



Draft Application for Site Certification

Cascade Renewable Transmission

The Dalles to Portland

September 2025

Prepared for

Cascade Renewable Transmission, LLC

Submitted to

Washington Energy Facility Site Evaluation
Council

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Acronyms and Abbreviations

3D	three-dimensional
°C	degrees Celsius
°F	degrees Fahrenheit
μT	microtesla
AAQS	ambient air quality standards
AC	alternating current
ADCP	acoustic Doppler current profiler
ADT	average daily traffic
AINW	Archaeological Investigations Northwest
ANSI	American National Standards Institute
APE	Area of Potential Effect
Applicant	Cascade Renewable Transmission, LLC (CRT)
ARPA	Archaeological Resources Protection Act
ASC	Application for Site Certification
ASME	American Society of Mechanical Engineers
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMP	best management practice
BOEM	Bureau of Ocean Energy Management
BP	Before Present
BPA	Bonneville Power Administration
BTB	back-to-back
CAA	Clean Air Act
CCS	cryptocrystalline silicate
CEP-IRP	Clean Energy Plan and Integrated Resource Plan
CETA	Clean Energy Transformation Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CIP	critical infrastructure protection
CO	carbon monoxide
CO ₂	carbon dioxide
CRD	Columbia River Datum
CRGC	Columbia River Gorge Commission
CRGNSA	Columbia River Gorge National Scenic Area
CRITFC	Columbia River Inter-Tribal Fish Commission
CRT	Cascade Renewable Transmission, LLC
CTD	conductivity, temperature, and depth
CWA	Clean Water Act
DAHP	Washington State Department of Archaeology and Historic Preservation
dB	decibel
dBA	A-weighted decibel
DC	direct current
DEM	digital elevation model
DGPS	differential global positioning system
DPS	distinct population segment

E&C	engineering and construction
Ecology	Washington State Department of Ecology
EDNA	Environmental Designation for Noise Abatement
EFH	Essential Fish Habitat
EPC	engineering, procurement, and construction
ESA	Endangered Species Act
ESCP	Erosion and Sediment Control Plan
ESU	evolutionarily significant units
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMO	foraging, migration, and overwintering
FWHCA	Fish and Wildlife Habitat Conservation Areas
GHG	greenhouse gas
GIS	geographic information system
GMA	General Management Area
GPS	global positioning system
HAB	horizontal auger boring
HDD	horizontal directional drilling
HDPE	high-density polyethylene
HGM	hydrogeomorphic
HPA	High Probability Area
HPRCST	Historic Property of Religious and Cultural Significance to Indian Tribes
HRA	Heritage Research Associates, Inc.
HVAC	high-voltage alternating current
HVDC	high-voltage direct current
Hz	hertz
I-5	Interstate 5
I-84	Interstate 84
I-205	Interstate 205
IBC	International Building Code
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IOG	Interconnector Owner's Group
IPaC	Information for Planning and Consultation
JARPA	Joint Aquatic Resource Permit Application
JPA	Joint Permit Application
kV	Kilovolt
KVA	key view area
LIPA	Long Island Power Authority
LRR	Land Resource Region
mg/L	milligrams per liter
MISO	Midcontinent Independent System Operator
MSA	Metropolitan Statistical Area
mT	millitesla
MW	Megawatts
MW _a	megawatt-average
NAAQS	National Ambient Air Quality Standards



NED	National Elevation Dataset
NEET	NextEra Energy Transmission, LLC
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NFPA	National Fire Protection Association
NHD	National Hydrography Dataset
NHPA	National Historic Preservation Act
NIOSH	National Institute for Occupational Safety and Health
NJDEP	New Jersey Department of Environmental Protection
NLCD	National Land Cover Database
NMFS	National Marine Fisheries Service
NO ₂	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOC	Notice of Construction
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSA	National Scenic Area
nT	nanotesla
NTU	nephelometric turbidity unit
NWI	National Wetland Inventory
NWR	National Wildlife Refuge
NYISO	New York Independent System Operator
O ₃	ozone
OAR	Oregon Administrative Rule
OARRA	Oregon Archaeological Records Remote Access
OBS	optical backscatter
ODEQ	Oregon Department of Environmental Quality
ODFW	Oregon Department of Fish and Wildlife
OHWM	ordinary high water mark
OHSD	Oregon Historic Sites Database
OPUC	Oregon Public Utility Commission
ORBIC	Oregon Biodiversity Information Center
OR EFSC	Oregon Energy Facility Siting Council
PBF	physical and biological features
PGE	Portland General Electric
PHS	Priority Habitats and Species
PJM	PJM Interconnection
PM	particulate matter
Prysmian	Prysmian Cables and Systems
PSD	Prevention of Significant Deterioration
PSET	Portland Sediment Evaluation Team
PSE	Puget Sound Energy

RCW	Revised Code of Washington
RM	River Mile
rms	root mean square
ROD	Record of Decision
ROW	right-of-way
RTO	regional transmission organization
SAP	sampling and analysis plan
SCC	Skamania County Code
SEPA	State Environmental Protection Act
SHPO	State Historic Preservation Office
SMC	Stevenson Municipal Code
SMP	Shoreline Master Program
SO ₂	sulfur dioxide
SOI	Secretary of the Interior
SPCC Plan	Spill Prevention, Control, and Countermeasures Plan
SR 14	Washington State Route 14
SWCAA	Southwest Clean Air Agency
SWPPP	Stormwater Pollution Prevention Plan
TBC	Trans Bay Cable
TCP	Traditional Cultural Properties
TMDL	total maximum daily load
TSS	total suspended solids
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VSC	voltage source conversion
WAC	Washington Administrative Code
WA EFSEC	Washington Energy Facility Site Evaluation Council
WATOR	Washington Tool for Online Rating
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington Department of Natural Resources
WISAARD	Washington Information System for Architectural and Archaeological Records Data
WNHP	Washington Natural Heritage Program
WRCC	Western Regional Climate Center
WSDOT	Washington State Department of Transportation
WUTC	Washington Utilities and Transportation Commission
XLPE	cross-linked polyethylene



1 General Information

Cascade Renewable Transmission, LLC (Applicant) proposes to construct and operate a high-voltage direct current (HVDC) (400-kilovolt [kV]), 1,100-megawatt (MW) electric transmission facility. The facility would interconnect the existing Bonneville Power Administration (BPA) Big Eddy 500-kV alternating current (AC) substation, located near The Dalles, Wasco County, Oregon (Eastern Interconnection), and the existing Portland General Electric (PGE) Harborton 230-kV AC substation, located in Portland, Multnomah County, Oregon (Western Interconnection). The Cascade Renewable Transmission project (Project) would be constructed primarily in the bed of the Columbia River in both Oregon and Washington, with approximately 40.2 route miles located in Washington and approximately 58 route miles and two converter stations located in Oregon. The Project includes exiting and re-entering the Columbia River in Washington to place approximately 7.6 miles of overland buried transmission cable in Washington, primarily in road ROW, to avoid the Bonneville Locks and Dam.

1.1 Organization (WAC 463-60-012)

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 (WA EFSEC) Application for Site Certification (ASC) for the Project is organized according to the order outlined in the regulations. This ASC is presented in 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)

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

The Applicant is Cascade Renewable Transmission, LLC (CRT), an entity formed in the state of New York on May 27, 2020, to develop the Project. CRT is wholly owned by CRT Holdco, LLC. In

accordance with CRT Holdco's LLC Agreement, CRT's affiliates will provide support and resources in support of CRT and these supporting affiliates are comprised of subsidiaries of PowerBridge, LLC (PowerBridge); Sun2o Partners, LLC (Sun2o); and NextEra Energy Transmission, LLC (NEET).

Name and mailing address of Applicant:

Christopher Hocker, Senior Vice President
Cascade Renewable Transmission, LLC
501 Kings Highway East, Suite 300
Fairfield, CT 06825
Chocker@PowerBridge.us
(203) 416-5590

PowerBridge of Fairfield, Connecticut, is a leading developer, owner, and operator of independent transmission projects, with a unique focus on underwater HVDC applications.

NEET is the leading competitive transmission company in North America, which owns, develops, finances, constructs, operates, and maintains transmission assets across the continent.

Sun2o is primarily a solar developer based in New York City that recognized the need for additional east-west transmission in the Pacific Northwest region and came to PowerBridge for a solution.

Applicant contact persons with mailing addresses, email addresses, and telephone numbers:

Christopher Hocker
Senior Vice President
PowerBridge, LLC
501 Kings Highway East, Suite 300
Fairfield, CT 06825
203-416-5590
Chocker@PowerBridge.us

Contact persons other than Applicant with mailing addresses, email addresses, and telephone numbers:

Suzy Cavanagh
HDR Engineering, Inc.
412 E. Parkcenter Boulevard, Suite 100
Boise, ID, 83706
(208) 387-7141
suzy.cavanagh@hdrinc.com

Timothy L. McMahan
Stoel Rives LLP
760 SW Ninth Avenue, Suite 3000
Portland, OR 97205
(503) 294-9517
Tim.McMahan@stoel.com

1.3 Council Recognizes Pressing Need for Energy Facilities (WAC 463-60-021)

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), the Applicant is not required to take action to meet this regulatory requirement; however, the Project would transmit renewable energy to help the State of Washington meet its goal of making its energy supply carbon neutral. In 2019, the Washington legislature enacted the Clean Energy Transformation Act (CETA), Senate Bill 5116,



which requires Washington's electric utilities to eliminate carbon emissions from their energy resources by 2045.¹

1.4 Description of Agent (WAC 463-60-025)

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

Applicant contact person with mailing address, email address, and telephone number:

Christopher Hocker
Senior Vice President
PowerBridge, LLC
501 Kings Highway East, Suite 300
Fairfield, CT 06825
203-416-5590
Chocker@PowerBridge.us

Contact persons other than Applicant with mailing addresses, email addresses, and telephone numbers:

Suzy Cavanagh
HDR Engineering, Inc.
412 E. Parkcenter Boulevard, Suite 100
Boise, ID, 83706
(208) 387-7141
suzy.cavanagh@hdrinc.com

Timothy L. McMahan
Stoel Rives LLP
760 SW Ninth Avenue, Suite 3000
Portland, OR 97205
(503) 294-9517
Tim.McMahan@stoel.com

1.5 Application Review Costs and Funding (WAC 463-60-035)

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 \$50,000 shall accompany this WA 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.”

The Applicant will provide an initial \$50,000 deposit with submittal of the full ASC for the proposed Project. It is the Applicant's understanding that any unexpended portions shall be returned at the completion of ASC processing. Per WAC 463-58-020(2), it is also understood that if the Applicant files amendments or supplements to the ASC, or should WA EFSEC find additional study is required, the Applicant may be advised of additional processing costs.

¹ CETA sets the following mandatory targets: 2025 – All electric utilities must eliminate coal-fired generation serving Washington state customers; 2030 – All electric utilities must be greenhouse gas neutral—for example, remaining carbon emissions are offset by renewable energy, energy efficiency, carbon reduction project investments, or payments funding low-income assistance; and 2045 – All electric utilities must generate 100% of their power from renewable or zero-carbon resources.

1.6 Where Filed (WAC 463-60-045)

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

This ASC is filed with the WA EFSEC at the following address:

Washington Energy Facility Site Evaluation Council
621 Woodland Square Loop SE
PO Box 43172
Olympia, WA 98504-3172

1.7 Form and Number of Copies (WAC 463-60-055)

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 will submit two hard copies and a digital copy in PDF format of this ASC to WA EFSEC and digital copies to Skamania County and the City of Stevenson. The Applicant will also provide one copy of the Skamania County Comprehensive Plan and one copy of the and Stevenson Comprehensive Plan and zoning ordinances to WA EFSEC.

1.8 Full Disclosure by Applicant (WAC 463-60-065)

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 provides in this ASC and supporting 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)

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 and/or its engineering, procurement, and construction (EPC) firm, 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 not be limited to, commercial general liability insurance, automobile insurance, property insurance, pollution liability insurance, contractor/builder's risk insurance, worker's compensation, and Washington stop gap liability insurance.

The Applicant will comply with the requirements of WAC 463-72, Site Restoration and Preservation. A Preliminary Decommissioning Plan is submitted with this application for WA EFSEC review (see Appendix A), and an initial Site Restoration Plan would be submitted to the WA EFSEC at least 90 days prior to the beginning of construction. The Project is anticipated to have a useful life of 50 years. The Project may be renovated or upgraded during or after that period to extend its lifespan. The Site Restoration Plan would describe measures that would be taken at the conclusion of the operating life of the Project. 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 costs of removing the Project components and provide for bonding to meet restoration costs.

In Washington, decommissioning the Project would likely include removing the underground HVDC cable and fiber optic cable and leaving the concrete and conduits in place, as removing them would cause unnecessary disturbance to the ground surface. Materials would be recycled to the extent possible. Reclamation procedures would be based on site-specific requirements and techniques commonly employed at the time the area is to be reclaimed.

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 would be in the form of a bond or letter of credit or other financial instrument of security deemed satisfactory to, and enforceable by WA EFSEC. The Applicant's financial assurance proposal is outlined below.

1.9.1 Factors Supporting the Applicant's Financial Assurance Proposal

Due to the demand for transmission services, the cost of building new transmission lines, and the intrinsic value of transmission rights-of-way (ROWs), the Project will be designed and would be constructed and operated with the objective to be in service indefinitely. Industry-wide, high-voltage transmission line retirements are extremely rare, and occurring after a line is re-routed. In the unlikely event the Project would need to be retired, the Applicant has the financial capability to complete the decommissioning. Nevertheless, the Applicant acknowledges that there is a minor risk that the Project could be abandoned or retired. This could occur during the construction phase or after the Project is in service up through its 50 years of expected life. Accordingly, the Applicant proposes that it obtain and maintain a bond or letter of credit during the construction phase of the Project. Once commercial operation has been achieved, the risk of retirement prior to the end of the Project's 50-year useful life is significantly reduced. Therefore, the amount of the bond or letter of credit during the period of operation would be set at a level that reasonably corresponds to the level of risk that the Project would be abandoned or retired.

The Applicant's proposed approach to satisfying the Financial Assurances Standard is informed by the following factors.

Based on history, major transmission facilities are seldom, if ever, retired during their useful life.

- High-voltage transmission lines, including HVDC systems and associated ROWs, are designed, constructed, and operated to be in service for a useful life of not less than 50 years. While equipment and cables may need to be replaced over time, once a high-voltage transmission line is placed in service, it seldom, if ever, is simply retired prior to the end of its useful life. In many instances, equipment and cables are replaced to maintain or upgrade the high-voltage transmission in perpetuity.
- In this case, the purpose of the Project is to support a reliable regional electric delivery network interconnecting increasing consumer load on the western side of the Cascade Mountains to generating resources to be constructed on the eastern side of the Cascade Mountains. While the Applicant has considered and described the measures and costs that would be necessary for decommissioning (see above), the Applicant's objective and expectations for the Project are that it will be in service throughout its 50-year life and potentially in perpetuity, as is the case for nearly all major transmission facilities. As necessary, the Applicant will repair or replace Project facilities to ensure that the line continues to provide safe and reliable electric service to regional customers.
- The Project has received its path rating from the Western Electric Coordinating Council. Prior to beginning construction, the Applicant will have entered into an acceptable revenue model, which may include (i) needed approvals from the Oregon Public Utility Commission (OPUC) and/or Washington Utilities and Transportation Commission (WUTC); (ii) a long-term contractual arrangement with BPA, PGE, PSE, or other load serving entities; (iii) a combination of both (i) and (ii); or (iv) Project approval for rate recovery in the Northern Grid transmission planning process, with the costs of the project being recovered in the rates of the Northern Grid Enrolled Parties who are determined to benefit from the Project.



- Even in the highly unlikely event that the Applicant were to cease to exist, the Project facilities would remain a valuable resource necessary to serve the region; therefore, it would remain in service under the ownership of another entity.
- The Applicant anticipates a contractual and financial structure that would achieve and maintain an investment-grade credit rating. The Applicant will provide an essential service; thus, in the unlikely event of a bankruptcy-related event involving the Applicant, either the Applicant would recapitalize and continue operating or a third party would assume control of the Project.
- The Applicant is expected to recover its costs under one of two different revenue models: (1) in accordance with the Northern Grid transmission planning process, which would approve the Project and then allocate the costs to be recovered in the regulated rates of the Northern Grid Enrolled Parties whose rate payers are determined to benefit from the Project, all in accordance with Northern Grid's filed Federal Energy Regulatory Commission Tariff, or (2) under long-term bi-lateral contracts with investment grade entities like BPA or PGE. Under a rate regulated framework resulting from the Northern Grid transmission planning process, the utilities commissions (e.g., WUTC and OPUC) would be expected to set rates that include the reasonable costs of providing service to utility customers, plus a return on the property used to provide service. The rates set by the commissions include the costs associated with retiring facilities that are taken out of service. Under a long-term contractual framework, the costs of retiring the facilities will be included in the long-term annual transmission tariffs.
- The Applicant will provide a letter from a bank providing assurance that, if required, the Applicant will be able to secure a letter of credit in an amount sufficient to retire the Project and restore the site to a useful and non-hazardous condition.

The costs of maintaining a bond or letter of credit for the costs of decommissioning the Project would be substantial and would be borne by the regional rate payers who will benefit from the Project, many of whom will be Washington citizens.

- The Applicant estimates that the costs to decommission the Project would be \$58,967,237 including those facilities in Washington and Oregon. It is assumed that conduits in the upland areas and the marine horizontal directional drilling (HDD) conduits will remain in place, but the cables will be removed. The Applicant estimates that the cost to maintain a bond or letter of credit sufficient to guarantee that amount would be approximately \$1 million annually, based on current interest rates and market conditions. Any cost incurred by the Applicant to maintain such a bond would be built into the rates regional customers pay to light and heat their homes and businesses and would be in addition to the decommissioning costs themselves that are normally built into utility rates.

Notwithstanding the above factors, the Applicant acknowledges the following:

- There is a very small risk the Project could be terminated after construction commences but prior to its placement in service. The Applicant estimates that construction will take place over a 3-year period. During that 3-year period, the Applicant anticipates that it will construct the cable portion of the Project in geographic segments. In addition, the completed work on the converter station sites will also increase as the construction timeline progresses.

Decommissioning costs for the Project will increase over time as additional segments of the cable are constructed and work on the converter stations is completed.

- While high-voltage transmission lines have potentially indefinite service lives, after the Project is in service for 50 years, and increasingly thereafter, it becomes slightly more probable that an unforeseen disruptive event could occur that would result in the decommissioning of the Project.

1.9.2 Proposal for Financial Assurance

The Applicant proposes obtaining and maintaining a bond or letter of credit, first during the construction phase of the Project and then, at start of operation, similar assurance for an assumed 50-year life of the Project. Given the Project straddles the states of Oregon and Washington, the Applicant proposes to provide financial assurance corresponding to the decommissioning costs estimated within each state. The Applicant estimates the cost for decommissioning the portion of the Project located in Oregon is \$48,606,198, corresponding to 58.6 percent of the cable in the river and 61.3 percent of the cable on land being located within Oregon, along with both converter stations. A similar financial assurance in the amount of \$10,361,040 will be posted as part of the WA EFSEC permit, corresponding to the decommissioning costs for cable located within Washington. The amount of the financial assurance would be based on certain factors. Specifically, the Applicant would provide the following financial assurances:

1. During the construction phase, the Applicant will obtain from one or more financial institutions, a bond or letter of credit to remain in effect until the Project is placed in service. The amount of the bond or letter of credit will be increased on a quarterly basis to correspond with the progress of the Project at the beginning of each quarter, assuming a 3-year construction period comprising 12 quarterly periods. The amount of the bond or letter of credit at the beginning of any such quarterly period will be equal to the product of (a) the Applicant's estimate of the decommissioning costs for the Project as set forth in Appendix A, and (b) a fraction, the numerator of which is the number of quarters that have passed since commencement of construction and the denominator of which shall be 12.0, provided that in all cases, the number resulting from the calculation shall not exceed 1.0. For example, for the first quarter of the schedule, the bond or letter of credit will be maintained in an amount equal to one-twelfth ($1/12$) of the estimated decommissioning costs. At the end of the second year of construction—i.e., eight quarters—the amount of the bond or letter of credit will be equal to eight-twelfths ($8/12$) or 67 percent of the estimated decommissioning costs.
2. Once the Project is placed in service, the Applicant's obligation to maintain a bond or letter of credit in the full amount will be revised to reflect requirements under paragraph numbers 3 and 4 below.
3. At the commencement of commercial operations, the Applicant will begin maintaining a bond or letter of credit in an amount that will increase on an annual basis over the 50 years useful life of the Project. At the start of commercial operation, the amount of the bond or letter of credit will be set at one-fiftieth ($1/50$) of the total estimated decommissioning costs. Each year, through the 50th year of service, the bond or letter of credit will be increased by one-fiftieth ($1/50$) of the estimated decommissioning costs. For instance, in year 25, the bond or letter of credit will be maintained in an amount equal to twenty-five fiftieths ($25/50$) or 50 percent of the estimated decommissioning costs. Once the bond or letter of credit is in an



amount equal to 100 percent of decommissioning costs, it will remain at that level for the life of the Project.

4. On the fifth anniversary of the in-service date, and on each subsequent fifth anniversary thereafter, the Applicant will report to WA EFSEC on the following subjects: (a) the physical condition of the Project; (b) any evolving transmission or electrical technologies that could impact the continued viability of the Project; (c) the Project's performance in the context of the larger northwest power grid; and (d) the Applicant's financial condition, including the Applicant's then-current credit rating. Based on the information provided in such reports, or any other information received by the WA EFSEC, WA EFSEC will consider whether the Applicant should be required to post a bond or letter of credit—other than the financial assurances set forth in paragraph 3 above—and may make any appropriate order to enforce its determination. This shall include the ability of WA EFSEC to extend the date by which the Applicant would be required to have posted a bond in the full amount of the estimated decommissioning costs for the financial assurances set forth in paragraph 3.
5. In the unlikely event that the Project would require removal from service, the Applicant will first prepare a retirement plan for WA EFSEC approval, as required by WAC 463-60-075. The Applicant's plan will include information regarding the availability of adequate funds for completion of retirement activities, which, if the Project is subject to OPUC-approved rate recovery, may include a specific decommissioning tariff to be filed with the OPUC to recover the costs of removal of facilities and restoration of the Project site to a useful, non-hazardous condition.

The proposed framework is consistent with, and provides financial assurances in addition to, the Financial Assurance Standard. Moreover, by adopting the proposal above, WA EFSEC can minimize burdening regional rate paying customers with unnecessary costs while still protecting Washington residents from the very minor risks that the Project might be retired or that the Applicant might lack the financial stability to pay those costs when required.

Based on the above information, WA EFSEC can reasonably find as follows:

1. During construction, it is reasonable for the Applicant to maintain a bond or letter of credit to cover the retirement costs as they increase commensurate to that portion of the Project on which construction is completed; and
2. After construction and during its expected useful life, it is reasonable for EFSC to require a bond or letter of credit that increases to the full costs to decommission the line over the first 50 years of operation.

1.9.3 Evidence of Reasonable Likelihood of Obtaining Security

The Applicant will submit a letter from a bank, as evidence that the Applicant has the financial capability to obtain a letter of credit in the amount of the retirement and decommissioning costs estimated for the Project. The letter will state the bank's willingness to furnish or arrange a letter of credit to cover the full costs of retiring the Project and returning the site to a useful and non-hazardous condition.

1.9.3.1 The Applicant's Proposed Conditions to Site Certification

The Applicant proposes the following site certificate conditions to ensure compliance with the Financial Assurance Standard.

During Construction

Retirement and Financial Assurance Condition 1: During the Construction Phase, the bond or letter of credit, which may be issued by one or more financial institutions, shall be submitted in the following form and amount:

- a. For purposes of this condition, the "Construction Phase" is defined as the period commencing at the time "notice to proceed" is issued under the engineering and procurement contract(s) for the construction of the two converter stations and the HVDC cable system interconnecting the converter stations and ending when the facility is placed in service.
- b. The amount of the bond or letter of credit will be increased on a quarterly basis to correspond with the progress of the construction of the facility at the beginning of each quarter. The amount of the bond or letter of credit at the beginning of any such quarterly period will be equal to the product of (i) the certificate holder's estimate of the total decommissioning costs for the portion of the facility located in Washington, which is \$10,361,040; and (ii) a fraction, the numerator of which is the number of quarters that have passed since commencement of construction, and the denominator of which will be the number of quarters the certificate holder estimates to complete the Construction Phase; provided that in all cases the number resulting from the calculation shall not exceed 1.0.
- c. To begin with, the certificate holder and the department shall assume a 3-year Construction Phase period comprising twelve quarterly periods. Therefore, for the first quarter of the Construction Phase, the bond or letter of credit will be maintained in an amount equal to one-twelfth (1/12) of the total estimated decommissioning costs. At the end of the first year of construction—i.e., four quarters—the amount of the bond or letter of credit will be equal to four-twelfths (4/12) or 33 percent of the total estimated decommissioning costs.
- d. The amount of the bond or letter of credit may be amended from time to time by agreement of the certificate holder and the department to account for adjustments in the construction schedule. Such amendments may be made without amendment to the site certificate. The Council authorizes the department to agree to amendments of the amount; however, the Council retains the authority to approve, reject, or modify any amendment of the plan agreed to by the department.

During Operation

Retirement and Financial Assurance Condition 2: During operation, the bond or letter of credit, which may be issued by one or more financial institutions, shall be submitted in the following form and amount:

- a. On the date that the facility is placed in service (the "In-Service Date"), the amount of the bond or letter of credit will be reduced, subject to sub-paragraphs (b) and (c) of this condition.
- b. On the In-Service Date, the certificate holder shall obtain and begin maintaining a bond or letter of credit in an amount that will increase on an annual basis for the first 50 years of operation.



In year 1, the amount of the bond or letter of credit will be set at one-fiftieth (1/50) of the total estimated decommissioning costs. Each year, through the 50th year of service, the bond or letter of credit will be increased by one-fiftieth (1/50) of the estimated decommissioning costs. For instance, in year 25, the bond or letter of credit will be maintained in an amount equal to twenty-five fiftieths (25/50) or 50 percent of the estimated decommissioning costs. Once the bond or letter of credit is in an amount equal to 100 percent of decommissioning costs, it will remain at that level for the life of the facility.

- c. On the fifth anniversary of the In-Service Date, and on each subsequent quinquennial thereafter, the certificate holder will report to the Council on the following subjects: (i) the physical condition of the facility; (ii) any evolving transmission or electrical technologies that could impact the continued viability of the facility; (iii) the facility's performance in the context of the larger power grid; and (iv) the certificate holder's general financial condition, including the certificate holder's then-current credit rating. Based on the information provided in such reports, or any other information received by the WA EFSEC, WA EFSEC will consider whether the certificate holder should be required to post a bond or letter of credit—other than the financial assurances set forth in sub-paragraph (b) of this condition—and may make any appropriate order to enforce its determination. This shall include the ability of WA EFSEC to extend the date by which the certificate holder would be required to have posted a bond in the full amount of the estimated decommissioning costs for the financial assurances set forth in sub-paragraph (b) of this condition.

1.10 Mitigation Measures (WAC 463-60-085)

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.

1.10.1.1 Earth

- The Project will comply with the National Pollutant Discharge Elimination System (NPDES) through pursuance of Construction Stormwater General Permit from the Washington Department of Ecology (Ecology).



- 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 Applicant will take to prevent the discharge of any unpermitted pollution.
- The Applicant's construction contractor will prepare a draft Spill Prevention Control and Countermeasure (SPCC) Plan, which would be implemented during construction and describe the preventative measures and practices to be used during construction to reduce the likelihood of an accidental release of a hazardous or regulated liquid.
- 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 implemented, 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.
 - Stabilized Construction Entrance/Exit: A stabilized construction entrance/exit would be installed at landing site locations where construction vehicles would access areas from paved roads. The stabilized construction entrance/exits would be inspected and maintained for the duration of construction.
 - Preserve Existing Vegetation: To the extent practicable, existing vegetation would be preserved. Where vegetation clearing is necessary, root systems would be conserved, if possible.
 - Silt Fencing: Silt fencing would be installed throughout the Project on the contour downgradient of excavations, HDD staging areas, and within roadside ditches that could potentially discharge stormwater.
 - Straw Wattles: Straw wattles would be used to decrease the velocity of sheet flow stormwater to prevent erosion. Wattles would be used along the downgradient edge of existing roads and within their ditches when adjacent to slopes or sensitive areas.
 - Mulching: Mulch would be used to immediately stabilize areas of soil disturbance, and during reseeding efforts.
 - Stabilization Matting: Jute matting, straw matting, or turf reinforcement matting would be used in conjunction with mulching to stabilize steep slopes that were exposed during trenching outside existing roadways.
 - Soil Binders and Tackifiers: Soil binders and tackifiers would be used on exposed slopes to stabilize them until vegetation is established.
 - Concrete Washout Area and HDD Drill Cuttings Management: Concrete truck chutes would be washed down to prevent concrete from hardening within the chutes. In these cases, the concrete wastewater would be washed out into a dedicated concrete washout area. Concrete solids and washout water would be contained within a confined area and hauled away to an appropriate location. Using dedicated concrete washout areas is a common BMP for construction. During HDD drilling to transition the cables from land to water and under sensitive areas, drill cuttings and HDD drilling mud solids would be contained within a confined area and shipped to an appropriate waste site.
 - Stockpile Management: To facilitate installation of transmission line via trenching, small excavations would be created. Soil from these excavations would be temporarily

stockpiled and used as backfill once the cable is laid. Silt fencing would be installed around the stockpile material as a perimeter control, and mulch or plastic sheeting would be used to cover the stockpiled material if the soil requires stockpiling for more than 1 day. Soils would be stockpiled and reused in order to prevent mixing of productive top soils with deeper subsoils.

- Revegetation: After construction is complete, any disturbed area outside the roadway would be revegetated with an approved seed mix as approved by the property owner. When required, the seed would be applied in conjunction with mulch and/or stabilization matting to protect the seeds as the grass establishes. Revegetation would take place as soon as site conditions and weather allow following construction.
- Pollutant Management: The SPCC Plan would identify source control measures for use during construction to reduce the potential of chemical pollution to surface water or groundwater during construction.
- Construction Timing: To the extent practicable, construction activities would be scheduled to occur in the dry season, when soils are less susceptible to compaction. Similarly, soil disturbance should be postponed when soils are excessively wet such as following a precipitation event.

1.10.1.2 Air

- Using construction and operations vehicles and equipment that comply with applicable state and federal emissions standards.
- Properly maintaining vehicles and equipment used during construction to minimize exhaust emissions.
- Implementing operational measures such as limiting engine idling time and shutting down equipment when not in use.
- Watering or other fugitive dust-abatement measures will be used as needed to control fugitive dust during construction.
- Covering construction materials that could be a source of fugitive dust when stored.
- Limiting traffic speeds on unpaved roads to 25 miles per hour to minimize generation of fugitive dust.
- Covering truck beds when transporting dirt or soil.
- Carpooling among construction workers will be encouraged to minimize construction related traffic and associated emissions.
- Implementing erosion-control measures to limit deposition of silt to roadways, to minimize a vector for fugitive dust.
- Replanting disturbed areas will be conducted during and after construction to reduce wind-blown dust.

1.10.1.3 Water

- Implementing the ESCP detailing specific BMPs to contain water runoff from the Project, prevent erosion, contain sediment, and control drainage.

- Implementing an SPCC Plan for pre-construction, construction, operation, and post-construction to prevent discharge of oil into navigable waters.
- Implementing a plan for inadvertent loss of HDD drilling fluids.
- Siting the cable in paved areas (e.g., Ash Lake Road, State Route 14 [SR 14]) and using HDD to minimize wetland impacts.
- Using HDD to transition from land to water segments, avoiding disturbance to riparian upland areas.
- Using HDD under the Oregon Slough, the Columbia Slough, and the Willamette River (Oregon).
- Monitoring sediment and water quality during construction. Adjusting installation methods, as needed, to meet standards.
- Installing the cable during the prescribed in-water work windows.
- Undertaking a sediment characterization to inform sediment transport and disposal approach.

1.10.1.4 Habitat, Vegetation, Fish, and Wildlife

Fish

- In the overland portion of the route, installing the cable using HDD methods underground below the streambed and riparian vegetation of streams that cross the Project corridor along Ash Lake Road and throughout the terrestrial portion of the entire Project.
- Positioning HDD entry and exit pits in existing disturbed areas outside of riparian corridors.
- In-river, routing the cable to avoid nearshore and shallow water habitats important to fish and invertebrates by being within or adjacent to the navigation channel.
- Implementing the ESCP detailing specific BMPs for erosion control, sedimentation retention, water quality/quantity, and stormwater treatment during Project construction and operation.
 - Coordinating the day-to-day installation schedule with other maritime activities and the United States Coast Guard. Planned installation and construction sequencing is intended to maintain the safe movement of commercial and recreation traffic along the cable route and to minimize the disturbance and impact due to Federal Navigation Channel maintenance.
 - Locating the surface water intake for the hydroplow near the water surface at the barge or cable laying vessel and will be screened per National Marine Fisheries Service (NMFS) salmonid screening criteria.
 - Using a vibratory hammer to drive sheetpiles to minimize noise levels.
 - Conducting pre-dredging and sheetpile installation and removal within the proposed in-water work window.
 - Inspecting equipment daily for leaks and other problems that could result in the discharge of petroleum-based products or other material into waters of the Columbia River.

- Dredging and material disposal will comply with Washington and Oregon State water quality standards (173-201A WAC and Oregon Administrative Rule (OAR) 340 Division 41). The Applicant has prepared a Water Quality Monitoring Plan for the proposed Project, which will be implemented during pre-installation dredging and cable installation activities in accordance with the Clean Water Act (CWA) Section 401 Water Quality Certification to be obtained for the project.
- Conducting pre-installation dredging using a clamshell dredge—impacts are highly localized and clamshell dredging is not documented to have notable entrainment, unlike hydraulic or suction dredging.
- Increasing cycle time (slowing the velocity through the water column).
- Pausing the dredge bucket near the bottom while descending and near the water line while ascending.
- Eliminating multiple bites of the dredge bucket at a given location.
- Using bottom-dump scows—accept and transport sediments dredged from the pre-installation dredging area. Bottom scows will contain water and sediment and avoid overflow during disposal.
- Using global positioning system (GPS) navigation—ensures accurate GPS positioning to identify the correct footprint for dredging and disposal.
- Using spuds to secure the barge/dredge location—passively lowered into the substrate and do not require active driving (e.g., vibratory pile driving) to set into the substrate.

Special Status Wildlife

- Trenching and installing the buried cable along SR 14 in Washington will occur within 0.25-mile of potential nesting and foraging habitat for northern spotted owl, and this work would be restricted to occur outside of the nesting season (March 1 to September 30) to avoid impacts to northern spotted owls.
- Limiting land-disturbing activities to the minimum disturbance footprint required for HDD sites and trenching.
- Developing an HDD Inadvertent Return Plan (i.e., frac-out) to provide contingency measures for containment and cleanup in the event of frac-out.
- Installing barriers to prevent sediment from leaving the site and entering downstream waterways via runoff (e.g., silt fences, straw bale barriers, and sediment ponds or basins) prior to grading.
- For landward construction, locating project staging and material storage areas a minimum of 150 feet from surface waters, in currently developed areas such as parking lots or managed fields. No oil, fuels, or chemicals will be discharged to surface waters or onto land where there is a potential for re-entry into surface waters.
- Preventing petroleum products, fresh cement, lime, uncured concrete, chemicals, or other toxic or deleterious materials from entering surface waters.

- Preventing water used during the placement of concrete for washdown or related operations from entering any streams or the Columbia River. Any process water/contact water will be routed to a contained area for treatment and will be disposed of at an authorized upland location.
- Containing and treating process water generated on site from construction, demolition or washing activities to meet applicable water quality standards before entering or reentering surface waters.
- Stabilizing construction entrances to minimize sediment tracking from active work areas.
- Requiring construction vehicles and equipment to use a wheel wash prior to entering public streets.
- Developing, implementing, and maintaining a SWPPP to minimize erosion of sediments due to rainfall runoff at construction sites, and reduce, eliminate, and prevent the pollution of stormwater. Contractor will prepare SWPPP.

1.10.1.5 Environmental Health

Noise

- Establishing and enforcing access road speed limits and construction site speed limits during the construction period.
- Using electric battery powered equipment instead of pneumatic or internal combustion powered equipment, where feasible.
- Locating material stockpiles and mobile equipment staging, parking, and maintenance areas as far as practicable from noise sensitive receptors.
- Using noise-producing signals, including horns, whistles, alarms, and bells for safety warning purposes only.
- Equipping noise-producing construction equipment and vehicles using internal combustion engines with mufflers; air-inlet silencers, where appropriate; and any other shrouds, shields, or other noise-reducing features as per original factory specification; and maintain equipment in good operating condition. Mobile or fixed “package” equipment (e.g., arcwelders, air compressors) would be equipped with shrouds and noise control features that are readily available for that type of equipment.
- Logging construction noise complaints within 48 hours of issuance. The construction supervisor would have the responsibility and authority to receive and resolve noise complaints. A clear appeal process to the Applicant would be established prior to the start of construction for resolving noise problems that cannot be resolved by the construction supervisor in a reasonable period of time.

Safety

Risk of Fire or Explosion

- Coordinating during construction with local emergency personnel.



- Monitoring construction equipment where activities may present safety issues.
- Implementing a Draft Emergency Response Plan, which addresses fire and other emergency procedures.
- Equipping all construction vehicles with fire extinguishers.
- Keeping vehicles on roads and off dry grassland, when feasible, during the dry months of the year, unless such activities are required for emergency purposes, in which case fire precautions will be observed.

Potential for Releases to the Environment

- Implementing an SPCC Plan for construction for hazardous material storage, spill prevention, and waste handling BMPs.

1.10.1.6 Land and Shoreline Use

- Complying with mitigation measures specified by applicable code or conditions of approval .
- Implementing specific required design features or BMPs to avoid or further reduce temporary impacts, to be developed during design and permitting prior to construction.
- Avoiding near-shoreline installation of cable by routing the installation near mid-river.

Recreation

- Implementing site-specific BMPs to minimize potential impacts to noise, traffic, and the visual surroundings during construction and operation, as described in the respective resource sections of this application to minimize impacts to recreational users.

Historic and Cultural Resources

- Sited the cable to minimize work in historic shorelines (i.e., areas inundated by the dams), that may have a higher potential for cultural resources.
- Developing a project-specific monitoring and inadvertent discovery plan, which will be implemented during construction. Archaeological and tribal monitoring will be performed during project construction to avoid and/or minimize impacts to cultural resources.

1.10.1.7 Transportation

- In-water vessel traffic would be coordinated through the U.S. Coast Guard (USCG) local notices to mariners.
- Continue consultation and coordination with Washington State Department of Transportation (WSDOT) and Skamania County to determine if segments of any roadway or bridge are restricted for travel and obtain any permits required.
- Developing a construction Traffic Management Plan to meet state and local requirements to reduce and manage construction related transportation impacts.
- Implementing BMPs to minimize hazards, road closures, disruption of emergency services, and disruption of traffic flow.

- Use signage denoting a construction entrance and warning slowing and turning traffic.
- Coordinate the timing and locations of road closures or oversize load movements in advance with emergency services such as fire, paramedics, and essential services such as mail delivery and school buses.
- Maintain emergency vehicle access to private property.
- Minimize movements of normal heavy trucks (dump trucks, concrete trucks, standard size tractor-trailers or flatbeds, etc.; essential deliveries only) and prohibit movements of oversize trucks, to the extent practicable, during peak traffic times.
- Post signs on city, county, and state maintained roads, where appropriate, to alert motorists of construction and warn them of slow, merging, or oversized traffic.
- Maintain at least one travel lane at all times so that roadways will not be closed to traffic due to construction vehicles entering or exiting public roads.

1.10.1.8 Socioeconomic Impact

- Consulting with WSDOT and Skamania County prior to construction to develop a construction Traffic Management Plan designed to meet state and local requirements to reduce and manage construction related transportation impacts.
- Consulting with Stevenson Fire Department, and Skamania County fire districts, Skamania County Sheriff's Office, and other law enforcement agencies, as needed, prior to construction, to develop and finalize an Emergency Response Plan, and to coordinate with local emergency services personnel.
- Following site-specific construction BMPs to minimize potential impacts from noise and air quality, as described in the respective resource sections of this application.

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 4.5.2 provides information regarding minority or low-income populations in the Project area, while the following summarizes the information provided there. The on-land portion of the proposed alignment in Washington State crosses two census block groups in Skamania County: Block Group 3, Census Tract 9502; and Block Group 1, Census Tract 9503 (Washington Project Alignment Block Groups) which overlay with the city of Stevenson and North Bonneville. The majority of the population in the two census block groups are White, ranging from 78 percent to 80 percent of the total. Persons of Hispanic or Latino origin is the largest minority group in block group 3, census tract 9502, at 8 percent, while people who identified as Some Other Race is the single largest minority group in block group 1, census tract 9503 at 12 percent. The minority population of the two block groups is 20.9 percent of the combined block group total population.

Potential impacts to minority or low-income populations are discussed in Section 4.5.2. No residential units exist in or near the land where the on-land portion of the proposed alignment would be located, therefore the construction and operation of the Project would not displace any minority or

low-income 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
- short-term, unavoidable noise impacts
- short-term increases in emissions from vehicle exhaust and fugitive dust disturbed by construction activities
- Short-term visual impacts would result from construction activities and the presence of equipment and work crews

During operation, the HVDC cables will not generate traffic, noise, or equipment emissions and thus will have no impact on minority or low-income populations

1.11 Sources of Information (WAC 463-60-095)

WAC 463-60-095: 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 list lists the information and data sources used in preparation of the ASC.

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1.12 Consultation (WAC 463-60-101)

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 tribes, as described in the Pre-Application Request submitted to WA EFSEC in December 2023 and summarized here, and the Oregon Energy Facility Siting Council (OR EFSC) process.

1.12.1 Public Engagement

The Applicant has participated in a series of public informational meetings as part of the WA EFSEC Pre-Application process. The meetings were held in Skamania, Klickitat, and Clark counties. (In addition, as part of the OR EFSC process, a series of public information meetings were held in Oregon as part of the OR EFSC Notice of Intent (NOI) process. Those meetings were held in North

Portland and The Dalles, Oregon.) Project factsheets in both English and Spanish were prepared, Project displays were prepared, and information was prepared and shared on WA EFSEC's, OR EFSC's, and the Applicant's websites about the Project and the processes. Public notices for these meetings were mailed per the agencies protocols and media releases were prepared by the agencies.

The Applicant started stakeholder outreach in 2020 and maintains a contact list for interested stakeholders, stakeholder groups, and tribal organizations, including but not limited to elected officials and agency representatives for states, cities and counties in the Project area, public and municipal utilities, labor and trade, non-governmental, environmental, higher education, and energy policy organizations.

The Applicant maintains a Project website at <https://www.cascaderenewable.com/> that was launched on November 1, 2020. The Project website includes detailed information on the Project and a contact link to reach out to ask questions or receive additional information directly from the Applicant. The Applicant has routinely received and responded to inquiries from interested parties, including federal agency representatives, municipal governments, local citizens, media, non-government and environmental organizations, Native American tribes and tribal organizations, and transmission industry and local commercial vendors.

The Applicant plans to continue engaging in stakeholder outreach throughout the permitting process.

1.12.2 Consultation with Indian Tribes and Applicable Agencies

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

Table 1-1. Initial Consultation Summary and Timeline

Date	Initial Outreach Activity
Federal Agencies	
March 2020	Preapplicant introduced the Project to Melody White, Team Lead, Regulatory Branch, U.S. Army Corps of Engineers (USACE) – Portland District.
October 2021	Preapplicant introduced the Project during a virtual meeting with USACE staff representing offices of Real Estate, Navigation, Office of Counsel, Program Management, Permitting, and Archaeology.
December 2021	Preapplicant reached out the USACE 408 Program Lead to initiate discussion of 408 requirements and process.
February 2022	Preapplicant met with the USACE 408 Program and Cultural Resources staff to discuss approach to National Environmental Policy Act and Cultural Resources.
March 2022	Preapplicant met with the USACE Regulatory and Cultural Resource staff to continue discussion related to National Environmental Policy Act and Cultural Resources.
March 2022	Preapplicant met with USACE members of the Portland Sediment Evaluation Team to discuss sediment quality and considerations related to dredge and discharge of dredge material associated with the project.
May 2022	Preapplicant met with USACE staff to review the approach to modeling sediment transport in the Columbia River.
August 2022	Preapplicant corresponded with USACE Regulatory PM to request USACE point of contact for Section 106 Consultation related actions.
January 2023	Preapplicant met with USACE 408 and Regulatory teams to provide project update and discuss specific project actions as primarily related to the 408 review.



Date	Initial Outreach Activity
February 2023	Preapplicant met with Sally Bird Gauvin and Kate Mott at USACE offices in Portland to provide a Project update.
March 2023	Preapplicant introduced the Project during a virtual meeting with the National Marine Fisheries Service (NMFS). Discussions involved the proposed route, in-water work timing, and areas of concern for fish impacts.
	Via email and virtual meeting, the Preapplicant discussed with the U.S. Fish and Wildlife Service (USFWS), streaked horned lark on Hayden Island and shoreline areas near the Portland International Airport.
August 2023	Preapplicant corresponded with Oregon DEQ related to general information on contaminated sediments (i.e., Portland Harbor Superfund) and suggested next steps.
September 2023	Preapplicant held the first virtual multi-agency coordination call. Federal agencies in attendance included USACE, Bonneville Power Administration (BPA), U.S. Forest Service (USFS), USFWS, U.S. Environmental Protection Agency (USEPA), and National Oceanic and Atmospheric Administration (NOAA).
	Preapplicant and its consultant met with the USACE to discuss the planned cultural resources survey.
November 2023	HDR met with USACE 408 PDT to discuss transmission line alignment and HDD in proximity to the Dalles Levee
November 2023	Applicant held a virtual multi-agency subcommittee coordination call to discuss the permitting process. Federal agencies in attendance included BPA, USACE, USFWS, NOAA and USEPA.
December 2023	Applicant held a virtual multi-agency subcommittee coordination call to discuss in-water installation and alignment. Federal agencies in attendance included BPA, USACE, USFWS, and USEPA.
January 2024	Applicant held a virtual call with Casey Gatz of USFS to introduce Project areas within non-urban areas of the National Scenic Area (NSA).
January 2024	Applicant held a second virtual multi-agency coordination call. Federal agencies in attendance included USACE, BPA, USFWS, and USEPA.
February 2024	Applicant held a second virtual multi-agency subcommittee coordination call to discuss in-water installation and alignment. Federal agencies in attendance included USACE, USFWS, and USEPA.
February 2024	Applicant held a virtual multi-agency subcommittee coordination call to review WA wetland delineation report. Federal agencies in attendance included USACE, USFWS, and USEPA.
March 2024	Preapplicant met with USEPA staff to discuss project in relation to existing National Priorities List sites Bradford Island and Portland Harbor.
April 2024	Applicant held a virtual multi-agency subcommittee coordination call to review OR wetland delineation report. Federal agencies in attendance included USACE, USFWS, and USEPA.
May 2024	Applicant met with USACE to review updated Cultural Resource Survey Plan.
June 2024	HDR corresponded and met with USACE regarding various aspects of upcoming 404 permit submittal.
July 2024	HDR held call with USACE about 404 permit application and public notice status.
October 2024	HDR met with USACE 408 PDT to discuss sediment transport modeling approach
	USACE sent an invitation to consult on the Project's area of potential effects (APE) to the following Tribes: Confederated Tribes and Bands of the Yakama Nation, Confederated Tribes of Grand Ronde Community of Oregon, Confederated Tribes of Siletz Indians, Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of Warm Springs, Cowlitz Indian Tribe, Nez Perce Tribe.
	Applicant met with USACE to discuss cultural resources.
November 2024	HDR met with USACE 408 PDT to discuss real estate information needs for 408 Authorization application
	Applicant attended a USACE facilitated meeting with the Cowlitz Indian Tribe. A project overview was presented followed by a question and answer period and discussion of next steps.

Date	Initial Outreach Activity
December 2024	HDR met with USACE 408 PDT to discuss technical aspects of the 408 Authorization application regarding design drawings
	Applicant met with USACE to discuss comments from Section 106 consulting parties on the APE and the Archaeological Resources Protection Act (ARPA) permit status.
	Applicant met with USACE at HDR offices in Portland to review Project status and general responses to 404 comments.
	Confederated Tribes of Grand Ronde Community of Oregon provided comments on the APE and survey plan to the USACE.
January 2025	Applicant and HDR met with USACE 408 PDT to discuss transmission cable alignment in proximity to the Dalles Levee
	Applicant met biweekly with USACE to coordinate Section 106 milestones for the Project,
February 2025	Applicant met with USACE to coordinate Section106 milestones for the Project.
	Applicant held third all-agency coordination meeting, extending the invitation to include tribes. Federal agencies in attendance included BPA, USEPA, USACE, USFS, and USFWS.
March 10, 2025	USACE sent an invitation to consult on the Project's APE to the Burns Paiute Tribe.
March 2025	Applicant met with US DOT FHWA to provide a project overview including a discussion of proposed activity and need, anticipated effects, alternatives considered and a variance application.
March 2025	Applicant held a multi-agency meeting to discuss aquatic resources and planned studies. USFWS attended.
	Applicant met biweekly with USACE to coordinate Section106 milestones for the Project.
April 2025	Applicant met biweekly with USACE to coordinate Section106 milestones for the Project.
May 2025	Applicant held a fourth all-agency coordination meeting (second to include tribes). Federal agencies in attendance included BPA, USEPA, NOAA, and USACE.
	Applicant met biweekly with USACE to coordinate Section106 milestones for the Project.
	Applicant held introductory meeting with new USACE Section 408 project manager assigned to Project.
June 2025	Applicant met biweekly with USACE to coordinate Section106 milestones for the Project.
State Agencies in Washington	
October 2019	Preapplicant met with Washington State Department of Transportation (WSDOT) staff to introduce the Project and discuss use of SR 14.
May 2021	Preapplicant met with Washington State Department of Archaeology and Historic Preservation (DAHP) State Historic Preservation Officer/Director to introduce the Project.
October 2021	Preapplicant met with Washington Utilities and Transportation Commission (UTC) Commissioner and Sr. Commission policy advisor to introduce the Project.
December 2021	Preapplicant met WA EFSEC staff to introduce the Project and request input.
September 2022	Preapplicant met with WUTC commissioner to provide a Project update.
September 2022	Preapplicant had a virtual meeting with the Columbia River Gorge Commission staff to introduce the Project.
October 2022	Preapplicant provided a Project update to WA EFSEC staff
November 2022	Preapplicant provided a Project overview to WUTC and Department of Commerce.
March 2023	Preapplicant met with WA EFSEC to discuss the Project and new preapplication process for siting electrical transmission facilities.
	Preapplicant introduced the Project during a virtual meeting with Washington Department of Fish and Wildlife (WDFW). Discussions included the proposed route, in-water work, and areas of concern for fish impacts.
September 2023	Preapplicant held the first virtual multi-agency coordination call. Washington State agencies in attendance included WDFW, WA EFSEC, WSDOT, and the Washington State Department of Ecology (Ecology).



Date	Initial Outreach Activity
November 2023	Applicant held a virtual multi-agency subcommittee coordination call to discuss the permitting process. WA agencies in attendance included WDFW, WDOT, Ecology, and WA EFSEC. A representative from the Washington Governor's Office of Regulatory Innovation and Assistance (WA ORIA) also attended.
December 2023	Applicant held a virtual multi-agency subcommittee coordination call to discuss in-water installation and alignment. WA agencies in attendance included WDFW, WSDOT, Ecology and WA EFSEC. A representative from WA ORIA also attended.
January 2024	Applicant held a second virtual multi-agency coordination call. WA State agencies in attendance included WA EFSEC, Washington Department of Natural Resources (WDNR), WDFW, and Ecology.
January 2024	Meeting with WA EFSEC
February 2024	Applicant held a second virtual multi-agency subcommittee coordination call to discuss in-water installation and alignment. WA agencies in attendance included WDFW, WDOT, Ecology, and WA EFSEC. A representative from WA ORIA also attended.
February 2024	Applicant held a virtual multi-agency subcommittee coordination call to review the WA wetland delineation report. WA agencies in attendance included WDFW, WSDOT, Ecology, WDNR, and WA EFSEC. A representative from WA ORIA also attended.
February 2024	Applicant held a virtual Meeting with WA state rep. Kevin Waters to introduce the Project.
April 2024	Applicant held a virtual multi-agency subcommittee coordination call to review OR wetland delineation report. WA agencies in attendance included WA EFSEC and Ecology.
May 2024	Applicant held a virtual meeting with staff of the Interstate Bridge Replacement Program (joint WA/OR departments of transportation project) to introduce the Project and share information.
August 2024	Applicant met with WA EFSEC to discuss the possibility of reviewing sections/issues from the ASC along the way, while the team prepares their formal application.
November 2024	Applicant met with Dept of Commerce Office of Economic Development & Competitiveness to discuss Clean Energy Projects of Statewide Significance program
December 2024	Applicant met with WA EFSEC to discuss WA EFSEC comments on Chapters 1&2 of the application, status of Chapters 3-5, planned studies and status of USACE, Section 106 process and OR EFSC application.
February 2025	Applicant held a third all-agency coordination meeting, extending the invitation to include Tribes. WA state agencies in attendance included WDFW, WDNR, Ecology, WA EFSEC, ORIA, WSDOT,
March 2025	Applicant held meeting to discuss aquatic resources and planned studies. WA DFW attended.
May 2025	Applicant held a fourth all-agency coordination meeting (second to include Tribes). WA state agencies in attendance included WDFW, WDNR, WSDOT Ecology, WA EFSEC.
June 2025	Applicant met with WA EFSEC to discuss upcoming application submittal.
State Agencies in Oregon	
February 2021	Preapplicant introduced the Project to Oregon Department of Energy (ODOE) Associate Director Strategic Engagement and Development/Tribal Liaison with Ruchi Sadhir.
October 2021	Preapplicant met with Oregon Public Utility Commission Program Director and Policy Advisor to introduce the Project.
November 2021	Preapplicant met with the ODOE staff to introduce the Project and request input.
January 2022	Preapplicant presented an overview of the Project and answered questions at a meeting of the OR EFSC.
April 2022	Preapplicant reached out to Oregon Bureau of Indian Affairs to request identification of Oregon tribes who may hold interest in the Project (OR EFSC requirement).
June 2022	Preapplicant met with Oregon Public Utility Commission (PUC) to provide a Project update.
	Preapplicant met with ODOE Electric Markets and Policy Group and provided a Project introduction.
	Preapplicant met with the Oregon Department of Transportation (ODOT) to solicit input on underground route in The Dalles, received communication affirming D9 support of proposed underground route.



