

[9] "Household quantity" refers to container sizes designed for consumer use, which are sized such that each container would hold less than a reportable quantity of any constituent hazardous chemical. Values would be, on average, 2 to 3 gallons.

during construction, the construction contractor will be required to develop an SPCC Plan prior to beginning construction of the Project. Accidental releases of hazardous materials would be prevented or minimized through proper containment of these substances during use and transportation to the Project site, and observance of appropriate handling procedures during transfer from the delivery vehicle to the equipment being filled.

Equipment oil-filling, fueling, or maintenance activities would take place a substantial distance from waterways or wetlands to prevent water quality impacts in the event of an accidental release. Any oily waste, rags, or dirty or hazardous solid waste would be collected in sealable drums at the construction yards, to be removed for recycling or disposal by a licensed contractor.

In the unlikely event of an accidental hazardous materials release, any spill or release would be cleaned up and the contaminated soil or other materials disposed of and treated according to applicable regulations. Spill kits containing items such as absorbent pads would be located on equipment and in on-site temporary storage facilities to respond to accidental spills, if any were to occur. Employees handling hazardous materials would be instructed in the proper handling and storage of these materials, as well as to the locations of spill kits.

The following list provides a summary of typical measures that would be implemented during Project construction to ensure safe handling, transport, use, and disposal of hazardous materials:

- The general contractor will be responsible for preparing an SPCC Plan prior to the start of construction and maintaining the program through the duration of construction activities. The SPCC Plan will be revised for the operational period of the Project.

Preventative Procedures to Avoid Spills

- Chemical Storage: All hazardous chemicals would be stored in a manner that provides secondary containment. This would be accomplished via double-wall containers, lined ground storage sites including dikes and berms, or other vessels. Chemical storage areas would be located at least 100 feet from the edge of perennial and intermittent streams and wetlands.
- Chemical Transfer: When space provides, hazardous chemical transfer would occur within the secondary containment. In the event this is not possible, sorbent pads or materials would be strategically placed at the transfer point to capture any possible leak. Transfer of materials from large to small containers would be performed using appropriate equipment, including pumps, hoses, and safety equipment; hand pouring techniques would not be utilized.
- Transportation: Procedures for loading and transporting fuels and other hazardous materials would meet the minimum requirements established by the U.S. Department of Transportation (USDOT) and WSDOT and other pertinent regulations. At all times, all hazardous materials used for the Project would be properly stored in approved USDOT containers and labeled, including during transportation. Smaller containers would be used on site to transport needed amounts of hazardous materials to a specific location.

- Fueling and Servicing: Construction vehicles (trucks, bulldozers, etc.) and equipment (pumps, generators, etc.) would be fueled and serviced in designated areas at least 300 feet from flowing streams wetlands and other water bodies (e.g., lakes ponds, reservoirs). Refueling locations should be flat to minimize the chance of a spilled substance reaching a stream. Fuel/service vehicles would carry a suitable absorbent material to collect approximately 20 gallons of spilled materials.
- Training and Education: All site personnel would be informed of the various hazardous chemicals stored on site. Training and education would include information on the proper handling, use, storage, and cleanup of hazardous chemicals found on site.

Clean-up Procedures

- In the event of a leak or spill of a hazardous substance, the Chemical Safety Supervisor is to be immediately notified. He/she would be notified immediately following emergency mitigation / containment activities.
- All spills exceeding established U.S. Environmental Protection Agency (EPA) reportable quantities will be reported to both the Washington State Emergency Response Commission and to the National Response Center. EPA reportable quantities can be found in 40 Code of Federal Regulations (CFR) 302.2, Designation, Reportable Quantities and Notification. Links to the reporting requirements can be found at https://www.epa.gov/sites/production/files/2015-03/documents/list_of_lists.pdf.
- Sorbent pads would be stocked on site to mitigate spills and leaks. In the event that a piece of equipment cannot be moved or immediately taken out of service, sorbent pads would be used to collect fluids and prevent the pollution of surrounding soil. This operation, should it arise, would be personally monitored by the project Superintendent and project Safety Coordinator.
- Soil cleanup would occur using designated and appropriately labeled barrels to contain any excavated contaminated soil. Cleanup would include a significant margin to ensure that all contaminants have been removed from the area.
- Equipment that is found to be the source of any leak or spill would be repaired immediately if possible. If immediate repair is not possible, the spill or leak would be contained and controlled using any approved and necessary means. Leaking equipment once removed from service would not be allowed to return to service until repairs have been made and demonstrated.

Storage Procedures

- Storage and containment of all chemicals and combustibles on site would be accomplished in compliance with all local, state, and federal regulations. All chemicals and combustibles would be stored in properly labeled and approved containers.
- Flammable storage cabinets would be obtained as necessary. Flammable and combustible liquids would be stored 25 feet from other construction operations. Material Safety Data Sheets for all materials on site would be available in the project Superintendent's office.

- Paint used on site would be stored per local, state, federal, and manufacturer requirements.
- Fuel tanks would be designed with double containment system protection.
- Portable gas cans shall be stored in designated areas that are protected with a secondary containment to avoid leakage or spillage onto the soil. A standard cattle trough is a good example of a secondary containment protection that can be easily installed.
- Compressed gas cylinders would be secured when in use and when stored would require a minimum 20-foot separation between oxygen and acetylene cylinders.

Spill Reporting Procedures

- In the event of a spill involving a hazardous material the cleanup procedures noted above will be followed, and reporting will follow guidance provided by EPA and Ecology:
  1. Consult the reporting limits for the specific material spilled by reviewing the EPA Office of Chemical Emergency Preparedness Document 550-B-01-003, available online at: www.epa.gov/ceppo/pubs/title3.pdf. In the event the spill meets the reporting limits as established by EPA Document 550-B-01-003, follow the prescribed reporting procedure by calling the National Response Center at 1-800-424-8802.
  2. Consult the reporting requirements for Washington located at https://ecology.wa.gov/Regulations-Permits/Reporting-requirements/Emergency-Planning-Community-Right-to-Know-Act, and follow the prescribed reporting procedure.

2.10.2 Spill Prevention during Operation

During operations, there would be no substantial quantities of fuels, oils, or chemicals on site, except as contained in qualified oil-filled equipment, including the Turbine gearboxes, substation transformers, and inverter station transformers within the solar array, and the sulfuric acid contained in the lead-acid batteries. Lubricating oil (5 gallons per Turbine per year) would be brought in as needed for periodic oil changes in the Turbine gearboxes by a maintenance contractor using a specialized vehicle, and waste oils would be removed in the same way. Small quantities of gear oil would likely be maintained on site for occasional top-offs; it is anticipated that less than 10 gallons would be stored in the O&M facilities at any given time. A full gear oil change would be done as needed by a specialized contractor and used oils would be removed for recycling. Small quantities (2 to 3 gallons) of pesticides or herbicides, paint, solvents, or cleaners may also be kept on site; when not in use, these would be stored in the O&M facilities. Given the nature of the materials, no secondary containment systems are planned for the O&M facilities for these materials. However, sorbent materials would be maintained on site to capture any small spills that may occur.

Chemical storage would include up to two lead-acid batteries in the control room within the O&M facilities. In addition, up to sixty 300 amp-hour lead-acid batteries in sealed containers would be held in a wall rack located inside both the northern and southern substation power control buildings, for a total of up to 120 lead-acid batteries. These batteries would be used as the main source of station service to operate all substation equipment. Each battery contains sulfuric acid within its maintenance-free sealed leakproof exterior. The final number and size of batteries would be determined during final design. Sulfuric acid is considered an extremely hazardous material by the EPA under 40 CFR §355. As required by regulation, secondary containment would be employed, and the Applicant will include sulfuric acid as part of its annual Emergency Planning and Community Right-to-Know Act report to local emergency responders. The batteries would be replaced at least every 5 years, if not earlier, as indicated by uninterruptible power system controls. Replacement of batteries would be handled by a qualified contractor and adhere to applicable regulations for transport and disposal, including but not limited to 49 CFR §173.159.

Secondary containment is optional for the transformers and for the Turbine gearboxes, as these are classified as qualified oil-filled operational equipment under the EPA's Amended Spill Prevention, Control, and Countermeasure Rule issued in 2006 (EPA-550-F-06-008). Per this amended rule, instead of providing secondary containment for qualified oil-filled operational equipment, an owner or operator may prepare an oil spill contingency plan and a written commitment of manpower, equipment, and materials to quickly control and remove discharged oil; the plan must include an inspection or monitoring program for the equipment to detect a failure and/or discharge. Alternatively, the transformers may be installed on foundations that provide secondary containment, or sorbent materials may be kept on-hand to capture minor leaks. The Applicant plans to install secondary containment for the substation transformers, and the specific design will be determined prior to construction of the substations. The nacelles and Turbine foundation will effectively function as secondary containment for the Turbine gearboxes, such that no additional secondary containment systems are needed for the Turbines.

The BESS may include hazardous substances within internal battery components; however, batteries are considered non-hazardous equipment when used according to the recommendations of the manufacturer and as long as their integrity is maintained (not damaged and internal seal is intact). Lithium-ion batteries can present a flammability hazard and require cooling systems to prevent overheating. The BESS would have integrated safety systems that monitor battery performance to detect malfunctions and implement response measures (such as notifying operators, depowering the system, or deploying fire suppression devices). Batteries would be housed in leak-proof containers to prevent inadvertent releases of hazardous materials. O&M staff would conduct periodic inspections of the battery cells for damage.

For the replacement of batteries during operation, the Applicant would follow the handling guidelines of 49 CFR 173.185 – Department of Transportation Pipeline and Hazardous Material Administration related to the shipment of lithium-ion batteries. The regulations include requirements for prevention of a dangerous evolution of heat, prevention of short circuits, and prevention of damage to the terminals. They also require that no battery come into contact with other batteries or conductive materials. Licensed third-party battery suppliers would be responsible for transporting batteries to and from the Project in accordance with applicable regulations.

Adherence to the requirements and regulations (including personnel training, safe interim storage, and segregation from other potential waste streams) will minimize safety hazards related to transport, use, or disposal of batteries.

Hazardous materials would be used in a manner that is protective of human health and the environment, and will comply with all applicable local, state, and federal environmental laws and regulations. The transformers in the substation yard would have polychlorinated biphenyl–free insulating oil inside the units, which have their own oil containment systems; at no time would oil be able to discharge from the proposed oil containment system. However, due to the quantity of oil in the transformers, the Applicant would maintain an SPCC Plan for the substation operations.

General Detail of Spill Prevention, Control, and Countermeasure Plan

A SPCC Plan is required by the State of Washington Site Certification Agreement and by state and federal requirements. Under an SPCC Plan for both construction and operation, the Applicant would have the overall responsibility to ensure the Project's compliance with state and federal environmental regulations, and compliance with environmental commitments made to EFSEC. All contractor and subcontractor personnel working on the Project would be responsible for implementation of the measures and procedures defined in the SPCC Plan. The Construction contractor would oversee field activities; coordinate resolution of deviations from the BMPs, commitments and regulations identified in the SPCC Plan; and identify any process changes that could require revision to the environmental procedures.

An SPCC Plan outlines preventive measures and practices to reduce the likelihood of an accidental release of a hazardous or regulated liquid and, in the event such a release occurs, to expedite the response to and remediation of the release. The SPCC Plan restricts the location of fuel storage, fueling activities, and construction equipment within the Project area and provides procedures for these activities. Training and lines of communication to facilitate the prevention, response, containment, and cleanup of spills during construction activities are also described. Additionally, the plan identifies the roles and responsibilities of key Applicant personnel and contractors (i.e., primary and subcontractors) who would be involved in construction of the Project. The SPCC Plan would be included in construction bid and contract documents as contractual requirements to the contractor and would be submitted for approval by EFSEC prior to construction.

2.11 SURFACE-WATER RUNOFF

> ***WAC 463-60-215:*** *The application shall describe how surface-water runoff and erosion are to be controlled during construction and operation to assure compliance with state water quality standards. The application shall describe in general detail the content of the construction and operational stormwater pollution prevention plans that will be prepared prior to commencement of construction and/or operation of the facility.*

The discharge of stormwater runoff from the Project would be regulated by EFSEC based on Ecology's stormwater pollution control program. This program is based on federal regulations adopted to implement Section 402(p) of the Federal Clean Water Act and Chapter 90.48 RCW, the state of Washington's Water Pollution Control Act. The goal of the stormwater program is to reduce or eliminate stormwater pollution from municipal and industrial point sources, by requiring the implementation of a technology-based SWPPP and to eliminate violations of surface water quality standards caused by stormwater.

To control erosion and surface-water runoff during construction and operations, the Applicant will obtain a Construction Stormwater General Permit. The permit application will include an ESCP. In addition, a SWPPP meeting the conditions of the Stormwater General Permit for Construction Activities would also be prepared and implemented prior to construction.

The Applicant would design and implement stormwater drainage systems in consultation with a professional engineer to ensure that minimal erosion would occur. BMPs and temporary erosion control measures would be identified in accordance with the Ecology Stormwater Management Manual for Eastern Washington (Ecology 2019), including, but not limited to, structural measures such as the installation of silt fences, straw bale barriers, and sediment ponds, and nonstructural measures including good design, routine inspection and maintenance, and employment and enforcement of BMPs.

During operations, erosion potential would not differ greatly from current conditions. The Applicant would monitor the site for erosion on a regular schedule and after large rainfall or snowmelt events, and would take corrective action as necessary. Further, all Project facilities would be designed, operated, and maintained to minimize erosion potential; and permanent stormwater BMPs would be installed to control runoff and would be maintained for the life of the Project.

The Applicant would use the Ecology SWPPP template recommended structure and content for preparation of a Construction Stormwater General Permit SWPPP. Section 1 of the SWPPP will include Project information, existing conditions, proposed construction activities, and BMPs.

Section 2 of the SWPPP will include documenting the required 13 Elements describing:

- Element 1: Preserve Vegetation/Mark Clearing Limits (the methods used to protect areas that should not be disturbed).
- Element 2: Establish Construction Access (description of how dust generation and vehicles tracking sediment off-site will be minimized).
- Element 3: Control Flow Rates (how properties and waterways downstream from the Project will be protected from increased speed and volume of stormwater discharges due to construction activities).
- Element 4: Install Sediment Controls (how sediment discharges will be controlled from the site).
- Element 5: Stabilize Soils (how exposed and unworked soils will be stabilized throughout the life of the Project).
- Element 6: Protect Slopes (how slopes will be designed, constructed, and protected to minimize erosion).

- Element 7: Protect Drain Inlets (how all operable storm drain inlets are protected from stormwater runoff).
- Element 8: Stabilize Channels and Outlets (how downstream erosion where site runoff is to be conveyed in channels, discharged to a stream or, discharged to a natural drainage point will be prevented).
- Element 9: Control Pollutants (how all pollutants will be handled and disposed of as to not cause contamination in stormwater, including covering, containing, and protecting from vandalism all chemicals, liquid products, petroleum products, etc., and how known contaminates will be managed).
- Element 10: Control Dewatering (description of where dewatering will occur, including source of the water to be removed and whether it is contaminated or has the potential to be contaminated and how dewatering water will be managed to prevent discharge of contaminates to the waters of the State).
- Element 11: Maintain BMPs (this is a list of permit requirements).
- Element 12: Manage the Project (discussion of how the project should be managed, including phases, seasonal limitations, inspection and monitoring, and how the SWPPP will be maintained and updated).
- Element 13: Protect Low Impact Development BMPs (protection of all Bioretention and Rain Garden facilities from sedimentation through installation of BMPs; however, this element will not apply to this Project).

Section 3 of the SWPPP will provide the pollution prevention team information including the person's name, title, and phone number. Section 4 will include monitoring and sampling requirements including site inspection, stormwater quality sampling. Section 5 requires identification of 303(d) or Total Maximum Daily Load (TMDL) waterbodies and whether discharges will occur to these features, and whether or not the applicable effluent limitations and waste loads will be met along with BMPs. Section 6 will include record-keeping protocols including site log book, records retention, when the SWPPP should be updated, discharge monitoring reports and notification of noncompliance. The SWPPP will include in the appendices a site map, BMP details, correspondence with agencies and local government, site inspection forms, the Construction Stormwater General Permit, the list of 303(d) and TMDL waterbodies, contaminated site information, and any engineering calculations.

2.12 EMISSION CONTROL

WAC 463-60-225:

(1) The application shall describe and quantify all construction and operational air emissions subject to regulation by local, state or federal agencies.

(2) The application shall identify all construction and operational air emissions that are exempt from local, state and federal regulation, and the regulatory basis for the exemption.

(3) The applicant shall demonstrate that the highest and best practicable treatment for control of emissions will be utilized in facility construction and operation.

(4) The application shall identify all state and federal air emission permits that would be required after approval of the site certification agreement by the governor, and the timeline for submittal of the appropriate applications for such permits.

(5) In the case of fossil-fuel fired energy plants, the application shall describe and quantify all emissions of greenhouse gases.

(6) In the case of a nuclear-fueled plant, the applicant shall address optional plant designs as these may relate to gaseous emissions.

Air quality impacts from construction of the Project would be temporary, and would be consist primarily of vehicle emissions and fugitive dust emissions. Vehicle emissions during construction are expected to be those typically associated with internal combustion engines (e.g., carbon dioxide, nitrogen oxides, sulfur oxides, carbon monoxide, and particulate matter). All Project vehicles and equipment would comply with applicable state and federal emissions standards, and BMPs would be implemented to control dust during construction including the use of a dust control agent (e.g., wetting down roadbeds) and controlling construction vehicle speeds.

No air emissions would be generated from operation of the Project, as the operation of the Turbines, solar array, and BESS would not involve the combustion of any fuels.

WAC 463-78 and 173-400 establish the requirements for review and issuance of construction approvals for new sources of air emissions under EFSEC jurisdiction. A notice of construction would not be required for the Project because there would be no permanent source of regulated air emissions. In addition, a Prevention of Significant Deterioration (PSD) permit would not be required because the Project would not produce criteria pollutants. No state or federal air emissions permits would be required for the Project. The Project is not a fossil fuel–fired energy plant or a nuclear-fueled plant, and therefore subparts (5) and (6) do not apply.

Section 3.2 contains additional information regarding air quality and applicable regulatory requirements during construction and operation of the Project.

2.13 CARBON DIOXIDE MITIGATION

WAC 463-60-230: *For thermal electric energy facilities, the application shall include a carbon dioxide mitigation plan and information required by chapter 463-80 WAC.*

Not applicable to this proposal, as the Project is not a thermal electric energy facility.

2.14 GREENHOUSE GASES EMISSIONS PERFORMANCE STANDARDS

WAC 463-60-232: *For baseload electric generating facilities, the application shall provide information required by, and describe how the requirements of chapter 463-85 WAC will be met.*

Not applicable to this proposal, as the Project is not a greenhouse gas emitting baseload electric generating facility.

2.15 CONSTRUCTION AND OPERATION ACTIVITIES

> ***WAC 463-60-235:*** *The application shall: Provide the proposed construction schedule, identify the major milestones, and describe activity levels versus time in terms of craft and noncraft employment; and describe the proposed operational employment levels.*

The Project would likely be built using a "phased approach" with distinct, fully functional portions of the Project potentially being built and implemented in a staggered manner. Table 2.15-1 provides a general description of a potential phased construction approach that could be followed to achieve the targeted nameplate energy generating capacity of up to 1,150 MW. More information regarding the construction schedule and construction workforce estimates of the example phased approach is provided in Section 2.15 of this ASC.

The Applicant will seek all permits and approvals for the Project and anticipates that the Site Certification Agreement and other permits and approvals will apply to all construction, operation, and retirement/decommissioning activities. It is possible that the Applicant may transfer or sell all or portions of the Project to another development company or other entity. Such transfers are common when a renewable energy developer sells power to more than a single utility or responds to other commercial objectives that result in more than a single entity with operational control. In the event of a future transfer or sale of all or a portion of the Project, the Applicant will work with the Council to ensure that all conditions of approval are fully allocated and enforceable on each entity owning or controlling all or a portion of the Project. The Site Certification Agreement should anticipate this possibility, with the Applicant responsible for allocating applicable conditions and providing necessary assurances to EFSEC.

Although a phased construction approach may be used, the resource impact analysis found in this ASC describes construction and operation of the entire Project as a whole (once all phases are completed) to provide a complete disclosure of the maximum potential Project layout and associated impacts.

For socioeconomic and transportation impact analyses, the construction schedule, including phasing of specific elements of the project, can alter the details of the analysis. In order to depict the range of potential impacts to these resources, an example of a likely phasing scenario is provided. The example provided in Table 2.15-1 and Section 2.15 of this ASC is for illustrative purposes only and does not represent all possible phasing approaches that may be considered. This phased approach example was developed to describe the range of possible impacts that could occur as a result of the Project's phased construction approach.

Table 2.15-1. Potential Project Construction Phasing Components

Project Components	Phases		
	Phase 1	Phase 2 (Alternative A)	Phase 2 (Alternative B)
Energy Generation	650 MW, with 350 MW generated via wind (consisting of 58-124 Turbines, depending on the Turbine size selected; see Table 2.3-1), plus 300 MWac generated via solar (consisting of the eastern solar siting area)	500 MW, with 250 MW generated via wind (consisting of up to 89 Turbines, depending on the Turbine size selected; see Table 2.3-1), plus 250 MWac generated via solar (consisting of the western solar siting area adjoining the BPA Webber Canyon substation[1/])	500 MW generated via wind (consisting of up to 177 Turbines, depending on the Turbine size selected; see Table 2.3-1)
Battery Energy Storage System (BESS)	150 MW BESS (600 MW-hr) located at the eastern Project substation	150 MW BESS (600 MW-hr) located at the BPA Webber Canyon primary or alternate (north) substation	
BPA Point of Interconnection (POI) Location	Bofer Canyon substation	Webber Canyon primary or alternate (north) substation location[1/]	Webber Canyon primary or alternate (north) substation location[1/]
Project Substations	HH-East Project substation	HH-West[2/] Project Intermediate Substation, collects and steps up to 230 kV *and* HH-West Step-Up Project Substation (adjacent to BPA Webber Canyon substation[1/], steps up to 500 kV *and (optional)* Solar Substation, collects and steps up to 230 kV if western solar array is not co-located with HH-West Step-Up Project Substation	HH-West[2/] Project Intermediate Substation, collects and steps up to 230 kV
O&M Facilities	One O&M facility located directly adjacent to the HH-East Project substation	One O&M facility located directly adjacent to the HH-West Intermediate Project substation[2/]	One O&M facility located directly adjacent to the HH-West Intermediate Project substation[2/]

Project Components	Phases		
	Phase 1	Phase 2 (Alternative A)	Phase 2 (Alternative B)
Transmission	Up to 500 feet of 230-kV transmission line would be built during Phase 1. HH-East Project substation would be sited adjacent to BPA Bofer Canyon substation	Up to 10.2 miles of 230-kV gen-tie from the HH-West Intermediate Substation[2/] to the BPA Webber Canyon substation[1/] *and (optional)* Solar Intertie, connects solar array to HH-West Step-Up Substation if not co-located	Up to 19.4 miles of 230-kV intertie between the HH-East substation and HH-West substation[2/]
Transportation	I-82 to Coffin Road and Bofer Canyon Road; I-82 to Hwy 397 to Nine Canyon Road and S. Finley Road, to Kirk Road and Beck Road and local farm roads and new project access roads	I-82 to Wine Country Rd, Frontier Road, Hwy 221, County Well Road, Sellards Road, Webber Canyon Road, Badger Canyon Road for substation and solar components. For wind components, I-82 to Locust Grove Road to Nicosen Road, Plymouth Road, Sellards Road, local farm roads, and new Project access roads.	I-82 to Wine Country Rd, Frontier Road, Hwy 221, County Well Road, Sellards Road, Webber Canyon Road, Badger Canyon Road for substation and solar components. For wind components, I-82 to Locust Grove Road to Nicosen Road, Plymouth Road, Sellards Road, local farm roads, and new Project access roads.

Notes:

1/ BPA has not yet finalized its selection of the Webber Canyon substation location. Two potential locations are shown in this ASC, with corresponding potential transmission line options. The southern location, located on Sellards Road, is identified for purposes of this ASC as the "primary location" while the northern location, located on County Well Road, is identified as the "north alternative location." Impact analysis for most resources (except socioeconomics and transportation) conservatively assumes that both substations would be constructed, although only one will be selected.

2/ The Horse Heaven West Intermediate Project substation location will be determined based on the final location selected for BPA's substation and other factors regarding final facility infrastructure. Both potential Intermediate Project substation locations are shown on maps and disturbance impacts are conservatively analyzed as if both would be constructed, although only one location will be selected.

2.15.1 Construction Activities

The construction of the Project would be performed in several stages and would include the following main elements and activities:

- Grading the field construction office area (also used for O&M facilities);
- Constructing site roads, turn-around areas, and crane pads;
- Constructing the Turbine tower foundations and transformer pads;
- Constructing the foundations and installing the posts and tracking system for the solar array;
- Installing the electrical collection system – underground and some overhead lines;
- Assembling and erecting the Turbines;
- Assembling the solar arrays;

- Assembling the BESS;
- Erecting the security fence around the solar arrays, substations, and O&M facilities;
- Constructing and installing the substation; and
- Plant commissioning and energization.

The Applicant intends to enter into two primary agreements for the construction of the Project: (1) an agreement for the supply, erection and commissioning of the Turbines, and (2) an EPC contract for the construction of the balance of the Project, which includes all other Project facilities and infrastructure such as the roads, electrical collection system, substation, O&M facility, etc. The Turbine supplier and the EPC Contractor would be selected during the EFSEC ASC review process.

The construction schedules discussed below are based on obtaining a site certificate from EFSEC by or before October 1, 2022.

2.15.1.1 Construction Schedule and Milestones

Tables 2.15-2 through 2.15-4 present the proposed construction schedule for the proposed construction phases by task. The tables also provide the number of estimated on-site workers by task as a measure of activity levels. The employment estimates are monthly averages for the duration of each task and are presented as full month totals.

Assuming the Governor's approval of the Site Certification Agreement in December 2021, the Applicant anticipates beginning construction of the first phase of the Project in January 2023 and commercial operation by the end of 2023. A second phase of the Project would begin construction in January 2024 and begin operation by the end of 2024. The construction schedule would be revised according to the actual approval of the Site Certification Agreement and implementation of commercial agreements for power purchase, and a copy provided to EFSEC at least sixty (60) days prior to the start of construction.

The Applicant has not yet formalized any arrangements regarding use of organized labor and no formal commitments have been made.[10] However, the following on-site workforce estimates assume that the Project would be built under a community workforce or project labor agreement that would include the use of apprentices for 15 percent of the labor hours. Initial workforce estimates developed by the Applicant were increased by 15 percent to account for apprentices.

For the purposes of analysis, Phase 1 is assumed to consist of 650 MW of generation capacity, with 350 MW generated via wind and 300 MWac (megawatts output as alternating current) generated via solar. Construction is estimated to take place over an 11-month period with commercial operation beginning at the end of November (Table 2.15-2). On-site activities

[10] The Applicant intends to engage relevant organized labor when the Project is closer to construction. Any formal arrangement cannot be made until a Balance of Plant contractor has been selected to build the project. Various Balance of Plant contractors have pre-existing relationships with organized labor, so there is not a one-size-fits-all approach that could be committed to today. However, the Applicant is anticipating utilizing organized labor and this is reflected in the workforce estimates presented in this section. The Applicant reserves the right to not utilize organized labor.

would employ an average of 300 workers over the 11-month construction period. Viewed by month, on-site employment would range from a low of 26 workers in November to 467 workers in May and June (Figure 2.15-1).

Table 2.15-2. Proposed Phase 1 Construction Schedule

Task[1/]	Start	Finish	Average On-Site Workforce[2/]
Final Engineering and Design[3/]	6/1/2022	12/1/2022	5
Pre-Construction Survey and Compliance Requirements[3/]	6/1/2022	12/1/2022	5
Road Construction	1/13/2023	5/3/2023	35
Wind Turbine Foundations	1/27/2023	4/26/2023	144
Wind Turbine Assembly	5/4/2023	8/21/2023	173
Wind Plant Commissioning[4/]	7/31/2023	10/30/2023	23
Solar Array Construction	1/1/2023	10/31/2023	70
Electrical System Installation	2/15/2023	9/1/2023	96
Battery Energy Storage System	5/4/2023	9/1/2023	31
Solar Plant Commissioning	9/1/2023	11/30/2023	26
Electrical System and Substation	2/15/2023	7/28/2023	58
O&M Building	3/17/2023	6/28/2023	40
Phase 1 Final Commercial Operation Date	**11/30/2023**	-	-

Notes:
1/ Phase 1 is assumed to consist of 650 MW of generation capacity, with 350 MW generated via wind and 300 MWac generated via solar. Additional details are provided in Table 2.15-1.
2/ Employment estimates are monthly averages for the duration of each task and are presented as full month totals.
3/ Final Engineering and Design jobs would not be on-site and are included for information only. Jobs related to Pre-Construction Survey and Compliance Requirements would occur prior to Site Certification and are also included for information purposes only.
4/ When the wind plant reaches substantial completion, it could start operation prior to the solar plant being complete.

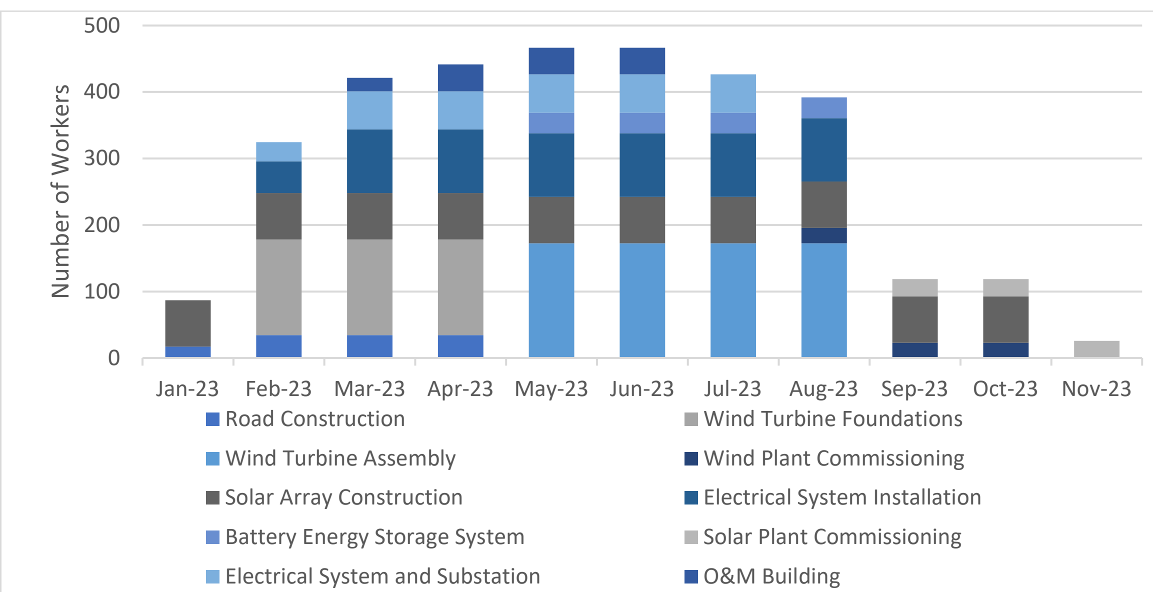

Figure 2.15-1. Estimated Phase 1 Construction Employment by Month and Task

Two Phase 2 alternatives have been identified for the purposes of analysis. Both Phase 2 alternatives consist of 500 MW of generation capacity (Table 2.15-1). Phase 2a consists of 250 MW generated via wind and 250 MWac generated via solar. Construction for Phase 2a is assumed to take place over an 11-month construction period with commercial operation beginning at the end of November 2024 (Table 2.15-3). An estimated average of 267 workers per month would be employed over the 11-month construction period, with estimated monthly employment ranging from 22 jobs in November to a peak of 430 jobs in May and June (Figure 2.15-2).

Table 2.15-3. Proposed Phase 2a Construction Schedule

Task[1/]	Start	Finish	Average On-Site Workforce[2/]
Final Engineering and Design[3/]	6/1/2023	12/1/2023	5
Pre-Construction Survey and Compliance Requirements[3/]	6/1/2023	12/1/2023	5
Road Construction	1/13/2024	5/3/2024	29
Wind Turbine Foundations	1/27/2024	4/26/2024	101
Wind Turbine Assembly	5/4/2024	8/21/2024	124
Wind Plant Commissioning	7/31/2024	10/30/2024	17
Solar Array Construction	1/1/2024	10/31/2024	58
Electrical System Installation	2/15/2024	9/1/2024	80
Battery Energy Storage System	5/4/2024	9/1/2024	31
Solar Plant Commissioning	9/1/2024	11/30/2024	22
Electrical System and Substation	2/15/2024	7/28/2024	81
O&M Facilities	3/17/2024	6/28/2024	40
Transmission Line Construction	1/1/2024	8/1/2024	17
Phase 2a Final Commercial Operation Date	**11/30/2024**	**-**	**-**

Notes:

1/ Phase 2a is assumed to consist of 500 MW of generation capacity, with 250 MW generated via wind and 250 MWac generated via solar. Additional details are provided in Table 2.15-1.

2/ Employment estimates are monthly averages for the duration of each task and are presented as full month totals.

3/ Final Engineering and Design jobs would not be on-site and are included for information only. Jobs related to Pre-Construction Survey and Compliance Requirements would occur prior to Site Certification and are also included for information purposes only.

4/ When the wind plant reaches substantial completion, it could start operation prior to the solar plant being complete.

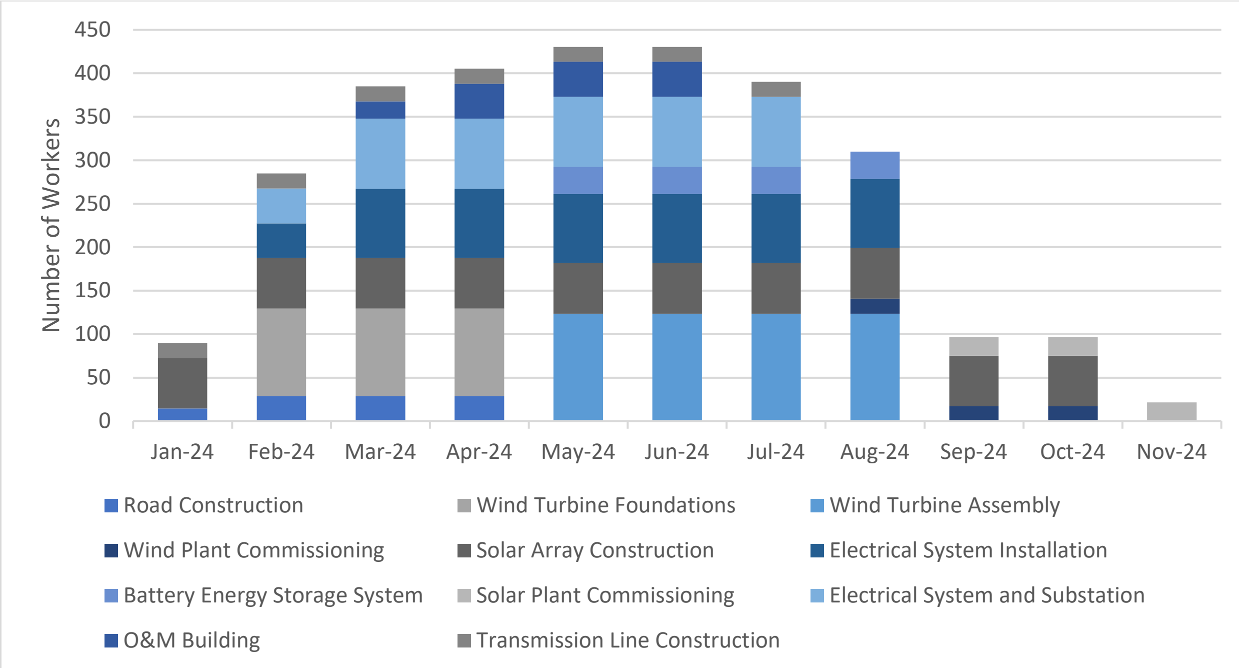

Figure 2.15-2. Estimated Phase 2a Construction Employment by Month and Task

Phase 2b consists of 500 MW generated via wind. The construction period for Phase 2b is assumed to be slightly shorter than for Phase 2a, 10 months rather than 11 months, with commercial operation assumed to begin at the end of October (Table 2.15-4). An average of 271 workers per month would be employed over the 10-month construction period, with estimated monthly employment ranging from 35 jobs in September and October to a peak of 412 jobs in April (Figure 2.15-3).

Table 2.15-4. Proposed Phase 2b Construction Schedule

Task[1/]	Start	Finish	Average On-Site Workforce[2/]
Final Engineering and Design[3/]	6/1/2023	12/1/2023	5
Pre-Construction Survey and Compliance Requirements[3/]	6/1/2023	12/1/2023	5
Road Construction	1/13/2024	5/3/2024	58
Wind Turbine Foundations	1/27/2024	4/26/2024	201
Electrical System and Substation	2/15/2024	7/28/2024	81
Wind Turbine Assembly	5/4/2024	8/21/2024	247
O&M Facilities	3/17/2024	6/28/2024	40
Transmission Line Construction	1/1/2024	8/1/2024	33
Plant Commissioning	7/31/2024	10/30/2024	35
Phase 2b Final Commercial Operation Date	**10/30/2024**	**-**	**-**

Notes:
1/ Phase 2b is assumed to consist of 500 MW of wind generation capacity. Additional details are provided in Table 2.15-1.
2/ Employment estimates are monthly averages for the duration of each task and are presented as full month totals.
3/ Final Engineering and Design jobs would not be on-site and are included for information only. Jobs related to Pre-Construction Survey and Compliance Requirements would occur prior to Site Certification and are also included for information purposes only.
4/ When the wind plant reaches substantial completion, it could start operation prior to the solar plant being complete.

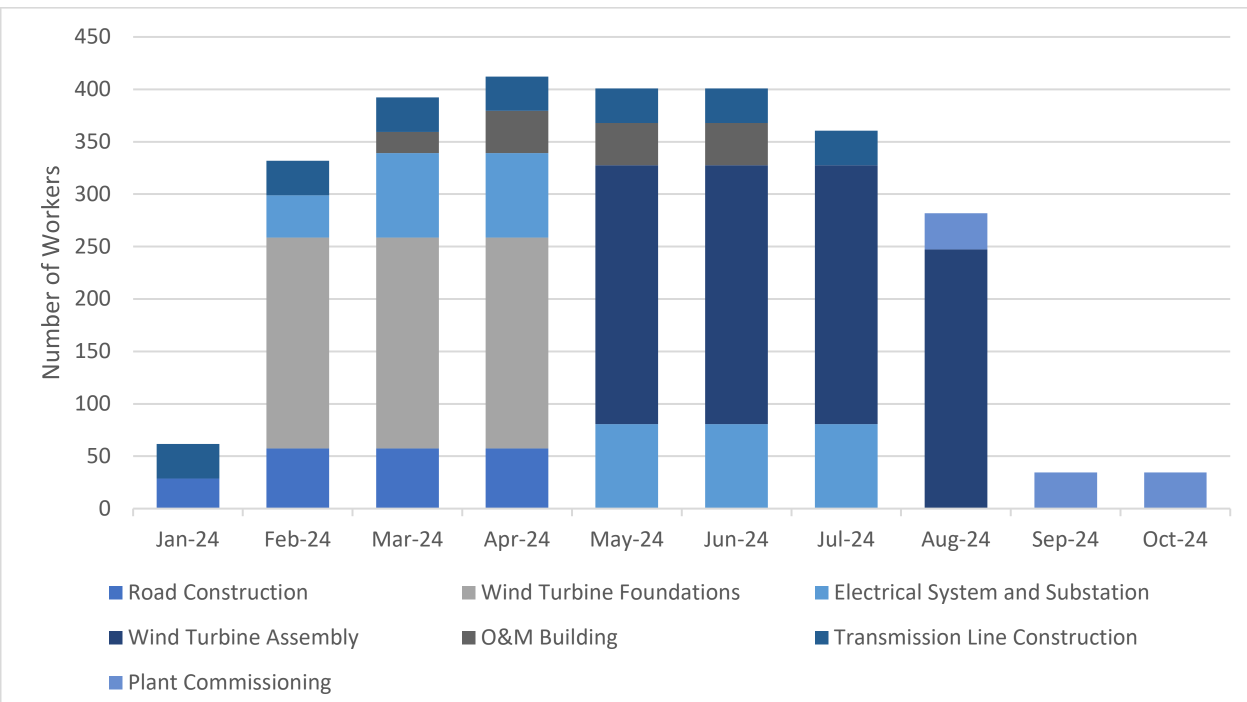

Figure 2.15-3. Estimated Phase 2b Construction Employment by Month and Task

2.15.1.1 Construction Workforce

Tables 2.15-5 through 2.15-7 show the distribution of average on-site workforce per month by type of employment for each task. Viewed in terms of total months of employment, Project Management and Engineers would account for 3 to 4 percent of total employment for all three potential phases (Phases 1, 2a, and 2b), with Field Technical Staff accounting for 9 to 11 percent. The remaining employment would be made up of Skilled Labor and Equipment Operators and Unskilled Labor with the relative distribution between these categories varying by task. Workers in the Skilled Labor and Equipment Operators category, for example, would account for the majority of employment during Wind Turbine Assembly, while the majority of the workforce installing Turbine Foundations would fall under the Unskilled Labor category. Apprentice employment is assumed to be equivalent to 15 percent of total employment in the other on-site workforce types (Tables 2.15-5 through 2.15-7).

Table 2.15-5. Proposed Phase 1 Construction Employment by Task and Workforce Type

Task	Average On-Site Workforce per Month[1/]					
	Project Manage-ment and Engineers	Field Technical Staff	Skilled Labor and Equipment Operators	Unskilled Labor	Apprentice[2/]	Total
Final Engineering and Design	5	0	0	0	0	5
Pre-Construction Survey and Compliance Requirements	1	4	0	0	0	5
Road Construction	2	1	15	12	5	35
Wind Turbine Foundations	2	5	30	88	19	144
Wind Turbine Assembly	2	10	118	20	23	173
Wind Plant Commissioning	1	19	0	0	3	23
Solar Array Construction	3	4	14	40	9	70
Electrical System Installation	2	5	19	56	12	96
Battery Energy Storage System	1	2	6	18	4	31
Solar Plant Commissioning	1	1	5	15	3	26
Electrical System and Substation	2	10	28	10	8	58
O&M Facilities	2	5	10	18	5	40

Note:
1/ Employment estimates are monthly averages for the duration of each task and are presented here as full month totals (see Table 2.15-2).
2/ Apprentice labor is assumed to be equivalent to 15 percent of total employment in the other four workforce categories.

Table 2.15-6. Proposed Phase 2a Construction Employment by Task and Workforce Type

Task	Average On-Site Workforce per Month[1/]					
	Project Manage-ment and Engineers	Field Technical Staff	Skilled Labor and Equipment Operators	Unskilled Labor	Apprentice[2/]	Total
Final Engineering and Design	5	0	0	0	0	5
Pre-Construction Survey and Compliance Requirements	1	4	0	0	0	5
Road Construction	2	1	13	10	4	29
Wind Turbine Foundations	2	3	20	63	13	101
Wind Turbine Assembly	2	7	81	15	16	124
Wind Plant Commissioning	1	15	0	0	2	17
Solar Array Construction	3	3	12	33	8	58
Electrical System Installation	2	4	16	47	10	80
Battery Energy Storage System	1	2	6	18	4	31
Solar Plant Commissioning	1	1	4	13	3	22
Electrical System and Substation	3	15	38	15	11	81
O&M Facilities	2	5	10	18	5	40
Transmission Line Construction	1	2	12	0	2	17

Note:
1/ Employment estimates are monthly averages for the duration of each task and are presented here as full month totals (see Table 2.15-3).
2/ Apprentice labor is assumed to be equivalent to 15 percent of total employment in the other four workforce categories.

Table 2.15-7. Proposed Phase 2b Construction Employment by Task and Workforce Type

Task	Average On-Site Workforce per Month[1/]					
	Project Manage-ment and Engineers	Field Technical Staff	Skilled Labor and Equipment Operators	Unskilled Labor	Apprentice[2/]	Total
Final Engineering and Design	5	0	0	0	0	5
Pre-Construction Survey and Compliance Requirements	1	4	0	0	0	5
Road Construction	4	1	25	20	8	58
Wind Turbine Foundations	3	7	40	125	26	201
Electrical System and Substation	3	15	38	15	11	81
Wind Turbine Assembly	3	14	162	31	32	247
O&M Facilities	2	5	10	18	5	40
Transmission Line Construction	2	4	23	0	4	33
Plant Commissioning	1	29	0	0	5	35

Note:
1/ Employment estimates are monthly averages for the duration of each task and are presented here as full month totals (see Table 2.15-4).
2/ Apprentice labor is assumed to be equivalent to 15 percent of total employment in the other four workforce categories.

See Section 4.4 for a discussion of where the construction labor force would likely be hired from.

2.15.2 Operations Workforce

A team of 16 to 20 personnel would be employed at the Project to operate and maintain Project components, including a facility manager, a project site manager, a project site lead, and a certified crew of technicians. The Project would also have specified personnel on-call 24 hours per day, 7 days per week, should an issue arise outside of normal business hours. The Project would require preventive and corrective maintenance of the Turbines, solar array, BESS, electrical collection system and Project substation, as well as direct operations dispatch to ensure continuing plant and transmission system safety and reliability.

The on-site team would work in coordination with off-site operations staff at a Remote Operation Control Center in accordance with Federal Energy Regulatory Commission (FERC) guidelines. This off-site team would assist in identifying Project components operating at non-peak efficiency and helping on-site staff quickly locate Turbines, solar modules, or battery components with potential operating issues so they can be quickly resolved to ensure safety and optimal performance of the Project.

During operations, the O&M staff would perform scheduled, preventive maintenance on the Turbines, solar modular, and battery storage facility. For the Turbine maintenance, this is typically done by personnel from the Turbine manufacturer for the first 1 to 3 years. Typically, visual inspections and system checks would be performed annually and consist of lubrication, fluid checks, electrical inspections, and Turbine functionality assessments. In addition, the torque requirements of the down-tower assembly cabinet and down-tower frame grounds, incoming power cables, and outgoing power cables would be checked regularly to conform with the design specifications. The on-site operations team also would drive throughout the Project on a regular basis conducting unrecorded visual inspections of the Project. Solar modules require limited routine maintenance but may be washed periodically during operations and would be replaced in the case where energy generating efficiency lags or component systems are damaged. Battery storage components would be checked for integrity and replaced when their operating efficiency drops below a predetermined level.

2.16 CONSTRUCTION MANAGEMENT

> ***WAC 463-60-245:*** *The application shall describe the organizational structure including the management of project quality and environmental functions.*

2.16.1 Applicant's Construction Management Team

The Applicant's Project management structure would include two primary groups: (1) an engineering and design specifications team, and (2) a field site management team.

The Applicant's Project Manager would have oversight authority over these two teams, as well as over the EPC contractor (i.e., the construction contractor) and the Turbine/solar equipment suppliers' teams.

2.16.1.1 Engineering and Design Team (EDT)

The EDT, under the direction of the overall Applicant Project Manager, would be responsible for establishing the design and construction specifications for the various portions of the Project. The EDT acts as a third-party verification group in conjunction with the Project's field quality assurance/quality control (QA/QC) team. The EDT would review proposals from the EPC contractor and the various Turbine/solar suppliers. The EPC contractor and Turbine/solar suppliers would be responsible for the detailed design work for the Project and for submitting these designs and equipment specifications to the EDT for review. Review by the EDT would ensure that the detailed construction plans would meet the required design specifications, codes, and standards for the Project.

2.16.1.2 Field Site Management Team

The field site management team, under the direction of the overall Applicant Project Manager, would oversee construction and ensure that it is performed in accordance with the engineering plans/specifications, permit requirements, and standard BMPs. A Project Site Manager would have a support team consisting of QA/QC specialists and site safety officers. The field site management team would be involved and have oversight of the construction process on a day-to-day basis. The Project Site Manager and support team would have stop work authority if safety issues or deficiently in permitting/construction requirements are identified.

The field site management team would also be responsible for implementing an environmental compliance program. The environmental compliance program would cover avoidance of sensitive areas during construction, waste handling and storage, stormwater management, spill prevention and control, and other components required by regulations and permit conditions.

2.16.2 Engineering, Procurement, and Construction Management Team

The EPC Contractor would be responsible for managing several construction subcontractors, including those that would construct the new roads, electrical and communications system infrastructure, substation, wind turbines, solar modules and the O&M facilities. The EPC Contractor would have a lead Project Manager, a Project Engineer, and a Site Manager supported by their field engineering team, QA/QC specialists, environmental monitors, and site safety officers. The EPC Contractor would be required to implement and perform a safety plan, a QA/QC plan, an environmental protection plan, the SWPPP, as well as all other permitted plans and BMPs required during construction.

Prior to the commencement of any construction work, the EPC Contractor would be required to prepare a safety plan that would apply to EPC Contractor personnel and all subcontractor personnel working at the site. The plan would be designed to ensure compliance with all laws, ordinances, regulations, and standards concerning health and safety. All employees on site will have stop work authority, and would stop all work when health and safety issues are violated, including any subcontractor safety issues, and the health and safety of construction personnel are in danger. Upon identification of a health and safety issue, the safety manager would work with the responsible department or subcontractor to correct the issue.

The EPC contractors would also be required to implement a worker training program to ensure that safety and environmental regulations and permits are followed by all staff involved with the construction of the Project.

2.16.3 Turbine and Solar Suppliers Construction Management Team

The suppliers of the Turbines and the solar modules would be responsible for the supply, delivery, and commissioning of the Turbines and solar modules. The supplier's construction team would include a lead Project Manager, a Site Manager, transportation specialists, and several lead technicians. The supplier's site team would be supported by their own QA/QC specialists and site safety officers.

2.17 CONSTRUCTION METHODOLOGY

> ***WAC 463-60-255:*** *The application shall describe in detail the construction procedures, including major equipment, proposed for any construction activity within water- courses, wetlands and other sensitive areas.*

2.17.1 Pre-Construction

Before construction can commence, a site survey would be performed during the micrositing process to stake out the exact final location of the Turbines, solar array, site roads, electrical cables, transmission line poles, access entryways, substations, BESS, etc. Once the survey is complete, a detailed geotechnical investigation would be performed to identify subsurface conditions which would dictate much of the design work of the roads, foundations, underground trenching and electrical grounding systems. Typically, the geotechnical investigation involves a drill rig which bores to the engineer's required depths (typically 8 inch diameter drill to 30 to 60 feet deep) and a backhoe to identify the subsurface soil and rock types and strength properties by sampling and lab testing. Testing is also done to measure the soil's electrical properties to ensure proper grounding system design. A geotechnical investigation is generally performed at each Turbine location, the substation location, and at the O&M facility location. During this time, any additional pre-construction surveys required by EFSEC or applicable regulatory agencies would also be performed.

2.17.2 Site Preparation and Road Construction

During site preparation, the selected construction contractor would install storm water pollution prevention measures and flag sensitive areas to be avoided during clearing activities. Dust would be controlled as needed by spraying water on dry, exposed soil. A Certified Erosion and Sediment Control Lead would be responsible for ensuring that storm water pollution prevention measures meet BMPs in accordance with the most recent version of Ecology's applicable Stormwater Management Manual.

The Project roads would be gravel surfaced and generally designed with a low profile. Road construction would be performed in multiple passes starting with the rough grading and leveling of the roadway areas, if necessary. Once rough grade is achieved, a fabric layer would be installed (where necessary), base rock would be trucked in, spread and compacted to create a road base. A capping rock would then be spread over the road base and roll-compacted to finished grade.

Excavated soil and rock that arises through grading would be spread across the site to the natural grade and would be reseeded with native grasses to control erosion by water and wind.

2.17.3 Foundation Construction

Foundations would be required for multiple Project facilities, including but not limited to, Turbine towners, solar array poles, O&M facilities, Project substations, BESS, etc. Foundation construction would occur in several stages and may include drilling, blasting and hole excavation, outer form setting, rebar and bolt cage assembly, casting and finishing of the concrete, removal of the forms, backfilling and compacting, construction of the pad transformer foundation (if required), and foundation site area restoration. Use of geopiers or other form of deep subgrade improvement may also be utilized, pending final site design engineering and final geotechnical analysis.

Excavation and foundation construction would be conducted in a manner that would minimize the size and duration of excavated areas required to install foundations. Portions of the work may require over excavation and/or shoring. Foundation work for a given excavation would commence after excavation of the area is complete. Backfill for the foundations would be installed immediately after approval by the engineer's field inspectors. The Applicant plans on using on-site excavated materials for backfill to the extent possible.

Construction of foundations would require the use of a number of types of heavy equipment, including excavation equipment, concrete-pumping equipment, and concrete finishing equipment. In addition, light- and medium-duty trucks, air compressors, generators, and other internal combustion engine driven equipment are anticipated.

The EPC contractor, in consultation with the Applicant, would determine the need for an on-site concrete batch plant, rock quarries, and rock crushers, which would be permitted in accordance with local processes.

2.17.4 Electrical Collection System Construction

Once the roads and Turbine foundations are complete for a particular row of turbines or solar arrays, underground electrical cables would be installed. A trench is cut to the required depth with a rock trencher. Clean fill would be placed above and below the cables for the first several inches of fill to prevent cable pinching. All cables and trenches would be inspected before backfilling. Once the clean fill is covering the cables, the excavated material would then be used to complete the backfilling. Blasting would be used in areas where solid rock is encountered close to the surface, or a rock saw or shallower trench would be cut using rock cutting equipment and the cables may be covered with a concrete slurry mix to protect the cables and comply with code and engineering specifications if site conditions warrant such coverage. In addition, as discussed in Section 2.3, a portion of these electrical cables may also be installed above ground to avoid steep slopes or sensitive resources.

The medium-voltage underground cables are fed through the trenches and into conduits at the pad transformers at each Turbine. The cables run to the pad transformers' medium voltage (34.5-kV) compartment and are connected to the terminals. Low-voltage cables are fed through another set of underground conduits from the pad transformer to the bus cabinet inside the base of the Turbine tower or solar array. The low-voltage cable would be terminated at each end and the whole system would be inspected and tested prior to energization.

For overhead transmission, once the survey and design work are done, the installation of poles and cross-arms to support the conductors can commence. The poles are first assembled and fitted with all of their cross-arms, cable supports, and insulator hardware on the ground at each pole location. Holes for each pole would then be excavated or drilled and the poles would be erected and set in place using a small crane or boom truck. Once it is set in place, concrete would be poured in place around the base of the pole, or clean fill would be compacted around the tower base according to the engineer's specifications. The overhead lines would connect to underground cables at each end through a switchable, visible, lockable riser disconnect with fuses.

The electrical construction work would require the use of several pieces of heavy machinery including a track-hoe, a rock trencher, rock cutting equipment, front-end loaders, drill rigs for the pole-line, dump trucks for import of clean back fill, transportation trucks for the materials, small cranes and boom trucks for offloading and setting of the poles and pad transformers, concrete trucks, cable spool trucks used to unspool the cable, man-lift bucket trucks for the pole-line work, and a winch truck to pull the cable from the spools onto the poles.

2.17.5 Wind Turbine Assembly and Installation

Turbine assembly is performed in multiple stages including setting of the bus cabinet and ground control panels on the foundation, erection of the tower, erection of the nacelle, assembly and erection of the rotor, connection and termination of the internal cables, and inspection and testing of the electrical system prior to energization.

Turbine assembly and erection involves mainly the use of large truck or track mounted cranes, smaller rough terrain cranes, boom trucks, rough terrain fork-lifts for loading and off-loading materials and equipment, and flat bed and low-boy trucks for transporting materials to site. In sequence with the installation of component equipment, support systems would be installed, including electrical equipment, control equipment, piping installation, wiring cable, and conduits. Typical construction activities would include mechanical fastening, welding, preparation, and painting.

2.17.6 Solar Array Assembly and Installation

Solar array assembly consists of spot-grading the site, setting the posts (also known as piles), installing trackers (which support the panels and attach them to the posts), installing the solar panels, and then connecting the array to the electrical collection system. The trackers are attached to the posts using bracket-mounted bearings, torsional limiters, and tracking actuators. A tracker control system would then be installed at the tracking actuators, which measures the system's inclination and is used to control the panels' position. The panels are attached to the trackers and posts using pressure mounting clips (or other mechanical devices) that provide for grounding of the system.

This process involves multiple pieces of equipment including construction vehicles similar to those listed for the wind turbines assembly above) as well as pile drivers. The pile drivers are specifically designed for solar array construction and consist of a high frequency vibratory hammer that operates at around 1,500 beats per minute. Typically, a crew of two to three people operate a single pile driver, driving in a post every 1 to 2 minutes, with 3- to 5-minute transitions between locations. Other pile-driving equipment may be considered if helical or screw anchor piles are used in the design.

2.17.7 Startup and Testing

At the completion of the construction sequence, each system would be energized and operational testing undertaken. This would include testing of each of the major component systems in a predetermined sequence and completion of QA/QC checks to ensure that each system is ready for full operation. At the end of the start-up testing phase, each unit would be separately certified for commercial operation.

2.17.8 Project Construction Clean-up

Landscaping cleanup is generally completed during the first allowable and suitable weather conditions after all of the heavy construction activities have been completed. Disturbed areas outside of the graveled areas would be reseeded to control erosion by water and wind. To the extent feasible for the Project, cleared areas would be reforested in accordance with typical commercial management practices. All construction clean-up work and permanent erosion control measures would be done in accordance to a SWPPP for the Project as outlined in Section 2.11. Other project clean-up activities may include interior finishing of the O&M facility, landscaping around the substation area, washing of towers and solar panels, painting of scratches on towers and exposed bolts, as well as other miscellaneous tasks that are part of normal construction cleanup.

Construction cleanup would require the use of a motor grader, dump trucks, front-end loaders, and light trucks for transportation.

2.18 PROTECTION FROM NATURAL HAZARDS

> ***WAC 463-60-265:*** *The application shall describe the means to be employed for protection of the facility from earthquakes, volcanic eruption, flood, tsunami, storms, avalanche or landslides, and other major natural disruptive occurrences.*

The Project Lease Boundary is not located in a mapped tsunami hazard area (Ecology 2020) nor is it within frequently flooded areas, which area defined as areas within the one-hundred-year floodplain, and are lands subject to a one percent or greater chance of flooding in any given year as designated by the Federal Emergency Management Agency (FEMA) Federal Insurance Rate Map (FIRM) for Benton County. The Project Lease Boundary is located over 80 miles from areas considered to be volcanic hazards by the U.S. Geological Survey (Washington Division of

Geology and Earth Resources 2016). There are two Quaternary mass-wasting deposits (i.e., landslides) identified just within the northern edge of the Project Lease Boundary; however, these are not located within the Micrositing Corridors and no Project components would be placed within these known landslide areas or on steep slopes. Benton County is located within a rain shadow created by the Cascade Mountains. The nearby city of Kennewick receives average annual precipitation of 7.7 inches, with 5.2 inches of that being snowfall (see Section 2.1.2). Given that Project infrastructure will be sited to avoid steep slopes and has relatively little snowfall, the likelihood of landslide and avalanche risk is low. Therefore, the Project would not require protection from these major natural disruptive occurrences.

A preliminary site-specific geotechnical investigation focused on 17 boring locations distributed throughout the Project Lease Boundary was conducted by Westwood using current code requirements and state-of-practice methods, per Benton County Critical Area requirements outlined in BCC 15.12.040. The report (included in Appendix B) addresses regional geology; geohazards including karst, soil expansion and collapse, seismicity, and volcanoes; subsurface stratigraphy; groundwater; and soil properties. This preliminary site-specific geotechnical evaluation informs the Project's structural engineers in their designing of the Turbine tower foundations and other infrastructure to withstand earthquakes, storms, and other natural events. A subsequent final site-specific geotechnical investigation will be conducted based on the full and final design to more fully characterize the subsurface conditions across the entire site, including at all final Turbine locations, substations, meteorological towers, and O&M facilities. The results of the subsequent final site-specific geotechnical analysis will be reported in a subsequent geotechnical engineering report and geotechnical engineering risk assessment that meets Benton County Critical Area requirements outlined in BCC 15.12.040 and 15.12.050, and will be prepared by a qualified professional meeting the standard specified in BCC 15.02.070(57). The subsequent geotechnical analyses will be used to calculate the bearing capacity of the soils, conduct stability analyses, and provide engineering recommendations for construction of the structures.

Based on the subsequent site-specific analyses, the original Turbine equipment manufacturer will provide the structural engineer with site-specific foundation loads and requirements. The structural engineer will then complete the foundation analyses based on the design site-specific parameters. Generally, these include the following loads for Turbine foundation design: extreme loads, load cases for up-lift, shear failure, tension loads (for pile foundations), earthquake loads, fatigue loads, subsoil properties, spring constants, verification procedures, and maximum allowable inclination. These design parameters will account for protection of the facility from earthquakes, storms, and other natural events. In addition, a qualified engineer will provide oversight and inspection during construction, including foundation inspections by a qualified engineering geologist or geotechnical engineer, to ensure that the Project is built according to plans and specifications, and the stability of the transmission line structures, Turbines, and other infrastructure is not compromised.

2.19 SECURITY CONCERNS

WAC 463-60-275: *The application shall describe the means employed for protection of the facility from sabotage, terrorism, vandalism and other security threats*

The Project is located in an area that contains a low population density (see Section 4.4), and the construction and operation of the Project is anticipated to have minimal impacts on the security and safety of the local population. The following safety measures would be taken to reduce the risk of property damage (though sabotage, terrorism, or vandalism) at the facility as well as protect the public from personal injury:

- Security measures would be implemented during the construction and operation of the Project, including temporary (safety) and permanent fencing, warning signs, and locks on equipment and Project facilities;
- The solar arrays would be entirely enclosed within an area encompassed by a 6-foot-tall security fence during construction and operation. The substations, O&M facilities, and the battery storage facilities would be also be enclosed by a 6-foot-tall security fence during construction and operation.
- The Turbine towers would be sited away from existing roadways and residences per the applicable setback requirements described in Section 2.23.
- Access to each Turbine tower would be through a solid steel door that would be locked and accessed only by authorized personnel.
- Turbine tower exteriors would be designed to be unclimbable.
- All energy facility equipment would conform to applicable industry standards.
- A professional engineer would certify that the foundation and tower design of the Turbines and solar arrays are within accepted professional standards, given local soil and climate conditions.
- Following construction, the Project would register Project underground facilities with the One-Call program.

2.20 STUDY SCHEDULES

WAC 463-60-285: *The application shall furnish a brief description of all present or projected schedules for additional environmental studies. The studies descriptions should outline their scope and indicate projected completion dates.*

Table 2.20-1 provides a summary of additional environmental studies planned for the Project.

Table 2.20-1. Planned Environmental Studies

Study Name	Description	Planned Dates
Additional Cultural Resource Surveys	Cultural resource surveys for portions of the micrositing corridor not yet surveyed.	January–April 2021
Additional Habitat and Rare Plant Surveys	Habitat and Rare Plant Surveys for solar areas of interest	April–June 2021
Additional Wetland Surveys	Wetland surveys for portions of survey area without access in 2020 (DNR parcel)	April-June 2021
Ambient Noise Monitoring	Collect ambient sound level information for the Project area	December 2020 – February 2021
Geotechnical Studies	Full site subsurface conditions testing at all turbine locations, project substations, solar arrays, BESS	Pre Construction

2.21 POTENTIAL FOR FUTURE ACTIVITIES AT SITE

WAC 463-60-295: *The application shall describe the potential for any future additions, expansions, or further activities which might be undertaken by the applicant on or contiguous to the proposed site.*

No future additions, expansions, or modifications are anticipated for the Project. However, the Applicant does request flexibility in siting turbines and associated infrastructure within the Project's Wind Energy Micrositing Corridor as well as the final location of the solar arrays within the Solar Siting Areas (as discussed in Sections 2.1 and 2.3).

2.22 ANALYSIS OF ALTERNATIVES

WAC 463-60-296: *The application shall include an analysis of alternatives for site, route, and other major elements of the proposal.*

2.22.1 Introduction

This section summarizes the alternatives that were explored during the development of the Project.

2.22.2 Site Selection

The Project would include multiple technologies including wind-powered energy facilities, photovoltaic-powered energy facilities and battery storage facilities. The Project site, on leased land adjoining the operating Nine Canyon Wind Project, is optimally suited for wind energy as it is primarily used for dry-land wheat farming, and is crossed by three BPA HV transmission lines. Dry-land wheat farming is considered optimal land use as it is compatible with the infrastructure installed for typical renewable energy technologies due to the minimal permanent surface impact and offering minimal obstruction to farming operations. Farmers often indicate that permanent all-weather access roads are beneficial to their operations. The site represents a commercially viable wind resource area that is favorable for regional utilities as it is coincident with peak loading demand.

The selection of this site conforms to industry accepted site selection criteria:

- Access to HV (115-kV/230-kV/500-kV) transmission lines within a reasonable distance to a project site, with sufficient available capacity to carry the project's output;
- Absence of significant environmental constraints (i.e., no threatened or endangered species, major archeological resources, critical wetlands, etc.);
- Willing landowner(s) with sufficient undivided acreage to support a project;
- Accessible site with sufficient road access to permit delivery of large Turbine components and allow construction of project infrastructure;
- Appropriate and compatible zoning designation and/or lack of conflicting land uses.

Alternative Turbine sites were initially assessed that would comprise a larger Project area, but were reduced to accommodate airspace restrictions associated with commercial air travel, military training and a national defense radar installation. The Project site meets all of the above criteria. Per WAC 463.60.021, the Council recognizes a pressing need for energy facilities. RCW 80.50.010 requires the Council to "recognize the pressing need for increased energy facilities." For that reason, applications for site certification need not demonstrate a need for the energy facility.

2.22.3 Electrical Transmission Routing Alternatives

The Project site is crossed by three BPA HV transmission lines. The proposed locations of the substations were selected to be placed in private land parcels in clear and level areas adjacent to well-maintained County Roads. Interconnection requests are in-progress for the following planned substations:

- A new 230-kV BPA substation is proposed to be located immediately adjacent to the BPA right-of-way alongside Beck Road. A new Project substation will be constructed nearby with a short span of 230-kV Project-owned overhead line.
- A new 230-kV or 500-kV BPA substation is proposed to be located immediately adjacent to the BPA right-of-way alongside either Sellards Road or County Well Road. A new Project substation will be constructed nearby with a short span of either 230-kV or 500-kV Project-owned overhead line.
- As BPA advances their studies associated with these interconnections, their planning may include new network infrastructure, with corresponding changes in the substation configuration and locations. To accommodate such changes, an alternative new 230-kV overhead transmission corridor within the Project site control area is being considered that could tie the western phase of the Project to the point of interconnection for the eastern phase of the Project, resulting a single point of interconnection at 230 kV. Ultimately, the Project must accommodate any reconfiguration contemplated by BPA.

When the Project interconnection plan was initially presented to BPA, they indicated the most likely achievable interconnection point in the timeframe desired would be at their Red Mountain 115-kV substation north of the Project Lease Boundary. An interconnection with BPA at this location was considered, but subsequently withdrawn. Site control for this transmission corridor was determined to not be viable.

The only other HV transmission infrastructure in the Horse Heaven Hills vicinity is owned by Benton Public Utility District No. 1 (BPUD), which was also considered for interconnection. The portion of the BPUD 115-kV system in the vicinity is operated as a swing line that can be fed by two separate sources, normally operating with one circuit feeder breaker open, which primarily supplies irrigation load. This design would be unsuitable as a generation interconnection, and thus would require significant upgrade in the HV system network, as well as in line capacity. Accordingly, this alternative was determined to not be viable.

2.22.4 Alternative Technologies and Fuel

The Project is an alternative source of energy that does not generate air or water emissions and does not produce hazardous waste. Wind energy is considered a renewable resource, and its operation does not deplete natural resources such as coal, oil, or gas; cause environmental damage through continual resource extraction and transportation; or require significant amounts of water during operation. PV (solar) energy is also in this same category as a renewable resource with similar attributes. Because of the environmental benefits of wind and solar energy, and the suitability of the site already leased by the Project for wind and solar energy production, no alternative technologies or fuel sources were considered.

2.22.5 Alternative Construction Access

The Project has the advantage of being transected by I-82. Therefore, access to the Project site must be from off-ramps within the site control area. All heavy equipment transport would approach the area from the south on I-82, and then use two off-ramps as access to state/county roads:

- Coffin Road, offering connection to Bofer Canyon Road and Nine Canyon Road; and
- Locust Grove/State Route 397, offering connection to Bofer Canyon Road.

Therefore, there is no practicable alternative construction access.

2.22.6 Alternative Haul Routes and Methods of Transport

All wind energy components, including tower sections, the nacelle and turbines, and blades would be shipped to either a western U.S. port or overland on the Interstate highway system. The U.S. ports are either the Port of Longview or Port of Vancouver, from which components would be transported by specialized trucks along Interstate, state, county, and private roadways.

Rail transportation could be utilized as there are Burlington Northern-Santa Fe Railway facilities south of the Project in Washington state. As there could be various manufacturers that could be selected to supply the Turbine components, the designated haul routes and methods of transport will be a commercial decision as an element of the negotiated purchase agreement.

Therefore, there are no other practicable alternative haul routes and methods of transport.

2.22.7 No Action Alternative

Under the No Action Alternative, the proposed Project would not be constructed or operated, and the environmental impacts described in this ASC would not occur. If the proposed Project is not constructed, Washington electrical utilities would lose an important non-polluting renewable resource alternative close to the region's major metropolitan areas. The economic benefits associated with this capital investment and the economic activity associated with construction and operation of the facility would be foregone.

2.23 PERTINENT FEDERAL, STATE, AND LOCAL REQUIREMENTS

WAC 463-60-297:

(1) Each application shall include a list of all applicable federal, state, and local statutes, ordinances, rules, permits, and required use authorizations (i.e., leases, easements, rights of way, or similar authorizations) that would apply to the project if it were not under council jurisdiction. For each federal, state, or local requirement, the applicant shall describe how the project would comply or fail to comply. If the proposed project does not comply with a specific requirement, the applicant shall discuss why such compliance should be excused.

(2) Inadvertent failure by the applicant to discover and list a pertinent requirement shall not invalidate the application, but may delay the council's processing of the application.

Table 2.23-1 lists pertinent federal, state, and local permits, requirements, and authorizations pursuant to WAC 463-60-297 that would apply to the Project if it were not under Council jurisdiction. The table identifies regulatory agencies and cites authorizing statutes, ordinances, regulations, and rules pertinent to each permit, requirement, and authorization. The table also identifies the sections in this ASC where the Applicant demonstrates compliance with each pertinent permit, requirement, and authorization.

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Table 2.23-1. Pertinent Federal, State, and Local Rules, Regulations, and Permits

Requirement, Permit, or Authorization	Agencies with Jurisdiction	Applicable Codes, Ordinances, Statutes, and Regulations	EFSEC ASC Section	Applicability
FEDERAL				
Notice of Proposed Construction or Alteration	FAA and DoD	14 CFR 77, Safe, Efficient Use, and Preservation of the Navigable Airspace	2.23.1.1	The Applicant is required to submit a Notice of Proposed Construction to FAA (Form 7460-1).
Determination of No Hazard	FAA and DoD	14 CFR 77, Safe, Efficient Use, and Preservation of the Navigable Airspace	2.23.1.1	The Applicant is required to request a Determination of No Hazard from FAA with input from DoD.
Bonneville Power Administration (BPA) Interconnection Agreement / NEPA Review	BPA	National Environmental Policy Act (42 U.S.C. Section [§] 4321, et seq.) BPA Interconnection Agreement	2.23.1.2	The Applicant would enter into an interconnection agreement with BPA, which is subject to NEPA review. BPA would complete the necessary NEPA review process.
Federal Endangered Species Act (ESA), Section 7 Consultation	USFWS Pacific Region, Washington Ecological Services Field Office	Section 7 of the ESA (16 U.S.C. § 1531, et seq.)	2.23.1.3 and 3.4	There is no federal nexus for the Project; therefore, the Applicant is not required to complete a Section 7 consultation.
ESA, Incidental Take Permit (ITP)	USFWS Pacific Region, Washington Ecological Services Field Office	Sections 9 and 10 of the ESA (16 U.S.C. § 1531, et seq.)	2.23.1.3 and 3.4	The Applicant does not expect the take of an ESA listed species and is not required to apply for an ITP.
Migratory Bird Treaty Act (MBTA) Consultation	USFWS Pacific Region, Washington Ecological Services Field Office	MBTA (16 U.S.C. §§ 703-711)	2.23.1.4 and 3.4	The Project would pose a low risk to avian species and the Applicant would implement measures to comply with the MBTA.
Bald and Golden Eagle Protection Act (BGEPA), Eagle Take Permit (ETP)	USFWS Pacific Region, Washington Ecological Services Field Office	BGEPA (16 CFR 668-668c and 50 CFR 22)	2.23.1.5 and 3.4	The Applicant does not expect to affect eagles and is not required to obtain an ETP. The Applicant would maintain coordination with the USFWS to confirm if an eagle take permit is appropriate for the Project.
Section 404 Permit	USACE	Section 404 of the CWA, regulatory definition (40 CFR 230.3)	2.23.1.6 and 3.3	The Applicant is designing the Project to avoid impacts to wetlands and waters of the United States. The need for Section 404 permit authorization is not anticipated and a Joint Aquatic Resource Permit Application (JARPA) is not included with this ASC.
STATE				
Water Quality Permits	Ecology	Section 401 of the CWA	2.23.1.6 and 3.3	The Applicant is designing the Project to avoid impacts to wetlands and waters of the United States. The need for Section 401 certification is not anticipated and a JARPA is not included with this ASC.
Authorization to Use State-owned Lands	DNR	RCW 79.36	2.23.2.1	The Applicant would obtain authorization to use State-owned land for Project components crossing parcels owned by DNR.
State Protected Species	WDFW	WAC 220-610, State species status and protections WAC 232-23, Classification of wildlife species, including "Priority Habitats and Species" WDFW Wind Guidelines (2009) RCW 77, Hydraulic Code	2.23.2.2, 3.3, 3.4, and 5.3	The Applicant has consulted with WDFW and proposes measures to avoid, minimize, and otherwise mitigate impacts to PHS and wildlife within the Project Lease Boundary (see Section 3.4.3). Final design of the Project in relation to waters of the state will determine whether Hydraulic Project Approval is required; a JARPA is not included with this ASC.
Access Permit, Utility Permit	WSDOT	WAC 468-34-100	2.23.2.3	The Applicant's licensed contractor would obtain this permit for Project components affecting WSDOT highway access and utilities.
Oversize and Overweight Permit	WSDOT	WAC 468-38-075	2.23.2.3	The Applicant's licensed contractor would obtain this permit for transporting oversize and overweight equipment on State highways.
Electrical Construction Permit	WDLI	WAC 296-746A, Washington Department of Labor and Industries Safety Standards: Installing Electrical Wires and Equipment – Administration Rules	2.23.2.4	The Applicant's licensed contractor would obtain this permit and comply with electrical requirements.
Noise Control	Ecology	RCW 70.107, Noise Control WAC 173-58, Sound Level Measurement Procedures WAC 173 Agency (BCAA-60, Maximum Environmental Noise Levels WAC 463-62-030, Noise Standards	2.23.2.5 and 4.1.1	The Applicant would comply with applicable noise control requirements as demonstrated in this ASC.

Requirement, Permit, or Authorization	Agencies with Jurisdiction	Applicable Codes, Ordinances, Statutes, and Regulations	EFSEC ASC Section	Applicability
Construction Stormwater General Permit	Ecology	CWA (42 U.S.C. 1251-15, CFR 923-930) RCW 90.48, establishes general stormwater permits for Ecology under the Water Pollution Control Act WAC 173-201A, Water Quality Standards for Surface Waters of the State of Washington	2.23.2.6,3.3, and 5.2	The Applicant would obtain this permit in coordination with EFSEC and comply with stormwater BMPs outlined in the permit and associated Stormwater Pollution Prevention Plan (SWPPP) and Erosion and Sediment Control Plan (ESCP). A Notice of Intent (NOI) is included with this ASC.
Sand and Gravel General Permit	Ecology	WAC 173-201A, Water Quality Standards for Surface Waters of the State of Washington WAC 173-204, sediment management standards WAC 173-226, procedures for issuing general permits	Section 2.23.2.6 and 5.3	Ecology would require a Sand and Gravel General Permit for potential stormwater discharges associated with rock crushing and concrete batch plants if conducted within the Project Lease Boundary.
Air Permits: New Source Review, Portable Air Containment Sources - Notice of Construction (NOC), and Notice of Intent (NOI)	Benton Clean Air Agency (BCAA)	Clean Air Act (CAA) WAC 463-78 and 173-400 BCAA	2.23.2.7,3.2, and 5.1	This Project does not meet the new source definition in the CAA, and a NOC is not required for the Project Turbines, solar arrays, or battery energy storage systems (BESS). While a NOC is not required for a concrete batch plant or temporary diesel generators (i.e., nonroad engines) under WAC Ch. 173-400, the BCAA would require a NOC to allow a concrete batch plant to operate for one year within the County and would require filing of a Notice of Intent to Operate (NOI) for each relocation. An NOI demonstrating compliance with National Ambient Air Quality Standards (NAAQS) would be required for the use of diesel-powered generators with greater than 2,000 brake horsepower.
Shoreline Substantial Development Permit	Ecology	WAC 173-18, Shoreline Management Act, Streams and Rivers Constituting Shorelines of the State WAC 173-22, Adoption of Designations of Shorelands and Wetlands Associated with Shorelines of the State RCW 90.58.140[9]	2.23.2.8	The Project is not located on or near a designated shoreline of the state and no shoreline permit is required.
State Environmental Policy Act (SEPA)	EFSEC	RCW 43.21C, Washington Environmental Policy Act WAC 197-11, Washington Department of Ecology SEPA Rules BCC 6.35	2.23.2.9	Absent EFSEC jurisdiction, a Conditional Use Permit (CUP) would be required from Benton County, with Benton County serving as the lead agency for SEPA review. For an ASC, EFSEC serves as the SEPA lead agency.
Archaeological Sites and Resources, Archaeological Site Alteration and Excavation Permit	DAHP	RCW 27.53, Archaeological Sites and Resources	2.23.2.10 and 4.2.5.3	The Applicant would comply with applicable requirements to protect cultural and historic resources as demonstrated in this ASC. An Archaeological Site Alteration and Excavation Permit would be required for disturbances to sites that contain prehistoric archaeological resources.
LOCAL				
Conditional Use Permit (CUP)	Benton County Planning and Building Development	BCC 11.17.017	2.23.3.1	Absent EFSEC Approval, a CUP would be required for conditional uses within Benton County. The Applicant is voluntarily using the EFSEC process in lieu of the CUP process.
Critical Areas Regulations	Benton County Planning and Building Development	RCW 36.70A WAC 365-190-(080-130) WAC. 365-195, Best Available Science Section WAC 365-196-485 and WAC 365-196-830, Procedures BCC 15.02.080	2.23.3.1, 3.1, 3.3, 3.4, and 3.5	Absent EFSEC Approval, a Critical Areas Review Report would be required for Project impacts to critical areas or buffers within Benton County. The Applicant is voluntarily using the EFSEC process in lieu of the Critical Areas Review Report to demonstrate compliance with RCW Ch. 36.70A and Title 15 of the BCC.
Building Permits	Benton County Planning and Building Development	BCC 11.42.040	2.23.3.1	A building permit is required for construction of any structure within Benton County. The Applicant or the Applicant's licensed contractor would obtain requisite Building Permits prior to Project construction. Given that the ASC deals mostly with discretionary permits and approvals, this document does not list all ministerial building permits.
Special Permit - General	Benton County Fire Marshall	BCC 3.16.032 International Fire Code (2015 Edition)	2.23.3.1	This permit may be required by the Benton County Fire Marshal for the two optional BESS in accordance with the International Fire Code (2015 Edition).
Road Approach Permit	Benton County Department of Public Works	RCW 36.75.130	2.23.3.1	This permit would be obtained by the Applicant or the Applicant's licensed contractor for a Project road approach onto County road right-of-way.

Requirement, Permit, or Authorization	Agencies with Jurisdiction	Applicable Codes, Ordinances, Statutes, and Regulations	EFSEC ASC Section	Applicability
Oversized Load Permit	Benton County Department of Public Works	RCW 46.44.090	2.23.3.1	This permit would be obtained by the Applicant or the Applicant's licensed contractor for transportation of oversized or overweight loads on County roads.
ROW Encroachment Permit	Benton County Department of Public Works	RCW 36.75.130	2.23.3.1	This permit would be obtained by the Applicant or the Applicant's licensed contractor for work that requires encroachment into County right-of-way.
Franchise Agreement	Benton County Department of Public Works	RCW 36.55.040	2.23.3.1	The Applicant would prepare a franchise agreement with Benton County for facility components that would be located upon, over, under, along, or across any County right-of-way.

Notes:
BCC – Benton County Code; CFR – Code of Federal Regulations; DAHP – Washington Department of Archaeology and Historic Preservation; DNR – Washington Department of Natural Resources; DoD – Department of Defense; Ecology – Washington Department of Ecology; EFSEC – Energy Facility Site Evaluation Council; FAA – Federal Aviation Administration; NEPA – National Environmental Policy Act; RCW – Revised Code of Washington; ROW – right-of-way; U.S.C. – United States Code; USACE – U.S. Army Corps of Engineers; USFWS – U.S. Fish and Wildlife Service; WAC – Washington Administrative Code; WDLI – Washington Department of Labor and Industries; WSDOT – Washington State Department of Transportation

2.23.1 Pertinent Federal Statutes, Regulations, Rules, and Permits

This section describes the Applicant's ability to comply with the pertinent federal statutes, regulations, rules, and permits identified in Table 2.23-1.

2.23.1.1 Aviation and Defense

Under 14 CFR 77.9, the FAA requires the Applicant to file a Notice of Proposed Construction or Alteration (FAA Form 7460-1) and obtain a Determination of No Hazard prior to Project construction. The FAA determination includes input and review by the DoD to ensure no conflict occurs with the North American Aerospace Defense Command (NORAD) system.

Statement of Compliance

The Applicant filed FAA Form 7460-1 on April 27, 2020 for proposed Turbine and meteorological tower locations. The Applicant also provided Turbine and meteorological tower locations to the DoD and executed a mitigation agreement to avoid potential interference with NORAD systems. Documentation of a Determination of No Hazard is pending review and would be made available to EFSEC upon receipt. The April 2020 request addressed anticipated Turbine heights up to 499 feet maximum blade tip height. Should taller Turbines such as those anticipated under Turbine Layout Option 2 be selected for construction, the current request would be withdrawn and replaced by an updated request and the corresponding documentation and eventual Determination of No Hazard would be made available to EFSEC prior to construction.

The Applicant would install and maintain Turbines with marking and lighting in accordance with FAA standards (FAA Advisory Circular 70/7460-1L). See Section 4.2.2 of this ASC for additional information regarding light and glare. Therefore, the Project complies with 14 CFR §77.9.

2.23.1.2 Energy

The Project requires agreements with BPA to interconnect at the proposed 230-kV Bofer Canyon substation and proposed 500-kV Webber Canyon substation. An interconnection agreement with BPA is subject to environmental review under the National Environmental Policy Act (NEPA). The BPA typically conducts the environmental review for interconnection agreements with their facilities which are likely subject to a Categorical Exclusion (Cat Ex) determination.

The U.S. Department of Energy does not require review and approval for the Project. The Applicant provided information to the Laser Interferometer Gravitational-Wave Observatory (LIGO) Hanford Observatory for their technical review to ensure the Project would not conflict with LIGO operations.

Statement of Compliance

In coordination with the BPA, the Applicant would not conduct NEPA review for the necessary BPA interconnection agreements. The BPA would complete the necessary environmental review process under NEPA. This process is not subject to EFSEC review. The Applicant has also avoided BPA transmission corridors and communication structures to ensure the placement of Turbines and supporting infrastructure do not interfere with BPA's operations.

In addition, the LIGO Hanford Observatory Technical Review board found that the Project would not adversely affect LIGO operations. The Applicant continues to coordinate with the LIGO Hanford Observatory Technical Review board to ensure potential changes in the Project's design would not conflict with LIGO operations. Related correspondence can be provided to EFSEC upon request.

2.23.1.3 Threatened or Endangered Species

The Endangered Species Act (ESA) of 1973 and implementing regulations provide protections for threatened and endangered species, and their critical habitat. Under 50 CFR 17, take of any fish or wildlife species that is federally listed as threatened or endangered is not permitted without prior approval pursuant to either Section 7 or Section 10 of the ESA. If there is a federal nexus (e.g., permit or funding from a federal entity), then ESA issues are addressed through Section 7 of the ESA and a Biological Assessment is developed. When there is no federal nexus, Section 10 of the ESA allows a non-federal applicant, under certain terms and conditions, to incidentally take an ESA-listed species that would otherwise be prohibited under Section 9 of the ESA. When a non-federal landowner wishes to proceed with an activity that is legal in all other respects, but that may result in the incidental taking of a listed species, an Incidental Take Permit (ITP), as defined under Section 10 of the ESA, is required. Incidental take is defined as take that is "incidental to, and not the purpose of, the carrying out of an otherwise lawful activity" (50 CFR 17.3). Under Section 10, a USFWS-approved Habitat Conservation Plan (HCP) is required to accompany an application for an ITP to demonstrate that reasonable and prudent efforts have been made to avoid, minimize, and mitigate for the effects of the potential incidental take.

Statement of Compliance

As described in Section 3.4 of this ASC, no wildlife species currently listed, or a candidate for listing, under the federal ESA are expected to occur at the Project. Because the Project does not have a federal nexus and would not affect federally listed threatened or endangered species, ESA Section 7 and Section 10 consultation were not conducted for the proposed Project.

2.23.1.4 Migratory Bird Species

The Migratory Bird Treaty Act (MBTA), administered by the USFWS, prohibits the taking, killing, or possession of migratory birds listed in 50 CFR 10, except as allowed by permit regulations found in 50 CFR 21.

Statement of Compliance

Migratory and special status bird species have the potential to occur within the Project Lease Boundary. The Applicant conducted baseline wildlife surveys from 2017 to 2020 within the Project Lease Boundary that include avian use surveys and raptor nest surveys. The results of these studies indicate the risk of fatality to avian species at the Project would likely fall within the lower range of fatalities observed at other wind energy projects in the Pacific Northwest. As described in Section 3.4, the Project Lease Boundary does not support areas of high avian concentration or use during the breeding season. The Applicant's proposed measures to avoid, minimize, and otherwise mitigate impacts to bird species are provided in Section 3.4.3.

2.23.1.5 Bald and Golden Eagles

The Bald and Golden Eagle Protection Act (BGEPA) prohibits the taking, possession, purchase, sale, barter, transport, export, or import of any bald or golden eagle or any part, nest, or egg of a bald or golden eagle, except for certain scientific, exhibition, and religious purposes. Eagle permit regulations are found in 50 CFR 22.

Statement of Compliance

The Applicant analyzed Project areas that have the potential to provide nesting habitat to bald and golden eagles. As described in Section 3.4, the Project poses a low collision risk to eagles due to the generally low direct impacts to eagles documented in the Pacific Northwest, the overall low use of the Project observed during surveys, and the lack of eagle breeding and foraging habitat within the Project Lease Boundary. The Applicant's proposed measures to avoid, minimize, and otherwise mitigate impacts to eagles are provided in Section 3.4.3. Specifically, the Applicant would continue ongoing coordination with the USFWS and continue to evaluate eagle risk to determine if an eagle take permit is appropriate for the Project.

2.23.1.6 Waters of the United States

The Clean Water Act of 1972 (CWA) regulates discharges of pollutants into the waters of the United States defined under 40 CFR 230.3, and identifies regulating quality standards for surface waters. Sections 404 and 401 of the CWA require a permit and certification for projects that impact wetlands and waters of the United States. The U.S. Army Corps of Engineers (USACE) regulates fill or excavation of waters of the United States, including associated wetlands. A Joint Aquatic Resource Permit Application (JARPA) can be completed to meet these and other related compliance obligations, where applicable (ORIA 2019). Permit coverage for the NPDES is handled through the Ecology Construction Stormwater General Permit, which is required for construction disturbance of one or more acres of land (Ecology 2020). The Construction Stormwater General Permit is addressed below in Section 2.23.2.

Statement of Compliance

The Applicant has mapped waters of the United States within the Project Lease Boundary as described in Section 3.3 and Section 3.5 of this ASC. No wetlands or waters of the United States are proposed to be filled as a result of the Project (i.e., no direct impacts to wetlands or waters of the United States would occur). No discharge or runoff impacts are expected to occur to surface waters (see Section 3.3.2). Indirect impacts to surface water would be minimal, if any, due to the mitigation measures discussed in Section 3.3.3. Because the Project design would avoid impacts to wetlands and waters of the United States as stated in Section 3.3 and Section 3.5, the need for a Section 404 permit under the CWA is not anticipated and a JARPA is not provided with this ASC. Accordingly, the Project would comply with the CWA. If at final design, the Project cannot avoid impacts to waters of the United States, or if the Project design is changed in a manner that would otherwise require Section 404 permit authorization and Section 401 certification, the Applicant would submit a JARPA to EFSEC for review as a condition of approval.

2.23.2 Pertinent State Statutes, Regulations, Rules, and Permits

This section describes the Applicant's ability to comply with the pertinent state statutes, regulations, rules, and permits identified in Table 2.23-1.

2.23.2.1 Land and Natural Resources

Pursuant to RCW 79.36, the DNR requires authorization to obtain a right-of-way or easement across state-owned lands (DNR 2020).

Statement of Compliance

The Project Lease Boundary includes five DNR parcels that are state trust lands, four of which include proposed Turbines and supporting facilities, and one that would be crossed by the proposed transmission line and is a possible site for the solar component of the Project (Figure 2.1-2). On July 2, 2020, the DNR provided a letter to the Applicant agreeing to negotiate a wind lease for four of the five DNR parcels identified on Figure 2.1-2. The Applicant is currently in discussions with DNR regarding the fifth parcel. This ASC includes an evaluation of potential environmental impacts to the DNR lands, and DNR is also completing its own State Environmental Policy Act (SEPA) analysis (potentially conducted in tandem with EFSEC's SEPA review) prior to issuing lease and right-of-way approvals. The Applicant would obtain final approval of easements from DNR prior to Project construction on state-owned land.

2.23.2.2 Fish and Wildlife

WDFW Wind Energy Guidelines

The WDFW provides guidelines for wind energy development to minimize the impact of construction and operations on wildlife and habitats (WDFW 2009). The WDFW does not have regulatory authority specific to wind power development. However, its guidelines provide consistent recommendations for the development of land-based wind energy projects that mitigate impacts to fish and wildlife habitats in Washington State (WDFW 2009). WDFW has not adopted siting guidelines for solar facilities, and the WDFW wind energy guidelines are not readily applicable to solar and BESS project elements. Hence, the Applicant has evaluated impacts of the solar and BESS project elements pursuant to WDFW's rules applicable to Priority Habitat and Species (PHS) rules as described below, with the evaluation of impacts and mitigation in accordance with these rules.

Statement of Compliance

The Applicant conducted wildlife baseline studies consistent with the WDFW Wind Power Guidelines (WDFW 2009) as well as USFWS Guidelines (USFWS 2012, 2013, 2016). The Applicant also coordinated with WDFW and USFWS regarding survey methods and results and Project permitting (see Section 3.4). The Applicant's proposed measures to avoid, minimize, and otherwise mitigate impacts to wildlife species are provided in Section 3.4.3. The Applicant would develop a mitigation plan for the Project consistent with the WDFW Wind Power Guidelines (WDFW 2009), where applicable.

State Threatened and Endangered Species and Priority Habitats and Species

Pursuant to WAC 232-12, the WDFW provides information on the classification of wildlife species and designates certain PHS. The WDFW also regulates fish and wildlife in accordance with RCW 77 and WAC 220. State protected species regulations under WAC 220-610 include provisions for endangered, threatened, and sensitive wildlife species, ESA-listed fish, and bald eagle protection rules. Fish and aquatic habitats are further protected under RCW 77.55, the Hydraulic Code. Projects that could occur in or near waters of the State may be subject to the Hydraulic Project Approval process. When required, the application for Hydraulic Project Approval is either included with the JARPA or submitted through WDFW's online Aquatic Project Permitting System tool and reviewed for authorization by WDFW.

Statement of Compliance

The potential for Project construction and operation to impact PHS and other fish and wildlife is discussed in Section 3.4. The Applicant may conduct micrositing or implement other design measures to avoid and minimize impacts to waters of the State as described in Section 3.3 and Section 3.4. Final design for road and electrical collection line crossings of waters of the State will determine whether an HPA is required; a JARPA is not provided with this ASC. If at final design, the Project cannot avoid impacts to waters of the State, or if the Project design is changed in a manner that would otherwise require an HPA, the Applicant would submit a JARPA or Aquatic Project Permitting System documentation to EFSEC for review as a condition of approval.

The Applicant has consulted with WDFW and conducted wildlife baseline studies discussed in Section 3.4. The WDFW recommendations would be observed to minimize risk for PHS and wildlife within the Project Lease Boundary. The Applicant's proposed measures to avoid, minimize, and otherwise mitigate impacts to wildlife species are provided in Section 3.4.3. Through implementation of these measures, the Project would not result in significant impacts to PHS. In addition, the Applicant would develop a mitigation plan for the Project consistent with the WDFW Wind Power Guidelines (WDFW 2009), where applicable.

2.23.2.3 Transportation

WSDOT requires an Access Permit, Utility Permit, and Oversize and Overweight Permit for projects that connect to state roads, cross state roads, make improvements to state roads, use state roads to transport oversized equipment, or otherwise occupy state road right-of-way. WSDOT permits are typically ministerial and obtained by a licensed contractor prior to construction.

Statement of Compliance

Trucks moving heavy loads, construction materials, or equipment are anticipated to access the Project from state managed roads identified in Section 4.3. Prior to construction, the Project contractor would obtain the necessary WSDOT Access Permit, Utility Permit, and Oversize and Overweight Permit to work in state road right-of-way and use state roads to transport oversized equipment. The Applicant would also require authorization to cross I-82 with electrical lines, either along an existing bridge or buried underground. The Applicant would complete a Utility Accommodation Application to authorize this use. The Applicant's proposed measures to avoid, minimize, and otherwise mitigate impacts to state managed roads are provided in Section 4.3.3.

2.23.2.4 Electrical Construction Permit

The Washington Department of Labor and Industries permits, inspects, and enforces regulations relating to electrical installations, pursuant to applicable sections of WAC 296-45 and WAC 296-

46B. The Washington Department of Labor and Industries regulates and enforces electrical permitting, inspections, and design for electrical installations either directly or pursuant to an agreement with EFSEC.

Statement of Compliance

The Applicant's licensed construction contractor would comply with the applicable sections of WAC Ch. 296-45 to WAC Ch. 296-46B and obtain an Electrical Construction Permit from the Washington Department of Labor and Industries. Required permits obtained by the Applicant's licensed contractor would be provided to EFSEC and Benton County prior to construction. The Project would be designed and constructed in conformance with WAC 296-45 and WAC 296-46B. In addition, the Applicant and its contractors would comply with applicable federal, state and local health and safety standards identified in Section 4.1.2 of this ASC.

2.23.2.5 Noise Control

Ecology regulates and enforces noise standards and control pursuant to RCW 70.107, Noise Control; WAC 173-58, Sound Level Measurement Procedures; and WAC 173-60, Maximum Environmental Noise Levels.

Statement of Compliance

The Applicant conducted a noise assessment and would design, construct, and operate the Project to comply with Ecology's applicable noise standards and noise control measures. The Applicant's proposed measures to satisfy Ecology's applicable noise standards are identified in Section 4.1.1 of this ASC.

2.23.2.6 Water Quality Storm Water Discharge: Construction Activities and Operation

The NPDES is administered by the EPA under 42 United States Code (U.S.C.) 1251 of the federal CWA. The EPA has delegated responsibility to administer the NPDES permit program to Ecology in accordance with RCW90.48, Water Pollution Control Act. To satisfy NPDES, Ecology requires a Construction Stormwater General Permit for construction activities that would disturb more than 1 acre of land (Ecology 2020). However, for projects under EFSEC jurisdiction, EFSEC administers NPDES compliance pursuant to WAC 463-60-537 and WAC Ch. 463-76. Therefore, EFSEC reviews projects for compliance with Washington's Waste Water General Permit Program (WAC 173-226) and Water Quality Standards for Surface Waters of the State (WAC 173-201A) which have been established to comply with NPDES. Ecology would require a Sand and Gravel General Permit for potential stormwater discharges associated with rock crushing and concrete batch plants if conducted within the Project Lease Boundary.

Statement of Compliance

The Applicant would obtain necessary NPDES permit coverage from EFSEC pursuant to WAC 463-60-537 and WAC 463-76. A Notice of Intent (NOI) is included with this ASC (see Section 5.2). The Applicant would also prepare a SWPPP and ESCP as part of this process. During Project construction and operation, fuel or oil stored aboveground would be kept in secondary containment if it is located less than 600 feet from navigable waters of the state or near a drain that may impact navigable waters of the state (WAC 173-180-320(8)). The Applicant or the Applicant's construction contractor would obtain a Sand and Gravel General Permit from

Ecology for concrete batch plant operations, if needed. Therefore, the Project would comply with state and federal standards for stormwater management during construction and operation.

2.23.2.7 Air Quality

As described in Section 3.2, the Clean Air Act (CAA) is the primary federal statute governing air quality. The EPA has primary and secondary National Ambient Air Quality Standards (NAAQS) for six criteria pollutants. The secondary standards are concentration levels judged necessary to protect public welfare and other resources from known or anticipated adverse effects of air pollution. The State of Washington has adopted standards identical to the federal levels (see WAC 173-476, Ambient Air Quality Standards). Local air quality is measured against these national and state standards, and areas that do not meet the standards are designated as "non-attainment" areas. The State of Washington has rules administered through Ecology or in partnership with local air agencies for permitting new emissions sources in both attainment and non-attainment areas of the state, and additional requirements are imposed by the local air authority, the BCAA.

EFSEC issues authorizations for air emissions for sources under its jurisdiction. In general, if potential emissions from stationary sources exceed certain thresholds, approval from the appropriate permitting authority is required before beginning construction. New sources in non-attainment areas must undergo more rigorous permitting to bring the area back into compliance with air quality standards. The two most common permits associated with industrial activity emitting regulated air pollutants are Notice of Construction (NOC)/New Source Review approvals and PSD permits. WAC 463-78 and 173-400 establish the requirements for review and issuance of NOC approvals for new sources of air emissions under EFSEC jurisdiction. Washington State and BCAA regulate what are known as "fugitive" air emissions, which consist of pollutants that are not emitted through a chimney, smokestack, or similar facility.

If a portable concrete batch plant would be used, a NOC is not required under WAC 173-400. However, the BCAA would require a NOC permit to allow one year of operation within the county and would require filing of an NOI for each potential relocation. If diesel-powered generators (i.e., nonroad engines) are needed during Turbine commissioning, a NOC is not required (WAC 173-400-035(2)); however, an NOI is required for BCAA to confirm the use is in compliance with NAAQS. In addition, WAC 173-400-040(9)(a) requires owners and operators of fugitive dust sources to take reasonable measures to prevent dust from becoming airborne and to minimize emissions.

The BCAA also requires notification prior to commencement of any work that would generate fugitive air emissions (BCAA Regulation 1 Section 4.02.D). A dust control plan that identifies management practices and operational procedures to effectively control fugitive dust emissions must be maintained and provided to the BCAA prior to construction (BCAA Regulation 1 Section 4.02.E). In Washington State, greenhouse gas (GHG) emissions are regulated by RCW 80.80, which establishes goals for statewide reduction of GHG emissions. WAC 173-441 established an inventory of GHG emissions through a mandatory greenhouse reporting rule for certain operations.

Statement of Compliance

The Project is not located within a non-attainment area for any criteria pollutants (EPA 2020). A NOC is not required for the Project Turbines, solar arrays, or optional BESS because there would be no permanent source of regulated air emissions associated with these components. A PSD Permit would not be required for the Project because the generation of electricity by Turbines or solar arrays does not produce air emissions.

To comply with WAC 173-400, the Applicant's licensed construction contractor would obtain a NOC permit from the BCAA, which implements state clean air regulations in Benton County instead of Ecology. This would allow Project concrete batch plants to operate for a period of one year. The Applicant or its contractor would also submit an NOI to BCAA for review and approval in the event that temporary diesel-powered generators are needed for Turbine commissioning. To prevent and reduce fugitive dust emissions during construction, the Applicant would prepare a Dust Control Plan. The Dust Control Plan would consider and incorporate dust control guidance from the BCAA as applicable (Benton Clean Air Agency 2020). GHG regulations would not apply to the Project because it would not produce GHG emissions.

2.23.2.8 Shorelines of the State

Per RCW 90.58.140(9), EFSEC jurisdictional energy facilities are exempt from the permit requirements of the Shoreline Management Act. In non-EFSEC settings, Ecology regulates waters designated as Shorelines of the State and associated wetlands, as defined in WAC 173-22. Therefore, impacts that would occur in designated Shorelines of the State would need to be addressed in a JARPA that would be submitted to Ecology. If the project is considered a "substantial development" by the definition stated in RCW 90.58.030(3)(e), then a substantial development permit would be required for any work that impacts designated Shorelines of the State and would be submitted to Ecology in conjunction with the JARPA. A Conditional Use Permit (CUP) and compliance with the Benton County Shoreline Master Program (SMP) would also be required. CUPs cannot be approved unless they are consistent with policies and procedures of the Shoreline Management Act, Ecology rules, and the local shoreline master program.

Statement of Compliance

Designated Shorelines of the State are not located within or adjacent to the Project Lease Boundary. The nearest Shoreline of the State is the Yakima River, which is located approximately 2 miles east of the Project Lease Boundary. Therefore, policies specified in RCW 90.58.020 and the Benton County SMP would not apply to the Project.

2.23.2.9 State Environmental Policy Act

The applicable SEPA statutes and regulations include RCW 43.21C, Washington Environmental Policy Act, WAC 197-11, Ecology SEPA Rules, and Section 6.35 of the BCC, which establish requirements for compliance with SEPA. EFSEC will serve as the lead agency for SEPA review.

Statement of Compliance

The Applicant has prepared a SEPA Environmental Checklist in compliance with the statutes and regulations set out above (see Appendix C). EFSEC would issue a SEPA Determination to satisfy these regulations. The substantive SEPA requirements set out in Section 6.35 of the BCC are the same as those used by EFSEC in its SEPA process. Therefore, the Project can comply with applicable SEPA procedural rules and statutes. The Applicant believes that the probable significant adverse environmental impacts can be reduced, with mitigation, to a level of non-significance as defined and understood in SEPA.

2.23.2.10 Archaeological Sites

Pursuant to RCW 27.53, Archaeological Sites and Resources, the Washington DAHP regulates and protects the cultural and historic resources in the State of Washington.

Statement of Compliance

The Applicant's consultant, HRA, conducted agency and tribal coordination (Section 1.12), cultural resource background research (i.e., archival and record search), archaeological surveys, an architectural inventory, and provided NRHP and management recommendations for the Project. HRA conducted a pedestrian survey of 10,260.7 acres on private land and 702.5 acres on DNR land that included Turbine, access road, crane path, and connection line locations within the Project Lease Boundary (see Section 4.2.5 of this ASC). HRA is conducting additional archaeological surveys for Project micrositing areas not yet surveyed. Additional information would be provided to EFSEC as subsequent cultural reports and information become available, which is anticipated in the spring of 2021.

As a result of HRA's investigations on behalf of the Applicant (2020a, 2020b), seven newly recorded archaeological "sites," one previously recorded archaeological site, and six archaeological isolates were documented within the Project Lease Boundary.[11] NRHP eligibility status and Project management recommendations for archaeological and architectural resources within the Project are provided in Table 4.2.5-3. The Applicant plans to implement avoidance measures and avoid these resources through design. If they cannot be avoided and would be impacted by Project design, additional archaeological investigations would be necessary to determine their NRHP eligibility and assess potential Project impacts. With implementation of mitigation measures discussed in Section 4.2.5.3, impacts to historic and cultural resources would not be significant.

The Applicant would submit a revised cultural survey report to DAHP for review and concurrence as a condition prior to Project construction. The Applicant is also conducting outreach to affiliated Native American tribes and requesting traditional use studies for the Project Lease Boundary. Final design of the Project would incorporate the results and recommendations

[11] Washington State statutes are interpreted to define an archaeological isolate as a single artifact and an archaeological site as a feature or two or more artifacts that meet the definition of "objects." Pursuant to RCW 27.53.030(2), "Archaeological object" means an object that comprises the physical evidence of an indigenous and subsequent culture, including material remains of past human life, including monuments, symbols, tools, facilities, and technological by-products. Pursuant to RCW 27.53.030(3), "Archaeological site" means a geographic locality in Washington, including but not limited to, submerged and submersible lands and the bed of the sea within the state's jurisdiction, that contains archaeological objects.

for protective or mitigation measures made in the cultural resource survey, DAHP letter, tribal outreach, and tribal studies. See Section 4.2.5 of this ASC for additional detail on the Project's compliance with RCW 27.53.

2.23.3 Pertinent Local Ordinances and Permits

The following subsections demonstrate Project compliance with local ordinances and permits associated with Benton County. Section 2.23.3.1 demonstrates that the Project complies with applicable land use regulations and development standards of the BCC (Benton County 2020a). Section 2.23.3.2 describes Project consistency with applicable goals and policies of the Benton County Comprehensive Plan (BCCP) (Benton County 2020b). The Project is located entirely within Benton County's Growth Management Act Agriculture (GMA AG) land use designation and entirely within Benton County's corresponding Growth Management Act Agriculture District (GMAAD) (Figure 2.1-3 and Figure 2.1-4). No portion of the Project or Project Lease Boundary occurs within a designated Urban Growth Area (UGA) (Figure 2.1-3).

Absent EFSEC jurisdiction, Benton County would require a CUP for Project development in the GMAAD zoning district. However, per RCW 80.50.060, the provisions associated with EFSEC Sire Certification apply when an Applicant chooses to receive certification under this chapter, regardless of the generating capacity of the project. RCW 80.50.110 and WAC 463-28 allow EFSEC to permit and authorize an energy generation facility with appropriate consideration of Project consistency with Benton County's land use regulations. As described below, the Project complies with applicable criteria of the BCC and supports implementation of the BCCP by harnessing the County's renewable wind and solar resources for economic and environmental benefits, while minimizing impacts to other natural resource values and agricultural lands of commercial long-term significance.

2.23.3.1 Benton County Code

This section demonstrates Project compliance with applicable provisions from the following Titles and Chapters of the BCC:

- Title 6 Health, Welfare, and Sanitation
  - Chapter 6.35 Environmental Policy
- Title 6A Public Nuisance Noise
  - Chapter 6A 16.15.040 Public Nuisance Noise- Unlawful
  - Chapter 6A 16.15.050 Exemptions
- Title 11 Zoning
  - Chapter 11.03 Definitions
  - Chapter 11.17 Growth Management Act Agriculture District (GMAAD)
  - Chapter 11.42 General Use Regulations
  - Chapter 11.50 Variance and Conditional Use
- Title 15 Environment
  - Chapter 15.02 General Provisions
  - Chapter 15.04 Wetlands

- Chapter 15.06 Aquifer Recharge Areas
- Chapter 15.08 Frequently Flooded Areas
- Chapter 15.12 Geologically Hazardous Areas
- Chapter 15.14 Fish and Wildlife Conservation Areas

The criteria and requirements, as they appear in the BCC, are copied below in italics, with some titles abbreviated. The provisions are followed by the Applicant's statement of compliance.

Title 6 Health, Welfare and Sanitation

Section 6.35.065 Environmental Checklist

(a) A completed environmental checklist (or a copy), in the form provided in WAC CH. 197-11-960, shall be filed at the same time as an application for a permit, license, certificate, or other approval not specifically exempted in this chapter; except, a checklist is not needed if the county and applicant agree an EIS is required, SEPA compliance has been completed, or SEPA compliance has been initiated by another agency. The county shall use the environmental checklist to determine the lead agency and, if the county is the lead agency, to determine the responsible official and to make the threshold determination.

(b) For private proposals, the county will require the applicant to complete the environmental checklist, providing assistance as necessary. For county proposals, the department initiating the proposal shall complete the environmental checklist for that proposal.

Statement of Compliance

While the Project is a private proposal for development in Benton County, the Applicant has opted into EFSEC jurisdiction and the Project is subject to EFSEC review. The Applicant completed a SEPA environmental checklist consistent with WAC 197-11-960. The Applicant's SEPA environmental checklist is provided as Appendix C to this ASC. Absent EFSEC jurisdiction, Benton County would likely have been the SEPA lead agency responsible for making a significance determination regarding the Project. Instead, a SEPA Determination would be issued by EFSEC in compliance with the SEPA process and applicable rules under WAC 197-11. The Applicant's SEPA environmental checklist (Appendix C) refers to detailed analysis in this ASC to provide EFSEC with sufficient information to make a SEPA determination. This ASC and attached SEPA environmental checklist (Appendix C) demonstrate that with the implementation of proposed avoidance, minimization, and mitigation measures, the Project would not have a significant adverse impact on environmental resources.

Title 6A Public Nuisance Noise

Section 6A.15.040 Public Nuisance Noise-Unlawful

It is unlawful for any person to make, continue, or cause to be made or continued or to allow to originate from his or her personal or real property any public nuisance noise which:

(a) is plainly audible within any dwelling unit which is not the source of the sound or is generated within two hundred (200) feet of any dwelling; and,

(b) either annoys, disturbs, injures or endangers the health, comfort, repose, peace or safety of others.

Section 6A.15.050 Exemptions

The following sounds are exempt from the provisions of this ordinance and are not public nuisance noises:

(g) sounds originating from harvesting, farming, ranching, agricultural, industrial or commercial activities;

(k) sounds created by construction or refuse removal equipment;

Statement of Compliance

Sounds generated by the Project would be classified as exempt from the Benton County's noise provisions as they would be limited to sounds originating from industrial or commercial activities (BCC 6A.015.050(g)) and sounds created by construction or refuse removal equipment (BCC 6A.015.050(k)). No residences would be located within 1,000 feet of a Turbine tower base and the proposed solar arrays, project substations, and BESS would not occur within 200 feet from residences. The Project is required to comply with Washington State noise regulations under WAC 173-60 and is evaluated pursuant to the applicable state requirements in Section 4.1.1 of this ASC. Based on the analysis presented, the Option 1 layout represents the maximum scenario for noise impacts. With the implementation of noise mitigation measures identified in Section 4.1.1.3, the Applicant demonstrates that the maximum noise scenario (Option 1 layout) is not predicted to exceed WAC noise regulations at any noise sensitive receptors, such as residences, and compliance is successfully demonstrated at all property boundaries. Therefore, though exempted, the Project would satisfy the County's applicable noise provisions under BCC 6A.015.040.

Title 11 Zoning

The Project is located entirely within Benton County's GMAAD zoning district (Figure 2.1-4). This section addresses Benton County zoning requirements that are applicable to the Project in the GMAAD zoning district. The Applicant demonstrates compliance with the applicable criteria and requirements under the following chapters and sections of BCC Title 11 (Zoning):

- Title 11 Zoning
  - Chapter 11.03 Definitions
  - Chapter 11.17 Growth Management Act Agriculture District (GMAAD)
    - Section 11.17.040 Allowable Uses
    - Section 11.17.070 Uses Requiring A Conditional Use Permit
    - Section 11.17.110 Building Requirements
    - Section 11.17.120 Setback Requirements
  - Chapter 11.42 General Use Regulations
    - Section 11.42.040 Building Permits
    - Section 11.42.070 Fencing Standards
    - Section 11.42.100 Solar Power Generator Facility – Major
  - Chapter 11.50 Variance and Conditional Use
    - Section 11.50.040 Conditional Use
    - Section 11.50.050 Procedures – Variance and Conditional Use Permits

As described above, RCW 80.50.110 and WAC 463-28 allow EFSEC to permit and authorize an energy generation facility with appropriate consideration of the Project's consistency with Benton County land use regulations.

Section 11.03.010 Definitions

(53) "Compatibility" means the congruent arrangement of land uses and/or project elements to avoid, mitigate, or minimize (to the greatest extent reasonable) conflicts.

(57) "Conditional Use Permit" means a permit which is granted for a conditional use. The term "conditional use" means a use subject to specified conditions which may be permitted in one (1) or more classifications as defined by this title but which use, because of characteristics peculiar to it, or because of size, technological processes or type of equipment, or because of the exact location with reference to surroundings, streets and existing improvements or demands upon public facilities, or impacts to ground or surface water requires a special degree of control to make such uses consistent with and compatible to other existing or permissible uses in the same zone or zones, and to assure that such use shall not be adverse to the public interest.

(167) "Solar Power Generator Facility, Major" means the use of solar panels to convert sunlight directly or indirectly into electricity. Solar power generators consist of solar panels, charge controllers, inverters, working fluid system, and storage batteries. Major facilities are developed as the primary land use for a parcel on which it is located and does not meet the siting criteria for a minor facility in BCC 11.03.010(168).

(182) "Utility Substation Facility" means above or below ground structures that are necessary to provide or facilitate distribution, transmission, or metering of water, gas, sewage, and/or electric energy. Such facilities may consist of, but are not limited to, the following:

(a) Water, gas, and electrical distribution or metering lines and sites;

(190) "Wind Turbine" means a machine with turbine apparatus (rotor blades, nacelle and tower) capable of producing electricity by converting the kinetic energy of wind into rotational, mechanical and electrical energy; provided, the term does not include electrical distribution or transmission lines, or electrical substations.

(191) "Wind Turbine Farms" means two or more wind turbines on one parcel.

(192) "Wind Turbine Height" means the distance measured from the ground level to the highest point on a wind turbine, including the rotor blades.

Statement of Compliance

The Project meets the County definition of a "Solar Power Energy Facility, Major" and "Wind Turbine Farm," containing two or more "Wind Turbines" (see BCC 11.03.010(167), (190), and (191)). Both the "Solar Power Energy Facility, Major" and "Wind Turbine Farm" may be permitted as conditional uses in the Benton County GMAAD zoning district (see BCC 11.17.070). Additionally, the Applicant is seeking authorization to construct two BESS as part of the wind and solar facility. Section 11.17.070(t) allows "related support structures and other improvements" as part of a wind energy generation project. The Applicant proposes the installation of the two BESS on the site, which would be fully integrated with the solar PV and wind generation facility. The zoning code allows the wind, solar, and battery components as a single integrated facility. The Applicant has not yet chosen the specific type or manufacture of the energy storage batteries and related equipment.

Along with the battery storage component, the overall facility would include other "related support structures and other improvements" such as onsite and offsite substations, generator intertie lines, underground collection cables, O&M building, solar inverters, and other components required for the wind and solar PV generation facility. As noted, the energy Project would operate as a single integrated facility enabling the Project to deliver power to local and regional utilities at a continuous capacity and duration that meets current utility expectations of renewable energy projects. A Zoning Determination and Interpretation letter from Benton County to the Applicant reviews the applicability of these definitions, included as Appendix D.

The Project Turbines analyzed in this ASC are described in Section 2.3.1. The Project includes Turbines capable of producing electricity by converting the kinetic energy of wind into electrical energy, meeting Benton County's definition of "wind turbine." Because the Project would include up to 244 Turbines, it meets Benton County's definition for "wind turbine farm." The Applicant applies the definition of "wind turbine height," or ground to blade tip height, when reporting maximum Turbine height in response to applicable criteria of the BCC.

The Project also includes the option to develop solar arrays that consist of the solar modules, tracking systems, posts, and related electrical equipment (e.g., cabling, inverters and transformers) described in Section 2.3.2 and the optional BESS described in Section 2.3.5, respectively. The proposed solar array and BESS options meet the County's definition of a "Solar Power Generator Facility, Major" because they are intended to be the primary uses for the parcels on which they are located.

The Project would construct up to four substations on the five potential locations described in Section 2.3.4, shown on Figures 2.3-1 and 2.3-2, and identified in Table 2.3-2. The Project's primary and alternate transmission and intertie lines are described in Section 2.3.10. The various anticipated configurations of the primary and alternate transmission and intertie line routes are shown on Figures 2.3-1 and 2.3-2, and identified in Table 2.3-3. The principal function of the Project's substations is to increase the voltage from the underground collection system (i.e., 34.5 kV) to the voltage of the associated transmission line. The transmission lines serve to facilitate the distribution of electricity produced by the Project to the regional electric grid, as well as transmission between Project substations. As such, the Project substations identified in Table 2.3-2 and the 230-kV to 500-kV transmission lines identified in Table 2.3-3 meet Benton County's definition of a "Utility Substation Facility" under BCC 11.03.010(182), which include above ground "structures that are necessary to provide or facilitate distribution, transmission, or metering of water, gas, sewage, and/or electric energy." In addition, Section 2.5 clarifies that the Project's proposed transmission lines are related and supporting facilities and not a stand-alone electrical transmission facility as defined under RCW 80.50.060(3).

Per BCC 11.17.070(t), the Project's electrical collection system, access roads, O&M facilities, meteorological towers, and SCADA system are considered "related support structures and other improvements" necessary for development of the Project.

Section 11.17.040 Allowable Uses

Provided all applicable code provisions are satisfied, the following uses are allowed within the GMA Agricultural District on a single parcel of record:

(n) Public or quasi-public buildings and yards and utility buildings, such as: pumping stations, fire stations, substations and telephone exchange and distribution facilities.

Statement of Compliance

The Project substations meet Benton County's definition of a "Utility Substation Facility" under BCC 11.03.010(182). The Project substations described in Section 2.3.4 would each occur on a single parcel of record within Benton County's GMAAD zoning district. Therefore, the Project substations would be considered allowable uses in the GMAAD zoning district and the Project complies with BCC 11.17.040(n).

Nonetheless, this ASC evaluates the Project substations and transmission line as related support structures to the wind and solar facilities, and optional BESS components in response to the conditional use permit approval criteria for BCC 11.50.040 below.

(s) Meteorological towers used to gather data to assess wind energy potential; provided, that the towers:

(1) Shall be located at least forty (40) feet for every one (1) foot of tower height or one mile, whichever is greater, from the ends of and at least five thousand (5,000) feet from the sides of all runways which are available solely for private use and identified on the most current edition of the Sectional Aeronautical Charts produced by the National Aeronautical Charting Office (NACO); and

(2) Must comply with the Federal Aviation Regulations Part 77, Objects Affecting Navigable Airspace, as amended, including but not limited to, providing such notices to the FAA as required thereunder and compliance with all requirements or prohibitions imposed by the FAA on the applicant's proposal.

Statement of Compliance

The Project would include up to four permanent meteorological towers described in Section 2.3.8; however, up to 13 possible locations are currently being assessed and included in the impact analysis (in order to ensure flexibility in the selection of the final location). The height of the meteorological towers would not exceed the hub height of the Turbines. The four meteorological towers would be considered an allowable use in the GMAAD, subject to the provisions in BCC 11.17.040(s). The Applicant requests that EFSEC allow up to four meteorological towers to be located within the Project Lease Boundary as needed, under the condition that they would be located within the Micrositing Corridor on land leased for the Project and comply with the setback requirement under BCC 11.17.040(s)(1). The permanent meteorological towers would be marked and lighted as specified by the FAA. As described in Section 2.23.1.1, the Applicant would comply with Federal Aviation Regulations Part 77, including providing such notices to the FAA as required and complying with requirements or prohibitions imposed by the FAA on the proposed Project. Therefore, the Project complies with BCC 11.17.040(s)(1) and (2).

Section 11.17.070 Uses Requiring a Conditional Use Permit

The following uses may be permitted within the GMA Agricultural District if a conditional use permit is issued by the Hearings Examiner after notice and public hearing as provided by BCC 11.50.040:

(t) One (1) wind turbine with a wind turbine height of sixty (60) feet or more or a wind turbine farm and related support structures and other improvements under the following conditions:

(1) The lowest point on all rotor blades must be at least thirty (30) feet above ground level;

Statement of Compliance

As described in the Applicant's response to BCC 11.03.010, the Project meets the County's definition of a "Wind Turbine Farm," containing two or more "Wind Turbines" (see BCC 11.03.010(190) and (191)). The Project would include up to 244 Turbines in Benton County's GMAAD zoning district (Figure 2.1-4). Analysis of potential impacts associated with Project Turbines is based on the largest Turbine models described in Section 2. Per BCC 11.17.070(t), the Project's electrical collection system, access roads, O&M facilities, meteorological towers, and SCADA system described in Section 2 are considered "related support structures and other improvements" necessary for development and operation of the Project Turbines. These related support structures are evaluated throughout this ASC and in response to the conditional use permit approval criteria for BCC 11.50.040. Absent EFSEC jurisdiction, the Project Turbines would require CUP approval for development in Benton County's GMAAD zoning district pursuant to BCC 11.17.070(t).

Based on the potential Turbine specifications evaluated in Table 2.3-1, the lowest point on the proposed Turbine rotor blades would be 36.5 feet above ground level, which complies with BCC 11.17.070(t)(1). Final Turbine model selection would depend on maintaining compliance with applicable provisions of the BCC and ensuring potential impacts would not exceed those described in this ASC. Therefore, the Project complies with these criteria.

> *(2) All wind turbine tower bases must be set back from all dwellings not located on the same parcel at least one thousand (1,000 feet);*

Statement of Compliance

Each Turbine tower base is setback a conservative distance of at least 1,250 feet from all dwellings not located on the same parcel. This conservative setback distance exceeds the requisite 1,000 feet under BCC 11.17.070(t)(2). Furthermore, there are no Turbine tower bases within 1,000 feet of any residences, regardless of parcel. Therefore, the Project complies with this criterion.

The Applicant acknowledges that EFSEC previously approved a setback distance for the Kittitas Valley Wind Power Project and the Desert Claim Wind Power Project, amounting to a minimum of four times the maximum blade tip height from non-participating residents (i.e., landowners without signed agreements with the Certificate Holder). For the Whistling Ridge Energy Project, EFSEC previously approved a setback distance of 2,500 feet from non-participating residents. For landowners with signed agreements, the setback distance was established at a minimum of 625 feet, provided all other setback requirements are met.

The Project has implemented a minimum setback distance in compliance with applicable county requirements under BCC 11.17.070(t) and has added a 10 percent buffer to County required setbacks consistent with industry safety standards. In addition, the Applicant has ensured Turbines are sufficiently far from residences to comply with permissible noise levels under WAC 173-60 discussed in Section 4.1.1 of this ASC. Applicable safety setbacks, such as required minimum distance from public roads and airstrip runways, also have been met under the layouts described in this ASC and addressed in responses to further BCC 11.17.070(t) provisions below. The aesthetics analysis provided in Section 4.2.3 describes visual impacts on potentially sensitive receptors, including residences, and the Applicant has considered and minimized such impacts wherever practicable. Nonetheless, two turbine locations in Turbine Layout Option 2 are slightly closer than 2,684 feet (four times the maximum blade tip height of the tallest Turbine under consideration, the GE 5.5 MW) to the nearest non-participating residences. The Applicant asserts that the analysis presented in this ASC addresses all legally required setbacks and avoids impacts described in applicable standards, and analyzes the impacts to other resources as required under SEPA. Although the site certification agreements approved by EFSEC for Kittitas Valley Wind Power Project and the Desert Claim Wind Power Project have implemented the setback of four times maximum blade tip height from non-participating residents (and 2,500 feet in the case of Whistling Ridge Energy Project), these setbacks are not required under any rules adopted by the state or county, and the current proposed layout avoids health and safety impacts to protected resources as required by law.

Turbine Array Options 1 and 2 are designed to comply with Benton County's setbacks addressed in Section 2.23.3 under Section 11.17.070(t) of the Benton County Code.

> *(3) All wind turbine tower bases must be set back from all property lines a distance equal to the associated wind turbine height, except that, where contiguous properties are leased for an identical duration for development of a wind farm, the tower bases set back from the property lines common with such leased properties may be eliminated so long as no part of any wind turbine extends past any such interior property lines and the above-required setbacks are maintained from the property lines comprising the exterior boundaries of the wind farm;*

Statement of Compliance

Each Turbine tower base is set back at least 499 feet or 671 feet from exterior property lines, depending on Turbine model, ensuring the setback is equal to or greater than the proposed maximum Turbine heights for Turbine Array Option 1 and Option 2 (ground to blade tip) of 499 feet and 671 feet, respectively (Table 2.3-1). Turbine tower bases are set back at least 280 feet from contiguous properties under lease for the Project. This distance is greater than the maximum blade tip length of 278.5 feet and avoids extension of any part of the Turbine past interior property lines within the Project Lease Boundary. Therefore, the Project complies with this criterion.

> *(4) All wind turbine tower bases must be set back from the closest edge of a state, county, or city road right-of-way a distance equal to the wind turbine height;*

Statement of Compliance

Each Turbine tower base is set back at least 650 feet or 671 feet from the closest edge of any state and county road right-of-way in the Project Lease Boundary. The setback distances are designed to be equal to or greater than the proposed maximum Turbine heights for Option 1 and Option 2 (ground to blade tip) of 499 feet and 671 feet, respectively (Table 2.3-1). No incorporated city road right-of-way is within the Project Lease Boundary. Therefore, the Project complies with this criterion.

> *(5) All wind turbine tower bases must be set back a distance equal to the wind turbine height from all borders of the GMA Agricultural District, except for GMA Agricultural District borders adjacent to the Hanford Reservation owned by the Department of Energy or*

> *adjacent to another zoning district adopted by another county that contains a general minimum parcel size of at least twenty (20) acres per parcel;*

Statement of Compliance

Each Turbine tower base is set back at least 499 feet or 671 feet from exterior property lines, including borders of the GMAAD zoning district. The setback distances are designed to be equal to or greater than the proposed maximum Turbine heights for Option 1 and Option 2 (ground to blade tip) of 499 feet and 671 feet, respectively (Table 2.3-1). The Project is not adjacent to the Hanford Reservation or another county. Therefore, the Project complies with this criterion.

> *(6) For wind turbine(s) proposed to be located within four (4) miles of the nearest point of the nearest runway of the nearest airport available for public use, the applicant for a building permit must comply with all the requirements imposed by the Federal Aviation Administration (FAA) and provide a written statement from the FAA that sets forth the FAA's comments and requirements, if any, for the proposal;*

Statement of Compliance

No Turbine locations are proposed within 4 miles of the nearest point of the nearest runway of the nearest airport available for public use, which is the Tri-Cities Airport. The nearest Turbine is located approximately 9.9 miles south of the Tri-Cities Airport. Therefore, this criterion does not apply to the Project. As described in Section 2.23.1.1, the Project would comply with applicable FAA requirements. The Applicant filed FAA Form 7460-1 and expects to obtain a Determination of No Hazard for the Project. Therefore, the Project complies with this criterion.

> *(7) All wind turbine(s) must comply with the Federal Aviation Regulations Part 77, Objects Affecting Navigable Airspace, as currently in effect or as hereafter amended, including but not limited to, providing such notices to the FAA as required thereunder and compliance with all requirements or prohibitions imposed by the FAA on the applicant's proposal;*

Statement of Compliance

The Project would comply with Federal Aviation Regulations Part 77, Objects Affecting Navigable Airspace, as described in Section 2.23.1.1 of this ASC. Per FAA regulations, the Project would provide a Notice of Proposed Construction or Alteration to the FAA and obtain a Determination of No Hazard prior to construction. Therefore, the Project complies with this criterion.

> *(8) Conditional use permit applications for the placement and operation of wind turbines under this section shall be made available for review by the United States Department of Defense (USDOD) in accordance with RCW 36.01.320, as in effect now or hereafter amended. The notice and processing of wind turbine permit applications will be in accordance with Benton County Code chapter 17.10. Pursuant to BCC 11.50.040 (d), the applicant is required to provide sufficient evidence to persuade the Hearings Examiner that the proposed wind turbine is compatible with other uses in the surrounding area, including any military training activities, or is no more incompatible than are any other outright permitted uses in the applicable zoning district, as well as provide all other evidence required by BCC 11.50.040;*

Statement of Compliance

The Project layout avoids military training areas and would not interfere with military training activities. As described in Section 2.23.1.1 of this ASC, the Applicant has consulted with the

DoD and modified the siting of Turbines following instruction from NORAD to ensure the Project is compatible with military training activities. Related correspondence with DoD can be provided to EFSEC upon request. The Applicant's compliance with BCC 11.50.040 is discussed in the following sections, providing sufficient evidence that the proposed Turbines are compatible with other uses in the surrounding area or are no more incompatible that are any other outright permitted uses in the GMAAD zoning district. Therefore, the Project complies with this criterion.

> *(9) All wind turbine tower bases shall be located at least forty (40) feet for every one (1) foot of tower height or one mile, whichever is greater, from the ends of and at least five thousand (5,000) feet from the sides of all runways which are available solely for private use and identified on the most current edition of the Sectional Aeronautical Charts produced by the National Aeronautical Charting Office (NACO);*

Statement of Compliance

The Project has been designed to locate Turbines over 5,000 feet from the sides of all private runways identified on the most current edition of the Sectional Aeronautical Charts (FAA 2019). Coopers Landing is the nearest runway available solely for private use and is located approximately 2 miles northeast from the Project's nearest Turbine tower base. The private runway at Coopers Landing runs east to west. Based on this heading, no Turbine under Option 1 or 2 would occur within 40 feet for every one foot of tower height (ground to blade tip) from the ends of the runway, which is measured at 3.8 and 5.1 miles, respectively. Therefore, the Project complies with this criterion.

> *(10) If the use of any wind turbine or wind turbine farm is discontinued for a period of one (1) year or more, the owner of such facility shall remove the facility within ninety (90) days of written notification by the Planning Department. If such facility is not removed within said ninety (90) days, the County may refer the issue to the code enforcement officer for appropriate action pursuant to Chapter 11.43 BCC; and*

Statement of Compliance

The Project is expected to have an operational life of 35 years. Following this, it is anticipated that the Applicant would either repower the facility with a newer model of Turbines or decommission the Project. To ensure compliance with BCC 11.17.070(t)(10), decommissioning would begin within a year following discontinuation of Project operations and the Applicant would remove the wind facility within ninety (90) days of written notification by the Planning Department. Section 2.3.13 provides additional details regarding Project decommissioning. Further, EFSEC would ultimately have jurisdiction over Project decommissioning requirements. Therefore, the Project complies with this criterion.

> *(11) The wind turbine(s) and all associated service roads may not displace more than five (5) percent of the area of that parcel(s) on which they are located.*

Statement of Compliance

Appendix E demonstrates that permanent disturbances associated with Turbine tower foundation pedestals and permanent disturbances associated with the Project's new 16-foot-wide access roads would not displace more than 5 percent of the parcel area on which they are located. The largest potential area of displacement from Turbines and associated service roads on any given parcel is approximately 2.3 percent (Appendix E). To be conservative, the analysis also included the footprint from Project meteorological towers and associated access roads. Therefore, the Project complies with this criterion.

(cc) Solar power generator facility, major.

Statement of Compliance

The Project meets the County definition of a "Solar Power Energy Facility, Major" (see BCC 11.03.010(167)). The Project includes the option to develop solar arrays that consist of the solar modules, tracking systems, posts, and related electrical equipment (e.g., inverters and transformers) and the optional BESS described in Section 2.3.2 and Section 2.3.5, respectively. The proposed solar arrays and BESS options meet the County's definition of a "Solar Power Generator Facility, Major" because they are intended to be the primary uses for the parcels on which they are located.

The proposed solar arrays, BESS options, and related support structures would occur entirely within Benton County's GMAAD zoning district (Figure 2.1-4). Analysis of potential impacts associated with the Project's proposed solar arrays and related and associated BESS options are based on the project description provided in Section 2. Absent EFSEC jurisdiction, the proposed solar arrays and BESS options would require CUP approval for development in Benton County's GMAAD zoning district pursuant to BCC 11.17.070(cc). The Applicant addresses the relevant general use regulations under BCC 11.42.100 and conditional use approval criteria under BCC 11.50.040 and BCC 11.50.050 for these Project components. Therefore, the Project complies with this criterion.