Date	Initial Outreach Activity
September 2022	Preapplicant met with Oregon PUC commissioner to provide a Project update.
	Preapplicant met with Oregon Legislature Senate Interim Committee on Energy & Environment to introduce the Project.
September 2022	Preapplicant had a virtual meeting with the Columbia River Gorge Commission staff to introduce the Project.
November 2022	Preapplicant met with ODOE Electric Markets and Policy Group and provided a Project update.
March 2023	Preapplicant submitted a Notice of Intent (NOI) to file an application with the ODOE OR EFSC. The ODOE conducted public meetings regarding the NOI on May 2 and 3, 2023.
April 2023	Preapplicant introduced the Project during a virtual meeting with the Oregon Department of Fish and Wildlife (ODFW). Discussions included the proposed route, in-water work, and areas of concern for fish impacts.
May 2023	ODOE held public information meetings with Oregon state agencies; ODOE and the Preapplicant each presented the Project.
	Preapplicant met with Oregon Public Utility Commission (OPUC) Chair to provide a Project update.
August 2023	Preapplicant phoned the Oregon Department of Environmental Quality (ODEQ) to inquire about recommended depth of HDD to avoid disturbing sediments and asked about appropriate agency contacts and next steps.
September 2023	Preapplicant held the first virtual multi-agency coordination call. OR agencies in attendance included ODOT, Oregon Department of Lands (ODSL), ODFW, and the ODEQ.
November 2023	Applicant held a virtual multi-agency subcommittee coordination call to discuss the permitting process. OR agencies in attendance included ODOT, ODEQ, DSL, ODFW, ODOE, and the Oregon Department of Geology and Mineral Industries (DOGAMI).
December 2023	Applicant held a virtual multi-agency subcommittee coordination call to discuss in-water installation and alignment. OR agencies in attendance included ODOT, ODEQ, ODSL, ODFW, and ODOE.
January 2024	Applicant held a second virtual multi-agency coordination call. OR agencies in attendance included ODOE, ODOT, ODFW, ODEQ, and ODSL, Port of Portland, and Metro.
February 2024	Applicant held a second virtual multi-agency subcommittee coordination call to discuss in-water installation and alignment. OR agencies in attendance included ODOT, ODEQ, ODSL, ODFW, ODOE, and Port of Portland.
February 2024	Applicant held a virtual multi-agency subcommittee coordination call to review the WA wetland delineation report. OR agencies in attendance included ODOT, ODEQ, ODSL, and ODOE.
April 2024	Applicant held a virtual multi-agency subcommittee coordination call to review OR wetlands delineation report. OR agencies in attendance included ODOT, ODEQ, ODSL, ODFW, and ODOE.
May 2024	Applicant held a virtual meeting with staff of the Interstate Bridge Replacement Program (joint WA/OR departments of transportation project) to introduce the Project and share information.
June 2024	Applicant met with ODOE and DOGAMI staff to discuss geologic hazards and timing of geotechnical studies.
July 2024	Applicant met with ODOE staff to discuss OR EFSC Draft Exhibit Submittal Planning/Logistics for informal review.
August 2024	Applicant met with ODOE staff to discuss Tribal participation in ongoing agency coordination efforts.
December 2024	Applicant met with ODOE staff in Salem to provide a project update.
February 2025	Applicant held a third all-agency coordination meeting. Oregon state agencies in attendance included ODEQ, ODFW, DOGAMI, ODOE, ODOT and ODSL.
	Applicant met with ODOE staff to discuss organization of the preliminary ASC in compliance with new regulations.
May 2025	Applicant held a fourth all-agency coordination meeting. OR state agencies in attendance included ODEQ, ODFW, ODOE, ODOT and ODSL.



Date	Initial Outreach Activity
Local Agencies in Washington	
June 2022	Preapplicant provided a Project overview during a workshop with the Skamania County Public Utility District (PUD) and Skamania County Board of Commissioners.
September 2022	Preapplicant met with Columbian River Gorge Commission to provide a Project introduction.
March 2023	Preapplicant provided a Project overview to the City of North Bonneville mayor and city planner.
April 2023	Preapplicant provided a Project overview to the City of Stevenson mayor and city planner.
	Preapplicant provided a Project overview to the City of Mosier city council.
May 2023	Preapplicant provided a review of the Project route in Stevenson to the City of Stevenson mayor.
September 2023	Preapplicant provided a Project update to the City of North Bonneville mayor and city planner.
December 2023	Applicant emailed notice of WA EFSEC Preapplication filing to Klickitat County Board of Commissions chairman and offered meeting with Project team.
	Applicant presented Project overview to City of White Salmon City Council at virtual meeting.
January 2024	City of Camas Project introduction to Mayor Hogan, Quinn, Peters SW?
	Applicant emailed notice of upcoming WA EFSEC public meetings to Klickitat County Board of Commissions chairman and offered meeting with Project team.
	Applicant emailed notice of upcoming WA EFSEC public meetings to City of Washougal.
February 2024	Applicant provided a Project update and review of the route corridor to the Mayor of the City of Stevenson
	Applicant provided a Project update and review of the route corridor to the City of North Bonneville mayor and city planner.
	Applicant provided a Project overview to Skamania County Commissioner Leckie
	Applicant emailed information regarding WA EFSEC corridor negotiations process and offered meeting with Project team to City of Bingen mayor.
	Applicant emailed information about WA EFSEC corridor negotiations process to Klickitat County Board of Commissions chairman and offered meeting with Project team.
June 2025	Applicant met with Skamania County Planning Department.
August 2025	Applicant conducted workshop with Skamania County Board of Commissioners.
Local Agencies in Oregon	
June 2022	Preapplicant met with Wasco County commissioner to provide a Project introduction.
	Preapplicant met with Port of Portland to discuss real estate.
September 2022	Preapplicant met with Columbian River Gorge Commission to provide a Project introduction.
November 2022	Preapplicant met with Multnomah County commissioners and staff to provide a Project introduction.
February 2023	Preapplicant met with Hood River Board of Commissioners and provided a Project overview during public meeting.
	Preapplicant met with the City of The Dalles city council and staff at a public meeting to provide a Project introduction.
May 2023	Preapplicant met with City of Mosier mayor and staff to provide a Project introduction.
	Preapplicant met with the City of Mosier staff to provide an overview of the Project route.
	Preapplicant met with the City of The Dalles city manager to provide a Project update.
September 2023	Preapplicant held the first virtual multi-agency coordination call. OR agencies in attendance included Port of Portland, ODOE, and Metro Parks and Nature.
January 2024	Applicant held a second virtual multi-agency coordination call, Port of Portland and Metro attended.
February 2024	Applicant provided Project overview to Wasco County Commissioner Brady.
April 2024	Applicant held a virtual multi-agency subcommittee coordination call to review OR wetland delineation report attended by Port of Portland, a regional agency serving multiple cities, towns, and counties in the Portland area.



Date	Initial Outreach Activity
May 2024	Applicant held virtual meeting to introduce Project to the City of Portland Bureau of Development Services representatives following comments submitting to OR EFSC on NOI.
October 2024	Applicant met with Port of Portland, providing a project update.
July 2025	Applicant met with OR Rep. Mark Gamba to provide project introduction and overview.
February 2025	Applicant held a third all-agency coordination meeting. The City of Portland, Port of Portland, and OR Metro attended.
March 2025	Applicant met with OR Metro to provide information about the project and the cable route.
May 2025	Applicant held a fourth all-agency coordination meeting. The City of Portland, Port of Portland, and OR Metro attended.
	Applicant met with Port of Portland to provide a project update.
Tribal Outreach	
May 2021	Preapplicant initiated contact with the Confederated Tribes of Warm Springs and had an introductory meeting.
	Preapplicant initiated contact with the Yakama Nation and held an introductory meeting.
	Preapplicant initiated contact with the Cowlitz Indian Tribe.
June 2021	Preapplicant initiated contact with the Nez Perce Tribe.
August 2021	Preapplicant initiated contact with the Confederated Tribes of the Umatilla Indian Reservation (Umatilla, Cayuse, and Walla Walla).
March 2022	Preapplicant initiated contact with the Columbia River Inter-Tribal Fish Commission (CRITFC) and had a meeting with CRITFC executive director, communications director, director of intergovernmental affairs, interim watershed department manager, manager of fishery science, watershed/water quality coordinator, and additional staff.
October 2022	Preapplicant initiated contact with the Confederated Tribes of the Chehalis Reservation and offered a meeting.
	Preapplicant emailed a Project update and offered another meeting to the Confederated Tribes of the Warm Springs.
	Preapplicant emailed a Project update and offered another meeting to the Yakima Nation.
	Preapplicant emailed a Project update, provided an overview slide deck, and offered another meeting to the Cowlitz Indian Tribe.
	Preapplicant emailed a Project update and offered another meeting to the Nez Perce Tribe.
	Preapplicant emailed a Project update and offered a meeting to the Confederated Tribes of the Umatilla Indian Reservation (Umatilla, Cayuse, and Walla Walla).
	Preapplicant initiated contact with the Confederated Tribes of Siletz Indians and offered a meeting.
	Preapplicant initiated contact with the Confederated Tribes of Grand Ronde.
March 2023	Preapplicant contacted the Umatilla Indian Reservation to inform that the ODOE NOI had been filed and provided a link to the NOI.
	Preapplicant contacted the Confederated Tribes of the Chehalis Reservation to inform that the ODOE NOI had been filed and provided a link to the NOI.
	Preapplicant contacted the Nez Perce Tribe to inform that the ODOE NOI had been filed.
	Preapplicant contacted the CRITFC to inform that the ODOE NOI had been filed and provided a link to the NOI.
	Preapplicant contacted the Confederated Tribes of Warm Springs to inform that the ODOE NOI had been filed and provided a link to the NOI.
	Preapplicant contacted the Yakima Nation to inform that the ODOE NOI had been filed and provided a link to the NOI.
	Preapplicant contacted the Confederated Tribes of Grand Ronde to inform that the ODOE NOI had been filed and provided a link to the NOI.
	Preapplicant contacted the Cowlitz Indian Tribe to inform that the ODOE NOI had been filed and provided a link to the NOI.



Date	Initial Outreach Activity
May 2023	Preapplicant emailed a .kmz file of the Project route in The Dalles, Oregon, in response to request and suggestion of contracting for services.
June 2023	Preapplicant's consultant contacted the Confederated Tribes and Bands of the Yakama Nation to inform them of planned cultural resources survey.
	Preapplicant's consultant contacted the Confederated Tribes of Grand Ronde Community of Oregon to inform them of planned cultural resources survey.
	Preapplicant's consultant contacted the Confederated Tribes of Siletz Indians to inform them of planned cultural resources survey.
	Preapplicant's consultant contacted the Confederated Tribes of Warm Springs to inform them of planned cultural resources survey.
	Preapplicant's consultant contacted the Confederated Tribes of the Umatilla Indian Reservation to inform them of planned cultural resources survey.
	Preapplicant's consultant contacted the Cowlitz Indian Tribe to inform them of planned cultural resources survey.
	Preapplicant's consultant contacted the Nez Perce Tribe to inform them of planned cultural resources survey.
October 2023	Preapplicant sent a letter to CRITFC to inform them that their comments on the ODOE NOI had been received and would be addressed in the ODOE application.
	Preapplicant sent a letter to the Confederated Tribes of Warm Springs to inform them that their comments on the ODOE NOI had been received and would be addressed in the ODOE application.
	Preapplicant sent a letter to the Confederated Tribes of Grand Ronde to inform them that their comments on the ODOE NOI had been received and would be addressed in the ODOE application.
	Preapplicant sent a letter to the Cowlitz Indian Tribe to inform them that their comments on the ODOE NOI had been received and would be addressed in the ODOE application.
December 2023	Preapplicant and its consultant met with the Nez Perce Tribe to discuss the cultural resources survey.
	Preapplicant's consultant met with the Confederated Tribes of Grand Ronde Community of Oregon to discuss the cultural resources survey.
	Preapplicant notified CRITFC that the Pre-Application had been filed with WA EFSEC.
	Preapplicant notified the Nez Perce Tribe that the Pre-Application had been filed with WA EFSEC.
	Preapplicant notified the Confederated Tribes and Bands of the Yakama Nation that the Pre-Application had been filed with WA EFSEC.
	Preapplicant notified the Confederated Tribes of the Grand Ronde that the Pre-Application had been filed with WA EFSEC.
	Preapplicant notified the Confederated Tribes of Siletz Indians that the Pre-Application had been filed with WA EFSEC.
	Preapplicant notified the Confederated Tribes of Warm Springs that the Pre-Application had been filed with WA EFSEC.
	Preapplicant notified the Confederated Tribes of the Umatilla Indian Reservation that the Pre-Application had been filed with WA EFSEC.
	Preapplicant notified the Cowlitz Indian Tribe that the Preapplication had been filed with WA EFSEC.
	Preapplicant notified the Confederated Tribes of Chehalis Reservation that the Preapplication had been filed with WA EFSEC.



Date	Initial Outreach Activity
February 2024	Applicant emailed CRITFC to notify them of the informational public meetings to be hosted by WA EFSEC on Feb. 6, 7, and 8 in Clark, Skamania, and Klickitat counties.
	Applicant emailed the Umatilla Indian Reservation to notify them of the informational public meetings to be hosted by WA EFSEC on Feb. 6,7, and 8 in Clark, Skamania, and Klickitat counties.
	Applicant emailed the Confederated Tribes of Siletz Indians to notify them of the informational public meetings to be hosted by WA EFSEC on Feb. 6,7, and 8 in Clark, Skamania, and Klickitat counties.
	Applicant emailed the Yakama Nation to notify them of the informational public meetings to be hosted by WA EFSEC on Feb. 6, 7, and 8 in Clark, Skamania, and Klickitat counties.
	Applicant emailed the Confederated Tribes of the Chehalis Reservation to notify them of the informational public meetings to be hosted by WA EFSEC on Feb. 6, 7, and 8 in Clark, Skamania, and Klickitat counties.
	Applicant emailed the Confederated Tribes of the Grand Ronde Community of Oregon to notify them of the informational public meetings to be hosted by WA EFSEC on Feb. 6, 7, and 8 in Clark, Skamania, and Klickitat counties.
	Applicant emailed the Cowlitz Indian Tribe to notify them of the informational public meetings to be hosted by WA EFSEC on Feb. 6, 7, and 8 in Clark, Skamania, and Klickitat counties.
	Applicant emailed the Confederated Tribes of the Warm Springs to notify them of the informational public meetings to be hosted by WA EFSEC on Feb. 6, 7 and 8 in Clark, Skamania, and Klickitat counties.
	Applicant emailed the Nez Perce Tribe to notify them of the informational public meetings to be hosted by WA EFSEC on Feb. 6, 7 and 8 in Clark, Skamania, and Klickitat counties.
	Applicant replied to an email from the Klickitat Coordinator at Yakama Nation Fisheries providing information about the cable temperature.
May 2024	Nez Perce Tribe Cultural Resource Program provide the Applicant with a draft version of its Traditional Land Use Study.
July 2024	Applicant met virtually with representatives of the Nez Perce Cultural Resource Program to discuss the draft Traditional Land Use Study.
August 2024	Applicant met virtually with Nez Perce Cultural Resource Program to provide a Project update.
	Applicant responded to email from representative a Yakama Fisheries requesting information on cable heat and electromagnetic fields.
November 2024	Applicant attended a USACE-facilitated meeting with Cowlitz Indian Tribe, where it presented a project overview, answered questions and discussed Project next steps.
January 2025	Applicant met with the Confederated Tribes of the Grand Ronde Community of Oregon to coordinate on upcoming archaeological surveys, and potential Traditional Cultural Properties/ Historic Property of Religious and Cultural Significance to Indian Tribes (TCP/HPRCST) studies.
	Applicant sent letters to Gerald Lewis at Confederated Tribes and Bands of the Yakama Nation, Austin Smith at Confederated Tribes of the Warm Springs, Eric Quaempts at Confederated Tribes of the Umatilla Indian Reservation, Michael Karnosh at Confederated Tribes of the Grand Ronde Community of Oregon, William Iyall at Cowlitz Indian Tribe, and Aja DeCoteau at CRITFC, responding to each tribes' comments filed with the USACE in response to 404 public notice.
February 2025	Representatives of CRITFC, Cowlitz Indian Tribe, Confederated Tribes of the Grand Ronde Community of Oregon, Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of the Warm Springs, Nez Perce Tribe, and Confederated Tribes and Bands of the Yakama Nation attended CRT's February 3, 2025 agency coordination meeting.



Date	Initial Outreach Activity
March 2025	Applicant responded to a request from K. Yallup at CRITFC for information about Project's schedule for filing OR EFSC and WA EFSEC siting applications.
	Applicant sent letters to Glen Connelly and Dan Penn at the Confederated Tribes of the Chehalis Reservation and Angela Sondenna and Buddy Lane at the Confederated Tribes of Siletz Indians to reiterate CRT's invitation to the agency coordination meetings and to affirm CRT's commitment to work with the Tribe to hear and address their concerns.
	Applicant sent a letter to Nakia Williamson-Cloud at the Nez Perce Tribe, thanking the tribe for attending the February agency coordination meeting and affirming CRT's on-going commitment to work with the tribe to understand and address the tribe's concerns.
	Applicant sent letters to William Iyall at Cowlitz, Michael Karnosh at Confederated Tribes of the Grand Ronde Community of Oregon, Eric Quaempts at Confederated Tribes of the Umatilla Indian Reservation, Austin Smith at Confederated Tribes of the Warm Springs, Gerald Lewis at Confederated Tribes and Bands of the Yakama Nation, and Aja DeCoteau at CRITFC, following up its January 2025 404 comment response letter, thanking the tribes for attending the February 2025 agency coordination meeting and affirming CRT's commitment to work with the tribes to hear and address their concerns.
April 2025	Applicants' consultant HDR met with Dave Witt and Brandon Gilliland of Warm Springs' GeoVisions to review project and cultural surveys, Oregon SHPO permit and to discuss a request to provide tribal monitoring during future field surveys.
May 2025	Applicant sent a letter via USPS to Austin Smith at Confederated Tribes of the Warm Springs following up on recent engagement with Warm Spring Natural Resource Branch staff and to express CRT's interest in sharing information with the broader Warm Spring Tribal community .
	Representatives of Burns Paiute Tribe, Cowlitz Indian Tribe, Confederated Tribes of the Grand Ronde Community of Oregon, Confederated Tribes of Siletz Indians, Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of the Warm Springs, Confederated Tribes and Bands of the Yakama Nation, and CRITFC attended CRT's May 27, 2025 agency coordination meeting.
August 2025	Applicant attended meeting with Yakama Nation Tribal Council to present project.

1.12.3 Meaningful Involvement

The Applicant has made the efforts described above and considered all input from the public regardless of race, ethnicity, or socioeconomic status. Through the use of the contact form on the Project website, the Applicant receives ongoing inquiries from interested parties and responded to all inquiries regardless of race, ethnicity, or socioeconomic status of the commentor. The Applicant has also met with education, community, and labor organizations serving members of all races, ethnicities, and socioeconomic statuses in the Project area to understand the socioeconomic needs of their membership, communicate the Project benefits, and explore partnerships to tailor Project benefits to address the specific needs of these organizations.

1.13 Graphic Material (WAC 463-60-105)

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.

In accordance with WAC 463-60-105, the Applicant has prepared descriptive graphic materials in support of this application 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)

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 review of all WA EFSEC ASC requirements, that qualified professional personnel have prepared the data in this ASC, 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)

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 (WAC 463-60-117)

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.**
- 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.*
- (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.*

1.16.1 Request for Expedited Processing

The Applicant is not requesting expedited processing.

1.16.2 Expedited Application Content Requirements

The Applicant is not requesting expedited processing.

1.16.3 Funds for Expedited Application Processing

The Applicant is not requesting expedited processing.



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2 Proposal

An HVDC electric transmission facility would interconnect the BPA Big Eddy substation and the PGE Harborton substation and would be constructed in both Oregon and Washington. The portion of the HVDC transmission line placed underground on land in Washington would be located in road ROWs along SR 14, Ashes Lake Road, Dam Access Road, and Fort Cascades Drive in Skamania County for approximately 7.5 miles to bypass the Bonneville Lock and Dam. The portion of HVDC transmission line buried in the sediment of the Columbia River would be in Klickitat, Skamania, and Clark counties. Following are descriptions of those portions in Washington. While this section generally focuses on Washington portions of the Project, it also includes information about the facility in Oregon for the purpose of providing a more complete description of the Project as a whole. Please refer to Figures 2-1, and Figures 2-2 and 2-3 in Appendix B for maps that delineate the Project and its Washington and Oregon portions.

The approximate length of the Project (all HVDC transmission cables) in Washington is 40.2 miles: 32.8 miles in the Columbia River and 7.4 miles on land. The Project's disturbance footprint in Washington is as follows.

- In water
 - HVDC transmission cables disturbance: temporary disturbance of 49.5 acres, permanent disturbance of 11.9 acres.
 - Two temporary three-sided cofferdams: temporary disturbance of 0.96 acres (0.48 acres each).
- On land
 - HVDC transmission cables disturbance: temporary disturbance of 8.75 acres, permanent disturbance of 2.3 acres.
 - Two temporary HDD laydown/work areas of 1.1 acres (0.55 acres each).

2.1 Site Description (WAC 463-60-125)

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 transmission facility would be located near The Dalles, Wasco County, Oregon, in the bed of the Columbia River (Oregon and Washington), in Stevenson, Skamania County, Washington, and in Portland and under the Willamette River, Multnomah County, Oregon. Figure 2-1, Vicinity Map, shows the proposed alignment in relation to county and state boundaries, major roads, communities, and other recognizable features within the vicinity.



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Figure 2-1. Vicinity Map



**FIGURE 2-1
VICINITY MAP**

FOR INFORMATION ONLY - CONCEPT DRAWING

- PROPOSED ALIGNMENT
- ALTERNATIVES
- RIVER MILES (USACE)
- COUNTY BOUNDARY
- STATE BOUNDARY

CASCADE RENEWABLE TRANSMISSION



0 10 mi
1:450,000



5/29/2025 NAD 1983 State Plane Oregon North Feet Data Sources: Esri, HDR.



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The facility is shown on the following large-scale maps, which are presented in Appendix B:

- Figure 2-2, Facility Location, shows the proposed alignment in relation to nearby roads, water bodies, cities and towns, land ownership categories, and other geographic features.
- Figure 2-3, Project Layout, shows the proposed Facility layout in relation to county and state boundaries, nearby roads, water bodies, communities, and other recognizable features within the vicinity.

Although Figure 2-2 and Figure 2-3 show facility component locations, the proposed alignment should be considered conceptual in nature and representative of a constructible design. These site plans are used for impact calculation purposes only and are subject to change at the time of construction, with impacts less than or equal to the impacts presented in the ASC.

2.1.1 Geography and Geology

The Project would be located within the Southern Cascades geologic province of Washington. The Cascade Range is home to 13 major volcanoes (NPS 2022). The Project area is primarily composed of Quaternary mass-wasting deposits and Quaternary alluvial deposits. The on-land portion of the Project in Washington is located within two major historic landslide features, the Red Bluffs Landslide and the Bonneville Landslide, which are part of the larger Cascade Landslide Complex. Washington State is seismically active, with the most significant earthquake hazards generally higher toward the western part of the state, associated with the Cascadia subduction zone. There are no known active Quaternary faults within the study area in Washington. Additional information on geology is located in Section 3.1.

The 7.5-minute quadrangle topographic map for Bonneville Lock and Dam shows that the elevation of the on-land Washington portion of the Project ranges from 40 to 246 feet above mean sea level. Topography slopes south toward the Columbia River (USGS 2020a).

2.1.2 Climate

The Western Regional Climate Center (WRCC) reports the average annual precipitation at the Bonneville Lock and Dam weather station, which is adjacent to the Washington portion of the Project, is 76.7 inches. The hottest months on average are July and August, with average high temperatures of 78.8 degrees Fahrenheit (°F) and 78.9°F, respectively. The coldest months, on average, are December and January, with average low temperatures of 43.9°F and 42.4°F, respectively. The area received 15.7 inches of snow annually. On average, there are 146 sunny days per year (WRCC 2022).

2.1.3 Land Use and Zoning

In Washington, the Project would be in unincorporated Skamania County and the City of Stevenson.

The jurisdictional boundaries of Klickitat County and Clark County do not extend beyond the shoreline of the Columbia River. The EFSEC land use and zoning analysis was determined by identifying the portions of the Project that are within jurisdictional boundaries (land or water). The Project is outside of the jurisdictional boundaries of Klickitat County and Clark County. Therefore, analysis of land use and zoning within Klickitat County and Clark County is not included.

Additionally, the portions of the Project in WSDOT, BNSF/UPRR Rail and the USACE are not addressed in this analysis.

2.1.3.1 Skamania County - Unincorporated

Skamania County is one of 11 counties in Washington that does not plan under Washington State's Growth Management Act (RCW 36.70A.040). Portions of the Project are proposed in Industrial (MG) zone, County road right-of-way, F-2 Large Woodland (NSA General Management Area), Natural Environment and High Intensity Environment (Shoreline Master Program).

2.1.3.2 City of Stevenson

The City of Stevenson's Comprehensive Plan was adopted in April 2013 and last amended in October 2022 (City of Stevenson 2022a). The current land use designation of the portion of the Project in Stevenson is Recreational – Cultural. Existing land uses are the existing Columbia Gorge Interpretive Center and parking lot, with undeveloped areas and a Columbia River inlet to the west of SR 14.

The portion of the Project in Stevenson is within the Public Use and Recreation (PR) zone.

2.2 Legal Descriptions and Ownership Interests (WAC 463-60-135)

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, including parcel numbers, parcel acres, and legal descriptions of the overall properties and affected portions of the properties, are provided as Appendix C of this ASC.

2.3 Construction on Site (WAC 463-60-145)

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 would be comprised of the following major components and structures. While these are located in both Oregon and Washington (Table 2-1), more detailed descriptions are limited to those components located in Washington.



Table 2-1. Major supporting Project components

Component	Units
High-voltage alternating current (HVAC) Transmission	• 500-kilovolt (KV) electrical transmission lines (overhead) • 500-kV transmission line structure (1) • 230-kV electrical transmission lines/conductor cable (underground) • Fiber optic communication line • Concrete-encased conduit to house cables & fiber optic (underground)
High-voltage direct current (HVDC) Transmission	• 320-kV or 400-kV electrical transmission lines/conductor cable (underground) • Fiber optic communication line • Concrete-encased conduit to house cables & fiber optic (underground)
Access Roads, Perimeter Fencing, Gates	• Existing roadways would be used to transport equipment and major apparatus. Likely to include Interstates 5, 84, 204; State Routes 30, 197; Columbia View Drive (The Dalles); N Leadbetter Road; and N Marine Drive (Portland) in Oregon and SR 14 in Washington. • Approximately 1 mile of perimeter fencing; 0.5 mile around each converter station. • Approximately 2 gates, one at each converter station.
Converter Stations	• Two 5-acre converter stations.
Temporary areas for horizontal directional drilling (HDD)/horizontal auger borings (HABs)	• Up to 17 temporary areas for HDD; 15 in Oregon and 2 in Washington • UP to 13 HABs; 11 in Oregon and 2 in Washington
Temporary three-sided wet coffer dams	• Up to 4 three-sided wet cofferdams; 2 in Oregon and 2 in Washington
Temporary Laydown Area	• Two 5-acre temporary laydown areas, one near each at converter station

2.3.1 Converter Stations

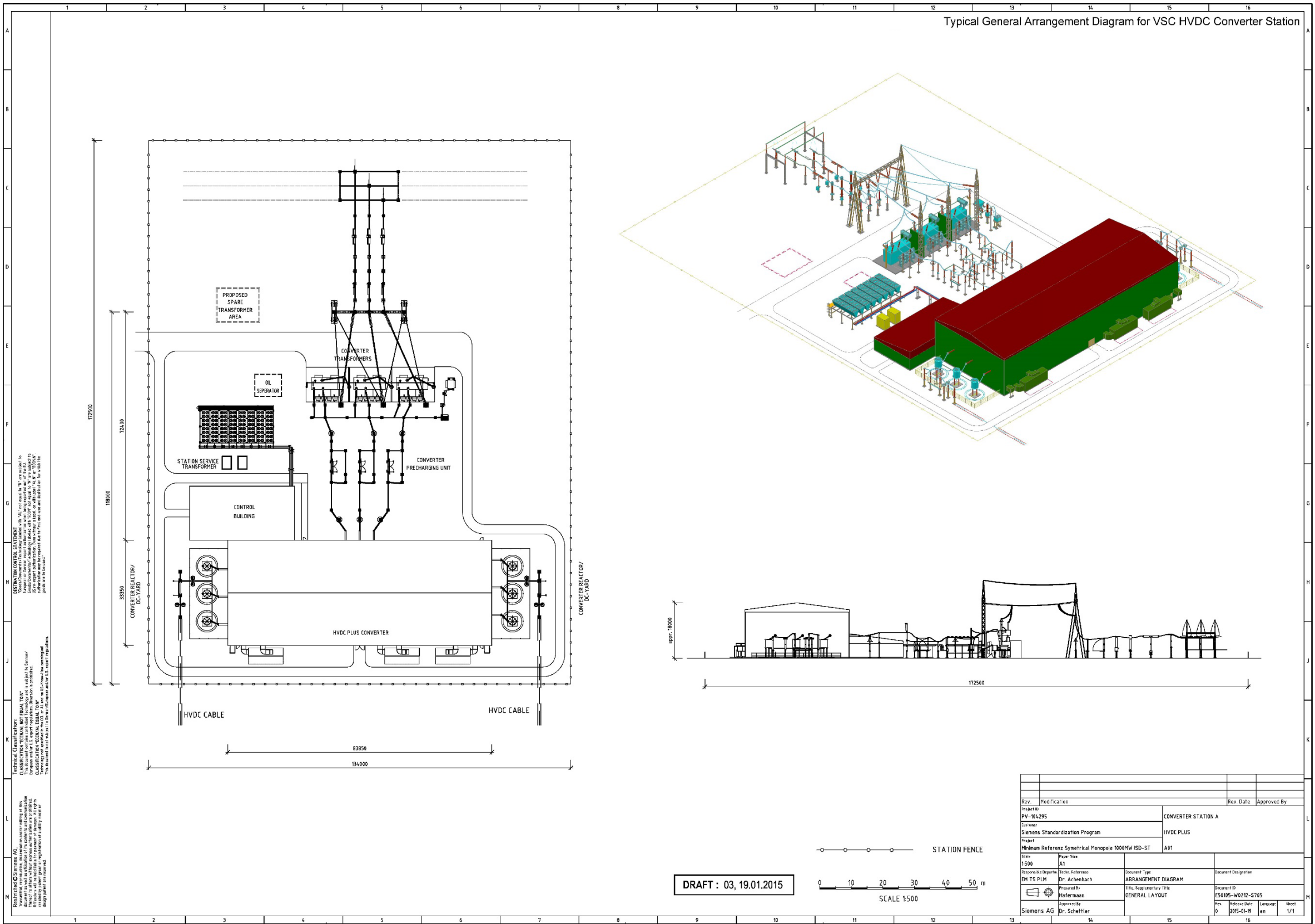
Two voltage source conversion high-voltage direct current (VSC-HVDC) technology converter stations would be located near respective interconnection points in Oregon. One interconnection point is the BPA Big Eddy 500-kV substation in The Dalles, Oregon, and the other is the PGE Harborton 230-kV substation in Portland, Oregon. The converter stations would be sited on approximately 5 acres, graveled and fenced with minimal parking, with appropriate site-specific drainage. These converter stations would include conventional design converter transformers and protective circuit breakers and include a control room for operating the transmission facility as well as basic facilities for staff (bathroom/kitchen). Final design at each converter station would be in accordance with approved site plans that account for local zoning requirements. An example site plan of the layout of the eastern converter station is shown in Figure 2-4. Figure 2-5 illustrates the general arrangement of the buildings, equipment, and structures at a typical VSC-HVDC converter station once constructed.

Third-party contractors would be responsible for arrangements for additional areas that may be required for temporary laydown or staging of materials or equipment during construction of the converter stations; these areas would be secured in accordance with all local and municipal regulations and permits.



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Figure 2-4. Typical Converter Station Site Plan





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Figure 2-5. Typical Converter Station Layout



2.3.2 HVAC Transmission

The converter stations would be connected to the respective substations on each end by short segments of high-voltage alternating current (HVAC) cable. No HVAC cable would be installed in Washington; however, information regarding the HVAC cables is included here to provide a complete description of the Project. While the interconnected HVAC substations are in Oregon, these are further connected to transmission facilities in Washington with networked access to the entire Pacific Northwest Region.

The eastern converter station near The Dalles, Oregon, would be connected to the existing Big Eddy substation with approximately 500 feet of 500 kV, HVAC overhead wire, which would be visible and supported by two new lattice structures about 80 feet wide and 60 feet tall. One lattice structure would be located in the Big Eddy substation and one lattice structure would be within the eastern converter station; however, the lattice structure associated with the Big Eddy substation would not be part of the transmission facility.

The western converter station in Portland, Oregon, would be connected to the existing Harborton substation via one of three underground routes. Under the Preferred Alignment, the western converter station would connect to the Harborton substation with approximately 2.85 miles of two-per-phase, 230-kV HVAC transmission cable; 0.25 mile would be installed under and across the bed of the Columbia Slough via HDD, 2.3 miles would be trenched in road ROW to the edge of the Willamette River, and 0.5 miles of transmission cable would be installed under and across the bed of the Willamette River via HDD. HDD or comparable trenchless technology such as horizontal auger boring (HAB), would also be used to cross under railroads and sensitive areas, and would not be visible. (Note that there are minor variations of the proposed AC cable route proposed in Oregon that do not materially affect the interconnection at Harborton Substation. These are shown on Figures 2-2 and 2-3 in Appendix B.)

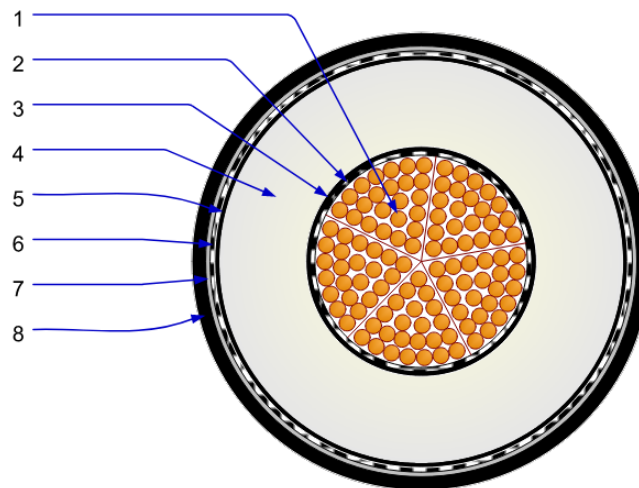
The trench for the underground HVAC transmission cables would be approximately 9 feet wide by 4.5 feet deep. Within the trench, a 9-foot-wide concrete casing would be placed, housing two sets of three 8-inch-diameter, high-density polyethylene (HDPE) conduits for transmission cables and a 4-inch-diameter HDPE conduit for fiber optic cable with 4 feet of separation between the sets. Under the Willamette River and Columbia Slough, each location would have two 34-inch bores having a 12-

foot separation. Each bore would hold three 8-inch-diameter and one 4-inch-diameter HDPE conduits.

HDD or comparable trenchless technology would also be used to cross under railroads and sensitive areas and would not be visible. The underground AC transmission would not be visible. No overhead transmission line structures would connect to the western converter station.

For the underground AC transmission cable, the conductor would be of a compacted circular design, constructed from annealed copper wires and filled with a water blocking material to limit water propagation in case of cable severance, as seen in Figure 2-6. The conductor would have a nominal cross-sectional area of 2,500 square millimeters. The conductor design would meet the requirements laid down by Class 2 stranding per International Electrotechnical Commission (IEC) 60228. The underground conductor cable diameter would be approximately 5 inches.

Figure 2-6. Cross Section of HVAC Transmission Cable



Diagrammatic Only – Not to Scale

Item	Description
1	Conductor
2	Binder
3	Conductor Screen
4	Insulation
5	Insulation Screen
6	S/C Water Barrier
7	Metallic Sheath
8	Finish

2.3.3 HVDC Transmission

The converter stations would be connected by a 400-kV (1,100-MW) HVDC transmission cable with associated fiber optic communications cable in underground conduits to the edge of the Columbia River on each end and for a short distance in Washington to bypass the Bonneville Lock and Dam and buried in the bed of the Columbia River in Oregon and Washington. The rated operating voltage of the HVDC cable system is currently 320 kV but could be changed to 400 kV based on the potential for cost savings to be determined prior to final design. A 400-kV cable would be the same diameter as a 320-kV cable and there would be no material reduction in performance.

Approximately 95.3 miles of 400-kV HVDC transmission cable, bundled with associated fiber optic communications cable, would be buried in the bed of the Columbia River in Oregon and Washington and underground in short segments on each end, linking the converter stations. Under the Proposed Alignment, to bypass the dam, locks, juvenile fish passage, and tribal fishing areas at the Bonneville Lock and Dam, the HVDC cable would be brought on land via HDD in Stevenson, Washington, east of the dam complex, buried underground on the Washington side of the Columbia River for approximately 7.4 miles, then re-enter the river west of the dam complex (see Figure 2-2 and Figure 2-3 in Appendix B). An alternative landing location in Stevenson is also being considered for bringing the cable on land from the Columbia River, requiring HDD for approximately the same length as for the Proposed Alignment.

The Proposed Alignment HVDC cables would continue west in the bed of the Columbia River, exiting onto Hayden Island in Portland. The cables would be trenched approximately 1.6 miles along an existing utility corridor to the south and then west toward the western end of Hayden Island. The Proposed Alignment and alternatives are depicted on Figure 2-2 and Figure 2-3 in Appendix B.

Directional drilling would be used to transition the in-river cables to land in The Dalles near the Big Eddy substation and in Portland near the Harborton substation. These on-land cables would be installed in underground conduits. Both the underground and underwater cable would feature cross-linked polyethylene (XLPE) dielectric insulation cable design. No elements of the HVDC transmission cable would be visible once construction is complete.

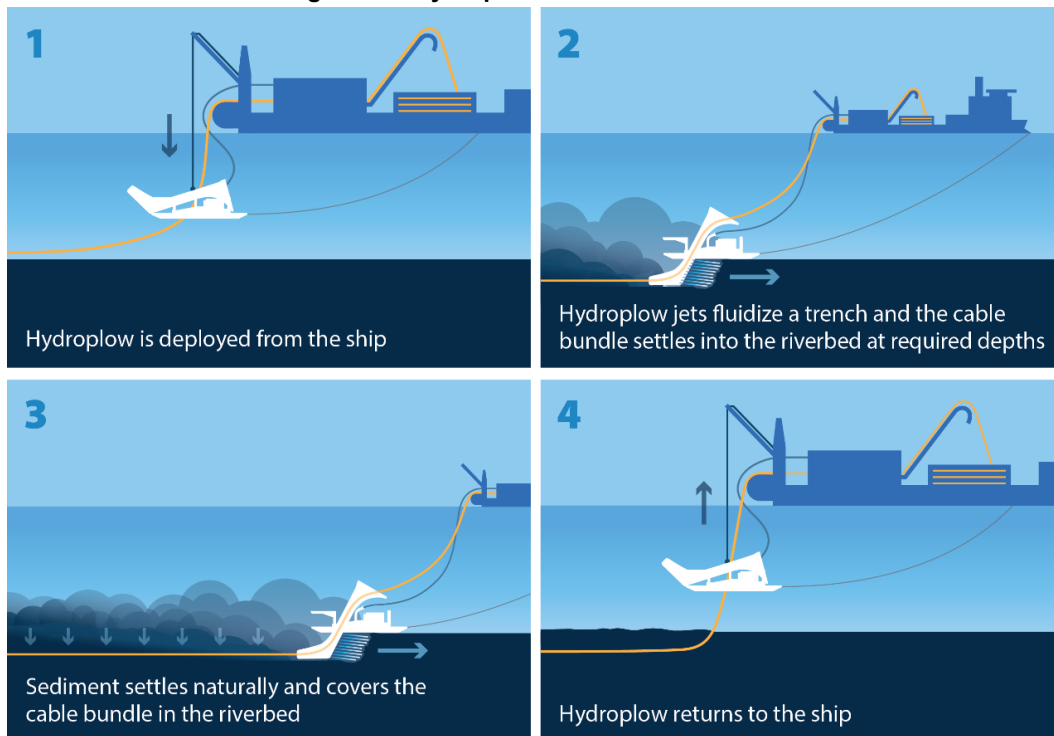
2.3.3.1 HVDC In-River Transmission Cable Installation

For the in-river transmission cable, the HVDC line would be installed in proximity to the navigation channel at certain locations using a hydro jet cable burial machine or “hydroplow” in the bed of the Columbia River to a point approximately 4 miles east of the Bonneville Lock and Dam (see Figure 2-2 and Figure 2-3 in Appendix B).

The U.S. Army Corps of Engineers (USACE) requires that the cable bundle be installed to a minimum depth of -34 Columbia River Datum (CRD) (top of bundle) in and/or proximal to the Federal Navigation Channel, which has a federally authorized depth of 27 feet, which is not necessarily the same as the actual depth at any given point. The cable would be installed at a planned depth in the bed sediments of 10 feet below the mudline to meet the USACE requirements. The hydroplow can install to a depth of approximately 15 feet; therefore, some pre-installation dredging may be needed for the hydroplow to reach USACE required depths. Pre-installation dredging would occur in limited areas within the navigation channel or immediate buffer area. The contractor would survey the bathymetry prior to construction and confirm depths and needed pre-dredging, if any.

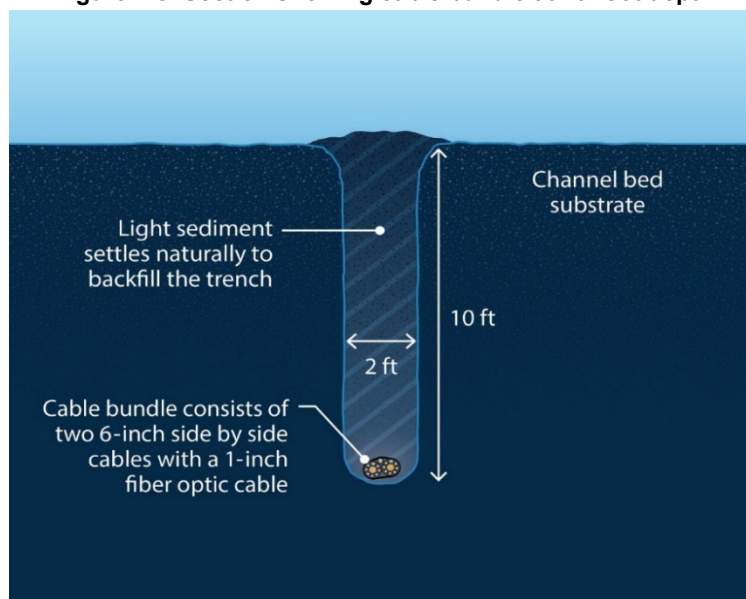
The hydroplow would be towed by a vessel, as shown in Figure 2-7, along with a support vessel. The hydroplow would create an approximately 24-inch-wide trench by temporarily fluidizing sediment allowing the 12-inch cable bundle to be placed within the trench and the sediment to settle back over the cables, burying it at the prescribed depth in the riverbed. The hydroplow would operate continuously, when allowed, and could place up to 1 mile per day depending upon the sediment type, current circulation patterns, and river bottom conditions. Construction activities would be relatively short term and localized with water quality conditions likely recovering completely once construction is complete. Installation in the river would be conducted during allowed in-water work seasons.

Figure 2-7. Hydroplow Installation Overview



The exact placement of the cable bundle in the river would be determined based on considerations such as the nature of the sediment, the topography of the river bottom, the presence of underwater obstacles, and the need to avoid sensitive habitats and cultural resources. There could be up to two locations where minor dredging may be required to place the cable bundle outside of the authorized navigation channel maintenance prism, see Appendix D for locations. The cable would be installed at a depth of 10 feet for most of the Project alignment. Installation could be up to 15 feet deep in the Federal Navigation Channel prism. Figure 2-8 shows a section of the cable at a 10-foot depth.

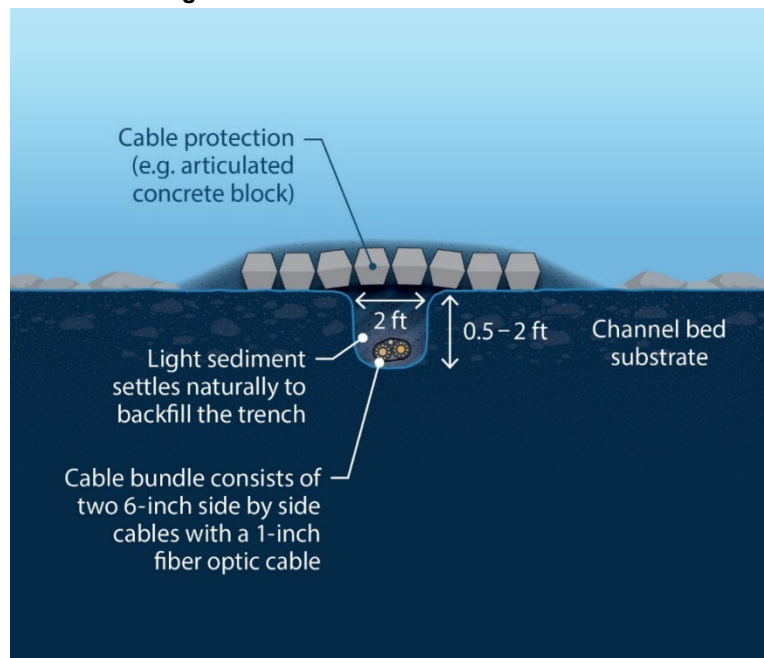
Figure 2-8. Section showing cable bundle at 10-foot depth



The cables would also be buried less than 10 feet deep in some locations where the cable bundle would need to avoid other utilities within the Columbia River and where there may be shallow sediment cover (i.e., up to 2.4 miles of the in-water alignment).

Where the cable bundle is placed directly on bedrock due to lack of sediment, an articulated concrete block mattress or hydraulically stable rock would be placed over the cable bundle to keep it weighted down and protected from damage. A typical concrete mattress is approximately 8 feet wide by 12 feet long by 9 inches deep. An illustration of placement is shown in Figure 2-9. Cable protection is discussed in more detail in Section 2.17.

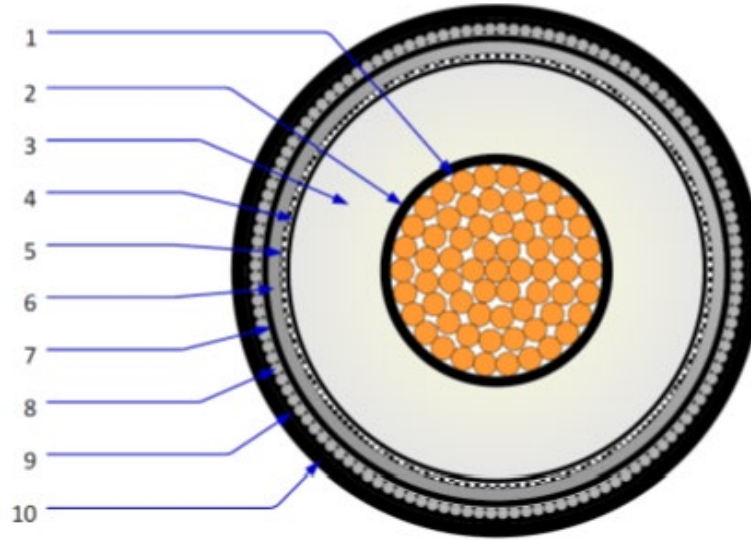
Figure 2-9. Concrete Mattress Illustration



The conductor for the in-river HVDC cable would be of a compacted circular design, constructed from annealed copper wires and filled with a water blocking material to limit water propagation in case of cable severance, as seen in Figure 2-10. The conductor would have a nominal cross-sectional area of 2,500 square millimeters. The conductor design would meet the requirements laid down by Class 2 stranding per IEC 60228. The in-river conductor cable diameter would be approximately 6 inches.

The in-river transmission cables would be bundled together, the bundle being approximately 12 inches, consisting of two 6-inch conductor cables (one positive and one negative) and one approximately 1-inch fiber optic cable for communication and would be installed along approximately 78.8 miles of the Columbia River. Additional information on construction methodology within watercourses and wetlands is discussed in more detail in Section 2.17.

Figure 2-10. Cross Section of HVDC In-River Transmission Cable



Diagrammatic Only – Not to Scale

Item#	Description#
1#	Conductor#
2#	Semi-conductive-water-swelling-tape#
3#	Semi-conductive-extruded-layer#
4#	Insulation#
5#	Semi-conductive-extruded-layer+Longitudinal-water-penetration-barrier#
6#	Metallic-Sheath#
7#	Anti-corrosion-sheath#
8#	Bedding-tape#
9#	Armour-wires#
10#	Serving#

2.3.3.2 HVDC Underground Transmission Cable Installation

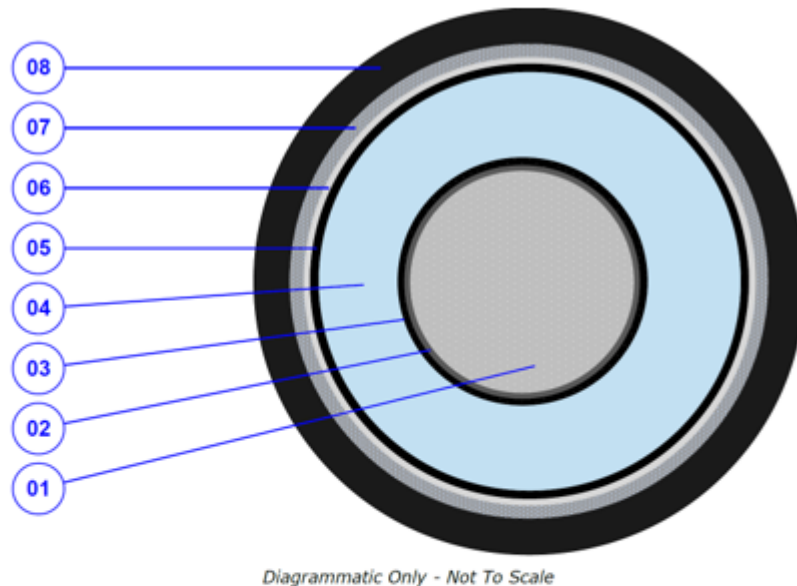
From the eastern converter station, the HVDC would be placed in a trench along road ROWs to near the edge of the Columbia River where it would be placed into the Columbia River via HDD.

The trench for the underground HVDC transmission cables would be approximately 2.5 feet wide by 4.5 feet deep. Within the trench two 5-inch-diameter conductor cables (one positive and one negative) would be placed in two 8-inch-diameter individual conduits spaced approximately 20 inches apart with a one 4-inch-diameter conduit containing a fiber optic cable for communication and encased with 6 inches of concrete. HDD would be used to transition the in-river cables to land. To cross highways, railroads, or sensitive areas, the transmission cable would be placed with HDD or similar trenchless technology.

For the underground HVDC transmission cable, the conductor would be of a compacted circular design, constructed from annealed copper wires, as seen in Figure 2-11. The conductor would have a nominal cross-sectional area of 3,000 square millimeters. The conductor design would meet the requirements laid down by Class 2 stranding per IEC 60228. The underground conductor cable diameter would be approximately 5 inches. Approximately 4.8 miles of underground transmission

cable would be installed in a trench in road ROW from the eastern converter station to the edge of the Columbia River and approximately 4.1 miles of underground transmission cable would be installed from the river to the western converter station. Another 7.6 miles of underground transmission cable would be installed in Washington to bypass the Bonneville Lock and Dam.

Figure 2-11. Cross section of HVDC Underground Transmission Cable



Item#	Description#
1#	Conductor#
2#	Semi-conductive-water-swelling-tape#
3#	Semi-conductive-extruded-layer#
4#	Insulation#
5#	Semi-conductive-extruded-layer#
6#	Longitudinal-water-penetration-barrier#
7#	Metallic-Sheath#
8#	Outer-PE-Layer#

2.3.4 Fiber Optic Communications Cable

In order to provide the required remote monitoring telemetry, station control, and voice communications, and appropriate redundancy and spares, a 1-inch-diameter fiber optic cable would be installed along with the HVDC and HVAC cables. No portions of the fiber optic communication cable would be visible.

2.3.5 Temporary HDD Area

During construction, temporary areas up to 1.42 acres in size would be used to establish HDD drill entry pits and stage equipment. Temporary areas up to 0.74 acres in size would be used to receive the HDD drill. Each temporary area for HDD would vary in size and would be positioned to minimize vegetation removal and sensitive resources. For crossing under railroads or roadways, other trenching technology may be used, such as auger drilling. In these locations, small temporary HAB,

approximately 40 feet long by 25 feet wide on each side of the feature to be crossed, would be used to stage and receive drill equipment. Two temporary HDD areas would be located in Washington, one near Stevenson above the Bonneville Lock and Dam and one near North Bonneville below the Bonneville Lock and Dam, where the cables would transition from land-to-water.

HDD specific geotechnical data will be performed to industry standards to allow the proper evaluation of each HDD crossing. This data will be reviewed during the design phase to develop a plan and profile geometry for the crossings. Based on the geotechnical data and design, the downhole fluid pressures and hydro fracturing potential and borehole stability analyses will be performed to aid in minimizing the potential for an inadvertent return. Annular down hole pressures will be monitored during the pilot hole process. An onsite drilling fluid specialist will monitor the mud rheology, to maintain optimal drilling fluid properties as the drill passes through the changing geological strata during the pilot hole opening and pull back process. The HDD drilling rig spread will have a mud recycling system and mud pumps to aid in the cleaning of the cuttings from the drilling fluids. Depending on the geology, a centrifuge may be added to the equipment on site to assist with the cleaning of the drill fluids. In addition, an HDD drilling management plan will be prepared prior to construction.

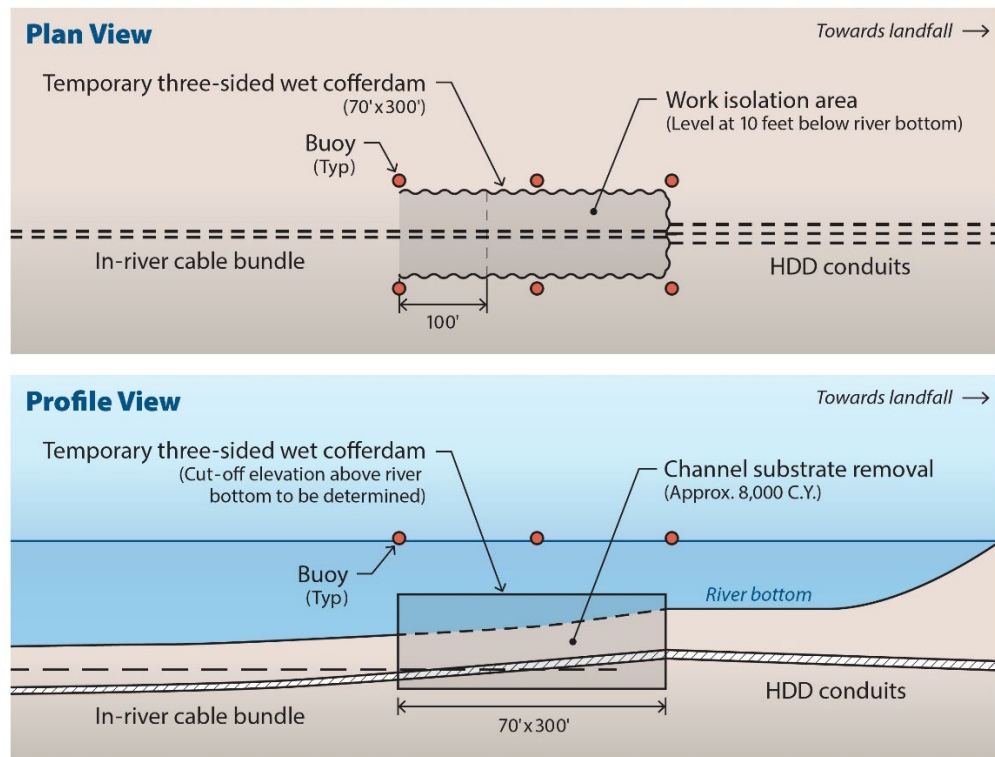
The shoreline setback and depth would avoid disturbance of the bed or banks of the Columbia River. The HDD bore pits would be set back from the shoreline. An inadvertent return (i.e., frac-out) plan would be developed to monitor and manage drilling fluids. Drilling fluids are mostly water, but can have additives that help stabilize the bore, such as bentonite, an absorbent clay or soda ash.

In addition, two HABs would be located in Washington to place the cables under the Burlington Northern Railroad at the SR 14 overpass (Figure 2-3 in Appendix B).

2.3.6 Temporary Three-sided Wet Cofferdams

Once the conduits are installed via HDD, a temporary three-sided wet cofferdam would be placed in the river to facilitate a safe workspace for divers to conduct the land-to-water cable transition. Each cofferdam would be in place for approximately 1 month including installation and removal. Installation of a temporary three-sided wet cofferdam could require dredging to level out the floor of the cofferdam and is anticipated to be vibratory installation (using vibratory hammers or hydraulic presses). Each temporary three-sided wet cofferdam would be approximately 70 feet by 300 feet in size and would be removed after cable installation (Figure 2-12). Four temporary three-sided wet cofferdams would be placed along the route for land-to-water cable transition, two of which will be in Washington State waters; one near The Dalles, one near Stevenson above the Bonneville Lock and Dam, one near North Bonneville below the Bonneville Lock and Dam, and one near Hayden Island (Figure 2-3 in Appendix B). A cofferdam design and installation plan will be prepared to account for marine conditions and geotechnical and environmental surroundings. This plan will be prepared to identify BMPs and safety and emergency planning to minimize the potential for failure during installation and utilization and to maximize safety to operators and the river traffic. The Applicant will hire local marine contractors with local river operating knowledge, experience, and the correct equipment for program execution.

Figure 2-12. Illustration of three-sided cofferdam plan and profile



2.3.7 Temporary Laydown Area (Oregon Only)

An additional 5 acres would be needed at each converter station for temporary laydown and staging of materials during construction.

2.3.8 Project Components in Washington

Of the Project components described above, only the HVDC transmission cable bundle would be installed underground in road ROWs and under the bed of the Columbia River in Washington. Specifically, to bypass the dam, locks, juvenile fish passage, and tribal fishing areas at the Bonneville Lock and Dam, approximately 7.6 miles of the Proposed Alignment of HVDC transmission cables would be brought on land near Stevenson via HDD and buried under the pavement of SR 14, Ashes Lake Road, Dam Access Road, and Fort Cascades Drive near North Bonneville. From Fort Cascades Drive, the HVDC transmission cable bundle would be placed via HDD back into the Columbia River.

2.4 Energy Transmission Systems (WAC 463-60-155)

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.

The proposed corridor on land was selected to be constructed in areas of existing road ROW and developed urban areas and placed underground. The alignment was sited to avoid or minimize disturbing wetland and waters of the state/U.S., shoreline/riparian areas, woody vegetation, and

areas with known cultural resources (inclusive of historical and archaeological resources and traditional cultural places and properties).

The in-river corridor was sited to minimize use conflicts and potential impacts to the aquatic communities such as avoiding near shore/shallow habitats, sensitive fish, and benthic habitat, inundated historic shorelines with cultural resources, areas of known sediment contamination.

Based on direct experience with the installation and operation of underwater and underground HVDC cable systems (see Section 2.16.1), the information in this Application shows that construction and operation of the Project within the proposed corridor can be accomplished with minor and predominately temporary impacts. Moreover, siting the Project within the proposed corridor would produce fewer impacts and less risk to the natural environment and is more feasible than a range of other possible alternatives intended to materially increase the availability of non-fossil fuel energy to load centers and meet state and regional renewable energy goals.

In 2020, the Applicant conducted a pre-feasibility study of the corridor extending from the Big Eddy substation in The Dalles, Oregon, to the Troutdale substation in Troutdale, Oregon.

The objectives of the study were to:

- Identify and provide a better understanding of potential risks, challenges, constraints, and opportunities from environmental, technical, physical, and regulatory perspectives.
- Identify foreseeable challenges to further evaluate and/or address.
- Identify and develop a strategy to work within the framework, constraints, and requirements established by applicable regulatory agencies.

Resources reviewed for the pre-feasibility study included geology, cultural resources, tribal treaty resources, land uses, biological resources, agricultural resources, and wetlands and water resources. Social factors were also considered, including impacts to Native American tribes, stakeholders, political entities, community members, and regulatory authorities.

Physical (man-made) constraints, such as structures that were identified to pose a potential challenge, included juvenile fish bypass tunnels, overhead crossings, established cable/pipeline areas, existing levees, existing piles, USACE dams, rail corridors, and roads. Environmental and geophysical constraints included navigation channel crossings, shallow bedrock, steep side slopes, geological hazards, hazardous waste sites, water depth, elevation differentials, designated National Scenic Areas (NSAs), presence of Washington Department of Fish and Wildlife (WDFW) priority species, presence of Oregon Department of Fish and Wildlife (ODFW) strategy species, presence of benthic species, in-water work windows, prime farmland and farmland of statewide importance, streams, and wetlands.

In 2021, the Applicant conducted an additional pre-feasibility study to extend the corridor of study to the Harborton substation in Portland, Oregon. Similar to the 2020 pre-feasibility study, this additional study identified physical (man-made), environmental, and social constraints. Physical constraints were identified including bridges and overhead powerlines, structures along shipping channels, established cable/pipeline areas, existing levees, existing piles, dredged areas, rail corridors, and roads. With the route extending west, urban infrastructure and development, such as highway bridges, ports, and their associated marine traffic, become more prevalent. Additionally, there is an



increased potential to encounter hazardous sites that are typical of urban areas initially developed as port towns, such as Portland. Environmental constraints unique to the corridor extension included the presence of rock, cobbles, boulders, and gravel; dredged areas and/or maintained depth areas along the Columbia River; and a concentration of obstacles/structures adjacent to the designated shipping channel along the Willamette River. Social constraints for the corridor extension were the same as those identified in the 2020 pre-feasibility study.

The constraints analysis identified three types of potential limiting factors to the potential alignment: design constraints, environmental constraints, and social concerns. Design constraints are those that involve the design of the proposed Project. Environmental constraints are those that involve the surrounding physical environment of the proposed Project. Social concerns are those that involve stakeholders, Native American tribes, political entities, community members, or regulatory authorities.

The Applicant identified opportunities that would take advantage of existing conditions in ways that could minimize constraints by avoiding, to the extent possible, potential physical, environmental and cultural resources, in addition to potentially providing enhancements. Identified opportunities included:

- Potential enhancements or improvements at fishing locations or aquatic habitats along the cable route.
- Removal of debris or other non-natural features (e.g., derelict vessels, cars, etc.).

The in-river corridor was selected based upon the findings of the pre-feasibility studies with the objective of minimizing constraints by avoiding, to the extent possible, potential physical obstacles as well as sensitive environmental and cultural resources.

To develop a cable alignment within the in-river corridor, the Applicant prepared constraint maps of the corridor area that, based on available data, identified potential areas of sensitivity (environmental and cultural resources) as well as contours of the river bottom to identify deep or shallow areas. The Federal Navigation Channel was also delineated. This mapping facilitated the development of a cable alignment that avoided sensitive areas, potentially submerged obstacles, and steep slopes, while also avoiding the navigation channel to the extent possible. From this information, the Applicant then adapted a computer program to create an interactive three-dimensional (3D) image of the river bottom for the entire in-water route. The 3D image helped further identify areas that could present challenges for cable installation. As a final step, the Applicant conducted a marine survey via side-scan sonar to provide images of four areas in the river where additional data was needed to review potential constraints. Results of the side-scan sonar led to the Applicant's decision to avoid an approximately 3-mile stretch east of the Bonneville Lock and Dam due to steep slopes, potential obstructions, and possible navigation channel encroachment. Therefore, in this area, the cable would exit the river on the Washington side and proceed underground for approximately 7.6 miles before re-entering the river below the dam. This decision has the added benefit of avoiding Native American tribal fishing areas near the dam.

The terrestrial corridor includes approximately 4.5 miles of buried cable in The Dalles and approximately 4.4 miles of buried cable in Portland, as well as approximately 7.6 miles of buried cable in Washington to bypass the Bonneville Lock and Dam. These corridors were selected based on the availability of previously disturbed areas, such as public roadways and railroad property, for

cable installation. The Applicant would avoid the few sensitive areas in or near the terrestrial corridor by using HDD or similar trenchless technology, such as HAB, that will avoid surface disturbance of the sensitive areas.

2.4.1 Evaluation of Selection Factors

- i. Disturbance to streams, rivers, and wetlands. Disturbance to functions and values associated with the Columbia River would be temporary except for areas where cable protection is needed (up to 3 miles). Where necessary, the effects to functions and values would be mitigated. The terrestrial (underground) portions of the corridor would be constructed and operated in areas of existing road ROW and developed urban areas, specifically selected to avoid or minimize disturbance to streams, rivers, and wetlands. Using HDD to transition from land to water would avoid wetlands and shorelines.
- ii. Location within exceptionally sensitive and/or valuable habitat. For example, ODFW defines Habitat Category 1 as essential, limited, and irreplaceable habitat such as bogs and fens, certain springs/seeps, and heron rookeries. The Facility is not located in, or adjacent to, these habitat types in either Washington or Oregon.
- iii. Location within public roads and existing ROWs. The terrestrial portions of the corridor would be located almost entirely within previously disturbed roadways and ROWs. Where the cable is located outside of roads and ROWs, previously disturbed and unvegetated lands have been prioritized for use.
- iv. Location requiring land use zone changes. The Applicant is not aware of any required land use zone changes.
- v. Location within protected areas. A portion of the Project is located within the Columbia River Gorge National Scenic Area (CRGNSA), which is an 85-mile-long area along both sides of the Columbia River from the outskirts of Portland-Vancouver in the west to Wasco and Klickitat counties in the east. Urban areas, including Cascade Locks, Hood River, Mosier, and The Dalles in Oregon, are exempt from scenic area regulations. Proposed aboveground activities that can be seen from a designated key view area (KVA) are subject to the Management Plan for the Columbia River Gorge National Scenic Area (CRGC 2020). The aboveground utilities associated with this Project within the CRGNSA are located in The Dalles Natural Scenic Area Urban Area; therefore, they are exempt from scenic area regulations per online Columbia River Gorge Commission (CRGC) maps and geographic information system (GIS) data (CRGC 2022).
- vi. Least disturbance to historical, cultural, or archeological resources. As discussed in this section, the corridor was sited to avoid the inundated historic shoreline with cultural resources and areas with known cultural resources. The Applicant has conducted detailed desktop reviews of the documented resources and will conduct field surveys and coordinate with affected Native American tribes to avoid cultural resources (inclusive of historical and archeological resources and traditional cultural places and properties) to the greatest extent possible.
- vii. Avoidance of seismic, geological, and soils hazards. The Project is proposed for construction and operation in areas of existing road ROW for the underground HVAC and HVDC transmission lines to the extent practicable. The aboveground components (converter

stations) are located in areas of low and moderate landslide susceptibility. There are no Quaternary faults located at either converter station location, the nearest Quaternary fault to the western converter station is located approximately 1.5 miles to the southwest and the nearest Quaternary fault to the eastern converter station is approximately 0.9 miles to the northeast.

- viii. Avoidance of Exclusive Farm Use lands. In Wasco County, Oregon, portions of the proposed Project that are within the Exclusive Farm Use Zone (A-1) would occur on land that BPA owns and uses for electricity transmission assets. No farmlands in Washington would be affected.

2.4.2 In-River Corridor Adjustments

The Applicant has not materially changed the in-river corridor since presenting the proposed Project at WA EFSEC informational meetings held in February 2024. However, the Project has been refined to avoid the historic (pre-dam) river shorelines and move closer, where possible, to the navigation channel. These refinements are intended to minimize or avoid the potential for impacts to submerged cultural resources and near-shore habitat areas.

2.4.3 Terrestrial Corridor Adjustments

The Applicant has made minor adjustments to the Project terrestrial corridor in Oregon since it was presented at informational public meetings held in Oregon in May 2023. These are described briefly below for informational purposes. No changes have been made to the terrestrial corridor in Washington.

1. An alternative route that would exit the river in the Broughton Beach area of Portland has been eliminated from further consideration. This alternative route was eliminated to avoid potential impacts to the public recreational area as well as to avoid using a portion of an existing USACE levee.
2. On Hayden Island, the original route discussed during the informational meetings would have exited the river on the north shore and traversed an area used for the disposal of dredged materials before reaching the south shore and extending via HDD to North Marine Drive. This route was eliminated upon the advice of the property owner (Port of Portland) and USACE due to the potential for encountering contaminated soils associated with the dredged materials. Instead, the proposed corridor would use an existing utility north-south ROW to reach the south side of the island, and then use an existing utility east-west ROW to reach the mainland (North Marine Drive) via HDD. There are two potential HDD locations shown as alternatives, with the westernmost location being the preferred alternative.
3. In The Dalles, the terrestrial corridor has been adjusted slightly to account for a USACE levee situated between the Union Pacific Railroad property and Interstate 84 (I-84). The existence of this levee had not been identified at the time of the informational meetings. In consultation with USACE, the cable route in this area has been adjusted slightly to comply with USACE restrictions on the use of its levee.

2.4.4 Selection of Project Converter Station Locations

The transmission facility requires converter stations at each of the interconnecting ends to convert the transmitted power between AC and direct current (DC). Potential locations for the converter stations were identified and evaluated using a number of criteria, including the following:

- Converter station sites should be close to the selected interconnection substations to minimize overhead interconnecting cable length and corresponding electrical losses, environmental impacts, and construction costs.
- Land must be available for purchase or long-term lease from willing property owners; the Applicant does not presume to have the authority to take property by eminent domain.
- Sites must have sufficient space (5 acres) available to construct a converter station on relatively flat topography.
- General compatibility with local zoning requirements and nearby land uses; and
- Sites should be at a distance from main thoroughfares to minimize visual impact.

2.5 Electrical Transmission Facilities (WAC 463-60-160)

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.*

The Applicant prepared the Pre-Application Request for the Project, as required by 463-61 WAC. The Applicant conducted initial consultation with WA EFSEC in December 2021, in October 2022, and in March 2023 to review the pre-application process. The Pre-Application Request was submitted to WA EFSEC and the pre-application corridor negotiations were initiated on December 20, 2023. For the pre-application corridor negotiations, the Applicant sent an informational mailing, including a notification letter to officials of three counties and seven cities in Washington where the transmission route would either be buried underground (Skamania County only) or buried under the Columbia River in Washington State waters adjacent to the specified county or city. (The Applicant subsequently determined that the proposed route would not be in Washington State waters adjacent to the City of Vancouver and concluded that no negotiation with that city was warranted.)

The Applicant provided a detailed accounting of efforts to engage with the specified counties and cities and to solicit responses to WA EFSEC on March 20, 2024. Two cities (Washougal and White Salmon) returned signed forms indicating concurrence with the proposed route. The City of North Bonneville communicated in writing that it would like to negotiate the route individually at an



unspecified later date; the Applicant subsequently met with officials in North Bonneville and while there has been no objection, the Applicant has not received a written response.

For the remaining six jurisdictions, the Applicant made repeated efforts to obtain written responses, and where possible, met with appropriate officials to describe the Project and the proposed routing. The Applicant participated in the three informational meetings held by WA EFSEC in early February that were attended by some of these officials. The Applicant received neither objections to nor concurrence with the proposed routing. In some cases, there were no responses to repeated efforts to obtain any written statements.

During the negotiation timeframe, none of the jurisdictions requested additional time for negotiations, so the Applicant determined that obligations for corridor negotiations were met.

2.6 Water Supply (WAC 463-60-165)

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

The Project would not require a water conveyance system, or other associated facilities required for providing water to the energy facility because it would not require water for long-term operation. As such, no water supply or usage alternatives were considered, including air cooling, and no water conservation methods are required for operation. Water conservation measures for construction are described below.

2.6.1.1 Construction Water Use

During HVDC underground cable placement, water would be required for concrete casings in trenches and for mixing drilling mud for HDD. Section 2.3.5 provides information on HDD mud management, on-site mud/fluid management, and identifies that an inadvertent return (i.e., frac-out) plan would be developed to monitor and manage drilling fluids. In addition, an HDD drilling management plan will be prepared prior to construction. During HVDC in-river cable placement, river water would be required to operate the hydroplow.

The Applicant's third-party construction contractor would be responsible for identifying water sources and ensuring any needed permits or approvals are obtained prior to construction. It is anticipated that water needed during construction would be obtained from the City of Stevenson and the City of North Bonneville. It is assumed that the cities have the appropriate water rights and no new water rights or authorizations would be required, and as such, no mitigation would be required.

Up to 500 gallons per day would be used over an approximately 6-month construction period. Daily water use would vary depending on the timing of construction and the weather. The water would be supplied from an existing source with valid water rights. This could mean that water is transported to the site by water trucks from an off-site municipal or commercial source via bilateral agreements. The construction contractor would be responsible for identifying water sources and ensuring any needed permits or approvals were obtained prior to construction.

2.6.1.2 Operational Water Use

There would be no water necessary during operations in Washington because the transmission cables would be located beneath the existing road surfaces and in the water under the bed of the Columbia River, which do not require operational water use.

2.7 System of Heat Dissipation (WAC 463-60-175)

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

This Project would not include a heat dissipation system.

2.8 Characteristics of Aquatic Discharge Systems (WAC 463-60-185)

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.

This Project would not include discharge into a watercourse as a permanent feature of the transmission facility.

2.9 Wastewater Treatment (WAC 463-60-195)

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).*

The Project would not require wastewater treatment.

2.10 Spillage Prevention and Control (WAC 463-60-205)

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.

The Applicant's construction contractor would prepare a draft SPCC Plan, which would be implemented during construction and describe the preventative measures and practices to be used during construction to reduce the likelihood of an accidental release of a hazardous or regulated

liquid. The SPCC Plan would describe the methods used in the event of a release to expedite the response to the release and the associated remediation of such a release. The plan would restrict locations of fuel storage, fueling activities and equipment maintenance activities, and provide procedures for these activities. The plan would also describe required training, key roles and responsibilities of key Applicant personnel and contractors, and establish lines of communications to facilitate the prevention, response, containment, and cleanup of any spills. Due to the procedures established in the SPCC Plan and the limited fuels, oils, or chemicals that would be kept on-site during construction, the Project is not expected to result in impacts to soils from chemical spills during construction. In addition, the SPCC Plan would help prevent discharge of oil into navigable waters or adjoining shorelines.

In addition, as indicated in Section 2.3.5, for HDD activities, bore pits would be set back from the shoreline and an inadvertent return (i.e., frac-out) plan would be developed to monitor and manage drilling fluids. Drilling fluids are mostly water, but can have additives that help stabilize the bore, such as bentonite, an absorbent clay or soda ash.

No SPCC Plan would be needed for operations in Washington because the transmission cables would be located beneath the existing road surfaces and in-water under the bed of the Columbia River and would not have components that require an operational SPCC Plan.

2.11 Surface Water Runoff (WAC 463-60-215)

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 during construction would be regulated by WA EFSEC based on the State Water Pollution Control Act, which requires compliance with the NPDES permit, which would be handled through a Construction Stormwater General Permit from Ecology. The NPDES permit will require:

- An ESCP would detail specific BMPs used and where they would be placed, as well as the total disturbance area. The ESCP would include measures to prevent erosion, contain sediment, and control drainage; installation details of the BMPs; and notes.
- A SWPPP would detail the activities and conditions at the site that could cause water pollution, and the steps the transmission facility would take to prevent the discharge of any unpermitted pollution. The Ecology SWPPP template recommended structure and content for preparation of a Construction Stormwater General Permit SWPPP would be followed.

The Applicant would design and implement a stormwater drainage system in consultation with a professional engineer to ensure that minimal erosion would occur. The ESCP and SWPPP will be based on final design and prepared prior to commencement of construction. The following additional mitigation measures are identified to avoid and minimize potential impacts of the proposed Project.

- Stabilized Construction Entrance/Exit: A stabilized construction entrance/exit would be installed at landing site locations where construction vehicles would access areas from

paved roads. The stabilized construction entrance/exits would be inspected and maintained for the duration of construction.

- **Preserve Existing Vegetation:** To the extent practicable, existing vegetation would be preserved. Where vegetation clearing is necessary, root systems would be conserved, if possible.
- **Silt Fencing:** Silt fencing would be installed throughout the Project on the contour downgradient of excavations, HDD staging areas, and within roadside ditches that could potentially discharge stormwater.
- **Straw Wattles:** Straw wattles would be used to decrease the velocity of sheet flow stormwater to prevent erosion. Wattles would be used along the downgradient edge of existing roads and within their ditches when adjacent to slopes or sensitive areas.
- **Mulching:** Mulch would be used to immediately stabilize areas of soil disturbance, and during reseeding efforts.
- **Stabilization Matting:** Jute matting, straw matting, or turf reinforcement matting would be used in conjunction with mulching to stabilize steep slopes that were exposed during trenching outside existing roadways.
- **Soil Binders and Tackifiers:** Soil binders and tackifiers would be used on exposed slopes to stabilize them until vegetation is established.
- **Concrete Washout Area and HDD Drill Cuttings Management:** Concrete truck chutes would be washed down to prevent concrete from hardening within the chutes. In these cases, the concrete wastewater would be washed out into a dedicated concrete washout area. Concrete solids and washout water would be contained within a confined area and hauled away to an appropriate location. Using dedicated concrete washout areas is a common BMP for construction. During HDD drilling to transition the cables from land to water and under sensitive areas, drill cuttings and HDD drilling mud solids would be contained within a confined area and shipped to an appropriate waste site.
- **Stockpile Management:** To facilitate installation of transmission line via trenching, small excavations would be created. Soil from these excavations would be temporarily stockpiled and used as backfill once the cable is laid. Silt fencing would be installed around the stockpile material as a perimeter control, and mulch or plastic sheeting would be used to cover the stockpiled material if the soil requires stockpiling for more than 1 day. Soils would be stockpiled and reused in order to prevent mixing of productive top soils with deeper subsoils.
- **Revegetation:** After construction is complete, any disturbed area outside the roadway would be revegetated with an approved seed mix. When required, the seed would be applied in conjunction with mulch and/or stabilization matting to protect the seeds as the grass establishes. Revegetation would take place as soon as site conditions and weather allow following construction.
- **Pollutant Management:** The SPCC Plan would identify source control measures for use during construction to reduce the potential of chemical pollution to surface water or groundwater during construction.



- **Construction Timing:** To the extent practicable, construction activities would be scheduled to occur in the dry season, when soils are less susceptible to compaction. Similarly, soil disturbance should be postponed when soils are excessively wet such as following a precipitation event.

During operations, a SWPPP would not be needed for operations in Washington because the transmission cables would be located beneath the existing road surfaces and in-water under the bed of the Columbia River, and would not have components that would require an operational SWPPP. The roadways would be reestablished to local and state requirements.

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.

2.12 Emission Control (WAC 463-60-225)

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.*

During construction, air pollutant combustion emissions would be generated from diesel and gasoline engines in the various vehicles and construction equipment. Project vehicles and equipment would comply with applicable state and federal emissions standards. Fugitive dust may be generated from vehicle traffic on paved and unpaved roads and from equipment during construction activities. The Applicant would implement BMPs, including applying dust control measures. The emissions and fugitive dust from these vehicles and equipment would be minor and would not exceed state emissions thresholds. As such, these emissions are not quantified and do not require a permit from Ecology.

No air emissions would be generated from operation of the Project because the HVDC transmission cables would not involve the combustion of any fuels.

WAC 263-78 and 173-400 establish the requirements for review and issuance of construction approvals for new sources of air emissions under WA 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 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; therefore, subparts (5) and (6) do not apply.

Section 3.2 provides 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)

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.

The Project would not emit carbon dioxide. Therefore, these rules are not applicable.

2.14 Greenhouse Gases Emissions Performance Standards (WAC 463-60-232)

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.

The Project is not a baseload electric generation facility. Therefore, these rules are not applicable.

2.15 Construction and Operation Activities (WAC 463-60-235)

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.

2.15.1 Construction Activities

Transmission facility construction is targeted to commence in 2026, pending issuance of a site certificate from OR EFSC, site certification from the WA EFSEC, and a record of decision (ROD) from the USACE. The start of commercial operation is targeted for July 1, 2029, though the Applicant will try to bring the transmission facility online earlier, if achievable. The converter stations would be built at the same time as the transmission line and would take approximately 3 years. The underground portion of the transmission cable would take approximately 6 months and then approximately 6 months for the in-river installation. The Applicant would plan to work over two winter in-water work windows: 2026/2027 and 2027/2028.

The proposed in-water work windows are November 1 through February 28, for the reach below Bonneville Lock and Dam, and November 1 through March 15 for the reach above Bonneville Lock and Dam. These proposed construction windows would avoid peak uses by fish and other aquatic organisms in the river.



In Washington, the HDD civil works is estimated to take 5 weeks at each HDD location to bring cables on land and into the water. Each HDD location is associated with a different cable campaign, so would be completed a year apart. Landing of the submarine cable bundle and then splicing the cables would take approximately 3 weeks at each location.

The duration of the open trench cable laying process on land is estimated to take approximately 4 months, including restoration of the roadways. For the temporary trenching process, work would be conducted with trenching, conduit placement, and restoration occurring in sequence to be continuously working along the roadway, minimize traffic congestion, and the length of time the temporary trench is open. It would take approximately 2 months to pull the cable through the conduits, 3 months to install the joints, and 1 month to restore the temporary HDD work areas. Much of this work could be concurrent, with an approximate 4-month total timeline.

2.15.2 Operations Workforce

There would be no proposed operation work force in Washington, as the facilities in Washington would be underground. Operational work force would be retained in Oregon at the converter stations.

2.16 Construction Management (WAC 463-60-245)

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

The Applicant has not yet selected contractors to construct or operate the transmission facility. In developing and executing their existing transmission projects, the Applicant's affiliated companies, PowerBridge and NEET, have assembled teams of experienced contractors, consultants, and advisors with extensive knowledge and capabilities. Typically, principal members of the team are well known nationally and internationally, supplemented with appropriate local and regional expertise.

The transmission facility would be constructed by experienced and qualified contractors under a comprehensive EPC agreement. Under the EPC agreement, the contractors would be responsible for executing the work in compliance with all applicable permits and regulatory requirements for a fixed price. The EPC agreement would contain customary provisions for schedule and warranties. Experienced personnel from one or more of the Applicant's affiliated companies would oversee the work of the EPC contractors, including compliance with environmental conditions, and administer the contracts.

2.16.1 Applicant's Previous Experience

Through its affiliates, PowerBridge and NEET, the Applicant can demonstrate previous experience in developing, permitting, financing, constructing, owning, and operating high-voltage transmission projects, specifically underwater HVDC electric transmission facilities. PowerBridge entities have successfully developed, and now owns and operates, two 660-MW underwater transmission projects connecting New Jersey and New York: Neptune Regional Transmission System (Neptune), completed in 2007, and Hudson Transmission (Hudson), completed in 2013. These projects, which represent more than \$1.5 billion in capital investment, are described in greater detail below.

2.16.1.1 The Neptune Project

The Neptune project is a 660-MW (500-kV) HVDC submarine electric transmission system, completed in 2007, that connects power generation resources in the PJM Interconnection (PJM) system to electricity consumers on Long Island. The cable extends from the First Energy Raritan River substation in Sayreville, New Jersey, to the Long Island Power Authority (LIPA) Newbridge Road substation in Levittown, Long Island, a distance of 67 miles (www.neptunerts.com).

Converter stations are located in Sayreville (near River Road) and at Duffy Avenue (community of New Cassel, near Hicksville) on Long Island. Most of the route – 51 miles – is underwater in the Raritan River, New York Harbor, and Atlantic Ocean; 14 miles are buried in the existing ROW of the Wantagh State Parkway. The Sayreville converter station takes AC power from PJM via 2,500 feet of buried AC cable extending from the Raritan River substation to the converter station at 230 kV and converts it to DC power at 500 kV. The DC power is transmitted to the Duffy Avenue converter station, where it is converted to AC at 345 kV and transmitted through approximately 1.7 miles of underground cable to LIPA's Newbridge Road substation.

Neptune's two converter stations, which are virtually identical, were built under the direction of Siemens and employ Siemens "HVDC Classic" line commutated converter power conversion technology. The converter stations require no fuel or combustion and produce no air emissions or discharges of pollutants. They meet all local and state codes and standards for noise, visual impacts, public safety, and electro-magnetic fields. The stations are comprised of three main, connected buildings, the tallest of which is about 64 feet high, and AC harmonic filter banks/reactive elements.

The Neptune cables were manufactured by and installed under the direction of Prysmian Cables and Systems (Prysmian). There are three cables: a main high-voltage cable approximately 5 inches in diameter that carries up to 660 MW of electricity at 500 kV; a medium-voltage "return" cable necessary for carrying current in a DC system; and a fiber optic cable for system control and communication. Under water, the three cables are bundled and buried 4 to 6 feet under the river and sea beds, except in the federal navigation channel where it is buried 17 feet below authorized depth. On land, the cables are buried 3 to 4 feet below ground in separate conduits. The Neptune project includes no overhead transmission lines.

Representative photos of the Neptune project are provided in Appendix E.

Successful completion of Neptune required permits and approvals from multiple agencies and jurisdictions (some overlapping), including the USACE, New York State Public Service Commission, and the New Jersey Department of Environmental Protection (NJDEP), as well as local approvals. Neptune also required Federal Energy Regulatory Commission approval as a "merchant" transmission line, and system studies and authorizations by the affected regional transmission organizations (RTOs), New York Independent System Operator (NYISO) and PJM, as well as the interconnecting utilities.

Starting in 2005, the PowerBridge team raised more than \$650 million in debt and equity financing and oversaw the 2-year construction and cable installation process. The project was completed ahead of schedule and within budget in June 2007.



PowerBridge oversaw the construction of Neptune and has managed its administration and operation since completion. Siemens currently provides day-to-day operation and maintenance of the converter stations under PowerBridge's oversight. Since 2007, Neptune has provided more than 20 percent of the electricity consumed on Long Island and has averaged more than 98 percent availability. Scheduling power transfers is in accordance with LIPA's needs and the rules of PJM and NYISO under Common Operating Instructions developed jointly by PowerBridge, the RTOs, and the interconnecting utilities.

Neptune is a member of PJM and operates in accordance with all applicable requirements of the North American Electric Reliability Corporation (NERC), the Northeast Power Coordinating Council, and Reliability First Corporation.

Major equity partners in Neptune currently include:

- The California Public Employees' Retirement System, the retirement fund for California employees;
- ASF Robin 2, L.P., a wholly owned subsidiary of ARDIAN, an infrastructure fund with over \$156 billion under management and advisement;
- An affiliate of Ullico Inc., an insurance and financial services company that focuses on the union labor market.

2.16.1.2 The Hudson Project

Like the Neptune project, the Hudson project is a 660 MW HVDC underwater transmission link between New York and PJM. While the basic technology for Neptune and Hudson is the same, Hudson features a single back-to-back (BTB) AC-DC-AC converter station in Ridgefield, New Jersey. AC power from PJM is transmitted underground at 230 kV from the Public Service Electric & Gas Company Bergen substation in Ridgefield for approximately a quarter mile to the converter station, where it is converted to DC power, then back to AC at 345 kV. The power is then transmitted via 3 miles of cable buried underground and 3.5 miles of cable under the Hudson River before making landfall near Pier 92 and under the West Side Highway to West 52nd Street in Manhattan, New York. The cable then proceeds underground to the Con Edison West 49th Street substation (www.hudsonproject.com).

As with Neptune, Siemens designed and built the Hudson converter station, while Prysmian manufactured and installed the underground and underwater cables. The single BTB converter station occupies approximately 8 acres on the former site of a warehouse facility; the station includes a converter and control building, with filter banks on either side of the building for incoming 230 kV AC power and outgoing 345 kV AC power. The actual AC-DC-AC conversion takes place within the building.

The 345-kV underground cable follows existing public and railroad ROWs to a site in Edgewater, New Jersey, where it enters the Hudson River and proceeds south, primarily in New York waters, to the Manhattan landfall.

Representative photos of the Hudson project are provided in Appendix E.



Like Neptune, Hudson was constructed and is operated under the authority of three major permits, including a New York State Article VII Certificate, a Department of the Army Permit, and an NJDEP Waterfront Development Permit. In addition, the converter station was built under the authority of the New Jersey Meadowlands Commission, which has zoning jurisdiction over the site.

Like Neptune, the Hudson project was constructed by a consortium of Siemens and Prysmian under the oversight of PowerBridge. Construction of the project began in May 2011 and was completed ahead of schedule and on budget, in June 2013. See Appendix E for a report on the Hudson project published in *Transmission & Distribution World* in June 2013.)

Starting in 2013, the Neptune and Hudson projects have been operated and maintained jointly by Siemens under the oversight of PowerBridge employees, with specialized technical expertise available, when needed, from Siemens and Prysmian.

Hudson is a member of PJM and is subject to PJM's control authority. Hudson follows applicable compliance standards of NERC and regional reliability organization, Reliability First Corporation.

In early 2019, principal equity ownership of Hudson was acquired by Argo Infrastructure Partners, LP, an independent fund manager investing on behalf of the California State Teachers Retirement System with more than \$5 billion under management, and the Dutch pension fund, APG.

Both the Neptune and Hudson facilities are system-to-system (i.e., not connected to a specific generation source) and are part of the bulk electric system in the northeastern United States, interconnecting the RTOs, PJM and NYISO. As such, both Neptune and Hudson must comply with NERC's reliability standards of a transmission owner and shared responsibilities of a transmission operator.

2.16.1.3 Cable Installation

For both Neptune and Hudson, submarine cable bundles were installed as prescribed by the permitting agencies. Agency prescriptions included the following:

- Working within seasonal work windows to protect aquatic life during times of migrations and spawning
- Monitoring sediment, turbidity, and water quality in real time during cable installation
- Selecting submarine alignment to avoid known sensitive habitat areas
- Monitoring of work area for impacts to endangered, threatened, and protected species (such as sea turtles and piping plover)
- Preparing reports comparing pre- and post-installation conditions related to benthos, fish and shellfish, thermal impacts, and electromagnetic field impacts

None of the prescribed environmental requirements for Neptune and Hudson interfered with the progress of the submarine installation, and there were no instances of non-compliance. The Applicant believes this record was likely due in part to the relatively small "footprint" created by the submarine cable installation and the temporary nature of the disturbance to the seabed.



The Applicant expects permit requirements for the installation of its submarine cable for the proposed Facility to be similar in kind to those required for Neptune and Hudson, while recognizing that conditions of the Columbia River will likely result in site-specific conditions that will vary from those met for Neptune and Hudson.

For both Neptune and Hudson, terrestrial cable installation by underground burial (including both trenching and trenchless methods) used proven and commonly used construction techniques. The Neptune land route required approximately 14 miles of burial in the eastern shoulder alongside the Wantagh State Parkway on Long Island, a major state highway, and was closely monitored by the NYSDOT for compliance with design standards and traffic safety. The route required using HDD to cross under approximately 20 bridge abutments and interchanges. In addition, the work required complete restoration of disturbed vegetation (grass and trees), including a post-construction maintenance period to assure the restoration was successful.

For Hudson, the land route was a combination of open trenching in public roadways in the New Jersey municipalities of Ridgefield, North Bergen, and Edgewater, and the Borough of Manhattan, New York City; installation via HDD along railroad ROW and under wetlands areas in New Jersey; and trenching via rock excavation through an approximately mile-long historic railroad tunnel. The installation was in accordance with the requirements of the respective municipalities and the affected railroads.

2.16.1.4 The Trans Bay Cable Project

NEET's wholly-owned indirect subsidiary Trans Bay Cable LLC owns and operates the Trans Bay Cable project (TBC), a 400-MW, 53-mile direct current electrical transmission cable with fiber optic communication cables bundled together and buried in the San Francisco Bay. TBC extends from Pittsburg, California to San Francisco, California and provides up to 40 percent of the electrical power used on a daily basis in San Francisco and the surrounding area. TBC is a federally identified "Critical Asset" in the Northern California electrical grid and is governed by the Federal Energy Regulatory Commission and the California Public Utilities Commission. (www.transbaycable.com).

As with Neptune and Hudson, Siemens designed and built the TBC converter stations, while Prysmian manufactured and installed the underground and underwater cables. TBC used Siemens voltage source converter technology, known as "HVDC Plus."

In September 2005, after a lengthy stakeholder process, the California Independent System Operator selected the TBC project as the best energy transmission solution to provide reliable energy to the City of San Francisco.

TBC was constructed and is operated under the authority of two major permits, including a California Public Utility Commission Certificate and a Department of the Army Permit.

NEET acquired TBC in June of 2019 and is responsible for the day-to-day operation, maintenance, and permit compliance.

2.16.2 Applicant's Management Team

This section includes a representative list of key personnel from PowerBridge and from NEET who have direct experience in the development, construction, operation, and maintenance of major

transmission systems and comparable infrastructure facilities. As noted previously, both PowerBridge and NEET are currently responsible for underwater HVDC interconnections in the U.S. that are comparable to CRT.

Most of the senior personnel of PowerBridge have been involved with the Neptune, and later, Hudson, projects since before their construction in such key roles as permitting, financing, construction oversight, community relations, operations and maintenance, and administration. In addition, most have decades of professional experience in the electric power industry in these areas.

2.16.2.1 PowerBridge Personnel

Edward M. Stern is President and CEO at PowerBridge. Ed has more than 30 years of experience leading the successful development, financing, construction, operation and ownership of major energy and infrastructure projects. Under Ed's guidance, PowerBridge developed, financed, and built the Neptune project, completed in 2007, and the Hudson project, completed in 2013. Both projects were completed on budget and ahead of schedule.

Jeffrey T. Wood is Chief Commercial Officer at PowerBridge. Jeff joined the PowerBridge team in 2011 and was primarily responsible for leading the financing effort for the Hudson project (totaling \$850 million). He will be responsible for assuring compliance with financing terms and conditions during construction of the Facility. Jeff is a former managing director at the investment bank Société Générale, where he was responsible for serving as financial advisor and for arranging \$600 million in non-recourse project financing for PowerBridge's Neptune project. Jeff has over 30 years of experience in project finance with involvement in raising more than \$7 billion in debt and equity. Before joining PowerBridge, he was a Senior Vice President with Noble Environmental Power of Essex, Connecticut, where he was responsible for raising more than \$700 million of non-recourse debt and \$200 million of tax equity for a portfolio totaling 330 MW of wind power in New York State. His finance experience also includes positions with J.P. Morgan Chase and Wachovia Securities, where he was involved in the financing of major energy projects both in the U.S. and internationally.

Ernest B. Griggs is Senior Vice President and Project Manager at PowerBridge. Ernie serves as senior vice president and project manager for both the Neptune and Hudson projects, and was the project manager for PowerBridge for the construction of both projects, overseeing all aspects of the work of the EPC contractors. Ernie has over 35 years of large-scale project management, HVDC, and electric power industry experience in bulk power generation, transmission, and operations, primarily in the northeastern United States. While at New England Power Co., his responsibilities included project management of Phase I and II of the 2,250 MW HVDC interconnection between New England and Hydro-Quebec, oversight of a 1,200 MW hydroelectric system, and project management of the Bear Swamp hydroelectric pumped storage project. He was also Director of Operations for New England Power during its transition to Pacific Gas and Electric's National Energy Group with operational responsibilities across the New England asset portfolio. Ernie is a founding member of the international HVDC Interconnector Owner's Group (IOG).

Thomas G. Beaumonte is Chief Financial Officer and Treasurer at PowerBridge and will be responsible for contract administration during construction of the transmission facility. Tom has more than 30 years of experience as a senior financial executive in planning, operations, strategic planning, budgeting, cost reduction, and financial reporting for both domestic and international



companies. Prior to joining PowerBridge at its inception, Tom served as vice president, comptroller, and treasurer of Enel North America, Inc. and its predecessor company, CHI Energy, Inc.

Kathy Neary is Vice President of Accounting and administration at PowerBridge. Kathy joined the PowerBridge team upon its founding and helped create all of the company's accounting and risk management functions. Kathy has more than 20 years of accounting and financial management experience and is primarily responsible for administrative, insurance, accounting, cash management and certain other financial matters for PowerBridge and its affiliated entities and projects. After starting her career with Arthur Andersen, she joined CHI Energy, Inc. and its successor company, Enel North America, Inc. and held the position of manager of finance, responsible for corporate financial analysis as well as oversight of insurance matters for more than 80 energy facilities.

Chris Hocker is Senior Vice President and Chief Development Officer at PowerBridge. Chris joined PowerBridge in 2004 after 20 years of experience in the electric power industry that encompassed project planning, licensing and permitting, government and community relations, business development, and corporate communications. He was responsible for permit compliance during construction of the Neptune project and led the successful permitting effort for the Hudson project. He is continuing in these roles for the development and construction of the CRT facility.

Between 1990 and 2004, he was employed by Enel North America, Inc., and its predecessor company, CHI Energy, Inc. With CHI, he initially focused on licensing, planning, and government and community relations for a proposed 1,500-MW power project, responsible for preparing a successful siting application for the project generating facility as well as a separate siting application for a related 345-kV transmission line.

James T. Sullivan is Vice President of Operations at PowerBridge. Jim is primarily responsible for operations and maintenance and NERC reliability compliance for the Neptune and Hudson projects. Jim joined the PowerBridge team in 2011, bringing more than 30 years of experience in the engineering, operations, maintenance, and management of electric systems, primarily for HVDC transmission systems.

For more than 20 years he has been responsible for development of operating procedures and for compliance with reliability requirements for HVDC systems. His previous work experience includes over 10 years as a supervisor for a 2,000-MW HVDC converter terminal in New England; and 7 years with National Grid as supervisor and director of HVDC operations and maintenance for the New England/Hydro Quebec HVDC Interconnection.

John Ostrowski is Vice President of Construction at PowerBridge. John joined PowerBridge in 2022 with 35 years of experience in the engineering and installation of electric power systems. He began his career as an electrical engineer for the Long Island Lighting Co. and its successor, KeySpan Energy, where he advanced to area supervisor and supervising service operator for the installation, operation, restoration, and improvements of distribution and bulk transmission systems. He then joined Pirelli/Prysmian Cables, where he was responsible for directing the installation of numerous land-based and submarine cable projects. These included the Neptune and Hudson projects.

John later formed Power Installation & Design Group, and in association with Railroad Construction Company, Inc. and was responsible for directing multi-million-dollar transmission and substation

projects, such as replacement and upgrading of a transmission line for Tampa Electric Co., and a \$100 million project involving the demolition of obsolete substation facilities and construction of a new substation and associated utilities and structures.

Susan Brown is Manager of Permits and Compliance at PowerBridge. Susan joined PowerBridge in 2011. She has both development and operations responsibilities, including safety, environmental and regulatory compliance oversight, and environmental social governance reporting for Hudson and Neptune. She has more than 25 years of diverse experience that includes marketing, education, and information technology.

2.16.2.2 NEET Personnel

NEET is a leading independent transmission company, with more than 2,200 miles of transmission lines across 11 U.S. states and Canada representing a total investment of more than \$5 billion.

Matt Pawlowski is the Vice President in Development for NEET with over 15 years of industry-related experience. As part of this role, Mr. Pawlowski is responsible for the Greenfield Transmission Development team and the Land Acquisition, Siting, and GIS teams with the goal of growing the transmission portfolio with strategic opportunities throughout North America. In previous roles at NextEra Energy, Inc. (NextEra Energy) and its affiliates, Mr. Pawlowski was the Executive Director of Business Management and Regulatory Affairs at NextEra Energy Resources, LLC (NEER) managing the interconnection processes for renewable generation across the U.S. and the regulatory relationship with the Southwest Power Pool (SPP) and the Midcontinent Independent System Operator (MISO).

La Margo Sweezer-Fischer is the Vice President of Operations for NEET with over 24 years of experience. Ms. Sweezer-Fischer is responsible for setting and managing operations and maintenance standards and practices, leading the Operations team, and interfacing with NEET Systems and operational staff; directing the safe, reliable, and cost-effective operations of NEET assets across North America to ensure operational excellence via the comprehensive application of processes, procedures, and standards for transmission operations; and managing control center operations, transmission line and substation field asset operations, installation, and maintenance for current NEET assets, including those of New Hampshire Transmission, LLC (New Hampshire Transmission) in New England, Lone Star Transmission, LLC (Lone Star) in Texas, and TBC and Horizon West Transmission, LLC (Horizon West Transmission) in California.

James Alligan is the Senior Director Capital Projects and Strategic Initiatives for NEET. He has over 40 years of global consulting expertise and operational responsibility across Power Generation and Delivery. In his current role, Mr. Alligan is responsible for providing Leadership on the development of Transmission & Substations programs up to 800 kV. Mr. Alligan has served in various roles within major utilities and industry groups, working directly with Engineering, Procurement, and Construction (EPC) vendors. For 4 years Mr. Alligan established and led the Operations business for the world's first Modular Multilevel Voltage-Sourced Converter High-Voltage Direct Current (HVDC) Technology project, Trans Bay Cable, LLC. For 8 years, Mr. Alligan led the T&S applications at the Electric Power Research Institute (EPRI) and has authored and contributed to many publications on subjects related to his field of work. He led Stakeholder teams to achieve new technology buy-in and optimized T&S programs at utilities across the US, and globally. Prior to his work at EPRI, Mr. Alligan worked on T&S Hardening projects in Boston, Massachusetts with



ABB, Ltd. He worked 20 years in the United Kingdom (UK) at the National Grid Company, including Managing the Central London T&S Area Team. He helped establish National Grid's Asset Management organization, and prior to this he worked in nuclear and fossil generation for the Central Electricity Generation Board (CEGB). Mr. Alligan is a graduate of the CEGB five-year Power Engineering program.

Dan Mayers is a Director of Strategic Initiatives for NEET Operations supporting special projects, including wildfire mitigation initiatives, with over 42 years of electric utility, transmission, and power system planning, substation, and transmission line design and engineering, transmission line siting and permitting, procurement, project management, operations, and engineering and construction (E&C) experience in progressive management roles. Mr. Mayers has supported the siting, engineering, procurement, and construction of over 2,500 miles of new 69 – 500 kV transmission lines and over 275 substations/switchyards throughout the United States and Canada. Mr. Mayers' previous roles were as Director of Transmission Engineering and Project Director, Transmission/Substation within the E&C Group for NEER and Florida Power & Light Company, respectively.

Rebecca Sher, JD is the Director of Tribal and Indigenous Relations for NextEra Energy, and its affiliates with 14 years of experience. Ms. Sher is responsible for the development and implementation of NEER's innovative, voluntary Tribal Relations Program aimed at conducting early coordination and building and managing relationships with federally-recognized Native American Indian Tribes. Ms. Sher works closely with tribes and tribal communities across the United States through project development, construction, and operations to identify, avoid, and/or resolve potential issues that may arise, including cultural resource concerns. Prior to joining NEER, Ms. Sher was an attorney for Native American Indian Tribes at a private law firm in Colorado.

2.16.2.3 Key Consultants

In addition to personnel responsible for direct oversight of construction, the Applicant has placed a high priority on engagement with potentially affected communities and interest groups, as well as with Native American tribes, and is mindful of the need to continue meaningful engagements during transmission facility construction. Consultants who are part of the development team to assist with appropriate outreach efforts are identified below.

Maia D. Bellon is a consultant with Cascadia Solutions and a Partner with Cascadia Law Group based in Seattle and Olympia. Maia advises tribal government, municipal, and private clients on a wide array of complex environmental matters, including climate and energy policy, air quality, water resources, toxics cleanup, water quality, and tribal law.

Prior to joining Cascadia, Maia was the Washington State Director of Ecology where she managed a staff of 1,700 employees and a biennial budget of \$2.3 billion. Maia previously served as the deputy and program manager of Ecology's Water Resources Program, regulating the state's freshwater resources and overseeing Ecology's Dam Safety Office and Well Construction and Licensing Program. Maia also served as an assistant attorney general for 15 years representing Ecology before the Pollution Control Hearings Board, Shorelines Hearings Board, Growth Management Hearings Board, and Washington superior and appellate courts.

Carol Loughlin is president of and a senior consultant with Lakeridge Resources in Seattle. She has an extensive background in energy project development, finance, and power marketing, with over two decades of industry experience. As a consultant to the Applicant, she leads the effort to engage with community groups, tribes, labor organizations, local officials, and educational institutions to explore potential partnerships to share project benefits in communities that could be affected by the proposed Facility.

Prior to forming Lakeridge Resources, Carol was a consultant with Sapere Consulting in Washington State focused on energy project development and finance, transmission and interconnection, and power marketing. She developed complex financial and rate structure models to evaluate potential acquisitions and project financing and refinancing and supported renewable energy developers with interconnection applications and studies. She also supported utility resource acquisition processes, performed market studies, prepared RFP responses, and negotiated power purchase agreements for independent power producers in the Pacific Northwest region.

Meghan E. Gavin is a consultant with Cascadia Solutions and an attorney with Cascadia Law Group. Meghan handles complex environmental and natural resource matters. She offers litigation, regulatory, and advisory services supported by a strong scientific background. Her experience includes defending tribal treaty rights, and representing clients in negotiations with regulatory agencies, such as over the scope of agreed environmental covenants. She also works with regulatory agencies to advance matters of environmental justice important to her clients and advises on environmental and energy transactions, including for climate-friendly infrastructure projects.

2.17 Construction Methodology (WAC 463-60-255)

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

The information presented below is information as presented in the 404 Application submitted to the USACE in June 2024 and as described above in Section 2.3.

2.17.1 Waters (Columbia River)

The work within waters consists of installing a cable bundle and related actions within the bed of the Columbia River. Work within waters of the U.S. includes:

- 78.3 miles of a 12-inch HVDC cable bundle buried in the bed of the Columbia River in Washington; 32.1 miles in Washington and 46.2 miles in Oregon.
- Cable protection, consisting of rock or articulated concrete blocks, where the cable might be buried less than 5 feet deep. The footprint would be up to 8 feet wide over a total combined length of up to 2.5 miles; 1.8 miles in Washington and 0.7 miles in Oregon.

To support installation, the project would require the following:

- Four temporary land-to-water transition areas that facilitate cable transition from uplands to the water; two in Washington and two in Oregon. Three-sided wet cofferdams (70 feet by 300 feet) would be used to isolate the work area and riverbed. Up to 32,644 cubic yards (half



in Washington and half in Oregon) would be removed from inside the wet cofferdams. The proposal is to side cast channel substrate adjacent to the cofferdams.

- Pre-installation dredging of material over a length of 1,650 linear feet and 100 feet wide to facilitate required depths of cable installation in the navigation channel prism. This material would be side cast into the channel, outside the navigation channel prism in Oregon.
- Eight geotechnical borings totaling 48 cubic yards removal for off-site sampling and analysis; four of the borings totaling approximately 24 cubic yards would be in Washington.
- Temporary disturbance of 40 square feet of emergent palustrine wetland near Stevenson, Washington.

The 12-inch HVDC cable bundle would be plowed into the bed of the Columbia River and has been sited to avoid the Bonneville Lock and Dam and fish bypass, Bradford Island Superfund Site, and Treaty fishing in-lieu sites. The proposed cable route is sited in the mid-river area, in or adjacent to the Federal Navigation Channel to avoid vegetated and near shore areas. Figure 2-7 in Section 2.3.3.1 depicts the hydroplow installation overview.

2.17.1.1 HVDC Cable Bundle

A 12-inch HVDC cable bundle would be plowed in the bed of the Columbia River from approximately The Dalles to Portland, Oregon, except for routing on land near Stevenson, Washington, to avoid Bonneville Lock and Dam and fish bypass, Bradford Island Superfund Site, and treaty fishing in-lieu sites. The proposed cable route is sited in the mid-river area, in or adjacent to the Federal Navigation Channel to avoid vegetated and near shore areas.

The cable would be installed at a depth of 10 feet for most of the project alignment. Installation could be up to 15 feet deep in the Federal Navigation Channel prism, where this depth is required to meet the USACE requirement of installation below -34 CRD. The cable would also be less than 10 feet deep in some locations where the cable bundle would need to avoid other utilities within the Columbia River and where there may be shallow sediment cover (i.e., up to 2.4 miles of the in-water alignment). Figure 2-8 Section 2.3.3.1 shows a section of the cable bundle at a 10-foot depth.

2.17.1.2 Cable Protection

Cable protection may be needed where the cable bundle would be shallower than 5 feet. Cable protection would not be used unless essential. The need for cable protection would be verified after completion of the geophysical survey, prior to construction. A figure identifying the potential location of cable protections is in Appendix D and summarized in Table 2-2.

Table 2-2. Potential Cable Protection Locations

River Mile	Total Length	Comments
121.5	300 feet (0.06 mile)	Known utility crossing of two, 20- inch pipelines
185.8- 187 187.5 to 188.7	2.4 miles	Deep section of river with bathymetric indications of steeper banks and potentially rocky river bottom.
Total Area	2.4 acres	

Between river miles (RM) 185.8 and 188.7, there may not be adequate substrate depth because the channel substrate consists of bedrock or other large boulders. In this scenario, the cable protection would mirror that of the existing substrate type and function. Figure 2-10 in Section 2.3.3.1 depicts shows the cable bundle at varying depths along with cable protection examples.

Cable protection methods would consist of either articulated concrete block or hydraulically stable rock. The quantities and locations of the cable protection is a conservative estimate. Prior to installation, the contractor would be required to do detailed soundings to identify existing utilities and to confirm installation slopes and substrates.

2.17.1.3 Land-to-Water Transition (Water Side)

There would be a total of four in-river transition areas, two in Oregon and two in Washington. On the water side of the transitions, the work area would be 70 feet by 300 feet. Work isolation methods (e.g., sheet pile) would be used to contain sediment and protect the work area. The isolation methods would be set up as a “U,” and the work area would remain “wet” throughout the construction process (see Figure 2-12 in Section 2.3.6). Divers would guide the ends of the in-water cables into pre-installed conduits; these would be pulled through the conduits into the land side transition areas for jointing to the land-based cables. Approximately at 10-foot excavation would be required below the channel bed surface.

2.17.1.4 Pre-Installation Dredging

The USACE requires that the cable bundle be installed to a minimum depth of -34 CRD (top of bundle) in and/or proximal to the Federal Navigation Channel. The hydroplow can install to a depth of approximately 15 feet; therefore, some pre-installation dredging may be needed to allow the hydroplow to reach USACE required depths.

This would occur in limited areas within the navigation channel or immediate buffer area. The pre-installation dredging volumes have been included as a placeholder since bedloads and channel maintenance schedules may change between permit submittal and proposed construction. The contractor would survey the bathymetry prior to construction and confirm depths and needed pre-dredging, if any.

The locations with the highest potential for pre-installation dredging location are located in Oregon near the Interstate 205 (I-205) bridge and Government Island.

2.17.1.5 Horizontal Directional Drilling

Cables would be installed via HDD into and out of the Columbia River. For HVDC technology, there would be one conduit per bore, with one cable in each conduit. In addition, one fiber optic cable/conduit would be installed at each HDD location.

There would be one HDD entry area near Stevenson above the Bonneville Lock and Dam and one HDD entry area near North Bonneville below the Bonneville Lock and Dam. The shoreline setback and depth would avoid disturbance of the bed or banks of the Columbia River. The bore pits would be set back from the shoreline. An inadvertent return (i.e., frac-out) plan would be developed to monitor and manage drilling fluids. Drilling fluids are mostly water, but can have additives that help stabilize the bore, such as bentonite, an absorbent clay or soda ash.