Section 11.17.110 Building Requirements

All lands, structures and uses in the GMA Agricultural District shall conform to the following building requirements:

(a) No residential building shall have a height greater than thirty-five (35) feet.

(b) Development on land shall be in compliance with Chapter 15.02 BCC, Chapter 15.04 BCC, Chapter 15.06 BCC, Chapter 15.08 BCC, Chapter 15.12 BCC, and Chapter 15.14 BCC. [Ord. 611 (2018) § 67]

Statement of Compliance

No residential buildings are proposed as part of the Project. Compliance with Chapter 15.02 BCC (General Provisions), Chapter 15.04 BCC (Wetlands), Chapter 15.06 BCC (Aquifer Recharge Areas), Chapter 15.08 BCC (Frequently Flooded Areas), Chapter 15.12 BCC (Geologically Hazardous Areas), and Chapter 15.14 BCC (Fish and Wildlife Conservation Areas) is addressed in Sections 3.1, Section 3.3, Section 3.4, and Section 3.5 of this ASC, respectively. Compliance is also summarized below in the Applicant's response to BCC Title 15 (Environment). Therefore, the Project complies with this criterion.

Section 11.17.120 Setback Requirements

All lands, structures, and uses in the GMA Agricultural District shall conform to the following minimum setback requirements; unless otherwise excepted as provided in BCC 11.17.130:

(a) Each structure on a lot shall have a front yard setback of fifty-five (55) feet from the centerline of any city, county, or state road right of way of sixty (60) feet or less in width,

twenty-five (25) feet from the property line bordering any road wider than sixty (60) feet, and twenty-five (25) feet from the legally-established boundary line of any access and/or combined access and utility easement adjacent to or within the property.

(b) Each structure on a lot shall have a setback of twenty (20) feet from its rear and side lot line(s).

<u>Statement of Compliance</u>

The proposed solar arrays and BESS options meet the County's definition of a "Solar Power Generator Facility, Major" (see BCC 11.03.010(167)). In accordance with BCC 11.42.100(b)(1), development of a "Solar Power Generator Facility, Major" is subject to the minimum zoning setbacks for the GMAAD zoning district listed above.

The County defines both "Front Yard" and "Setback, Front" under BCC 11.03.010(77) and (161), respectively. The front yard is "the required open space between the front property line and the nearest part of any building on the lot" BCC 11.03.010(77). The front setback is the "minimum horizontal distance measured perpendicularly from the centerline of the adjacent right-of-way to the nearest wall of the structure" BCC 11.03.010(161). Based on the preliminary layout shown on Figures 2.3-1 and 2.3-2, no Project solar arrays or walled structures would be located within 55 feet from the centerline of any city, county, or state road right of way of 60 feet or less in width, 25 feet from the property line bordering any road wider than 60 feet, and 25 feet from the legally-established boundary line of any known access or combined access and utility easement adjacent to or within the Project Lease Boundary. Project Turbines would comply with the greater setback distances as described above under BCC 11.17.070(t).

Solar array components and security fencing for the solar array sites under consideration would cross side and rear lot lines of adjacent parcels within the Project Lease Boundary. The County defines the side and rear setbacks as the "minimum horizontal distance measured perpendicularly from the nearest property line to the nearest wall of the structure" BCC 11.03.010(162). While solar array components and security fencing would cross side and rear lot lines, these components are not walled structures; therefore, the side and rear setbacks under BCC 11.17.120(b) do not apply to the proposed solar arrays within the Project Lease Boundary.

The Project's enclosed structures would include the control enclosures associated with the Project substations, BESS containers, and O&M facilities. Upon final design, these enclosed structures would be sited to comply with the setback criteria under BCC 11.17.120(a) and (b). As a condition of approval, the Applicant would provide documentation to EFSEC to verify setback compliance prior to the start of construction. Therefore, the Project would comply with the applicable setback criteria under BCC 11.17.120(a) and (b).

<u>Section 11.42.040 Building Permits</u>

(a) No person, company, or corporation shall erect a building or structure of any kind or make any addition to an existing building or structure or alter any building or structure already erected within the unincorporated area of the County of Benton without complying with Title 3 of the Benton County Code.

(b) For building permit applications that will necessitate potable water, evidence of an adequate water supply shall be submitted in accordance with RCW CH. 19.27.097 and, if applicable, compliance with Chapter 15.18 BCC. [Ord. 611 (2018) § 165; Ord. 621 (2020) § 1]

Statement of Compliance

Construction and operation of the Project would comply with applicable sections of Title 3 (Building and Construction) of the BCC including Chapter 3.04 (Building Code), Chapter 3.08 (Plumbing Code), Chapter 3.12 (Mechanical Code), Chapter 3.14 (Energy Code), Chapter 3.16 (Fire Code), and Chapter 3.18 (Minimum Standards Fire Flows, Water Mains, Fire Hydrants, and Roads). Provisions under Title 3 (Building and Construction) of the BCC are understood to apply to design, construction, and operation of the Project's O&M facilities, substations, solar arrays, Turbines, and electrical collection system, BESS, and access roads. As discussed in Section 3.3, no Project components would be placed in special flood hazard areas and the provisions of BCC 3.26 (Flood Damage Prevention) do not apply to the Project. Standards for the design of private access roads are established in BCC 3.18.045 and would be addressed during final design of the Project and submitted to EFSEC with the site plan as a condition of approval, as addressed in the response below to BCC.11.50.040(c). As a condition of approval, the Applicant or its licensed construction contractor would obtain requisite building permits and other ministerial permits from the County as may be administered by EFSEC prior to construction in compliance with Title 3 (Building and Construction) of the BCC.

The Applicant has included information within this ASC to meet the substantive requirements of Title 3 (Building and Construction) for a building permit application under BCC 3.04.018 and pursuant to RCW 19.27.095. A SEPA Checklist is included with this ASC as Appendix C. Project compliance with applicable CUP criteria is addressed below in response to Title 11 (Zoning). The Applicant's licensed contractor would submit a Building Permit Application Form, Septic/Sewage Permit, Plot Plan, Construction Drawings, Conditioned Approval to Construct Road Access Approach on Public Road, and Declaration of Use and Contractor Status before construction, per BCC 3.04.049 through BCC 3.04.054, as may be administered by EFSEC. Proof of water availability is addressed in Section 3.3 of this ASC. Automatic sprinkler systems would be installed in the Project O&M building and BESS containers per BCC 3.04.041. The Applicant or the Applicant's licensed contractor would coordinate with the Benton County Fire Marshal to address special fire protection provisions under BCC 3.04.046 and BCC 3.04.048 as required. Therefore, the Project complies with BCC 11.42.040.

<u>Section 11.42.070 Fencing Standards</u>

> *(a) Fences that are 7 feet or less in height are exempt from a building permit. Fences that are greater than 7 feet in height shall not be erected without first obtaining a building permit from the Benton County Building Department.*
>
> *(b) Fences, regardless of height, to be located in a Flood Hazard Area, will require a Flood Development Permit and compliance with BCC 3.26, as existing and hereafter amended.*
>
> *(c) Fences, regardless of height, shall comply with the following construction standards: Fences shall not be constructed out of tires, pallets, tarps and/or sheet plastic, bed springs, multicolored materials, except colored materials manufactured specifically for fencing (i.e., slats of chain link fences), corrugated sheet metal, wheel rims and similar or like materials not traditionally manufactured or used for fencing purposes. [Ord. 611 (2018) § 168]*

Statement of Compliance

As described in Section 2.3, the proposed solar arrays, Project substations, battery storage facilities, and O&M facilities would be enclosed by a 6 foot-tall security fence designed in accordance with industry standards to provide site safety and security. Project fencing is not anticipated to exceed 7 feet in height and building permits from the Benton County Building Department would not be required for fencing. As discussed in Section 3.3, no Project components or micrositing corridors would be placed in special flood hazard areas and the provisions of BCC 3.26 (Flood Damage Prevention) do not apply to the Project. In addition, Project fencing would not be constructed from materials not traditionally manufactured or used for fencing purposes. Therefore, the Project complies with these criteria.

Section 11.42.100 Solar Power Generator Facility – Major

(b) Major Facilities. Systems that solely serve offsite uses are utility-scale solar facilities sited on a parcel as the principal use.

(1) Setbacks: Shall meet the minimum zoning setbacks for the zoning district in which located.

(2) Height: Twenty (20) feet maximum.

(3) Lot Coverage: The surface area of a ground-mounted system, regardless of the mounted angle, shall be calculated as part of the overall lot coverage for the zoning district in which located.

(4) Visibility:

(i) Solar facilities with panels located at least one hundred fifty (150) feet from an adjacent public street right-of-way, residentially zoned property, or residential use shall not require screening.

(ii) Solar facilities with panels located less than one hundred fifty (150) feet from an adjacent public street right-of-way, residentially zoned property, or residential use shall require screening. Screening is to include a perimeter landscape buffer as determined by the Planning Administrator through the required conditional use permit process.

(5) Solar facilities are to be equipped with a non-reflective finish/coating.

Statement of Compliance

The Project meets the County definition of a "Solar Power Energy Facility, Major" (see BCC 11.03.010(167)). The Project includes the option to develop solar arrays that consist of the solar modules, tracking systems, posts, and related electrical equipment (e.g., cabling, inverters and transformers) described in Section 2.3.2 and the optional BESS described in Section 2.3.5, respectively. The proposed solar arrays and BESS options meet the County's definition of a "Solar Power Generator Facility, Major" because they are intended to be the primary uses for the parcels on which they are located.

The Applicant demonstrates under BCC 11.17.120 that the Project, including the solar arrays and BESS options, would comply with the applicable setback requirements of the GMAAD zoning district. The height of solar modules within the proposed solar arrays (as measured from the top edge of the module) described in this ASC would be 15 feet above ground. At final design, the solar array would not exceed the maximum height of 20 feet allowed for a major solar power generation facility.

Lot coverage standards are not specified under BCC 11.17.090 (Lot Requirements) for the GMAAD zoning district and do not apply to the Project. The proposed solar arrays would not be located within 150 feet from residentially zoned property or residential uses; however, portions may be located within 150 feet of an adjacent public street right-of-way. Views toward the solar arrays may occur when driving on public roads that boarder solar array sites. However, where there is intervening topography, vegetation, or structures, views from local roads located 0.5 mile or more from the Project would be partially to completely screened. When visible, the experience of views towards the solar arrays from public roads would be limited to a short passing view duration and the principal traveler focus would be on the road ahead. For these reasons, and consistent with findings provided in the Project's visual resource analysis (see Section 4.2.3), landscape buffers and screening are not proposed. While the need for screening is not anticipated, should the solar arrays be located within 150 feet from an adjacent public street right-of-way at final design, landscape buffers and screening would be accomplished with a design coordinated with EFSEC. As described in Section 2.3.2.1, the solar modules are contained within antireflective glass panels. Therefore, the Project complies with BCC 11.42.100(b).

Section 11.50.040 Conditional Use

> *(a) Conditional Use Permit-General Standards. The conditional use permit application process allows the Hearings Examiner to review the location and design of certain proposed uses, the configuration of improvements, and the potential impacts on the surrounding area. The application process also allows the Hearings Examiner to ensure that development in each zoning district protects the integrity of that district. The notice, hearing, decision and enforcement procedures are as set forth herein and in BCC 11.50.050.*
>
> *Certain uses are classified as conditional uses because of their unusual nature, infrequent occurrence, special requirements, or potentially significant impacts to the environment, public infrastructure or adjacent properties, and/or possible safety hazards and other similar reasons.*
>
> *Once granted, a conditional use permit may be transferred by a holder thereof after written notice to the Hearings Examiner; provided the use and location must remain the same and the transferee must continue to comply with the conditions of the permit and, if applicable, the requirements set forth in Chapter 11.51 BCC.*

Statement of Compliance

As described earlier, the Project is considered a conditional use in the GMAAD zoning district per BCC 11.17.070(t) and (cc). See below for the Applicant's response to the substantive portion of BCC 11.50.050; other CUP procedural steps do not apply as the Project is being approved under EFSEC jurisdiction instead of through Benton County's CUP process. As the Project would be a new use and does not currently exist it would not meet the definition of non-conforming use. Therefore, BCC 11.51 does not apply to the Project.

> *(b) Conditional Use Application Required—Non-Refundable Application Fee. The Planning Department shall provide application forms for conditional use permits and prescribe the type of information to be provided in the application. No application shall be processed unless it complies with the requirements of this section. A completed application for a conditional use permit shall be filed with the Planning Department accompanied by a non-refundable fee as set by resolution of the Board of County Commissioners.*

Statement of Compliance

The Applicant has elected that the Project be evaluated for approval under EFSEC jurisdiction in lieu of the County's CUP process; therefore, this fee does not apply.

> *(c) Conditional Use Application-Site Plan Required. The Planning Department shall require the applicant to submit an application and a site plan as part of the application whenever such a permit is required for that use under the applicable zoning district. The application and site plan shall contain the following information:*
>
> *(1) Identify the proposed use and associated facilities, together with the names, addresses and telephone numbers of the owner or owners of record of the land and of the applicant, and, if applicable, the names, addresses and telephone numbers of the architect, planner, designer, and/or engineer;*
>
> *(2) The proposed use or uses of the land and buildings; and,*
>
> *(3) A site plan drawing or drawings at a scale of not less than one inch equals fifty feet (1"=50'), unless an alternate scale is approved by the Planning Administrator. The site plan drawing(s) shall include the following:*
>
> *(i) Location of all existing and proposed structures, including, but not limited to, buildings, fences, culverts, bridges, roads and streets;*
>
> *(ii) Boundaries, dimensions and square footage of the parcel or parcels involved;*
>
> *(iii) All setback lines;*
>
> *(iv) All areas, if any, to be preserved as buffers or to be dedicated to a public, private or community use, or for open space under the provisions of this title;*
>
> *(v) All existing and proposed easements;*
>
> *(vi) Location of all utility structures and lines;*
>
> *(vii) All means of vehicular and pedestrian ingress and egress to and from the site and the size and location of driveways;*
>
> *(viii) Location and design of off-street parking areas showing their size and locations of internal circulation and parking spaces;*
>
> *(ix) Location of all loading/unloading areas, including, but not limited to, loading platforms and loading docks where trucks will load or unload;*
>
> *(x) Topographic maps, when the Planning Administrator deems the maps necessary for adequate review, which delineate existing and proposed contours, at intervals of two (2) feet and show the location of existing lakes, streams, and storm water drainage systems from existing and proposed structures, together with an estimate of existing maximum storm runoff, and any other information deemed pertinent for adequate review.*
>
> *(xi) Identification of all special districts, such as fire, school, sewer, drainage improvements, and irrigation districts, in which the proposed use would be located; and,*
>
> *(xii) The proposed number of square feet of paved or covered surfaces, whether covered by buildings, driveways, parking lots or any other structure covering land.*

Statement of Compliance

The Applicant and the Applicant's agent are identified in Section 1.2 and Section 1.4, respectively. Appendix F provides a list of landowners and associated parcel acreage within the

Project Lease Boundary. The landowner list was compiled from publicly available data maintained by Benton County. Appendix F also provides property legal descriptions as noted in Section 2.2 pursuant to WAC 463-60-135.

As a condition of approval, the Applicant's engineer would prepare and submit site drawings to EFSEC for review and approval prior to the start of construction. These plans would substantively comply with the applicable criteria under BCC 11.50.040(C) such as showing the location of existing and proposed structures, parcel boundaries and dimensions, applicable setbacks addressed above under BCC 11.17.070, BCC 11.17.120, and BCC 11.42.100, existing and proposed easements and utility infrastructure, proposed means of ingress and egress, and proposed square feet of paved and covered surfaces. The Applicant would coordinate with EFSEC to confirm precise site plan scale and required details. Special Districts identified within the Project Lease Boundary are described in the Applicant's response to BCC 11.50.040(d)(4) and include service areas for the Kennewick Police Department, Benton County Sheriff's Office, Washington State Patrol, Benton County Fire Department District 1, Kennewick Fire Department, Trios Health Southridge Hospital, and Kennewick School District.

As described in Section 2.3.7, the Project would require two O&M facilities, each of which would be located directly adjacent to the Project's substations. Each facility would include a vehicle parking area and an area for outdoor storage of larger equipment and materials within a fenced area for safety and security.

In compliance with applicable NPDES regulations discussed in Section 2.23.2.6, the Applicant would obtain and comply with the Ecology Construction Stormwater General Permit (CSWGP). See Section 5.2 regarding the NOI for the CSWGP. Construction and operation of the Project would not alter existing drainage systems already in place for agricultural operations and existing development in the Project Lease Boundary. The Applicant would design and implement stormwater drainage systems in consultation with a professional engineer to ensure that minimal erosion would occur. An SWPPP and ESCP with BMPs that the Applicant would follow during construction and operations would be developed as part of the CSWGP. Please refer to Section 3.1 and Section 3.3 for additional information concerning stormwater and erosion control. Therefore, the Project complies with these criteria.

> *(d) Conditional Use-Permit Granted or Denied. A conditional use permit shall be granted only if the Hearings Examiner can make findings of fact based on the evidence presented sufficient to allow the Hearings Examiner to conclude that, as conditioned, the proposed use:*
>
> > *(1) Is compatible with other uses in the surrounding area or is no more incompatible than are any other outright permitted uses in the applicable zoning district;*

Statement of Compliance

The Project is a renewable energy generation facility consisting of wind and solar facilities as well as the two optional BESS. In total, the Project's permanent disturbance footprint would occupy approximately 6,869 acres of Benton County's GMAAD zoning district which represents approximately 1.1 percent of the existing GMAAD area in the County (see Section 4.2.1). Total agricultural land within the Project's permanent disturbance footprint (6,866 acres) represent approximately 0.9 percent of the existing agricultural lands in Benton County, as identified in the

Benton County land cover dataset, which includes some additional land outside of the GMAAD zoning district (see Section 4.2.6). Land uses and habitat attributes in the Project Lease Boundary are predominantly cropland, pastureland, open shrub-steppe habitat and grassland, with few and interspersed single-family rural residences.

"Compatibility" of the Project with "other uses in the surrounding area" under the County code provisions is judged by whether the Project would have a substantiated negative impact on the ability of surrounding landowners to maintain their *existing use of the land*, including the ongoing use for agricultural activities and residential uses. These criteria do not require a demonstration that there will be no change, nor does the change in the use of the Project site itself indicate lack of "compatibility." Compatibility is objectively measured by factors including whether the Project would result in the imposition of additional costs, impair or materially change commercial operations, impair transportation circulation, isolate existing properties, and whether the Project would compel or force changes in known and accepted agricultural practices and other existing uses of the surrounding lands; generally, the question is whether the Project would undermine existing uses or cause any increase in the costs of agricultural uses and practices of the land. As demonstrated throughout this ASC, the Applicant has developed measures to avoid, mitigate, or minimize (to the greatest extent reasonable) potential conflicts with surrounding land uses.

Based on a review of topographic maps and historical aerial photographs between 1958 and 2019, historical uses surrounding the Project Lease Boundary have consisted of rural pasture and agricultural land, cultivated crops with scattered wells and grain elevators, and ranch properties. Current uses on land surrounding the Project Lease Boundary are consistent with the historic uses summarized above. Structures associated with surrounding land uses include rural residences, barns, corrals, and other rural and agricultural structures. Additionally, an operating wind energy facility, the Nine Canyon Wind Project, is located north of and adjacent to the Project Lease Boundary. Section 4.2.6 and Figure 4.2.6-1 identify existing land cover surrounding the Project Lease Boundary based on land types identified in the BCCP, using the most recent data available (Benton County 2020a and 2020b). As depicted on Figure 4.2.6-1, land north of and adjacent to the Project Lease Boundary consists predominately of dryland agriculture and agricultural rangelands with small areas of adjacent development. Land to the east and south and adjacent to the Project Lease Boundary consists predominately of a mixture of dryland and irrigated agriculture. Land west of and adjacent to the Project Lease Boundary consists of dryland agriculture. The wind, solar and battery storage uses would be benign in impacts to these existing uses of surrounding lands, enable a highly beneficial use for clean energy, and in no way force changes of uses on surrounding lands. Roads associated with the Project are generally advantageous for agricultural activities associated with the existing use and may serve to limit soil erosion and airborne dust.

For the purposes of demonstrating compliance with the applicable provisions of BCC 11.50.040(d), the Project is analyzed as two separate uses of land: (1) "Wind Turbine Farm," containing two or more "Wind Turbines" and related support structures [see BCC 11.03.010(190) and (191)]; and (2) "Solar Power Energy Facility, Major" including related support structures and the optional BESS (see BCC 11.03.010(167)). These separate land uses are addressed in turn below.

Wind Turbine Farm. The Project is compatible with the existing agricultural, renewable energy generation, and interspersed residential land uses in areas surrounding the Project's proposed wind facility components. Except for agricultural land that would be permanently disturbed by Project facilities during the life of the Project (see Section 4.2.6), the Project does not preclude or erode existing or future agricultural uses within the Project Lease Boundary. Agricultural uses would continue within the Project Lease Boundary and surrounding area during construction and operation. As described in Section 4.2.6, Project Turbines are largely compatible with existing agricultural operations, including grazing activities. Cattle, sheep, and other domestic animals can graze up to the Turbines and around above ground transmission and collector line support structures. Construction of new access roads or improvements to existing roads would not limit farming practices as farmers would continue to have access (or anticipated improved access) to agricultural fields. While not anticipated, construction and operation of the Turbines may result in some minor alterations to aerial application of pesticides or fertilizers; however, these alterations would not change harvesting patterns and would not be significant so as to increase the cost of farming within the Project Lease Boundary or on surrounding lands. The Applicant would coordinate with landowners to ensure no disruption to current land use activities.

As demonstrated in the BCCP (Benton County 2020b), existing wind farms are presently located in agricultural areas, including the Nine Canyon Wind Project adjacent to the Project Lease Boundary. Prior studies have found that large-scale wind energy facilities do not have a negative impact on the value of agricultural properties that host wind turbines or on rural residential or agricultural properties surrounding wind facilities (Hoen et al. 2009; Hoen et al. 2013; MaRous & Company 2018). In addition, the Project's wind facility components would comply with Benton County's applicable setback standards addressed above in response to BCC 11.17.070 and BCC 11.17.120. Therefore, the Project's "wind turbine farm" components are compatible with other uses of the lands in the surrounding areas.

Solar Power Energy Facility, Major. Construction, operation, and maintenance of the proposed solar arrays and optional BESS would reduce the area available for agricultural cultivation within the Project Lease Boundary for the life of the Project. However, the Applicant is working with landowners to microsite the solar arrays within the Solar Siting Areas to minimize adverse impacts to the landowners' ongoing agricultural operations. While the solar arrays and optional BESS may preclude over 6,000 acres from agricultural practices, depending on final design, the facilities would not change land uses or preclude access to farm operations on surrounding properties. The solar arrays and optional BESS would not necessitate relocating existing farm access routes or farm infrastructure and would not result in changes to the practices for planting, irrigating, fertilizing, or harvesting on surrounding properties. In addition, the Applicant would ensure the Project's solar arrays and optional BESS would comply with Benton County's applicable setback and screening standards addressed above in response to BCC 11.17.120 and BCC 11.42.100. Therefore, the Project's "solar power energy facility, major" components are compatible with other uses in the surrounding areas.

Benton County considers minor solar power energy facilities, wineries, breweries, distilleries, personal airstrips, utility yards and buildings (such as substations), and meteorological towers as permitted uses within the GMAAD zoning district. As demonstrated throughout this ASC, the

Project's major solar power generating facility components, taking into account mitigation, would be no more incompatible (i.e., would be equally compatible) on surrounding areas compared to a minor solar power generating facility or utility substation, which are allowable uses in the GMAAD.

Construction of the Project may have limited temporary impacts to neighboring land uses, but would follow site-specific BMPs to minimize potential impacts to traffic, noise, air quality, and vegetation, as described in the respective resource sections of this ASC. These temporary impacts would not make the Project incompatible with surrounding uses of the lands given the primarily temporary nature of much of the disturbance in comparison to the overall acreage in agricultural production on surrounding lands. In addition, operation of the Project would not negatively impact land uses beyond the Project footprint (see Section 4.2.6 for additional analysis of potential impacts to agriculture).

Combined Project Facilities. Based on the proposed Project layout, no residences or businesses would be displaced due to the Project and impacts to non-participating property values are not anticipated from the Project. The proposed Project has been designed with input from participating landowners, with whom the Applicant has lease agreements that include terms, as applicable, to avoid or reduce impacts to existing onsite land uses. Following construction, temporary impact areas would be returned to pre-construction conditions, which primarily consist of crop and pasture lands. Upon decommissioning of the Project, the Applicant would remove all above-grade facilities as well as below-grade facilities to not less than 3 feet below grade. The Applicant would also replace topsoil and reseed areas where facilities were located with grasses and/or other vegetation reasonably acceptable to the landowner. Therefore, no irreversible changes to land use would remain beyond the operating life of the Project.

The Project would incorporate measures to reduce the potential for aesthetic impacts as described in Section 4.2.3. For example, the Project would use non-reflective materials in muted tones, as well as white or light gray, non-reflective paint to eliminate the need for daytime aviation lighting and eliminate glare from the Turbines. Section 4.2.3 also summarizes the shadow flicker analysis conducted for the Project. Potential shadow flicker impacts were assessed against the industry standard threshold of 30 hours per year. Of the 742 receptors analyzed in the study, only seven were predicted to experience more than 30 hours of shadow flicker per year and these seven receptors are Project participants (see Appendix G). Residences on neighboring non-participating properties would not experience shadow flicker in exceedance of industry standard thresholds. Therefore, shadow flicker is not expected to result in a significant environmental impact for the proposed Project. Section 4.2.2 summarizes glare modeling analysis completed for the Project. The analysis indicates that the surrounding observation points and vehicle routes would not experience glare as a result of the Project (see Appendix H). As described in Section 2.23.1.1 of this ASC, the Applicant has also consulted with the DoD and modified the siting of Turbines following instruction from NORAD to ensure the Project is compatible with military training activities.

The Applicant is coordinating with appropriate local, state, and federal agencies, and underlying landowners to obtain applicable permits and authorizations outlined in Table 2.23-1 prior to

Project construction. These approvals would further demonstrate compatibility with current land uses within the Facility Lease Boundary and in relation to surrounding areas.

As noted in Section 2.23.3.2, the Project is consistent with applicable goals and policies of the BCCP and would provide economic benefits that are supportive of existing land uses. These benefits include direct wind and solar lease payments to landowners, new local temporary and long-term employment for construction and operations, and taxes paid to Benton County.

For the reasons described above, the Project is compatible with other uses of the lands in the surrounding areas and complies with BCC 11.50.040(d)(1).

> *(2) Will not materially endanger the health, safety, and welfare of the surrounding community to an extent greater than that associated with any other permitted uses in the applicable zoning district;*

Statement of Compliance

The Project would implement a variety of BMPs to preserve, and not endanger, the health, safety, and welfare of the surrounding community. Mitigation measures proposed for the Project are summarized in Section 1.10. Proposed actions include, but are not limited to:

- Compliance with all County setback requirements as described in this ASC;
- Development and implementation of a Transportation Management Plan. This plan would include measures to avoid and reduce Project-related delays on local roadways and protect public safety;
- Use of non-reflective materials in muted tones to reduce potential aesthetic, glare, and shadow-flicker impacts
- Implementation of a Dust Control Plan to avoid or minimize dust generated from construction activities to protect local air quality;
- Coordination with Benton County Fire Marshal concerning hazardous materials storage Special Permit and Project fire safety measures.
- Coordination with local emergency service providers to develop procedures for response to natural hazards and human-caused incidents. The Applicant would register each Turbine location and the O&M facilities with the rural identification/addressing (fire number) system and 911 system;
- Implementation of a SWPPP as well as all erosion control measures identified in accordance with the Ecology Stormwater Management Manual for Eastern Washington, to be included in the ESCP; and
- Implementation of a SPCC Plan to prevent leaks or spills and provide for rapid response in the unlikely event of an incident.

The Project would not materially endanger the health, safety, and welfare of the surrounding community. No extremely hazardous materials would be used for the Project and no special emergency services would be required. During construction, some additional risk for workers or the public may exist, as it would for any large construction project. However, work plans and specifications would be prepared to address worker and community safety during construction.

The Applicant or designated contractor would work with local emergency service providers to develop appropriate emergency prevention and response procedures. The Project would follow site-specific plans that are protective of health and safety, including but not limited to a Stormwater Pollution Control Plan, Dust Control Plan, SPCC Plan, and Benton County Special Permit General obtained from the Fire Marshal, which would be submitted to EFSEC before construction.

In addition, the Project would be constructed with a SCADA system that allows real-time and remote detection of any potential safety issues. The Project substations and O&M facilities would be fenced and monitored to prevent unauthorized access. Project infrastructure would be kept locked, and additional security would be provided as appropriate. No trespassing signs and signs with emergency contact information would be posted as needed. Additional detail regarding Project design features and activities is provided in the Project Description in Section 2.3, and further health and safety information is provided in Section 4.1.2. Therefore, the Project complies with BCC 11.50.040(d)(2).

> *(3) Would not cause the pedestrian and vehicular traffic associated with the use to conflict with existing and anticipated traffic in the neighborhood to an extent greater than that associated with any other permitted uses in the applicable zoning district;*

Statement of Compliance

During Project construction, there would be a temporary increase in traffic on local roadways for short-term periods spread out over the duration of phased construction described in Section 2.15. Movement of construction equipment and large-scale Project components, such as Turbine blades, would be coordinated with local landowners to ensure that Project-related traffic does not interfere with the transport of agricultural products. An estimated 16 to 20 personnel would be employed onsite during the lifespan of the Project (see Section 2.15.2). During operations, there would be minimal Project-related traffic associated with vehicles commuting to the site and conducting periodic O&M activities. During Project decommissioning, potential traffic impacts would be similar to those evaluated for construction and the Applicant would implement similar controls (see Section 4.3.3).

Section 4.3 provides additional detail regarding proposed road improvements, control measures to minimize potential impacts to local traffic, and access for emergency vehicles. With implementation of these mitigation measures, the Project is not expected to conflict with existing and anticipated traffic in the project vicinity to an extent greater than that associated with any other permitted use in the GMAAD. Therefore, the Project complies with BCC 11.50.040(d)(3).

> *(4) Will be supported by adequate service facilities and would not adversely affect public services to the surrounding area; and*

Statement of Compliance

The Project would be in the service area of the Kennewick Police Department, Benton County Sheriff's Office, Washington State Patrol, Benton County Fire Department District 1, Kennewick Fire Department, Trios Health Southridge Hospital, and Kennewick School District. The Project would likely be built using a "phased approach" with distinct, fully functional portions of the Project potentially being built and implemented in a staggered manner. More information regarding the construction schedule and construction workforce estimates of the example phased approach is provided in Section 2.15 of this ASC.

On average, the Project could employ between approximately 230 and 260 workers per month depending on the construction phase (see Section 2.15.1). Actual construction employment will be higher or lower than this average and could reach a maximum of up to approximately 350 to 375 workers during some months. This workforce could create a short-term increase in the need for emergency services, including police, fire, and medical response during the phased construction periods. However, the Applicant would coordinate with local service providers and develop service agreements to ensure the Project is within their response capacity. Construction workers are not anticipated to relocate their families to the Project vicinity for the duration of the phased construction periods. Therefore, no additional demand for local school or non-emergency health services is anticipated during construction. During operations, the addition of up to 16 to 20 permanent employees and their families would represent a minimal potential change to local schools and other public services. Section 4.1.2 and Section 4.4 provide additional detail regarding Project control measures to manage and minimize the need for public services. With these conditions, the Project would not adversely affect public services to the surrounding area. Therefore, the Project complies with BCC 11.50.040(d)(4).

(5) Would not hinder or discourage the development of permitted uses on neighboring properties in the applicable zoning district as a result of the location, size or height of the buildings, structures, walls, or required fences or screening vegetation to a greater extent than other permitted uses in the applicable zoning district.

Statement of Compliance

The Project Lease Boundary is located entirely within Benton County's GMAAD zoning district and is largely surrounded by adjacent properties within the GMAAD zoning district. Two short portions of the Project Lease Boundary are adjacent to Benton County's Rural Lands Five Acre District (RL-5) (Figure 2.1-4). Allowable uses in the RL-5 zoning district are generally consistent with allowable uses in the GMAAD zoning district such as single-family dwellings, utility buildings and substations, and other agricultural uses. As described in response to BCC 11.50.040(d)(1), the Project is compatible with surrounding land uses including active agricultural operations and existing residential development. Accordingly, the Project would not hinder or discourage the development of permitted uses on neighboring properties within the GMAAD or RL-5 zoning districts. In summary, the Project would not cause any changes, nor impose additional costs on the uses of the surrounding lands. The Project would comply with required setback buffers addressed above in response to BCC 11.17.070, BCC 11.17.120, and BCC 11.42.100, and would comply with other development standards, building requirements, and fencing standards necessary for development in the GMAAD zoning district. Specifically, the wind facility components comply with the development standards for wind turbine farms addressed under to BCC 11.17.070(t), and the solar array and BESS components comply with the development standards for major solar power generating facilities under BCC 11.42.100(b).

Studies have shown wind farms do not negatively impact the property values of agricultural properties that host wind turbines or on rural residential or agricultural properties surrounding wind facilities (Hoen et al. 2009; Hoen et al. 2013; MaRous & Company 2018). There would be temporary, short-term impacts to traffic in the Project Lease Boundary during the Project construction period. However, these impacts would be mitigated through implementation of traffic control measures identified in Section 4.3.3 and would not hinder or discourage the development of other permitted uses in the area.

As described above in response to BCC 11.50.040(d)(1), the Project would incorporate measures to reduce potential aesthetic, glare, and shadow flicker impacts which are addressed in Section 4.2.2 and Section 4.2.3. The shadow flicker analysis conducted for the Project demonstrates that residences on neighboring non-participating properties would not experience shadow flicker in exceedance of industry standard thresholds (see Appendix G – Shadow Flicker Report). The glare modeling analysis completed for the Project indicates that surrounding observation points and vehicle routes would not experience glare as a result of the Project (see Appendix H – Glare Analysis Report). Based on the reasons provided above, the Project is not expected to hinder or discourage the development of permitted uses on neighboring properties within the GMAAD zoning district and the Project complies with BCC 11.50.040(d)(5).

Section 11.50.050 Procedures – Variance and Conditional Use Permits

(c) Variance or Conditional Use Permit—Application—Approval or Denial—Decision Final.

(2) Each conditional use permit approved by the Hearings Examiner shall specify the location, nature and extent of the conditional use, together with all conditions that are imposed to ensure the proposed use is consistent with all applicable state laws, the Benton County Code, the Benton County Comprehensive Plan and any other information deemed necessary for the issuance of the permit.

Statement of Compliance

With submittal of this ASC, the Applicant has specified the location, nature, and extent of the proposed Project, and provided information and identified conditions to ensure consistency with applicable state laws (Section 2.23.2), the BCC (Section 2.23.3.1), and the BCCP (Section 2.23.3.2). The Applicant has provided or committed to providing as a condition of approval the information deemed necessary for issuance of a CUP, though EFSEC approval would take the place of CUP issuance from Benton County. Through this ASC, including attached reports and documentation, the Applicant has presented sufficient evidence and identified reasonable conditions that would allow the Hearings Examiner to make the conclusions required above if the Project were not under EFSEC jurisdiction. Accordingly, EFSEC may find that the Project complies with applicable land use regulations and development standards of the BCC and is consistent with the applicable goals and policies of the BCCP.

Title 15 Environment

Section 15.02.080 Jurisdiction – Critical Areas

(a) The County shall regulate all uses, activities, and developments within, adjacent to, or likely to affect, one or more critical areas, consistent with the best available science and the provisions herein. Benton County's critical areas maps depict the approximate location and extent of known critical areas and are displayed on various inventory maps at the County Planning Department.

(b) Critical areas regulated by this chapter include:

(1) Wetlands;

(2) Critical aquifer recharge areas;

(3) Frequently flooded areas;

(4) Geologically hazardous areas; and

(5) Fish and wildlife habitat conservation areas.

(c) All areas within unincorporated Benton County meeting the definition of one or more critical areas, regardless of any formal identification, are hereby designated critical areas and are subject to the provisions of this chapter. [Ord. 609 (2018) § 9]

Statement of Compliance

Title 15 (Environment) of the BCC applies to lands within unincorporated Benton County, including both Washington State–owned lands and privately owned lands. This ASC evaluates potential Project impacts from the maximum potential layout to critical areas as defined in BCC 15.02, 15.04, 15.06, 15.08, 15.12, and 15.14. The following summarizes which critical areas would be impacted by Project components and identifies where compliance with each critical area is addressed in this ASC:

- Wetlands (BCC 15.04): Section 3.5 reviews the potential presence of wetlands in relation to Project components. Based on the results of wetland delineations carried out in February, August, October, and November 2020, no wetlands were found within the study areas. The Project would not result in impacts to wetlands and complies with Benton County's critical areas regulations for wetlands under BCC 15.04.
- Critical Aquifer Recharge Areas (CARAs; BCC 15.06): Section 3.3 identifies critical aquifer recharge areas in relation to Project disturbance areas. There would be a small area of temporary Project disturbance within two CARA types. With the implementation of appropriate control measures during construction, as described in Section 3.3, the Project would comply with Benton County's critical areas regulations for critical aquifer recharge areas under BCC 15.06.
- Frequently Flooded Areas (BCC 15.08): As discussed in Section 3.3, while there could be a small area of temporary disturbance during construction, no Project components would be placed in special flood hazard areas and the provisions of BCC 3.26 (Flood Damage Prevention) and BCC 15.08 (Frequently Flooded Areas) would not apply to the Project.
- Geologically Hazardous Areas (BCC 15.12): Section 3.1 identifies geologically hazardous areas in relation to Project components. Based on the maximum potential layout, the Project would include areas of temporary and permanent disturbance within geologically hazardous areas. Section 3.1 discusses applicable avoidance, minimization, and control measures to demonstrate that the Project would comply with Benton County's critical areas regulations for geologically hazardous areas under BCC 15.12.
- Fish and Wildlife Habitat Conservation Areas (FWHCAs; BCC 15.14): Section 3.4 identifies the County's fish and wildlife habitat conservation areas in relation to Project components. Based on the maximum potential layout, the Project would include areas of temporary and permanent disturbance in FWHCAs. The section demonstrates that with the implementation of proposed minimization and mitigation measures, which would be

developed based on final design, the Project would comply with Benton County's critical areas regulations for fish and wildlife habitat conservation areas under BCC 15.14.

No Project parcels within the Project Lease Boundary include mineral resource lands, as specified under BCC 15.16 – Mineral Resources, and no mineral resource review is required for this Project. Therefore, the Project complies with Benton County's critical areas regulations and with the requirements of RCW 36.70A.

2.23.3.2 Benton County Comprehensive Plan

Benton County requires applicants for CUP approval to demonstrate consistency with the BCCP (BCC 11.50.050(c)(2)). The goals and policies of the BCCP are intended to guide the development of County regulations. While the BCCP does not include specific, implementable regulatory criteria, BCC 11.50.050(c)(2) requires that a proposed conditional use be consistent with the BCCP before a CUP can be issued. Therefore, while pursuant to the Washington Growth Management Act the BCCP cannot be lawfully used to regulate development, this section demonstrates to EFSEC that the Project is consistent with applicable goals and policies of the BCCP.

As explained below, the Project would not hinder or interfere with the ongoing implementation of comprehensive plan policies through the implementation of land development (zoning) regulations. The following goals and policies from the BCCP are considered applicable to EFSEC's evaluation of consistency of these policies to the Project:

Chapter 3: Land Use Element

LU Goal 1. Ensure that land uses are compatible with surrounding uses that maintain public health, safety, and general welfare.

Policy 1: Maintain a mix of land uses that supports the character of each rural community.

Statement of Compliance

For the reasons described in the Applicant's statement of compliance to BCC 11.50.040(d)(1), (2), and (5) above, the Project is compatible with other uses in the surrounding areas and would maintain public health, safety, and general welfare in Benton County. The Project maintains a mix of land uses by minimizing its footprint within active farmland. As a land use conditionally allowed within the GMAAD zoning district, the Project supports the character of the community by financially supporting ongoing agricultural ownership and operations via its lease agreements. Therefore, the Project is consistent with this goal and policy of the BCCP.

Policy 3: Maximize the opportunities for compatible development within land use designations to serve a multitude of compatible uses and activities.

Statement of Compliance

For the reasons described in the Applicant's statement of compliance to BCC 11.50.040(d)(1) and (5) above, the Project is compatible with other uses in the surrounding areas. Operation of the Project would not interfere with surrounding land uses and represents compatible development to serve a multitude of uses and activities. Therefore, the Project is consistent with this policy of the BCCP.

Policy 7: Encourage "green infrastructure" in new developments and redevelopments to address flooding and storm water runoff.

Statement of Compliance

Project design incorporates environmental BMPs and complies with state stormwater permitting requirements. See Section 2.23.2.6 for stormwater compliance. Wind and solar energy are clean, renewable sources of electricity that represent green energy infrastructure. Therefore, the Project is consistent with this policy of the BCCP.

LU Goal 5: Identify the location, site planning, and density of new non-farm development outside of UGAs to protect existing agriculture from incompatible adjacent land uses.

Policy 1: Establish compatible land uses adjacent to areas designated as GMA Agriculture to minimize conflicts associated with farm activities such as spray, dust, noise, odors, and liability.

Statement of Compliance

The Project is located entirely within Benton County's GMA AG land use designation and corresponding GMAAD zoning district. For the reasons described in the Applicant's statement of compliance to BCC 11.50.040(d)(1), (2), and (5) above, the Project is compatible with other uses in the surrounding areas. The Project is designed to minimize potential dust and noise. See Sections 3.2 and Section 4.1.1 for further details. Liability is addressed through lease agreements and/or other approval processes with participating landowners. Therefore, the Project is consistent with this goal and policy of the BCCP.

LU Goal 6: Preserve rural lifestyles outside UGAs and incorporated areas while accommodating new population growth consistent with the protection of rural character.

Policy 3: Provide public services consistent with rural character.

Statement of Compliance

The Project would provide a new source of clean, renewable energy designed for compatibility with existing rural uses as described in described in the Applicant's statement of compliance to BCC 11.50.040(d)(1). The Project would not create any new, significant demands on rural public services that would increase demand or negatively impact rural character. Therefore, the Project is consistent with this goal and policy of the BCCP.

Policy 4: Encourage the reduction of fire risk and urban/wildland interface through fire-wise principles, prevention measures, and other programs.

Statement of Compliance

Project-specific fire prevention and emergency response protocols would be developed in coordination with local emergency providers. The Applicant would register each Turbine location, solar array, BESS, and associated O&M facilities with the rural identification/addressing (fire number) system and 911 system. The Project's SCADA system would allow for real-time and remote detection of any potential safety issues, including fire. See Section 4.1.2 for further risk reduction measures. Therefore, the Project is consistent with this policy of the BCCP.

Policy 5: Limit impervious surface in rural lands by implementing maximum lot coverage in the development regulations.

Statement of Compliance

The Project complies with BCC 11.17.070(t)(11). Permanent disturbances associated with Turbine tower foundation pedestals and permanent disturbances associated with the Project's new 16-foot-wide access roads would not displace more than 5 percent of the parcel area on which they are located. As described in the Applicant's statement of compliance with BCC 11.50.040(C), the Project site plan would be submitted to EFSEC for review and approval prior to the start of construction. These plans would identify the proposed square feet of paved and covered surfaces within the Project Lease Boundary. New permanent access roads would have a gravel surface and lot coverage within the Project Lease Boundary would be minimal. Therefore, the Project is consistent with this policy of the BCCP.

Policy 6: Encourage new rural development away from the 100-year floodplain, and as guided in the County's Flood Damage Prevention Ordinance, CAO, and SMP.

Statement of Compliance

Section 3.3 demonstrates that Project components are located outside of the 100-year floodplain and the provisions of BCC 3.26 (Flood Damage Prevention) and BCC 15.08 (Frequently Flooded Areas) do not apply to the Project. Therefore, the Project is consistent with this policy of the BCCP.

Chapter 4: Natural Resource Lands Element

NR Goal 1: Conserve and maintain agricultural land of long-term commercial significance as the local natural resource most essential for sustaining the County's agricultural economy.

Policy 1: Conserve areas designated "GMA Agriculture" in the Comprehensive Plan for a broad range of agricultural uses to the maximum extent possible and protect these areas from the encroachment of incompatible uses.

Statement of Compliance

The Project is designed to minimize its permanent footprint, representing up to approximately 1.1 percent of Benton County's GMA AG land use designation. Wind farms and solar energy facilities (major) are compatible uses in Benton County's agricultural areas as described in the Applicant's statement of compliance to the conditional use criteria under BCC 11.50.040(d). The Project would be microsited to avoid and minimize disruption to existing cropland and would provide new revenue to agricultural landowners via lease agreements, as well as significant new sources of tax revenues for the County as a whole. Further, the Project would not cause the encroachment of other incompatible land uses (such as residential subdivisions and sprawling rural residential development) that would impair existing rural and agricultural uses of the land and cause increased need for costly rural public services. Therefore, the Project is consistent with this goal and policy of the BCCP.

Policy 3: Recognize that only uses related or ancillary to, supportive of, complimentary to, and/or not in conflict with agricultural activities are appropriate in areas designated GMA Agriculture.

Statement of Compliance

The Project qualifies as an appropriate conditional use in Benton County's GMA AG land use designation and corresponding GMAAD zoning district. The Project is generally supportive of and does not conflict with adjacent and surrounding agricultural activities as demonstrated in the Applicant's statement of compliance to BCC 11.17.070(t), which sets criteria for wind farms in the GMAAD zoning district, BCC 11.42.100, which sets criteria for major solar power generation facilities in the County, and to the conditional use criteria under BCC 11.50.040(d). Therefore, the Project is consistent with this policy of the BCCP.

Policy 4: Apply development standards that conserve water resources when reviewing proposed new non-agricultural developments to sustain the ability of the regional agricultural economy to expand and respond to new market conditions and opportunities.

Statement of Compliance

The Project would obtain water for construction and operation from existing, permitted sources. Anticipated water needs are noted in Section 3.3 and are substantially less than typical farm operations. Water required for the Project would not inhibit the ability of the agricultural economy to expand. Therefore, the Project is consistent with this policy of the BCCP.

WR Goal 2: Protect and enhance surface and groundwater quality for human health, drinking water supply, and to meet water quality standards.

Policy 1: Prohibit developments which have the potential for significant individual or cumulative impacts on ground and surface water quality; or alternatively, site and design developments to avoid or mitigate such impacts.

Statement of Compliance

The Project would not have a significant individual or cumulative impact on ground and surface water quality. Design of the Project includes avoidance of wetlands and waters of the U.S. and would comply with state stormwater permit requirements as demonstrated in Section 3.3 and Section 3.5, respectively. Therefore, the Project is consistent with this goal and policy of the BCCP.

CA Goal 1: Protect the functions and values of critical areas within the county with land use decision-making and development review.

Policy 1: Apply standards, regulations, and mitigation strategies to development during the permitting and development approval process that protects critical areas functions and values.

Statement of Compliance

The Project's micrositing corridors are designed to avoid, where possible, Benton County's designated critical areas within the Project Lease Boundary. Where critical areas cannot be avoided, the Applicant proposes minimization and mitigation measures to protect critical areas functions and values. This ASC evaluates potential impacts to critical areas as defined in BCC 15.02, 15.04, 15.06, 15.08, 15.12, and 15.14. The Applicant's statement of compliance to BCC Title 15 above summarizes which critical areas would be impacted by Project components within the Project Lease Boundary and identifies where compliance with each critical area is addressed in this ASC. Therefore, the Project is consistent with this goal and policy of the BCCP.

Policy 2: Encourage new development and redevelopment in UGAs and large developments outside of UGAs to comply with low impact development standards as applicable.

Statement of Compliance

The Project is located outside the UGA and is designed following low-impact development practices to the greatest extent practicable, including but not limited to minimizing impervious surfaces and using energy efficient technology. Therefore, the Project is consistent with this policy of the BCCP.

CA Goal 4: Sustain a diverse, productive, and high-quality natural environment for the use, health, and enjoyment of County residents.

Policy 1: Work with private and public property owners during development to ensure protection and appropriate use of the County's natural resources.

Statement of Compliance

The Applicant is working with participating private and public landowners to ensure natural resource protection and agree upon appropriate measures to reduce or avoid natural resource impacts. Therefore, the Project is consistent with this goal and policy of the BCCP.

Chapter 5: Economics Element

ED Goal 1: Create a balanced and diverse economy that provides an opportunity to make economic and lifestyle choices for Benton County residents.

Policy 1: Promote industries that are diverse and support an agriculture-based economy.

Statement of Compliance

The Project represents a diverse, valuable addition to the economy while continuing to facilitate a sustainable, thriving agricultural sector. These benefits may include but are not limited to direct wind and solar lease payments to landowners, new local temporary and long-term employment for construction and operations, and taxes paid to Benton County (see Section 4.4 for related socioeconomics analysis). Additionally, with DNR as a participant in the Facility, lease revenues to the State of Washington through the School Trust program will have a direct beneficial impact to local schools and other public services. Therefore, the Project is consistent with this goal and policy of the BCCP.

Policy 4: Facilitate economic growth and prosperity while preserving the existing rural quality of life and character, as it is defined by rural residents.

Statement of Compliance

The Project's proposed wind, solar, and optional BESS would create new rural economic activity in the County while preserving the existing rural quality of life through the continuation of the agricultural economy. For the reasons described in the Applicant's statement of compliance to BCC 11.50.040(d)(1), (2), and (5) above, the Project is compatible with other land uses in the surrounding areas. Therefore, the Project is consistent with this policy of the BCCP.

ED Goal 2: Expand employment opportunities in unincorporated Benton County.

Policy 1: Maintain and protect the agricultural economic base of Benton County.

Statement of Compliance

As stated above, the Project is designed to be compatible with ongoing agricultural operations and adds a new, diverse source of revenue to landowners and the County through new family wage construction and Facility operation jobs, helping to maintain and protect the agricultural economic base. See Section 4.4 for the socioeconomics analysis. Therefore, the Project is consistent with this goal and policy of the BCCP.

Chapter 8: Parks, Recreation, Open Space, and Historic Preservation Element

PR Goal 3: Conserve visually prominent naturally vegetated steep slopes and elevated ridges that define the Columbia Basin landscape and are uniquely a product of the ice age floods.

Policy 1: Identify and preserve historically significant structures and sites whenever feasible.

Statement of Compliance

In the 2,000 years subsequent to the last ice age, which occurred between 15,000 and 13,000 years ago, an ice dam of Glacial Lake Missoula failed repeatedly. The floods flowed across the Spokane Valley in eastern Washington, spilling into Glacial Lake Columbia. From there, the floods spread out across the landscape of eastern Washington, flowing into the Pasco Basin where the Tri Cities are located, and then west to the Yakima Valley and south into Glacial Lake Condon (DNR 2016). The floods effectively flowed around the higher elevation area known as Horse Heaven Hills. As such, the Project Lease Boundary is outside of the ice age flood pathway as identified on the Ice Age Floods National Geologic Trail, Washington Section Map (DNR 2016). The Project would not affect the prominent naturally vegetated steep slopes and elevated ridges that define the Columbia Basin landscape associated with the ice age floods. In addition, the Project would be designed to avoid historically significant structures and sites. See Section 4.2.5 for detailed discussion of historic and cultural resources. Therefore, the Project is consistent with this goal and policy of the BCCP.

Policy 5: Consider the preservation of the ridges and hillside areas through various development regulations.

Statement of Compliance

This goal specifically directs the County's adoption of "various development regulations," and is not directly applicable to EFSEC's consideration of the Project. Regardless, the Project is designed to comply with the applicable development regulations, including setbacks addressed above under BCC 11.17.070, BCC 11.17.120, and BCC 11.42.100. Section 4.2.3 provides additional analysis of potential visual effects associated with construction and operation of the Project and measures to reduce the Project's potential for aesthetic impacts. Therefore, the Project is consistent with this policy of the BCCP.

PR Goal 4: Preserve significant historic structures, districts, and cultural resources that are unique to Benton County.

Policy 1: Coordinate with local tribes to protect historic and cultural resources.

Statement of Compliance

The Applicant has coordinated with DAHP and local tribes to ensure protection of historic and cultural resources. See Sections 1.12.1 and 4.2.5 for detailed discussion of ongoing tribal consultation and review of historic and cultural resources, respectively. Therefore, the Project is consistent with this goal and policy of the BCCP.

Policy 2: Preserve archaeologically significant sites by siting and designing development to avoid or mitigate impacts.

Statement of Compliance

The Project would be designed to avoid any archaeologically significant sites. See Section 4.2.5 for detailed discussion of archaeological, historic, and cultural resources. Therefore, the Project is consistent with this goal and policy of the BCCP.

PR Goal 5: Identify, preserve, and protect historic, cultural, and archaeological resources found to be significant by recognized local, state, tribal or federal processes.

Policy 3: Preserve areas that contain valuable historical or archaeological sites of federal, state, tribal, or local significance including those maintained in the Department of Archaeology and Historic Preservation's database, areas known only to tribes and areas of higher risk potential. Maintain and enforce development code provisions that require conditioning of project approval on findings made by a professional archaeologist for development activities on sites of known cultural, historical, or archaeological significance.

Statement of Compliance

The Project would be designed to avoid areas that contain valuable historical or archaeological sites of federal, state, tribal, or local significance including those maintained in the DAHP database, and areas known only to tribes and areas of higher risk potential. See Section 4.2.5 for detailed discussion of archaeological, historic, and cultural resources, including ongoing tribal consultation. Therefore, the Project is consistent with this goal and policy of the BCCP.

Chapter 10: Utilities Element

UE Goal 1: Ensure utilities support the land use and economic development goals of the County.

Policy 1: Siting of proposed public facilities should be consistent with adopted land use policies.

Statement of Compliance

While not a public facility, the Project would be consistent with the County's applicable land use goals and policies addressed above under Chapter 3 (Land Use Element) of the BCCP. For example, the Project is a conditionally allowed use located entirely within Benton County's GMA AG land use designation and corresponding GMAAD zoning district. The Project is outside of the County's UGA. The Applicant's statements of compliance to BCC 11.50.040(d)(1), (2), and (5) above, further demonstrate that the Project is compatible with other land uses in the surrounding areas and would maintain public health, safety, and general welfare in Benton County. The Project complies with each of the conditions under BCC 11.17.070(t) and maintains a mix of land uses by minimizing its footprint within active farmland. The Project would not create any new, significant demands on rural public services or negatively impact rural character.

The Project would also support the County's applicable economic development goals and policies addressed above under Chapter 5 (Economics Element) of the BCCP. Specifically, the Project represents a diverse, valuable addition to the economy while continuing to facilitate a sustainable, thriving agricultural sector. Economic benefits may include but are not limited to direct wind and solar lease payments to landowners, new local temporary and long-term employment for construction and operations, and taxes paid to Benton County (see Section 4.4 for related socioeconomics analysis). In the BCCP, Benton County recognizes that land uses require utilities. The Project would supply renewable energy to help Washington meet its goal of achieving a carbon neutral energy supply by 2030 (Senate Bill 2116, enacted into law in 2019). Approval of this Project would support the utilities element of the BCCP, providing low-cost clean renewable energy and rural economic development. Therefore, the Project is consistent with this goal and policy of the BCCP.

Utilities Goal 3: Facilitate efficiency in utility land use and development.

Policy 2: Encourage multiple uses, including passive recreational use, in utility corridors where practical.

Statement of Compliance

The Project's proposed transmission line route is described in Section 2.3.10. The majority of the proposed transmission line route occurs on private property, where ongoing agricultural activity would occur along the corridors. A small portion of the route would occur on DNR land. The right-of-way for the transmission line would not be fenced. The Project's transmission line corridor would accommodate multiple land uses, including utilities and agricultural uses. Passive recreational uses within the proposed transmission line corridor would be possible on DNR land where practical. Therefore, the Project is consistent with this goal and policy of the BCCP.

Policy 3: Facilitate maintenance and rehabilitation of existing utility systems and facilities and encourage the use of existing transmission/distribution corridors.

Statement of Compliance

The Project's proposed transmission line routes are described in Section 2.3.10. The transmission line connecting the Project's substations within the Project Lease Boundary would traverse parcels to optimize the most direct route between substations while minimizing potential environmental and agricultural impacts on surrounding lands. No existing transmission line corridors are present in the area between project substations and the Webber Canyon substation. The eastern Project substation has been located adjacent to BPA's proposed Bofer Canyon substation, thereby eliminating the need for new transmission lines at this location. Proposed transmission lines would be located adjacent to and parallel existing public road right-of-way where possible. Therefore, the Project is consistent with this policy of the BCCP.

3.0 NATURAL ENVIRONMENT

3.1 EARTH

WAC 463-60-302:

(1) The applicant shall provide detailed descriptions of the existing environment, project impacts, and mitigation measures for the following:

(a) Geology. The application shall include the results of a comprehensive geologic survey showing conditions at the site, the nature of foundation materials, and potential seismic activities.

(b) Soils. The application shall describe all procedures to be utilized to minimize erosion and other adverse consequences during the removal of vegetation, excavation of borrow pits, foundations and trenches, disposal of surplus materials, and construction of earth fills. The location of such activities shall be described and the quantities of material shall be indicated.

(c) Topography. The application shall include contour maps showing the original topography and any changes likely to occur as a result of energy facility construction and related activities. Contour maps showing proposed shoreline or channel changes shall also be furnished.

(d) Unique physical features. The application shall list any unusual or unique geologic or physical features in the project area or areas potentially affected by the project.

(e) Erosion/enlargement of land area (accretion). The application shall identify any potential for erosion, deposition, or change of any land surface, shoreline, beach, or submarine area due to construction activities, placement of permanent or temporary structures, or changes in drainage resulting from construction or placement of facilities associated with construction or operation of the proposed energy project.

(2) The application shall show that the proposed energy facility will comply with the state building code provisions for seismic hazards applicable at the proposed location.

3.1.1 Existing Environment

The following analysis was based on review of current orthoimagery and current databases maintained by the U.S. Geological Survey (USGS), DNR, and Benton County, as well as a Preliminary Geotechnical Investigation Report prepared for the Project by Westwood (see Appendix B).

3.1.1.1 Geology

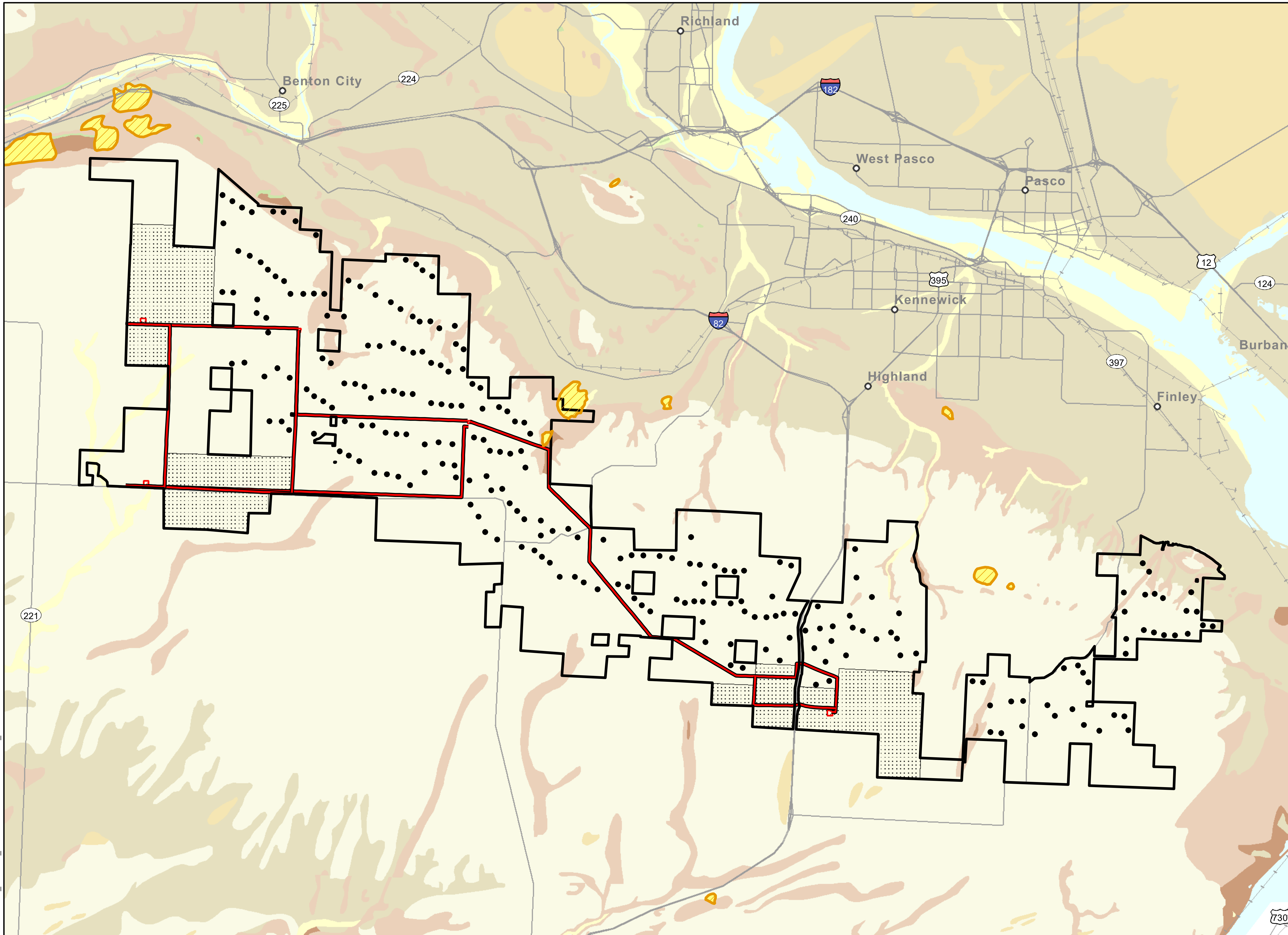
The Horse Heaven Hills area of Benton County is located on an anticline ridge of the Yakima Folds within the larger Columbia Plateau Ecoregion (Clarke and Bryce 1997). The Project is located in the Columbia Plateau province of the Intermontane Plateaus physiographic region. The geology within the Project Lease Boundary is primarily composed of Quaternary-aged loess sedimentary deposits (USGS 1994). These deposits consist primarily of eolian silt and fine sand which includes clay caliche, tephra, and paleosols with some outburst flood deposits. Miocene-age volcanic rocks (Columbia River Basalt Group) underlie the sedimentary deposits throughout the Project Lease Boundary (Figure 3.1-1). These deposits consist primarily of generally fine-grained flood basalts flows, local intracanyon flows, and local coarsely plagioclase-phyric flood basalt flows (USGS 1994).

The state of Washington is one of the most seismically active states in the country, although the most significant earthquake risk is generally isolated to the western portion of the state around the Cascadia subduction zone (DNR 2020; Appendix B). The northwest trending, undifferentiated Quaternary faults identified as the Horse Heaven Hills Structures are located along the northern edge of the Project Lease Boundary (Figure 3.1-2; USGS 2020a); however, these are not located within the Micrositing Corridors and no Project components would be placed along these known faults. The locations of these fault systems are generally inferred rather than well constrained, and the faults are expected to slip at a rate of less than 0.2 millimeters per year (USGS 2020a; Appendix B). Although faults lie within the Project site, the state of Washington maps the area as a region of low shaking hazard (DNR 2020; Appendix B). No earthquake epicenters are identified within the Project Lease Boundary; however, approximately thirty 2.5 to 2.9 magnitude and eighteen 3.0 to 3.9 magnitude earthquakes have occurred within 20 miles of the Project Lease Boundary (Figure 3.1-2; USGS 2020b). There are two Quaternary mass-wasting deposits (i.e., landslides) identified just within the northern edge of the Project Lease Boundary; however, these are not located within the Micrositing Corridors and no Project components would be placed within these known landslide areas. Mount Adams is the closest volcano to the Project Lease Boundary, located approximately 90 miles due west; however, Mount Adams has not historically been active. Mount St. Helens is the closest historically active volcano in proximity to the Project; located approximately 125 miles due west of the Project Lease Boundary.

A preliminary site-specific geotechnical investigation was conducted by Westwood (Appendix B) using current code requirements and state-of-practice methods. The preliminary geotechnical report focused on 17 boring locations distributed throughout the Project Lease Boundary, representative of areas where Turbines maybe placed and one boring where a substation may be placed. The report addresses regional geology; geohazards including karst, soil expansion and collapse, seismicity, and volcanoes; subsurface stratigraphy; groundwater; and soil properties. The preliminary site-specific geotechnical evaluation will inform the structural engineer in designing the Turbine tower foundations and other infrastructure. A subsequent investigation will be necessary to more fully characterize the subsurface conditions across the site, including at all final Turbine locations, substations, meteorological towers, and O&M facilities.

3.1.1.2 Soils

Figure 3.1-3 shows soils in the Project Lease Boundary. Table 3.1-1 describes the soils in this area, based on information from the Natural Resources Conservation Service (NRCS). As shown in Table 3.1-1, the majority of soils (about 92 percent) in the Project Lease Boundary are Ritzville silt loam. In general, the remainder of soils in the Project Lease Boundary are silt loams, fine sandy loams, very fine sandy loams, stony fine sandy loams, and very stony silt loams, all with an approximate thickness of 7 feet. Approximately 98 percent of soils within the Project Lease Boundary have moderate permeability, moderate runoff potential, and high hazard for erosion. The site-specific geotechnical evaluation provides additional detail regarding soil properties.



Horse Heaven Wind Farm

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Figure 3.1-1 Geology

BENTON COUNTY, WA

- Option 1 Turbine Location
- Proposed Transmission Line
- Proposed Substation
- Solar Siting Area
- Project Lease Boundary
- 1:100,000k Landslide from geologic mapping
- Quaternary alluvium
- Quaternary mass-wasting deposits
- Quaternary dune sand
- Quaternary eolian deposits, loess
- Pleistocene outburst flood deposits
- Quaternary-Tertiary sedimentary rocks and deposits
- Tertiary sedimentary rocks and deposits
- Miocene Columbia River Basalt Group, Saddle Mountains Basalt
- Miocene Columbia River Basalt Group, Wanapum Basalt
- Water

Data Sources:
Geology:
Washington Division of Geology and Earth Resources, 2016. Surface geology, 1:100,000- GIS data, Accessed: 10/2020.
Background:
ESRI Streetmap

TETRA TECH

Reference Map

1:140,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

NOT FOR CONSTRUCTION

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Horse Heaven Wind Farm

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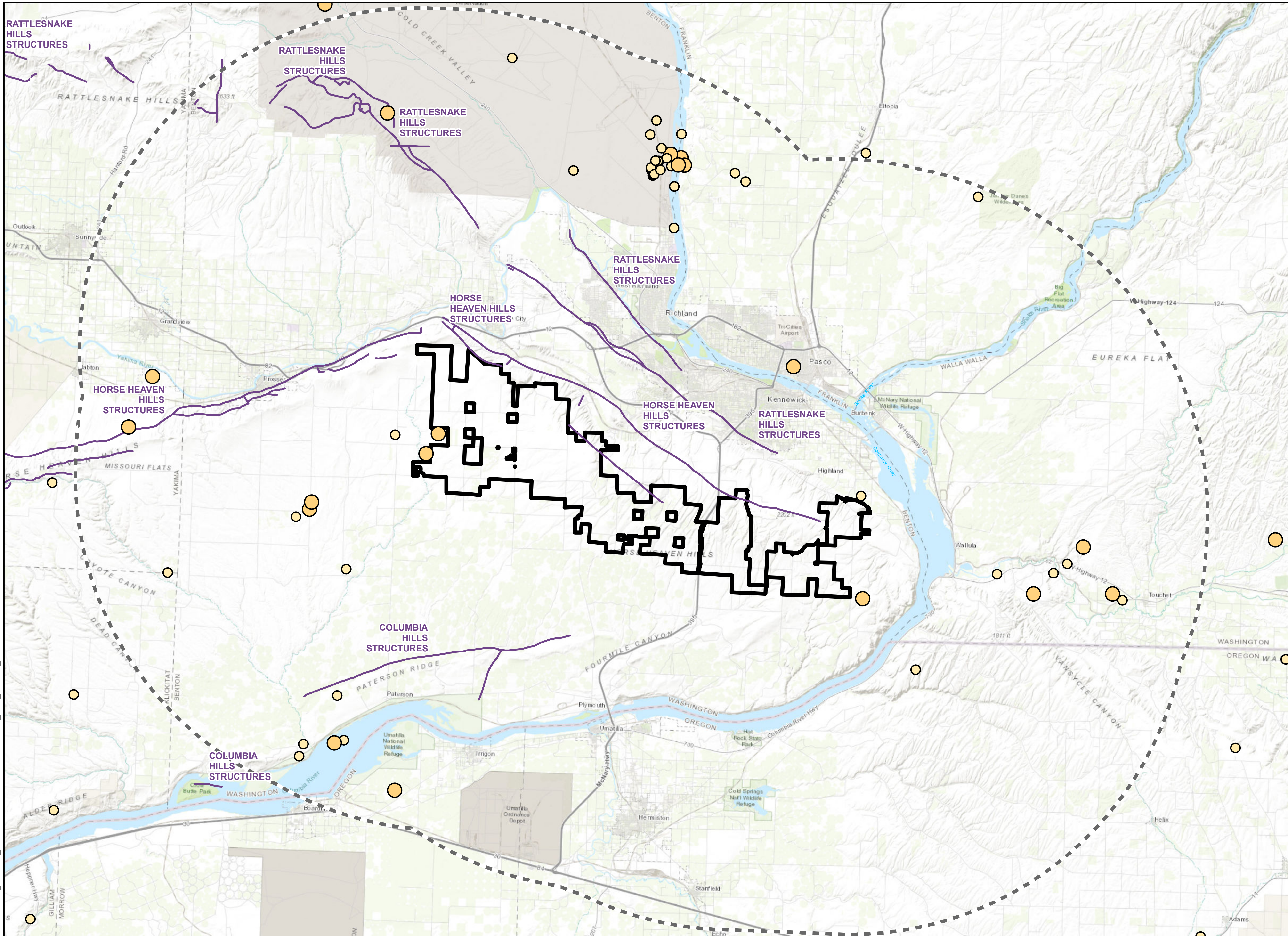
Figure 3.1-2
Historical Seismicity and Potentially Active Faults

BENTON COUNTY, WA



- Project Lease Boundary
- 20 mile Project Buffer
- Undifferentiated Quaternary (<1.6 million years)

Eathquake by Magnitude

- 2.6 - 2.9
- 3.0 - 3.9

Data Sources:
Faults:
U.S. Geological Survey, Quaternary fault and fold database, 2020. Accessed 10/2020.
https://www.usgs.gov/natural-hazards/earthquake-hazards/faults
Earthquakes:
U.S. Geological Survey, Earthquake Catalog, 2020. Accessed 10/2020
https://earthquake.usgs.gov/earthquakes/search/

Background:
ESRI Topographic Basemap

TETRA TECH

Reference Map

1:350,000 WGS 1984 UTM Zone 11N

0 2.5 5 10 15 20 Miles

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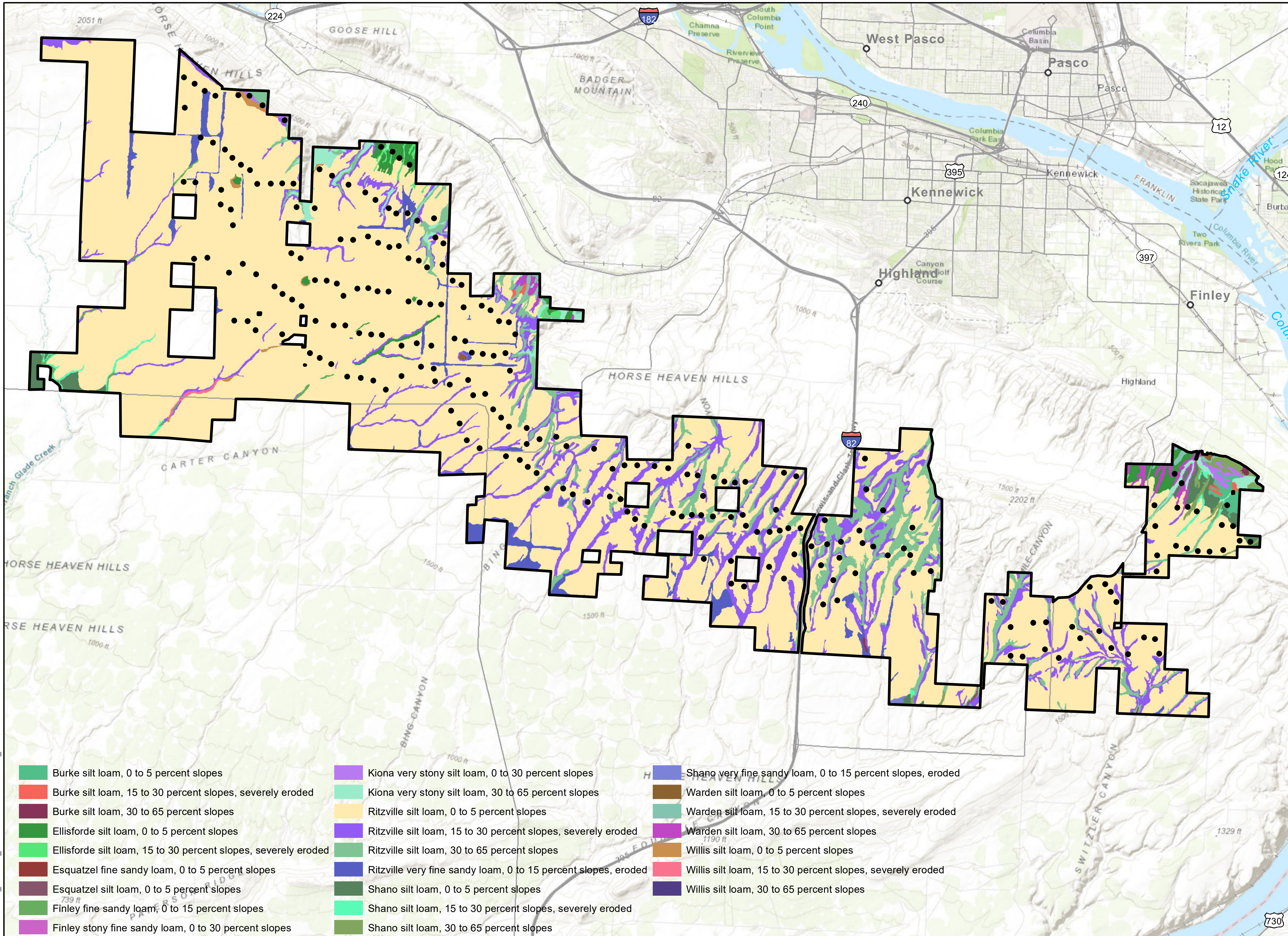
Horse Heaven Wind Farm

Figure 3.1-3
Soils

BENTON COUNTY, WA



- Option 1 Turbine Location
- Project Lease Boundary

Data Sources:
Soils:
Natural Resources Conservation Service, 2020
United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database for Benton County, WA. Accessed 10/2020.
https://websoilsurvey.sc.egov.usda.gov/
Background:
ESRI Topographic Basemap, ESRI Streetmap

Reference Map

1:130,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

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Table 3.1-1. Soils within the Project Lease Boundary

Soil Type ID	Soil Unit	Setting Within Project Area	Approximate Thickness	Formation Setting	Permeability	Runoff	Hazard for Erosion	Acres in Project Lease Boundary	Percent of Project Lease Boundary
BmAB	Burke silt loam	0 to 5 percent slopes, hillslopes	7 Feet	eolian deposits over residuum weathered from basalt	Moderate	Moderate-High	High	181	0.3%
BmE3	Burke silt loam	15 to 30 percent slopes, severely eroded, hillslopes	7 Feet	eolian deposits over residuum weathered from basalt	Moderate	Moderate-High	High	52	0.1%
BmF	Burke silt loam	30 to 65 percent slopes, hillslopes	7 Feet	eolian deposits over residuum weathered from basalt	Moderate	Moderate-High	High	17	0.0%
EfB	Ellisforde silt loam	0 to 5 percent slopes, terraces	7 Feet	loess over lacustrine deposits	Moderate	Moderate-High	High	717	1.0%
EfE3	Ellisforde silt loam	15 to 30 percent slopes, severely eroded, terraces	7 Feet	loess over lacustrine deposits	Moderate	Moderate-High	High	120	0.2%
EsB	Esquatzel fine sandy loam	0 to 5 percent slopes, flood plains	7 Feet	alluvium	Moderately Rapid	Moderate	High	14	0.0%
EuAB	Esquatzel silt loam	0 to 5 percent slopes, flood plains	7 Feet	alluvium	Moderate	Moderate	High	21	0.0%
FeC	Finley fine sandy loam	0 to 15 percent slopes, terraces	7 Feet	alluvium	Moderately Rapid	Low	Moderate	118	0.2%
FfE	Finley stony fine sandy loam	0 to 30 percent slopes, flood plains/terraces	7 Feet	alluvium	Moderately Rapid	Low	Moderate	7.0	0.0%
KnE	Kiona very stony silt loam	0 to 30 percent slopes, hillslopes/plateaus/ridges	7 Feet	mixed colluvium and residuum weathered from basalt and loess	Moderate	Moderate	High	150	0.2%
KnF	Kiona very stony silt loam	30 to 65 percent slopes, hillslopes/plateaus/ridges	7 Feet	mixed colluvium and residuum weathered from basalt and loess	Moderate	Moderate	High	659	0.9%
ReB	Ritzville silt loam	0 to 5 percent slopes, hillslopes	7 Feet	loess	Moderate	Moderate	High	56,258	77.7%
ReE3	Ritzville silt loam	15 to 30 percent slopes, severely eroded, hillslopes	7 Feet	loess	Moderate	Moderate	High	6,437	8.9%
ReF	Ritzville silt loam	30 to 65 percent slopes, hillslopes	7 Feet	loess	Moderate	Moderate	High	4,278	5.9%
RfD2	Ritzville very fine sandy loam	0 to 15 percent slopes, eroded, hillslopes	7 Feet	loess	Moderate	Moderate	High	1,662	2.3%
ShAB	Shano silt loam	0 to 5 percent slopes, hillslopes	7 Feet	loess	Moderate	Moderate	High	572	0.8%

Soil Type ID	Soil Unit	Setting Within Project Area	Approximate Thickness	Formation Setting	Permeability	Runoff	Hazard for Erosion	Acres in Project Lease Boundary	Percent of Project Lease Boundary
ShE3	Shano silt loam	15 to 30 percent slopes, severely eroded, hillslopes	7 Feet	loess	Moderate	Moderate	High	192	0.3%
ShF	Shano silt loam	30 to 65 percent slopes, hillslopes	7 Feet	loess	Moderate	Moderate	High	296	0.4%
SnD2	Shano very fine sandy loam	0 to 15 percent slopes, eroded, hillslopes	7 Feet	loess	Moderate	Moderate	High	21	0.0%
WdAB	Warden silt loam	0 to 5 percent slopes, terraces	7 Feet	loess over lacustrine deposits	Moderate	Moderate	High	31	0.0%
WdE3	Warden silt loam	15 to 30 percent slopes, severely eroded, terraces	7 Feet	loess over lacustrine deposits	Moderate	Moderate	High	132	0.2%
WdF	Warden silt loam	30 to 65 percent slopes, terraces	7 Feet	loess over lacustrine deposits	Moderate	Moderate	High	316	0.4%
WsB	Willis silt loam	0 to 5 percent slopes, broad ridges/hillslopes	7 Feet	loess over residuum weathered from basalt	Moderate	Moderate-High	High	116	0.2%
WsE3	Willis silt loam	15 to 30 percent slopes, severely eroded, broad ridges/hillslopes	7 Feet	loess over residuum weathered from basalt	Moderate	Moderate-High	High	55	0.1%
WsF	Willis silt loam	30 to 65 percent slopes, broad ridges/hillslopes	7 Feet	loess over residuum weathered from basalt	Moderate	Moderate-High	High	5.8	0.0%

3.1.1.3 Topography

The elevation of the Project Lease Boundary ranges from 604 to 2,051 feet above mean sea level (Figure 3.1-4). The topography in the Project Lease Boundary is dominated by rolling hills bisected by meandering canyons, some of which contain ephemeral or intermittent drainages. There are no major rivers or other perennial streams within the Project Lease Boundary; however, the Yakima River lies north of the western portion of the Project, approximately 1.5 miles away at its closest location to the Project and flows generally eastward to its confluence with the Columbia River. The Columbia River lies north, east, and south of the eastern portion of the Project, approximately 1.3 miles away at its closest location to the Project, as it bends around the Project Lease Boundary and ultimately runs west towards the Pacific Ocean.

The Horse Heaven Hills ridgeline lies along the northern border of the Project, particularly in the western portion of the Project Lease Boundary; on the southern side of this ridge, the landscape transitions to relatively rolling topography with shallow, meandering canyons that drain southwest into the Columbia River. While the majority of this western portion of the Project Lease Boundary drains to the southwest into the Columbia River, a small portion of the Project along the northeastern boundary ultimately drains northwest into the Yakima River and northeast into the Columbia River. The eastern portion of the Project Lease Boundary similarly drains primarily to the south into the Columbia River with a small portion of the Project draining northeast into the Columbia River.

3.1.1.4 Unique Physical Features

There are no notable unique geologic or physical features within the Project Lease Boundary.

3.1.1.5 Erosion/Enlargement of Land Area (Accretion)

The susceptibility to erosion depends on chemical and physical characteristics of the material; topography; the amount and intensity of precipitation and surface water; the intensity of wind; and the type and density of vegetative ground cover, if present. As noted above, the majority of the soils in the Project Lease Boundary have high hazard for erosion with moderate permeability and runoff.

The Project Lease Boundary contains areas identified as susceptible to erosion, landslides, and bluff failures that may require specialized engineering to develop the area. According to Benton County Ordinance – Geologically Hazardous Areas Map (Benton County 2018), there are areas/drainages identified as combined erosion hazard and steep slopes (15 percent), areas/drainages with steep slopes (15 percent), historic landslides, and areas with moderate to high potential for liquefaction within the Project Lease Boundary (Figure 3.1-5).

3.1.2 Impacts

The primary impacts from construction would involve approximately 9,826 acres of earth-disturbing activities (approximately 6,869 acres of permanent disturbance and 2,957 acres of temporary disturbance; see Table 2.1-1). Activities that require surface disturbance are discussed in Section 2.1, and include construction/erection of the Turbine tower foundations, solar array foundations, and BESS; trenching for electrical collection system and SCADA; and development of the Project substations, transmission lines, access roads, O&M facilities, meteorological towers, temporary laydown yards, and crane paths. These activities would impact the topography of the area to some extent; however, the areal footprint of the grading and total volume of material excavated will depend on the final design(s) of the facilities. No changes to shorelines or channels from the proposed Project would occur.

Construction activities can introduce the potential for increased erosion due to soil disturbance, loss of vegetation (exposure of soil), compaction, and changes to surface drainage patterns. Erosion can be caused by increasing exposure to wind or water. Wind erosion is influenced by the wind intensity, vegetative cover, soil texture, soil moisture, grain size of unprotected soil surface, topography, and the frequency of soil disturbance. Potential impacts from erosion will be minimal and will be addressed through the implementation of mitigation measures as described below. There are 812 acres of Geologically Hazardous Areas (combined erosion hazard areas and steep slope areas) within the Wind Micrositing Corridors and 627 acres within the Solar Siting Areas. It is the intent of the Applicant that final siting of Project components avoid geological hazards, and therefore no impacts are expected to areas identified with combined erosion hazards and steep slopes, landslides, or liquefaction. The preliminary site-specific geotechnical report prepared by Westwood (see Appendix B) identifies seismic design parameters in consideration of current building codes to be considered during design. The subsequent investigation to characterize the subsurface conditions across the site will inform the final design(s) to ensure that it meets current building codes as well.

Project operations would have no impact on soil erosion. Operations would be confined to gravel-surfaced areas including the apron constructed around each Turbine, the BESS, access roads, substations, and O&M facilities. No additional ground disturbance is anticipated to occur during Project operations.

3.1.3 Mitigation Measures

The State Water Pollution Control Act requires compliance with the National Pollutant Discharge Elimination System (NPDES), which would be handled through a Construction Stormwater General Permit from Ecology. The NPDES permit will require:

- An Erosion and Sediment Control Plan (ESCP) detailing specific BMPs that will be used and where they will be placed, as well as the total disturbance area. The ESCP includes measures to prevent erosion, contain sediment, and control drainage. The ESCP will also include installation details of the BMPs as well as notes.
- A Stormwater Pollution Prevention Plan (SWPPP) will be required detailing the activities and conditions at the site that could cause water pollution, and the steps the facility will take to prevent the discharge of any unpermitted pollution.

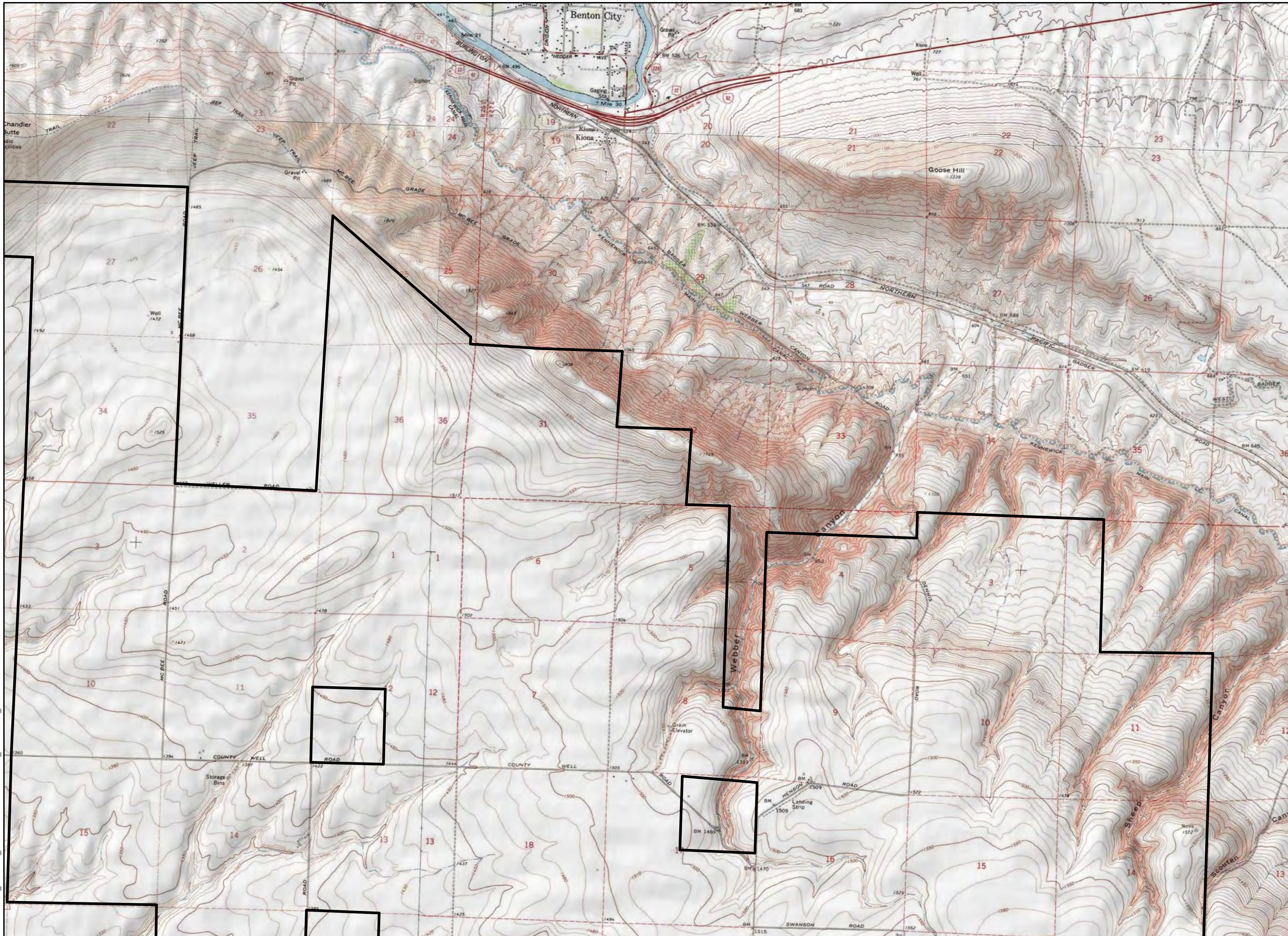
Due to the potential quantities of hazardous materials that may be present during construction, the construction contractor will be required to develop a Spill Prevention, Control, and Countermeasure (SPCC) Plan prior to beginning construction to help prevent a discharge of oil into navigable waters or adjoining shorelines (see Section 2.10.1). An SPCC Plan will be maintained for the substation operations (see Section 2.10.2).

Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 3.1-4
Project Area Topography
Map 1 of 5

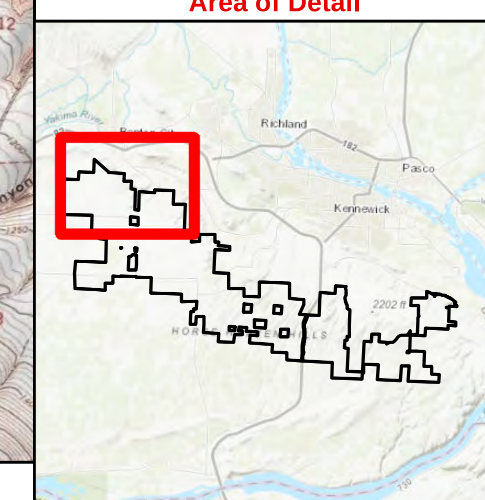
BENTON COUNTY, WA



Project Lease Boundary

TETRA TECH

Area of Detail



1:40,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 1.5 2 Miles

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Horse Heaven Wind Farm

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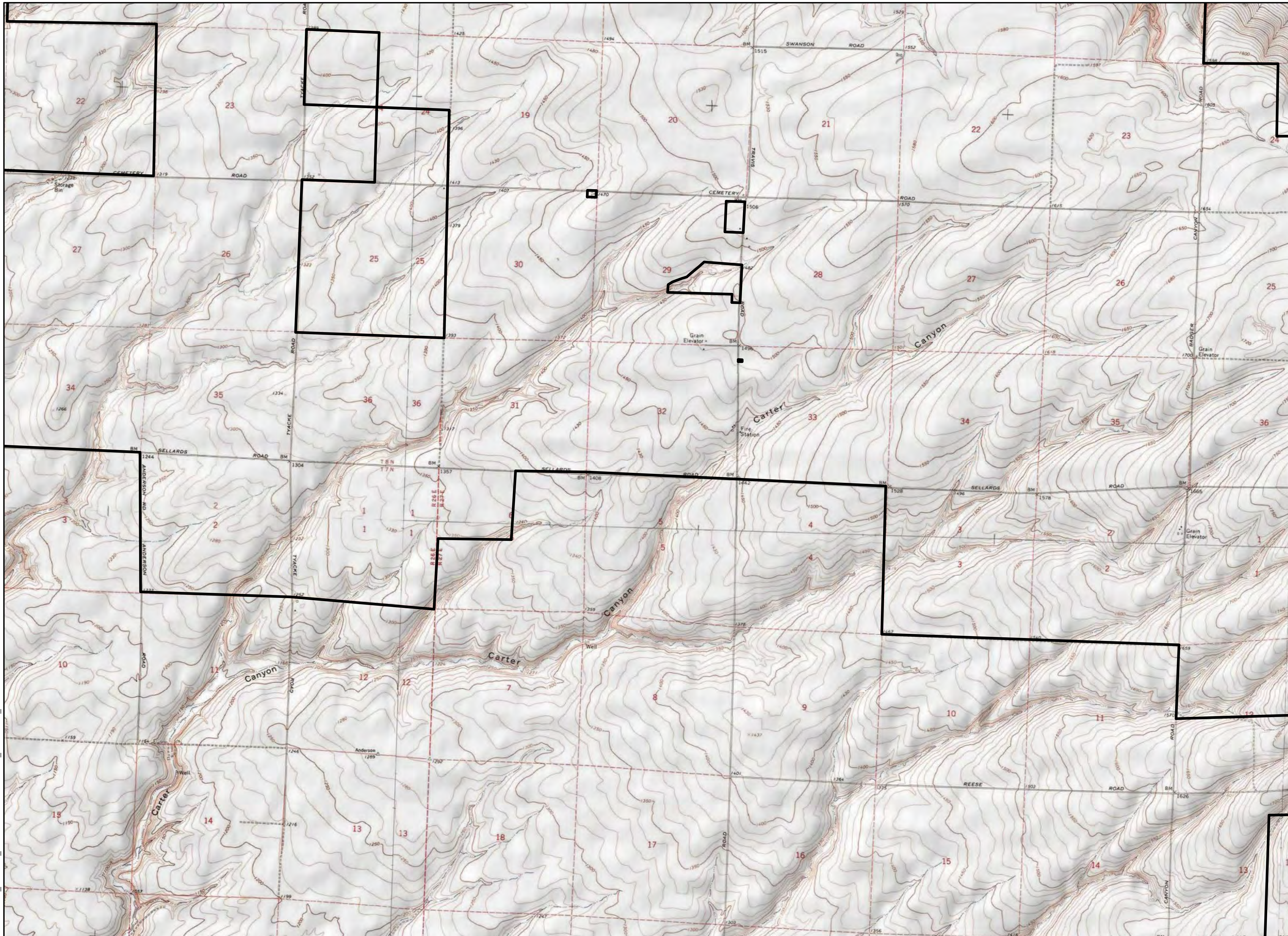
Figure 3.1-4
Project Area Topography
Map 2 of 5

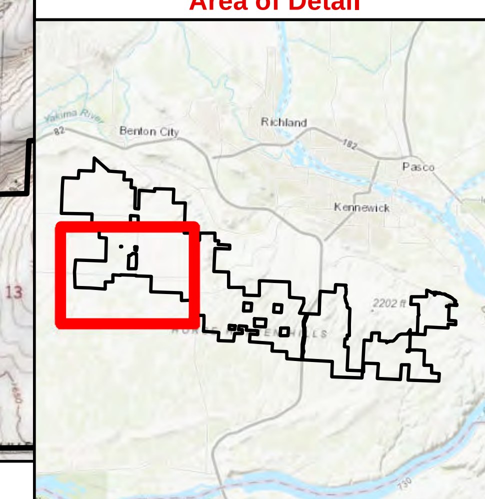
BENTON COUNTY, WA

Project Lease Boundary



TETRA TECH

Area of Detail



1:40,000 WGS 1984 UTM Zone 11N

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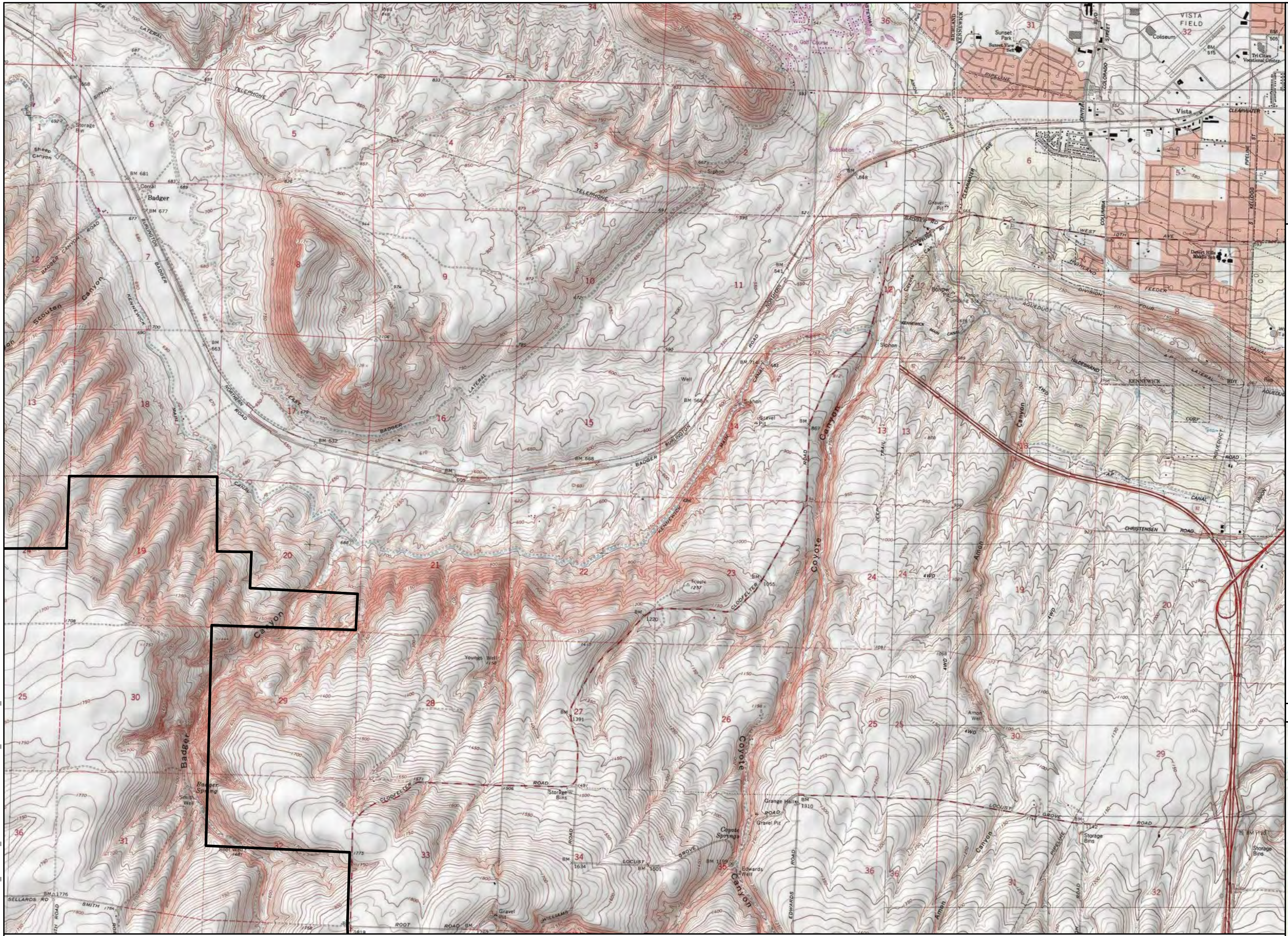


Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

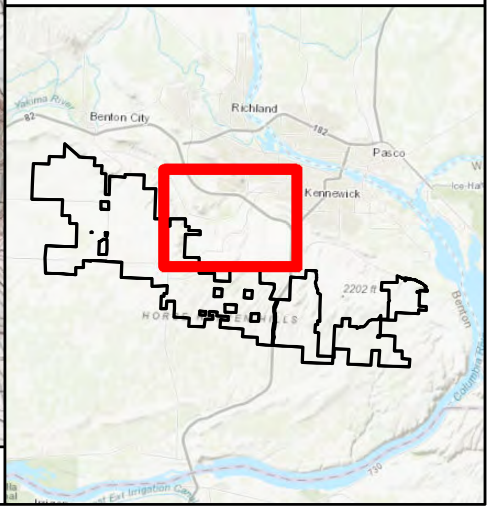
Figure 3.1-4
Project Area Topography
Map 3 of 5

BENTON COUNTY, WA

Project Lease Boundary

TETRA TECH

Area of Detail



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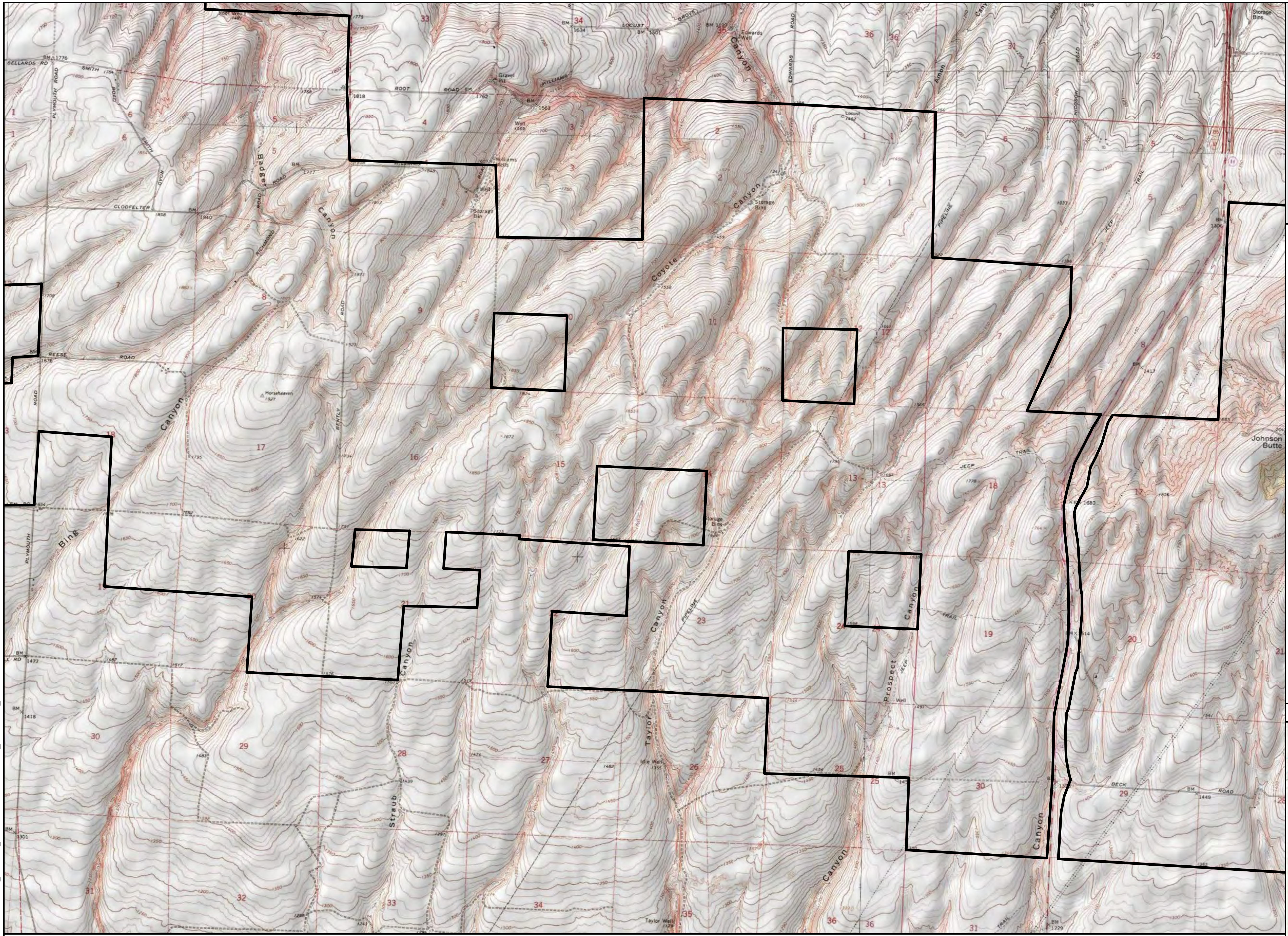


Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

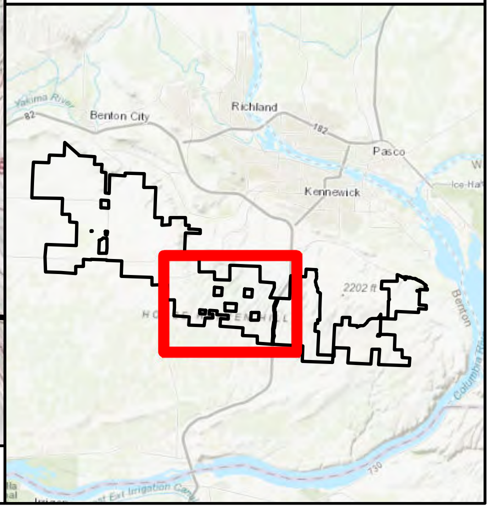
Figure 3.1-4
Project Area Topography
Map 4 of 5

BENTON COUNTY, WA

Project Lease Boundary

TETRA TECH

Area of Detail



1:40,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 1.5 2 Miles

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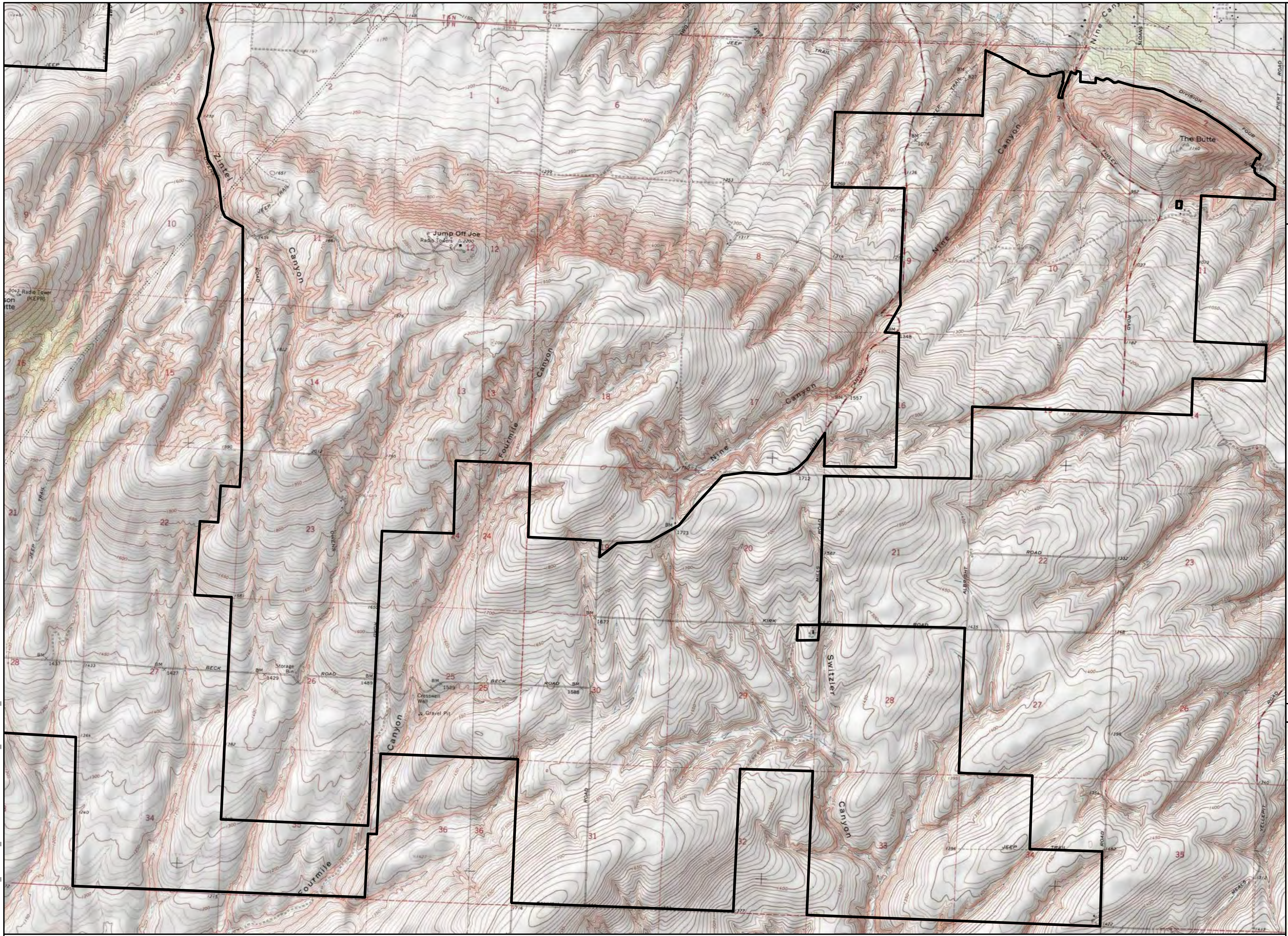
Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 3.1-4
Project Area Topography
Map 5 of 5

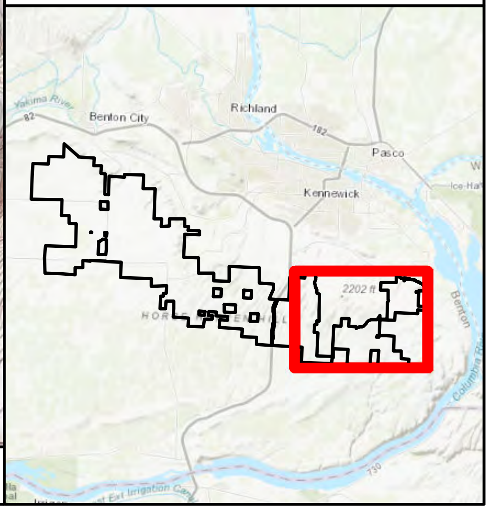
BENTON COUNTY, WA



Project Lease Boundary

TETRA TECH

Area of Detail



1:40,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 1.5 2 Miles

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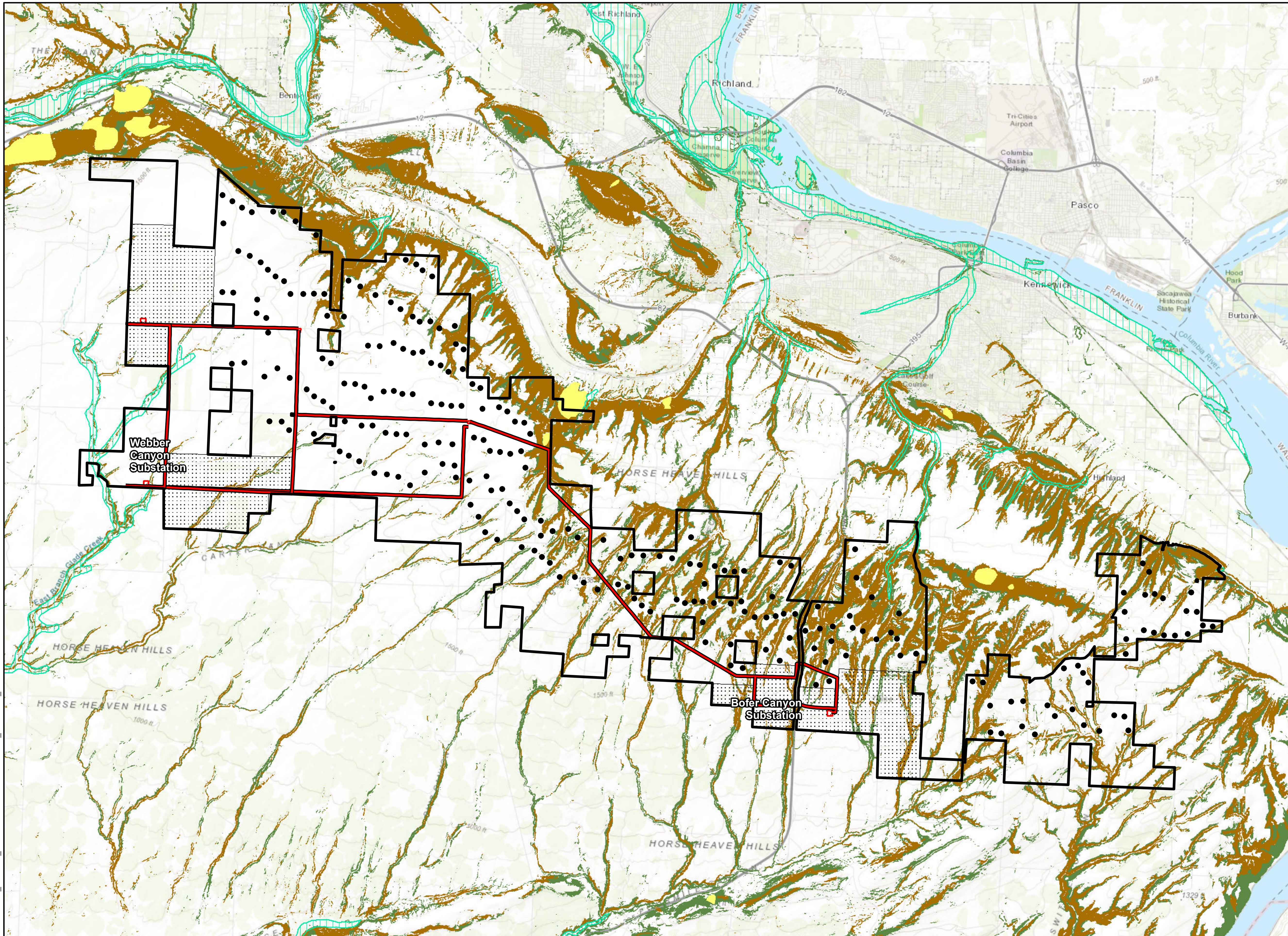
Horse Heaven Wind Farm

Figure 3.1-5
Geologically Hazardous Areas

BENTON COUNTY, WA



- Option 1 Turbine Location
- Proposed Transmission Line
- Solar Siting Area
- Proposed Substation
- Project Lease Boundary
- Liquefaction - Moderate to High
- Historic Landslide Area
- Combined Erosion Hazard & Steep Slope 15%
- Steep Slope: 15%

Reference Map

1:140,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

NOT FOR CONSTRUCTION

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The following additional mitigation measures are identified to avoid and minimize potential impacts of the proposed Project related to geology, soils, topography, and geologic hazards.

- Stabilized Construction Entrance/Exit: A stabilized construction entrance/exit will be installed at locations where construction vehicles will access newly constructed roads and/or disturbed areas from paved roads. The stabilized construction entrance/exits will be inspected and maintained for the duration of the Project's lifespan.
- Clearing, excavation, and grading will be limited to those areas of the Project area absolutely necessary for construction of the Project. Areas outside the construction limits would be marked in the field and equipment would not be allowed to enter these areas or to disturb existing vegetation. To the extent practicable, existing vegetation will be preserved. Where vegetation clearing is necessary, root systems will be conserved if possible.
- Vegetated areas that are disturbed or removed during construction will be restored to near as reasonably possible pre-disturbance conditions.
- Excavated soil and rock from grading will be spread across the site to the natural grade and will be reseeded with native grasses to control erosion by water and wind.
- Silt Fencing: Silt fencing will be installed throughout the Project as a perimeter control, and on the contour downgradient of excavations, the O&M facilities, and substations.
- Straw Wattles: Straw wattles will be used to decrease the velocity of sheet flow stormwater to prevent erosion. Wattles will be used along the downgradient edge of access roads adjacent to slopes or sensitive areas.
- Mulching: Mulch will be used to immediately stabilize areas of soil disturbance, and during reseeding efforts.
- Stabilization Matting: Jute matting, straw matting, or turf reinforcement matting will be used in conjunction with mulching to stabilize steep slopes that were exposed during access road installation.
- Soil Binders and Tackifiers: Soil binders and tackifiers will be used on exposed slopes to stabilize them until vegetation is established.
- Concrete Washout Area: Concrete chutes and trucks will be washed out in dedicated areas near the foundation construction locations. This will prevent concrete washout water from leaving a localized area. Soil excavated for the concrete washout area will be used as backfill for the completed footing to ensure that the surface soils maintain infiltration capacity.
- Stockpile Management: To facilitate installation of the Turbine footings, large excavations will be created. Soil from these excavations will be temporarily stockpiled and used as backfill for the completed footing. Silt fencing will be installed around the stockpile material as a perimeter control. Mulch or plastic sheeting will be used to cover

the stockpiled material. Soils will be stockpiled and reused in order to prevent mixing of productive topsoils with deeper subsoils.

- Revegetation: After construction is completed, the site will be revegetated with an approved seed mix. When required, the seed will be applied in conjunction with mulch and/or stabilization matting to protect the seeds as the grass establishes. Revegetation will take place as soon as site conditions and weather allow following construction.
- Check Dams and Sediment Traps: If water crossings are needed, check dams and sediment traps will be used during the construction of low-impact ford crossings or culvert installations. The check dams and sediment traps will minimize downstream sedimentation during construction of the stream crossings.
- Pollutant Management: During construction and operations, source control measures will be identified in the SPCC Plan to reduce the potential of chemical pollution to surface water or groundwater during construction.
- Construction Timing: To the extent practicable, construction activities will be scheduled to occur in the dry season, when soils are less susceptible to compaction. Similarly, soil disturbance should be postponed when soils are excessively wet such as following a precipitation event.
- Equipment oil-filling, fueling, or maintenance activities will take place a substantial distance from waterways or wetlands to prevent water quality impacts in the event of an accidental release. Any oily waste, rags, or dirty or hazardous solid waste will be collected in sealable drums at the construction yards, to be removed for recycling or disposal by a licensed contractor.
- All structures will be built in accordance with current code requirements and state-of-practice methods to limit potential for issues from slope instability/topography, liquefaction, and geologic hazards including seismic events.

As the final design of the Project is not complete, the discussion above is intended to represent a broad range of BMPs that may be implemented. The actual BMPs used for construction and operation will be identified in the ESCP.

3.2 AIR

WAC 463-60-312: *The application shall provide detailed descriptions of the affected environment, project impacts, and mitigation measures for the following:*

(1) Air quality. The application shall identify all pertinent air pollution control standards. The application shall contain adequate data showing air quality and meteorological conditions at the site. Meteorological data shall include, at least, adequate information about wind direction patterns, air stability, wind velocity patterns, precipitation, humidity, and temperature. The applicant shall describe the means to be utilized to assure compliance with applicable local, state, and federal air quality and emission standards.

(2) Odor. The application shall describe for the area affected all odors caused by construction or operation of the facility, and shall describe how these are to be minimized or eliminated.

(3) Climate. The application shall describe the extent to which facility operations may cause visible plumes, fogging, misting, icing, or impairment of visibility, and changes in ambient levels caused by all emitted pollutants.

(4) Climate change. The application shall describe impacts caused by greenhouse gases emissions and the mitigation measures proposed.

(5) Dust. The application shall describe for any area affected all dust sources created by construction or operation of the facility, and shall describe how these are to be minimized or eliminated.

3.2.1 Existing Environment

3.2.1.1 Regulatory Framework

The Clean Air Act (CAA) is the primary federal statute governing air quality. The EPA has promulgated primary and secondary National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), two size categories of particulate matter (PM_{10} and $PM_{2.5}$), ozone (O_3), sulfur dioxide (SO_2), and lead. The primary standards are concentration levels of pollutants in ambient air, averaged over a specific time interval, designed to protect public health with an adequate margin of safety. The secondary standards are concentration levels judged necessary to protect public welfare and other resources from known or anticipated adverse effects of air pollution. Although states may promulgate more stringent ambient standards, the State of Washington has adopted standards identical to the federal levels (see WAC 173-476, Ambient Air Quality Standards). Local air quality is measured against these national and state standards, and areas that do not meet the standards are designated as “non-attainment” areas.

A new emissions source must demonstrate compliance with all applicable federal and state air quality requirements, including emissions standards and ambient air quality standards (AAQS). The state of Washington has established rules through Ecology for permitting new sources in both attainment and non-attainment areas of the state, and additional requirements may be imposed by local air authorities. EFSEC issues authorizations for air emissions for sources under its jurisdiction. In general, if potential emissions from stationary sources exceed certain thresholds, approval from the applicable permitting authority is required before beginning construction. New sources of air emissions in non-attainment areas must undergo more rigorous permitting than equivalently sized sources in attainment areas, in an effort to bring the area back into compliance with air quality standards. However, the Project is not located within a non-attainment area for any criteria pollutants (EPA 2020a).

Under the CAA, new industrial sources of air pollution must receive an air quality permit prior to operation. The two most common permits associated with industrial activity emitting regulated air pollutants are Notice of Construction (NOC)/New Source Review approvals and Prevention of Significant Deterioration (PSD) permits.

Notice of Construction/New Source Review

WAC 463-78 and 173-400 establish the requirements for review and issuance of notice of construction approvals for new sources of air emissions under EFSEC jurisdiction. A NOC is not required for the Project because there would be no permanent source of regulated air emissions. If a portable concrete batch plant will be installed, a notice of construction is not required under WAC 173-400; however, the Benton County Clean Air Agency (BCAA) will require a NOC permit that would allow one year of operation within the county, and filing of a Notice of Intent to Operate (NOI) for each relocation. During commissioning, testing would take place with each Turbine powered up individually. If backfeed power is not available at the time of testing and temporary generators (i.e., with greater than 2,000 brake horsepower) are needed, an NOI would be required under WAC 173-400-035. Prior to approval of the NOI, the Project would need to demonstrate that emissions from the generators are in compliance with the NAAQS.

Prevention of Significant Deterioration

PSD regulations apply to proposed new or modified sources located in an attainment area that have the potential to emit criteria pollutants in excess of predetermined de minimus values (40 CFR Part 51). For new generation facilities, these values are 100 tons per year of criteria pollutants for 28 specific source categories, or 250 tons per year for sources not included in the 28 categories. A PSD permit would not be required for the Project because the generation of electricity by Turbines or solar arrays does not produce air emissions.

Construction Emissions

Although construction emissions are not included in permitting of stationary sources, mobile sources (such as construction equipment and maintenance pickups) are regulated separately under the federal CAA. Washington State and BCAA regulate what are known as “fugitive” air emissions, which consist of pollutants that are not emitted through a chimney, smokestack, or similar facility. Blowing dust from construction sites, unpaved roads, and tilled agricultural fields are common sources of fugitive air emissions. Wind and solar energy plants are not included among the facilities for which review and permitting of fugitive emissions are required (WAC 173-400-040). Nevertheless, WAC 173-400-040(9)(a) requires owners and operators of fugitive dust sources to take reasonable measures to prevent dust from becoming airborne and to minimize emissions.

Other Washington state regulations that apply to nuisance emissions, including fugitive dust, and various equipment used during construction include the following:

- *WAC 173-400-040(3) Fallout. No person shall cause or allow the emission of particulate matter from any source to be deposited beyond the property under direct control of the* *owner or operator of the source in sufficient quantity to interfere unreasonably with the use and enjoyment of the property upon which the material is deposited.*

- *WAC 173-400-040(4–4a) Fugitive emissions. The owner or operator of any emissions unit engaging in materials handling, construction, demolition, or other operation which is a source of fugitive emissions, if located in an attainment area and not impacting any non-attainment area, shall take reasonable precautions to prevent the release of air contaminants from the operation.*
- *WAC 173-400-040(5) Odors. Any person who shall cause or allow the generation of any odor from any source that may unreasonably interfere with any other property owner's use and enjoyment of his property must use recognized good practice and procedures to reduce these odors to a reasonable minimum.*

In addition to prescribing the above Washington state regulations, the BCAA requires notification prior to commencement of any work that would generate fugitive air emissions (BCAA Regulation 1 Section 4.02.D). Additionally, a dust control plan that identifies management practices and operational procedures to effectively control fugitive dust emissions must be maintained and provided to the BCAA prior to construction (BCAA Regulation 1 Section 4.02.E).

Greenhouse Gases

Greenhouse gases (GHGs), play a critical role in determining the earth's surface temperature. A GHG is any gas in the atmosphere that absorbs infrared radiation. The infrared radiation is selectively absorbed or "trapped" by GHGs as heat and then reradiated back toward the earth's surface, warming the lower atmosphere and the earth's surface. As the atmospheric concentrations of GHGs rise, the average temperature of the lower atmosphere gradually increases, thereby increasing the potential for indirect effects such as a decrease in precipitation as snow, a rise in sea level, and changes to plant and animal species and habitat. Climate impacts are not attributable to any single action, but are exacerbated by diverse individual sources of emissions that each make relatively small additions to GHG concentrations.

GHGs are emitted by both natural processes and human activities. Human activities known to emit GHGs include industrial manufacturing, utilities, transportation, residential, and agricultural activities. The GHGs that enter the atmosphere because of human activities are CO_2, methane, nitrous oxide, and fluorinated carbons (hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride).

In Washington State, GHGs are regulated by RCW Chapter 80.80, which establishes goals for statewide reduction of GHG emissions. The statute aims to reduce overall GHG emissions to 1990 levels by 2020, and to 25 percent below 1990 levels by 2035. By 2050, the state intends to reduce overall emissions to 50 percent below 1990 levels. Goals also include fostering a clean energy economy by increasing the number of jobs in the clean energy sector to 25,000 by 2020, from just over 8,000 jobs in 2004. WAC 173-441 established an inventory of GHG emissions through a mandatory greenhouse reporting rule for certain operations. Because wind or solar power would not emit GHGs during operations, these regulations would not apply to the Project.

3.2.1.2 Climate

Benton County is located within a rain shadow created by the Cascade Mountains, which causes a decrease in precipitation to the east. In this region of Washington, the summers are short, hot, and mostly clear; winters are very cold and partly cloudy; and it is typically dry year-round (e.g., on average, there are nearly 200 days of sunshine). Average annual precipitation at Kennewick, one of the cities closest to the Project, is 7.7 inches. The average seasonal snowfall at Kennewick is 5.2 inches. In normal years, snow remains on the ground for no longer than a few days at a time. In winter, temperatures in Kennewick average a high of 43°F and a low of 29.6 °F, with extreme lows below 10°F. In summer, temperatures average a high of 87.1°F and a low of 59.6°F, with extreme highs above 100°F. Average relative humidity is 64 percent.

Wind conditions near the Project can be characterized by Automated Surface Observing Systems (ASOS), which serves as the nation's primary surface weather observing network. The closest ASOS station to the Project is located at the Tri-Cities Airport in Pasco, Washington (KPSC). Based on data collected over the period from January 1, 1990 to December 31, 2019, the prevailing winds most frequently blew from the southwest (approximately 24 percent of the time) and the north-northwest (approximately 24 percent of the time), with calm conditions (less than 2.0 miles per hour) occurring approximately 23 percent of the time. The average wind speed for the period was approximately 6.7 miles per hour (3.0 meters per second) (NOAA 2020).

3.2.1.3 Existing Air Quality

The two most prevalent existing sources of air pollution in Benton County are fugitive dust and vehicle emissions. Windblown fugitive dust is prevalent in non-irrigated agricultural areas. Fugitive dust and combustion emissions are generated by agricultural activities, traveling vehicles, construction, and other activities that disturb the soils and use combustion engines.

The nearest air quality monitors to the Project are located in Kennewick, Washington (with the monitor located approximately 4 miles to the north), which measure ozone and PM_{10}. The nearest $PM_{2.5}$ monitors are in Pendleton, Oregon (approximately 35 miles southwest) and Toppenish, Washington (approximately 40 miles to the northwest). The nearest SO_2 monitor is in Wenatchee, Washington (approximately 80 miles to the north). The nearest CO monitor is in Portland, Oregon (approximately 118 miles to the southwest). The nearest NO_2 monitors are in Tacoma, Washington (approximately 157 miles to the northwest) and Portland, Oregon (approximately 157 miles west-southwest; EPA 2020b).

3.2.2 Impacts

3.2.2.1 Construction

The primary sources of air pollution generated by construction of the Project would be vehicle exhaust emissions and fugitive dust particles from disturbed soils that become airborne.

Sources of vehicle exhaust emissions would include heavy construction equipment operating on the site, trucks delivering construction materials and Project components to the site, and vehicles used by construction workers to access the site. In addition, some emissions would result from the use of generators on-site. The amount of pollutants emitted from these sources would be relatively small, given the size of the construction workforce and equipment fleet, and similar to emissions from other equipment commonly used for agriculture, transportation, and construction in Benton County. The emissions would generally be dispersed among multiple locations in and near the Project site at any given time rather than concentrated in a specific location, and they likely would not reach significant concentrations at off-site locations.

Construction activities that could create fugitive dust include transportation of materials; clearing and grading for roads, crane pads, Turbine foundations, solar array pads, and other Project facilities; and trenching or plowing for underground utility cables.

Construction activities for a single phase of the Project's construction[12], as described in Section 2.15, are scheduled to take approximately 11 to 12 months. Given the relatively low magnitude, localized extent, and temporary duration of construction-related emissions, air quality impacts associated with Project construction would not be substantial. Consequently, there is no basis to assume that these emissions would contribute to an exceedance of any air quality standards.

3.2.2.2 Operation

O&M impacts on air quality from the Project would be minimal. Combustion emissions and fugitive dust generated by vehicles traveling on Project access roads to perform standard and routine O&M functions would be the only emissions expected. The volume of O&M vehicle traffic would be very low. Therefore, quantities of potential emissions generated by these vehicles would be very small, intermittent, and localized. Areas disturbed during construction and not occupied by permanent Project facilities would be revegetated to prevent blowing dust. Project operation would not produce visible plumes, fogging, misting, icing, impairment of visibility, changes in ambient levels of pollutants, or impacts on climate.

The Project is not expected to induce regional growth that would result in substantial changes to off-site air quality. Other pollutants, including GHGs, would be emitted from outside the immediate vicinity, as a result of the total fuel cycle of the Project. These emissions would be generated from manufacturing and transporting Project parts and equipment. However, the Project itself would not directly emit GHGs, beyond the use of vehicles and transportation (as mentioned earlier). Furthermore, the Project would support the state's goal of increasing use of renewable energy resources, which has been declared in part to protect Washington's clean air and water.

During Project-related construction activities, exhaust from diesel-powered vehicles and equipment and painting of the O&M facilities and other structures could create minor odors. These odors are not likely to be noticeable beyond the immediate vicinity and would be temporary and short-lived. Long-term odors are associated typically with industrial projects involving use of chemicals, solvents, petroleum products, and other strong-smelling elements used in manufacturing processes, as well as sewage treatment facilities and landfills. The Project involves no elements related to these types of uses. Therefore, no long-term odor impacts would occur with Project operation.

[12] The Project would likely be built using a "phased approach" with distinct, fully functional portions of the Project potentially being built and implemented in a staggered manner.

3.2.3 Mitigation Measures

Project-generated fugitive emissions and dust would be controlled through standard construction control practices and methods, such as the following:

- Construction and operations vehicles and equipment will comply with applicable state and federal emissions standards.
- Vehicles and equipment used during construction will be properly maintained to minimize exhaust emissions.
- Operational measures such as limiting engine idling time and shutting down equipment when not in use will be implemented.
- Watering or other fugitive dust-abatement measures will be used as needed to control fugitive dust generated during construction.
- Construction materials that could be a source of fugitive dust will be covered when stored.
- Traffic speeds on unpaved roads will be limited to 25 miles per hour to minimize generation of fugitive dust.
- Truck beds will be covered when transporting dirt or soil.
- Carpooling among construction workers will be encouraged to minimize construction-related traffic and associated emissions.
- Erosion-control measures will be implemented to limit deposition of silt to roadways, to minimize a vector for fugitive dust.
- Replanting or graveling disturbed areas will be conducted during and after construction to reduce wind-blown dust.

Expected air quality impacts from construction, operation, maintenance, and decommissioning would be minimal, and therefore, no additional mitigation measures beyond those discussed above are proposed.

3.3 WATER

WAC 463-60-322: *(1) The application shall provide detailed descriptions of the affected natural water environment, project impacts and proposed mitigation measures, and shall demonstrate that facility construction and/or operational discharges will be compatible with and meet state water quality standards.*

(2) Surface water movement/quality/quantity. The application shall set forth all background water quality data pertinent to the site, and hydrographic study data and analysis of the receiving waters within one-half mile of any proposed discharge location with regard to: Bottom configuration; minimum, average, and maximum water depths and velocities; water temperature and salinity profiles; anticipated effluent distribution, dilution, and plume characteristics under all discharge conditions; and other relevant characteristics which could influence the impact of any wastes discharged thereto.

(3) Runoff/absorption. The application shall describe how surface water runoff and erosion are to be controlled during construction and operation, how runoff can be reintroduced to the ground for return to the groundwater supply, and to assure compliance with state water quality standards.

(4) Floods. The application shall describe potential for flooding, identify the five, fifty, and one hundred-year flood boundaries, and describe possible flood impacts at the site, as well as possible flood-related impacts both upstream and downstream of the proposed facility as a result of construction and operation of the facility and all protective measures to prevent possible flood damage to the site and facility.

(5) Groundwater movement/quantity/quality. The application shall describe the existing groundwater movement, quality, and quantity on and near the site, and in the vicinity of any points of water withdrawal associated with water supply to the project. The application shall describe any changes in surface and groundwater movement, quantity, quality or supply uses which might result from project construction or operation and from groundwater withdrawals associated with water supply for the project, and shall provide mitigation for adverse impacts that have been identified.