2.17.1.6 Wetlands

An HDR biologist performed wetland delineations on April 19-21, 2023, and November 6-10, 2023 (Section 3.5; Appendix F). A total of 19 wetlands were delineated along the Project study area and rated using field observations, desktop analysis, and Ecology's Washington Tool for Online Rating (WATOR) to determine wetland categories for each wetland (Table 3-13; Appendix F).

Work on land (i.e., transmission elements and HDD pits) outside the Columbia River would not result in permanent impacts to wetlands, waters, and vegetated riparian areas. To the extent practicable, all work has been sited within paved and/or previously disturbed areas (e.g., roadway right of ways) or in locations with limited vegetation (e.g., graveled areas). Erosion control, drilling fluids, and construction and post-development stormwater runoff would be managed to avoid and/or minimize the potential for discharge into waters of the U.S.

There would be temporary disturbances to wetlands and buffers due to installation of the HVDC cables to one wetland, near Stevenson, Washington (i.e., Wetland 18). Wetland 18 and the wetland buffer occur within the project survey and work areas in a roadside ditch north of SR 14, which has surface water connection to the Columbia River. A total of 40 square feet of temporary impacts and 26.2 square feet of permanent unavoidable impacts to Wetland 18 and 200 square feet of temporary impacts to the wetland buffer. The wetland would be restored to existing or improved functions after cable installation. No other wetlands/standing water are proposed to be impacted (temporary or permanent) as a result of the Project (Section 3.5; Appendix F).

2.17.2 Underwater (in-river) HVDC Transmission

The Applicant would minimize effects to the Columbia River during the construction activities described below. All construction activities would be completed within the agreed to in-water work window.

2.17.2.1 Pre-Installation Activities

Prior to cable laying, the following activities would occur to verify conditions and facilitate minimization of impacts for operations. The installer would be required to survey the entire cable route to identify pre-project bathymetric contours and conduct soundings to identify any utility conflicts or other anomalies that may affect construction. The contractor would finalize the installation plan to include areas of pre-installation dredging and cable protection needed (if any). Adjustments in the final route may be made to avoid large channel features, such as rock outcrops or buried immovable features.

The installer would then conduct pre-installation dredging, as necessary, approximately 2 to 4 weeks before cable installation. This would be completed by a vessel separate from the cable-laying vessel via clamshell dredging. Material would be disposed of in accordance with USACE direction via their Section 408 program and in consultation with the Portland Sediment Evaluation Team (PSET). This would likely be in-water disposal given the low quantity of anticipated dredge volume.

At designated sites along the cable route, a pre-installation grapnel run may be conducted to confirm that there are no obstructions present for cable installation. The pre-installation grapnel run is designed as a single pass along the center line of the installation route and would penetrate the riverbed at a depth of 0.5 to 1.6 feet and a width of 3 to 7 inches. The grapnel would be towed

behind the vessel along the riverbed and the grapnel pull resistance would be monitored throughout the towing operation. This initial survey is aimed at identifying any stray surface-lying lines/wires or other obstructions that are located within the cable installation corridor. The project will comply with Washington and Oregon Water Quality regulations (173-201A WAC and OAR 340 Division 41). The Applicant has prepared a Water Quality (Turbidity) Monitoring Plan for the Proposed Action, which will be implemented during pre-installation dredging and cable installation activities in accordance with the CWA Section 401 Water Quality Certification to be obtained for the project.

2.17.2.2 Cable-Laying and Burial Operations

Following the pre-installation dredging and grapnel run, the cable-laying vessel would begin the cable-laying process. Cable installation does not need to occur in a single continuous method. Different segments can be installed and spliced together if needed to manage installation logistics. Figure 2-7 in Section 2.3.3.1 depicts the anticipated cable sequence.

The Applicant has planned for two in-water work seasons to complete the installation to accommodate in-water work windows and minimize effects to aquatic resources, specifically listed and non-listed fish species. The cable is estimated to be installed at a rate of approximately 1 mile per day. However, there may be some down time due to weather, vessel maintenance, or other unforeseen events.

The cables would be laid and backfilled simultaneously using a hydroplow. The hydroplow fluidizes the channel bottom along the cable installation path to obtain the predetermined depth. When all the appropriate connections are secured, the on-board crane would lift the hydroplow from the deck of the cable-laying vessel and place it on the riverbed in the cofferdam. A team of divers would disconnect the crane from the hydroplow and engage the cable bundle into the machine itself. The machine would then be ready to start cable burial activities.

Cable installation activities begin when towing tension is applied to the hydroplow from the cable-laying vessel. At this time, the water jets would be activated, and the cable burial operation would commence. The cable laying vessel would move along the cable route as the cables are paid out and simultaneously buried by hydroplow in the 24-inch-wide trench. During cable laying and burial operations, the vessel would use either dynamic positioning propulsion or anchors to steady the position.

As the cable operations are underway, the HVDC cables and fiber optic cables would be conveyed from turntables into a wrapping machine on board the vessel, which would secure the three cables into a bundle configuration. During this step, approximately 3-foot strips of polypropylene would be wound around the cables. Then, the cables would be fed off the rear of the vessel and down into the hydroplow for laying and burial. Cable laying activities are constantly monitored by operators and adjusted in order to confirm the cable is being installed correctly. Vessel speed, hydroplow water pressures, and cable installation depth and speed are some of the tasks coordinated by the on-board computer and operator during the installation process.

Cable vessel movement along the route during installation would be monitored using a differential global positioning system (DGPS), providing vessel position. The position of the hydroplow on the riverbed would be determined by the vessel's hydroacoustic positioning system. A marine surveyor would be on-board to confirm cable positioning and produce as-built data.



The day-to-day installation schedule would be coordinated with other maritime activities and the United States Coast Guard at regularly scheduled project meetings. Planned installation and construction sequencing is intended to maintain the safe movement of commercial and recreation traffic along the cable route and to minimize the disturbance and impact due to Federal Navigation Channel maintenance.

2.17.2.3 Post-Installation

A post-installation cable inspection would be conducted following cable installation, and include, if necessary, additional bathymetric, side-scan sonar and magnetometer surveys. The post-installation survey would be conducted to establish baseline conditions concerning cable location, the approximate depth below the riverbed of the cable, and post-installation bathymetry along the cable route. Actual cable burial depth and location would have been established by a system mounted on the hydroplow and transmitted in real time during installation.

2.17.2.4 Suspended Sediment and Water Quality Monitoring

Turbidity monitoring would be conducted prior to, and during, hydroplow cable installation operations. The monitoring would characterize the effect of sediment disturbance on the overlying water column and provide information for operational refinements that could minimize the amount and extent of sediment suspension during cable-laying to the extent practicable. Should turbidity exceed background beyond the permit allowance (assumed 4 hours), operations can be slowed, and/or jet force adjusted to address elevated turbidity.

Monitoring would focus on defining the extent of the suspended sediment plume associated with sediment disturbance, using a combination of real-time instrumentation and laboratory analysis of water samples as follows:

1. Periodic turbidity profiling measurements using in situ optical backscatter (OBS) monitoring equipment;
2. Continuous in situ acoustical backscatter monitoring for suspended sediment using an acoustic Doppler current profiler (ADCP);
3. Grab sample collection for laboratory analysis of total suspended solids (TSS);
4. Periodic temperature profiling measurements using conductivity, temperature, and depth (CTD) equipment; and
5. Concurrent time and positional information using a DGPS.

The OBS and ADCP backscatter data (#1 and #2 above) would be used in conjunction with the grab samples for TSS to afford wide spatial and temporal coverage of the anticipated suspended sediment plume in near real-time. Vertical profiling of temperature would provide information on ambient conditions that may contribute to plume dynamics. Data would include time and positional information from the shipboard DGPS system (#5 above).

Results of the pre-installation trials would be summarized and the findings and recommendations for procedures to be implemented during cable burial and associated monitoring would be provided upon request.

Suspended sediments and turbidity would be monitored along transects positioned perpendicular to the axis of the expected plume and located down-current of cable burial operations. Exact monitoring locations would vary but would be selected so that the three transects relative to the cable-burial operations fully enclose the sediment plume. Previous surveys of similar operations suggest that 200 feet, 500 feet and 800 feet down-current would provide adequate coverage, and these distances would be used initially.

The length of each transect would vary (primarily determined by current velocity); however, each transect would be of sufficient length to establish the spatial extent (boundaries) of the plume. Each sampling location would include the collection of three water samples for laboratory TSS measurement: one from 18 inches below the surface, one at mid-depth, and one 3 feet above the bottom. Vertical profiles of turbidity and water temperature would be measured at each sampling location as well. Turbidity would be measured in nephelometric turbidity units (NTU) using an OBS instrument. These measurements would then be correlated to suspended sediment concentrations (milligrams per liter) based on field calibrations and TSS/ turbidity correlations obtained during previous monitoring efforts.

The OBS instrument would be attached to the CTD so that a single instrument cluster would be lowered through the water column for each sampling location. Background suspended sediments and turbidity monitoring would be conducted throughout the cable burial operations outside the area of the expected plume (approximately 500 feet upstream or adjacent to cable burial operations depending on tidal conditions) for comparison purposes.

Backscatter data from the ADCP would be compared to simultaneous TSS and turbidity measurements to determine the relationship between acoustical backscatter and suspended sediment, as well as the error associated with this relationship. ADCP data would be correlated to TSS and/or turbidity based on the relationship developed from the field measurements and laboratory analysis to create an uninterrupted profile across each section of the sediment plume traversed during water quality monitoring. Water temperature and salinity data would be used to calculate speed of sound to improve acoustical backscatter results. Water samples collected for TSS measurement would be transferred for analytical analysis 24 to 48 hours following collection. The total turnaround time, including laboratory analysis, data entry, and data processing, is expected to take 4 to 6 days. It is anticipated that gross sediment characteristics (grain size distribution, sediment type, etc.) over the permitted cable route would not vary substantially over a 3-day period of cable installation. Thus, TSS results on the fourth day would be used to guide the monitoring crew interpreting real-time acoustical and optical backscatter data. Field activities during the first 3 to 4 days would be guided by backscatter correlations developed during pre-trial installation trials. Estimates of volumetric plume extent for each day would be provided following completion of cable burial activities.

2.17.2.5 Land-to-Water Transition

A three-sided isolation area (wet cofferdam) would be installed on the water side of the land-to-water transition area consisting of sheet pile (Figure 2-3 in Appendix B). The locations of the cofferdams were placed to avoid near shore habitats and vegetation. The intent of the isolation area is to protect divers from currents and other debris while working and minimize turbidity in adjacent areas. The isolation area would not be dewatered. The sediment within the isolation area would be removed to the depth needed to bury the cable at the location (i.e., 5 to 10 feet). The material in the isolation



area would be removed as determined in consultation with the PSET and sediment sampling. Options could include sidecast, removal, and/or beneficial reuse.

2.17.2.6 Horizontal Directional Drilling

HDD or other trenchless technology methods would also be used to avoid streams and wetlands adjacent to Ash Creek Road in Stevenson, Washington. HDD is also an approved method of crossing railroad tracks. HDD is proposed to avoid disturbing lands or key infrastructure. All HDD areas would occur outside of wetlands, waters, and vegetated riparian areas. Inadvertent return of drilling fluids (i.e., frac-out) would be managed to avoid and/or minimize the potential for discharge into waters of the U.S. HDD pits along with other on-land work would be restored to pre-project conditions.

2.17.2.7 Underground (on-land) HVDC Transmission

The Applicant has minimized effects to wetlands and waters associated with on-land work by predominately locating cables in paved areas, gravel roads and road shoulders, and upland areas previously cleared (i.e., grassy/non-woody vegetation). In addition, other adjacent disturbed upland areas would be used for equipment laydown and material stockpiling. Where water crossings are needed, HDD would be used to avoid drainages associated with Ash Creek Road.

Prior to construction, photo documentation of the disturbed areas would be collected to aid in the site restoration to pre-construction conditions. Traffic Control Plans would be developed for work adjacent to active roadways and/or that may require road closure. Erosion prevention and sediment control plans would be prepared, and erosion prevention and sediment control permits would be secured from the appropriate agencies in Oregon and Washington prior to beginning construction activities. Erosion prevention and sediment control would minimize the likelihood of discharges to waters and wetlands proximal to the work and minimize water quality and related affects during work in the waterbody.

Installation of the cable would require temporary disturbance of Wetland 18, near Stevenson, Washington. The following actions would be taken to minimize impacts:

- Applicant would obtain and adhere to the erosion control permits for Washington; with the intent to avoid or minimize sediment laden water from entering wetlands.
- Wetland disturbance areas adjacent to active construction would be field flagged or otherwise designated.
- No staging, stockpiling, truck traffic would be allowed in wetland areas, except for those areas identified for disturbance.
- The wetland impact area has been minimized to allow for the minimum necessary area for cable construction/access.

2.17.2.8 Material Disposal

Disposal would be required for up to 4,500 cubic yards of pre-installation dredge materials in the area downstream of Bonneville Lock and Dam and up to 32,244 cubic yards of removal from the wet cofferdams located near The Dalles and Stevenson, Washington, upstream of Bonneville Lock and Dam; and Hamilton Island and near Hayden Island downstream of Bonneville Lock and Dam. The

Applicant is working with the PSET team related to the characterization of sediment in these locations. The Applicant is proposing to side cast or undertake in-water disposal in designated areas. The Applicant would adhere to PSET's recommendation and the USACE requirements once the proposed sediment characterization work and modeling is complete.

Permanent fill material would consist of the HVDC cable materials and cable protection (i.e., stone or articulated concrete blocks). Temporary fill would include sheet piles. All materials would be sourced from manufacturing and/or permitted sources (i.e., quarries).

2.18 Protection from Natural Hazards (WAC 463-60-265)

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 State of Washington uses International Building Code (IBC) 2021, with current amendments by the Washington State Building Code and local agencies, and the State of Oregon uses IBC 2021, with current amendments by the Oregon Structural Specialty Code and local agencies. Pertinent design codes as they relate to geology, seismicity, and near-surface soils are contained in IBC, Chapter 16, Section 1613, with slight modification by the current amendments of the states of Washington and Oregon and local agencies. The Project will be designed to meet or exceed the minimum standards required by these design codes. The Applicant has extensive experience building HVDC transmission facilities and from a structural perspective, designs projects to withstand non-seismic geologic hazards.

A qualified engineer will assess and review the seismic, geologic, and soil hazards associated with the construction of Project facilities. Construction requirements would be modified, as needed, based on the site-specific characterization of seismic, geologic, and soil hazards. The Project would be designed, engineered, and constructed to meet all current standards. The Applicant proposes to design, engineer, and construct the Project to avoid dangers to human safety related to seismic hazards and non-seismic hazards in many ways, including conducting site-specific geotechnical evaluations for the facilities. Converter station structures would be designed in accordance with the current version of the Oregon Structural Specialty Code. Transmission lines would be specified in accordance with the latest versions of the Institute of Electrical and Electronics Engineers (IEEE) standards. The converter stations and portions of the underground transmission cables would be located mostly industrial areas; therefore, the risks to human safety and the environment due to seismic hazards would be minimal.

Typical mitigation measures for non-seismic hazards include avoiding potential hazards, conducting subsurface investigations to characterize the soils to adequately plan and design appropriate mitigation measures, creating detailed geologic hazard maps to aid in laying out facilities, providing warnings in the event of hazards, and purchasing insurance to cover the Project in the event of hazards. Should Project elements be damaged, damages would be assessed, and repairs made quickly to ensure recovery of operations after a major storm event.

The Project would be a registered entity with NERC and adhere to applicable standards for critical infrastructure protection (CIP), emergency preparedness and operations, and facility design. (Note that affiliates of the Applicant that own and operate similar facilities currently are subject to and in



compliance with NERC reliability requirements.) Similarly, BPA confirmed it has system recovery plans for the Big Eddy substation and its associated transmission lines, and PGE confirmed it has system recovery plans for the Harborton substation and its associated transmission lines. Additionally, the Project can provide black start capability to initiate system restoration to the grid in the event of severe or catastrophic outages on the backbone AC bulk electric system.

2.19 Security Concerns (WAC 463-60-275)

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 cable system would be buried at least 10 feet in the sediment of the Columbia River, or 3 to 4 feet underground, primarily in public roadways; therefore, the cable system would not require specific security measures. For the transmission facility as a whole, the perimeter of each converter station site in Oregon would be secured by standard grade galvanized chain-link fence during construction and permanent fencing to secure the converter facilities during operation. All pedestrian and vehicle gates would be locked and monitored with security cameras during operation. In addition, the transmission facility would be operated in accordance with NERC standards applicable to required security measures, including cybersecurity.

2.20 Study Schedules (WAC 463-60-285)

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.

As identified in the Pre-Application Request, Table 2-3 lists the environmental studies and technical reports that have been prepared or will be prepared for this proposed Project. All studies that are currently being developed will be made available to the appropriate agencies upon their completion. Additional studies may be required based on what initial studies reveal.

Table 2-3. Environmental Studies and Technical Reports

Environmental Studies and Technical Reports	Survey/Report	Extent of Area Addressed in Study/Report	Report Status
General	Phase I Environmental Site Assessment	Eastern and western converter station locations	A Phase I Environmental Site Assessment was completed for the western converter station location in February 2024. A Phase I Environmental Site Assessment will be completed for the eastern converter station prior to construction
Earth	Sampling and Analysis Plan (required by the USACE Portland Sediment Evaluation Team)	Sediment sampling within the Columbia River to characterize sediment quality.	Sampling completed during in-water work window in November 2024, PSET provided Sediment Determination Memorandum stating that the dredge work is suitable in July 2025

Environmental Studies and Technical Reports	Survey/Report	Extent of Area Addressed in Study/Report	Report Status
Earth	Geophysical Investigation (multibeam, sub-bottom, side scan sonar and marine magnetometer surveys)	Geophysical characterization of an approximate 250 foot swath of the Columbia River for 80 miles (segmented upstream and downstream of the Bonneville Dam).	Geophysical Investigation Report and Data provided August 2025
Earth	Geotechnical Investigation Report	Surveys to include soil borings conducted both in river and at HDD drilling areas and converter station locations.	Will be completed prior to construction
Wetlands	Wetlands and Other Waters Delineation Report	Surveys included field delineation to identify wetlands at converter station sites and land-based cable locations and evaluate potential temporary or permanent impacts to wetlands.	WA and OR Wetland Delineation Reports completed and submitted to the USACE as part of the CWA 404 Joint Permit Application in June 2024
Plants	Botany and Habitat Survey Report	Surveys will include site visits and general habitat assessment at land to water transition areas, near shore areas.	Completed
Plants and Animals	Site Habitat Characterization Study	Surveys to be conducted at converter station sites and land-based cable locations.	Completed
Socioeconomic Effects	Economic Impacts Assessment of the Cascade Renewable Transmission Project	Skamania County	Completed
Cultural / Historic	Cultural Resources Investigations	Surveys to be performed in the area of potential effects inclusive of converter station sites and land-based cable locations.	Surveys completed in Washington

2.21 Potential for Future Activities (WAC 463-60-295)

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.

2.22 Analysis of Alternatives (WAC 463-60-296)

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 Site Selection

The proposed Project corridor on land is in areas of existing road ROW and developed urban areas and placed underground. The Applicant selected this alignment to avoid or minimize disturbing wetland and waters of the state/U.S., shoreline/riparian areas, woody vegetation, and areas with known cultural resources (inclusive of historical and archaeological resources and traditional cultural places and properties).

The in-river corridor was sited to minimize use conflicts and potential impacts to the aquatic communities such as avoiding near shore/shallow habitats, sensitive fish and benthic habitat, inundated historic shorelines, and areas of known sediment contamination.

Based on the Applicant's direct experience with the installation and operation of underwater and underground HVDC cable systems, the Applicant believes that construction and operation of the Project within the proposed corridor can be accomplished with minor and predominately temporal impacts. Moreover, siting of the Project within the proposed corridors would produce fewer impacts, present less risk to the natural environment, and is more feasible than a range of other possible alternatives intended to materially increase energy access for generation resources to supply load centers and to meet state and regional renewable energy goals for the state of Washington and the broader region.

In 2020, the Applicant conducted a pre-feasibility study of the corridor extending from the Big Eddy substation in The Dalles, Oregon, to the Troutdale substation in Troutdale, Oregon.

The objectives of the study were to:

- Identify and provide a better understanding of potential risks, challenges, constraints, and opportunities from environmental, technical, physical, and regulatory perspectives.
- Identify foreseeable challenges to further evaluate and/or address.
- Identify and develop a strategy to work within the framework, constraints, and requirements established by applicable regulatory agencies.

Resources reviewed for the pre-feasibility study included geology; cultural resources; tribal treaty resources; land uses; biological resources; agricultural resources; and wetlands and water resources. Social factors were also considered, including impacts to Native American tribes, stakeholders, political entities, community members, and regulatory authorities.

Physical (man-made) constraints, such as structures that were identified to pose a potential challenge, included juvenile fish bypass tunnels, overhead crossings, established cable/pipeline areas, existing levees, existing piles, USACE dams, rail corridors, and roads. Environmental and geophysical constraints included navigation channel crossings, shallow bedrock, steep side slopes, geological hazards, hazardous waste sites, water depth, elevation differentials, designated NSAs, presence of WDFW priority species, presence of ODFW strategy species, presence of benthic species, in-water work windows, prime farmland and farmland of statewide importance, streams, and wetlands.

In 2021, the Applicant conducted an additional pre-feasibility study to extend the corridor to the Harborton substation in Portland, Oregon. Similar to the 2020 pre-feasibility study, this additional

study identified physical (man-made), environmental, and social constraints. Physical constraints were identified, including bridges and overhead powerlines, structures along shipping channels, established cable/pipeline areas, existing levees, existing piles, dredged areas, rail corridors, and roads. With the route extending west, urban infrastructure and development, such as highway bridges, ports, and their associated marine traffic, become more prevalent. Additionally, the potential to encounter hazardous sites that are typical of urban areas initially developed as port towns, such as Portland, increases. Environmental constraints unique to the corridor extension included the presence of rock, cobbles, boulders, and gravel; dredged areas and/or maintained depth areas along the Columbia River; and a concentration of obstacles/structures adjacent to the designated shipping channel along the Willamette River. Social constraints for the corridor extension were the same as those identified in the 2020 pre-feasibility study.

The constraints analysis identified three types of potential limiting factors to the potential project alignment: design constraints, environmental constraints, and social concerns. Design constraints are those that involve the design of the proposed project. Environmental constraints are those that involve the surrounding physical environment of the proposed project. Social concerns are those that involve stakeholders, Native American tribes, political entities, community members, or regulatory authorities.

The Applicant identified opportunities that would take advantage of existing conditions in ways that could minimize constraints by avoiding, to the extent possible, potential physical, environmental, and cultural resources, in addition to potentially providing enhancements. Identified opportunities included:

- Potential enhancements or improvements at fishing locations or aquatic habitats along the cable route.
- Removal of debris or other non-natural features (e.g., derelict vessels, cars, etc.).

The in-river corridor was selected based upon the findings of the pre-feasibility studies with the objective of minimizing constraints by avoiding, to the extent possible, potential physical obstacles as well as sensitive environmental and cultural resources.

To develop a cable alignment within the in-river corridor, the Applicant prepared constraint maps of the corridor area that, based on available data, identified potential areas of sensitivity (environmental and cultural resources) as well as contours of the river bottom to identify deep or shallow areas. The Federal Navigation Channel was also delineated. This mapping facilitated the development of a cable alignment that avoided sensitive areas, potentially submerged obstacles, and steep slopes, while at the same time avoided the Federal Navigation Channel to the extent possible. From this information, the Applicant then adapted a computer program to create an interactive 3D image of the river bottom for the entire in-water route in order to further identify and understand areas that could present challenges for cable installation. As a final step, the Applicant conducted a marine survey via side-scan sonar to provide images of areas in the river of four areas where additional data was needed to review potential constraints. Based on this information, the Applicant elected to avoid a stretch of approximately 3 miles east of the Bonneville Lock and Dam due to steep slopes, potential obstructions, and possible navigation channel encroachment. In this area, the cable would exit the river on the Washington side and proceed underground for approximately 7.6 miles before re-



entering the river below the dam. This decision has the added benefit of avoiding Native American tribal fishing areas near the dam.

The terrestrial corridor includes approximately 4.5 miles of buried cable in The Dalles and approximately 4.4 miles of underground cable in Portland. These corridors were selected based on the availability of previously disturbed areas, such as public roadways and railroad property, for cable installation. There are few sensitive areas in or near the terrestrial corridor, and these would be avoided by using HDD or similar trenchless technology to avoid surface disturbance.

2.22.2 Electrical Transmission Routing Alternatives

Although there were no public comments inquiring about alternatives from WA EFSEC informational meetings, there were public comments as part of the Oregon NOI informational meetings that suggested other alternatives to the proposed Project. Those alternatives, where applicable to Washington, are addressed below for consistency across applications and awareness.

2.22.2.1 Above Ground Transmission

Designing the route for a major new transmission facility is a function of, among other things, the chosen points of interconnection to the electric grid. The substations at the points of interconnection must be sufficiently robust to accommodate a new high-voltage line, both physically and electrically. The Applicant identified the existing BPA Big Eddy substation (500 kV) and the existing PGE Harborton substation (230 kV) as having sufficient physical space and electrical capacity to accommodate a new high-voltage line at an acceptable cost, while meeting the needs of providing significant new transmission capacity to meet growing energy demands and achieve public policy goals.

The Applicant is aware of generally east-to-west overhead transmission lines proposed by others that would make use of existing ROWs. None of these alternatives would interconnect directly into the greater Portland area, and they would require additional transmission expansion to do so, such as expansion needed to overcome existing constraints on the south-north North of Pearl flowgate. Given the existing constraints on the AC transmission system, construction of multiple overhead transmission lines would be required to increase flows into the Portland area by the same 1,100 MW as the Project.

The Project, as proposed, is an HVDC facility that affords benefits to the regional electric system that would not be provided by an AC facility. As such, it requires converter stations near the points of interconnection to convert AC power to DC, and DC back to AC.

Given the need for additional transmission directly into the greater Portland area, and the need to site converter stations at a reasonable distance from the interconnection points, the constraints on realistically routing overhead transmission between the two points are severe if not impossible. The Applicant has no power of eminent domain that would likely be necessary to acquire portions of a new overhead transmission line ROW. Using existing transmission ROWs that might be widened to accommodate overhead transmission comparable to the Project have been proposed by PGE and BPA, and may well be ultimately necessary, but the acknowledged need for additional transmission capacity beyond 2030 is significantly greater than the Project's 1,100 MW, which can be put into service by or before 2030. In any event, the Applicant's use of existing ROW is not a realistic alternative since these are owned and controlled by such entities as PGE or BPA; thus, not available

to the Applicant. Additionally, these ROWs traverse areas of wildfire risk over the Cascades that the Project is designed to avoid. The Project, as a controllable HVDC line, will provide system reliability benefits that would not be available as an above ground AC transmission project. Theoretically, there could be plausible routes that use highway ROWs (I-84 in Oregon, or SR 14 in Washington) or existing railroad ROWs in either state. However, any of these ROWs has numerous physical barriers (such as narrow sections of ROW that would not allow transmission structures, bridges, tunnels, etc.) that would prevent the unimpeded construction of approximately 100 miles of overhead transmission. Moreover, in Oregon, the co-location of utilities parallel to the ROW is currently prohibited and would require the approval of the Oregon Department of Transportation and the Federal Highway Administration. Even then, the prospect of routing highly visible transmission facilities through the CRGNSA is extremely unlikely.

For these reasons, overhead transmission is not a viable alternative to the proposed underwater cable route that is available to the Applicant, and that overhead transmission currently proposed by others, while not equivalent alternatives to the Project, will also be required to meet the region's needs.

2.22.2.2 Transmission Along Rail Rights-of-Way

The Applicant has considered the use of existing rail corridors in Oregon and Washington for the possibility of burying HVDC cable between the selected interconnection points. However, rail ROWs on each side of the Columbia River present more than one insurmountable obstacle. In designing the route for a long, linear project such as a transmission facility within a narrow corridor, the presence of even one insurmountable obstacle renders the entire concept not feasible, even if most of the route would be feasible.

Underground placement of high-voltage cable requires far more space for construction operations than simply the width of the trench, even though the workspace requirement is temporary. Space is needed for machinery, equipment, materials, movement of construction crews, and temporary placement of excavated material. Even after trenching is complete, the jointing of cable sections requires physical space for jointing operations – typically, a covered, heated area approximately 12 feet by 25 feet set up temporarily at the location of each joint to allow jointing specialists to work safely.

There are numerous locations along the rail ROWs on both the Oregon and Washington sides of the river where there is insufficient space to safely accommodate the required work. In particular, there are locations where the ROW is constrained by sheer rock cliff on one side and the edge of the river on the other. There also are several locations where the ROW narrows to a single track, such that trenching operations would unavoidably conflict with railroad operations. In narrow, constrained areas such as these, there are often no alternative routes that would allow trenching operations to circumvent or move away from these areas and rejoin the ROW further along the route.

In examining the rail ROW on the Oregon side, the Applicant identified 17 culverts or overpass bridges, 3 tunnels, and 5 causeways. For these types of conditions, it is likely that the cable could not be buried but instead would be attached to the structure. Structural analysis of each such situation would be required to determine if the structure could safely bear the additional weight of the cable. If not, the structure would need to be reinforced, if possible; otherwise, the structure would not



be usable for this purpose. There are many instances of similar conditions on the rail ROW on the Washington side, as well as extremely narrow ROWs and single-track areas.

Even if there were theoretical technical solutions for the various obstacles to be encountered along the rail ROWs, using the ROWs would require the permission and approval of the railroads themselves, which is not guaranteed. As noted previously, the Applicant does not have powers of eminent domain.

For these reasons, the Applicant considers the use of rail ROWs for cable routing to be not feasible.

2.22.2.3 Transmission on Washington Side of the Columbia River

The Applicant conducted a detailed feasibility review of using Washington SR 14 to route an underground cable system that would cover much of the distance between the two points of interconnection. The review considered the stretch of highway between Vancouver and Lyle, a distance of approximately 81 miles. On the basis of the review, there are numerous reasons to conclude that this alternative is not feasible, including the following:

- The presence of approximately 350 physical obstacles (tunnels, roundabouts, bridges, culverts, causeways, etc.), some of which are many decades old; the integrity and load-bearing capability of crossings would need to be assessed, with reinforcement, as needed (if feasible at all).
- The presence of basalt rock for much of the route that might necessitate blasting to create a trench (and consequent safety and noise issues).
- In many locations, the presence of sheer rock cliffs on either side of the highway and the absence or near-absence of constructable shoulder area.
- WSDOT would have to approve a blanket exception to the prohibition on the use of linear utilities within a state highway prism; while such exceptions are possible and within WSDOT's authority, there is no guarantee that the entire route would be granted an exception.
- The susceptibility of some stretches of the route to rockslides; WSDOT policy places priority on maintaining a safe highway, so that a rockslide could not only impede cable installation, but could require removal of a portion of the installed cable in order to restore the highway.
- The need to shut down a lane of the two-lane highway for cable installation, which almost certainly would require much or all of the work to be done at night.

Using a substantial portion of SR 14 would still require crossing of the Columbia River in two places in order to reach the interconnection points in Portland and The Dalles. Further, as a practical matter, any construction contractor with the experience and capability of performing the work would do so only on a time-and-materials basis due to the multiple uncertainties involved (WSDOT requirements, rock, force majeure events such as rockslides, lane restrictions, time of day restrictions, reinforcement of structures, etc.). It would be virtually impossible to estimate, much less guarantee, a cost or schedule for the work without including vast contingencies on both.

The Applicant acknowledges that the Proposed Alignment does include the use of a small portion of SR 14 (approximately 4 miles) as part of a 7.5-mile stretch of underground cable needed to bypass

the Bonneville Lock and Dam. Based on the Applicant's experience and on direct communication with WSDOT, the Applicant considers this short stretch of SR 14 to be free of significant obstacles and believes that the time required for the work can be conservatively estimated at 6 months. The work required in this relatively small portion of SR 14 is in no way comparable to the work that would be required for more than 80 miles and multiple challenges and uncertainties that are virtually impossible to quantify or estimate.

2.22.2.4 Offshore Wind Development

The Applicant is familiar with earlier efforts to evaluate and encourage offshore wind development along the Oregon coast, which conceivably could have provided large-scale renewable energy resources to Washington as well. However, these efforts in Oregon have been suspended, and Oregon's governor has requested the federal Bureau of Ocean Energy Management (BOEM) "halt all current leasing activities off the coast of Oregon" and terminate a planned auction of offshore wind lease areas to potential wind developers.² Consequently, the Applicant does not consider offshore wind to be a comparable alternative to the Project, which can be operational to help meet growing energy demands and public policy requirements in the early 2030s.

2.22.2.5 Energy Efficiency and Conservation

PGE's 2023 *Clean Energy Plan and Integrated Resource Plan* (2023 CEP-IRP) includes extensive discussions of measures that would partially offset the need for additional generation and transmission resources over its "planning horizon" (the years 2023-2043) (BPA 2023a). These include:

1. Distributed Energy Resources (see 2023 CEP-IRP, Section 6.2.1)
2. Demand Response (see 2023 CEP-IRP, Section 6.2.2)
3. Energy Efficiency (see 2023 CEP-IRP, Section 6.2.3)
4. Community-based Renewable Energy (see 2023 CEP-IRP, Chapter 7)

Measures that can be broadly categorized as "energy efficiency and conservation" include distributed energy storage and distributed generation (such as rooftop solar installations), as well as efforts to electrify buildings and vehicles. For electrification measures in particular, adoption of electrification requirements has the effect of increasing electricity demand over time (see 2023 CEP-IRP, Section 6.2.1, Figures 34 and 35).

PGE's 2023 CEP-IRP estimates the impact of rooftop solar installations as follows: "(T)he incremental energy impact from 2023 of customer-adopted solar in the Reference Case is estimated at approximately 25 megawatt-average (MWa) by 2030...By the end of the planning horizon, this is expected to double" (2023 CEP-IRP, Section 6.2.1). PGE's "high" case shows the impact to be approximately 30 MWa by 2030, and approximately 80 MWa by 2043.

Demand response measures include both technologies such as "smart" thermostats and programs such as time-of-use pricing and other strategies to reduce peak demands. PGE expects such measures to result in "achievable economic" impacts of 228 MW and 174 MW during summer and

² Kotek, Tina. 2024. Letter from Governor Tina Kotek to Bureau of Ocean Energy Management. September 27, 2024. Available at: https://www.opb.org/pdf/GovernorKoteklettertoBOEMDirectorKlein_1727455319170.pdf



winter, respectively, by 2030 (the “high” case impacts are 282 MW in summer and 205 MW in winter).

PGE’s 2023 CEP-IRP breaks down the impact of what it terms “cost effective” energy efficiency measures into industrial, commercial, and residential sectors and estimates savings in the range of approximately 30 MW per year in the near term (by 2030). The annual savings actually peaks around the 2032-2033 time frame and then declines over the next 10 years, since the cost-effective measures are assumed to be implemented more quickly. Even so, the cumulative impact of energy efficiency measures is estimated to be approximately 500 MW by 2043.

The key point is that in formulating its 2023 CEP-IRP and estimating its resource and transmission needs over its planning horizon, PGE *has already taken into account* what it believes to be realistic, cost-effective measures that can be broadly categorized as “energy efficiency and conservation” (including rooftop solar and other behind-the-meter generation and storage, demand response, and energy efficiency). Even assuming arbitrarily that PGE’s “reference case” impacts are significantly understated and should be doubled, the results would not come close to offsetting the estimated additional transmission needs of 1,658 MW, 4,568 MW, and 9,043 MW by 2030, 2035, and 2040, respectively.

2.22.2.6 Recommendations of CRITFC’s 2022 Energy Vision

The Applicant also considered alternatives based on recommendations in the *Energy Vision for the Columbia River Basin* (Energy Vision), published in 2022 by the Columbia River Inter-Tribal Fish Commission (CRITFC). The Energy Vision is included as Appendix G and the Applicant fully supports the four goals stated in that document (page 6):

- Create a regional energy portfolio that protects and enhances environmental quality, treaty protected resources, and supports the restoration of Columbia Basin’s fish and wildlife to healthy and harvestable population levels.
- Prevent new and reduce ongoing damage to Columbia River Basin resources, including fish, wildlife, water quality, and tribal cultural resources, by recognizing the relationships and interdependencies of natural and built systems including the Northwest’s energy system.
- Provide increased protection for both fish and wildlife and utility customers against unanticipated events, such as drought, fire, and market aberrations while providing an adequate, economical, and reliable electric supply.
- Mitigate climate change impacts to protect Northwest ecosystems by replacing fossil-fuel electric generation and reducing the reliance on fossil-fuels for power, transportation, and other uses.

Moreover, the Applicant believes that the Project is consistent with the 43 recommendations in the Energy Vision. Measures to reduce peak loads, increase energy storage, and maximize energy efficiency are fundamental to energy plans and policies throughout the Pacific Northwest. As discussed above, PGE has addressed many such measures in its most recent 2023 CEP-IRP and has concluded that even when those measures it believes to be realistic and cost-effective are accounted for, the growing need over its planning horizon for additional transmission capacity is in the thousands of megawatts. Even assuming a doubling or tripling of PGE’s projections of these measures does not approach the future resource or transmission needs.

Certain Energy Vision recommendations align directly with one of the main objectives of the Project, which is to create a 1,100-MW pathway for renewable generation to reach the growing energy load in the greater Portland area. These include recommendations to reduce greenhouse gases, pursue wind power development, promote utility scale solar energy, and reduce the use of fossil fuels.

The Applicant also acknowledges the Energy Vision recommendations that directly support the protection and enhancement of fish and wildlife in the Columbia River Basin. As is shown in this application, the Project, as proposed, would minimize impacts to fish and wildlife populations. Impacts of Project construction, both in the river and on land, will be minor, temporary, and capable of being mitigated to the extent necessary. Project operation would require two converter stations occupying approximately 5 acres each, located in areas of existing compatible uses. Project operation does not require emissions into the atmosphere or discharges into water or onto the land. Consumption of water is negligible, as are quantities of waste and wastewater.

The Applicant also acknowledges Energy Vision recommendations 36, 37, and 38, which are directly related to transmission. Recommendation 36, in particular, calls for solutions that “minimize transmission and distribution expansions.” Given the demonstrated need for new transmission, either as quantified by PGE and in BPA’s 2023 *TSR Study & Expansion Process*, to meet reliability and clean energy goals, the proposed Project would provide a direct east-to-west path into the greater Portland area (Harborton substation) without the need to construct or expand additional south-north transmission to overcome existing constraints on the North of Pearl flowgate. Further, the proposed Project eliminates or minimizes many of the negative or objectionable impacts associated with traditional overhead transmission, including visual impacts; impacts to terrestrial habitat, vegetation, and species; impacts to directly affected or adjacent property owners; and increased risk of wildfires.

2.22.3 No Action Alternative

Under the No Action Alternative, the proposed Project would not be constructed or operated, and the environmental impacts described in this application would not occur. If the proposed Project is not constructed, Washington’s energy access is more limited for all resources. In particular Washington and the surrounding region would lose an important opportunity to supply renewable energy to help the state meet its goal of making its energy supply carbon neutral by 2030 (Senate Bill 2116, enacted into law in 2019).



2.23 Pertinent Federal, State, and Local Requirements (WAC 463-60-297)

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 2-4 identifies the federal, state, and local permits and authorizations pursuant to WAC 463-60-297 that would apply to the Project if it were not under WA EFSEC jurisdiction. The table identifies regulatory agencies and cities authorizing statutes, ordinances, and regulations, and rules pertinent to each permit, requirement, and authorization. The table also identifies the sections of this ASC where the Applicant demonstrates compliance with each pertinent permit, requirement, and authorization.



Table 2-4. Pertinent Federal, State, and Local Rules, Regulations, and Permits.

Requirement, Permit, or Authorization	Agencies with Jurisdiction	Applicable Codes, Ordinances, Statutes, and Regulations	WA EFSEC ASC Section	Applicability
Federal Permits				
National Environmental Policy Act (NEPA) Compliance / Record of Decision (ROD)	USACE	NEPA, Section 102 (40 United States Code [U.S.C.] § 4332)	-	Project that includes a federal action (approving permits).
Section 10, Rivers and Harbors Act (RHA)	USACE	RHA 1899 (33 U.S.C. § 403)	-	For working in or affecting navigable waters of the United States.
Section 14 of the RHA (Section 408 Permission)	USACE	RHA, Section 14 (33 U.S.C. § 408)	-	Permission is required for the permanent or temporary action that builds upon, alters, improves, moves, occupies or otherwise affects the usefulness of any USACE Civil Works project.
Section 404 of the Clean Water Act (CWA)	USACE	CWA, Section 404 (33 U.S.C. § 1344)	-	A Section 404 permit will be required for dredge or fill in waters of the United States. Generally, a Section 404 permit requires a CWA Section 401, Water Quality Certification.
Section 401 of the CWA, Water Quality Certification	USACE, ODEQ, Ecology	CWA, Section 401 (33 U.S.C. § 1341);	-	Water quality certification is required for projects that are processed under the USACE Section 404 Nationwide Permits for proposed discharges into waters of the United States. The proposed project would occur in the State of Oregon and the State of Washington. The Oregon Department of Environmental Quality's notice for a water quality certification is included in the Joint Permit Application (Section 404). The Washington Department of Ecology will issue a separate notice for water quality certification.
Section 7 of the Endangered Species Act (ESA)	USACE, NMFS, USFWS	ESA (16 U.S.C. 1536)	-	ESA requires federal agencies to consult with the National Marine Fisheries Service (NMFS) and/or U.S. Fish and Wildlife Service (USFWS) on all actions that may affect a species listed (or proposed for listing) under the ESA as threatened or endangered or that may adversely modify designated critical habitat.



Requirement, Permit, or Authorization	Agencies with Jurisdiction	Applicable Codes, Ordinances, Statutes, and Regulations	WA EFSEC ASC Section	Applicability
Magnuson-Stevens Fishery Conservation and Management Act	USACE, NMFS	Section 305(b)(2) of the act as amended (16 U.S.C. 1855)	-	Requirement that federal agencies to consult with the NMFS on all actions, or proposed actions, permitted, funded, or undertaken by the agency, that may adversely affect Essential Fish Habitat (EFH).
National Historic Preservation Act (NHPA)	USACE, Oregon State Historic Preservation Office (SHPO), Washington Department of Archaeological Preservation (DAHP)	Section 106 of the NHPA of 1966, as amended (54 U.S.C. 306108)	-	Requires federal agencies to consult with the appropriate State and/or Tribal Historic Preservation Officer(s) to account for the effects of actions they undertake or permit on historic properties listed in or eligible for listing in the National Register of Historic Places.
Archaeological Resources Protection Act (ARPA) permit	USACE	ARPA (16 U.S.C. § 470aa (b))	-	Permit is required to perform archaeological investigations on federal lands. ³
Bonneville Power Administration (BPA) Interconnection Agreement	BPA	-	-	Interconnection services to the Federal Columbia River Transmission System and interrelated matters.
United States Forest Service (USFS)	USFS	Special Use/ Utility Permit	-	Work within the Columbia River Gorge National Scenic Area.
Washington State Permits				
Washington State Energy Facility Site Certification	Washington State Energy Facility Site Evaluation Council (WA EFSEC) State Environmental Policy Act (SEPA)	Revised Code of Washington (RCW) 43.21C requires state and local agencies to identify and analyze the adverse environmental impacts of a proposal before deciding on that proposal (RCW 43.21C.030)	-	“Opt-in” to WA EFSEC jurisdiction: electrical transmission facilities: (A) of a nominal voltage of at least 115-kV and (B) located in more than one jurisdiction that has promulgated land use plans or zoning ordinances.

³ No USFS-managed lands are crossed by the Project and accordingly, an ARPA permit from USFS is not required for archaeological investigations.



Requirement, Permit, or Authorization	Agencies with Jurisdiction	Applicable Codes, Ordinances, Statutes, and Regulations	WA EFSEC ASC Section	Applicability
Section 401 Water Quality Certification	Washington State Department of Ecology (Ecology)Q	Section 401 of the CWA.	-	Water quality certification is required for projects that are processed under the USACE Section 404 Nationwide Permits for proposed discharges into waters of the United States. The proposed project would occur in the State of Oregon and the State of Washington. The Oregon Department of Environmental Quality's notice for a water quality certification is included in the Joint Permit Application (Section 404). The Washington Department of Ecology will issue a separate notice for water quality certification. Administered by WA EFSEC.
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	-	Soil disturbing activities of one acre and more and may discharge stormwater to surface waters of the state, which includes storm drains, ditches, wetlands, creeks, rivers, lakes, and marine waters. The Applicant would obtain this permit in coordination with WA EFSEC and comply with stormwater BMPs outlined in the permit and associated Stormwater Pollution Prevention Plan (SWPPP) and Erosion and Sediment Control Plan (ESCP).
Hydraulic Project Approval	Washington State Department of Fish and Wildlife (WDFW) – Region 5	RCW 77.55	-	Any form of work that uses, diverts, obstructs, or changes the natural flow or bed of any fresh water or saltwater of the state (over, under, or within). This includes bed reconfiguration, all construction or other work waterward, under and over the ordinary high-water mark (OHWM), including wetlands, dry channels, and may include projects landward of the OHWM (e.g., activities outside the OHWM that will directly impact fish life and habitat, falling trees into streams or lakes, bridge maintenance, dike construction, etc.). Administered by WA EFSEC.



Requirement, Permit, or Authorization	Agencies with Jurisdiction	Applicable Codes, Ordinances, Statutes, and Regulations	WA EFSEC ASC Section	Applicability
Aquatic Lands Use Authorization or Aquatic Lands Lease	Washington State Department of Natural Resources (WDNR) Rivers District	RCW 79.36	-	Most activities taking place on state-owned aquatic lands (including harbors, tidelands, shorelands, and beds of navigable waters) may require an authorization, such as a license, lease, rights-of-entry, or easement lease. These state-owned aquatic lands include the coast, bedlands, lakes, rivers, and Puget Sound marine areas. The Applicant would obtain authorization to use State-owned land for Project components. Administered by WA EFSEC.
Shoreline Substantial Development Permit	EFSEC with input from Skamania County	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)	-	The Project is located near a designated shoreline of the state; however, the shoreline will not be affected because the Project would be established underneath the shoreline via HDD.
State Protected Species	WDFW	WAC 220-610, State species status and protections WAC 232-23, Classification of wildlife species, including "Priority Habitats and Species"	-	The Applicant will consult with WDFW and proposes measures to avoid, minimize, and otherwise mitigate impacts to Priority Habitats and Species (PHS) and wildlife within the Project Area.



Requirement, Permit, or Authorization	Agencies with Jurisdiction	Applicable Codes, Ordinances, Statutes, and Regulations	WA EFSEC ASC Section	Applicability
State Environmental Policy Act (SEPA)	WA EFSEC	RCW 43.21C, Washington Environmental Policy Act WAC 197-11, Washington Department of Ecology SEPA Rules NBMC 21.04	-	Absent EFSEC jurisdiction, a Conditional Use Permit (CUP) would be required from the City of North Bonneville. For an ASC, WA EFSEC serves as the SEPA lead agency.
Archaeological Sites and Resources, Archaeological Site Alteration and Excavation Permit	Washington State Department of Archaeology and Historic Preservation (DAHP) ⁴	RCW 27.53, Archaeological Sites and Resources	-	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. Consult with USACE (lead federal agency) under NHPA Section 106 (36 CFR Part 800) regarding identification of historic properties and determinations of project effects.
General Permit, Access Permit, Utility Permit, Oversize and Overweight Permit	Washington State Department of Transportation (WSDOT) – Southwest Region	WAC 468-34-100 WAC 468-38-075	-	Work within WSDOT right-of-way. The Applicant's licensed contractor would obtain this permit for Project components affecting WSDOT highway access and utilities and 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	-	The Applicant's licensed contractor would obtain this permit and comply with electrical requirements.

⁴ The DAHP is an independent Washington state government agency that houses the Washington State Historic Preservation Officer (SHPO).



Requirement, Permit, or Authorization	Agencies with Jurisdiction	Applicable Codes, Ordinances, Statutes, and Regulations	WA EFSEC ASC Section	Applicability
Noise Control	Ecology	RCW 70.107, Noise Control WAC 173-58, Sound Level Measurement Procedures WAC 173-60-40, Maximum Environmental Noise Levels WAC 463-62-030, Noise Standards	-	The Applicant would comply with applicable noise control requirements as demonstrated in this ASC.
 Local Permits in Washington^{5,6}				
Administrative Review	Skamania County – Planning and Development Department	SCC 21.70.020(A) and (B)) SCC 22.14.040	-	Administrative review is required for the development of public facilities and utilities in the Industrial (MG) zone and an underground utility facility in the F-2 Large Woodland (NSA General Management Area) zone. The Applicant's licensed construction contractor would obtain these permits.

⁵ [RCW 19.122.020](#): (35) "Transmission pipeline" means a pipeline that transports hazardous liquid or gas within a storage field, or transports hazardous liquid or gas from an interstate pipeline or storage facility to a distribution main or a large volume hazardous liquid or gas user, or operates at a hoop stress of twenty percent or more of the specified minimum yield strength. (36) "Underground facility" means any item buried or placed below ground for use in connection with the storage or conveyance of water, sewage, electronic, telephonic or telegraphic communications, cablevision, electric energy, petroleum products, gas, gaseous vapors, hazardous liquids, or other substances and including but not limited to pipes, sewers, conduits, cables, valves, lines, wires, manholes, attachments, and those parts of poles or anchors that are below ground. This definition does not include pipelines as defined in subsection (27) of this section, but does include distribution systems owned and operated under franchise for the sale, delivery, or distribution of natural gas at retail.

⁶ [RCW 80.04.010](#): **Definitions.** (13) "Facilities" means lines, conduits, ducts, poles, wires, cables, cross-arms, receivers, transmitters, instruments, machines, appliances, instrumentalities and all devices, real estate, easements, apparatus, property and routes used, operated, owned or controlled by any telecommunications company to facilitate the provision of telecommunications service. (23) "Public service company" includes every gas company, electrical company, telecommunications company, wastewater company, and water company. Ownership or operation of a cogeneration facility does not, by itself, make a company or person a public service company.



Requirement, Permit, or Authorization	Agencies with Jurisdiction	Applicable Codes, Ordinances, Statutes, and Regulations	WA EFSEC ASC Section	Applicability
Grading and Right-of-Way Permit	Skamania County – Public Works Department	Skamania County Resolution No. 2010-15	-	A grading permit is required for land preparation (clearing and grading). The Applicant's licensed construction contractor would obtain this permit. The Applicant will seek determination of compliance with local land use standards under the WA EFSEC process.
Shoreline Conditional Use Permit and Shoreline Substantial Development Permit	Skamania County – Planning and Development Department	SMP 4.2.4 Shoreline Environment Designation Provisions for Natural Environment SMP 4.2.7, Shoreline Environment Designation Provisions for High Intensity Environment SMP 5.2.13, and Shoreline Use Regulations for Utilities Policies and Regulations	-	The HVDC transmission line in the High Intensity Environment and the Natural Environment are considered a non-water-oriented utility/parallel transmission facility, requiring a Shoreline Substantial development permit in the High Intensity Environment and a Shoreline Conditional use Permit in the Natural Environment. Fills upland of the OHWM in the High Intensity Environment require are considered a shoreline modification and require a Shoreline Substantial Development Permit. The Applicant will seek determination of compliance with local land use standards under the WA EFSEC process.
Grading Permit	City of Stevenson Planning Department	SMC 17.35.040(A)(1). SMC 17.13.040 SMC 17.35.100	-	A portion of the HVDC transmission cable and the temporary HDD area are proposed within the PR zoning designation. A utility facility in the Public use and Recreation zone requires a grading permit.



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 2-4.

2.23.1.1 National Environmental Policy Act

The applicable National Environmental Policy Act (NEPA) statutes and regulations include 40 Code of Federal Regulations (CFR) § 1500, National Environmental Policy Act. USACE will serve as the lead NEPA agency.

Statement of Compliance

The USACE would complete the necessary environmental review process under NEPA. This process is not subject to WA EFSEC review.

2.23.1.2 Waters of the United States

The 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. USACE regulates fill or excavation of waters of the United States, including associated wetlands. The Applicant has filed a Joint Permit Application (JPA) with USACE (June 28, 2024), which the Oregon Department of Environmental Quality (ODEQ) will review. Ecology will issue a separate notice for water quality certification. As stated in the USACE Public Notice issued July 30, 2024, USACE holds the authority to evaluate the proposed Project under:

- Section 10, Rivers and Harbors Act 1899 (33 United States Code [U.S.C.] 403), for work in or affecting navigable waters of the United States.
- Section 14, Rivers and Harbors Act 1899 (33 U.S.C. 408) (referred to as Section 408), for work to alter a USACE civil works project. An alteration is defined as any action that builds upon, alters, improves, moves, occupies, or otherwise affects the usefulness, or the structural or ecological integrity of a USACE federally authorized project. The proposed project may alter the Columbia River Navigation Channel.
- Sections 401 and 404, CWA (33 U.S.C. 1341, 1344), for the discharge of dredged or fill materials into waters of the United States.

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 land⁷. The Construction Stormwater General Permit is addressed below in Section 2.23.2.

Statement of Compliance

As described in the JPA filed with the USACE under Section 404 of the CWA, the Applicant has mapped waters of the United States, as described in Sections 3.3 and 3.5. There would be a total of

⁷ Ecology. 2024. Stormwater general permits. Accessed at: <https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Stormwater-general-permits>

40 square feet of temporary and 26.6 square feet of permanent unavoidable impacts to an emergent palustrine wetland near Stevenson, Washington. No discharge or runoff impacts are expected to occur to surface waters (see Section 3.3.2). There would be temporary disturbance to waters associated with installation of the HVDC cable and permanent fill associated with the cable bundle and cable protection in the Columbia River. Disposal would be required for up to 4,500 cubic yards of pre-installation dredge materials in the area downstream of Bonneville Lock and Dam and up to 32,244 cubic yards of river substrate removal from the wet cofferdams. Permanent fill material would consist of the HVDC cable materials and cable protection (i.e., hydraulically stable rock or articulated concrete block mattress). Temporary fill would include sheet piles for three-sided wet cofferdams. All materials would be sourced from manufacturing and/or permitted sources (i.e., quarries).

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, taking 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. A Biological Assessment has been developed as part of the CWA Section 404 process.

Statement of Compliance

The USACE would complete the necessary environmental review process and consultation with the U.S. Fish and Wildlife Service (USFWS) and NMFS. It is anticipated that USFWS will coordinate with WDFW and ODFW during the environmental review process.

2.23.1.4 Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act of 1976 includes a mandate that NMFS must identify Essential Fish Habitat (EFH) for federally managed marine fish, and federal agencies must consult with NMFS on all activities, or proposed activities, authorized, funded, or undertaken by the agency that may adversely affect EFH. The act defines EFH as waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. Waters are defined as aquatic areas and associated physical, chemical, and biological properties that are used by fish. Substrate is defined as sediment, hard bottom, structures underlying the waters, and associated biological communities. Necessary is defined as the habitat required to support a sustainable fishery and managed species' contribution to a healthy ecosystem.

Statement of Compliance

The USACE would complete the necessary environmental review process and consultation with USFWS and NMFS. It is anticipated that USFWS will coordinate with WDFW and ODFW during the environmental review process.