(6) Public water supplies. The application shall provide a detailed description of any public water supplies which may be used or affected by the project during construction or operation of the facility.

3.3.1 Existing Environment

3.3.1.1 Surface Water

Review of National Wetlands Inventory (NWI) data shows no wetlands or standing waters within the Micrositing Corridor or the Solar Siting Areas (USFWS 2018; Figure 3.3-1). Review of the National Hydrography Dataset (NHD) (USGS 2017) and Benton County Critical Area Ordinance – Fish and Wildlife Habitat Conservation Areas Map (Benton County 2018) identified 253 intermittent streams within the Project Lease Boundary (Figure 3.3-2). However, these databases typically overestimate the extent of waterbodies. There are no perennial streams identified within the Project Lease Boundary (USGS 2017). Wetland delineations of the Project were completed in February, August, October, and November of 2020 to verify the extent of wetlands in the area; no wetlands were noted within the Micrositing Corridors and Solar Siting Areas and two intermittent streams and 31 ephemeral stream channels were mapped (Figure 3.3-3; Appendix I; also see Section 3.5) that are considered waters of the State. A portion of the

Solar Siting Area along Sellards Road has not yet been surveyed for wetlands due to access restrictions. This area will be surveyed in spring 2021.

There are no impaired and threatened waterbodies on the 2014 section 303(d) list or 305(b) report identified within the Project Lease Boundary (Ecology 2014). The USGS Washington Current Water Conditions data do not identify water quality conditions within the Project Lease Boundary (USGS 2020).

3.3.1.2 Runoff/Absorption

Given the moderate permeability and depth of the soils on site (see Section 3.1), surface water is anticipated to infiltrate into the ground. Infiltrated water would ultimately drain into the Yakima and Columbia Rivers on both the northeast and southwest sides of Horse Heaven Hills northwest trending anticline (Figure 3.3-2). Section 3.3.3 describes how surface water runoff and erosion are to be controlled during construction and operation to ensure compliance with state water quality standards.

3.3.1.3 Floodplains

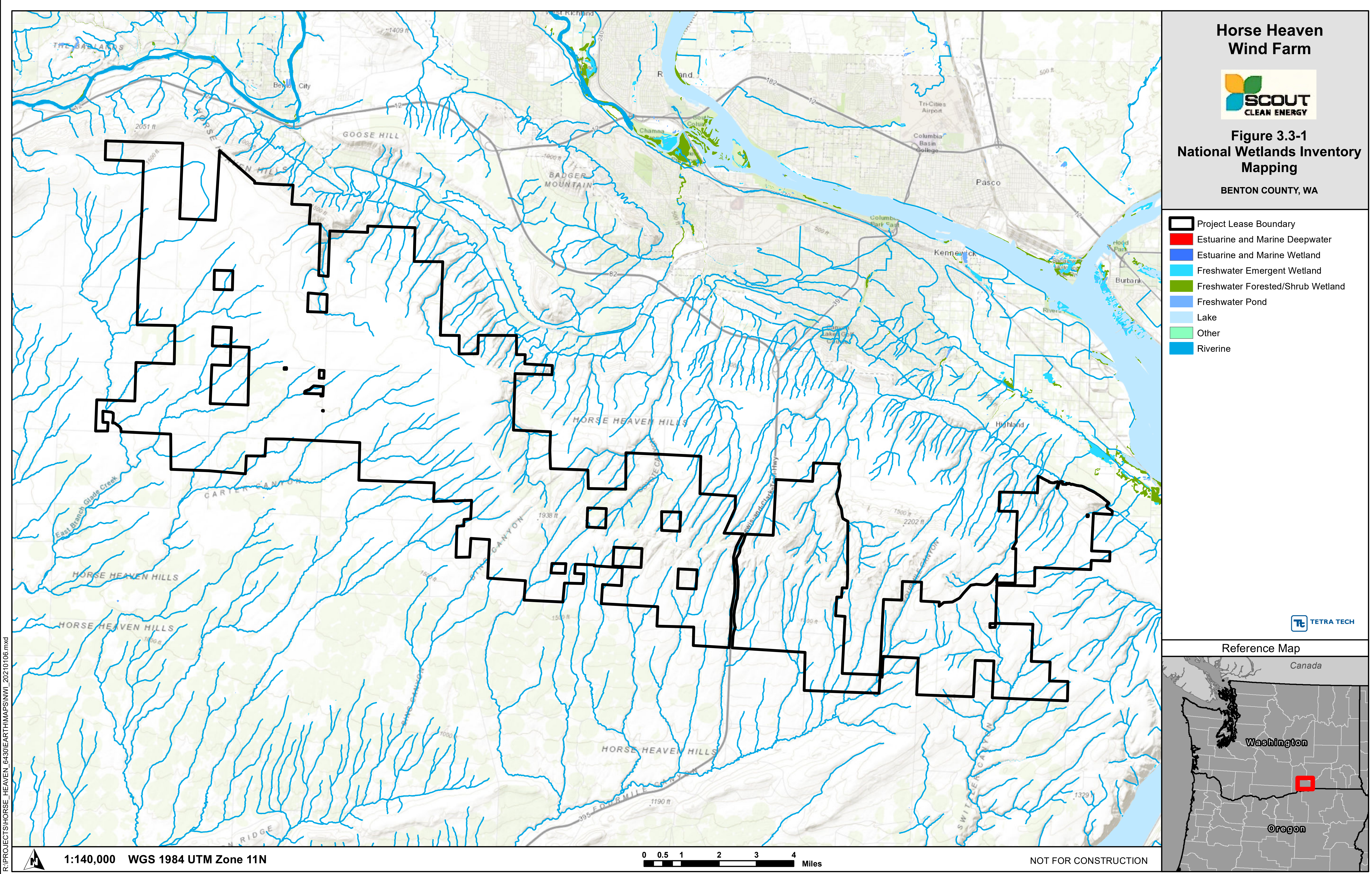
There are approximately 149 acres of 100-year floodplains (also referred to as Frequently Flooded Areas by Benton County code), which are associated with Critical Aquifer Recharge Areas (CARAs) as defined by Benton County, within the Project Lease Boundary (Figure 3.3-2). There are no existing data on 5-year and 50-year floodplains in the Project Lease Boundary; therefore, impacts to 5-year and 50-year floodplains will not be discussed further.

3.3.1.4 Groundwater

The USGS Washington Current Water Conditions data identify the depth to water below land surface in much of the Project Lease Boundary as below normal, at 184 feet (USGS 2020). However, data regarding existing groundwater movement, quality, and quantity within or near the Project Lease Boundary were not available. Water well depths in the Project Lease Boundary range between 55 and 1,506 feet below ground surface (Ecology 2020). According to Ecology, the wells located within the Project Lease Boundary are primarily drilled into the Columbia Plateau basaltic-rock aquifers and are mostly used for domestic, stock, and irrigation purposes. Groundwater was not encountered during the site-specific geotechnical investigation (Appendix B). There are 160 acres of alluvial soils which are associated with CARAs identified within the Project Lease Boundary (Benton County 2018).

3.3.1.5 Public Water Supplies

No public water supply wells are located within the Project Lease Boundary (Ecology 2020). As discussed in Section 2.6, water used during construction would be supplied by the City of Kennewick. A contractor such as Wing Air would be used to supply water during operations. Wing Air, who has experience working in the region on other wind and solar projects, has submitted a letter to the Applicant indicating that if they are selected to provide water during operations, they would obtain this water from the City of Kennewick (Appendix J).


Horse Heaven Wind Farm
SCOUT CLEAN ENERGY
Figure 3.3-1
National Wetlands Inventory Mapping
BENTON COUNTY, WA
Project Lease Boundary
Estuarine and Marine Deepwater
Estuarine and Marine Wetland
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Lake
Other
Riverine
TETRA TECH
Reference Map
Canada
Washington
Oregon
1:140,000 WGS 1984 UTM Zone 11N
0 0.5 1 2 3 4
Miles
NOT FOR CONSTRUCTION
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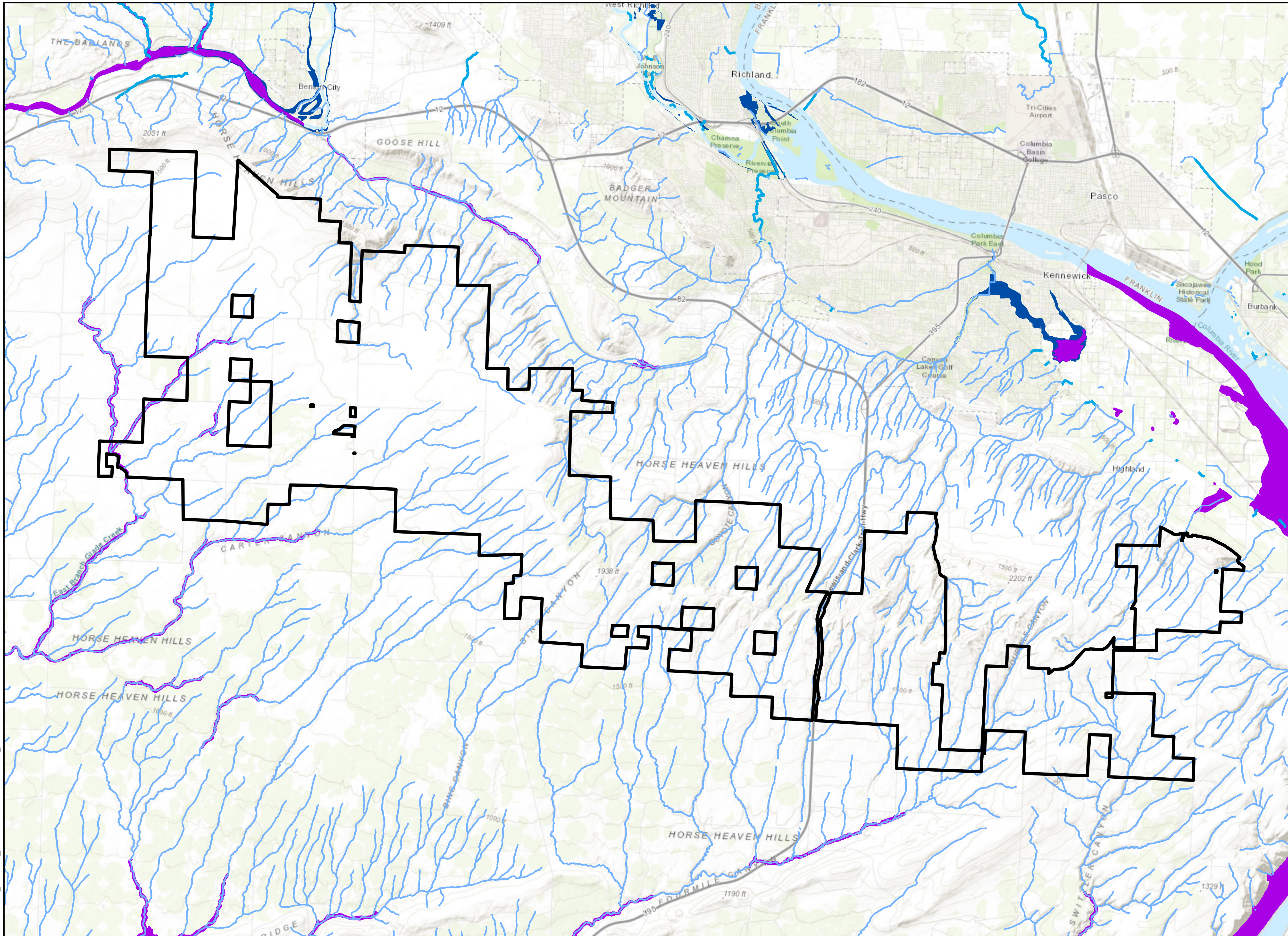
GOOSE HILL
BADGER MOUNTAIN
HORSE HEAVEN HILLS
CARTER CANYON
East Branch Glade Creek
Pasco
Kennewick
Burbank
Highland
Tri-Cities Airport
Columbia Basin College
2051 ft
1938 ft
2202 ft
1190 ft

Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 3.3-2
Benton County and National Hydrography Dataset Mapping

BENTON COUNTY, WA



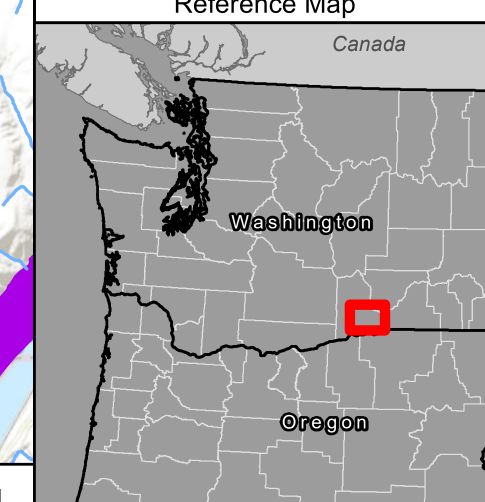
- Project Lease Boundary
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- 100 Year Flood Zone
- 500 Year Flood Zone

Data Sources:
100yr and 500yr Flood Zone:
Benton County GIS, Critical Aquifers Recharge Map Service,
Streams:
U.S. Geological Survey, National Geospatial Program, 20170317, USGS National Hydrography Dataset (NHD)

Background:
ESRI Topographic Basemap

TETRA TECH

Reference Map



1:140,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

NOT FOR CONSTRUCTION

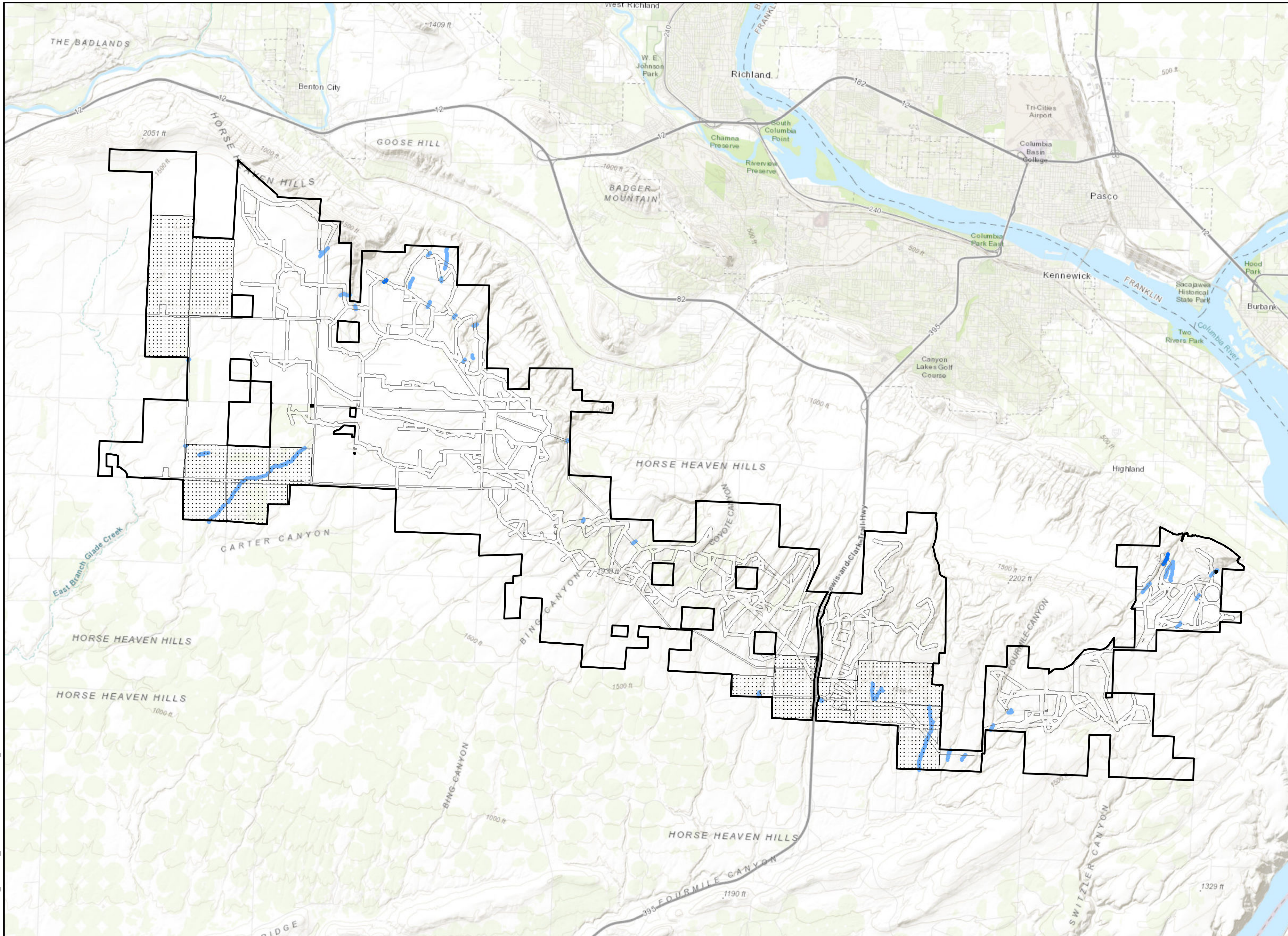
R:\PROJECTS\HORSE_HEAVEN_6430\EARTH\MAPS\WATER_20210106.mxd

Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 3.3-3 Field Delineated Waters

BENTON COUNTY, WA



- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Solar Siting Area
- Ephemeral Stream
- Intermittent Stream

TETRA TECH

Reference Map

1:140,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

NOT FOR CONSTRUCTION

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3.3.2 Impacts

3.3.2.1 Surface Water

No wetlands / standing waters are proposed to be filled as a result of the Project (i.e., no direct impacts to these wetlands would occur). Project features, such as collection lines, roads, crane paths, and transmission lines will have temporary impacts on 19 of the 31 mapped ephemeral stream channels and both of the two mapped intermittent streams; and permanent impacts on one ephemeral stream within the Ordinary High Water Level (OHWL). The one ephemeral stream with permanent impacts would likely require a culvert for road placement; if this impact as well as temporary impacts in other ephemeral and intermittent stream channels cannot be avoided and work in the OHWL will occur, a Hydraulic Project Approval may be required and would be developed upon final design of the Project. Indirect impacts to surface water quality would be minimal, if any, due to the mitigation measures discussed below.

3.3.2.2 Runoff/Absorption

Given the moderate permeability and depth of the soils on site (see Section 3.1), surface water is anticipated to infiltrate into the ground. Therefore, no runoff impacts are expected to occur. In addition, although the impervious surfaces would increase slightly with the construction of the Project (in the form of graveled access roads), they are not expected to notably affect the runoff on site.

3.3.2.3 Floodplains

The Project would have temporary impacts to approximately 0.8 acre of 100-year floodplains/Frequently Flooded Areas, which are associated with CARAs. No Project components would be placed in 100-year flood zones/Frequently Flooded Areas. Impacts to floodplains would be temporary and minimal due to the mitigation measures discussed below.

3.3.2.4 Groundwater

Construction and operation of the Project would have minimal to no impacts on groundwater. Although 1.6 acres of alluvial soils associated with CARAs would be temporarily impacted during construction, mitigation measures discussed below would be implemented to minimize the potential for impacts to groundwater. It is unlikely that the Project’s water use would have a direct effect on groundwater quantity, quality, and flow direction in the immediate area below the proposed facilities because water would be purchased from off-site public water supplies (see Section 3.3.5); their water sources are the Columbia River and two collector wells on the banks of the Columbia River.

3.3.2.5 Public Water Supplies

As discussed in Section 2.6, water used during construction would be primarily associated with road construction, concrete, dust control, and other activities. Water consumed during construction activities would be purchased by the contractor from the City of Kennewick and transported to the site in water-tanker trucks. No water would be drawn or used from the site during construction. The City of Kennewick has no stated limitations of water for purchase, which would indicate that the Project would not impact the city public water supply. Therefore, no negative impacts are expected with the City of Kennewick supplying the necessary water for the Project during construction.

A contractor such as Wing Air would be used to supply water during operations. Water used during operations would be trucked to the site and stored in a water storage tank for use at the O&M facilities. Water for panel washing would be trucked to the site from a municipal source such as the City of Kennewick or from a private source with a valid water right. Water cooling is not a part of operations for wind and solar facilities. During operations, water use would be minimized by using solar panel wash methods that reduce the required amount of water, such as robotic panel washing equipment. No new water rights or water right changes are anticipated to be required for the Project.

3.3.3 Mitigation Measures

As discussed in Section 2.6.2.1, water conservation will be implemented to the extent practicable by use of less water-intensive methods of dust suppression, including use of soil stabilizers, tightly phasing construction activities, staging grading and other dust-creating activities, and/or compressing the entire construction schedule to reduce the time period over which dust suppression measures would be required.

Surface Water, Groundwater, Runoff/Absorption: Impacts to waters of the state may be avoided by spanning (e.g., with the transmission line) or otherwise micrositing away from the streams. If these impacts cannot be avoided, indirect impacts to water quality can be minimized by working within the OHWL during the dry season when no rain is predicted. As discussed in Sections 2.11 and 3.1.3, to control erosion and surface-water runoff during construction and operations, the Applicant will prepare a Construction Stormwater General Permit including an ESCP. Water runoff from the Project will be contained by measures identified in the ESCP to prevent erosion, contain sediment, and control drainage. The ESCP will also include installation details of BMPs (see Sections 2.11 and 3.1.3). In addition, a SWPPP meeting the conditions of the Stormwater General Permit for Construction Activities will also be prepared and implemented prior to construction. All final designs would conform to the applicable Stormwater Management Manual (see Section 2.11). In addition, an SPCC Plan for both construction and operation will be prepared to prevent discharge of oil into navigable waters (see Section 2.10).

No impacts to wetlands or their buffers, 100-year floodplains, or public water supply would occur; therefore, no mitigation is required or proposed.

3.4 HABITAT, VEGETATION, FISH, AND WILDLIFE

WAC 463-60-332: *The application shall describe all existing habitat types, vegetation, wetlands, fish, wildlife, and in-stream flows on and near the project site which might reasonably be affected by construction, operation, decommissioning, or abandonment of the energy facility and any associated facilities. For purposes of this section, the term "project site" refers to the site for which site certification is being requested, and the location of any associated facilities or their right of way corridors, if applicable. The application shall contain the following information:*

(1) Assessment of existing habitats and their use. The application shall include a habitat assessment report prepared by a qualified professional. The report shall contain, but not be limited to, the following information:

(a) A detailed description of habitats and species present on and adjacent to the project site, including identification of habitats and species present, relative cover, density, distribution, and health and vigor;

(b) Identification of any species of local importance, priority species, or endangered, threatened, or candidate species that have a primary association with habitat on or adjacent to the project site;

(c) A discussion of any federal, state, or local special management recommendations, including department of fish and wildlife habitat management recommendations, that have been developed for species or habitats located on or adjacent to the project area;

(2) Identification of energy facility impacts. The application shall include a detailed discussion of temporary, permanent, direct and indirect impacts on habitat, species present and their use of the habitat during construction, operation and decommissioning of the energy facility. Impacts shall be quantified in terms of habitat acreage affected, and numbers of individuals affected, threatened or removed. The discussion of impacts shall also include:

(a) Impacts to water quality, stream hydrology and in-stream flows;

(b) Impacts due to introduction, spread, and establishment of noxious or nonnative species;

(c) Impacts and changes to species communities adjacent to the project site;

(d) Impacts to fish and wildlife migration routes;

(e) Impacts to any species of local importance, priority species, or endangered, threatened, or candidate species;

(f) Impacts due to any activities that may otherwise confuse, deter, disrupt or threaten fish or wildlife;

(g) An assessment of risk of collision of avian species with any project structures, during day and night, migration periods, and in- clement weather;

(h) An assessment for the potential of impacts of hazardous or toxic materials spills on habitats and wildlife.

(3) Mitigation plan. The application shall include a detailed discussion of mitigation measures, including avoidance, minimization of impacts, and mitigation through compensation or preservation and restoration of existing habitats and species, proposed to compensate for the impacts that have been identified. The mitigation plan shall also:

(a) Be based on sound science;

(b) Address all best management practices to be employed and setbacks to be established;

(c) Address how cumulative impacts associated with the energy facility will be avoided or minimized;

(d) Demonstrate how the mitigation measures will achieve equivalent or greater habitat quality, value and function for those habitats being impacted, as well as for habitats being enhanced, created or protected through mitigation actions;

(e) Identify and quantify level of compensation for impacts to, or losses of, existing species due to project impacts and mitigation measures, including benefits that would occur to existing and new species due to implementation of the mitigation measures;

(f) Address how mitigation measures considered have taken into consideration the probability of success of full and adequate implementation of the mitigation plan;

(g) Identify future use of any manmade ponds or structures created through construction and operation of the facility or associated mitigation measures, and associated beneficial or detrimental impacts to habitats, fish and wildlife;

(h) Discuss the schedule for implementation of the mitigation plan, prior to, during, and post construction and operation;

(i) Discuss ongoing management practices that will protect habitat and species, including proposed monitoring and maintenance pro- grams;

(j) Mitigation plans should give priority to proven mitigation methods. Experimental mitigation techniques and mitigation banking may be considered by the council on a case-by-case basis. Proposals for experimental mitigation techniques and mitigation banking must be supported with analyses demonstrating that compensation will meet or exceed requirements giving consideration to the uncertainty of experimental techniques, and that banking credits meet all applicable state requirements.

(4) Guidelines review. The application shall give due consideration to any project-type specific guidelines established by state and federal agencies for assessment of existing habitat, assessment of impacts, and development of mitigation plans. The application shall describe how such guidelines are satisfied. For example, wind generation proposals shall consider Washington state department of fish and wild-life Wind Power Guidelines, August 2003, or as hereafter amended. Other types of energy facilities shall consider department of fish and wildlife Policy M-5002, dated January 18, 1999, or as hereafter amended.

(5) Federal approvals. The application shall list any federal approvals required for habitat, vegetation, fish and wildlife impacts and mitigation, status of such approvals, and federal agency contacts responsible for review.

3.4.1 Existing Environment

The Project is located within the Columbia Plateau Ecoregion (Clarke and Bryce 1997), within the big sagebrush (*Artemisia tridentata*)/bluebunch wheatgrass (*Pseudoroegneria spicata* [*Agropyron spicatum*]) vegetation zone (Franklin and Dyrness 1988). The elevation within the Project Lease Boundary ranges from 604 to 2,051 feet above msl. The topography in the Project Lease Boundary is defined by gently rolling hills. Benton County is located within a rain shadow created by the Cascade Mountains, which causes a decrease in precipitation to their east. In this region of Washington, the summers are short, hot, and mostly clear; winters are very cold and partly cloudy; and it is dry year round. In general, vegetation within the majority of the Project Lease Boundary has been heavily modified due to historic and current agriculture and grazing activity. Non-native invasive grasses and forbs are prevalent throughout the Project Lease Boundary due to historic and current farming and grazing activity and other development.

3.4.1.1 Habitat and Vegetation

The Applicant mapped habitats within the Project Lease Boundary based on surveys conducted in 2018 (Chatfield and Brown 2018a, 2018b) and 2020 (Tetra Tech 2020a), as well as National Land Cover Database (NLCD) data (USGS 2016; Yang et al. 2018). Surveys conducted in 2018 verified land cover types that were mapped by the NLCD and the NWI (USFWS 2018) within the majority of the Project Lease Boundary. Surveys in 2018 consisted of coarse-scale reconnaissance and mapping of land cover from accessible public and private roads within a majority of the Project Lease Boundary. These surveys did not cover the entire Project Lease Boundary due to Project changes following the completion of the 2018 surveys. Surveys conducted in 2020 verified, mapped, and characterized habitat at 44 proposed Turbine locations (based on the Project Turbine layout dated April 15, 2020) that were preliminarily identified as occurring within native habitat versus agricultural or developed lands. The survey area in 2020 included a minimum 200-foot buffer around these Turbine locations as well as areas that were traversed on foot or vehicle between the 44 Turbine locations. The survey area generally coincided with the portions of the Micrositing Corridor (as defined in Section 2.1) around and in between these 44 Turbine locations, but habitat was also mapped beyond the Micrositing Corridor where the surveyor was able to visually scan the surrounding area and determine the habitat type with the assistance of aerial imagery.

Habitats mapped within the portions of the Project Lease Boundary that were not surveyed in 2018 or 2020 are based on NLCD data, as well as a desktop analysis conducted in the fall of 2020. This desktop analysis was primarily focused on refining areas mapped as shrub-steppe during the 2018 surveys or as shrub/scrub by the NLCD. During this analysis, areas mapped as shrub-steppe or shrub/scrub that appeared, based on aerial imagery, to consist of a non-shrubland habitat type (e.g., agricultural land, grassland, developed land) were reclassified as appropriate. In addition, areas that appeared to contain shrubland habitat were further separated into a shrubland habitat subtype (i.e., dwarf shrub-steppe, rabbitbrush shrubland, sagebrush shrub-steppe, or unclassified shrubland). Prior to construction, habitat surveys would be conducted within the Solar Siting Areas and portions of the Micrositing Corridor that were not surveyed in 2020. These habitat surveys would focus on documenting areas of sagebrush shrub-steppe habitat.

Although focused on shrubland habitat, the desktop analysis also refined other mapped habitat types if discrepancies were observed during the review of areas mapped as shrub-steppe and shrub/scrub (e.g., an agricultural field being mapped as grassland).

In general, habitat types and subtypes were adapted from habitat descriptions in the *Washington Department of Fish and Wildlife Wind Power Guidelines* (WDFW 2009) and *Wildlife-habitat Relationships in Oregon and Washington* (Johnson and O'Neil 2001). However, two of the habitat subtypes observed during field surveys conducted in 2020 (i.e., rabbitbrush shrubland and non-native grassland) were not readily classified following either of those sources.

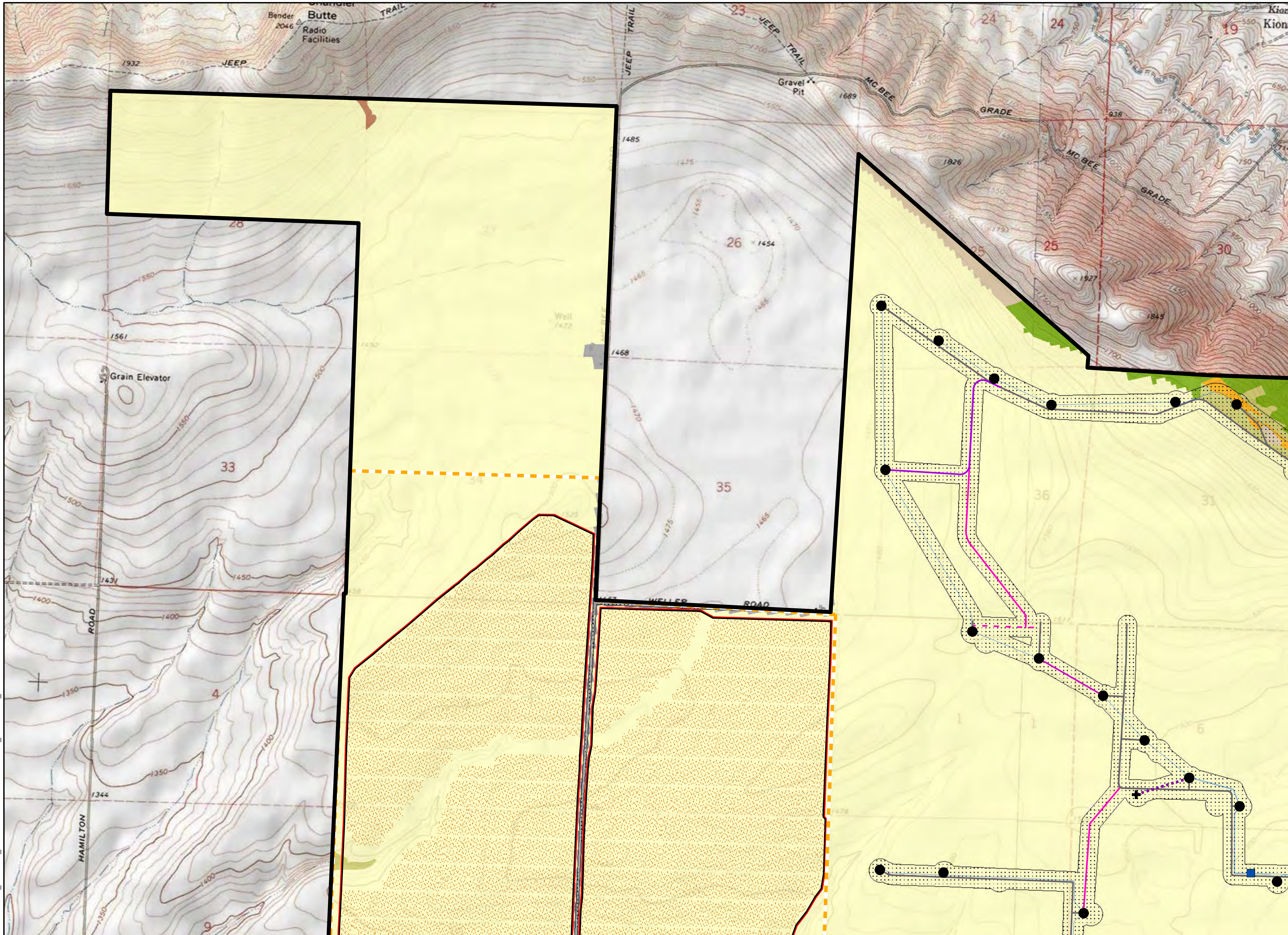
The following nine upland habitat subtypes were mapped within the Project Lease Boundary:

- Agricultural land,
- Developed/disturbed,

- Dwarf shrub-steppe,
- Non-native grassland,
- Planted grassland,
- Rabbitbrush shrubland,
- Sagebrush shrub-steppe,
- Unclassified Grassland, and
- Unclassified Shrubland.

Figure 3.4-1 shows the locations of each habitat type and subtype mapped within the Project Lease Boundary, Micrositing Corridor, and Solar Siting Areas (as defined in Section 2.1) and Table 3.4-1 lists the acreage of each habitat type and subtype. In addition to the nine upland habitat subtypes, several ephemeral and intermittent streams occur within the Project Lease Boundary (Figure 3.3-2 in Section 3.3). Wetland surveys have not been conducted within the entire Project Lease Boundary; however, no wetland habitat types have been documented within the Micrositing Corridor and Solar Siting Areas (Appendix I). Review of NWI data shows no wetlands or standing waters within the Micrositing Corridors or Solar Siting Areas (USFWS 2018; Figure 3.3-1 in Section 3.3). Wetlands and other waters are discussed in Sections 3.5 and 3.3, respectively.

The following describes the various habitat types and subtypes addressed in this analysis.



Horse Heaven Wind Farm

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Figure 3.4-1
Habitat Types and Subtypes
Map 1 of 11

BENTON COUNTY, WA

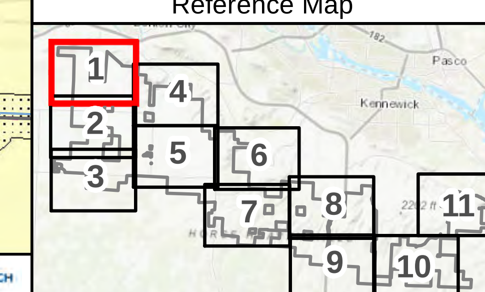
- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Option 1 Turbine Layout
- Met Tower
- Met Tower Access Road
- Solar Siting Area
- Solar Array
- Solar Array Fencing
- Solar Array Road
- Junction Box
- Collection Line
- CraneCL
- CraneCL_OnRoad
- CraneCL_Alt
- RoadCL
- RoadCL_Alt

Habitat Types and Subtypes
- Agricultural land
- Developed/disturbed

Grassland
- Unclassified Grassland
- Non-native Grassland

Shrubland
- Dwarf Shrub-steppe
- Sagebrush Shrub-steppe
- Unclassified Shrubland

Reference Map



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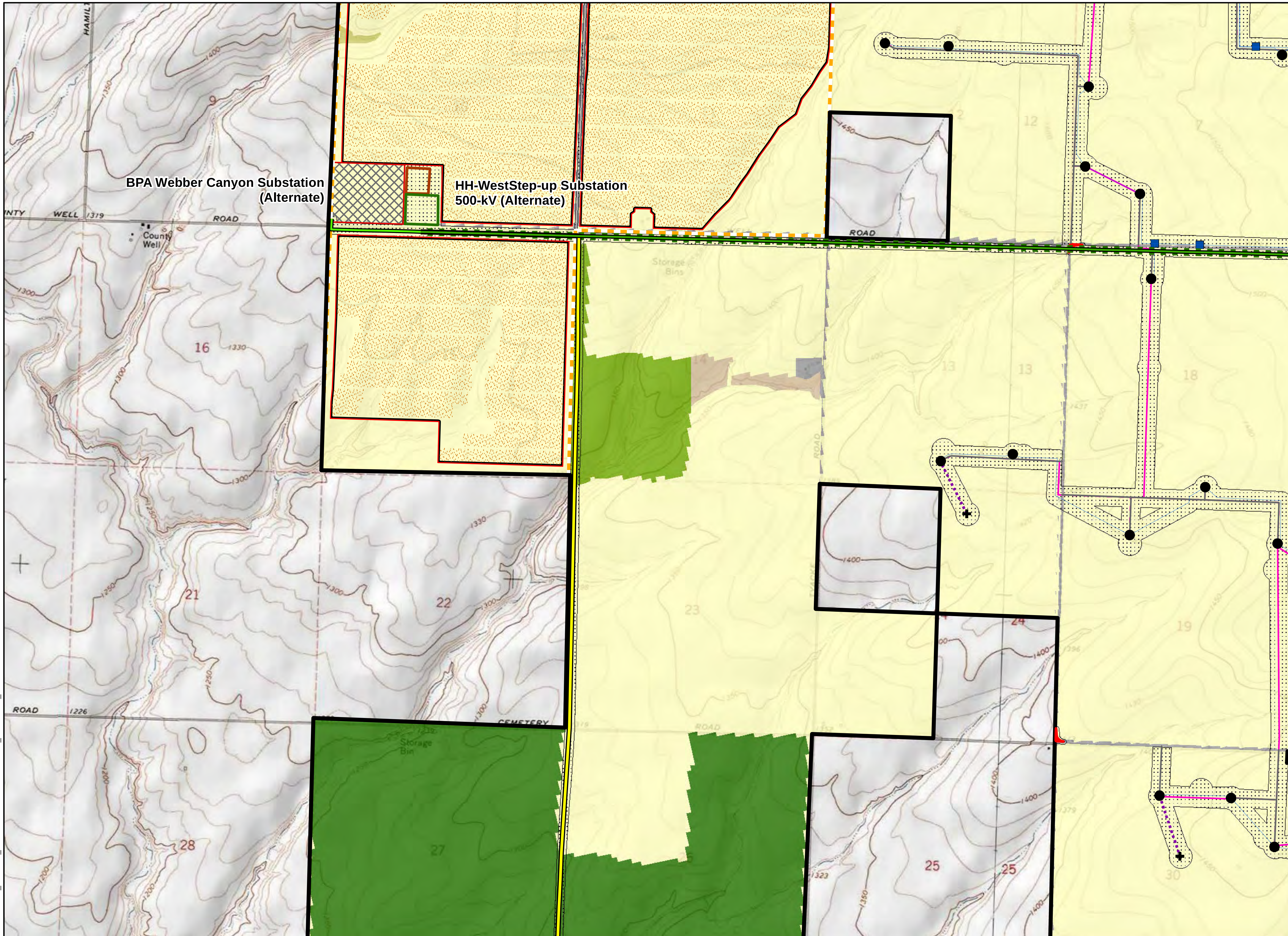
Horse Heaven Wind Farm

Figure 3.4-1
Habitat Types and Subtypes
Map 2 of 11

BENTON COUNTY, WA



- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Option 1 Turbine Layout
- Met Tower
- Met Tower Access Road
- Solar Intertie 230-kV Transmission Line
- County Well Road 230-kV Transmission Line (Primary)
- County Well Road 500-kV Transmission Line Step-up (Primary)
- Battery Storage
- Intersection Improvement Area
- Project Substation (Alternate)
- Solar Siting Area
- Solar Array
- Solar Array Fencing
- Solar Array Road
- BPA Substation (Alternate)
- Junction Box
- Collection Line
- CraneCL
- CraneCL_OnRoad
- RoadCL

Habitat Types and Subtypes

- Agricultural land
- Developed/disturbed

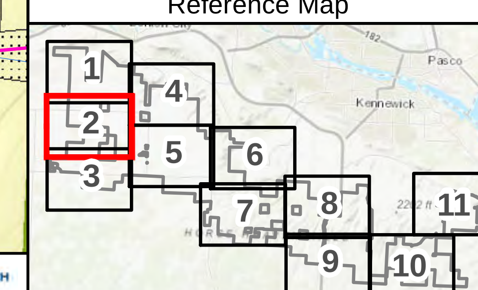
Grassland

- Unclassified Grassland
- Non-native Grassland
- Planted Grassland

Shrubland

- Sagebrush Shrub-steppe
- Unclassified Shrubland

Reference Map



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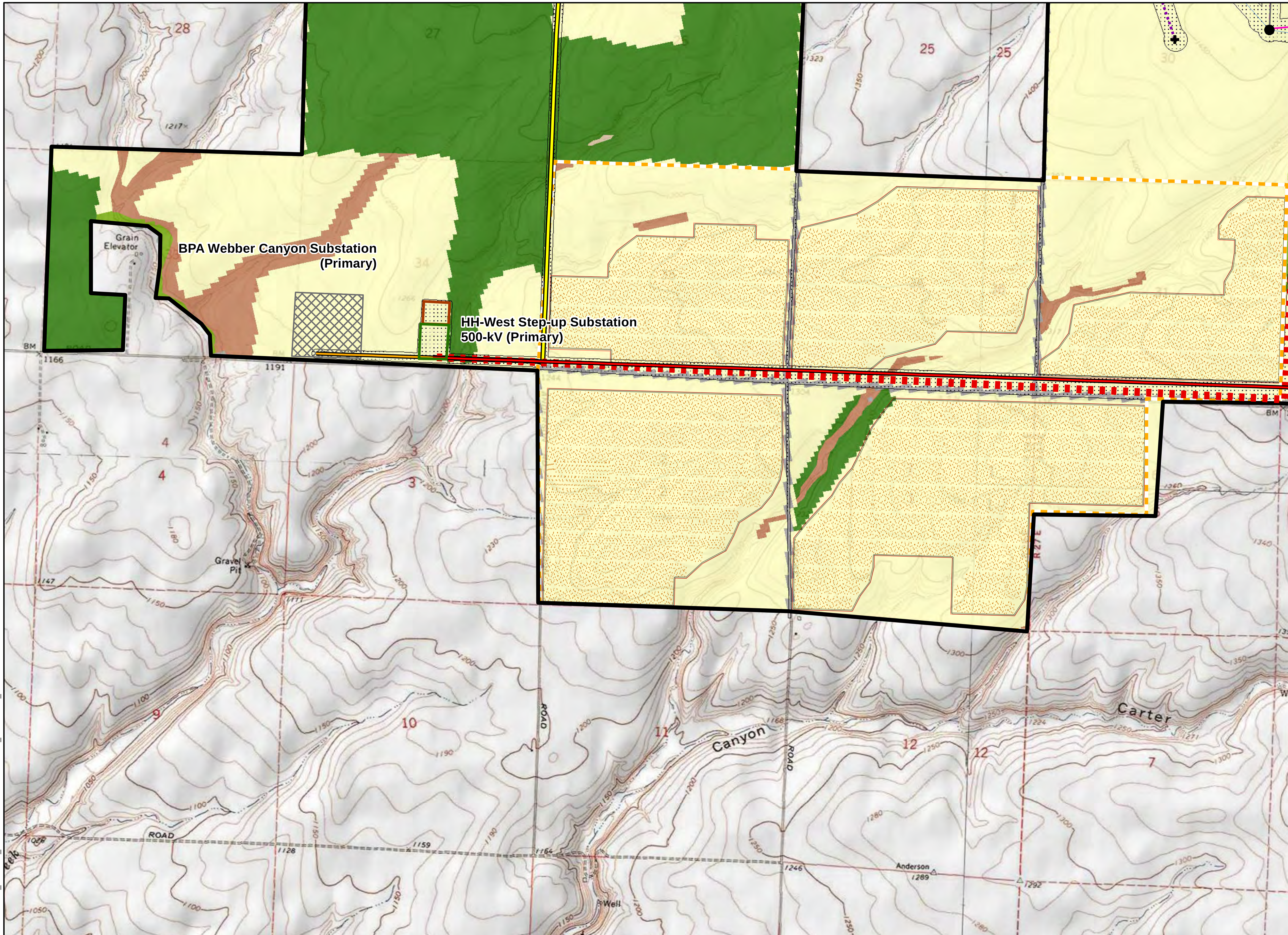

Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 3.4-1
Habitat Types and Subtypes
Map 3 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Option 1 Turbine Layout
- Met Tower
- Met Tower Access Road
- Sellards Road 230-kV Transmission Line (Primary)
- Sellards Road 500-kV Transmission Line Step-up (Primary)
- Sellards Road 230-kV Transmission Line (Alternate)
- Solar Intertie 230-kV Transmission Line
- Battery Storage
- Project Substation (Alternate)
- Solar Siting Area
- Solar Array
- Solar Array Fencing
- Solar Array Road
- Collection Line
- CraneCL
- CraneCL_OnRoad
- RoadCL

Habitat Types and Subtypes
- Agricultural land
- Developed/disturbed

Grassland
- Unclassified Grassland
- Planted Grassland

Shrubland
- Sagebrush Shrub-steppe
- Unclassified Shrubland

Reference Map

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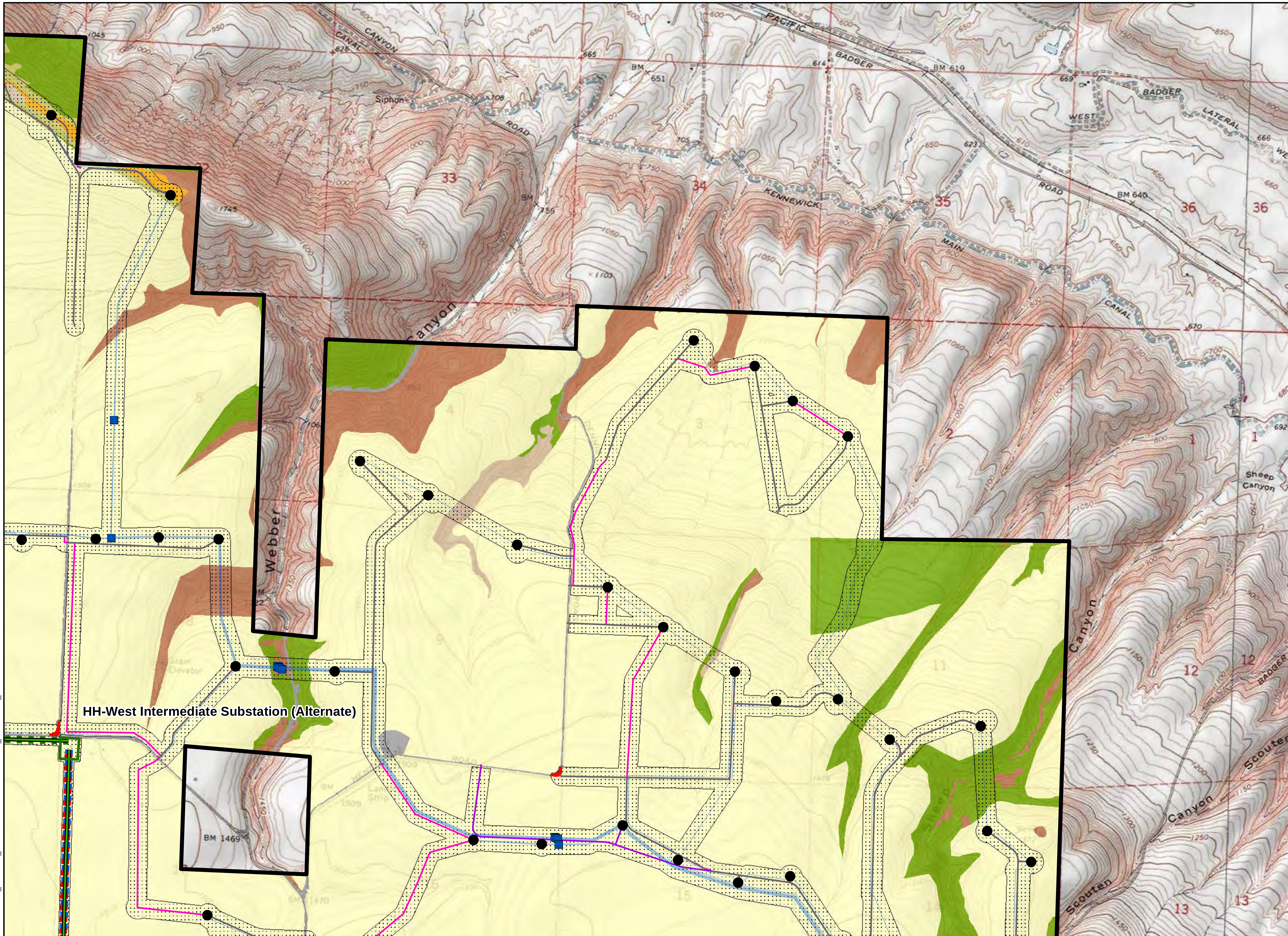

Horse Heaven Wind Farm

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Figure 3.4-1 Habitat Types and Subtypes

Map 4 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Option 1 Turbine Layout
- Sellards Road 230-kV Transmission Line (Alternate)
- County Well Road 230-kV Transmission Line (Primary)
- Intersection Improvement Area
- Project Substation (Alternate)
- Junction Box
- Collection Line
- CraneCL
- CraneCL_OnRoad
- CraneCL_OnRoad_Alt
- RoadCL
- RoadCL_Alt

Habitat Types and Subtypes

- Agricultural land
- Developed/disturbed

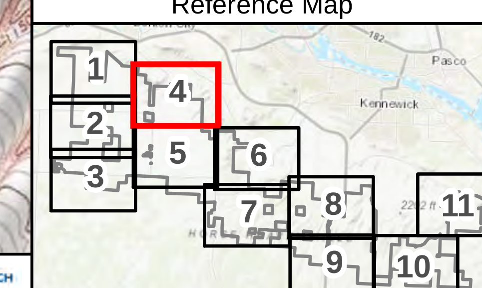
Grassland

- Unclassified Grassland
- Non-native Grassland

Shrubland

- Dwarf Shrub-steppe
- Sagebrush Shrub-steppe
- Unclassified Shrubland

Reference Map



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Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 3.4-1
Habitat Types and Subtypes
Map 5 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Option 1 Turbine Layout
- Met Tower
- Met Tower Access Road
- Sellards Road 230-kV Transmission Line (Primary)
- Sellards Road 230-kV Transmission Line (Alternate)
- County Well Road 230-kV Transmission Line (Primary)
- 230-kV Intertie Transmission Line (Primary)
- O & M Facility
- Intersection Improvement Area
- Laydown Yard
- Project Substation (Primary)
- Solar Siting Area
- Solar Array
- Solar Array Fencing
- Solar Array Road
- Junction Box
- Collection Line
- CraneCL
- CraneCL_OnRoad
- CraneCL_Alt
- CraneCL_OnRoad_Alt
- RoadCL
- RoadCL_Alt

Habitat Types and Subtypes

- Agricultural land
- Developed/disturbed

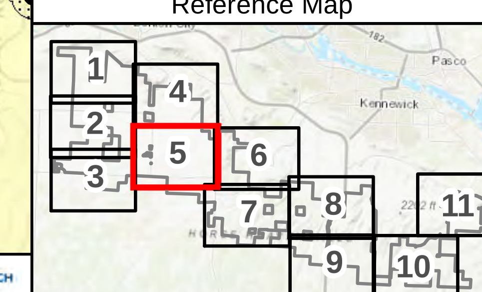
Grassland

- Unclassified Grassland
- Planted Grassland

Shrubland

- Unclassified Shrubland

Reference Map



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Horse Heaven Wind Farm

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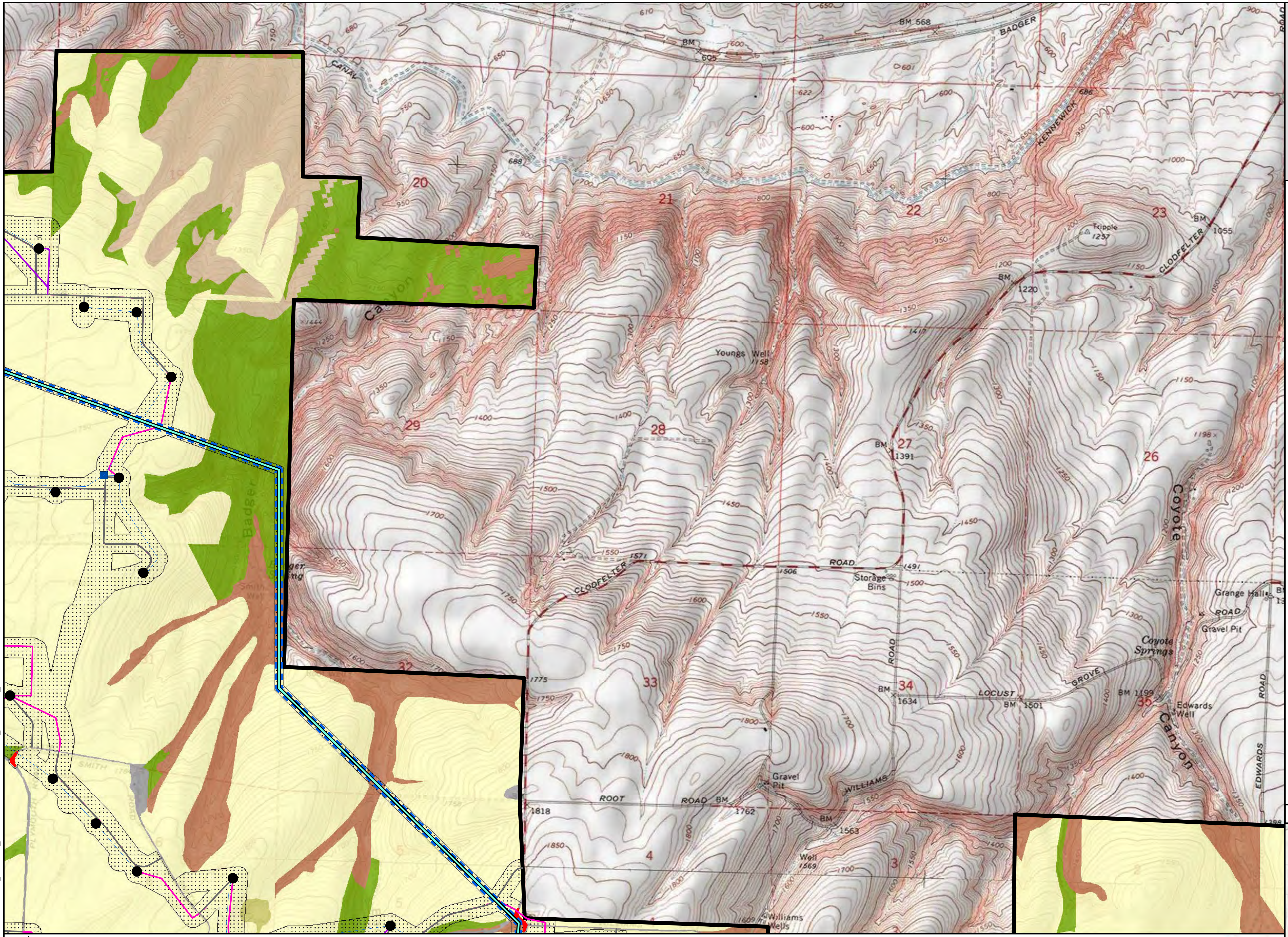
Figure 3.4-1
Habitat Types and Subtypes
Map 6 of 11

BENTON COUNTY, WA



- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Option 1 Turbine Layout
- 230-kV Intertie Transmission Line (Primary)
- Intersection Improvement Area
- Junction Box
- Collection Line
- CraneCL
- CraneCL_OnRoad
- CraneCL_OnRoad_Alt
- RoadCL
- RoadCL_Alt

Habitat Types and Subtypes

- Agricultural land
- Developed/disturbed

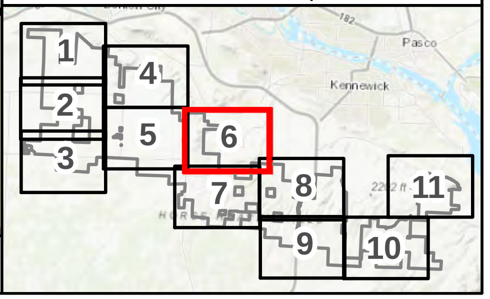
Grassland

- Unclassified Grassland
- Non-native Grassland

Shrubland

- Sagebrush Shrub-steppe
- Unclassified Shrubland

Reference Map



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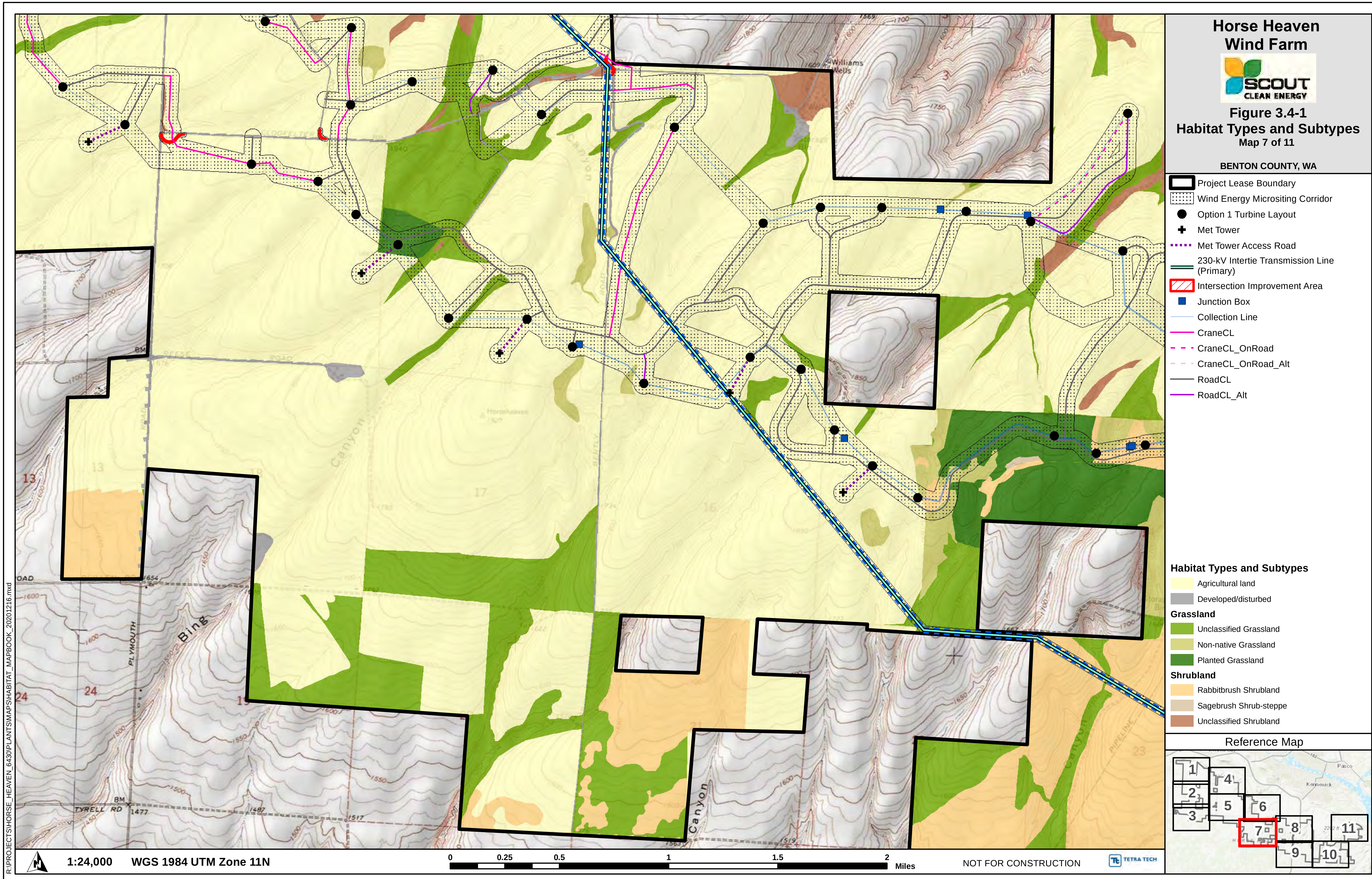
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Figure 3.4-1
Habitat Types and Subtypes
Map 7 of 11
BENTON COUNTY, WA
Project Lease Boundary
Wind Energy Micrositing Corridor
Option 1 Turbine Layout
Met Tower
Met Tower Access Road
230-kV Intertie Transmission Line (Primary)
Intersection Improvement Area
Junction Box
Collection Line
CraneCL
CraneCL_OnRoad
CraneCL_OnRoad_Alt
RoadCL
RoadCL_Alt
Habitat Types and Subtypes
Agricultural land
Developed/disturbed
Grassland
Unclassified Grassland
Non-native Grassland
Planted Grassland
Shrubland
Rabbitbrush Shrubland
Sagebrush Shrub-steppe
Unclassified Shrubland
Reference Map
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Horse Heaven Wind Farm

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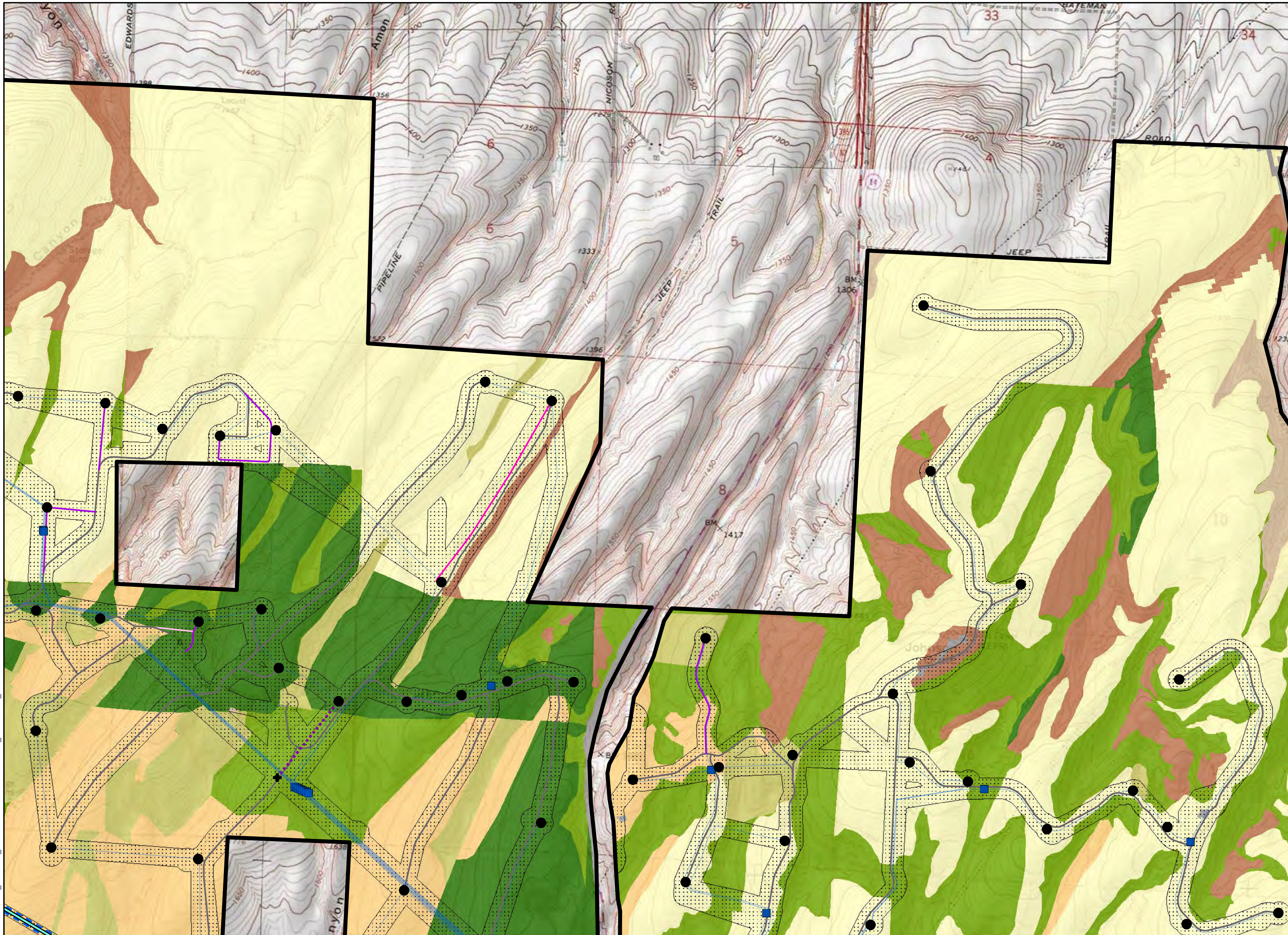
Figure 3.4-1
Habitat Types and Subtypes
Map 8 of 11

BENTON COUNTY, WA



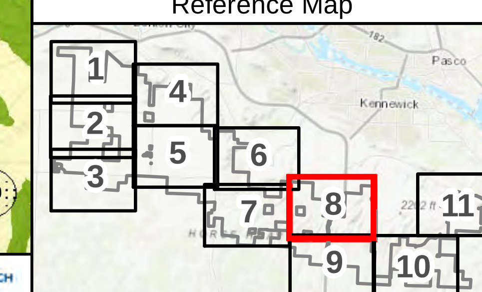
- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Option 1 Turbine Layout
- Met Tower
- Met Tower Access Road
- 230-kV Intertie Transmission Line (Primary)
- Junction Box
- Collection Line
- CraneCL
- CraneCL_OnRoad
- CraneCL_Alt
- CraneCL_OnRoad_Alt
- RoadCL
- RoadCL_Alt

Habitat Types and Subtypes
- Agricultural land
- Developed/disturbed

Grassland
- Unclassified Grassland
- Non-native Grassland
- Planted Grassland

Shrubland
- Rabbitbrush Shrubland
- Sagebrush Shrub-steppe
- Unclassified Shrubland

Reference Map



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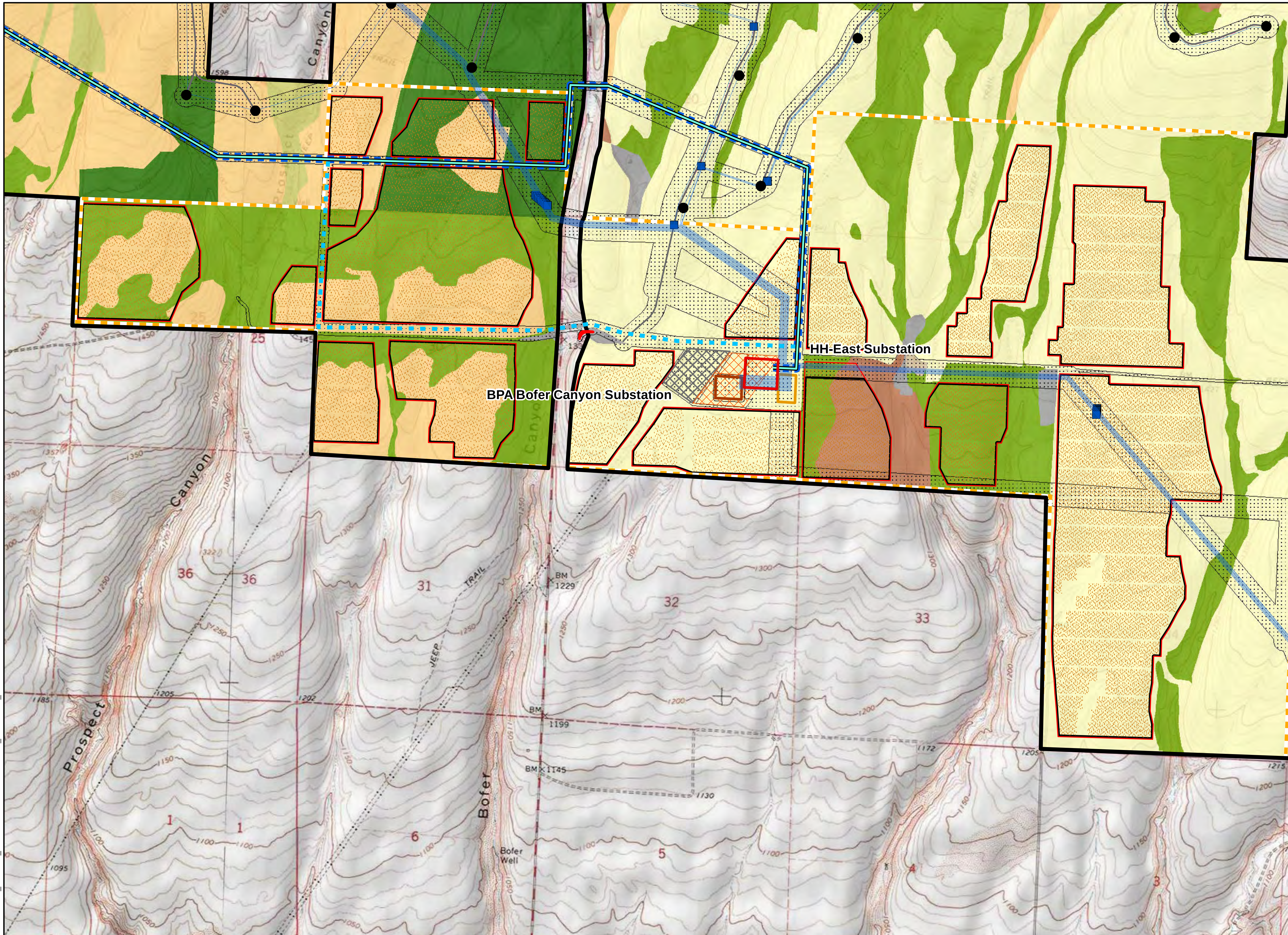

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Figure 3.4-1
Habitat Types and Subtypes
Map 9 of 11

BENTON COUNTY, WA

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Horse Heaven Wind Farm

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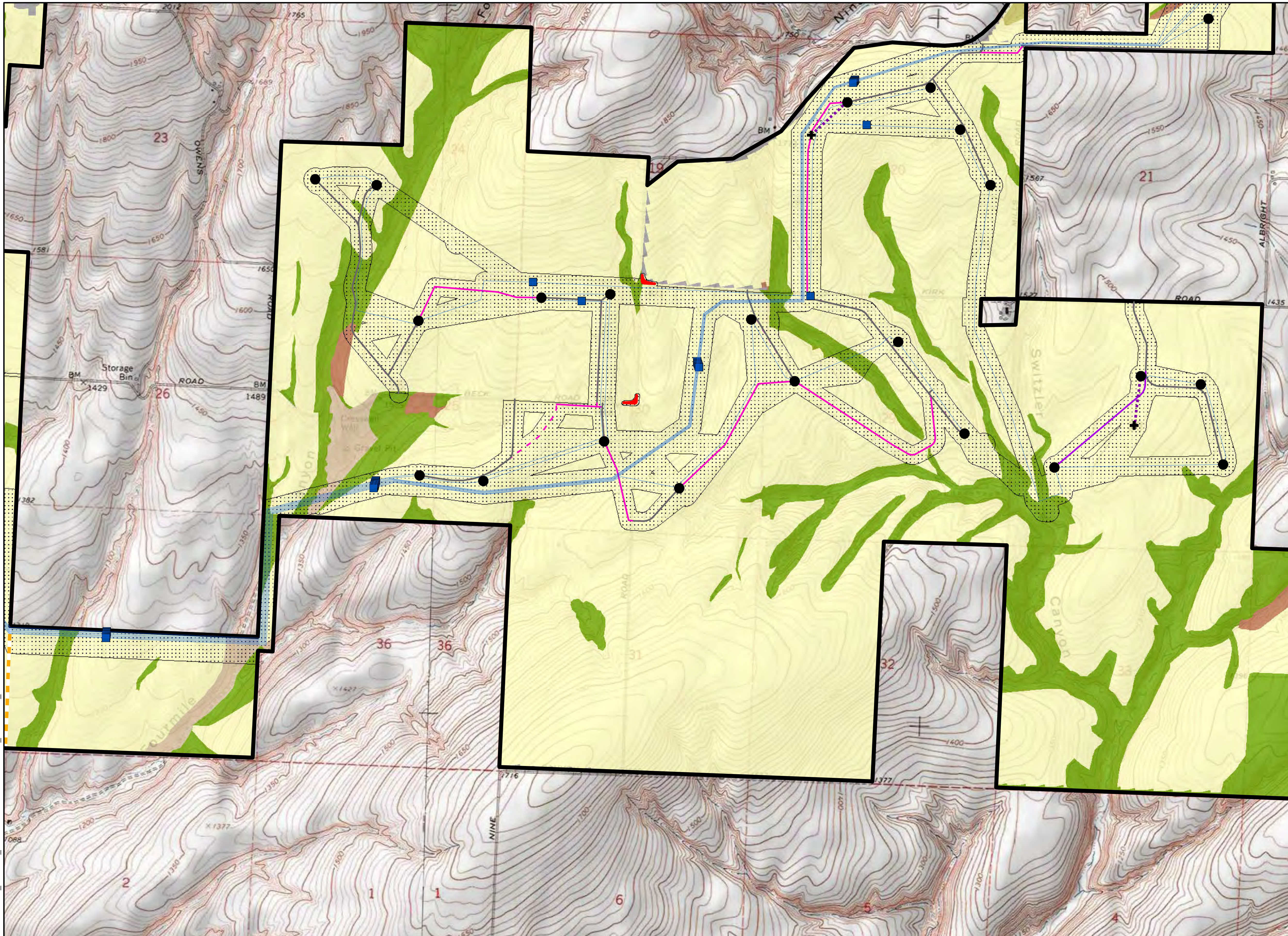
Figure 3.4-1
Habitat Types and Subtypes
Map 10 of 11

BENTON COUNTY, WA



- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Option 1 Turbine Layout
- Met Tower
- Met Tower Access Road
- Intersection Improvement Area
- Solar Siting Area
- Junction Box
- Collection Line
- CraneCL
- CraneCL_OnRoad
- CraneCL_OnRoad_Alt
- RoadCL
- RoadCL_Alt

Habitat Types and Subtypes

- Agricultural land
- Developed/disturbed

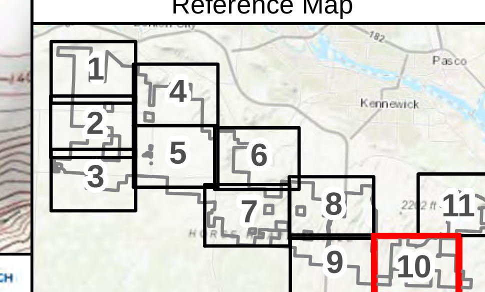
Grassland

- Unclassified Grassland
- Non-native Grassland

Shrubland

- Sagebrush Shrub-steppe
- Unclassified Shrubland

Reference Map



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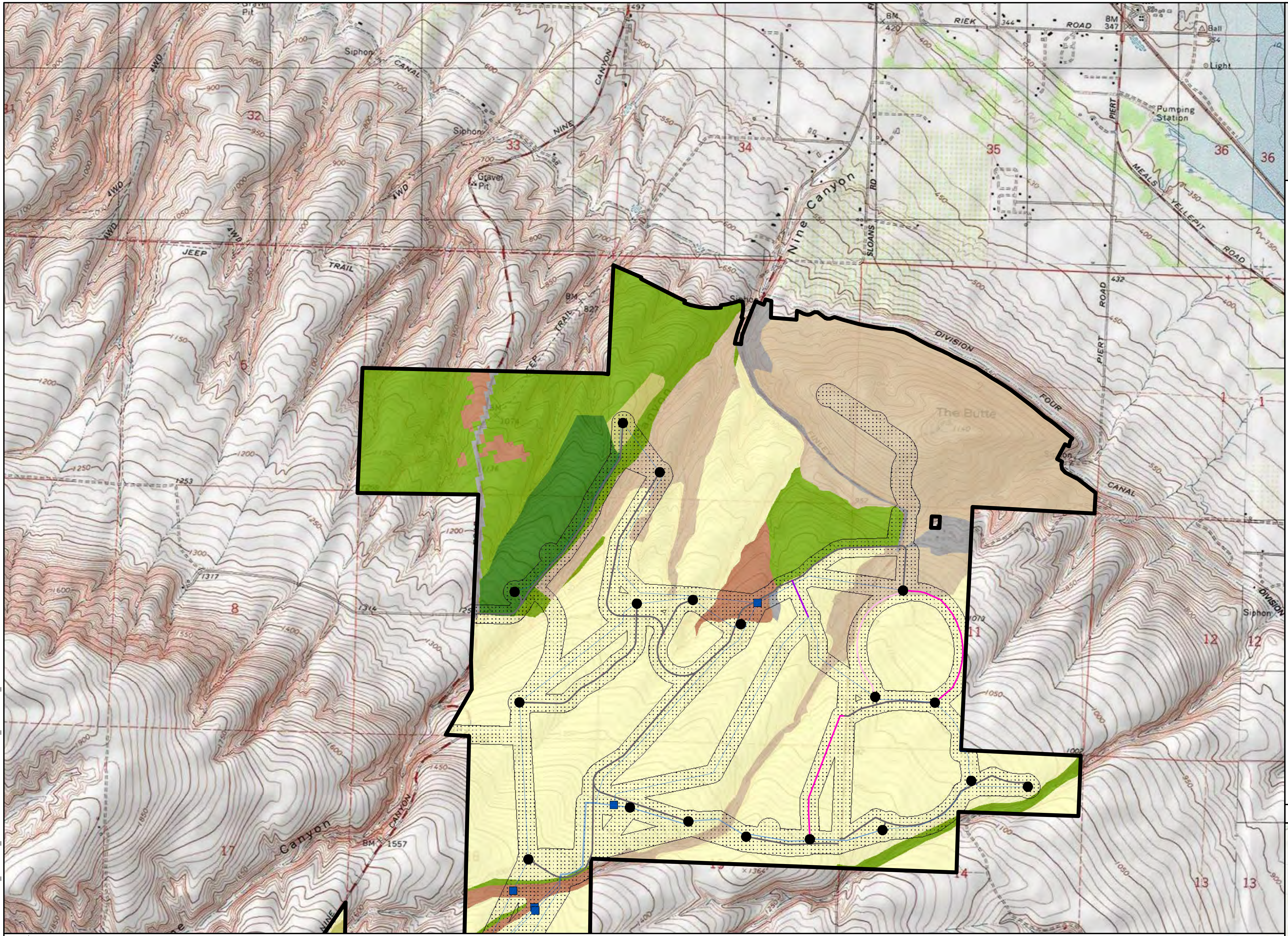
Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 3.4-1
Habitat Types and Subtypes
Map 11 of 11

BENTON COUNTY, WA



- Project Lease Boundary
- Wind Energy Micrositing Corridor
- Option 1 Turbine Layout
- Junction Box
- Collection Line
- CraneCL
- CraneCL_OnRoad
- CraneCL_Alt
- CraneCL_OnRoad_Alt
- RoadCL
- RoadCL_Alt

Habitat Types and Subtypes

- Agricultural land
- Developed/disturbed

Grassland

- Unclassified Grassland
- Non-native Grassland
- Planted Grassland

Shrubland

- Sagebrush Shrub-steppe
- Unclassified Shrubland

Reference Map

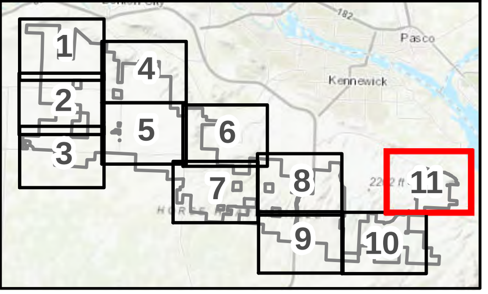


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Table 3.4-1. Habitat Types and Subtypes within the Project Lease Boundary, Micrositing Corridor, and Solar Siting Areas

Habitat Type	Habitat Subtype	Project Lease Boundary		Micrositing Corridor		Solar Siting Areas	
		Acres	Percent of Project Lease Boundary	Acres[3/]	Percent of Micrositing Corridor	Acres[3/]	Percent of Solar Siting Areas
Agricultural land	Agricultural land	53,886	74%	8,767	80%	8,575	80%
Developed/disturbed	Developed/disturbed	652	1%	105	1%	159	1%
Grassland	Non-native grassland	689	1%	173	2%	4	<0.1%
	Planted grassland	3,789	5%	639	6%	226	2%
	Unclassified grassland[1/]	7,892	11%	639	6%	1,063	10%
Shrubland	Dwarf shrub-steppe	23	<0.1%	21	0.2%	--	--
	Rabbitbrush shrubland	2,517	4%	389	4%	566	5%
	Sagebrush shrub-steppe	1,261	2%	126	1%	4	<0.1%
	Unclassified shrubland[1/]	1,719	2%	114	1%	159	1%
	Total[2/]	**72,428**	**100%**	**10,972**	**100%**	**10,755**	**100%**

Notes:
1/ Unclassified grassland and unclassified shrubland habitat subtypes include those areas mapped during surveys conducted in 2018 or using NLCD data that were not further classified into subtypes (e.g., planted grassland, sagebrush shrub-steppe) during the 2020 desktop analysis.
2/ Totals may not sum exactly due to rounding.
3/ Areas that fall within both the Micrositing Corridor and the Solar Siting Areas (e.g., wind-associated collection lines that pass through the Solar Siting Areas) are included only in the total acres listed for the Solar Siting Areas.

Agricultural Land

Areas mapped as agricultural land within the Project Lease Boundary consist primarily of active wheat fields and fallow wheat fields (i.e., fields in active rotation but not planted during the current season).

Developed/Disturbed

Developed/disturbed areas include existing roads, buildings and structures associated with ranching and farming activities, gravel pits, and radio towers. The majority of areas mapped as developed/disturbed are unvegetated. Vegetation that does occur in these areas consists primarily of ruderal species (i.e., species that colonize or thrive in disturbed areas), including many non-native species. Common plant species in vegetated areas of developed/disturbed habitat are similar to those listed below under the non-native grassland habitat subtype.

Grassland

Grassland habitat includes uncultivated areas dominated by herbaceous vegetation. Where survey information (e.g., Tetra Tech 2020 in Appendix K) and the desktop analysis allowed for differentiation of grassland habitat, non-native and planted grassland habitat subtypes were mapped. The remaining grassland habitat is grouped as the unclassified grassland subtype (see Table 3.4-1).

Non-native Grassland

During surveys, areas mapped as non-native grassland were often observed on hillslopes and adjacent draws (Tetra Tech 2020 in Appendix K). However, this habitat subtype was also found adjacent to agricultural fields and in flat areas where formerly planted and/or native grassland is now dominated by non-native grass and forb species and has transitioned to non-native grassland. Dominant species observed in this habitat subtype include cereal rye (*Secale cereale*), cheatgrass (*Bromus tectorum*), prickly lettuce (*Lactuca serriola*), tall tumblemustard (*Sisymbrium altissimum*), and yellow salsify (*Tragopogon dubius*). Although native forbs including common yarrow (*Achillea millefolium*), hoary-aster, and slender hareleaf (*Lagophylla ramosissima*) were occasionally observed in this habitat subtype, they typically represented only a small percent of the overall vegetative cover. Several areas mapped as non-native grassland habitat in 2020 consisted of vast areas dominated by dense cover of cereal rye. Cereal rye is listed as a Class C noxious weed in Washington State and Benton County (BCNWCB 2020; WSNWCB 2020).

Planted Grassland

The planted grassland habitat subtype consists of lands that have been planted with non-native grasses, native grasses, and/or native shrubs. These areas may have been or may currently be enrolled in the Conservation Reserve Program (CRP), but their current enrollment status is unknown.

Areas mapped as planted grassland include areas planted with the non-native perennial grass crested wheatgrass (*Agropyron cristatum*), as well as areas planted primarily with the native perennial grasses bluebunch wheatgrass and big bluegrass (*Poa ampla*; a cultivar of *P. secunda*) (Tetra Tech 2020, in Appendix K). Rabbitbrush, primarily rubber rabbitbrush (*Ericameria* *nauseosa*), was also commonly observed in this habitat subtype. Areas mapped as planted grassland typically contained less than five percent cover of rabbitbrush. However, small (less than one acre) dense patches of rabbitbrush occur in this habitat subtype. Larger areas containing high cover of rabbitbrush were mapped as the rabbitbrush shrubland habitat subtype.

The quality of planted grassland habitat subtype observed during surveys varied, with some areas of planted grassland habitat containing a predominance of native species such as bluebunch wheatgrass, big bluegrass, common yarrow, and large-flowered agoseris (*Agoseris grandiflora*) and low cover of non-native invasive species (Tetra Tech 2020). Other areas of planted grassland habitat are dominated by non-native species including the planted perennial grass crested wheatgrass, as well as non-native invasive species such as cheatgrass, cereal rye, prickly lettuce, and yellow salsify (Tetra Tech 2020). In general, planted grassland habitat contained a low diversity of forb species.

Unclassified Grassland

The unclassified grassland habitat subtype includes areas mapped as grasslands in 2018 (Chatfield and Brown 2018a, 2018b) and areas identified as the "herbaceous" land cover classification by the NLCD (USGS 2016; Yang et al. 2018) that were not further classified into a habitat subtype based on the desktop analysis discussed above. Prior to construction, habitat surveys would be conducted within the Solar Siting Areas and portions of the Micrositing Corridor that were not surveyed in 2020. These habitat surveys would focus on documenting areas of sagebrush shrub-steppe habitat, if present, but would also refine the categorization of areas mapped as unclassified grassland (e.g., into planted grassland or other grassland habitat subtype) if observed during the mapping of sagebrush shrub-steppe habitat.

Shrubland

Shrubland habitat includes areas where the shrub component accounts for 5 percent or more of the vegetative cover. Where survey information and desktop analysis allowed for differentiation of shrubland habitat, habitat subtypes, including dwarf shrub-steppe, rabbitbrush shrubland, and sagebrush shrub-steppe, were mapped. The remaining shrubland habitat type is grouped as the unclassified shrubland subtype (Table 3.4-1). Prior to construction, habitat surveys would be conducted within the Solar Siting Areas and portions of the Micrositing Corridor that were not surveyed in 2020. These habitat surveys would focus on documenting areas of sagebrush shrub-steppe habitat.

Dwarf Shrub-steppe

One small area (approximately 23 acres) was mapped as dwarf shrub-steppe during surveys conducted in 2020 (Figure 3.4-1; Table 3.4-1). This area is located on a ridgetop in the northwest corner of the Project Lease Boundary and occurs on lithosol soils. Lithosols are shallow soils with poorly defined layers that consist mainly of partially weathered rock fragments (Azerrad et al. 2011). Dominant species observed within this habitat subtype include the native sub-shrub/dwarf shrub rock buckwheat (*Eriogonum sphaerocephalum*), the native perennial grasses bluebunch wheatgrass and Sandberg bluegrass (*Poa secunda*), and the non-native annual grasses cheatgrass and cereal rye. Forbs and sub-shrubs commonly observed in this habitat subtype include common yarrow, rosy balsamroot (*Balsamorhiza rosea*), hoary aster

(*Dieteria canescens*), Douglas' dustymaiden (*Chaenactis douglasii*), cushion fleabane (*Erigeron poliospermus*), narrowleaf goldenweed (*Nestotus stenophyllus*), tall tumblemustard, and yellow salsify. Scattered shrubs, including rubber rabbitbrush, green rabbitbrush (*Chrysothamnus viscidiflorus*), and big sagebrush, were also observed in areas mapped as the dwarf shrub-steppe habitat subtype; however, cover of these shrub species did not exceed 5 percent. This habitat subtype matches the description of the rock buckwheat/Sandberg bluegrass dwarf-shrub herbaceous vegetation type, which is listed by the Washington Natural Heritage Program (WNHP) as a rare and/or high-quality plant community (WNHP 2020a).

Rabbitbrush Shrubland

Similar to the planted grassland habitat subtype discussed above, the rabbitbrush shrubland habitat subtype was often observed in areas that appeared to be former agricultural lands that had been planted with native grasses, native shrubs, and/or non-native grasses. These areas may have been or may currently be enrolled in CRP, but their current enrollment status is unknown. Shrub cover in the rabbitbrush shrub-steppe habitat subtype ranged between approximately 10 to 80 percent cover, but was typically greater than 50 percent. Rubber rabbitbrush was the dominant shrub species observed, although green rabbitbrush was occasionally observed in this habitat subtype as well. It is unknown whether rubber and green rabbitbrush were planted in these areas or have established naturally. Rubber rabbitbrush is an early seral species that readily colonizes disturbed sites, such as areas disturbed by overgrazing or fire or abandoned agricultural lands (Faber-Langendoen et al. 2013; Tirmenstein 1999; USDA 2017).

Other common species observed in rabbitbrush shrubland habitat include the native grasses big bluegrass and the non-native grasses crested wheatgrass, cheatgrass, and cereal rye. Common forbs observed included the native common yarrow and hoary-aster and the non-native prickly lettuce, tall tumblemustard, and yellow salsify.

Sagebrush Shrub-steppe

During field surveys in 2020, sagebrush shrub-steppe habitat was primarily mapped in the north-central and northeastern portions of the Project Lease Boundary. In addition, a small patch of remnant sagebrush shrub-steppe habitat was mapped in the northwestern portion of the Project Lease Boundary (Figure 3.4-1).

Shrub cover in sagebrush shrub-steppe habitat subtype ranged between approximately 10 to 75 percent cover, but was typically less than 50 percent and included areas of grassland habitat in between patches of shrubs. The dominant shrub species in this habitat subtype was big sagebrush. Other shrub species commonly observed include spineless horsebrush (*Tetradymia canescens*), rubber rabbitbrush, and green rabbitbrush. Cover and diversity of grasses and forbs was variable within this habitat subtype; however, cover of the non-native cheatgrass was typically high. Other grasses and forbs observed in sagebrush shrub-steppe habitat include the native grasses and forbs: bluebunch wheatgrass, Sandberg bluegrass, Carey's balsamroot (*Balsamorhiza careyana*), common yarrow, long-leaf phlox (*Phlox longifolia*), low pussytoes (*Antennaria dimorpha*), shaggy fleabane (*Erigeron pumilus*), woolly plantain (*Plantago patagonica*), woollypod milkvetch (*Astragalus purshii*), and the non-native forbs redstem stork's bill (*Erodium cicutarium*), prickly lettuce, and yellow salsify.

The WDFW maintains a list of Priority Habitats and Species (PHS), which includes habitats and species considered to be priorities for conservation and management in the state (WDFW 2008). In addition to the PHS list, the WDFW maintains a database of known locations of PHS in the state. Shrub-steppe, specifically shrub-steppe dominated or co-dominated by big sagebrush, antelope bitterbrush (*Purshia tridentata*), threetip sagebrush (*Artemisia tripartita*), scabland sagebrush (*Artemisia rigida*), and/or dwarf sagebrush (*Artemisia arbuscula*) is considered a priority habitat by the WDFW. Approximately 2,756 acres of shrub-steppe have been mapped within the Project Lease Boundary by the WDFW's PHS mapper database (WDFW 2020a, 2020b). During field surveys conducted by Tetra Tech in 2020, approximately 704 of these acres were confirmed as sagebrush shrub-steppe, 23 acres were determined to be dwarf shrub-steppe, 42 acres were determined to be some other habitat type (e.g., agricultural land, disturbed land) and the remaining 1,988 acres were not field-verified during these surveys due to the limited extent of the survey area.

Unclassified Shrubland

As noted above, the unclassified shrubland habitat subtype includes areas mapped as shrub/scrub by the NLCD (USGS 2016; Yang et al. 2018) and areas mapped as shrub-steppe during 2018 surveys (Chatfield and Brown 2018a, 2018b) that could not be further differentiated during the desktop analysis. Prior to construction, habitat surveys would be conducted within the Solar Siting Areas and portions of the Micrositing Corridor that were not surveyed in 2020. These habitat surveys would focus on documenting areas of sagebrush shrub-steppe habitat, including refining the categorization of areas currently mapped as unclassified shrubland.

Special Status Plants and Noxious Weeds

In order to determine the list of special-status plant species with potential to occur within the Project Lease Boundary, the Applicant conducted a desktop assessment. For purposes of this assessment, the term "special status plant" includes species listed under the federal ESA (16 U.S.C. §1531 et seq.) or state-listed endangered, threatened, candidate, or sensitive vascular plant species as defined by WNHP. Specific sources of information that were reviewed include:

- USFWS species lists for Benton County (USFWS 2020a);
- List of Known Occurrences of Rare Plants in Washington by County (WNHP 2020b);
- Washington Natural Heritage Program Element Occurrences database (WNHP 2020c)
- Washington Vascular Plant Species of Special Concern (WHNP 2019); and
- Field Guide to the Rare Plants of Washington (WNHP 2020d)

Based on the background review, one federally listed threatened plant species, the Umtanum desert buckwheat (*Eriogonum codium*), is known to occur within Benton County (USFWS 2020a). However, this species has a highly restricted distribution, and the entire known population occurs in a 1.9-acre area on the eastern end of Umtanum Ridge within the Hanford Reach National Monument, which is more than 25 miles north of the Project Lease Boundary (USFWS 2019). Additionally, the approximately 5 acres of designated critical habitat for Umtanum desert buckwheat is restricted to this region along Umtanum Ridge (i.e., outside the Project Lease Boundary).

Two state-listed endangered, 11 state-listed threatened, and 15 state sensitive vascular plant species are known or have the potential to occur in Benton County (WNHP 2020b). In addition, two state sensitive vascular plant species now believed to be extirpated in the state and/or county are also historically known to occur in Benton County (WNHP 2020b). One state threatened vascular plant species, grey cryptantha (*Cryptantha leucophaea*), has been documented within 5 miles of the Project Lease Boundary (WNHP 2020c); however, this occurrence is across the Columbia River from the Project Lease Boundary.

Special status plant surveys were conducted in June 2020, concurrently with the habitat verification and mapping surveys discussed above (Tetra Tech 2020, in Appendix K). These surveys were restricted to 44 proposed Turbine locations and areas traversed while walking between Turbine locations. No special status plant species were observed during these surveys.

Noxious weed surveys were conducted concurrently with habitat verification and mapping and special status plant surveys in June 2020 (Tetra Tech 2020, in Appendix K). Six state and county-designated noxious weeds were observed during these surveys (BCNWCB 2020; WSNWCB 2020). Table 3.4-2 lists the noxious weed species observed, their noxious weed designation, and the frequency of observations. Surveys conducted in 2020 did not cover the entire Project Lease Boundary; therefore, other state- and/or county-designated noxious weeds may also occur within the Project Lease Boundary.

Table 3.4-2. Noxious Weeds Observed During Field Surveys Conducted June 2020

Scientific Name	Common Name	State and County Status[1/]	Frequency[2/]
Bassia (*Kochia*) *scoparia*	Kochia	B	Observed in several locations scattered throughout survey area.
Centaurea spp.[3/]	knapweed	B	Frequently observed in central portion of survey area.
Centaurea solstitialis	yellow starthistle	B	Observed in two locations in central portion of survey area.
Chondrilla juncea	rush skeletonweed	B	Abundant. Frequently observed throughout survey area.
Onopordum acanthium	Scotch thistle	B	Observed in two locations in south-central portion of survey area.
Secale cereale	Cereal rye	C	Abundant. Frequently observed throughout survey area.

Notes:

1/ "**Class B" weeds**: Non-native species presently limited to portions of the state. Species are designated for required control in regions where they are not yet widespread. Preventing new infestations in these areas is a high priority. In regions where a Class B species is already abundant, control is decided at the local level, with containment as the primary goal.
"Class C" weeds: Noxious weeds that are typically widespread in the state or are of special interest to the state's agricultural industry. The Class C status allows county weed boards to require control if locally desired, or they may choose to provide education or technical consultation (WSNWCB 2020).

2/ As noted in Tetra Tech 2020a, noxious weed surveys were conducted within a limited portion of the Project Lease Boundary. Frequency of observation listed here is limited to the areas surveyed in 2020.

3/ Individuals observed were not flowering at the time of surveys; therefore, positive identification was not possible. Based on observations of rosettes and leaves, individuals and populations are believed to be either diffuse knapweed (*C. diffusa*) or spotted knapweed (*C. stoebe spp. micranthos*) which are both designated as "Class B" weeds in the state and county.

3.4.1.2 Fish

This section describes the topography, direction of drainage, and presence of fish-bearing streams in the vicinity of the Project and identifies fish listed under the federal ESA that occur in the Project vicinity. Sources of information include the wetlands and waters delineation conducted at the Project as well as desktop sources as cited below.

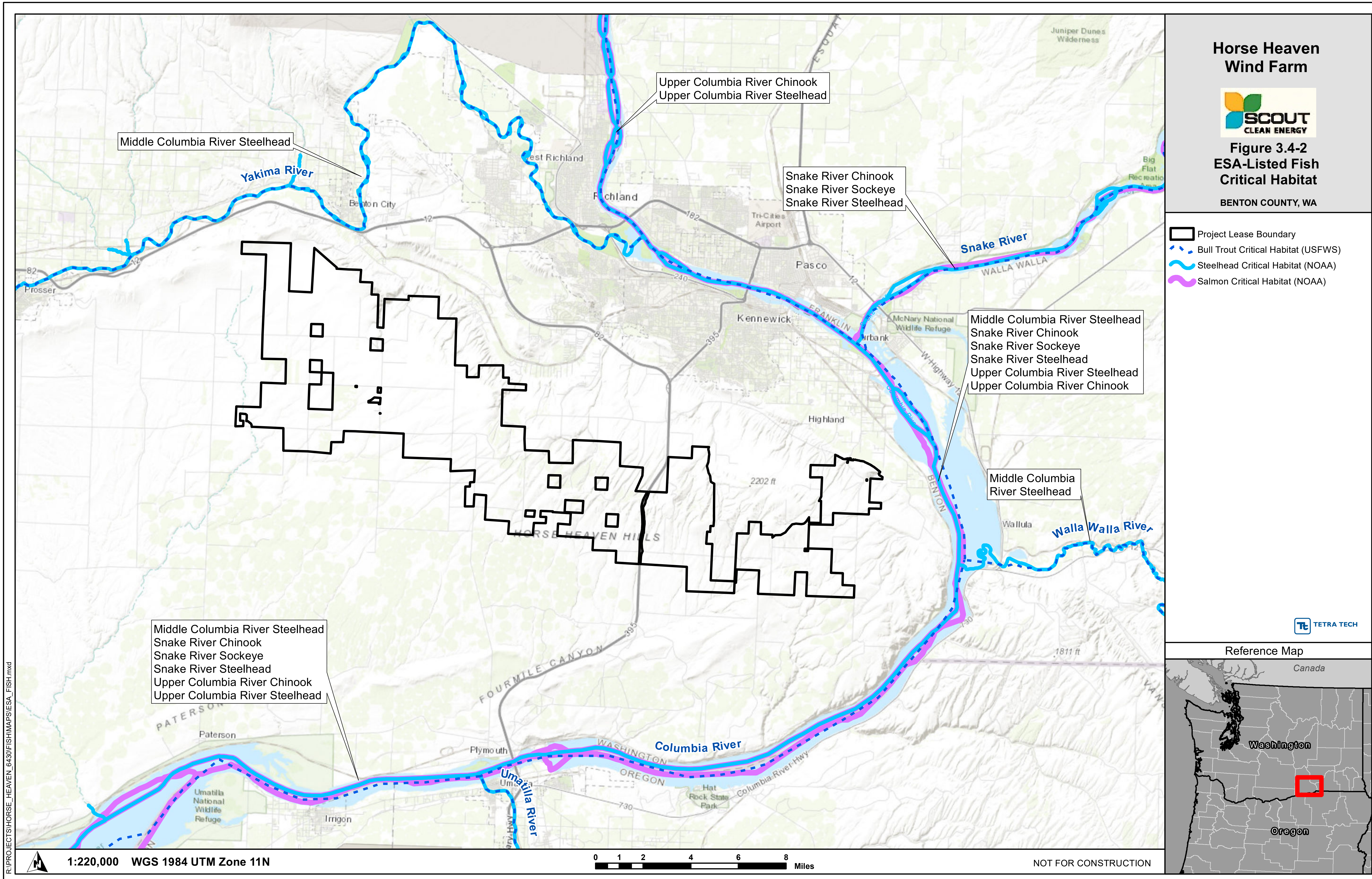
The Project Lease Boundary is dominated by rolling hills bisected by meandering canyons, some of which constitute ephemeral or intermittent drainages. There are no major rivers or other perennial streams within the Project Lease Boundary. The elevation within the Project Lease Boundary ranges from 604 to 2,051 feet above msl. The Yakima River lies north of the western portion of the Project, approximately 1.5 miles away at its closest location to the Project, and flows generally eastward to its confluence with the Columbia River. The Columbia River lies north, east, and south of the eastern portion of the Project, approximately 1.3 miles away at its closest location to the Project, as it bends around the Project Lease Boundary and ultimately runs west towards the Pacific Ocean (Figure 3.4-2).

The Horse Heaven Hills ridgeline lies along the northern border of the Project, particularly in the western portion of the Project Lease Boundary and includes canyons with some of the steeper slopes found within the Project Lease Boundary. On the southern side of this ridge, the landscape transitions to relatively rolling topography with shallow, meandering canyons that drain primarily southwest into the Columbia River. However, a portion of the Project Lease Boundary along the northeastern boundary ultimately drains northwest into the Yakima River and northeast into the Columbia River (Figure 3.4-2). The eastern portion of the Project Lease Boundary similarly drains primarily to the south into the Columbia River with a small portion of the Project draining northeast into the Columbia River.

There are no fish-bearing streams identified within the Project Lease Boundary (WDFW 2018). Although NHD (USGS 2017) and the Benton County Critical Area Ordinance (CAO) – Fish and Wildlife Habitat Conservation Areas (FWHCA; Benton County 2018) Map identified 253 intermittent streams within the Project Lease Boundary, the wetlands and waters delineation conducted by the Applicant in 2020 (see Sections 3.3 and 3.5, and Appendix I) only identified two intermittent streams and 31 ephemeral streams within the Micrositing Corridor. All stream segments within the Project Lease Boundary were determined to be ephemeral or intermittent, and while a non-perennial stream designation does not directly exclude fish, the characteristics of these non-perennial streams greatly limits the ability of fish to occupy areas well upstream of the consistently perennial flowing portions of the drainage in this dry warm area of the state. Therefore, these Project stream segments were not considered to be fish-bearing streams due to varied factors, including:

- Small drainage basins, which adversely affect flow maintenance and channel size;
- Small channels that limit rearing and holding pool habitat; and
- Distance (e.g., more than 1 river mile) from areas reasonably considered to have fish presence.

As discussed above, there are no fish-bearing streams within the Project Lease Boundary; however, fish-bearing streams do occur outside of the Project Lease Boundary. The Columbia River, to which ephemeral and intermittent streams within the Project Lease Boundary ultimately drain, contains fish, including the following ESA-listed salmonids and their critical habitat: Chinook salmon (*Oncorhynchus tshawytscha*), sockeye salmon (*O. nerka*), steelhead (*O. mykiss*), and bull trout (*Salvelinus confluentus*) and the Yakima River contains ESA-listed steelhead and bull trout (Figure 3.4-2). National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries)–designated critical habitat for the following Evolutionarily Significant Units (ESUs) and Distinct Population Segments (DPSs) of salmon and steelhead are present within the Columbia River where it passes east and south of the Project: Snake River ESU Chinook (threatened), Upper Columbia River ESU Chinook (endangered) Snake River ESU Sockeye, Middle Columbia River DPS steelhead (threatened), Snake River DPS steelhead (threatened), and Upper Columbia River DPS steelhead (threatened); NOAA Fisheries-designated critical habitat for Middle Columbia River DPS steelhead is present within the Yakima River where it passes north of the Project (Figure 3.4-2; NOAA Fisheries 2019). USFWS-designated critical habitat for bull trout (threatened) is present within both the Columbia River and Yakima River in the vicinity of the Project (Figure 3.4-2; USFWS 2020b).



Upper Columbia River Chinook
Upper Columbia River Steelhead
Middle Columbia River Steelhead
Yakima River
Benton City
West Richland
Richland
Tri-Cities Airport
Snake River Chinook
Snake River Sockeye
Snake River Steelhead
Snake River
Pasco
Kennewick
Prosser
Middle Columbia River Steelhead
Snake River Chinook
Snake River Sockeye
Snake River Steelhead
Upper Columbia River Steelhead
Upper Columbia River Chinook
Highland
2202 ft
Middle Columbia River Steelhead
Wallula
Walla Walla River
HORSE HEAVEN HILLS
Middle Columbia River Steelhead
Snake River Chinook
Snake River Sockeye
Snake River Steelhead
Upper Columbia River Chinook
Upper Columbia River Steelhead
FOURMILE CANYON
Paterson
Plymouth
Columbia River
WASHINGTON
OREGON
Umatilla River
Umatilla National Wildlife Refuge
Irrigon
Hat Rock State Park
1811 ft
Juniper Dunes Wilderness
McNary National Wildlife Refuge
Horse Heaven Wind Farm
SCOUT CLEAN ENERGY
Figure 3.4-2
ESA-Listed Fish
Critical Habitat
BENTON COUNTY, WA
Project Lease Boundary
Bull Trout Critical Habitat (USFWS)
Steelhead Critical Habitat (NOAA)
Salmon Critical Habitat (NOAA)
TETRA TECH
Reference Map
Canada
Washington
Oregon
1:220,000 WGS 1984 UTM Zone 11N
0 1 2 4 6 8 Miles
NOT FOR CONSTRUCTION
R:\PROJECTS\HORSE_HEAVEN_6430\FISH\MAPS\ESA_FISH.mxd

3.4.1.3 Wildlife

This section summarizes special status wildlife species known or expected to occur at the Project, other wildlife observed at the Project (based on baseline wildlife surveys conducted at the Project), and the presence of FWHCA, which are considered Critical Areas under BCC 15.14.010. Sources of information for the desktop reviews and the results of Project-specific surveys are indicated in each subsection. The Applicant coordinated with WDFW and USFWS regarding survey methods and results and Project permitting in 2017 and 2020 (i.e., during an Agency kick-off meeting September 19, 2017 [Jansen 2017a] and a Joint Stakeholder Meeting January 28, 2020 [Jansen and Fossum 2020]).

Special Status Wildlife

For purposes of this assessment, the term "special status wildlife" includes species listed under the federal ESA, state endangered species (designated in WAC 220-610-010), state threatened species (designated in WAC 220-200-100), state sensitive species (designated in WAC 220-200-100), state candidate species (designated and reviewed by WDFW per WAC 220-610-010), WDFW priority species (WDFW 2008), and eagles (protected under the BGEPA and WAC 220-610-100 for bald eagles [*Haliaeetus leucocephalus*]). Nearly all native bird species are protected under the Migratory Bird Treaty Act and therefore these species are addressed under *General Wildlife* rather than *Special Status Wildlife* unless the species are also otherwise designated special status (e.g., state threatened birds). The Project is not located within a priority area for big game (e.g., calving/breeding area, migration corridor, or regular concentration area for elk [(*Cervus elaphus*)] or mule deer [*Odocoileus hemionus hemionus*]; WDFW 2020a) or within a Habitat Concentration Area (HCA) for mule deer (WHCWG 2012) and big game were not discussed as species of concern for the Project during meetings with WDFW in 2017 and 2020 (Jansen 2017a; Jansen and Fossum 2020).

No wildlife species currently listed, or candidates for listing, under the federal ESA are expected to occur at the Project. A review of the USFWS IPaC project planning tool indicates two federally listed wildlife species known or expected to occur in the Project vicinity: gray wolf (*Canis lupus*; federally endangered, state endangered) and yellow-billed cuckoo (*Coccyzus americanus*; federally threatened, state endangered) (USFWS 2020c). However, on November 3, 2020, the USFWS published a final rule removing the gray wolf from the list of threatened and endangered species, effective January 4, 2021, and there are currently no wolf packs in Benton County (USFWS 2020d; WDFW et al. 2020); yellow-billed cuckoo is not expected to occur at the Project due to a lack of suitable habitat within the Project Lease Boundary (i.e., dense willow and cottonwood stands in river floodplains; USFWS 2020e).

One state threatened species initially identified as having the potential to occur, the greater sage grouse (*Centrocerus urophasianus*), is not expected to occur because the Project falls outside of species' current range and suitable shrub-steppe habitat is limited in the Project Lease Boundary (WDFW 2020d).

A total of 20 special status wildlife species have the potential to occur within the Project Lease Boundary; this includes 4 mammals, 2 reptiles, and 14 birds (Table 3.4-3). General habitat requirements and the potential for occurrence for each of these species is presented in Table 3.4-3. Of the 20 special status wildlife species with potential to occur, 14 species have been documented within the Project Lease Boundary (WDFW 2020a; Appendix K).

Table 3.4-3. Special Status Wildlife Species with Potential to Occur within the Project Lease Boundary

Species	Status	Habitat	Potential for Occurrence
Mammals			
Black-tailed jackrabbit *Lepus californicus*	SC, PS	Occurs in sagebrush and rabbitbrush dominated habitats as well as areas of mixed grassland and shrub (WDFW 2020e).	Suitable habitat present; however, known to be rare within Project Lease Boundary (Chatfield and Brown 2018a,b). Known occurrences north of the Project (WDFW 2020a)
Townsend's big eared bat *Coryhorhinus townsendii*	SC, PS	In Washington, occurs in a variety of arid and moist lowland habitats including shrub-steppe (WDFW 2020f); roosts in caves, lava tubes, mines, old buildings, and bridges.	Suitable roosting habitat absent from Project Lease Boundary; however, some potential to occur as a rare visitor. Not known from the southern Columbia Basin (WDFW 2020f).
Townsend's ground squirrel *Urocitellus townsendii townsendii*	SC, PS	Inhabits shrub-steppe, native grasslands, pastures, orchards, vineyards, highway margins, vacant lots, and the banks of canals; occurs only in Washington in the Columbia Basin west of the Columbia River, including throughout Benton County.	**Documented.** Documented within the Project Lease Boundary with numerous occurrences north of the Project Lease Boundary (WDFW 2020a); however, limited suitable habitat present.
White-tailed jackrabbit *Lepus townsendii*	SC, PS	Occurs in open, grassy, or sagebrush plains; where the range of the two jackrabbits species overlaps, white-tailed jackrabbits tends to be more common in bunchgrass habitats with less shrub cover (WDFW 2020g).	Suitable habitat present; however, known to be rare in Project Lease Boundary (Chatfield and Brown 2018a,b).
Reptiles			
Sagebrush lizard *Sceloporus graciosus*	SC, PS	Associated with vegetated sand dunes and sandy habitats that support shrubs and have large areas of bare ground (WDFW 2020h).	Project falls within species' range and limited suitable habitat is present within Project Lease Boundary, particularly in the washes and sagebrush shrub-steppe habitat in the northeast portion of the Project.
Striped whipsnake *Masticophis taeniatus*	SC, PS	Inhabits shrub-steppe habitats within the driest portions of the central Columbia Basin (WDFW 2020i).	Historical records for the species in Benton County (WDFW 2020i); suitable habitat present within the Project Lease Boundary.
Birds			
American white pelican *Pelecanus erythrorhynchos*	ST, PS	Breeds primarily on isolated islands in freshwater lakes and forages in shallow areas (Stinson 2016). Nests on Columbia River dredge islands near the Tri-Cities (Stinson 2016).	**Documented.** Suitable habitat not present within Project Lease Boundary but individuals likely to fly over travelling between foraging areas; known to nest on Badger Island approximately 4 miles east of the Project (Stinson 2016). Documented during surveys for the Project.

Species	Status	Habitat	Potential for Occurrence
Bald eagle *Haliaeetus leucocephalus*	BGEPA, PS	Nests in trees or cliffs near water, typically along shorelines, lakes, reservoirs, and rivers; feeds on fish and carrion.	**Documented.** Year-round resident in the region; known to nest along Columbia River to the south, east, and north of Project. Documented during surveys for the Project.
Burrowing owl *Athene cunicularia*	SC, PS	Occurs in open areas; nests in burrows dug by badgers or other mammals; feeds on insects, small rodents, lizards, frogs, and small birds.	**Documented.** Common resident of Tri-Cities area from mid-April to early September (Ennor 1991); documented breeding locations within the Project Lease Boundary (WDFW 2020a); foraging and nesting habitat present throughout Project Lease Boundary.
Ferruginous hawk *Buteo regalis*	ST, PS	Occurs in open prairie habitat and commonly feeds on ground squirrels, rabbits, and hares; nests in trees, cut banks, cliffs, and rocky pinnacles (Ennor 1991)	**Documented.** Common in Tri-Cities area during breeding season; nest sites documented within the Project Lease Boundary. Documented during surveys for the Project.
Golden eagle *Aquila chrysaetos*	SC, BGEPA, PS	Habitat consists of open, arid plateaus deeply incised by canyons and steeps with shrub-steppe and grassland (Watson and Whalen 2004). Breeds in hilly or mountainous areas, nests on rocky cliffs or isolated large trees. Common prey species include ground squirrels, marmots, rabbits, and hares.	**Documented.** While not known to nest in Benton County, may occur as uncommon visitor to area, particularly during spring and fall migration (Hayes 2013). Documented during surveys for the Project.
Great blue heron *Ardea Herodias*	PS	Nesting mostly occurs in trees, although herons sometimes nest on man-made structures, cliffs, the ground, and in shrubs if trees are absent. During the breeding season herons feed in the shallow margins of various coastal and freshwater habitats (Larsen et al. 2004). During the non-breeding season, adult and juvenile herons often prey on small mammals in fallow, freshly plowed, or mowed fields and in grasslands (Azerrad 2012).	**Documented.** Suitable nesting habitat not present within Project Lease Boundary, but individuals may fly in transit to suitable nesting habitat along the Yakima River and Columbia River. Individuals in nest rookeries along the rivers surrounding the Project may move inland to forage in the upland grassland and grain fields in the Project Lease Boundary during fall and winter. Documented during surveys for the Project.
Loggerhead shrike *Lanius ludovicianus*	SC, PS	Uses lowland communities of shrub-steppe and grassland for foraging; prefers trees and shrubs with dense foliage for nesting; feeds on insects, small mammals, birds, reptiles, and amphibians.	**Documented.** Documented within the Project Lease Boundary (WDFW 2020a); nesting and foraging habitat present, particularly in limited shrub-steppe habitat, but also in agricultural areas. Documented during surveys for the Project.
Prairie falcon *Falco mexicanus*	PS	Inhabits arid environments of eastern Washington and nests on cliffs usually associated with native steppe and shrub-steppe habitats. Known to	**Documented.** Documented nesting at numerous locations within 5 miles of the Project Lease Boundary (WDFW 2020a). Potential to nest in cliffs along Columbia River and

Species	Status	Habitat	Potential for Occurrence
		breed in most counties in central and eastern Washington; largest wintering populations in Washington are in central Columbia Basin including Benton County (Hays and Dobler 2004).	northwest of the Project (e.g., Chandler Butte) and occur year round at the Project. Documented during surveys for the Project.
Ring-necked pheasant *Phasianus colchicus*	PS	Ring-necked pheasants are found in most agricultural areas throughout Washington; they are dependent on agricultural habitats and they thrive in non-crop vegetation around cultivated crops (Larsen et al. 2004). Benton County is within a primary pheasant management zone (WDFW 2008).	**Documented.** Documented north of the Project (WDFW 2020a). Suitable habitat present within the Project Lease Boundary. Documented during surveys for the Project.
Sagebrush sparrow *Artemisiospiza nevadensis*	SC, PS	Restricted to open shrub lands and grasslands with mature big sagebrush stands; nests on the ground or in sagebrush; feeds on insects.	**Documented.** Limited suitable sagebrush habitat is present within Project Lease Boundary. Documented during surveys for the Project.
Sage thrasher *Oreoscoptes montanus*	SC, PS	Inhabits open, shrub-steppe habitats, preferring areas dominated by sagebrush or bitterbrush with native grasses intermixed. Post-breeding, often moves into thickets such as along creek drainages.	**Documented.** Small areas of suitable shrub-steppe habitat present with Project Lease Boundary. Documented during surveys for the Project.
Sandhill crane *Antigone canadensis*	SE, PS	Nesting habitat ranges from open meadows to deep bogs and marshes; migration stopover and staging areas occur primarily near croplands where waste grains are available near wetlands.	**Documented.** Breeding in Washington occurs only in western Yakima and Klickitat counties (Stinson 2017); possible to occur during migration or as transients during post-breeding; cropland within Project may provide stopover habitat. Documented during surveys for the Project.
Tundra Swan *Cygnus columbianus*	PS	May forage on the waste grain in wheat fields following harvest.	**Documented.** Migrates through eastern Washington and a relatively small number of tundra swans may overwinter in eastern Washington. Documented during surveys for the Project.
Vaux's swift *Chaetura vauxi*	SC, PS	Inhabits riparian thickets, woodlands, orchards, rocky cliffs, talus slopes, and rimrock areas (Ennor 1991)	Nesting and roosting habitat not present within Project Lease Boundary but may occur during migration. Known to occur in Walla Walla River Delta IBA 2 miles east of the Project in large numbers during fall migration (Audubon 2017).

Notes: SE – state endangered species; ST – state threatened species; SC – state candidate species for listing; PS – state priority species; BGEPA – species protected under the Bald and Golden Eagle Protection Act. Species status from WDFW (2020c)
Sources of occurrence: WDFW 2008, 2020a, 2020b, 2020c; Tetra Tech 2020, in Appendix K

General Wildlife

The Applicant conducted baseline wildlife surveys at the Project from 2017 through 2020, including avian use surveys, aerial raptor nest surveys, and acoustic bat surveys within various survey areas (i.e., based on previous Project layouts) that overlap with the current Project Lease Boundary (Table 3.4-4; Figure 3.4-3). Figure 3.4-3 depicts the extent of the various survey areas in relation to the Project Lease Boundary, including Horse Heaven East and Four Mile, which are primarily east of Highway 395, and Horse Heaven West and Badger Canyon, which are west of Highway 395.

Table 3.4-4. Summary of Wildlife Surveys Conducted 2017−2020

Year	Survey/Report	Extent	Reference
2017	Aerial raptor nest survey	*Horse Heaven West* 10-mile (eagle) and 2-mile (other raptor) buffers	Jansen 2017b
2017–2018	Avian use survey, aerial raptor nest survey, and habitat mapping	*Horse Heaven West* 13 point count locations; 10-mile (eagle) and 2-mile (other raptor) buffers; habitat mapping and verification	Jansen and Brown 2018
2017–2018	Bat acoustic survey	*Horse Heaven West* 1 location at a met tower in the southeastern corner of the Project	Hays et al. 2019
2018	Site characterization study	*Horse Heaven West (i.e., Badger Canyon)* Desktop assessment and site visit	Chatfield and Thompson 2018a
2018	Bat acoustic survey	*Horse Heaven West (i.e., Badger Canyon)* 1 location at a met tower in the central portion of the Project	Hays et al. 2018a
2018	Site characterization study	*Horse Heaven East (i.e., Four Mile)* Desktop assessment and site visit	Chatfield and Thompson 2018b
2018	Townsend's ground squirrel habitat survey	*Horse Heaven East (i.e., Four Mile)* Townsend's ground squirrel habitat survey	Chatfield and Brown 2018c
2018	Bat acoustic survey	*Horse Heaven East (i.e., Four Mile)* 2 locations in eastern portion of Project	Hays et al. 2018b
2018–2019	Avian use survey	*Horse Heaven West (i.e., Badger Canyon)* 28 point count locations	Chatfield et al. 2019a
2018–2019	Avian use survey	*Horse Heaven East (i.e., Four Mile)* 27 point count locations	Chatfield et al. 2019b
2018–2019	Avian use survey, aerial raptor nest survey	*Horse Heaven West* 13 point count locations; 10-mile (eagle) and 2-mile (other raptor) buffers	Jansen et al. 2019
2019	Aerial raptor nest survey	*Horse Heaven East* (i.e., *Four Mile*) 10-mile (eagle) and 2-mile (other raptor) buffers	Chatfield et al. 2019c
2019	Aerial raptor nest survey	*Horse Heaven West (i.e., Badger Canyon)* 10-mile (eagle) and 2-mile (other raptor) buffers	Chatfield et al. 2019d
2019–2020	Avian use survey	*Horse Heaven East* 8 point count locations	Jansen 2021

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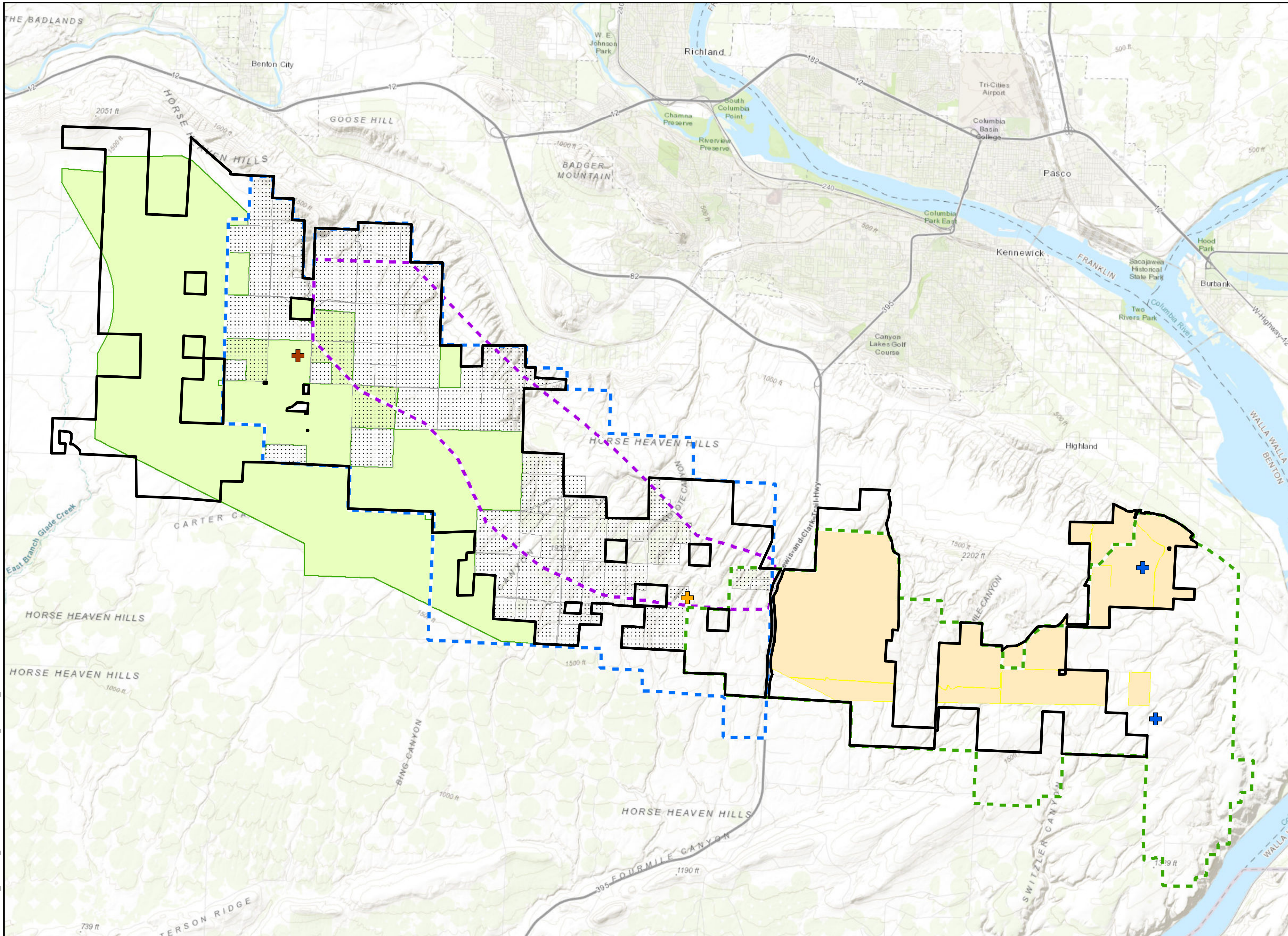


Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 3.4-3 Wildlife Survey Areas

BENTON COUNTY, WA

Project Lease Boundary

Bat Detector Location

- 2017 & 2018 (Horse Heaven West)
- 2018 (Four Mile)
- 2018 (Badger Canyon)

Avian Use Survey Areas

- 2020 (Horse Heaven East)
- 2019 (Horse Heaven West)
- 2018 (Four Mile)
- 2018 (Badger Canyon)
- 2018 (Horse Heaven West)
- 2017 (Horse Heaven West)

TETRA TECH

Reference Map

1:140,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

NOT FOR CONSTRUCTION

R:\PROJECTS\HORSE_HEAVEN_6430\WILDLIFE\MAPS\WILDLIFE_SURVEY_AREAS.mxd

A description of surveys conducted for habitat is provided in Section 3.4.1.1, and a description of surveys conducted for wetlands and waters is provided in Appendix I. The results of the habitat and wetlands/waters surveys were used to inform the wildlife assessment where applicable. Baseline studies were conducted at the Project consistent with the WDFW Wind Power Guidelines (WDFW 2009), the USFWS 2012 Final Land-Based Wind Energy Guidelines (USFWS 2012), the 2013 USFWS Eagle Conservation Plan Guidance Module 1 – Land Based Wind Energy (ECPG; USFWS 2013), and the USFWS 2016 Eagle Rule Revision (USFWS 2016). Table 3.4-5 summarizes all wildlife observed during Project surveys 2017-2020.

Table 3.4-5. Wildlife Observed During Project Surveys

Taxa/Scientific Name	Common Name	Origin[1/]	Taxa/Scientific Name	Common Name	Origin[1/]
Birds			**Birds (cont.)**		
Accipiter cooperii	Cooper's hawk	N	*Ixoreus naevius*	varied thrush	N
Accipiter striatus	sharp-shinned hawk	N	*Junco hyemalis*	dark-eyed junco	N
Agelaius phoeniceus	red-winged blackbird	N	*Lanius ludovicianus*	loggerhead shrike	N
Ammodramus savannarum	grasshopper sparrow	N	*Larus californicus*	California gull	N
Anthus rubescens	American pipit	N	*Larus delawarensis*	ring-billed gull	N
Antigone canadensis	sandhill crane	N	*Melospiza melodia*	song sparrow	N
Anser albifrons	greater white-fronted goose	N	*Numenius americanus*	long-billed curlew	N
Aquila chrysaetos	golden eagle	N	*Oreoscoptes montanus*	sage thrasher	N
Ardea herodias	great blue heron	N	*Pandion haliaetus*	osprey	N
Arremisiospiza nevadensis	sagebrush sparrow	N	*Passer domesticus*	house sparrow	I
Asio flammeus	short-eared owl	N	*Passerculus sandwichensis*	Savannah sparrow	N
Branta canadensis	Canada goose	N	*Passerina amoena*	lazuli bunting	N
Bubo scandiacus	snowy owl	N	*Pelecanus erythrorhynchos*	American white pelican	N
Bubo virginianus	great horned owl	N	*Perdix perdix*	gray partridge	I
Buteo jamaicensis	red-tailed hawk	N	*Petrochelidon pyrrhonota*	cliff swallow	N
Buteo lagopus	rough-legged hawk	N	*Phasianus colchicus*	ring-necked pheasant	I
Buteo regalis	ferruginous hawk	N	*Pica hudsonia*	black-billed magpie	N
Buteo swainsoni	Swainson's hawk	N	*Pipilo maculatus*	spotted towhee	N
Callipepla californica	California quail	I	*Pooecetes gramineus*	vesper sparrow	N
Cathartes aura	turkey vulture	N	*Riparia riparia*	bank swallow	N
Catharus guttatus	hermit thrush	N	*Sayornis saya*	Say's phoebe	N
Charadrius vociferous	killdeer	N	*Spinus tristis*	American goldfinch	N

Taxa/Scientific Name	Common Name	Origin[1/]	Taxa/Scientific Name	Common Name	Origin[1/]
Chen caerulescens	snow goose	N	*Spizella passerina*	chipping sparrow	N
Chordeiles minor	common nighthawk	N	*Sturnella neglecta*	western meadowlark	N
Chondestes grammacus	lark sparrow	N	*Sturnus vulgaris*	European starling	I
Circus hudsonius	northern harrier	N	*Turdus migratorius*	American robin	N
Colaptes auratus	northern flicker	N	*Tyrannus verticalis*	western kingbird	N
Columba livia	rock pigeon	I	*Zenaida macroura*	mourning dove	N
Corvus brachyrhynchos	American crow	N	*Zonotrichia atricapilla*	golden-crowned sparrow	N
Corvus corax	common raven	N	*Zonotrichia leucophrys*	white-crowned sparrow	N
Cygnus columbianus	tundra swan	N	**Mammals**		
Eremophila alpestris	horned lark	N	*Antilocapra americana*	Pronghorn antelope	N
Empidonax wrightii	gray flycatcher	N	*Canis latrans*	coyote	N
Euphagus cyanocephalus	Brewer's blackbird	N	*Eptesicus fuscus*	big brown bat	N
Falco columbarius	merlin	N	*Lasionycteris noctivagans*	silver-haired bat	N
Falco mexicanus	prairie falcon	N	*Lasiurus cinereus*	hoary bat	N
Falco peregrinus	peregrine falcon	N	*Myotis evotis*	western long-eared bat	N
Falco sparverius	American kestrel	N	*Myotis lucifugus*	little brown bat	N
Falco spp.	unidentified falcon	N	*Myotis californicus*	California bat	N
Haliaeetus leucocephalus	bald eagle	N	*Myotis volans*	long-legged bat	
Haemorhous mexicanus	house finch	N	*Odocoileus hemionus columbianus*	black-tailed deer	N
Hirundo rustica	barn swallow	N	*Parastrellus hesperus*	canyon bat	N
Icterus bullockii	Bullock's oriole	N	*Urocitellus* sp.	ground squirrel	N

Note:
1/ Origin (N = native, I = introduced)

Acoustic Bat Surveys

Methods

The objective of the bat acoustic surveys was to estimate levels of bat activity within the Project Lease Boundary during the period of known activity for migratory and resident bats in eastern Washington. The Applicant conducted bat acoustic surveys at four sites across the Project Lease Boundary from May through October in 2017 and 2018 (Hays et al. 2018a, 2018b, and Hays et al. 2019 in Appendix K; Figure 3.4-3). Anabat SD2 ultrasonic bat detectors were deployed in 2017 and 2018 at Horse Heaven, and in 2018, Wildlife Acoustics Song Meter (SM3) detectors at Horse Heaven East (i.e., formerly Four Mile) and Horse Heaven West (i.e., formerly Badger Canyon). All detectors were outfitted with microphones, one at each detector; one microphone was deployed near the ground, at approximately 5 feet (1.5 meters), while the other microphone was raised on a meteorological tower to approximately 148 feet (45 meters) above ground level.

Results

Bat calls were detected at all sites, and bats were detected at both high frequencies (> 30 kilohertz [kHz]) and low frequencies (<30 kHz). Bat activity at the ground detector stations was generally higher than at the raised detector stations throughout the study periods. Eight species of bat were documented at the Project with low frequency species detected more often than high frequency species (Tables 3.4-6 and 3.4-7). Townsend's big-eared bat was not confirmed during the study periods; no federal or state-listed bat species were detected. The period of peak bat activity documented at the Project occurred during September at all stations.