2.23.1.5 Historic Resources

Pursuant to the National Historic Preservation Act (NHPA), federal agencies are required to consult with the appropriate state and/or tribal historic preservation officer(s) to take into account the effects of actions they undertake or permit on historic properties listed in or eligible for listing in the National Register of Historic Places (NRHP). USACE will initiate this consultation.



Statement of Compliance

The USACE would complete the necessary environmental review process and consult with the Oregon State Historic Preservation Office (SHPO), Washington State Department of Archaeology and Historic Preservation (DAHP), and Tribal Historic Preservation Offices (THPOs). The Applicant's consultants conducted agency and tribal coordination (Section 1.12), cultural resource background research (i.e., archival and record search), and will conduct archaeological surveys, an archeological inventory, and provide NRHP and management recommendations for the Project. An Archaeological Resources Protection Act (ARPA) permit will be obtained prior to conducting surveys on federal lands. Pedestrian surveys will be conducted in the cultural resource inventory area. Information will be provided to USACE, OR EFSC, and WA EFSEC as cultural resource reports become available.

The Applicant is also conducting outreach to affiliated Native American tribes and facilitating traditional use studies for the Project when requested. Final design of the Project would incorporate the results and recommendations for protective or mitigation measures made in the cultural resource survey, DAHP letter, tribal outreach, and tribal studies. See Section 4.3.5 of the application for additional detail on compliance with RCW 27.53.

2.23.1.6 Energy

The project requires agreements with BPA to build the eastern converter station and interconnect to the Big Eddy substation and with PGE to interconnect to the Harborton substation. BPA may participate in the NEPA process led by the USACE under the CWA Section 404 process. However, there is no separate review and approval process of the U.S. Department of Energy.

Statement of Compliance

BPA would participate as a cooperating agency with USACE in the NEPA process necessary under the CWA Section 404 process; it is anticipated that they would not conduct a separate NEPA process for the interconnection request. Neither of these processes would be subject to WA EFSEC review.

2.23.1.7 Columbia River Gorge National Scenic Area

A portion of the Project is located within the CRGNSA, which is an 85-mile-long area along both sides of the Columbia River from the outskirts of Portland-Vancouver in the west to Wasco and Klickitat counties in the east. Urban areas, including Cascade Locks, Hood River, Mosier, and The Dalles in Oregon, are exempt from scenic area regulations. Proposed aboveground activities that can be seen from a designated KVA are subject to the Management Plan for the Columbia River Gorge National Scenic Area (CRGC 2020). The aboveground utilities associated with this Project within the CRGNSA are located in The Dalles Natural Scenic Area Urban Area; therefore, they are exempt from scenic area regulations per online CRGC maps and GIS data (CRGC 2022).

Statement of Compliance

Comments received from the CRGC during the OR EFSC public and agency comment period for the NOI to Apply for Site Certification indicate that the CRGC does not have jurisdiction or advisory responsibility with regard to facility components sited in the river or in designated urban areas within the CRGNSA.

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 2-4.

2.23.2.1 Washington State Energy Facility Site Certification and State Environmental Policy Act

RCW 43.21C requires state and local agencies to identify and analyze the adverse environmental impacts of a proposal before deciding on that proposal (RCW 43.21C.030). RCW 43.21C, Washington Environmental Policy Act WAC 197-11, Ecology State Environmental Policy Act (SEPA) Rules, and North Bonneville Municipal Code 21.04.

Statement of Compliance

The Applicant is voluntarily seeking site certification from WA EFSEC. Consequently, WA EFSEC serves as the SEPA lead agency. The applicant has prepared a SEPA Environmental Checklist (Appendix K) in compliance with Chapter 43.21C RCW and Ch. 197-11 WAC. WA EFSEC would issue a SEPA Determination to satisfy these regulations. Therefore, the Project can comply with applicable SEPA procedural rules and statutes.

2.23.2.2 Water Quality/Waters of the State

As described above in Section 2.23.1, Section 401 Water Quality Certification, the 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 USACE regulates fill or excavation of waters of the United States, including associated wetlands. A JPA has been filed with the USACE (June 28, 2024) and will be reviewed by ODEQ. Ecology will issue a separate notice for water quality certification, which would be administered by WA EFSEC. When required, the application for Hydraulic Project Approval is either included with the Joint Aquatic Resource Permit Application (JARPA) or submitted through WDFW's online Aquatic Project Permitting System tool and reviewed for authorization by WDFW.

A Hydraulic Project Approval will be required for work under and over the ordinary high-water mark (OHWM), including wetlands, dry channels, and may include projects landward of the OHWM. The WA EFSEC would administer this permit.

The NPDES is administered by the U.S. Environmental Protection Agency (USEPA) under 42 U.S.C. 1251 of the federal CWA. The USEPA has delegated responsibility to administer the NPDES permit program to Ecology in accordance with RCW 90.48, 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 land⁸. However, for projects under WA EFSEC jurisdiction, WA EFSEC administers NPDES compliance pursuant to WAC 463-60-537 and WAC 463-76. Therefore, WA EFSEC review projects for compliance with Washington's Waste Water General Permit Program

⁸ Ecology. 2024. Stormwater general permits. Accessed at: <https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Stormwater-general-permits>



(WAC 173-226) and Water Quality Standards for Surface Waters of the State (WAC 173-201A), which have been established to comply with NPDES.

Statement of Compliance

The Applicant would obtain necessary NPDES permit coverage from WA EFSEC pursuant to WAC 463-60-537 and WAC 463-76. An NOI would be prepared. 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)). Based on this, the Project would comply with state and federal standards for stormwater management during construction and operation.

2.23.2.3 Land and Natural Resources

Pursuant to RCW 79.36.510, the Washington Department of Natural Resources (WDNR) requires authorization to obtain a ROW or easement across state-owned lands⁹.

Statement of Compliance

The Project will be placed within the Columbia River, where WDNR has jurisdiction. Most activities taking place on state-owned aquatic lands (including harbors, tidelands, shorelands, and beds of navigable waters) may require an authorization, such as a license, lease, rights-of-entry, or easement lease. These state-owned aquatic lands include the coast, bedlands, lakes, rivers, and Puget Sound marine areas. The Applicant would obtain approval of easement from WDNR prior to Project construction on state-owned land and understands that DNR's approval would be administered and confirmed in the EFSEC process.

2.23.2.4 Shoreline

The Washington Shoreline Management Act (SMA) establishes a local/state partnership in administering shoreline permits. Regulation of development in Shorelines of the State and associated wetlands, as defined in WAC 173-22, are enforced through implementation of the local government's shoreline master program. Activity that would occur in the shoreline jurisdiction of designated Shorelines of the State would need to be addressed through the local jurisdiction SMP requirements. It is anticipated that the Project would require a Shoreline Substantial Development Permit, and a Shoreline Conditional Use Permit from Skamania County

Statement of Compliance

The Project is located within the jurisdiction of Skamania County Shoreline Master Program. The Applicant will submit the appropriate shoreline permit(s) for the proposed development. Section 4.3.1.5 provides more detail on land use consistency, generally.

⁹ WDNR. 2024. Rights-of-Way Across State-Owned Lands. Accessed at: <https://www.dnr.wa.gov/programs-and-services/product-sales-and-leasing/rights-way>

2.23.2.5 Fish and Wildlife

The WDFW through WAC 220-610 and WAC 232-23 identify state species and status and their protections and classification of wildlife species, including Priority Habitats and Species (PHS).

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 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 Applicant consulted with WDFW regarding survey methods and reporting prior to conducting wildlife baseline studies as discussed in Section 3.4. The potential for Project construction and operation to impact PHS and other fish and wildlife is discussed in Section 3.4. In addition, as discussed in Section 2.23.1 above, there is an ongoing environmental review process under ESA Section 7 and the Magnuson-Stevens Fishery Conservation and Management Act in consultation with USFWS and NMFS. As part of the typical workflow for Section 7, USFWS would consult with state agencies as part of their review process.

2.23.2.6 Washington State Department of Archaeology and Historic Preservation

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

DAHP will consult with USACE (lead federal agency) under NHPA Section 106 (36 CFR Part 800) regarding identification of historic properties and determinations of project effects. DAHP will review potential project impacts on archaeological, historical, and cultural resources under SEPA (RCW 21.43c) in coordination with WA EFSEC (lead state agency). Any alteration to an archaeological site requires an Archaeological Site Alteration and Excavation Permit issued by DAHP (RCW 27.44 and RCW 27.53).

Statement of Compliance

As stated above in Section 2.23.1, the USACE would complete the necessary environmental review process and consult with the Oregon SHPO and DAHP. The Applicant's consultants conducted agency and tribal coordination (Section 1.12), cultural resource background research (i.e., archival and record search), and will conduct archaeological surveys, an archeological inventory, and provide NRHP and management recommendations for the Project. Pedestrian surveys have been conducted in the cultural resource inventory area. Information will be provided to USACE, OR EFSC, and WA EFSEC as cultural resource reports become available.

The Applicant is also conducting outreach to affected Native American tribes and arranging to conduct or fund traditional use studies for the Project if so requested. Final design of the Project would incorporate the results and recommendations for feasible protective or mitigation measures



made in the cultural resource survey, DAHP letter, tribal outreach, and tribal studies. See Section 4.3.5 of the application for additional detail on compliance with RCW 27.53.

2.23.2.7 Transportation

WSDOT requires a General Permit, Access Permit, Utility Permit, and Oversize and Overweight Load 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 ROW. WSDOT permits are typically ministerial and obtained by a licensed contractor prior to construction.

Statement of Compliance

Much of the on-land component of the Project in Washington would be constructed within WSDOT ROWs under pavement on SR 14, Ash Lake Road, Dam Access Road, and Fort Cascades Drive. Trucks moving heavy loads, construction materials, or equipment are anticipated to access the Project from state managed roads identified in Section 4.4. Prior to construction. The Project contractor would obtain the necessary WSDOT General Permit, Access Permit, Utility Permit, and Oversize and Overweight Load Permit to work in state road ROW and use state roads to transport oversized equipment. The Applicant's proposed measures to avoid, minimize, and otherwise mitigate impacts to state managed roads are provided in Section 4.4.

2.23.2.8 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 WA EFSEC.

Statement of Compliance

The Applicant's licensed construction contractor would comply with the applicable sections of the WAC 296-45 to WAC 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 WA EFSEC and Skamania County prior to construction. The Project would be designed and constructed in conformance with WAC 296-45 to 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 4.2 of this ASC.

2.23.2.9 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 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 4.2 of this ASC.

2.23.3 Pertinent Local Ordinances and Permits

This section describes the Applicant's ability to comply with the pertinent state statutes, regulations, rules, and permits identified in Table 2-4.

The components of the Project within unincorporated Skamania County include a portion of the HVDC transmission cable and one temporary HDD area. Both the HVDC transmission cable and the temporary HDD area are entirely within the NSA General Management Area (GMA) and within Shoreline jurisdiction. Applicable land use plans include the *Skamania County Comprehensive Plan (2018)*, the *Management Plan for the Columbia River Gorge National Scenic Area (2020)* and the *Skamania County Shoreline Master Program (2020)*.

The components of the Project within the City of Stevenson include a portion of the HVDC transmission cable primarily in Stevenson's road ROW and one temporary HDD area on a private parcel. Applicable land use plans include the *City of Stevenson Comprehensive Plan (2022)*. Analysis of the Project is consistent with the relevant goals and policies of the *City of Stevenson Comprehensive Plan*.

The Applicant has provided a preliminary consistency evaluation for all substantive criteria in Section 4.3. The Project can be permitted through the compliance pathway identified in Table 4-11.



3 Natural Environment

3.1 Earth (WAC 463-60-302)

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 is based on review of current orthoimagery and current databases maintained by the U.S. Geological Survey (USGS), WDNR, Ecology, and Skamania County.

The study area for soils, geology, and topography is limited to the portion of the HVDC transmission cables placed on land in road ROWs along SR 14, Ash Lake Road, Dam Access Road, and Fort Cascades Drive, where temporary and permanent surface disturbance would occur. The Columbia River, as a water body, does not have soil or geologic units associated with it, it is identified as “water” in databases reviewed. The study area for historic seismicity and potentially active faults covers a 20-mile radius of the entire Project length.

3.1.1.1 Geology

The portion of the Project in Skamania County, Washington is located within the Southern Cascades geologic province of Washington (WDNR 2024a). Geology within the Project area is composed of Quaternary mass wasting and Quaternary alluvial deposits (Figure 3-1; WDNR 2024b). The mass-wasting deposits are located on the east side of the Project and are characterized primarily as landslide deposits, but may include local talus, colluvium, protalus ramparts, and rock glaciers. The alluvium deposits, located on the western portion of the Project, are generally characterized by unconsolidated (or semi-consolidated) clays, silts, sands, gravels, and cobbles, with some variations depending on location, but may include volcanoclastic or tephra deposits, as well as modified land or artificial fill. Underlying the alluvium and landslide deposits on the western side of the project are tuffaceous sandstone, siltstone, claystone, and volcanic conglomerates of the Eagle Creek and Weigle Formations, which are also seen in well logs on the western side of the project (Norman & Roloff, 2004). On the eastern side, well logs show basalt present below unconsolidated deposits, with basalt starting as shallow as 41 feet in one well log (Ecology 2019).

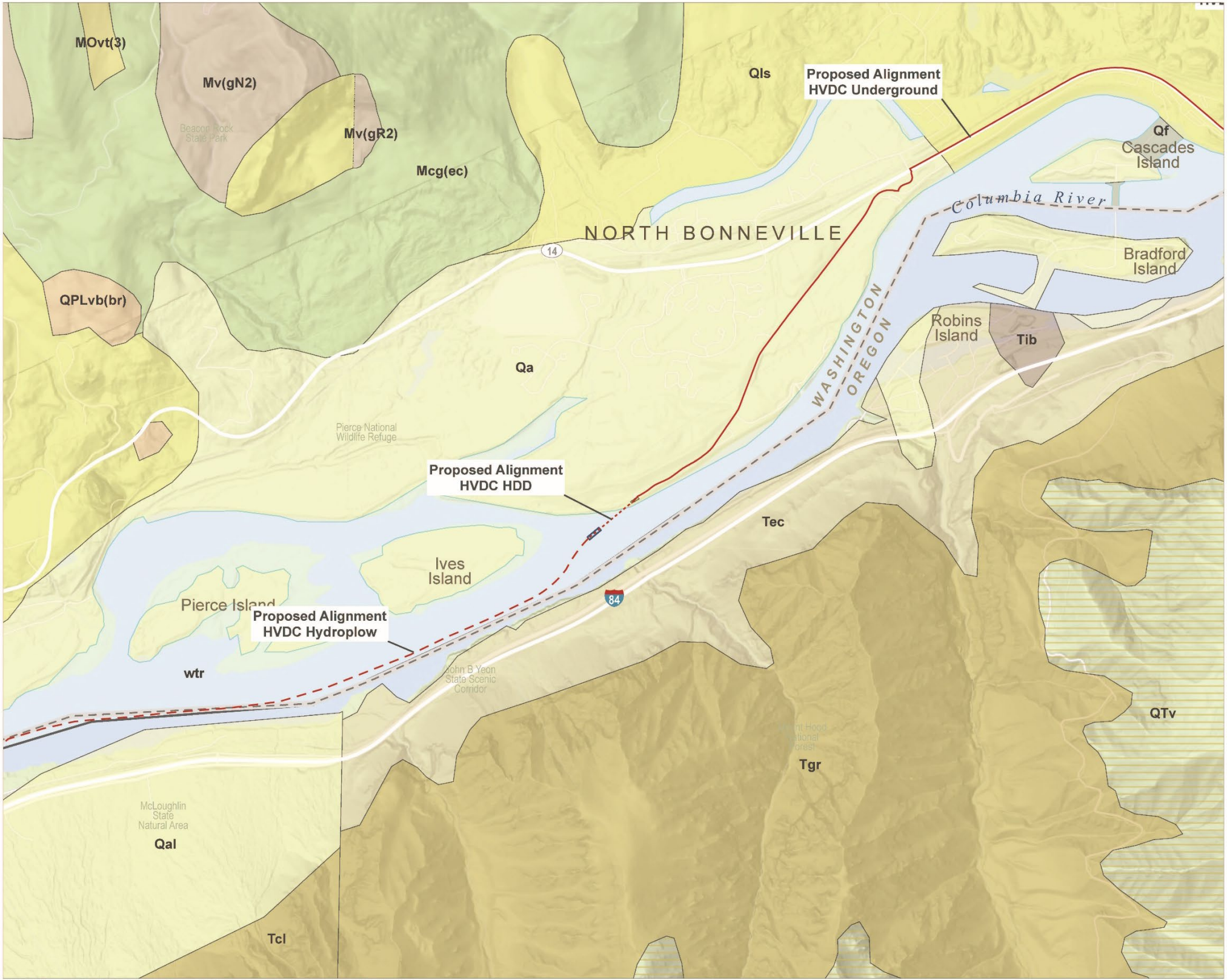
Washington State is seismically active with the most significant earthquake hazards generally toward the western part of the state, associated with the Cascadia subduction zone (WDNR 2024c). There are Quaternary faults within the study area (Figure 3-2; Angster et al. 2021). The locations of these fault systems are generally inferred rather than well constrained and are expected to have less than 2 millimeters per year slip (i.e., movement). No earthquake epicenters are identified within the study area; however, approximately 933 earthquakes between a magnitude 1.0 and 5.4 have occurred within 20 miles of the study area (Figure 3-2; USGS 2020b).

The study area crosses two large historic landslide features (Figure 3-1), the Red Bluffs Landslide and the Bonneville Landslide, which are part of the larger Cascade Landslide Complex (WDNR 2024a). Mount Hood in Oregon and Mount Adams and Mount St. Helens in Washington are the closest volcanos to the Project area; all have been historically active. Mount Adams and Mount St. Helens are each approximately 40 miles northeast and northwest of the Project area, respectively. Mount Hood is across the Columbia River approximately 25 miles south-southeast of the Project area. If these volcanoes became active, hazards would be in the form of ash fallout, landslides, debris avalanches, and lahars that could occur due to snow and ice rapidly melting (USGS 2023b, USGS 2023c).

3.1.1.2 Soils

Figure 3-3 shows soils in the study area. Table 3-1 describes the soils in this area based on information available from the Natural Resources Conservation Service (NRCS). Most of the soils (approximately 43 percent) in the study area are Arents 0 to 5 percent slopes, a gravelly sandy loam. The second most prevalent soil in the study area is the Steever stony clay loam, 2 to 30 percent slopes (approximately 30 percent). The remaining soils are Steever stony clay loam, 30 to 65 percent slopes, and Bonneville stony sandy loam. Arents and Bonneville stony clay loam have a low runoff potential and a moderately low hazard for erosion. Arents is well drained, while Bonneville stony clay loam is somewhat excessively drained. The Steever stony clay loams are well drained, have a moderately low runoff potential, and a moderately low hazard for erosion (NRCS 2024). All soil types are described as farmland of statewide importance, except for the Steever stony clay loam, 30 to 65 percent slopes.

Figure 3-1. Geology



9/18/2025 NAD 1983 State Plane Oregon North Feet Data Sources: Esri, HDR, WADNR.

FIGURE 3-1
GEOLOGY
PAGE 1 OF 2

FOR INFORMATION ONLY - CONCEPT DRAWING

- PROPOSED ALIGNMENT - HVDC HDD
- PROPOSED ALIGNMENT - HVDC HYDROFLOW
- PROPOSED ALIGNMENT - HVDC UNDERGROUND
- TEMPORARY HORIZONTAL DIRECTIONAL DRILLING (HDD) AREA
- TEMPORARY 3-SIDED WET COFFERDAM
- STATE BOUNDARY

WADNR SURFACE GEOLOGY 100K

- HOLOCENE ARTIFICIAL FILL AND MODIFIED LAND
- QUATERNARY ALLUVIUM
- QUATERNARY MASS-WASTING DEPOSITS
- QUATERNARY-TERTIARY VOLCANIC ROCKS
- TERTIARY SEDIMENTARY ROCKS AND DEPOSITS
- TERTIARY FRAGMENTAL VOLCANIC ROCKS AND DEPOSITS (INCLUDES LAHARS)
- MIOCENE COLUMBIA RIVER BASALT GROUP, GRANDE RONDE BASALT
- WATER

OREGON GEOLOGY 100K

- QUATERNARY SURFICIAL DEPOSITS
- BORING VOLCANIC FIELD
- COLUMBIA RIVER BASALT GROUP
- JOHN DAY/CLARNO GROUP
- LATE WESTERN CASCADE VOLCANICS

CASCADE RENEWABLE TRANSMISSION



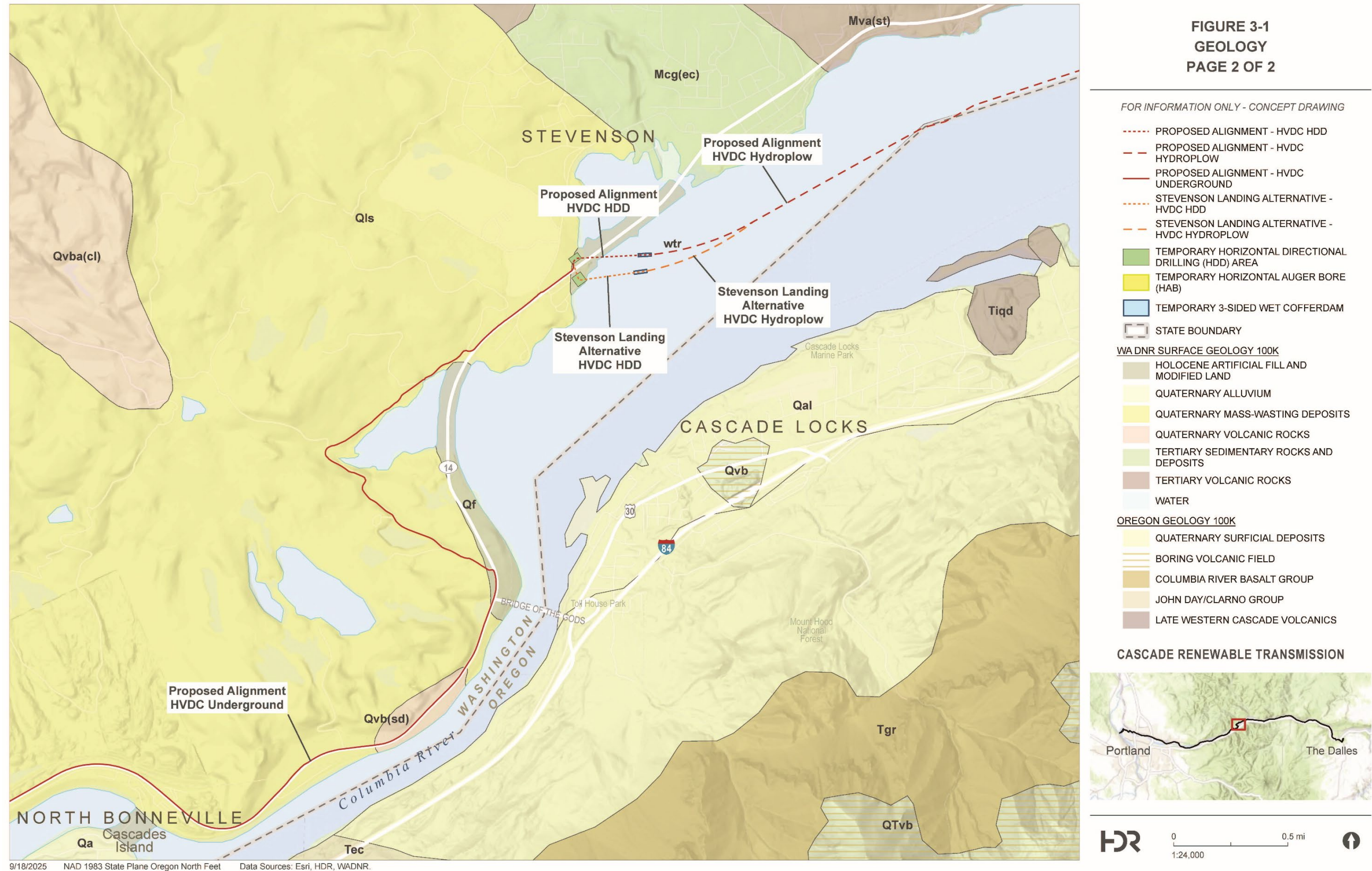


Figure 3-2. Historical Seismicity and Potentially Active Faults

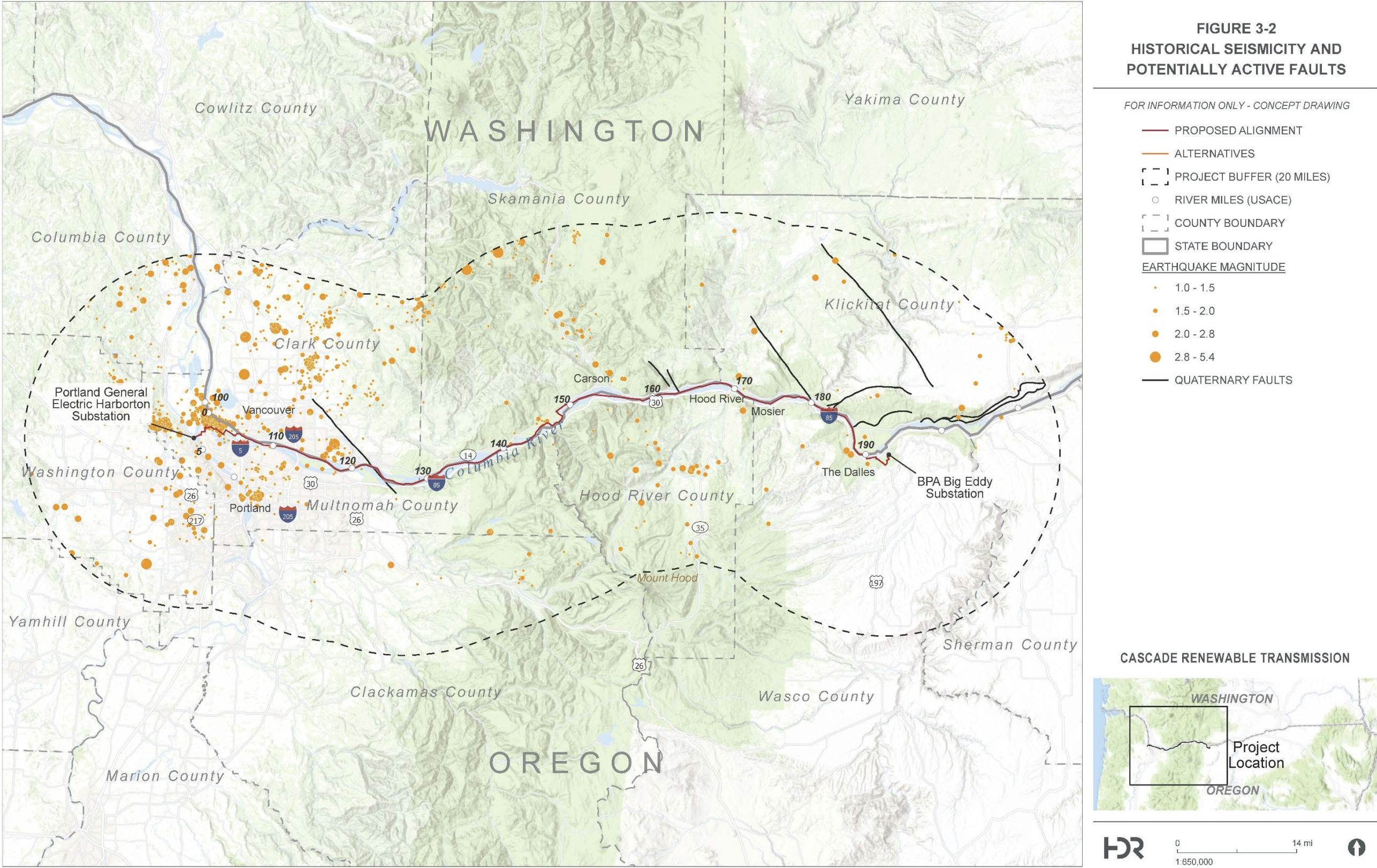
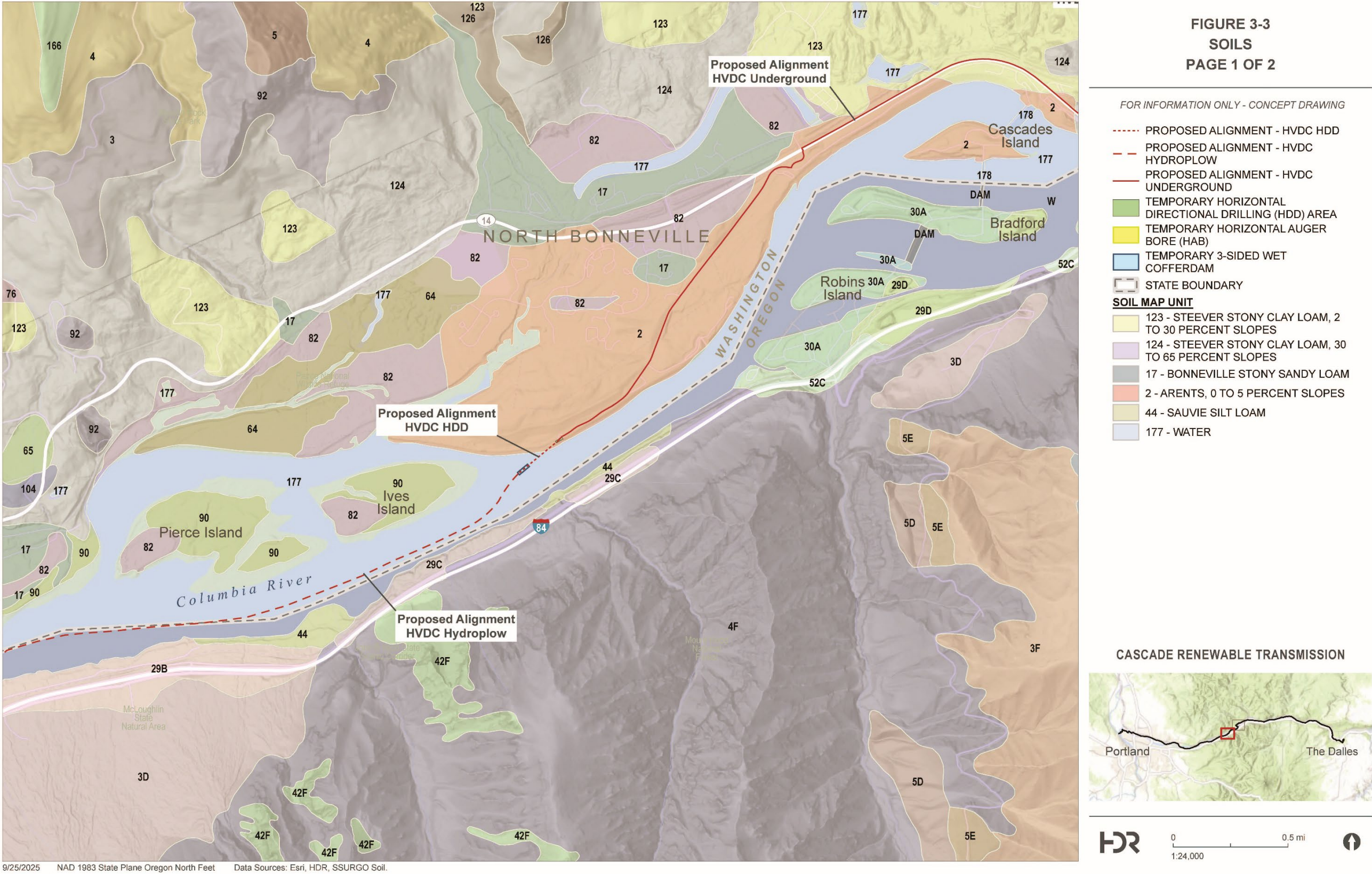
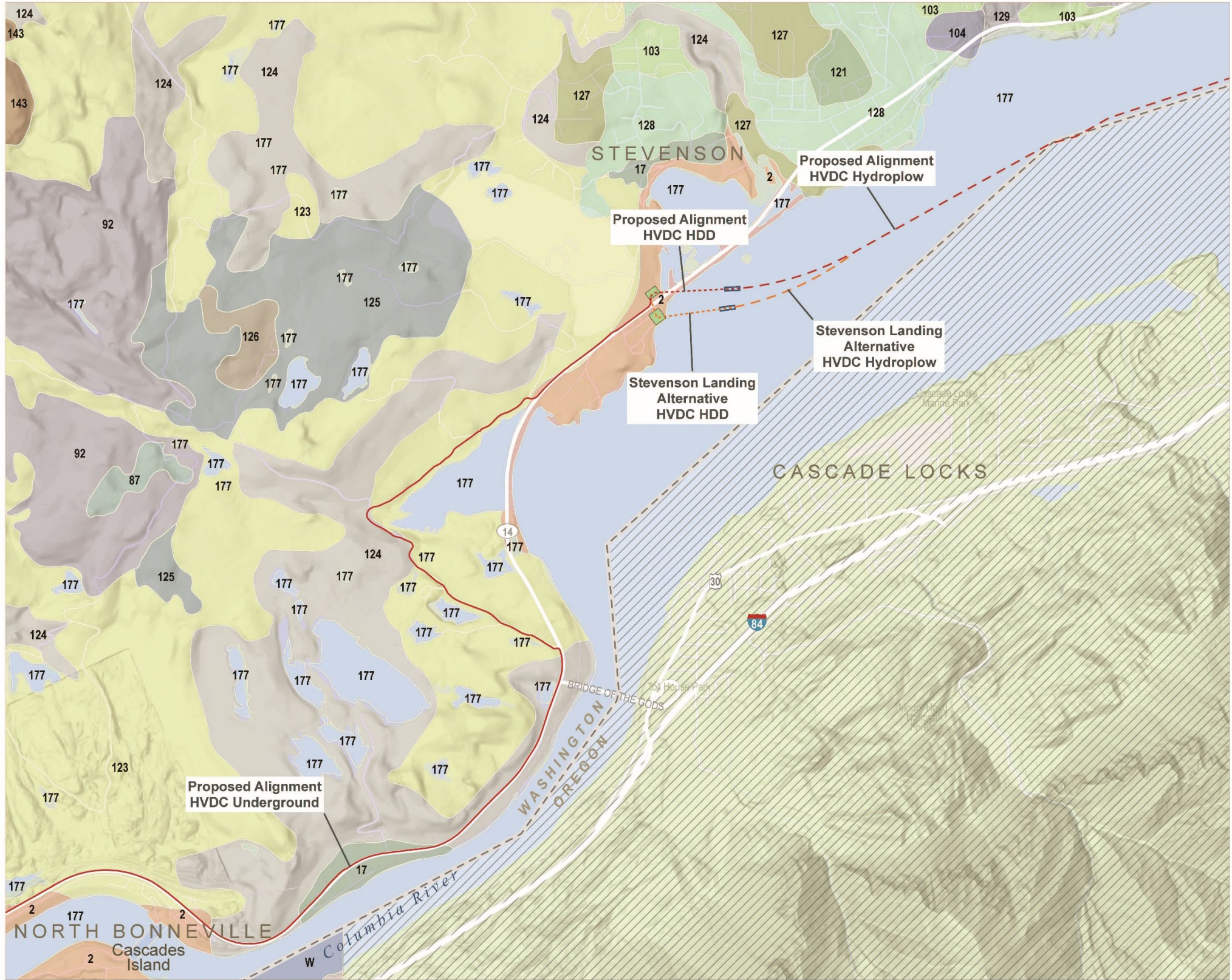


Figure 3-3. Soils





9/25/2025 NAD 1983 State Plane Oregon North Feet Data Sources: Esri, HDR, SSURGO Soil.

FIGURE 3-3
SOILS
PAGE 2 OF 2

FOR INFORMATION ONLY - CONCEPT DRAWING

- PROPOSED ALIGNMENT - HVDC HDD
- - - - - PROPOSED ALIGNMENT - HVDC HYDROFLOW
- PROPOSED ALIGNMENT - HVDC UNDERGROUND
- STEVENSON LANDING ALTERNATIVE - HVDC HDD
- STEVENSON LANDING ALTERNATIVE - HVDC HYDROFLOW
- TEMPORARY HORIZONTAL DIRECTIONAL DRILLING (HDD) AREA
- TEMPORARY HORIZONTAL AUGER BORE (HAB)
- TEMPORARY 3-SIDED WET COFFERDAM
- STATE BOUNDARY

- SOIL MAP UNIT**
- 123 - STEEVER STONY CLAY LOAM, 2 TO 30 PERCENT SLOPES
 - 124 - STEEVER STONY CLAY LOAM, 30 TO 65 PERCENT SLOPES
 - 17 - BONNEVILLE STONY SANDY LOAM
 - 2 - ARENTS, 0 TO 5 PERCENT SLOPES
 - 44 - SAUVIE SILT LOAM
 - 177 - WATER

CASCADE RENEWABLE TRANSMISSION



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Table 3-1. Soils in the Study Area

Map Unit	Soil Unit Name	Setting Within Project Area	Approximate Thickness (in)	Landform	Drainage	Runoff Potential	Hazard for Erosion (K factor)	Farmland Classification	Acres in Project Study Area	Percent of Project Study Area
2	Arents (gravelly sandy loam)	0 to 5 percent slopes	60	Terraces	Well drained	A (low RP)	0.1	Farmland of Statewide Importance	5.1	43%
17	Bonneville stony sandy loam	0 to 5 percent slopes	60	Terraces	Somewhat excessively drained	A (low RP)	0.1	Farmland of Statewide Importance	0.91	8%
123	Steever stony clay loam	2 to 30 percent slopes	60	Mountain Slopes	Well drained	B (mod low RP)	0.1	Farmland of Statewide Importance	3.55	30%
124	Steever stony clay loam	30 to 65 percent slopes	60	Mountain Slopes	Well drained	B (mod low RP)	0.1	Not Prime Farmland	2.28	19%

3.1.1.3 Topography

The elevation of the study area ranges from 42 to 234 feet above mean sea level (Figure 3-4). The topography of the surrounding area is heavily influenced by the Columbia River Gorge, dominated by rugged terrain, rock outcrops, steep slopes and cliffs rising from the Columbia River into the southern hills of the Cascade Mountains. Many perennial and intermittent streams drain from these hills to the Columbia River, resulting in high energy streams, and many waterfalls.

The elevation and topography of the existing roadways where the HVDC transmission cables would be placed is relatively flat with rolling hills.

3.1.1.4 Unique Physical Features

There are no notable unique geological or physical features within the study area.

3.1.1.5 Erosion/Enlargement of Land Area (Accretion)

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 previously, most of the soils in the study area have moderately low hazard for erosion.

The study area contains areas identified as susceptible to erosion, landslides, and bluff failures that may require specialized engineering to develop the area. According to the WDNR Skamania County Liquefaction Susceptibility Map (WDNR 2004a), Site Class Map (WDNR 2004b), and the Geologic Information Map (WDNR 1990), 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 study area (Figure 3-5).

3.1.2 Impacts

The primary impacts from construction would be from surface disturbing activities. Construction would permanently impact approximately 2.3 acres and temporarily impact approximately 1.1 acres. Activities that require surface disturbance are discussed in Section 2.1 and include trenching and temporary HDD work areas, including HAB locations. These activities are not expected to impact the topography or elevation of the area because once the HVDC cables are installed, the temporary HDD and HAB work areas and the roadbed and pavement would be replaced to the condition prior to disturbance. The total volume of material excavated will depend on the final design(s) of the facilities. No changes to shorelines from the proposed Project would occur because the HVDC transmission cables would be placed via HDD under the shoreline into the Columbia River.

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 minimized through the implementation of an NPDES permit, which would be handled through a Construction Stormwater General Permit from Ecology, as described in Section 3.1.3.



If a volcanic eruption should occur during construction, a temporary shutdown would likely be required to protect equipment and human health. Construction and operation of the Project are unlikely to adversely affect or be aggravated by an eruption.



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Figure 3-4. Project Area Topographic Map

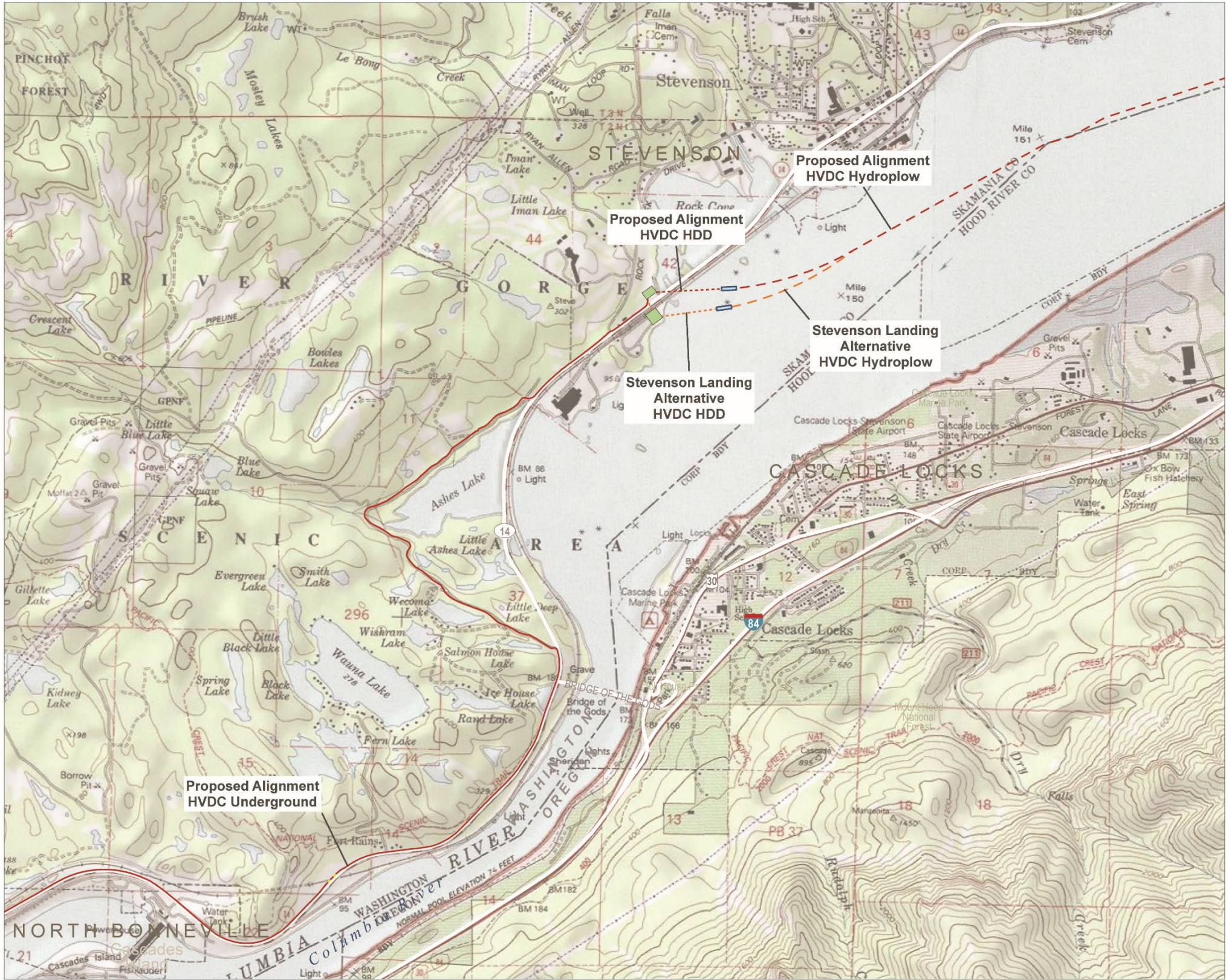
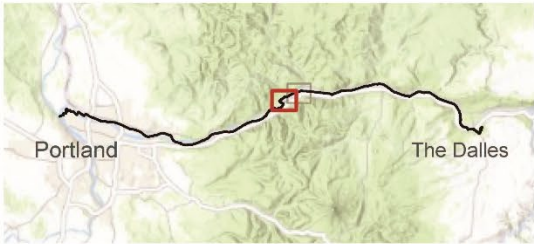


FIGURE 3-4
PROJECT AREA TOPOGRAPHIC MAP
PAGE 1 OF 2

FOR INFORMATION ONLY - CONCEPT DRAWING

- PROPOSED ALIGNMENT - HVDC HDD
- PROPOSED ALIGNMENT - HVDC HYDROFLOW
- PROPOSED ALIGNMENT - HVDC UNDERGROUND
- STEVENSON LANDING ALTERNATIVE - HVDC HDD
- STEVENSON LANDING ALTERNATIVE - HVDC HYDROFLOW
- TEMPORARY 3-SIDED WET COFFERDAM
- TEMPORARY HORIZONTAL DIRECTIONAL DRILLING (HDD) AREA
- TEMPORARY HORIZONTAL AUGER BORE (HAB)
- STATE BOUNDARY

CASCADE RENEWABLE TRANSMISSION



HDR

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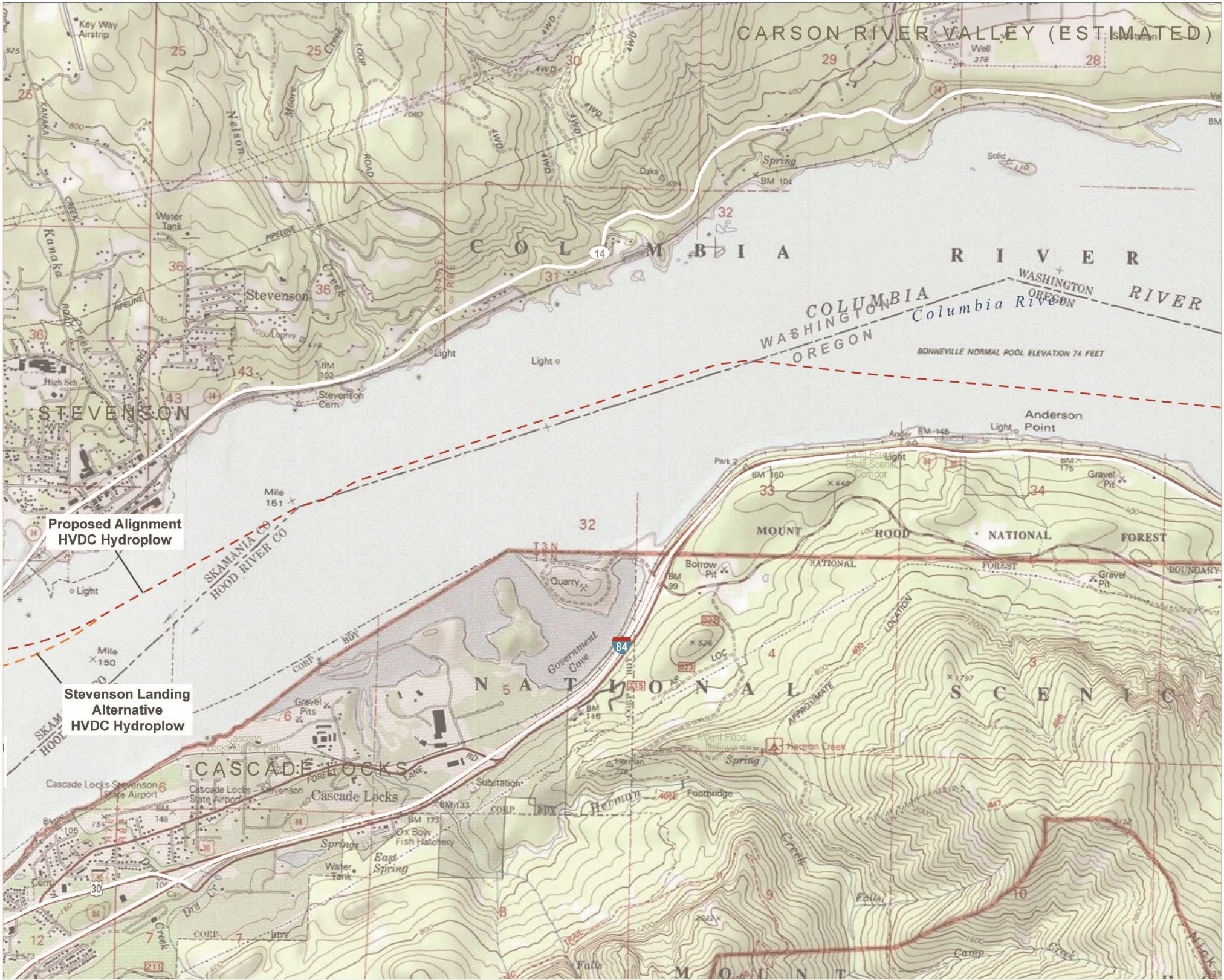


FIGURE 3-4
PROJECT AREA TOPOGRAPHIC MAP
PAGE 2 OF 2

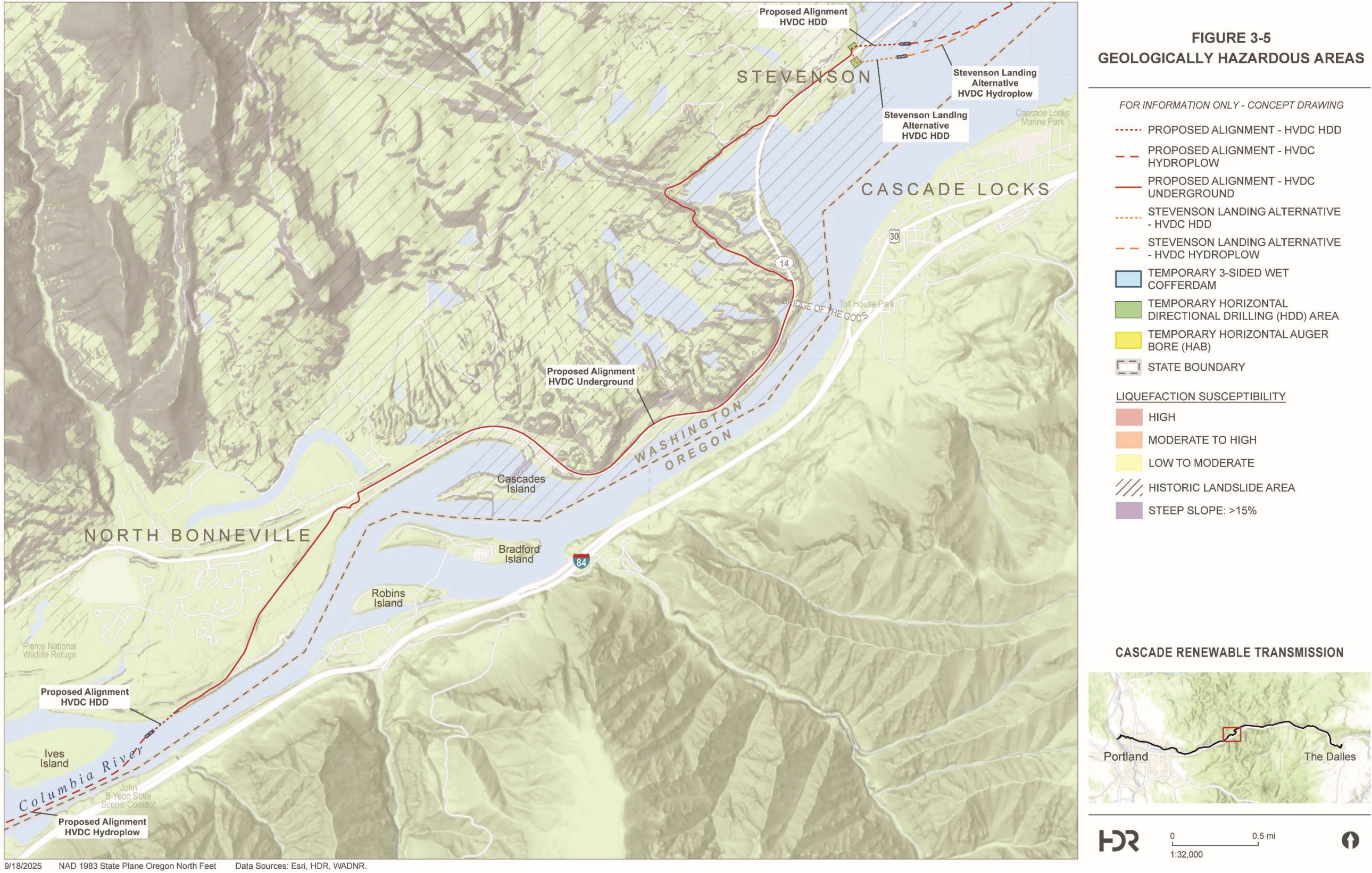
FOR INFORMATION ONLY - CONCEPT DRAWING

- PROPOSED ALIGNMENT - HVDC HYDROFLOW
- STEVENSON LANDING ALTERNATIVE - HVDC HYDROFLOW
- TEMPORARY 3-SIDED WET COFFERDAM
- TEMPORARY HORIZONTAL DIRECTIONAL DRILLING (HDD) AREA
- TEMPORARY HORIZONTAL AUGER BORE (HAB)
- STATE BOUNDARY

CASCADE RENEWABLE TRANSMISSION



Figure 3-5. Geologically Hazardous Areas





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A site-specific geotechnical evaluation will be conducted to provide additional detail regarding soil, geology, and geologic hazards, and identify seismic design parameters in consideration of current building codes to inform final design prior to construction. At an appropriate stage in development, the Applicant will have a qualified engineer conduct a site-specific geotechnical investigation, using current code requirements and state-of-practice methods to inform final design. The investigation will also rely on current geologic information at the time the investigation occurs.

Work to be conducted during the site-specific geotechnical investigation will include the following:

- Test pits, soil boring, and rock cores advanced along access road alignments in order to determine soil strength and rock mass properties and evaluate HDD conditions. Seismic refraction surveys may also be used to evaluate HDD conditions. The final layout of the structures and associated roads will dictate the locations of the site-specific geotechnical investigations. A qualified engineer of record will conduct a probabilistic and deterministic seismic hazard analysis with peak ground and spectral acceleration.
- Drilling and sampling will be in accordance with ASTM International (formerly American Society for Testing and Materials) method D1586 for advancement to refusal of specified minimum depth, with identification and description of changes in strata, joints, discontinuity, and extent of weathering in accordance with ASTM D5878. A boring log for each boring location will be completed. Testing of materials will include electrical resistivity testing (IEEE Standard 81), thermal resistivity testing (IEEE Standard 442), shear wave velocity testing, and California bearing ratio testing. Laboratory testing will include, at minimum, moisture content, density determination, Atterberg limit and sieve analysis, direct shear unconfined compression, unconfined compression soil, organic context, triaxial compression test and consolidation test, modified proctor compaction testing, chemical testing, and bond strength.
- In-river soil sampling will be conducted at various depths within the Columbia River, including each marine HDD location and at the cofferdams. Additionally, the marine installation contractor will take soil samples at numerous locations in the river at designated intervals.
- Landslide hazard mapping will be conducted using the best available resources, including available LiDAR coverage or high-resolution aerial imagery. Drilling will be used to evaluate unstable areas and the characteristics of landslide-prone areas in order to avoid placing structures or facilities on existing landslides or potentially unstable areas.
- Based on the results of the site-specific geotechnical investigation, facilities will be sited to avoid or minimize geologic hazards. Facilities will be sited to minimize or avoid geologic impacts on the environment (for example, causing accelerated erosion or reconfiguring the landscape) and to minimize or avoid any geologic impacts of the environment on the structures.
- Data and design reports will summarize the geologic hazards and geotechnical conditions, describe soil and rock properties and present laboratory testing results of soils and rock for structural designers.