Table 3.4-6. Summary of Bat Acoustic Study Characteristics and Results

Survey Year / Type	Horse Heaven West 2017	Horse Heaven West 2018	Horse Heaven West 2018[1/]	Horse Heaven East 2018[2/]
Survey Dates	Aug. 19–Oct. 30	May 14–Oc. 29	May 11–Oct. 29	May 11–Oct. 29
Technology	Anabat SD2	Anabat SD2	Song Meter 3	Song Meter 3
No. of Stations	1	1	1	2
No. of Detectors	1 (ground only)	2	2	4
Detector Nights	72	303	344	670
Total Bat Passes	24	82	384	734
No. of High Freq. / No. of Low Freq.	2 / 22	1 / 81	24 / 360	55 / 679
Avg. Bat Passes / Night	0.33 ± 0.08	0.27 ± 0.05	1.12 ± 0.13	1.09 ± 0.11

1/ Formerly Badger Canyon Wind Project.
2/ Formerly Four Mile Wind Project
Sources: Hays et al. 2019; Hays et al. 2018a,b

Table 3.4-7. Number of Detector Nights and Percent Species Present by Study Phase

Common Name *Scientific Name*	Horse Heaven West (2017 & 2018)[1/]	Horse Heaven West (2018)[1/,2/]	Horse Heaven East (2018)[1/,3/]
High-Frequency (> 30 kHz)			
California bat *Myotis californicus*	0 (0%)	0 (0%)	1 (<1%)
canyon bat *Parastrellus hesperus*	3 (<1%)	9 (3%)	11 (2%)
little brown bat *Myotis lucifugus*	0 (0%)	2 (1%)	8 (1%)
long-legged bat *Myotis volans*	0 (0%)	0 (0%)	2 (<1%)
western long-eared bat *Myotis evotis*	0 (0%)	0 (0%)	1 (<1%)
Low-Frequency (< 30 kHz)			
big brown bat *Eptesicus fuscus*	8 (2%)	19 (6%)	31 (5%)
hoary bat *Lasiurus cinereus*	13 (3%)	47 (14%)	91 (14%)
silver-haired bat *Lasionycteris noctivagans*	55 (15%)	81 (24%)	169 (25%)
Total No. of Detector Nights	**375**	**344**	**670**

1/ Number of nights species present (percent of nights species detected, rounded)
2/ Formerly Badger Canyon Wind Project (Hays et al. 2018a)
3/ Formerly Four Mile Wind Project (Hays et al. 2018b)

Avian Use Surveys (2017–2020)

Methods

The objective of the avian use surveys was to document temporal and spatial use at the Project in accordance with agency recommendations. The Applicant conducted fixed-point count avian use surveys from 2017−2020 for two discrete bird size classes, small-sized birds and large-sized birds at each Survey Area (Figure 3.4-3). Avian use surveys for the two size classes were conducted separately according to recommendations in the ECPG. Both surveys recorded the following common types of data: species, distance from observer, flight heights and direction, and habitat types.

For small bird use surveys, the objective was to collect data on species occurrence and the spatial and temporal patterns of avian use with a particular focus on passerines and other non-raptors. All auditory and visual bird observations within a 100-meter circular plot were recorded for a 10-minute sample period. All points were surveyed once or twice per month, depending on the survey year. Data collection for small bird use surveys used commonly-used survey methods (Ralph et al. 1993).

For large bird use surveys, the objective was to collect data on species occurrence and the spatial and temporal patterns of avian use with a particular focus on eagles, other raptors, and non-raptors such as sandhill crane and American white pelicans that had management concern. All auditory and visual bird observations within an 800-meter circular plot were recorded for a 60-minute sample period and bird flight paths were recorded on topographic maps.

To be consistent with the ECPG (as well as the Final Rule; USFWS 2016), the Applicant recorded all eagle observations during large bird use surveys. The data recorded included the total number of minutes an eagle was observed within the 800-meter survey plot were recorded as well as whether the bird was flying within 200 meters above ground level (agl) or perched. Eagle exposure minutes are defined as time spent flying within the 800-meter radius survey buffer and at or below 200 meters agl. Observations of perched eagles and those outside of survey plots were not considered eagle exposure minutes; however, the perch locations and flight paths of all eagles were mapped to qualitatively assess areas of eagle use within the Project Lease Boundary.

Analyses

To calculate comprehensive metrics of bird abundance and flight behavior at the Project, data from all Survey Areas during all years were aggregated to calculate overall mean use estimates and exposure indices. Data were used from all survey points and seasons which were standardized. Other metrics such as species richness, frequency observed, percent of mean use, and other characteristics for each Survey Area are found in the original technical reports (Appendix K).

For generating standardized fixed-point avian use estimates at the Project, small birds within a 100-meter radius plot per 10-minute survey and large birds within the 800-meter radius plot per 60-minute survey for all survey points were used in the analysis. The metric used to measure mean bird use was the number of observations per survey per plot. These standardized estimates of mean bird use were used to compare differences in relative abundance among bird types and species. Overall mean use was calculated by summing the total number of observations within each plot during a visit, then averaging across plots within each visit, followed by averaging across visits within the season. Overall mean use was calculated as a weighted average of seasonal values by the number of days in each season.

The bird exposure index is used as a relative measure of species-specific risk of Turbine collision using flight height data collected during the pre-construction surveys. A relative index of bird exposure (R) was calculated for small- and large-sized bird species observed during avian surveys using the following formula:

$$R = A \times P_f \times P_t$$

Where A equals the mean relative use for species i averaged across all surveys, P_f equals the proportion of all observations of species i where activity was recorded as flying (an index to the approximate percentage of time species i spends flying during the daylight period), and P_t equals the proportion of all initial flight height observations of species i within the likely rotor swept height (RSH) for proposed Turbines at the Project. The minimum and maximum RSH for each Turbine type in Table 3.4-8 were rounded to the nearest 5-meter increment to reflect the level of accuracy field data were recorded. The bird exposure index provides a relative measure of species-specific risk of Turbine collision and identifies the bird species most likely to collide with Turbines at the Project. However, the exposure index does not account for other possible collision risk factors, such as avoidance probabilities or inter/intra-specific behaviors. The flight height of first observation was used to minimize the unintentional bias associated with a change in bird behavior potentially caused by the presence of the observer.

Results

As described in Section 2, the Project is considering two general Turbine options comprising four different Turbine technologies (Table 3.4-8) to facilitate flexible Turbine siting. The specifications of these Turbine technologies are presented here to provide context for avian use survey results, in particular with respect to flight heights. Generally, Option 1 is a shorter Turbine that would occupy a smaller air space but would have more Turbines on the landscape compared to Option 2, which is a taller Turbine that would occupy a larger airspace but because of its higher energy production capability would result in fewer Turbines (Table 3.4-8).

Table 3.4-8. Potential Turbine Specifications

Turbine Parameters/Features	Turbine Layout: Option 1		Turbine Layout: Option 2	
	GE 2.82-MW Turbine	GE 3.03-MW Turbine	GE 5.5-MW Turbine	SG 6.0-MW Turbine
Tower Type	Tubular	Tubular	Tubular	Tubular steel / Hybrid
Maximize Number of Turbines considered	244	244	150	150
Turbine Rotor Diameter	127 / 417 *(meters/feet)*	140 / 459 *(meters/feet)*	158 / 518 *(meters/feet)*	170 / 557 *(meters/feet)*
Turbine Hub Height (ground to nacelle)	89 / 292 *(meters/feet)*	81 / 266 *(meters/feet)*	125 / 411 (*meters/feet*)	115 / 377 (*meters/feet*)
Maximum Total Height (ground to blade tip)	152 / 499 *(meters/feet)*	151 / 496 *(meters/feet)*	204 / 671 (*meters/feet*)	200 / 657 (*meters/feet*)
Tower Base Diameter	4.6 / 15.1 *(meters/feet)*	4.6 / 15.1 *(meters/feet)*	4.6 / 15.1 *(meters/feet)*	4.7 / 15.5 *(meters/feet)*

Note: All values are approximate.

Overall

A total of 66 species of birds were documented during point count avian use surveys from 2017 through 2020. Of the 66 species observed at the Project, 37 were large birds, and the remaining 29 species were small birds. This is approximately 22 percent of the 304 avian species that have been reported in Benton County (eBird 2020). Observations of species during these studies compose approximately 13 percent of the 542 avian species occurring in the Great Basin Bird Conservation Region (BCR 9; USFWS 2008, eBird 2020) and approximately 13 percent of the 518 species recorded in Washington, not including extirpated species (Washington Ornithological Society 2019). Overall, the Project appears to contain a low number of avian species relative to these broader landscape scales, and the species observed are generally typical of those commonly found throughout arid shrub-steppe, agriculture, and grassland habitats of the Columbia Plateau physiographic region.

Overall mean use for small birds was composed primarily of use of horned lark (*Eremophila alpestris*; 5.3 observations/100-meter plot/10-minute survey) followed by western meadowlark (*Sturnella neglecta*; 0.28 observations/100-meter plot/10-minute survey; Table 3.4-9; Appendix M). Horned lark had the highest exposure index relative to all other small bird species and in general; a higher percent of observations of this species were flying within the RSH for shorter Turbines with a lower tip height (i.e., GE 3.03 MW, rounded to 10−155 meters agl).

Overall mean use for large birds was composed primarily of use by snow goose (*Chen caerulescens*; 12.96 observations/800-meter plot/60-minute survey) followed by Canada goose (*Branta canadensis*; 1.87 observations/800-meter plot/60-minute survey). Snow goose had the highest exposure index relative to all other large bird species and a higher percent of observations were flying within the RSH for taller Turbines with large rotor diameter (i.e., Siemens Gamesa 6.0 MW, rounded to 30−200 meters agl). In general, exposure indices for raptors were higher for shorter Turbines with a maximum rotor height of 155 meters agl compared to taller Turbines with a maximum RSH of approximately 200 meters agl. Conversely, exposure indices were higher for waterfowl when taller Turbines were analyzed (Table 3.4-10; Appendix M).

Table 3.4-9. Mean Exposure Indices Calculated for Small Birds Observed During Fixed Point Count Surveys Conducted 2017-2020

Common Name[1/]	Overall Mean Use	% Flying	GE 3.03-MW Turbine (10 - 155 m RSH)		GE 2.82-MW Turbine (25 - 155 m RSH)		GE 5.5-MW Turbine (45 - 205 m RSH)		SG 6.0-MW Turbine (30 - 200 m RSH)	
			% Flying within RSH	Exp. Index	% Flying within RSH	Exp. Index	% Flying within RSH	Exp. Index	% Flying within RSH	Exp. Index
horned lark	5.30	69.0	34.9	1.275	8.5	0.312	0	0	5.1	0.187
unidentified small bird	0.15	96.1	95.9	0.140	21.6	0.032	21.6	0.032	21.6	0.032
bank swallow	0.14	100	50.0	0.072	0	0	0	0	0	0
white-crowned sparrow	0.14	70.0	62.5	0.063	0	0	0	0	0	0
European starling	0.10	69.6	81.9	0.059	79.8	0.057	2.1	0.002	78.7	0.057
barn swallow	0.09	100	41.4	0.039	10.3	0.010	0	0	10.3	0.010
Brewer's blackbird	0.03	100	50.0	0.014	0	0	0	0	0	0
western meadowlark	0.28	31.8	11.7	0.011	0	0	0	0	0	0
western kingbird	0.03	31.3	80.0	0.008	20.0	0.002	0	0	20.0	0.002
unidentified swallow	0.02	100.0	28.6	0.007	0	0	0	0	0	0
savannah sparrow	0.06	76.9	12.0	0.006	0	0	0	0	0	0
cliff swallow	0.04	100	10.0	0.004	0	0	0	0	0	0
American goldfinch	0.02	14.9	71.4	0.002	71.4	0.002	0	0	0	0
red-winged blackbird	<0.01	100	100	0.002	66.7	0.001	0	0	66.7	0.001
American pipet	<0.01	50.0	50.0	0.001	50.0	0.001	0	0	0	0
vesper sparrow	<0.01	85.7	16.7	0.001	16.7	0.001	0	0	0	0
American robin	<0.01	100	0	0	0	0	0	0	0	0
chipping sparrow	<0.01	50.0	0	0	0	0	0	0	0	0
golden-crowned sparrow	<0.01	100	0	0	0	0	0	0	0	0
grasshopper sparrow	0.02	16.7	0	0	0	0	0	0	0	0
house finch	0.01	100.0	0	0	0	0	0	0	0	0
lark sparrow	0.01	50.0	0	0	0	0	0	0	0	0
northern flicker	0.01	25.0	0	0	0	0	0	0	0	0
Say's phoebe	<0.01	100	0	0	0	0	0	0	0	0
song sparrow	0.01	100	0	0	0	0	0	0	0	0
unidentified passerine	<0.01	100	0	0	0	0	0	0	0	0
unidentified sparrow	<0.01	50.0	0	0	0	0	0	0	0	0

1/ Bewick's wren, dark-eyed junco, hermit thrush, house sparrow, sage sparrow, sage thrasher, spotted towhee did not have flight heights
Exp. – Exposure, GE – General Electric, m – meters, MW – megawatt, RSH – rotor-swept height
Source: Bird and Bat Conservation Strategy (see Appendix M)

Table 3.4-10. Mean Exposure Indices Calculated for large Birds Observed During Fixed Point Count Surveys Conducted 2017−2020

Common Name[1/]	Overall Mean Use	% Flying	GE 3.03-MW Turbine (10 − 155 m RSH)		GE 2.82-MW Turbine (25 − 155 m RSH)		GE 5.5-MW Turbine (45 − 205 m RSH)		SG 6.0-MW Turbine (30 − 200 m RSH)	
			% Flying within RSH	Exp. Index	% Flying within RSH	Exp. Index	% Flying within RSH	Exp. Index	% Flying within RSH	Exp. Index
snow goose	12.96	98.0	76.3	9.681	75.5	9.579	81.7	10.372	98.3	12.479
Canada goose	1.87	78.5	85.6	1.254	85.3	1.250	94.9	1.390	97.5	1.428
common raven	1.54	93.8	82.2	1.190	53.2	0.770	25.1	0.363	47.2	0.684
rock pigeon	1.01	80.2	78.2	0.634	47.8	0.388	8.8	0.071	37.5	0.304
American white pelican	0.35	100	81.9	0.290	81.5	0.289	85.6	0.303	85.6	0.303
red-tailed hawk	0.32	78.7	91.7	0.228	75.7	0.188	60.3	0.150	72.6	0.181
rough-legged hawk	0.26	88.7	93.8	0.213	75.9	0.172	49.5	0.112	71.0	0.161
California gull	0.23	100	91.1	0.206	70.2	0.159	28.6	0.065	78.0	0.176
Swainson's hawk	0.24	83.4	97.2	0.190	83.7	0.164	62.6	0.123	79.3	0.155
northern harrier	0.56	98.4	24.7	0.136	10.6	0.058	5.9	0.032	8.9	0.049
unidentified gull	0.09	100	97.1	0.090	94.2	0.087	89.4	0.082	93.3	0.086
American kestrel	0.18	52.6	72.6	0.070	22.1	0.021	4.4	0.004	15.0	0.014
sandhill crane	1.60	98.4	2.6	0.042	2.6	0.042	21.1	0.332	21.1	0.332
unidentified goose	0.04	100	100	0.037	100.0	0.037	100	0.037	100	0.037
unidentified raptor	0.02	100	90.9	0.015	54.5	0.009	36.4	0.006	63.6	0.011
unidentified *buteo*	0.03	75.0	70.0	0.013	70.0	0.013	63.3	0.012	73.3	0.014
bald eagle	0.02	100	73.3	0.011	60.0	0.009	80.0	0.012	80.0	0.012
greater white-fronted goose	0.01	100	100	0.011	100.0	0.011	57.1	0.006	100	0.011
tundra swan	0.01	100.0	100	0.011	0.0	0.000	0	0	0	0
prairie falcon	0.02	57.6	89.5	0.010	63.2	0.007	26.3	0.003	52.6	0.006
turkey vulture	0.01	100.0	100	0.008	100.0	0.008	100	0.008	100	0.008
golden eagle	0.01	85.7	100	0.007	100.0	0.007	83.3	0.006	100	0.007
Cooper's hawk	0.01	100.0	66.7	0.007	66.7	0.007	33.3	0.003	66.7	0.007
killdeer	0.01	96.0	83.3	0.007	16.7	0.001	0	0	0	0
ring-billed gull	0.02	100.0	30.8	0.005	30.8	0.005	3.8	0.001	28.8	0.005
mourning dove	0.01	65.4	52.9	0.005	0.0	0.000	0	0	0	0.000

Common Name[1/]	Overall Mean Use	% Flying	GE 3.03-MW Turbine (10 − 155 m RSH)		GE 2.82-MW Turbine (25 − 155 m RSH)		GE 5.5-MW Turbine (45 − 205 m RSH)		SG 6.0-MW Turbine (30 − 200 m RSH)	
			% Flying within RSH	Exp. Index	% Flying within RSH	Exp. Index	% Flying within RSH	Exp. Index	% Flying within RSH	Exp. Index
sharp-shinned hawk	0.01	100.0	71.4	0.004	42.9	0.002	28.6	0.002	42.9	0.002
black-billed magpie	0.02	93.3	21.4	0.004	10.7	0.002	0	0	10.7	0.002
ferruginous hawk	0.01	100.0	75.0	0.004	50.0	0.003	50.0	0.003	50.0	0.003
long-billed curlew	0.01	60.0	100	0.003	16.7	0.001	0	0	16.7	0.001
unidentified accipiter	<0.01	100.0	75.0	0.003	75.0	0.003	75.0	0.003	100	0.003
osprey	<0.01	100.0	100	0.002	100.0	0.002	100	0.002	100	0.002
unidentified falcon	0.01	70.0	42.9	0.002	28.6	0.001	14.3	0.001	14.3	0.001
great blue heron	<0.01	100.0	100	<0.001	100	<0.001	100	<0.001	100	<0.001
American crow	<0.01	100.0	0	0	0.0	0.000	0	0	0	0
California quail	0.01	13.3	0	0	0.0	0.000	0	0	0	0
gray partridge	0.01	11.1	0	0	0.0	0.000	0	0	0	0
merlin	<0.01	100.0	0	0	0.0	0.000	0	0	0	0
short-eared owl	<0.01	66.7	0	0	0.0	0.000	0	0	0	0

1/ Great horned owl and ring-necked pheasant did not have flight heights.
Exp. – Exposure, GE – General Electric, m – meters, MW – megawatt, RSH – rotor-swept height, SG – Siemens Gamesa
Source: Bird and Bat Conservation Strategy (see Appendix M)

Horse Heaven West

Avian use surveys were conducted continuously in four different Survey Areas west of Highway 395 from August 2017 to June 2019 (Figure 3.4-3). The Survey Areas referred to what was then called Badger Canyon (1 year of surveys) and Horse Heaven (2 years of surveys). The following summary statistics aggregate data from all 3 years of surveys. Detailed results and summary tables for the aggregate data can be found in Appendix M. Site-specific details on mean use and collision risk and other indices are presented in Chatfield et al. (2019a), Jansen and Brown (2018), and Jansen et al. (2019). In total, 100 point counts were surveyed one or two times each month during all seasons for a total of 88 survey rounds.

A total of 4,438 small bird observations were recorded during 649 surveys and consisted of 23 species. The most small bird observations were of horned lark (87 percent of observations) and mean use was highest in winter. The second most abundant observations of small birds were attributed to western meadowlark with 131 observations (3 percent). All other small bird observations accounted for approximately 3 percent or less of all small bird observations. Although the highest mean use of small birds occurred during winter, the relatively low species diversity and comparatively low number of groups recorded indicates larger bird flocks during this time of year (Chatfield et al. 2019a; Jansen and Brown 2018; Jansen et al. 2019).

A total of 9,329 large bird observations were recorded during 827 surveys, and 32 species were identified. The most large bird observations were of sandhill crane (approximately 28 percent of large bird observations) and mean use by this species was highest in fall. In all years, groups of sandhill cranes were observed flying above the RSH (>150 meters agl) the majority of the time (>90 percent). Canada goose, snow goose, common raven (*Corvus corax*), and rock pigeon (*Columba livia*) constituted 51 percent of all other large bird observations and observations of these species were most abundant in fall. Thirteen species of raptor were observed; northern harrier (*Circus hudsonius*) was the most frequently observed raptor species, and most observations were recorded during the fall; the majority of observations were of individuals flying below RSH (<25 meters agl). Overall large bird mean use was greatly influenced by waterfowl and waterbirds (Chatfield et al. 2019a; Jansen and Brown 2018; Jansen et al. 2019).

A total of six golden eagle observations were recorded for a total of 43 exposure risk minutes. All but one of the golden eagle observations occurred during fall; one observation occurred during spring. The majority of exposure risk minutes was composed of one juvenile golden eagle circling the observer for 30 minutes. No obvious spatial pattern of golden eagle use was evident. A total of six bald eagle observations were recorded for a total of 13 exposure risk minutes. All but one of the bald eagle observations occurred during winter and spring; one observation occurred during fall. There was a spatial grouping of bald eagle observations in the center of Horse Heaven West, along Bing Canyon and Coyote Canyon.

Eleven special status species, as classified by the USFWS or WDFW, were observed during standardized point counts and/or incidentally at Horse Heaven West (American white pelican, bald eagle, ferruginous hawk, golden eagle, great blue heron, ring-necked pheasant, sagebrush sparrow, sandhill crane, loggerhead shrike, prairie falcon, and tundra swan).

Horse Heaven East

Avian use surveys were conducted during two discrete survey periods, from June 2018−May 2019 and again from October 2019−September 2020 in two different Survey Areas east of Highway 395. (Figure 3.4-3). Survey Areas referred to what was then called Four Mile (1 year of surveys) and Horse Heaven East (1 year of surveys). The following summary statistics aggregate data from 2 years of surveys. Detailed results and summary tables for the aggregate data can be found in Appendix M. Site-specific details on mean use and collision risk and other indices are presented in Chatfield et al. (2019b), and Jansen (2021). In total, 64 point counts were surveyed one or two times each month during all seasons for a total of 36 survey rounds.

A total of 1,632 small bird observations were recorded during 309 surveys and 20 species were identified. The most abundant small bird observations were of horned lark (67 percent of small bird observations) and mean use of this species was highest during fall. Observations of three species—western meadowlark, European starling (*Sturnus vulgaris)*, and bank swallow—composed an additional 18 percent of small bird observations while each remaining species accounted for 3 percent or less of the total number of observations. No obvious spatial patterns of use were evident.

A total of 20,614 large bird observations were recorded during 405 surveys, and 28 species were identified. The most abundant large bird was snow goose (76 percent of large bird observations), of which 66 percent of snow goose observations were recorded during winter. Three species—Canada goose, common raven, and American white pelican—composed an additional 17 percent of large bird observations while each remaining species accounted for 2 percent or less of the total number of large bird observations. Thirteen species of raptor were observed; northern harrier was the most frequently observed raptor species, over half (51 percent) of which were during the fall, and the majority of the observations were of individuals flying below RSH (<25 meters agl). Waterfowl and waterbird observations were the most abundant among large bird types and also had a relatively high proportion of groups flying within the RSH (25−150 meters agl). Overall large bird mean use was greatly influenced by waterfowl and waterbirds and was highest at points on the eastern side of Horse Heaven East, closer to the Columbia River (Chatfield et al. 2019b; Jansen 2021).

One golden eagle observation was recorded, during the fall, for a total of 15 exposure risk minutes. The observation occurred on the last point count of the last survey for the year and consisted of one adult golden eagle circling the observer for 26 minutes, of which 15 minutes were within the 800-meter survey plot and flying below 200 meters agl. A total of 10 bald eagle observations were recorded for a total of 18 exposure risk minutes. All bald eagle observations occurred during winter and spring; however, no obvious spatial pattern of bald eagle use was evident.

Eight special status species, as classified by USFWS or WDFW, were observed during standardized point counts and incidentally (i.e., American white pelican, bald eagle, golden eagle, loggerhead shrike, prairie falcon, ring-necked pheasant, sandhill crane, sage thrasher).

Special Status Birds

Of the 13 special status bird species documented at the Project (Table 3.4-3), all but one (burrowing owl) were documented during avian use survey 2017-2020. This section discusses each of the species' spatial use of the Survey Area. It describes number of observations and such factors as location and flight height in order to assess risk of the Project to individuals of these species.

- **American white pelican:** American white pelican observations totaling 887 birds in 76 groups were recorded during point count surveys. The average flight height when first observed was approximately 130 meters agl (range: 10−400 meters agl). Of the 76 groups with flight height data, 61 groups representing 83 percent of the total number of individuals were observed flying within the RSH (25−150 meters agl) at any point during the observation. The majority of observations (82 percent) and groups (82 percent) occurred during summer at an average flight height within the RSH (Table 3.4-11). Of the 76 groups, 72 groups (94 percent) were recorded at point counts located in the eastern half of the 2018−2019 Four Mile Survey Area, which has been removed from the current Project Lease Boundary.

Table 3.4-11. American White Pelican Flight Heights Recorded 2017−2020

Season	Number of Groups	Number of Observations	Min. Flight Height (meters)1/	Max. Flight Height (meters)1/	Average Flight Height (meters)1/	Standard Deviation (meters)
Fall	3	111	140	400	250	136
Spring	11	52	60	325	209	79
Summer	62	724	10	325	111	56
Total (Average)	**76**	**887**	**(70)**	**(350)**	**(190)**	**(90)**

1/ Flight height when first observed

- **Bald eagle:** Ten bald eagle observations in 10 groups were recorded during point count surveys. Juveniles and one sub-adult constituted 80 percent of the observations, with six of the observations recorded in winter, three in spring, and one in fall. Bald eagles were not observed in the Survey Area during summer. No winter eagle roosts were observed in the Project Lease Boundary. The average flight height when first observed for all observations was approximately 75 meters agl (range of 5−150 meters agl). All 10 of the observations were recorded flying within RSH at any time during the observation for a total of 31 exposure risk minutes. The number of observations were divided equally between eastern and western portions of the Project Lease Boundary.
- **Ferruginous hawk:** Four ferruginous hawk observations in four groups were recorded during point count surveys. The average flight height when first observed was approximately 48 meters agl (range: 5−120 meters agl). Of the four observations, three were during spring, one during fall, and all were within the Horse Heaven West Survey Area during 2018. Observations occurred at three point counts nearest to an active nest that was located approximately 2 miles away. Observations of ferruginous hawks at point counts nearest to an active nest suggests increased use is associated with territory occupancy.
- **Golden eagle:** Seven golden eagle observations in seven groups were recorded during point count surveys. Four observations of adults and three observations of juveniles were recorded with five of the observations in fall (72 percent) and the remainder in spring.

Golden eagles were not observed in the Survey Area during summer or winter. Excluding one observation of a juvenile perched in a field, the average flight height when first observed for the remaining six observations was approximately 88 meters agl (range of 50−250 meters agl). Once the perched individual took flight, all seven of the eagle observations were recorded flying within the RSH at any time during the observation for a total of 58 exposure risk minutes. Two observations (one adult and one juvenile) composed 45 minutes (approximately 78 percent) of the total 58 exposure risk minutes. Eagles were entering and leaving the survey plot and circling above the observer. The disproportionately high number of minutes attributed to a relatively few observations may mischaracterize the actual exposure risk of collisions with Turbines at the Project.

- **Great blue heron:** One great blue heron was observed flying approximately 50-70 meters agl in winter over grassland habitat.
- **Loggerhead shrike:** One loggerhead shrike was observed incidentally to point count surveys in Horse Heaven East during summer. The maximum flight height of the individual was 3 meters agl. Based on the timing of the observation, the individual could have been nesting in the area. Nesting habitat in the Project Lease Boundary includes isolated hedgerows, plantings around abandoned homesteads, and isolated patches of sagebrush.
- **Prairie falcon**: Thirty observations of prairie falcon in 30 groups were recorded during point count surveys. The average flight height when first observed was approximately 30 m agl (range: 2−85 m agl). Prairie falcons were observed during all seasons, the majority (73 percent) of which were during fall and spring, combined. Of the 26 observations with flight height data, 18 groups (69 percent) were flying within the RSH at any time during the observation. Of the 30 observations, 19 (63 percent) were either perched or actively hunting. Observations occurred evenly among cropland and grassland habitat types.
- **Ring-necked pheasant:** Ten observations of ring-necked pheasant in 10 groups were recorded during point count surveys. No ring-necked pheasant were observed flying and 60 percent of the observations were of auditory calls. Habitat where the birds were observed wase split evenly between cropland and grasslands. The seasons when the birds were observed were split roughly evenly between spring (60 percent) and summer (40 percent). Of the 10 groups recorded, 7 were in Horse Heaven West and 3 were in Horse Heaven East.
- **Sagebrush sparrow and sage thrasher:** One sagebrush sparrow observation (in spring) and three sage thrasher observations (one incidentally in spring and two in fall) were recorded during point count surveys. These individuals were observed perched and flying low (<6 meters agl) between bushes and fences within a grassland.
- **Sandhill crane**: Sandhill crane observations totaling 3,050 crane in 27 groups were recorded during point count surveys. The average flight height when first observed was approximately 253 meters agl (range: 45-500 meters agl). Of the 26 groups with flight height data, eight groups (31 percent) were observed flying within the RSH (25−150 meters agl) at any point during the observation. This represents approximately 14 percent of the total number of observations recorded during surveys. No sandhill cranes were

observed perched on the ground, either foraging or loafing. The majority of groups occurred during fall (19 groups) and typically flew higher (average of 289 meters agl) than groups recorded during spring (7 groups, average = 156 meter agl).

- **Tundra swans:** One group of 35 individual tundra swans were observed flying north during March at a flight height of 15 meters agl (range 5-30 meters agl). These 35 individuals were observed taking off from an agricultural field.

Raptor Nest Surveys

Methods

The objective of the raptor nest surveys was to document the location, territory occupancy, and nesting status of raptors within and surrounding the Project Lease Boundary. Aerial raptor nest surveys were completed in spring of 2017 through 2019 within 10 mi of the Avian Use Survey Areas identified in Figure 3.4-3 (Jansen 2017b, Jansen and Brown 2018, Chatfield et al. 2019c, 2019d, Jansen et al. 2019; Appendix M). During each survey, nests of all raptor species were documented within 2 mi of the Project whereas only nests constructed by golden eagles or bald eagles were documented within 10 miles of the Project. Each survey year, two rounds of double-observer (i.e., a primary and secondary observer) aerial nest surveys were conducted at least 30 days apart in a helicopter with bubble windows providing excellent visibility (Pagel et al. 2010; USFWS 2013). The first survey was conducted during a time period overlapping the primary early nesting period of eagles in the Pacific Northwest, when breeding pairs are exhibiting courtship, nest-building, and/or egg-laying and incubation behaviors (Isaacs 2018). A second survey was conducted when eagles are actively engaged in middle to late breeding season reproductive activities (e.g., incubating, brooding, feeding nestlings), and when eagles engaged in ongoing nesting activities would be reliably on or around nests (Watson 2010; Isaacs 2018). Once a nest was identified, each proceeding year rechecked the nest if the nest was located within the respective survey buffer.

The Applicant categorized basic nesting territories and nest status using definitions originally proposed by Postupalsky (1974) and largely followed currently (USFWS 2013). Nests were classified as occupied if any of the following were observed at the nest structure: (1) an adult in an incubating position; (2) eggs; (3) nestlings or fledglings; (4) presence of an adult (sometimes sub-adults); (5) a newly constructed or refurbished stick nest in the area where territorial behavior of a raptor had been observed earlier in the breeding season; or (6) a recently repaired nest with fresh sticks (clean breaks) or fresh boughs on top, and/or droppings and/or molted feathers on its rim or underneath. Occupied nests were further classified as active if an egg(s) or young were observed. Nests were classified as inactive if no eggs or young were present. Nests not meeting the above criteria for "Occupied" during at least two consecutive surveys were classified as "Unoccupied."

Results

Non-eagle Raptor Nest Results

Between 20 and 44 stick nests were documented within 2 miles of the Project Lease Boundary during 2017−2019 aerial surveys (Table 3.4-12). Although the number of nests located within the 2-mile Survey Area of the Project increased from 2017 to 2019, nest density decreased because the Survey Area was over four times as large in 2019 due to expansion of the Project

(Table 3.4-12). During each survey year, nests of *Buteo* species composed the majority (64−73 percent) of all occupied nests (Table 3.4-12). Signs of active nesting were observed in all but two of the 30 occupied nests within 2 miles of the Project. Of the 44 nests documented in 2019, 11 (25 percent) were located within the Project Lease Boundary and included 5 Swainson's hawk (*Buteo swainsoni*) nests, 3 common raven, one great horned owl (*Bubo virginianus*) nest, one ferruginous hawk nest, and one unoccupied nest. Raptor nest substrates within the 2020 Project Lease Boundary are limited to isolated trees or tree patches, often associated with old farmsteads or residential buildings. Nests along cliffs and large rock outcrops north of the Project Lease Boundary, which is a common type of nest substrate used by ferruginous hawks, were inactive during all survey years. One ferruginous hawk nest was observed nesting in the same tree during 2017, 2018, and 2019, at the northern edge of the Project, approximately 0.5 mile east of the nearest proposed Turbine (Appendix M).

Table 3.4-12. Non-eagle Raptor Nest Survey Results1/

Nesting Species	2017		2018		2019	
	# Nests	Nest Density (#/mi^2) 2/	# Nests	Nest Density (#/mi^2)2/	# Nests	Nest Density (#/mi^2)2/
common raven	1	0.013	1	0.007	5	0.015
ferruginous hawk	2	0.027	1	0.007	1	0.003
great-horned owl	2	0.027	2	0.013	3	0.009
red-tailed hawk	4	0.054	8	0.052	14	0.043
Swainson's hawk	1	0.013	6	0.039	7	0.021
unoccupied	10	0.134	14	0.092	14	0.043
Total	20	0.268	32	0.210	44	0.134

1/ Aerial surveys conducted March 31 and May 10 2017, March 5 and May 10 2018, and March 5 and May 16 2019 within 2 miles of the Project.

2/ Nest Density = # Nests within 2-mi of Survey Area / (Survey Area + 2-mi All Raptor Survey Area). Survey Area: 2017 = 74.66 mi^2; 2018 = 152.60 mi^2 ; 2019 = 328.80 mi^2

Eagle Nest Results

During aerial surveys conducted during 2017−2019, six bald eagle territories, comprising seven nests, were documented within 10 miles of the 2020 Project Lease Boundary (Table 3.4-13), with no nests documented within the 2020 Project Lease Boundary. Five of the six territories were beyond the 10-mile survey radius during 2017-2018 and were not surveyed. The Peavine Island Territory had two large stick nests at the southern end of the island. During 2019, all but one of the six territories (Yakima River Mouth Territory) were active during at least one of the survey rounds. Each of the five active nests had eggs or young approximately 2-4 weeks old observed during the second survey round. The distance of bald eagle nests to the nearest proposed Turbine ranged from 3.7 to 10.7 miles (average = 7.7 miles, standard deviation = 2.4 miles). No golden eagle nests were observed during any survey years.

Table 3.4-13. Bald Eagle Nest Status and Productivity

Territory Name[1/]	Nest Status	Nest Productivity	Distance to Turbine (miles)[2/]
Prosser	2017 - Not in Survey Area 2018 - Not in Survey Area 2019 - Occupied/Active	2019 - two-three young, ~4 weeks old	10.7
Yakima River Mouth	2017 - Occupied/Active 2018 - Occupied/Active 2019 - Occupied/Inactive	2017 - one young, ~3 weeks old 2018 - two young, ~3 weeks old 2019 - adult flushed from nest	8.1
Port of Pasco	2017 - Not in Survey Area 2018 - Not in Survey Area 2019 - Occupied/Active	2019 - two young, ~3-4 weeks old	6.5
Peavine Island	2017 - Not in Survey Area 2018 - Not in Survey Area 2019 - Occupied/Active	2019 - two young, ~3 weeks old	3.7
McNary NWR	2017 - Not in Survey Area 2018 - Not in Survey Area 2019 - Occupied/Active	2019 - two young, ~3 weeks old	7.8
Sand Station	2017 - Not in Survey Area 2018 - Not in Survey Area 2019 - Occupied/Active	2019 - two eggs	9.2

1/ Territory names established by WEST (see Appendix M).
2/ Distance to nearest proposed Turbine.
NWR – National Wildlife Refuge

Fish and Wildlife Habitat Conservation Areas

The Washington State legislature requires that local governments who plan under state regulation RCW 36.70A.040 designate critical areas and adopt development regulations concerning critical areas. Benton County's regulations regarding critical areas are established in Title 15 of the BCC. Title 15 defines critical areas as including any of the following areas or ecosystems: (1) wetlands (see Chapter 15.04 BCC); (2) critical aquifer recharge areas (see Chapter 15.06 BCC); (3) frequently flooded areas (see Chapter 15.08 BCC); (4) geologically hazardous areas (see Chapter 15.12 BCC); and (5) fish and wildlife conservation areas (see Chapter 15.14 BCC). This section addresses the FWHCAs, while other critical areas are addressed in their respective sections of this ASC.

Per BCC 15.14.010, FWHCAs include the following: (1) areas where federal or state designated endangered, threatened, and sensitive species have a primary association[13], (2) state priority habitats and areas associated with state priority species, (3) habitats and species of local importance as designated by Benton County (i.e., shrub-steppe habitat), (4) waters of the state, (5) naturally occurring ponds under 20 acres and their submerged aquatic beds that provide fish or wildlife habitat, (6) lakes, ponds, streams, and rivers planted with native fish populations, (7) Washington State Wildlife Areas, and (8) Washington State Natural Area Preserves and Natural Resource Conservation Areas (Benton County 2018). This section provides a description of these species and habitats within areas proposed for Project disturbance plus a 350-foot buffer consistent with the

[13] Primary association area - The area used on a regular basis by, in close association with, or is necessary for the proper functioning of the habitat of a critical species. Regular basis means that the habitat area is normally, or usually known to contain a critical species, or based on known habitat requirements of the species, the area is likely to contain the critical species. Regular basis is species and population dependent. Species that exist in low numbers may be present infrequently yet rely on certain habitat types (Benton County 2018).

Benton County CAO (i.e., BCC 15.14.030 requires a critical areas report to address habitat conservation areas within 300 feet of a project area and 15.02.070(56) defines the project area as areas within 50 feet of the area proposed to be disturbed, altered, or used by the proposed activity).

The extent of FWHCAs in the vicinity of the Project Lease Boundary was determined based on field surveys as well as review of the State's PHS database (WDFW 2020a). The Applicant conducted field surveys for habitat and wildlife as described above and detailed in Appendix K, and for wetlands and waters as described in Sections 3.3 and 3.5 and detailed in Appendix I. Shrub-steppe habitat, waters of the State, and a ferruginous hawk nest site are the FWHCAs present within the Project Lease Boundary (and within 0.5 mile of the Project Lease Boundary for the ferruginous hawk nest) as confirmed by field surveys (Figure 3.4-4). Additionally, review of PHS data indicated the presence of Townsend's ground squirrel colonies, a loggerhead shrike nest, and burrowing owl burrows within areas proposed for Project disturbance plus a 350-foot buffer, which are also considered FWHCAs (WDFW 2020a). Other priority species identified during surveys and data review that have a primary association with habitat in the Project Lease Boundary are also associated with the shrub-steppe habitat identified as a FWHCA. Below is a detailed response to each of the possible FWHCAs defined in the Benton County CAO.

(1) Areas where federal or state designated endangered, threatened, and sensitive species have a primary association

As described above, no wildlife or plant species currently listed or candidates for listing under the federal ESA are expected to occur at the Project. Three state designated endangered, threatened, or sensitive wildlife species have been observed at the Project. These include ferruginous hawk, sandhill crane, and American white pelican.

Ferruginous hawk: The ferruginous hawk has a primary association with habitat found in the Project Lease Boundary (i.e., shrub-steppe). In Washington, ferruginous hawks frequent shrub-steppe in the channeled scablands, as well as juniper-savannah areas of the Columbia Basin (Larsen et al. 2004). Landscapes comprising primarily shrub-steppe, native prairie, haylands, and pasture are favored for nesting, while cropland is avoided (Howard 1975; Gilmer and Stewart 1983; Schmutz et al. 1984; Roth and Marzluff 1989; Larsen et al. 2004). Seven ferruginous hawk nests have been documented within the Project Lease Boundary (WDFW 2020a). However, only one ferruginous hawk nest within 2 miles of the Project Lease Boundary was determined to be occupied/active during surveys for the Project in 2017, 2018, and 2019. This nest was located in a deciduous tree 30 meters (100 feet) from Coyote Canyon Road (Jansen and Brown 2018 and Jansen et al. 2019 in Appendix K).

Several inactive ferruginous hawk nests were observed during surveys, located on the ground along incised drainages within the northeast-facing rampart on northern perimeter of the Project Lease Boundary. A 2010 survey of 192 ferruginous hawk territories in Washington resulted in the lowest number of occupied territories (19 percent) over a 14-year period, which indicates a persistent population decline in Washington (WDFW 2013). Predation at ground nests from predators such as coyotes (*Canis latrans*), which were observed during surveys, can contribute to reduced nest occupancy, and combine with other factors such as habitat loss and associated prey abundance (Richardson 1996).

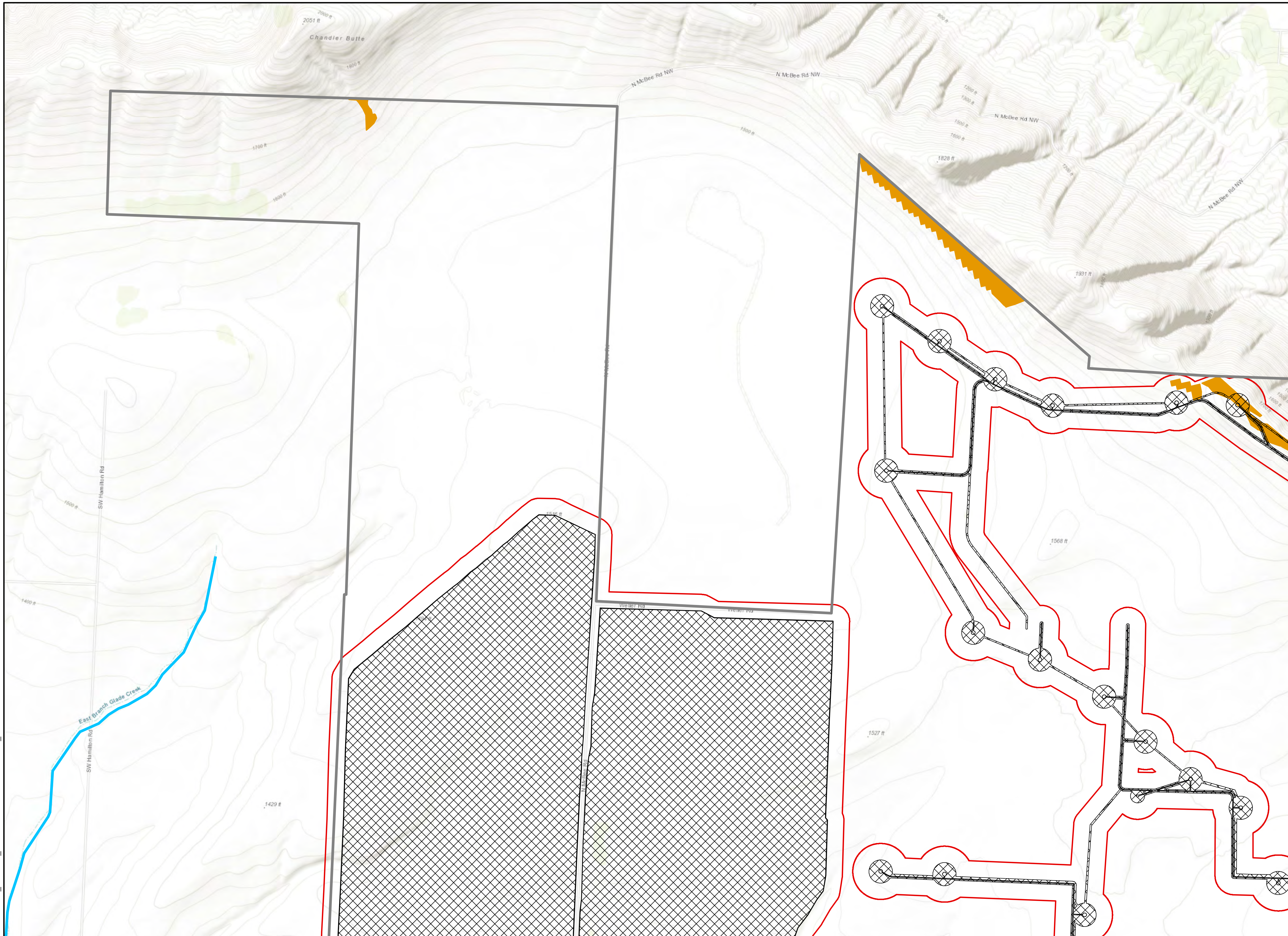
Sandhill cranes and American white pelicans. Sandhill cranes and American white pelicans were observed traveling through but not using habitat in the Project Lease Boundary. These two species do not have a primary association with habitat found in the Project Lease Boundary (Chatfield et al. 2019a, 2019b; Jansen and Brown 2018; and Jansen et al. 2019 in Appendix K).

(2) State priority habitats and areas associated with state priority species

A query of WDFW PHS data in February 2020 indicated that one priority habitat type (i.e., shrub-steppe) and four priority species (i.e., Townsend's ground squirrel, ferruginous hawk, burrowing owl, and loggerhead shrike) have been documented in the Project Lease Boundary. A Townsend's ground squirrel habitat assessment was performed, but was limited to the Project substation (Chatfield and Brown 2018c).

Townsend's ground squirrels. Townsend's ground squirrels primarily inhabit open sagebrush and grassland, but suitable habitat also includes large patches of sagebrush at the lower edges of forest, as well as pastures and abandoned fields (Johnson and Cassidy 1997; NatureServe 2020). Townsend's ground squirrels serve as prey for numerous predators including ferruginous hawk (WDFW 2020j). Two Townsend's ground squirrel colony locations have been documented in the northwest portion of the Project Lease Boundary, and a third colony location has been documented outside the Project Lease Boundary but within 350 feet of proposed Project disturbance (WDFW 2020a). There are approximately 6 acres of Townsend's ground squirrel colonies located within 350 feet of proposed disturbance. The Applicant has not conducted species-specific surveys for Townsend's ground squirrels within the Project Lease Boundary because surveys are not required on private land and were not recommended by WDFW during agency coordination for the Project (Jansen 2017a, Jansen and Fossum 2020). However, if impacts to suitable habitat cannot be avoided during final design, the Applicant will consult with WDFW regarding the need for Townsend's ground squirrel surveys prior to construction.

Burrowing owls. In Washington, burrowing owls typically occupy shrub-steppe habitat of the eastern part of the state during the breeding season (Bryant 1990; Larsen et al. 2004). Burrowing owls inhabit open, dry areas in well-drained grasslands, shrub-steppe, prairies, and deserts (Martin 1973). The primary habitat characteristic preferred by burrowing owls include a complex of available burrows, short and/or sparse vegetation that provides good visibility, and adequate populations of prey species (Haug et al. 1993). Four burrowing owl burrow locations have been documented within the Project Lease Boundary, one in the northwestern portion of the Project Lease Boundary, two in the western portion of the Project Lease Boundary, and one in the southeastern portion of the Project Lease Boundary, all documented in 2005 (WDFW 2020a). Burrowing owls were not observed during avian use and other biological surveys conducted at the Project from 2017-2020, although the Applicant has not conducted species-specific surveys for burrowing owls within the Project Lease Boundary because surveys are not required on private land and were not recommended by WDFW during agency coordination for the Project (Jansen 2017a, Jansen and Fossum 2020). However, if impacts to potentially suitable habitat cannot be avoided during final design, the Applicant will consult with WDFW regarding the need for burrowing owl surveys prior to construction.



Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 3.4-4
Fish and Wildlife Habitat Conservation Areas

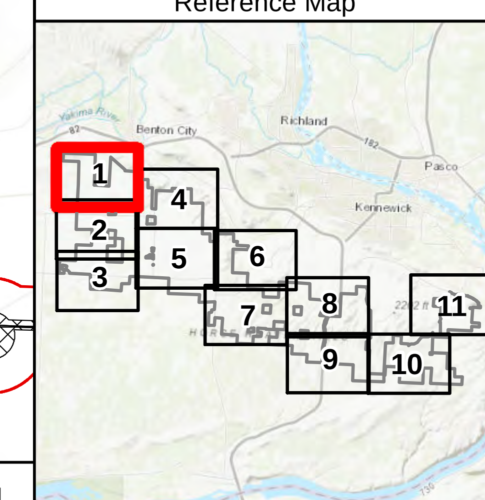
Map 1 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Disturbance
- Disturbance 350' Buffer
- Waters of the State - Benton County
- Shrub-steppe (NLCD/Field mapped)

TETRA TECH

Reference Map



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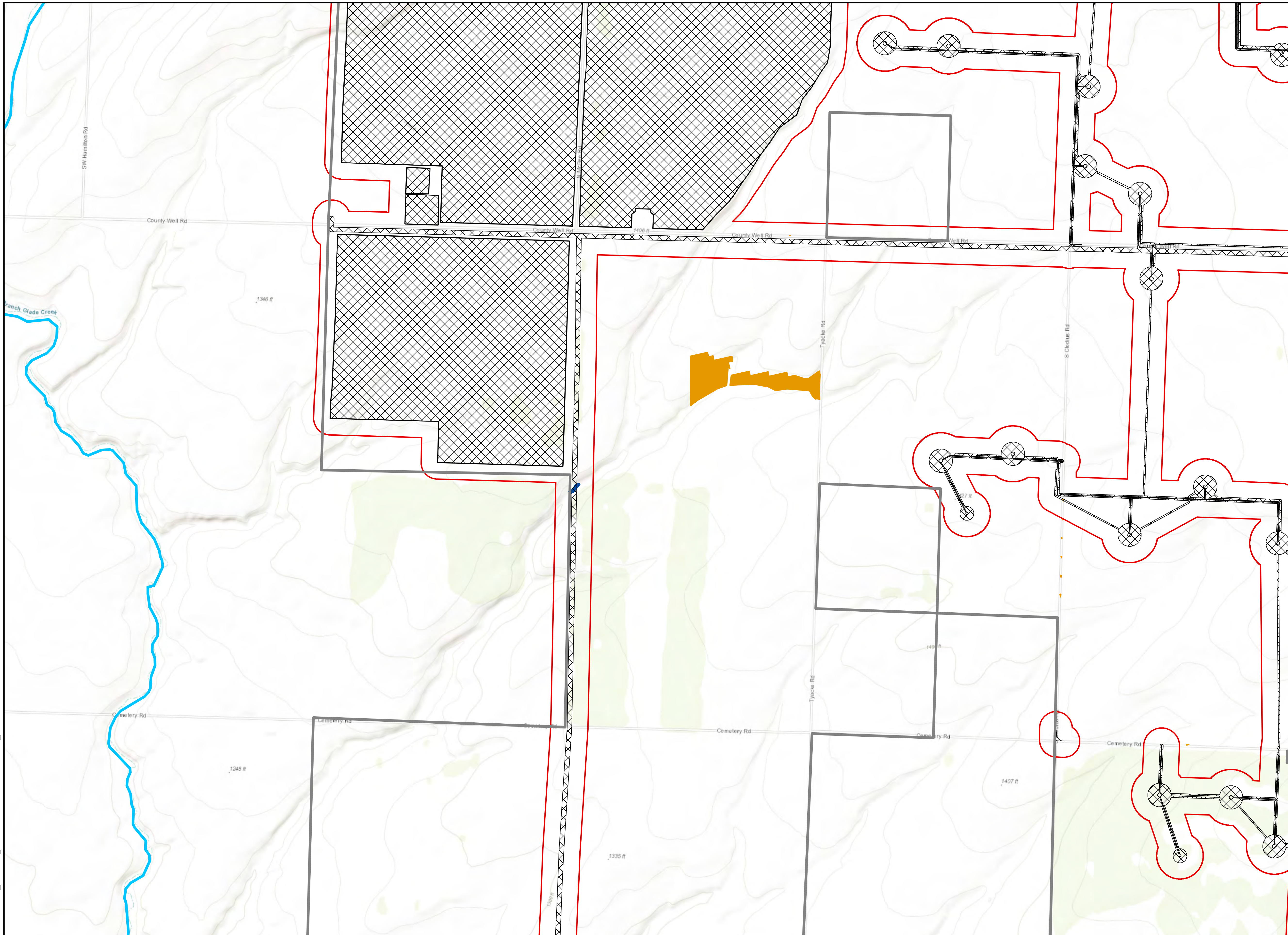


Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 3.4-4
Fish and Wildlife Habitat Conservation Areas

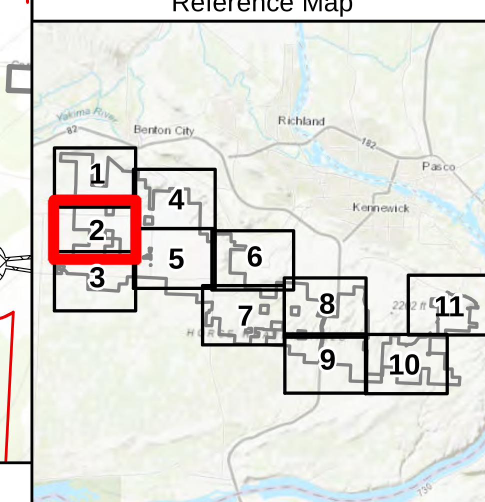
Map 2 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Disturbance
- Disturbance 350' Buffer
- Waters of the State - Benton County
- Shrub-steppe (NLCD/Field mapped)

TETRA TECH

Reference Map



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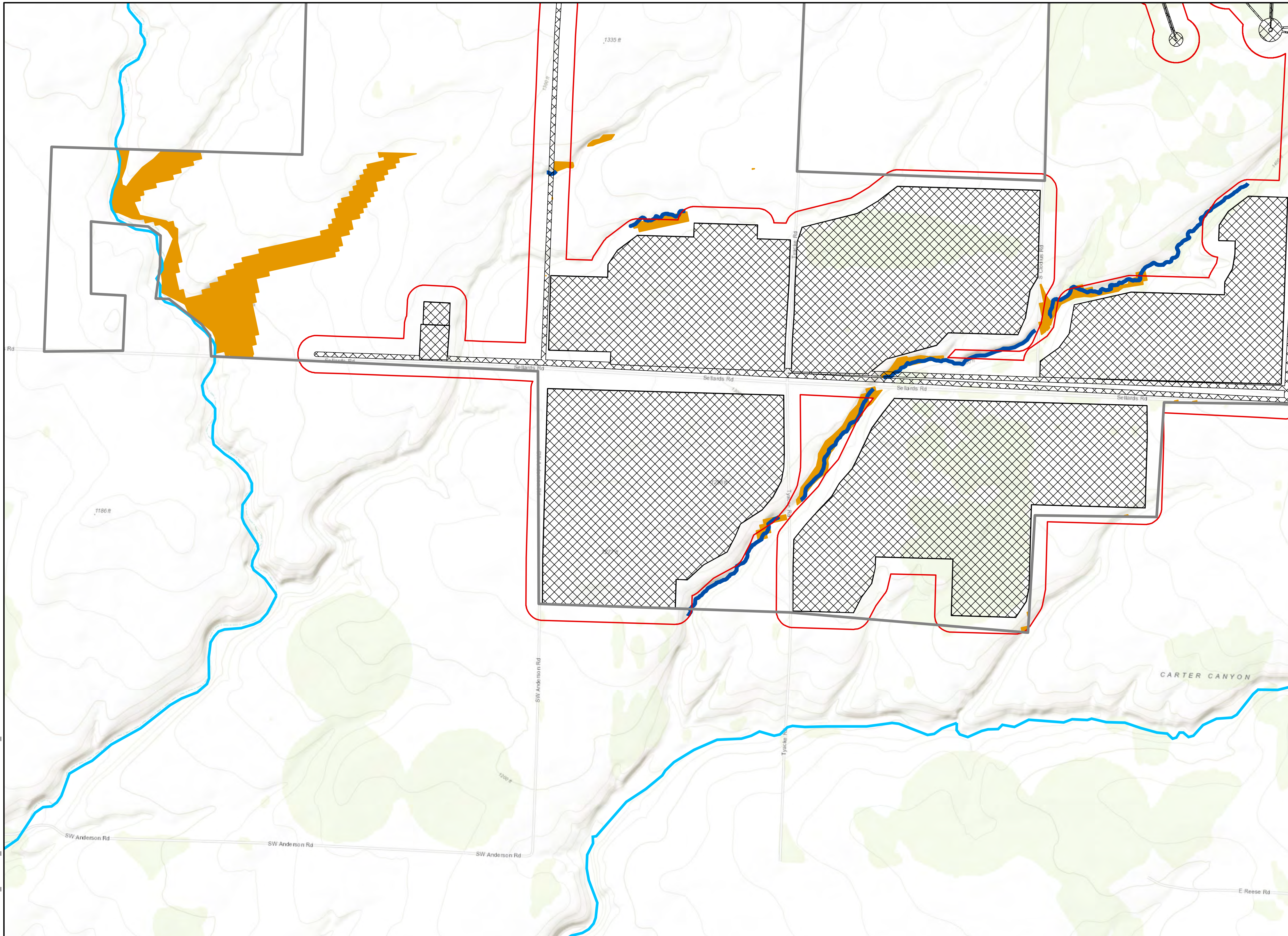


Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

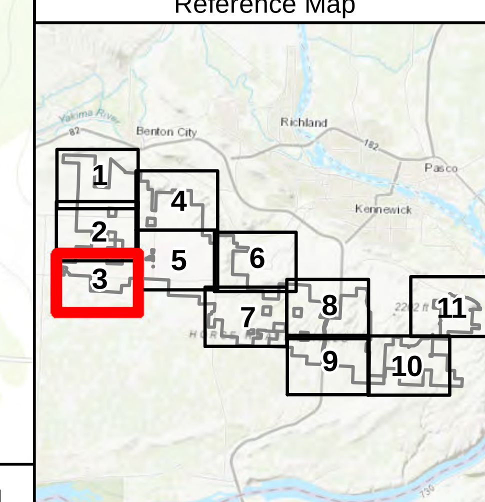
Figure 3.4-4
Fish and Wildlife Habitat Conservation Areas
Map 3 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Disturbance
- Disturbance 350' Buffer
- Waters of the State - Field mapped
- Waters of the State - Benton County
- Shrub-steppe (NLCD/Field mapped)

TETRA TECH

Reference Map



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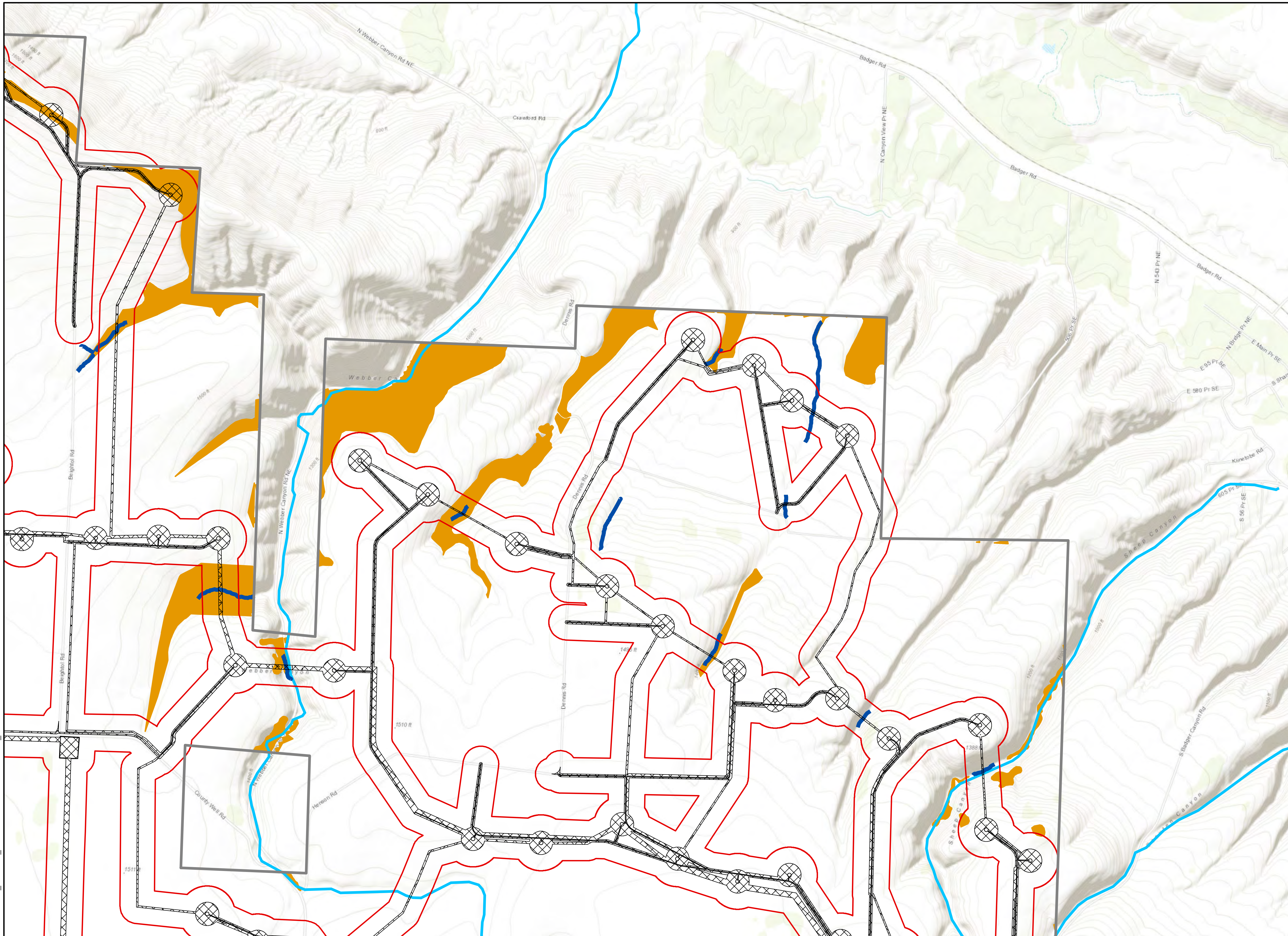


Horse Heaven Wind Farm

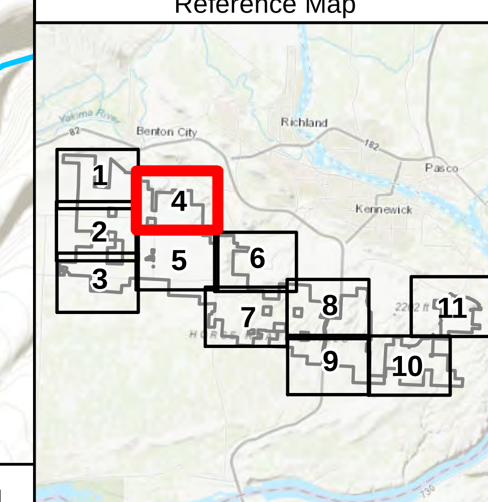
Figure 3.4-4
Fish and Wildlife Habitat Conservation Areas
Map 4 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Disturbance
- Disturbance 350' Buffer
- Waters of the State - Field mapped
- Waters of the State - Benton County
- Shrub-steppe (NLCD/Field mapped)

TETRA TECH

Reference Map



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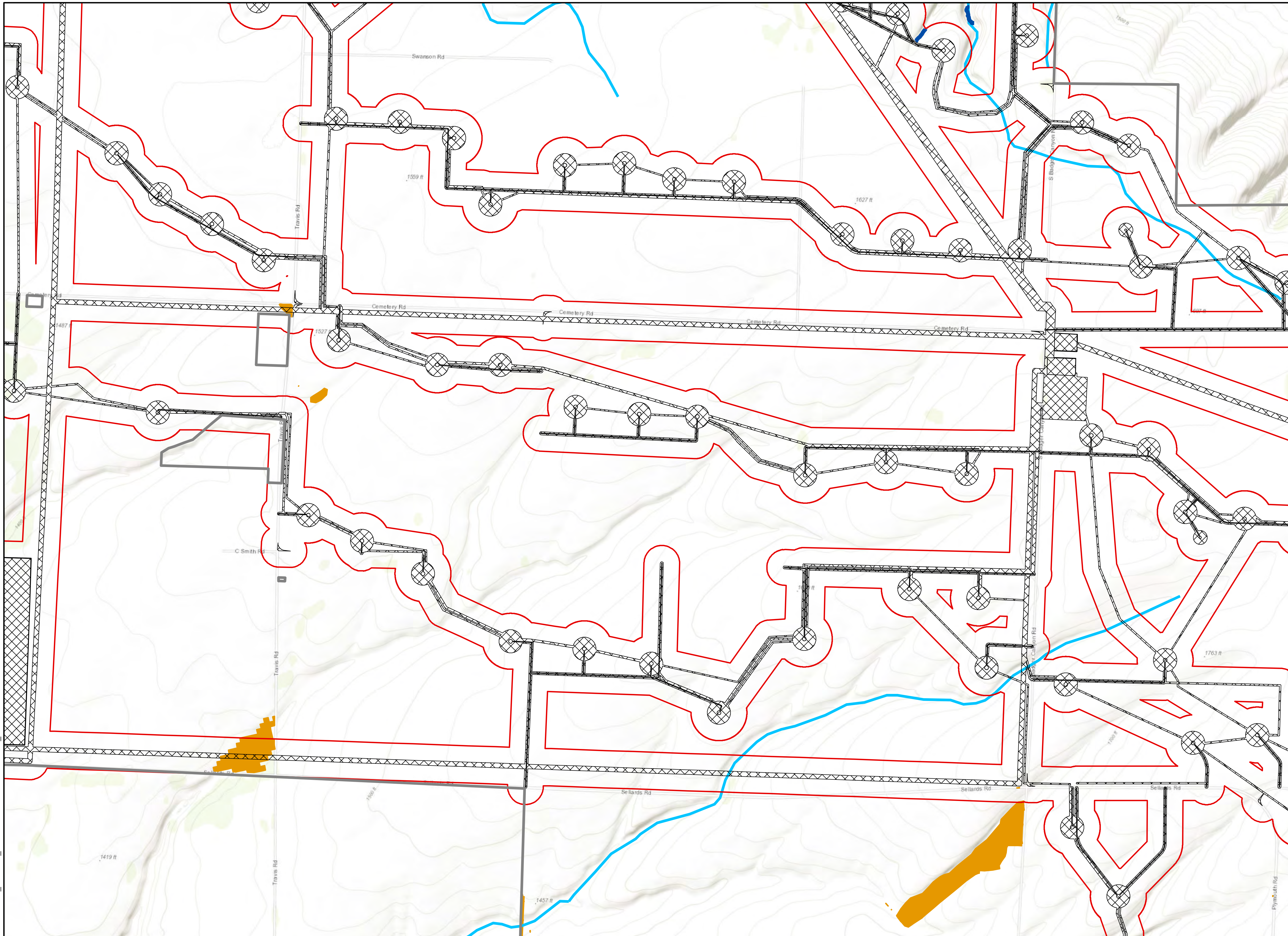
Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 3.4-4
Fish and Wildlife Habitat Conservation Areas
Map 5 of 11

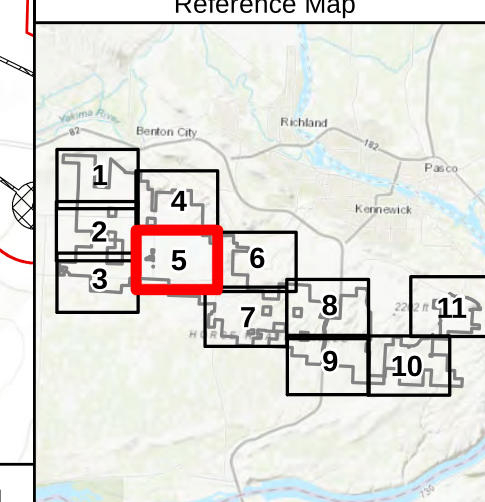
BENTON COUNTY, WA

- Project Lease Boundary
- Disturbance
- Disturbance 350' Buffer
- Waters of the State - Field mapped
- Waters of the State - Benton County
- Shrub-steppe (NLCD/Field mapped)



TETRA TECH

Reference Map



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1:24,000 WGS 1984 UTM Zone 11N

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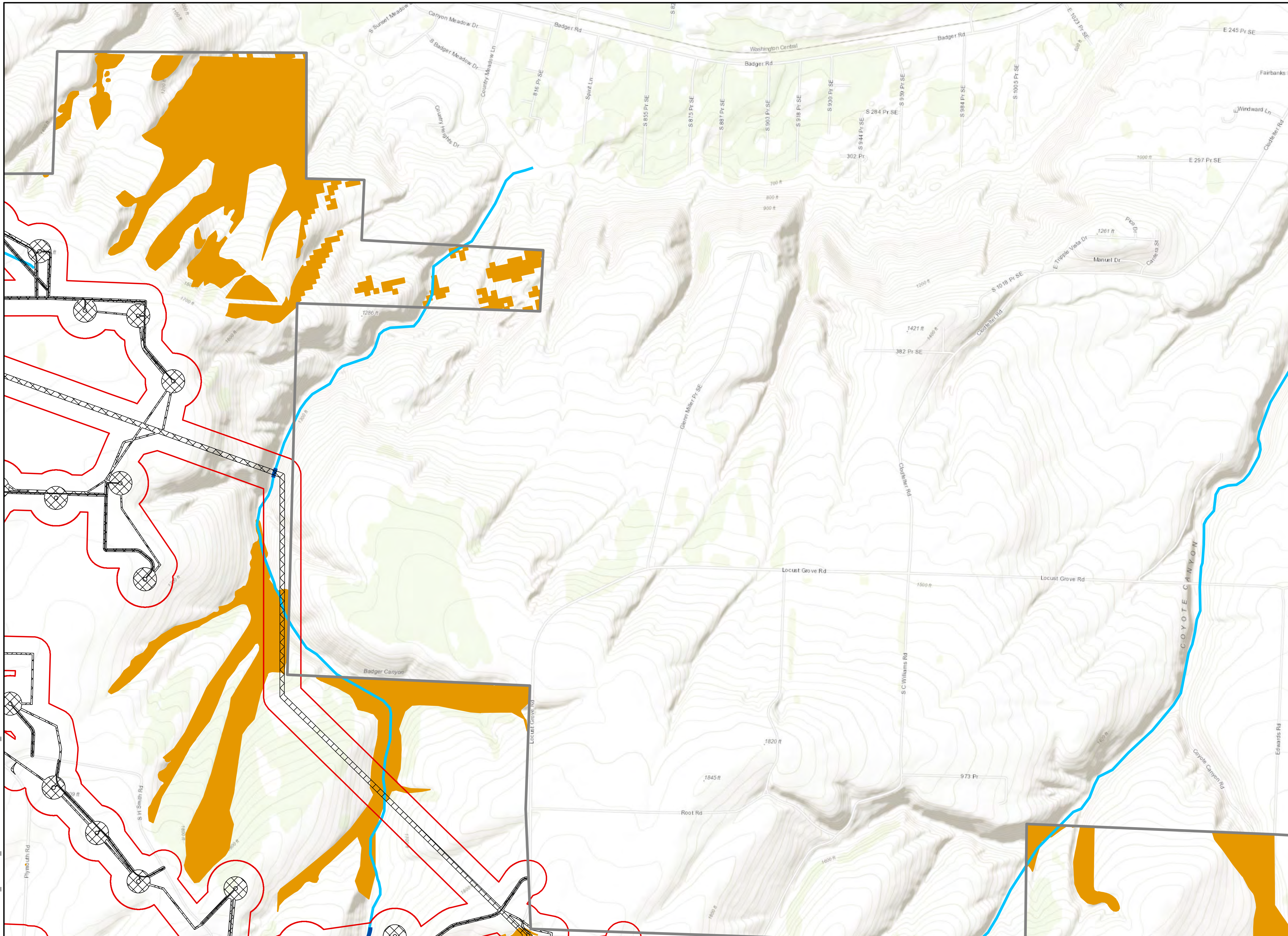


Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

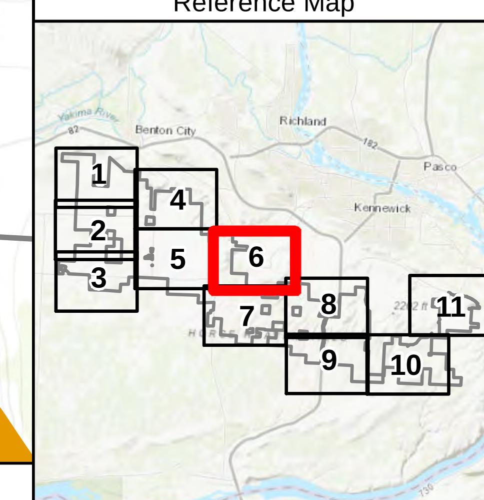
Figure 3.4-4
Fish and Wildlife Habitat Conservation Areas
Map 6 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Disturbance
- Disturbance 350' Buffer
- Waters of the State - Field mapped
- Waters of the State - Benton County
- Shrub-steppe (NLCD/Field mapped)

TETRA TECH

Reference Map



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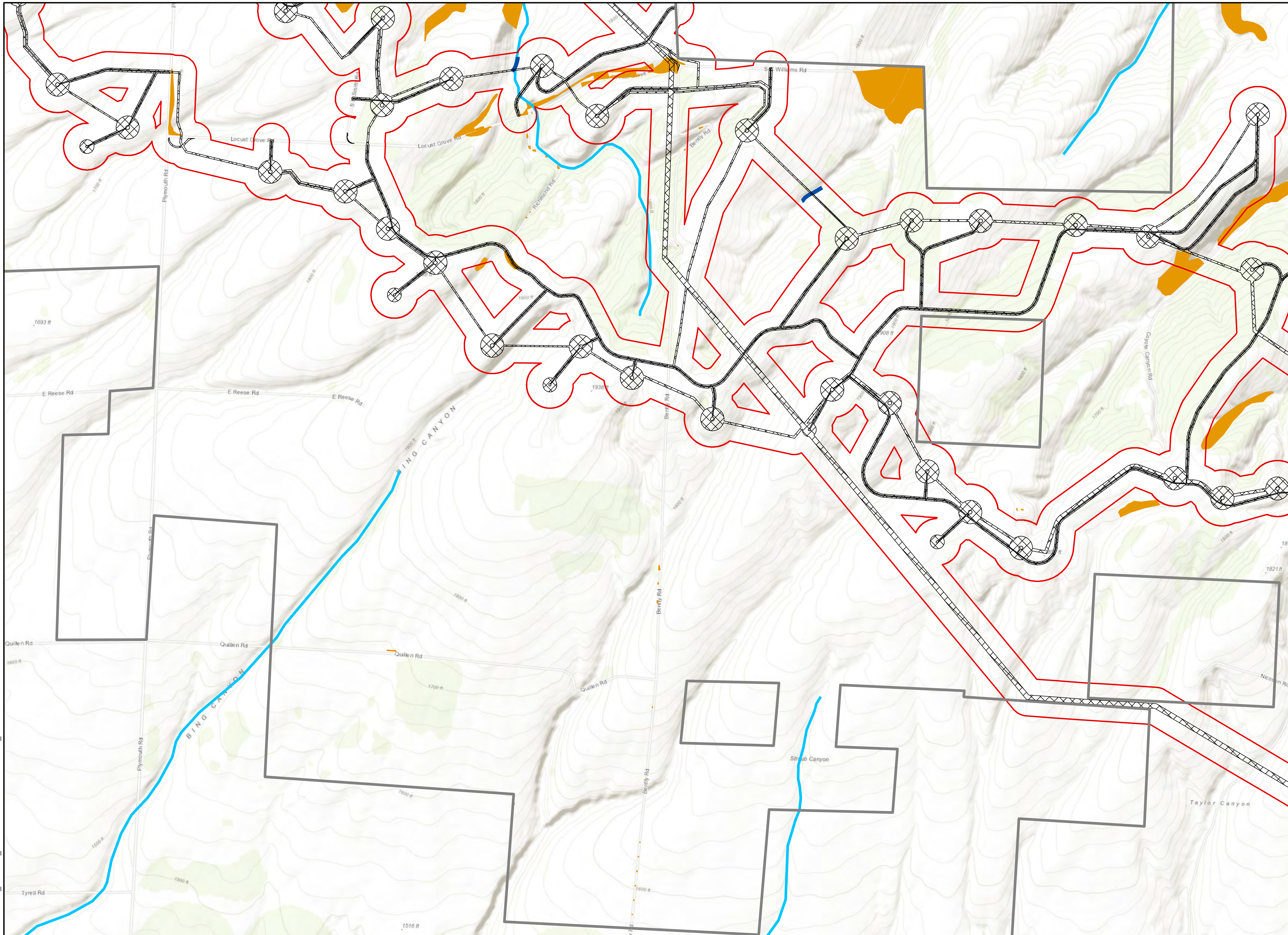


Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

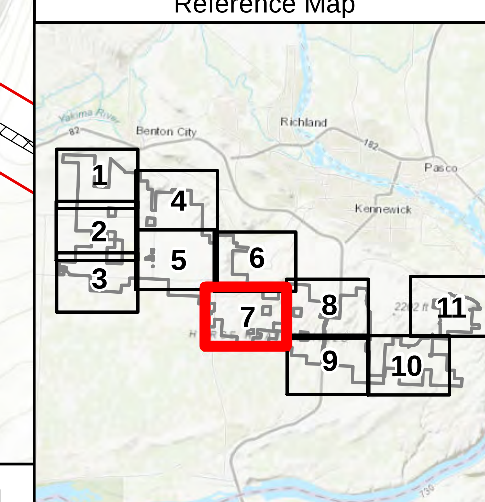
Figure 3.4-4
Fish and Wildlife Habitat Conservation Areas
Map 7 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Disturbance
- Disturbance 350' Buffer
- Waters of the State - Field mapped
- Waters of the State - Benton County
- Shrub-steppe (NLCD/Field mapped)

TETRA TECH

Reference Map



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1:24,000 WGS 1984 UTM Zone 11N

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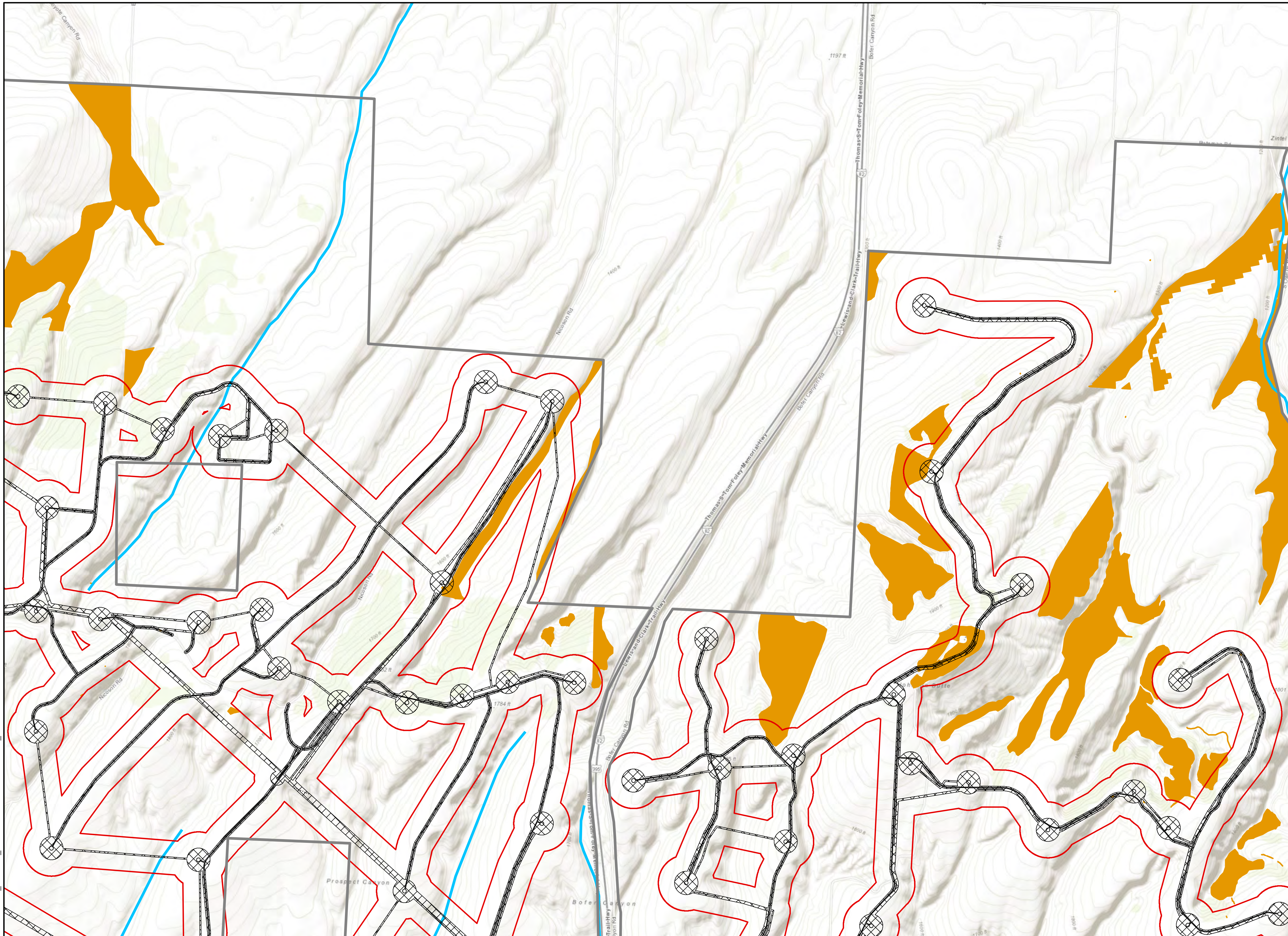
NOT FOR CONSTRUCTION

Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 3.4-4
Fish and Wildlife Habitat Conservation Areas
Map 8 of 11

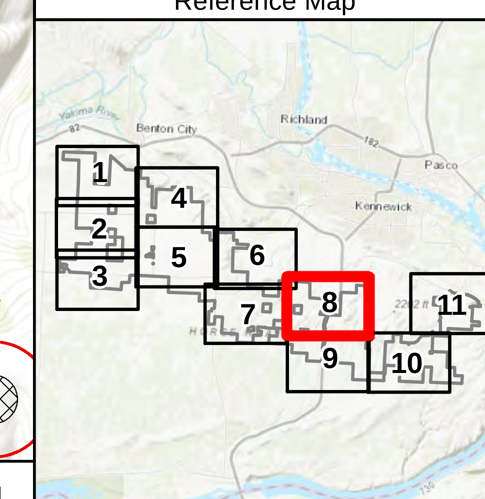
BENTON COUNTY, WA



- Project Lease Boundary
- Disturbance
- Disturbance 350' Buffer
- Waters of the State - Benton County
- Shrub-steppe (NLCD/Field mapped)

TETRA TECH

Reference Map



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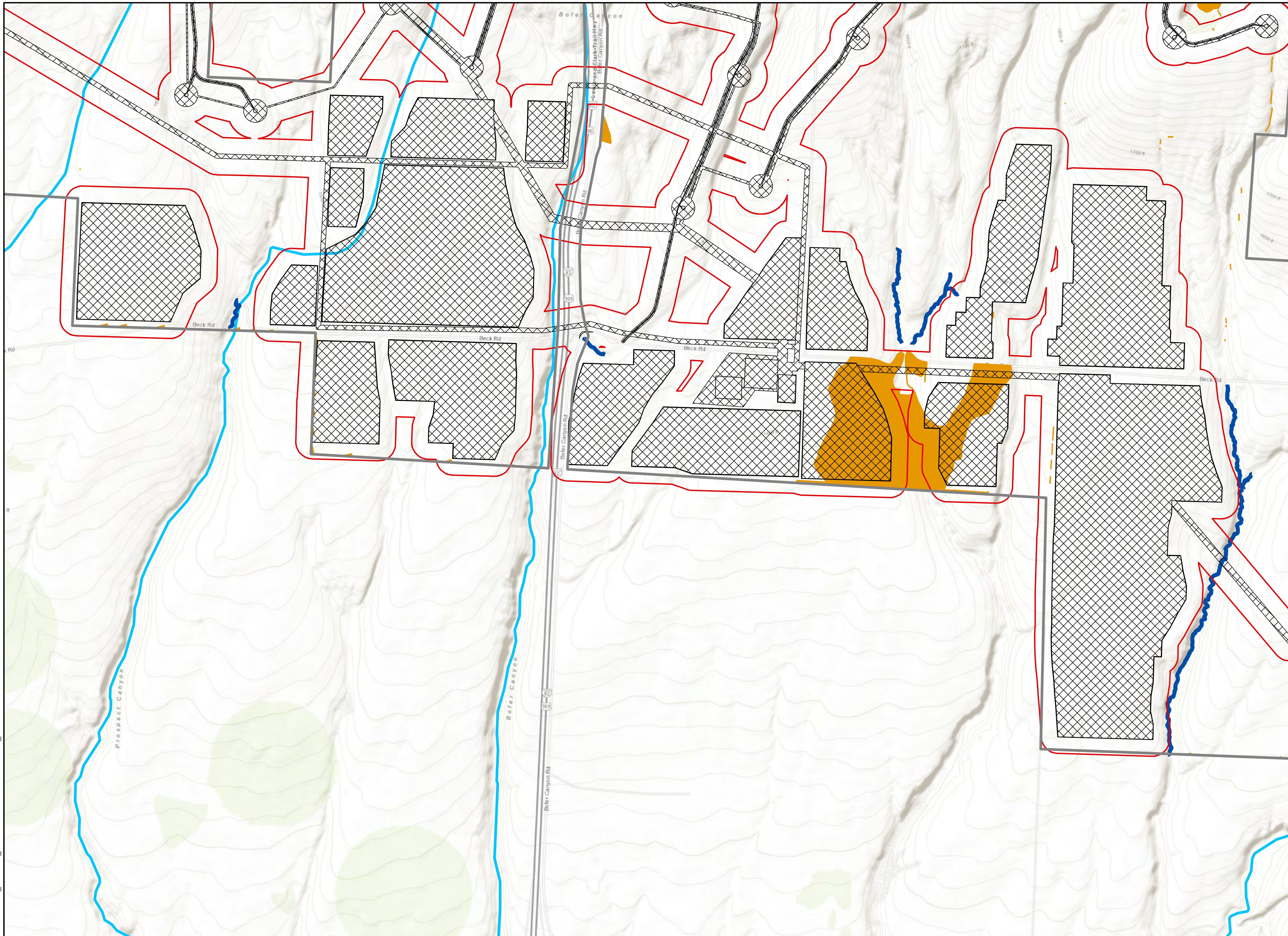

Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 3.4-4
Fish and Wildlife Habitat Conservation Areas

Map 9 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Disturbance
- Disturbance 350' Buffer
- Waters of the State - Field mapped
- Waters of the State - Benton County
- Shrub-steppe (NLCD/Field mapped)

1:24,000 WGS 1984 UTM Zone 11N

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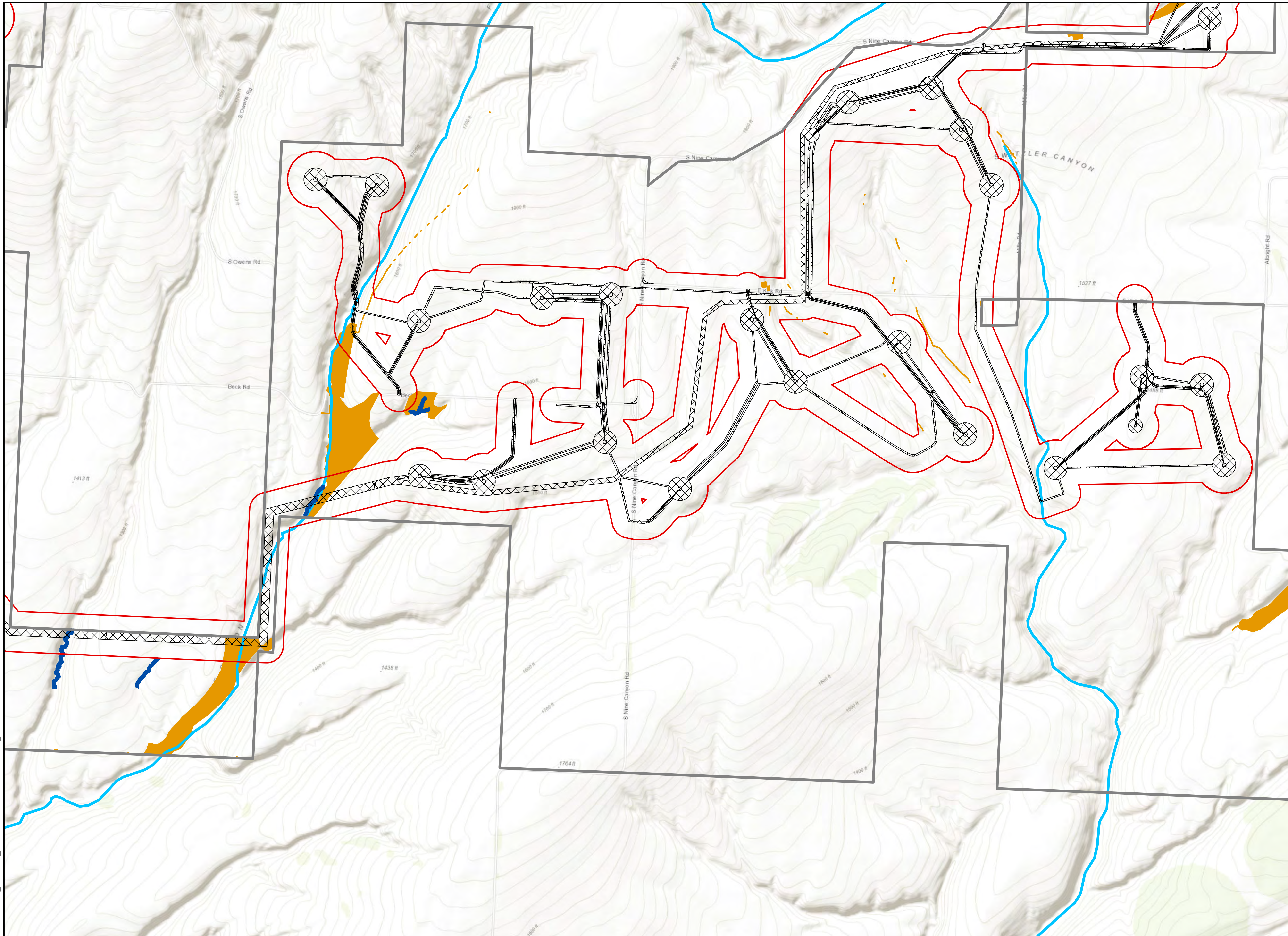


Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

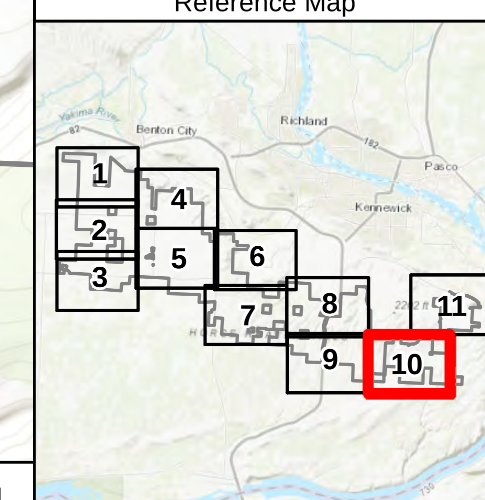
Figure 3.4-4
Fish and Wildlife Habitat Conservation Areas
Map 10 of 11

BENTON COUNTY, WA

- Project Lease Boundary
- Disturbance
- Disturbance 350' Buffer
- Waters of the State - Field mapped
- Waters of the State - Benton County
- Shrub-steppe (NLCD/Field mapped)

TETRA TECH

Reference Map



1:24,000 WGS 1984 UTM Zone 11N

0 0.125 0.25 0.5 0.75 1 Miles

NOT FOR CONSTRUCTION

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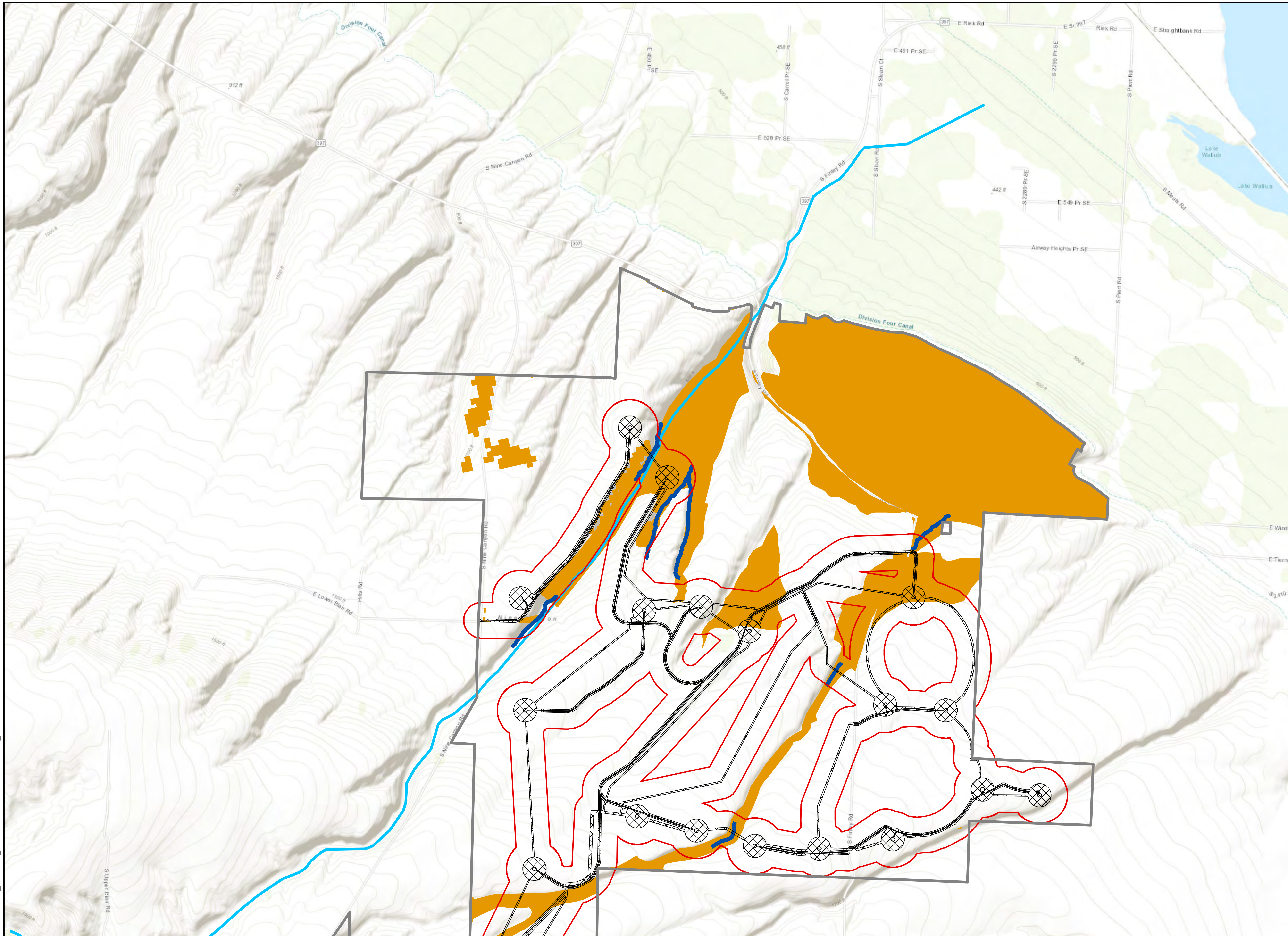
Horse Heaven Wind Farm

Figure 3.4-4
Fish and Wildlife Habitat Conservation Areas
Map 11 of 11

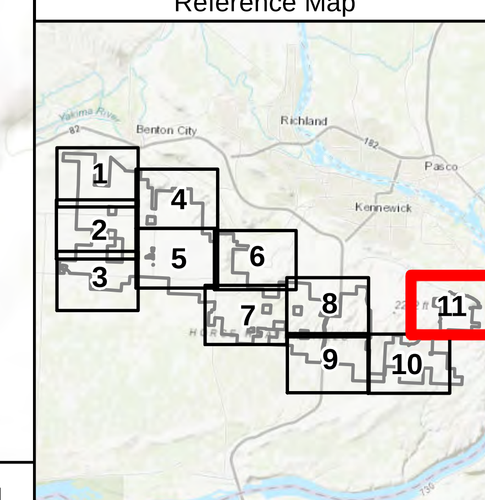
BENTON COUNTY, WA



- Project Lease Boundary
- Disturbance
- Disturbance 350' Buffer
- Waters of the State - Field mapped
- Waters of the State - Benton County
- Shrub-steppe (NLCD/Field mapped)

TETRA TECH

Reference Map



1:24,000 WGS 1984 UTM Zone 11N

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Loggerhead shrikes. In Washington, loggerhead shrikes are primarily a breeding resident of the shrub-steppe zone, including Benton County (Larsen et al. 2004). Loggerhead shrikes use open habitat during both breeding and nonbreeding seasons. Grasslands or pastures with short or patchy grasses are usually used for foraging (Larsen et al. 2004). Scattered trees, shrubs, or hedgerows are most often used for nesting and perching (Kridelbaugh 1983; Bohall-Wood 1987; Gawlik and Bildstein 1990; Larsen et al. 2004). One loggerhead shrike nest has been documented within the Project Lease Boundary (in 1990) and a second presumed nest (from 1987) is located outside the Project Lease Boundary but within 350 feet of disturbance (WDFW 2020a). The Applicant has not conducted species-specific nesting surveys for loggerhead shrikes within the Project Lease Boundary because surveys are not required and were not recommended by WDFW during agency coordination for the Project (Jansen 2017a; Jansen and Fossum 2020). However, if impacts to suitable habitat cannot be avoided during final design, the Applicant will consult with WDFW regarding the need for loggerhead shrike surveys prior to construction.

Eleven WDFW priority species were observed during surveys for the Project: American white pelican, ferruginous hawk, sandhill crane, bald eagle, golden eagle, great blue heron, sage thrasher, sagebrush sparrow, loggerhead shrike, ring-necked pheasant, and prairie falcon.

(3) Habitats and species of local importance

Benton County has designated shrub-steppe as a habitat of local importance, critical to supporting priority species in Benton County. Vegetation types within the Project Lease Boundary are described above in Section 3.4.1.1 and include a mosaic of agricultural land, developed/disturbed land, non-native grassland, planted grassland, rabbitbrush shrubland, dwarf shrub-steppe, sagebrush shrub-steppe, unclassified grassland, and unclassified shrubland (Chatfield and Brown 2018a, 2018b and Tetra Tech 2020 in Appendix K). The vegetation types sagebrush shrub-steppe, and dwarf shrub-steppe mapped by the Applicant (which align with the definitions of shrub-steppe designated as a WDFW priority habitat as described in Section 3.4.1.1), as well as unclassified shrubland (also conservatively considered shrub-steppe for the purposes of this analysis, pending field verification prior to construction) cover approximately 397 acres within 350 feet of proposed Project disturbance (i.e., 127 acres of sagebrush shrub steppe, 13 acres of dwarf shrub-steppe, and 257 acres of unclassified shrubland).

Within the Project Lease Boundary, the Applicant primarily mapped sagebrush shrub-steppe and dwarf shrub-steppe in the north-central, northeastern, and northwestern portion of the Project Lease Boundary (Figure 3.4-1). Sagebrush shrub-steppe mapped during surveys was dominated by big sagebrush but also included spineless horsebrush, rubber rabbitbrush, and green rabbitbrush with shrub cover ranging from 10 to 75 percent cover. Cover of the non-native cheatgrass was typically high, but other grasses and forbs observed in sagebrush shrub-steppe included bluebunch wheatgrass, Sandberg bluegrass, Carey's balsamroot, common yarrow, long-leaf phlox, low pussytoes, shaggy fleabane, woolly plantain, woollypod milkvetch, redstem stork's bill, prickly lettuce, and yellow salsify. Dwarf shrub-steppe mapped during surveys was dominated by the native sub-shrub/dwarf shrub rock buckwheat, native perennial grasses bluebunch wheatgrass and Sandberg bluegrass, and the non-native annual grasses cheatgrass and cereal rye. See Section 3.4.1.1 for a further description of vegetation within the Project Lease Boundary.

(4) Waters of the State

Although NHD and the Benton County CAO – FWHCA Map identified 253 intermittent streams (which are considered waters of the State) within the Project Lease Boundary (USGS 2017, Benton County 2018), the wetlands and waters delineation conducted in 2020 (see Sections 3.3 and 3.5) identified only two intermittent streams and 31 ephemeral streams within the Project's Micrositing Corridor. Based on field surveys conducted within the Micrositing Corridor and the Benton County Critical Area Ordinance – FWHCA Map where field data were not available, there are 30 field-mapped streams (including a 150-foot buffer where applicable) and 12 County-mapped streams within 350 feet of proposed Project disturbance (i.e., within the area considered for this critical areas assessment).[14]

Outside of the Micrositing Corridor, where field survey data were not available, the Applicant used the Benton County CAO – FWHCA Map rather than NHD data because field observations during surveys in 2020 indicated that the NHD data overestimated the extent of waterbodies (i.e., the majority of streams mapped by NHD were not present), and the Benton County CAO – FWHCA Map appeared to more accurately identify likely waters of the State. Per BCC (15.14.040 g)(2)(iv), a 150-foot buffer was applied to all intermittent streams mapped during field surveys, as well as two field-mapped ephemeral streams as these appeared to meet the definition of Type Ns Waters.[15]

(5) Naturally occurring ponds under twenty acres and their submerged aquatic beds that provide fish or wildlife habitat

There are no naturally occurring ponds within 350 feet of Project disturbance that meet the description for FWHCAs.

(6) Lakes, ponds, streams and rivers planted with native fish populations

There are no fish-bearing lakes, ponds, streams, or rivers within 350 feet of Project disturbance (see Section 3.4.1.2 and Section 3.3).

(7) Washington State Wildlife Areas

No Washington State Wildlife Areas are located within 350 feet of Project disturbance (Benton County 2018; WDFW 2020k).

[14] Counts of field-mapped and County-mapped streams are by feature ID and stream name, respectively; each feature (including the 150 foot buffer) and named stream may occur within the 350-foot buffer at multiple locations but is tallied here only once. County-mapped streams are frequently continuations of field-mapped streams outside of the Micrositing Corridor and thus the field-mapped and County-mapped streams are not intended to be tallied.

[15] "Type Ns Water" means all segments of natural waters within the bankfull width of the defined channels that are not Type S, F, or Np Waters. These are seasonal, non-fish habitat streams in which surface flow is not present for at least some portion of a year of normal rainfall and are not located downstream from any stream reach that is a Type Np Water. Ns Waters must be physically connected by an above-ground channel system to Type S, F, or Np Waters (WAC 222-16-030).

(8) Washington State Natural Area Preserves and Natural Resource Conservation Areas

No Washington State Natural Area Preserves or Natural Resource Conservation Areas are located within the 350 feet of Project disturbance (DNR 2020a, 2020b).

Migration Routes

The Project lies in the Pacific Flyway, which is a broad band that runs through a large area of the United States, stretching between the Pacific Ocean and the Rocky Mountains (USFWS 2021). USFWS divided North America into four administrative flyways to facilitate management of migratory birds and their habitats, and as a result, all land within North America falls within one of these flyways (USFWS 2021). Most birds that move along the Pacific Flyway during fall migration travel from Alaska and Canada, through the western states, eventually reaching the tropics of South America via Baja California and western Mexico. The Project contains stopover habitat (i.e., habitat where migratory species may stop to rest, drink, and refuel) for raptors, songbirds, waterfowl, and shorebirds in the form of cropland with much smaller areas of shrubland and grassland habitat. High-quality riparian/wetland and forest stopover habitat is absent from Project Lease Boundary.

The Project is not located within a migration route for big game species (WDFW 2020a). Although the Project provides low habitat value to mule deer (e.g., due to the extent of agricultural and developed land, which covers 75 percent of the Project Lease Boundary), one Least-Cost Path (LCP) modeled by the Washington Wildlife Habitat Connectivity Working Group (WHCWG 2012, 2013) passes through the Project along a north-south route west of and parallel to Highway 395. This LCP connects HCAs at the Hanford Site and Rattlesnake Hills in Washington to a HCA in Oregon between Pendleton and Heppner. This LCP falls outside the Solar Siting Areas but passes through the Micrositing Corridor. WDFW is currently working to identify migratory corridors through research of mule deer movement; however, these are currently prioritized in the East Slope Cascades and East Columbia Gorge Mule Deer Management Zones (MDMZ) and not the Columbia Plateau MDMZ (WDFW 2020l), where the Project occurs.

3.4.2 Impacts

3.4.2.1 Habitat and Vegetation

Table 3.4-14 provides the estimated number of acres of each habitat type and subtype impacted by the Project under Turbine Option 1. Turbine Option 1 represents the estimated maximum acreage of impact (from the greatest number of Turbines and associated roads and collector lines) and thus impacts on habitat from Turbine Option 1 are presented here as the most impactful scenario. If Turbine Option 2 is selected, impacts on habitat and vegetation would be reduced within the Micrositing Corridor. Impacts from the solar arrays and associated infrastructure would not vary based on Turbine options.

Table 3.4-14. Estimated Impacts on Habitat Types from Construction and Operation of the Project

Habitat Type	Habitat Subtype	Micrositing Corridor		Solar Siting Areas		
		Temporary Impact (Acres)1/	Permanent Impact (Acres)1/	Temporary Impact (Acres)2/	Permanent Impact (Acres)2/	Modified Habitat Impact (Acres)2/
Agricultural land	Agricultural land	2,309	257	53	239	5,382
Developed/disturbed	Developed/disturbed	20	0.7	3	3	3
Grassland	Non-native grassland	47	4	0.1	0.1	3
	Planted grassland	199	18	3	6	100
	Unclassified grassland3/	135	6	9	20	333
Shrubland	Dwarf shrub-steppe	9	1	--	--	--
	Rabbitbrush shrubland	119	10	6	22	393
	Sagebrush shrub-steppe	17	0.8	--	--	--
	Unclassified shrubland3/	25	1	1	4	63
Total4/		**2,881**	**299**	**76**	**294**	**6,276**

Notes:

1/ Overlapping permanent disturbance is subtracted from temporary impact corridors/areas (e.g., temporary impact area around a Turbine does not include the Turbine foundation and graveled areas); those are included only in the permanent impact column.

2/ Temporary impacts associated with solar facilities include a 10-foot construction buffer along the outside of the solar fencelines. Permanent impacts include the solar inverters and new access roads within the Solar Siting Areas. Modified impacts are associated with the solar arrays and included those areas within the solar fencelines that are outside areas of permanent impact. Following construction, low growing vegetation would be planted under the solar arrays; therefore, these impacts would be considered a modification of habitat rather than a temporary or permanent impact.

3/ Unclassified grassland and unclassified shrubland habitat subtypes include those areas mapped during surveys conducted in 2018 or using NLCD data that were not further classified into subtypes (e.g., planted grassland, sagebrush shrub-steppe) during the 2020 survey or desktop analysis. Acres of impacts to each of these "unclassified" habitat subtypes may be revised following habitat surveys of the Solar Siting Areas and Micrositing Corridor that are planned to occur prior to construction.

4/ Totals may not sum exactly due to rounding.

Following completion of construction, temporarily disturbed areas, including areas under solar arrays, would be revegetated (see Appendix N – Revegetation and Noxious Weed Management Plan). Therefore, habitat and vegetation within the solar array fencelines but outside areas of permanent disturbance (i.e., graveled interior access roads, inverter pads, and tracker system support posts) would retain residual value following construction, especially for wildlife that can pass through, under, or over the security fence (e.g., birds, mice) and utilize the low-growing vegetation that would be established and maintained under the solar arrays. A recent study demonstrated that successful revegetation under solar arrays is possible, even with native grass species adapted to full-sun conditions (Beatty et al. 2017). This study demonstrated that revegetation under solar arrays was able to "achieve ground cover sufficient to control erosion and begin to restore wildlife habitat" (Beatty et al. 2017). As a result, areas under solar arrays that would be revegetated are considered modified rather than temporarily or permanently impacted. Anticipated impacts to wildlife as a result of the wind and solar Project components are further described below in Section 3.4.2.3.

Special Status Plants and Noxious Weeds

No special status plant species were observed within the portions of the Project Lease Boundary surveyed in June 2020 (Tetra Tech 2020 in Appendix K). In addition, no special status plants have been documented within the Project Lease Boundary (WNHP 2020c). Therefore, no known occurrences of special status plant species would be impacted by construction or operation of the Project. However, surveys for special status plants species have not been conducted within the Solar Siting Areas and portions of the Micrositing Corridor. Although most of the area within the Solar Siting Areas and unsurveyed portions of the Micrositing Corridor consists of agricultural land which does not provide suitable habitat for special status plants, suitable habitat for special-status plant species may occur in non-agricultural areas that have not been surveyed. Special status plant surveys would be conducted within the Solar Siting Areas and unsurveyed portions of the Micrositing Corridor prior to construction.

Six state- and or county-designated noxious weeds have been documented within the Project Lease Boundary. Noxious weed surveys, however, were only conducted within a portion of the Micrositing Corridor and have not been conducted within the Solar Siting Areas; therefore, other state- and/or county-designated noxious weeds may also occur within these areas. Ground disturbance, as well as the movement of construction and operation equipment and personnel would increase the potential for spread of existing noxious weeds and/or introduction of other noxious weeds not currently present. Noxious weeds can alter plant species composition, reduce native plant diversity and abundance, and degrade habitat quality. Implementation of BMPs associated with the NPDES permit and measures in the Revegetation and Noxious Weed Management Plan (Appendix N) would reduce the spread of noxious weeds and control infestations associated with the Project's ground-disturbing activities.

3.4.2.2 Fish

Based on the Applicant's implementation of BMPs during construction and operation of the Project, impacts to water quality, stream hydrology, and in-stream flows are anticipated to be minimal, if any (see Section 3.3). As described in Section 3.3, Project features such as collection lines, roads, crane paths, and transmission lines as currently designed may have temporary impacts on 19 of the 31 ephemeral stream channels mapped within the Micrositing Corridor and both of the two mapped intermittent streams; and permanent impacts on one ephemeral stream. However, these impacts may be avoided by spanning (e.g., with the transmission line and collection line) or otherwise micrositing away from the streams. If these impacts cannot be avoided, potential effects will be minimized by performing the work during the dry season when the streams are dry, to the extent practicable, and utilizing construction BMPs including control of erosion and surface-water runoff, as described in Section 3.3. Additionally, impacts are not anticipated from potential sediment or hazardous spills into streams (which could adversely affect fish downstream) during construction or operation due to the implementation of erosion control measures and spill prevention measures (see Section 3.3.3 and Section 2.10, respectively). As a result of these minimization measures and due to the lack of fish-bearing streams within the Project Lease Boundary, no impacts are anticipated to fish, including ESA-listed fish and their critical habitat located outside of the Project Lease Boundary in the Yakima River and Columbia River.

3.4.2.3 Wildlife

Construction and operation of the Project would result in both permanent and temporary impacts to wildlife, as well as modifications to habitat within the solar array fencelines. Potential impacts on wildlife during construction include loss or modification of habitat (see Table 3.4-14), injury to or loss (fatalities) of individuals due to collision with or crushing from construction equipment and vehicles, and general disturbance (noise and visual) from construction activity. General disturbance can interrupt normal wildlife behavior, which can have varying effects depending on the species and an individual’s ability to tolerate such disturbance. In general, noise and visual disturbance may cause wildlife to avoid typical foraging and breeding areas, or distract them from those activities within those areas, which can result in reduced fitness. The Applicant has proposed several measures to avoid, minimize, and mitigate these effects as described in Section 3.4.3.

The vast majority of habitat proposed to be permanently impacted within the Micrositing Corridor is agricultural land, followed by planted grassland, rabbitbrush shrubland, unclassified grassland, non-native grassland, unclassified shrubland, dwarf shrub-steppe, sagebrush shrub-steppe, and developed/disturbed (Table 3.4-14). In addition to habitat-related impacts (i.e., habitat loss and modification), potential adverse impacts to wildlife during operation may include Turbine collision, potential nesting and breeding disturbance, electrocution, powerline collision, structure collision, and vehicular collision, disturbance related to artificial lighting, and the introduction or spread of noxious weeds and other non-native invasive species. Routine maintenance activities during operation would typically involve the temporary presence of vehicles on roads, including heavy equipment, and human activity in and around the Project infrastructure. These activities are expected to affect wildlife in a manner similar to that described for construction; however, the magnitude, frequency, and duration of operational disturbances will be less than during construction. The primary anticipated impact of operation of the Project is direct fatalities of birds and bats due to collision with Turbine blades.

Where not permanently impacted due to permanent infrastructure (i.e., graveled interior access roads, inverter pads, and tracker system support posts), habitat within the solar array fencelines will remain available to wildlife such as small mammals, birds, and reptiles, in a modified condition. Limited research is available regarding the effects of photovoltaic (PV) array development (including the effects of fencing and shading) on residual wildlife habitat value; however, preliminary studies indicate residual habitat value remains for various species of birds, and the value may differ based on restoration and vegetation management practices. For example, DeVault et al. (2014) studied avian abundance at PV arrays fields and paired airport grassland areas using transect surveys. The results indicated that airport grasslands generally had greater species diversity and PV arrays generally had more total birds observed; however, overall bird mass was comparable at airport grasslands and PV arrays, suggesting more smaller birds tended to use the PV arrays than the airport grasslands. Similarly, Visser et al. (2018) measured bird abundance and diversity at a PV array facility in South Africa using point counts within and outside the facility. The primary conclusion of the study was that bird diversity and density were higher outside of the facility, but the facility was not absent of birds. Visser et al. (2018) found that the bird community inside the facility comprised birds that were generalist species or those that use grassland habitat. Thus, the species composition appeared to be associated with a change from a shrub/woodland habitat to a grassland habitat within the facility. This limited research demonstrates that while bird species use may change at PV arrays, use of the area is not eliminated; instead, the modified habitat supports a modified avifaunal community.

As described in Section 3.4.1, vegetation within the majority of the Project Lease Boundary has been heavily modified due to historic and current agriculture and grazing activity and non-native invasive grasses and forbs are prevalent throughout the Project Lease Boundary. The vast majority of habitat proposed to be modified within the solar array fencelines is agricultural land, followed by rabbitbrush shrubland, unclassified grassland, planted grassland, unclassified shrubland, developed/disturbed, and non-native grassland (Table 3.4-14); habitat within the northern and western Solar Siting Areas is almost entirely agricultural and disturbed land while just over half of the habitat within the eastern Solar Siting Area is agricultural and disturbed land with the remaining habitat consisting of grassland and shrubland habitat (Figure 3.4-1). Neither sagebrush shrub-steppe nor dwarf shrub-steppe (i.e., the higher quality habitat subtypes documented at the Project as described in Section 3.4.1.1) have been mapped within the solar array fencelines, although field surveys would be conducted prior to construction to verify the results of desktop habitat mapping within the Solar Siting Areas. Therefore, with revegetation, the majority of areas of proposed modified habitat under the solar array may provide higher quality habitat following revegetation compared to the current condition (e.g., areas that are actively plowed and/or dominated by invasive species may provide higher quality habitat to wildlife once revegetated with low-growing vegetation).

The Applicant used the results of surveys conducted to date (described in Section 3.4.1.3) to develop this wildlife impact analysis, along with publicly available information on post-construction mortality monitoring from other wind energy projects and relevant literature as cited below. Impacts are not anticipated from hazardous or toxic materials spills; as described in Section 2.10, fuels would be the only hazardous material that may be stored in substantial quantities on site during construction and hazardous materials would be used in a manner that is protective of the environment and would comply with all applicable local, state, and federal environmental laws and regulations.

Special Status Wildlife

Mammals

Four special status mammal species have the potential to occur within the Project Lease Boundary: black-tailed jackrabbit, white-tailed jackrabbit, Townsend's big eared bat, and Townsend's ground squirrel.

Black-tailed and white-tailed jackrabbit. Although suitable habitat is present for both jackrabbit species, there are no documented occurrences of these species within the Project Lease Boundary, either during Project surveys or as reported by WDFW (2020a), and they are known to be rare within the Project Lease Boundary (Chatfield and Brown 2018a,b). Approximately 1,554 acres of suitable habitat (i.e., shrubland and grassland) would be disturbed or modified during Project construction (Table 3.4-14) and therefore potential Project impacts to these species include habitat loss and modification as well as disturbance if individuals are present during construction and/or operation. However, based on the lack of documented use of the Project by jackrabbits, impacts to these species are unlikely to occur.

Townsend's big-eared bat. Suitable roosting habitat for Townsend's big-eared bat (i.e., caves, lava tubes, mines, old buildings, and bridges) is absent from the Project Lease Boundary and this species has not been documented in the southern Columbia Basin, including where the Project is located (WDFW 2020f). Although there is some potential for this species to occur as a rare visitor, it was not observed during surveys for the Project (Hays et al. 2018a, 2018b, 2019 in Appendix K). Due to this lack of suitable roosting habitat and low likelihood of occurrence, impacts to this species are unlikely. Impacts to bats in general are discussed further below under *General Wildlife – Bats*.

Townsend's ground squirrel. Townsend's ground squirrels have been documented to occur within the Project Lease Boundary (WDFW 2020a) and suitable habitat would be impacted during construction, including 1,554 acres of shrubland and grassland (Table 3.4-14). One of the documented Townsend's ground squirrel colony locations would be directly impacted by Project disturbance because it overlaps with the temporary disturbance associated with an intersection improvement within agricultural land. For this colony as well as the documented Townsend's ground squirrel colony locations that would not be directly impacted by Project disturbance, the temporary and permanent loss and modification of occupied and unoccupied habitat could result in decreased cover, food availability, and dispersal opportunities. Additionally, the fenced solar array may disrupt dispersal. However, Townsend's ground squirrels are likely to be able to pass through or burrow under the perimeter fencing and utilize the low-growing vegetation that will be planted under the solar arrays. Project dirt and gravel roads are not anticipated to result in barriers to dispersal, as ground squirrels cross dirt and gravel roads, thus limiting Project-related habitat fragmentation. However, if individuals are present, vehicles and equipment used during construction activities, as well as O&M vehicles, could cause direct mortality of Townsend's ground squirrels by collision on roadways. This species may experience slightly increased raptor predation pressure as a result of increased perching and nesting structures provided by the Project transmission line; however, this effect does not appear to be large enough to cause long-term effects resulting in abandonment of ground squirrel colonies as thriving colonies have been found adjacent to existing transmission lines (Tetra Tech 2011, 2014). Although Townsend's ground squirrels may be impacted directly and/or indirectly by Project construction and operation, the mitigation measures described in Section 3.4.3 (e.g., revegetation and compensatory mitigation) would avoid, minimize, and otherwise mitigate impacts on Townsend's ground squirrel.

Reptiles

Two special status reptile species have the potential to occur within the Project Lease Boundary: sagebrush lizard and striped whipsnake.

Sagebrush lizard. Although there are no documented occurrences of sagebrush lizard within the Project Lease Boundary (WDFW 2020a), the Project Lease Boundary is within the range of the species and contains some suitable habitat. Approximately 28 acres of sagebrush shrub-steppe and dwarf shrub-steppe would be impacted (temporarily or permanently) during construction, a portion of which contains a sand component and/or bare ground sufficient to support this species (Table 3.4-14). Potential adverse impacts to this species include loss of habitat and disturbance during construction if individuals are present. Based on the lack of documented use of the Project by this species, impacts to sagebrush lizard are unlikely.

Striped whipsnake. Although suitable habitat (i.e., shrub-steppe; WDFW 2020i) for the striped whipsnake is present within the Project Lease Boundary, and the species' potential range overlaps with the Project Lease Boundary, only two populations of this species are verified still existing, neither of which are located in the vicinity of the Project Lease Boundary (WDFW 2020i). Additionally, the habitat of the still existing populations includes basalt outcrops and relatively undisturbed shrubland with grasses and a low cover of invasive cheatgrass. This type of habitat is absent from the Project Lease Boundary. Based on the lack of documented use of the Project by this species, impacts are not anticipated.

Birds

Fourteen special status bird species have the potential to occur within the Project Lease Boundary: American white pelican, bald eagle, burrowing owl, ferruginous hawk, golden eagle, great blue heron, loggerhead shrike, prairie falcon, ring-necked pheasant, sagebrush sparrow, sage thrasher, sandhill crane, tundra swan, and Vaux's swift. Potential collision risk to these special status bird species from Project Turbines is discussed here; a discussion of collision risk with PV arrays is presented under *General Wildlife* (see *Collision Risk – All Birds*).

American white pelican. No American white pelican foraging or breeding habitat is located within the Project Lease Boundary, which reduces the likelihood that American white pelicans will land within the Project Lease Boundary, thus reducing their exposure to collisions with Turbines. However, because of the relatively large resident population within 4 miles of the Project, individuals may occur within the Project Lease Boundary during all seasons except possibly in winter. American white pelicans may migrate over the Horse Heaven Hills or occur in the Project Lease Boundary when traversing between foraging areas along the Columbia River. The relatively high abundance of American white pelicans observed in closer proximity to the Columbia River suggests the far eastern corner of the Four Mile Survey Area (now excluded from the Project Lease Boundary; see Figure 3.4-3) serves as a flyway, or short cut between foraging areas along the Columbia River and the breeding colony on Badger Island.

Based on the exposure index derived from mean use and flight behavior, American white pelicans are approximately the fifth most likely large bird to collide with Turbines at the Project, depending on the Turbine technology employed (i.e. exposure indices ranged from 0.29 for Option 1 technologies to 0.30 for Option 2 technologies; Table 3.4-10). However, the exclusion of areas of the highest observed use from the current Project Lease Boundary reduces the collision exposure of American white pelicans with Turbines at the Project. No fatalities of American white pelicans have been documented at the adjacent Nine Canyon Wind Project. Spatial and temporal patterns suggest exposure of collision with Turbines would be relatively higher at Turbines constructed in the far eastern half of the Project Lease Boundary and exposure would increase during the summer months. Therefore, although areas of high pelican use have been excluded from the Project Lease Boundary, occasional use of the Project Lease Boundary by pelicans may occur during Project operation and there remains some potential of impacts to this species as a result of collision with Turbines.

Ferruginous hawk. Avian use surveys indicated a very low mean use of the Project by ferruginous hawks (Jansen and Brown 2018; Jansen et al. 2019; Chatfield et al. 2019b; Chatfield et al. 2019a); however, breeding activity was observed within 2 miles of the Project Lease Boundary. Ferruginous hawks were observed nesting in 2017, 2018, and 2019 within a deciduous tree 100 feet (30 meters) from Coyote Canyon Road (Jansen et al. 2019). This ferruginous hawk nest is located approximately 0.5 mile from Project disturbance (the temporary impact area associated with a Turbine pad) at its closest location.

Of the five ferruginous hawk fatalities recorded in the Pacific Region, four have been documented at three different wind facilities in Washington. Exposure to Turbine collision risk is present primarily during the breeding season and migration, when the species occurs in the region. Use of the Project Lease Boundary by ferruginous hawks will likely continue following construction. Exposure to Turbine collision risk likely increases at Turbines in proximity to occupied territories, particularly if the nest is active during the nesting period (Kolar 2013). Based on the exposure index derived from mean use and flight behavior, ferruginous hawks are approximately the twenty-fourth most likely large bird to collide with Turbines at the Project (i.e. exposure index of less than 0.01 for all technologies; Table 3.4-10). Due to past nesting activity in the Horse Heaven Hills area and the overall relatively low territory occupancy in the region, impacts to ferruginous hawk can result in abandonment of the nest territories located closer to Project facilities, particularly because of the tendency of the species to avoid human development and activity (Richardson 1996). Project operations may further reduce territory occupancy and nest success of ferruginous hawk within the Horse Heaven Hills. To avoid and minimize potential impacts to ferruginous hawk from human activity, the Applicant will implement spatial and seasonal restrictions on ground disturbing activities near active nests per WDFW recommendations (Section 3.4.3). The Project would also result in the loss and modification of foraging habitat for ferruginous hawk, including shrubland and grassland habitat, but also agricultural habitat which can serve as important foraging areas when prey densities are low in big sagebrush /grassland habitat (Leary et al. 1998; Dechant et al. 1999); habitat impacts to ferruginous hawk are further discussed under the *General Wildlife* (see *Birds - Habitat Loss and Modification*) and *Fish and Wildlife Habitat Conservation Areas* sections.

Sandhill crane. Sandhill cranes do not appear to be particularly susceptible to collision with Turbines. The three fatalities documented in the United States were one individual at an older-generation facility at Altamont Pass in California (Smallwood and Karas 2008), and two fatalities in west Texas (Gerber et al. 2014; Navarrete and Griffis-Kyle 2014). Studies at wind facilities in other parts of the United States have shown that sandhill cranes are likely to avoid Turbines despite relatively high numbers of sandhill cranes observed within and surrounding the wind facilities (Nagy et al. 2012; Pearse et al. 2016). No sandhill crane fatalities have been documented at the adjacent Nine Canyon Wind Project since operations began in 2002.

Although croplands are the primary land cover type in the Project Lease Boundary, characteristic stopover habitat (croplands interspersed with wetlands) are absent from the Project Lease Boundary which reduces the likelihood that sandhill cranes will land in the Project, thus reducing their exposure to collision with Turbines. Occurrences of sandhill cranes within or flying over the Project Lease Boundary are migratory individuals, likely crossing over the Horse Heaven Hills to preferred staging areas north of the Tri-Cities areas and near Othello, Washington (Stinson 2017; eBird 2020). Because of the absence of suitable stopover habitat within the Project Lease Boundary, flight behavior at heights typically above the RSH, the lack of fatalities at the Nine Canyon Wind Project, and the available data regarding this species' avoidance of Turbines, impacts to sandhill cranes resulting from Project operation are anticipated to be minimal.

Bald eagle. No bald eagle nests were located within the Project Lease Boundary. Six occupied territories comprising seven nests were located along the Yakima and Columbia Rivers in 2019; the nearest nest was approximately 2.8 miles from the Project Lease Boundary. The Project Lease Boundary lacks aquatic foraging habitat and trees suitable for bald eagle nesting. The absence of bald eagle observations in the Project Lease Boundary during summer can reflect the tendency for adults to have smaller home ranges and higher site fidelity as a function of eagle nest-tending behaviors (Stalmaster 1987). As a result, exposure appears proportionately lower during the summer nesting period compared to other periods of the year when eagles can potentially migrate through the Project Lease Boundary or fly inland for winter-killed prey. In winter, fish can become unavailable due to ice or dropping to lower water depths out of a bald eagle's reach, which can pressure bald eagles to utilize other prey items (Watson et al. 1991).

A single bald eagle fatality has been documented in the Pacific Region, at a Washington wind facility (per Pagel et al. 2013 and WEST 2019), although eagle fatalities may be under reported in public databases due to the sensitive nature of an eagle fatality. No bald eagle fatalities have been reported at the Nine Canyon Wind Project since the beginning of operations in 2002 (Energy Northwest 2020). Based on the exposure index derived from mean use and flight behavior, bald eagles are approximately the seventeenth most likely large bird to collide with Turbines at the Project (i.e., exposure index of 0.01 for all technologies; Table 3.4-10). Bald eagles will likely continue to occur within the Project Lease Boundary during Project operations and there would be continued exposure to collision risk.

Burrowing owl. Burrowing owls were not documented during surveys at the Project, although targeted surveys for this ground-nesting species have not been conducted because surveys are not required on private land and were not recommended by WDFW during agency coordination for the Project (Jansen 2017a; Jansen and Fossum 2020). None of the previously mapped burrowing owl burrows (from 2005) would be removed by the Project as they are not located in the disturbance footprint. However, shrub-steppe habitat would be impacted; impacts to nesting and foraging habitat are described under the *Fish and Wildlife Habitat Conservation Areas* section. Non-habitat-related potential impacts to this species include disturbance during the breeding season, and vehicle and Turbine collision, if individuals were present. However, the Applicant will adhere to WDFW-recommended timing restrictions to avoid disturbing nesting burrowing owls as applicable (see Section 3.4.3). If impacts to potentially suitable habitat cannot be avoided during final design, the Applicant will consult with WDFW regarding the need for burrowing owl surveys prior to construction, including surveys to determine habitat suitability for burrowing owls, and surveys for breeding owls if suitable habitat is present. Additionally, risk of collision with vehicles will be minimized by the implementation of speed limits on Project roads (see Section 3.4.3). This species is not generally susceptible to collision with Turbines; burrowing owls have been documented in only six fatality incidents at wind projects nationwide (i.e., 0.1 percent of fatality incidents based on 193 studies reported in AWWI 2019). As a result, impacts to burrowing owls from collisions with Turbine blades are anticipated to be minimal.

Golden eagle. Although suitable golden eagle nest habitat is located along large cliffs adjacent to the Columbia River 4−6 miles southeast of the Project, no golden eagle nests were observed within 10 miles of the Project during 2018-2019 aerial surveys that surveyed the cliff areas. Using a 9-year study of 17 golden eagles within the Columbia Plateau, Watson et al. (2014) cautioned wind development within 8 miles of an active golden eagle nest. However, the USFWS currently recommends golden eagle surveys within 2 miles of a Project footprint based on their analysis of the home range of 101 breeding golden eagles (USFWS 2020f). Of the 10 golden eagle fatalities reported in the Pacific Region, 2 were reported in Washington. Because of the sensitive nature of any eagle fatality, golden eagle fatalities may be underrepresented in publicly available literature and databases (e.g., Pagel et al. 2013; WEST 2019). No golden eagle fatalities have been reported at the Nine Canyon Wind Project since the beginning of operations in 2002 (Energy Northwest 2020). Based on the exposure index derived from mean use and flight behavior, golden eagles are approximately the twenty-second most likely large bird to collide with Turbines at the Project (i.e. exposure index of 0.01 for all technologies; Table 3.4-10). However, because of the relatively consistent use of the Project Lease Boundary during migration that was documented over several years, golden eagles will likely continue to occur within the Project Lease Boundary during Project operations and there would be continued exposure and some associated collision risk.

Great blue heron. Of the four great blue heron fatalities reported in the Pacific Region, three fatalities were found at wind facilities in Washington, of which one fatality was discovered at the Nine Canyon Wind Project during standardized post-construction monitoring surveys in 2003 (Erickson et al. 2003; WEST 2019). The fatality at Nine Canyon was found in February, which is consistent with the season the species was observed during point count surveys. Based on the presence of the species, suitable foraging habitat within the Project Lease Boundary, and documented fatalities at an adjacent wind facility, impacts to individual great blue herons from Project operation may occur.

Loggerhead shrike. Loggerhead shrikes are expected to occur within the Project Lease Boundary during operation based on their documented occurrence incidental to Project surveys. One fatality of a similar species, the northern shrike (*Lanius borealis*), has been reported in the Pacific Region at a wind facility in Washington (WEST 2019). Based on the relatively low number of observations during surveys, the likelihood of collision appears low and impacts to this species from the Project are expected to be minimal.

Prairie falcon. Of the three prairie falcon fatalities reported in the Pacific Region, two were from Washington (WEST 2019). Use of the Project by prairie falcons will likely continue during Project operation. Exposure to Turbine collision may increase during fall and winter when individuals occur more often within the Project Lease Boundary. Use of the Project Lease Boundary during spring and summer was relatively lower, which reduces the likelihood of collision and resulting potential nest failure during the breeding season. Based on the exposure index derived from mean use and flight behavior, prairie falcons are approximately the twenty-first most likely large bird to collide with Turbines at the Project, depending on the Turbine technology employed (i.e., exposure indices ranged from 0.003 for Option 2, GE 5.5 MW to 0.01 for all other technologies; Table 3.4-10). Despite suitable foraging habitat and use within the Project Lease Boundary, impacts to prairie falcons are anticipated to be minimal because of the relatively low number of fatalities reported at wind facilities in the region.

Ring-necked pheasant. Ring-neck pheasants are the seventh most common fatality reported at wind facilities in Washington (WEST 2019). Forty-six fatalities have been reported at seven wind facilities in Washington which represents approximately 52 percent of the ring-necked pheasant fatalities in the Pacific Region (WEST 2019). Although a relatively common fatality at wind facilities, the cause of mortality has not always been clearly associated with Turbine operation. Of the 36 bird fatalities recorded during standardized post-construction monitoring surveys at the Nine Canyon Wind Project, five (14 percent) were ring-necked pheasants (Erickson et al. 2003). All fatalities consisted of feather spots, which indicates carcasses were scavenged prior to discovery by surveyors, and two of the five fatalities were at roost spots which suggests predation could have been the cause of mortality (Erickson et al. 2003). Subsequent to the study by Erickson et al. (2003), one additional pheasant fatality was recorded in 2010 during operational monitoring at the Nine Canyon Wind Project (Energy Northwest 2020). The whole carcass was discovered at the base of the Turbine tower, presumably after hitting the tower.

Based on the presence of ring-necked pheasant, suitable habitat within the Project Lease Boundary, and documented fatalities at an adjacent wind facility, impacts to individuals from Project operations are likely to occur. Fatalities of upland game birds have been recorded throughout the United States and Europe, and because upland game bird species rarely fly within the RSH, fatalities are most often attributable to collisions with towers, vehicles, or non-project related sources such as predation (WEST 2019; Choi et al. 2020). Other impacts include habitat removal or modification from Project construction.

Sagebrush sparrow and sage thrasher. Of the two sagebrush sparrow and one sage thrasher fatalities recorded at wind facilities in the Pacific Region, one of each species has occurred in Washington. Based on the presence of the species and small patches of suitable nesting and foraging habitat within the Project Lease Boundary, the species are likely to occur during Project operations. However, due to the high fragmentation of sagebrush patches within the Project Lease Boundary, individuals observed during surveys were more likely migrating through the Project than breeding; thus, displacement of breeding individuals will be lower at the Project compared to other areas of higher-quality shrub-steppe. Based on the relatively low number of reported fatalities at facilities in Washington and the limited documented use of the Project Lease Boundary during surveys, impacts to sagebrush sparrow and sage thrasher from the Project are anticipated to be minimal.

Tundra swan. No tundra swan fatalities have been reported at wind facilities in the Pacific Region and waterfowl appear relatively less susceptible to Turbine collisions. Of the 1,351 fatalities comprising 122 species reported at wind facilities in Washington, 6 Canada geese (<1 percent) were reported from the waterfowl group, despite known use by relatively large groups of waterfowl in the region, particularly during migration; consequently, waterfowl fatalities do not appear to increase with higher use. Croplands in the Project Lease Boundary provide foraging habitat for waterfowl and landing in fields may increase exposure to collisions with Turbines; however, the lack of wetlands and limited amount of waters in the Project Lease Boundary, and the general lack of documented fatalities within the areas of the Pacific Region and state with comparatively robust waterfowl populations suggests impacts to tundra swans would be minimal.

Vaux's swift. Vaux's swift was not documented during surveys for the Project but may occur within the Project Lease Boundary during migration; nesting and roosting habitat is not present within the Project Lease Boundary. Vaux's swift have been documented in only five fatality incidents at wind projects nationwide (i.e., 0.1 percent of fatality incidents based on 193 studies reported in AWWI 2019). Based on the lack of observations of this species during surveys, the lack of suitable habitat, and the low fatality rates at wind farms nationwide, impacts to Vaux's swift from the Project are expected to be minimal.

General Wildlife

Bats

Eight species of bats were recorded during acoustic bat surveys conducted for the Project. The majority of bat passes recorded in the Project were produced by three low-frequency bat species: silver-haired bat, hoary bat, and big brown bat. Overall, silver-haired bat and hoary bat were documented on 22 percent and 11 percent of detector-nights, respectively. No federally or state-listed bat species were detected during the studies. Impacts to bats from the construction and operation of the Project could include both direct and indirect impacts. Direct impacts to bats as a result of collisions with operational Turbine blades is the main source of mortality at wind projects (Grodsky et al. 2011; Rollins et al. 2012), but the underlying reasons for why bats fly near Turbines are still largely unknown (Hein and Schirmacher 2016).

Collision fatalities at wind energy facilities are considered by many to be one of the greatest threats to bat populations in North America (O'Shea et al. 2016). The primary cause of bat fatalities at wind facilities are collisions with moving Turbine blades (Grodsky et al. 2011; Rollins et al. 2012) and 24 of 47 bat species in the continental United States and Canada have been found as fatalities at wind energy facilities (e.g., Arnett and Baerwald 2013; AWWI 2018a). It is unknown why bats regularly fly in close proximity to operating Turbines (Cryan and Barclay 2009) although many of the hypotheses consider that at least some bat species may be attracted to Turbines (Barclay et al. 2017).

As of 2016, post-construction monitoring studies at wind energy facilities show that migratory tree-roosting bat species (e.g., eastern red bat [*Lasiurus borealis]*, hoary bat, and silver-haired bat) compose approximately 72 percent of reported bat fatalities; the majority of fatalities occur during the fall migration season (August and September); and most fatalities occur on nights with relatively low wind speeds (e.g., <6.0 meters/second; AWWI 2018b). According to the American Wind Wildlife Institute (AWWI) (2018a), eight bat species constituted over 95 percent of the bat fatalities in the United States between 2006 and 2016.[16] Based on publicly available data from 64 studies across 52 wind energy facilities in Washington reporting five species of bats as fatalities, two species of migratory tree bats detected at the Project composed the majority of the 639 bat Turbine fatalities reported in Washington: hoary bat (52 percent) and silver-haired bat (44 percent; WEST 2019).

The AWWI (2018a) has compiled publicly available data from wind energy facilities in the United States and the median adjusted fatality estimate was 2.6 bats per MW per year (ranged <1−50 bats/MW/year; AWWI 2018a). In Washington, fatality estimates from 13 facilities had a median adjusted fatality rate of 1.4 bats/MW/year (range 0.4−2.5 bat/MW/year; WEST 2019). The bat fatality rate of 2.47 bats/MW/year at the Nine Canyon Wind Project approximated the national median estimate, and consisted entirely of hoary bats and silver-haired bats during the spring and fall (Erickson et al. 2003; WEST 2019).

Post-construction bat mortality data from utility-scale PV solar energy sites are limited; however, three publicly available studies from California sites have reported small numbers of bat carcasses found both during fatality searches as well as incidentally (WEST 2017). Data from non-PV solar projects with higher bat fatality rates reported (e.g., a power-trough facility in California) suggest that the timing of potential bat fatalities at solar facilities is primarily in late summer and fall. While the cause of mortality in these studies is generally inconclusive based on the condition of the carcasses when found, some of these may be due to collision with project infrastructure. Insects may be attracted to lighting around structures, which may in turn attract bats to forage near project infrastructure. Thus, artificial lighting at night may increase the risk of collision fatalities. To reduce the potential adverse effects of night lighting on bats and other wildlife, the Applicant would install down-shield lighting where feasible (Section 3.4.3). Based on these limited data, bat mortality may occur at the PV array; however, the cause of such mortalities at solar facilities is not well understood at this time and does not appear to affect bats at a scale that would raise concern for local or migratory populations.

[16] AWWI (2018a) reported 12,661 total bat fatalities including hoary bat (31.85 percent), eastern red bat (24.03 percent), silver-haired bat (16.14 percent), Mexican free-tailed bat (*Tadarida brasiliensis;* 9.98 percent), little brown bat (*Myotis lucifugus;*5.11 percent), big brown bat (5.02 percent), tri-colored bat (*Perimyotis subflavus*; 1.71 percent), and evening bat (*Nycticeius humeralis*; 1.67 percent; AWWI 2018a).

These summaries of the species composition of bat fatalities that occur in the United States and Washington provide insight into species that can be expected as fatalities at wind facilities in this region. The range and timing of bat fatalities observed in Washington can be expected to encompass the impacts anticipated at the Project, although there is uncertainty in this prediction because the comparatively wide regional differences in habitat among wind projects in Washington and the limited duration and extent of post-construction monitoring at the Nine Canyon Wind Project. For example, bias trials to account for observer detection bias and carcass persistence were not conducted for bats at the Nine Canyon Wind Project (Erickson et al. 2003).

It is anticipated that direct impacts to bats would be consistent with the species composition and timing observed at other facilities in United States and Washington. It is likely that bat mortality at the Project would be: a) within the range of other facilities in Washington; b) consist primarily of migratory, tree-roosting species (e.g., silver-haired bat, hoary bat); and c) occur mainly in the fall. Post-construction fatality monitoring will be conducted at the Project using contemporary survey protocols and statistical methods to determine the level impact to bats from Project operations (see Appendix M).

Understanding how wind energy development could affect bats through indirect effects such as disturbance or displacement is relatively limited by the lack of knowledge on this topic (Kunz et al. 2007). Any bats roosting in the Project may be temporarily disturbed by human activities, although because of the absence of large forested areas, rock outcrops and cliffs providing roost habitat, it is not anticipated that operation of the Project would permanently disturb or displace roosting bats. Habitat disturbance and modification from the construction of the wind and solar facilities would eliminate or degrade bat foraging habitat; however, the impacts to foraging habitat on a landscape scale would likely have relatively limited impacts because of the availability of bat foraging habitat throughout the Horse Heaven Hills region.

Birds

Collision Risk

All Birds

Based on publicly available data from 482 studies across 221 wind energy facilities in the United States, 336 species of birds have been reported as fatalities (data compiled by WEST; WEST 2019). Of the studies between 2015 and 2018, fatality estimates at these facilities ranged from 0–9 birds/MW/year. The historic maximum was 12.1 birds/MW/year in California in 2014 (WEST 2019). AWWI has compiled publicly available data from 193 studies across 130 wind energy facilities in the United States that reported 281 species of birds as fatalities during surveys and an additional 13 species as incidental observations (AWWI 2019). Of the studies between 2002 and 2017, fatality estimates at the facilities ranged from approximately 0–12 birds/MW/year, with a median value of 1.8 birds/MW/year (AWWI 2019).

Among facilities in the USFWS Pacific Region of the United States, fatality estimates ranged from less than 0.4 to 8.4 birds/MW/year (median of 2.4 birds/MW/year) based on the 22 wind facilities (30 technical reports) from this region (WEST 2019). Of the more than 500 avian species occurring in the Pacific Region, 114 have been recorded as fatalities, with the more numerous fatalities from horned lark, gray partridge (*Perdix perdix*), golden-crowned kinglet

(*Regulus satrapa*), ring-necked pheasant, and chukar (*Alectoris chuckar*; WEST 2019). In Washington, of the 10 wind facilities with publicly available data, 107 bird species have been recorded during post-construction monitoring studies, which is 62 percent more species found as fatalities compared to the total species observed at the Project (WEST 2019). Overall bird fatality estimates at facilities in Washington were comparable to the Pacific Region and ranged from 1.3−8.4 birds/MW/year (median of 2.6 birds/MW/year; WEST 2019).

Regional estimates of bird fatalities at larger geographic scales provide context of what can potentially be expected at the Project and are consistent with what has been observed at the Nine Canyon Wind Project, which is adjacent to the Project and the only operational wind facility in Benton County. During one year of standardized post-construction monitoring surveys, conducted 2002−2003, 14 species totaling 35 fatalities were recorded (Erickson et al. 2003). Of the 35 fatalities, the top three bird species were horned lark (47 percent), ring-necked pheasant (14 percent), and western meadowlark (6 percent), which is consistent with species found as fatalities at other facilities in the Pacific Region and Washington. The overall bird fatality estimate was 2.76 birds/MW/year which is within the lower end of the range observed within the Pacific Region (range of less than 0.4 to 8.4 birds/MW/year) and Washington (range of 1.3−8.4 birds/MW/year) but above the median in the Pacific Region (median of 2.4 birds/MW/year) and Washington (median of 2.6 birds/MW/year) (Erickson et al. 2003). From 2005 to 2020, the Nine Canyon Wind Project has been reporting bird fatalities found during regular project O&M activities (Energy Northwest 2020). During this 16-year period, 14 species comprising 22 fatalities were reported. The most common species attributed to Turbine strikes included gray partridge, ring-necked pheasant, common raven, and red-tailed hawk (*Buteo jamaicensis*). Other bird fatalities included barn swallows (*Hirundo rustica*), chukar, and great horned owl, which were attributed to vehicle/window strikes, electrocution, or entrapment inside O&M buildings (Energy Northwest 2020). The range and species composition of bird fatalities anticipated at the Project is expected to be consistent with those found at multiple geographic scales, including with the adjacent operational facility, Nine Canyon Wind Project. The various sources of bird mortality at the Nine Canyon Wind Project (e.g., Turbine collisions, vehicle/window strikes, etc.) underscore the need for diverse avoidance and minimization measures as discussed in Section 3.4.3 and the Project Bird and Bat Conservation Strategy (Appendix M).

In one of the most comprehensive contemporary analyses of impacts to birds from PV solar development, Kosciuch et al. (2020) reviewed bird species composition and fatality patterns at 10 PV solar facilities across a 13 site-year period in the southwest United States. Across all studies and years, ground-dwelling bird species (songbirds and pigeon/doves) composed the majority of the 86 identifiable species, totaling 669 fatalities. The highest concentration of fatalities were found during fall. The cause of mortality could not be determined for 61 percent of carcasses and over half (54 percent) were feather spots rather than carcasses or portions of carcasses, which introduced uncertainty in the fatality estimates. Water-obligate birds occurred during 9 of the 10 site years in the Sonoran and Mojave Desert BCR. Of the 10 facilities with post-construction fatality data, one solar project in Nevada was located in BCR 9 (Great Basin), which is the same BCR the Project is located in. Although only one year of post-construction monitoring was conducted in BCR 9, of the 12 fatalities recorded, 86 percent consisted of horned lark and western meadow lark, which reflects the patterns of species composition observed at the nine other sites. Fatalities of water-obligate birds were not observed at the one PV solar project in BCR 9, and the absence was attributed to the project being located away from a relatively major concentrations of water-obligate birds, which were observed at other projects in closer proximity to the Salton Sea. However, the causal mechanisms of why water-obligate bird fatalities occur at solar facilities were not explicitly studied at any of the sites reviewed by Kosciuch et al. (2020) and remain an open topic of research. Although the direct impacts of PV solar facilities to birds in the Pacific Region and Washington are understudied, patterns observed at other solar facilities suggest the majority of fatalities will (1) consist of the most abundant ground dwelling birds, (2) reflect a comparatively strong seasonal pattern, (3) not consist of relatively large-scale fatality events of nocturnal migrants, and (4) have uncertain species identification and cause of mortality because the only evidence may consists of feather spots. Based on these patterns, exposure to collision with Turbines increases during fall and winter for horned lark, western meadow lark, and mourning dove, when these species are most abundant.

Raptors

Of the fatality studies between 2011 and 2018 of wind energy facilities in the United States compiled by WEST (2019), raptor fatality estimates at these facilities ranged from 0–0.7 raptors/MW/year. The historic maximum was 0.7 raptors/MW/year in Puerto Rico in 2014 (WEST 2020). The AWWI has also compiled publicly available data from the United States between 2002 and 2017 and raptor fatality estimates ranged from approximately 0–1.0 birds/MW/year, with a median value of <0.01 birds/MW/year (AWWI 2019).

The Pacific Region of the United States has raptor fatality estimates ranging from 0–0.3 raptors/MW/year (median of 0.1 raptors/MW/year) based on the 30 facilities from this region (WEST 2019). The top five raptor fatalities were American kestrel (*Falco sparverius*), red-tailed hawk, Swainson's hawk, rough-legged hawk (*Buteo lagopus*), and golden eagle (WEST 2019). In Washington, of the 10 wind facilities with publicly available data, 19 raptor species (includes owls and vultures) have been recorded during post-construction monitoring studies; however, one species, barred owl (*Strix varia*), is unlikely to occur at the Project. Overall raptor fatality estimates at facilities in Washington were identical to the Pacific Region. Of the 144 raptor fatalities documented at 10 facilities in Washington, species composition of the top five raptor species are similar to the Pacific Region and include red-tailed hawk (33 percent), American kestrel (31 percent), short-eared owl (*Asio flammeus*; 6 percent), great horned owl (5 percent), and rough-legged hawk (3 percent; WEST 2019). This species composition is consistent with what was observed at the Nine Canyon Wind Project where a fatality of an American kestrel and a short-eared owl were recorded during standardized post-construction monitoring surveys (Erickson et al. 2003) and a great-horned owl and three red-tailed hawks were reported during 16 years of O&M monitoring (Energy Northwest 2020).

Raptor nest density is one factor that can influence the probability of collision risk (Watson et al. 2014). Within the Columbia Plateau Ecoregion, Kolar (2013) observed a density-dependent relationship between red-tailed hawk and Swainson's hawk nest density with Turbine collisions. The complex interaction between other factors such as raptor species characteristics, physical site attributes and wind facility specifications also affect collision risk (Marques et al. 2014). Although nest density is likely not the only predictor of collision risk, the increase in flight activity of adults and fledglings around nests presents a clear risk to individuals when nests are in relatively close proximity to Turbines (Bose et al. 2020; Kolar and Bechard 2016). Raptor nest density at the Project is relatively low when compared with previous raptor nest studies at wind facilities in the Columbia Plateau Ecoregion (see Appendix M).

These summaries of raptor species composition and fatalities that occurred in Washington and at the Nine Canyon Wind Project provide insight into species that could be affected by the Project. The species composition observed during pre-construction surveys at the Project indicate raptor fatality rates are expected to be within the range of raptor fatalities observed at other Projects in Washington.

Passerines
The majority of avian fatalities at wind energy projects in North America are passerines (e.g., songbirds), which accounted for approximately 62.5 percent of the fatalities in 116 studies (Erickson et al. 2014). In an analysis of 121 technical reports at 84 wind facilities in the United States, the small bird fatality rate ranged from 0−8.6 birds/MW/year (median of 1.9 birds/MW/year; WEST 2019). Passerine fatalities within the Pacific Region ranged from 0.2−7.6 birds/MW/year (median of 2.1 birds/MW/year) and within Washington ranged from 1.1−7.6 birds/MW/year (median of 2.1 birds/MW/year; WEST 2019). Passerine fatalities at the Nine Canyon Wind Project, comprising mostly horned larks (17 fatalities), were slightly above the median fatality rate in Washington at 2.5 birds/MW/year.

At all geographic scales analyzed, horned lark composed nearly half (48−49 percent) of all passerine fatalities in the Pacific Region, Columbia Plateau Ecoregion, Washington, and Nine Canyon (Erickson et al. 2003; Johnson and Erickson 2011; WEST 2019). As discussed in Section 3.4.1.3, horned lark was the most abundant passerine observed during all surveys and seasons at the Project, particularly winter. It is anticipated that horned lark will reflect the patterns observed at other facilities within Washington and be the predominant passerine fatality at the Project. Other passerine species commonly observed at facilities in the Columbia Plateau Ecoregion include resident species such as western meadowlark, European starling, and dark-eyed junco (*Junco hyemalis*) or migrants such as golden-crowned kinglets (Johnson and Erickson 2011).

Avian Power Line Interactions
Potential impacts to birds from power line operation include electrocution and collision and depend on voltage, configurations, and location relative to area habitats and bird presence/use. For this Project, collection lines will be buried where feasible to minimize electrocution and collision risk, although collection lines may be constructed overhead in select locations to span intermittent streams and other features if applicable based on the final design.

The potential risk of bird electrocution and collision with the overhead transmission lines would be based on a number of site-specific factors. These factors would include line design, line orientation and placement, at-risk bird species present, topography, habitats, weather and seasonality, bird morphology, flight characteristics, land uses, and human influences (APLIC 2012). Designs of the electrical transmission/distribution systems for the wind and solar phase of the Project are still pending; however, the Project intends to implement the applicable engineering designs and technical specifications of the APLIC suggested guidelines (APLIC

2012) to avoid and minimize potential impacts to birds, consistent with BPA's practices in this region.

Habitat Loss and Modification

Construction of the Project would result in temporary and permanent impacts to bird nesting and foraging habitat by the removal, disturbance, or modification of vegetation and further fragmentation of the landscape. Shrub-steppe habitat is proposed to be impacted by the Project, as is other shrubland and grassland habitat. As described in Section 3.4.3, the Project layout has been developed in a manner that minimizes impacts to shrub-steppe habitat as feasible, and prioritizes development in previously disturbed areas such as croplands and developed areas (which often have less value to wildlife species). As described in Section 3.4.2.1, approximately 592 acres of shrubland and grassland habitat is proposed to be impacted (41 acres permanently and 551 acres temporarily) within the Micrositing Corridor and approximately 962 acres of shrubland and grassland habitat is proposed to be impacted (52 acres permanently, 19 acres temporarily, and 891 acres modified habitat) within the Solar Siting Areas.

Construction of the Project would result in habitat impacts potentially leading to indirect impacts through displacement of local avian species. Displacement effects are one type of indirect impacts to birds caused by the avoidance of Turbines at wind facilities. Displacement effects are defined as "the displacement of birds from areas within and surrounding wind farms due to visual intrusion and disturbance that can amount effectively to habitat loss" (Drewitt and Langston 2006). Displacement can occur during both the construction and operation of wind projects and may be caused by the presence of the Turbines and/or vehicle/vessel and personnel movements.

The scale and degree of displacement effects varies according to site- and species- specific factors. The scale of disturbance caused by wind projects varies greatly and is likely to depend on multiple factors including seasonal and daily patterns of use by birds, location to important habitats, availability of alternative habitats, and Turbine and wind project specifications (Drewitt and Langston 2006; Lange et al. 2018). Similarly, the degree of the behavioral responses will vary among species and individuals, and can potentially depend on factors such as life cycle stage (e.g., wintering, molting, breeding), flock size, and degree of habituation.

AWWI (2017) concluded that indirect impacts on birds from operating Turbines due to displacement include some species showing consistent decreases in abundance while other species showed no effect. Research has indicated that indirect impacts from displacement of grassland birds by Turbines vary across years, species, sites, and distance from Turbines (Leddy et al. 1999; Johnson et al. 2000; Erickson et al. 2004; Young et al. 2006; Shaffer and Johnson 2009; Hale et al. 2014; Hale 2016; Johnson 2016; Shaffer and Buhl 2016). For example, studies in the Great Plains on the effects of wind energy development on grassland breeding birds found immediate displacement effects (first year) for three species, attraction for two species, and no effect on four species (Shaffer and Buhl 2016). Over time, however, delayed effects (2 to 5 years post-construction) were observed for seven species that showed some displacement up to 300 meters (984 feet) from Turbines, whereas no effects were observed for two species (i.e., killdeer [*Charadrius vociferus*] and vesper sparrow [*Pooecetes gramineus*]; Shaffer and Buhl 2016). Of the seven grassland-breeding birds showing displacement in the Shaffer and Buhl

(2016) study, only western meadowlark was recorded at the Project. Displacement effects for grassland breeding birds at the Project remain difficult to quantify because of the general lack of direct research on this issue in the Pacific Region. Displacement of birds due to solar energy development is less well-studied; as summarized above, the limited available research suggests that the bird species use may changes at PV arrays but not be eliminated (DeVault et al. 2014; Visser et al. 2018).

Raptors nesting closer to Turbines have the potential to be impacted by disturbance due to construction or operation of the Project and thus experience habitat loss in the form of displacement. Birds displaced from wind energy facilities could potentially move to lower quality habitat with fewer disturbances, with an overall effect of reducing breeding success (Marques et al. 2020). Stewart et al. (2007) provided a meta-analysis showing declines of raptor abundance near Turbines and displacement can persist over many years post-construction for some species (Hunt et al. 1995; Marques et al. 2020). However, the effects of displacement can be species-specific and diminish over time as resident birds become habituated to disturbances (Dohm et al. 2019). The degree of the effects of raptor displacement from the wind energy development remains variable and likely due to local conditions such as existing raptor densities, species-specific behavior, and level of existing disturbances, among other factors (Watson et al. 2018). Because raptors nest in proximity to proposed Turbines or other infrastructure, some displacement of raptors or functional loss of foraging habitat is anticipated from Project operation. However, raptor nest densities were lower within the Project Lease Boundary compared to the surrounding area during 3 years of pre-construction surveys, which suggests the presence of less suitable nest substrate than the surrounding area and potentially less displacement relative to nest activity in the surrounding landscape.

Migration Routes

There is some potential for migrating waterfowl, shorebirds, and waterbirds to use the available habitat seasonally as stopover habitats; however, given the limited amount of such habitat, use is not expected to be substantial, and the Project is not anticipated to be used as a concentrated migration pathway.

As the Project is not located within a migration route for big game species, impacts to big game migration routes are not anticipated from the Project. Although the Micrositing Corridor overlaps with one LCP modeled by WHCWG (2012, 2013), the Project Lease Boundary in general provides low value habitat to mule deer and is unlikely to support large migrations of mule deer despite this modeled linkage. The modeled LCP that passes through the Project does not overlap with the fenced solar arrays (or the larger Solar Siting Areas), which are primarily located on agricultural and disturbed lands. This LCP is designated as low centrality; centrality is a measure of how important a habitat area or linkage is for keeping the overall connectivity network connected (WHCWG 2013). Therefore, construction and operation of the Project is not anticipated to constitute a barrier to deer movement.

Fish and Wildlife Habitat Conservation Areas

This section describes potential impacts to the FWHCAs identified in Section 3.4.1.3, primarily shrub-steppe habitat, and associated wildlife species.

WDFW has recommendations for managing shrub-steppe in developing landscapes (Azerrad et al. 2011). Management recommendations applicable to the Project include identifying and mapping shrub-steppe, siting facilities away from high-quality shrub-steppe, minimizing roads, utilities, and fences in shrub-steppe to minimize habitat fragmentation and predator perches. The Applicant has sited Project facilities away from shrub-steppe habitat as feasible. However, impacts would occur in shrub-steppe habitat. The Applicant will develop a mitigation plan (see Appendix L) for the Project that is consistent with the WDFW Wind Power Guidelines (WDFW 2009), as applicable, that compensates for impacts in shrub-steppe habitat (Section 3.4.3).

Approximately 121 acres of sagebrush shrub-steppe, dwarf shrub-steppe, and unclassified shrubland would by impacted by the Project. This includes 52 acres of temporary impacts, 7 acres of permanent impacts, and 63 acres of habitat modification within the solar array fencelines (consisting entirely of unclassified shrubland, conservatively considered shrub-steppe for the purposes of this analysis, pending field verification prior to construction). Removal of shrub-steppe habitat could affect species that rely on shrub-steppe for breeding and foraging, including the four priority species identified in the PHS query (WDFW 2020a).

- **Townsend's ground squirrel**: One of the documented Townsend's ground squirrel colony locations would be directly impacted by Project disturbance because it overlaps with the temporary disturbance associated with an intersection improvement within agricultural land. No other documented colonies are located in the disturbance footprint. Removal of shrub-steppe as a result of the Project could result in habitat loss and fragmentation for this subspecies, including disturbance to occupied habitat as well as unoccupied habitat that otherwise may have become occupied in the future. Loss and degradation of shrub-steppe as a result of agricultural conversion, urban development, and invasion by cheatgrass and other exotic annuals continue to be threats to this species, which could be exacerbated by Project development. However, the mitigation measures described in Section 3.4.3 (e.g., revegetation and compensatory mitigation) would avoid, minimize, and otherwise mitigate impacts on Townsend's ground squirrel.
- **Ferruginous hawk:** The one ferruginous hawk nest within the Project Lease Boundary determined to be occupied/active during surveys for the Project in 2017, 2018, and 2019 would not be removed during Project construction as it is not located within the Project disturbance footprint; this ferruginous hawk nest is located approximately 0.5 mile from Project disturbance (the temporary impact area associated with a Turbine pad) at its closest location. Removal of shrub-steppe habitat could result in reduced prey availability for ferruginous hawks. Loss of uncultivated land and the prey base it supports (Howard and Wolfe 1976; Woffinden and Murphy 1977) may limit the frequency and success of ferruginous hawk nesting efforts (Larsen et al. 2004). WDFW has developed management recommendations regarding avoidance of ferruginous hawk nesting disturbance (Ritter 2020; Larsen et al. 2004). The Applicant will follow the management recommendation as described in Section 3.4.3.
- **Burrowing owl:** None of the documented burrowing owl burrows would be removed by the Project because they are not located in the disturbance footprint. If these burrows are occupied by nesting burrowing owls during construction, the owls could experience

disturbance because the burrows are all located within 0.5 mile of Project disturbance (e.g., disturbance associated with a Turbine pad; Larsen et al. 2004). Impacts to shrub-steppe habitat as a result of the Project could reduce nesting and foraging opportunities for burrowing owls by removing habitat directly as well as reducing the numbers of potential prey and burrowing mammal species (which create nesting habitat) that also rely on shrub-steppe habitat for survival. Human activities that eliminate nesting and foraging habitat are likely the primary cause of this species' decline (Haug et al. 1993; Sheffield 1997; Belthoff and King 2002). WDFW has developed management recommendations for burrowing owls, including protecting existing habitat, limiting pesticide use, and providing mitigation such as artificial nest burrows (Larsen et al. 2004), as applicable. Protecting existing habitat includes preserving areas of native vegetation (e.g., shrub-steppe), protecting burrowing mammal species (e.g., ground squirrels and badgers) that create nesting habitat for burrowing owls, and protecting nest burrows from disturbance (Larsen et al. 2004). The Applicant will follow the WDFW management recommendation for burrowing owl as feasible, as described in Section 3.4.3. If impacts to potentially suitable habitat cannot be avoided during final design, the Applicant will consult with WDFW regarding the need for burrowing owl surveys prior to construction, including surveys to determine habitat suitability for burrowing owls, and surveys for breeding owls if suitable habitat is present.

- **Loggerhead shrike:** Both loggerhead shrike nest locations are within PHS-mapped shrub-steppe habitat and outside the Project disturbance footprint. Loss of breeding habitat may be a cause of decline of loggerhead shrike (Larsen et al. 2004). Therefore, disturbance to and loss of shrub-steppe habitat as a result of the Project could negatively affect loggerhead shrike. However, the mitigation measures described in Section 3.4.3 would avoid, minimize, and otherwise mitigate impacts on shrub-steppe habitat and loggerhead shrikes. WDFW has developed management recommendations regarding loggerhead shrike (Larsen et al. 2004), including minimizing shrub-steppe disturbance and fragmentation.

Six additional priority species that are likely to use shrub-steppe habitat were observed during surveys for the Project: golden eagle, sage thrasher, sagebrush sparrow, and prairie falcon (Chatfield et al. 2019a; Jansen and Brown 2018; Jansen et al. 2019). Nesting habitat for golden eagles and prairie falcons (typically cliffs and rock escarpments) is absent from the Project Lease Boundary. These raptors may be affected to the extent that their prey may be affected by Project disturbance. Sage thrasher and sagebrush sparrow are sagebrush obligate species and would experience the same type of impacts described for the species above. Overall, the Project Lease Boundary does not support areas of high avian concentration or use during the breeding season (Chatfield et al. 2019b; Jansen and Brown 2018; Jansen et al. 2019), so effects to breeding birds from disturbance to shrub-steppe habitat are anticipated to be relatively minimal.

As currently proposed, the Project may result in temporary impacts to 21 waters of the state, and permanent impacts to one water of the state (Figure 3.4-4). These include temporary impacts to 0.4 mile and permanent impacts to less than 0.1 mile of stream mapped during surveys in 2020. Sources of these potential impacts include Project collection lines, transmission lines, crane paths, and roads. These impacts also include 1.7 acres of temporary impact to the 150-foot buffers on four streams, and less than 0.1 acre of permanent impact on the 150-foot buffers of two of those streams. However, these impacts to waters of the state may be avoided by spanning (e.g., with the transmission line and collection line) or otherwise micrositing away from the streams as described in Section 3.3. If these impacts cannot be avoided, potential effects will be minimized by performing the work during the dry season when the streams are dry and utilizing construction BMPs including control of erosion and surface-water runoff. As a result, impacts to these FWHCAs are anticipated to be minimal.

3.4.3 Mitigation Measures

Proposed measures to avoid, minimize, and otherwise mitigate impacts to habitat, vegetation, fish and wildlife include the following:

- To minimize impacts to wildlife, baseline studies were conducted at the Project consistent with the WDFW Wind Power Guidelines (WDFW 2009), the USFWS' 2012 Final Land-Based Wind Energy Guidelines (USFWS 2012), the 2013 USFWS Eagle Conservation Plan Guidance Module 1 – Land Based Wind Energy (USFWS 2013), and the USFWS 2016 Eagle Rule Revision (USFWS 2016). In order to mitigate and avoid wildlife resources, the Applicant used the results of these baseline studies to inform the Project's layout design.
- Project facilities were sited on previously disturbed (e.g., cultivated cropland) areas to the extent feasible to avoid impacts to native habitats and associated wildlife species.
- The Project will use industry standard BMPs to minimize impacts to vegetation, waters, and wildlife.
- The Project was sited outside of wetlands and waters to the extent feasible to avoid and minimize impacts to these resources as described in Section 3.3 and Section 3.5, which will also avoid impacts to fish and minimize impacts to wildlife species that use these habitats.
- If the final design results in impacts to waters of the state that cannot be avoided, the Applicant will work with EFSEC and WDFW to confirm whether a Hydraulic Project Approval is required, and will prepare an application accordingly.
- During construction, WDFW-recommended seasonal buffers (per Larsen et al. 2004) for ferruginous hawk nests will be observed to avoid disturbing nesting ferruginous hawks.
- During construction, WDFW-recommended seasonal buffers (per Larsen et al. 2004) for burrowing owl nests will be observed to avoid disturbing nesting burrowing owls, if present. If impacts to potentially suitable habitat cannot be avoided during final design, the Applicant would consult with WDFW regarding the need for burrowing owl surveys prior to construction, including surveys to determine habitat suitability for burrowing owls, and surveys for breeding owls if suitable habitat is present.
- The Applicant will minimize bird and bat collision with Project infrastructure by implementing down-shield lighting (e.g., for permanent lighting at the substations and O&M facilities) that will be sited, limited in intensity, and hooded in a manner that prevents the lighting from projecting onto any adjacent properties, roadways, and waterways; lighting will be motion activated where practical (i.e., excluding security lighting).

- All permanent meteorological towers will be unguyed to minimize collision risk for wildlife.
- The Applicant will acquire any required federal approvals as described in Section 2.23. The Applicant will continue ongoing coordination with the USFWS (Mathew Stuber, Eagle Coordinator, Columbia Pacific Northwest Region) regarding an eagle take permit for incidental take of bald and golden eagles, and will continue to evaluate eagle risk to determine if an eagle take permit is appropriate considering the use of the Project by bald and golden eagles. The Applicant does not plan to pursue an eagle take permit for the Phase 1 of the Project but will re-evaluate eagle risk and the need for an eagle take permit for Phase 2 of the Project.
- Prior to construction, habitat surveys will be conducted within the Solar Siting Areas and portions of the Micrositing Corridor that were not surveyed in 2020. These habitat surveys will focus on documenting areas of sagebrush shrub-steppe habitat. Sagebrush shrub-steppe habitat would be avoided to the extent possible. If avoidance is not possible, mitigation for impacts to sagebrush shrub-steppe habitat would be developed in consultation with the applicable agencies.
- Prior to construction, special status plant surveys will be conducted within the Solar Siting Areas and portions of the Project Micrositing Corridor that were not surveyed in 2020. If special status plant species are observed during pre-construction surveys, individuals and populations would be avoided to the extent possible. If avoidance is not possible, mitigation measures for impacts would be developed in consultation with the applicable agencies.
- Following construction, temporarily disturbed areas will be revegetated with native or non-invasive, non-persistent non-native plant species as described in the Revegetation and Noxious Weed Management Plan (Appendix N).
- The Applicant does not anticipate using pesticides during Project construction or operation; if unforeseen circumstances arise that require the use of pesticides, the Applicant would consult with WDFW and EFSEC regarding use of pesticides to avoid and minimize impacts to burrowing owl (per Larsen et al. 2004).
- The Applicant will limit construction disturbance by flagging any sensitive areas (e.g., wetlands, rare plant populations) and will conduct ongoing environmental monitoring during construction to ensure flagged areas are avoided.
- The Applicant has prepared a BBCS that describes the surveys conducted, avoidance and minimization, and potential impacts to birds and bats and their habitat as a result of construction and operation of the Project (Appendix M).
- The Applicant will conduct 2 years of standardized post-construction fatality monitoring to assess impacts of Turbine operation on birds and bats. Proposed post-construction fatality monitoring is described in the Applicant's BBCS (Appendix M).
- The Applicant will develop a Habitat Mitigation Plan (Appendix L) for the wind energy generation areas of the Project, consistent with the WDFW Wind Power Guidelines (WDFW 2009), where applicable. The Habitat Mitigation Plan will separately address mitigation for the solar and battery storage facility elements, consistent with best available industry practices. The Habitat Mitigation Plan will be provided to EFSEC within approximately one month of submittal of this ASC.

3.5 WETLANDS

WAC 463-60-333: *The application shall include a report for wetlands prepared by a qualified professional wetland scientist. For purposes of this section, the term "project site" refers to the site for which site certification is being requested, and the location of any associated facilities or their right of way corridors if applicable. The report shall include, but not be limited to, the following information:*

(1) Assessment of existing wetlands present and their quality. The assessment of the presence and quality of existing wetlands shall include:

(a) A wetland delineation performed by a qualified professional according to the Washington State Wetlands Delineation and Identification Manual, 1997, and associated data sheets, site maps with data plots and delineated wetlands areas, photographs, and topographic and aerial site maps.

(b) A description of wetland categories found on the site according to the Washington state wetland rating system found in Western Washington, Ecology Publication #93-74 and Eastern Washington, Ecology Publication 391-58, or as revised by the department of ecology.

(c) A discussion of water sources supplying wetlands and documentation of hydrologic regime encountered.

(d) A function assessment report prepared according to the Washington State Wetland Function Assessment Method to assess wetlands functions for those wetland types covered by the method, and including a description of type and degree of wetland functions that are provided.

(2) Identification of energy facility impacts. The application shall include a detailed discussion of temporary, permanent, direct and indirect impacts on wetlands, their functions and values, and associated water quality and hydrologic regime during construction, operation and decommissioning of the energy facility. The discussion of impacts shall also include impacts to wetlands due to proposed mitigation measures.

(3) Wetlands mitigation plan. The application shall include a detailed discussion of mitigation measures, including avoidance, minimization of impacts, and mitigation through compensation or preservation and restoration of existing wetlands, proposed to compensate for the direct and indirect impacts that have been identified. The mitigation plan shall be prepared consistent with the Department of Ecology Guidelines for Developing Freshwater Wetlands Mitigation Plans and Proposals, 1994, as revised. The application shall also include, but not be limited to:

(a) A discussion of how standard buffer widths have been incorporated into the mitigation proposal. Variances from standard buffer widths must be supported with professional analyses demonstrating that smaller or averaged buffer widths protect the wetland functions and values based on site-specific characteristics;

(b) A demonstration of how enhancement, restoration or compensatory mitigation actions will achieve equivalent or greater hydrologic and biological functions at the impact site, and whether any existing wetland functions would be reduced by the mitigation measures;

(c) A discussion of how standard mitigation ratios have been incorporated into the mitigation proposal. Variances from standard mitigation ratios must be supported with professional analyses demonstrating that equivalent or greater hydrologic and biological functions will be achieved;

(d) A demonstration that the mitigation actions are being conducted in an appropriate location, and that consideration was given in order of preference to: On-site

opportunities; opportunities within the same subbasin or watershed assessment unit; opportunities within the same Water Resources Inventory Area (WRIA); opportunities in another WRIA;

(e) A discussion of the timing and schedule for implementation of the mitigation plan;

(f) A discussion of ongoing management practices that will protect wetlands, including proposed monitoring and maintenance programs;

(g) Mitigation plans should give priority to proven mitigation methods. Experimental mitigation techniques and mitigation banking may be considered by the council on a case-by-case basis. Proposals for experimental mitigation techniques and mitigation banking must be supported with analyses demonstrating that compensation will meet or exceed requirements giving consideration to the uncertainty of experimental techniques, and that banking credits meet all applicable state requirements.

(4) Federal approvals. The application shall list any federal approvals required for wetlands impacts and mitigation, status of such approvals, and federal agency contacts responsible for review.

3.5.1 Existing Environment

Wetland delineations were carried out in February, August, October, and November of 2020 (Appendix I). Delineations followed the methods prescribed by the USACE and Ecology. No wetlands were listed on the NWI, and no wetlands were found within the wetland delineation study area. No functional wetland assessment report is included in this submittal because there are no wetlands within the study area.

3.5.2 Impacts

No wetlands were identified within the Benton County-dictated buffers on impacts and so there would be no impact to wetlands.

3.5.3 Mitigation Measures

No mitigation is required because no wetlands would be impacted by the Project.

3.6 ENERGY AND NATURAL RESOURCES

WAC 463-60-342: *(1) Amount required/rate of use/efficiency. The application shall describe the rate of use and efficiency of consumption of energy and natural resources during both construction and operation of the proposed facility.*

(2) Source/availability. The application shall describe the sources of supply, locations of use, types, amounts, and availability of energy or resources to be used or consumed during construction and operation of the facility.

(3) Nonrenewable resources. The application shall describe all nonrenewable resources that will be used, made inaccessible or unusable by construction and operation of the facility.

(4) Conservation and renewable resources. The application shall describe conservation measures and/or renewable resources which will or could be used during construction and operation of the facility.

(5) Scenic resources. The application shall describe any scenic resources which may be affected by the facility or discharges from the facility.

3.6.1 Existing Environment

Electricity in the general region is provided by Benton Public Utility District No. 1 (Benton PUD) and Benton Rural Electric Association (Benton REA); natural gas is provided by Cascade Natural Gas Corporation. Water in this region is also available in the form of ground and surface water (see Section 3.3 for more details regarding surface and ground water).

No National Scenic areas, Washington designated wildernesses, or scenic highways are located within the Project Lease Boundary (WSDOT 2020; USFS 2020). Benton County has adopted goals and policies related to scenic resources, including ridges and hillsides, in their Comprehensive Plan (Benton County 2020; see Section 4.2.3). The types of scenic users in the Project Lease Boundary and nearby vicinity include: residents of the adjacent Tri-Cities communities, including Benton City, Burbank, Kennewick, Pasco, and Richland; residents of unincorporated Benton County; travelers on the various interstates and highways; as well as recreators to the Rattlesnake, Red, Candy, and Badger mountains, McNary National Wildlife Refuge, and other facilities in the area. The Project Lease Boundary is also of interest to the Confederated Tribes and Bands of the Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation, and Nez Perce Tribe, who attach cultural significance to natural landscape components. See Section 4.2.3 for further description of the existing visual context for the Project, and Section 4.2.4 for existing recreational resources in the Project vicinity.

3.6.2 Impacts

The Project would consume energy and natural resources during construction. During construction, consumption of resources would include limited amounts of nonrenewable resources, such as raw materials used for Turbines, solar panels, and ancillary infrastructure. Energy consumption during construction would include use of gasoline and diesel fuel to operate construction equipment, to transport Project components to the site, and to transport construction workers to and from the site; furthermore, portable generators and load banks (which would consume fuel) may be utilized to commission Turbines, in the event the BPA infrastructure is not capable of backfeed when needed.

Water for construction would be obtained from local water sources via water trucks, as described in Sections 2.6.1 and 3.3. Fuel for construction equipment and vehicles would be obtained from gas stations or fuel distributors located outside of the Project Lease Boundary. Nonrenewable resources used for construction (such as steel, cable, concrete, etc.) would be purchased from existing suppliers and local distributors. Electricity used during construction for the O&M Buildings would be provided by local utilities, Benton PUD and Benton REA, depending upon construction location in service territory. Turbines and solar panels would be purchased from an applicable manufacturer.

The exact amount of materials consumed during construction would be determined by the construction contractor, and would depend on the final design and layout of the Project. However, the following provides approximate estimates for the amount of materials that could be consumed by Project construction based on the Option 1 Turbine layout (see Section 2.0 for further Project description information):

- 335,700 yards of gravel aggregate for roads (nonrenewable);
- 500,000 cubic yards of concrete for facility foundations (nonrenewable);
- 97,600 U.S. tons of steel for Turbine towers, solar posts / trackers, and reinforcement / support structures (nonrenewable);
- 80,000 gallons of fuel (diesel and gasoline) for construction equipment (nonrenewable);
- 285,000 gallons of diesel for load bank generators during Turbine commissioning, if needed (nonrenewable);
- 120 million gallons of water for to mix concrete for structural foundations and to suppress fugitive dust during grubbing, clearing, grading, trenching, and soil compaction (renewable); and
- 1.9 million linear feet of collector lines and other electrical cabling.

During operations, the Project would consume negligible amounts of energy and natural resources while in operation, as the Turbines and solar panels would use wind and solar energy (i.e., naturally occurring renewable resources) to generate electricity. Normally self-supplied, the Project Turbines do consume parasitic load during calm wind periods for control systems, heating/cooling, lighting, and hydraulics. For example, the peak load power demand ranges from 44 to 80 kW per Turbine if all loads are operating at the same time, which could reach 12 MW peak loading for the full 150 larger Turbine Project buildout, and represents a load on the grid. Consumption of nonrenewable energy during operations would include consumption of gasoline and diesel fuel in vehicles used to patrol the site and maintain the facility. Electricity would also be used for lighting, heating, and other domestic purposes at the O&M facilities, which will be served by the distribution system source of the local electric utility. Limited natural resources, such as lubricants, will be used during operations for maintenance and repair activities. Overall, the Project would have a large positive net energy balance (i.e., would generate more energy than it would consume). The following provides approximate estimates for the amount of materials that would be consumed or produced by the Project during operation:

- Up to 1,150 MW of electricity produced during Project operations;

- 5,000 gallons of fuel consumed annually for vehicle use;
- Less than 5,000 gallons per day of water for the O&M facilities;
- Approximately 2,025,000 gallons of water per year for solar panel washing;
- Negligible amounts of lubricating oils, greases and hydraulic fluids for the Turbines and solar tracking arrays; and
- Negligible amount of raw materials for component parts maintenance of solar panels, Turbines, and batteries.

Long-term visual effects during operation of the Project would result from the visibility of the aboveground components associated with the Project Turbines, solar arrays, substations, BESS, and transmission line. New access roads would also be constructed to reach Turbine and solar array locations. Rather than from any designated scenic resource area, the greatest potential for local concern over the visual impacts of the Project is likely to be associated with residents who are non-participating landowners and would be exposed to relatively near views of Project Turbines and solar arrays. For nearby recreational resources, given existing views of electrical grid infrastructure and wind farms as well as the intervening topography of the area, and other landscape features from areas farther than 1 mile from the Project, minimal to no visual impacts are anticipated at a majority of the recreational resources (see Section 4.2.4). See Section 4.2.3 for a detailed discussion of aesthetic impacts.

3.6.3 Mitigation

The Project would consume quantities of energy and natural resources comparable to standard solar/wind projects of this type. As no significant impacts to energy or natural resources are expected to occur, no mitigation measures are proposed. Furthermore, by using renewable resources (i.e., wind and solar energy) to generate electricity, operation of the Project would help reduce overall consumption of nonrenewable natural resources in the region. Wind and solar energy have a high ratio of energy produced compared to energy consumption during construction and operations.

See Section 4.2.3 for proposed aesthetic mitigation measures applicable to scenic resources.

4.0 BUILT ENVIRONMENT

4.1 ENVIRONMENTAL HEALTH

4.1.1 Noise

WAC 463-60-352: *(1) Noise. The application shall:*

(a) Describe and quantify the background noise environment that would be affected by the energy facility. The number of locations used for assessment of the existing noise environment shall be commensurate with the type of energy facility being proposed, the impacts expected, and the presence of high density receptor locations in the vicinity of the proposed site.

(b) Identify and quantify the impact of noise emissions resulting from construction and operation of the energy facility, using appropriate state-of-the-art modeling techniques, and including impacts resulting from low frequency noise;

(c) Identify local, state, and federal environmental noise impact guidelines;

(d) Describe the mitigation measures to be implemented to satisfy WAC 463-62-030;

(e) Describe the means the applicant proposes to employ to assure continued compliance with WAC 463-62-030.

4.1.1.1 Existing Environment

Introduction

The Applicant prepared an acoustic assessment for the Project, evaluating potential sound impacts relative to the applicable noise regulations prescribed in the WAC. The existing ambient acoustic environment is presented in a qualitative manner; however, a field survey is currently underway to further characterize ambient conditions in a quantitative way and the results will be provided separately to EFSEC when available. An acoustic modeling analysis was conducted simulating sound produced during both construction and operation. Modeled sound levels from Project operations were evaluated against the WAC noise regulations. The overall objectives of this assessment were to: (1) identify Project sound sources and estimate sound propagation characteristics; (2) computer-simulated sound levels using internationally accepted calculation standards; and (3) confirm that the Project will operate in compliance with the applicable noise regulations.

Project Lease Boundary

The Project's Lease Boundary (i.e., the extent of parcels in which the Applicant has executed a lease to construct Turbines, the solar array, and associated facilities) encompasses approximately 72,428 acres. The Project's Wind Energy Micrositing Corridor encompasses 11,850 acres and consists of the area in which the Turbines and supporting facilities would be sited during the final design. The Solar Siting Areas (which consist of the three areas under consideration for siting of the proposed solar arrays during the final design) encompass 10,755 acres located within the Project Lease Boundary. The Micrositing Corridor and the Solar Siting Areas are larger than the Project's final footprint to allow minor rerouting to optimize the design and to avoid resources that may be discovered during the final design and pre-construction process.

The elevation within the Project Lease Boundary ranges from 604 to 2,051 feet above mean sea level. The Project Lease Boundary is dominated by rolling hills bisected by meandering canyons, some of which constitute ephemeral or intermittent drainages. The Horse Heaven Hills ridgeline lies along the northern border of the Project, particularly in the western portion of the Project Lease Boundary; on the southern side of this ridge, the landscape transitions to relatively rolling topography with shallow, meandering canyons that drain southwest into the Columbia River. While the majority of this western portion of the Project Lease Boundary drains to the southwest into the Columbia River, a small portion of the Project along the northeastern boundary ultimately drains northwest into the Yakima River and northeast into the Columbia River. The eastern portion of the Project Lease Boundary similarly drains primarily to the south into the Columbia River, with a small portion of the Project draining northeast into the Columbia River.

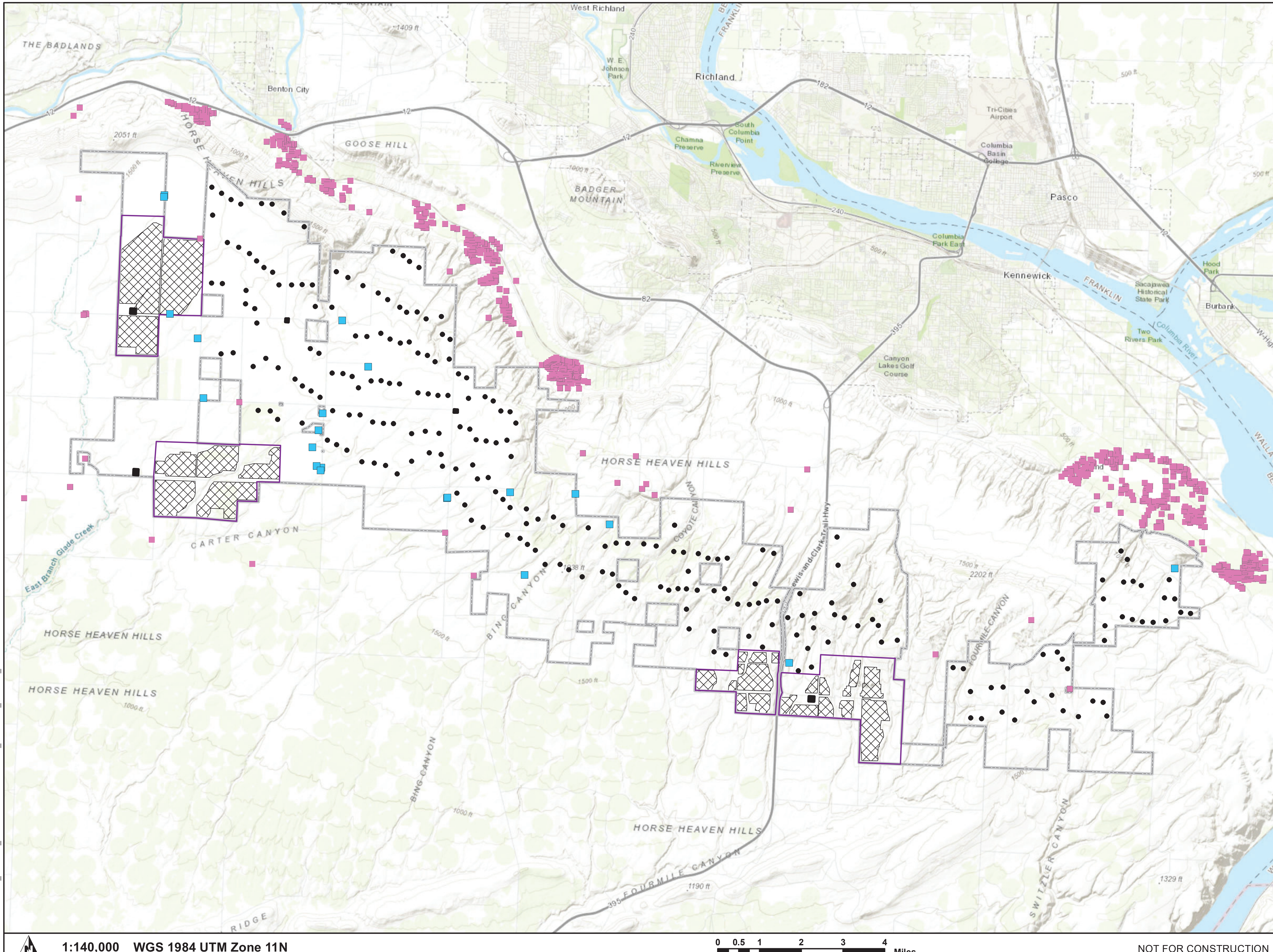
Figure 4.1.1-1 provides an overview of the Project vicinity and provides the locations of nearby residences, which are considered noise sensitive receptors (NSRs).

Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 4.1.1-1 Project Vicinity

BENTON COUNTY, WA



- Noise Receptor - Participating
- Noise Receptor - Non-participating
- Option 1 Turbine Location
- Project Lease Boundary
- Proposed Project Substation
- Solar Siting Area
- Solar Array

TETRA TECH

Reference Map

Acoustics Metrics and Terminology

All sounds originate with a source, whether it is a human voice, motor vehicles on a roadway, or a combustion turbine. Energy is required to produce sound and this sound energy is transmitted through the air in the form of sound waves – tiny, quick oscillations of pressure just above and just below atmospheric pressure. These oscillations, or sound pressures, impinge on the ear, creating the sound we hear. A sound source is defined by a sound power level (L_W), which is independent of any external factors. By definition, sound power is the rate at which acoustical energy is radiated outward and is expressed in units of watts.

A source sound power level cannot be measured directly. It is calculated from measurements of sound intensity or sound pressure at a given distance from the source outside the acoustic and geometric near-field. A sound pressure level (L_P) is a measure of the sound wave fluctuation at a given receiver location and can be obtained through the use of a microphone or calculated from information about the source sound power level and the surrounding environment. The sound pressure level in decibels (dB) is the logarithm of the ratio of the sound pressure of the source to the reference sound pressure of 20 microPascals (μPa), multiplied by 20.1. The range of sound pressures that can be detected by a person with normal hearing is very wide, ranging from about 20 μPa for very faint sounds at the threshold of hearing, to nearly 10 million μPa for extremely loud sounds such as a jet during take-off at a distance of 300 feet.

Broadband sound includes sound energy summed across the entire audible frequency spectrum. In addition to broadband sound pressure levels, analysis of the various frequency components of the sound spectrum can be completed to determine tonal characteristics. The unit of frequency is hertz (Hz), measuring the cycles per second of the sound pressure waves. Typically, the frequency analysis examines 11 octave bands ranging from 16 Hz (low) to 16,000 Hz (high). Since the human ear does not perceive every frequency with equal loudness, spectrally-varying sounds are often adjusted with a weighting filter. The A-weighted filter is applied to compensate for the frequency response of the human auditory system and is represented in A-weighted decibel (dBA).

Sound can be measured, modeled, and presented in various formats, with the most common metric being the equivalent sound level (L_{eq}). The L_{eq} has been shown to provide both an effective and uniform method for comparing time-varying sound levels and is widely used in acoustic assessments in the State of Washington. Estimates of noise sources and outdoor acoustic environments, and the comparison of relative loudness are presented in Table 4.1.1-1. Table 4.1.1-2 presents additional reference information on terminology used in the report.

Table 4.1.1-1. Sound Pressure Levels and Relative Loudness of Typical Noise Sources and Acoustic Environments

Noise Source or Activity	Sound Level (dBA)	Subjective Impression
Vacuum cleaner (10 feet)	70	Moderate
Passenger car at 65 miles per hour (25 feet)	65	
Large store air-conditioning unit (20 feet)	60	
Light auto traffic (100 feet)	50	Quiet
Quiet rural residential area with no activity	45	
Bedroom or quiet living room; Bird calls	40	Faint
Typical wilderness area	35	
Quiet library, soft whisper (15 feet)	30	Very quiet
Wilderness with no wind or animal activity	25	Extremely quiet
High-quality recording studio	20	
Acoustic test chamber	10	Just audible
	0	Threshold of hearing

Adapted from: Beranek (1988) and EPA (1971).

Table 4.1.1-2. Acoustic Terms and Definitions

Term	Definition
Noise	Typically defined as unwanted sound. This word adds the subjective response of humans to the physical phenomenon of sound. It is commonly used when negative effects on people are known to occur.
Sound Pressure Level (L_P)	Pressure fluctuations in a medium. Sound pressure is measured in dB referenced to 20 µPa, the approximate threshold of human perception to sound at 1,000 Hz.
Sound Power Level (L_W)	The total acoustic power of a noise source measured in dB referenced to picowatts (one trillionth of a watt). Noise specifications are provided by equipment manufacturers as sound power as it is independent of the environment in which it is located. A sound level meter does not directly measure sound power.
Equivalent Sound Level (L_{eq})	The L_{eq} is the continuous equivalent sound level, defined as the single sound pressure level that, if constant over the stated measurement period, would contain the same sound energy as the actual monitored sound that is fluctuating in level over the measurement period.
A-Weighted Decibel (dBA)	Environmental sound is typically composed of acoustic energy across all frequencies. To compensate for the auditory frequency response of the human ear, an A-weighting filter is commonly used for describing environmental sound levels. Sound levels that are A-weighted are presented as dBA in this ASC.
Unweighted Decibels (dBL)	Unweighted sound levels are referred to as linear. Linear decibels are used to determine a sound's tonality and to engineer solutions to reduce or control noise as techniques are different for low and high frequency noise. Sound levels that are linear are presented as dBL in this ASC.
Propagation and Attenuation	Propagation is the decrease in amplitude of an acoustic signal due to geometric spreading losses with increased distance from the source. Additional sound attenuation factors include air absorption, terrain effects, sound interaction with the ground, diffraction of sound around objects and topographical features, foliage, and meteorological conditions including wind velocity, temperature, humidity, and atmospheric conditions.

Noise Regulations and Guidelines

Federal Regulations

There are no federal noise regulations applicable to the Project.

Washington Administrative Code Statutes

Environmental noise limits have been established by the Washington Administrative Code (WAC 173-60). WAC 173-60 establishes limits on sounds crossing property boundaries based on the Environmental Designation for Noise Abatement (EDNA) of the sound source and the receiving properties.

- Class A EDNA – Lands where people reside and sleep. They typically include residential property; multiple family living accommodations; recreational facilities with overnight accommodations such as camps, parks, camping facilities, and resorts; and community service facilities including orphanages, homes for the aged, hospitals, and health and correctional facilities.
- Class B EDNA – Lands involving uses requiring protection against noise interference with speech. These typically will include commercial living accommodations; commercial dining establishments; motor vehicle services; retail services; banks and office buildings; recreation and entertainment property not used for human habitation such as theaters, stadiums, fairgrounds, and amusement parks; and community service facilities not used for human habitation (e.g., educational, religious, governmental, cultural and recreational facilities).
- Class C EDNA – Lands involving economic activities of a nature that noise levels higher than those experienced in other areas are normally to be anticipated. Typical Class A EDNA uses generally are not permitted in such areas. Typically, Class C EDNA include storage, warehouse, and distribution facilities; industrial property used for the production and fabrication of durable and nondurable man-made goods; and agricultural and silvicultural property used for the production of crops, wood products, or livestock.

The WAC does maintain flexibility for interpretation in the classification of the appropriate EDNA on both the state and local level. For example, EFSEC in previous siting decisions has identified and defined different land use types within single contiguous properties, dissecting properties into separate EDNAs. The noise level limits by EDNA classifications are presented in Table 4.1.1-3. Between the hours of 10:00 p.m. and 7:00 a.m. the noise limitations are reduced by 10 dBA for receiving property within Class A EDNAs. The WAC allows these limits to be exceeded for certain periods of time: 5 dBA for no more than 15 minutes in any hour, 10 dBA for no more than 5 minutes of any hour, and 15 dBA for no more than 1.5 minutes of any hour and are commonly presented as L_n statistical sound levels as well as maximum sound levels (L_{max}) as shown in Table 4.1.1-4. WAC 173.60.050 exempts temporary construction noise from the state noise limits.

Table 4.1.1-3. Washington State Environmental Noise Limits

EDNA of Source Property	EDNA of Receiving Property		
	Class A Land Day/Night	Class B Land	Class C Land
Class A Land	55/45	57	60
Class B Land	57/47	60	65
Class C Land	60/50	65	70

Source: WAC 173-60-040

Table 4.1.1-4. Ln Environmental Noise Limits for Class C Sources

EDNA of Source Property	EDNA of Receiving Property			
	LN_{25}	$LN_{8.3}$	$LN_{2.5}$	L_{MAX}
Class A Land	60/50	65/55	70/60	75/65
Class B Land	65	70	75	80
Class C Land	70	75	80	85

Source: WAC 173-60-040 (b) and (c).

Table 4.1.1-4 shows a maximum noise limit of 60 dBA for a Class C noise source and a Class A receiving property, which is subject to a further reduction of 10 dBA during nighttime hours. The WAC regulatory limits are absolute and independent of the existing acoustic environment; therefore, an ambient sound survey is not requisite to determine conformance. However, based on the requirements under WAC 463-60-352, and to describe and quantify the background noise environment, an ambient sound survey has been conducted. The results of that survey will be submitted under separate cover in February 2021.

For the Project acoustic assessment, a conservative approach was taken in demonstrating compliance with the WAC regulatory limits. Land use that is considered agricultural is defined as Class C property. The Project Lease Boundary is zoned as GMA AG/GMAAD (see Figure 2.1-4 in Section 2) and the majority of adjacent off-site receiving properties are also classified as GMA AG/GMAAD. This agricultural zoning falls under the definition of EDNA Class C land, which means that a limit of 70 dBA would be applicable during both daytime and nighttime hours at adjacent property boundaries and residences. As a conservative approach to evaluating Project compliance, non-participating residences located on agricultural lands were considered Class A receivers. Two short portions of the Project Lease Boundary are adjacent to Benton County's RL-5 zoning district (Figure 2.1-4). Allowable uses in the RL-5 zoning district include single-family dwellings, utility buildings and substations, and other agricultural uses. For purposes of this impact analysis, lands zoned RL-5 were considered as EDNA Class A receivers.

Benton County Code

Chapter 6A.15 of the BCC provides language pertaining to public disturbance and nuisance noise; however, sounds originating from industrial or commercial activities, as well as construction or refuse removal equipment, are exempt. Specific language from the BCC is given in Section 4.2.1.

Existing Sound Environment

The degree of audibility of a new or modified sound source is dependent in a large part upon the relative level of the ambient noise. A wide range of noise settings occurs within the Project vicinity. Variations in acoustic environment are due in part to existing land uses, population density, and proximity to transportation corridors. Elevated existing ambient sound levels in the region occur near major transportation corridors such as interstate highways and in areas with higher population densities. The Project Lease Boundary and vicinity is primarily open land or rural in nature, and will have comparatively lower ambient sound levels, possibly 30 dBA or less during nighttime. Principal contributors to the existing acoustic environment likely include motor vehicle traffic, mobile farming equipment, farming activities such as plowing and irrigation, all-terrain vehicles, local roadways, rail movements, periodic aircraft flyovers, and natural sounds such as birds, insects, and leaf or vegetation rustle during elevated wind conditions. Diurnal effects result in sound levels that are typically quieter during the night than during the daytime, except during periods when evening and nighttime insect noise dominates in warmer seasons.

In accordance with EFSEC requirements, the Applicant has conducted an ambient sound survey to quantitatively document the existing ambient acoustic environment within the Project Area. The results of that survey will be submitted under separate cover in February 2021.

4.1.1.2 Impacts

Construction Noise

The Project is expected to be constructed in two phases. Assuming the Governor's approval of the Site Certification Agreement in December 2021, the Applicant anticipates beginning construction of the first phase of the Project in January 2023 and commercial operation by the end of 2023. A second phase of the Project would begin construction in January 2024 and begin operation by the end of 2024. The construction schedule would be revised according to the actual approval of the Site.

Table 4.1.1-5 summarizes equipment that may be used on the Project and estimates of construction sound levels at a reference distance of 50 feet and far field distance of 2,000 feet. The variation in power and usage imposes additional complexity in characterizing construction noise levels. The estimated composite site noise level assumes that all equipment would operate simultaneously at the given usage load rating, over a standard eight-hour workday, to calculate the composite average daytime L_{eq}. Usage factor accounts for the fraction of time that the equipment is in use over the specified time period.

In addition to the equipment listed in Table 4.1.1-5 above[17], generators may be used for temporary power over the approximately 19-week Turbine commissioning period (see Section 2.3.1). The generators would be relocated throughout the site as needed to facilitate Turbine commissioning. The generators would be housed in a sound-attenuated container, which is specified at a maximum of 75 dBA at 50 feet. Sound emissions resulting from the generators

[17] As variables such as the Usage Factor are unknown at this time for the temporary generators, this Project component was not added to Table 4.1.1-5.

would be low level especially when compared to other construction equipment on-site, and are not expected to significantly add to the noise levels in the area.

Table 4.1.1-5. Estimated L_{max} Sound Pressure Levels from Construction Equipment

Equipment	L_{max} Equipment Sound Level at 50 feet (dBA)	Usage Factor (%)[1/]	Equipment Sound Level at 50 feet, L_{eq} (dBA)	Equipment Sound Level at 2,000 feet, L_{eq} (dBA)	Composite Equipment Sound Level at 2,000 feet, L_{eq} (dBA)
Crane	85	16	77	34	48
Forklift	80	40	76	33	
Backhoe	80	40	76	33	
Grader	85	40	81	38	
Man basket	85	20	78	35	
Dozer	88	40	84	41	
Loader	88	40	84	41	
Scissor Lift	85	20	78	35	
Truck	85	40	81	38	
Welder	73	40	69	26	
Compressor	80	40	76	33	
Concrete	77	50	74	31	

Note: Data compiled in part from the following sources: FHWA 2006; Bolt Beranek and Newman, Inc. 1977.
1/ Percentage of time during operation that a piece of construction equipment is operating at full power.

The construction of the Project may cause short-term, but unavoidable, noise impacts that could be loud enough at times to temporarily interfere with speech communication outdoors and indoors with windows open. Noise levels resulting from the construction activities would vary significantly depending on several factors such as the type and age of equipment, specific equipment manufacturer and model, the operations being performed, and the overall condition of the equipment and exhaust system mufflers.

Project construction would generally occur during the day, Monday through Saturday. Furthermore, all reasonable efforts would be made to minimize the impact of noise resulting from construction activities including implementation of standard noise reduction measures. Due to the infrequent nature of loud construction activities at the site, the limited hours of construction and the implementation of noise mitigation measures, the temporary increase in noise due to construction is considered to be a less than significant impact. Project construction mitigation measures are described in Section 4.1.1.3.

Operational Noise

This section describes the model used for the assessment, input assumptions used to calculate noise levels due to the Project's normal operation, and the results of the noise impact analysis.

Turbines

Sound generated by an operating Turbine comprises both aerodynamic and mechanical sound, with the dominant sound component from modern utility-scale Turbines being largely aerodynamic. Aerodynamic sound refers to the sound produced from air flow and the interaction with the Turbine tower structure and moving rotor blades. Mechanical sound is generated at the gearbox, generator, and cooling fan, and is radiated from the surfaces of the nacelle and machinery enclosure and by openings in the nacelle casing. Due to the improved design of Turbine mechanical components and the use of improved noise damping materials within the nacelle, including elastomeric elements supporting the generator and gearbox, mechanical noise emissions have been minimized. Sound reduction elements designed as a part of the Turbines include impact noise insulation of the gearbox and generator, sound reduced gearbox, sound reduced nacelle, and rotor blades designed to minimize noise generation.

Wind energy facilities, in comparison to other energy-related facilities, are unique in that the sound generated by each individual Turbine will increase as the wind speed across the site increases. Turbine sound is negligible when the rotor is at rest, increases as the rotor tip speed increases, and is generally constant once rated power output and maximum rotational speed are achieved. Under this condition, the Turbine maximum sound power level will be reached at approximately 15.7 to 20.1 miles per hour (7 to 9 meters per second) according to the Turbine manufacturer specifications. It is important to recognize that, as wind speeds increase, the background ambient sound level will generally increase as well, resulting in acoustic masking effects; however, this trend is also affected by local contributing sound sources. As such, during periods of elevated wind speeds when higher Turbine sound emissions occur, the sound produced from a Turbine operating at maximum rotational speed may be largely or fully masked due to wind generated sound in foliage or vegetation. In practical terms, this means a nearby receptor would tend to hear leaves or vegetation rustling rather than Turbine noise. This relationship is expected to further minimize the potential for any adverse noise effects of the Project. Conversely, these acoustic masking effects may be limited during periods of unusually high wind shear or at receiver locations that are sheltered from the prevailing wind direction.

Substations

The primary ongoing noise sources at substations are the transformers, which generate sound generally described as a low humming. There are three main sound sources associated with a transformer: core noise, load noise, and noise generated by the operation of the cooling equipment. The core vibrational noise is the principal noise source and does not vary significantly with electrical load.

Transformer noise varies with transformer dimensions, voltage rating, and design, and attenuates with distance. The noise produced by substation transformers is primarily caused by the load current in the transformer's conducting coils (or windings) and consequently the main frequency of this sound is twice the supply frequency (60 Hz). The characteristic humming sound consists of tonal components generated at harmonics of 120 Hz. Most of the acoustical energy resides in the fundamental tone (120 Hz) and the first three or four harmonics (240, 360, 480, and 600 Hz).

Circuit-breaker operations may also cause audible noise, particularly the operation of air-blast breakers, which is characterized as an impulsive sound event of very short duration and expected to occur no more than a few times throughout the year. Because of its short duration and infrequent occurrence, circuit breaker noise was not considered in this analysis.

Solar and Battery Storage Facilities

The major components of the proposed solar energy generation systems consist of the solar modules, tracking systems, posts, and related electrical equipment (e.g., inverters and transformers). Inverters serve the function of converting DC to AC in accordance with electrical regulatory requirements. The AC electricity from the inverters will be routed to transformers that will increase the output voltage from the inverter (660 volts per individual unit) to the collection system voltage (34.5 kV). The transformers may be co-located with the inverters or may be centrally located within the solar array. Transformers at these locations will step up the voltage from the inverters. Sound emissions will be associated with the transformers and inverters. Electronic noise from inverters can be audible but is often reduced by a combination of shielding, noise cancellation, filtering, and noise suppression.

Two BESS may be developed for the Project. The BESS would be capable of storing and later deploying up to 300 MW of energy generated by the Project using lithium-ion batteries. The BESS would use a series of self-contained containers and would be placed adjacent to the HH-East substation and the 500 kV Step-up substation near BPA's Webber Canyon interconnect. Lithium-ion batteries are the most common type of utility-scale technology used for battery storage systems. Sound emissions from BESS are typically associated with battery storage container ground level cooling equipment.

Transmission Lines

Transmission line sound sources would primarily consist of corona noise in addition to aeolian noise, and noise associated with maintenance activities. Transmission line noise (also called corona noise) is caused by the partial electrical breakdown of the insulating properties of air around the electrical conductors and overhead power lines. Audible noise generated by corona on transmission lines is composed of two major components. The higher frequencies of the broadband component distinguish it from more common outdoor environmental noise. The random phase relationship of the pressure waves generated by each corona source along a transmission line results in a characteristic sound commonly described as crackling, frying, or hissing. The second component is a lower-frequency sound that is superimposed over the broadband noise. The corona discharges produce positive and negative ions that, under the influence of the alternating electric field around alternating current conductors, are alternately attracted to and repelled from the conductors. This motion establishes a sound-pressure wave having a frequency twice that of the voltage; i.e., 120 Hz for a 60 Hz system. Higher harmonics (e.g., 240 Hz) may also be present, but they are generally of lower significance (Electric Power Research Institute [EPRI] 2005). Corona activity increases with increasing altitude, and with increasing voltage in the line, but is generally not affected by system loading. The relative magnitude of hum and broadband noise may be different depending on weather conditions at the line. According to EPRI, when the line is wet (such as during rainy weather conditions), the broadband component typically dominates; however, under icing conditions, the lower frequency components may be more prevalent.

Corona noise levels during precipitation may vary over a wide range. During the initial stages, when the conductors are not thoroughly wet, there may be considerable fluctuation in the noise level as the precipitation intensity varies. When the conductors are thoroughly wet, the noise fluctuations will often be less significant, because even as the intensity of precipitation diminishes the conductors will still be saturated, which can result in corona discharge. The variation in noise levels during rain depends greatly on the condition of the conductor surface and on the voltage gradient at which the conductors are operating. At high operating gradients, the audible noise is less sensitive to rain rate than at low gradients. Consequently, the variation in noise levels is less for the higher gradients. In different weather conditions the relative magnitudes of random noise and hum may be different. Noise levels in fog and snow usually do not attain the same magnitude as compared to rain, and elevated noise levels during fog and snow are usually for a shorter duration in proportion to the event (EPRI 1982).

During fair weather conditions, corona occurs only at scratches or other imperfections in the conductor surface or where dust has settled on the line. These limited sources are such that the corona activity is minimal, and the audible noise generated is very low. Generally, the fair-weather audible noise of transmission lines cannot be distinguished from ambient noise at the edge of the transmission line right-of-way.

Corona noise is not generally an issue at substations. The presence of equipment such as circuit breakers, switches, and measuring devices reduces the electromagnetic field gradient on the buses to a great extent. In addition, the distance from most of the buses to the perimeter of the substation is considerable (on average, greater than 100 meters). Consequently, low levels of corona noise would likely not be readily detectable immediately outside the substation fence line (EPRI 1982).

In addition to corona noise, wind blowing across power lines and power poles can generate noise when airflow is non-laminar or turbulent. Aeolian, or wind, noise is produced when a steady flow of wind interacts with a solid object, such as a tower. The interaction produces oscillating forces on the object that in turn can radiate sound as a dipole source at a given frequency.

The occurrence of aeolian noise is dependent on several factors and is difficult to predict. Wind noise from a stationary source requires perfect conditions: to produce any sound, the wind must blow for enough time in a specific direction at a specific speed; a slight deviation in either the direction or intensity would disrupt the conditions necessary to produce noise. Wind can create a variety of sounds, ranging from a low hum to a snapping sound to a high whistle. Aeolian noise is not considered a significant contributor to noise disturbance and has not been considered further in the acoustic analysis.

Noise Prediction Model

The acoustic modeling analysis was conducted using the most recent version of CadnaA (Computer Aided Noise Abatement; DataKustik GmbH 2020). CadnaA is a comprehensive three-dimensional acoustic software model that conforms to the International Organization for Standardization (ISO) standard ISO 9613-2 “Attenuation of Sound during Propagation Outdoors” (ISO 1989). The engineering methods specified in this standard consist of full (1/1) octave band algorithms that incorporate geometric spreading due to wave divergence, reflection from surfaces, atmospheric absorption, screening by topography and obstacles, ground effects, source directivity, heights of both sources and receptors, seasonal foliage effects, and meteorological conditions. Topographical information was imported into the acoustic model using the official USGS digital elevation dataset to accurately represent terrain in three dimensions. Terrain conditions, vegetation type, ground cover, and the density and height of foliage can also influence the absorption that takes place when sound waves travel over land. The ISO 9613-2 standard accounts for ground absorption rates by assigning a numerical coefficient of G=0 for acoustically hard, reflective surfaces and G=1 for absorptive surfaces and soft ground. If the ground is hard-packed dirt, typically found in industrial complexes, pavement, bare rock or for sound traveling over water, the absorption coefficient is defined as G=0 to account for reduced sound attenuation and higher reflectivity. In contrast, ground covered in vegetation, including suburban lawns, livestock, and agricultural fields (both fallow with bare soil and planted with crops), will be acoustically absorptive and aid in sound attenuation (i.e., G=1.0). A mixed (semi-reflective) ground factor of G=0.5 was used in the Project acoustic modeling analysis. In addition to geometrical divergence, attenuation factors include topographical features, terrain coverage, and/or other natural or anthropogenic obstacles that can affect sound attenuation and result in acoustical screening. To be conservative, sound attenuation through foliage and diffraction around and over existing anthropogenic structures such as buildings was not included in this modeling analysis.

Sound attenuation by the atmosphere is not strongly dependent on temperature and humidity; however, the temperature of 10 degrees Celsius (50°F) and 70 percent relative humidity parameters were selected for this analysis. Over short distances, the effects of atmospheric absorption are minimal. The ISO 9613-2 standard calculates attenuation for meteorological conditions favorable to propagation, i.e., downwind sound propagation or what might occur typically during a moderate atmospheric ground level inversion. Under these atmospheric conditions, sound travels farther than if a person is upwind from a source and the atmosphere is well mixed, which would attenuate sound levels. Though a physical impracticality, the ISO 9613-2 standard simulates omnidirectional downwind propagation. That is, the noise prediction algorithms assume every point at which the sound level is calculated is downwind of all Turbines simultaneously. This is one of the conservative measures incorporated into the acoustic modeling analysis. For receivers located between discrete Turbine locations or Turbine groupings, the acoustic model may result in over-prediction. In addition, the acoustic modeling algorithms essentially assume laminar atmospheric conditions, in which neighboring layers of air do not mix. This conservative assumption does not take into consideration turbulent eddies and micrometeorological inhomogeneities that may form when winds change speed or direction, which can interfere with the sound wave propagation path and increase attenuation effects.

Input to the Noise Prediction Model

Acoustic models were created for the Turbine layout, solar layouts, and combined operations.

Wind Turbine Layout

The operational acoustic assessment was performed using two potential layout options with two potential Turbine models per layout option (as described in Section 2.3.1). The layout and turbine options are summarized below in Table 4.1.1-6.

Table 4.1.1-6. Candidate Turbine Layout and Model Options

Turbine Parameters/Features	Turbine Layout: Option 1		Turbine Layout: Option 2	
	GE 2.82-MW Turbine	GE 3.03-MW Turbine	GE 5.5-MW Turbine	SG 6.0-MW Turbine
Tower Type	Tubular	Tubular	Tubular	Tubular steel / Hybrid
Maximize Number of Turbines considered	244	244	150	150
Turbine Rotor Diameter	127 / 417 *(meters/feet)*	140 / 459 *(meters/feet)*	158 / 518 *(meters/feet)*	170 / 557 *(meters/feet)*
Turbine Hub Height (ground to nacelle)	89 / 292 *(meters/feet)*	81 / 266 *(meters/feet)*	125 / 411 (*meters/feet*)	115 / 377 (*meters/feet*)
Maximum Total Height (ground to blade tip)	152 / 499 *(meters/feet)*	151 / 496 *(meters/feet)*	204 / 671 (*meters/feet*)	200 / 657 (*meters/feet*)
Tower Base Diameter	4.6 / 15.1 *(meters/feet)*	4.6 / 15.1 *(meters/feet)*	4.6 / 15.1 *(meters/feet)*	4.7 / 15.5 *(meters/feet)*

To assist project developers and acoustical engineers, Turbine manufacturers report Turbine sound power data at integer wind speeds referenced to the effective hub height, ranging from cut-in to full-rated power per International Electrotechnical Commission (IEC) standard (IEC 61400-11:2006 Wind Turbine Generator Systems – Part 11: Acoustic Noise Measurement Techniques). This accepted IEC standard was developed to ensure consistent and comparable sound emission data of utility-scale wind turbines between manufacturers.

Turbines can be somewhat directional, radiating more sound in some directions than others. The IEC test measurement protocol requires that sound measurements are made for the maximum downwind directional location when reporting apparent sound power levels. Thus, it is assumed that Turbine directivity and sound-generating efficiencies are inherently incorporated in the sound source data and used in acoustic model development. The specification for the Turbines includes an expected warranty confidence interval, or k-factor, which was added to the nominal sound power level in the acoustic model. A confidence interval of k = 2 dBA was applied to account for the uncertainty in independent sound power level measurements conducted, the applied probability level and standard deviation for test measurement reproducibility, and product variability. A summary of the expected sound power level data during maximum rotation for all four Turbines under consideration, as specified by the Turbine manufacturers, is reported in Table 4.1.1-7.

Table 4.1.1-7. Candidate Turbine Maximum Sound Power Level Data

Project Layout Configuration and Turbine Model	Maximum Rated Sound Power Level (dBA)
Option 1 - GE 2.82	110.0
Option 1 - GE 3.03	108.0
Option 2 - GE 5.5	107.5
Option 2 - SG 6.0	106.0

All four Project configuration options were analyzed for the purposes of the acoustic study. Implementing the Option 1 layout resulted in the highest received sound levels at non-participating NSRs and, in order to demonstrate compliance with the applicable WAC regulatory limits at the Project property boundary adjacent to Class A lands, noise mitigation measures were required. Mitigation measures are further discussed in Section 4.1.1.3.

Substations

To support the Project wind and solar facilities, there would be up to five on-site substations, which were incorporated into the acoustic modeling analysis. Substation transformer broadband sound source levels were derived based on their given specifications and/or based on transformers used at similar facilities. Transformer sound source data by octave band center frequency were calculated based on the estimated transformer NEMA rating using standardized engineering guidelines. Table 4.1.1-8 lists the five substations, the number of transformers planned for installation at each substation, and the transformer MVA ratings. Sound source level details cannot be disclosed because that information is considered proprietary to the Turbine manufacturers.

Table 4.1.1-8. Substation Transformer Information and Sound Power Level Data

Substation	Transformer MVA Rating	Number of Transformers
HH-East Substation	120 MVA	1
	250 MVA	1
	192 MVA	1
	137 MVA	1
HH-West (34.5 to 230kV) [250 MW Wind]	120 MVA	1
	147 MVA	1
HH-West (34.5 to 230kV) [250 MW Solar]	120 MVA	1
	192 MVA	1
HH-West (230 to 500kV)-Sellards Road	187 MVA	4; MAX 3 running at once
HH-West (230 to 500kV)-County Well Road	187 MVA	4; MAX 3 running at once

dB – decibel; dBA – A-weighted decibels; kV – kilovolt; MVA – megavolt ampere

Solar and Battery Storage Facilities

The Project's general arrangement was reviewed and directly imported into the acoustic model so that on-site equipment could be easily identified; buildings and structures could be added; and sound emission data could be assigned to sources as appropriate. The primary noise sources during operations are the inverters, transformers, and BESS.

Two BESS may be developed for the Project. The BESS would be capable of storing and later deploying up to 300 MW of energy generated by the Project using lithium-ion batteries. The BESS would use a series of self-contained containers and would be placed adjacent to the HH-East substation and the 500 kV Step-up substation near BPA's Webber Canyon interconnect.

It is expected that all equipment could potentially operate 24 hours per day. Reference sound power levels input to CadnaA were provided by equipment manufacturers, based on information contained in reference documents or developed using empirical methods. The source levels used in the predictive modeling are based on estimated sound power levels that are generally deemed to be conservative. The projected operational noise levels are based on Applicant-supplied sound power level data for the major sources of equipment. Table 4.1.1-9 summarizes the equipment sound power level data used as inputs to the initial modeling analysis.

Table 4.1.1-9. Modeled Octave Band Sound Power Level for Solar and BESS Equipment

Equipment	Octave Band Sound Power Level (dB) by Frequency (Hz)									Broadband (dBA)
	31.5	63	125	250	500	1000	2000	4000	8000	
Inverter/Transformer Block	58	66	73	74	73	70	65	58	51	79
BESS[1/]	54	64	71	77	80	79	78	73	64	85

Notes:
1/ Battery energy storage system (BESS) sound power is given per container. It was assumed that 50 containers would be located in each storage area.
dB – decibel; dBA – A-weighted decibels; Hz – hertz

Transmission Line

Operational noise levels produced by a 230 kV transmission line generally correspond to low level sound. If corona-related noise emission from a transmission line were to occur, it would be most likely to occur during certain weather conditions. In foggy, damp, or rainy weather, power lines can create a crackling sound due to the small amount of electricity ionizing the moist air near the wires. During heavy rain, the background noise level of the rain is usually greater than the noise from the transmission line. As a result, people do not normally hear noise from a transmission line during heavy rain.

Noise Prediction Model Results

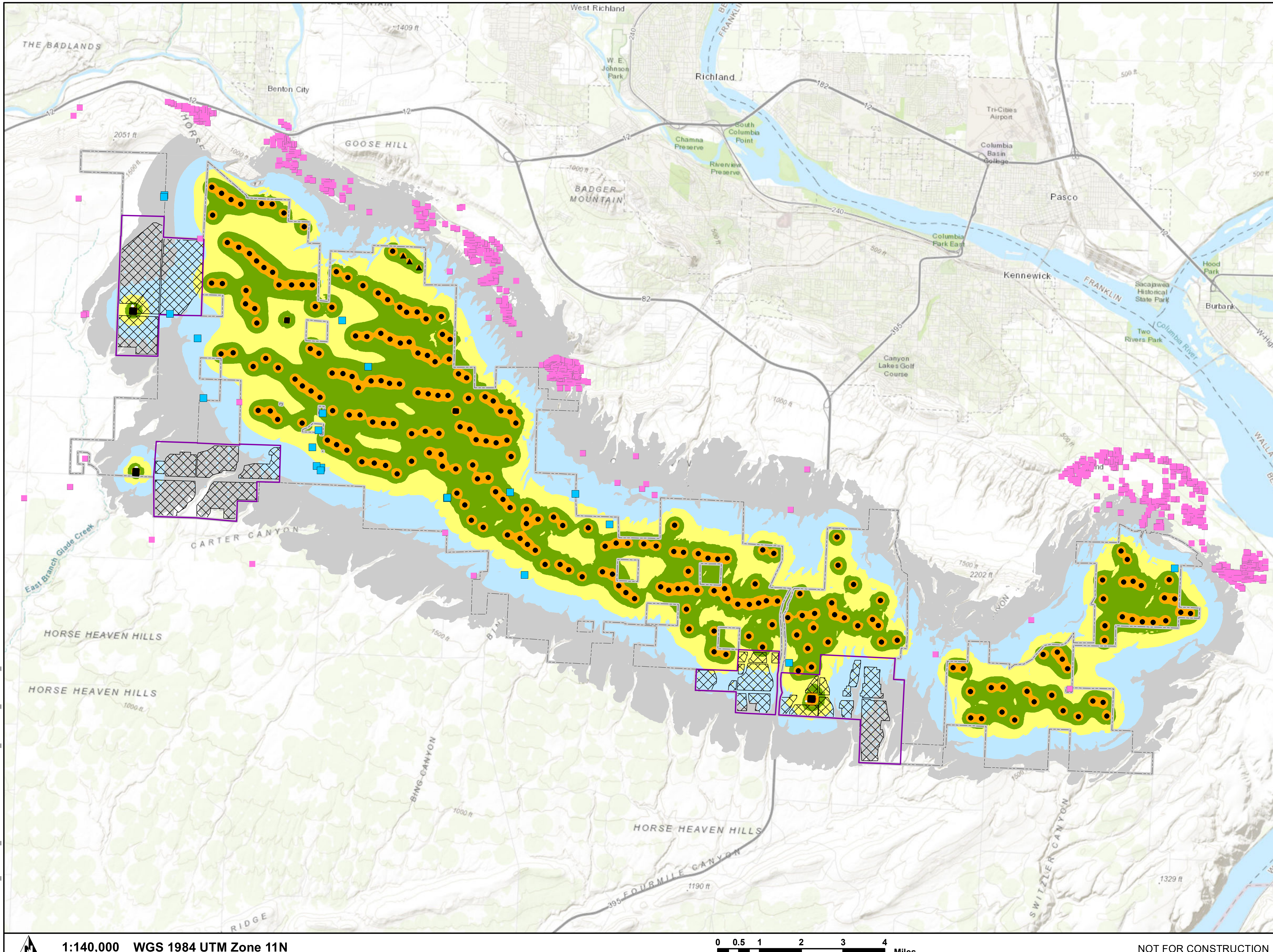
Broadband (dBA) sound pressure levels were calculated for expected normal Project operation assuming that all components identified previously are operating continuously and concurrently at the representative manufacturer-rated sound power level (Table 4.1.1-7). It is expected that all sound-producing equipment would operate during both daytime and nighttime periods. After calculation, the sound energy was then summed to determine the equivalent continuous A-weighted downwind sound pressure level at a point of reception.

Acoustic models were created for the four Turbine layout configurations, combined with solar layouts and associated substation and BESS facility operations. Predicted model results were evaluated against applicable WAC regulatory requirements, both at NSRs and at the Project property boundary. For NSRs located on Class A land (land zoned RL-5), compliance was assessed relative to the WAC 173-60.040 50 dBA nighttime limit. For non-participating NSRs located on Class C land (land zoned GMAAD), compliance was also conservatively assessed relative to the 50 dBA nighttime limit. The compliance status of participating NSRs located on Class C land was evaluated against the applicable daytime and nighttime 70 dBA limit for Class C lands. At the Project property boundary, where the Project is adjacent to Class A land, compliance was assessed relative to the 50 dBA nighttime limit. At the Project property boundary, where the Project is adjacent to Class C land, compliance was assessed relative to the 70 dBA limit.

As discussed previously, maximum noise impacts occurred with the Option 1 Turbine layout modeled. With both the GE 2.82 MW and GE 3.03 MW Turbine configurations, compliance is achieved at all NSRs based on the applicable WAC 173-60 regulatory limits described previously. However, noise mitigation measures, such as low noise trailing edge (LNTE) technology and noise reduced operation (NRO), would need to be applied to select Turbines to attain compliance at the Project property boundary. These noise mitigation measures are described in detail in Section 4.1.1.3. For the GE 2.82 MW Turbine configuration, Turbine IDs 6, 7, and 8 would need to be equipped with NRO 106 mode in order to comply with the 50 dBA nighttime limit at the Project property boundary adjacent to Class A lands. For the GE 3.03 MW Turbine configuration, Turbine IDs 6, 7, and 8 would need to be equipped with LNTE blade technology in order to comply with the 50 dBA nighttime limit at the Project property boundary. With the implementation of mitigation measures at Option 1 layout Turbine IDs 6, 7, and 8, compliance with WAC 173-60 is successfully demonstrated at all Project property boundaries.

Received sound levels were also modeled for the Option 2 layout using GE 5.5 MW and SG 6.0 MW Turbine models under consideration. Compliance was assessed at both NSRs and the Project property boundary relative to the Class A land and Class C land limits as discussed above. Unlike the Option 1 layout, modeling results indicated that the Project successfully demonstrated compliance with the WAC 173-60 regulatory requirements at NSRs and the Project property boundary; therefore, no noise mitigation measures are needed.

Sound contour plots were prepared for the four Turbine layout configurations, displaying broadband (dBA) sound levels presented as color-coded isopleths and provided in Figures 4.1.1-2 through 4.1.1-5. The sound levels represent potential 24-hour operation assuming all equipment is operating at maximum rated power with the exception of Layout Option 1 GE 2.82 Turbine IDs 6, 7, and 8, which will be operating in NRO 106 mode. The sound contours are graphical representations of the cumulative noise associated with full operation of the equipment and show how operational noise would be distributed over the surrounding area of the Project site. The contour lines shown are analogous to elevation contours on a topographic map (i.e., the sound contours are continuous lines of equal noise level around some source, or sources, of sound). Table O-1 in Appendix O shows the projected exterior sound levels resulting from full, normal operation of the Project during both daytime and nighttime hours, at all nearby NSRs for all modeling scenarios.



Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 4.1.1-2 Operational Received Sound Levels Option 1 G.E. 2.82 MW Wind Turbines (NRO Mode)

BENTON COUNTY, WA

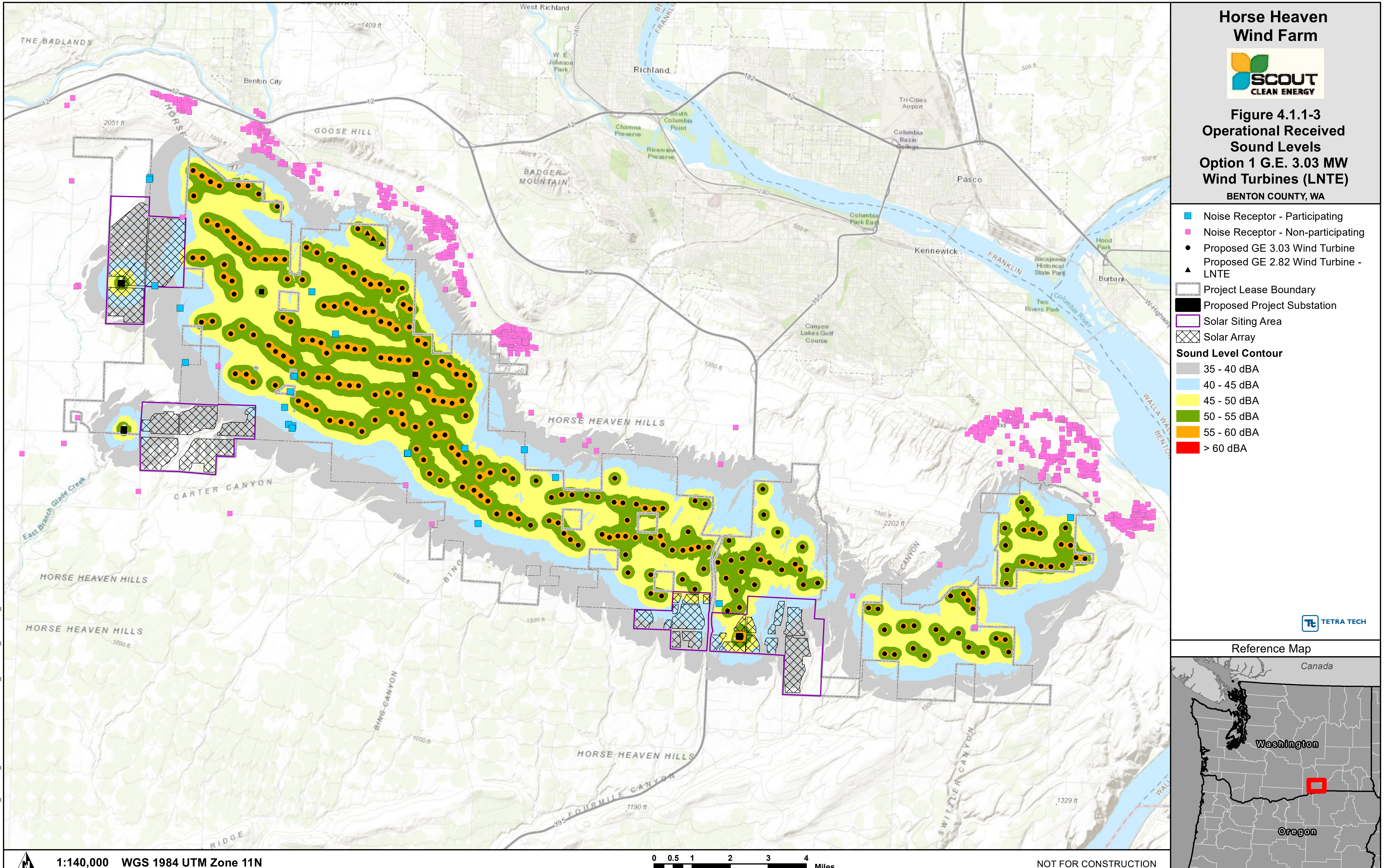
- Noise Receptor - Participating
- Noise Receptor - Non-participating
- Proposed GE 2.82 Wind Turbine
- Proposed GE 2.82 Wind Turbine - NRO 106
- Project Lease Boundary
- Proposed Project Substation
- Solar Siting Area
- Solar Array

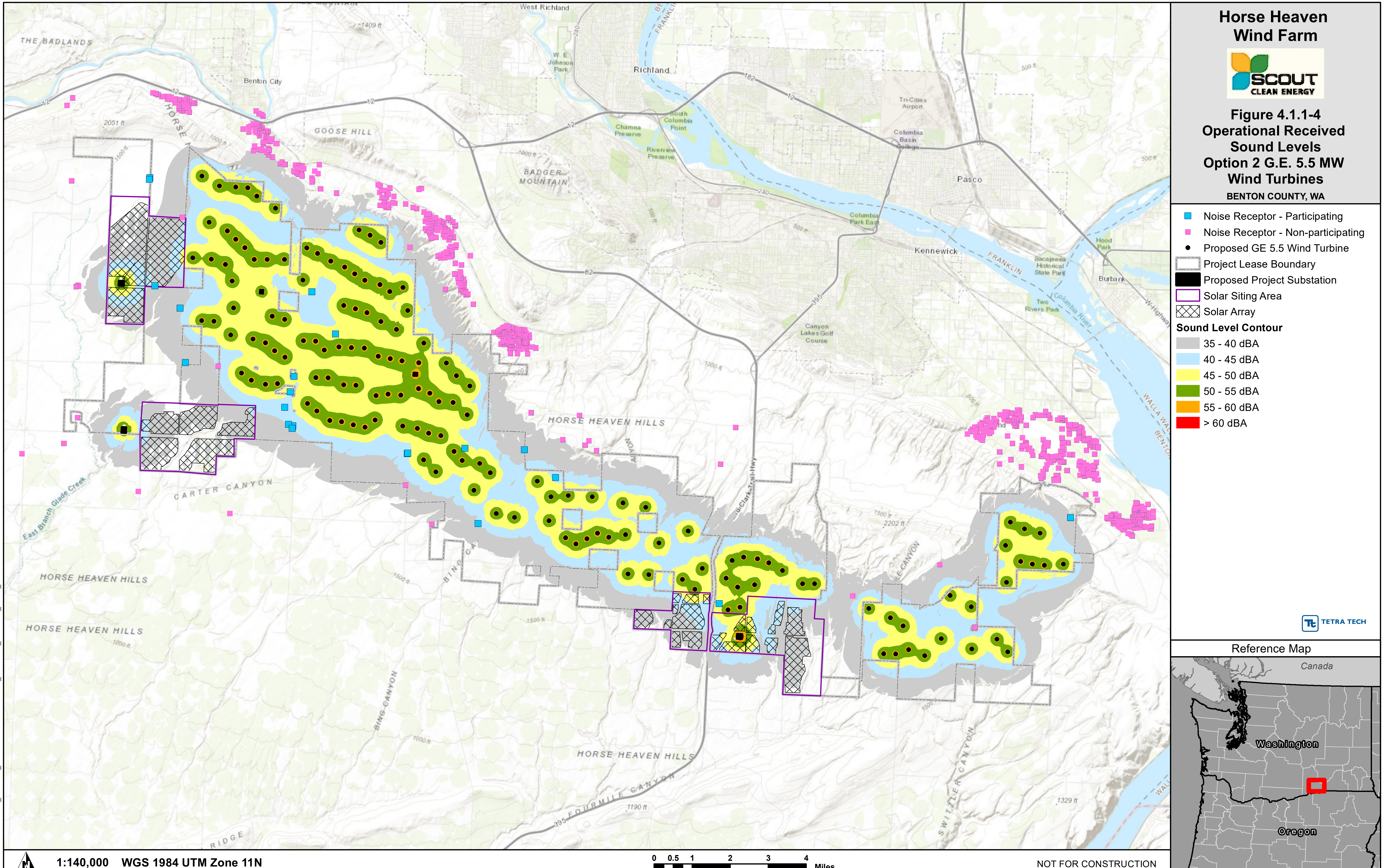
Sound Level Contour

- 35 - 40 dBA
- 40 - 45 dBA
- 45 - 50 dBA
- 50 - 55 dBA
- 55 - 60 dBA
- > 60 dBA

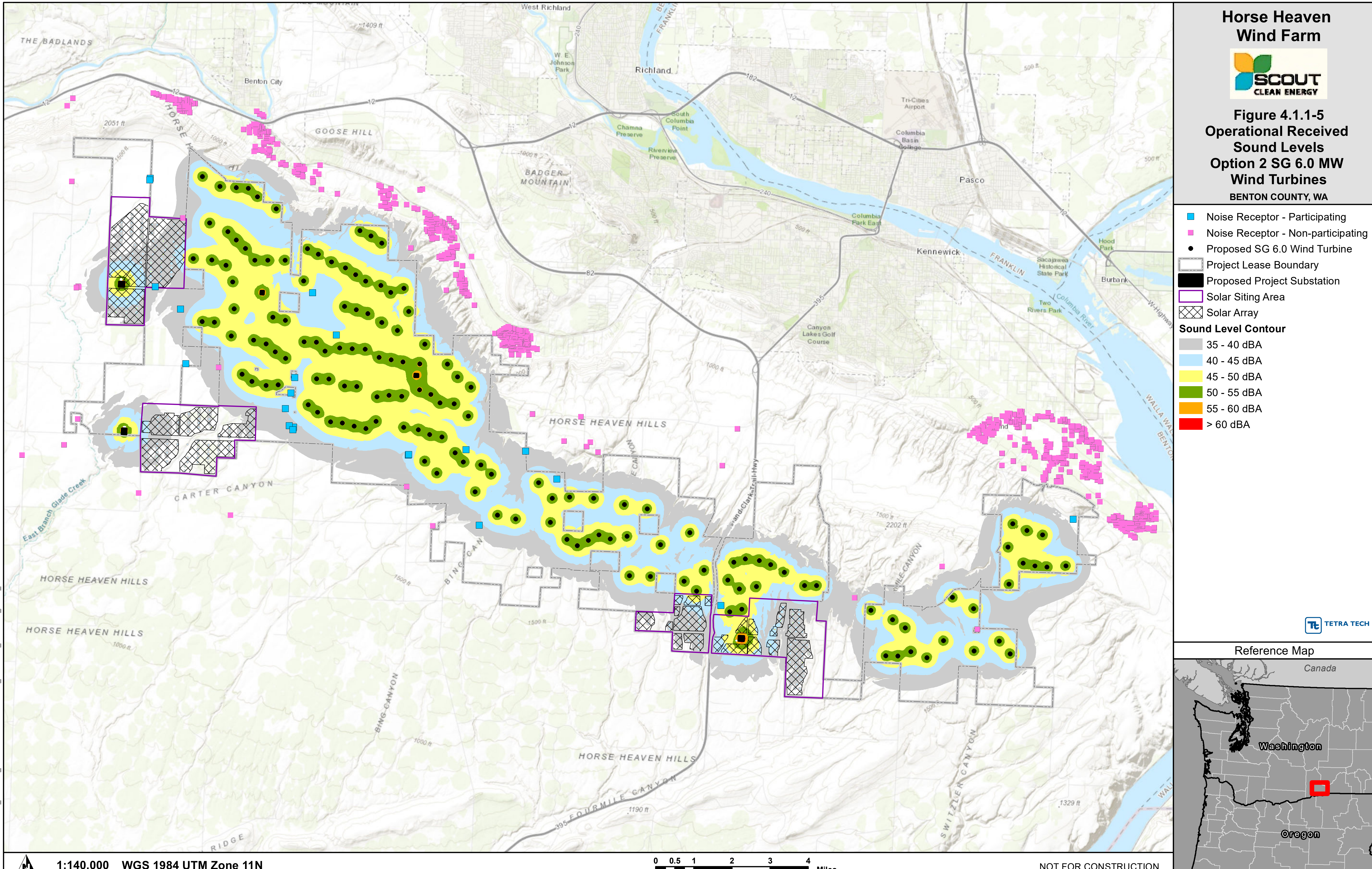
TETRA TECH

Reference Map


Horse Heaven Wind Farm
SCOUT CLEAN ENERGY
Figure 4.1.1-3
Operational Received Sound Levels
Option 1 G.E. 3.03 MW Wind Turbines (LNTE)
BENTON COUNTY, WA
Noise Receptor - Participating
Noise Receptor - Non-participating
Proposed GE 3.03 Wind Turbine
Proposed GE 2.82 Wind Turbine - LNTE
Project Lease Boundary
Proposed Project Substation
Solar Siting Area
Solar Array
Sound Level Contour
35 - 40 dBA
40 - 45 dBA
45 - 50 dBA
50 - 55 dBA
55 - 60 dBA
> 60 dBA
TETRA TECH
Reference Map
Canada
Washington
Oregon
1:140,000 WGS 1984 UTM Zone 11N
0 0.5 1 2 3 4 Miles
NOT FOR CONSTRUCTION
R:\PROJECTS\HORSE_HEAVEN_6430\NOISE\MAPS\NOISE_RESULTS_20210114_LNTE.mxd
THE BADLANDS
Benton City
West Richland
Richland
GOOSE HILL
BADGER MOUNTAIN
Kennewick
Pasco
HORSE HEAVEN HILLS
CARTER CANYON
East Branch Glade Creek
BING CANYON
FOURMILE CANYON
SWITZLER CANYON
RIDGE



Horse Heaven Wind Farm
SCOUT CLEAN ENERGY
Figure 4.1.1-4
Operational Received Sound Levels
Option 2 G.E. 5.5 MW Wind Turbines
BENTON COUNTY, WA
Noise Receptor - Participating
Noise Receptor - Non-participating
Proposed GE 5.5 Wind Turbine
Project Lease Boundary
Proposed Project Substation
Solar Siting Area
Solar Array
Sound Level Contour
35 - 40 dBA
40 - 45 dBA
45 - 50 dBA
50 - 55 dBA
55 - 60 dBA
> 60 dBA
TETRA TECH
Reference Map
Canada
Washington
Oregon
1:140,000
WGS 1984 UTM Zone 11N
0 0.5 1 2 3 4
Miles
NOT FOR CONSTRUCTION
R:\PROJECTS\HORSE_HEAVEN_6430\NOISE\MAPS\NOISE_RESULTS_20210114_OPT2_5PT5.mxd
West Richland
Richland
Benton City
THE BADLANDS
GOOSE HILL
BADGER MOUNTAIN
Pasco
Kennewick
Burbank
HORSE HEAVEN HILLS
CARTER CANYON
BING CANYON
FOURMILE CANYON



Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 4.1.1-5 Operational Received Sound Levels Option 2 SG 6.0 MW Wind Turbines

BENTON COUNTY, WA

4.1.1.3 Mitigation Measures

Construction Noise Mitigation

Because construction equipment operates intermittently, and the types of machines in use at the Project site change with the stage of construction, noise emitted during construction would be mobile and highly variable, making it challenging to control. The construction management protocols would include the following noise mitigation measures to minimize noise impacts:

- Maintain all construction tools and equipment in good operating order according to manufacturers' specifications.
- Limit use of major excavating and earth-moving machinery to daytime hours.
- To the extent practicable, schedule construction activity during normal working hours on weekdays when higher sound levels are typically present and are found acceptable. Some limited activities, such as concrete pours, will be required to occur continuously until completion.
- Equip any internal combustion engine used for any purpose on the job or related to the job with a properly operating muffler that is free from rust, holes, and leaks.
- For construction devices that utilize internal combustion engines, ensure the engine's housing doors are kept closed, and install noise-insulating material mounted on the engine housing consistent with manufacturers' guidelines, if possible.
- Limit possible evening shift work to low noise activities such as welding, wire pulling, and other similar activities, together with appropriate material handling equipment.
- Utilize a complaint resolution procedure to address any noise complaints received from residents.

Operational Noise Mitigation

Modeling results indicated that under Option 2 the Project would be in compliance with the WAC 173-60 regulatory requirements at NSRs and the Project property boundary; therefore, no noise mitigation measures are needed under Option 1. The following discusses the mitigation measures proposed for Option 1.

Some manufacturers provide options for noise mitigation including the use of LNTE and NRO modes. LNTE consists of the addition of plastic or metal sawtooth serrations that can be affixed to the blade's rear edge to reduce blade trailing edge noise. Application of NRO modes limits the rotational speed of the Turbines in order to reduce their sound emissions. For the Option 1 layout using GE 2.82-MW Turbines, in order to demonstrate compliance with the applicable WAC regulatory limits at the Project property boundary adjacent to Class A lands, select Turbines would need to operate in NRO mode. Several NRO modes are available for the GE 2.82-MW Turbine, depending on the Turbine hub height. Those NRO modes and their corresponding sound source level characteristics were evaluated and several modeling iterations were conducted to determine what level of NRO would be required to successfully demonstrate Project compliance.

Modeling iterations for the Option 1 layout using the GE 2.82-MW Turbine indicated that Turbine IDs 6, 7, and 8 will need to operate in NRO 106 mode in order to comply with the applicable 50 dBA nighttime limit at the Project property boundary adjacent to Class A EDNA lands. The maximum rated sound power level for the GE 2.82-MW Turbine operating in NRO mode will be 106 dBA as reported by the Turbine manufacturer.

Modeling iterations for the Option 1 layout using the GE 3.03-MW Turbine found that Turbine IDs 6, 7, and 8 will need to be equipped with LNTE technology to comply with the applicable 50 dBA nighttime limit at the Project property boundary adjacent to Class A EDNA lands. The maximum rated sound power level for the GE 3.03-MW Turbine equipped with LNTE will be 106 dBA as reported by the Turbine manufacturer.

4.1.1.4 Conclusion

The Applicant completed a detailed acoustic assessment of the Project, proposed in Benton County, Washington. The assessment included an evaluation of potential Project sound level impacts during construction and operation phases.

The construction noise assessment indicated that construction noise would be periodically audible at off-site locations; however, that noise would be temporary and minimized to the extent practicable through implementation of best management practices and noise mitigation measures as identified in section below. Traffic noise generated during construction on and off site would also add to overall sound levels but would be intermittent and short-term.

Operational sound levels were modeled and evaluated at nearby NSRs and property lines. Project sound sources consist of the Turbines, substation transformers, solar integrated inverter/ transformers, and BESS units. Acoustic modeling results indicate that the maximum received sound levels resulting from Project operations are associated with the Turbine Option 1 layout. With both the GE 2.82 MW and GE 3.03 MW Turbine configurations, compliance is achieved at all NSRs based on the applicable WAC 173-60 regulatory limits. However, noise mitigation measures would be necessary for the Project to demonstrate compliance at the Project property boundary adjacent Class A land. For the GE 2.82 MW Turbine configuration, review of noise mitigation options ultimately found that Turbine IDs 6, 7, and 8 would have to operate in NRO 106 mode. For the GE 3.03 MW Turbine configuration, Turbine IDs 6, 7, and 8 would need to be equipped with LNTE blade technology in order to comply with the 50 dBA nighttime limit at the Project property boundary. With the implementation of mitigation measures at Option 1 layout Turbine IDs 6, 7, and 8, compliance with WAC 173-60 is successfully demonstrated at all Project property boundaries.

Received sound levels were also modeled for the Option 2 layout using GE 5.5 MW and SG 6.0 MW Turbine models under consideration. Compliance was assessed at both NSRs and the Project property boundary relative to the Class A land and Class C land limits as discussed above. For the Option 2 layout, modeling results indicated that the Project successfully demonstrated compliance with the WAC 173-60 regulatory requirements at NSRs and the Project property boundary; therefore, no noise mitigation measures are needed.

Based on the presented data and analysis, the Project would meet all established noise limits for the Project. It is expected that received sound levels at NSRs would be consistent with sound generated at similar wind energy facilities successfully sited throughout the State of Washington employing the same or similar criteria. Individual response to low-level Turbine noise is largely subjective and therefore not predictable and may depend on non-technical factors. These factors include predetermined perceptions of the Project, economic incentives, and other factors. Project participants are less likely to be affected by noise than non-participants. Non-participants that consider the development of renewable energy sources, and wind energy projects specifically, as beneficial will also be more likely to deem noise impacts as acceptable (MassDEP 2012).

4.1.2 Safety

WAC 463-60-352:

(2) Risk of fire or explosion. The application shall describe any potential for fire or explosion during construction, operation, standby or nonuse, dismantling, or restoration of the facility and what measures will be made to mitigate any risk of fire or explosion.

(3) Releases or potential releases to the environment affecting public health, such as toxic or hazardous materials. The application shall describe any potential for release of toxic or hazardous materials to the environment and shall identify plans for complying with the federal Resource Conservation and Recovery Act and the state Dangerous waste regulations (chapter 173-303 WAC). The application shall describe the treatment or disposition of all solid or semisolid construction and operation wastes including spent fuel, ash, sludge, and bottoms, and show compliance with applicable state and local solid waste regulations.

(4) Safety standards compliance. The application shall identify all federal, state, and local health and safety standards which would normally be applicable to the construction and operation of a project of this nature and shall describe methods of compliance therewith.

(5) Radiation levels. For facilities which propose to release any radioactive materials, the application shall set forth information relating to radioactivity. Such information shall include background radiation levels of appropriate receptor media pertinent to the site. The application shall also describe the proposed radioactive waste treatment process, the anticipated release of radionuclides, their expected distribution and retention in the environment, the pathways which may become sources of radiation exposure, and projected resulting radiation doses to human populations. Other sources of radiation which may be associated with the project shall be described in all applications.

(6) Emergency plans. The application shall describe emergency plans which will be required to assure the public safety and environmental protection on and off the site in the event of a natural disaster or other major incident relating to or affecting the project as well as identifying the specific responsibilities that will be assumed by the applicant.

4.1.2.1 Risk of Fire or Explosion

Existing Environment

The Project is situated on vacant land with little vegetation cover and few trees, presenting little to no inherent risk of fire or explosion.

Impacts

The Project is expected to pose a low fire and explosion risk. Vegetation, if allowed to become overgrown, may grow into the clearance area of the conductors, posing a risk of fire due to arcing or direct contact, and may also cause power outages. Turbine nacelles may pose a fire risk due to the combustible materials and lubricants in them (OSHA 2020). Similarly, diesel-powered generators that may be used during initial Turbine commissioning could pose a fire risk due to the fuel combustion process. Lithium-ion battery storage may pose a risk of fire and explosion due to the tendency for lithium-ion batteries to overheat (FPRF 2013). If lithium-ion battery cells are exposed to abnormal heat, electrolyte products can vaporize and be vented from cells. This vented electrolyte is flammable and may ignite on contact with an ignition source (FPRF 2016).

Mitigation

All facilities will be designed per recommendations of the Institute of Electrical and Electronics Engineering (IEEE) Guide for Substation Fire Protection (979-2012) and the Unified Facilities Criteria (UFC) for Fire Protection Engineering for Facilities (UFC 3-600-01). During construction, trees and vegetation that pose a hazard to the collector lines may be topped or cleared from the right-of-way. During operation and maintenance of the Project, vegetation that is overgrown and could pose a hazard to the transmission line will be topped or cleared on an as-needed basis. Battery storage systems and diesel-powered generators will include fire suppression measures. Appropriate coordination with local emergency personnel will be conducted. Precautionary measures will be taken during construction to reduce fire risk. Construction equipment will be monitored where activities may present safety issues. A Draft Emergency Response Plan, which addresses fire and other emergency procedures, is included as Appendix P. A finalized plan will be developed and implemented, in coordination with the Benton County Fire Marshal and other appropriate agencies, before construction. Typical fire mitigation measures that will be included in a Final Emergency Action Plan include, but are not limited to, requiring that:

- All Project vehicles will be equipped with fire extinguishers.
- Fire station boxes with appropriate fire suppression equipment (e.g., shovels, water tank sprayers, sand) will be installed at multiple locations within the Project.
- No gas-powered vehicles will be allowed outside of graveled areas.
- High clearance vehicles will be used on-site if required to be operated off-road. Low clearance vehicles with catalytic converters will not be parked in tall grasses.
- Any constructing personal required to handle explosives will be state-licensed explosive specialist contractors. All explosives will be secured on-site in compliance with federal, state, and local requirements.
- Areas directly surrounding Turbines and substations will be cleared of vegetation and graveled.
- All portable generators to be fitted with spark arrestors on exhaust system, and not allowed to operate in open grass areas.

4.1.2.2 Potential for Releases to the Environment

Existing Environment

The Project Lease Boundary is dominated by rolling hills bisected by meandering canyons, some of which constitute ephemeral or intermittent drainages. These rolling hills and drainages can create pathways to distribute and spread hazardous materials if an unintended release was to occur.

Impacts

The Project requires use of some hazardous materials, including diesel fuel, lithium-ion batteries, lead-acid batteries, gasoline, and lubricant oils from construction equipment, which could pose the potential for release to the environment if handled improperly. During construction, small quantities of a few hazardous materials may be utilized or stored in the construction yards. Such materials may include cleaners, insecticides or herbicides, paint, or solvents. None would be present in substantial, reportable quantities[18]; the amounts present (if any) would be no greater than household quantities[19] of up to a few gallons each. When not in use, these materials would be stored in a secure location within the construction yards.

Fuels would be the only hazardous material that may be stored in substantial quantities on-site during construction; the Applicant anticipates that up to 500 gallons of diesel fuel and 200 gallons of gasoline may be kept on-site for fueling of construction equipment. These would be stored in temporary aboveground tanks in the construction yard(s), within an area that provides for secondary containment. In addition, if backfeed power is not available during Turbine commissioning, up to three diesel-powered generators may be required (see Section 2.3.1). Each generator can hold up to 1,250 gallons of fuel in a tank within a secondary containment system. Supplementing the generator tanks, a 3,000-gallon diesel fuel tank with its own secondary containment system may be on-site during Turbine commissioning (approximately 19 weeks total) to minimize the need for refueling deliveries. Most fuel would be delivered to the construction yard by a licensed specialized tanker vehicle on an as-needed basis. There would be no substantial quantities of lubricating oils, hydraulic fluid for construction equipment, or other hazardous materials maintained on-site during construction. Lubricating oil or hydraulic fluids for construction equipment would similarly be brought in on an as-needed basis for equipment maintenance by a licensed contractor using a specialized vehicle, and waste oils removed by a similarly licensed maintenance contractor. Hydraulic oils for the Turbines and dielectric oils for the transformers would similarly arrive on an as-needed basis and be transferred into the receiving components; none would be stored on-site.

In the unlikely event of an accidental hazardous material release, any spill or release would be cleaned up and the contaminated soil or other materials disposed of and treated according to applicable regulations. Spill kits containing items such as absorbent pads would be located on equipment and in on-site temporary storage facilities to respond to accidental spills, if any were to occur. Employees handling hazardous materials would be instructed in the proper handling and storage of these materials, as well as to the locations of spill kits.

During operations, there would be no substantial quantities of fuels, oils, or chemicals on-site, except as contained in qualified oil-filled equipment, including the Turbine gearboxes, substation transformers, and inverter station transformers within the solar array, and the sulfuric acid contained in the lead-acid batteries. Section 2.10 provides more details regarding the hazardous materials that would be stored on-site, and the measures that would be implemented to minimize the risk of their inadvertent release.

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[18] "Reportable quantity" refers to the amount of hazardous substance that has to be released into the environment before the EPA requires notification of the release to the National Response Center pursuant to the Comprehensive Environmental Release, Compensation, and Liability Act, also known as Superfund. These numerical designations are listed under 49 CFR 172.101 Appendix A, Table 1 and Table 2.
[19] "Household quantity" refers to container sizes designed for consumer use, which are sized such that each container would hold less than a reportable quantity of any constituent hazardous chemical.

Mitigation

Hazardous material storage, spill prevention, and waste handling BMPs will be implemented and utilized during construction and operation of the Project in compliance with the construction phase and an operational phase SPCC Plan (see Section 2.10 for a detailed description of this plan and its BMPs).

4.1.2.3 Safety Standards Compliance

The Applicant and its contractors would comply with applicable federal, state and local health and safety standards, including:

- Occupational Safety and Health Act of 2000
- Applicable Standards from WAC 296-155, Safety Standards for Construction Work
- Uniform Fire Code
- Uniform Fire Code Standards
- Uniform Building Code
- National Fire Protection Association (NFPA) Standards
- National Institute for Occupational Safety and Health (NIOSH)
- American Society of Mechanical Engineers (ASME), design standards
- American National Standards Institute (ANSI), design standards
- National Electric Safety Code
- American Concrete Institute Standards

The Applicant will coordinate with local emergency services personnel and provide training to emergency personnel where necessary.

4.1.2.4 Radiation Levels

The Project does not generate or emit significant amounts of radiation, or radioactive materials; therefore, this section is not applicable to the Project.

4.1.2.5 Emergency Plans

The Applicant will prepare and submit the following emergency plans to EFSEC for approval prior to construction:

- Emergency Action Plan
- Safety Manual
- SPCC Plan (Construction)
- SPCC Plan (Operations)
    - Note that this SPCC Plan for the Project's operation will be provided to EFSEC prior to operations (as opposed to prior to construction).
- SWPPP (Construction)

The construction contractor would be responsible for implementing the applicable plans during construction.

4.2 LAND AND SHORELINE USE

4.2.1 Land-Use Plans and Zoning Ordinances

WAC 463-60-362: *(1) The application shall identify land use plans and zoning ordinances applicable to the project site.*

4.2.1.1 Existing Environment

County Comprehensive Plan

The Project would be located entirely in unincorporated Benton County, Washington. Benton County's land use development regulations were adopted to implement the general policy guidance of the BCCP, adopted on February 13, 2018 and last updated per Ordinance #620 in January 2020 (Benton County 2020). In total, Benton County includes 1,098,013 acres that are divided into 12 land use designations. Table 4.2.1-1 presents the current total acres and percent of the County for each category.

Table 4.2.1-1. Benton County Comprehensive Plan Land Use Designations and Acreages

Land Use Type/Designation	Land Area (Acres)	Percent of County
Cities and Urban Growth Areas	72,245	6.58
Hanford Site	265,576	24.19
Hanford Reach	12,443	1.13
Unincorporated Area		
Growth Management Act Agriculture	649,153	59.12
Open Space Conservation	2,169	0.20
Public	15,563	1.42
Rural Transition	3,507	0.32
Rural Remote	66,402	6.05
Rural Resource	7,214	0.66
Rural Community Center	448	0.04
Rural Commercial	423	0.04
Rural Industrial	2,870	0.26
Total Unincorporated Area	747,749	--
Total County Area	1,098,013	100

Source: Benton County 2020

The Project would be within the GMA AG land use designation, which encompasses approximately 649,153 acres (59 percent) of the County's land base (Table 4.2-1; Figure 2.1-3). These lands are agricultural lands identified by the County based on criteria established by Washington State's Growth Management Act (RCW Chapter 36.70A) and are considered agricultural lands of long-term commercial significance per RCW 36.70A.030(3) (Benton County 2020). The Project is not within any designated UGA (Figure 2.1-3).

County Zoning Ordinance

The County's GMA AG land use designation is implemented through its zoning ordinance, BCC Title 11 Zoning, specifically BCC 11.17 GMAAD. The Project is located entirely within the

GMA AG/GMAAD (Figure 2.1-4). The GMAAD is intended to protect agricultural lands in the district "by limiting non-agricultural uses to those compatible with agriculture and by establishing minimum lot sizes in areas where soils, water, and climate are suitable for agricultural purposes" (BCC 11.17.010). The Project would be a considered both a "wind turbine farm" per BCC 11.17.07(t) and a "solar power generator facility, major" per BCC 11.17.07(cc), which are listed as permitted, conditional uses in the GMAAD under BCC 11.17.07 and are subject to approval criteria intended to identify any local, site-specific impacts that can be addressed through conditioned permits (see Section 2.23 for Project compliance discussion).

Washington State Trust Lands

The Project Lease Boundary includes all or part of five DNR parcels that are state trust lands, three of which include proposed Turbines and supporting facilities, one with only supporting facilities, and one that is a possible site for the solar component of the Project (Figure 2.1-2). There is no state land use or management plan that applies directly to these parcels. However, in managing state trust lands, DNR is obligated to follow the common law duties of a trustee, which include generating revenue, managing trust assets prudently, and acting with undivided loyalty to trust beneficiaries (*Skamania v. State of Washington*, 102 Wn.2d 127, 685 P.2d 576 [1984]). State trust lands generate continuous revenue for beneficiaries, primarily educational institutions, through a variety of activities, including leasing lands for agricultural purposes and energy production. As of 2015, wind leases on DNR trust lands produced about $1 million per year for state beneficiaries, and DNR has expressed interest in solar power generation on state trust lands (DNR 2020).

4.2.1.2 Impacts

As noted above, the Project would be an allowed conditional use under Benton County's land use planning and zoning regulations. The Applicant demonstrates the Project's consistency with applicable goals and policies of the BCCP and compliance with applicable provisions of the BCC in Section 2.23 of this application. The Project would not result in a finding of non-compliance with the identified local requirements.

In total, depending on the final layout option selected, the Project's permanent footprint would occupy up to approximately 6,869 acres of Benton County's GMA AG land use designation and corresponding GMAAD zone, which represents approximately 1.1 percent of the existing GMA AG/GMAAD area in the County. Construction of the Project may have limited temporary impacts to neighboring land uses, in particular due to noise and traffic generated during construction (see Section 4.1.1 and Section 4.3 for impact analysis and related mitigation measures). Operation of the Project would not negatively impact land uses beyond its footprint and would be compatible with other uses in the surrounding area (see Section 2.23.3 and Section 4.2.6 for additional analysis of potential impacts to agriculture). The Project would provide a new source of revenue for participating landowners, including through a lease agreement with DNR. Upon Project decommissioning, land would be restored for agricultural or other permitted uses. For these reasons, and with measures noted below, the Project would have no significant impacts related to applicable land use plans and zoning.

4.2.1.3 Mitigation Measures

The proposed Project has been designed with input from participating landowners, with whom the Applicant has lease agreements that include terms, as applicable, to avoid or reduce impacts to existing land uses. Construction and operation of the Project will follow site-specific BMPs to minimize potential impacts to traffic, noise, air quality, and vegetation, as described in the respective resource sections of this application. Upon decommissioning of the Project, the Applicant will remove all above-grade facilities as well as below-grade facilities to not less than 3 feet below grade. The Applicant will also replace topsoil and reseed areas where facilities were located with grasses and/or other vegetation reasonably acceptable to the landowner. Given these measures and the relatively small Project footprint in relation to existing GMA AG/GMAAD land in Benton County, no significant impacts related to applicable land use plans and zoning would result from implementation of the Project.

4.2.2 Light and Glare

> *(2) Light and glare. The application shall describe the impact of light and glare from construction and operation and shall describe the measures to be taken in order to eliminate or lessen this impact.*

4.2.2.1 Existing Environment

Existing light or glare could occur from vehicles traveling local roadways and I-82, nearby rural residential development, the adjacent Nine Canyon Wind Project, and any nearby BPA Substations. The level of light and glare from these sources is low, and typical for the rural, largely agricultural setting.

4.2.2.2 Impacts

The Project would generate minimal light during the construction process from vehicles and equipment. Construction work would be concentrated during daylight hours, minimizing the potential need for temporary nighttime lighting.

Once constructed, external lighting at supporting facilities such as the substations, O&M facilities, and BESS would be limited to security lighting. Security lighting would be directed downward and shielded to avoid nighttime light pollution effects. This type of exterior lighting would be consistent with other similar sources of light in the area such as the existing BPA substation and rural residential development, as well as the adjacent Nine Canyon Wind Farm facility.

The Turbine towers would be painted off-white with a non-reflective coating in accordance with FAA regulations. Aviation lighting would be mounted on Turbine nacelles per FAA requirements, which include additional lighting for Turbines with blade tip heights above 499 feet, and mid-tower lighting for Turbines with blade tip heights above 599 feet. Up to four permanent meteorological towers would also be lighted as specified by the FAA (see Section 2.23 for FAA regulatory compliance discussion). These lights would be most visible at night, akin to lighted communication towers common in the Tri-Cities area.

The solar modules would be mounted on single-axis trackers that optimize electricity production by rotating the solar modules to follow the path of the sun throughout the day. The modules to be used for the Project would have anti-reflection coating; however, there could still be some potential for glare. To evaluate the potential extent of glare from the proposed solar arrays, the Applicant conducted a solar glare analysis for a sampling of observation points and vehicle routes within approximately two miles of the solar modules. These observation points and vehicle routes were selected to be consistent with the visual analysis discussed in Section 4.2.3 of this application. The complete Glare Analysis Report is provided in Appendix H of this application.

The results of the glare modeling analysis indicate that the surrounding observation points and vehicle routes would not experience glare as a result of the Project (see Appendix H). The glare analysis also found that the Project would not create any glare effects that could impact jurisdictional airports (see Appendix H; FAA 2020). The predicted glare at these receptors is considered to be a conservative representation as the modeling tool does not consider weather conditions or obstacles (either man-made or natural) between the defined solar PV arrays and the receptors such as vegetative screening (existing or planted), buildings, topography, etc. Where such features exist, they would screen views of the Project and, thus, minimize or eliminate glare from these receptor locations. See Appendix H for figures and further information regarding the methods used for the glare analysis.

For the above reasons, light or glare from construction and operation of the Project would not result in a safety hazard or other significant adverse impact.

4.2.2.3 Mitigation Measures

No significant light and glare impacts are anticipated from the Project; therefore, no mitigation measures are proposed.

4.2.3 Aesthetics

> *(3) Aesthetics. The application shall describe the aesthetic impact of the proposed energy facility and associated facilities and any alteration of the surrounding terrain. The presentation will show the location and design of the facilities relative to the physical features of the site in a way that will show how the installation will appear relative to its surroundings. The applicant shall describe the procedures to be utilized to restore or enhance the landscape disturbed during construction (to include temporary roads).*

Potential impacts to visual resources that could result from construction and operation of the Project are analyzed and described in this section. As described in Section 2.1 of this Application, the Project Lease Boundary encompasses approximately 72,428 acres primarily on privately held land with some DNR state trust land. Section 2.3 of this Application provides a detailed description of the various Project components and Figures 2.3-1 and 2.3-2 illustrate the location of the proposed Project facilities. The visual impact analysis evaluated the Turbines, solar arrays, and transmission lines due to their height and spatial area. Other features located within the Project Lease Boundary (meteorological towers, substations, BESS areas) are mostly surrounded by larger or more numerous features, or will be located underground, and therefore were not the focus of the visual analysis. The following specifications were used in the visual analysis:

Turbines

Four different Turbine models across two different Turbine layouts were evaluated as outlined in Table 2.3-1. The four Turbine models are grouped into two Turbine Layout options (i.e., Turbine Layout Option 1 and Turbine Layout Option 2) based on the MW output and overall size of the Turbine models considered. Option 1 consists of Turbines with a nameplate generating capacity of 2.82 MW and 3.03 MW of energy and a maximum height of about 496-499 feet (151-152 meters); Option 2 consists of Turbines with a nameplate generating capacity of 5.5 and 6.0 MW of energy and a maximum height of about 657-671 feet (200-204 meters). Figures 2.3-1 and 2.3-2 illustrate proposed Turbine Layout options.

This analysis uses the GE 2.82 MW Turbine for Option 1 (499 feet maximum height) and the GE 5.5 MW Turbine for Option 2 (671 feet maximum height), as they represent the greatest potential visual impact for each Turbine Layout option.

The Applicant would construct support facilities with non-reflective materials in muted tones, and would use white or light gray, non-reflective paint on Turbines to reduce the need for daytime aviation lighting and minimize glare from the Turbines as required by FAA Advisory Circular 70/7460-1M.

Solar Arrays

The major components of the proposed solar energy generation systems consist of the solar modules, tracking/racking systems, posts, and related electrical equipment (e.g., inverters and transformers). These components are combined to form a solar array. Although the Benton County Code allows a maximum solar panel height of 20 feet, the most likely maximum height is 15 feet and the analysis was performed using this value. Three solar arrays, identified as Western (County Well Road), Western (Sellars Road), and Eastern (Bofer Canyon), are located in the Project Lease Boundary. The solar arrays would be enclosed by a 6-foot-tall security fence. The solar panels would be equipped with a non-reflective finish/coating.