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. A qualified engineer would provide oversight and inspection during construction to ensure that the Project is

constructed according to plans and specifications, and the stability of the structures is not compromised.

Project operations would have no impact on soil erosion because the HVDC cable would be underground in the roadways and no additional ground disturbance is anticipated during Project operations.

3.1.3 Mitigation Measures

The State Water Pollution Control Act requires compliance with the NPDES, which would be handled through a Construction Stormwater General Permit from Ecology. The NPDES permit will require:

- An ESCP detailing specific BMPs that will be used and where they will be implemented, 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.
- A SWPPP will be required detailing the activities and conditions at the site that could cause water pollution, and the steps the Applicant will take to prevent the discharge of any unpermitted pollution.

Mitigation measures are discussed in Section 2.11.

The Applicant's construction contractor will prepare a draft SPCC Plan, which would be implemented during construction and describe the preventative measures and practices to be used during construction to reduce the likelihood of an accidental release of a hazardous or regulated liquid. The SPCC Plan will describe the methods used in the event of a release to expedite the response to the release and the associated remediation of such a release. The plan will restrict locations of fuel storage, fueling activities and equipment maintenance activities, and provide procedures for these activities. The plan will also describe required training, key roles and responsibilities of key Applicant personnel and contractors, and establish lines of communications to facilitate the prevention, response, containment, and cleanup of any spills. Due to the procedures established in the SPCC Plan and the limited fuels, oils, or chemicals that would be kept on-site during construction, the Project is not expected to result in impacts to soils from chemical spills during construction. In addition, the SPCC Plan will help prevent discharge of oil into navigable waters or adjoining shorelines.

The Project has been designed to avoid impacts to sensitive soils to the extent practicable. For example, impacts to soils have been minimized through the use of existing roads to the extent possible. Potential impacts to soil from construction, operations, and decommissioning would be mitigated by adhering to BMPs identified in the ESCP. Localized impacts to soils from temporary disturbance areas would be minimized through the use of BMPs and efforts to restore soil surfaces and vegetation following disturbances.



The ESCP would include, but not necessarily be limited to, the following minimization measures and BMPs:

- **Stabilized Construction Entrances/Exits:** A stabilized construction entrance/exit will be installed at locations where construction vehicles will access disturbed areas from paved roads. The stabilized construction entrance/exits will be inspected and maintained for the duration of construction.
- **Preserve Existing Vegetation:** To the extent practicable, existing vegetation will be preserved. Where vegetation clearing is necessary, root systems will be conserved, if possible.
- **Silt Fencing:** Silt fencing will be installed throughout the Project on the contour downgradient of excavations and HDD staging areas.
- **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 and staging areas 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 and HDD Drill Cuttings Management:** Concrete truck chutes will be washed down to prevent concrete from hardening within the chutes. In these cases, the concrete wastewater will be washed out into a dedicated concrete washout area. Concrete solids and washout water would be contained within a confined area and hauled away to an appropriate location. Using dedicated concrete washout areas is a common BMP for construction. During HDD drilling to transition the cables from land to water and under sensitive areas, drill cuttings and HDD drilling mud solids will be contained within a confined area and transported to an appropriate waste site.
- **Stockpile Management:** To facilitate installation of transmission line via trenching, small excavations will be created. Soil from these excavations will be temporarily stockpiled and used to backfill the trenches once the cable is laid. Silt fencing will be installed around the stockpile material as a perimeter control, and mulch or plastic sheeting will be used to cover the stockpiled material if the soil requires stockpiling for more than 1 day. Soils will be stockpiled and reused in reverse order to prevent mixing of productive topsoil with deeper subsoil.
- **Revegetation:** After construction is complete, 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 vegetation establishes. Revegetation will take place as soon as site conditions and weather allow following construction.

- **Pollutant Management:** The SPCC Plan will identify source control measures 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 will be postponed when soils are excessively wet such as following a significant precipitation event.

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)

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 USEPA has promulgated primary and secondary National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO₂), two size categories of particulate matter (PM₁₀ and PM_{2.5}), ozone (O₃), sulfur dioxide (SO₂), 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. 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. WA 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 (USEPA 2024a).

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 NOC approvals for new sources of air emissions under WA EFSEC jurisdiction. A NOC is not required for the Project because there would be no permanent source of regulated air emissions.

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 minimis 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 there would be no new or modified source of regulated 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 Southwest Clean Air Agency (SWCAA) regulate what are known as “fugitive” air emissions, which consist of pollutants that are not emitted through a stack, chimney, vent, or other functionally equivalent opening. Blowing dust from construction sites, unpaved roads, and tilled lands are common sources of fugitive air emissions. Energy plants and underground transmission lines 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 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.

Additionally, any activity generating fugitive dust requires the operator to take reasonable precautions to prevent fugitive dust from becoming airborne and must maintain and operate the "source" or activity to minimize emissions. No additional notice is required per SWCAA 400-13(a). Fugitive emissions from an emissions unit are included only if the emissions unit is part of one of the source categories listed in subsection (15)(e). The Applicant's construction contractor will be required to take reasonable measures to prevent dust from becoming airborne and to minimize emissions.

Greenhouse Gases

Greenhouse gases (GHGs) play a critical role in determining the earth's surface temperature. A GHG is defined as 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.

Both natural processes and human activities emit GHGs. Human activities known to emit GHGs include industrial manufacturing, fossil fuel utilities, transportation, residential, and agricultural activities. The GHGs that enter the atmosphere because of human activities are carbon dioxide (CO₂), 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 underground transmission lines would not emit GHGs during operations, these regulations would not apply to the Project. In fact, this Project is designed to help Washington State meet its established goals for statewide reduction of GHG emissions by transmitting clean, renewable energy while maintaining and enhancing electric transmission system reliability and resiliency.

3.2.1.2 Climate

Skamania County is located within the Western Cascades Lowlands and Valleys, a region primarily characterized by mountains underlain by volcanic rock and shaped by alpine glaciation. In this region of Washington, the summers are relatively dry and warm; winters are mild and wet (e.g., on average, there are approximately 160-180 days of sunshine). According to the Western Regional Climate Center, average annual precipitation at the Bonneville Dam is 76.7 inches. The average seasonal snowfall at Bonneville Dam is 15.7 inches. In winter, temperatures in Bonneville Dam average a low of 44°F, with extreme lows averaging 34°F. In summer, temperatures average a high of 76.5°F, with extreme high averages above 80°F. Average relative humidity is typically around 60 percent (2024).

3.2.1.3 Existing Air Quality

The two most prevalent existing sources of air pollution in Skamania 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 Vancouver, Washington (with the monitor located approximately 29 miles to the west), which measure PM_{2.5}. The nearest PM₁₀ monitors are in Portland, Oregon (approximately 33 miles southwest). The nearest SO₂ monitor is in Portland, Oregon (approximately 30 miles to the southwest). The nearest CO monitor is in Portland, Oregon (approximately 30 miles to the southwest). The nearest NO₂ monitors are in Portland, Oregon (approximately 30 miles to the southwest) (USEPA 2024a).

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 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. 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 transportation and construction in Skamania County. The emissions would generally be dispersed among multiple locations in and near the study area 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, trenching, and temporary HDD work areas.

As described in Section 2.15.1, HDD civil works is estimated to take approximately 5 weeks at each HDD location to bring cables on land from the river. The duration of the open trench cable laying process on land is estimated to take approximately 6 months, including restoration of the roadways. 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

There would be no impacts to air quality from Project operations because the transmission cables will be located beneath the existing road surfaces and will not generate air pollution, odors, or dust while in operation.

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 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 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; therefore, no additional mitigation measures beyond those discussed above are proposed.

3.3 Water (WAC 463-60-322)

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

The proposed Project lies within Cascades level III ecoregion and the Western Cascades Lowlands and Valleys level IV ecoregion (EPA 2016). The Cascades ecoregion is primarily characterized by mountains underlain by volcanic rock shaped by alpine glaciations. The majority of the landforms within the survey area and surrounding landscape including steep ridges generally less than 3,200 feet elevation associated with the Cascades Mountain Range, and relatively narrow Columbia River Valley.

The following analysis is based on review of current databases maintained by USGS, Federal Emergency Management Agency (FEMA), NRCS, National Hydrologic Data (NHD), U.S.

Department of Agriculture (USDA), USFWS, National Oceanic and Atmospheric Administration (NOAA), WDNR, Ecology, WDFW, Skamania County, City of North Bonneville, City of Stevenson, and fieldwork performed by HDR staff. The information presented within this section is summarized in Section 404 of the CWA application submitted to USACE in June 2024.

3.3.1.1 Regulatory Framework

Waters were delineated followed the methods prescribed by the USACE and Ecology, as outlined in the methods section of the *Wetland and Waters Delineation Report* (Appendix F). Delineation of the ordinary high-water mark followed USACE *A Guide to the Ordinary High-Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States* (Mersel and Lichvar 2014) and the prescribed method by Ecology, as outlined in *Determining the Ordinary High-Water Mark for Shoreline Management Act Compliance in Washington State* Ecology's (Anderson et al. 2016). The guidance for OHWM identification is based on the Shoreline Management Act (RCW 90.58.030(2)(c)) and WAC 173-22-030(5)).

Existing federal, state and local resources reviewed for this analysis include the following:

Federal

- FEMA Flood Insurance Rate Map (FIRM) (1986)
- NHD maps and data (USGS 2024a)
- USGS topographic maps (2024c)
- USDA and NRCS Land Resources Regions (NRCS 2022)
- USDA NRCS Hydric Soils List (NRCS ND)
- USFWS National Wetland Inventory (NWI) Mapper (USFWS 2024a)
- USFWS Critical Habitat Mapper (USFWS 2024c)
- NOAA Essential Fish Habitat and Critical Habitat Mappers (NOAA 2021 and NOAA 2024)
- Climate Data for Bonneville Dam weather stations (WRCC 2024)

State

- Ecology Water Quality Atlas Map (Ecology 2024b)
- WDNR Forest Practices Application mapping tool (2024d)
- WDNR National Heritage Program Data Explorer for Wetlands of High Conservation Value (2023)
- WDFW Washington State Fish Passage (2024b)
- WDFW Priority Habitats and Species on the Web (2024a)
- WDFW SalmonScape web application (2024d)
- Statewide Washington Integrated Fish Distribution Web Map Viewer (SWIFD 2024)

Local

Waters and associated buffers identified in the survey area were classified according to the stream definitions and typing detailed in the following resources:

- City of Stevenson Municipal Code, Title 18 Environmental Protection (City of Stevenson 2024a) and Shoreline Master Program (City of Stevenson 2022b) (SMC 18.13.095)
- Skamania County Municipal Code, Title 19 Critical Areas (Skamania County 2024b) and Shoreline Master Program (Skamania Count 2020) (SCMC 19.05.040)



- Skamania County Shoreline Environmental Designation Map (Skamania County 2025)

Criteria for this typing system are described in Table 3-2, Table 3-3, and Table 3-4. The stream types described are based on the stream reaches within the survey area; stream types may be different in downstream reaches. Fish presence was determined through the review of online resources, an assessment of the available habitat, and the hydrologic condition of identified surface waters and is discussed further in Section 3.4.

Table 3-2. Summary of City of Stevenson Stream Typing System and Required Buffers

Water Type	Description	Buffer Width (feet)
Type S	Waters identified as shorelines of the state (Columbia River, Rock Cove, etc.)	150
Type F, anadromous fish bearing stream	Streams and waterbodies that are known to be used by fish or meet the physical criteria to be potentially used by fish. Fish streams may or may not have flowing water all year; they may be perennial or seasonal.	100
Type Np	Type Np Waters are streams that have flow year-round and may have spatially intermittent dry reaches downstream of perennial flow. Type Np streams do not meet the physical criteria of a Type F stream. This also includes streams that have been proven not to contain fish using methods described in Forest Practices Board Manual Section 13.	50
Type Ns	Type Ns Waters are streams that do not have surface flow during at least some portion of the year, and do not meet the physical criteria of a Type F stream.	50
Other	Irrigation ditches, canals, stormwater run-off devices, or other entirely artificial watercourses, except where they exist in a natural watercourse that has been altered by humans are not assigned a water type and are therefore not regulated as riparian habitats.	0

Source: SMC 18.13.095 Table 18.13.095-1

Table 3-3. Summary of City of North Bonneville Stream Typing System and Required Buffers

Water Type	Description	Buffer Width (feet)
Type S	Waters identified as shorelines of the state (Columbia River)	150
Type F, anadromous fish bearing stream	Perennial or fish bearing waters (Including but not limited to Hamilton Creek, Greenleaf Lake; Hamilton Springs; Greenleaf Creek; Moffet Creek; Bass Lake; Carpenter Creek)	100
Type F, non-anadromous fish bearing stream	All perennial waters that are not fish bearing	75
Type Np	Less than 3 feet in width on average	50
Type Ns	Seasonal streams with a defined channel	25

Source: NBMC 21.10.070 Table 21.10.070-8

Table 3-4. Summary of Skamania County Stream Typing System and Required Buffers

Water Type	Description	Buffer Width (feet)
WDNR Type S	S waters are all waters, within their bankfull width, as inventoried as “shorelines of the state” under Chapter 90.58 RCW and the rules promulgated pursuant to Chapter 90.58 RCW, including periodically inundated areas of their associated wetlands. Type S shorelines are regulated under the county shoreline management program (SMP).	See County SMP
WDNR Type F	Type F waters are segments of natural waters which are not classified as Type S waters and have a high fish, wildlife, or human use. These are segments of natural waters and the periodically inundated areas of their associated wetlands.	100
Type Np	Type Np waters are all segments of natural waters within defined channels that are perennial non-fish-habitat streams. Perennial streams are waters that do not go dry at any time of a year of normal rainfall. However, for the purpose of water typing, Type Np waters include the intermittently dry portions of the perennial channel below the uppermost point of perennial flow.	50
Type Ns	Type Ns waters are all segments of natural waters within 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 aboveground channel system to a Type S , F , or Np water.	25

Source: SCMC 19.05.040 Table 19.05-1

3.3.2 Surface Water

The survey area for water resources includes the portion of the HVDC transmission cables placed within the Columbia River and on land in Washington State located along the proposed alignment in road ROWs along SR 14, Ash Lake Road, Dam Access Road, and Fort Cascades Drive, where temporary and permanent surface disturbance would occur. The survey area for water resource can be found in *Wetland and Waters Delineation Report* (Appendix F).

3.3.2.1 Field Investigation

HDR staff performed waters delineations on April 19-21, 2023, and November 6-10, 2023. HDR biologists identified the Columbia River, 13 streams, and 7 ditches within the survey area. Of the fourteen mapped surface waters within the survey area; nine are fish bearing, and five are non-fish bearing or unknown. HDR biologist looked for physical indicators, including but not limited to, natural scour line, distribution of upland and water tolerant vegetation, and drift deposits. All streams within the survey area are considered Waters of the U.S, and Waters of the State. The OHWM of streams and rivers outside the survey area of the Project, or in locations with restricted right of entry, were estimated using field observations, aerial imagery, and project specific 2-foot contours. Table 3-5 summarizes the waters within the Project survey area. The complete analysis of delineation of waters is located within the *Wetland and Waters Delineation Report* (Appendix F).



Table 3-5. Surface Waters in the Survey Area

Waterbody	Approx. Length in Survey Area (feet)	Approx. Length in Impact Area (feet)	Flow Regime ^a	Tributary to	Local Jurisdiction	Local Water Type	WDNR Water Type	OHW Width (ft)	Stream Buffer Width (ft)	USACE/ Ecology Jurisdictional
Columbia River	N/A	0	Perennial	Pacific Ocean	Skamania County, Cities of North Bonneville and Stevenson	S	S	1050-4000	150	Y/Y
Stream 1	479	0	Intermittent	NWI mapped wetland complex	Skamania County, City of North Bonneville	F	Not mapped	3.4	100	Y/Y
Stream 2	77	0	Intermittent	Columbia River	Skamania County	F	N	2.5	100	Y/Y
Stream 3	237	0	Intermittent	Columbia River	Skamania County	F	N	2.8	100	Y/Y
Stream 4	15	0	Intermittent	Ashes Lake	Skamania County	F	N	2.5	100	Y/Y
Stream 5	21	0	Perennial	Ashes Lake	Skamania County	F	F	7.5	100	Y/Y
Stream 6	14	0	Ephemeral	Ashes Lake	Skamania County	Ns	Not mapped	2	25	Y/Y
Stream 7	22	0	Intermittent	Ashes Lake	Skamania County	F	Not mapped	1.4	100	Y/Y
Stream 8	24	0	Perennial	Ashes Lake	Skamania County	F	F	7.3	100	Y/Y
Stream 9	18	0	Intermittent	Ashes Lake	Skamania County	Ns	Not mapped	7.2	25	Y/Y
Stream 10	260	0	Intermittent	Wetland D	Skamania County	Ns	Not mapped	1.2	25	Y/Y



Waterbody	Approx. Length in Survey Area (feet)	Approx. Length in Impact Area (feet)	Flow Regime ^a	Tributary to	Local Jurisdiction	Local Water Type	WDNR Water Type	OHW Width (ft)	Stream Buffer Width (ft)	USACE/ Ecology Jurisdictional
Stream 11	8	0	Perennial	Ashes Lake	Skamania County	F	F	4.2	100	Y/Y
Stream 12	75	0	Intermittent	Rock Cove	City of Stevenson	Ns	Not mapped	Not accessed	50	Y/Y
Stream 13	400	0	Ephemeral	Columbia River	Skamania County	Ns	Not Mapped	1.9	25	Y/Y
Ditch 1	132	0	Ephemeral	Columbia River	Skamania County	Ns	N/A	1.3	N/A	N/N
Ditch 2	735	0	Ephemeral	Columbia River	Skamania County	Ns	N/A	2.0	N/A	N/N
Ditch 3	499	0	Ephemeral	Stream 1 to large wetland complex	Skamania County	Ns	N/A	2.0	N/A	N/N
Ditch 4	733	0	Ephemeral	Upland	Skamania County	N/A	N/A	1.5	N/A	N/N
Ditch 5	1233	0	Ephemeral	Columbia River	Skamania County	Ns	N/A	3.5	N/A	N/N
Ditch 6	87	0	Ephemeral	Ashes Lake	Skamania County	Ns	N/A	1.0	N/A	N/N
Ditch 7	192	0	Ephemeral	Upland	Skamania County	Ns	N/A	<1.0	N/A	N/N



Columbia River

The Columbia River is a perennial, fish bearing stream and is a Shoreline of Statewide Significance. The portion of the River where the project is proposed contains many anadromous and residential fish species including: fall chum, winter and summer steelhead, coho and pink salmon, spring, summer and fall chinook, Sockeye salmon, walleye, small and large mouthed bass, white and green sturgeon, cutthroat trout, dolly varden/bull trout, American shad, and mountain whitefish. The Columbia River is designated as a critical habitat for bull trout, eulachon, steelhead, coho salmon, chum salmon, sockeye salmon, and Chinook salmon. The lower section of the Columbia River within the survey area is designated as Essential Fish Habitat to Chinook and Coho salmon. Additional information of fish habitat can be found in Section 3.4.

The OHWM of the Columbia River was identified within the survey area. Water elevation and corresponding depths of the Columbia River vary depending on the time of year and dam operations. The lowest water levels occur in September and highest levels occur in May (NOAA 2022).

Channel depths in the main channel of the Columbia River below Bonneville Lock and Dam generally range from 20 to 50 feet. Side channels and fringe areas that are adjacent to riverine islands range from 2 to 14 feet. The reach below Bonneville Lock and Dam is tidally influenced and typical tidal fluctuation around Portland is approximately 3 feet, with extreme ranges up to 13 feet. The reach above Bonneville Lock and Dam is generally deeper, with depths ranging from 30 to 70 feet with sections of deeper pools. Near The Dalles, depths can be up to 300 feet (USGS 1981). Bed sediments in the Columbia River downstream of the Willamette River were characterized as having mean sediment size ranging from 0.2 to 1.2 millimeters (Cohn and Moritz 2023).

At the Dalles, the average discharge is 190,300 cubic feet per second (cfs). Annual average discharges at the Vancouver, Washington, station along the Columbia River (calculated from 10 records between 1964 and 2020) is 198,770 cfs, with ranges from 173,300 to 237,800 cfs (USGS 2023a).

During the proposed in-water work period below Bonneville Lock and Dam (November 1 - February 28), the median monthly discharge ranges from 93,500 to 260,000 cfs. During the proposed in-water work period above Bonneville Lock and Dam (proposed November 1 - March 15), the median monthly discharge ranges from 71,700 to 280,750 cfs. From a seasonal perspective, flows during the in-water work period tend to correlate with the annual averages as this is the period between the low late summer flows and the high late spring freshet flows.

USGS undertook velocity measurements via acoustic doppler current profiles for the Columbia River near Vancouver, Washington, and The Dalles, Oregon. According to the outputs, the velocity profiles followed expected velocity distribution with the maximum velocities in the upper-middle portions of the water column and the lowest velocity near the sides and bottom. The measurements indicate that the expected average river velocities during the in-water work window will range between 1.2 and 3.4 feet per second downstream of Bonneville Lock and Dam and 2.0 to 4.9 feet per second above Bonneville Lock and Dam.

Temperature

Surface water temperatures in the Columbia River vary throughout the year. USGS stream gage at The Dalles (14105700) has recorded a minimum temperature of 2.4 degrees Celsius (°C) and a maximum of 23.1 °C between May 2022 and May 2024 (USGS 2024b). This temperature range is similar to that recorded at downstream of Bonneville Dam at Dodson, Oregon (432630122021400) over the same period (2.5 to 23.0 °C; USGS 2024b).

The USEPA has identified 23 Cold Water Refuge tributaries along the Lower Columbia River, with 12 cold water refuges important to salmon on the Columbia River. There are nine located between Portland and the Dalles Dam (in the Project area). There are four in Washington: Wind River, Little White Salmon River, White Salmon River, and the Klickitat River. All these rivers in Washington are outside of the study area that was assessed in the field between Bonneville Dam and Stevenson. There are five in Oregon: Sandy River, Tanner Creek, Eagle Creek, Herman Creek, and the Hood River.

Turbidity

Turbidity is a measure of water clarity. Increases in suspended solids such as sediments result in an increase in turbidity, which lowers light penetration into the water column. Information on turbidity is available at USGS stream gage at Vancouver, Washington (14144700). Turbidity within the proposed in-water work window is generally below 20 formazin NTU. Intermittent spikes above 30 occur for about 24 hours intermittently, on the range of three to five events per year. This increase in turbidity does not appear to correlate with flow or velocity and may be from other temporary inputs or disturbances.

Total Suspended Solids

TSS are the total amount of organic and inorganic particles suspended in the water. Several studies have looked at TSS and other components of water chemistry in the project area. *Regional Environmental Monitoring and Assessment Program: 2009 Lower mid-Columbia River Ecological Assessment Final Report*, conducted grab samples within the Columbia River at The Dalles (Caton 2012). These grabs were analyzed for TSS among other water quality constituents. TSS within and surrounding the project area ranged from less than 1 to 26 milligrams per liter (mg/L). A sample taken at The Dalles produced a TSS measurement of 2 mg/L.

The USEPA conducted an additional study on Mid-Columbia River Fish Toxics at 42 locations within the Columbia River between Oregon and Washington. The results of their analysis produced an average TSS of 2 mg/L (Herger et al. 2017).

Toxics

There are a number of toxic compounds present in the Columbia River, primarily between the Hayden Island land-to-water transition at RM 105.5 and the Sandy River (RM 121). Table 3-6 summarizes the chemicals, which are 303(d) listed or have an active, established total maximum daily load (TMDL). The Columbia River is the only impaired and threatened waterbody identified by Ecology (2024b) and the USEPA (2024c) within the survey area.

Table 3-6. 303(d) and Total Maximum Daily Load Listings for Columbia River

Compound	Location	Status
Copper	Bridal Veil Creek to Sandy River (RM121-132)	303(d) Listing (Oregon)
DDE 4,4'	Willamette River to Multnomah Creek (RM 102-136)	303(d) Listing (Oregon)
Dioxin	Willamette River to Sandy River (RM 102-121)	TMDL
PAHs	Willamette River to McCord Creek (RM 102-142.5)	303(d) Listing (Oregon)
PCBs	Willamette River to McCord Creek (RM 102-142.5)	303(d) Listing (Oregon)
Temperature	Extent of Project Area	TMDL
TDG	Lady Island to Pierce Island (RM 121-142.5)	TMDL
Vinyl Chloride	Willamette River to Lady Island (RM 102-121)	303(d) Listing (Washington)

Source: Ecology 2024b, USEPA 2024c

Notes: DDE – 4,4' = 4,4' Dichlorodiphenyltrichloroethane (DDT), PCBs = Polychlorinated Biphenyls, PAHs = Polycyclic Aromatic Hydrocarbons, TMDL = Total Maximum Daily Load, TDG = Total Dissolved Gas

The Applicant is coordinating with the PSET, a multi-agency review team, related to the potential for sediment disturbance through Project activities. PSET ranked the project as low risk to disturb contaminated sediments. The Applicant prepared a Sediment Analysis Plan (SAP) to conduct sediment quality testing along the proposed route; PSET reviewed and approved the SAP. Sampling was conducted in the Columbia River in November 2024. The sediment analysis identified the sediments as primarily coarse, heavy sand and sediment modeling shows the sand is not expected to drift or stay suspended in the water column. In addition, laboratory analysis results show that the sediment samples do not contain contaminants above agency thresholds. This indicates that the hydroplow activity will have minimal impacts to water quality in the Columbia River. The Project was sited to avoid known contaminated sites; therefore, temporary or permanent changes to toxic compounds or concentrations within the Columbia River are not expected.

The Project is proximal to, but not within, two known areas of contaminated sediments on the National Priority List (NPL; known as superfund sites) and one Washington 303(d)-listed sediment site in or near the Columbia River. The Burlington Environmental LLC Washougal site is listed in Washington for elevated concentrations of arsenic, cadmium, chromium, copper, lead, mercury, phenol, silver, and zinc. The site occupies 40 acres adjacent to Cottonwood Beach Park in Washougal, Washington. The site was created from operations of various businesses between 1978 and 2002.

The Union Pacific Railroad Company Tie Treating Plant located in The Dalles near the Columbia River covers 83 acres. The site was contaminated with wood treatment chemicals, including creosote, pentachlorophenol, arsenic, benzene, and other volatile organic compounds. The site was identified for NPL listing in 1990. The most recent 5-year review for the site was completed in 2022, which determined that the current cleanup module is being phased out because contaminant recovery rates are approaching asymptotic slopes (USEPA 2024b). The proposed cable alignment is routed adjacent to the site to the east (i.e., downslope).

Bradford Island is part of the Bonneville Lock and Dam complex and was listed on the NPL in 2022. The site includes a landfill that was used between the 1940s and 1980s and electrical equipment and light bulb disposal in surrounding areas. Landfill debris, including electrical equipment, has been found in the sediments of the Columbia River adjacent to the island. Site investigations have revealed polychlorinated biphenyls; semi-volatile organic compounds, butyltins, volatile organic compounds, and several pesticides. The proposed cable route will avoid the island, transiting

2.5 miles downstream of the site and 4 miles upstream. While the extent of the remediation areas is still being determined, the cable alignment is anticipated to be outside the limits (USEPA 2024d).

Streams

For the streams identified within the survey area, not including the Columbia River, the hydrology is primarily attributed to upslope lakes, wetlands and topographical location. Streams 1 through 4 are identified as fish bearing due to their intermittent flow and proximity and potential connectivity to other fish bearing waters. Streams 5, 8 and 11 are identified as perennial fish bearing streams. Streams 7, 9, 10 and 12 are identified as non-fish bearing intermittent streams. Streams 6 and 13 are identified as ephemeral non-fish bearing streams. According to Ecology's Water Quality Atlas Mapper (Ecology 2024b) and the Water Quality Assessment database (Ecology 2024c) none of the streams (1-13) within the survey area have been identified as an impaired and threatened waterbody.

Ditches

For the ditches identified within the survey area, Ditches 1-4, and 6 are ephemeral and are hydrologically influenced by precipitation, road runoff and topographic position. Ditch 5 receives intermittent hydrology from upslope wetlands, stream and from road runoff. Ditch 7 is ephemeral and is hydrologically influenced by precipitation and upslope wetland.

3.3.2.2 Runoff/Absorption

Given the permeability and depth of soils on the landward sites (see Section 3.1.1), surface water is anticipated to infiltrate or runoff into the ground in adjacent roadway ditches. Infiltration and runoff would ultimately drain to the Columbia River throughout the entire survey area. Section 3.3.4 describes how the Applicant proposes to control surface water runoff and erosion during construction and operation to ensure compliance with state water quality standards.

3.3.2.3 Floodplains

There are two locations within the survey area that have been mapped as Frequently Flooded Areas (Skamania County Code 19.06). The western, eastern, and southeastern portions of HDD work areas are within the mapped Columbia River FEMA 100-year floodplain Zone A FIRM Panel 53059C0963C.

3.3.2.4 Groundwater

USGS Washington Current Water Conditions data does not provide depth to water information within the survey area (Ecology 2024a). Although there is no well data for the survey area, well logs from Ecology's well report viewer indicates there is groundwater at approximately 21 feet below ground surface near the western side of the survey area (Ecology 2002) and between 10 and 30 feet below ground surface near the eastern side of the survey area (Ecology 2019a, 2019b). In addition, the USDA Web Soil Survey does provide average depth to water for each soil type. Within the survey area, both Arents, 0 to 5 percent slopes and Steever stony clay loam 2 to 65 percent slopes have an average depth to water table of more than 80 inches (USDA 2024).

Washington's Wellhead Protection Program follows the statutory requirements in Section 1428 of the 1986 Federal Safe Drinking Water Act (SDWA) Amendments. The survey area is located within



several mapped wellhead protection zones for Group A for 6-month, 1-year, 5-year, and 10-year time-of-travel zones. Wellhead ID 495958 and its 1, 5, and 10-year travel time zones intersects the survey area directly, while the 6-month travel time zone is located approximately 150 feet northwest of the survey area near Bass Lake. Wellhead ID 473654 and its 5 and 10-year travel time zone intersect the project directly, while the 6 month and 1-year travel time zones are located 450 feet and 25 feet southeast of the survey area near Cascades Island. Wellhead ID 473655 and its 6-month, 1, 5 and 10-year travel time zones are all located within the survey area, located near the Washington Shore Visitor Center. Wellhead ID 14779 and its 600 feet travel time zone intersect the survey area near project mile 49.5.

3.3.2.5 Public Water Supplies

No public water supply wells are located within the survey area (Ecology 2024a). As identified in Section 2.6, the contractor would obtain water during construction from the City of Stevenson and the City of North Bonneville. The Applicant assumes that the cities have the appropriate water rights and no new water rights or authorizations will be required.

3.3.3 Impacts

The Applicant has made efforts to avoid and minimize impacts to water resources throughout the entire proposed Project survey area through project designs and the use of Best Management Practices. Impacts discussed here are reflective of those identified in the CWA 404 JPA submitted to the USACE in June 2024.

3.3.3.1 Surface Water

There would be temporary disturbance within the OHWM associated with installation of the HVDC transmission cable and permanent disturbance as fill associated with the transmission cable bundle and cable protection in the Columbia River, as described in Section 2.17.1.

3.3.3.2 Runoff/Absorption

Given the moderate permeability, runoff potential, and depth of the soil on landward site (see Section 3.1), precipitation and sheetflow from roads is anticipated to infiltrate into the ground. In addition, as described above in Section 3.1.3, an Erosion and Sediment Control Plan and a Stormwater Pollution Prevention Plan will be implemented before any ground disturbance begins to avoid and minimize runoff. The existing grades within the right-of-way will be maintained throughout the Project area. Therefore, runoff potential is not expected to increase.

3.3.3.3 Floodplains

Due to the horizontal directional drilling, the Project will have temporary impacts to the Columbia River's mapped FEMA 100-year floodplain and the Skamania County mapped, Frequently Flooded Areas.

3.3.3.4 Groundwater

Construction and operation of the Project would have minimal to no impact on groundwater. As described above in Section 3.1.3, an ESCP, SWPPP, and SPCC Plan will be implemented during construction to avoid and minimize potential impacts to surface water quality and hence groundwater

quality. It is unlikely that the Project's water use of up to 500 gallons per day over a 6-month construction period purchased from the City of Stevenson and the City of North Bonneville would have a direct effect on groundwater quantity due to the minor amounts of water required during construction.

3.3.3.5 Public Water Supplies

As discussed in Section 2.6, water used during construction would be for concrete casings in trenches and for mixing drilling mud for horizontal directional drilling. During HVDC in-river cable placement, river water will be required to operate the hydroplow. The Applicant anticipates that water needed during construction will be purchased by the contractor and obtained from the City of Stevenson and the City of North Bonneville and transported to the site in water-tanker trucks. The concrete containing water would arrive pre-mixed in concrete trucks. The City of Stevenson and the City of North Bonneville have not stated limitations of water for purchase, which would indicate that the Project would not impact the cities' public water supply. Therefore, no negative water impacts are expected for the City of Stevenson and the City of North Bonneville by supplying the necessary water for the Project during construction. During HVDC in-river cable placement, river water will be required to operate the hydroplow. The Applicant does not anticipate that new water rights or water right changes are required for the Project.

3.3.4 Mitigation Measures

3.3.4.1 Surface Water

The project will avoid and minimize Waters impacts through:

- Siting the cable in paved areas (e.g., Ash Lake Road, SR 14) and using HDD to minimize wetland impacts.
- Using HDD to transition from land to water segments, avoiding disturbance to riparian upland areas.
- Using HDD under the Oregon Slough, the Columbia Slough, and the Willamette River (Oregon).
- Preparation of and adherence to a plan for inadvertent loss of drilling fluids.
- Ongoing sediment and water quality monitoring during construction. Adjusting installation methods as needed to meet standards.
- Installation of the cable during the prescribed in-water work windows.
- Undertaking a sediment characterization to inform sediment transport and disposal approach.

In addition, 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). 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 Manuals

(see Section 2.11). In addition, an SPCC Plan for both pre-construction, construction, and operation, and post-construction will be prepared to prevent discharge of oil into navigable waters (see Section 2.10). A plan for inadvertent loss of HDD drilling fluids will also be prepared. Existing roads will be used and cleared areas and siting of temporary HDD laydown areas outside woody riparian areas will help shorten the vegetation restoration recovery period.

3.3.4.2 Runoff/Absorption, Floodplains, Groundwater, Public Water Supplies

There are no anticipated impacts to runoff/absorption, groundwater, or city water supplies; therefore, no mitigation is warranted. Temporary impacts have been identified within the 100-year floodplain of the Columbia River as a result of the HDD work areas will be mitigated by returning the areas impacted to their pre-existing conditions. For mitigation measures related to water quality, please see Section 3.4.3.1 (fish mitigation measures).

3.4 Habitat, Vegetation, Fish, and Wildlife (WAC 463-60-332)

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 wildlife 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 proposed Project lies within the Cascades (4) level III ecoregion and the Western Cascades Lowlands and Valleys (4a) level IV ecoregion (USEPA 2010). The Cascades ecoregion is primarily characterized by mountains underlain by volcanic rock shaped by alpine glaciations. The major landforms within the survey area and surrounding landscape include steep ridges generally less than 3,200 feet in elevation associated with the Cascades Mountain Range, and the relatively narrow Columbia River valley. The climate is wet (60-90 mean annual inches of precipitation) and mild (mean temperature 31-78 °F), promoting coniferous forests comprised mainly of Douglas fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), western red cedar (*Thuja plicata*), red alder (*Alnus rubra*) and vine maple (*Acer circinatum*) (Thorson et al. 2010).

The survey area is within Land Resource Region (LRR) A – Northwest Forest, Forage, and Specialty Crop (NRCS 2022). Forest, recreation, and timber production are the main industries in the region. General land uses within and immediately adjacent to the survey area include roadway ROW, urban development, utility infrastructure, state, federal, and privately held lands, and recreation areas associated with the Columbia River, the Pacific Crest Trail, and the Fort Cascades Historic Site.

3.4.1.1 Habitat and Vegetation

HDR mapped habitats within the study area based on surveys conducted on April 20, 2023, and May 30 and 31, 2024, as well as desktop review using National Land Cover Database (NLCD) data (MRLC 2024). Surveys conducted in 2023 and 2024 verified land cover types that were mapped by the NLCD and the NWI (USFWS 2024) within most of the study area. The initial survey conducted in 2023 was a reconnaissance-level pedestrian survey from accessible public roads within the study area. Surveys in 2024 were more detailed and mapped observations of vegetation and species on properties outside of public ROW, where obtained permissions allowed. The survey area, which is primarily within existing roadway ROW was almost entirely void of vegetation except for sparse

ruderal plant species growing on the road shoulder. HDR investigated the survey area against the NLCD, verifying it as Developed open space and having low to high intensity ground cover for existing state and county roads. The study area that extends outside of the road ROW, which includes the land to water transition site, contained vegetation that includes developed open space, mixed forest, woody wetland, and grassland herbaceous and barren land (rock, sand, clay).

Table 3-7. Habitat Types and Subtypes in the Study Area

Habitat Type	Area (acres)	Percent of Study Area
Agricultural, Pastures, and Mixed Environs	14.4	0.8
Developed/Disturbed	604.8	32.9
Barren Land	23.8	1.3
Deciduous Forest	54.5	3
Evergreen Forest	677.1	36.9
Mixed Forest	102.3	5.6
Herbaceous	93.4	5.1
Shrub / Scrub	150.5	8.2

Agriculture, Pastures, And Mixed Environs

Agricultural land consists of areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle (USDA 2025). This land cover is represented in the study area by open grassy areas south of the town of North Bonneville. Unimproved pastures are predominantly grassland sites that may or may not be grazed by livestock. Unimproved pastures include rangelands planted to exotic grasses that are found on private land, state wildlife areas, and federal wildlife refuges. These areas provide habitat for many wildlife species including small mammals and insects.

Developed/Disturbed

Developed/disturbed areas include the existing roads (SR 14, Ash Lake Road, Dam Access Road, Fort Cascades Drive), and open space associated with the Burlington Northern Railroad and the Columbia Gorge Discovery Center and Museum. Most of these areas are impervious soils or open cleared spaces with minimal vegetation growth. Vegetation that occurs within these areas are primarily ruderal species (i.e., species that colonize or thrive in disturbed areas).

Developed land cover in the study area accounts for the second largest component behind evergreen forest. Much of the Project corridor is routed through existing developed areas, primarily roads and roadside gravel areas. These areas generally lack wildlife habitat features and are a risk to wildlife. Developed unvegetated surfaces without vehicle or foot traffic (e.g., roofs) may have some habitat value because structures may provide cover, perch, and even nesting opportunities.

Barren Land

Barren land is defined as areas of bedrock, desert pavement, scarps, talus, slides, volcanic material, glacial debris, sand dunes, strip mines, gravel pits and other accumulations of earthen material. Generally, vegetation accounts for less than 15 percent of total cover (USDA 2025). Barren land cover in the study area is the extensive shoreline armoring along the bank of the Columbia River along the tailrace downstream of Bonneville Dam as well as the shoreline banks of the islands that are part of the dam facility. This armoring is rock and rip rap and is almost entirely unvegetated and provides little to no habitat value for wildlife and poorly functioning stream bank habitat for fish.



These areas are in the study area but located outside the footprint of the project for trenching and cable installation.

Deciduous Forest

Deciduous forest landcover includes areas dominated by trees generally greater than 5 meters tall, and greater than 20 percent of total vegetation cover, where more than 75 percent of the tree species shed foliage simultaneously in response to seasonal change (USDA 2025).

This forest cover in the study area consists primarily of black cottonwood, red alder and bigleaf maple. Oregon ash, bitter cherry, and a variety of nonnative trees are also present within this habitat type. There is moderate to high structural complexity and native understory plants are common and dominate some areas. In other areas, invasive plants (e.g., ivy, nonnative blackberries) dominate, reducing the native habitat. The forest's proximity to road areas increases noise and air pollution, increases collision risk for wildlife, and decreases habitat quality. It also acts as a buffer from these impacts on adjacent areas.

Patches of deciduous forest in the study area occur in riparian areas along Ash Lake Road, as well as larger areas in the western end of the study area on Hamilton Island and Ives Island. These areas are outside the Project footprint for the trenching and cable installation.

Mixed Forest

Mixed forest includes areas with stands of conifers and deciduous trees dominated by trees generally greater than 5 meters tall, and greater than 20 percent of total vegetation cover. Neither deciduous nor evergreen species are greater than 75 percent of total tree cover. Dominant trees are primarily big leaf maple and Douglas-fir. Pacific madrone may also be present within this habitat type. There is moderate to high structural complexity. The mix of tree types makes the food availability and habitat valuable for wildlife.

Similar to the distribution of deciduous forest, patches of deciduous forest in the study area occur in riparian areas along Ash Lake Road, as well as larger areas in the western end of the study area southeast of North Bonneville, on Hamilton Island, and Ives Island. These areas are outside the Project footprint for the trenching and cable installation.

Evergreen Forest

Evergreen forest includes areas dominated by trees generally greater than 5 meters tall, and greater than 20 percent of total vegetation cover (USDA 2025). Evergreen forest dominated by conifers in the study area consists primarily of Douglas-fir, with some western red cedar, western hemlock, grand fir, and Sitka spruce. Evergreen and mixed forest land cover account for the largest portion of landcover adjacent to the Project footprint. The Project is designed to be installed within existing cleared areas and road prism along the cable route to avoid impacts to forested, riparian, and wetland habitats in the area surrounding the Project.

Grassland / Herbaceous

Grassland and herbaceous vegetation communities include uncultivated areas dominated by graminoid or herbaceous vegetation, generally accounting for greater than 80 percent of total vegetation cover (USDA 2025). Grassland habitat includes uncultivated areas dominated by

herbaceous vegetation. Areas mapped as grassland include the areas surrounding the Hamilton Island Recreation Area.

This landcover also includes areas along roadways that are maintained for vehicular safety and are regularly mowed. These areas are disturbed regularly with maintenance actions, herbicide application, roadway noise, and pollution. These areas are dominated by nonnative grasses and forbs with scattered scotch broom and blackberry. There is limited habitat structure, and the periodic maintenance causes high disturbance. These areas may provide some browsing habitat for herbivores such as deer, rabbits, and rodents, and some limited foraging habitat for birds.

Shrub/Scrub

Landcover classified as shrub/scrub includes areas dominated by shrubs less than 5 meters tall with shrub canopy typically greater than 20 percent of total vegetation (USDA 2025). This class includes true shrubs, young trees in an early successional stage or trees stunted from environmental conditions. Shrubland habitat includes areas where the shrub components account for 5 percent or more of the vegetation cover.

Invasive shrubs dominate some areas, including dense Himalayan blackberry and Scotch broom, often with nonnative herbaceous layer. These areas may be part of the maintained right of way, but invasive shrubs persist. There is low habitat structure, and the amount of disturbance is high, making these areas low value habitats for wildlife, although they may provide some cover for small mammals and nesting habitat for birds. Shrubland habitat includes areas on Hamilton Island and islands and roadside areas by Bonneville Dam.

Special Status Plants and Noxious Weeds

HDR conducted a desktop analysis to create a list of special status plant species with the potential to occur within the study area. Special Status Plants include 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 the Washington Natural Heritage Program (WNHP). HDR reviewed the following specific sources of information:

- USFWS species lists for Skamania County (USFWS 2024c);
- List of Known Occurrences of Rare Plants in Washington by County (WNHP 2024a);
- Washington Natural Heritage Program Element Occurrences database (WNHP 2023)
- Washington Vascular Plant Species of Special Concern (WNHP 2024b); and
- Field Guide to the Rare Plants of Washington (WNHP 2024c)

Based on the background review, the Washington National Heritage Program Data Explorer identifies three occurrences of western ladies-tresses (*Spiranthes porrifolia*) occurring [REDACTED]

[REDACTED] This observation was made in 1993 but HDR biologists did not observe any growing within the study area. The WNHP (2024a) data also includes observations from 2019 of Columbia yellowcress (*Rorippa columbiae*), a state threatened species, located in the [REDACTED]

HDR conducted special status plant surveys in May and June 2024, concurrently with the habitat verification and mapping surveys. The majority of the Project corridor is located along paved

roadways within disturbed ROW and no special status plant species were observed during these surveys.

3.4.1.2 Fish

This section describes the topography, direction of drainage, and presence of fish-bearing streams in the vicinity of the study area and identifies fish listed under the federal ESA that occur in the study area. Sources of information include the wetlands and waters delineation conducted for the Project as well as desktop sources cited below.

HDR assessed fish habitat in streams that crossed the Project corridor to determine fish use and potential presence of ESA-listed and special status fish species. Biologists evaluated stream habitat and accessibility to listed fish species for streams that intersect the Project corridor. Biologists investigated all field survey areas, looking for features indicative of perennial, seasonal, or ephemeral streams, including a clear natural scour line, recent bank erosion, and the presence of litter and debris. Stream habitat surveys consisted of assessing habitat features, potential barriers, and suitability for various life stages of listed fish species. Incidental observations of fish during these surveys were recorded. Stream habitat was qualitatively characterized, and no stream measurements or pebble counts were conducted.

The study area is located on southern facing slopes from the Cascade mountains to the north. The study area ranges in topography from relatively flat to very steep and contains many streams and drainage features originating in the Cascade mountains to the north, all of which flow into the Columbia River. All of these streams drain perpendicular to the study area beneath culverts of varying size, discharging to the Columbia River. The Columbia River flows from east to west roughly parallel to the south of the Project route and is within the study area portions where the cable route transitions from water to land (Appendix H figures).

Review of NHD (USGS 2024a) and the Skamania County MapSifter (Skamania County 2024d) online data identified three perennial and six intermittent/ephemeral streams within the study area. HDR conducted a wetlands and waters delineation in the field in 2023 (see Section 3.3 and Appendix F), identifying 13 streams and the Columbia River within the study area. All streams and surface waters in the study area are described above in Section 3.3. Of the 13 streams identified, the Columbia River and 8 streams that intersect the study area were determined to provide habitat for fish and are documented as having fish use or meet physical criteria to provide fish habitat.

Table 3-8 provides a summary of the fish habitat in the study area and special status fish species documented or presumed to occur in those streams.

Table 3-8. Summary of fish habitat and special status fish species by waterbody.

Waterbody	Flow Regime ^a	Tributary to	Local Jurisdiction	Local Water Type	Special Status Fish Species Potentially Present
Columbia River	Perennial	Pacific Ocean	Skamania County, Cities of North Bonneville and Stevenson	S	Chum Salmon, Coho Salmon, Chinook Salmon, Sockeye Salmon, Steelhead, Pacific Lamprey
Stream 1	Intermittent	NWI mapped wetland complex	Skamania County, City of North Bonneville	F	None

Waterbody	Flow Regime ^a	Tributary to	Local Jurisdiction	Local Water Type	Special Status Fish Species Potentially Present
Stream 2	Intermittent	Columbia River	Skamania County	F	Cutthroat Trout
Stream 3	Intermittent	Columbia River	Skamania County	F	Cutthroat Trout
Stream 4	Intermittent	Ashes Lake	Skamania County	F	Cutthroat Trout
Stream 5	Perennial	Ashes Lake	Skamania County	F	Coho Salmon, Steelhead, Cutthroat Trout
Stream 7	Intermittent	Ashes Lake	Skamania County	F	None
Stream 8	Perennial	Ashes Lake	Skamania County	F	Coho Salmon, Steelhead, Cutthroat Trout
Stream 11	Perennial	Ashes Lake	Skamania County	F	Coho Salmon, Steelhead, Cutthroat Trout

Information from the WDFW PHS database (WDFW 2024a) on state priority species was referenced to identify state priority fish species that could occur within the study area. Salmon species, including ESA-listed stocks documented or potentially occurring in streams in the study area, were assessed using online resources including WDFW SalmonScape (WDFW 2024d) and the Statewide Washington Integrated Fish Distribution (SWIFD) dataset (2024). Priority aquatic species include cutthroat trout and Pacific lamprey.

Cutthroat trout (*Oncorhynchus clarkii*) are widespread throughout small streams in western Washington and are documented in stream 5 (SWIFD 2024; WDFW 2024d) and are presumed present in many of the other fish-bearing streams in the study area where suitable habitat was observed (Table 3-8). They seek smaller streams with minimal flow and small gravel substrate including sand. They prefer the uppermost portions of these streams, areas that are generally too shallow for other salmonids. They can be anadromous and rear in streams for 2 to 3 years or be resident and remain entirely in fresh water (Wydoski and Whitney 2003). Due to passage restrictions at many culvert crossings throughout the study area, cutthroat trout that inhabit upstream reaches are likely resident, but anadromous populations could be supported if barrier correction projects occur.

Pacific lamprey (*Entosphenus tridentatus*) are anadromous and migrate up the Columbia River as adults to spawn in tributaries. Larval lamprey burrow in fine sediments where they remain as filter feeders. The distribution of lamprey in the Columbia River is not well known, but they are concentrated in tributaries and at river mouths. The cable route and trenching operations avoid these areas and therefore reduce the likelihood of impacts to larval lamprey. Adults migrate up the Columbia River generally between February and June; therefore, some migrating adults could be present in the late part of the in-water work window. The larval life stage is the most susceptible to impacts from the Project due to their low mobility and presence year-round in the substrate.

The Columbia River, to which all the streams in the study area ultimately drain, contains many species of fish, including ESA-listed Chinook salmon (*Oncorhynchus tshawytscha*), chum salmon (*O. keta*), coho salmon (*O. kisutch*), sockeye salmon (*O. nerka*), steelhead (*O. mykiss*), and bull trout (*Salvelinus confluentus*). Of the nine identified fish bearing streams (Appendix H), stream 5 is listed as critical habitat for Lower Columbia River distinct population segment (DPS) steelhead (NOAA 2024), while stream 8 is presumed to have coho salmon (WDFW 2024d).



The Columbia River in the study area is also included in designated critical habitat for the following evolutionarily significant units (ESUs) and DPSs of salmon and steelhead: Columbia River ESU chum salmon (threatened), Lower Columbia River DPS steelhead (threatened), Lower Columbia River ESU coho salmon (threatened), Lower Columbia River ESU Chinook salmon (threatened), Middle Columbia River DPS steelhead (threatened), Upper Columbia River spring-run ESU Chinook salmon (endangered), Upper Columbia River DPS steelhead (threatened), Snake River fall-run ESU Chinook salmon (threatened), Snake River ESU sockeye salmon (endangered), and Snake River Basin DPS steelhead (threatened) (NOAA 2024).

The following sections describe the use of the Columbia River and tributary streams in the study area. More detailed information on these species and their occurrence in the study area is provided in Appendix H.

Table 3-9. Federally Listed Salmonid Species That May Occur in the Project Area

Species	ESU/DPS	Listing Status	Agency	Critical Habitat
Bull Trout (<i>Salvelinus confluentus</i>)	Coterminous United States	Threatened	USFWS	Designated in Columbia River in study area
Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	Upper Columbia River spring-run ESU	Endangered	NMFS	Designated in Columbia River in study area
Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	Multiple ESUs ¹	Threatened	NMFS	Designated in Columbia River and Willamette River ³ in study area
Steelhead (<i>Oncorhynchus mykiss</i>)	Multiple DPSs ²	Threatened	NMFS	Designated in Columbia River and Willamette River ³ in study area
Chum Salmon (<i>Oncorhynchus keta</i>)	Columbia River ESU	Threatened	NMFS	Designated in Columbia River in study area
Coho Salmon (<i>Oncorhynchus kisutch</i>)	Lower Columbia River ESU	Threatened	NMFS	Designated in Columbia River in study area
Sockeye Salmon (<i>Oncorhynchus nerka</i>)	SNAKE RIVER ESU	Endangered	NMFS	Designated in Columbia River in study area
Eulachon (<i>Thaleichthys pacificus</i>)	Southern DPS	Threatened	NMFS	Designated in Columbia River in study area

Note: ESU = Evolutionary Significant Unit; DPS = Distinct Population Segment; NA = not applicable; NMFS = National Marine Fisheries Service; USFWS = U.S. Fish and Wildlife Service

¹ Four threatened ESUs for Chinook salmon: Lower Columbia River, Upper Willamette River, Snake River spring/summer run, and Snake River fall run.

² Five threatened DPSs for steelhead: Lower Columbia River, Upper Willamette River, Middle Columbia River, Upper Columbia River, and Snake River.

³ Critical habitat is designated in the Willamette River for the Lower Columbia River and Upper Willamette River ESUs and DPSs of Chinook salmon and steelhead, respectively.

Bull Trout

In November 1999, the USFWS listed all populations of bull trout within the conterminous United States as a threatened species pursuant to the ESA (64 FR 58910). The mainstem Columbia River, from the mouth upstream to John Day Dam, provides foraging, migration, and overwintering (FMO) habitat for extant populations of bull trout in the Lewis, Hood, Klickitat, and Deschutes Rivers and is

considered essential for maintaining connectivity for amphidromous and fluvial life histories (USFWS 2010a). Bull trout have been documented in the Columbia River and its tributaries; however, no known spawning occurs in the mainstem Columbia River that supports its own local population (USFWS 2010a). Bull trout have been observed in the fish ladders at Bonneville and The Dalles dams; however, bull trout have never been officially recorded on USACE fish ladder counts, although it is possible that fish counters may have observed them (USFWS 2010a).

Bull trout are not expected to be in the rivers and streams in the study area during the proposed in-water work window (November 1 to March 15 upstream of Bonneville Lock and Dam, November 1 to February 28 downstream of Bonneville Lock and Dam) because post-spawned adults are expected to be in natal tributaries resting and preparing to overwinter. No bull trout spawning or rearing occurs in the study area and juvenile bull trout are not expected to occur within the mainstem Columbia River within the study area at any time of the year.

Bull trout critical habitat is designated in the mainstem Columbia River in the study area. Critical habitat includes the lateral extent of the river as defined by the bankfull elevation on one bank to the bankfull elevation on the opposite bank, or the OHWM if bankfull elevation is not evident on either bank (USFWS 2010b).

Within designated critical habitat, the physical and biological features (PBFs) for bull trout include those habitat components that are essential for the primary biological needs of foraging, reproducing, rearing of young, dispersal, genetic exchange, or sheltering (USFWS 2010b). The USFWS (2010b) has determined that nine PBFs are essential for the conservation of bull trout, including water quality and cold water temperatures, habitat complexity, quality spawning and rearing habitat, and migration corridors (see Appendix H).

Chinook Salmon

Chinook salmon from five ESUs occur in the Columbia River and, therefore, in the study area. These include the Lower Columbia River ESU, Upper Willamette River ESU, Upper Columbia River spring-run ESU, Snake River fall-run ESU, and Snake River spring/summer-run ESUs. The Columbia River Chinook salmon populations rely heavily on hatchery production and there are few sustained native, naturally reproducing populations (NMFS 2005a). See Appendix H for life history descriptions of these populations in the Columbia River.

Chinook salmon runs are designated based on when adults enter freshwater. Early, spring-run Chinook salmon tend to enter freshwater as immature fish, migrate upriver (holding in rivers for several months), and finally spawn in late summer and early autumn. Fall-run Chinook salmon enter freshwater at an advanced stage of maturity, move rapidly to their spawning areas on the mainstem or lower tributaries of the rivers, and spawn within a few days or weeks of freshwater entry (NMFS 2005a).

Most juveniles and adults migrate through the study area between March and October, but individuals from several populations of Chinook salmon could occur in the study area during the cable installation in-water work window (November 1 to March 15), described in Appendix H.