Transmission Lines

A new 230-kV single-circuit transmission line would be constructed to connect the Project's substations as well as interconnect with the regional grid at Bofer Canyon. For a short distance (less than 0.5 mile) at Webber Canyon, there would be a 500-kV single circuit transmission line to connect the Project's step-up substation to the regional grid. While there are six possible transmission line route alternatives being considered in the western portion of the Project, the visual analysis considers all possible routes collectively to provide a conservative assessment of impacts. The transmission line would be suspended above ground on single steel monopole structures and the structure height would primarily be approximately 110 feet above grade. Where the transmission line steps up to 500 kV, the support structures would be approximately 135 feet above grade. The viewshed analysis accounts for this minor increase in height.

Other Facilities

Two BESS facilities may be developed for the Project. The BESS would use a series of self-contained battery banks and would be placed adjacent to the two intermediate Project substations and enclosed within a separate fence. Each BESS would occupy up to approximately 6 acres.

Up to four substations would be required for the Project. Two of these Project substations would be co-located with the Project's O&M facilities (one O&M building at HH-East near BPA's planned Bofer Canyon substation, and one at the HH-West Project substation). The Project's substations would be fenced, and consist of substation transformers, circuit breakers, switching devices, auxiliary equipment, a control enclosure (containing equipment for proper control, protection, monitoring, and communications), and associated equipment and facilities. The area within the Project substations' fence line would be graded/flattened and contain a bed of crushed rock. The Project substations would be enclosed by a security wire mesh fence designed in accordance with industry standards to provide safety and security. See Section 2.3 for additional detail regarding other Project infrastructure.

4.2.3.1 Project Lease Boundary Existing Conditions

The Project is located within the Horse Heaven Hills area which consists primarily of cultivated crops (primarily dryland agriculture), pastureland (with some livestock grazing), and open shrub-steppe habitat and grassland. The topography gently slopes from north to south within the Project Lease Boundary and is dissected by minor drainageways. Multiple existing transmission lines and substations are located north of the Project Lease Boundary mostly traversing the area east-west. One transmission line crosses northeast-southwest through the east-central portion of the Project Lease Boundary and another transmission line crosses north-south adjacent to the western portion of the Project Lease Boundary. Multiple communication towers exist north of the Project Lease Boundary. One communication tower is located northwest of the Project on Chandler Butte while another is located southwest of the Project east of Highway 221, and another is located south of the Project along I-82. I-82/U.S. Highway 395 runs north-south through the Project Lease Boundary, roughly dividing it into western and eastern sections. The existing Nine Canyon Wind Project is on the east side of I-82 near Finley and the existing Turbines are visible when heading north through the proposed Project Lease Boundary. Other human modifications of the landscape in the area include local roads and low-to medium-density rural residential development.

4.2.3.2 Visual Impact Analysis Methodology

Visual impacts are generally defined in terms of a project's physical characteristics and potential visibility, as well as the extent to which the project's presence would change the perceived visual character and quality of the environment in which it would be located. Where visible and noticeable, the Project facilities would introduce visual contrast and have the potential to create visual effects within the surrounding areas. The potential visual effects anticipated as a result of the construction and operation of the Project are discussed below. At the end of the Project's operational life, decommissioning would include removal of all equipment associated with the Project and returning the Project Lease Boundary to substantially the same condition as existed prior to Project development.

This visual impact analysis was completed to address requirements set forth in WAC 463-60-362(3) to describe the aesthetic impact of the proposed facility and provide the location and design of the facilities as well as depict how the Project will appear relative to the surrounding landscape. The EFSEC requirements do not specify a methodology to be used to evaluate potential aesthetic impacts. Enjoyment of a scenic resource is subjective and highly dependent on the viewer's perception of beauty and scenery and the addition of the Project facilities into a view may be detrimental to one viewer's enjoyment of a location but may have a negligible effect for a different viewer. Therefore, a process using the concept of "contrast" based on the Bureau of Land Management (BLM) Visual Resource Management (VRM) system is often used to objectively measure potential changes to landscape features of inventoried sensitive resources (BLM 1986a, 1984). Concepts from the BLM VRM system are widely used for a variety of projects and, with some modifications, have been applied successfully to projects that do not occur on lands under the jurisdiction of the BLM. In the BLM VRM system, potential visual effects are assessed by considering the level of contrast the Project facilities introduce to the existing landscape. There are multiple visual methodologies defined by federal agencies to review actions undertaken within their jurisdiction. For wind projects, three methodologies are commonly used to analyze visual impacts that may result from construction of a new project: the Federal Highway Administration (FHWA) Guidelines for the Visual Impact Assessment of Highway Projects (FHWA 2015); the United States Forest Service's (USFS) Scenery Management System (USFS 1995); and the BLM VRM system (BLM 1984). All of these methodologies have been used successfully to analyze impacts to these types of projects. These three agencies follow a similar approach to assessing visual impacts, which include: development of a project description to identify what is to be analyzed; identify and select key observation points from which visual impacts will be analyzed; prepare visual simulations and other associated graphics (e.g., viewsheds, line-of-sights) to depict how the project will look; assess impacts by comparing the change from what viewers see today against what the landscape would look like if the project is built. A methodology that includes assessment practices common to most major federal analysis systems and based on the BLM approach was utilized for this Project based upon the following:

- Project proximity to land under the jurisdiction of the BLM;
- The BLM methodology is a widely used, industry accepted approach to evaluate large energy projects for actions on federal and on private lands for federal, state and local permitting processes; and
- BLM has a formal process for assessing project impacts through evaluation of Visual Contrast Rating.

The BLM's visual contrast rating process (Handbook 8431-1, Visual Resource Contrast Rating [BLM 1986b]) was used as the basis for reviewing potential landscape changes resulting from the proposed Project and is discussed below and in Section 4.2.3.3.

Visual Study Areas

The Project visual study area for the Turbines and transmission lines was defined as the area within 10 miles of the Project Lease Boundary, and the visual study area for the solar arrays was defined as the area within 5 miles of each solar array. The Project visual study areas were identified based on results of the viewshed analyses prepared for the Project (Figures 4.2.3-1 through 4.2.3-6). Although theoretical visibility of Turbines and solar arrays may extend beyond 10 and 5 miles, respectively, the visual study areas were defined to include the area where these features are likely to be noticeable to the casual observer. Viewer distance is a key factor in determining the level of visual effect, with perceived contrast generally diminishing as distance between the viewer and the affected area increases (BLM 1986b). Given the location of the Project, it is anticipated that viewers in closer proximity to the Project or viewers with elevated views would have the greatest potential to perceive changes to the landscape. The visual study areas encompass all proposed Project facilities.

Within the visual study areas, aerial photography was used to identify possible residential structures, travel ways, cultural resources, recreation, and other areas of interest and open space areas from which to identify potential visibility referred to as visual receptors. Additionally, the Applicant sought input from Benton County to identify potential areas of interest to local community members. Benton County noted potential interest on the part of residents located north of the Project. The resulting list of potential areas of interest were visited and photographed, and a selection of observation points ("receptors") was identified to represent the range of viewers and locations that have views of the area where Project infrastructure would be built.

Most potential visual receptors within the visual study areas are located to the north or northeast of the wind facility with the highest concentration between 1 to 3 miles. Visual receptors located to the south and west are less concentrated and located primarily between 1 and 2 miles from the wind facility. These receptors are depicted on the viewshed analysis figures described below.

Viewshed Analysis

A viewshed analysis was conducted to evaluate the geographic extent of potential visibility of the Turbines, solar arrays, and transmission lines. The analysis was based on the height of the Turbines, the extent of the solar arrays, and the height of the transmission line poles because they are the largest and most geographically diverse Project components, and therefore, potentially the most noticeable introduction into the landscape. Although the proposed supporting components (i.e., substations, BESS, O&M facilities) may also be visible from some locations, they would be less visible at distance and therefore a separate viewshed analysis was not prepared.

The viewshed analysis was performed using Esri ArcGIS software, employing a 10-meter digital elevation model to represent the terrain within the visual study areas. The bare earth modeling approach used in the viewshed analysis is based only on the effects of terrain on visibility, resulting in a conservative assessment of potential visibility. Such an approach does not account for the effects of vegetation or buildings, which could block or screen views in some places. In addition, the viewshed model does not account for lighting and atmospheric factors (such as weather) that can diminish visibility under actual field conditions. Thus, potentially "visible" areas identified in the viewshed analysis do not necessarily confirm that the Project would be visible or noticeable to the viewer.

Two different viewshed analyses were created for the maximum Turbine heights in each Turbine Layout Option. Figures 4.2.3-1 and 4.2.3-2, respectively, illustrate the potential visibility of the Turbine options. Three viewshed analyses were created to assess potential visibility for each of the three Solar Siting Areas (West 1 on County Well Road; West 2 on Sellards Road; and East at Bofer Canyon). Figures 4.2.3-3 through 4.2.3-5, respectively, illustrate the potential visibility of the solar panel areas. All three of the solar panel viewshed analyses assumed a maximum panel height of 15 feet. One viewshed analysis was created to represent potential visibility of all of the various transmission line options, the Project Intertie line between HH-West and HH-East substations and combined options for transmission lines from the HH-West Project substation to Webber Canyon (Figure 4.2.3-6). Note that the viewshed analysis shown on Figure 4.2.3-6 is a conservative combined analysis for multiple transmission line options. Because not all of these lines would be built, the viewshed analysis likely overstates the potential visibility of transmission lines that would ultimately be constructed.

Turbine Visibility

Project Turbines under Turbine Layout Option 1 would potentially be visible from approximately 86 percent of the area located within 5 miles of the Project and from 81 percent of the area within 10 miles of the Project. Project Turbines under Turbine Layout Option 2 would potentially be visible from a slightly larger portion of the analysis area, approximately 87 percent of the area located within 5 miles of the Project and approximately 83 percent of the area within 10 miles of the Project. The taller Turbines in Turbine Layout Option 2 would be visible from a slightly larger portion of the analysis area, but fewer Turbines would be visible overall because this layout would have nearly 40 percent fewer Turbines than Turbine Layout Option 1. Areas identified as having potential visibility of large numbers of Project Turbines include most of the Horse Heaven Hills to the west and southwest of the Project; areas on the southwest-facing slopes of the Rattlesnake uplift formation, specifically Red, Candy, and Badger mountains; and areas ranging from approximately 8 to 10 miles to the north, northeast, and east of the Project, including parts of the Tri-Cities urbanized area and agricultural areas beyond. There would be a direct line of sight to a large majority of the Project Turbines in these areas identified as having potential visibility; however, with the distance and change in elevation, the entire Turbine (blades and tower) is not anticipated to be visible and in many cases only the blade tips or blades are visible. Notable areas in which potential visibility would be blocked by terrain include a large area in the lower Yakima River Valley from Benton City westward; lower-elevation locations in the Badger Canyon area immediately to the north and northeast of the Project; and a large expanse of the eastern and southern parts of Benton County (Figures 4.2.3-1 through 4.2.3-2).

Solar Array Visibility

The three solar arrays (Western [County Well Road], Western [Sellars Road], and Eastern [Bofer Canyon]) would be potentially visible from approximately 45 percent, 51 percent, and 31 percent, respectively, of the area located within 5 miles of the Project (see Figures 4.2.3-3 through 4.2.3-5). The proposed solar arrays would appear as low geometric elements that are gray in color and would generally follow the gently rolling terrain landscape. The views can be different from one location to another, even in close proximity, because of the terrain and the screening effects of vegetation (including crops), and existing development. Viewers in proximity to the Project may have unobstructed or partially screened views and include residences and travelers along the local roads and highways. Areas identified as having potential visibility of the solar arrays include mostly flat to gently rolling terrain areas south of the Project. There would be a direct line of sight to a majority of the solar arrays in close proximity to the Project in these areas identified as having potential visibility; however, with the change in distance and elevation, the solar panels are unlikely to be always noticeable and in many cases will appear as a darker line on the horizon with indistinguishable features.

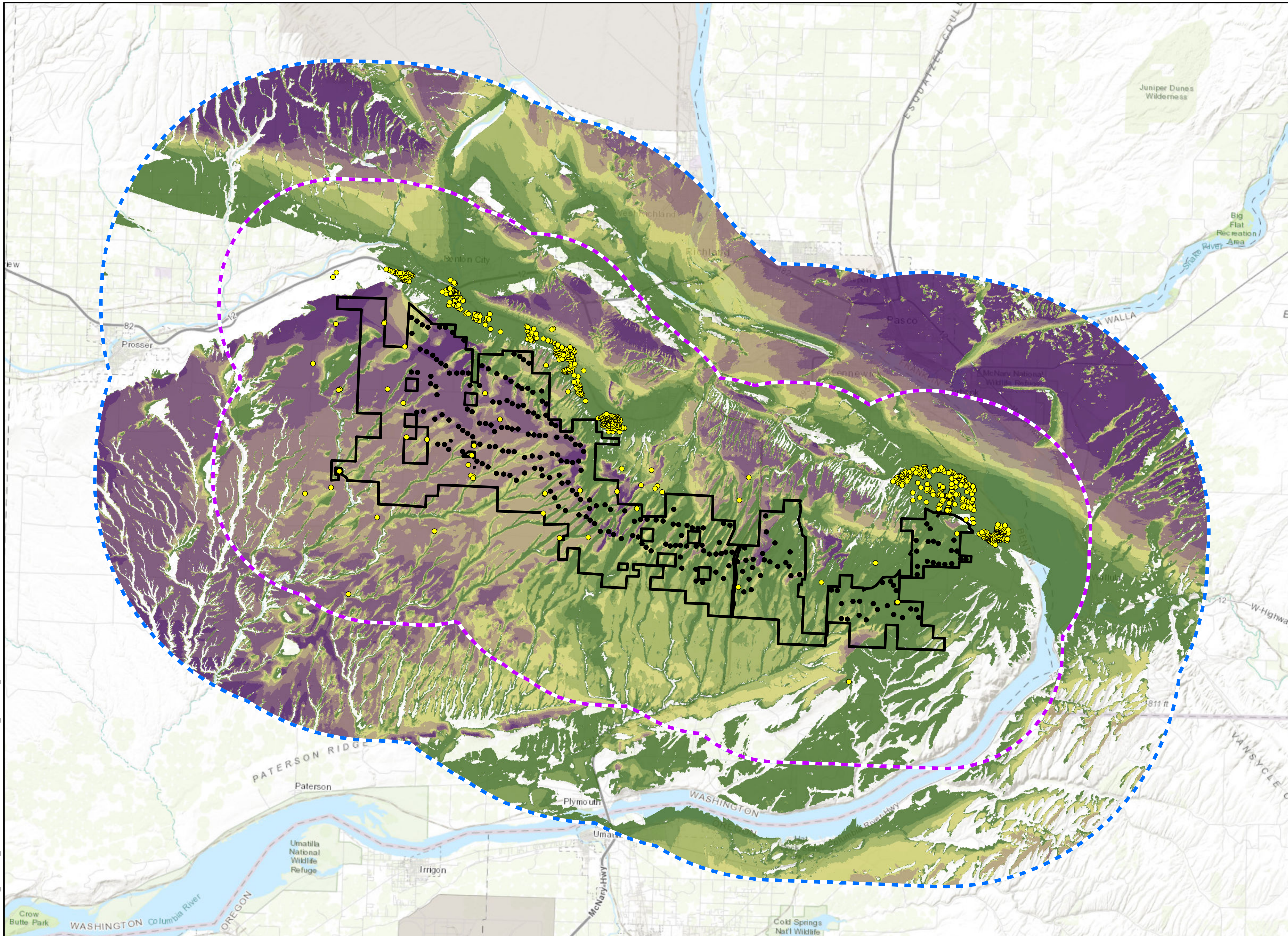
Transmission Line Visibility

Transmission Lines would potentially be visible from approximately 52 percent of the area located within 10 miles of the Project (Figure 4.2.3-6). The spatial extent of transmission line pole visibility would be similar to the Turbines discussed above. However, the poles would be much thinner than Turbines and would have no motion, so would be less noticeable especially with distance.

Horse Heaven Wind Farm

Figure 4.2.3-1 Viewshed Analysis Results: Turbine Layout Option 1

BENTON COUNTY, WA



Proposed Turbine Location (244 Turbines modeled at 499' blade-tip height)

Visual Receptor

Project Lease Boundary

5 mile Buffer

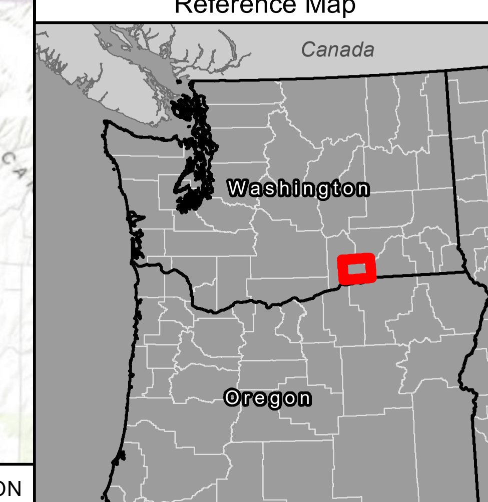
10 mile Buffer

Number of Turbines Potentially Visible

- 0
- 1 - 50
- 51 - 75
- 76 - 100
- 101 - 125
- 126 - 150
- 151 - 175
- 176 - 200
- 201 - 244

TETRA TECH

Reference Map



1:250,000 WGS 1984 UTM Zone 11N

0 2 4 8 12 16 Miles

NOT FOR CONSTRUCTION

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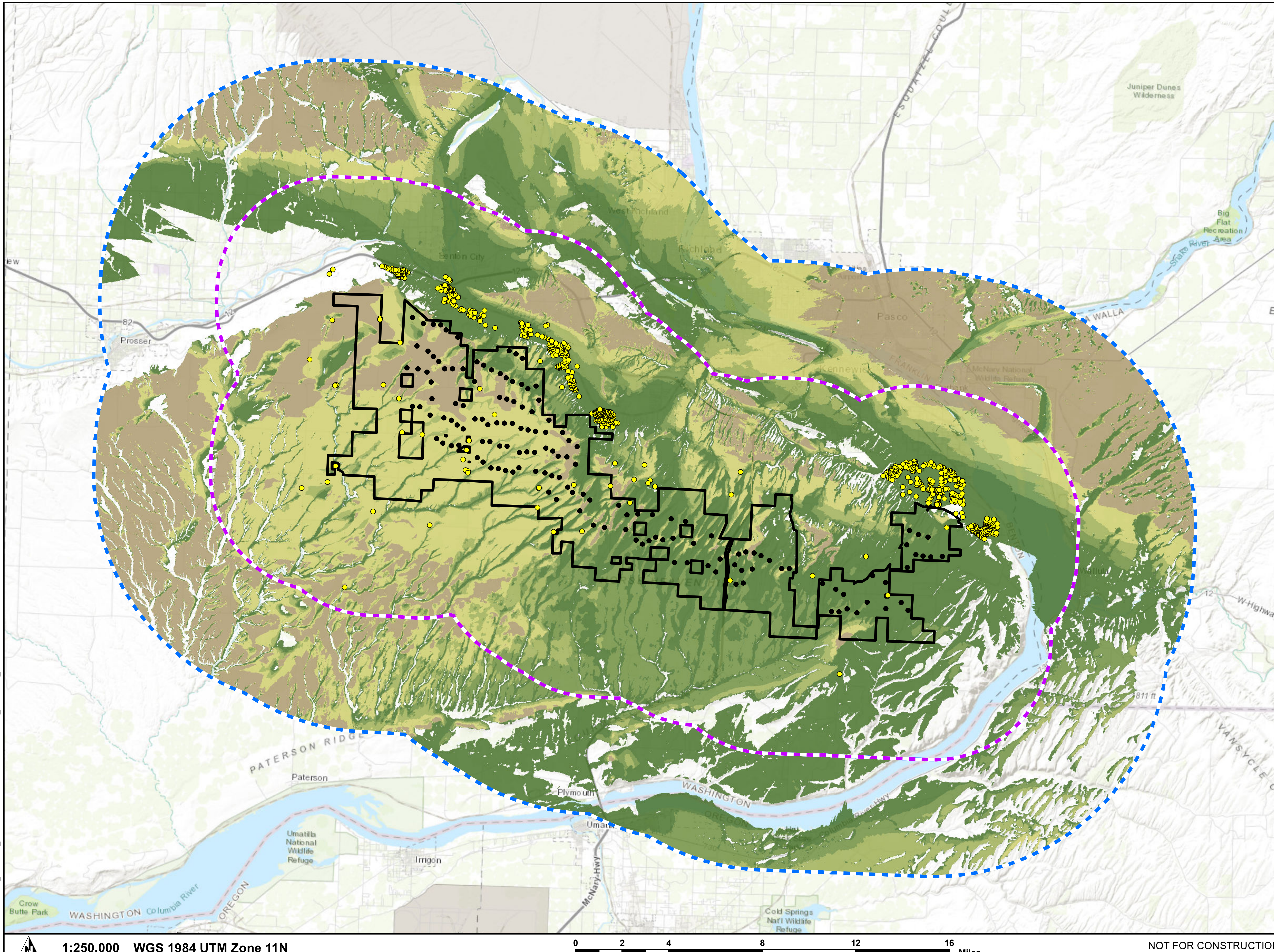

Horse Heaven Wind Farm

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Figure 4.2.3-2
Viewshed Analysis Results: Turbine Layout Option 2

BENTON COUNTY, WA

- Proposed Turbine Location (150 Turbines modeled at 671' blade-tip height)
- Visual Receptor
- Project Lease Boundary
- 5 mile Buffer
- 10 mile Buffer

Number of Turbines Potentially Visible
- 0
- 1 - 50
- 51 - 75
- 76 - 100
- 101 - 125
- 126 - 150
- 151 - 175
- 176 - 200
- 201 - 244

TETRA TECH

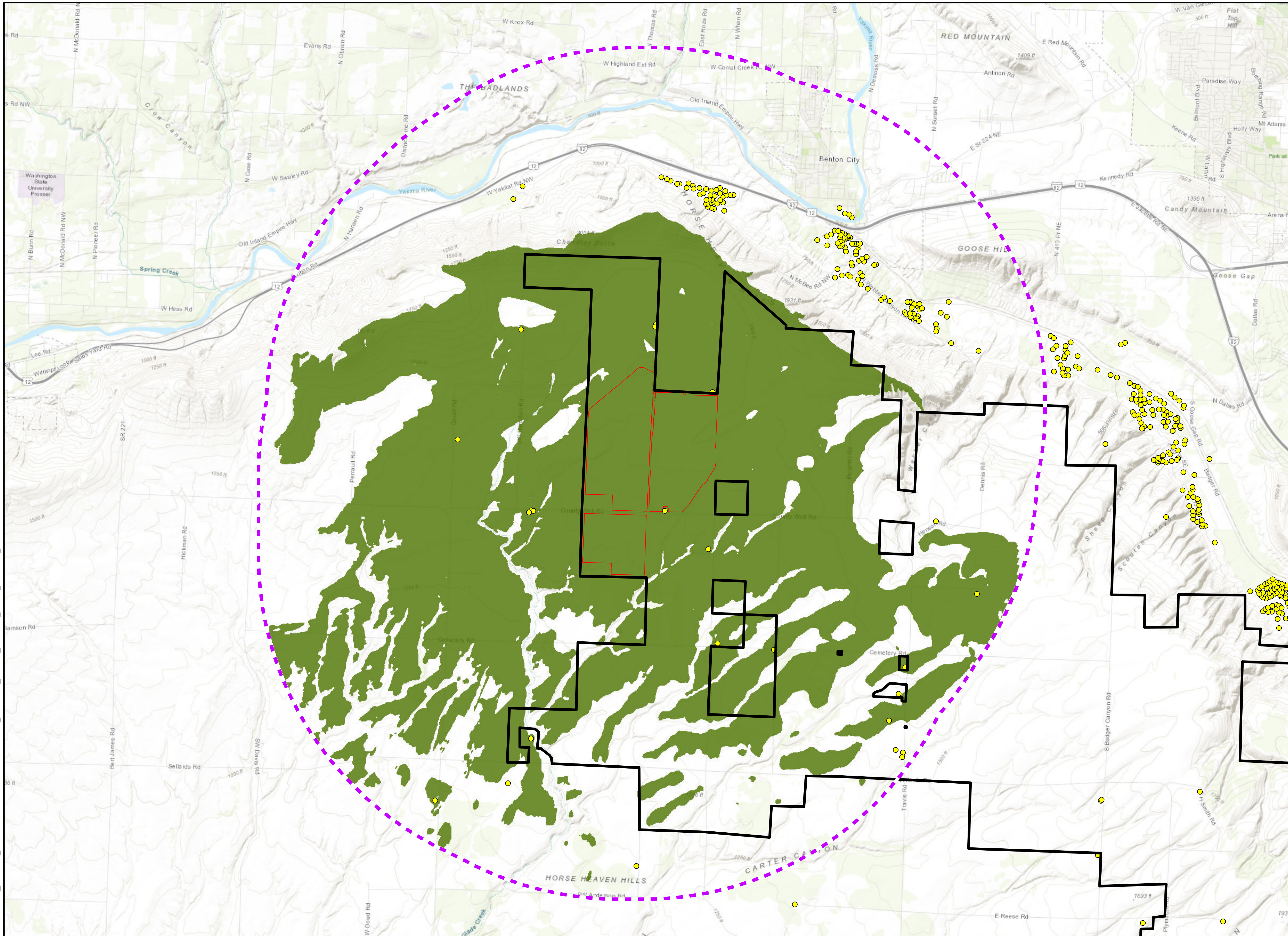
Reference Map

Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 4.2.3-3
Viewshed Analysis Results: Western Solar Array (County Well Road)

BENTON COUNTY, WA



- Visual Receptor
- Solar Array Fence Line
- Project Lease Boundary
- Solar Array 5 mile Buffer
- Potentially Visible
- Not Visible

TETRA TECH

Reference Map

1:90,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

NOT FOR CONSTRUCTION

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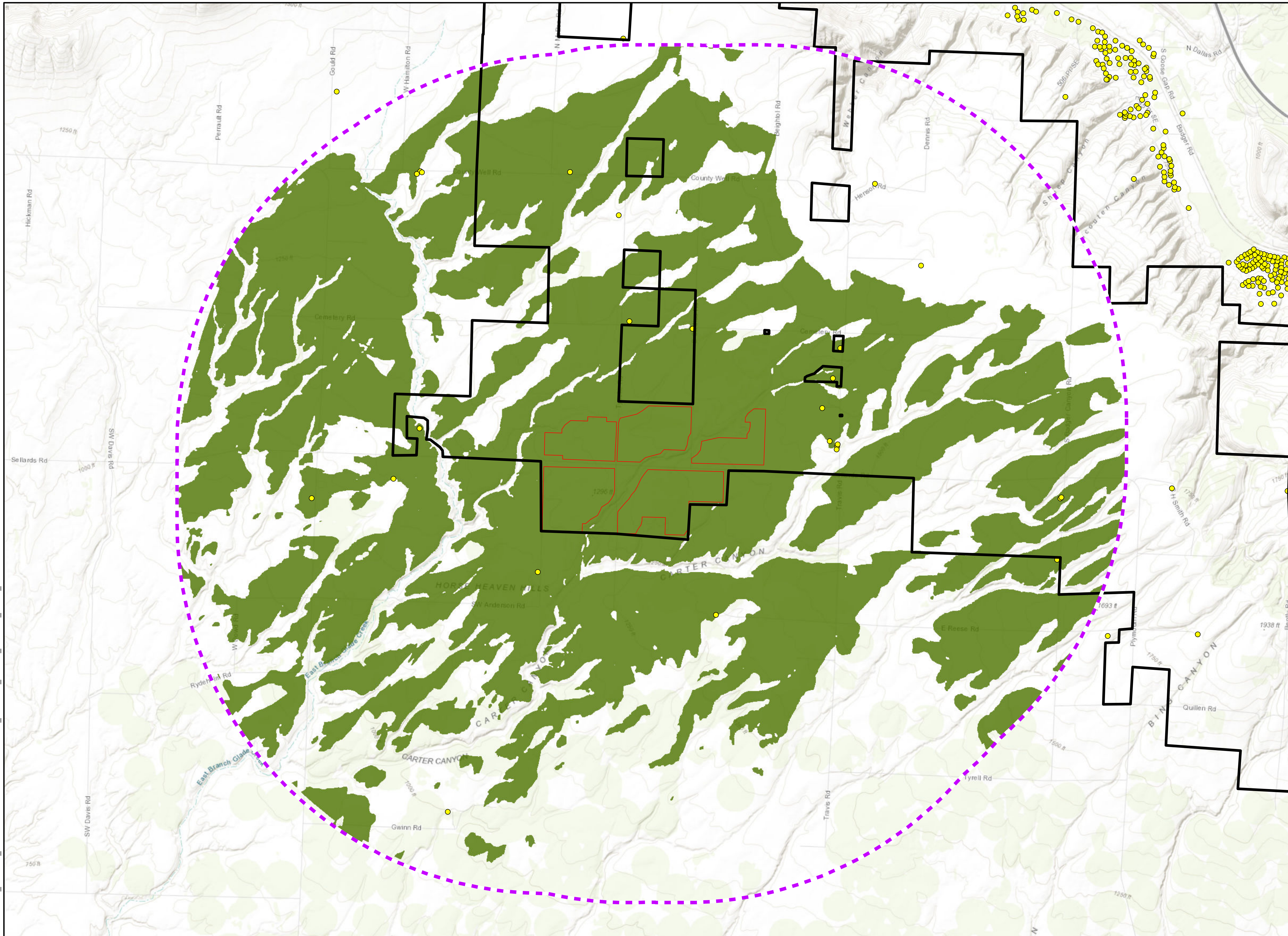
Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 4.2.3-4
Viewshed Analysis Results: Western Solar Array (Sellards Road)

BENTON COUNTY, WA



- Visual Receptor
- Solar Array Fence Line
- Project Lease Boundary
- Solar Array 5 mile Buffer
- Potentially Visible
- Not Visible

TETRA TECH

Reference Map

1:80,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

NOT FOR CONSTRUCTION

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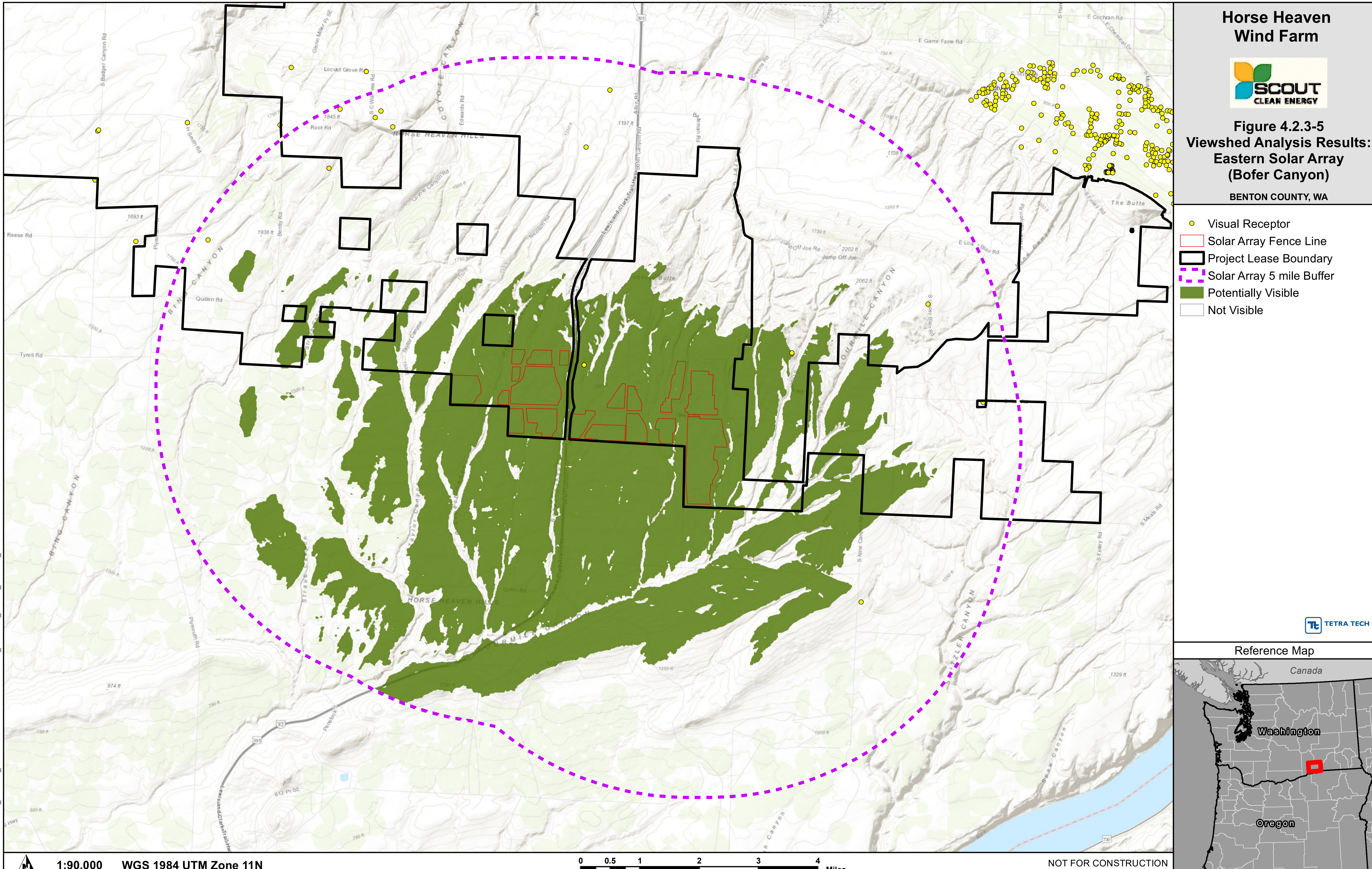

Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 4.2.3-5
Viewshed Analysis Results: Eastern Solar Array (Bofer Canyon)

BENTON COUNTY, WA

- Visual Receptor
- Solar Array Fence Line
- Project Lease Boundary
- Solar Array 5 mile Buffer
- Potentially Visible
- Not Visible

TETRA TECH

Reference Map

1:90,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

NOT FOR CONSTRUCTION

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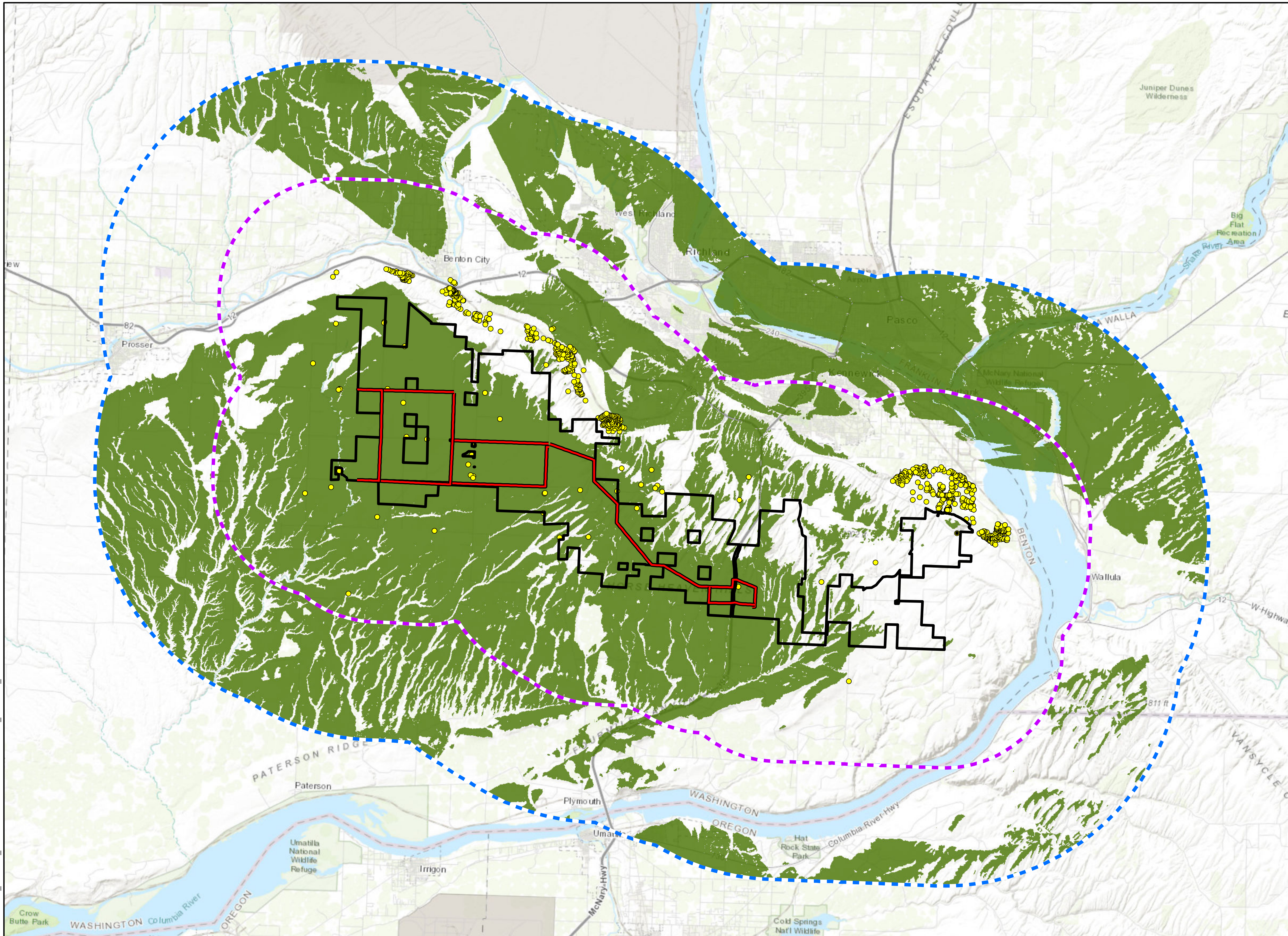
Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 4.2.3-6
Viewshed Analysis Results: Proposed Transmission Lines

BENTON COUNTY, WA



- Proposed Transmission Line
- Visual Receptor
- Project Lease Boundary
- 5 mile Buffer
- 10 mile Buffer
- Potentially Visible
- Not Visible

TETRA TECH

Reference Map

1:250,000 WGS 1984 UTM Zone 11N

0 2 4 8 12 16 Miles

NOT FOR CONSTRUCTION

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Viewer Types and Visual Sensitivity

Viewer reactions to changes in the landscape can vary depending on the characteristics and preferences of the viewer group. For example, residential viewers are typically expected to have a high concern for changes in views from their residences. Motorists' concern generally depends on when and where travel occurs, and the type of travel involved (e.g., commuting vs. recreational travel). The types of users in the visual study areas include residents of the adjacent Tri-Cities communities, including Benton City, Burbank, Kennewick, Pasco, and Richland; travelers on the various interstates and highways; recreators to the Rattlesnake, Red, Candy, and Badger mountains, McNary National Wildlife Refuge, and other facilities in the area. The Project Lease Boundary is also of interest to the Confederated Tribes and Bands of the Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation, and Nez Perce Tribe, who may attach cultural significance to natural landscape components (see Section 4.2.5 for more details on cultural resources).

Scenic views designated in land use plans adopted by federal, state, or local government entities typically formalize a widely recognized visual value of a resource and the public's desire to protect that value (e.g., a designated wilderness or scenic area). Where such official designations exist, the public expectation may be that the view at the location or of the identified resource will be preserved, and the viewer concern is considered high. Benton County has adopted planning goals and policies in their Comprehensive Plan (Benton County 2020) to conserve areas of potential value to the county and its residents. The following planning goals and policies are noted below and most applicable to this visual analysis:

- PL Goal 3: Conserve visually prominent naturally vegetated steep slopes and elevated ridges that define the Columbia Basin landscape and are uniquely a product of the ice age floods.
- Policy 5: Consider the preservation of the ridges and hillside areas through various development regulations.

The types of viewers present within the visual study areas are classified as local residents, travelers, tourists and recreational users. The following discussion summarizes the composition of these groups and characteristics that define visual sensitivity for each.

Local Residents

The local resident viewer group consists of people who live within the visual study areas. Concentrations of residences are found in the suburban neighborhoods north of the Project Lease Boundary in the outskirts of the nearby cities Kennewick, Pasco, and Richland. Smaller concentrations of residences are found east, west, and south of the Project Lease Boundary. Outside of these communities, low-density residential uses are scattered throughout the visual study areas. Generally, local residents view the landscape from their yards and homes, and often from places of employment while engaged in daily activities.

Residents' sensitivity to visual change can be variable and may be tempered by the visual character and setting of their neighborhoods. For example, residents with a view of existing commercial or industrial facilities may be less sensitive to landscape changes than those with a view of forested areas. It is assumed, however, that local residents are generally familiar with the local landscape and may be more sensitive to changes in views that are important to them.

Through-Travelers and Commuters

This viewer group consists of through-travelers and daily commuters traveling through the area on their way to work or those who are engaged in other types of business or personal travel. Travelers passing through an area typically view the landscape from motor vehicles. Through-travelers and commuters will typically be concentrated on major roads including I-82 and U.S Highway 395. Furthermore, they do not tend to stop along their travel routes, have a relatively narrow field of view because they are focused on road and traffic conditions, and are destination oriented. Passengers in through-travel and commuter vehicles may have greater opportunities for prolonged off-road views toward landscape features and, accordingly, may have a greater perception of changes in the visual environment. It is anticipated that the level of sensitivity of this user group will vary; with less sensitivity to visual change experienced by through-travelers or commuters passing through the visual study areas and higher sensitivity to visual change experienced by local commuters who are traveling through the area daily.

Tourists and Recreational Users

This viewer group includes tourists and recreational users visiting from outside of the local area, as well as local residents engaged in recreational activities. These viewers can be involved in outdoor recreational activities at parks and other developed recreational facilities or in undeveloped natural settings such as forests, fields, and water bodies. Tourists and recreational users come to the area to experience its cultural, scenic, and/or recreational resources. They may view the landscape while travelling to these destinations on local roads, or from the recreational sites themselves.

The recreational user group includes those involved in active recreation (e.g., bicyclists, hikers, joggers, hunters, recreational boaters) and those involved in more passive recreational activities (e.g., picnicking, sightseeing, wildlife observation, or walking). For some of these viewers, scenery is a very important part of their recreational experience, and recreational users may have continuous views of landscape features over relatively long periods of time. Other recreational users may be focused on their activities with only periodic views or focus on the surrounding landscape and are less likely to notice changes to the visual environment. Recreational users' sensitivity to visual quality and landscape character will be variable, depending on their reason for visiting the area. For example, an off-highway vehicle recreation user is considered less sensitive to visual change than a wildlife viewer or a recreator looking for a cultural experience. However, recreators are generally considered to have relatively high sensitivity to scenic quality and landscape character.

Within the visual study areas, there are numerous opportunities for recreational activities including nature trails/hiking, picnicking, boating, fishing, hunting, swimming, and wildlife watching.

As distinguished from recreational visitors, tourists may be just passing through the local area or staying for a period of varying duration to enjoy local attractions. Tourists typically come to the area for activities such as visiting historic or geologic sites, taking sightseeing tours, visiting friends and family, and attending festivals or events, but they may also engage in recreational activities while they are present. Consequently, there is a considerable degree of overlap among recreational and tourist visitors in terms of activity patterns and user characteristics.

Scenic Quality

Scenic quality is determined by rating the distinctiveness and diversity of interest of a particular natural landscape. The BLM Scenic Quality Class Rating (BLM 1984) definitions are provided below:

- Class A – Unique: Landscapes are represented by unique lands of outstanding or distinctive diversity or interest, including high-relief mountains, escarpments, highly dissected canyons, monumental landforms, and scenic river ways.
- Class B – Above Average: Landscapes are lands of above average diversity of interest and consist of rolling, vegetated hills and valleys, mesas, buttes, and unique landforms that define the environment.
- Class C – Common: Landscapes are primarily common and of minimal diversity, such as high desert plateaus and desert plains areas with few distinguishing features.

A scenic quality evaluation was used to determine the natural landscape based on the degree of distinctiveness, which takes into consideration such factors as landform, vegetation, color, water, adjacent scenery, scarcity, and cultural modification.

Distance Zones

Viewing distance is a key factor in determining the level of visual effect, with perceived contrast generally diminishing as distance between the viewer and the affected area increases (BLM 1986b). Distance zones are developed based on perception thresholds, the scale and nature of objects being viewed, and the viewing environment. Both natural and human-made elements become less obvious and less detailed at greater distances and perception of texture and color also becomes less noticeable with increased distance. The BLM Manual 8410-1 (BLM 1986a), Visual Resource Inventory, defines distance zones as follows, which were adopted for this analysis:

- Foreground/Middleground − 0 to 5 miles (this study refers to the Foreground Distance Zone as 0 to 0.5 mile and the Middleground Distance Zone as 0.5 to 5 miles)
- Background − 5 to 15 miles
- Seldom Seen − Beyond 15 miles

Inventory Point Selection

The results of the viewshed analysis were used to identify specific locations for field review; these locations are referred to as inventory points. Photographs of the visual study areas were taken from each of the inventory points during field visits conducted in August 2018, February 2020, and December 2020. A subset of the inventory points was selected for detailed analysis (representative viewpoints), discussed further below. Photographic simulations of the representative viewpoints can be found in Appendix Q.

Representative Viewpoints and Photographic Simulations

Seven representative viewpoints were selected to represent different cardinal directions, elevations, and distances from the Project to represent perspectives from which the public will be expected to be able to observe the Project once constructed. These locations were selected to represent the viewer types/groups in the visual study areas, identified from known vantage points along public transportation routes, neighborhoods, and parks and trails and are analyzed further in the following sections. Figure 4.2.3-7 presents the locations of the seven selected inventory points.

Photographs of the existing conditions were taken from the selected viewpoints towards the proposed Project Lease Boundary. At two of these viewpoints (i.e., representative viewpoints 2 and 4) photos in more than one direction were taken. Existing condition photographs were taken using standard focal lengths to most closely represent the human field of view. In order to create photographic simulations, a three-dimensional model of the Turbine, solar array, and transmission line layouts were placed in the photographic view, taking into consideration Project topography (elevation) and distance from the observation point. Simulated Turbines, solar arrays, and transmission lines were aligned to the photographs and the model rendered and composited to create the visualizations.

Table 4.2.3-1 provides a list of selected representative viewpoints, which are shown on Figure 4.2.3-7. Photographic simulations are provided in Appendix Q. Table 4.2.3-2 provides a summary of existing scenic quality and proposed Project visual impacts. The overall visual impact rating for each representative viewpoint was determined by evaluating scenic quality, viewer sensitivity, distance zone, and contrast expected to be introduced by development of the Project. Numerical values were assigned to the ratings in each category (i.e., scenic quality, contrast rating, viewer sensitivity, distance zone) as outlined below:

1. Low viewer sensitivity, weak contrast, Class C scenic quality, or background viewing distance.
2. Moderate viewer sensitivity, moderate contrast, Class B scenic quality, or middleground viewing distance.
3. High viewer sensitivity, strong contrast, Class A scenic quality, or foreground viewing distance.

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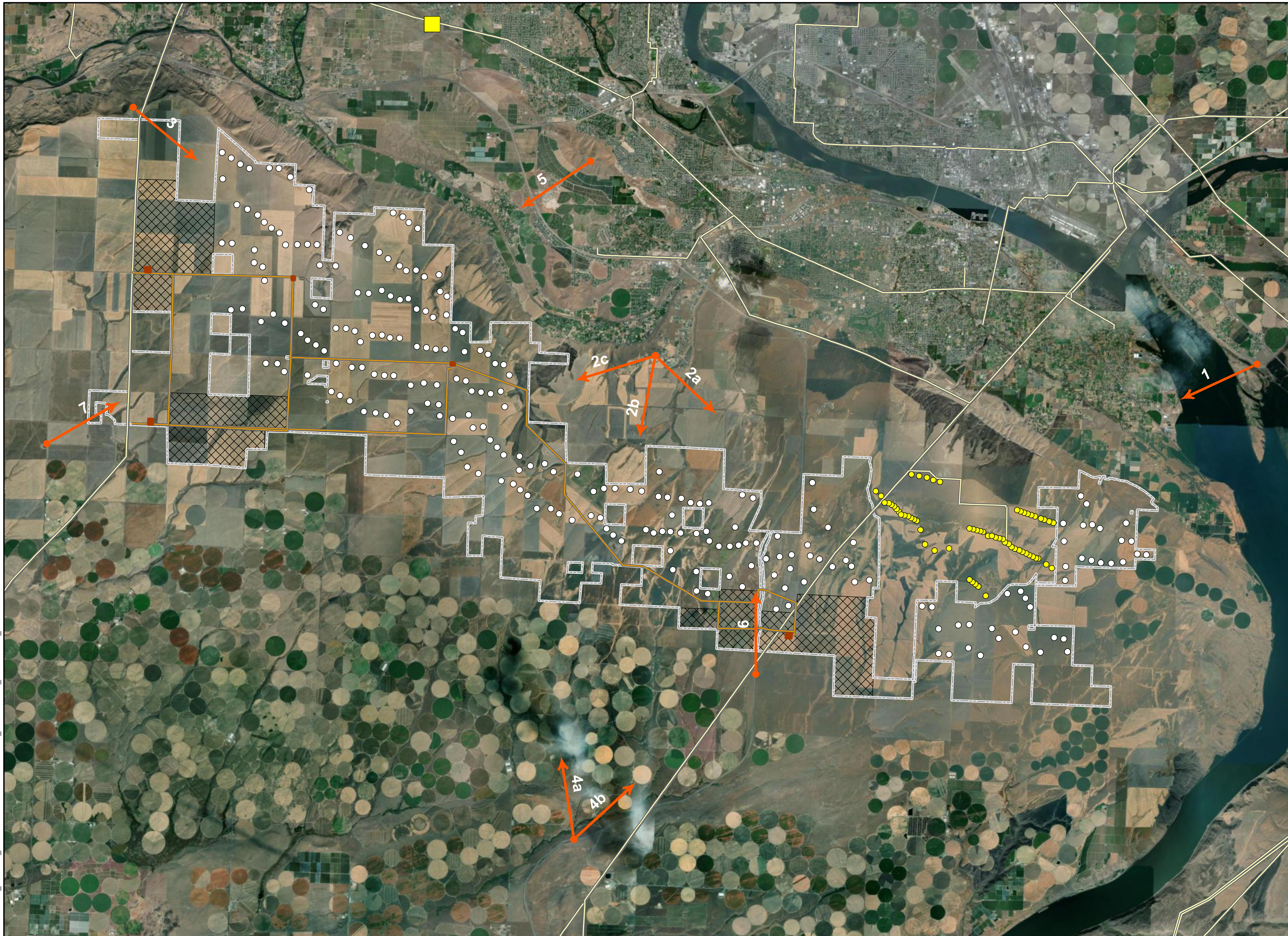
Figure 4.2.3-7 Representative Viewpoint Locations

BENTON COUNTY, WA



- Viewpoint with Direction
- Option 1 Turbine Location
- Proposed Substation
- Proposed Transmission Line
- Project Lease Boundary
- Solar Siting Area
- Existing Turbine
- Existing Substation
- Existing Transmission Line

TETRA TECH

Reference Map

1:150,000 WGS 1984 UTM Zone 11N

0 1 2 4 6 8 Miles

NOT FOR CONSTRUCTION

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Table 4.2.3-1. Selected Representative Viewpoints

Representative Viewpoint	Representative Viewpoint Name	Location	Description[1/]	Viewer Types
1	McNary National Wildlife Refuge (NWR)	McNary NWR, along the Columbia River, 3 miles southeast of Burbank, 0.5 mile west of U.S. Route 12.	Viewpoint is located along an unpaved road within McNary NWR, looking southwest across the Columbia River towards the Project Lease Boundary. The closest potential Turbine is approximately 5.2/5.8 miles away. Solar arrays, transmission lines, and substations/BESS would not be visible from this location.	Recreational, Residential
2a	S Clodfelter Road – East	Manuel Dr., just north of S. Clodfelter Road, 2.2 miles south from Interstate 82 (I-82)	Viewpoint is located along the south side of Manuel Dr. toward S. Clodfelter Road, looking southeast. The closest potential Turbine is approximately 3.9/4.8 miles away. Solar arrays, transmission lines, and substations/BESS would not be visible from this location.	Residential
2b	S Clodfelter Road – Central	Manuel Dr., just north of S. Clodfelter Road, 2.2 miles south from I-82	Viewpoint is located along the south side of Manuel Dr. toward S. Clodfelter Road, looking south. The closest potential Turbine is approximately 3.0/3.5 miles away. Solar arrays, transmission lines, and substations/BESS would not be visible from this location.	Residential
2c	S Clodfelter Road – West	Manuel Dr., just north of S. Clodfelter Road, 2.2 miles south from I-82	Viewpoint is located along the south side of Manuel Dr. toward S. Clodfelter Road, looking southwest. The closest potential Turbine is approximately 3.7/3.7 miles away. The closest potential transmission line is 3.4 miles away. Solar arrays and substations/BESS would not be visible from this location.	Residential
3	Chandler Butte	East side of Chandler Butte, just outside the gates leading to the communication towers.	Viewpoint is located along the unpaved road east of the communication towers, looking southeast. The closest potential Turbine is approximately 2.5/2.8 miles away. The closest potential solar array is approximately 2.1 miles away. The closest potential transmission line is 4.2 miles away. The substations/BESS would not be visible from this viewpoint.	Recreational

Representative Viewpoint	Representative Viewpoint Name	Location	Description[1/]	Viewer Types
4a	I-82 South	Along I-82/U.S. Highway 395 approximately 0.8 mile southwest of 812 Prairie SE.	Viewpoint is located along the right shoulder of the highway, looking northwest. The closest potential Turbine is approximately 7.3/7.3 miles away. The closest potential transmission line is 6.5 miles away. The solar arrays and substations/BESS would not be visible from this viewpoint.	Vehicle Travel
4b	I-82 South	Along I-82/U.S. Highway 395 approximately 0.8 mile southwest of 812 Prairie SE.	Viewpoint is located along right shoulder of the highway, looking northeast. The closest potential Turbine is approximately 7.0/7.3 miles away. The closest potential solar array is approximately 6 miles away. The closest potential transmission line is 6.5 miles away. The substation (HH-East)/BESS would be potentially visible from this viewpoint.	Vehicle Travel
5	Badger Mountain	Along Badger Road, 0.5 mile northwest of Canyon View Road Northeast.	Viewpoint is located along the southern side of the top of Badger Mountain looking southwest. The closest potential Turbine is approximately 4.7/4.7 miles away. Solar arrays, transmission line, and substations/BESS would not be visible from this location.	Recreational
6	Bofer Canyon Road/I-82	Along Bofer Canyon Road, approximately 12.3 miles northeast of 6th Street.	Viewpoint is located along the right shoulder of the road, looking north. The closest potential Turbine is approximately 1.7/1.8 miles away. The closest potential solar array is approximately 0.6 mile away. The transmission line is 1.2 miles away. The substation (HH-East)/BESS would be potentially visible from this viewpoint.	Vehicle Travel
7	Highway 221	Along Highway 221, approximately 0.5 mile south of Sellards Road.	Viewpoint is located along the right shoulder of the highway, looking northeast. The closest potential Turbine is approximately 5.8/5.8 miles away. The closest potential solar array is approximately 3.1 miles away. The closest transmission line is 2.2 miles away. The substation (HH-West)/BESS would be visible from this location.	Vehicle Travel, Residential

Note:
1/ Mileages reported here are for Turbine Layout Option 1 and Options 2, respectively.
BESS – battery energy storage system

The ratings in each category were totaled and an average was then taken. An averaged value of 1 or less received a low overall rating. Averaged values between 1.1 to 2 received a low-moderate overall rating, and so forth. Overall visual impact ratings are generally described as follows:

- 1 - Low Impact: The viewpoint is typically located in an area of common scenic quality and low visual sensitivity. Project features are located farther away from the viewer in the background or middleground distance zones and contrast is anticipated to be moderate. While Project features are likely visible, development of the Project is not anticipated to significantly degrade the visual environment associated with the viewpoint.
- 2 - Moderate Impact: The viewpoint is typically located in an area of above average scenic quality and moderate visual sensitivity. Project features are located closer to the viewer in the middleground distance zone and contrast is anticipated to be moderate to strong. While Project features may be visible, development of the Project is not anticipated to significantly degrade the visual environment associated with the viewpoint.
- 3 - High Impact: The viewpoint is typically located in an area of above average scenic quality and high visual sensitivity. Project features are located closer to the viewer in the foreground and middleground distance zones and contrast is anticipated to be strong. Project features would be visible and obvious to viewers and development of the Project would likely degrade the visual environment associated with the viewpoint.

Representative Viewpoint 1 – McNary National Wildlife Refuge

Representative Viewpoint 1 is located along the Columbia River, 3 miles southeast of Burbank and 0.5 miles west of U.S. Route 12 within the National Wildlife Refuge. Visitors to the National Wildlife Refuge and travelers along the Columbia River and U.S. Route 12 have mostly open unobstructed views towards the Project. Existing power lines, shrubs, and trees are located within the foreground. The middleground includes views of the Columbia River, industrial areas, and some residential areas with tree cover. Existing Turbines and a cell tower can be seen in the background viewing distance, approximately 6.5 miles away.

Representative Viewpoint 2 – South Clodfelter Road

Representative Viewpoint 2a – South Clodfelter Road – East

Representative Viewpoint 2a is located on Manuel Drive just north of South Clodfelter Road, approximately 2.2 miles from I-82. Residents and travelers along South Clodfelter Road have mostly open unobstructed views towards the rolling hills. From within the residential neighborhood, views of the surrounding landscape are partially screened by residential development and associated landscape. Views toward the Project Lease Boundary are mainly limited to residences located along the southern perimeter of the neighborhood who have elevated unobstructed views to the south. The existing power lines along South Clodfelter Road are located within the foreground. The middleground includes views of large expanses of rolling agricultural fields. Existing Turbines can be seen in the background viewing distance, approximately 6.5 miles away.

Representative Viewpoint 2b – South Clodfelter Road – Central

Representative Viewpoint 2b is located on Manuel Drive just north of South Clodfelter Road, approximately 2.2 miles from I-82. Residents and travelers along South Clodfelter Road have mostly open unobstructed views towards the rolling hills. From within the residential neighborhood, views of the surrounding landscape are partially screened by residential development and associated landscape. Views toward the Project Lease Boundary are mainly limited to residences located along the southern perimeter of the neighborhood who have elevated unobstructed views to the south. The existing power lines along South Clodfelter Road are located within the foreground. The middleground includes views of large expanses of rolling agricultural fields.

Representative Viewpoint 2c – South Clodfelter Road – West

Representative Viewpoint 2c is located on Manuel Drive just north of South Clodfelter Road, approximately 2.2 miles from I-82. Residents and travelers along South Clodfelter Road have mostly open unobstructed views towards the rolling hills. From within the residential neighborhood, views of the surrounding landscape are partially screened by residential development and associated landscape. Views toward the Project Lease Boundary are mainly limited to residents located along the southern perimeter of the neighborhood who have elevated unobstructed views to the south. The existing power lines along South Clodfelter Road are located within the foreground. The middleground includes views of power lines, roads, residential areas, and transmission lines.

Representative Viewpoint 3 – Chandler Butte

Representative Viewpoint 4 is located on the east side of Chandler Butte on BLM land, just outside the gates leading to the communication towers. From this elevated viewpoint, recreationalists along Chandler Butte have mostly open unobstructed views of the agricultural fields below. In the existing conditions photography, clouds are shading a portion of the view (appears as a dark area on the ground). There are existing transmission lines in the foreground. Existing Turbines can be viewed in the background viewing distance, approximately 21.2 miles away.

Representative Viewpoint 4

Representative Viewpoint 4a – Interstate 82 South (North)

Representative Viewpoint 4a is located along I-82. I-82 runs north south through this region and passes through urban development, agricultural, and natural landscape settings. Travelers along I-82 have mostly unobstructed views of the surrounding landscape. Existing fencing and scattered rural residential areas are located within the foreground and middleground.

Representative Viewpoint 4b – Interstate 82 South (Northeast)

Representative Viewpoint 4b is located along I-82. I-82 runs north-south through this region and passes through urban development, agricultural, and natural landscape settings. Travelers along I-82 have mostly unobstructed views of the surrounding landscape. Existing power lines, fencing, and transmission lines are located within the foreground and middleground. Existing Turbines can be seen in the background viewing distance approximately 11.6 miles away.

Representative Viewpoint 5 – Badger Mountain

Representative Viewpoint 5 is located along the top of Badger Mountain trail with views in all directions. Recreationalists along this trail have mostly unobstructed elevated views towards the Project. Existing power lines, residential house development, and roads are located within the foreground and middleground in the valley below. Horse Heaven Hills can be seen in the middleground and background viewing distances.

Representative Viewpoint 6 –Bofer Canyon Road/Interstate 82

Representative Viewpoint 6 is located along Bofer Canyon Road, which parallels I-82. Bofer Canyon Road and I-82 run north-south through this region and pass through urban development, agricultural, and natural landscape settings. Travelers along I-82 and Bofer Canyon Road have mostly unobstructed views of the surrounding landscape. Existing power lines, fencing, and paved roads are located within the foreground and middleground. The existing power line extends into the background viewing distance.

Representative Viewpoint 7 – Highway 221

Representative Viewpoint 7 is located along Highway 221 on the west side of the Project. Highway 221 runs north-south through this region connecting the town of Prosser to the town of Paterson and Highway 14. This approximately 25-mile-long highway passes through mostly rural residential and agricultural settings. Travelers along Highway 221 and rural residences nearby have mostly unobstructed views of the surrounding landscape. Existing powerlines can be seen in the background.

4.2.3.3 Impact Analysis

Potential visual impacts were characterized by determining the level of visual contrast introduced by the Project. Existing landscape scenery is defined by the visual characteristics (form, line, color, and texture) associated with the landform (including water), vegetation, and existing facilities. The level of visual contrast introduced by a project can be measured by changes in the visual characteristics that would occur as a result of project implementation. The greater the difference between the character elements found within the existing landscape and with a proposed project, the more apparent the level of visual contrast. The following general criteria (BLM 1986b) were used when evaluating visual contrast:

- None—The element contrast is not visible or perceived.
- Weak—The element contrast can be seen but does not attract attention.
- Moderate—The element contrast begins to attract attention and begins to dominate the characteristic landscape.
- Strong—The element contrast demands attention, would not be overlooked, and is dominant in the landscape.

Other environmental factors that can influence the amount of visual contrast introduced by the components of a project include the following (BLM 1986b) although this is not a complete list:

- Distance—The contrast created by a project usually is less as viewing distance increases.

- Angle of Observation—The angle between the viewer's line-of-sight and a project's location. Angles of observation are typically described as inferior (in which viewers are situated at a lower elevation than the proposed project), level (as described above), and superior (in which viewers are situated at a higher elevation than the proposed project). Angle of observation influences the perception of visual contrast. Viewers at higher elevations (superior views) tend to see larger portions of a project.
- Length of Time the Facility is in View—If the viewer has only a brief glimpse of a project, the contrast may not be of great concern. If, however, a project is subject to view for a long period, as from an overlook, the contrast may be very significant.
- Relative Size or Scale—The level of visual contrast created by a project is directly related to its size and scale compared to the surrounding landscape in which it is located.
- Season of Use—The physical conditions that exist during the heaviest or most critical visitor use season, such as snow cover and tree defoliation during the winter, leaf color in the fall, and flowering in the spring.
- Lighting Conditions—The direction and angle of the sun affects the color, intensity, shadow, reflection, form, and texture of visual aspects of project components.
- Atmospheric Conditions—The visibility of projects due to atmospheric conditions such as air pollution, natural haze, fog, and precipitation, which could affect the visibility of an object.

This section presents the results of this Project-specific impact evaluation. The following subsections discuss the representative viewpoints, shadow flicker, nighttime view, construction impacts, operation impacts, and decommissioning impacts.

Visual Effects from Representative Viewpoints

This section discusses potential impacts from construction of the Project at each of the representative viewpoints (Table 4.2.3-1; Figure 4.2.3-7). For each representative viewpoint, a brief introduction identifies the location and setting; the existing landscape conditions are described; and a discussion of how the Project would change the landscape is provided. Corresponding visual simulations are provided in Appendix Q.

<u>Representative Viewpoint 1 – McNary National Wildlife Refuge</u>

Turbine Layout Option 1

This representative viewpoint is located approximately 5.2 miles northeast of the nearest Option 1 Project Turbine in the background. Visitors to the McNary National Wildlife Refuge and travelers along the Columbia River and U.S. Route 12 would have primarily unobstructed views towards the Project Lease Boundary. From this area of the National Wildlife Refuge, the Project would not be screened by vegetation and/or development as the area is open in the foreground with rolling topography, sloping upwards in the middleground and background. Existing Turbines from the Nine Canyon Wind Project are present in the background. Proposed Turbines would be visible in the background, but would be approximately 1 mile closer to the viewpoint than the existing Nine Canyon Wind Project Turbines. Views of the proposed Turbines would be similar to the existing Turbines in form, line, and color. The texture and color are muted and less detailed due to distance, which helps to further reduce contrast. The proposed Turbines located nearer to this viewpoint than the existing Turbines would be more distinguishable and appear to contrast more in color and taller in form. As such, the Project would create moderate visual contrast and would be a co-dominant feature in the landscape setting. Because visitors and travelers would be visiting for a limited time, the degree of contrast would be reduced by the short view duration. Views from local roads located 0.5 mile or more from the viewpoint would most likely be partially to completely screened by topography and/or vegetation and residential development. Portions of the Project that would be visible would appear as lines along the horizon and may be seen in the context of other human-made features such as the existing Turbines and power line (see Appendix Q, Figure 1).

The solar arrays, transmission lines, and substations/BESS would not be visible from this location.

Turbine Layout Option 2

This representative viewpoint is located approximately 5.8 miles northeast of the nearest Option 2 Project Turbine in the background. The proposed Turbines in this option would be more distinct than the Turbines in Option 1; however, fewer Turbines would be seen, creating a less cluttered look along the horizon (Appendix Q, Figure 1). The taller structures created by the proposed Turbines would attract attention but would be seen in the context of the existing Nine Canyon Wind Project Turbines. As such, the Project would create moderate visual contrast and would be a co-dominant feature in the landscape setting. Because visitors and travelers would be visiting for a limited time, the degree of contrast would be reduced by the short view duration.

The solar arrays, transmission lines, and substations/BESS would not be visible from this location.

Representative Viewpoint 2a – South Clodfelter Road – East

Turbine Layout Option 1

This representative viewpoint is located approximately 3.9 miles north of the nearest Option 1 Project Turbine in the middleground. Residents and travelers along South Clodfelter Road would have partially unobstructed views towards the Project Lease Boundary. From this area along the road, the Project would not be screened by vegetation and/or development as the area is open, sloping downward, and flat. Turbines would be visible in the middleground. When looking towards the Project, proposed Turbines located east (left) of the existing Turbines would be comparable to the existing Turbines in similarity of form, line, and color, therefore reducing contrast (Appendix Q, Figure 2). The texture and color would be muted and less detailed due to distance, which helps to further reduce contrast. The proposed Turbines located to the right of the existing Turbines would be approximately 2 miles closer, making them more distinguishable and appear to contrast more in color and taller in form. The darker color and taller structures created by the proposed Turbines would attract attention but would be seen in the context of the existing Turbines. Although the Project would attract attention due to its proximity to viewers, the Project would appear to be a co-dominant feature with other developments. As such, Option 1 would introduce moderate visual contrast for residents along South Clodfelter Road.

The solar arrays, transmission lines, and substations/BESS would not be visible from this location.

Turbine Layout Option 2

This representative viewpoint is located approximately 4.8 miles north of the nearest Option 2 Project Turbine in the middleground. The proposed Turbines in this option would be more distinct than the Turbines in Option 1; however, fewer Turbines would be seen, creating a less cluttered look along the horizon (Appendix Q, Figure 2). The taller structures of the proposed Turbines would attract attention but would be seen in the context of the existing Turbines. As such, Option 2 would introduce moderate visual contrast for residents along South Clodfelter Road.

The solar arrays, transmission lines, and substations/BESS would not be visible from this location.

<u>Representative Viewpoint 2b – South Clodfelter Road – Central</u>

Turbine Layout Option 1

This representative viewpoint is located approximately 3 miles north of the nearest Option 1 Project Turbine in the middleground. Residents and travelers along South Clodfelter Road would have partially unobstructed views towards the Project Lease Boundary. From this area along the road, the Project would not be screened by vegetation and/or development as the area is open, rolling topography, sloping upwards. When looking towards the Project, proposed Turbines would contrast with the agricultural fields in form, line, and color, thereby increasing contrast (Appendix Q, Figure 3). The Turbines would attract attention on the horizon. The Project would attract attention due to its proximity to viewers from this viewpoint. As such, Option 1 would create a strong visual contrast for residents along South Clodfelter Road.

The solar arrays, transmission lines, and substations/BESS would not be visible from this location.

Turbine Layout Option 2

This representative viewpoint is located approximately 3.5 miles north of the nearest Option 2 Project Turbine in the middleground. Option 2 Turbines are taller and therefore can be viewed more fully from this viewpoint, but because they are fewer in number, they appear less cluttered. When looking towards the Project, proposed Turbines contrast with the agricultural fields in form, line, and color, thereby increasing contrast (Appendix Q, Figure 3). The Turbines would attract attention on the horizon. The Project would attract attention due to its proximity to viewers from this viewpoint. As such, Option 2 would create a strong visual contrast for residents along South Clodfelter Road.

The solar arrays, transmission lines, and substations/BESS would not be visible from this location.

Representative Viewpoint 2c – South Clodfelter Road – West

Turbine Layout Option 1

This representative viewpoint is located approximately 3.7 miles east of the nearest Project Turbine in the middleground. Residents and travelers along South Clodfelter Road would have partially unobstructed views towards the Project Lease Boundary. Views from this location would have partially obstructed views towards the Project Lease Boundary due to the existing human-made structures such as residential properties, fencing, and powerlines. When looking towards the Project, proposed Turbines can be seen over the horizon, particularly on the west side of the simulation (Appendix Q, Figure 4). The vertical forms of the Turbines would contrast with the sky and surrounding vegetation and residential areas, would attract attention due proximity to viewers, and the Project would appear as a co-dominant feature with other development. As such, Option 1 would introduce moderate visual contrast for residents along South Clodfelter Road.

The closest potential transmission line to this representative viewpoint is approximately 3.4 miles away in the middleground. The transmission line would be indiscernible to viewers along the road given the low horizontal angle of the lines which would be mostly hidden by existing homes. Some homes closer to the transmission line would have more distinctive views, giving this a weak contrast.

The solar arrays and substations/BESS would not be visible from this location.

Turbine Layout Option 2

This representative viewpoint is located approximately 3.7 miles east of the nearest Project Turbine in the middleground. Option 2 Turbines are taller and therefore would be viewed more fully from this viewpoint, but because they are fewer in number, they appear less cluttered. The Turbines would draw attention to the horizon; however, the Project would appear as a co-dominant feature with other development (Appendix Q, Figure 4). As such, Option 2 would introduce moderate visual contrast for residents along South Clodfelter Road.

Views of the transmission line would be the same under Turbine Layout Option 2 as described above for Turbine Layout Option 1. The solar arrays and substations/BESS would not be visible from this location.

Representative Viewpoint 3 – Chandler Butte

Turbine Layout Option 1

This representative viewpoint is located approximately 2.5 miles away from the nearest potential Turbine. The proposed Turbines would be visible in the middleground. Because of the elevated viewing position, these Turbines would be seen against the ground surface backdrop. The Turbines are unobstructed and, at this elevated viewing position, would be visible to recreationists along Chandler Butte. The contrast between the light color of the Turbines in Option 1 and the darker color of the ground would create a strong visual contrast, increasing the visibility of the Turbines.

The closest potential Solar Array to this representative viewpoint is the western array on County Well Road, which is approximately 2.1 miles away in the middleground. Because of the elevated viewing position, this solar array would be seen against the ground surface backdrop. In the photograph of existing conditions, clouds are shading a portion of the view (dark area on the ground) and are closer in color to the solar arrays than the golden yellow grass (see Appendix Q, Figure 5). The solar arrays are unobstructed and at this elevated viewing position would be visible to recreationists along Chandler Butte. The solar arrays would be seen in contrast to the existing landscape due to their dark color against the golden color of the landscape. As such, the Project would introduce moderate contrast to this representative viewpoint.

The closest potential transmission line to this representative viewpoint is approximately 4.2 miles away in the middleground. The transmission line would be indiscernible among the Turbines due to the shorter, narrower poles that appear to blend in more with the environment compared to the stark white contrast of the Turbines, giving this a weak contrast.

The substations/BESS would not be visible from this location.

Turbine Layout Option 2

This representative viewpoint is located approximately 2.8 miles away from the nearest potential Turbine in the middleground. Option 2 Turbines appear more spread out in this representative viewpoint. The contrast between the light color of the Turbines in Option 2 and the darker color of the ground would create a strong visual contrast, increasing the visibility of the Turbines (Appendix Q, Figure 5).

Visibility of the solar arrays and transmission line would be as discussed under Turbine Layout Option 1. The substations/BESS would not be visible from this location.

Representative Viewpoint 4a – Interstate 82 South (North)

Turbine Layout Option 1

This representative viewpoint is located approximately 7.3 miles away from the nearest potential wind Turbine in the background. Travelers along I-82 would have primarily open unobstructed views of the rolling agriculture fields towards the Project Lease Boundary. From along this segment of I-82, the Project Turbines would introduce vertical structures; however, only the upper portions of the Turbines would be visible with the sky as a backdrop, reducing contrast for form, line, and color (Appendix Q, Figure 6). At this distance, the form of the Turbines would be distinguishable, but the texture and color would be muted and less detailed due to distance, which helps to further reduce contrast. Portions of the Project that would be visible would also be seen in the context of other human-made features such as fencing and scattered rural residential properties. Due to the distance of the viewer from the Project and the existing human-made modifications visible in the immediate foreground, the Project may attract attention but would appear to be a subordinate feature. As such, Option 1 would introduce moderate visual contrast. These impacts would be short term because travelers would only be approaching the Project Lease Boundary for a limited time and their focus would be on the road. The closest potential transmission line to this representative viewpoint would be approximately 6.5 miles away in the background. The transmission line would be indiscernible to viewers along the road given the low horizontal angle of the lines which would be mostly muted against the hillsides. From this distance, the transmission line would introduce weak contrast.

The solar arrays and substations/BESS would not be visible from this viewpoint.

Turbine Layout Option 2

This representative viewpoint is located approximately 7.3 miles away from the nearest potential Turbine in the background. Option 2 would introduce taller Turbines so more of the Turbine would be seen in this viewpoint (Appendix Q, Figure 6). Due to the distance of the viewer from the Project and the existing human-made modifications visible in the immediate foreground, the Project may attract attention but would appear to be a subordinate feature. The contrast of Option 2 would introduce moderate contrast.

Transmission line visibility would be the same under Option 2 as described above for Option 1. The solar array and substations/BESS would not be visible from this viewpoint.

Representative Viewpoint 4b – Interstate 82 South (Northeast)

Turbine Layout Option 1

This representative viewpoint is located approximately 7.0 miles away from the nearest potential Turbine in the background. Travelers along I-82 would have primarily open unobstructed views of the rolling agriculture fields towards the Project Lease Boundary. Although the tall vertical forms would contrast with the lighter color of the sky, the Project would be seen in the context of human-made modifications, including fencing in the immediate foreground and transmission lines and existing Turbines in the background, approximately 11.6 miles away. When looking towards the Project, proposed Turbine blades would be seen over the horizon. Because the vertical forms of the Turbines would contrast with the sky and surrounding vegetation, the Project would attract attention, and the Project would appear as a co-dominant feature with existing Turbines and power lines. As such, Option 1 would introduce moderate visual contrast.

The closest potential solar arrays to this representative viewpoint are at Bofer Canyon, which is approximately 6 miles away in the background. These solar arrays would be seen against the ground along the horizon. The solar arrays would be seen in contrast to the existing landscape due to their dark color against the golden, green, and gray colors of the landscape (Appendix Q, Figure 7). As such, the Project would introduce moderate contrast to this representative viewpoint. However, these impacts would be short term because travelers would only be approaching the Project Lease Boundary for a limited time and their focus would be on the road ahead.

The closest potential transmission line to this representative viewpoint is approximately 6.5 miles away in the background. The transmission line would be indiscernible to viewers along the road given the low horizontal angle of the lines, which are mostly muted against the hillsides. From this distance, the transmission line would introduce weak contrast.

The substation (HH-East)/BESS would be potentially visible from this viewpoint.

Turbine Layout Option 2

This representative viewpoint is located approximately 7.3 miles away from the nearest potential Turbine in the background. Option 2 Turbines are fewer in number but taller than Option 1 Turbines; therefore, more of the Turbine can be seen (blades and a portion of the tower). Because the vertical forms of the Turbines would contrast with the sky and surrounding vegetation, the Project would attract attention, and the Project would appear as a co-dominant feature with existing Turbines and power lines. As such, Option 2 would introduce moderate visual contrast.

Views of solar arrays and transmission lines would be the same under either Turbine Layout Option 1 or Turbine Layout Option 2. The substation (HH-East)/BESS also would be potentially visible from this viewpoint.

Representative Viewpoint 5 – Badger Mountain

Turbine Layout Option 1

This representative viewpoint is located approximately 4.7 miles away from the nearest potential Turbine in the middleground. Recreationalists on Badger Mountain would have open unobstructed views of the rolling agricultural fields, residential homes, and rolling hills towards the Project Lease Boundary. Due to the unobstructed views, the Turbines in the middleground would contrast with the lighter color sky, making it a strong contrast with the surrounding area depending on the lighting (Appendix Q, Figure 8). On a light hazy day, the Project may attract attention. At this distance, the form of the Turbines is distinguishable; however, the texture and color are muted and less detailed due to distance, which helps to further reduce contrast. Due to the distance of the Project from this viewpoint, it would also be seen in the context of the surrounding features. On a foggy day, the Turbines would appear muted and less detailed against the backdrop, and therefore the contrast would be reduced. In this lighting, the form, line, and color of the Turbines would be less distinguishable.

The solar arrays, transmission lines, and substations/BESS would not be visible from this location.

Turbine Layout Option 2

This representative viewpoint is located approximately 4.7 miles away from the nearest potential Turbine in the middleground. Option 2 Turbines would appear taller and fewer in number. At this distance, the form of the Turbines is distinguishable; however, the texture and color are muted and less detailed, which helps to further reduce contrast. Due to the distance of the Project from this viewpoint, it would also be seen in the context of the surrounding features. On a foggy day, the Turbines would appear muted and less detailed against the backdrop, and therefore the contrast would be reduced. In this lighting, the form, line, and color of the Turbines would be less distinguishable.

The solar arrays, transmission lines, and substations/BESS would not be visible from this location.

Representative Viewpoint 6 – Bofer Canyon Road/Interstate 82

Turbine Layout Option 1

This representative viewpoint is located approximately 1.7 miles away from the nearest potential Turbine in the middleground. Travelers along Bofer Canyon Road would have primarily open unobstructed views of the rolling agriculture fields towards the Project Lease Boundary. The Project would be seen to the east while heading north on the road. At this distance, the form of the Turbines is distinguishable as they rise above the rolling terrain. Portions of the Project that are visible would also be seen in the context of other human-made features, such as the existing BPA power transmission lines which present a vertical line across the area (Appendix Q, Figure 9). Because the Turbines are less than 2 miles from this representative viewpoint, the Project would attract attention but would appear to be a co-dominant feature with the existing power lines. However, because there are more Turbines in this view, they would attract attention and therefore Option 1 would introduce strong visual contrast.

The closest potential solar arrays to this representative viewpoint are in Solar East at Bofer Canyon, which is approximately 0.6 mile away in the middleground. The Project solar arrays would be seen on the east and west side of Bofer Canyon Road and I-82 heading north through the Project Lease Boundary. These solar arrays would draw attention to the Project due to being darker in color, which contrasts from the golden color of the fields in surrounding area. Due to the sun's glare, the solar arrays on the left would appear gray in color and the solar arrays on the right would appear dark gray in color. As such, the Project would introduce moderate contrast to the area. However, these impacts would be short term because travelers would only be approaching the Project Lease Boundary for a limited time and their focus would be on the road ahead. The substation (HH-East)/BESS also would be potentially visible from this viewpoint.

The closest potential transmission line to this representative viewpoint is approximately 1.2 miles away in the middleground. Views of the transmission line would be discernible to viewers along the road because of the close proximity of the horizontal wires and vertical poles that rise above the horizon. From this distance, the transmission line would introduce moderate contrast.

Turbine Layout Option 2

This representative viewpoint is located approximately 1.8 miles away from the nearest potential wind Turbine in the middleground. Option 2 Turbines would appear taller and fewer in number. At this distance, the form of the Turbines is distinguishable. Portions of the Project that are visible would also be seen in the context of other human-made features such as the power lines which present a horizontal line across the area. The Project would attract attention but would appear to be a co-dominant feature with the existing power lines. However, due to the distance and extent of Turbines, Option 2 would introduce strong visual contrast.

Visibility of the solar arrays, transmission lines, and substations/BESS would be the same under Turbine Layout Option 2 as described above for Turbine Layout Option 1.

Representative Viewpoint 7 – Highway 221

Turbine Layout Option 1

This representative viewpoint is located approximately 5.8 miles away from the nearest potential Turbine in the background. Travelers along Highway 221 and rural residences in the area would have primarily open unobstructed views of the rolling agriculture fields towards the Project Lease Boundary. The Project Turbines would be seen to the east heading north along the highway. Although the tall vertical forms contrast with the lighter color of the sky, the Turbines would be seen in the context of human-made modifications, including powerlines and transmission lines in the background. Due to the distance and existing transmission lines on the horizon, the Turbines would present a moderate contrast. From this viewpoint, the proposed transmission line would be visible, but the vertical lines would be seen in the context of the Turbines. The eastern substation/BESS and transmission line would be visible from this viewpoint.

The closest potential solar arrays to this representative viewpoint would be in Solar West 2 (Sellards Road), which is approximately 3.1 miles away in the middleground. The solar arrays, alone, likely would not draw attention because they are low to the ground. Although they would be dark in color and along the horizon, they follow the form of the landscape. Due to the angle of the sun at the time of day represented in the photograph, the solar arrays on the left in the simulation (Appendix Q, Figure 10) appear gray in color and the solar arrays on the right appear dark gray in color and these shades of gray would likely vary throughout the day. In the existing conditions photography, a faint horizontal line of haze appears along the horizon. The solar array would create some contrast, particularly on days when the haze is visible. As such, the Project would introduce moderate visual contrast to the area. However, these impacts would be short term because travelers would only be approaching the Project Lease Boundary for a limited time and their focus would be on the road ahead. The substation (HH-West)/BESS also would be visible from this viewpoint.

The closest potential transmission line to this representative viewpoint would be approximately 2.2 miles away in the middleground. In the simulation (Appendix Q, Figure 10), a faint horizontal line of haze appears along the horizon and the transmission line, although darker where the poles appear to be stacked on each other, appears within that hazy area creating less contrast. The transmission line would be seen by viewers along the road given the low dark vertical angle of the poles but would not attract attention. From this distance, the transmission line would introduce weak contrast.

Turbine Layout Option 2

This representative viewpoint is located approximately 5.8 miles away from the nearest potential Turbine in the background. Option 2 Turbines would appear taller and fewer in number. At this distance, the form of the Turbines is more distinguishable than in Option 1; however, the Turbines are in the background at this viewpoint. Although the tall vertical forms contrast with the lighter color of the sky, the Turbines would be seen in the context of other human-made features such as the power lines that present a horizontal line across the area, and structures on the horizon. The Project would attract attention but would appear to be a co-dominant feature with the existing power lines. As such, Option 2 would introduce moderate visual contrast.

The solar arrays, transmission lines, and substations/BESS would have the same visibility under Turbine Layout Option 2 as described above for Turbine Layout Option 1.

Table 4.2.3-2 includes a summary of the proposed Project visual impacts as discussed above.

Table 4.2.3-2. Summary of Existing Scenic Quality and Proposed Project Visual Impacts

Representative Viewpoint	Existing Scenic Quality		Contrast Rating (overall rating in bold)	Distance Zone[2/]	Overall Visual Impact Rating[4/]
	Visual Quality[1/]	Viewer Sensitivity			
1	Class B	Moderate	**Moderate** (Turbines)/None (Solar Arrays)/None (Transmission Line)	Background (Turbines)	Low to Moderate
2a[3/]	Class B	High	**Moderate** (Turbines)/None (Solar Arrays)/None (Transmission Line)	Middleground (Turbines)	Moderate to High
2b[3/]	Class B	High	**Strong** (Turbines)/None (Solar Arrays)/None (Transmission Line)	Middleground (Turbines)	Moderate to High
2c[3/]	Class B	High	**Moderate** (Turbines)/None (Solar Arrays)/Weak (Transmission Line)	Middleground (Turbines/Transmission Line)	Moderate to High
3	Class B	High	**Strong** (Turbines)/Moderate (Solar Arrays)/Weak (Transmission Line)	Middleground (Turbines/Solar Arrays/Transmission Line)	Moderate to High
4a[3/]	Class C	Low	**Moderate** (Turbines)/None (Solar Arrays)/Weak (Transmission Line)	Background (Turbines/Transmission Lines)	Low to Moderate
4b[3/]	Class C	Low	**Moderate** (Turbines)/Moderate (Solar Arrays)/Weak (Transmission Line)	Background (Turbines/Solar Arrays/Transmission Line)	Low to Moderate
5	Class B	High	**Strong** (Turbines)/None (Solar Arrays)/None (Transmission Line)	Middleground (Turbines)	Moderate to High
6	Class C	Moderate	**Strong** (Turbines)/Moderate (Solar Arrays)/Moderate (Transmission Line)	Middleground (Turbines/Solar Arrays/ Transmission Line)	Moderate
7	Class C	Moderate	**Moderate** (Turbines)/Moderate (Solar Arrays)/Weak (Transmission Line)	Middleground/Background (Turbines)/Middleground (Solar Arrays/ Transmission Line)	Low to Moderate

Notes:
1/ Overall Scenic Quality Rating: Class A – Unique; Class B – Above Average; Class C – Common.
2/ Middleground distance zone (0.5-5 miles); Background distance zone (5-15 miles).
3/ Representative Viewpoints 2a/2b/2c are the same inventory point; similarly, viewpoints 4a/4b are the same inventory point.
4/ Impact rating is a range taking the average of visual quality, viewer sensitivity, distance zone, and contrast rating, e.g., 3=strong/high/Class A, 2=moderate/Class B, 1=weak/low Class C.

Shadow Flicker

A Turbine's moving blades can cast a moving shadow on locations within a certain distance of a Turbine. These moving shadows can create a temporary phenomenon experienced at nearby residences called shadow flicker. The Applicant assessed shadow flicker impacts from Turbines of the Project on nearby sensitive receptors (i.e., residences) using the WindPro software package (see Appendix G). A total of 742 structures were identified as occupied or potentially occupied residences within approximately 1.2 miles of the Project Lease Boundary and considered to be potential shadow flicker receptors for the purpose of the analysis. To allow flexibility in the choice of Turbines at the time of construction, this study analyzed impacts using four different Turbine models across two different Turbine layouts that are under consideration for the Project (Table 2.3-1).

Shadow flicker impacts are not regulated in applicable state or federal law, nor are they addressed by the local county ordinances. Therefore, potential shadow flicker impacts were assessed against the widely used industry standard threshold of 30 hours per year. Of the 742 receptors analyzed in the study, 7 were predicted to experience more than 30 hours of shadow flicker per year. However, all 7 receptors have been identified as Project participants. The analysis was deliberately conservative to account for potential variations in environmental conditions, and actual shadow flicker is expected to occur for less than the modeled durations. The analysis assumed that the receptors all have a direct in-line view of the incoming shadow flicker sunlight, and does not account for trees or other obstructions that may block sunlight. In reality, the windows of many houses will not face the sun directly for the calculated shadow flicker impact times. Shadow flicker is not expected to be a significant environmental impact for the Project. Details of the study, including expected shadow flicker impacts at all receptors and figures showing shadow flicker impact areas, can be found in Appendix G.

Nighttime View

As noted in Section 4.2.2, flashing red aviation lighting would be mounted on Turbine nacelles as required by the FAA. The red lights may be visible at night up to 10 to 35 miles, assuming no intervening topography or vegetation and in clear weather, with decreasing contrast at further distances. The FAA lights would introduce visual contrast to the landscape during nighttime hours. Once the Turbines for the Project have been constructed, there would potentially be up to approximately 50 flashing red lights within the Project Lease Boundary (depending on the final layout and lighting design as approved by FAA), located on the Turbine nacelles approximately 266 to 411 feet above the ground (depending on the hub height of the final Turbine model selected). Turbines exceeding 499 feet will be required by FAA to have dual flashing lights placed on the nacelle (one on each side). These lights would simultaneously flash 20 to 40 times per minute, or another configuration as approved by the FAA. The solar arrays would not have any nighttime lighting.

FAA lights associated with the Project would introduce a horizonal cluster of flashing lights into a rural landscape that is relatively dark at night and would therefore introduce a greater degree of contrast than the existing lights. In addition, the height of the FAA lights would allow them to be seen from locations more than 25 miles away. Although the FAA lights can potentially be visible from great distances, the actual intensity of the lighting may appear no greater than other sources of nighttime lighting within and near the Project Lease Boundary, including dual blinking red lights associated with communication towers, vehicle head and taillights and some small-scale exterior lighting around residences and outbuildings, as well as nighttime lighting associated with the existing Nine Canyon Wind Project.

Based on the 2013 study prepared for the BLM (Sullivan et al. 2013), FAA lights were noted as being visible at 36.2 miles. It is anticipated that locations within the visual study areas that have potential views of Turbine nacelles during day would also have potential views of the FAA lights at night. It is anticipated that all or most of the FAA lights would be visible from travel routes and residences in and near the Project Lease Boundary that have unobstructed views toward the Project. For travelers along local and major travel ways, the duration of visibility would be short term because travelers would only be approaching and parallel to the Project for a limited time and their focus would be on the road ahead. In some instances, such as from roads located within the background or seldom seen distance zones, intervening terrain, vegetation, and/or structures may partially or completely screen the Project. Strong contrast is anticipated for residential viewers within the foreground/middleground distance zone who have unobstructed to partially screened views towards the Project where the synchronized flashing lights would draw attention and dominate the nighttime setting. The contrast is anticipated to be reduced for residential viewers located farther from the Project Lease Boundary. Regardless of the number of FAA lights visible, any lighting is more likely to be seen or noticeable from outside areas surrounding residences rather than within the residences, as lights within residential homes tend to reflect and mirror views in windows, or views outside are obscured by curtains or blinds.

Construction Impacts

During construction, short-term visual effects would result from construction activities and the presence of equipment and work crews. Visual contrast introduced during Project construction would be evident primarily for local residents and travelers adjacent to the Project Lease Boundary, mostly along I-82/U.S. Highway 395 and other local roads, where the presence of construction equipment, materials, and crews would be prominent in the foreground. Views of Project construction from areas not immediately adjacent to the Project Lease Boundary would be partially screened by topography. Visual effects that occur as a result of construction activities would be short term because construction equipment and crews would be removed once construction is complete.

Construction disturbance would be limited to the extent practicable in accordance with BMPs and the Project's site certificate conditions. After construction is completed, disturbed areas, including temporary access roads not later used as Project access roads, would be restored as nearly as practicable to their original condition.

In general, vegetated areas that are temporarily disturbed or removed during construction of the Project would be restored as reasonably possible to pre-disturbance conditions. Areas with significant soil compaction and disturbance from construction activities would be revegetated in accordance with the Revegetation and Noxious Weed Management Plan (Appendix N).

Operation Impacts

Long-term visual effects during operation of the Project would result from the visibility of the aboveground components associated with the Project Turbines, solar arrays, substations, BESS, and transmission line. New access roads would also be constructed to reach Turbine and solar array locations. The greatest potential for local concern over the visual impacts of the Project is likely to be associated with residents who are non-participating landowners and would be exposed to relatively near views of Project Turbines and solar arrays.

Foreground views (0 to 0.5 miles) offer the maximum discernment of detail of the Turbines and solar arrays and adjacent landscape features. At this distance, Turbine towers and rotor blades are clearly seen, and the Turbines are generally dominant parts of the visual setting. Solar arrays at this distance would also be visible. Visual receptors within 0.5 mile of the Project would primarily have unobstructed views toward the Project. The strong vertical lines associated with the Turbines and horizontal lines of the solar arrays and associated infrastructure would contrast with the organic forms and colors of the existing landform and vegetation. While the existing substations, high-voltage transmission lines, communication towers, and existing Nine Canyon Wind Project are also visible from many of these locations, the Project would introduce strong contrast at this distance given the proximity of the visual receptors to Project facilities. Thirteen residences are located on non-participating properties that would have foreground views (less than 0.5 mile) of Project Turbines and solar arrays. These residences would represent locations of relatively high sensitivity to visual impacts from the Project.

Numerous visual receptors are in the middleground range, from 0.5 to 5 miles, primarily within nearby cities. For visual receptors located in the middleground, there is a transition toward the visual simplification of objects, textures, and overall shapes and patterns. At closer distances in the middleground, Turbine towers and blades and solar arrays can be distinctly seen. Details slowly fade with distance, and the visual dominance of individual Turbines and solar arrays—along with rotor visibility—begins to diminish. In the farther part of the middleground, individual Turbines and solar arrays tend to visually "merge" with the Turbine strings (side-by-side orientation) of which they are a part. The Project would also be seen in the context of the existing substations, high-voltage transmission lines, communication towers, and the Nine Canyon Wind Project. Due to the distance of the Project and the existing human-made facilities in the landscape setting, the Project would be noticeable but may not appear to be a dominant feature in the landscape from some locations as the distance to Turbines and solar arrays extends to 5 miles or beyond.

For visual receptors traveling along I-82/U.S. Highway 395, which runs north-south through the Project Lease Boundary, roughly dividing it into western and eastern sections approximately 0.5 mile to the east and west, views toward the Turbines would be unobstructed. The light color and strong vertical lines created by the Turbines would attract attention. Views towards the solar arrays may occur when driving through areas within a mile of the solar arrays. The solar arrays would be darker in color and lower to the ground but could still attract attention. As such, the Project would create moderate to strong visual contrast within 10 miles of the Project Lease Boundary and would be a co-dominant feature in the landscape setting with the existing infrastructure and Nine Canyon Wind Project and existing transmission lines. Because travelers on I-82 would be approaching or parallel to the Project Lease Boundary only for a limited time and their focus would be on the road ahead, the degree of contrast would be reduced by the short view duration. Where there is existing vegetation or structures, views from local roads located 0.5 mile or more from the Project would be partially to completely screened by topography and/or vegetation and residential development. Portions of the Project that are visible would appear as vertical lines along the horizon and may be seen in the context of other human-made features such as the existing substations, high-voltage transmission lines, and the existing Nine Canyon Wind Project.

In the background (greater than 5 miles), individual Turbines and solar arrays become increasingly difficult to see, and strings of facilities begin to recede from view. For visual receptors located within 5 to 10 miles, the Project Turbines would be less distinct than foreground views and would appear more as vertical lines depending on comparative elevation. The solar arrays would likely be indiscernible greater than 5 miles from the Project. Visual receptors that are at a higher elevation would be able to see more of the Project's extent looking downslope, while other viewers with level or lower-elevation views would only see portions of the Project (e.g., blade tips during rotation). Within the context of existing views of development and infrastructure, as well as potential screening vegetation close to receptors, the

Project would likely not create a dominant feature of the landscape and significant visual impacts would be unlikely at this distance.

There are five DNR state trust land parcels in the Project Lease Boundary (one parcel has solar arrays and transmission lines; three parcels have roads, crane paths, collection lines, and Turbines; and one has collection lines only) that are accessible for dispersed, informal recreation such as wildlife viewing, off-highway vehicle uses, and permitted hunting, depending on existing parcel-specific management. Based on the viewshed results, the land within these parcels would have views of the Project; however, public use is likely low and short term.

In addition, there are multiple designated public recreational opportunities in the immediate vicinity of the Project (see Section 4.2.4). Recreational areas located in or adjacent to the Project with foreground views are likely to have more views of the Project given the proximity to the Project infrastructure. Recreational areas located in the middleground would also likely have views of the Project. These views may be intermittent or in certain areas of a larger recreation area. Where the elevation of the recreation area is lower, particularly recreation areas around the Columbia River, views are less likely to occur and may be intermittent as recreationists traverse the area; however, elevated views are more likely to see more components of the Project. In most areas, vegetation would likely not provide substantial screening of the Project, and where Turbines are visible, they may be several vertical lines in the foreground, middleground, or background distance. Three recreational areas, which represent views of a larger portion of the Project, were selected as representative viewpoints: McNary National Wildlife Refuge, Chandler Butte, and Badger Mountain and discussed in detail in Section 4.2.3.3.

The substation and interconnection facilities would introduce vertical and geometric structures into the landscape; the substation equipment would generally consist of open metal structures, and the transmission line support structures would include 110- to 135-foot-tall steel poles, as described earlier. Similarly, the perimeter fence would add an additional vertical element to the Project Lease Boundary. These features would also contrast with the surrounding natural environment, though they would not be as prominent as the Turbines and solar arrays.

4.2.3.4 Mitigation Measures

The Applicant would incorporate the following measures into the Project’s design to reduce the Project’s potential for aesthetic impacts:

- Active dust suppression will be implemented during construction.
- Following completion of construction, temporarily disturbed areas (e.g., laydown yards, crane paths not used as Project access roads) will be returned to their previous conditions once construction is complete.
- Restoration of the laydown yards will involve preconstruction stripping and storing topsoil, including weed avoidance, and also removing the gravel surface, regrading to preconstruction contours, restoring topsoil and decompacting subsoils as needed, and reseeding with approved seed mixes.

- Following completion of construction, the temporary crane paths will be removed, and the area restored, in accordance with the Project's Revegetation and Noxious Weed Management Plan (Appendix N).
- The Applicant will provide a clean-looking facility free of debris and unused or broken-down equipment by storing equipment and supplies in designated areas within the O&M facilities and promptly removing damaged or unusable equipment from the site.
- The Turbines and solar arrays will be uniform in design to present a trim, uncluttered, aesthetically attractive appearance.
- The only exterior lighting on the Turbines will be aviation warning lights and potentially mid-tower lighting, depending on the size of the tower, as required by the FAA.
- The Applicant will construct support facilities with non-reflective materials in muted tones, as well as the use of white or light gray, non-reflective paint to minimize the need for daytime aviation lighting and eliminate glare from the Turbines.
- Sensors and switches will be used to keep security lighting turned off when not required, and all lights except aviation safety lighting would be hooded and directed downward to minimize light pollution.
- Any perimeter lighting at the O&M facilities and BESS will be activated only during maintenance or emergency activities at night.

4.2.4 Recreation

(4) Recreation. The application shall list all recreational sites within the area affected by construction and operation of the facility and shall then describe how each will be impacted by construction and operation.

4.2.4.1 Existing Environment

Inventory of Recreational Resources

Landownership within and in the vicinity of the Project is predominantly private and used for farming. Other landownership/land management types present in the vicinity (approximately 25 miles from the Project Lease Boundary) that may offer recreational opportunities include USFWS-administered land, BLM-administered land, USACE-administered lands, DNR-administered state trust lands, Washington State Parks–administered lands, Oregon Department of State Lands (ODSL)-administered land, Oregon Parks and Recreation Department (OPRD)-administered land, and Oregon Department of Fisheries and Wildlife (ODFW)-administered land (USGS 2020; see Table 4.2.4-1); however, only private property and DNR state trust lands exist within the Project Lease Boundary (see Figure 4.2.4-1). According to information from public databases, much of these federal and state-managed lands found within 25 miles of the Project are open to public access, including off-highway vehicles (OHV) and permitted hunting, though some are also held for potential extractive uses such as mining or logging (USGS 2020; DNR 2020). Some of these lands, such as the DNR-administered state land trust and ODSL-administered lands, lack designated facilities, but may still contain natural resource/hiking attractions, and thus public use of these areas is likely low (see Table 4.2.4-1).

The USFWS sites in the vicinity of the Project are open to the public during daylight hours, except as modified by fishing and hunting regulations (USFWS 2020a, 2020b, 2020c, 2020d). For the BLM-administered lands, specific visitor use information is not available; however, the Area of Critical Environmental Concern (ACEC) and OHV area in the vicinity of the Project claims that 300,000 visitors use this area annually (Table 4.2.4-1, BLM 2020). USACE offers day-use sites and campgrounds in the Project vicinity, which are either reservable or first-come, first-served. No day limits for camping are listed except for the camping season, which runs from approximately May to September for most site locations (USACE 2020a, 2020b, 2020c, 2020d). Washington State Park campgrounds in the vicinity of the Project are operated on a first-come, first-served basis, and state regulations limit overnight stays to 10 days (Washington State Parks 2020). OPRD also offers day-use sites and campgrounds, which are either reservable or first-come, first-served (Oregon State Parks 2020). Additionally, the ODFW Wildlife Areas are all day-use with some sites that can accommodate overnight camping (ODFW 2020). Note that specific visitor use information is not available for the DNR-administered and ODSL parcels in the vicinity of the Project.

The primary recreation activities in the vicinity of the Project include swimming, boating, river rafting, kayaking, water skiing and wind surfing, camping, biking, hiking, nature-watching, horseback riding, hunting, picnicking, and other outdoor sports. Sightseeing is a popular year-round activity to the south/southeast in the Columbia River Gorge. There are multiple designated public recreational opportunities and natural resources within 25 miles of the Project that offer these activities (see Figure 4.2.4-1, Table 4.2.4-1). This study area covers forests and wilderness areas, wildlife areas, boat launches, fish hatcheries, national parks and historic sites, state parks, county parks, city parks, trails, campsites, golf courses, and museums.

Table 4.2.4-1. Federal, State, and County Parks, Recreational Facilities, and Activities within 25 Miles of the Project

Recreational Resource Name	Management Unit	Distance from Project (closest point of resource)
McNary National Wildlife Refuge	USFWS	2.7 miles E
Saddle Mountain National Wildlife Refuge	USFWS	8.7 miles N
Cold Springs National Wildlife Refuge	USFWS	11.3 miles S
Umatilla National Wildlife Refuge	USFWS	11.4 miles SW
Irrigon Fish Hatchery	USFWS	13.9 miles S
Hanford Reach National Monument	USFWS	14.3 miles N
Sunnyside Wildlife Management Area	USFWS	15 miles W
Washington Farm Service Agency Tracts	USFWS	24.7 miles W
Juniper Dunes OHV Area/ACEC/Wilderness Area	BLM	15.3 miles NE
Hood Park	USACE	6.5 miles NE
Sand Station Recreation Area (Lake Wallula)	USACE	8 miles S
Charbonneau Park	USACE	12.5 miles NE
Fishhook Park	USACE	18.5 miles NE
Johnson Butte	DNR	**Within Project Lease Boundary**
Jump Off Joe Butte	DNR	1.5 mile E

Recreational Resource Name	Management Unit	Distance from Project (closest point of resource)
Chandler Butte	DNR	1.8 miles NW
Goose Hill Butte	DNR	2 miles NW
Sacajawea State Park	WSP	5.2 miles N
Crow Butte Park	WSP	22.2 miles SW
Hat Rock State Park	OPRD	8.1 miles S
Irrigon Wildlife Area	ODFW	11 miles SW
Coyote Springs Wildlife Area	ODFW	21 miles SW
Horse Heaven Cemetery	Benton County	**Within Project Lease Boundary**
Hover Park	Benton County	1.5 miles E
Wallula Gap Preserve	Benton County	3 miles SE
Badger Mountain Centennial Preserve	Benton County	4 miles NW
Two Rivers Park	Benton County	4.5 miles NE
Candy Mountain Preserve	Benton County	5 miles NW
Vista Park	Benton County	5 miles NE
Rattlesnake Mountain Shooting Facility	Benton County	8 miles NW
Horn Rapids Park	Benton County	9 miles NW
Boardman Park	Morrow County	20.1 miles SW
Multiple Small Local Parks[1]	Multiple	variable

Note:
DNR – Washington Department of Natural Resources; ODFW – Oregon Department of Fish and Wildlife; OPRD – Oregon Parks and Recreation Department; WSP – Washington State Parks

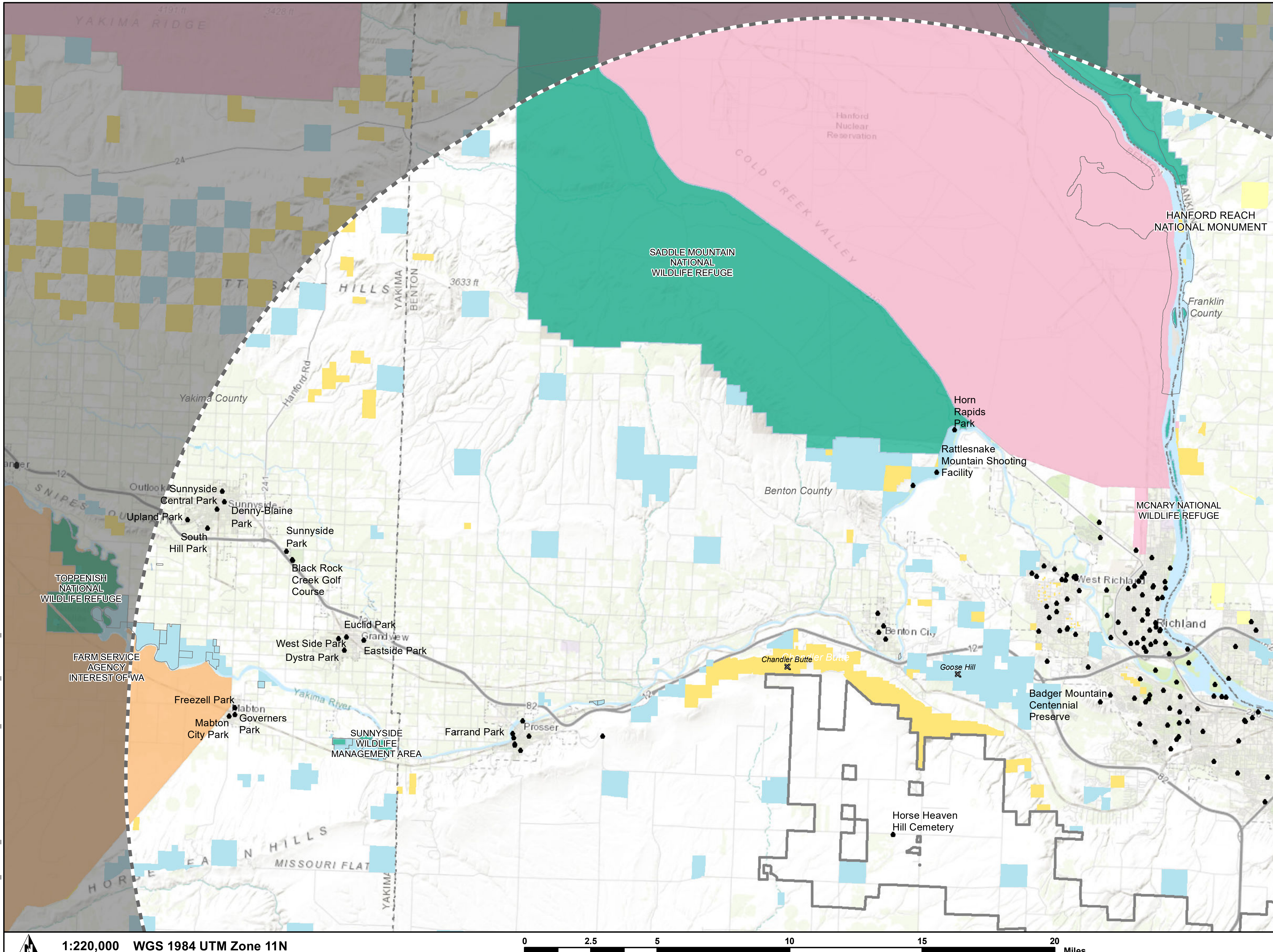
1/ There are 208 small local parks found within 25 miles of the Project. These various parks are shown on Figure 4.2.4-1, but are not listed individually in this table.

Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 4.2.4-1
Recreation Locations
Map 1 of 4

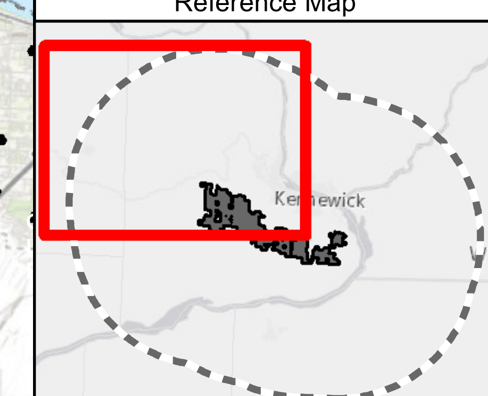
BENTON COUNTY, WA

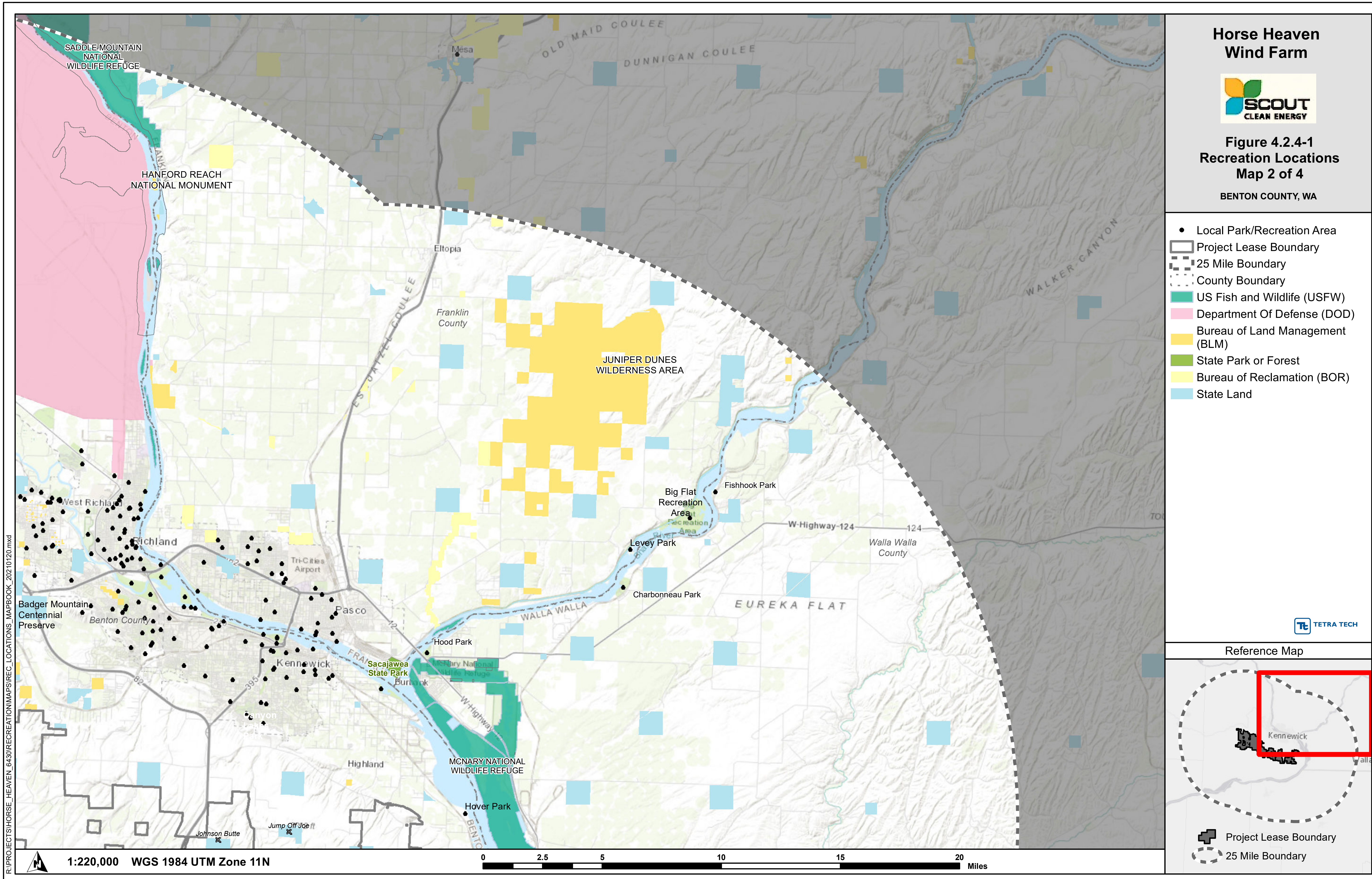


- Local Park/Recreation Area
- Project Lease Boundary
- 25 Mile Boundary
- County Boundary
- US Fish and Wildlife (USFW)
- Department Of Defense (DOD)
- Bureau of Land Management (BLM)
- Bureau of Reclamation (BOR)
- Bureau of Indian Affairs (BIA)
- State Land

TETRA TECH

Reference Map





Horse Heaven Wind Farm
SCOUT CLEAN ENERGY
Figure 4.2.4-1
Recreation Locations
Map 2 of 4
BENTON COUNTY, WA
Local Park/Recreation Area
Project Lease Boundary
25 Mile Boundary
County Boundary
US Fish and Wildlife (USFW)
Department Of Defense (DOD)
Bureau of Land Management (BLM)
State Park or Forest
Bureau of Reclamation (BOR)
State Land
TETRA TECH
Reference Map
Kennewick
Project Lease Boundary
25 Mile Boundary
SADDLE MOUNTAIN NATIONAL WILDLIFE REFUGE
HANFORD REACH NATIONAL MONUMENT
Mesa
OLD MAID COULEE
DUNNIGAN COULEE
WALKER CANYON
Eltopia
Franklin County
JUNIPER DUNES WILDERNESS AREA
Fishhook Park
Big Flat Recreation Area
W Highway 124
Walla Walla County
Levey Park
Charbonneau Park
EUREKA FLAT
West Richland
Richland
Tri-Cities Airport
Badger Mountain Centennial Preserve
Benton County
Pasco
Hood Park
Kennewick
Sacajawea State Park
Burbank
Highland
MCNARY NATIONAL WILDLIFE REFUGE
Hover Park
Johnson Butte
Jump Off Joe
1:220,000 WGS 1984 UTM Zone 11N
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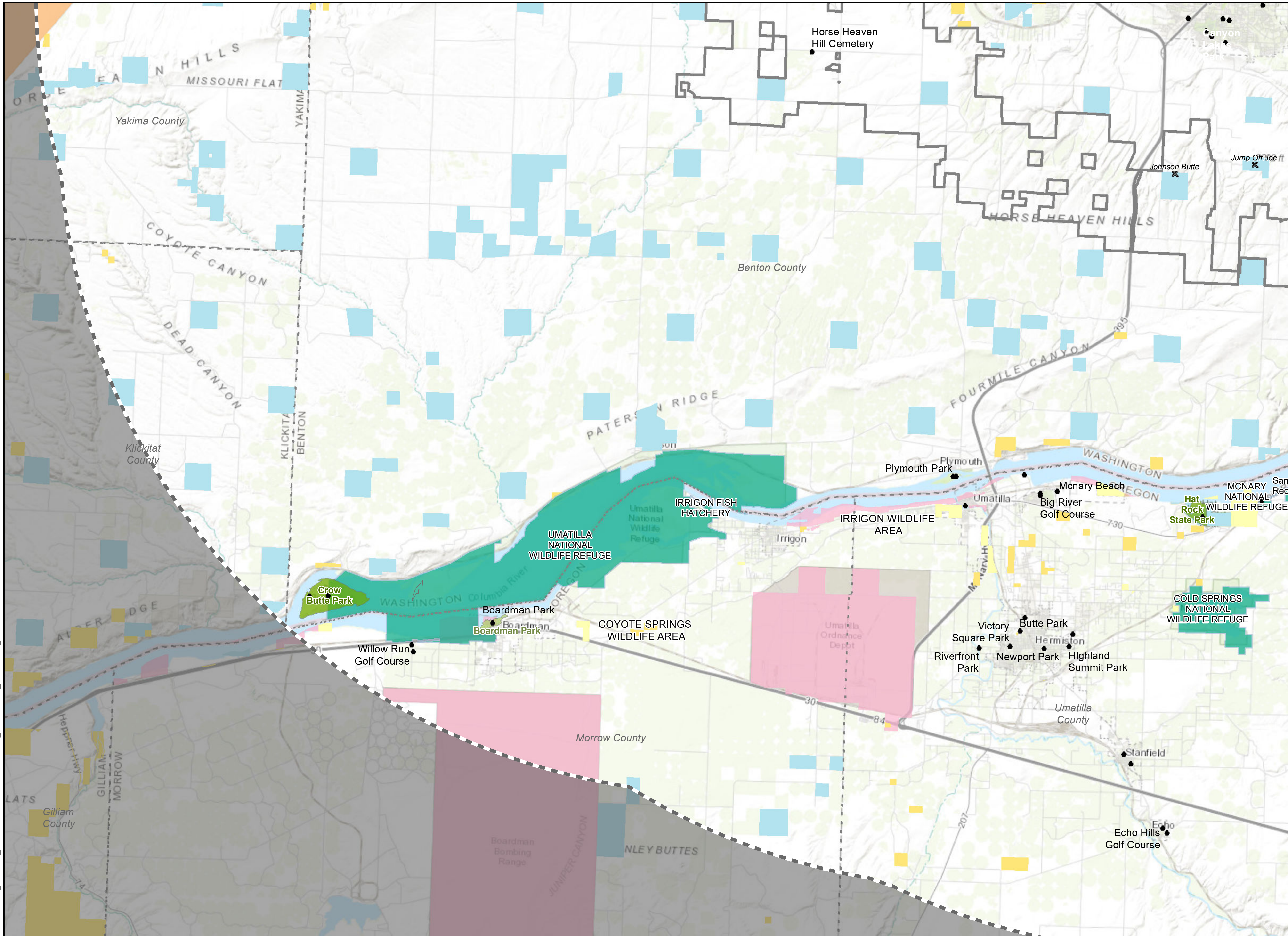

Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 4.2.4-1 Recreation Locations Map 3 of 4

BENTON COUNTY, WA

- Local Park/Recreation Area
- Project Lease Boundary
- 25 Mile Boundary
- County Boundary
- US Fish and Wildlife (USFW)
- Department Of Defense (DOD)
- Bureau of Land Management (BLM)
- State Park or Forest
- County Park
- Bureau of Reclamation (BOR)
- Bureau of Indian Affairs (BIA)
- Other Federal
- State Land

TETRA TECH

Reference Map

- Project Lease Boundary
- 25 Mile Boundary

1:220,000 WGS 1984 UTM Zone 11N

0 2.5 5 10 15 20 Miles

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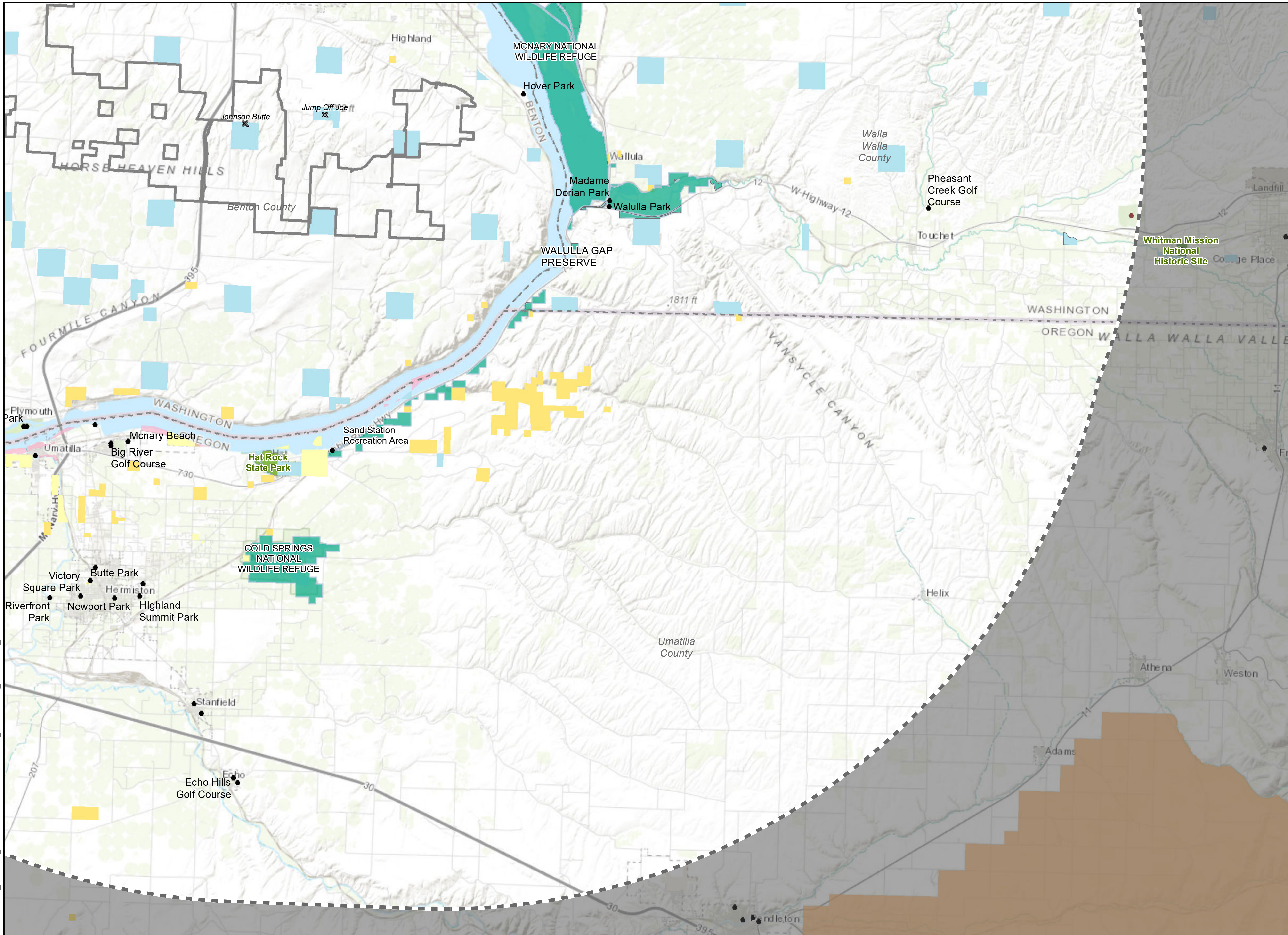

1:220,000 WGS 1984 UTM Zone 11N

0 2.5 5 10 15 20 Miles

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Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

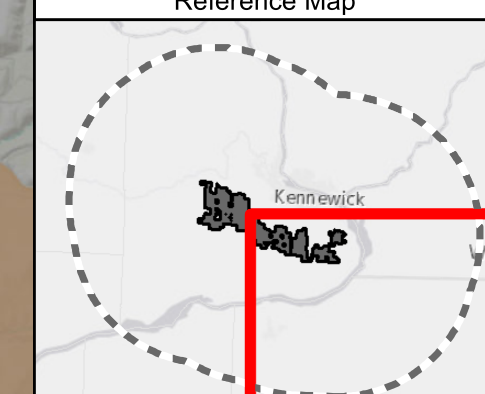
Figure 4.2.4-1 Recreation Locations Map 4 of 4

BENTON COUNTY, WA

- Local Park/Recreation Area
- Project Lease Boundary
- 25 Mile Boundary
- County Boundary
- US Fish and Wildlife (USFW)
- Department Of Defense (DOD)
- Bureau of Land Management (BLM)
- National Park or Forest
- State Park or Forest
- Bureau of Reclamation (BOR)
- Bureau of Indian Affairs (BIA)
- Other Federal
- State Land

TETRA TECH

Reference Map



- Project Lease Boundary
- 25 Mile Boundary

One natural resource and one designated recreational resource are located within the Project Lease Boundary (i.e., Johnson Butte and Horse Heaven Cemetery). DNR's Johnson Butte (as well as Jump Off Joe Butte, Goose Hill Butte, and Chandler Butte, which are all less than 5 miles from the Project) lack any designated facilities but may host hiking opportunities. Benton County's Horse Heaven Cemetery is a decommissioned pioneer cemetery, in which the County plans to take restoration steps to make it more of a point of interest as a historical attraction (Benton County 2020). All nine of Benton County's parks are within 25 miles of the Project, and seven are 5 miles or less away. These parks offer a variety of recreational opportunities including water activities and non-motorized activities such as hiking, biking, bird watching, picnicking, and children entertainment (e.g., playgrounds; Benton County 2020). One national wildlife refuge is located less than 5 miles from the Project (i.e., McNary National Wildlife Refuge). The refuge is located across the Columbia River from the Project and offers a host of recreational activities including nature-watching, hiking, horseback riding, boating, fishing, and hunting. The remaining recreational resources within 5 miles of the Project are all local facilities (3 local park facilities out of the 208 total local park facilities), offering some traditional park amenities as well as various sports recreation; these three facilities are the Canyon Lakes Golf Course (3.3 miles north of the Project), Shark Reef Water Park (3.8 miles north of the Project) and the Bombing Range Road Sports Complex (5 miles northeast of the Project).

Established Plans and Policies

The Washington Recreation and Conservation Office regularly prepares a Washington State Comprehensive Outdoor Recreation Plan (SCORP) to characterize recreational use at the statewide and regional analysis levels. The latest SCORP was prepared in 2017 using information obtained from random online surveys (Eastern Washington University 2017). Benton County is located in the center of the South-Central Region (which also includes Yakima, Franklin, and Walla Walla Counties). The highest participation rates for general recreational categories in the South-Central Region included those for walking, nature activities, leisure activities at a park, hiking, swimming, and sightseeing. Notable individual recreational activities in the South-Central Region included walking in a park or trail setting (82 percent), visiting rivers or streams (72 percent), attending an outdoor concert or event (60 percent), playing (50 percent), day-hiking (50 percent), swimming in an outdoor pool (49 percent), scenic or wilderness area (48 percent), swimming/wading at a freshwater beach (47 percent), wildlife or nature viewing (47 percent), gathering or collecting things in a nature setting (47 percent), and visiting a beach or tide pools (47 percent). Similarly, the top 10 individual recreational activities for Washington state included walking in a park or trail setting (84 percent), visiting rivers or streams (66 percent), visiting a beach or tide pools (60 percent), attending an outdoor concert or event (58 percent), gathering or collecting things in a nature setting (54 percent), day-hiking (53 percent), sightseeing at a scenic or wilderness area (51 percent), wildlife or nature viewing (50 percent), swimming/wading at a freshwater beach (50 percent), and driving or motorcycling for pleasure (46 percent). Overall, residents of the SCORP South-Central Region participated in the same recreational activities at very similar rates to other Washington residents (Eastern Washington University 2017).

The Benton County Comprehensive Plan, Walla Walla County Comprehensive Plan, Umatilla County Comprehensive Plan, Morrow County Comprehensive Plan, Yakima County

Comprehensive Plan, Kennewick Comprehensive Parks and Recreation Plan, City of Pasco's Parks, Recreation, and Forestry Plan, City of Richland's Parks and Recreation Master Plan, Benton City Comprehensive Plan, City of Umatilla Comprehensive Land Use Plan, City of Boardman Comprehensive Plan, Hermiston Park Master Plan, City of Prosser Parks and Recreation Plan, and City of Grandview Comprehensive Parks, Recreation and Open Space Plan contain general goals, policies and objectives applicable to the recreational resources within the Project vicinity (Benton County 2007; City of Benton City 2017; City of Boardman 2003; City of Grandview 2014; City of Hermiston 2007; City of Kennewick 2018; City of Pasco 2016; City of Prosser 2018; City of Richland 2019; City of Umatilla 2013; Morrow County 2011; Umatilla County 2018; Walla Walla County 2019; Yakima County 2017). Common goals, objectives, and policies across the plans include protection and maintenance of the resources, preservation of land use while promoting development, local coordination, and education.

4.2.4.2 Impacts

Construction and operation of the Project would not displace any existing recreational uses within the vicinity of the Project. A majority of the construction workers are expected to be within daily commuting distance of the site. At peak construction periods, some workers may seek temporary housing in apartments or motels, or may make private arrangements for recreational vehicles. Existing limits on the length of stay in public camping areas would minimize any potential impacts on park users. Workers would be more likely to use the facilities on weekdays rather than busy weekends, so minimal impacts to park and recreation facilities are expected from construction workers. A small team of 12 to 16 employees would staff the Project permanently during operations; therefore, no facility/lodging-related impacts are expected for existing recreational uses post-construction.

During construction, there would be temporary delays on local roads that are also used to access recreation activities in the vicinity of the Project (see Section 4.3). This would represent a minor impact to recreationists due to the short duration of construction (see Section 2.15). In addition, most of the recreation areas are located more than 4 miles away and would likely be accessed from the roads north or south of the Project (e.g., in Kennewick, Umatilla, Irrigon, or the Tri-Cities urban area). No transportation-related impacts are expected for existing recreational uses post-construction due to the small operations team. See Section 4.3 for a more detailed analysis of traffic impacts in the Project's vicinity during construction and operations.

Construction-related noise (such as noise generated by construction equipment) would be temporary, while operational noise would not be noticeable at most of the recreation areas due to distances between the Project and most of these areas. Nevertheless, operational noise could be experienced by recreational users at the closest recreation areas, such as Johnson Butte and the Horse Heaven Cemetery. See Section 4.1.1 for a detailed analysis of noise generated by the Project during construction and operations and its impact on local communities.

Potential visual effects resulting from construction, operation, and decommissioning of the project are addressed in more detail in Section 4.2.3. Based on the location of a specific recreational resource, views of the Project facilities may be fully or partially obstructed or viewers may have more wide-open views. Some views from recreational resources may include electrical infrastructure and wind farms in the immediate vicinity as well as the intervening topography of the area, and other landscape features from areas farther from the Project. Visual impacts to recreational resources would vary depending on the specific recreational resource being considered. Table 4.2.4-2 summarizes potential visual impacts to recreational resources within 10 miles of the Project, which matches the extent of the visual resource study area. Where not screened by intervening topography, vegetation, or existing built infrastructure, recreation sites farther than 10 miles from the Project may have distant views of the Project. Recreationists at sites with elevated views may notice the change from the Project; however, it would be in context with other existing built infrastructure, including residential/commercial development, roadways, electrical lines, and an operating wind farm. At all distant sites, potential views of the Project would not interfere with the use of the sites for their intended purposes.

Table 4.2.4-2. Visual Impacts to Recreational Resources within 10 Miles of the Project Lease Boundary

Recreational Resource Name	Management Unit	Distance from Project Lease Boundary (closest point of resource)	Potential Views	Viewing Distance	Potential Visual Impact (overall rating in bold)
McNary National Wildlife Refuge	USFWS	2.7 miles E	See representative viewpoint discussion in Section 4.2.3	Middleground	**Low to Moderate**. See Representative Viewpoint 1 discussion in Section 4.2.3 – Aesthetics.
Saddle Mountain National Wildlife Refuge	USFWS	8.7 miles N	Southern tip of NWR within 10-mile visual study area will potentially have views	Background	**None**. Saddle Mountain NWR is located in Wahluke West and is closed to the public at this time.
Hood Park	USACE	6.5 miles NE	Potential views similar to McNary, Sacajawea SP, and Two Rivers Park	Background	**Low**. Visitors to this location may have background views of some Project components. Recreational users at water areas (lakes, rivers) are generally focused on activities such as camping, picnicking, boating, fishing, and hiking and may not be focusing outward toward surrounding views. At this lower elevation, Project facilities may not be noticeable or concerning to visitors.
Sand Station Recreation Area (Lake Wallula)	USACE	8 miles S	Potentially intermittent views	Background	**Low**. Visitors to this may have background views of some Project components. Recreational users at water areas (lakes, rivers) are generally focused on activities such as camping, picnicking, boating, fishing, and hiking and may not be focusing outward toward surrounding views. At this lower elevation, Project facilities may not be noticeable or concerning to visitors.
Johnson Butte	DNR	Within Project Lease Boundary	Views likely	Foreground	**Moderate to High**. Visitors to this location will have close views of Project facilities. Extended viewing of the surrounding landscape is a common activity for hikers that reach the top of the butte and change resulting from the Project may be noticeable. Project facilities will be introduced into a setting that includes other existing built modifications such as roadways, existing electrical lines, and an operating wind farm (Nine Canyon Wind Power Project).

Recreational Resource Name	Management Unit	Distance from Project Lease Boundary (closest point of resource)	Potential Views	Viewing Distance	Potential Visual Impact (overall rating in bold)
Jump Off Joe Butte	DNR	1.5 miles E	Potential views	Middleground	**Moderate**. Visitors to this location will have middleground views of Project facilities. Extended viewing of the surrounding landscape is a common activity for hikers that reach the top of the butte and change resulting from the Project may be noticeable. Project facilities will be introduced into a setting that includes other existing built modifications such as roadways, existing electrical lines, and an operating wind farm (Nine Canyon Wind Power Project).
Chandler Butte	DNR	1.8 miles NW	See representative viewpoint discussion in Section 4.2.3	Middleground	**Moderate to High**. See Representative Viewpoint 3 discussion in Section 4.2.3 – Aesthetics.
Goose Hill Butte	DNR	2 miles NW	Potential views	Middleground	**Low to Moderate**. Visitors to this location will have middleground views of some Project facilities. Extended viewing of the surrounding landscape is a common activity for hikers that reach the top of the butte and change resulting from the Project may be noticeable. Project facilities will be introduced into a setting that includes other existing built modifications such as roadways, existing electrical lines, and an operating wind farm (Nine Canyon Wind Power Project).
Sacajawea State Park	WSP	5.2 miles N	Possible view of eastern Turbines	Background	**Low**. Visitors to this location may have background views of some Project components. Recreational users are likely focused on the interpretive center and nearby water activities and may not be focusing outward toward surrounding views. Project facilities may not be noticeable or concerning to visitors.
Hat Rock State Park	OPRD	8.1 miles S	Potential intermittent views	Background	**Low**. Visitors to this location may have background views of some Project components. Recreational users at water areas (lakes, rivers) are generally focused on activities such as picnicking, boating, fishing, and hiking and may not be focusing outward toward surrounding views. At this lower elevation, Project facilities may not be noticeable or concerning to visitors.

Recreational Resource Name	Management Unit	Distance from Project Lease Boundary (closest point of resource)	Potential Views	Viewing Distance	Potential Visual Impact (overall rating in bold)
Horse Heaven Cemetery	Benton County	Within Project Lease Boundary	Views likely	Foreground	**Moderate to High**. Visitors to this location will have close views of Project facilities that may be noticeable. However, visitors are likely focused on the decommissioned pioneer cemetery and not on views toward the surrounding landscape. If the County implements restoration to add additional visitor amenities, that would likely further retain viewer attention within the site. Project facilities will be introduced into a setting that includes other existing built modifications such as roadways, existing electrical lines, and an operating wind farm (Nine Canyon Wind Power Project).
Hover Park	Benton County	1.5 miles E	Potential views	Middleground	**Low**. Visitors to this location may have middleground views of some Project components. Recreational users passive, unstructured recreational areas are generally focused on activities such as fishing, hiking, and horseback riding and may not be focusing outward toward surrounding views. Project facilities may not be noticeable or concerning to visitors.
Wallula Gap Preserve	Benton County	3 miles SE	Potential intermittent views	Middleground	**Low**. Visitors to this location may have middleground and background views of some Project components. Recreational users at water areas (lakes, rivers) are generally focused on activities such as fishing and hiking and may not be focusing outward toward surrounding views. At this lower elevation, Project facilities may not be noticeable or concerning to visitors.
Badger Mountain Centennial Preserve	Benton County	4 miles NW	See representative viewpoint discussion in Section 4.2.3	Middleground	**Moderate to High**. See Representative Viewpoint 5 discussion in Section 4.2.3 – Aesthetics.
Two Rivers Park	Benton County	4.5 miles NE	Potential views similar to McNary, Sacajawea SP, and Hood Park	Middleground	**Low**. Visitors to this location may have middleground views of some Project components. Recreational users are likely focused on the nearby water activities and may not be focusing outward toward surrounding views. Project facilities may not be noticeable or concerning to visitors.

Recreational Resource Name	Management Unit	Distance from Project Lease Boundary (closest point of resource)	Potential Views	Viewing Distance	Potential Visual Impact (overall rating in bold)
Candy Mountain Preserve	Benton County	5 miles NW	Potential views similar to Badger Mountain	Background	**Low to Moderate**. Visitors to this location will have relatively distant views of some Project facilities. Extended viewing of the surrounding landscape is a common activity for hikers that reach the top of the butte and change resulting from the Project may be noticeable. Project facilities will be introduced into a setting that includes other existing built modifications such as roadways, existing electrical lines, and an operating wind farm (Nine Canyon Wind Power Project).
Vista Park	Benton County	5 miles NE	Possibly western Turbines	Background	**Low**. Visitors to this location may have background views of some Project components. Recreational users are likely focused on the nearby water activities and may not be focusing outward toward surrounding views. Project facilities may not be noticeable or concerning to visitors.
Rattlesnake Mountain Shooting Facility	Benton County	8 miles NW	Potential intermittent views	Background	**Low**. Visitors to this location may have distant views of some Project components in some portions of the facility. Recreational users are likely focused on firearm-related activities and may not be focusing outward toward surrounding views. Project facilities may not be noticeable or concerning to visitors.
Horn Rapids Park	Benton County	9 miles NW	Possibly western Turbines and transmission line	Background	**Low**. Visitors to this location may have distant views of some Project components. Recreational users are likely focused on the nearby water activities and may not be focusing outward toward surrounding views. Project facilities may not be noticeable or concerning to visitors.
Multiple Small Local Parks[1]	Multiple	Variable	Varies	Varies	**Low**. Recreational users at local parks are generally focused on activities such as picnicking, use of playgrounds and sports fields, and gathering with friends and family and may not be focusing outward toward surrounding views. Even if visible, Project facilities may not be noticeable or concerning to visitors to local parks.

1/ There are 208 small local parks found within 25 miles of the Project. These various parks are shown on Figure 4.2.4-1, but are not evaluated individually in this table.

4.2.4.3 Mitigation Measures

This Project would not significantly interfere with recreation in conjunction with the current land use. As applicable, Project construction and operation will follow site-specific BMPs to minimize potential impacts to noise, traffic, and the visual surroundings, as described in the respective resource sections of this application. These measures would minimize impacts to recreational users; therefore, no mitigation measures specific to recreation are proposed.

4.2.5 Historic and Cultural Resources

> *(5) Historic and cultural preservation. The application shall coordinate with and provide a list of all historical and archaeological sites within the area affected by construction and operation of the facility to the Washington state office of archaeology and historic preservation and interested tribe(s). The application shall:*
>
> *(a) Provide evidence of this coordination;*
>
> *(b) Describe how each site will be impacted by construction and operation; and*
>
> *(c) Identify what mitigation will be required.*

4.2.5.1 Existing Environment

The Applicant's consultant, Historical Research Associates, Inc. (HRA), conducted agency and tribal coordination (see Section 1.12), cultural resource background research (i.e., archival and record search), archaeological surveys, an architectural inventory, and provided NRHP and management recommendations for the Project (HRA 2020a, 2020b: see Appendix R for non-confidential [redacted] versions of the HRA cultural reports). HRA conducted a pedestrian survey of 10,261 acres on private land and 703 acres on DNR land that included Turbine, access road, crane path, connection, and communication line locations within the Project Lease Boundary (Figure 4.2.5-1). Forty-seven percent of the Micrositing Corridor and Solar Siting Areas have been surveyed for archaeological and architectural resources. HRA is currently conducting archaeological surveys for remaining Project micrositing areas not yet surveyed; the completion date of these surveys is anticipated for spring of 2021 (prior to construction). Additional information will be provided to EFSEC as subsequent cultural reports and information become available.

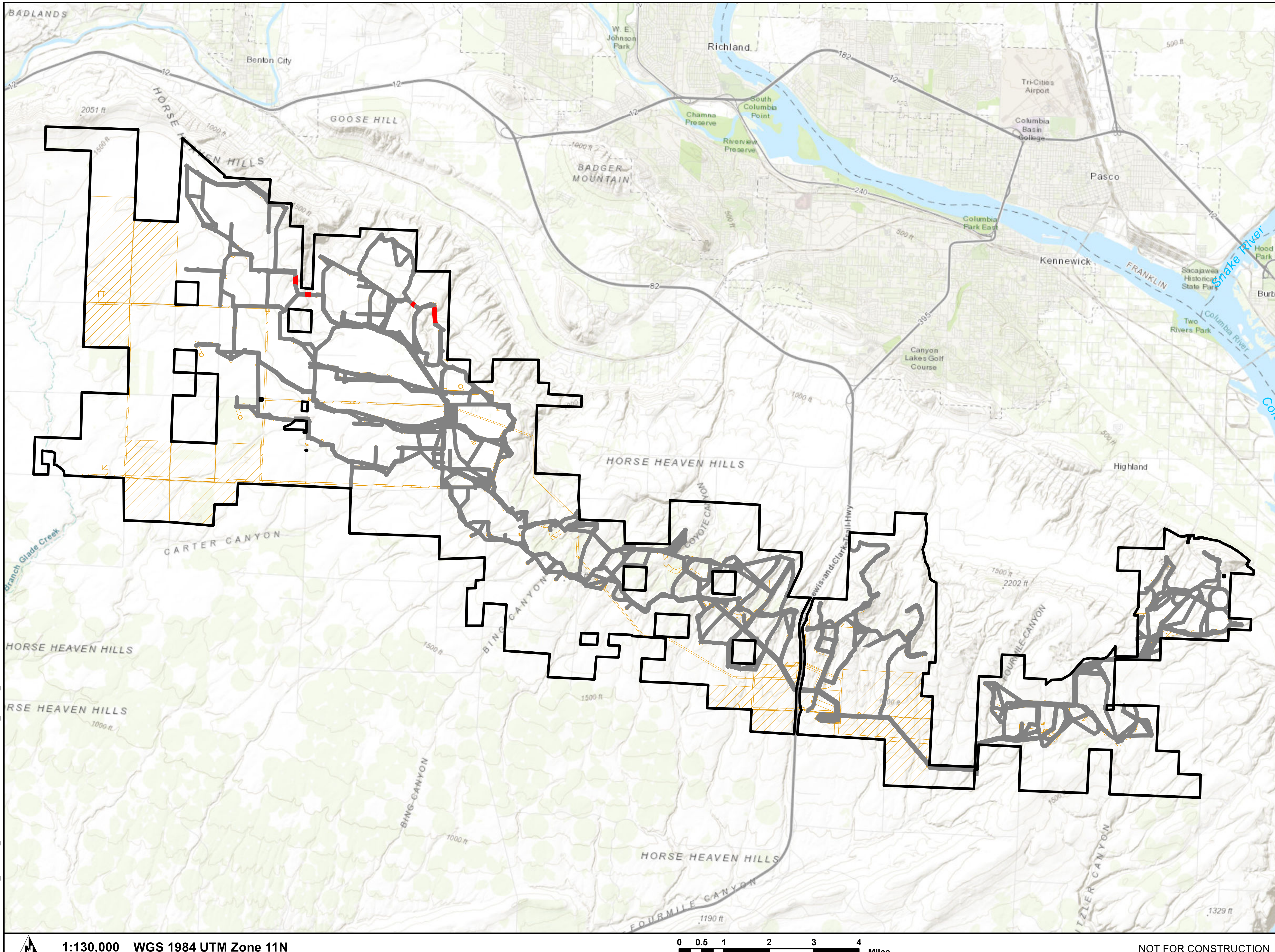
Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 4.2.5-1 Areas Surveyed for Cultural Resources

BENTON COUNTY, WA

- Project Lease Boundary
- Surveyed Area (HRA 2020) -
- Not Surveyed Area (HRA 2020 - steep slope)
- Survey Area to be Completed (Winter 2020/Spring 2021 prior to construction)



TETRA TECH

Reference Map

The following information has been extracted from the cultural resource investigation reports prepared by HRA for the Project (HRA 2020a, 2020b; Appendix R).

Cultural Background and Context

The following briefly discusses the general cultural context (pre-contact, ethnographic, and historic) of the Project, focusing on the cultural chronology of human occupation for the region that characterized by changing settlement, economic, and subsistence strategies reflected in material culture.

Precontact Context

The Project is located in the Columbia Basin physiographic province, which roughly comprises the south-central portion of the larger Plateau cultural region. The Plateau encompasses a vast stretch of the Pacific Northwest, including eastern Oregon, eastern Washington, most of Idaho, western Montana, and the inter-mountain region of British Columbia (Ames et al. 1998; Pokotylo and Mitchell 1998; Roll and Hackenberger 1998 as cited in HRA 2020a).

In general, the Plateau region was characterized by subsistence patterns centered on the harvesting and storage of fish, edible roots, and large ungulates, such as deer and elk (Chatters and Pokotylo 1998, as cited by HRA 2020a). Several cultural chronologies have been formulated for the southern part of the Plateau, each based on a different set of archaeological sites depending on the scale of the analysis and the availability of data at the time. Several key archaeologists have contributed to the development of the chronological framework for the broader Plateau such as Andrefsky (2004:26, as cited by HRA 2020a), Ames and colleagues (1998, as cited by HRA 2020) for the Southern Plateau, as well as the Mid-Columbia Study Sequence developed by Galm and colleagues (1981, as cited by HRA 2020a) and data from the Lower Snake River Archaeological District (Solimano 2012, as cited by HRA 2020b). The generalized cultural sequence for the Project presented here includes the Paleoarchaic Period (pre-11,000 – 8,000 Before Present [B.P.]), Early Archaic period (8000–5000 B.P.), Middle Archaic (5000–2000 B.P.), Late Archaic (2000–250 B.P.). A brief overview of these periods is provided below.

Paleoarchaic Period

During the Paleoarchaic period (pre-11,000–8000 B.P.), hunter-gatherers occupied parts of eastern Washington and Oregon. The socio-economic structure of Paleoarchaic people of the interior Plateau was likely based on a highly mobile subsistence strategy, focused on hunting large game, complemented by fishing, along with gathering and some evidence of seacoast trade (Aikens et al. 2011; Ames et al. 1998, as cited by HRA 2020b). Most Paleoarchaic sites in the region occur in the form of diagnostic lithic tools presumed to be associated with either the Western Clovis complex (defined as a projectile with a prominent “flute” or flake scar at its base) or the Western Stemmed Tradition (large lanceolate, stemmed, and shouldered bifaces). Several Paleoarchaic Period sites and isolates have been recorded in Washington such as the Richey-Roberts Clovis Cache site, the Mitchell Site, and the Kavanaugh’s Springs Site 45BN1685.

Early Archaic Period

The Early Archaic period (8000–5000 B.P.) populations of the Columbia Plateau are characterized as having a broad-spectrum hunter-gatherer subsistence economy: high seasonal and annual mobility, low population densities, and a technology geared to maximum flexibility (Ames et al. 1998:103, as cited by HRA 2020a). Faunal assemblages demonstrate a wide resource base that included large terrestrial mammals, smaller mammals, birds, and riverine resources such as mussels and fish (Ames et al. 1998:103, as cited by HRA 2020a). Hopper mortars, pestles, and the appearance of anvils on living floors were common during this period, suggesting the processing of roots and bulbs such as camas (Ames et al. 1998:109–110; Chatters and Pokotylo 1998:75, as cited by HRA 2020a). Artifact assemblages are characterized by projectile point such as stemmed and lanceolate dart points (including Windust Phase type), leaf-shaped or lanceolate Cascade Points, and large side- and corner-notched points bone needles, bone awls, cobble choppers, beads, multi faced burins, and lanceolate knives, include ovate bifaces, crescents, end- and side-scrapers, used flakes, cores, small milling stones, manos, edge-ground cobbles, bola stones, composite and single-piece harpoons, and bone needles.

Middle Archaic Period

The Middle Archaic (5000–2000 B.P.) is a transitional period that represents attributes from both the Early and Late Archaic. This period is characterized by population increases, riverine villages of pit houses, increased sedentism, and evidence of trade (Ames et al. 1998:113, as cited by HRA 2020a). During this time, habitation sites become larger and located near locations with dense and reliable subsistence resources, and more intensive food processing and storage also occurred (Ames et al. 1998; Hicks and Morgenstein 1994, as cited by HRA 2020b).

Artifact assemblages are characterized by beads made of marine *olivella* shell, hopper mortars, and pestles and an absence of cores and edge-ground cobbles (Chatters and Pokotylo 1998:75; Galm et al. 1981; Warren 1968:32, as cited by HRA 2020a). Intensification of salmon fishing corresponds with the appearance of girdled and perforated net sinkers and fish weirs. Changes in the lithic technology include the introduction of small, notched projectile points, indicating the adoption of bow and arrow technology (Ames and Maschner 1999, as cited by HRA 2020a).

Late Archaic Period

The Late Archaic (2000–250 B.P.) is marked by the widespread presence of sedentary occupation of pithouses, an increasingly heavy reliance on riverine resources and fishing, salmon storage, intensive camas processing; and evidence of land use patterns that lasted into the nineteenth century. Faunal assemblages also reflect the consumption of deer, elk, pronghorn antelope, fish, and birds. Artifact types from this period included high frequencies of cobble tools, fishing gear (net weights and composite harpoons), and mortars and pestles, but relatively low frequencies of projectile points. Small corner-notched or stemmed arrow points were the most frequent projectile point types. There is also evidence of social stratification (i.e., variation in house sizes, disparities in funerary goods) and a coastal influence (dentalium, shell beads, steatite pipes, stone and bone clubs) among Columbia Plateau groups during this subperiod (Chatters and Pokotylo 1998:78; Prentiss et al. 2006:84, as cited by HRA 2020a). Late period sites in the region are common.

Ethnographic Context

The Project is located above the Columbia River, near its junction with several major waterways including the Snake, Yakima, Umatilla, and Walla Walla Rivers. Among the many Native groups that utilized the Project vicinity are the Yakama, Umatilla, Cayuse, Walla Walla, and Nez Perce people (Hunn et al. 2015:5; Miller 2011:3; Ray 1938:386; Schuster 1998:327–328; Schroeder and Landreau 2015:10; Stern 1998:396; Walker 1998:1–3, as cited by HRA 2020b). The exact customary and ancestral boundaries of indigenous groups are not always clearly defined because the Native people utilized many of the same places and resources. Many neighboring groups utilized the Project vicinity for hunting, fishing, and gathering. Below is a general discussion of language, ancestral territory, and seasonal rounds.

The Native people who lived and collected resources within the Project vicinity spoke various dialects of the Sahaptin language-group. Intermarriage between the Umatilla, Cayuse, Yakama, and Walla Walla was so common that it was accepted practice for individuals of one group to claim rights to resource locations in another's land once married (Ray 1938, as cited by HRA 2020b). The Nez Perce welcomed the Palus, Yakama, and Walla Walla to their rich gathering grounds, and they too intermarried. Ethnographic research supports that many Sahaptin people treated each other as being from a nearby village and not from another tribe (Haines 1955:16–17, as cited by HRA 2020b).

The ancestral territory of the Nez Perce includes contemporary central Idaho, along the Snake, Salmon, and Clearwater River systems. The Cayuse lived between the Nez Perce and the Walla Walla people in the Walla Walla River Valley (CTUIR 2020; Haines 1955:17, as cited by HRA 2020a). The traditional territory of ancestors of the Yakama Nation consisted of the Yakama (Lower Yakama), Kittitas (Upper Yakama), Klikitat, Taitnapam, and Wanapam bands and villages; these Yakama groups were closely related but remained independent, and together their territory extended from the Cascade Range to the west to the Wenatchee Range on the north, then to the Columbia River Valley to the east and south, including the Horse Heaven Hills (Schuster 1998:327–328, as cited by HRA 2020a). The northwestern portion of Umatilla territory also overlaid the Horse Heaven Hills, with portions of Walla Walla territory extending into the same area (Stern 1998:396, as cited by HRA 2020a). In general, the territory of the Umatilla and Walla Walla included the Columbia River and its confluence with major tributaries, including Willow Creek, and the Umatilla, Snake, Walla Walla and Yakima Rivers, as well as upland areas on opposite sides of each of these waterways and east toward the foothills of the Blue Mountains (Anastasio 1975; Stern 1998:395–396, as cited by HRA 2020b).

Like most Plateau and Columbia Basin groups, the Umatilla, Walla Walla, Cayuse, Yakama, and Nez Perce hunted terrestrial game, fished from the area's rich waterways, and gathered both edible and medicinal plants on a seasonal round basis. Important spring collection activities (e.g., fishing, gathering roots) were typically a time for socialization, ceremony, trade, and re-establishing critical inter-group relationships (Anastasio 1975:154; CTUIR 2020; Hunn et al. 2015:95; Ray 1936:216–217; Relander 1956:112–113; Schuster 1998:331, 335; Stern 1998:396–397, as cited by HRA 2020b). By the late summer to fall, hunting, gathering, and processing activities continued in the uplands until the first severe frost. After this, people generally congregated in larger family-groups at riverine villages and made the last preparations for the coming winter. Seasonal camps at resource-procurement locations tended to consist of more ephemeral tents or huts, constructed of tule mats over a cottonwood framework (Haines 1955:12–13; Relander 1956:40; Stern 1998, as cited by HRA 2020b).

Important game animals besides deer and elk included mountain sheep, mountain goats, and fox. Nez Perce groups would hunt black bear and grizzly bear as well (Haines 1955:20–21, as cited by HRA 2020a). Birds were also taken, including duck, grouse, quail, pheasant, sage hen, and geese. Salmon, steelhead, sucker, eel, lamprey, and shellfish were important resources harvested from the major rivers and their tributaries. Numerous roots and berries were gathered, including Indian carrot, bitterroot, biscuitroot (couse or kouse), Indian onion, Indian potato, huckleberries, serviceberries, blueberries, rose haws, black moss, sunflower, and currant (CTUIR 2020; Haines 1955:7, 20–21; Schuster 1998:331–332; Stern 1998:399–400, as cited by HRA 2020b).

In time, the introduction of the horse would transform the interactions of many indigenous groups in the Plateau. Due to their geographic location, the Yakama, Umatilla, Walla Walla, Cause, and Nez Perce resided in the center of a great trade network for thousands of years that stretched from the Pacific Ocean to the Plains, and south to the Great Basin.

Historic Context

Early Exploration and Fur Trade

The first non-Native people to arrive in the region surrounding the Project were explorers. On September 20, 1805, William Clark, of the Lewis and Clark Expedition, accompanied by six men, pushed ahead in the region. On October 16, 1805, the Expedition camped for two nights near the confluence of the Snake and Columbia Rivers (4 miles northeast of the Project) at a village of 200 people; the village was likely kwsiis. William Clark wrote in his journal "*In every direction from the junction of those rivers the Countrey [sic] is one continued plain low and rises from the water gradually, except a range of high Countrey [sic] which runs from S.W. & N.E. and is on the opposit [sic] side about 2 miles distant from the Columbia*" (University of Nebraska Press 2020, as cited by HRA 2020a). This range was likely the Horse Heaven Hills.

As in much of the West, non-Native exploration of Washington and Oregon was driven by the expansion of the fur trade. Less than a decade after the Lewis and Clark Expedition made its return trip east, other exploration parties traversed the region. Several fur companies were established such as the Pacific Fur Company in 1810, the North West Company in 1818, and the Hudson's Bay Company from 1821 to 1857.

Early European Settlement and Native American Interactions

The next line of non-Native settlements in the Interior Plateau were the missionaries. Dr. Marcus Whitman, his wife Narcissa, and Henry and Eliza Spalding traveled through the Walla Walla Valley in 1836. The Whitmans constructed a Presbyterian mission at Waiialatpu that same year, about 30 miles east of the Project. The Whitman Mission was a regular stopping point for settlers venturing west via the Oregon Trail (NPS 2020, as cited by HRA 2020b). The first wave of emigrants ventured across the Oregon Trail in the 1840s and continued to do so until the 1880s.

Non-Native influence on the indigenous populations in the Plateau had been felt much earlier than upon first physical contact. Campbell (1989, as cited by HRA 2020b) has suggested that estimated populations in the Pacific Northwest declined abruptly as early as the 1500s due to the first North American smallpox epidemic in 1520 (Campbell 1989:186, as cited by HRA 2020a). Several devastating epidemics had a profound impact on indigenous Plateau societies as a result of new disease carried by European immigration.

By 1850, 12,000 emigrants had traveled through the Columbia Plateau along the Oregon Trail. The expansion of foreigners into Native American territory began to cause tension between non-Indigenous people and Indigenous people and several treaties were enacted. It was agreed by the government that the creation of specific lands reserved for the Native people would provide the means for the U.S. government to both consolidate tribal populations and further open areas for continued non-Native settlement. After several treaties were signed by Native groups in 1855, Washington Territorial Governor Isaac Stevens sought to open vast areas of lands in eastern Washington, including the mid-Columbia River Basin, to a non- Indigenous settlement. Due to the lack of treaty enforcement and treaty violations, Native groups throughout the Plateau region began to fight against the intrusion. This ultimately resulted in the Indian Wars of 1855–1858 (Beckham 1998; Hunn 1990, as cited by HRA 2020b). Although conflicts between Native people and settlers and the U.S. government lasted until the 1870s in the American West, they were mostly confined to the years 1855 to 1858 in the Project vicinity.

Ranching and Railroads

John B. Nelson was one of the earliest European immigrants to settle near the mouth of Yakima River (in 1863). Another immigrant, E. Bird, brought an estimated 300 head of cattle into the lands where contemporary Richland is situated in 1868 (Miller 2011:7, as cited by HRA 2020b). Although the early European immigrant ranchers likely had to endure the valley's severe, arid environmental conditions, low prices for their stock, transportation of their cattle to distant markets, and opposition from local Tribes, there was financial opportunity that outweighed the hardships. The non-native population remained low in the Project vicinity with few people engaged in raising cattle and horse stock (Kershner 2008, as cited by HRA 2020a). This began to change with Northern Pacific railroad constructing its route from the Midwest to the Pacific Ocean in the 1870s. Work began on the line in Kennewick in 1883. In 1888, when the railroad bridge spanning the Columbia River between Pasco and Kennewick was completed, the railroad connected the Great Lakes regions to Seattle and Portland via the Tri-Cities (Robertson 1995:236–237, as cited by HRA 2020a). In order to find success in larger farming enterprises, more elaborate irrigation works would be necessary. The population continued to increase throughout the late 1870s to the end of the century.

Agriculture, Irrigation, and Transmission

Populations began to increase in the Project vicinity when the Yakima Irrigation and Improvement Company began to irrigate the dry lands in the Tri-Cities beginning in 1892. They built a dam at Horn Rapids on the Yakima River (10 miles north of the Project) and constructed a series of canals to irrigate over 4,000 acres. In 1902, the Northern Pacific Irrigation Company took over irrigation in the area and completed additional canals, allowing the agricultural industry to boom. In 1937, the BPA was created, and public power was provided to residents in the Pacific Northwest.

Two BPA transmission lines extend through the survey area. The McNary–Badger Canyon No. 1 Transmission Line was built in 1948 as part of a different line and was altered to its current alignment in 1975. The McNary–Franklin No. 2 Transmission Line was built in 1955 (Brannan and Clark 2007, as cited by HRA 2020a).

Background Research and Field Survey Methods

The following sections describe the records search of previous cultural resources investigation and previously recorded cultural resources within the Project Lease Boundary. The section also describes field methods used to conduct field surveys for the Project.

Specific Cultural Resource Records Review Research

In February 2020, the Applicant's consultant (i.e., Tetra Tech) conducted and provided to HRA a review of files maintained by the Washington Department of Archaeology and Historic Preservation (DAHP) in the Washington Information System for Architectural and Archaeological Records Data (WISAARD). The record search covered all areas in and within 1 mile of the Project Lease Boundary. HRA supplemented this research by reviewing WISAARD again in September 2020 to see if any additional cultural resources had been recorded since the original research was conducted in February 2020 and to research areas added to the Project Lease Boundary between February and September 2020.

There have been 27 surveys previously conducted within the Project Lease Boundary and 13 additional surveys within 1 mile of this area (Table 4.2.5-1). Given the large size of the Project Lease Boundary, very little of the area within it has been previously surveyed. The most coverage of any survey was conducted for the current Project and consists of surveys by HRA within the survey Micrositing Corridor on DNR parcels and private land (Davis and Ragsdale 2020; Davis et al. 2020, as cited by HRA 2020a). Excluding these surveys, less than 1 percent of the Micrositing Corridor has been previously surveyed. There have been five other wind development–related surveys conducted in and around the Project Lease Boundary (Chatters and Williams 2001; Kelly 2007a; McDaniel 2009a, 2009c; McKnight and Chatters 2000, as cited in HRA 2020b). Other surveys in the area were conducted for projects related to transportation, transmission lines, agricultural (irrigation, livestock water, wells), cell towers, fire response, fiber optics, geotechnical investigations, and a reservoir.

Table 4.2.5-1. Cultural Resources Surveys Conducted in and within 1 mile of the Project Lease Boundary

DAHP Report No.	Date	Author(s)	Report Title	Location Relative to the Project Lease Boundary
1342215	2003a	Miller	A Cultural Resource Survey for the Proposed Interstate 82/State Route 397 Intertie Project, Benton County, Washington	Within
1342289	2000	McKnight and Chatters	Archaeological Survey of the Proposed Nine Canyon Wind Power Project, Benton County, Washington	Within
1342423	2003b	Miller	Addendum to the Proposed Interstate 82/State Route 397 Intertie Project: Testing and Recording at Site 45BN1279, Benton County, Washington	Within 1 mile
1346382	2005	Amara	NRCS Wilkerson Ranches EQIP 2005 Cultural Resources Site Identification Survey in Benton County, Washington	Within 1 mile
1347584	2006	Landreau	Section 106 Archaeological Review and Inventory at the North Webber Canyon Roadway Re-Alignment, Benton County, Washington, Phase 2: Kiona Re-Alignment	Within 1 mile
1348237	2001	Chatters and Williams	Archaeological Survey of the Proposed Bateman Wind Power Project, Benton County, Washington	Within
1349482	2007	Brannan and Clark	A Cultural Resources Survey for the Walla Walla Region 2007 Transmission Line Maintenance Project, Benton and Franklin Counties, Washington	Within
1349625	2007	Woody	Cultural Resources Survey Report for the Kennewick Fiber Optic Installation Project	Within
1349709	2007	Harder and Hannum	Cultural Resource Survey for the Johnson Butte Cellular Tower, Location #347351, Benton County, Washington	Within
1349803	2007a	Kelly	Cultural Resources Survey Report for Clipper Windpower's Chandler Butte Meteorological Tower Project: Blackney Parcel, Benton County	Within
1351023	2008b	Boyd	A Cultural Resources Survey on Bureau of Land Management Lands in the 2007 McBee Grade Fire Area, Benton County, Washington	Within
1351396	2008	Anderson and Roulette	Results of an Archaeological Survey of Part of the McNary– Badger Canyon No. 1 Transmission Line Rebuild Project Between Structure 2/3 and Structure 18/3, Benton County, Washington	Within
1351530	2008	Lehman and Roulette	Archaeological Survey for Access Roads and Tensioning Sites Related to the McNary–Badger Canyon Transmission Line No. 1 Rebuild Project, Benton County, Washington	Within
1351858	2008	Landreau and Cain	An Archaeological Review and Inventory of a North Webber Canyon Roadway Improvement, Benton County, Washington	Within

DAHP Report No.	Date	Author(s)	Report Title	Location Relative to the Project Lease Boundary
1352784	2009a	McDaniel	Cultural Resources Inventory Report for Clipper Windpower's Chandler Butte 2009 Meteorological Tower Project: Towers 1, 2, 3a, 3b, 3c and 5, Benton County, Washington	Within
1352842	2008	Woody et al.	Yakama Nation Cultural Resources Site Identification Survey of the Jonathan Hellberg-Wilson 2008 NRCS EQIP Project. NRCS EQIP Contract #740546080KX	Within 1 mile
1353152	2009a	Harder and Hannum	Cultural Resource Survey for the Kiona Cellular Tower, Location #347355, Benton County, Washington	Within 1 mile
1353173	2009b	Harder and Hannum	Cultural Resource Survey for the Bofer Cellular Tower, Location #TR1020	Within
1353368	2009	Landreau	Archaeological Review and Inventory of the Travis Road Improvement Project, Benton County, Washington	Within
1680213	2009c	McDaniel	2009 Inventory of Clipper Windpower's Installed Tower Site and 45BN261 at the Blackney Parcel, Horse Heaven Hills, Benton County, Washington	Within
1681107	2001	Perry	A Cultural Resources Survey and Monitoring Report on Bureau of Land Management Lands in the Horse Heaven Steel Gate Project Area, Benton County, Washington	Within 1 mile
1682596	2012	Ellis	Horse Heaven Hills Geotech Project Cultural Resources Survey Report Benton County, Washington	Within
1682749	2012	Baldwin and Hushour	Historic Properties Treatment Plan for the Washington Rural Access Project SC-6 Route, Benton and Walla Walla Counties, Washington	Within 1 mile
1682848	2012	Trost	Cultural Resources Assessment for the Kennewick Irrigation District 2012–2014 Capital Improvement Plan, Benton County, Washington	Within 1 mile
1683958	2013c	Boyd	A Cultural Resources Survey on BLM Lands in the Tapani Right of Way Project Area, Benton County, Washington	Within 1 mile
1684043	2011	Dickson	Inventory of Unsurveyed Lands Within the McNary Project Area, Umatilla County, Oregon, Benton, Franklin, and Walla Walla Counties, Washington	Within 1 mile
1684092	2012	Schroeder and Landreau	County Road Administration Board 9 Canyon Road Reconstruction, Excavation, and Embankment Project, Phases I & II, Benton County, Washington	Within
1684115	2013b	Boyd	A Cultural Resources Survey on BLM Lands in the Dennis Command Fire Suppression Impacts Project Area, Benton County, Washington	Within
1684281	2013a	Boyd	A Cultural Resources Survey on BLM Lands in the Webber Canyon Fire Suppression Impacts Project Area, Benton County, Washington	Within 1 mile

DAHP Report No.	Date	Author(s)	Report Title	Location Relative to the Project Lease Boundary
1684364	2013	Schroeder and Landreau	A Section 106 Archaeological Review and Inventory of Benton County CRP 1948/Run-Off Road & Intersection Safety Projects: Phase 3—Clodfelter to Trippel Vista Road, Phase 4—Plymouth-Locust Grove Intersection and Phase 5—Hanks and Rothrock Roads Intersection, Benton County, WA	Within
1684942	2014	Johnson	A Cultural Resources Survey and Records Search for a Proposed Tower Telecommunications Sites, American Towers LLC - Tower Site #282247-Clodfelter Road, Kennewick, Benton County, WA	Within 1 mi
1686140	2014	Teoh	Cultural Resources Survey for the 2015 McNary-Franklin Structure 17/6 Replacement, Benton County, Washington	Within 1 mile
1687325	2015	Teoh	Cultural Resources Survey for the Pasco Region 2015 Transmission Line Maintenance Project in Benton and Franklin Counties, Washington	Within
1688554	2016	Furlong	Cultural Resources Survey of Four Drought Well Locations, Benton County, Washington	Within
1689111	2016	Litzkow and Evenson	A Cultural Resources Survey on BLM Lands in the McBee Command Fire Suppression Line Rehabilitation Project Area, Benton County, Washington	Within
1689203	2017	Swanson and Ozbun	Cultural Resource Survey for the John Day–Franklin Subsection of the BPA's Ross–Schultz Fiber Replacement Project, Benton and Franklin Counties, Washington	Within
1689235	2017	Sloma	Cultural Resource Monitoring Report for Portions of the Zayo Fiber Optic Line, Vantage to Pasco, Washington	Within
1689682	2017	Teoh	Cultural Resources Survey for Pasco District FY17 Priority Pole Project – 2018 Construction Franklin, Benton and Walla Walla County, Washington	Within
1693875	2020	Davis et al.	Cultural Resources Investigations on Washington Department of Natural Resources Land for the Horse Heaven Wind Farm Project, Benton County, Washington	Within
1684281	2013a	Boyd	A Cultural Resources Survey on BLM Lands in the Webber Canyon Fire Suppression Impacts Project Area, Benton County, Washington	Within 1 mile
pending	2020	Davis and Ragsdale	Cultural Resources Investigations on Washington Department of Natural Resources Land for the Horse Heaven Wind Farm Project, Benton County, Washington - Addendum 1	Within

There are 28 previously recorded cultural resources in and within 1 mile of the Project Lease Boundary (Table 4.2.5-2). Of these, 15 resources are within 1 mile but outside of the Project Lease Boundary and consist of 4 architectural resources and 11 archaeological sites.

Thirteen previously recorded sites are within the Project Lease Boundary, and only four of these are within the areas surveyed. Resources within the areas surveyed include three historic period architectural resources (McNary–Badger Canyon No. 1 Transmission Line, McNary–Franklin No. 2 Transmission Line, and Nine Canyon Road) and one precontact archaeological site (45BN261). Site 45BN261 is within the Micrositing Corridor and has not been evaluated for listing in the NRHP. The Nine Canyon Road (DAHP Property ID 667765) is not eligible for listing in the NRHP (DAHP determination 2014). The McNary–Badger Canyon No. 1 Transmission Line (DAHP Property ID 721665) is not eligible for listing in the NRHP, and the McNary–Franklin No. 2 Transmission Line (DAHP Property ID 721666) is eligible but with a finding of no significant impact from the Project. DAHP concurred with the NRHP eligibility findings for McNary–Badger Canyon No. 1 and McNary–Franklin No. 2 Transmission Lines on April 15, 2020, and in a letter dated May 26, 2020.

The remaining nine resources within the Project Lease Boundary include four architectural resources, a cemetery, three historic-period archaeological resources, and five paleontological sites (three are associated with prehistoric sites, and one is associated with a historic site). Of these nine resources within the Project Lease Boundary, only one (i.e., Kennewick Main Canal Division IV) has been determined eligible for listing in the NRHP; the other eight have not been formally evaluated.

Table 4.2.5-2. Previously Recorded Cultural Resources in and within 1 mile of the Project Lease Boundary

ID# or Site No.	Age	Site Type	NRHP Eligibility	Author	Location Relative to Project Boundary
12851	Historic	Historic homestead/ farmstead: Edwards Homestead—5 deteriorated structures including a pump house, livestock barn, machine shop, workshop, and farmhouse	Not evaluated	Karnofski 1980b	Within
12852	Historic	Historic homestead/ farmstead: Bentley Homestead—barn and shed	Not evaluated	Karnofski 1980c	Within
12977 (45BN1497)	Historic	Cemetery: Horse Heaven Hills Cemetery	Not evaluated	Karnofski 1980a	Within
98743	Historic	Structure: 87505 S Plymouth Rd., Kennewick, WA	Not eligible	DAHP 2003	Within 1 mile
410774	Historic	Canal: Kennewick Division Main Canal Station (c. 1956)	Eligible	Doncaster 2011a	Within 1 mile
573284	Historic	Structure: 196404 E Lower Blair Rd. SE, Highland, WA (c. 1948)	Not evaluated	Artifacts Consulting Inc. 2011a	Within 1 mile
537371	Historic	Canal: Kennewick Division Main Canal Division III	Eligible	Doncaster 2011b; Harvey 2020a	Within 1 mile
575328	Historic	Structure: 91508 Owens Rd., Highland, WA (c. 1942)	Not evaluated	Artifacts Consulting Inc. 2011b	Within
667226	Historic	Canal: Kennewick Main Canal Division IV	Eligible	Harvey 2020b; Trost 2012	Within
667765	Historic	Road: 9 Canyon Road (c. 1950)	Not Eligible	Schroeder 2012a	Within
721665	Historic	Transmission line: McNary-Badger Canyon No. 1	Not eligible	Davis and Burk-Hise 2020a	Within
721666	Historic	Transmission line: McNary– Franklin No. 2	Eligible	Davis and Burk-Hise 2020b	Within
45BN205	Historic/Paleo-ontological	Archaeological site: well, four structures (no longer extant), and horse wagon frames	Not evaluated	Randolph and Boreson 1975a	Within
45BN209	Historic	Archaeological site: deep dry well, "shaky" wooden structure, bottom of well encased in metal	Not evaluated	Randolph and Boreson 1975b	Within 1 mile

ID# or Site No.	Age	Site Type	NRHP Eligibility	Author	Location Relative to Project Boundary
45BN210	Historic	Archaeological site: windmill, trough, two circular red brick cisterns, wood gate	Not evaluated	Randolph and Boreson 1975c	Within 1 mile
45BN211	Paleontological, precontact	Paleontological site: megafaunal remains, faunal remains Archeological isolate: projectile point fragment	Not evaluated	Randolph and Boreson 1975d	Within 1 mile
45BN212	Paleontological, precontact	Paleontological site: megafaunal remains, faunal remains Archaeological site: lithic scatter	Not evaluated	Randolph and Boreson 1975e	Within 1 mile
45BN215	Paleontological, precontact	Paleontological site: micro and megafaunal remains Archaeological site: projectile points, projectile point fragment, lithic scatter	Not evaluated	Randolph et al. 1975	Within 1 mile
45BN258	Undetermined precontact or historic	Archaeological site: stone wall	Not evaluated	Randolph 1980b	Within 1 mile
45BN260	Undetermined precontact or historic	Archaeological site: stone cairn and stone circle	Not evaluated	Litzkow 2016a; Randolph 1980c	Within 1 mile
45BN261	Precontact	Archaeological site: stone cairn and stone circle	Not evaluated	Boyd 2013a; Kelly 2007b; McDaniel 2009d; Randolph 1980a	Within
45BN262	Undetermined precontact or historic	Archaeological site: basal stone cairn; site monitored in 2016 and noted as disturbed; CTUIR, Yakama, and DAHP were consulting regarding damage	Not evaluated	Boyd 2016; Randolph 1980d	Within 1 mile
45BN265	Paleontological	Paleontological site: faunal remains from early Pleistocene or late Pliocene	Not evaluated	Gilbow 1981	Within 1 mile
45BN1279	Historic	Archaeological site: refuse scatter with cans, domestic dump (c. 1960s)	Not evaluated	Hazelbrook 2001	Within 1 mile
45BN1456	Historic	Archaeological site: refuse scatter with cans, barbed wire, glass (c. 1960s)	Not evaluated	Boyd 2003 Litzkow 2016b	Within 1 mile

ID# or Site No.	Age	Site Type	NRHP Eligibility	Author	Location Relative to Project Boundary
45BN1490	Historic	Archaeological site: section of historic road, Old Webber Canyon Road, adjacent to modern road	Not evaluated, listed as potentially eligible	Landreau 2008	Within 1 mile
45BN1677	Precontact	Archaeological site: rock cairn and rock circle	Not evaluated	Boyd 2002	Within 1 mile
45BN1758	Historic	Archaeological site: debris scatter (c. 1950)	Potentially eligible	Schroeder 2012b	Within 1 mile

Archaeological Survey and Architectural Inventory Methods

The field investigations were designed to determine if archaeological and historic properties[20] were present within the survey areas and, if found, to make preliminary recommendations for all resources identified. The investigations followed DAHP guidelines (DAHP 2020a, as cited by HRA 2020a).

The survey methods included a pedestrian survey of the survey corridor (areas centered on the most recent conceptual project design for turbine layout at the time of survey; see Figure 4.2.5-1). Some of the survey corridors have since been eliminated from the Project design and are no longer under consideration in this application. Pedestrian transects were spaced 20 meters apart, and the number of archaeologists surveying in a corridor varied by its width (120 meters to 200 meters wide), depending on location within the Project design. As such, between 5 and 10 archaeologists surveyed the corridor in any given location, sometimes making multiple passes in a corridor to ensure complete coverage.

The survey crew attempted to identify high probability areas (HPA) during the pedestrian survey. HPAs consist of locations where the landform (e.g., flat to slightly sloped), proximity to a waterway, and/or condition (e.g., few to no previous disturbances and poor ground surface visibility) would suggest a high likelihood of buried cultural deposits and would warrant excavation of shovel probes. None were identified within the survey area.

When archaeological resources were encountered during the pedestrian survey, the field crew systematically searched the area to delineate resource boundaries and to identify artifact concentrations and features, if present.

HRA's Architectural Historian also conducted a desktop evaluation of two historic properties identified during the field survey, as well as review of previously recorded historic architectural resources.

Regulatory Context

Under SEPA, cultural resources are evaluated for their eligibility at the local, state, or national register level. As such, and as feasible, HRA evaluated the resources identified within the private land survey areas for eligibility for listing in the NRHP. Although not separately addressed in the HRA reports (2020a, 2020b), pre-contact resources are protected by the Washington Heritage Register (WHR) that is maintained by DAHP, regardless of NRHP eligibility recommendations.

National Register of Historic Places Eligibility

The principal federal law addressing cultural resources is the National Historic Preservation Act (NHPA) of 1966, as amended (16 United States Code [U.S.C.], Section 470), and its implementing regulations (36 CFR Part 800), which primarily address compliance with Section 106 of the NHPA. The NHPA is the principal federal law guiding lead federal agency actions pertaining to treatment of cultural, archaeological, and historic resources. Section 106 (54

[20] This term is consistent with the DAHP uses of the term historic property(ies) for built environment resources that include buildings, structures, sites, districts, and objects dating from the contact era, and not intended to refer to the National Park Services use of the term historic properties as defined in 36 CRF 800.16(I)(1).

U.S.C. § 306108) of the NHPA requires that federal agencies take into account the effects of their undertakings on historic properties listed or eligible for listing on the NRHP and give the Advisory Council on Historic Preservation and State Historic Preservation Officer a reasonable opportunity to comment on the undertaking. A historic property is "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register of Historic Places" (54 U.S.C. § 306108). To be eligible for the NRHP, cultural resources must be at least 50 years old (generally) and meet most of the seven aspects of integrity. Recommendations for eligibility for listing a resource on the NRHP are based on the following criteria codified in Title 36 CFR Part 60.4:

> *A. That are associated with events that have made a significant contribution to the broad patterns of our history; or*
>
> *B. That are associated with the lives of persons significant in the past; or*
>
> *C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic value, or that represent a significant or distinguishable entity whose components may lack individual distinction; or*
>
> *D. That have yielded, or are likely to yield, information important in prehistory or history.*

Washington Heritage Register Criteria

The WHR is maintained by DAHP and includes buildings, structures, objects, historic sites, traditional cultural properties, cultural landscapes, districts, and cemetery or burial sites that have been identified and documented as being significant in local or state history, architecture, archaeology, engineering or culture. Listing offers no protection against alteration or demolition, although preservation is encouraged by DAHP. Private owners of WHR properties using private funds may alter or demolish these properties within existing local building regulations. Projects involving federal or state agency actions are reviewed by DAHP under SEPA with the goal of preserving historic resources whenever possible. SEPA requires that significant properties, specifically those listed in or eligible for the WHR, be given consideration when state undertakings (permits, grants, construction, etc.) affect historic and cultural values. If significant resources are identified, DAHP considers the effects of a proposed project on such resources and makes a professional recommendation for appropriate treatments or actions. A local governing authority may choose to uphold DAHP's recommendation and may require mitigation of adverse effects to significant properties.

The WHR has similar requirements for listing, including the age of 50 years or older; a high to medium level of integrity; and a documented historical importance at the local, state, or federal level under one or more of the following areas of significance (DAHP 2020b):

- *The property belongs to the early settlement, commercial development, or original native occupation of a community or region*
- *The property is directly connected to a movement, organization, institution, religion, or club that served as a focal point for a community or group*

- *The property is directly connected to specific activities or events that had a lasting impact on the community or region*
- *The property is associated with legends, spiritual or religious practices, or life ways that are uniquely related to a piece of land or to a natural feature*
- *The property displays strong patterns of land use or alterations of the environment that occurred during the historic period*
- *The property is directly associated with an individual who made an important contribution to a community or to a group of people*
- *The property has strong artistic, architectural, or engineering qualities, or displays unusual materials or craftwork belonging to a historic era*
- *The property was designed or built by an influential architect, or reflects the work of an important artisan*
- *Archaeological investigation of the property has or will increase our understanding of past cultures or life ways*
- *Architectural resources within the survey area that met the 50-year age limit were also evaluated for eligibility using the WHR criteria*

Survey Results

HRA's cultural resources investigations for the Project took place during five field sessions including March 4–6, April 8–15, April 27–30, July 9–15, July 22–29, and September 8–12, 2020. In total, HRA surveyed 10,963 acres (47 percent) that included Turbine, access road, crane path, and connection line locations and surrounding Micrositing Corridors for these features. There were 122 acres (less than 1 percent) that were not surveyed because of steep slopes or because of restricted access (e.g., right-of-way of I-82 or a field in crop, therefore access not granted). HRA (2020a, 2020b) did not recommend any cultural resource surveys at these locations due to the low probability for resources to be present in the area. HRA identified 14 archaeological resources (6 isolates and 8 sites) and 5 historic properties (historic-period architectural resources). HRA (2020a) does not recommend any locations within the surveyed areas for shovel probing, as no areas were identified that suggest a high likelihood for buried cultural deposits.

Isolates

- **Isolate 45BN2081***:* Isolate 45BN2081 is a piece of historic farm equipment dating to 1936, although the date of deposition is unknown. It is recommended that Isolate 45BN2081 is not eligible for listing in the NRHP due to a failure to convey significance under any of the criteria and a lack of integrity. Assuming the DAHP concurs with this recommendation, the Project will not need to consider impacts to the isolate.
- **Isolate 45BN2082:** Isolate 45BN2082 consists of a historic single, fragmented earthenware vessel (8 fragments), likely a domestic tableware. Flow-blue transfer print ceramics were commonly produced between 1915–1935 (Williams 1981, as cited by HRA 2020a). It is recommended that Isolate 45BN2082 is not eligible for listing in the NRHP due to a failure to convey significance under any of the criteria and a lack of

integrity. Assuming the DAHP concurs with this recommendation, the Project will not need to consider impacts to the isolate.

- **Isolate 45BN2083:** Isolate 45BN2083 consists of one historic pull tab can. Cans utilizing pull tab, also known as zip or tab top, openings were first introduced in 1962 (Benbow 2019; Schroeder 2019, as cited by HRA 2020a). It is recommended that Isolate 45BN2083 is not eligible for listing in the NRHP due to a failure to convey significance under any of the criteria and a lack of integrity. Assuming the DAHP concurs with this recommendation, the Project will not need to consider impacts to the isolate.
- **Isolate 45BN2084:** Isolate 45BN2084 consists of a large piece of historic farm equipment that appears to be a tow-behind disc cultivator, and it is situated between two wheat fields. Based on the "Massey-Harris' manufacture name painted on the cultivator, it was produced prior to 1953, although its age of deposition is unknown. It is recommended that Isolate 45BN2084 is not eligible for listing in the NRHP due to a failure to convey significance under any of the criteria and a lack of integrity. Assuming the DAHP concurs with this recommendation, the Project will not need to consider impacts to the isolate.
- **Isolate 45BN2091:** Isolate 45BN2091 is a single, fragmented white stoneware vessel, likely a domestic tableware. A fragment exhibited a maker's mark dating to the Sterling Pottery Co. between 1939 and 1953. It is recommended that Isolate 45BN2091 is not eligible for listing in the NRHP due to a failure to convey significance under any of the criteria and a lack of integrity. Assuming the DAHP concurs with this recommendation, the Project will not need to consider impacts to the isolate.

  Isolate 45BN2092: Isolate 45BN2092 consists of a proximal fragment of a cryptocrystalline silicates broad-necked, corner-notched projectile point. Isolate 45BN2092 is unevaluated for NRHP eligibility. The site is protected by the WHR and therefore it is recommended that the site be avoided by the Project in keeping with RCW 27.53, which declares that the public has an interest in conserving, preserving, and protecting archaeological resources (which includes precontact objects regardless of their NRHP eligibility). To ensure protection of Isolate 45BN2092, HRA recommends avoidance of the isolate (HRA 2020a, 2020b). If the isolate cannot be avoided, additional work will be necessary to determine the isolate's significance and integrity, as well as to assess potential impacts from the Project. Additionally, per a tribal request, HRA plans to complete shovel probe testing at the isolate to determine whether additional subsurface artifacts are present. This work will occur in early 2021 and prior to Project construction (HRA 2020b).

Archaeological Resources

- **Site 45BN2085:** Site 45BN2085 consists of a historic-period debris consisting of fragments of glass, ceramic, cut bone, and metals. Site 45BN2085 is unevaluated for NRHP eligibility; however, HRA recommended that the site be avoided by the Project (HRA 2020a, 2020b). If it cannot be avoided, additional work will be necessary to determine the site's significance and integrity, as well as to assess potential impacts from the Project.

- **Site 45BN2086:** Site 45BN2086 consists of a historic-period debris scatter consisting of fragments of glass, ceramic, and metal. Site 45BN2086 is unevaluated for NRHP eligibility; however, HRA recommended that the site be avoided by the Project (HRA 2020a, 2020b). If it cannot be avoided, additional work will be necessary to determine the site's significance and integrity, as well as to assess potential impacts from the Project.
- **Site 45BN2093:** Site 45BN2093 consists of historic-period structural remains and artifacts. The remains of two residential structures are present and numerous other foundations and features in ruin, as well as a scatter of historic-period artifacts. Site 45BN2093 is unevaluated for NRHP eligibility; however, HRA recommended that the site be avoided by the Project (HRA 2020a, 2020b). If it cannot be avoided, additional work will be necessary to determine the site's significance and integrity, as well as to assess potential impacts from the Project.
- **Site 45BN261:** Site 45BN261 was originally recorded in 1980 as basalt stone circles and was updated in 2009, 2013, and 2016 with various observations that include three precontact rock features, a cairn, and a large modern rock feature. During the HRA (2020) Project survey, the previously recorded site area was visited, and a large stack of rocks was observed. The other previously recorded rock features were not identified. Despite the various efforts to document Site 45BN261, and years of disturbance to the site, it is unevaluated for NRHP eligibility. The site is protected by the WHR and therefore it is recommended that the site be avoided by the Project, in keeping with RCW 27.53, which declares that the public has an interest in conserving, preserving, and protecting archaeological resources (which includes precontact sites regardless of their NRHP eligibility). To ensure protection of the site, HRA recommended avoidance of the site (HRA 2020a, 2020b).
- **Site 45BN2087:** Site 45BN2087 is a historic-period debris scatter consisting of 63 fragments of debris including glass, ceramic, brick, and metal items. Site 45BN2087 is unevaluated for NRHP eligibility; however, HRA recommended that the site be avoided by the Project (HRA 2020a, 2020b). If it cannot be avoided, additional work will be necessary to determine the site's significance and integrity, as well as to assess potential impacts from the Project.
- **Site 45BN2088:** Site 45BN2088 consists of a historic-period debris scatter consisting of 19 debris fragments of glass, ceramic, and metal. Artifacts reflect a wide range between middle nineteenth and early twentieth century date for the site. Site 45BN2088 is unevaluated for NRHP eligibility; however, HRA recommended that the site be avoided by the Project (HRA 2020a, 2020b). If it cannot be avoided, additional work will be necessary to determine the site's significance and integrity, as well as to assess potential impacts from the Project.
- **Site 45BN2089:** Site 45BN2089 is a historic-period debris scatter of glass bottles, cans, brick, and metal. The artifacts suggest an early twentieth century date for the site. Site 45BN2089 is unevaluated for NRHP eligibility; however, HRA recommended that the site be avoided by the Project (HRA 2020a, 2020b). If it cannot be avoided, additional

work will be necessary to determine the site's significance and integrity, as well as to assess potential impacts from the Project.

- **Site 45BN2090:** Site 45BN2090 consists of a stacked rock feature. Site 45BN2090 is unevaluated for NRHP eligibility. The site is protected by the WHR, and therefore, it is recommended that the site be avoided by the Project, in keeping with RCW 27.53, which declares that the public has an interest in conserving, preserving, and protecting archaeological resources (which includes precontact sites regardless of their NRHP eligibility). If it cannot be avoided, additional work will be necessary to determine the site's significance and integrity, as well as to assess potential impacts.

Historic Properties (Architectural Resources)

- **Grain Elevator (3152-S5):** A grain elevator was recorded within the survey corridor and consists of a multi-story building. It is recommended that the grain elevator is not eligible for individual listing in the NRHP as it does not meet any NRHP criteria. Additionally, there would be no direct impact to the structure as part of the Project.
- **McNary–Badger Canyon No. 1 Transmission Line**: The McNary–Badger Canyon No. 1 Transmission Line is a 115-kV line originally constructed ca. 1948 as the McNary–Pasco line (Brannan and Clark 2007, as cited by HRA 2020a).

  The McNary–Badger Canyon No. 1 Transmission Line alignment comprises wood pole structures, transmission cables, conductors, insulators, and mounting equipment.

  The portion of the McNary–Badger Canyon No. 1 Transmission Line within the private land portion of the Project is similar to the previously recorded portions, as it retains a similar level of integrity and significance. HRA concurs with the previous determination (Davis et al. 2020, as cited by HRA 2020a) that the whole of the McNary–Badger Canyon No. 1 Transmission Line is not eligible for listing in the NRHP under the Multiple Property Document (MPD) for the BPA Transmission System. The resource does not appear to be individually eligible outside of the context of the MPD. As the resource's 2020 determination was made within the past 5 years and is current, HRA did not re-record the resource (DAHP Property No. 721665) in WISAARD.

- **McNary–Franklin No. 2 Transmission Line**: The McNary–Franklin No. 2 Transmission Line is a 230-kV line comprising wood pole structures, transmission cables, conductors, insulators, and mounting equipment. The transmission line was originally constructed in 1955 and energized in 1956.

  The Project proposes various facilities (e.g., access roads, collector lines) in the vicinity of the McNary–Franklin No. 2 Transmission Line. The Project would not alter the integrity of location or setting, as the named line would continue to connect the same endpoints within the BPA Transmission System and will remain within the original construction corridor. It would not alter the integrity of design, materials, workmanship, feeling or association, as no action will occur to the line itself. The line would continue to provide uniform, repetitive towers within a defined corridor that is identifiable as a built or constructed feature within the landscape. The line would also retain integrity of association, as BPA will continue to own and operate the line, which would remain an integral and functioning part of the BPA Transmission System. As a result, it is anticipated that the Project would have no significant impact to the McNary–Franklin No. 2 Transmission Line.

- **Nine Canyon Road:** Nine Canyon Road (also called 9 Canyon Road) consists of a paved road that extends for approximately 9 miles from its intersection with Highway 297 near Finley to the north, to near its intersection with Coffin Road to the south.

  Nine Canyon Road was previously recorded in 2012 in its entirety (Schroeder 2012a, as cited by HRA 2020a). According to records in WISAARD, the Federal Highway Administration and DAHP determined in 2014 that the resource is not eligible for listing in the NRHP. The portions of the road that are located within the survey corridor of the Project are similar to the previously recorded portions, as these portions retain a similar level of integrity and significance. HRA concurs with the previous determination that Nine Canyon Road is not eligible for listing in the NRHP. Additionally, the road would not be directly impacted by the Project. As the resource's 2014 eligibility determination was made within the past 10 years and is current, HRA did not re-record the resource (DAHP Property No. 667765) in WISAARD, although updated photographs have been provided per DAHP standards.

- **147407 E. Beck Road (3152-S4):** One building was identified on the edge of the survey corridor east of Johnson Butte and south of the Beck Road and consists of a double-wide manufactured house. It is recommended that the residence at 147407 E. Beck Road is not eligible for individual listing in the NRHP as it does not meet any NRHP criteria. Additionally, there would be no direct impact to the structure as part of the Project.

4.2.5.2 Impacts

As a result of HRA's investigations on behalf of the Applicant (HRA 2020a, 2020b), seven newly recorded archaeological sites, one previously recorded archaeological site, and six archaeological isolates were documented within the Project Lease Boundary. Additionally, five architectural resources were investigated, including two newly recorded resources and three previously recorded resources.

It is recommended that five historic period isolates (i.e., 45BN2081, -2082, -2083, -2084, and -2091) are not eligible for listing in the NRHP (HRA 2020a, 2020b). No further cultural resource investigations or management are recommended for these isolated resources. Pre-contact isolate 45BN2092 was not evaluated for NRHP eligibility. It is recommended that the Project avoid isolate 45BN2092 as it is protected by the WHR. The eight archaeological sites (i.e., 45BN2085, -2086, -2087, -2088, -2089, -2090, -2093, and -261) are unevaluated for listing in the NRHP. No impacts would occur during construction or operation of the Project to isolate 45BN2092 or the eight archaeological sites, as the Applicant plans to implement avoidance measures and will avoid these resources through design by relocating a Project feature(s), as applicable. If they cannot be avoided and would be impacted by the Project's final design, additional archaeological investigations will be necessary to determine their NRHP and WHR eligibility and assess potential Project impacts.

Of the five historic properties (architectural resources), two have been previously determined not eligible for listing in the NRHP, and HRA recommended another two resources are also not eligible. One architectural resource has been previously determined eligible for listing in the NRHP under the BPA MPD. Therefore, the Project in not anticipated to have a significant impact to this resource.

NRHP eligibility status and Project management recommendations for archaeological and architectural resources within the Project are provided in Table 4.2.5-3. With implementation of mitigation measures discussed below, impacts to architectural and archaeological resources would be less than significant (see Section 4.2.5.3 below).

Table 4.2.5-3. HRA Recommendations for Archaeological Resources within the Project

Resource No.	Description	NRHP Eligibility Status	Within Micrositing Corridor	HRA Recommendations
Archaeological Resources				
45BN2081	Historic isolate	Recommended not eligible	Yes	No further work
45BN2082	Historic isolate	Recommended not eligible	Yes	No further work
45BN2083	Historic isolate	Recommended not eligible	Yes	No further work
45BN2084	Historic isolate	Recommended not eligible	Yes	No further work
45BN2085	Historic debris scatter	Unevaluated	No	Implement avoidance measures or determine NRHP eligibility
45BN2086	Historic debris scatter	Unevaluated	Yes	Implement avoidance measures or determine NRHP eligibility
45BN2087	Historic debris scatter	Unevaluated	Yes	Implement avoidance measures or determine NRHP eligibility
45BN2088	Historic debris scatter	Unevaluated	Yes	Implement avoidance measures or determine NRHP eligibility
45BN2089	Historic debris scatter	Unevaluated	Yes	Implement avoidance measures or determine NRHP eligibility
45BN2090	Precontact stacked rock feature	Unevaluated	Yes	Protect by WHR. Implement avoidance measures (per RCW 27.53) or determine NRHP eligibility
45BN2091	Historic isolate	Recommended not eligible	Yes	No further work

Resource No.	Description	NRHP Eligibility Status	Within Micrositing Corridor	HRA Recommendations
45BN2092	Precontact isolate	Unevaluated	Yes	Protect by WHR. Implement avoidance measures (per RCW 27.53)
45BN2093	Historic structural remains, debris scatter	Unevaluated	Yes	Implement avoidance measures or determine NRHP eligibility
45BN261	Precontact stacked rock feature(s)	Unevaluated	Yes	Protect by WHR. Implement avoidance measures (per RCW 27.53) or determine NRHP eligibility
Architectural Resources				
N/A	Grain elevator	Recommended not eligible	Yes	No further work
N/A	McNary–Badger No. 1 Transmission Line	Not eligible	Yes	No further work
N/A	McNary–Franklin No. 2 Transmission Line	Eligible	Yes	No further work (no significant impacts)
N/A	14707 E. Beck Road	Recommended not eligible	No	No further work
N/A	Nine Canyon Road	Not eligible	Yes	No further work

4.2.5.3 Mitigation Measures

With implementation of the standard cultural resource management measures outlined below, the Project would not have a significant impact to historic and cultural resources.

Cultural Resource Worker Education/Training – Prior to construction of the Project, a qualified archaeologist will be retained and will provide a cultural resource briefing that includes all applicable laws and penalties pertaining to disturbing cultural resources, a brief discussion of the prehistoric and historic regional context and archaeological sensitivity of the area, types of cultural resources found in the area, instruction that Project workers will halt construction if a cultural resource is inadvertently discovered during construction, and procedures to follow in the event an inadvertent discovery (Inadvertent Discovery Plan discussed below) is encountered, including appropriate treatment and respectful behavior of a discovery (e.g., no posting to social media or photographs). If requested, a local tribal representative(s) shall be invited to participate in the environmental training to discuss or provide text from a tribal cultural perspective regarding the cultural resources within the region.

Preconstruction Survey and Cultural Resource Avoidance Plan – The Applicant will retain a qualified archaeologist to prepare and implement a Cultural Resource Preconstruction Survey and Avoidance Plan. The plan will provide protocols for preconstruction surveys of areas that have not been previously surveyed (e.g., during final design, construction needs, etc., extend beyond previously surveyed areas), and outline cultural resource avoidance measures. Tribal representatives will also be invited to monitor the site during construction. Recorded cultural and historic resources will be avoided by the Project through modification of Project design to avoid a resource and via avoidance through buffers and protective signage or flagging, as well as monitoring, as appropriate. If a resource cannot be avoided, a qualified archaeologist will develop additional archaeological investigation measures and additional mitigation in coordination with DAHP and the Tribes, as appropriate.

An Archaeological Excavation and Removal Permit is required for any alteration to any pre-contact archaeological site regardless of the level of disturbance. For historic-era archaeological sites, permits are only required for removal or excavation of those that are eligible for or listed on the NRHP.

Inadvertent Discovery of Archaeological Resources During Construction – The Applicant will retain a qualified archaeologist to prepare an Inadvertent Discovery Plan for the Project and avoidance procedures. During Project-level construction, should subsurface archaeological resources be discovered, all activity in the vicinity of the find will stop and a qualified archaeologist will be contacted to assess the significance of the find according to WHR and NRHP criteria (as applicable). If any find is determined to be significant, the archaeologist will determine, in consultation with the implementing agencies and local Native American groups expressing interest, appropriate avoidance measures or other appropriate mitigation. If a resource cannot be avoided, a qualified archaeologist will develop additional archaeological investigation measures, such as data recovery or other appropriate measures, in consultation with the implementing agency, DAHP and appropriate Native American representatives.

If evidence of human burials is encountered, all ground-disturbing activity in the vicinity will be halted immediately, and the DAHP, Benton County Planning and Community Development Department, the Benton County Sheriff's Office, Applicant, and the appropriate Tribes will be notified immediately. No work will resume within a 100-foot radius (or appropriate distance) of the find until all the appropriate approvals are received.

4.2.6 Agricultural Crops/Animals

(6) Agricultural crops/animals. The application shall identify all agricultural crops and animals which could be affected by construction and/or operation of the facility and any operations, discharges, or wastes which could impact the adjoining agricultural community.

4.2.6.1 Existing Environment

General County

According to the USDA 2017 Census of Agriculture, Benton County had 1,520 farms that accounted for 613,562 acres of agricultural land use, with an average farm size of 404 acres (USDA 2017a). Approximately 204,309 acres (33 percent) of Benton County farms were irrigated. Approximately 472,443 acres (77 percent) of farms were cropland, 85,899 acres (14 percent) were pastureland, and 55,221 acres (9 percent) were designated as other farm uses.

The market value of crops, including nursery and greenhouse crops, was $769,417,000 and the market value of livestock, poultry, and their products was $235,871,000. The share of sales by type was 77 percent crops and 23 percent livestock, poultry, and products. Table 4.2.6-1 provides additional agricultural information for Benton County and, for comparison purposes, the State of Washington (USDA 2017a, 2017b).

Table 4.2.6-1. Agricultural Characteristics for Benton County and Washington (2017)

Characteristic	Benton County	Washington
Farms (number)	1,520	35,793
Land in farms (acres)	613,562	14,679,857
Average size of farm (acres)	404	410
Estimated market value of products sold:		
• Total (dollars)	1,005,288,000	9,634,461,000
• Average per farm (dollars)	661,374	269,172
Net cash farm income:		
• Total (dollars)	143,254,000	1,705,211,000
• Average per farm (dollars)	94,246	47,641
Land in farms by use:		
• Cropland (acres)	472,443	7,488,625
• Pastureland (acres)	85,899	4,628,666
• Woodland (acres)	0	2,044,726
• Other (acres)	55,221	517,840
Market value of agricultural products sold:		
• Crops, including nursery and greenhouse crops ($1,000)	769,417	6,983,383
• Livestock, poultry, and their products ($1,000)	235,871	2,651,078
Share of sales by type:		
• Crops (percent)	77	72
• Livestock, poultry, and products (percent)	23	28

Sources: USDA 2017a, 2017b

Benton County's current information regarding existing agricultural land cover provides similar but slightly different totals from the USDA 2017 Census. Table 4.2.6-2 presents the County acreage totals for dryland, irrigated, and rangeland agricultural land types identified in the BCCP, using the most recent data available (Benton County 2020a and 2020b). Dryland agriculture includes cropland that is not irrigated. The primary use for dryland agriculture within the Project vicinity is dryland wheat production. Irrigated agriculture includes cropland, such as for potatoes and corn, grown in circle irrigation systems. Rangeland generally includes pastureland and open areas for livestock and other uses.

Table 4.2.6-2. Agricultural Lands by Type (Acres) – Benton County Existing Land Cover

Land Type	Acres
Dryland	304,805
Irrigated	294,560
Rangeland	92,299
Total	**691,664**

Source: Benton County 2020b

Project Area

Land uses in the Project Lease Boundary are predominantly cropland, pastureland, open shrub-steppe habitat, and grassland, with some rural homestead development occurring in certain locations. Table 4.2.6-3 provides the breakdown of existing agricultural lands within the area where Project facilities could be located (i.e., the Wind Energy Micrositing Corridor and Solar Siting Areas as described in Section 2.1). This information is based on land cover data from Benton County (Figure 4.2.6-1; Benton County 2020b).

Table 4.2.6-3. Agricultural Lands by Land Type (Acres) – Micrositing Corridor and Solar Siting Areas

Project	Dryland	Irrigated	Rangeland	Total Ag	Non-Ag1/	Total Area2/
Wind Micrositing Corridor and Solar Siting Areas	21,216	129	91	**21,436**	291	**21,727**

Source: Land Type - Benton County 2020b

1/ While the entirety of the Project is within the Benton County Comprehensive Plan GMAAD designation, the land cover dataset includes developed land (e.g., residential development). Section 4.2.1 provides information on existing conditions and impacts specific to the County's land use designations and zoning.

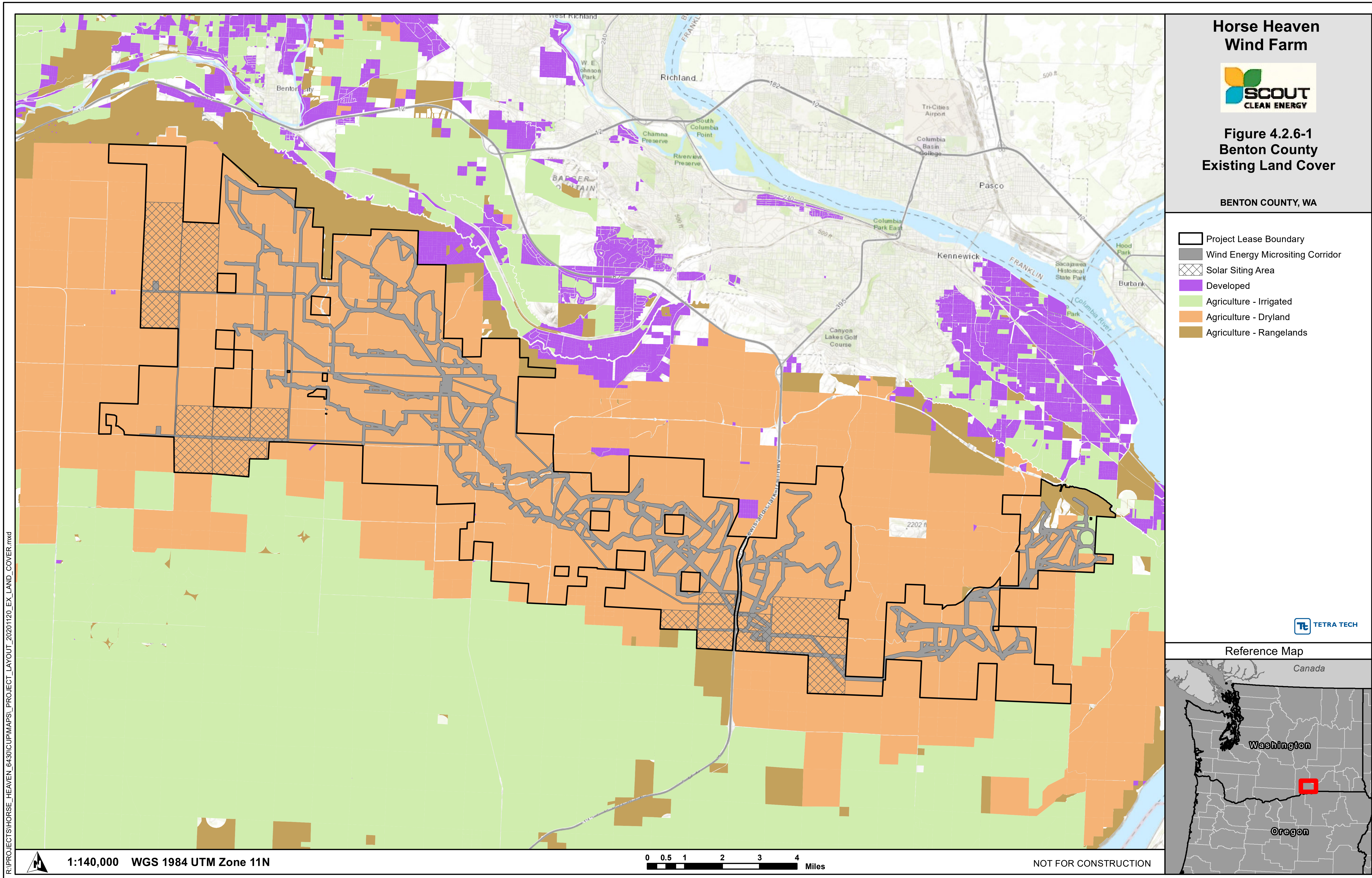
2/ Totals account for areas of spatial overlap between the Wind Micrositing Corridor and Solar Siting Areas.

Overall, the total agricultural land within the Project siting areas represents approximately 3.1 percent of existing agricultural land cover in Benton County (see Table 4.2.6-3).

4.2.6.2 Impacts

Project construction would temporarily disturb agricultural land within the Wind Micrositing Corridor and Solar Siting Areas. Project construction could potentially delay agricultural activities for short durations on adjacent properties due to Project-related transportation activities during the construction period (see Section 4.3 for an assessment of temporary traffic impacts related to Project construction). During Project construction, it may be necessary to remove cattle from areas where blasting or heavy equipment operations take place. The Applicant will make arrangements with property owners and livestock owners to keep livestock out of these areas during designated construction periods.

Once the Project is completed, the operation of Turbines and solar facilities is compatible with existing agricultural operations, including grazing activities. Cattle, sheep, and other domestic animals routinely graze near operating Turbines, transmission line support structures, and up to the fenced boundary of solar arrays at projects across the U.S. Project operations would not affect land uses beyond the Project footprint and agricultural impacts to nearby or adjacent properties are not anticipated. The Project is not expected to affect regional growth, overall agricultural land use patterns, or off-site agricultural activities. No surrounding agricultural activities would affect Project operations. Section 2.23.3 further demonstrates the Project's compatibility with surrounding agricultural land uses.



Horse Heaven Wind Farm
SCOUT CLEAN ENERGY
Figure 4.2.6-1
Benton County
Existing Land Cover
BENTON COUNTY, WA
Project Lease Boundary
Wind Energy Micrositing Corridor
Solar Siting Area
Developed
Agriculture - Irrigated
Agriculture - Dryland
Agriculture - Rangelands
TETRA TECH
Reference Map
Canada
Washington
Oregon
Richland
Kennewick
Pasco
West Richland
Benton City
Burbank
1:140,000
WGS 1984 UTM Zone 11N
0 0.5 1 2 3 4
Miles
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As detailed in Table 4.2.6-4, the Project would permanently impact up to approximately 6,866 acres of agricultural land, primarily dryland agriculture (e.g., dryland wheat), during the life of the Project. This represents approximately 9.5 percent of the Project Lease Boundary and 0.9 percent of the 691,664 acres of existing agricultural lands in Benton County (Benton County 2020b). The remaining 65,562 acres (90.5 percent) of the Project Lease Boundary would remain open for agricultural or other current uses. Because the conversion of agricultural land to Project use would be nominal, and because the Applicant would implement the mitigation measures described below to reduce impacts to agricultural property and operations, there would be no significant impacts to agriculture during construction or operation of the Project.

Table 4.2.6-4. Agricultural Lands by Land Type (Acres) – Project Permanent Disturbance

Project	Dryland	Irrigated	Rangeland	Total Permanent Ag Impact1/	Non-Ag	Total Permanent Impact
Option 1 Layout (Maximum Footprint)	6,863	2	1	**6,866**	3	**6,869**

Source: Land Type - Benton County 2020b

1/ The impact to agricultural land is greater than the amount of habitat impacted (see Section 3.4) because while vegetation may be avoided or maintained within the fenced solar areas, the use of the land for agriculture would be precluded.

4.2.6.3 Mitigation Measures

The proposed Project has been designed in consultation with participating landowners and this collaboration would continue throughout Project construction and operation. Lease agreements have been developed with these landowners that include terms to avoid and reduce impacts to agricultural property and operations, as well as provide a new source of revenue to offset the use of land developed for the Project. Project construction and operation will follow site-specific BMPs to minimize potential impacts to noise, traffic, vegetation, and air quality, as described in the respective resource sections of this ASC. Upon Project decommissioning, occupied land will be restored for agricultural use and the Applicant will remove all aboveground infrastructure as well as belowground infrastructure to 3 feet or more below grade. Topsoil will be replaced, and areas where concrete pads were located will be reseeded with native grasses and/or other vegetation approved by the landowner(s). Given these measures and the relatively small Project footprint in relation to available agricultural land in the area, no significant impacts to agricultural lands, crops, and animals are expected.

4.3 TRANSPORTATION

WAC 463-60-372: *(1) Transportation systems. The application shall identify all permanent transportation facilities impacted by the construction and operation of the energy facilities, the nature of the impacts and the methods to mitigate impacts. Such impact identification, description, and mitigation shall, at least, take into account:*

(a) Expected traffic volumes during construction, based on where the work force is expected to reside;

(b) Access routes for moving heavy loads, construction materials, or equipment;

(c) Expected traffic volumes during normal operation of the facility;

(d) For transmission facilities, anticipated maintenance access; and

(e) Consistency with local comprehensive transportation plans.

(2) Vehicular traffic. The application shall describe existing roads, estimate volume, types, and routes of vehicular traffic which will arise from construction and operation of the facility. The applicant shall indicate the applicable standards to be utilized in improving existing roads and in constructing new permanent or temporary roads or access, and shall indicate the final disposition of new roads or access and identify who will maintain them.

(3) Waterborne, rail, and air traffic. The application shall describe existing railroads and other transportation facilities and indicate what additional access, if any, will be needed during planned construction and operation. The applicant shall indicate the applicable standards to be utilized in improving existing transportation facilities and in constructing new permanent or temporary access facilities, and shall indicate the final disposition of new access facilities and identify who will maintain them.

(4) Parking. The application shall identify existing and any additional parking areas or facilities which will be needed during construction and operation of the energy facility, and plans for maintenance and runoff control from the parking areas or facilities.

(5) Movement/circulation of people or goods. The application shall describe any change to the current movement or circulation of people or goods caused by construction or operation of the facility. The application shall indicate consideration of multipurpose utilization of rights of way and describe the measures to be employed to utilize, restore, or rehabilitate disturbed areas. The application shall describe the means proposed to ensure safe utilization of those areas under applicant's control where public access will be granted during project construction, operation, abandonment, termination, or when operations cease.

(6) Traffic hazards. The application shall identify all hazards to traffic caused by construction or operation of the facility. Except where security restrictions are imposed by the federal government the applicant shall indicate the manner in which fuels and waste products are to be transported to and from the facility, including a designation of the specific routes to be utilized.

4.3.1 Existing Environment

4.3.1.1 Local Infrastructure

The Project would be constructed in two separate phases. Each would utilize a different set of local roads and constructed access roads for interior access; however, both phases would be served by I-82 as the primary inbound route for materials, and equipment is all anticipated to be delivered from the south to the Project location. From I-82, State Route 397 and county two-lane roads would be used to access the eastern portion of Project Lease Boundary (Figure 4.3-1). From I-82, State Route 221 and County roads would be used to access the western portion of the Project Lease Boundary (Figure 4.3-2). Workers would arrive from multiple locations as will be discussed more in Section 4.3.2.1. All utilized roads as well as the available traffic count data and jurisdiction are summarized in Table 4.3-1 below. Table 4.3-2 summarizes the physical characteristics and conditions for the local infrastructure. The conditional assessment is simply a qualitative judgement utilizing available aerial imagery inspection and is not a detailed characterization of quality based on in-person inspection of pavement or quantitative metrics such as asphalt/gravel depth, age, or design life. The newest aerial imagery available through Google Earth is from July 2018 as well as numerous older dates. Additionally, Table 4.3-2 shows the current designated Level of Service (LOS) standard. This is the LOS designation that is considered the lowest acceptable for that roadway. More information on LOS is contained in Section 4.3.1.2.

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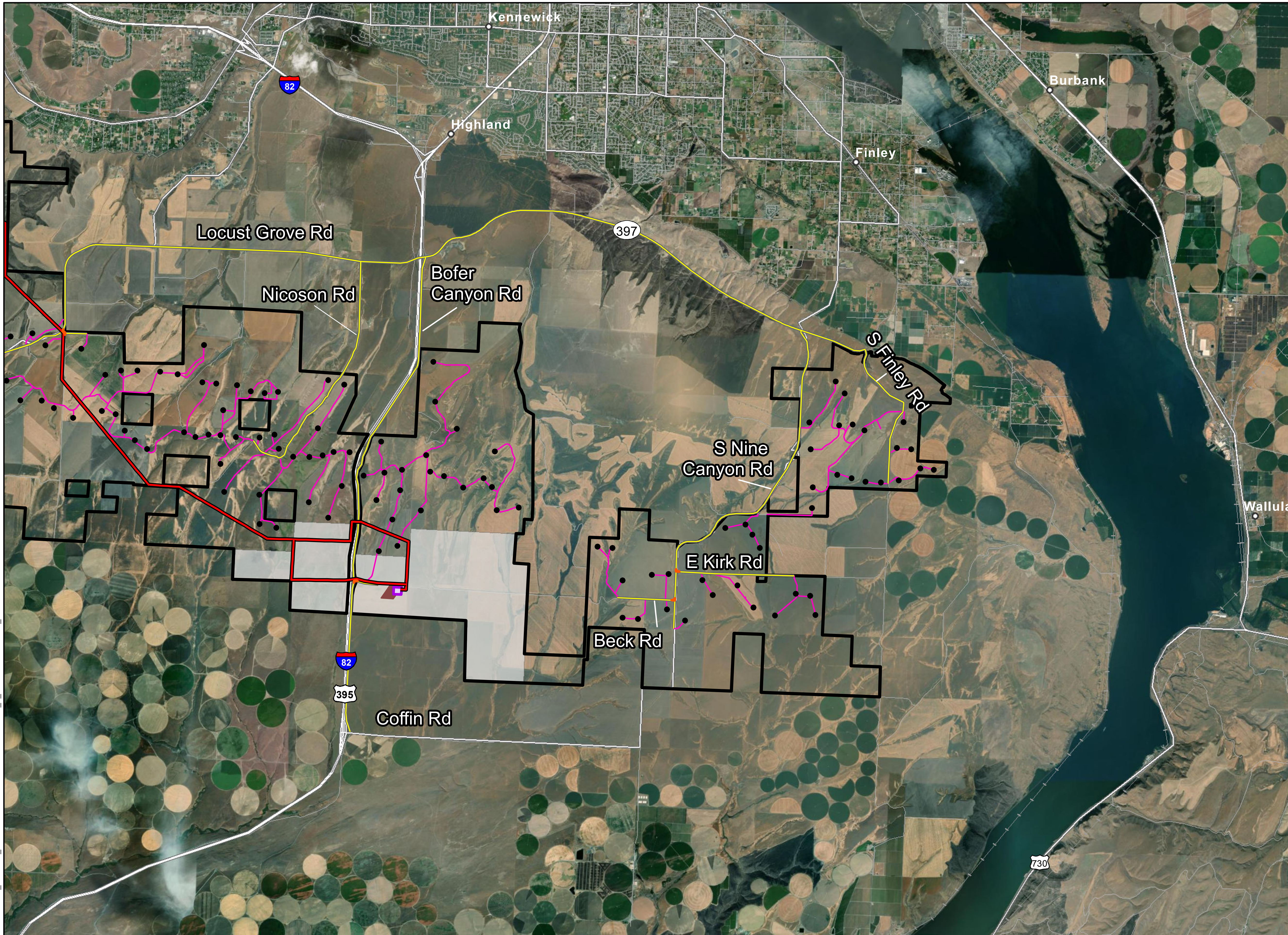

Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 4.3-1 Phase 1 Transportation Routes

BENTON COUNTY, WA

- Project Access - Existing Road
- Prposed New Access Road
- Proposed Transmission Line
- Proposed Turbine Location
- Intersection Improvements
- Laydown Yard
- Proposed Project Substation
- Solar Siting Area
- Project Lease Boundary
- Main Road
- Local Road

TETRA TECH

Reference Map

1:100,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

NOT FOR CONSTRUCTION

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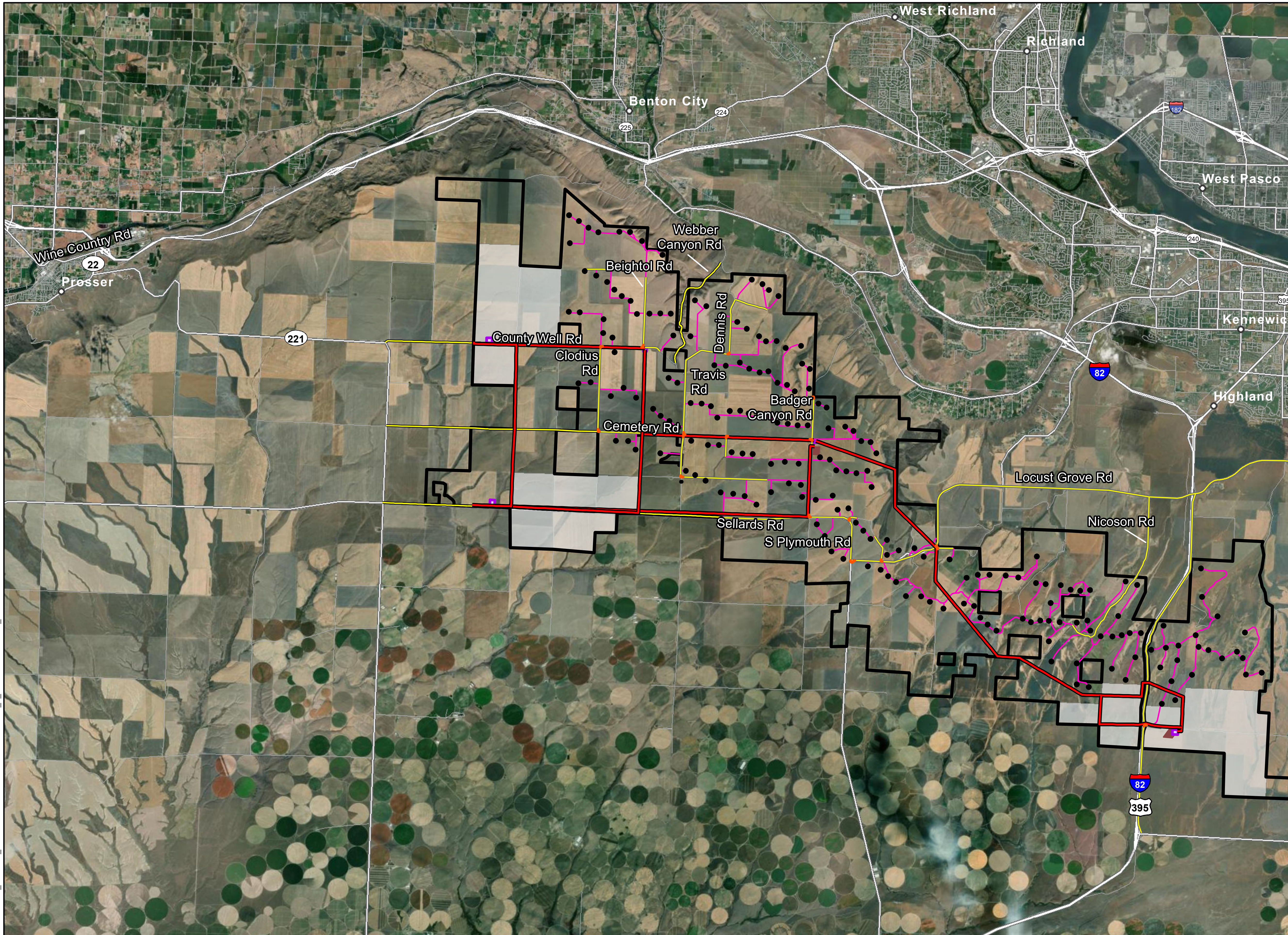
Horse Heaven Wind Farm

SCOUT CLEAN ENERGY

Figure 4.3-2 Phase 2 Transportation Routes

BENTON COUNTY, WA



TETRA TECH

Reference Map

1:140,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

NOT FOR CONSTRUCTION

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Table 4.3-1. Highway and County Roads Existing and Future Forecasted Traffic Volumes

Access Road	Jurisdiction	Peak Hour Average Traffic[1/]	Current ADT[2/]	Future ADT (10-Year Forecast)[3/]
I-82	FHWA/WSDOT	2,100	21,000 AADT (2019)	No data
Phase 1				
Coffin Road	Benton County	32	318	427
Bofer Canyon Road	Benton County	No data	No data	No data
Nine Canyon Road	Benton County	63	630	847
Beck Road	Benton County	No data	No data	No data
Kirk Road	Benton County	No data	No data	No data
State Route 397	WSDOT	190	1,900	No data
S. Finley Road	Benton County	348	3,484	4,682
Phase 2				
State Route 221	WSDOT	250	2,500	No data
Webber Canyon Road	Benton County	76	759	1,020
Travis Road	Benton County	60	595	800
Locust Grove Road	Benton County	36	362	486
Nicoson Road	Benton County	No data	No data	No data
S. Plymouth Road	Benton County	67	659	886
Sellards Road	Benton County	71	713	958
Badger Canyon Road S.	Benton County	35	345	464
Cemetery Road	Benton County	No data	No data	No data
Clodius Road	Benton County	No data	No data	No data
County Well Road	Benton County	21	209	281
Beightol Road	Benton County	No data	No data	No data
Dennis Road	Benton County	No data	No data	No data

Notes:
AADT – average annual daily traffic; ADT – average daily traffic; FHWA – Federal Highway Administration; WSDOT – Washington State Department of Transportation
1/ Peak Hour Average Traffic is calculated as 10% of ADT per HCM guidelines; TRB 2016
2/ Current ADT data for Benton County roads is 2015-2016; only County roads with LOS and ADT data included. Current AADT data for I-82 are from the closest permanent traffic recorder (P-09).
3/ Future ADT for Benton County roads is forecasted to either 2025 or 2026 depending on current ADT year and 10-year forecast uses a 3% yearly increase in ADT.
Sources: Benton County 2020; WSDOT 2019, 2020

Table 4.3-2. Highway and County Road Characteristics

Access Road	Width (feet)[1/]	LOS Standard[2/]/ Speed Limit	Number of Lanes[3/]	Condition
I-82	36/side	C/70 mph	4	Fair; minor cracking especially on the shoulders; road may have been resurfaced because most cracking does not continue into road.
Phase 1				
Coffin Road	30	No data	2	Fair; some minor cracking visible.
Bofer Canyon Road	32	No data	2	Good; no cracking or wear visible, appears to have been redone between 2013 and 2015.
Nine Canyon Road	28	No data	2	Good; appears to have been paved between 2013 and 2015.
Beck Road	20	No data	1.5	Poor; evidence of rutting all along gravel road.
Kirk Road	18	No data	1.5	Good; rutting was repaired in 2016, gravel surface appears smooth.
State Route 397	36	D/60 mph	2	Poor; plentiful filled cracks along the entire road.
S. Finley Road	24	No data	2	Good; appears to be repaved between 2015 and 2016.
Phase 2				
State Route 221	32	C/65 mph	2	Good; no visible wear or cracking.
Webber Canyon Road	32	C/25 mph	2	Good; provides connectivity to Benton City and appears well maintained.
Travis Road	28	C/50 mph	2	Good; a continuation of Webber Canyon Road
Locust Grove Road	32	No data	2	Good; no obvious signs of wear and condition appears unchanged through the available imagery.
Nicoson Road	20	No data	2	The first 4,600 feet is good condition paved, then it transitions to gravel/two-track road that is very narrow and may be a private road.
S. Plymouth Road	32	C/50 mph	2	Good; some very occasional minor cracking/wear.
Sellards Road	32	C/50 mph	2	Good; is a continuation of S. Plymouth Road.
Badger Canyon Road	18	No data	1.5	Good; no visible rutting or washout.
Cemetery Road	18	No data	1.5	Fair; some evidence of worn tracks, though no apparent ruts.
Clodius Road	16	No data	1.5	Fair; narrow and worn looking, but no obvious ruts.
County Well Road	20	No data	2	Good; probably very light use with no visible change in conditions throughout available imagery.
Beightol Road	16	No data	1.5	Fair; narrow and worn looking.
Dennis Road	16	No data	1.5	Fair; some washboarding visible.

Notes:
1/ Width measured from aerial imagery is approximate edge of shoulder to edge of shoulder. For paved road only; the paved shoulder is included though most have additional gravel.
2/ LOS for state routes (including I-82, SR-307, and SR-221) is the existing standard set by WSDOT. This is the lowest acceptable rating for that road. The actual LOS is estimated using the standard methodology from the Transportation Research Board Highway Capacity Manual.
3/ The number of lanes is total number of lanes counting both directions: 1.5 lanes indicates a road that is gravel as gravel roads do not have lane markings and usually have less width than a typical 2-lane paved road.

4.3.1.2 Analysis Methodology

The generally accepted method for rating performance of roads and intersections is LOS. LOS is a qualitative measure that predicts the quality of experience by motorists using the infrastructure. The analysis performed evaluates the potential change to the LOS rating of roadways and intersections anticipated to be impacted by Project development. Procedures used in the analysis are based on the Highway Capacity Manual (HCM) guidelines for determining LOS, which is the nationally accepted standard used by most transportation engineering professionals and jurisdictions (TRB 2016). The LOS analysis provides a standardized means of categorizing efficiency and experiential quality by assigning a letter grade to it. As shown in Table 4.3-3, LOS ranges from A to F, with A and B representing the best conditions (i.e., little to no delay). LOS C is generally considered the lowest acceptable LOS in rural areas, LOS D is generally considered the lowest acceptable LOS in urban areas, LOS E is reflective of a road or intersection at its maximum capacity, and LOS F represents failure of the infrastructure (i.e., unacceptably high congestion and delays).

The LOS performance measure for an intersection is based on the delay that an average vehicle will experience after approaching the intersection. Unsignalized intersections include two-way and all-way stop-controlled intersections, and roundabouts. Signalized intersections are any that have traffic signals/traffic lights. The LOS for highways and freeways is based on the density of the road in passenger cars per mile per lane (pcpmpl). Roadways that are not highways/freeways are only analyzed at their intersections as the intersections on those roads are the conflicting zones where delay occurs. It is also important to note that grade separated interchanges are analyzed as two independent unsignalized/signalized intersections where the two exit ramps meet the cross street. The LOS for all three types of analysis are done for a peak hour. The peak hour is typically morning and/or evening commuting times but can vary especially in rural areas. The HCM stipulates that if peak hour traffic volume is not known it can be assumed to be 10 percent of the average daily traffic volume. This analysis assumes that the peak hour for existing traffic is the same as the peak hour for project worker traffic so that the analyzed condition is conservative. This standard method provides the worst-case LOS, which provides a basis to say that if the worst case is acceptable, then LOS during any time is acceptable. Further, the comparative analysis considers the peak workforce for construction for the same reason.

Table 4.3-3. Highway and County Road Characteristics

LOS	Signalized Intersection	Unsignalized Intersections	Highway/ Freeway
	Delay (s/veh)		Density (pcpmpl)
A	0-10	0-10	0-11
B	10-20	10-15	11-18
C	20-35	15-25	18-26
D	35-55	25-35	26-35
E	55-80	35-50	35-45
F	>80	>50	>45

pcpmpl – passenger cars per mile per lane; s/veh – seconds per vehicle

The delay must be analyzed for each movement of the intersection independently. To analyze LOS, intersections are broken up into turning movements. A turning movement is the individual movements that can be taken by a vehicle at an intersection (i.e., westbound left turn, northbound through movement, etc.). There are many variables that impact intersection function and how humans behave within them, including geometry, presence of pedestrians and bikes, lane width, grade, theoretical maximum movement counts if no traffic is present at any other movement/lane group, and conflicting traffic demand volume. Geometry is the physical layout of the intersection such as a "T" or "4 leg" intersection and the number of lanes for each direction. Pedestrian and bike crossings will impede traffic, so estimates on the hourly pedestrian volumes are important but are assumed to be zero because the area is rural. Lane width affects a driver's comfort and ultimately how quickly the driver can negotiate the movement, as well as the length of time it takes a pedestrian to cross. The theoretical maximum capacity (i.e., saturation flow rate from the HCM) is 1,800 passenger cars per hour per lane (pcphpl) for a free-flowing lane (TRB 2016). Finally, conflicting volume is the number of cars that would impede completing a safe movement (i.e., right turns merge with conflicting cross traffic).

Traffic data are only available for roadways in the area, and no new traffic counts were collected as part of this analysis. Therefore, to analyze intersections, assumptions had to be made on turning movement counts based on the number of vehicles on the intersecting roads. Because analysis is done during peak hour and because not all intersections are utilized during peak hour not all intersections are included in analysis. Further explanation and justification is provided in Section 4.3.2.1.

All calculations were performed using the Highway Capacity Software (HCS7) package.

4.3.1.3 Existing Conditions Level of Service

Intersections that would be heavily utilized for Project construction and have appreciable background traffic volumes were analyzed for impacts. The set of intersections that were determined to be necessary for inclusion will be referred to as the major intersections. As noted in Section 4.3.1.1, the full explanation and justification for which intersections are major intersections is in Section 4.3.2.1 because the selection of major intersections is primarily dictated by the amount of use by Project vehicles. The existing conditions LOS serves as the baseline to assess the significance and severity of the impacts. The LOS presented in Table 4.3-4 is the most accurate prediction of the current functional quality of the local major intersections during the peak hour. The available data for average daily traffic (ADT) shown in Table 4.3-1 is from 2015-2016. Because most of this data also has a 10-year forecasted value, the annual growth rate used in the forecast was approximately 3 percent for all roads. This value is likely conservative because the U.S. Census growth rate for the county including urban areas is approximately 1.7 percent (U.S. Census Bureau 2019). Typically, population growth is more concentrated in urban areas, and population growth is a reasonable indication of traffic growth rates as well. Although population growth in Benton County has been lower, the 3 percent annual growth rate was used to determine the 2023-2024 estimated traffic counts for analysis and to predict growth where the forecast was not provided and are shown in Table 4.3-6. Additionally, assumptions were made for roads where traffic data are not available based on engineer's experience, road connectivity, road size, road condition, and the number of homes or other destinations along the road.

Table 4.3-4. Existing Conditions Level of Service

Highway/Freeway	Density (pcpmpl)	LOS
I-82	10.9	A
State Route 397	0.4	A
State Route 221	0.5	A
Intersection	**Delay (seconds)**	**LOS**
Route 397 and S. Nine Canyon Road	11.4	B
Bofer Canyon Road and Beck Road	8.8	A
I-82 N Ramp and Locust Grove Road	10.1	B
I-82 S Ramp and Locust Grove Road	11.5	B
Locust Grove Road and S Plymouth Road	8.8	A
Travis Road and Cemetery Road	9.3	A
Route 221 and Sellards Road	12.9	B

LOS – level of service; pcpmpl – passenger cars per mile per lane

The existing traffic conditions are good, which is typical for rural areas. The intersections are far below their capacities and traffic flows freely throughout the Project vicinity.

4.3.1.4 Waterborne, Rail, and Air Traffic

The Port of Kennewick, Port of Benton, and the Port of Pasco on the Columbia River serve the area by water. The largest airport to serve the area is the Tri-Cities Airport; smaller airports that serve the area are Vista Field (Kennewick Airport), Port of Benton Airport, and Richland Airport. Burlington Northern-Santa Fe, Union Pacific Railroad, and Tri City and Olympia Railroad Company provide commercial rail service to the area. Amtrak provides passenger rail service to the area.

4.3.1.5 Parking

The Project Lease Boundary area is located in rural agricultural land with no major existing parking facilities outside of individual rural residences and small areas used for existing agricultural operations.

4.3.1.6 Movement/Circulation of People or Goods

The Project vicinity is utilized for agricultural activities. Most of the roads that would be utilized by the Project primarily serve local rural residents and the transport of agricultural produce. I-82 is the only road in the area that provides long range transmission of goods and is the only road in the area that crosses the Columbia River. It is maintained by WSDOT including several upcoming planned repairs described in the Benton-Franklin Council of Governments' (BFCOG) Transportation Improvement Program (TIP; BFCOG 2020).

State and interstate highways are designed and constructed to handle legal loads of 105,500 pounds (gross weight). Some trucks that deliver large and heavy equipment (typically the base, lower middle, and top tower sections, nacelles, drive train, and hub) would be required to obtain oversize/overweight permits. These permits allow travel on all unrestricted roads. I-82 and State Route 397 are constructed to standards that will safely allow the legally oversize/overweight trucks to pass with no adverse impact on the road surface. At this time, none of the state roads are restricted. The condition of the existing Benton County roads that would be used by the Project varies from improved gravel two-lane roads to two-track roads with minimal aggregate surfacing.

4.3.1.7 Traffic Hazards

Existing traffic hazards likely consist of current truck transport (including of hazardous materials, such as fuel), agricultural equipment, and vehicle accidents.

4.3.1.8 Local Comprehensive Transportation Plan

The Transportation Element of the Benton County Comprehensive Plan describes the existing transportation network, LOS, planned improvements and financing, and intergovernmental coordination needs, as required under RCW 36.70A.070(6) which helps integrate the transportation planning with land use (Benton County 2020). In generally describing existing traffic issues, the Comprehensive Plan notes that while peak hour congestion problems exist in the urban areas of the county, "*congestion problems are absent on County roads serving rural or agricultural areas*" (Benton County 2020: 99).

Benton County participates in the Benton-Franklin Regional Transportation Planning Organization and the Tri-Cities Metropolitan Planning Organization. These organizations coordinate to prepare a TIP. The Planning Area covered by this effort includes the entirety of the Project Lease Boundary, extending to the north and west to county lines, and to the south and east as far as the Columbia River. The TIP is updated at least every 2 years, and the 2021-2024 version was adopted by the BFCOG in October 2020. Projects are identified to meet stated performance measures addressing safety, pavement and bridges, as well as system performance, freight, and congestion mitigation.

The Benton County Public Works Department provided a letter dated January 13, 2020, listing information requested to fully assess impacts on County roads. This analysis provides all relevant information that is currently able to be developed. Development of some of the required information, such as source location for products, detailed schedule, and structural assessment of existing features, would be possible following Turbine selection and has been included as a commitment in this analysis.

4.3.2 Impacts

4.3.2.1 Project Trip Generation

Vehicular Traffic

Construction activities are discussed in detail in Section 2.15 of this ASC including the main elements and activities, the phased construction schedule, number of construction workforce for the wind and solar energy components, and the construction labor resource loading schedule. Both Phase 1 and Phase 2 of construction would occur over successive 11 month periods.

During peak construction of each phase, a typical day would include the transportation of workers, transportation of materials, and movement of heavy equipment.

During construction, trucks would use I-82, State Route 397, State Route 221, and local Benton County roads identified in Table 4.3-1 to bring construction equipment, Turbine components, solar components, substation equipment, and transmission line equipment to the various Project construction sites. Trucks would also be used to bring road base aggregate to improve existing roads and to construct new access roads; concrete for the Turbine, substation, BESS, and O&M facilities foundations; and water for dust control. Some large Project components such as Turbine blades, tower components, and nacelles may be delivered to remote ports, such as the Port of Vancouver or Port of Longview, and transported overland via I-84 to I-82. Other components may originate within the continental U.S. and be transported overland from other locations to I-84 and on to I-82.

Typical construction equipment used in construction of wind and solar facilities is listed in Table 4.3-5. Two laydown yards would be established within the Project Lease Boundary, likely adjacent to the eastern and western substation locations, to facilitate the delivery and assembly of materials and equipment (Figures 4.3-1 and 4.3-2). Equipment such as excavators, trenching equipment, backhoe loaders, cranes, forklifts, and other material handling equipment would be brought on-site by a flatbed semi-tractor trailer and would remain on-site throughout construction. Equipment such as water trucks, fuel trucks, service trucks, and trucks delivering Turbine and solar components would make frequent trips to deliver supplies. As noted earlier, some trucks would be required to obtain oversize/overweight permits, which allow travel on all unrestricted roads. While none of the state roads are currently restricted, at the time of construction, WSDOT and the county transportation departments will be contacted by the Applicant's transportation contractor to make certain that no roads are restricted at that time.

Table 4.3-5. Construction Equipment

Type of Equipment	Construction Use
Heavy Vehicles	
Bulldozer (medium)	Access road and driveway leveling
Scraper	Access road and driveway leveling
Drum Compactor	Compacting
Skid Steer Loader	Light soils work for slabs and foundations
Road Grader	Access road and driveway leveling
Excavator	Trenching and foundations
Trenching Equipment/Cable Plows	Trenching
Backhoe Loader	Moving materials
Tracked Pile Driver	Driving piles into ground (solar)
Cable Reel Truck	Dispensing cable
Concrete Pump Truck	Delivering concrete
Mobile Hydraulic Crane/Truck Mounted Crane	Moving materials
2,000 kW Generators	Turbine Commissioning
Load Banks	Turbine Commissioning

Type of Equipment	Construction Use
Large Crawler Crane	Moving materials
Water Trucks	Dust control
Fuel Trucks	Refueling equipment
Non-heavy Vehicles	
Forklifts/Telehandler	Moving materials, loading and unloading of trucks
Personnel transport vehicles	Transporting workers
Other Material Handling Equipment	Moving materials
Service Trucks	Maintaining heavy equipment
Other Equipment	
Disposal Containers	Disposing of and removing construction debris
Other General Industrial Equipment	Assembling structures
Plate Compactors/Jumping Jacks	Compacting soil for concrete slabs and foundations
Pressure Washers	Cleaning
Storage Containers	Storing on-site materials
Welders	Assembling structures

Some of the private roads would require upgrading to accommodate the truck traffic associated with the Project's construction. The Applicant requested the Turbine manufacturer (i.e., GE) to have TLG Transport review whether trucking configurations for towers and blades can reach proposed pad sites along proposed access routes within the Project. The preliminary report provides details of where road improvements would be needed with a disclaimer that the Project information provided will be updated when Turbine selection and layout have been finalized (the TLG Report is included as Appendix V). TLG Transport states that the report does not represent a complete list of all necessary improvements, as changes to the site and plans can change necessary improvements as the Project evolves up and through completion, and subsequent site visits may identify other changes that are needed (see Appendix V). Currently anticipated road intersection improvements are identified on Figures 4.3-1 and 4.3-2 and detailed in Appendix V.

The Applicant indicates in a signed franchise agreement with Benton County Public Works, dated July 2, 2019, that all work done on existing Benton County roads will be done in accordance with Benton County requirements and with review and approval by the County Engineer. See also the discussion in Section 2.23 regarding compliance with local road standards. New access roads, as discussed in Section 2.3.6, would be owned and maintained by the Applicant; the general public would not have access to these Project roads during construction or operation of the Project.

Facility Components Traffic

During Phase 1, an estimated total of 29,003 trucks would be utilized for the public road intersection improvements, access road, substation, O&M facilities, overhead collection line, transmission line, and Turbine construction. Construction of the solar array would require 21,807 truck trips and the BESS would require 1,774 truck trips. Over the 11-month wind and solar facility construction period for Phase 1, assuming an average of 24 working days per month, an average of 110 truck trips per day would be generated by public road intersection improvements, access road, substation, O&M facilities, transmission line, and Turbine construction activities; approximately 83 truck trips per day would be generated by solar array construction; and approximately 7 truck trips per day would occur for the BESS. It is further assumed that construction of the transmission lines would occur concurrently with the wind farm, solar, and BESS construction so that the combined average daily trips during the 11 months when all activities are underway would be approximately 200 truck trips per day. Because construction material and equipment traffic is not uniform, this number is increased by 25 percent to estimate peak periods, yielding an estimated maximum of 250 truck trips per day during peak construction of Phase 1.

Two Phase 2 alternatives have been identified for the purpose of analysis. Both Phase 2 alternatives consist of 500 MW of generation capacity. Phase 2a consists of 250 MW generated via wind and 250 MW (alternating current) generated via solar constructed over an 11-month period. Phase 2b consists of 500 MW generated via wind constructed over a 10-month period. Phase 2a consists of an estimated total of 22,222 truck trips for the public road intersection improvements, access road, substation, O&M facilities, transmission line, and Turbine construction. Construction of the solar array and the BESS would require 18,216 and 1,774 truck trips, respectively. Over the 11-month wind and solar facility construction period for Phase 2a, assuming an average of 24 working days per month, an average of 84 truck trips per day would be generated by public road intersection improvements, access road, substation, O&M facilities, transmission line, and Turbine construction activities; approximately 69 truck trips per day would be generated by solar array construction; and approximately 7 truck trips per day would occur for the BESS. It is further assumed that construction of the transmission lines would occur concurrently with the wind farm, solar, and BESS construction so that the combined average daily trips during the 11 months when all activities are underway would be approximately 160 truck trips per day. Because construction vehicle traffic is not uniform, this number is increased by 25 percent to account for peak periods, yielding an estimated maximum of 200 truck trips per day. Phase 2b consists of an estimated total of 39,618 truck trips for the public road intersection improvements, access road, substation, O&M facilities, transmission line, and Turbine construction. No solar or battery storage would be built under Phase 2b. Over the 10-month wind facility construction period for Phase 2b, assuming an average of 24 working days per month, an average of 165 trucks trips per day would be generated by public road intersection improvements, access road, substation, O&M facilities, transmission line, and Turbine construction activities. Because construction vehicle traffic is not uniform, this number is increased by 25 percent to account for peak periods, yielding an estimated maximum of 206 truck trips per day.

Workforce Traffic

On-site workers would include technicians, laborers, foremen, equipment operators, and construction managers, with approximately 62 percent of these positions expected to be filled by workers normally resident in Benton and Franklin counties (see Section 4.4). Most of the construction worker traffic would originate from the Tri-Cities of Kennewick, Pasco, and Richland as well as nearby communities. As such, the workforce would use the same roads to access the Project as the equipment transporters. Conservatively, it is assumed that most workers would drive alone, and that the average vehicle would only have 1.25 occupants. Private vehicles would primarily travel mornings and evenings corresponding to the workday, whereas the construction truck traffic would be more uniformly distributed throughout the workday. As a result, the worker traffic and the truck traffic would not overlap substantially. Additionally, truck traffic would primarily go directly to the construction location while commuting worker traffic would go to the laydown yard for morning tailgate meetings. Therefore, the number of trucks estimated during peak hour for LOS analysis is 5 percent of the average daily total, or 13 trucks for Phase 1 and 10 trucks for Phase 2.

For Phase 1, the typical average workforce headcount and construction skills required for the construction are shown in Table 2.15-2 and Figure 2.15-1. On-site construction employment for Phase 1 would follow a bell-shaped curve, with an average of 300 workers and a peak near the middle of the construction period of approximately 467 workers employed on-site at the same time. This results in an estimated daily average of 240 worker vehicles, and 374 worker vehicles during the peak period.

For Phase 2a, the typical average workforce headcount and construction skills required for the construction are shown in Table 2.15-3 and Figure 2.15-2. On-site construction employment for Phase 2a would follow a bell-shaped curve, with an average of 267 workers and a peak near the middle of the construction period of approximately 430 workers employed on-site at the same time. This results in an estimated daily average of 214 worker vehicles, and 344 worker vehicles during the peak period. For Phase 2b, the typical average workforce headcount and construction skills required for the construction are shown in Table 2.15-4 and Figure 2.15-3 for a 10-month construction period. On-site construction employment for Phase 2a would follow a bell-shaped curve, with an average of 271 workers and a peak near the middle of the construction period of approximately 412 workers employed on-site at the same time. This results in an estimated daily average of 271 worker vehicles, and 330 worker vehicles during the peak period.

For the LOS analysis, the 374 peak hour worker trips were used for Phase 1 and 344 peak hour worker trips for Phase 2 because this is the more conservative case. Phases 2a and 2b are not analyzed independently as the worker and truck counts are similar and the roads/intersections used would be the same. Two Project laydown yard locations have been preliminarily identified, one adjacent to the eastern substation location on Beck Road (Figure 4.3-1), and one of two possible locations adjacent to either the primary (Badger Canyon Road) or alternate (County Well Road) western substation location would be selected in the west for Phase 2 (Figure 4.3-2). For the purposes of this analysis, the 374 and 344 peak worker estimates would arrive at the corresponding laydown yard. This peak is anticipated only for the intersection(s) that would provide access to the laydown area used for the morning tailgate meeting during the peak of construction. It is anticipated that workers would drive to multiple locations within the Project throughout the day, resulting in many vehicle trips throughout the site roads and intersections; however, this traffic activity is anticipated to be far lower at any given hour or intersection than the vehicle peak occurring during the morning arrival peak hour at intersections used to access the laydown yard.

Major Intersections

There are a total of approximately 29 intersections that are local to the Project vicinity that would be utilized for construction, not including new Project access roads connecting to existing roads or intersections that are only used as through streets (i.e., State Route 297 and Owens Road).

Intersections were chosen as "major intersections" for analysis that would have proportionally more traffic and/or are conservative and representative of other intersections. For instance, the intersection of State Route 221 and County Well Road and the intersection of State Route 221 and Sellards Road would have nearly identical traffic utilization because the laydown yard would be on one of those two roads. Background traffic would also be virtually identical at those two intersections as well as on State Route 221 and Cemetery Road. Therefore, selecting the intersection of State Route 221 and Sellards Road provides a conservative analysis of the greatest impact for any of the three intersections on State Route 221. Similarly the intersection of Travis Road and Cemetery Road would have equal or greater traffic volumes and more significant impacts than any of the flowing intersections in the area: Cemetery Road and Badger Canyon Road, Cemetery Road and Claudius Road, Travis Road and Dennis Road, and other minor intersections in the area. Therefore, analyzing the intersection of Badger Canyon Road and Cemetery Road will provide a conservative baseline for a number of other intersections in the area. With this reasoning in mind, a small subset of six intersections (with one analyzed for both phases) was chosen to provide an accurate and conservative estimation of largest potential site-wide LOS impacts. The chosen intersections are shown in Tables 4.3-4 and 4.3-7.

4.3.2.2 Construction Impacts to Levels of Service

Interstate and Benton County roads may be temporarily affected by construction-related traffic, but the impact is expected to be acceptable and occurs only during peak times (1 to 2 hours a day). Table 4.3-7 provides a summary of current traffic volumes and LOS conditions, as well as projected traffic volumes and service levels with Project construction traffic on the surrounding road network. Truck traffic would generally not coincide with morning and evening peak hours; rather, truck traffic would be dispersed throughout the working day. The private vehicle traffic would generally occur out of phase with the truck traffic, as the workers report earlier and leave later than most of the truck traffic. Given the early start times (7 a.m.) and late finish times (7 p.m.) common to wind farm construction, worker commuting traffic likely would overlap with peak traffic hours and is analyzed with that assumption. Evening departure times for workers are usually not as defined as the morning start time and it is expected that the evening peak hour would be slightly less severe than the morning peak hour for this reason. Therefore, the LOS analysis focuses on morning peak hour.

Additional impacts are likely due to the delivery of large components. The delays caused by slow-moving large components are not quantifiable with analysis methods; however, the navigation, particularly of Turbine blades, throughout the area is expected to cause occasional delays and obstructions while turning. Temporary road modifications would be required to accommodate the large component turning radii at designated locations.

Interstate 82

Most Project construction traffic may travel on I-82 but would not cause a reduction in service levels on the interstate (Tables 4.3-6 and 4.3-7). At the time of construction, the ADT is estimated to be 22,947 trips. Most, if not all, materials and equipment deliveries are anticipated to come from the south on I-82, while most workers that use I-82 would come from the north from Kennewick and the surrounding area. There is a drop from LOS A to B; however, even during peak hour peak construction, the LOS would remain well below capacity and well within the LOS standard. Interstate highways are constructed to handle large and heavy roads, and the condition of I-82 would not be adversely affected by transport of the loads required for Project construction.

State Route 397 and State Route 221

The segment of State Route 397 just east of I-82 to the turn at Nine Canyon Road would carry most of the traffic for the easternmost Turbines in Phase 1 (Figure 4.3-1). The traffic counts along that segment are estimated to be 2,269 ADT in 2023 (Table 4.3-6). State Route 397 is unlikely to see significant traffic during the peak hour of construction because peak hour traffic would turn immediately onto Bofer Canyon Road from State Route 397 after exiting I-82 in order to go to the laydown area. However, the height of Project construction may add as many as 226 vehicles to this intersection during its peak hour as analyzed. This is an approximately a 100 percent increase in peak hour traffic and potentially 17 times the current ADT during peak construction. This number of additional trips for construction would not cause significant change on the roadway; however, at the intersections of State Route 397 and Bofer Canyon Road as well as State Route 397 and Nine Canyon Road, the increased traffic would cause a drop to LOS C, which still exceeds the minimum standard of D on this highway segment. The main concern for State Route 221 is its current deteriorated pavement condition. A large number of heavy loads are likely to cause issues on roads that are nearing or past their design life. Data were not found on when that road was constructed, or what the design life at the time was, but the visual inspection from aerial and street view imagery indicates that it is well worn already. It cannot be stated conclusively whether the Project would cause substantial deterioration of a poor condition road; however, the deterioration may need to be addressed as part of the Project's road improvement effort. As discussed in the mitigation measures section below (Section 4.3.3), a detailed condition assessment would be conducted prior to construction, to ensure that any condition improvements needed prior to construction are conducted and that the roads are restored to their original condition or better when construction is complete.

The segment of State Route 221 immediately south of I-82 and just east of the city of Prosser would be used for the solar and western substation construction traffic in Phase 2 (Figure 4.3-2). State Route 221 provides the most direct access to both potential laydown yard locations for Phase 2. The traffic counts on State Route 221 are estimated to be 2,985 in 2024 (Table 4.3-6). Project construction would add an estimated 240 peak hour trips and as many as 808 more ADT on this road segment. This is an approximately a 90 percent increase in peak hour or 30 percent increase in ADT on this highway. This number of additional trips for construction does not cause significant change to LOS on the roadway. However, the intersections of State Route 221 and Sellards Road and State Route 221 and County Well Road would have a significant decrease in LOS. Very conservative assumptions were used to arrive at the forecasted conclusion that the intersection would temporarily operate at LOS D, which is below the County's LOS standard. Based on these conservative assumptions, the Project would heighten existing traffic congestion during the 2 months of peak construction of each phase. The mitigation measures discussed below in Section 4.3.3 would help to reduce the level of impact.

Project Intersections and Local Roads

The analysis of the set of intersections that were determined to be reasonably representative of all road intersections excluding State Route 221 and I-82 yields decreases in LOS in both construction phases. Given how low the current ADT is, it is not surprising that LOS would decrease as Project traffic would increase the road's usage by many times the current ADT. In all cases, this would result in a drop in LOS; however, all of the intersections would remain at acceptable LOS levels during the peak construction. This peak construction period is no more than 2 months for each phase, and the impacts would be less than those calculated for most hours of the day during peak construction, and all hours of the day for the rest of the construction process. Changes in traffic volumes as a result of Project construction are shown in Table 4.3-6. The construction LOS is shown in Table 4.3-7.

The primary locations where impacts are noticed would be at intersections because that is where the delays and conflicting vehicular interactions would occur. It is likely that all the local gravel roads would be improved to accommodate the heavy vehicle traffic, and the improved condition would remain even after construction resulting in high probability of improved ride quality and road surface condition. A maintenance agreement with Benton County would be developed for the paved roads to repair any damaged caused by construction. At most locations this is not a concern; however, some of the paved roads that usually have very little if any truck traffic may not be designed for the size and frequency of loads that would occur for this Project. Preconstruction improvements and condition assessment for all roads would be addressed through a maintenance agreement, which is included as a mitigation measure below in Section 4.3.3.

Table 4.3-6. Project Construction Traffic Summary

Road	Estimated Existing ADT (2023/2024)1/	Existing Peak Hour Traffic	Peak Construction Daily Worker Traffic2/, 3/	Peak Construction Daily Truck Traffic4/	Total ADT During Peak Construction/Percent Trucks	Construction Peak Hour Traffic
Interstate 82	22,947	2,295	748	498	24,193 / 15%	2,607
State Route 397	2,269	227	1,196	498	3,963 / 12%	453
State Route 221	2,985	299	688	120	3,793 / 0%	539
Bofer Canyon Road5/	286	29	1,496	498	2,280 / 22%	341
Nine Canyon Road	752	75	598	498	1,998 / 25%	301
Locust Grove Road	432	43	1,496	498	2,426 / 21%	355
Travis Road	710	71	1,379	412	2,501 / 16%	356
Plymouth Road	787	79	1,376	412	2,575 / 16%	364
Sellards Road	851	85	1,376	412	2,639 / 16%	370
Badger Canyon Road	412	41	1,376	0	1,788 / 0%	316

Notes:
AADT – average annual daily traffic; ADT – average daily traffic
1/ Current ADT data for Benton County roads is 2015-2016. Current AADT data for interstates are from the closest permanent traffic recorders used.
2/ Because worker housing locations are unknown, workers could come to the site via I-82, State Route 397, State Route 221, or Badger Canyon Road and it is almost certain to be some combination of all of these; the total peak hour worker vehicles are added to each of those routes to provide a conservative Worker ADT value.
3/ Most workers would not leave the site during the day; however, most would have to drive throughout the site during the day. As an example, a worker may drive on Plymouth Road commuting in the morning, then go to the day's construction location, then back to the laydown yard before traveling on it a fourth time leaving for the day. This means from the perspective of ADT that one worker was 4 ADT on Plymouth Road. The actual value in this column is a representative estimate of this phenomena that is difficult to accurately quantify. To keep it simple, I-82 and State Route 221 are expected to only have the morning and evening commute so two times the peak worker vehicle number was added. The rest of the roads would have inter-project travel so four times the peak worker vehicle number was used.
4/ This column's value is double the peak number of trucks for the phase that affects that road because each truck makes one trip in and one trip out. Additionally, all deliveries are anticipated to come from I-82so some roads are not utilized. This is also representative because some days a given road may have little to no truck traffic and other roads may see the given peak which would not correspond to the peak workforce, but to that area of the Project being worked on during the peak period.
5/ This is an assumed number of vehicles used for analysis because data were not available for Bofer Canyon Road.

Table 4.3-7. Peak Construction Level of Service

Highway/Freeway	Existing Density (pcpmpl)	Existing LOS	Forecast Peak Density (pcpmpl)	Forecast LOS During Peak Construction
I-82	10.9	A	12.9	B
State Route 397	0.4	A	3.8	B
State Route 221	0.5	A	3.0	B
Intersection	**Existing Delay (s/veh)**	**Existing LOS**	**Forecast Delay During Peak Construction (s/veh)**	**Forecast LOS During Peak Construction**
Phase 1				
Route 397 and S Nine Canyon Road	11.4	B	15.2	C
Bofer Canyon Road and Beck Road	8.8	A	17.0	C
I-82 N Ramp and Locust Grove Road	10.1	B	13.9	B
Phase 2				
I-82 S Ramp and Locust Grove Road	11.5	B	12.7	B
Locust Grove Road and S Plymouth Road	8.8	A	10.5	C
Travis Road and Cemetery Road	9.3	A	12.2	B
Route 221 and Sellards Road	12.9	B	32.6	D

LOS – level of service; pcpmpl – passenger cars per mile per lane; s/veh – seconds per vehicle

Waterborne, Rail, and Air Traffic

Although there is existing waterborne, rail, and air traffic within the area, these methods of transportation would not be used for Project construction. Some Project components may be delivered to ports remote from the Project site such as the Port of Vancouver or Port of Longview. Detailed transportation plans, including port delivery locations and long-range transport routes, would be developed following Turbine selection. No Project construction activities would interfere with existing waterborne or rail transportation in Benton and Franklin counties, and if components are delivered to a remote port, it would be a port accustomed to handling large deliveries and capable of managing components such as those required for a wind farm. Construction equipment such as cranes and derricks that would be used for the construction of the proposed towers could propose a hazard to aviation safety during the construction period. An FAA "Determination of No Hazard to Air Navigation" would have to be obtained for the proposed Project site (see Section 2.23). By following all applicable safety measures and pursuant to FAA review, no impact to air traffic is anticipated from Project construction.

Parking

Parking during construction (e.g., of construction vehicles) would occur at construction laydown yards and within the Micrositing Corridors. This would not impede or displace any existing private parking areas in the vicinity. Therefore, construction of the Project would not impact parking.

Movement/Circulation of People or Goods

No change is expected to the current movement or circulation of people or goods during construction of the Project. I-82 is a four-lane divided highway, allowing for movement or circulation of people around larger loads exiting the interstate. In addition, given the rural and agricultural nature of the Project Lease Boundary area, and the low ADT rates on State Route 397, State Route 221, and the Benton County roads, the increase in ADT volumes is not expected to impact the current movement or circulation of people or goods during construction or operation. The gravel roads throughout the area are likely to be improved as part of the construction of the Project and would therefore facilitate the circulation of local traffic. Thus, during construction only occasional short delays would be experienced. As discussed in Section 4.3.3 below, prior to commencement of construction, the Applicant would consult with WSDOT and Benton County on the development of a construction-phase Traffic Management Plan to help minimize impacts to traffic.

Multipurpose use (e.g., vehicular, bicycle, pedestrian) of existing rights-of-way on existing roads would be maintained during construction or operation of the Project. No multipurpose use of new Project access roads would occur during construction, as the new Project roads would not be open to the public. Measures to be employed to utilize, restore, or rehabilitate temporarily disturbed areas are discussed in Section 2.3.12.

Traffic Hazards

Traffic hazards associated with construction projects are generally related to accident occurrence. Project construction would require that many construction vehicles, including trucks with oversize and overweight loads, share the existing roadway network with the general public. As a result, some accidents could occur that would be directly attributable to construction traffic. Mitigation measures would be implemented to minimize the risk of accident due to Project construction (see Section 4.3.3).

During construction, fuels and waste products would be transported to and from the Project by a licensed specialized tanker vehicle on an as-needed basis; the specific routes to be utilized would be determined by the construction contractor. Improvements made to existing roads and construction of new Project access roads would help determine the specific routes. Spill prevention during construction is discussed in Section 2.10.1, including preventive procedures to avoid spills during transportation and the requirement of an SPCC Plan to be developed by the construction contractor.

4.3.2.3 Operational Impacts to Level of Service

Vehicular Traffic

Once operational, expected traffic volumes during normal operation of the Project would be up to 16 to 20 vehicle trips per day to and from the O&M facilities by O&M staff. O&M staff would commute to the Project during normal peak commuting hours. It is assumed that O&M staff would reside in the Tri-Cities or nearby communities and use the same roads that would be used by the construction workforce; operational traffic generation would be minimal. The O&M staff would perform scheduled, preventive maintenance on the Turbines, solar module, and battery storage facilities. The O&M staff would drive throughout the Project on a regular basis conducting unrecorded visual inspections of the Project. Truck traffic would be minimal; heavy equipment may be brought in occasionally for major repairs or Turbine replacement, but these occasions are expected to be infrequent and at this time are unknown. Additional trips may occur in the form of delivery vehicles (e.g., FedEx/UPS) used to deliver small packages to the site; however, these deliveries would be at an infrequent and unknown frequency.

During operations, routine cleaning of the solar panels would occur. This cleaning is estimated to require an estimated 675,000 gallons of water three times per year, for a total of 2,025,000 gallons per year. Water would be carried via 4,000-gallon trucks for about 168 trucks per cleaning event. This would probably take place over approximately one week. The anticipated 35 trucks per day over one week, three times per year, is substantially less than peak construction and would not result in a significant impact to local roads or traffic conditions.

It is anticipated that O&M staff would drive light-duty trucks, water trucks, and utility vehicles kept at the O&M facilities (not driven offsite) to conduct maintenance. Because there would be minimal O&M staff activity, minimal impacts to traffic and to transportation infrastructure are expected. Transportation infrastructure would be maintained as described below under Section 4.3.3.

Waterborne, Rail, and Air Traffic

Although there is existing waterborne, rail, and air traffic within the area, these methods of transportation are not being proposed for use by the Project within the analysis area. Because the Project would not use waterborne or rail transportation during operation, and no Project activities would interfere with existing waterborne or rail transportation, no impact would occur within the analysis area. As the Project would adhere to all FAA and Benton County development regulations as it pertains to Turbine siting and safety (see Section 2.23), and no glare is anticipated from the Project's solar arrays (see Section 4.2.2), no impact to air traffic would occur.

Parking

Once constructed, the O&M facilities would have parking areas for operations vehicles. Plans for maintenance and runoff control from the parking areas at the O&M facilities would be dictated by the ESCP including the BMPs and SWPPP discussed in Section 3.1.3. The Project would not displace any existing private parking within the area, and no impacts related to parking would occur.

Movement/Circulation of People or Goods

Given the minimal vehicular traffic during Project operations as discussed above, and as Project facilities would not displace or impede transportation networks, no change is expected to the current movement or circulation of people or goods during operation of the Project. Multipurpose use of existing rights-of-way on existing roads would be maintained during operation of the Project. No multipurpose use of new permanent Project access roads would occur, as private Project access roads would not be open to the public.

Traffic Hazards

During operations, it is expected that traffic conditions similar to those listed under existing conditions would continue to exist. The Project would add 16 to 20 vehicle trips per day to the O&M facilities by O&M staff, with an additional 35 trips per day during periods of panel washing. Additional trips may occur in the form of delivery vehicles (e.g., FedEx/UPS) used to deliver small packages to the site; however, these deliveries could occur at any time of day and would be unlikely to contribute meaningfully to the level of traffic during peak hours. Improvements made to existing roads and road maintenance; following the Department of Transportation Pipeline and Hazardous Material Administration related to the shipment of lithium-ion batteries (discussed in Section 2.10.2) and following the mitigation measured outlined in Section 4.3.3 would help minimize traffic hazards.

4.3.2.4 Consistency with Local Comprehensive Transportation Plans

Use of the road network for the Project would not impede the ability of Benton County to provide multi-modal transportation networks, minimize the environmental and other impacts of County transportation projects, coordinate the transportation system with cities and other transportation providers, or protect public safety and property, as called for in the Transportation Element of the Comprehensive Plan (Benton County 2020). In addition, all work done on existing Benton County roads would be done in accordance with the Benton County requirements and with review and approval by the County Engineer as identified in the signed franchise agreement. By adhering to development regulations established by Benton County as well as the FAA (see Section 2.23), the Project would be compatible with the local and regional transportation system. As discussed above, no significant adverse effects to transportation would result from Project construction or operation; however, there is the potential for one intersection to fall below the acceptable LOS standard during the peak hour for the estimated 2 months of peak construction during each phase. Mitigation measures would be implemented as described in Section 4.3.3 to reduce the level of impact. With these mitigation measures and due to the short duration of this impact, it is anticipated to be less than significant. For these reasons, the Project would be consistent with the Transportation Element of the Benton County Comprehensive Plan.

The current BFCOG TIP does not directly address intersections or road segments planned for use during construction. The Project would implement mitigation measures as described below to comply with regional goals for safety and security, preservation, mobility and accessibility, and freight movement. Construction of the Project would support BFCOG goals regarding economic development and environmental sustainability.