There is no known spawning habitat within the Columbia River in the study area or the tributary streams that cross the Project. Limited freshwater rearing may be provided for Chinook salmon populations expressing the ocean-type juvenile life history. Riparian habitat in the study area is



degraded and many areas are restricted by highways, rail lines, and other development as well as shore armoring and riprap, and lacks most of the components of suitable rearing habitat.

The primary use of the lower Columbia River in the study area mainstem is used as a migratory habitat for both adults and juveniles migrating to and from the Pacific Ocean and upstream (tributary) spawning and rearing areas.

The Project is located within designated critical habitat for ESA-listed Chinook salmon populations in the study area. For all ESUs and DPSs of Chinook salmon and steelhead, designated habitat includes the mainstem Columbia River ESUs. Critical habitat consists of six PBFs that are considered essential for the conservation of ESA-listed Chinook salmon, including freshwater spawning areas, rearing habitat, and migration corridors (see Appendix H).

Steelhead

Steelhead are the anadromous form of freshwater resident rainbow trout. The present distribution of steelhead extends from Kamchatka in Asia, east to Alaska, and down to southern California (NMFS 2009). Four ESA-listed steelhead DPSs traverse the study area in the lower Columbia River during adult upstream and juvenile downstream migrations: the Lower Columbia River DPS, Middle Columbia River DPS, Upper Columbia River DPS, and Snake River DPS.

Unlike many salmonid species, steelhead exhibit complex and variable life history characteristics, such that their offspring can exhibit different life-history forms from the parental generation (NMFS 2009). For example, offspring of resident fish may migrate to sea, and offspring of anadromous steelhead may remain in streams as resident fish (Burgner et al. 1992). Unlike Pacific salmon, steelhead are iteroparous, or capable of spawning more than once before they die. However, it is rare for steelhead to spawn more than twice before dying, and those that do are usually females (Busby et al. 1996).

Over their entire range, West Coast steelhead spawning migrations occur throughout the year, with seasonal peaks of migration activity varying by location. Steelhead juvenile outmigrants (smolts) have been shown to migrate at ages ranging from 1 to 5 years throughout the Columbia River basin, but most steelhead generally smolt after 2 years in freshwater (NMFS 2009, 2013). Most steelhead spend 2 years in the ocean (range 1 to 4 years) before migrating back to their natal streams (NMFS 2009, 2013).

Individuals from several ESA-listed populations of steelhead could occur in the study area during the in-water work window (November 1 to March 15, as described in Appendix H. Most juveniles and adults migrate through the Columbia River in the study area from April through August (Appendix H).

Critical habitat for the five DPSs of steelhead that occur in the study area was designated in 2005 (NMFS 2005b). Critical habitat for all steelhead populations in the Columbia River includes all the basins supporting the populations and the mainstem Columbia River, including the Lower Columbia River, which is designated as a migration corridor (NMFS 2005b). Critical habitat for Lower Columbia River steelhead also includes the Willamette River in the study area. Critical habitat PBFs in the study area are the same as those for Chinook salmon, described above. The study area is located within the designated migration corridor for both adult and juvenile steelhead (PBF 3). Riparian habitat in much of the study area is generally degraded by the proximity of development, highways, and rail lines, and areas of armoring and riprap that lack most of the components of PBF 2.

However, there are some areas such as along Hayden Island and other islands that include vegetated and forested corridors that may support a diversity of wetland-dependent and aquatic organisms for PBF 2. PBFs 1 and 4 through 6 are not present in the study area.

Columbia River Chum Salmon

Columbia River chum salmon once were widely distributed throughout the Lower Columbia River basin and spawned in the mainstem Columbia River and the lower reaches of most of the Lower Columbia River tributaries. Most natural spawning in the Columbia River occurs in the Grays River basin and the lower Gorge (Wind River and Little White Salmon River basins) (NMFS 2013).

Although chum salmon are strong swimmers, they rarely pass river blockages and waterfalls that pose no hindrance to other salmon or steelhead; therefore, they spawn in low-gradient, low-elevation reaches and side channels (ODFW 2010). Chum salmon fry emerge from the gravel from March through May and are usually in freshwater for only a few days after emerging before they promptly migrate downstream to the Columbia River estuary, where they rear anywhere from weeks to months prior to moving into ocean waters (NMFS 2013).

Columbia River chum salmon could occur within the study area during cable installation downstream of Bonneville Lock and Dam. Adult chum salmon return to the Columbia River from mid-September through December (NMFS 2020) and spawn from early November to late December (NMFS 2013), which overlaps with the in-water work window for cable installation.

Critical habitat for Columbia River chum salmon was designated in 2005 (NMFS 2005b) and includes the mainstem Columbia River upstream to the White Salmon River, including the study area. The PBFs of critical habitat for Columbia River chum salmon are the same as those previously discussed for Chinook salmon. The portion of the Columbia River in the study area supports primarily migration habitat (PBF 3). Lower portions of the river near the estuary (i.e., outside the study area) also support juvenile rearing habitat.

Lower Columbia River Coho Salmon

Coho salmon generally occupy intermediate positions in tributaries and typically spawn in small to medium, low- to moderate-elevation streams from valley bottoms to stream headwaters, favoring small, rain-driven, lower-elevation streams characterized by relatively low flows during late summer and increased river flows and decreased water temperatures in winter (LCFRB 2010; ODFW 2010). On their return, adult fish often mill near the river mouths or in lower river pools until the first fall freshets occur (LCFRB 2010). Coho salmon construct redds in gravel and small cobble substrate in pool tailouts, riffles, and glides, with sufficient flow depth for spawning activity (NMFS 2013).

Juveniles typically rear in freshwater for more than a year. Coho salmon fry rear in low-velocity areas, preferring pool habitat, and quiet backwaters, side channels, and small creeks with riparian cover and woody debris (NMFS 2013). Juvenile coho salmon normally spend 1 year rearing in freshwater before they become smolts and migrate to the ocean in spring.

Adult Lower Columbia River coho salmon enter the Columbia River from June through February (NMFS 2020); therefore, adult coho salmon could be present within the Project area during the work window for in-river cable installation.



Coho salmon juveniles outmigrate through the Lower Columbia River from March through mid-June and rear in the Lower Columbia River throughout the year (NMFS 2020). Therefore, other than a few potential early outmigrants, it is unlikely that juvenile coho salmon would be present in the study area during the in-water work window for cable installation.

Critical habitat for Lower Columbia River coho salmon was designated in 2005 (NMFS 2005b) and includes the same PBFs as those discussed for Chinook salmon (Appendix H). Designated habitat includes the entirety of the mainstem Columbia River. The Columbia River in the study area functions primarily as a migratory corridor for adults and juveniles.

Snake River Sockeye Salmon

Sockeye salmon in the Columbia River constitute the southernmost major run in North America (Wydoski and Whitney 2003). Sockeye salmon differ from other species of salmon in that most stocks require a lake environment for part of their life cycle. Spawning occurs over gravel in streams, and the fry migrate upstream or downstream to a lake soon after they emerge and continue to rear in the lake environment (Wydoski and Whitney 2003). While few sockeye salmon currently follow an anadromous life cycle, the small remnant run of the historical population migrates 900 miles downstream from the Sawtooth Valley through the Salmon, Snake, and Columbia Rivers to the ocean (NMFS 2015). They spawn in gravel areas in lakes, where the juveniles rear for 1 to 3 years (Groot and Margolis 1991). Other populations have adopted a resident life history pattern, remaining in freshwater to mature and reproduce. After rearing in nursery lakes, anadromous sockeye salmon begin migrating to the sea as smolts during spring, and peak emigration to the ocean occurs in mid-April to early May. They remain at sea for an additional 1 to 3 years before returning to natal areas to spawn (Bjornn et al. 1968; Groot and Margolis 1991).

Snake River sockeye salmon, like other stream-type salmonids, move relatively quickly through the estuary, probably passing through the study area within 2 to 3 days. Juveniles enter the Columbia River estuary at a large size as a result of the long time they spend in their natal lakes.

Most adult sockeye salmon enter the Columbia River from approximately mid-April through mid-July (NMFS 2020). Outmigrating sockeye salmon juveniles migrate in spring and tend to reach the lower river from March to mid-July, peaking in May, with low numbers occurring through mid-October (NMFS 2020). Therefore, only early migrating juvenile sockeye salmon are anticipated to potentially overlap with the later part of the in-river cable installation work window in March.

Critical habitat for the Snake River sockeye salmon was designated in 1993 (58 FR 68543). The designated critical habitat includes the mainstem Columbia River, including the study area, which is used as a migration corridor for both upstream migrating adults and downstream out-migrating juveniles. PBFs for Snake River sockeye salmon critical habitat are the same as those described above for Chinook salmon (Appendix H).

Eulachon

Eulachon are an anadromous forage fish endemic to the northeastern Pacific Ocean. Eulachon are small ocean-going fish that occur in offshore marine waters and return to tidal portions of rivers to spawn including the Columbia River downstream of Bonneville Dam. Like most salmonids, both male and female adults die after spawning. Eulachon are broadcast spawners, and spawning events typically occur over coarse, sandy substrates or pea-sized gravels (WDFW and ODFW 2001; Willson

et al. 2006). The Lower Columbia River basin supports one of the largest spawning runs of eulachon, with most spawning activity occurring in the mainstem of the Columbia River and the Cowlitz River (Howell et al. 2002). Although no eulachon spawning has been documented within the Columbia River in the study area, substrates suitable for egg adhesion may occur.

In the Columbia River, eulachon typically spawn in January, February, and March (NMFS 2017c), but small runs (often referred to as “pilot runs”) can occur as early as November or December (Emmett et al. 1991; NMFS 2017c; WDFW and ODFW 2001). Larval outflow collection data from the Lower Columbia River (RM 34) indicated a minor peak in mid-January, which is associated with adults arriving in late-November through December (Langness et al. 2020). Therefore, adult eulachon could occur in the study area downstream of Bonneville Dam during the in-water work window for cable installation (November 1 to March 15).

Critical habitat for eulachon was designated on October 20, 2011 (76 FR 65324) and includes the Columbia River from the mouth upstream to Bonneville Lock and Dam at RM 146 and therefore occurs within the western end of the study area. The PBFs essential to the conservation of the Southern DPS fall into three major categories reflecting key life history phases of eulachon of freshwater spawning and incubation sites, migration corridors with abundant prey supporting larval feeding after the yolk sac is depleted, and nearshore and offshore marine foraging habitat (see Appendix H).

3.4.1.3 Wildlife

This section summarizes special status wildlife species known or expected to occur in the study area, other wildlife observed at the Project (based on baseline wildlife surveys conducted in the study area), and the presence of Fish and Wildlife Habitat Conservation Areas (FWHCAs), which are considered Critical Areas under City of North Bonneville 21.10.070.E., Skamania County Code 19.05 FWHCA and City of Stevenson 18.13.095. Sources of information for the desktop reviews and the results of Project-specific surveys are indicated in each subsection.

The study area is located within the Pacific Flyway, which provides habitat for a variety of raptors, land birds, and shorebirds protected under the Migratory Bird Treaty Act of 1918 (MBTA). The Columbia River, generally located 0.10 to 7 miles south of the Project corridor, is the largest river in the Pacific Northwest. It provides habitat and food for numerous migratory bird species, including bald eagles and the western grebe (*Aechmophorus occidentalis*) (NOAA 2004). No dedicated raptor nest surveys or other aerial surveys occurred as part of this effort; however, incidental observations of raptor or other bird nests in the ROW were recorded during field surveys.

Raptor nest surveys were conducted concurrently with the pedestrian wildlife surveys. These surveys were conducted from the ground, including views from public roads outside the Project Boundary in order to gain vantage points on as much of the study area as possible. Occupancy of nests were documented based on observations at the time of the survey and follow-up visits may be conducted in order to confirm, as feasible. In some cases, non-occupancy may not be definitively confirmed, and these nests are conservatively considered occupied for the purposes of assessing potential project impacts.

A total of four adult bald eagles (*Haliaeetus leucocephalus*) and one juvenile were observed during the field surveys. The two adults and one juvenile were observed flying near Ash Lake Road, and

the other two adults were observed flying then perching in large Douglas fir trees on the Oregon side of the river across from [REDACTED]. The adults observed may have been pairs, but no bald eagle nests were observed during the surveys, although habitat in the surrounding areas is suitable and some nesting is likely beyond the study areas observed.

Osprey (*Pandion haliaetus*) and occupied osprey nests were observed in areas [REDACTED]. During the pedestrian surveys, five active osprey nests were observed, and two other nests were recorded, but these appeared to be inactive (Appendix H).

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 2024b), and eagles (protected under the Bald and Golden Eagle Protection Act (BGEPA) and WAC 220-610-100 for bald eagles [*Haliaeetus leucocephalus*]). Nearly all native bird species are protected under the MBTA; 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).

A review of the WDFW PHS online data identified a total of two special status wildlife species that have the potential to occur within the study area; this includes the northwestern pond turtle and the northern spotted owl. Neither species was observed within or near the study area, but both have the potential to occur in adjacent habitat.

Table 3-10 lists the special status species that were identified as potentially occurring in the project area following desktop review, as described in Appendix H.

Table 3-10. Federal and State Threatened and Endangered Species that Potentially Occur in the Project Area

Species	ESA Status	WA State Status	USFS Status
Birds			
Northern Spotted Owl <i>Strix occidentalis caurina</i>	T	E	None
Streaked Horned Lark <i>Eremophila alpestris strigata</i>	T	E	None
Yellow-billed Cuckoo <i>Coccyzus americanus</i>	T	E	None
Bald Eagle <i>Haliaeetus leucocephalus</i>	None ^a	None	S
Golden Eagle <i>Aquila chrysaetos</i>	None ^a	C	None
Ferruginous Hawk <i>Buteo regalis</i>	None	E	S (WA)
Sandhill Crane <i>Grus canadensis</i>	None	E	None
American White Pelican <i>Pelecanus erythrorhynchos</i>	None	T	None
Mammals			
Columbian white-tailed deer <i>Odocoileus virginianus leucurus</i>	T	E	None

Species	ESA Status	WA State Status	USFS Status
Western Gray Squirrel <i>Sciurus griseus</i>	None	T	S (WA)
Reptiles and Amphibians			
Oregon Spotted Frog <i>Rana pretiosa</i>	T	E	None
Northern Leopard Frog <i>Rana pipiens</i>	None	E	None
Northwestern Pond Turtle <i>Actinemys marmorata</i>	PT	E	S
Invertebrates			
Monarch butterfly <i>Danaus plexippus</i>	C	None	None
Mardon skipper <i>Polites mardon</i>	None	E	S
Vascular Plants			
Golden Paintbrush <i>Castilleja levisecta</i>	None	T	None
Nelson's Checker-mallow <i>Sidalcea nelsoniana</i>	T	E	None
Nonvascular Species			
Marginate Splashzone Moss <i>Scouleria marginata</i>	None	T	S (WA)
Burnet's Skin Lichen <i>Leptogium burnetiae</i>	None	E	Strategic

Note: C = candidate; E= endangered; S = sensitive; T= threatened; PT=proposed threatened.

^a Protected under the Bald and Golden Eagle Protection Act

Several species were listed as potentially occurring in the region, but do not occur in the Project vicinity nor is suitable habitat present in the corridor; these species are listed in Table 3-11. These species and their habitats were not included in the surveys for this effort.

Table 3-11. Federal and State Threatened and Endangered Species that Potentially Occur in the Project Region but Do Not Occur or Have Suitable Habitat within the Project Corridor or Vicinity

Species	ESA Status	WA State Status	USFS Status	Notes
Wolverine <i>Gulo gulo</i>	PT ^a	C	S	Alpine habitats in Cascade mountains. Suitable habitat is not present in the Project area.
Cascade Red Fox <i>Vulpes vulpes cascadiensis</i>	None	C	None	Alpine and subalpine habitats in the Cascade mountains. Suitable habitat is not present in the Project area.
Gray Wolf <i>Canis lupus</i>	E ^b	E	S	Wide ranging individuals in Cascade Range in the central and northern part of the state. Not present in the Project area.

Note: C = candidate; E= endangered; PT = proposed threatened; S = sensitive; T= threatened (USFS).

^a Although the USFWS withdrew the proposed rule to list the North American distinct population segment of wolverine as a threatened species in 2020 (85 *Federal Register* 64618), a federal District Court ruled on May 26, 2022, that the species should be restored to the candidate species list while USFWS reconsiders its 2020 decision. The most recent IPaC list obtained for the Project (USFWS 2022b) includes the species as proposed threatened.

^b Although gray wolves throughout the Lower 48 states were delisted in January 2021 (85 *Federal Register* 69778), the IPaC list obtained for the Project (USFWS 2022b) indicated that gray wolves in the Project vicinity are endangered. On February 10, 2022, a U.S. District court restored ESA protections for gray wolves in certain areas of the country, including the Project vicinity.



No wildlife species currently listed, or candidates for listing, under the federal ESA are expected to occur in the Project footprint. A review of the USFWS Information for Planning and Consultation (IPaC) tool indicates seven federally listed wildlife species known or expected to occur in the Project vicinity: gray wolf (*Canis lupus*; federally endangered, state endangered), the North American wolverine (*Gulo gulo luscus*; federally endangered, state candidate) yellow-billed cuckoo (*Coccyzus americanus*; federally threatened, state endangered), northern spotted owl (*Strix occidentalis caurina*; federal threatened, state endangered), northwestern pond turtle (*Actinemys marmorata*; federal proposed threatened, state endangered), bull trout (federal threatened, state candidate), and the monarch butterfly (*Danaus plexippus*; federal proposed threatened, state candidate) (USFWS 2024b). The study area does not overlap with any existing critical habitat designation for any of the listed species, nor is there any suitable habitat present within the survey area. 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 near the study area. The closest pack is a single wolf territory called the Big Muddy pack, located south to southeast of Mount Adams (WDFW 2024c).

North American Wolverine

The wolverine is a carnivore that occupies arctic, alpine, and subalpine habitats in the northern portions of the northern hemisphere (Copeland et al. 2010). The species is wide-ranging, with documented long-distance dispersals across habitats far from the high mountains near the timberline where known populations reside in Washington, Idaho, Montana, and Wyoming (USFWS 2018). Wolverines prefer extensive remote wilderness dominated by coniferous forest as well as high elevations above the tree line. The requirement of cold, snowy conditions means that, in the southern portion of the species' range where ambient temperatures are warmest, wolverine distribution is restricted to high elevations (USFWS 2013). There is no suitable habitat for wolverines in or adjacent to the project corridor and the study area does not overlap with any documented occurrences.

Northern Spotted Owl

Northern spotted owls are believed to have historically inhabited most forests throughout southwestern British Columbia, western Washington and Oregon, and northwestern California, as far south as San Francisco Bay.

Although some potentially suitable conifer forest is present in the study area within the extent of elevated construction noise from vibratory pile driving and HDD, much of the area surrounding most of the Project is highly disturbed with residential areas, railway, and highways. Small patches of older forest near the cable trenching route west of Stevenson currently function solely as potential foraging or dispersal habitat for transient spotted owls dispersing across the landscape. Some potential dispersal habitat is present in the study area in patches of coniferous forest where older trees are interspersed with areas that have been logged at different time periods. However, typical nesting habitat is not present. Spotted owl presence, particularly dispersing or foraging individuals, within areas impacted by project noise is possible; however, their presence is unlikely.

Yellow-billed Cuckoo

The yellow-billed cuckoo is a slender, long-tailed passerine that formerly occurred on both sides of the Cascades in both Oregon and Washington but is a rare migrant in both states. Yellow-billed

cuckoos display a strong preference for large, continuous riparian zones dominated by cottonwoods (*Populus* spp.) and willows (*Salix* spp.). Currently, yellow-billed cuckoos are extremely rare summer visitors to Washington (WDFW 2024e). Only 20 sightings have been reported since the 1950s, all or nearly all of which were likely non-breeding vagrants or migrants (Wiles and Kalasz 2017). Although historical observations of yellow-billed cuckoo occurred along the Columbia River in Clark County, Washington, no detections have been documented in the county since 1937 (Wiles and Kalasz 2017).

The yellow-billed cuckoo is not documented to occur in the study area (WDFW 2024e), and the Project corridor lacks large, continuous blocks of cottonwood and willow riparian forest.

Northwestern Pond Turtle

On October 3, 2023, the northwestern pond turtle (*Actinemys marmorata*) was proposed as a threatened species under the ESA throughout its range (88 FR 68370). Specific habitat needs include: 1) aquatic features such as ponds, lakes, and streams for breeding, feeding, overwintering, sheltering, and dispersal; 2) basking sites that allow for thermoregulation; and 3) terrestrial or upland features adjacent to aquatic habitat for nesting, overwintering, aestivation, and to provide corridors for dispersal and connectivity between populations (USFWS 2023f). In Washington, northwestern pond turtles typically occur in open upland habitats that receive extensive sun exposure, including prairies in the Puget Sound region, oak-pine savanna and other open forest types in the Columbia Gorge, and pastures (WDFW 2023).

In Washington, northwestern pond turtles are known to occur at two recovery sites in south Puget Sound and four recovery sites in the Columbia River Gorge. It is unlikely that other pond turtle populations have persisted in Washington, although the possibility remains that turtles may exist in areas that have not been accessible for surveys (Hallock et al. 2017).

The population occurring near the study area is at the [REDACTED] site, located in Skamania County in a mosaic of approximately 200 acres of U.S. Forest Service (USFS) land and 65 acres of adjacent private lands. The Bergen site includes an extensive lake, pond, and wetland complex within a forested and pasture environment (Hallock et al. 2017) and is located near [REDACTED]. The project corridor and trenching and cable installation will not impact these areas, or the vicinity where the turtles are known to occur.

Gray Wolf

The gray wolf is a carnivorous, opportunistic feeder, whose primary prey are elk, deer, and moose, and smaller animals when those prey are not available, such as rabbits, beavers, coyotes, and fish (ODFW 2024). Wolves are highly social and typically live in packs of 5 to 10 members. Packs establish territories, usually about 200 to 400 square miles in size, and defend these territories from other wolves. At sexual maturity, wolves disperse from their natal pack to search for a mate and to start a new pack; dispersal may be to either nearby or distant unoccupied habitat. Wolves are habitat generalists but mostly occupy forests and nearby open habitats with sufficient prey.

The Big Muddy pack is in the south Cascades and is the closest pack to the study area, located approximately 10 miles north of the project corridor near White Salmon, Washington. The Big Muddy wolf pack is the first wolf pack documented in the South Cascades and Northwest Coast wolf recovery region since wolves returned to Washington (WDFW 2023).



Although denning is not known to occur in the study area, transient individuals, including those associated with the Big Muddy pack, may enter the study area during construction of the Project. However, much of the project corridor near White Salmon is within the Columbia River, and terrestrial noise and ground disturbance occurs further west by Stevenson, Washington. These areas are generally disturbed with rural residential, open grassy areas, and heavy traffic on SR 14 and an active rail line; therefore, these areas provide only marginal habitat for transiting gray wolves.

3.4.2 Impacts

3.4.2.1 Habitat and Vegetation

The Applicant has minimized effects to habitat and vegetation associated with on-land work by predominantly locating cables in paved areas, gravel roads, road shoulders, and upland areas previously cleared. The one location that will be disturbed is at Wetland 18, where the landing site of the cable will traverse W18 to the road shoulder. In this location, there will be temporary impacts to vegetation (see Section 3.5). The applicant will restore this area to pre-existing conditions.

Special Status Plants and Noxious Weeds

No special status plant species were observed within the portions of the study area surveyed on May 30 and 31, 2024, which included the area within and adjacent to the corridor of the buried cable. Therefore, no known occurrences of special status plant species would be impacted by Project construction or operation.

Noxious weed observations were noted concurrently with habitat verification and mapping and special status plant surveys. Surveys conducted in 2024 did not cover the entire Project study area but focused on the ground disturbed area in the project corridor. Several noxious weed species were observed along the roadside of SR 14 and Fort Cascades Drive. These are listed and described in Appendix H. Ground disturbance, as well as movement of construction and operation equipment and personnel could increase the potential for spread of undocumented noxious weeds and or introduction of other noxious weeds not currently present. Implementation of BMPs associated with the NPDES permit would reduce the potential spread of noxious weeds and control infestations associated with the project's ground disturbing activities.

3.4.2.2 Fish and Aquatic Resources

The Applicant has made efforts to avoid and minimize impacts to fish and aquatic resources through avoidance of sensitive areas in project designs and the use of BMPs during construction. Streams that intersect the cable route along SR 14 and Ash Lake Road will be avoided by using HDD methods to bore underneath the streams for conduit and cable installation. The Project will therefore not impact stream habitat or fish accessing the streams during construction and operation.

Freshwater habitat in the Columbia River for ESA-listed fish species would be temporarily degraded during project construction. Project construction would result in short-term elevated underwater noise and turbidity from cable installation and vibratory installation of the sheetpile cofferdams where cable connections would be made between the in-river and on-land sections (all occurring within the in-water work window of November 1 through March 15). Although in-water construction activities could stir up sediments, increased turbidity would impact only areas in proximity to the hydroplow given the narrow size of the temporary trench. Temporary turbidity caused by project construction

would quickly dissipate, as sandy material would quickly drop out of the water column and finer material would be diluted by riverine flow.

Potential impacts to the benthic community in the Columbia River include trenching by hydroplow for cable installation and pre-installation dredging in the navigation channel as well as the HDD receiving pits for the land to water transitions of the cable. Disturbance of the riverbed by trenching with the hydroplow and dredging is likely to result in the mortality of some benthic invertebrates in the disturbed footprint. Immediately following dredging and within the narrow path of the hydroplow, the disturbed areas will likely be devoid of any benthic invertebrates. However, given the small size of these areas relative to the surrounding benthic habitat in the Columbia River, recolonization is expected to occur from adjacent areas that were not disturbed. It is expected that the temporary effects to benthic community from cable installation and cofferdam excavations would be similar to those from dredging. For dredging Dernie et al. (2003) found recovery of species composition within a few months and that clean sand communities had the most rapid recovery rate following disturbance, whereas communities from muddy sand habitats had the slowest physical and biological recovery rates. After installation is complete, sediment disturbance would no longer occur.

The Project would not measurably alter river or shoreline habitat, and the Columbia River in the study area would continue to be used primarily as a migratory corridor for fish the same as under current conditions. The cable route is located in or near the navigation channel through much of its length. The Columbia River in the study area experiences high levels of vessel traffic associated with use of the Federal Navigation Channel, and relatively high levels of underwater noise and currents that generate suspended sediments (NMFS 2017a). The narrow strip of affected river bottom is not considered high-quality habitat for fish and the project route avoids important near-shore and more productive habitats including salmon spawning areas and tributary mouths.

Articulated concrete blocks (mattress) or rock berms could alter a total area of up to 2.4 acres of streambed habitat by adding hard substrate. Some of these areas are located over exposed bedrock, which would prevent the hydroplow from burying the cable; therefore, the general nature of the substrate would not significantly change. Other areas that may require such measures, such as utility crossings, could be needed for cable protection. The areas of potential eulachon spawning habitat consisting of sandy substrates would not require cable protections as the nature of these substrates is conducive to trenching with the hydroplow.

Benthic communities recover at varying rates depending on species composition and substrate. Where the cable protection is being used would have a temporary loss of habitat within the installation footprint but would be recolonized likely within a year. Cable protection may even provide additional habitat complexity in areas with exposed bedrock. In sites where burial depth is shallow and cable protection is needed such as at utility crossings, mattressing or rock berms would introduce hard substrate in areas that may have existing sand or fines and would alter benthic habitats. Re-colonization of these areas could take longer due to the surrounding benthic community being adapted to soft substrates.

Electric and Magnetic Fields (EMF)

Current through the cable during operations produces an electromagnetic field (EMF) which has two components: electric fields (E-fields) and magnetic fields (B-fields). To minimize EMF generated by cables, all cabling would be contained in electrical shielding that eliminates any electric field from

emanating outside the cable housing. As a result, no electric field would occur in the surrounding substrate or water column. In the unlikely event of a cable rupture (e.g., anchor strike), the flow of electricity shuts down instantaneously. However, magnetic field emissions cannot be reduced by shielding and would emanate from the cable through the surrounding substrate. The proposed cable in the Columbia River would be buried to a depth of 10 feet below the substrate wherever possible. The strength of the magnetic field dissipates rapidly with distance from the cable. Naturally occurring magnetic fields from the earth are also present and these background levels are approximately 54 μT in the Columbia River. CRT had an analysis conducted for a 320 kV and 400 kV cable that would be used for the project to determine the strength and extent of the magnetic field generated. The results of this study showed magnetic field levels will fall below background levels in the benthic zone of the substrate when the cables were buried at depths of 5 and 10 feet.

Magnetoreception in fish is a sensory mechanism comprised of several biological processes that allow detection of the Earth's magnetic field. This mechanism facilitates navigation, migration, and spatial orientation throughout various life stages and environments. CRT is using best available science from research and published studies to inform fish physiological and behavioral responses to DC magnetic fields. The existing research is not exhaustive of all species potentially affected by the cable; however, it includes research pertaining to species that have similar life histories such as Atlantic salmon and sturgeon. Observations of magneto-sensitive organs in fish, and laboratory studies on fish behaviors in response to magnetic fields, suggest magneto-sensitivity to static (0 hertz [Hz]) magnetic fields is common in many types of fish. Evidence suggests that there is a biologically relevant and species-dependent threshold for anthropogenically-induced EMF frequencies that will alter natural behavioral patterns and physiology. Recent research has revealed distinct physiological mechanisms to detect magnetic fields in fish. Naisbett-Jones et al. (2020) demonstrated, through induced magnetic pulses, that Chinook salmon use biogenic magnetite as a geomagnetic sensor. When disrupted through induced EMF, this sensor will cause a disruption in orientation (taxis) behavior.

Electromagnetic induction, especially in electroreceptive fish such as sturgeons (Acipenseridae) and lampreys (Petromyzontidae), is a second mechanism that detects electric fields using specialized organs called ampullae (Chung-Davidson et al. 2004; Bodznick 1983). Species reported to be magnetosensitive include salmon, American eel, sturgeon, yellowfin tuna, sharks, skates, and rays (BOEM 2019). Salmonid species have been shown to orient to magnetic fields and may use them to guide their movements during migration (BOEM 2019). Studies of salmonids and sturgeons (broadly) confirm magnetic cues are used for orientation during critical life stages (Naisbett-Jones et al. 2022; BOEM 2019).

Multiple studies regarding EMF effects have included sturgeon and Atlantic salmon (BOEM 2019; Armstrong et al. 2015; Normandeau et al. 2011). Behavior of captive Atlantic salmon was examined in a laboratory study conducted by Armstrong et al. (2015) which found no significant differences in approach, traverse or departure times associated with activation of magnetic fields up to 95 microtesla (μT). These laboratory-induced magnetic field intensities measured in millitesla (mT) are orders of magnitude higher when compared to microtesla or nanotesla (nT) fields measured around underwater cables. CRT requested analysis at additional burial levels of 0.5 feet, 2 feet, 5 feet, and 10 feet. The results of the analysis showed the magnetic field levels for the 0.5-foot burial and 2-foot burial, at the river bottom, will exceed the natural background levels of approximately 54 μT normally

occurring in the Columbia River. All other magnetic field levels will be below the 54 μ T natural background levels.

Gunckel et al. (2006) characterized vertical and horizontal movement patterns of juvenile salmonids in the Columbia River, strongly supporting evidence that mid-water migratory pathways limit their spatial and temporal exposure to benthic EMF emissions. Salmon are pelagic and generally migrate in upper 2/3 of the water column and will not typically encounter these areas of elevated EMF. If they do, most exposures are expected to be very short, on the order of minutes, not hours, occurring only when mobile fish swim through the cable route area at a depth that would place them within 30 feet directly above the cable (including substrate depth). The spatial extent of magnetic field elevation (<30-feet around the cable, including burial depth) comprises a small fraction of available habitat for migratory fish in the action area, many of which travel multiple kilometers in a day. Additionally, field strength levels associated with either the 320 kV or 400 kV cable configurations fall well below thresholds shown to elicit behavioral changes in fish in laboratory studies (Armstrong et al. 2015; Normandeau et al. 2011; Bevelhimer et al. 2013; BOEM 2019).

A study of Rainbow Trout concluded the magnetic field (MF) and EMF of 10 and 1 mT, respectively (values magnitudes greater than those generated by the proposed cable), had no significant effect on the mortality or growth of either trout embryos or larvae. MF and EMF also had no effect on the time of hatching or the time when the larvae swam up from the bottom. However, both MF and EMF increased the yolk-sac absorption (Fey et al. 2019). Although increased yolk-sac absorption may result in smaller weights at age, the likelihood of salmonid egg exposure to MF and EMF in the mainstem Columbia River is exceedingly low. As stated previously, the only salmon species with potential spawning habitat along the proposed cable route is Chum Salmon (near the I-205 bridge near RM 113). Because the proposed cable will be buried in deeper waters adjacent to the navigation channel, more than 800 feet from potential shallow spawning areas along the shoreline, the likelihood of exposure of salmonid eggs to MF and EMF is exceedingly low.

Once re-colonized, benthic organisms that inhabit the substrate in the immediate vicinity of the buried cable would also be potentially exposed to the localized magnetic field and thermal radiation from the operating cable bundle. Some studies have indicated the survival and reproduction of benthic organisms are not affected by long-term exposure to static magnetic fields (Bochert and Zettler 2006; Normandeau et al. 2011). Results from monitoring the Cross Sound Cable Project in Long Island Sound indicated that the benthos within the transmission line corridor returned to pre-installation conditions. The presence of amphipod and worm tube mats at a number of stations within the transmission line corridor suggest construction and operation of the transmission line did not have a long-term negative effect on the potential for benthic recruitment (Ocean Surveys 2005).

Pacific Lamprey larvae burrow into soft sediments but are typically concentrated near tributary mouths and shorelines rather than in the mid-channel. In a study evaluating the distribution and density of larval lamprey in the mainstem Columbia River, Blanchard et al. (2023) found the probability of presence for both Pacific Lampreys and *Lampetra* spp. decreased with increasing distance from the closest tributary river mouth, and distance from the nearest mainstem riverbank. In addition, the authors found the probability of presence in delta sediments at tributary mouths was an order of magnitude greater than in reservoir pools. These findings indicate that, although the mainstem Columbia River supports larval lamprey rearing year-round, the probability of presence is highest within 500m of tributary mouths that support lamprey spawning, and within 500m of the shoreline. The proposed cable route was purposely sited near the center of the Columbia River to

avoid biologically active tributary deltas where larvae are most likely to occur. For these reasons, exposure of larval lamprey in the benthic zone directly above the proposed cable route is expected to be low.

Freshwater mussels are found predominantly in the littoral and shallow sublittoral zones (Tiller et al. 2015), where they burrow into sediments up to 90 cm deep in water depths up to 30 feet. These habitats are generally outside the cable burial corridor in the main channel. While mussels lack specialized electroreceptive or magneto-receptive organs, limited studies (e.g., Bevelhimer et al., 2013; Cada et al., 2011) suggest minimal risk from EMF exposure even at higher field strengths.

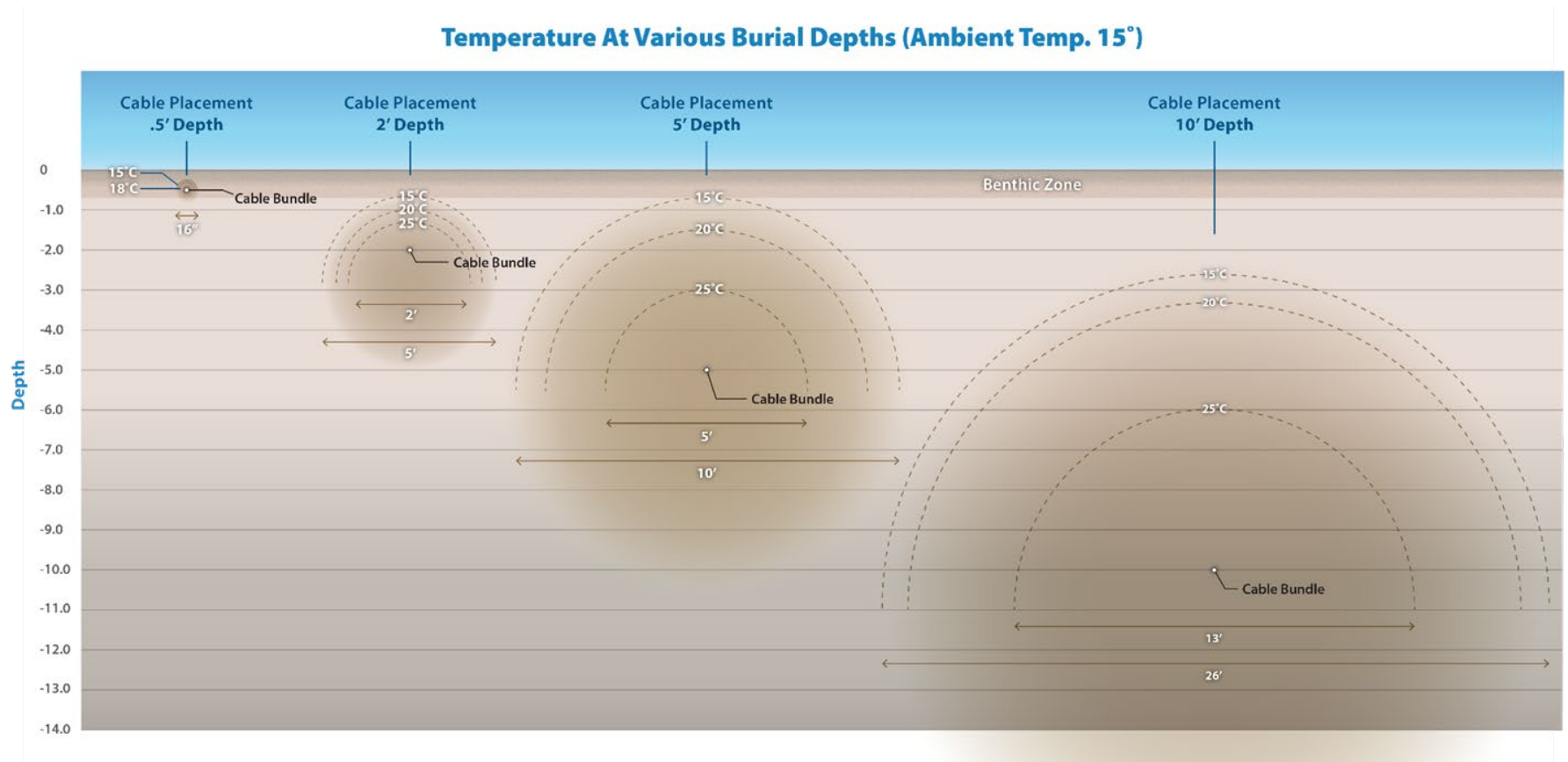
For these reasons, it is therefore extremely unlikely that there will be any measurable effects to salmonids and other fish species due to exposure to the EMF from the proposed cable.

Thermal Impacts

When electric energy is transported, a certain amount gets lost as heat, leading to an increased temperature of the cable surface. This has the potential to impact the environment immediately surrounding the cable with localized increases in temperature. Minor increases in ambient temperature from cables have the potential to cause impacts to benthic organisms (Ospar Commission 2012). A study using field measurements from a wind energy project in the Baltic Sea (Taormina et al. 2018) concluded at the end of their review on thermal effects of submarine cables that considering the narrowness of cable corridors and the expected weakness of thermal radiation, impacts are not considered to be significant. This was corroborated by several NMFS biological opinions for offshore wind projects on the east coast of the U.S. (NMFS 2021b, 2023a, 2023b, 2023c).

An analysis of temperature influence from the cable at various depths has been conducted for the project to better understand thermal impacts both to river sediments and to the water column (Figure 3-6). There would be a localized (16-inch diameter) increase in ambient sediment temperatures (3°C) where the cable is buried at 2 feet or less. The deeper the burial, the more influence substrate has on heat insulation. Heat generated from the cable buried at a depth of 10 feet in the substrate is anticipated to return to ambient conditions at approximately 2.3 feet below the riverbed surface (approximately 7.7 feet away from the cable) and outside of the benthic zone. As discussed above, CRT conducted an analysis of temperature influence from the cable at various burial depths to better understand the potential for long-term thermal impacts from cable operation on the benthos and in the water column. The analysis indicated potential increases of up to 3 °C in the upper 12 inches of the sediment if the cable is buried less than 0.5 feet. Negligible changes were found to the upper 12 inches of sediment if the cable is buried at depths of 2 feet or greater. The upper 12 inches of the substrate is the benthic zone where invertebrate and larva prey species are typically found. Because CRT proposes burying the cable at depths of 10 feet in most areas, no thermal effects on habitat for benthic prey species are expected for 97 percent of the route. In areas where the cable cannot be buried, it will likely be due to substrate (i.e., bedrock), which provides limited benthic habitat. Effects of thermal radiation from the operation of the cable for the proposed Project, are therefore, not anticipated to measurably change the abundance, distribution of benthic organisms, or the availability of potential invertebrate prey for fish species.

Figure 3-6. Temperature At Various Burial Depths



Although increased water temperature impacts from the cable are not expected along portions of the route where the cable will be buried, minor localized rises in ambient temperatures are expected in areas where the cable is surface laid or covered by cable protection in the Columbia River. Given the massive and relatively stable insulative properties the surrounding water column provides to the riverbed, combined with river flows that will strip localized warmed waters away from the cable, localized increased temperatures to the water column are expected to be too small to measure. Areas with low flows, such as in the deeper areas of the Bonneville pool, have accumulated soft sediments that allow the cable to be buried to depths of 10 feet or more, reducing or eliminating heat transfer from the cable to the river bed and water column.

Permanent impacts to freshwater habitat will be insignificant to ESA-listed salmonids. The greatest impact to fish associated with the construction of the Project would be a temporary degradation of habitat due to elevated in-water noise and localized turbidity. Potential displacement of fish by elevated noise would not be permanent, and there would be no long-term effects to their habitat. Effects from magnetic fields and heat generated from operating the cable are not expected to have significant impacts on pelagic and benthic species in the Columbia River. Long-term impacts from exposure by organisms and life stages that inhabit the substrate is also expected to be insignificant. As described above, burial of the cable will reduce the magnetic field and thermal impacts to below background levels before they reach the benthic zone within the substrate and the surface of the riverbed.

3.4.2.3 Wildlife

Construction and operation of the project would result in both permanent and temporary impacts to terrestrial wildlife. Potential impacts on wildlife during construction include loss or modification of habitat, 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.

Special Status Wildlife

No impacts to habitat supporting terrestrial ESA-listed and special status species would occur as a result of the Project construction and operation. Vegetation clearing for HDD pits and cable trenching would occur in previously disturbed and developed areas along roadways and clearings and are not located in areas that contain suitable habitat for any listed species. Trenching activities will be confined to the project footprint and adjacent road surfaces and temporary construction impacts from equipment and trenching activities will not extend into riparian or forested habitats.

The western pond turtle is known to occur in the Pierce National Wildlife Refuge (NWR) recovery site, located approximately 0.4 mile north of the proposed upland cable trenching route. The cable installation would completely avoid the recovery site and would not extend into suitable aquatic habitat for the western pond turtle in this area. As construction noise is estimated to travel up to 0.16 mile from the trenching corridor (Section 2.3), it is unlikely the Pierce NWR would experience any Project-related noise disturbance. The western pond turtle has also been historically recorded at the west end of the study area in the Portland metropolitan area and Sauvie Island. Aquatic features,

including ponds and wetlands, occur in the Smith and Bybee wetlands, along the Columbia River Slough, in north Portland on the eastern side of the Willamette River, Sauvie Island, and near the Harborton substation. Although there is patchy potential suitable habitat present in these areas, the Project would avoid aquatic habitat and ground disturbance is limited to upland areas. Furthermore, there are no Oregon Biodiversity Information Center (ORBIC) records of western pond turtle within the study area.

Trenching to install the cable in all terrestrial portions of the project would occur in existing roadside and road prism, which does not provide habitat that is suitable or used by ESA-listed species. Trenching activities would be confined to the Project footprint and adjacent road surfaces and temporary construction impacts from equipment and trenching activities would not extend into riparian or suitable habitats for northwest pond turtle, northern spotted owl, or streaked horned larks (*Eremophila alpestris strigata*). No suitable nesting or roosting trees for northern spotted owl would be removed during construction or operation of the Project.

Special status terrestrial species could be affected by temporary construction noise during HDD activities and trenching and backfilling the cable trenches in the terrestrial portions of the Project. Elevated construction noise levels could be audible up to approximately 0.16 mile from the Project trenching corridor and up to 0.24 mile from the sheetpile cofferdam installation and removal operations (Section 2.3). Construction activities would increase noise in the area of trenching and HDD activities, but these are located along SR 14, where heavy traffic and human activity produces existing noise that wildlife species would typically avoid. Some avoidance of the construction areas could occur but would be temporary and use of the corridor could resume as previously when trenching and cable installation is completed. There would be no noise impacts during operation of the cable as maintenance activities are not anticipated for the 50 year lifespan of the Project.

Northern spotted owls, if present within the Project vicinity, may perceive elevated in-air noise and temporarily alert to the noise source. However, significant alterations in behavior or displacement from occupied habitats are not expected. No nesting territories are mapped within or near the area impacted by project noise during construction. Installation and removal of the sheet piles in the Columbia River for the land to water transition areas is the loudest activity during Project construction and this will occur within the in-water work window from November 1 to February 28, which is outside the northern spotted owl breeding season.

Habitat suitability for northern spotted owl within 0.16 mile of the site is marginal due to the developed, industrial nature of the area, and neither species has been observed within the Project footprint or adjacent areas. Most of the Project route is along SR 14, which has traffic noise. Therefore, the potential for individuals moving through and in proximity to the cable trenching and HDD work during construction is highly unlikely. Individuals could readily disperse to other nearby, habitable areas to avoid nuisance noise. Therefore, the effects of in-air noise from Project construction are considered insignificant.

The trenching activities and HDD pits are located in existing disturbed and cleared areas, including the roadway, and no suitable nesting trees would be removed and no potential dispersal habitat for northern spotted owls would be impacted by the construction and operation of the Project. Critical habitat for northern spotted owl is located in portions of the outer extent of where construction noise could extend during trenching along SR 14 near Stevenson (Appendix H), but these Project activities would be scheduled to occur outside the nesting season. The vibratory installation and removal of



cofferdams in the river near northern spotted owl habitat would be conducted in the in-water work window, which occurs prior to the nesting season.

Gray wolf denning is not known to occur in the study area, but wolves are wide-ranging and transient individuals, including those associated with the Big Muddy pack, and may enter the study area during construction of the Project. However, the Project footprint by White Salmon is located within the Columbia River for cable laying operation, and terrestrial noise and ground disturbance occurs further west by Stevenson, Washington. These surrounding areas are generally disturbed with rural residential and heavy traffic on SR 14 and an active rail line; therefore, these areas provide only marginal habitat for gray wolves.

Construction activities would increase noise in the area but are located along SR 14 where heavy traffic and human activity would typically be avoided by wolves under existing conditions. The cables are buried in the road prism and disturbed areas, and operation of the Project would have no impacts on wolves that may transit the area.

As described for the underwater cable in the Columbia River, the buried cable on land will also produce a static magnetic field (the electric field is completely contained within the shielding material of the cable). The strength of this field is low compared to natural background magnetic fields and dissipates rapidly with distance from the cable. The burial depth of the cable results in the field reaching levels below background by the time it reaches the topsoil. Based on existing research, harmful effects on animals and plants from artificial electric, magnetic, or electromagnetic fields have not been demonstrated. There are no experimental findings nor theoretical models that demonstrate that the fields emanating from power lines and mobile communications systems have a harmful effect on insects, birds, mammals, and plants (Bundesamt für Strahlenschutz 2019). The cable is routed in road prisms and existing disturbed areas that are largely unvegetated and provide limited to no habitat value for terrestrial species. As a result, no adverse effects from magnetic field resulting from operation of the cable are anticipated to vegetation, wildlife, or their habitats.

General Wildlife

Vegetation clearing for the HDD pits and cable trenching would occur in previously disturbed and developed areas along roadways and clearings and are not located in areas that contain suitable habitat for any listed species.

Trenching to install the cable in all terrestrial portions of the Project would occur in existing roadside and road prism, which does not provide habitat that is suitable or used by ESA-listed species. Trenching activities would be confined to the project footprint and adjacent road surfaces and temporary construction impacts from equipment and trenching activities would not extend into riparian or suitable habitats for northwest pond turtle, northern spotted owl, or streaked horned larks. No suitable nesting or roosting trees for northern spotted owl would be removed for Project construction and operation.

Migratory bird species have potential to occur in the Project study area during construction activities and could be impacted by noise. No nests were observed during surveys and pre-construction surveys in areas of shrub and no tree removal would be conducted as part of Project construction. If nests are located in areas disturbed or cleared during Project construction, then that area would be avoided until after the nesting season.

3.4.3 Mitigation Measures

3.4.3.1 Fish

The Applicant will implement several impact minimization measures to avoid or reduce the potential for adverse effects upon aquatic resources, including ESA-listed species and their habitat. HDD methods will be used to install the cable below the streambed and riparian vegetation of streams that cross the Project corridor along Ash Lake Road and other locations within the terrestrial portion of the Project. This will avoid impacts to all streams inhabited by fish that intersect the Project corridor outside of the Columbia River. HDD entry and exit pits are located in existing disturbed areas outside of riparian corridors and work at these sites will not impact stream banks or riparian vegetation. Construction activities in the Columbia River would be completed in compliance with Washington State Water Quality Standards (Chapter 173-201A WAC) and the ODEQ Water Quality Standards (OAR 340, Division 41). The routing of the cable in the Columbia River has been designed to avoid nearshore and shallow water habitats important to fish and invertebrates by being within or adjacent to the navigation channel.

BMPs include erosion control, sedimentation retention, water quality/quantity, and stormwater treatment during project construction and operation. Additional minimization efforts to reduce impacts for in-river activities are listed below:

- The day-to-day installation schedule will be coordinated with other maritime activities and the United States Coast Guard. Planned installation and construction sequencing is intended to maintain the safe movement of commercial and recreation traffic along the cable route and to minimize the disturbance and impact due to Federal Navigation Channel maintenance.
- The surface water intake for the hydroplow will be located near the water surface at the barge or cable laying vessel and will be screened per NMFS salmonid screening criteria.
- A vibratory hammer will be used to drive sheetpiles to minimize noise levels.
- Pre-dredging and sheetpile installation and removal will only be conducted within the proposed in-water work window.
- Equipment will be inspected daily for leaks and other problems that could result in the discharge of petroleum-based products or other material into waters of the Columbia River.
- Dredging and material disposal will comply with Washington and Oregon State water quality standards (173-201A WAC and OAR 340 Division 41). The Applicant has prepared a Water Quality Monitoring Plan for the proposed Project, which will be implemented during pre-installation dredging and cable installation activities in accordance with the CWA Section 401 Water Quality Certification to be obtained for the project.
- Pre-installation dredging will be conducted using a clamshell dredge—impacts are highly localized and clamshell dredging is not documented to have notable entrainment, unlike hydraulic or suction dredging.
- Increased cycle time (slowing the velocity through the water column).
- Pausing the dredge bucket near the bottom while descending and near the water line while ascending.

- Elimination of multiple bites at a given location.
- Use of bottom-dump scows—accept and transport sediments dredged from the pre-installation dredging area. Bottom scows will contain water and sediment and avoid overflow during disposal.
- Use of GPS navigation—ensures accurate GPS positioning to identify the correct footprint for dredging and disposal.
- Use of spuds to secure the barge/dredge location—passively lowered into the substrate and do not require active driving (e.g., vibratory pile driving) to set into the substrate.

3.4.3.2 Special Status Wildlife

The Project corridor is routed through existing disturbed habitats including paved areas and road shoulders for the majority of its length. These areas provide little to no habitat value for wildlife species. The Project avoids forested areas, meadows, wetlands, and streams and no trees are slated to be removed for Project construction. BMPs include erosion control, sedimentation retention, water quality/quantity, and stormwater treatment during project construction and operation. The following measures are considered part of the proposed Project:

- Trenching and installation of the buried cable along SR 14 in Washington will occur within 0.25-mile of potential nesting and foraging habitat for northern spotted owl, and this work would be restricted to occur outside of the nesting season (March 1 to September 30) to avoid impacts to northern spotted owls.
- Land disturbing activities will be limited to the minimum disturbance footprint required for HDD sites and trenching.
- An HDD Inadvertent Return Plan (i.e., Frac-out) will be developed to provide contingency measures for containment and cleanup in the event of frac-out.
- Barriers to prevent sediment from leaving the site and entering downstream waterways via runoff (e.g., silt fences, straw bale barriers, and sediment ponds or basins) will be installed prior to grading.
- For landward construction, project staging and material storage areas will be located a minimum of 150 feet from surface waters, in currently developed areas such as parking lots or managed fields. No oil, fuels, or chemicals will be discharged to surface waters or onto land where there is a potential for re-entry into surface waters.
- Petroleum products, fresh cement, lime, uncured concrete, chemicals, or other toxic or deleterious materials will not be allowed to enter surface waters.
- Water used during the placement of concrete for washdown or related operations will not be allowed to enter any streams or the Columbia River. Any process water/contact water will be routed to a contained area for treatment and will be disposed of at an authorized upland location.
- Process water generated on site from construction, demolition or washing activities will be contained and treated to meet applicable water quality standards before entering or reentering surface waters.

- Stabilized construction entrances to minimize sediment tracking from active work areas will be used.
- Construction vehicles and equipment will be required to utilize a wheel wash prior to entering public streets.
- The contractor will develop, implement, and maintain a SWPPP to minimize erosion of sediments due to rainfall runoff at construction sites, and to reduce, eliminate, and prevent the pollution of stormwater.

3.5 Wetlands (WAC 463-60-333)

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

An HDR biologist performed wetland / waters delineations on April 19-21, 2023, and November 6-10, 2023 (Appendix F). Delineations followed the methods prescribed by the USACE and Ecology, as outlined in the methods section of the *Wetland and Waters Delineation Report* (Appendix F).

Wetlands are defined as areas saturated or inundated by surface or groundwater at a frequency and duration sufficient to support, and which under normal circumstances do support, a prevalence of vegetation adapted for life in saturated soil conditions. The methods used to delineate the on-site wetlands conform to methods described in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987), and *Regional Supplement to the Corps of Engineers Wetland*

Delineation Manual: Western Mountains, Valleys and Coast Region (Environmental Laboratory 2010), and are outlined in detail in the *Wetland and Waters Delineation Report* (Appendix F). All delineated wetlands were located with survey-grade GPS units, surveyed by professional surveyors and mapped on project base maps.

Wetlands within the Project survey area were rated using the Washington State Wetland Rating System for Western Washington, 2023 Update (Hruby and Yahnke 2023). Table 3-12 defines criteria for each wetland rating category.