4.3.3 Mitigation Measures

As discussed in Section 2.3.6, during construction portions of existing roads may need to be improved, resulting in the temporary widening and increased turning radii of some public and private roads. These improvements would be removed following construction, and the area restored to preconstruction conditions to the extent practical unless otherwise requested by the landowner.

Where necessary, new access roads would be constructed between existing roadways and Project components such as Turbine sites, solar arrays, construction yard, Project substations, O&M facilities, and transmission line towers. The permanent access roads would be all-weather, gravel surfaced, and generally 16 feet in width for the drivable area and additional width for the shoulder and drainage (if necessary). All road improvement and construction would be done in conjunction with Benton County Public Works requirements following Benton County

Standards. The Applicant would maintain new access roads to access the Turbine structures during operations.

The following measures are examples of typical measures that are implemented to reduce or control transportation impacts and ensure access for emergency vehicles. Prior to commencement of construction, in coordination with EFSEC, the Applicant will consult with WSDOT and Benton County on the development of a construction-phase Traffic Management Plan. The Traffic Management Plan may include modified and/or additional requirements to those below.

- A detailed haul plan will be developed once Turbines have been selected and construction schedule developed. This haul plan will confirm source locations and routes to be used during Project construction as well as anticipated loads and haul schedule. The Transportation Study provided as Appendix V would be verified and updated to include detailed condition assessments of roads to be used, structural assessments, and plans for improvement and maintenance.
- Ingress and egress points will be located and improved (if needed) in order to ensure adequate capacity for existing and projected traffic volumes and to provide efficient movement of traffic, including existing and anticipated agricultural traffic.
- The Applicant will obtain all necessary WSDOT permits to access, modify ingress and egress to, or transport regulated loads on State managed roadways.
- The Applicant will obtain WSDOT trip permits for oversize and overweight loads.
- The Applicant will coordinate with EFSEC and Benton County, to identify a qualified third-party engineer who will document road conditions prior to construction and again within 30 days after construction is complete or as weather permits.
- A service agreement between the Applicant and Benton County will ensure postconstruction road restoration to conditions as good or better than preconstruction.
- The Applicant or its contractor and EFSEC staff will meet prior to final site plan approval to outline steps for minimizing construction traffic impacts, including conflicts if State-imposed roadway restrictions could affect transporter routes.
- The Applicant or its contractor will provide advance notification to adjacent landowners and farmers through mailing, informal meeting, open house or other similar methods, when construction takes place in the vicinity of their homes and farms to help minimize access disruptions.
- All construction vehicles will yield to school-related vehicles (e.g., school buses) and will lower their speed when approaching a school bus or bus stop along the transporter route.
- Advanced warning and proper roadway signage will be placed on major state and Benton County roads to warn motorists of potential Project-related vehicles entering and exiting the roadway.
- When slow or oversized wide loads are being hauled, appropriate vehicle and roadside signing and warning devices will be deployed. Pilot cars will be used as WSDOT dictates, depending on load size and weight.

- Carpooling among the construction workers will be encouraged to reduce traffic volume to and from the Project site.
- Detour plans and warning signage will be provided in advance of any planned traffic disturbances.
- Flaggers will be employed as necessary to direct traffic when large equipment is exiting or entering public roads to minimize risk of accidents. Should the Applicant or its construction contractor receive notice during Project construction of transportation events (e.g., WSDOT or Benton County transportation projects, roadway incident, other traffic events) that give rise to a safety concern, the Project construction manager will review the Traffic Management Plan in coordination with the applicable agency and address additional safety measures, including flagging, as may be appropriate for the situation.
- If lane closure must occur, adequate signage for potential detours or possible delays will be posted.
- Advance notification will be provided to emergency providers and hospitals when public roads may be partially or completely closed.
- Emergency vehicles will be given the right-of-way as required by local, state, and federal requirements.
- Site access roads and an entrance driveway to the O&M facilities on-site will be constructed to service truck movements of legal weight and provide adequate sight distance.
- Traffic control requests will be coordinated through the WSDOT traffic engineer and the Benton County public works department abiding by seasonal County road restrictions.
- A haul and approach route will be developed in coordination with the appropriate jurisdictional authorities.
- Permanent private Project access roads will be maintained by the Applicant for the life of the Project.
- Tracked vehicles and heavy trucks will be restricted to approved transporter roads to prevent damage to surface and base of Benton County roads.
- Turbines and permanent meteorological towers will be lit according to regulations established by the FAA.
- The Applicant will obtain Determinations of No Hazard to Air Navigation from the FAA.
- Advanced warning and proper roadway signage will be placed on highways and Benton County roads to warn motorists of potential vehicles entering and exiting the roadway.
- After construction, all-weather access roads (including graveled roads), suitable to handle emergency equipment, will be provided to within 150 feet of any built structure or surface activity area.

4.4 SOCIOECONOMIC IMPACT

WAC 463-60-535: *The application shall include a detailed socioeconomic impact analysis which identifies primary, secondary, positive as well as negative impacts on the socioeconomic environment in the area potentially affected by the project, with particular attention to the impact of the proposed facility on population, work force, property values, housing, health facilities and services, education facilities, governmental services, and local economy. The study area shall include the area that may be affected by employment within a one-hour commute distance of the project site. The analysis shall use the most recent data as published by the U.S. Census or state of Washington sources.*

(1) The analysis shall include:

(a) Population and growth rate data for the most current ten-year period for the county or counties and incorporated cities in the study area;

(b) Published forecast population figures for the study area for both the construction and operations periods;

(c) Numbers and percentages describing the race/ethnic composition of the cities and counties in the study area;

(d) Average per capita and household incomes, including the number and percentage of the population below the poverty level for the cities and counties within the study area;

(e) A description of whether or not any minority or low-income populations would be displaced by this project or disproportionately impacted;

(f) The average annual work force size, total number of employed workers, and the number and percentage of unemployed workers including the year that data are most recently available. Employment numbers and percentage of the total work force should be provided for the primary employment sectors;

(g) An estimate by month of the average size of the project construction, operational work force by trade, and work force peak periods;

(h) An analysis of whether or not the locally available work force would be sufficient to meet the anticipated demand for direct workers and an estimate of the number of construction and operation workers that would be hired from outside of the study area if the locally available work force would not meet the demand;

(i) A list of the required trades for the proposed project construction;

(j) An estimate of how many direct or indirect operation and maintenance workers (including family members and/or dependents) would temporarily relocate;

(k) An estimate of how many workers would potentially commute on a daily basis and where they would originate.

(2) The application shall describe the potential impact on housing needs, costs, or availability due to the influx of workers for construction and operation of the facility and include the following:

(a) Housing data from the most recent ten-year period that data are available, including the total number of housing units in the study area, number of units occupied, number and percentage of units vacant, median home value, and median gross rent. A description of the available hotels, motels, bed and breakfasts, campgrounds or other recreational facilities;

(b) How and where the direct construction and indirect work force would likely be housed. A description of the potential impacts on area hotels, motels, bed and breakfasts, campgrounds and recreational facilities;

(c) Whether or not meeting the direct construction and indirect work force's housing needs might constrain the housing market for existing residents and whether or not increased demand could lead to increased median housing values or median gross rents and/or new housing construction. Describe mitigation plans, if needed, to meet shortfalls in housing needs for these direct and indirect work forces.

(3) The application shall have an analysis of the economic factors including the following:

(a) The approximate average hourly wage that would likely be paid to construction and operational workers, how these wage levels vary from existing wage levels in the study area, and estimate the expendable income that direct workers would likely spend within the study area;

(b) How much, and what types of direct and indirect taxes would be paid during construction and operation of the project and which jurisdictions would receive those tax revenues;

(c) The other overall economic benefits (including mitigation measures) and costs of the project on the economies of the county, the study area and the state, as appropriate, during both the construction and operational periods.

(4) The application shall describe the impacts, relationships, and plans for utilizing or mitigating impacts caused by construction or operation of the facility to the following public facilities and services:

(a) Fire;

(b) Police;

(c) Schools;

(d) Parks or other recreational facilities;

(e) Utilities;

(f) Maintenance;

(g) Communications;

(h) Water/stormwater;

(i) Sewer/solid waste;

(j) Other governmental services.

(5) The application shall compare local government revenues generated by the project (e.g., property tax, sales tax, business and occupation tax, payroll taxes) with their additional service expenditures resulting from the project; and identify any potential gaps in expenditures and revenues during both construction and operation of the project. This discussion should also address potential temporal gaps in revenues and expenditures.

(6) To the degree that a project will have a primary or secondary negative impact on any element of the socioeconomic environment, the applicant is encouraged to work with local governments to avoid, minimize, or compensate for the negative impact. The term "local government" is defined to include cities, counties, school districts, fire districts, sewer districts, water districts, irrigation districts, or other special purpose districts.

4.4.1 Existing Environment

The Project is a renewable energy generation facility located in the Horse Heaven Hills area in unincorporated Benton County, Washington (Figure 2.1-1). At its closest point, the Project

Lease Boundary area, which encompasses approximately 72,428 acres, is located approximately 4 miles south/southwest of Kennewick and the larger Tri-Cities urban area.

The primary socioeconomic study area for this analysis is the Kennewick-Richland Metropolitan Statistical Area (MSA), which consists of Benton and Franklin counties. MSAs consist of integrated geographic regions typically made up of an urbanized economic core and economically related counties (Office of Management and Budget 2020). The Tri-Cities of Kennewick, Pasco, and Richland are the core of the Kennewick-Richland MSA. Benton and Franklin counties are the economically related counties that share a high degree of economic integration with the urbanized core and one another. The cities of Kennewick and Richland are located in Benton County; the city of Pasco is located in Franklin County.

The Kennewick-Richland MSA is the area within a one-hour commute that is most likely to be affected by Project employment. All five of the incorporated communities in Benton County and two of the four incorporated communities in Franklin County are within an approximate one-hour commute of the Project Lease Boundary. These communities are Benton City, Kennewick, Prosser, Richland, and West Richland in Benton County and Mesa and Pasco in Franklin County.

Other counties that are partially within an approximate one-hour commute of the Project Lease Boundary include Walla Walla and Yakima counties, Washington, and Morrow and Umatilla counties, Oregon. Although within a one-hour approximate commute, existing employment and commuting patterns suggest that Project employment would have limited impacts on these counties. More than 90 percent of the workforce presently employed in Benton County resides in either Benton or Franklin counties, with Benton County accounting for slightly more than three-quarters of the total (Table 4.4-1).

Table 4.4-1. Residence County to Workplace County Commuting Flows for Benton County

Residence County	Percent of Total Benton County Workforce
Benton County	76.6
Franklin County	15.8
Yakima County	4.0
Walla Walla County	1.0
Umatilla County	1.0
60 other counties[1/]	1.7

Note:
1/ This total includes workers from Morrow County, Oregon who account for less than 0.1 percent of the Benton County workforce.
Source: U.S. Census Bureau 2015

4.4.1.1 Population

Benton County had an estimated population of 205,700 in 2020 (Table 4.4-2). An estimated 82 percent of the population lived in one of five incorporated communities, with more than two-thirds of the total living in Kennewick (41 percent) and Richland (28 percent). The tenth most populated county in Washington, Benton County had an average population density of 121.0 persons per square mile in 2020 compared to a statewide average of 115.2 persons per square mile (Washington Office of Financial Management [OFM] 2020a; U.S. Census Bureau 2020a).

Table 4.4-2. Population

Geographic Area	Population Estimates		2011 to 2020		Annual Growth Rate (Percent)
	2011	2020	Net Change	Percent Change	
Benton County	**177,900**	**205,700**	**27,800**	**15.6**	**1.5**
Benton City	3,145	3,560	415	13.2	1.2
Kennewick	74,665	84,960	10,295	13.8	1.3
Prosser	5,780	6,220	440	7.6	0.7
Richland	49,090	58,550	9,460	19.3	1.8
West Richland	12,200	15,710	3,510	28.8	2.6
Unincorporated	33,020	36,700	3,680	11.1	1.1
Franklin County	**80,500**	**96,760**	**16,260**	**20.2**	**1.9**
Mesa	495	495	0	0.0	0.0
Pasco	61,000	77,100	16,100	26.4	2.4
Other Incorporated[1/]	5,340	5,665	325	6.1	0.6
Unincorporated	13,665	13,500	-165	-1.2	-0.1
Washington	**6,767,900**	**7,656,200**	**888,300**	**13.1**	**1.2**

Note:

1/ The two other incorporated communities in Franklin County (Connell and Kahlotus) are an approximately one-hour commute or more from the Project Lease Boundary area and unlikely to be affected by Project employment.

Source: Washington OFM 2020a

Total county population increased by 27,800 people or 15.6 percent between 2011 and 2020, an increase above the state average of 13.1 percent (Table 4.4-2). Population growth results from either net in-migration or natural increase. Net in-migration occurs when more people move to an area than leave. Natural increase occurs when there are more births than deaths. Migration accounted for 66 percent of statewide population growth between 2012 and 2020, with natural increase accounting for the remaining 34 percent. Migration played a slightly smaller role in Benton County, accounting for approximately 61 percent of population growth over this period, with natural increase accounting for the remaining 39 percent (Washington OFM 2020b).

Franklin County had an estimated population of 96,760 in 2020 (Table 4.4-2). The majority of the population (80 percent) lives in the city of Pasco, with the remaining population divided between three other incorporated communities (Mesa, Connell, and Kahlotus) (6 percent) and unincorporated areas (14 percent). Franklin County had an average population density of 77.9 persons per square mile in 2020 compared to a statewide average of 115.2 persons per square mile (Washington OFM 2020a; U.S. Census Bureau 2020a).

Total population in Franklin County increased by more than 16,200 people or 20.2 percent between 2011 and 2020, an increase above the state average of 13.1 percent (Table 4.4-2). Natural increase accounted for more than two-thirds (68 percent) of the increase, with net in-migration making up the remaining 32 percent (Washington OFM 2020b).

Population Projections

The Washington OFM prepares county population projections for planning under Washington State's Growth Management Act (GMA). High-, medium- and low-growth expectations are prepared for each county, with the medium series considered the most likely because it is based on assumptions that have been validated with past and current information (Washington OFM

2018a). Current projections developed in support of the GMA extend through 2040, with supplemental projections developed from 2040 through 2050 to provide additional data for counties.

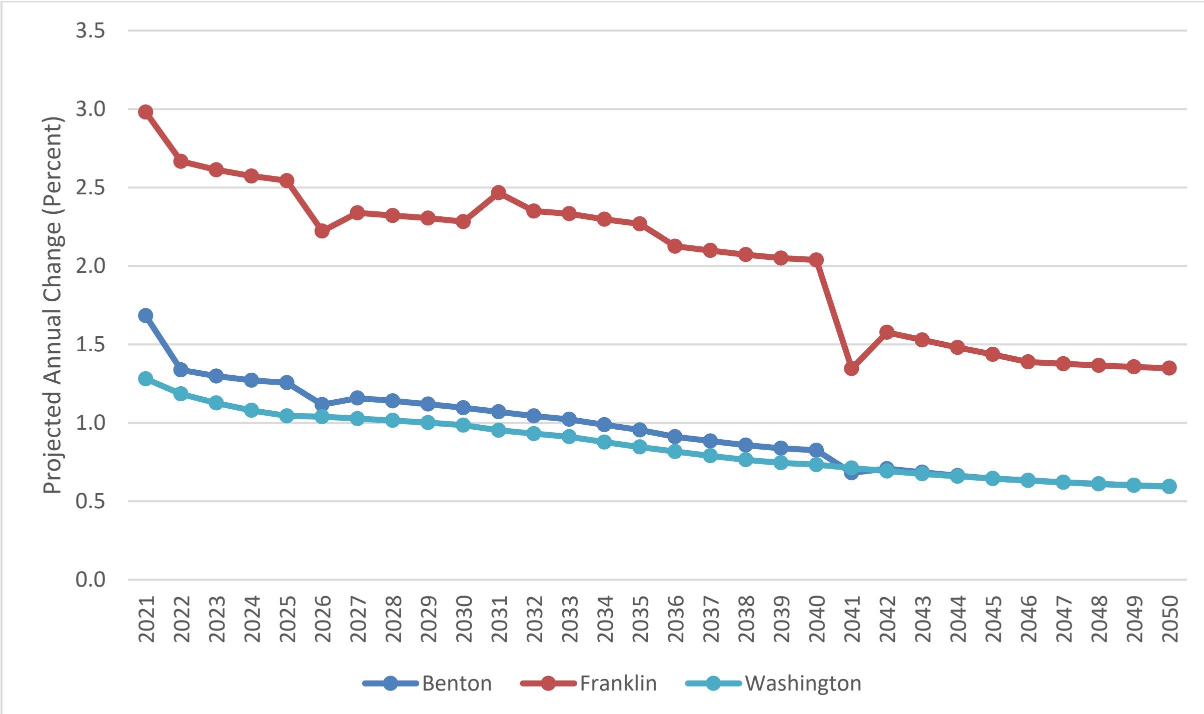
The Project is expected to have an operational life of 35 years, which would extend beyond the available population projections. However, projections are, as noted, available through 2050 and provide useful insight into anticipated population growth over the operational life of the Project. Population is projected to continue grow from 2020 through 2050 in the study area counties, as well as statewide (Table 4.4-3).

From 2020 to 2025, population is projected to increase by 7 percent and 14 percent in Benton and Franklin counties, respectively, compared to a statewide average of 6 percent. Population is also projected to increase at a faster rate in Franklin County from 2020 to 2050, with a projected increase of about 83 percent (82,900 people), compared to smaller relative increases of 33 percent (65,600 people) in Benton County and 29 percent (2.2 million people) statewide (Table 4.4-3). Annual growth rates in Franklin County are expected to be more than twice the state average over the entire period. Projected annual rates in Benton County are higher than the state average from 2020 to 2040 and the same from 2040 to 2050 (Figure 4.4-1).

Table 4.4-3. Population Projections 2020 to 2050

Geographic Area	2020 (Estimate)[1/]	2020 (Projection)[2/]	2025	2030	2040	2050
Benton	205,700	201,563	215,740	228,162	250,524	267,139
Franklin	96,760	99,712	113,781	127,443	158,574	182,589
Washington	**7,656,200**	**7,638,415**	**8,085,043**	**8,503,178**	**9,242,022**	**9,855,117**

Notes:
1/ Population estimates are for April 1, 2020 and represent current estimates.
2/ The population projections here, including the 2020 projection, are Medium series projections developed in 2017 in support of Washington State's GMA.
Sources: Washington OFM 2018b, 2020a



Source: Washington OFM 2018b

Figure 4.4-1. Projected Annual Change in Population, 2020 to 2050

Race and Ethnicity

According to the most recent Census estimates, more than two-thirds (69 percent) of the population of Washington State is White. Persons of Hispanic or Latino origin were identified as the single largest minority group, accounting for 13 percent of the total population (Table 4.4-4). A similar share of the total population in Benton County was identified as White (71 percent), with persons of Hispanic or Latino origin accounting for a much larger share than the statewide average (21 percent compared to 13 percent) (Table 4.4-4). The majority of the populations in the incorporated communities in Benton County were White, with White populations ranging from 54 percent (Prosser) to 84 percent (West Richland) (Table 4.4-4).

Less than half (41 percent) of the population in Franklin County was identified as White, with persons of Hispanic or Latino origin accounting for about 53 percent of the total. In Pasco the corresponding totals were 39 percent (White) and 55 percent (Hispanic or Latino). In Mesa, three-quarters of the population was identified as Hispanic or Latino, with just 21 percent White (Table 4.4-4).

Table 4.4-4. Race and Ethnicity by County and City

Geographic Area	Total[1]	Percent of Total				
		White[2]	Hispanic or Latino	American Indian and Alaska Native[2]	Other Race[2, 3]	Two or More Races[2]
Benton County	**194,168**	**70.9**	**21.3**	**0.6**	**4.4**	**2.9**
Benton	3,315	67.8	29.0	2.2	0.3	0.5
Kennewick	80,204	65.4	26.4	0.4	4.9	3.0
Prosser	6,076	54.2	42.4	2.6	0.9	0.0
Richland	55,043	77.5	11.1	0.6	7.0	3.8
West Richland	14,187	83.8	10.2	0.7	2.6	2.7
Franklin County	**90,660**	**40.7**	**52.8**	**0.3**	**4.3**	**1.9**
Mesa	485	21.4	75.3	0.0	3.3	0.0
Pasco	71,858	38.6	55.1	0.2	4.3	1.8
Washington	**7,294,336**	**69.1**	**12.5**	**1.1**	**12.6**	**4.7**
United States	322,903,030	61.1	17.8	0.7	18.1	2.4

Notes:
1/ Estimates are annual totals developed as part of the 2014-2018 American Community Survey 5-Year Estimates.
2/ Non-Hispanic only. The federal government considers race and Hispanic/Latino origin to be two separate and distinct concepts. People identifying as Hispanic or Latino origin may be of any race. The data summarized in this table present Hispanic/Latino as a separate category.
3/ The "Other" category presented here includes census respondents identifying as Black or African American, Asian, Native Hawaiian and Other Pacific Islander, or Some Other Race.
Source: U.S. Census Bureau 2019a

The Project Lease Boundary area coincides with seven census block groups, which together encompass approximately 877 square miles (561,543 acres). A census block group is a statistical subdivision of a census tract, generally defined to contain between 600 and 3,000 people and 240 and 1,200 housing units. The majority of the population in five of the seven census block groups is White, ranging from 74 percent to 96 percent of the total (Table 4.4-5).

Two of the block groups have total minority populations that exceed 50 percent of the total population and, therefore, meet the definition of a minority population according to White House Council on Environmental Quality (CEQ) and EPA Guidelines.[21,22] The population in Census Tract 116, Block Group 2 was identified as 100 percent Hispanic or Latino. The total minority population in Census Tract 116, Block Group 1 comprised 52 percent of the total population, with persons of Hispanic or Latino accounting for most of the minority total (Table 4.4-5). Both of these block groups had very low population densities in 2020, 0.3 and 1.8 persons per square mile compared to respective county and state averages of 121.0 and 115.2 persons per square mile.

[21] Minority populations identified by the U.S. Census include Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, and Other Race, which are considered races, and persons of Hispanic or Latino origin, which is considered an ethnicity.
[22] Guidelines provided by the CEQ (1997) and EPA (1998) indicate that a minority population may be defined as either: 1) where the minority population comprises more than 50 percent of the total population; or 2) where the minority population is meaningfully greater than the minority population in the general population of an appropriate benchmark region used for comparison. The Washington State Environmental Justice Task Force (2020) report cited below with respect to low-income populations does not provide a comparable statistical definition for minority populations.

Table 4.4-5. Race and Ethnicity by Block Group

Geographic Area	Total[1/]	Percent of Total				
		White[2/]	Hispanic or Latino	American Indian and Alaska Native[2/]	Other Race[2/, 3/]	Two or More Races[2/]
Block Group 1, Census Tract 108.07	1,347	84.6	5.3	3.6	1.0	5.3
Block Group 1, Census Tract 108.14	698	95.8	2.3	0.0	1.9	0.0
Block Group 1, Census Tract 115.01	1,306	84.6	14.9	0.0	0.5	0.0
Block Group 1, Census Tract 115.03	2,494	82.2	1.0	0.0	15.4	1.3
Block Group 1, Census Tract 116	855	47.8	48.2	0.0	0.0	4.0
Block Group 2, Census Tract 116	40	0.0	100.0	0.0	0.0	0.0
Block Group 4, Census Tract 118	1,240	73.5	24.8	0.0	0.0	1.8
Block Group Total	**7,980**	**78.8**	**13.4**	**0.6**	**5.2**	**2.0**

Notes:
1/ 2/ 3/ See footnotes to Table 4.4-4.
Source: U.S. Census Bureau 2019a

Income and Poverty

The estimated share of total households below the poverty level in Washington State is 11 percent. Levels were similar and higher in Benton and Franklin counties, 11 percent and 14 percent, respectively. In Benton County, the share of households below the poverty level in the five incorporated communities ranged from about 8 percent (West Richland) to 15 percent (Benton City). The corresponding rates in Pasco and Mesa are 15 percent and 25 percent, respectively (Table 4.4-6).

Table 4.4-6. Income and Poverty by County and City

Geographic Area	Per Capita Income[1/]		Median Household Income[1/]		Households Below the Poverty Level (Percent)[1/]
	2018 Dollars	Percent of State Per Capita	2018 Dollars	Percent of State Median	
Benton County	**31,580**	**85.6**	**65,650**	**93.6**	**11.4**
Benton City	25,339	68.7	55,966	79.8	15.2
Kennewick	26,366	71.5	56,132	80.1	14.6
Prosser	27,718	75.1	53,902	76.9	14.3
Richland	39,242	106.4	74,405	106.1	8.3
West Richland	34,932	94.7	92,952	132.6	7.5
Franklin County	**23,373**	**63.4**	**62,002**	**88.4**	**13.8**
Mesa	16,123	43.7	50,000	71.3	25.0
Pasco	23,159	62.8	61,662	87.9	14.7
Washington	**36,888**	**100.0**	**70,116**	**100.0**	**10.8**
United States	32,621	na	60,293	na	13.4

Notes:
na – not applicable
1/ Estimates are annual totals developed as part of the 2014-2018 American Community Survey 5-Year Estimates.
Sources: U.S. Census Bureau, 2019b, 2019c, 2019d

Per capita and median incomes were below the state average in both Benton and Franklin counties. This was also the case for the incorporated communities, with the exceptions of

Richland and West Richland in Benton County, which both had median household incomes above the state median. Per capita income in Richland also exceeded the state per capita (Table 4.4-6).

The estimated share of total households below the poverty level was higher than the state average in two of the census block groups (Census Tract 118, Block Group 4 and Census Tract 115.01, Block Group 1) that coincide with the Project Lease Boundary area, with respective rates of 16.6 percent and 19.2 percent (Table 4.4-7). Per capita incomes were lower than the state per capita in five of the seven block groups; median household income was lower than the state median in two of the block groups (Table 4.4-7). The Washington State Environmental Justice Task Force (2020, p. 80) defines low-income as individuals and families "who make less than 80 percent of the median family income for the area."[23] None of the census block groups meet this definition. The closest is Census Tract 118, Block Group 4 where median household income was equivalent to 80.7 percent of the state median and 86.2 percent of the Benton County median.

Table 4.4-7. Income and Poverty by Block Group

Geographic Area	Per Capita Income1/		Median Household Income1/		Households Below the Poverty Level (Percent)1/
	2018 Dollars	Percent of State Per Capita	2018 Dollars	Percent of State Median	
Block Group 1, Census Tract 108.07	36,426	98.7	82,500	117.7	6.8
Block Group 1, Census Tract 108.14	46,102	125.0	136,723	195.0	0.0
Block Group 1, Census Tract 115.01	33,838	91.7	78,814	112.4	19.2
Block Group 1, Census Tract 115.03	43,239	117.2	112,411	160.3	4.5
Block Group 1, Census Tract 116	29,129	79.0	68,405	97.6	4.8
Block Group 2, Census Tract 116	29,661	80.4	na	na	0.0
Block Group 4, Census Tract 118	21,055	57.1	56,595	80.7	16.6
Block Group Total	**35,774**	**97.0**	**na**	**na**	**9.3**

Notes:
na – not available
1/ Estimates are annual totals developed as part of the 2014-2018 American Community Survey 5-Year Estimates.
Sources: U.S. Census Bureau 2019b, 2019c, 2019d

4.4.1.2 Economic Conditions

An estimated 113,284 people were employed in Benton County in 2018. Government and the health care and social assistance sector were the largest economic sectors based on employment, accounting for about 12 percent of total employment each (Table 4.4-8). Government employment related to plutonium development at the Hanford site, north of the Tri-Cities, began in 1943. The last reactor ceased operation in 1987. Continued federal investment since then has involved scientific diversification and nuclear and chemical cleanup employing numerous skilled engineers and scientists (U.S. Department of Energy 2020; Washington Employment Security Department 2019a). The county is also relatively specialized in agriculture, which accounted for 4.4 percent of total employment compared to 1.9 percent statewide (Table 4.4-8).

[23] The CEQ (1997) and EPA (1998) guidelines referenced with respect to minority populations do not provide a comparable definition for low-income populations.

An estimated 43,152 people were employed in Franklin County in 2018. Government and retail trade were the largest economic sectors based on employment, accounting for 16 percent and 10 percent of total employment, respectively (Table 4.4-8). The county is relatively specialized in agriculture, which accounted for 8.8 percent of total employment compared to just 1.9 percent statewide (Table 4.4-8). The first farm in the county received irrigation water from the Grand Coulee Dam irrigation system in 1948. Food manufacturing and storage facilities followed, and ranching and farming continues to be important today, as indicated by the relative specialization in agriculture (Washington Employment Security Department 2019b).

Table 4.4-8. Employment by Economic Sector, 2018

Economic Sector	Benton County	Franklin County	Washington State
Total Employment	113,284	43,152	4,560,332
Percent of Total			
Agriculture	4.4	8.8	1.9
Forestry, fishing, and hunting	(D)	4.3	1.0
Mining	(D)	0.2	0.2
Utilities	0.1	(D)	0.1
Construction	7.5	6.5	6.0
Manufacturing	4.5	8.8	6.8
Wholesale trade	1.4	4.6	3.2
Retail trade	11.1	10.2	10.2
Transportation & warehousing	1.7	(D)	4.4
Information	0.8	0.4	3.2
Finance and insurance	3.1	1.7	3.8
Real estate, rental and leasing	3.7	3.5	4.7
Professional, scientific, and technical services	9.7	2.7	7.4
Management of companies and enterprises	0.5	0.1	1.1
Administrative and waste management services	10.1	3.7	4.9
Educational services	1.0	1.7	1.8
Healthcare and social assistance	12.1	8.2	10.6
Arts, entertainment, and recreation	2.1	1.6	2.4
Accommodation and food services	7.3	5.6	6.9
Other services (except public administration)	4.6	5.2	5.0
Government	12.1	16.2	14.4

Notes:
(D) Not shown to avoid disclosure of confidential information; estimates for this item are, however, included in the totals.
1/ Employment estimates include self-employed individuals. Employment data are by place of work, not place of residence, and, therefore, include people who work in the area but do not live there. Employment is measured as the average annual number of jobs, both full- and part-time, with each job counted at full weight.
2/ Percentages for the two counties do not sum to 100 because employment counts are not provided for some sectors to avoid disclosing confidential information (identified by [D] in the table).
Source: U.S. Bureau of Economic Analysis 2019

The largest employers in the Tri-Cities (Benton and Franklin counties) include the Pacific Northwest National Laboratory, Kadlec Regional Medical Center, Bechtel National, Lamb Weston, Kennewick School District, Washington River Protection Solutions, and the Pasco School District (Tri-City Development Council 2020).

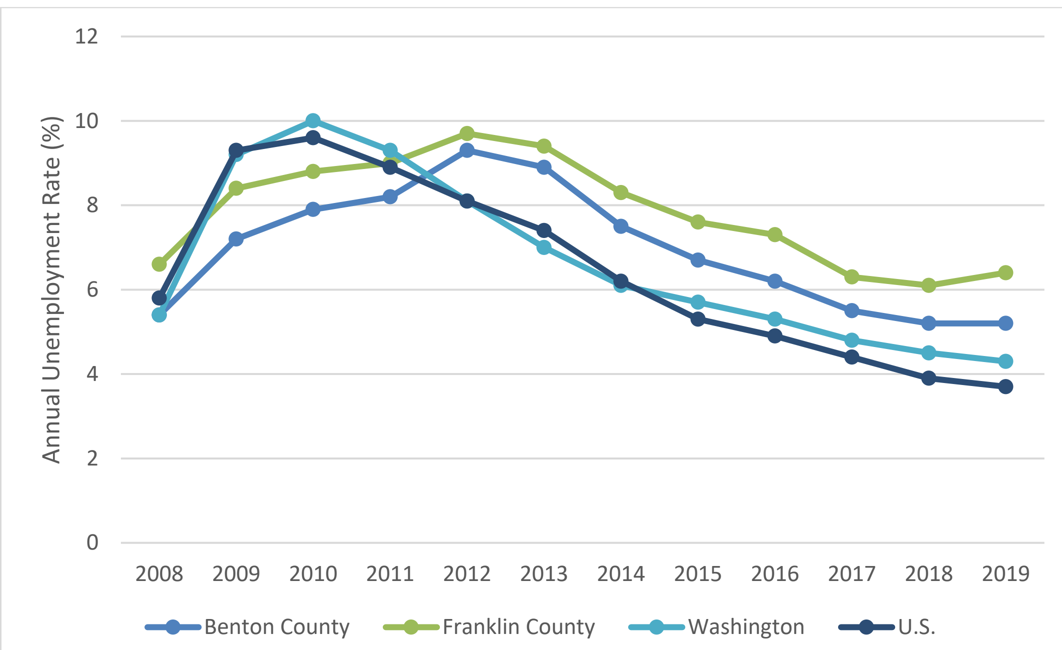
The average annual work force size, total number of employed workers, and the number and percentage of unemployed workers are presented for Benton and Franklin counties and Washington state in Table 4.4-9. Average annual unemployment rates were higher than the state average in both Benton and Franklin counties in 2019, 5.2 percent and 6.4 percent, respectively, compared to 4.3 percent (Table 4.4-9).

Table 4.4-9. Average Annual Workforce, 2019

Geographic Area	Civilian Labor Force	Employment	Unemployment	Unemployment Rate
Benton County	103,169	97,773	5,396	5.2%
Franklin County	43,132	40,383	2,749	6.4%
Washington State	**3,914,154**	**3,747,713**	**166,441**	**4.3%**

Source: Washington Employment Security Department 2020; U.S. Bureau of Labor Statistics 2020a

Annual unemployment rates for Benton and Franklin counties, Washington state, and the United States are presented in Figure 4.4-2. Unemployment rates in all four areas rose during the recession in 2009 and 2010, before gradually declining and dropping below pre-recession (2008) levels in Washington and the United States. In Benton and Franklin counties unemployment rates continued to rise, peaking in 2012 in both cases, before gradually declining to rates comparable to pre-recession levels (Figure 4.4-2).



Source: Washington Employment Security Department 2020; U.S. Bureau of Labor Statistics 2020b

Figure 4.4-2. Average Annual Unemployment Rates, 2008 to 2019

4.4.1.3 Housing and Property Values

Housing resources are summarized by city, county, and state in Table 4.4-10. The data presented in this table are annual estimates for 2018 prepared by the U.S. Census Bureau using 5 years of data (2014 to 2018) (U.S. Census Bureau 2019e). The U.S. Census Bureau defines a housing unit as a house, apartment, mobile home or trailer, group of rooms, or single room occupied or intended to be occupied as separate living quarters. There were an estimated 75,108 housing units in Benton County in 2018, with the cities of Kennewick and Richland together accounting for almost three-quarters of the total, 40 percent and 31 percent, respectively (see Table 4.4-10). An estimated total of 4,125 units were vacant in Benton County in 2019, approximately 5 percent of the total. Median values for owner-occupied homes were below the state median ranging from about $143,000 in Benton City to about $245,000 in Richland and West Richland. Median rent for renter-occupied units ranged from almost $730 (Benton City) to more than $1,000 (Richland and West Richland).

Table 4.4-10. Housing Characteristics

Geographic Area	Total Housing Units	Occupied Housing Units	Vacant Housing Units		Median Home Value (dollars)	Median Gross Rent (dollars)
			Number	Percent of Total		
Benton County	**75,108**	**70,983**	**4,125**	**5**	**216,900**	**933**
Benton City	1,246	1,194	52	4	143,100	727
Kennewick	30,384	28,364	2,020	7	196,100	889
Prosser	2,801	2,583	218	8	168,600	848
Richland	23,302	22,016	1,286	6	245,000	1,010
West Richland	4,774	4,642	132	3	244,700	1,143
Franklin County	**27,571**	**26,316**	**1,255**	**5**	**187,900**	**891**
Mesa	138	124	14	10	108,800	775
Pasco	22,064	21,283	781	4	186,900	895
Washington	**3,064,381**	**2,800,423**	**263,958**	**9**	**311,700**	**1,194**

Notes:
1/ Estimates are annual totals developed as part of the 2014-2018 American Community Survey 5-Year Estimates.
Source: U.S. Census Bureau, 2019e

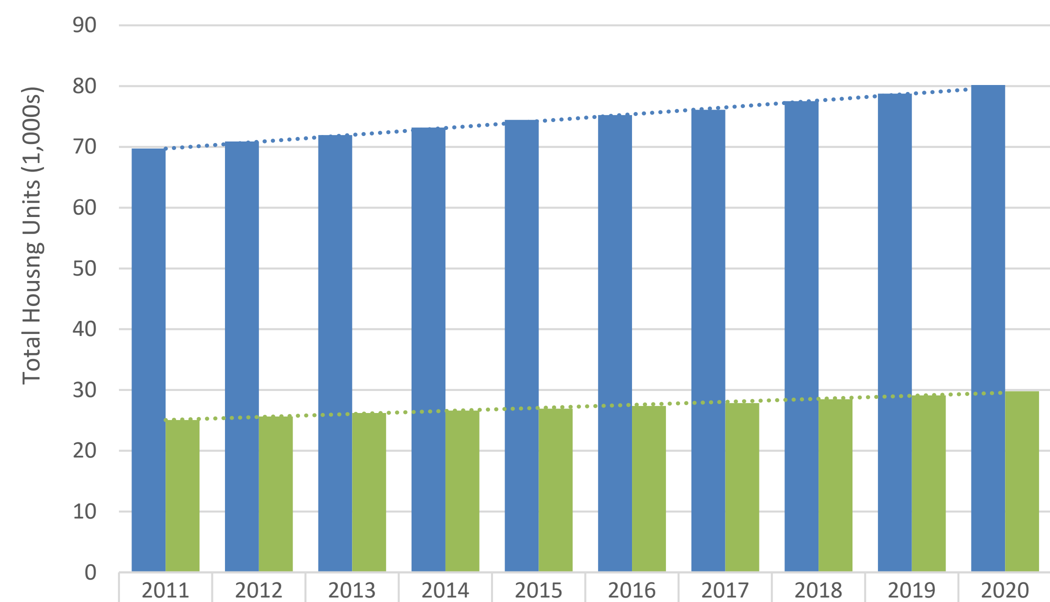
Franklin County had an estimated total of 27,571 housing units in 2018, with the city of Pasco accounting for 80 percent of the total (see Table 4.4-10). An estimated total of 1,255 units were vacant in Franklin County in 2019, approximately 5 percent of the total. Median values for owner-occupied homes were lower than in adjacent Benton County, with a county-wide median of $187,900. Median rent for renter-occupied units in Franklin County was $891, slightly lower than in Benton County (see Table 4.4-10).

The number of housing units has increased statewide and in Benton and Franklin counties over the last decade (2011 to 2020), with net gains of about 10,500 units (15 percent) and 4,700 units (19 percent) in Benton and Franklin counties, respectively (see Table 4.4-11). Viewed by community, the largest absolute increases over this period were in Pasco (4,900 units), Richland (4,200 units), and Kennewick (3,500 units). Figure 4.4-3 shows total housing units for 2011 to 2020 for the two study area counties.

Table 4.4-11. Number of Housing Units, 2010 to 2020

Geographic Area	2010	2020	2010 to 2020		
			Net Change	Percent Change	Annual Growth Rate
Benton County	**69,739**	**80,190**	**10,451**	**15**	**1.4**
Benton City	1,241	1,362	121	10	0.9
Kennewick	28,745	32,222	3,477	12	1.1
Prosser	2,134	2,312	178	8	0.8
Richland	21,232	25,465	4,233	20	1.8
West Richland	4,606	5,726	1,120	24	2.2
Unincorporated	11,781	13,103	1,322	11	1.1
Franklin County	**25,070**	**29,794**	**4,724**	**19**	**1.7**
Mesa	128	130	2	2	0.2
Pasco	19,350	24,256	4,906	25	2.3
Other Incorporated[1/]	1,044	1,111	67	6	0.6
Unincorporated	4,548	4,297	-251	-6	-0.6
Washington	**2,904,627**	**3,218,136**	**313,509**	**11**	**1.0**

Note:
1/ The two other incorporated counties in Franklin County (Connell and Kahlotus) are an approximate one-hour commute or more from the Project Lease Boundary.
Source: Washington OFM 2020c



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Benton-Total	69.7	70.9	72.0	73.2	74.4	75.2	76.1	77.5	78.8	80.2
Franklin-Total	25.1	25.6	26.2	26.6	26.9	27.4	27.9	28.5	29.1	29.8

Notes:
1/ Data are in thousands.
Source: Washington OFM 2020c

Figure 4.4-3. Total Housing Units by County, 2010 to 2020

Temporary Housing Resources

Rental housing resources are summarized in Table 4.4-12. Viewed by county, these estimates suggest that rental housing is available in both counties, with an estimated 1,391 units available for rent in Benton County and 231 units available in Franklin County. More than 90 percent of the estimated units available in Benton County are in Kennewick (54 percent) and Richland (40 percent). Kennewick and Richland both had estimated rental vacancy rates (6.5 percent and 6.6 percent, respectively) that exceeded the Benton County average (5.8 percent) (see Table 4.4-12). Rental housing markets are tighter in Franklin County and Pasco, with respective estimated vacancy rates of 2.7 percent and 1.7 percent. An estimated 112 housing units were available for rent in Pasco in 2018, approximately 48 percent of the total available units in Franklin County (see Table 4.4-12). Additional units classified for seasonal, recreational, or occasional use may also be available in both counties (see Table 4.4-12).

Rental housing options may also include other special living situations, such as Airbnb units and spare bedrooms in homes that residents would be willing to rent to construction workers. These types of potential housing opportunities are not included in the data presented in Table 4.4-12.

Table 4.4-12. Rental Housing

Geographic Area	Total Housing Units[1/]	Rental Vacancy Rate[1/]	Units Available for Rent[1/]	Seasonal, Recreational, or Occasional Use[1/,2/]
Benton County	**75,108**	**5.8**	**1,391**	**684**
Benton City	1,246	4.7	14	13
Kennewick	30,384	6.5	750	151
Prosser	2,801	0.0	0	33
Richland	23,302	6.6	553	196
West Richland	4,774	4.2	36	39
Franklin County	**27,571**	**2.7**	**231**	**145**
Mesa	138	14.7	10	4
Pasco	22,064	1.7	112	79
Washington	**3,064,381**	**3.7**	**40,339**	**95,056**

Notes:
1/ All data are annual estimates from the American Community Survey 5-year estimates for 2014-2018.
2/ Housing units for seasonal, recreational, or occasional use are generally considered to be vacation homes. They are not included in the estimated number of housing units available for rent.
Sources: U.S. Census Bureau 2019e, 2019f

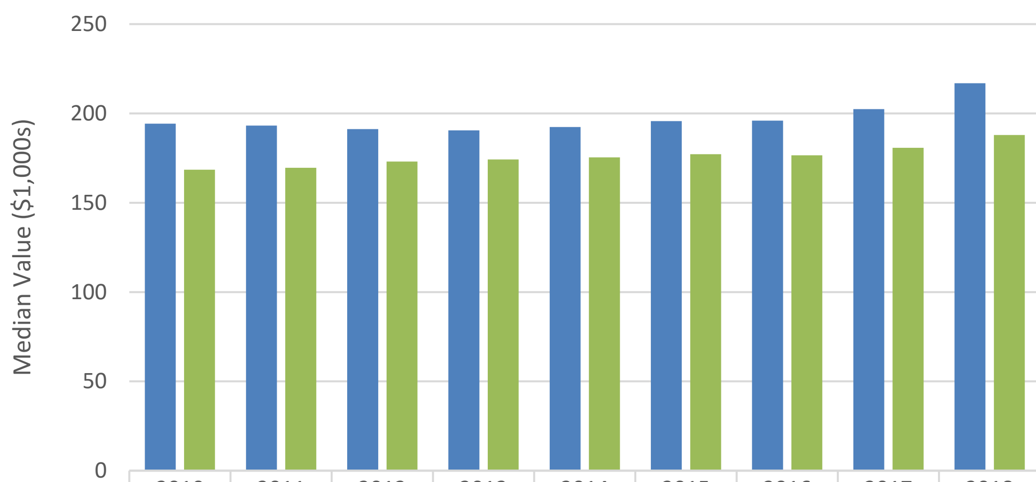
Temporary housing is also available in the form of hotel and motel rooms. Data compiled by STR Global (i.e., a travel research firm) identified 44 hotels in the Tri-Cities area in November 2017, with a total of 4,063 guestrooms (ECONorthwest 2018). STR Global compiles data for commercial lodging establishments with at least 15 rooms. They do not count single room occupancy hotels, most bed and breakfast inns, or short-term rentals (e.g., Airbnb). A number of new hotels have opened in the Tri-Cities in recent years and several others are currently under construction. With these additions, the number of guestrooms in the Tri-Cities is expected to increase to about 4,700 (Culverwell 2020). Lodging facilities available elsewhere in Benton County include four hotels in Prosser, with more than 140 guestrooms.

Hotels in the Tri-Cities had an overall average occupancy rate of 62.5 percent from December 2016 to November 2017. The market is seasonal, with monthly occupancy rates ranging from 42 percent in December to 77 percent in June. Occupancy in July and August averaged 69 percent. The Tri-Cities attracts a larger than average share of business and meeting visitors, which tends to support fairly strong occupancy in the shoulder seasons (spring and fall) (ECONorthwest 2018).

Temporary accommodation in the study area also includes recreational vehicle (RV) parks and campsites. Facilities in Benton and Franklin counties include 12 RV parks and campgrounds, with a total of 1,320 RV spaces. Parks and campgrounds are located in Richland and Pasco, south of the Project area in Plymouth, Washington, and also in Prosser and Benton City.[24]

Residential Property Values

Figures 4.4-4 and 4.4-5 show annual estimated median home values for owner-occupied housing units and median gross rent for rental units for 2010 to 2018, the most recent years these data are available. Adjusted for inflation and presented in 2018 dollars, these data indicate that home values and rents increased in both counties over this period, with increases of about 12 percent in median home values in both counties. Median rents increased from 2010 to 2018 by about 12 percent in Benton County and 16 percent in Franklin County.

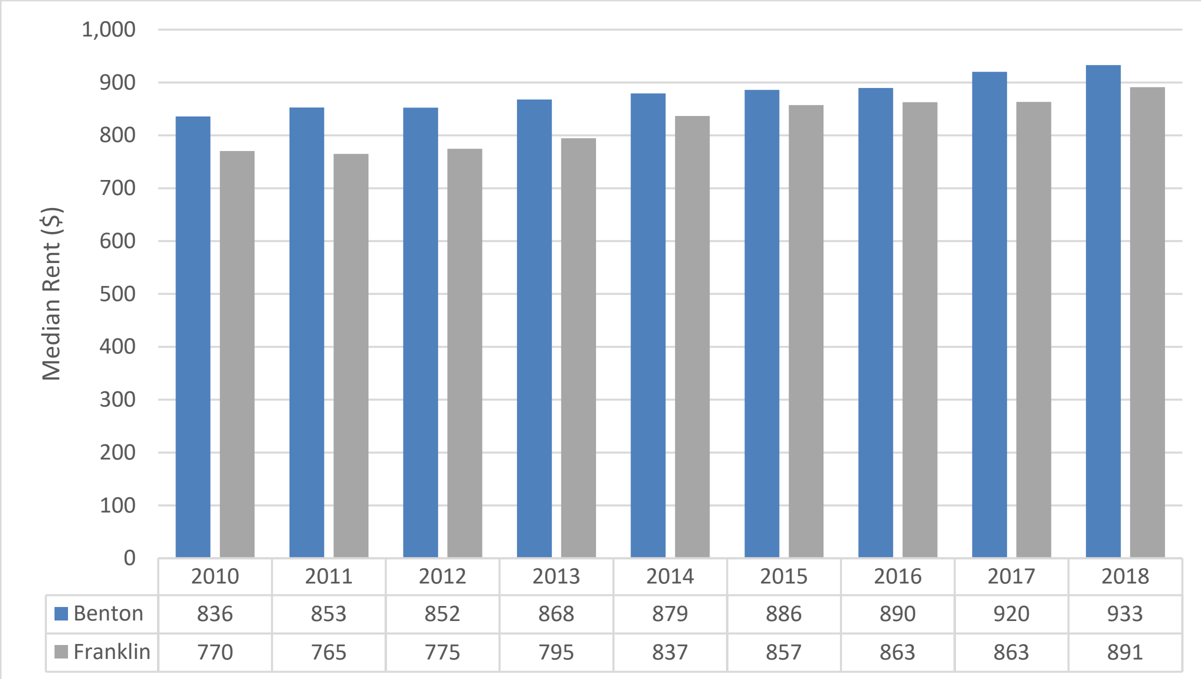


	2010	2011	2012	2013	2014	2015	2016	2017	2018
Benton	194.3	193.2	191.3	190.5	192.4	195.7	195.9	202.4	216.9
Franklin	168.5	169.6	173.1	174.2	175.4	177.2	176.6	180.8	187.9

Notes:
1/ Estimates are annual totals developed as part of the American Community Survey 5-Year Estimates.
2/ Estimates are adjusted for inflation and presented in thousands of 2018 dollars.
Source: U.S. Census Bureau, 2019e

Figure 4.4-4. Median Home Values, 2010 to 2018

[24] Data on RV parks and campsites were compiled from a number of online sources, including visittri-cities.com, rvshare.com, goodsam.com, and campgroundreviews.com, as well as individual campground web sites.



Notes:
1/ Estimates are annual totals developed as part of the American Community Survey 5-Year Estimates.
2/ Estimates are adjusted for inflation and presented in thousands of 2018 dollars.
Source: U.S. Census Bureau, 2019e

Figure 4.4-5. Median Rent, 2010 to 2018

4.4.1.4 Fiscal Conditions

Annual filings with the Washington State Auditor (2020) indicate that Benton County had total revenues of $117.3 million in 2019, with property taxes and sales and use taxes accounting for 26 percent and 28 percent of the total, respectively (Table 4.4-13). Benton County had total expenditures of $102.7 million in 2019, with spending on general government and public safety accounting for 80 percent of the total.

Franklin County had total revenues of $47.9 million, with property taxes and sales and use taxes accounting for 29 percent and 26 percent of the total, respectively. Franklin County had total expenditures of $42.2 million in 2019, with spending on general government and public safety accounting for three-quarters of the total (Table 4.4-13).

Table 4.4-13. Revenues and Expenditures by County, 2019

Revenues/Expenditures	Benton County		Franklin County	
	Governmental Amounts ($)	Percent of Total Revenues/ Expenditures	Governmental Amounts ($)	Percent of Total Revenues/ Expenditures
Total Revenues	**117,320,039**	**100%**	**47,861,511**	**100%**
Property Taxes	30,278,759	26%	13,967,328	29%
Sales & Use Taxes	32,731,700	28%	12,290,450	26%
Other Local Taxes	1,088,224	1%	1,144,120	2%
Intergovernmental Revenues	16,560,843	14%	11,158,678	23%
Other Revenue[1/]	36,660,513	31%	9,300,935	19%

Revenues/Expenditures	Benton County		Franklin County	
	Governmental Amounts ($)	Percent of Total Revenues/ Expenditures	Governmental Amounts ($)	Percent of Total Revenues/ Expenditures
Total Expenditures	**102,659,528**	**100%**	**42,231,931**	**100%**
General Government	38,274,457	37%	14,908,048	35%
Public Safety	44,641,281	43%	16,790,681	40%
Social Services	5,796,845	6%	1,359,213	3%
Transportation	10,306,166	10%	6,847,586	16%
Culture and Recreation	1,253,210	1%	274,388	1%
Other Expenditures[2/]	2,387,569	2%	2,052,015	5%

Notes:

1/ Other revenue includes licenses and permits, charges for goods and services, fines and penalties, and other miscellaneous revenues.

2/ Other expenditures include environmental services and community planning and economic development.

Source: Washington State Auditor 2020

Sales and Use Tax

The State of Washington imposes a sales and use tax of 6.5 percent. Sales tax applies to most retail sales of "tangible personal property" within Washington, including some services such as lodging and related services. Use taxes are equivalent to sales taxes and apply to taxable purchases made out-of-state for use in Washington. State sales and use tax revenues are deposited in the state general fund. In addition to the 6.5 percent state sales and use tax, local governments can impose local sales taxes on the same tax base as the state. Cities and counties can impose up to 1 percent in "unrestricted" sales taxes that may be used for any lawful government purpose, as well as a number of "restricted" local sales taxes that may only be used for specific purposes (Municipal Research and Services Center 2020; Senate Ways and Means Committee 2020).

Both Benton and Franklin counties impose an unrestricted sales tax of 1.0 percent. Benton County also imposes the following restricted taxes: Public Transit (0.6 percent), Criminal Justice (0.1 percent), Public Safety (0.3 percent), and Juvenile Correction (0.1 percent) for an overall local sales tax total of 2.1 percent. Franklin County imposes the following restricted taxes: Public Transit (0.6 percent), Criminal Justice (0.4 percent), and Juvenile Correction (0.1 percent), which, like Benton County, results in an overall local total of 2.1 percent (Washington Department of Revenue 2020a). In Fiscal Year 2019, local sales and use taxes generated approximately $106 million in revenue in Benton County and $26.2 million in revenue in Franklin County (Washington Department of Revenue 2020b).[25]

Property Tax

Property taxes are a primary source of revenue for counties. The property tax system in Washington State is a "budget-based" system, which means that counties and other taxing districts first establish the total dollar amount of property tax revenue they wish to generate in the

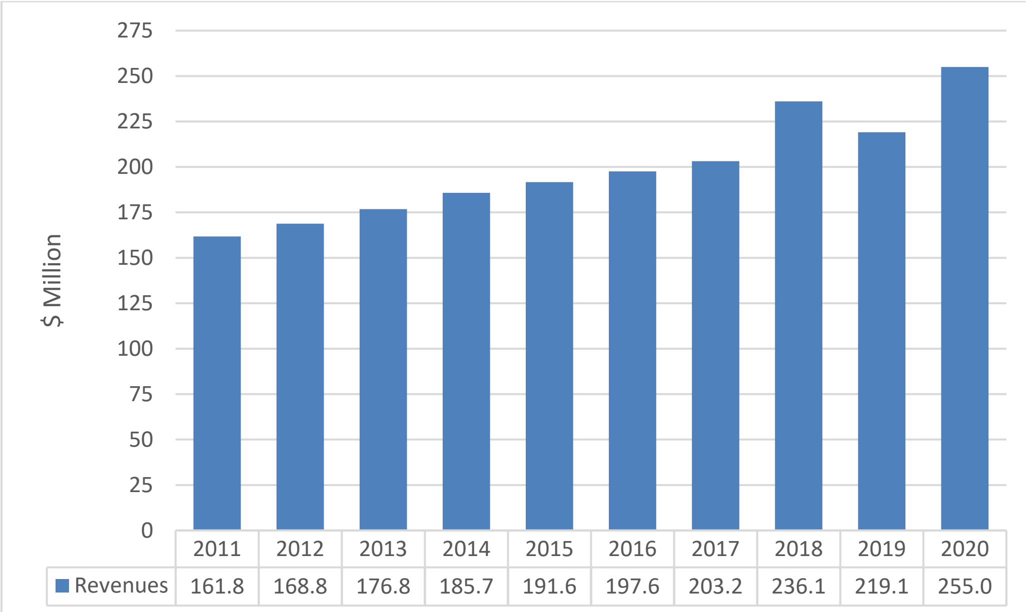
[25] Note these totals are larger than the sales and use tax revenues shown for each county in Table 4.4-13 because they include distributions to all taxing districts in each county, including incorporated cities and other local taxing districts, as well as county government. Revenues and expenditures presented in Table 4.4-13 are for each county government only and do not include revenues and expenditures for cities or other local taxing districts.

upcoming year. Once this amount is established, the county assessor then calculates the applicable levy rate based on the total assessed value of all properties in the county.

The levy or millage rate, which determines the amount an individual property owner owes, is expressed as a dollar amount per $1,000 assessed value. A jurisdiction with a levy rate of 10 mills, for example, would impose tax at the rate of $10 per $1,000 of property value. The Washington State Constitution requires that levy rates are uniform (i.e., the same) for all properties within a taxing district. The one exception to this requirement is for agricultural, timber, and open space land, as discussed below. The county assessor's office is responsible for assessing all property located within the county, including both incorporated and unincorporated areas. The resulting assessed value is the fair market value and represents the amount a buyer would pay to a willing seller. The assessor may determine fair market value through use of a sales (market data), cost, or income approach or a combination of these methods.

The total dollar amount of property taxes to be collected in one year is known as the levy amount. In Washington, the amount the levy amount can grow from year-to-year is limited by the "levy lid," also known as the "1% increase limit" or "101% limit." For counties with more than 10,000 residents, like Benton and Franklin counties, annual increases in the levy amount cannot exceed 1 percent or the rate of inflation, whichever is lower, plus an additional amount generated by new construction and "add-ons." These "add-ons" include increases in assessed valuation from the previous year due to new construction and property improvements and construction of renewable energy electricity-generating facilities, including wind turbine and solar facilities (RCW 84.55.010). Annual property tax revenues generated in Benton County have increased over the past decade (2011 to 2020), with a total of $255 million generated in 2020 (Figure 4.4-6).[26]

[26] As noted with respect to sales and use tax revenues, the total shown for 2019 in Figure 4.4-6 is larger than the corresponding number in Table 4.4-13 because it includes revenues generated by all taxing districts in Benton County, not just the County government.



Note:
1/ Estimates are presented in millions of dollars.
Source: Benton County 2020b

Figure 4.4-6. Benton County Property Tax Revenues, 2011 to 2020

Individual government units with property tax authority in Benton County, include the state, county, cities, school districts, hospitals, libraries, and fire districts. These government units, known as taxing districts, combine to form Tax Areas, which represent unique combinations of overlapping taxing districts. The resulting combined levy or millage rate varies by Tax Area.

The Benton County Levy Rates report for 2020 identified 52 Tax Areas, with corresponding levy rates ranging from 7.89 to 13.32 mills. The majority of the Tax Areas (90 percent) had 2020 levy rates above 10 mills, which is reflected in the average rate per Tax Area, which was 11.29 mills. This rate is very similar to the actual county average rate, which was 11.40 mills in 2020, based on the ratio of annual taxes levied to total assessed value (Benton County 2020). The parcels that make up the Project Lease Boundary fall within a number of different Tax Areas. The most common rate identified in a limited review of parcels was 11.49 mills, which is very similar to the Tax Area and county averages. The share of estimated revenues by type of taxing district is shown for a representative parcel in Figure 4.4-7. Schools accounted for more than half (59 percent) of total revenues, followed by fire districts (14 percent) and roads (12 percent).

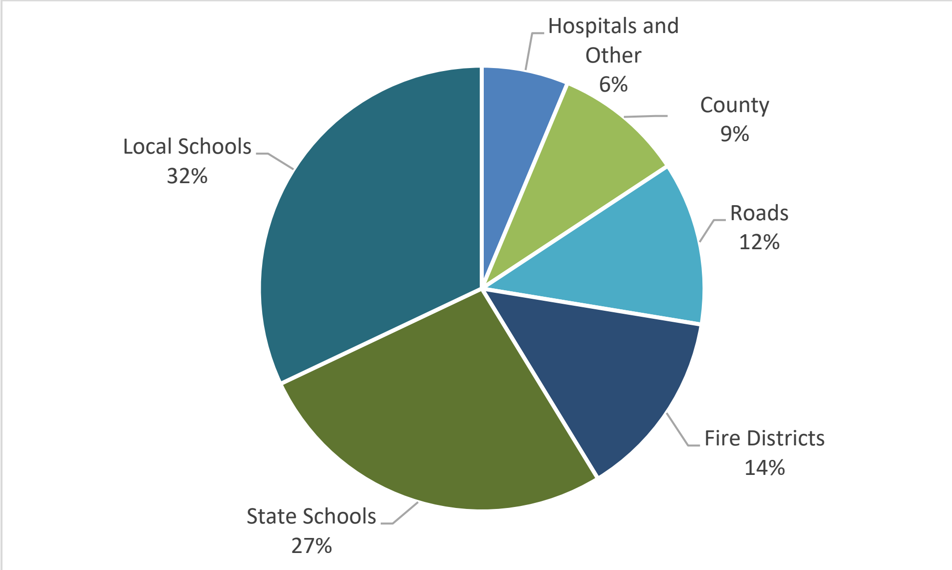


Figure 4.4-7. Representative Distribution of Property Tax Revenues

Farm and Agricultural Land

As noted above, the Washington State Constitution requires that all taxes on real estate be uniform within a taxing district, with the exception of lands classified as farm and agricultural land, open space land, or timber land. The Open Space Taxation Act, enacted in 1970, authorizes these lands to be valued on the basis of their current use rather than fair market value. Landowners may apply for special reduced valuations for property that qualifies for one of the three classifications under the Act. The classification for farm and agricultural land, which applies to land primarily used for agriculture, also allows other incidental uses that are compatible with agricultural use, provided that incidental uses do not exceed 20 percent of the classified land (RCW 84.34.020).

For wind facilities, each Turbine occupies a relatively small footprint. Landowners can usually continue farming and livestock operations and land developed for wind facilities could continue to qualify as farm and agricultural land for property tax purposes. For areas developed for solar facilities, agricultural use would no longer be possible and in cases where solar facilities occupy 20 percent or more of the affected property, the affected land would no longer qualify for classified status as farm and agricultural land.

Following removal from classified status, the affected property would be valued at fair market value for property tax purposes. In addition, removed properties that have been in the program for less than 10 years are subject to an additional tax, plus interest and a penalty. The additional tax is equal to the difference between the tax paid on the current use value and the tax that would have been paid if the land had not been classified (i.e., the tax that would have been paid based on fair market value). The additional tax is payable for the last 7 tax years, plus interest at the same rate as charged on delinquent property taxes, plus a penalty of 20 percent of the total amount (Washington Department of Revenue 2017).

4.4.1.5 Public Services and Utilities

Fire Protection

The five incorporated communities and portions of the remaining unincorporated area of Benton County are served by municipal and rural fire departments. Richland and Kennewick municipal fire departments are operated by full-time firemen. Prosser, Benton City, and West Richland operate with full and part-time positions along with volunteer staff. The unincorporated areas of Benton County are served by six fire districts: Benton County Fire Districts #1 through #6, which are primarily staffed by volunteer personnel. The Project Lease Boundary area primarily falls within the jurisdiction of two of these areas: Districts #1 and #5. Both districts are part of the Tri-County Master Mutual Aid Agreement, which includes all fire departments and fire districts within Benton, Franklin, and Walla Walla Counties. Mutual aid agreements allow a jurisdiction to provide resources, facilities, services, and other required support to another jurisdiction during an incident (Benton County 2018; Benton County Emergency Management 2018).

Fire District #1 protects an area of approximately 320 square miles south of the cities of Kennewick Richland and West Richland, serving a population of approximately 17,500 residents. District #1 includes developed areas with many permanent homes, wildland areas, and agricultural areas, with a significant wildland urban interface area. District #1 operates a combination fire department with 13 career staff and 90 volunteer firefighters, officers, Emergency Medical Technicians, First Responders, and support personnel. The district operates out of six fire stations and personnel are on duty 24 hours a day, 7 days a week (Benton County Emergency Management 2018).

Fire District #5 protects an area of approximately 400 square miles, south of I-82 and the cities of Prosser and Benton City. District #5 is primarily a wildland fire agency with some urban/suburban interface with neighboring agencies. The district primarily relies on neighboring agencies for structure firefighting. The district also responds to vehicle accidents and provides some non-ambulance emergency medical services. District #5 operates out of four main stations with approximately 20 volunteers. Personnel are on duty 24 hours a day, 7 days a week (Benton County Emergency Management 2018).

Law Enforcement

The Benton County Sheriff's Office would provide law enforcement services to the Project Lease Boundary area. The Sheriff's Office law enforcement bureau consists of 60 commissioned deputies and 10 non-commissioned employees, who fall under the direction of two Bureau Commanders. The Bureau consists of four divisions: the Patrol, Detective, Civil, and Records divisions. The Patrol Division is responsible for providing initial responses to all calls received by the Sheriff's Office. The Patrol Division consists of 34 deputies that comprise four patrol squads. These deputies provide initial investigations on all crimes reported, traffic enforcement and traffic accident investigation, and emergency response, often in conjunction with other law enforcement and fire rescue agencies. The Patrol Division provides 24-hour coverage of all areas in Benton County (Benton County 2020a).

Other law enforcement agencies providing service in the vicinity of the Project Lease Boundary area include the Washington State Patrol. Benton and Franklin counties are served by the Washington State Patrol District 3, which covers the seven southeastern counties of Washington state. District 3 includes more than 900 miles of state and interstate highways and employs more than 140 staff, who provide an array of services including law enforcement, traffic investigations, and vehicle inspections. The district operates out of four detachment offices. The closest detachment office to the Project Lease Boundary area is in Kennewick (Washington State Patrol 2020).

Health Care

General hospitals located in Richland, Kennewick, and Prosser provide Benton County residents with in-patient care. The Kennewick and Prosser hospital services are each operated by a public entity in the form of a hospital district directed by elected board members. The Richland hospital is a not-for-profit, private corporation governed by local volunteer trustees. Benton County is also served by a variety of public and private medical clinics that provide treatment for most medical concerns (Benton County 2018). The Project Lease Boundary area falls within the jurisdiction of the Kennewick and Prosser Hospital Districts.

The Kennewick Hospital District provides healthcare services for its district or service area by contracting these services from RCCH Health Care Partners/Trios (RCCH). RCCH operates two hospitals and a number of related facilities in Kennewick. The two hospitals are the 74-bed Trios Southridge Hospital, which opened in 2014, and the older 37-bed Trios Women's and Children's Hospital. Classified as a Level III Adult Trauma Center, Trios Southridge Hospital offers 24-hour emergency room services, 7 days a week, with 27 emergency treatment rooms (Trios Health 2020). Emergency departments are designated by the resources they have available to treat cases of traumatic injury. A Level III designation means that the department can provide prompt assessment, resuscitation, surgery, intensive care, and stabilization of injured patients (American Trauma Society 2020).

Prosser Memorial Hospital is a critical access hospital with 25 beds. Classified as a Level IV Adult Trauma Center, Prosser Memorial Hospital offers 24-hour emergency room services, 7 days a week. A Level IV designation means that the department can provide advanced life support measures that can stabilize a trauma patient enough to be transported to another facility, if necessary. Prosser Memorial Hospital’s emergency medical services team provides western Benton County with primary 911 treatment and ambulance transportation to local area hospitals (Prosser Memorial Hospital 2020).

Kadlec Regional Medical Center, located in Richland, is a regional medical center with 270 beds. Classified as a Level III Adult Trauma Center, Kadlec Regional Medical Center offers 24-hour emergency room services, 7 days a week, with 27 emergency treatment rooms (Kadlec Regional Medical Center 2020).

In addition, Lourdes Medical Center, a critical access hospital with 35 beds, is located in Pasco in neighboring Franklin County. Classified as a Level IV Adult Trauma Center, Lourdes Medical Center offers 24-hour emergency room services, 7 days a week (Lourdes Health 2020).

Schools

Summary information on schools is presented for Benton and Franklin counties in Table 4.4-14. This information includes numbers of school districts, schools, students, and teachers, as well as student/teacher ratios. Student/teacher ratios, calculated by dividing the total number of students by the total number of full-time equivalent (FTE) teachers, are a common measure used to assess the overall quality of a school. The national average student/teacher ratio for the 2018-2019 school year was 15.7. The statewide average ratio in Washington was 17.4 (National Education Association Research 2020a). Average student/teacher ratios in Benton and Franklin counties in 2019-2020 were 18.9 and 17.4, respectively (Table 4.4-14).

Benton County is served by seven school districts, with a combined total student enrollment of 38,668 in the 2019-2020 school year. Most of these students were enrolled in the Kennewick and Richland School Districts, which together accounted for 87 percent of total enrollment (see Table 4.4-14). Franklin County is served by five school districts, with a combined total student enrollment of 20,810 in the 2019-2020 school year. The Pasco School District accounted for 89 percent of this total (see Table 4.4-14).

Table 4.4-14. Schools by County, 2019-2020 School Year

County/School District	Number of School Districts	Total Number of Schools	Total Number of Students	Total Number of FTE Teachers	Student/ Teacher Ratio (Average)
Benton County	**7**	**67**	**38,668**	**2,045**	**18.9**
Finley School District	-	3	885	53	16.8
Kennewick School District	-	32	19,598	1,042	18.8
Kiona-Benton City School District	-	4	1,377	81	17.0
Paterson School District	-	1	126	9	13.9
Prosser School District	-	6	2,712	154	17.6
Richland School District	-	21	13,970	706	19.8
Franklin County	**5**	**39**	**20,810**	**1,195**	**17.4**
Educational Service District 123	-	2	26	na	na
Kahlotus School District	-	1	44	10	4.5
North Franklin School District	-	9	2,190	128	17.1
Pasco School District	-	26	18,539	1,056	17.6
Star School District No. 054	-	1	11	2	5.5

Notes:
FTE—full-time equivalent, na – not available
Source: National Education Association Research 2020b

Parks and Other Recreational Facilities

Parks and other recreational facilities are discussed in Section 4.2.4 of this ASC.

Public Utilities

Electric service is supplied to areas in Benton County via two local public utilities: the Benton County Public Utility District (Benton PUD) and Benton Rural Electric Association (Benton REA). The Benton PUD service area is entirely within Benton County and includes the cities of Kennewick, Benton City, Prosser, and portions of West Richland, as well as those rural areas of the county not served by Benton REA. Benton REA, a consumer owned rural cooperative that also serves portions of Lewis and Yakima counties, serves rural areas in Benton County, as well as some urban areas, including West Richland (Benton County 2018).

Cascade Natural Gas Corporation provides natural gas service to Benton County. The pipeline network that supplies natural gas to Benton County is owned and operated by the Northwest Pipeline Corporation. Natural gas is stored in a facility in Plymouth in the south part of the county (Benton County 2018).

Several companies supply local, long distance, and cellular telecommunications service in Benton County (Benton County 2018).

Water and Stormwater

Water and stormwater are discussed in Section 3.3 of this ASC.

Solid Waste and Wastewater

The Washington Utilities and Transportation Commission (WUTC), the county, and municipalities regulate solid waste collection in Benton County. Solid waste collection in unincorporated Benton County is provided under certificates granted by the WUTC, with four haulers certified to collect waste in Benton County: Basin Disposal, Inc. (BDI); Ed's Disposal, Inc.; Sanitary Disposal, Inc.; and Waste Management of Kennewick (Waste Management).

BDI, Ed's Disposal, Inc., and Sanitary Disposal, Inc. primarily serve eastern, central, and southwestern Benton County, respectively. Waste Management serves areas throughout unincorporated Benton County. The service areas for all four haulers overlap with the Project Lease Boundary area.

Waste collected by BDI and Ed's Disposal is first transported to the BDI transfer station in Pasco and then hauled to the Finley Buttes Landfill in Boardman, Oregon for disposal. Waste collected by Sanitary Disposal is transported to a transfer station in Umatilla County prior to disposal at Finley Buttes Landfill. Waste collected by Waste Management is transported to its transfer station in Kennewick and hauled to the Columbia Ridge Landfill in Arlington, Oregon for disposal (HDR Engineering 2013).

Most rural residents in Benton County rely on on-site septic tanks and drain fields for their wastewater system needs. The Benton-Franklin Health District permits and regulates all on-site systems in the county (Benton County 2018).

4.4.2 Environmental Impacts

For the purposes of analysis, the Applicant has developed a representative development scenario that assumes that the Project would be built in two phases, with each phase representing a distinct and fully functional subset of the larger Project. Two alternatives (Alternatives A and B) are identified for Phase 2 to identify a range of possible impacts that could occur as a result of the Project.

- Phase 1 is assumed to have a nameplate capacity of up to 650 MW, with 350 MW generated via wind and 300 MWac generated via solar. Phase 1 also includes a BESS capable of storing up to 150 MW of energy.

- Phase 2 is assumed to have a nameplate capacity of up to 500 MW. Alternative A (also referred to as Phase 2a) would consist of both wind and solar facilities, with each resource generating up to 250 MW of energy. Phase 2a also includes a BESS capable of storing up to to 150 MW of energy. Alternative B (also referred to as Phase 2b) would generate up to 500 MW via wind and would not include a BESS.[27]

Each phase would also include substation and transmission line facilities, as well as an O&M facility. The key components for each phase are discussed in Section 2.15 and summarized in Table 2.15-1.

4.4.2.1 Population

Assuming the Governor's approval of the Site Certification in December 2021, the Applicant anticipates beginning construction of the first phase of the Project in January 2023 and commercial operation by the end of 2023. A second phase of the Project would begin construction in January 2024 and begin operation by the end of 2024.

During construction of Phase 1, the Project will directly employ an average of 300 workers on-site over an 11-month construction period, with an estimated 62 percent of these positions expected to be filled by local workers. On-site construction employment for Phase 1 would follow a bell-shaped curve, peaking near the middle of the construction period with up to 467 workers employed on-site at the same time (Figure 4.4-8). Non-local employment would average approximately 113 workers over the 11-month construction period. The non-local workforce is expected to peak in May and June 2023, with an estimated monthly total of approximately 177 non-local workers employed on-site (Figure 4.4-8).

[27] Phases 2a and 2b represent two potential 500 MW scenarios. Other Phase 2 development scenarios are possible, including an all solar alternative, with up to 500 MW of energy generated by solar. An all-solar alternative is not considered in detail here, but preliminary review suggests that the total installed cost and construction workforce loading for an all-solar alternative would be similar to those evaluated for Phases 2a and 2b.

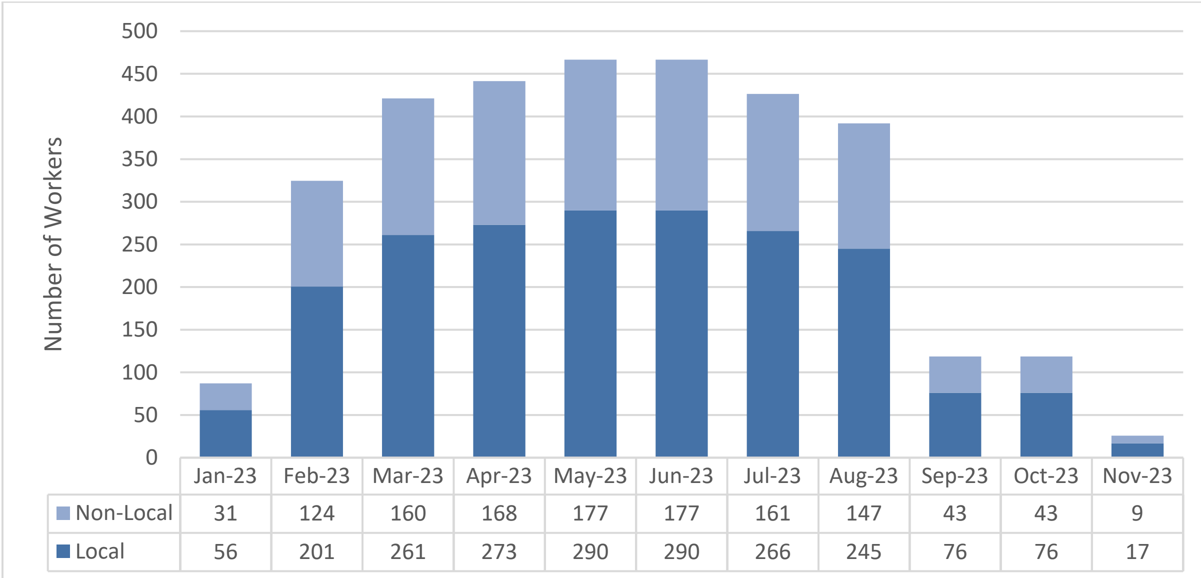


Figure 4.4-8. Estimated Phase 1 Local and Non-Local Construction Workforce by Month

Few, if any, of the non-local workers employed during Project construction are expected to be accompanied by family members or permanently relocate to the analysis area. However, for the purposes of analysis, the following assessment assumes that 5 percent of the non-local workforce would be accompanied by their families. The average U.S. family household consisted of 3.15 people per family in 2020 (U.S. Census Bureau 2020b). Applying this average family household size to the average and peak non-local workforce totals results in respective non-local totals of 125 and 196 people temporarily relocating. Viewed as share of existing population, these temporary increases would be equivalent to less than 0.1 percent of the existing total population in Benton and Franklin counties (Table 4.4-15).

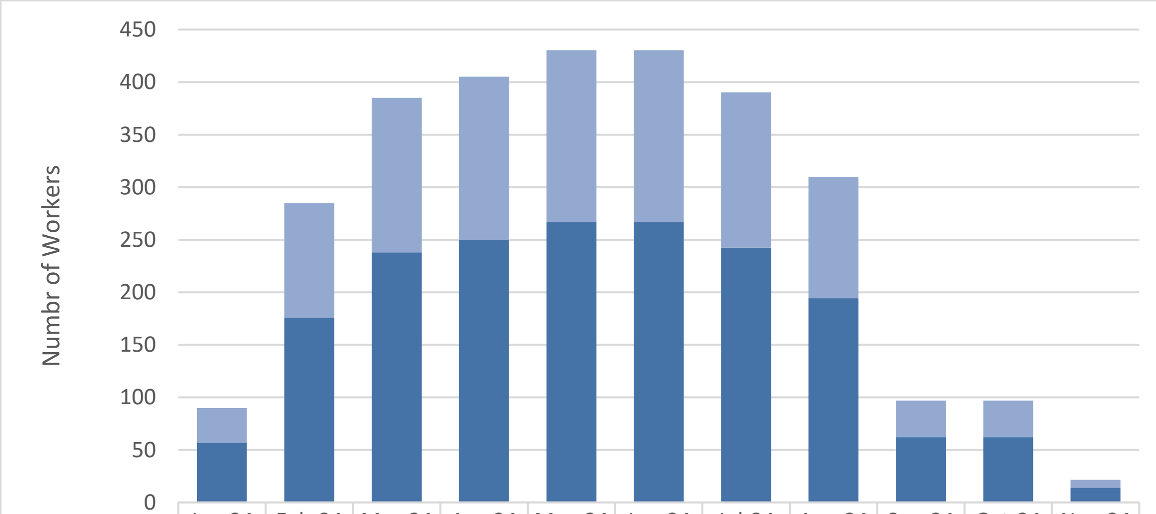
Table 4.4-15. Construction Workforce and Estimated Population Change as a Share of Existing Population

Local/Non-Local Workforce[1/]	Phase 1	Phase 2	
		Alternative A	Alternative B
Average Workforce	**299**	**267**	**271**
Local	186	166	163
Non-Local[2/]	113	101	108
Non-Local Workers Relocating as Individuals	107	96	103
Non-Local Workers Relocating with Families	6	5	5
Family Members Relocating	12	0	0
Total Non-Local Relocations	125	101	108
Total Peak Workforce	**467**	**430**	**412**
Local	290	267	247
Non-Local[2/]	177	164	165
Non-Local Workers Relocating as Individuals	168	156	157
Non-Local Workers Relocating with Families	9	8	8
Family Members Relocating	19	0	0
Total Non-Local Relocations	196	164	165
2020 Population[3/]	302,460	302,460	302,460
Average Non-Local Relocations as a Percent	0.04%	0.03%	0.04%
Peak Non-Local Relocations as a Percent	0.06%	0.05%	0.05%

Notes:
1/ Numbers may not sum due to rounding.
2/ An estimated 5 percent of non-local workers are assumed to be accompanied by family members for the purposes of analysis. The estimated number of family members relocating is based on the average U.S. family household, which consisted of 3.15 persons in 2020 (U.S. Census Bureau 2020b).
3/ Population estimates are from Washington OFM 2020a (see Table 4.4-2).

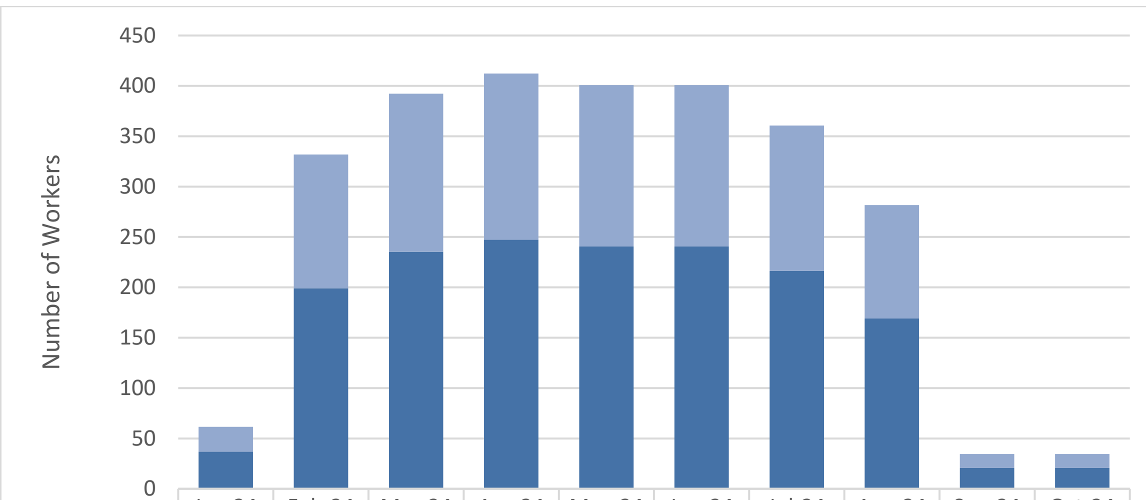
Construction of Phases 2a and 2b is estimated to employ respective averages of approximately 267 and 271 workers over a 10- to 11-month construction period, with 60 percent (Phase 2b) to 62 percent (Phase 2a) of these positions expected to be filled by local workers. On-site construction employment for both Phase 2 alternatives would follow a bell-shaped curve, with employment peaking near the middle of the construction period with approximately 412 (Phase 2b) to 430 (Phase 2a) workers expected to be employed on-site at the same time (Figures 4.4-9 and 4.4-10).

Non-local employment for Phase 2a would average approximately 101 workers over the 11-month construction period, with non-local employment expected to peak with approximately 164 workers expected to be on-site in May and June 2024 (Figure 4.4-9). Non-local employment for Phase 2b is expected to peak with a monthly average of 165 non-local workers on-site in April 2024. Non-local employment for Phase 2b would average 108 workers over the 10-month construction period (Figure 4.4-10).



	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24
Non-Local	33	109	147	155	164	164	148	115	35	35	8
Local	57	176	238	250	267	267	243	194	62	62	14

Figure 4.4-9. Estimated Phase 2a Local and Non-Local Construction Workforce by Month



	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24
Non-Local	25	133	157	165	160	160	144	113	14	14
Local	37	199	235	247	240	240	216	169	21	21

Figure 4.4-10. Estimated Phase 2b Local and Non-Local Construction Workforce by Month

Assuming for the purposes of analysis that 5 percent of non-local workers would be accompanied by family members with an average family size of 3.15 people, the temporary increases in population estimated for both Phase 2 alternatives would be equivalent to less than 0.1 percent of the existing total population in Benton and Franklin counties (Table 4.4-15).

The Project operations workforce is described in Section 2.15.2. A team of 16 to 20 personnel would be employed at the Project to operate and maintain Project components. This team would be responsible for operation of both Phase 1 and Phase 2 facilities. The permanent relocation of all or part of this workforce and their families to the socioeconomic study area would have a negligible impact on the existing study area population.

Minority and Low-Income Populations

Construction and operation of the Project would not displace any minority or low-income populations. As discussed in Section 4.4.1.1, two of the seven census block groups that coincide with the Project Lease Boundary area were identified as potential minority populations.

During construction, nearby communities, including potential minority or low-income populations, would experience an increase in construction-related activities, including short-term increases in construction-related traffic, noise, and equipment emissions. Short-term increases in traffic would include the daily movement of construction workers to and from the Project site, as well as daily material and equipment deliveries. Transportation-related impacts and mitigation measures designed to reduce potential impacts are discussed in Section 4.3.

Project construction would result in short-term, unavoidable noise impacts within the Project Lease Boundary that could be loud enough at times to temporarily interfere with speech communication outdoors and indoors with windows open. Construction would generally occur during the day from Monday through Saturday and all reasonable efforts would be made to minimize construction noise impacts, including implementation of standard noise reduction measures. Based on the infrequent nature of loud construction activities, the limited hours of construction, and the implementation of noise mitigation measures, the noise analysis presented in Section 4.1.1 concluded that the impact of the temporary increase in construction noise would be less than significant.

The primary sources of construction-related air pollution would be vehicle exhaust emissions and fugitive dust disturbed by construction activities. As discussed in Section 3.2, vehicle emissions are expected to be relatively small and similar to emissions from other equipment commonly used for agriculture, transportation, and construction in the Project vicinity. Given the relatively low magnitude, localized extent, and temporary duration of construction-related emissions, air quality impacts associated with Project construction are not expected to be substantial, as discussed in Section 3.2. Potential impacts to public safety from Project construction, including the risk of fire and explosion and the potential for releases to the environment, are discussed in Section 4.1.2.

Short-term visual impacts would result from construction activities and the presence of equipment and work crews. Impacts would be most noticeable for local residents and travelers adjacent to the Project Lease Boundary. These impacts would be short term and would end once construction is completed (see Section 4.2.3).

Based on these analyses, which are discussed in more detail in their respective sections, Project construction is not expected to result in significant adverse impacts to nearby communities, including minority and low-income populations, and the potential for construction to have disproportionately high and adverse impacts on minority and low-income populations is considered low.

Following construction, nearby communities, including minority and low-income populations, could experience localized increases in traffic and noise and visual impacts. Operation of the Project would result in a small increase in Project-related vehicle traffic that is not expected to add a noticeable increase to existing traffic flows or air emissions (see Sections 4.3 and 3.2). Potential impacts to public safety from Project operation, including the risk of fire and explosion and the potential for releases to the environment, are discussed in Section 4.1.2.

During operation, the Project would meet all established noise limits for the Project, with received sound levels at NSRs expected to be consistent with sound generated at similar wind facilities elsewhere in Washington state (see Section 4.1.1). Long-term visual effects during operation of the Project would result from the visibility of the aboveground components associated with the Project Turbines, solar arrays, substations, BESS, and transmission line. Impacts would be more noticeable to residences with foreground views (less than 0.5 mile) of Project facilities (see Section 4.2.3). These impacts are not expected to disproportionately affect minority or low-income populations relative to other populations with similar views.

4.4.2.2 Economic Conditions

Employment and Income

Section 2.15 presents the estimated average size by month of the Project construction workforce for each phase by task (Tables 2.15-2 to 2.15-4; Figures 2.15-1 to 2.15-3). Workforce estimates are also presented in Section 2.15 by task and workforce type (Tables 2.15-5 to 2.15-7).

The Applicant anticipates that the majority of the on-site construction workforce would be hired locally to the extent workers are available, with an estimated 60 percent (Phase 2b) to 62 percent (Phases 1 and 2a) of the workforce expected to already reside in Benton and Franklin counties. The Applicant proposes to develop the Project under a community workforce or project labor agreement that will be certified by the Washington Department of Labor and Industry (L&I) in accordance with RCW 82.08.962 (see Section 4.4.2.4). This agreement is assumed to include the use of apprentices for 15 percent of construction labor hours, which is reflected in the workforce estimates developed for this document (see Section 2.15).

As part of its commitment to local hiring, the Applicant will require construction contractors to advertise positions locally and employ local workers to the greatest extent possible. On-site workers would include technicians, laborers, foremen, equipment operators, and construction managers. Non-local workers would mainly be required for supervision and to supplement the local construction workforce in cases where some of the more specialized skills required for Project construction are not available in the local labor pool.

The shares of the workforce expected to be hired in Benton and Franklin counties for Phase 1 would be equivalent to approximately 171 FTE jobs.[28] Local employment would peak during

[28] FTE jobs are a commonly used measure of employment. Each FTE job equates to one full-time job for one year or 2,080-hour units of labor. Part-time or temporary jobs constitute a fraction of a job. For example, if an engineer works just 3 months on a solar project, that would be considered one-quarter of an FTE job. FTEs are also sometimes referred to as job-years.

the summer months with approximately 290 local workers estimated to be employed on-site during May and June (Figure 4.4-8).

For Phase 2, the local share of the workforce would range from the equivalent of 136 FTE jobs (Phase 2b) to 152 FTE jobs (Phase 2a). Local employment would peak during the summer months for both Phase 2 alternatives. Under Phase 2a, approximately 267 local workers would be employed on-site during May and June (Figure 4.4-9). For Phase 2b, employment would peak in April, with approximately 247 local workers employed on-site, with a monthly average of 240 local workers estimated for May and June (Figure 4.4-10).

Workers hired locally (i.e., within Benton and Franklin counties) would commute daily between the Project and their normal place of residence. Based on the existing distribution of population in the two counties, the majority of these workers would likely normally reside in the Tri-Cities and surrounding area. This would also be the case with non-local workers temporarily relocating to the area, with the majority of these workers likely seeking temporary accommodation in the Tri-Cities, where most of this type of accommodation is located (see Section 4.4.1.3).

Review of occupational data for the Kennewick-Richland MSA indicates that the area has a large construction workforce pool. Representative occupational employment estimates for the disciplines required to construct the Project are presented for the Kennewick-Richland MSA in Table 4.4-16. In addition to total employment, Table 4.4-16 also provides location quotient information, as well as mean hourly and annual wage data. The location quotients, which are a measure of relative economic specialization, indicate that the local share of employment in the representative occupations identified in Table 4.4-16 exceeds the corresponding national averages in all but one of the identified occupations. Additional construction workforce resources are also available from elsewhere in the state, including the adjacent Yakima and Walla Walla counties, as well as from Morrow and Umatilla counties, Oregon, which are located across the Columbia River from Benton County.

On-site construction jobs would be well-paid positions. The Applicant proposes to develop the Project under a community workforce or project labor agreement, with on-site annual salaries expected to range from $65,000 to $110,000 in 2020 dollars. Hourly wage rates would range from about $31 to $53 per hour, which would be higher than the corresponding representative mean hourly and annual wages identified in Table 4.4-16. The use of a community workforce or project labor agreement is discussed with respect to sales and use tax in Section 4.4.2.4.

Table 4.4-16. Existing Construction Workforce in the Kennewick-Richland MSA by Occupation

SOC Code[1/]	Labor Discipline	Total Employment	Location Quotient[2/]	Mean Hourly Wage[3/]	Mean Annual Wage[3/]
11-9021	Construction Managers	340	1.42	47.27	98,320
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	920	1.83	35.68	74,210
47-2061	Construction Laborers	1,400	1.70	21.03	43,740
47-2073	Operating Engineers and Other Construction Equipment Operators	380	1.15	30.30	63,030
47-2111	Electricians	1,320	2.37	35.22	73,250
47-4011	Construction and Building Inspectors	110	1.25	34.27	71,290
53-3032	Heavy and Tractor-Trailer Truck Drivers	1,340	0.90	21.89	45,540

Notes:
SOC = standard occupational classification
1/ Data are for May 2019, the most current data available.
2/ Location quotients estimated here by the U.S. Bureau of Labor Statistics show an occupation's share of an area's employment relative to the national average. A location quotient above 1.0 indicates that an occupation accounts for a larger share of employment in an area than it does nationally, and a location quotient below 1.0 indicates the area's share of employment in the occupation is lower than the national share.
3/ These wage estimates represent wages and salaries only, and do not include employee bonuses or nonwage costs to the employer, such as health insurance or employer contributions to retirement plans.
Source: U.S. Bureau of Labor Statistics 2020c

Following construction, a team of 16 to 20 personnel would be employed on-site to operate and maintain the Project. On-site personnel would include a facility manager, project site manager, assistant site manager, and a certified crew of technicians. The on-site team would work in coordination with off-site operations staff at a Remote Operation Control Center in accordance with FERC guidelines. This on-site team would be responsible for operation of both Phase 1 and Phase 2 facilities. The Applicant anticipates that approximately 50 percent of the on-site workforce, 8 to 10 workers, would be hired locally. The remaining half would be hired from outside the area, with all or most of these workers and their families expected to relocate to the Project vicinity.

Average annual salaries for on-site management positions are expected to range from approximately $85,000 (assistant site manager) to $115,000 (facility manager), which equates to hourly wages of $41 to $55. Average annual salaries for technicians would range from $52,000 to $62,400 ($20 to $30 per hour).

Detailed occupational data similar to those provided for the construction labor force in Table 4.4-16 are not available for these occupations in the Kennewick-Richland MSA. The preceding salary and wage rates are current estimates. The Applicant anticipates that O&M staff will be paid prevailing wages for these occupations at their time of hire.

Overall Economic Benefits

An economic impact assessment prepared on behalf of the Applicant estimated the total (direct, indirect, and induced) economic impacts expected to accrue from Project construction and operation (Appendix S). Regional economic impacts were assessed for the Kennewick-Richland MSA, which consists of Benton and Franklin counties and corresponds with the socioeconomic study area for this ASC. Economic impacts were assessed for Phase 1 and Phase 2 (Alternatives

A and B) in terms of employment, labor income, and economic output using the IMPLAN economic modeling package and 2019 IMPLAN data for Benton and Franklin counties. Separate analyses were developed for construction and operation of each phase.

Total economic impacts consist of three components: direct, indirect, and induced impacts. These three components may be described as follows:

- The *direct* impact component consists of expenditures made specifically for a proposed facility, such as construction labor and materials. These direct impacts generate economic activity elsewhere in the local economy through the multiplier effect, as initial changes in demand "ripple" through the local economy and generate indirect and induced impacts. For this Project analysis, the direct component is based on labor expenditures only and does not include direct expenditures on materials, which are included as part of the indirect impact analysis.
- *Indirect* impacts are generated by the expenditures on goods and services by suppliers who provide goods and services to the construction project, for example. Indirect effects are often referred to as "supply-chain" impacts because they involve interactions among businesses. In the analysis for this Project, indirect impacts also include the effects of direct expenditures on materials.
- *Induced* impacts are generated by the spending of households associated either directly or indirectly with the proposed facility. Workers employed during construction, for example, will use their income to purchase groceries and other household goods and services. Workers at businesses that supply the facility during construction or operation will do the same. Induced effects are sometimes referred to as "consumption-driven" impacts.

Employment estimates are presented in FTEs or job-years. As noted above, an FTE is the equivalent of one full-time job lasting a single year. Estimated FTE jobs do not directly translate into numbers of workers, who may be employed on the Project for shorter periods. Labor income or earnings represent the sum of employee compensation and proprietary income. Employee compensation estimates are based on fully-burdened rates that include the full cost to the employer. Output represents the total value of goods and services produced as a result of the Project and serves as a broad measure of economic activity.

Construction

The economic impact analysis assessed direct, indirect, and induced impacts for the representative construction phases using labor and cost estimates developed by the Applicant. For wind generation facilities, the largest share of the overall construction cost consists of the purchase and transportation of the equipment (turbines, blades, and towers) to the Project site. Project-related materials and equipment (solar modules, inverters, BESS, electrical components, and mounting) also account for the largest share of the overall construction cost for solar facilities, with these two categories together accounting for more than half of the total estimated cost. None of these expenditures are expected to occur in Benton and Franklin counties.

Other expenditures that are expected to occur in Benton and Franklin counties include balance of plant (wind) and balance of system (solar) expenditures, including local expenditures on concrete, rebar, and other construction materials, as well as expenditures on electrical components and cabling required to prepare the sites. Other expenditures expected to occur in Benton and Franklin counties include those related to engineering, legal services, substation and transmission line construction, and O&M building construction, as well as local expenditures related to the BPA network upgrades required to accommodate the energy that would be generated by the Project. The shares of these expenditures expected to occur in Benton and Franklin counties were estimated by the Applicant.

Installation labor-related expenditures that occur in Benton and Franklin counties would also result in secondary economic impacts elsewhere in the local economy. Installation labor expenditures in this context refer to wage and salary payments to construction workers employed directly on-site. Payments to construction workers who normally reside in the Benton and Franklin counties are assessed as household income, a share of which would be spent locally and are captured in the Impact Analysis for Planning (IMPLAN) model as induced impacts. Workers temporarily relocating to the Project area for the duration of their on-site employment will also spend money locally. Local expenditures by these workers were estimated using per diem information provided by the Applicant and assigned to the appropriate economic sectors in IMPLAN, primarily those related to lodging/housing, food, transportation, and incidentals.

Estimated construction impacts are summarized for both phases for Benton and Franklin Counties in Table 4.4-17. These estimates are one-time impacts for the respective construction periods, which are estimated to be 11 months for Phase 1 and Phase 2a, and 10 months for Phase 2b.

Construction of Phase 1 is expected to result in on-site employment of approximately 171 jobs that would be filled by workers normally resident in Benton and Franklin counties. Depending on the alternative (Phase 2a or 2b), Phase 2 construction would result in an estimated 136 to 152 on-site construction jobs that would be filled by local workers. Construction of Phase 1 would generate an estimated $19.4 million in direct labor income that would be paid to local workers. Phase 2 would result in an estimated $15.7 million to $17.2 million in direct labor income for local workers (see Table 4.4-17).

Construction of the Project would also support employment, income, and output elsewhere in the regional economy. During Phase 1, Project construction is expected to support an estimated 168 indirect jobs and 118 induced jobs in Benton and Franklin counties. Phase 2 construction is estimated to support 199 to 269 indirect jobs and 120 to 135 induced jobs.

Overall, construction of Phase 1 of the Project is estimated to support 458 total (i.e., direct, indirect, and induced) jobs in Benton and Franklin counties and approximately $37.0 million in labor income, with total economic output of approximately $70.6 million. During Phase 2, Project construction is estimated to support approximately 472 to 539 total jobs and approximately $37.6 million to $41.9 million in labor income, with total economic output of approximately $73.0 million to $85.7 million (see Table 4.4-17).

Table 4.4-17. Estimated Construction Impacts for Phase 1 and Phase 2

Type of Impact[1/]	Employment (FTE)[2/]	Labor Income ($ million)[3/]	Economic Output ($ million)[3/]
Phase 1 (350 MW Wind, 300 MW Solar, 150 MW BESS)			
Direct Impacts	171	19.4	19.4
Indirect Impacts	168	11.1	30.7
Induced Impacts	118	6.5	20.5
Total Impacts	**458**	**37.0**	**70.6**
Phase 2a (250 MW Wind, 250 MW Solar, 150 MW BESS)			
Direct Impacts	152	17.2	17.2
Indirect Impacts	199	13.8	35.0
Induced Impacts	120	6.6	20.8
Total Impacts	**472**	**37.6**	**73.0**
Phase 2b (500 MW Wind)			
Direct Impacts	136	15.7	15.7
Indirect Impacts	269	18.8	46.7
Induced Impacts	135	7.4	23.4
Total Impacts	**539**	**41.9**	**85.7**

Notes:
FTE – full-time equivalent
1/ Estimates are for the entire 10- to 11-month construction period. Numbers may not sum due to rounding.
2/ Jobs are FTE for a period of one year (1 FTE = 2,080 hours). Direct jobs include those directly employed on-site during construction. Additional on-site positions that would be filled by workers from outside Benton and Franklin counties are not included in these estimates.
3/ Labor income and economic output are expressed in millions of dollars in Year 2021 dollars.

Operation

Once the construction phase is complete, operations and maintenance of the Project would continue to contribute to the local economy. The Project would provide direct operations-related employment and Project-related operation expenditures will generate economic benefits in the local economy. The Project would require preventive and corrective maintenance of the Turbines, solar array, BESS, electrical collection system, and Project substation, as well as direct operations dispatch to ensure continuing plant and transmission system safety and reliability. Typical local operation-related expenditures include vehicle-related expenditures, such as fuel costs, site maintenance, replacement parts and equipment, and miscellaneous supplies. For the purposes of analysis, O&M employees were divided between the two phases, based on the relative generating capacity of each phase.

Lease payments to landowners would also generate annual benefits to the local economy over the expected 35-year operating life of the Project. These payments represent a net increase in income for the landowner. For wind facilities, each Turbine occupies a relatively small footprint when compared to the site as a whole and landowners can usually continue farming and livestock operations on their property.

Estimated annual operation impacts are summarized for both phases for Benton and Franklin Counties in Table 4.4-18. Project operations would create direct jobs in Benton and Franklin counties. Eleven full-time employees would be employed on-site to operate and maintain the Phase 1 share of the Project, with an additional nine full-time employees employed for Phase 2.

Table 4.4-18. Estimated Annual Operation Impacts for Phase 1 and Phase 2

Type of Impact[1]	Employment (FTE)[2]	Labor Income ($ million)[3]	Economic Output ($ million)[3]
Phase 1 (350 MW Wind, 300 MW Solar, 150 MW BESS)			
Direct Impacts	11	1.0	1.0
Indirect Impacts	12	0.9	3.0
Induced Impacts	9	0.5	1.5
Total Impacts	**32**	**2.4**	**5.5**
Phase 2a (250 MW Wind, 250 MW Solar, 150 MW BESS)			
Direct Impacts	9	0.8	0.8
Indirect Impacts	9	0.7	2.2
Induced Impacts	7	0.4	1.1
Total Impacts	**24**	**1.8**	**4.1**
Phase 2b (500 MW Wind)			
Direct Impacts	9	0.8	0.8
Indirect Impacts	10	0.9	3.2
Induced Impacts	7	0.4	1.3
Total Impacts	**26**	**2.1**	**5.2**

Notes:
FTE – Full-time equivalent
1/ Estimates are annual impacts that would occur each year the Project is in operation. Numbers may not sum due to rounding.
2/ Jobs are FTE for a period of one year (1 FTE = 2,080 hours).
3/ Labor income and economic output are expressed in millions of dollars in Year 2021 dollars.

Project operations would also provide annual economic benefits elsewhere in Benton and Franklin counties. Operation of Phase 1 of the Project is estimated to support approximately 32 total (i.e., direct, indirect, and induced) jobs in Benton and Franklin counties and approximately $2.4 million in labor income, with total economic output of approximately $5.5 million. Operation of Phase 2 is estimated to support 24 to 26 total jobs, an estimated $1.8 million to $2.1 million in labor income, and total economic output of $4.1 million to $5.2 million. These annual impacts are expected to occur each year the Project operates.

4.4.2.3 Housing and Property Values

Housing

Construction of Phase 1 is expected to take place over an 11-month construction period from January through November 2023. During an average month, an estimated 113 workers are expected to seek temporary accommodation in the study area, with this number increasing to 177 workers during peak months (Table 4.4-15, Figure 4.4-8). The estimated demand for temporary accommodation would be very similar during construction of Phase 2. An estimated 101 (Phase 2a) to 108 (Phase 2b) non-local workers expected to seek temporary accommodation in the study area during an average month, with these numbers expected to increase to 164 (Phase 2a) to 165 (Phase 2b) workers during peak months (Table 4.4-15, Figures 4.4-9 and 4.4-10).

Workers employed during both phases are expected to seek a range of temporary accommodations, including rental housing (houses, apartments, mobile homes), hotel/motel rooms, and RV parks/campgrounds, as well as other special living situations such as Airbnb units and spare bedrooms.

The review of temporary housing resources presented in Section 4.4.1.3 indicates that temporary housing resources in the study area include more than 1,600 housing units that are vacant and available for rent, with additional units classified for seasonal, recreational, or occasional use that may also be available (see Table 4.4-12). Temporary housing is also available in the form of hotel and motel rooms. Recent estimates indicate that there are about 4,700 hotel and motel rooms in the Tri-Cities, with more than 140 guestrooms in the city of Prosser. Monthly occupancy rates typically peak in June in the Tri-Cities, with slightly more than three-quarters (77 percent) of rooms normally occupied. This suggests that during peak occupancy more than 1,100 rooms are normally empty and available for rent. In addition, temporary accommodation in the study area includes 12 RV parks and campgrounds, with a total of 1,320 RV spaces.

The preceding review indicates that existing temporary housing resources in the study area that are normally vacant and available for rent substantially exceed the estimated demand from Phase 1 and Phase 2 construction workers. Assuming for the purposes of comparison that all of the workers temporarily relocating during peak construction were to seek hotel and motel accommodation, total demand would be equivalent to about 16 percent of the normally available supply of rooms. Viewed as a share of the supply of housing units available for rent, total construction-related demand would be equivalent to about 11 percent of the estimated supply. As a result, meeting the construction workforce's housing needs is not expected to constrain the housing market for existing residents or lead to changes in housing values, rents, or new housing construction.

This would also be the case during Project operation. As described in Section 2.15.2, a team of 16 to 20 personnel would be employed at the Project to operate and maintain Project components. This team would be responsible for operation of both Phase 1 and Phase 2 facilities. The permanent relocation of all or part of this workforce to the socioeconomic study area would have negligible impacts on the housing market in the study area, with no changes in housing values, rents, or new housing construction likely to occur.

Property Values

The potential for a project to affect surrounding property values is a concern often raised when a new wind or solar facility is proposed. Typical concerns related to the potential impact of wind power facilities on residential property values include scenic vista stigma and nuisance stigma (Hoen et al. 2009). Scenic vista stigma is the concern that a home may be devalued because of the view of a wind energy facility and the potential impact of that view on an otherwise scenic vista. Nuisance stigma refers to the potential impact of other factors, such as sound and shadow flicker on residential property values. A number of studies addressing the potential impact of wind projects on property values have been conducted since the early 2000s in the United States and elsewhere. Recent studies that have addressed these types of potential impacts in rural settings in the United States are summarized below.

- Laposa and Mueller (2010) used hedonic price models to evaluate the announcement effect of a proposed wind farm development on an 11,000-acre ranch in Larimer County on surrounding rural housing prices. The study focused on the announcement effect because the facility had not been built at the time of the study. The facility was initially announced in March 2007, which coincided with the beginning of national and regional housing price declines. Using data from 2,910 single-family home transactions before and after the wind farm announcement and adjusting for the economic recession, the study concluded that the wind farm announcement had "insignificant and minimal impacts to surrounding home values and sales," noting that the wind farm was one of multiple variables affecting home sales prices (Laposa and Mueller 2010, p. 383).

- Hoen et al. (2011) used data from 7,459 sales of single-family homes within 10 miles of 24 existing wind facilities. Using four different hedonic models and a number of robustness tests this study assessed the potential impacts of Scenic Vista Stigma, Area Stigma, and Nuisance Stigma on residential property values.[29] The study concluded that "no statistical evidence of the presence of these stigmas was found for the 24 wind facilities and 7,459 residential real estate transactions included in the sample" (Hoen et al. 2011, p. 308). The authors continue "if impacts do exist, they are either too small or too infrequent to result in any statistically observable impact among this sample." While no statistical evidence of the three identified stigma was found, the study did identify some evidence that post-announcement reductions in price occurred prior to actual construction and then faded once construction was complete.
- Magnusson and Gittell (2012) used a statistical comparison (primarily analysis of variance, or ANOVA) to assess the impact of a 12-Turbine wind farm on property values. Built in 2008, the wind farm is located in the town of Lempster in Sullivan County, New Hampshire. Using data from 2,065 transactions from 2005 through 2011, this study primarily focused on the visual impact of the Turbines, comparing sales information for homes in the vicinity with a clear view, obscure view, or no view. While acknowledging that isolated cases of property value impacts may exist, the authors concluded that this study found "no evidence that the Project has had a consistent, statistically significant impact on property values within the Lempster region" (Magnusson and Gittell 2012, p. 28).
- Hoen et al. (2013) used a pooled data set collected from more than 50,000 home sales from within 10 miles of 67 wind facilities in nine states, and included a substantially larger sample size of homes within 1 mile of facilities than Hoen et al. (2011). Two pairs of hedonic models and a set of robustness tests were used to examine average effects near the turbines across the pooled sample, while controlling for the effects of other potentially competing influences. The models in each pair consist of one-mile models – all homes within 1 mile of an existing Turbine (1,198 sales) – and half-mile models – homes within a half mile (331 sales), where effects are thought more likely to appear but fewer data are typically available. Impacts were assessed for three time periods: pre-announcement, post-announcement/pre-construction, and post-construction, with home sales between 3 and 10 miles from a Turbine used as the reference category. The study found "no statistical evidence that home prices near wind turbines were affected in either the post-announcement/preconstruction or post-construction periods" (Hoen et al. 2013, p. 38). In other words, the authors stated, there was no statistical evidence that homes in

[29] Hoen et al. (2011, p. 280) define "area stigma" as: "(a) perception that the general area surrounding a wind energy facility will appear more developed, which may adversely affect home values in the local community regardless of whether any individual home has a view of the wind turbines."

either period that sold near Turbines (within 0.5 mile or 1 mile) did so for less than similar homes between 3 and 10 miles away that sold during the same period. The authors, therefore, concluded that if effects do exist, the average impacts are relatively small (within the margin of error of the models) and/or affect only a small subset of homes.

None of the above studies found statistical evidence that wind projects resulted in significant impacts to residential property values. However, as in any property-related transactions, the factors affecting price are complex and will vary depending on the details of each transaction. Isolated cases of property value impacts may exist even though overall impacts are not statistically significant. Other factors typically affecting residential property values include location, property size and condition, proximity to public services and infrastructure, market trends, and purchaser preferences. A property's value is ultimately determined by the amount a purchaser is willing to pay.

The potential impact of utility-scale solar facilities on residential property values has received less attention in the professional and academic literature. Writing in 2018, Al-Hamoodah et al. noted that to the best of their knowledge, there were no existing peer-reviewed research that quantified the property value impacts associated with utility-scale solar facilities. Gaur and Lang (2020) also note that there is little existing information on the impact of large-scale solar installations on residential property values. These two recent papers provide some insight into this relationship as summarized below.

- Al-Hamoodah et al. (2018) explored the impact of utility-scale solar installations on home values using a geospatial analysis and a survey of property assessors. The geospatial analysis reviewed the locations of 956 unique solar sites that had been completed by 2016 and found that very few homes tend to be located close to utility-scale solar installations. Results from the authors' survey of 37 assessors found that the majority of respondents believed that proximity to a solar installation had no impact or a positive impact on residential property values. Project features associated with positive impacts included locations on land that previously had an unappealing use and the presence of trees or other visual barriers around the facility. Negative impacts tended to be associated with facilities located on land that previously had an appealing use.

- Gaur and Lang (2020) observed over 400,000 housing transactions within 3 miles of 208 solar institutions in Massachusetts and Rhode Island, with approximately 71,000 transactions (treated group) occurring within 1 mile and 348,000 transactions between 1 and 3 miles (control group). Using a difference-in-differences, repeat sales identification strategy, the authors concluded that their preferred model suggests that property values in the treatment group (i.e., within 1 mile) declined by 1.7 percent on average compared to those in the control group (within 1 to 3 miles) following construction of a solar installation, all else equal. However, the authors found that this average value obscured important variations in impacts, with "substantially larger negative effects (identified) for properties within 0.1 miles and properties surrounding solar sites built on farm and forest lands in non-rural areas" (Gaur and Lang 2020, p. 18).

The two solar-related studies discussed above provide limited insight to the potential impact of utility-scale solar facilities on residential property values. Together, the studies suggest that negative impacts are more likely in cases where valued land uses, such as farm and forest lands in non-rural areas, are converted to solar use. However, as discussed above with respect to wind facilities, many factors affect residential property values and impacts vary depending on the details of each transaction, with the value of a property ultimately determined by how much a purchaser is willing to pay.

4.4.2.4 Fiscal Conditions

Sales and Use Tax

The State of Washington provides a sales and use tax exemption to wind and solar facilities with a generating capacity over 1 kW. The exemption may be claimed in the form of a sales or use tax remittance of 50 percent, 75 percent, or 100 percent of the sales or use tax paid on qualified machinery and equipment, and installment labor and services (RCW 82.08.962). The amount of the remittance is determined by criteria established by the Washington L&I and applied for through the Department of Revenue. Operators pay sales or use tax on the machinery, equipment and installation services and then claim a remittance from the Department of Revenue. The program applies to projects commenced after January 1, 2020 and completed by December 31, 2029.

The following analysis assumes that the Project would meet the criteria for a 100 percent remittance and Project-related qualified machinery, equipment, and installment labor and services would be exempt from sales and use tax. These criteria include certification by the Washington L&I that the Project is developed under a community workforce agreement or project labor agreement.[30] Procurements assumed to be subject to state and local sales tax are limited to those items not used directly to generate electricity in accordance with RCW 82.08.962. These include local expenditures on concrete, rebar, and other construction materials, as well as expenditures related to O&M building construction. Sales and use tax revenues from construction would be one-time revenues generated during the construction phase only.

Based on these assumptions, Phase 1 construction would generate one-time revenues of approximately $2.9 million in state and $1.0 million in local (i.e., Benton and Franklin counties) sales tax. For Phase 2, estimated local procurements not directly related to electric generation are estimated to generate one-time revenues of $2.2 million to $3.7 million in state sales tax, and $0.7 million to $1.2 million in local (Benton and Franklin counties) sales tax. Phase 2a represents the lower of the range of both estimates.

Local expenditures by construction workers would also generate local sales tax revenues for Benton and Franklin counties, as would indirect and induced economic activity that would be supported elsewhere in the local economy. These impacts are not estimated but would provide

[30] The Applicant intends to engage relevant organized labor when the Project is closer to construction. Any formal arrangement cannot be made until a Balance of Plant contractor has been selected to build the project. Various Balance of Plant contractors have pre-existing relationships with organized labor, so there is not a one-size-fits-all approach that could be committed to today. However, given the tax benefit, the Applicant is anticipating utilizing organized labor and as a result the economic study reflects this. The Applicant reserves the right to not utilize organized labor.

additional benefit to Benton and Franklin counties that would be in addition to the direct procurement-related impacts identified above.

Purchases of goods and services made during Project operations and expenditures by local employees would generate economic activity that would be subject to state and local sales and use tax. These impacts are not estimated but would provide small and beneficial increases in state and local sales tax revenues each year that the Project operates. These types of impacts would occur during operation of both Project phases.

Property Tax

The Project would be subject to property taxes at the county level. Property taxes would generate revenues on an annual basis for the life of the Project. Estimated Project-related property tax revenues are assumed to be "add-ons" to existing levy amounts and would represent increases to current levels.

Based on the estimated installed cost of the Phase 1 facility and the average mill rate for Benton County in 2020 (11.4 mills), Phase 1 would generate an estimated $10.4 million in property taxes in its first year of operation. This estimated total is equivalent to approximately 4.1 percent of the total property tax revenues generated in Benton County in 2020. Using the same assumptions, Phase 2 would generate an estimated $9.0 million in property taxes in its first year of operation. This estimated total, which is the same for both Phase 2 alternatives (Phase 2a and 2b), is equivalent to approximately 3.5 percent of the total property tax revenues generated in Benton County in 2020.

Based on the representative distribution shown in Figure 4.4-7, more than half of the property tax revenues generated by both phases would be paid to schools, with 32 percent of the total directly paid to local school districts. Fire districts account for the next largest share of revenues (14 percent), followed by roads (12 percent) (see Figure 4.4-7). Viewed in dollar terms, Phase 1 during its first year of operation would generate approximately $6.1 million in school-related tax revenues, with $3.4 million of this total paid directly to local school districts. The corresponding totals for Phase 2 would be $5.3 million, with $2.9 million of this total paid directly to local school districts.

Total property tax revenues were also estimated for the assumed 35-year operating life of the Project based on the installed cost, average mill rate, and the valuation indicators provided for solar and wind electrical generating facilities in the *2021 Personal and Industrial Property Valuation Guidelines* (Washington Department of Revenue 2020c). Over the 35-year operating life of the Project, Phase 1 would generate an estimated $140.6 million in total property tax revenues. Phase 2a would generate an estimated $122.3 million in total property tax revenues while Phase 2b would generate an estimated total of $121.7 million

Construction of the solar components of Phase 1 (up to 300 MW) and Phase 2a (up to 250 MW) could also result in land currently classified as farm and agricultural land for property tax purposes being removed from that classification. Properties that are removed and have been in the program for less than 10 years are subject to an additional tax, plus interest and a penalty. Additional tax, interest, and penalty revenues generated as a result of the Project would represent additional property tax revenues paid to Benton County over current levels in the first year of operation and in addition to the $10.4 million (Phase 1) and $9.0 million (Phase 2a) estimated above.

4.4.2.5 Public Services and Utilities

Fire Protection

Fire protection services in the vicinity of the Project Lease Boundary area are described in Section 4.4.1.5. The temporary addition of non-local workers and family members to the socioeconomic study area during Phase 1 and Phase 2 construction is not expected to affect the provision of fire protection services. This would also be the case during operation, with the small potential increase in population unlikely to noticeably affect existing service levels.

The risk of fire or explosion during construction and operation of the Project is discussed in Section 4.1.2. A Draft Emergency Response Plan, which addresses fire and other emergency procedures, is included as Appendix P. The Applicant will coordinate with the Benton County Fire Marshal and other appropriate agencies to finalize the Emergency Response Plan, which will be submitted to EFSEC for approval prior to construction. Other emergency plans that will be developed by the Applicant and submitted to EFSEC for approval prior to construction are identified in Section 4.1.2.5. Typical fire mitigation measures that will likely be included in a Final Emergency Response Plan are identified in Section 4.1.2.1.3. The Applicant will coordinate with local emergency services personnel and provide training to emergency personnel where necessary.

Law Enforcement

Temporary increases in population during Phase 1 and Phase 2 construction would be small, with average monthly and peak monthly increases equivalent to less than 0.1 percent of existing population in the study area (Table 4.4-15). These increases would be temporary and not expected to affect the ability of law enforcement agencies to serve existing constituencies in the study area.

The Applicant will consult with WSDOT and Benton County to develop a construction-phase Traffic Management Plan. This plan will be designed to reduce and manage construction-related transportation impacts. Typical measures used to control transportation impacts are discussed in Section 4.3.3. Section 4.3.3 also identifies potential measures that could be implemented to minimize construction-related impacts to local traffic and ensure access for emergency vehicles.

Operation of the Project is expected to provide direct employment for 16 to 20 workers. The permanent relocation of a portion of this workforce to the study area from elsewhere is not expected to adversely affect existing law enforcement capabilities.

Health Care

Project construction would result in small temporary increases in population, as non-local workers relocate to the study area for the duration of their employment. Many of these non-local workers would likely continue to access their own primary care physicians for preventative care, especially those workers who will be employed for shorter periods. Non-local workers may, however, seek short-term care in the study area. These temporary increases in local population are not expected to affect the ability of health care providers to serve existing populations in the counties within the study area. This would also be the case during Project operations. The potential operations-related increase in population would be very small and unlikely to noticeably affect existing service levels.

The Applicant and its contractors will comply with all applicable federal, state, and local health and safety standards. These standards are summarized in Section 4.1.2.3.

Schools

Few, if any, of the non-local workers employed during Project construction are expected to be accompanied by family members or permanently relocate to the analysis area. However, for the purposes of analysis, the Applicant has assumed that 5 percent of the non-local workforce will be accompanied by their families. The average U.S. family household consisted of 3.15 people per family in 2020, with 0.86 persons under 18 (U.S. Census Bureau 2020b). Applying this average family household size to the peak and average non-local workforce totals results in an estimated 5 to 8 household members below the age of 18 temporarily relocating to the analysis area during each construction phase. Assuming all are school age, these very small potential increases in persons below the age of 18 are expected to have a negligible effect on school personnel, programs, and facilities in local school districts.

This would also be the case during Project operations. The potential operations-related increase in the school-age population would be very small and unlikely to noticeably affect existing service levels.

Parks and Other Recreational Facilities

Parks and other recreational facilities are discussed in Section 4.2.4 of this ASC.

Public Utilities

Project construction and the temporary in-migration of non-local workers are not expected to affect the provision or quality of local electricity or natural gas service. Construction of each Project phase would require a small amount of electricity that will be well within the capacity of local suppliers (i.e., Benton REA) to provide. Construction activities would not require natural gas. Non-local workers temporarily relocating to the study area would seek existing temporary housing resources or RV and campground facilities, which are already accounted for in baseline forecasts of demand for electricity and natural gas.

This would also be the case during Project operations. The potential operations-related increase in population would be very small and unlikely to noticeably affect existing service levels. Electricity would be used by the Project for lighting, heating, and other domestic purposes at the O&M facilities, which would be served by the local electric utility (i.e., Benton REA). In addition, while Project Turbines are normally self-supplied, though they do consume parasitic load during calm wind periods for control systems, heating/cooling, lighting, and hydraulics. If all loads are operating at the same time, peak load power demand could reach 12 MW for the full 150 larger Turbine scenario, as discussed in Section 3.6. O&M-related demands for electricity would be well within the capacity of local suppliers to provide.

Water and Stormwater

Water and stormwater are discussed in Section 3.3 of this ASC.

Solid Waste and Wastewater

Project construction typically generates a variety of non-hazardous construction wastes, including wood, concrete, plastics, metal, glass, insulation, and paper products. Concrete that accumulates in the concrete washout area along with any other material not suitable to be left in place would be allowed to harden and then removed from the site. Additional wastes could include erosion control materials, such as straw bales and silt fencing, and electrical equipment. All waste generated during construction would be stored within designated temporary waste collection areas until it is disposed of properly. Waste materials that can be recycled would be stored and transported separately. All waste would be stored separately within appropriate secondary containment in accordance with all applicable rules and regulations. Any concrete waste would be hauled and disposed of at a permitted site. Waste that cannot be recycled would be transported offsite to one of the nearby landfills with available capacity.

The temporary increase in population during construction could generate additional quantities of wastewater from the use of temporary accommodations. However, the use of these accommodations is already accounted for in baseline forecasts of demand for wastewater treatment. Temporary potable sanitary facilities provided for construction crews would be adequate to support expected on-site personnel and would be removed at completion of construction activities. Wastewater generated in association with these facilities would be periodically removed by a licensed hauler and disposed of at an existing municipal sewage treatment facility or otherwise disposed of in accordance with applicable state and local laws and regulations.

During construction, water would be used to mix concrete for structural foundations and to suppress fugitive dust disturbed during construction activities. In addition, non-toxic soil binding agents may be employed to help with soil stabilization during construction. This water usage is discussed further in Section 2.6.1.1.

Operation and maintenance of the Project is expected to generate approximately one or two dumpsters of waste per week at the O&M facilities. All waste would be stored within designated temporary waste collection areas until it is collected for transport to an approved landfill. Materials that can be recycled would be stored and transported separately.

Project operations would require water for the limited needs of the O&M facilities and for solar panel washing (see Sections 2.6 and 2.9). There would be no industrial wastewater stream from the Project. Wastewater from the O&M facilities would be discharged to an on-site septic system. This anticipated use is expected to be less than 5,000 gallons per day for kitchen and bathroom use. Solar modules would be washed once per year during operations, with an estimated 2,025,000 gallons of water per year expected to be required for solar panel washing. Water used for solar panel washing is allowed to infiltrate into the ground and would not require treatment.

Local Government Revenues and Additional Service Expenditures

The preceding sections identify the potential impacts of Project construction and operation on public facilities and services that could result in additional local government service expenditures. With mitigation measures in place, as discussed above, impacts to the provision of public facilities and services are expected to be low. Potential impacts during construction could include a small increase in traffic-related costs due to the need for permitting and control measures related to oversize or overweight loads carrying equipment such as tower sections, nacelle, and blades. Construction vehicles, including those with oversize and overweight loads, would share existing roads with the general public and other users.

Benton County could also experience small increases in the costs of providing other public services such as fire suppression, law enforcement, governmental services, parks and recreation, and hospital costs due to construction activities and related temporary increases in population. These potential additional costs would be temporary and negligible within the context of the total costs for services in Benton County. This would also be the case during Project operation, with service cost increases related to Project operation expected to be minimal.

The benefits of the Project would outweigh the potential increase in local government service expenditures during Project construction and operation. Project benefits during construction would include additional temporary jobs, income, local spending, and tax revenues. Following construction, the benefits of the Project would include permanent jobs, income, local spending, and tax revenues, including substantial increases in property tax revenues that would begin following completion of the Project and continue for the life of the project. Property tax revenues would decrease over time as the value of the Project depreciates but would continue to make a substantial contribution to Benton County over the life of the Project (see Section 4.4.2.4).

4.4.3 Mitigation Measures

Socioeconomic impacts are expected to be beneficial in the form of additional jobs, increased economic activity, and increased tax revenues. Temporary increases in population during construction due to non-local workers relocating to the area are not expected to have significant impacts on local housing resources or the provision of public services. Mitigation measures designed to reduce impacts to the socioeconomic environment during construction include the following:

- Active dust suppression will be implemented during construction.
- Engine idling time will be limited and equipment will be shut down when not in use to limit air emissions.
- Noise mitigation measures will include maintaining all tools and equipment in good operating order, using properly muffled construction equipment, and scheduling construction activity during normal working hours on weekdays to the extent possible.
- Prior to commencement of construction, the Applicant will consult with WSDOT and Benton County on the development of a construction-phase Traffic Management Plan that will be designed to reduce and manage construction-related transportation impacts.
- The Applicant will coordinate with the Benton County Fire Marshal and other appropriate agencies to finalize an Emergency Response Plan, as well as coordinate with local emergency services personnel and provide training where necessary.

Related discussions of impacts and mitigation are provided in Section 3.2, Section 4.1, and Section 4.3.

5.0 APPLICATIONS FOR PERMITS AND AUTHORIZATIONS

5.1 AIR EMISSIONS PERMITS AND AUTHORIZATIONS

WAC 463-60-536:

(1) The application for site certification shall include a completed prevention of significant deterioration permit (PSD) application and a notice of construction application pursuant to the requirements of chapter 463-78 WAC.

(2) The application shall include requests for authorization for any emissions otherwise regulated by local air agencies as identified in WAC 463-60-297 Pertinent federal, state and local requirements.

Pursuant to WAC 463-60-536, a Prevention of Significant Deterioration (PSD) Permit application is typically required for energy facilities requiring site certification to be submitted with the Washington EFSEC ASC. However, as a clean, renewable wind and solar energy facility, the Project would not produce point source air emissions during operations and would only produce negligible dust and vehicular air emissions during construction, and therefore a PSD Permit is not required for the Project. Therefore, in accordance with WAC 463-60-115, which recognizes that not all application sections apply equally to all proposed energy facilities, the Applicant finds the information required by WAC 463-60-536(1) does not apply to the proposed Project, and a PSD Permit application is not provided as part of this ASC. Potential air emissions are addressed in Section 3.2 of this ASC and the SEPA Environmental Checklist (Appendix C).

A Notice of Construction (NOC) application must be submitted for new and stationary sources of air emissions, pursuant to WAC 173-400-110. However, WAC 173-400-110(4) exempts certain emission units and activities from new source review and states that exempt activities do not require filing a NOC application. The Project qualifies for exemption because it meets criteria for WAC 173-400-110(4)(ii) for concrete application and installation, and WAC 173-400-110(4)(x) for construction activities that do not result in new or modified stationary sources or portable stationary sources. The temporary use of diesel-powered generators (i.e., nonroad engines), if needed during Turbine commissioning, is also exempt from new source review per WAC 173-400-035(2)(a). As described in Section 3.2 (Air), the Project would not be a permanent source of air emissions, is therefore exempt from new source review, and does not require filing a NOC application pursuant to WAC 173-400-110(4).

Table 2.23-1 in Section 2 lists pertinent federal, state, and local permits, requirements, and authorizations pursuant to WAC 463-60-297 that would apply to the Project if it were not under EFSEC jurisdiction. Project construction may result in the need for portable concrete batch plant operations within the Project Lease Boundary. While portable concrete batch plant operations do not require a NOC application under WAC 173-400, the BCAA imposes emissions requirements as a local air authority. The BCAA would require a NOC permit to allow portable concrete batch plant operations for one year within the County and would require filing of a Notice of Intent (NOI) to Operate for each proposed relocation. In the event a portable concrete batch plant is needed during Project construction, the Applicant or the Applicant's contractor would obtain a

NOC permit from the BCAA, which implements state clean air regulations in the County instead of Ecology. The Applicant and contractor would comply with substantive requirements of the BCAA NOC permit. Similarly, while a NOC is not needed, if backfeed power is not available at the time of Turbine commissioning and temporary diesel-powered generators are needed, a nonroad engine NOI would be required per WAC 173-400-035. In the event such generators are needed, the Applicant or the Applicant's contractor would submit the NOI demonstrating emissions are in compliance with the NAAQS to BCAA for review and approval.

5.2 WASTEWATER/STORMWATER DISCHARGE PERMIT APPLICATIONS

WAC 463-60-537: *The application for site certification shall include:*

(1) A completed National Pollutant Discharge Elimination System (NPDES) permit application, for any proposed discharge to surface waters of the state of Washington, pursuant to the requirements of WAC 463-76-031; or

(2) For any proposed discharge to publicly owned treatment works (POTW) and/or groundwater of the state of Washington, a state waste discharge application;

(3) A notice of intent to be covered under any applicable state-wide general permit for stormwater discharge.

As described in Section 2.23.2.6, EFSEC has jurisdiction to oversee the Project's compliance with NPDES requirements pursuant to WAC 463-76. An NPDES Permit application is required for stormwater discharges to surface waters of the state that would result from construction activities disturbing one or more acres of land. Because the Project would clear, grade, or excavate more than one acre of land, NPDES permit compliance is required through EFSEC. The Applicant's NOI for the NPDES Permit application is included as Appendix T with this ASC. The Project will not discharge to publicly owned treatment works or groundwater; therefore, a state waste discharge application is not required.

5.3 OTHER PERMIT APPLICATIONS

WAC 463-60-540: *The application for site certification shall include:*

(1) A completed joint aquatic resource permit application (JARPA) for any proposed activities that would require the issuance of a water quality certification under section 401 of the Federal Water Pollution Control Act, or would otherwise require the issuance of a hydraulic permit approval;

(2) A notice of intent to be covered under a statewide general permit for sand and gravel issued by ecology; and

(3) A notice of intent to be covered under other permits that are otherwise issued by state agencies.

As described in Section 3.5 – Wetlands, the Project design and proposed construction activities would avoid all impacts to wetlands associated buffer areas, as there are no wetlands in the micrositing corridor or solar siting area. In addition, as described in Section 3.3, Project features, such as collection lines, roads, crane paths, and transmission lines, would have temporary impacts on 19 of the 31 mapped ephemeral stream channels and both of the two mapped intermittent streams; and permanent impacts on one ephemeral stream within the Ordinary High

Water Level (OHWL). These ephemeral streams are not considered waters of the United States and thus are not subject to water quality certification under Section 401 of the Federal Water Pollution Control Act; however, they are considered waters of the State (see Section 2.23.2.2). The one ephemeral stream with permanent impacts would likely require a culvert for road placement; if this impact as well as temporary impacts in other ephemeral and intermittent stream channels cannot be avoided and work in the OHWL will occur, a Hydraulic Project Approval may be required and would be developed upon final design of the Project.

Ecology's Sand and Gravel General Permit regulates discharges of process water, stormwater, and water from mine dewatering associated with sand and gravel operations such as concrete batch plant and hot mix asphalt operations (ORIA 2020). A Sand and Gravel General Permit would be required if rock crushing and concrete batch plant operations are conducted within the Project Lease Boundary. In the event a portable concrete batch plant is needed during Project construction, an Ecology Sand and Gravel General Permit would be obtained by the Applicant or Applicant's contractor in coordination with EFSEC prior to use of the batch plant.

Section 2.23 and Table 2.23-1 also identify pertinent state permits, requirements, and authorizations pursuant to WAC 463-60-297 that would apply to the Project if it were not under EFSEC jurisdiction. If an archeological site cannot be avoided, the Project would require a DAHP Archaeological Excavation Permit (WAC 25-48-060(1)) and Monitoring permit (WAC 25-48-060(2)). Standard cultural resource management and mitigation measures would be implemented to avoid significant impacts to historic and cultural resources, as discussed in Section 4.2.5 – Historic and Cultural Resources. For Project use of the DNR parcels, the Applicant would obtain DNR authorization for right-of-way approvals on State-owned land within the Project Lease Boundary. The Applicant or the Applicant's licensed contractor would obtain the necessary WSDOT Access Permit, Utility Permit, and Oversize and Overweight Permit to work in a state road right-of-way and use state roads to transport oversized equipment. The Applicant would also require authorization to cross I-82 with electrical lines, either along an existing bridge or buried underground. The Applicant would complete a WSDOT Utility Accommodation Application to authorize this use. In addition, the Applicant or the Applicant's licensed contractor would obtain an Electrical Construction Permit from the Washington Department of Labor and Industries prior to construction. The Applicant will complete required inspections associated with the Electrical Construction Permit prior to initiating Project operations.