Table 3-12. Washington State Wetland Rating System

Category I	Category II	Category III	Category IV
Category I wetlands: Represent a unique or rare wetland type; are more sensitive to disturbance than most wetlands; are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime; or provide a high level of functions. Specific wetlands that meet the Category I criteria include:	Category II wetlands: Wetlands that are difficult, though not impossible, to replace, and provide high levels of some functions. Specific wetlands that meet the Category II criteria include:	Category III wetlands: Wetlands that provide a moderate level of functions. Specific wetlands that meet the Category III criteria include:	Category IV wetlands: Wetlands that have the lowest levels of functions and are heavily disturbed. Specific wetlands that meet the Category IV criteria include:
1) alkali wetlands, characterized by the presence of shallow saline water with a high pH;	1) forested wetlands in the	1) wetlands scoring between 16 and 18 points, out of 27, on the wetland rating form.	1) wetlands scoring less than 16 points out of 27 on the wetland rating form
2) natural heritage wetlands, specifically, wetlands identified by the Washington Natural Heritage Program/WDNR as high quality relatively undisturbed wetlands; and wetlands that support state-listed threatened or endangered plants;	2) mature and old-growth forested wetlands with fast growing trees that are over 0.25 acre in size;	-	-
3) bogs and calcareous fens;	3) vernal pool that are located in a landscape with other wetlands and that are relatively undisturbed during the early spring; and	-	-
4) mature and old-growth forested wetlands with slow growing trees that are over 0.25 acre in size; and	4) wetlands scoring between 19 and 21 points, out of 27, on the wetland rating form.	-	-
5) wetlands that perform many functions very well, as indicated by a score of 22 or more points out of 27 on the wetland rating form.	-	-	-

Source: Hruby 2014

A total of 19 wetlands were delineated within the Project survey area and rated using field observations, desktop analysis, and Ecology's WATOR to determine wetland categories for each wetland. Table 3-13 identifies each wetland, its category, local jurisdictional buffer, wetland size in survey area and total wetland size. Summary tables of the 19 wetlands are included in the *Wetland and Waters Delineation Report* (Appendix F). Alternative delineation methodologies were applied in



circumstances where some standard methodologies could not effectively be used to delineate wetlands boundaries. These circumstances included areas with excavation restrictions, property access issues, field safety concerns, recent human disturbance and recently formed wetlands. Delineators implemented a combination of applicable standard methods as well as methods for atypical situations outlined in Section F of the Manual and difficult wetland situation outlined in Chapter 5 of the Regional Supplement. In Table 3-13, alternative delineation methodologies were used for wetlands 1-6, 9-11, 14, 15, 18 and 19.

Table 3-13. Summary of Wetlands in and adjacent to the Survey area

Wetland Name	Total Wetland Size (acres)	Wetland Size in Survey Area (acres)	Wetland Size in Impact Area (acres)	Local Jurisdiction	Ecology Rating ^a	Wetland Buffer Width (ft)	USACE PJD	Ecology PJD
Wetland 1	0.07	0.02	0	Skamania County	I	100	Yes	Yes
Wetland 2	0.04	0.003	0	Skamania County	I	100	Yes	Yes
Wetland 3	0.03	0	0	Skamania County	I	100	Yes	Yes
Wetland 4	0.21	0.12	0	Skamania County/ City of North Bonneville	I	100 and 110	Yes	Yes
Wetland 5	0.14	0	0	City of North Bonneville	II	220	Yes	Yes
Wetland 6	0.18	0	0	Skamania County/ City of North Bonneville	II	220	Yes	Yes
Wetland 7	<0.01	<0.01	0	City of North Bonneville	III	120	Yes	No
Wetland 8	<0.01	<0.01	0	City of North Bonneville	III	135	Yes	No
Wetland 9	0.11	0.06	0	Skamania County	II	100	Yes	Yes
Wetland 10	0.22	0.02	0	Skamania County	II	100	Yes	Yes
Wetland 11	4.21	<0.01	0	Skamania County	II	100	Yes	Yes
Wetland 12	<0.01	<0.01	0	Skamania County	III	50	Yes	Yes
Wetland 13	<0.01	<0.01	0	Skamania County	III	50	Yes	Yes
Wetland 14	0.06	0	0	Skamania County	II	100	Yes	Yes
Wetland 15	2.75	0.05	0	Skamania County	II	100	Yes	Yes
Wetland 16	0.03	0.03	0	Skamania County	III	50	Yes	Yes
Wetland 17	0.05	0.05	0	Skamania County/ City of Stevenson	II	50 and 75	Yes	Yes
Wetland 18	0.14	0.13	40 sq. ft. Temporary wetland impacts. 1,000 sq. ft. Temporary wetland buffer impact	Skamania County/ City of Stevenson	II	200 and 150	Yes	Yes
Wetland 19	0.03	<0.01	0	Skamania County	III	50	Yes	Yes

^a Source: Hruby 2014.

^b Source: NBMC 18.13.100, SMC 19.03.040, SCMC 21.10.070.



3.5.1.1 Depressional

Depressional wetlands occur in topographic depressions where the elevation of the surface within the wetland is lower than the surrounding landscape. The shapes of depressional wetlands vary, but in all cases, the movement of surface water and shallow subsurface water is towards the lowest point in the depression. Depressional wetlands may have an outlet, but the lowest point in the wetland somewhere within the boundary, not at the outlet. (Hruby and Yahnke 2023; Environmental Laboratory 2010).

3.5.1.2 Riverine

Riverine wetlands occur in valleys associated with stream or river channels. They lie in the active floodplain and have important hydrologic links to the flows in the river or stream. Their proximity to the river facilitates both the rapid transfer of floodwaters in and out of the wetland, and the import and export of sediments. The distinguishing characteristic of Riverine wetlands in western Washington is that they are flooded by overbank flow from the river at least once every 2 years on average over a 10-year period (Hruby and Yahnke 2023; USACE 2010).

3.5.1.3 Slope

Slope wetlands occur on hill or valley slopes where groundwater surfaces begin running along the surface, or immediately below the surface. Water in these wetlands flows only in one direction (downslope) and the gradient is steep enough that the water is not impounded (Hruby and Yahnke 2023; Environmental Laboratory 2010).

Wetlands sometimes meet the criteria for multiple different classes, and do not fit perfectly into one. In these instances where several hydrogeomorphic (HGM) classes are present, Table 3-14 is used to identify the appropriate class to use for rating.

Table 3-14. Hydrogeomorphic Classifications for Wetlands

HGM classes found within one wetland unit	HGM Class to use if area of this class >10% total area of unit
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of wetland	Treat as ESTUARINE and do not score. Categorize the wetland based on the Special Characteristics section

The Project survey area contains 19 wetlands, which are classified as 15 depressional, 3 slope, and 1 riverine. The survey area lies within the level IV ecoregion of the Cascades, and level III ecoregion of the Western Cascades Lowlands and Valleys. The Western Cascades Lowlands and Valleys region is a relatively wet region with wetlands throughout most of the alignment, particularly associated with the road in which the cable will be placed that is perpendicular to the south facing hillsides of the Cascades, which drain to the Columbia River. Most of these wetlands are depressional wetlands that have formed as a result of urbanization and the development of roads that intersect with the downward movement of water along the hillsides, though slope and riverine wetlands were also observed. Most of these wetlands are emergent wetlands with some shrub and

forested components that support a mixture of native and introduced species, as a result of vegetation maintenance associated with the roadway runoff. Most of these wetlands have developed and occur under normal conditions and were delineated using standard methodology. Further details regarding these wetlands and their water sources can be found in the *Wetland and Waters Delineation Report* (Appendix F).

3.5.2 Impacts

Work on land (i.e., HDD pits, trenching) outside the Columbia River would not result in permanent impacts to wetlands, waters, and vegetated riparian areas. To the extent practicable, all work has been sited within paved and/or previously disturbed areas (e.g., roadway ROWs) or in locations with limited vegetation (e.g., graveled areas). Erosion control, drilling fluids, and construction and post-development stormwater runoff will be managed to avoid and/or minimize the potential for discharge into waters of the U.S.

Due to the installation of the HVDC cable bundle, there would be temporary and permanent impacts to one wetland (Wetland 18), and temporary impacts to Wetland 18 buffer. Wetland 18 is located along a roadside ditch north of SR 14 and has surface water connection to the Columbia River (Appendix F figures). There would be a total of 40 square feet of temporary and 26.6 square feet of permanent unavoidable impacts to Wetland 18, and 200 square feet of temporary impacts to the buffer. Permanent fill within Wetland 18 would consist of the HVDC cable materials and cable protection. Wetland soils that were excavated to make the trench would be used to fill in the remaining wetland area. Wetland 18 and the associated buffer would be restored post construction to match or improve pre-construction vegetation conditions. No other wetlands are proposed to be impacted (temporary or permanent) as a result of the Project.

Table 3-15 summarizes the temporary and permanent wetland impacts. The wetland would be restored to existing or improved functions after cable installation. Additional information about the wetland is available in the *Wetland and Waters Delineation Report* (Appendix F)

Table 3-15. Wetland Impacts

Description	Total Area	Wetland Impact Area	Wetland Buffer Impact Area
Wetland: Wetland 18 is primarily a depressional palustrine emergent wetland with shrub/scrub components on the east end. Most shrubs were trimmed to ground in April 2023, but most had regrown stems by November 2023. In accordance with the Department of Ecology Wetland Rating System, Wetland 18 is rated a Category II wetland based on moderate water quality function, high hydrology function, and moderate habitat function. The wetland was assigned a 200 and 150-foot buffer per Skamania County and City of Stevenson code, respectively. Based on agency discussions any developed areas devoid of vegetation were removed from the buffer area.	0.14 acres	40 square feet (temporary) 26.6 square feet (permanent)	200 square feet



3.5.3 Mitigation Measures

Wetland 18 is located within an area that has been identified in a watershed or in the local plan as important to maintaining water quality. The proposed permanent impact of 26.6 square feet is located within the westerly portion of Wetland 18, which is the narrowest. The project has demonstrated a strong effort to avoid and minimize impacts. The HVDC cable materials and cable protection (as described in Section 2.3.3.) will be buried 4 feet below the surface in a trench, which will be backfilled with approximately 3 feet of native wetland soils, and revegetated. The hydrologic and wetland functions will be restored over time, therefore no mitigation measures are proposed for temporary or permanent impacts to W18 and its buffer.

The wetland and buffer would be restored to existing or improved functions after HVDC cable bundle installation. Restoration would include the following:

No mitigation will be required for temporary or permanent impacts to Wetland 18 and its buffer. The wetland would be restored to existing or improved functions after cable installation. Restoration would include the following:

- A post-construction monitoring plan will be prepared. The purpose of the plan will be to establish monitoring procedures and performance standards that will be used to determine that the wetland and associated buffer affected by the Project will be restored to pre-construction conditions.
 - Stockpiling and replacement of the upper 12 inches of soil,
 - Reseeding with a WSDOT approved grass mix for stabilization, and
 - Replacing of 10 2-gallon shrubs consisting of a combination Douglas spirea (*Spiraea douglasii*) and Pacific willow (*Salix lucida ssp. Lasianдра*). Planting density of 1 per 4 square feet.

Prior to the completion of the Project, seeding and planting will be implemented based on the planting plan. Generally, the timing of the plantings will occur in the late fall and winter seasons to increase survivability. Temporary erosion prevention and sediment management practices will remain in place until seeding has become established.

3.6 Energy and Natural Resources (WAC 463-60-342)

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 Stevenson and North Bonneville area is supplied by Skamania County Public Utility District (PUD) #1 and natural gas is provided to Stevenson by Avista and to North Bonneville by Northwest Natural. The City of Stevenson water is supplied by surface water and groundwater sources and the City of North Bonneville water is supplied by groundwater.

The Project is within the CRGNSA; however, there would be no aboveground components of the Project located in Washington, so the Project would not affect scenic resources.

3.6.2 Impacts

During construction, consumption of resources would include limited amounts of nonrenewable resources, such as raw materials used for concrete, HDPE conduits, HVDC cables and associated hardware (cable transition joints, ground plate box, bonding cable, grounding rods, splice vaults, etc.) and HDD drilling additives such as bentonite, an absorbent clay or soda ash. Energy consumption during construction would include use of gasoline and diesel fuel to operate construction equipment, to transport Project components, and to transport construction workers.

Water for construction would be obtained from local water sources via water trucks, as described in Sections 2.6 and 3.3. Fuel for construction equipment and vehicles would be obtained from local gas stations or fuel distributors in the local area. Concrete would be purchased from existing suppliers and local distributors. The HVDC transmission cable and associated hardware would be purchased from a specialty contractor and shipped with the specialty vessel used for installation. Other than what is supplied by battery powered equipment or portable generators, no electricity would be used during construction of the Washington components. No electricity from external sources will be used during operation.



The quantities of materials to be used during construction are estimated in Table 3-16; the final quantities will be determined by the construction contractor during final design.

Table 3-16. Construction Material Inventory for 400 kV HVDC Transmission On Land—In Washington (around Bonneville Lock & Dam)

Material	Quantity	Units	Ultimate Disposition
HV cable	77,600	feet	Below ground
HV cable transition joints	4	each	Below ground
HV cable joints	38	each	Below ground
Ground plate box	2	each	Below ground
Bonding cable	200	feet	Below ground
Bare ground cable	200	feet	Below ground
Ground rods	8	each	Below ground
FO cable	38,800	feet	Below ground
PE 8-inch conduit	77,600	feet	Below ground
PE 2-inch conduit	38,800	feet	Below ground
FO splice vaults	9	each	Below ground
FO splices	9	each	Below ground
Fluidized thermal backfill (FTB) (thermal concrete)	4,666	cubic yards	Below ground
Asphalt	2,593	cubic yards	Aboveground for road repair
Aggregate	3,422	cubic yards	Below ground
HDD drilling fluid (mostly water)	242,000	gallons	Recycled to the extent practical, then landfilled

During operations, the Project would not consume energy or natural resources in Washington.

As noted in Table 3-16, the ultimate disposition of the materials in Washington will be underground. As such, the Project would not affect scenic resources during operations.

3.6.3 Mitigation Measures

Because the Project would not consume energy or natural resources or have visual impacts, no mitigation measures are proposed.



4 Built Environment

4.1 Introduction

As described in Section 2.3, the Applicant is proposing to install approximately 42 miles of HVDC cable in Washington State, including approximately 34 miles within the bed of the Columbia River and approximately 8 miles underground on land in Skamania County.

4.2 Environmental Health

4.2.1 Noise (WAC 463-60-352)

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.*

4.2.1.1 Existing Environment

Acoustic Terminology

Sound is what is heard. Sound is defined as a rapid fluctuation or oscillation of air pressure above and below atmospheric pressure creating a sound wave and reaching our ears to exert tiny pressures on our eardrums. Sound energy is characterized by the properties of sound waves, which are frequency, wavelength, period, amplitude, and velocity. When sound becomes noise is a highly subjective determination, largely dependent on the following factors (not provided in any specific order of importance):

- Magnitude or intensity of noise with a frequency weighting to human hearing response;
- Duration of the intruding noise;
- Time of year (windows open or closed – outdoor exposure and location of outdoor activities);
- Time of day (higher sensitivities may occur at night);

- Existing ambient sound levels in the community when the noise is not present, including effects of wind generated noise (eolian) and masking by foliage in areas with established tree stands during elevated wind conditions;
- History of prior exposure to the same or similar noise sources;
- Existence of a pure tone, tonal, or impulsive character in the sound;
- Level of community outreach and notification of schedule of potential noisy periods (i.e., construction activities);
- Predetermined attitudes towards a proposed project or activity; and
- Facility benefits, including private and public economic incentives.

The unit of sound pressure is the decibel (dB). The decibel scale is logarithmic to accommodate the vast dynamics of sound intensities to which the human ear is subjected. A logarithmic scale is formed by taking 20 times the base logarithm (base 10) of the ratio of two sound pressures¹⁰: the measured sound pressure divided by a reference sound pressure. The reference sound pressure is 20 micro-Pascals, the approximate threshold of human perception to sound at a frequency of 1,000 hertz (Hz; 0 dB). The loudness of a sound is determined by the source sound power level (L_w), the total acoustic power radiated by an object or structure measured in decibels referenced to 10⁻¹² watts and is independent of environmental conditions. The received sound pressure level (L_p) includes the effects of propagation and attenuation that occur between source and receptor location.

Sound is typically composed of acoustic energy spanning across a wide range of frequencies, referred to as the frequency spectrum; however, the human ear does not interpret the sound level from each frequency equally as loud. To compensate for the physical response of the human ear, the A-weighting filter is commonly used for describing environmental sound levels. The A-weighted sound level is the most widely accepted descriptor for community noise assessments. A-weighting filters the frequency spectrum of sound levels to correspond to the human ear frequency response (attenuating low and high frequency energy like the way people hear sound). Sound levels that are A-weighted to reflect human response are presented as dBA. Table 4-1. shows how this scale is related to some common noise sources and environment. Unweighted sound levels are referred to as linear, or dBL. An inherent property of the logarithmic decibel scale is that the sound pressure levels of two separate sounds are not directly additive. For example, if a sound of 50 dB is added to another sound of 50 dB, the total is a 3-dB increase (or 53 dB), not an arithmetic doubling to 100 dB. The human ear does not hear changes in the sound pressure level as equivalent changes in perceived loudness.

¹⁰ Or, alternatively, 10 times the base-10 logarithm of the ratio of two powers.

Scientific research demonstrates the following general relationships between sound level and human perception for two broadband sound levels with identical (or very similar) frequency characteristics are valid:

- **1 dBA** increase or decrease is a non-perceptible change in an environmental sound level.
- **3 dBA** increase or decrease is a doubling or halving of acoustic energy, respectively, and it corresponds to the threshold of perceptibility of change in an ideal listening environment such as an audiology booth. In practice, the average person may or may not be able to distinguish a 3 dBA change in environmental sound levels outdoors.
- **5 dBA** increase or decrease is described as a perceptible change in an environmental sound level and is a clearly discernable change in an outdoor environment.
- **10 dBA** increase is a tenfold increase in acoustic energy but is perceived as only a doubling in loudness (i.e., the average person will judge a 10 dBA change in sound level to be twice or half as loud, depending on if it is a 10 dBA increase or decrease).

Table 4-1. Sound Pressure Levels (LP) and Relative Loudness

Noise Source or Activity (distance from source)	Sound Level (dBA)	Subjective Impression	Relative Loudness (Perception of Different Sound Levels)
Jet aircraft takeoff from carrier (50 feet)	140	Threshold of pain	64 times as loud
50-hp siren (100 feet)	130	--	32 times as loud
Loud rock concert near stage Jet takeoff (200 feet)	120	Uncomfortably loud	16 times as loud
Float plane takeoff (100 feet)	110	--	8 times as loud
Jet takeoff (2,000 feet)	100	Very loud	4 times as loud
Heavy truck or motorcycle (25 feet)	90	--	2 times as loud
Garbage disposal Food blender (2 feet) Pneumatic drill (50 feet)	80	Loud	Reference loudness
Vacuum cleaner (10 feet)	70	Moderate	1/2 as loud
Passenger car at 65 mph (25 feet)	65		--
Large store air-conditioning unit (20 feet)	60		1/4 as loud
Light auto traffic (100 feet)	50	Quiet	1/8 as loud
Quiet rural residential area with no activity	45		--
Bedroom or quiet living room Bird calls	40	Faint	1/16 as loud
Typical wilderness area	35		--
Quiet library, soft whisper (15 feet)	30	Very quiet	1/32 as loud
Wilderness with no wind or animal activity	25	Extremely quiet	--
High-quality recording studio	20		1/64 as loud
Acoustic test chamber	10	Just audible	--
--	0	Threshold of hearing	--

Source: Adapted from Beranek 1988 and USEPA 1971

Notes: dBA=A-weighted decibel; mph=miles per hour

Acoustic Metrics

Noise can be measured, modeled, and presented in various formats. The most common sound metrics used in community sound surveys are the equivalent sound level (L_{eq}), the day-night sound level (L_{dn}), the maximum sound level (L_{max}), and statistical sound levels (L_n). The following sound metrics were employed in the Project acoustic assessment:

- The L_{eq} value is the energy averaged sound level and is defined as the steady, continuous sound level, over a specified time, which has the same acoustic energy as the actual varying sound levels over the same time. The L_{eq} has been shown to provide both an effective and uniform method for comparing time varying sound levels that typically occur and have been used routinely in assessing construction and transportation noise studies.
- The L_{dn} is essentially a 24-hour L_{eq} , with nighttime sound levels (from 10:00 pm until 7:00 am) receiving a 10-dB penalty to account for increased sensitivity to noise during the night.
- The L_n descriptor is a statistical sound level, which identifies the sound level that is exceeded “n” percent of the time over a measurement period. The L_{10} is the A-weighted sound level that is exceeded for 10 percent of the time during a specified measurement period. For example, during a 100-minute period, the L_{10} would be the sound level that was exceeded by other sound levels for 10 minutes of the 100-minute measurement period. The L_{50} is the median sound level. During a given period, the measured sound levels are greater than the L_{50} half of the time, and less than the L_{50} half of the time.
- The L_{max} is the maximum instantaneous sound level as measured during a specified time period. It can also be used to quantify the maximum sound pressure level generated by a piece of equipment or an activity that normally varies with time or the maximum allowable noise sound pressure level as set as a regulatory criterion or manufacturers maximum source level emission level.

These sound metrics are broadband (i.e., they include sounds at all audible frequencies). In addition to broadband, sound level data typically include an analysis of the various frequency components of the sound spectrum to determine tonal characteristics. The unit of frequency is Hz, measuring the cycles per second of the sound pressure waves, and typically the frequency analysis includes 10 octave bands from 31 Hz (low frequency) to 16,000 Hz (high frequency).

Existing Sound Environment

Per WAC 463-60-352(1)(a), the background noise environment that would be affected by the Project is described below.

Within the lower Columbia River, anthropogenic underwater noise is caused by dredging, ship traffic, and construction. Background underwater noise levels where the project is located are not available. However, ambient noise levels measuring 136 dB peak were measured at RM 45 where the river is tidally influenced, dredging occurs regularly, and shipping traffic includes large ocean-going transports, barges, and recreational vessels of varying size (Carlson et al. 2001; NMFS 2010). Subtracting 15 dB from the peak sound measurement yields a crude estimate of root mean square (rms) value of 121 dB rms (NMFS 2010). Therefore, the Applicant conservatively estimates that ambient underwater sound is 120 dB rms in the Project area.



On land, the Project would be within the ROW of four roads:

1. SR 14 (3.86 miles): State highway with typical highway traffic noise, as well as noise from the Burlington Northern Railroad tracks that run parallel to the highway.
2. Ash Lake Road (1.8 miles): One-lane road that travels through a rural, wooded area. Background noise would be typical of a rural road.
3. Dam Access Road (0.1 miles): Two-lane road that travels from SR 14 to Fort Cascades Drive. Background noise would be typical of highway traffic noise, as well as noise from the Burlington Northern Railroad tracks that run along the north side of SR 14.
4. Fort Cascades Drive (1.7 miles): Two-lane road that travels through a recreational area on Hamilton Island. Background noise would be typical of a rural road.

The Applicant has not quantified existing background noise in these road ROWs using an ambient sound survey or acoustic modeling analysis. Per Section 4.2.1.2, the HVDC cables are not expected to generate audible noise during operation. Therefore, the only impacts to the background noise environment would be temporary construction noise.

4.2.1.2 Impacts

Construction Noise

Installation of HVDC cables in Washington would involve the construction equipment listed in Table 4-2.

Table 4-2. Construction Equipment for HVDC cable installation

Location	Type of construction	Equipment details
In Columbia River	Cofferdams	Construction of temporary 3-sided cofferdams in the Columbia River would involve barges with cranes and vibratory pile drivers, pumps, and dive boats with diver equipment, including air compressors.
	In-river cable	Installation of cable in the Columbia River would involve a barge, a tug, and a dive boat with diver equipment including air compressors.
On Land	Drilling	Horizontal directional drilling (HDD) and horizontal auger boring (HAB) drilling areas would involve a drill rig, drill pipe handling equipment, pumps to manage drill fluid, and mixing machines to make the drilling mud. Receiving on water would be a barge, a tug, and a dive boat with diver equipment including air compressors. Receiving on land would be pipe fusing equipment and several excavators to help conduit bundle to the receive pit.
	Open trenching	Trenching would involve a backhoe, front loader, dump truck, concrete mixer truck, grader, and roller.

Construction noise was not modeled. For laying in-river cable via hydroplow, installation noise is not expected to be noticeably different from existing vessel traffic noise. For the cofferdams and work on land, a list of equipment with expected noise levels is provided for informational purposes in

Table 4-3. The combined noise from the loudest two equipment types for each construction phase is also presented.¹¹

Table 4-3. Typical Sound Levels for Construction Equipment

Noise Source	Quantity	Leq at 50 feet, dBA (single)	Leq at 50 feet, dBA (combined)	Leq at 1,000 feet, dBA (combined)
Cofferdams (1 month per site)				
Crane	1	74	74	48
Compressor	4	66	72	46
Pump	4	73	79	53
Vibratory Pile Driver	1	99	99	73
Loudest 2 pieces of equipment		99		73
HDD/HAB (1 month per site)				
Drill Rig	1	87	87	61
Drum Mixer	2	66	69	43
Pumps	2	73	76	50
Compressor	2	66	69	43
Excavator	1	77	77	51
Welding	1	71	71	45
Loudest 2 pieces of equipment		87		61
Open Trenching (variable, moving site)				
Backhoe	1	76	76	50
Front Loader	1	72	72	46
Dump Truck	1	82	82	56
Concrete Mixer Truck	1	81	81	55
Grader	1	78	78	52
Compacter (roller)	1	82	82	56
Loudest 2 pieces of equipment		85		59

Source: Burge 2022, CAT 2024

Notes: dBA=A-weighted decibel

Operational Noise

During operation, the HVDC cables are not expected to generate audible noise. The cables would be heavily insulated, which will eliminate or substantially reduce corona noise.

What little noise may be generated would be attenuated by transmission through soil and water. Soil is a poor medium for transmission of noise, with transmission loss of up to 30 dB per centimeter depending on soil characteristics. Even conservatively assuming a transmission loss of 0.5 dB per centimeter, noise would be reduced by at least 60 dB at the depths the cable will be buried (4 feet [122 centimeters] on land and 10 feet [305 centimeters] under water). Although water is an efficient medium for noise propagation with negligible transmission loss, the air-water boundary reflects most

¹¹ The combination of the loudest two equipment types is presented instead of all equipment types because construction equipment operation is not constant, so it would be unlikely for all equipment to be operating simultaneously. Presenting the loudest two equipment types operating simultaneously is a conservative but realistic scenario.



underwater noise back into the water. Therefore, no audible noise is expected from buried and in-river segments of the transmission line.

4.2.1.3 Noise Regulations and Guidelines

Federal Regulations

No noise-related federal regulations apply to this project. The USEPA offers non-binding guidelines for noise levels, including a maximum L_{dn} of 55 dBA in residential areas to avoid interference with sleep. However, the Noise Control Act of 1972 reserves primary responsibility for setting noise limits to state and local authorities.

Washington Administrative Code Statutes

WAC 173-60 establishes maximum permissible noise levels based on the Environmental Designation for Noise Abatement (EDNA) of properties where the sound originates (source properties) and the EDNA of properties impacted by the sound (receiving properties). There are three types of EDNAs:

- Class A EDNA – Residential areas: 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 – Commercial areas: 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 – Industrial areas: Lands involving economic activities of a nature that noise levels higher than those experienced in other areas are normally to be anticipated. 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 maximum permissible noise levels for each EDNA are presented in Table 4-4. Between the hours of 10:00 p.m. and 7:00 a.m., the noise limitations are reduced by 10 dBA for receiving properties within Class A EDNAs.

Table 4-4. Washington State Environmental Noise Limits

EDNA of Noise Source	EDNA of Receiving Property		
	Class A Day/Night	Class B	Class C
Class A	55/45 dBA	57 dBA	60 dBA
Class B	57/47 dBA	60 dBA	65 dBA
Class C	60/50 dBA	65 dBA	70 dBA

The WAC allows these limits to be exceeded for certain short 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.

Per WAC 173.60.050, temporary construction noise is exempt from the state noise limits for Class B and Class C receiving properties. For Class A receiving properties, temporary construction noise is exempt between the hours of 7:00 a.m. and 10:00 p.m., but must comply between the hours of 10:00 p.m. and 7:00 a.m.

Skamania County Code

Construction noise is not designated as a “public disturbance noise” per Skamania County Code Section 8.22.050 Public Disturbance Noises.

Per Section 8.22.060(C), sounds created by the installation of essential utility services are exempt from noise control provisions between the hours of 7 a.m. and 10 p.m.

Stevenson Municipal Code

Construction noise is not designated as a “public disturbance noise” per Stevenson Municipal Code Section 8.08.050 Public Disturbance Noises.

Per Section 8.08.060(C), sounds created by the installation of essential utility services are exempt from noise control provisions between the hours of 7 a.m. and 10 p.m.

Klickitat County Code, Clark County Code, Bingen Municipal Code, Washougal Municipal Code, Camas Municipal Code, Vancouver Municipal Code

In Klickitat County, Clark County, Bingen, Camas, Washougal, and Vancouver, the only proposed activity would be installation of in-river cable. Noise created by the installation of in-river cable via hydroplow is not expected to be noticeably different from existing vessel traffic noise.

4.2.1.4 Mitigation Measures

Construction Noise Mitigation

For cable installation in the Columbia River and associated cofferdam construction, no noise mitigation measures would be employed.

The Applicant would require the construction contractor to employ the following measures to minimize noise levels to the extent practicable and to address potential public complaints about construction noise:



- Existing access road speed limits would be enforced, and construction site speed limits would be established and enforced during the construction period.
- Electric battery powered equipment would be used instead of pneumatic or internal combustion powered equipment, where feasible.
- Material stockpiles and mobile equipment staging, parking, and maintenance areas would be located as far as practicable from noise sensitive receptors.
- The use of noise-producing signals, including horns, whistles, alarms, and bells would be for safety warning purposes only.
- Noise-producing construction equipment and vehicles using internal combustion engines would be equipped with mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or other noise-reducing features as per original factory specification and maintained in good operating condition. Mobile or fixed “package” equipment (e.g., arcwelders, air compressors) would be equipped with shrouds and noise control features that are readily available for that type of equipment.
- Construction noise complaints would be logged within 48 hours of issuance. The construction supervisor would have the responsibility and authority to receive and resolve noise complaints. A clear appeal process to the Applicant would be established prior to the start of construction for resolving noise problems that cannot be resolved by the site supervisor in a reasonable period of time.

Operation Noise Mitigation

No noise is anticipated from operation of the HVDC cables; therefore, no mitigation measures are proposed.

Monitoring

Because no noise is anticipated from operation of the HVDC cables, no monitoring is proposed.

4.2.2 Safety (WAC 463-60-352)

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.*

4.2.2.1 Risk of Fire or Explosion

Existing Environment

The Project would be situated in paved areas, gravel roads and road shoulders, and upland areas previously cleared, presenting little to no inherent risk of fire or explosion.

Impacts

The Project is expected to pose a low risk of fire and explosion during construction, operation, and decommissioning. The temporary HDD laydown/work area (0.55 acres) upstream of Bonneville Locks and Dam would require some removal of grasses in an already disturbed area to minimize fire risk during construction. After construction the temporary area will be revegetated and the transmission cables will be underground during operation, posing no fire risk. The temporary HDD laydown/work area (0.55 acres) downstream of Bonneville Locks and Dam would not require vegetation removal because the area is paved. Similarly, the transmission cables will be underground during operation, posing no fire risk.

Mitigation

During construction appropriate coordination with local emergency personnel will be conducted and precautionary measures will be taken 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 I. Typical fire mitigation measures that will be included in an Emergency Response Plan include, but are not limited to:



- All construction vehicles will be equipped with fire extinguishers.
- Employees will keep vehicles on roads and off dry grassland, when feasible, during the dry months of the year, unless such activities are required for emergency purposes, in which case fire precautions will be observed.

During operation, the proposed HVDC cables would not require fire detection or fire suppression. The cables would be located underground and underwater and have sensitive and rapid protection schemes to quickly trip the interconnection and remove all energy from the cable in the event of a fault. Therefore, no mitigation is proposed.

4.2.2.2 Potential for Releases to the Environment

Existing Environment

As discussed in Section 3.3, the project would be within and adjacent to the Columbia River and other waterbodies and wetlands, which would be impacted if an unintended release of hazardous or dangerous waste was to occur.

In addition, the project is proximal to, but not within, two known areas of contaminated sediments on the NPL (known as superfund sites). The Burlington Environmental LLC Washougal site is listed in Washington for elevated concentrations of arsenic, cadmium, chromium, copper, lead, mercury, phenol, silver, and zinc. The site occupies 40 acres adjacent to Cottonwood Beach Park in Washougal, Washington approximately 0.5 miles from the proposed alignment in the river. The site was created from operations of various businesses between 1978 and 2002.

Bradford Island is a part of the Bonneville Lock and Dam complex and was listed on the NPL in 2022. The site includes a landfill that was used between the 1940s and 1980s and electrical equipment and light bulb disposal in surrounding areas. Landfill debris, including electrical equipment, has been found in the sediments of the Columbia River adjacent to the island. Site investigations have revealed the presence of polychlorinated biphenyls; semi-volatile organic compounds, butyltins, volatile organic compounds, and several pesticides. The proposed cable route will avoid the island and transit 2.5 miles downstream of the site and 4 miles upstream. While the extent of remediation areas is still being determined, the cable alignment is anticipated to be outside the limits (USEPA 2024d).

At an appropriate stage in development, the Applicant will have a qualified engineer conduct a site-specific geotechnical investigation, using current code requirements and state-of-practice methods to inform final design. The geotechnical investigation will include soil sampling and laboratory testing will include chemical testing. Based on the results of the site-specific geotechnical investigation, facilities will be sited to avoid or minimize disturbance of existing contamination.

Impacts

The Project would require the use of diesel fuel, gasoline, and lubricant oils for construction equipment, which could pose a risk for release or potential release into the environment if handled improperly. Fuel would be delivered to the construction yard by a licensed specialized 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 be brought on site 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. During the HDD, to transition the cables from land to water, drill cuttings and HDD drilling mud solids would be contained within a confined area within the temporary work area and shipped to an appropriate waste 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 material disposed of and treated according to applicable regulations. Spill kits containing items such as absorbent pads would be located on equipment and on-site during construction to respond to accidental spills, if any were to occur.

Construction materials proposed in substantial quantities are listed in Table 4-5. Material quantities are conservative estimates of the greatest quantities expected.

Table 4-5. Construction materials for Washington components

Material	Quantity	Units	Ultimate Disposition
400 kV HVDC Transmission In-River			
HV cable	841,400	feet	In-water, in bed of river
FO cable	420,700	feet	In-water, in bed of river
PE 18-inch conduit	10,200	feet	In-water, in bed of river
PE 4-inch conduit	5,100	feet	In-water, in bed of river
Concrete mattress, 8 feet by 20 feet	50	each	In-water, on bed of river
Anchor block	12	each	In-water, in bed of river
400 kV HVDC Transmission On Land—In Washington (around Bonneville Lock & Dam)			
HV cable	77,600	feet	Below ground
HV cable transition joints	4	each	Below ground
HV cable joints	38	each	Below ground
Ground plate box	2	each	Below ground
Bonding cable	200	feet	Below ground
Bare ground cable	200	feet	Below ground
Ground rods	8	each	Below ground
FO cable	38,800	feet	Below ground
PE 8-inch conduit	77,600	feet	Below ground
PE 2-inch conduit	38,800	feet	Below ground
FO splice vaults	9	each	Below ground
FO splices	9	each	Below ground
Fluidized thermal backfill (FTB) (thermal concrete)	4,666	cubic yards	Below ground
Asphalt	2,593	cubic yards	Aboveground for road repair
Aggregate	3,422	cubic yards	Below ground
HDD drilling fluid	92,500	gallons	Recycled to the extent practical, then landfilled



Mitigation

Hazardous material storage, spill prevention, and waste handling BMPs will be implemented and utilized during construction (see Section 2.10 for a detailed description of this plan and its BMPs). During operation, an SPCC Plan would not be required because there would be no Project components with potential to release contaminants.

4.2.2.3 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
- International 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.

4.2.2.4 Radiation Levels

The Project would not generate or emit significant amounts of radiation or radioactive materials; therefore, this section is not applicable.

4.2.2.5 Emergency Plans

The Applicant will prepare and submit the following emergency plans to WA EFSEC for approval prior to construction:

- Emergency Action Plan
- Safety Manual
- SPCC Plan (Construction)
- SWPPP (Construction)
- HDD Frac-out Mitigation Plan (Construction)

The construction contractor would be responsible for implementing plans that are applicable during construction.

4.3 Land and Shoreline Use

4.3.1 Land Use Plans and Zoning Ordinances (WAC 463-60-362)(1)

WAC 463-60-362: (1) The application shall identify land use plans and zoning ordinances applicable to the project site.

The Project would be located within Unincorporated Skamania County and the City of Stevenson, primarily in the road ROW. This section identifies land use plans and zoning ordinances applicable to the Project components in these jurisdictions. The Project components in each jurisdiction are shown in Table 4-6 and illustrated in Figure 4-1.

Table 4-6. WA Project Components in Each Jurisdiction

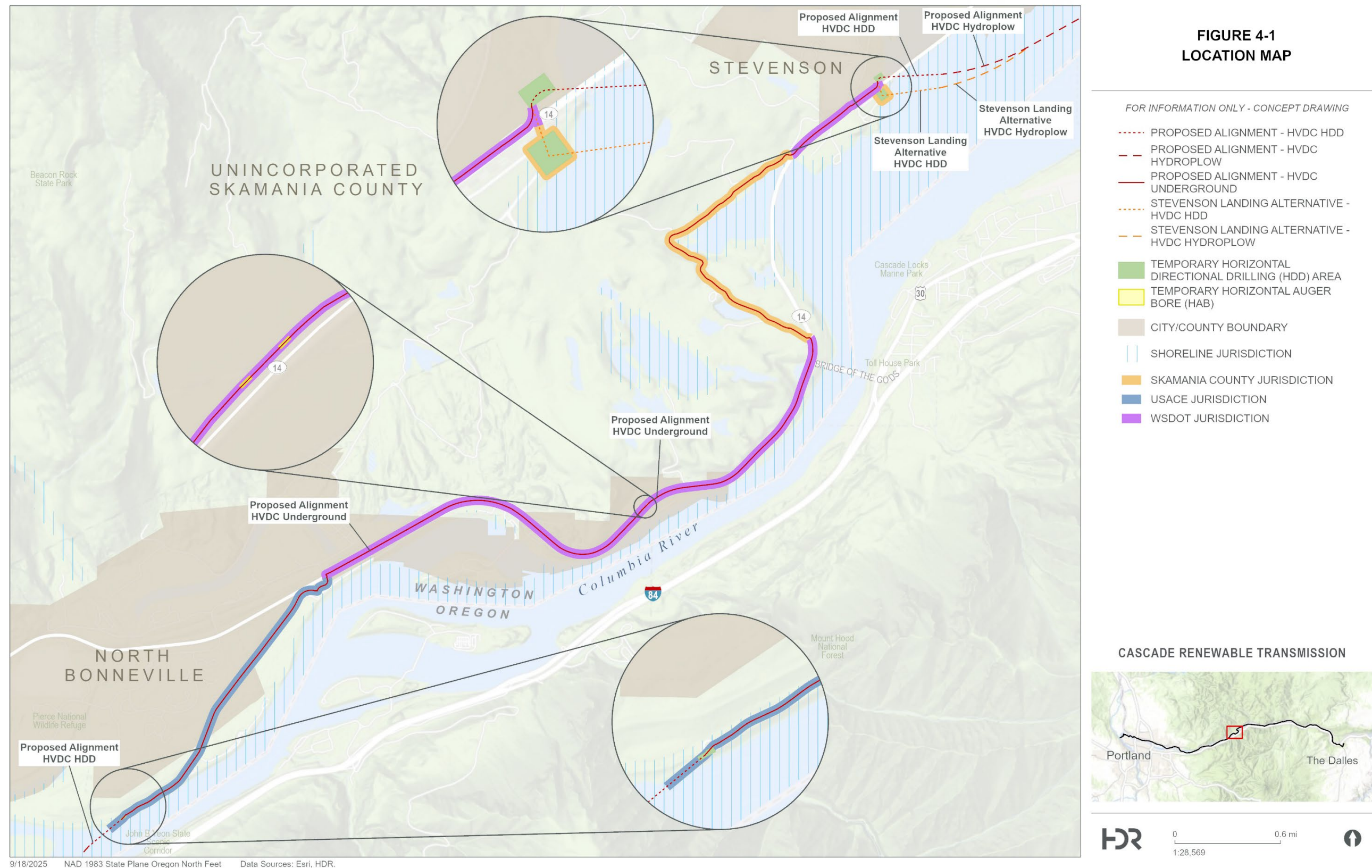
Project Components	Jurisdiction	
	Unincorporated Skamania County	City of Stevenson
Horizontal directional drilling (HDD) area*	•	•
Horizontal auger boring (HAB) area*	×	×
HVDC transmission cable	•	•

*temporary

• = yes Facility component in jurisdiction

× = no, Facility component not in jurisdiction

Figure 4-1. Location Map





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The approach for identifying applicable land use plans and zoning ordinances included the following steps for each jurisdiction:

- Identification of whether the Project components and the use category are consistent with the proposal.
- Identification of the zone where the Project component(s) are proposed and the land use category that aligns within each zone.
- Identification of any overlay zones, and/or special zoning districts.
- Review applicable substantive criteria.
- Analysis of the land use and development criteria for the Project.

Code criteria that were procedural, administrative, or not applicable were excluded. Each jurisdiction categorizes the components of the Project as a different use category, as addressed below by jurisdiction.

4.3.1.1 Unincorporated Skamania County

The components of the Project within unincorporated Skamania County include a portion of the HVDC transmission cable and one temporary HDD area. Both the HVDC transmission cable and the temporary HDD area are entirely within the NSA General Management Area (GMA) and within Shoreline jurisdiction.

Table 4-7 shows a breakdown of the Project components within unincorporated Skamania County, the zone, and proposed land use.

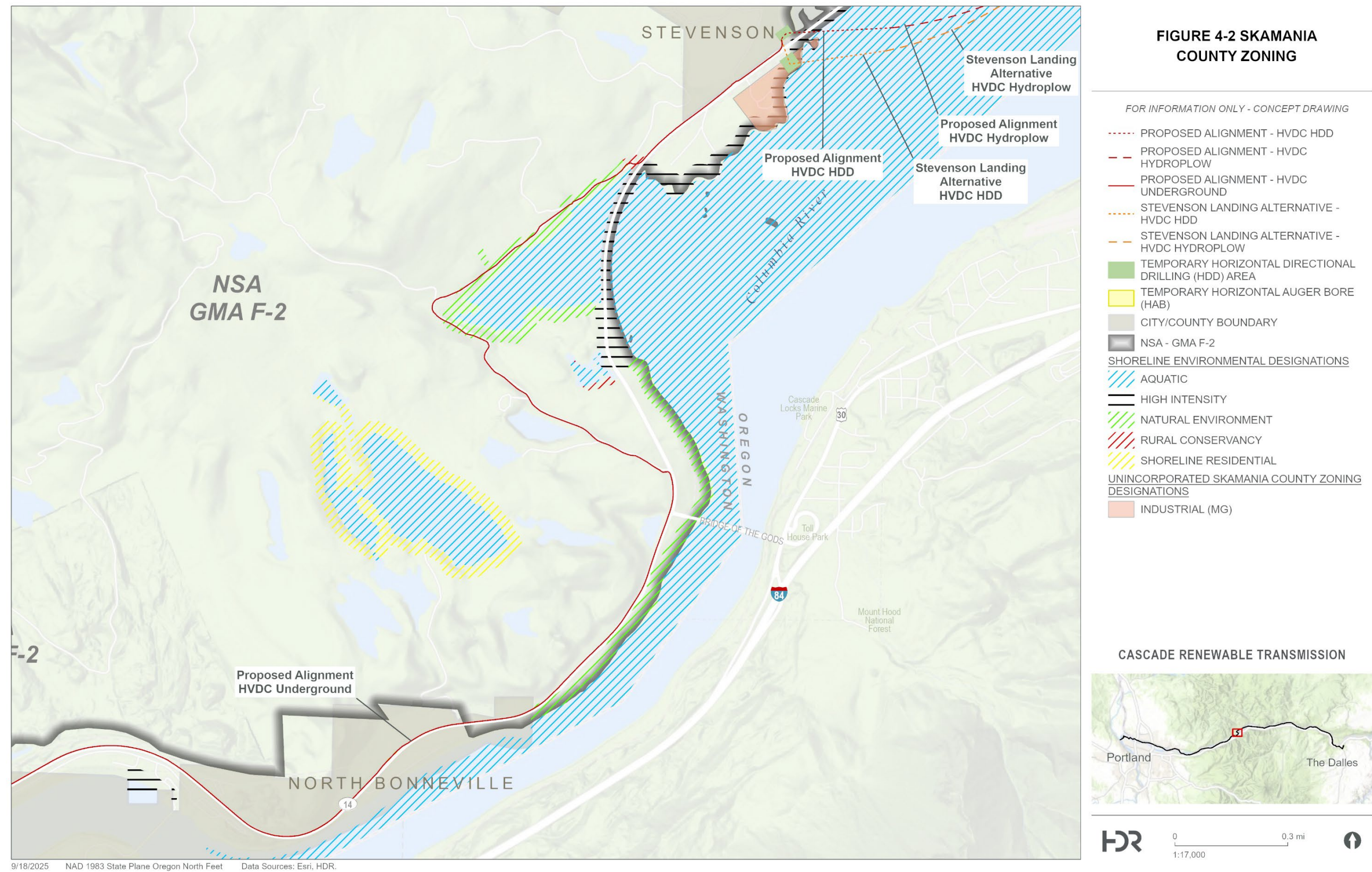
Table 4-7. Project components in Unincorporated Skamania County

Project Component	Description	Zone(s)	Proposed Land Use
HVDC Transmission Cable	Approximately 4.04 miles (0.04 miles is associated with the Stevenson Alternative).	Industrial (MG)	Public facilities and utilities (Rural I, designation 10)
		Skamania County Road right-of-way	Utility Facility
		F-2 Large Woodland (NSA General Management Area)	Underground utility facility
		Natural Environment and High Intensity Environment (Shoreline Master Program)	Utility - non-water oriented parallel transmission facility
Temporary HDD Area	Approximately 1.26 acres to establish HDD drill entry pits and stage equipment to support HVDC cables transitioning from land-to-water. This Temporary HDD Area is associated with the Applicant's "Stevenson Alternative."	Industrial (MG)	Temporary - grading
		F-2 Large Woodland (NSA General Management Area)	Underground utility facility
		High Intensity Environment (Shoreline Master Program)	Shoreline Modification - fills upland of OHWM



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Figure 4-2. Skamania County Zoning





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Land Use Plans

Applicable land use plans include the *Skamania County Comprehensive Plan (2018)*, the *Management Plan for the Columbia River Gorge National Scenic Area (2020)* and the *Skamania County Shoreline Master Program (2020)*.

Skamania County is not subject to comprehensive planning under the Growth Management Act. Skamania County's Comprehensive Plan (2018) includes critical areas goals and policies, designation of natural resource lands and their preservation. Analysis of the Project's consistency with the relevant goals and policies of the Skamania Comprehensive Plan are in Table 4-8.

Table 4-8. Skamania County Comprehensive Plan Consistency Review

Goal	Objective/Policy/Guideline	Consistency Evaluation
Goal LU.3: To coordinate public and private interests in land development.	Policy LU.3.3: Encourage industry that would have minimal adverse environmental or aesthetic effects.	Consistent. The Project would be underground in the existing right-of-way. Alternative locations considered included outside of road ROW, on private land, through forests or recreation areas - all of which were determined to have a higher degree of scenic, cultural, natural, recreational, agricultural or forest land impacts. During construction, visual impacts would be temporary, resulting from construction activity and the presence of equipment and work crews. During operation, the Project would maintain existing environmental and aesthetic conditions.
	Policy LU.4.7: Projects needing shorelines permits shall be required to be in conformance with the standards and purposes of the Shorelines Master Program.	Consistent. The Project proposes a "non-water oriented parallel transmission facility utility" use in the Natural and High Intensity Environments, and a "shoreline modification" in the High Intensity Environment. The Applicant is required to comply with the standards and purposes of the SMP and will do so through the Shoreline Conditional Use Permit and Shoreline Substantial Development Permit compliance pathways.
	Policy LU.4.8: In the event of a conflict between the Shorelines Master Program and the Comprehensive Plan, the Shorelines Master Program shall take precedence.	Consistent. The Project has prioritized avoidance and minimization during preliminary routing and alternative location identification, consistent with the intent of the SMP to protect natural resources against adverse effects. In the event of a conflict between the SMP and the Comprehensive Plan, the SMP would continue to be prioritized.

Industrial (MG)

A portion of the HVDC Transmission Cable is proposed within the MG zoning designation. The proposed HVDC Transmission Cable meets the definition of a use consistent with “Public facilities and utilities,” defined in the Skamania Comprehensive Plan as, “...such as parks, public water access, libraries, schools, utility substations, and telecommunication facilities” (Rural I Designation No. 10). Utilities are an Allowable Use in the MG zone, through an *Administrative Review process*. The Administrative Review Process confirms the Project’s consistency with setbacks, density requirements and the substantive provisions of Skamania County Code (SCC 21.70.020(A) and (B)).

The Project’s proposal for a temporary HDD Area use will also require an approved Grading Permit (SCC 24.02.070, *Application requirements*).

Right-of-way

All utility installations in Skamania County Road ROW must apply for a ROW Permit and comply with Skamania County Resolution No. 2010-15 (Skamania County 2010). Specifically, 4A(1), 4B(1-3), C, 5A, 5B (1-3), 6A (1-4), 6B, 6C (1-5), 6F, 8, 10A, 10C, 10D, 11A-H, 12A, 12B, and Standard Specifications. Analysis of the Project’s consistency with the relevant goals and policies of the Skamania County Resolution No. 2010-15 are in Table 4-9. Note that Standard Specification requirements are not included in the consistency analysis because they are procedural in nature and the design is forthcoming.



Table 4-9 Skamania County Right-of-Way Resolution No. 2010-15 Consistency Review

Policy	Objective/Guideline	Consistency Evaluation
Section 4: General Conditions And Requirements		
A. Location	(1) Utility installations shall be located to minimize need for later adjustment to accommodate future roadway improvements and to permit access to servicing such installations with minimum interference to roadway traffic. Counties shall make available to utilities a copy of their annual and six-year transportation improvement program (or capital facilities and transportation plan where required,) in order to minimize both utility customer and road user inconvenience should future road improvements (on existing or new alignment) require adjustment or relocating of the utility facilities. Said utilities shall, within the limits of standard business practice, make available appropriate short and long-range development plans to the county.	Consistent. Once the Project is constructed, operations of the roadway would continue as they did before. The new transmission line would be buried beneath the roadway, so no on-going maintenance would be required.
B. Design – General	(1) The utility shall be responsible for the design of the utility facility being proposed. This responsibility shall include, in addition to the integrity of the proposed utility facility, provisions for public safety during the course of construction, as well as consideration of traffic safety and accident potential for the life of the installation.	Consistent. The Applicant and its contractors would comply with applicable federal, state and local health and safety standards, including. For more information see Section 4.2.2.3, Safety Standards Compliance.
	(2) For work requiring application to the county, the county may review and approve the utility's plans with respect to: (a) location, (b) the manner in which the utility facility is to be installed, (c) measures to be taken to preserve safe and free flow of traffic, (d) structural integrity of the roadway, bridge, or other structure, (e) ease of future road maintenance, and appearance of the roadway.	Consistent. The Applicant will comply with (B)(2)(a-e), as applicable, by going through the final design review with the county.
	(3) Provision shall be made for known or planned expansion of the utility facilities, particularly those located underground or attached to bridge or other structures within the right of way.	Consistent. There are no known or planned expansion of the proposed Project. In coordination with the County, the Applicant would be made aware of planned expansions of any underground utility facilities that would need to be accounted for during design.
C. Standards and Codes	All utility installations shall be designed in accordance with the standards, codes and regulations applicable to the type of utility. The methods of installation and materials used shall conform to the codes and standards promulgated by government and by the industry. This shall also include any road design standards, which the county shall deem necessary to provide adequate protection to the road, its safe operation, appearance and maintenance.	Consistent. Similar to (B)(2)(a-e), as applicable, the Applicant go through the final design review with the county to ensure compliance.

Policy	Objective/Guideline	Consistency Evaluation
Section 5: Permits		
A. General Requirements	For work not authorized by franchise, comprehensive plan, or other agreement, a written permit may be required for occupancy of road right-of-way by all utility facilities, including private lines. No facility shall be used for other than the purpose stated, unless written approval is granted by the county.	Consistent. Through WA EFSEC compliance, the Project would fulfill requirements for written permit for occupancy of road right-of-way.
B. Specific Requirements	For all work within the County right-of-way, permit applications shall be submitted in a standard format as prescribed by the County. Permit applications will be administered by Skamania County Public Works an assigned to Public Works Engineering for location and work method and to Skamania County Community Development to determine if any other permits applications are necessary due to regulatory or environmental requirements in the work area prior to Public Works issuing the permit. The permit application shall include the following information: 1) Describe if the work is for replacement, repair or a new installation. Show the location of the work by road name and milepost. 2) Adequate exhibits depicting existing or proposed location of the facility in relation to the road, including right-of-way, easement lines, water bodies or other geographical conditions that may impact the work area; relationship to currently planned road revisions, if applicable; and all locations and situations for which deviations in depth of cover (including the proposed method of protection) or other locational standards are anticipated. 3) Agreement to all provisions in the permit conditions and to special conditions the county may deem appropriate for the work to be completed. An authorized employee of the Utility Company must sign the permit application agreeing to these conditions.	Consistent. Application requirements B(1-3) are included in this WA EFSEC Application.



Policy	Objective/Guideline	Consistency Evaluation
Section 6: Specific Requirements - Underground Utilities		
A. Underground Utilities - Location and Alignment	(1) For all crossings, the angle of crossing should be as near a right angle to the road centerline as practicable. However, lesser angles may be permitted based upon economic considerations of practical alternatives.	Consistent. Crossings in Skamania County include crossing of WSDOT regulated SR 14 upon exit of the Columbia River as shown in Figure 4-1 and Figure 4-2 and is designed to be perpendicular. With the current preliminary design, the Applicant does not anticipate needing consideration of practical alternatives but would coordinate with the county as required.
	(2) Where practicable, crossings should avoid deep cuts, footings of bridges and retaining walls, or locations where highway drainage would be affected.	Consistent. Crossings in Skamania County include crossing of WSDOT regulated SR 14 upon exit of the Columbia River as shown in Figure 4-1 and Figure 4-2 and are designed to avoid deep cuts, footings of bridges and retaining walls. The Project would comply with federal, state, and local statutes and regulations related to construction stormwater runoff, including drainage. Construction BMPs associated with permits are expected to reduce any stormwater impacts below the established requirements as outlined in Construction Stormwater General Permit from Ecology permit requirements.
	(3) Longitudinal installations should run parallel to the roadway and lie as near as practicable to the right-of-way line. Installations which cannot be so installed will be allowed within the right of way, provided that: a. The installation will not adversely affect the design, construction, stability, structural integrity, traffic safety, or operation of the road facility; or b. Failure to allow such installation will create an undue hardship or financial burden upon the utility.	Consistent. The Project is been designed as a parallel alignment in road ROWs, except for crossing SR 14, which would require WSDOT approval, as discussed in 6(A)(1) and (2) above.
	(4) Where irregularly shaped portions of the right of way extend beyond the normal right of way limits, a uniform alignment of facilities shall be allowed.	Inconclusive. Irregularly shaped portions of the right-of-way that extend beyond the normal right-of-way limits have not been identified. However, uniformly aligning the cables, casings, housings, conduits is standard practice and if required, compliance could be met.

Policy	Objective/Guideline	Consistency Evaluation
B. Underground Utilities – Cover	The grade of and resulting cover for an underground utility shall be in compliance with applicable federal, state and county requirements unless otherwise specified.	Consistent. Through approved permits, the Applicant would show compliance with all applicable federal, state and county requirements, including cover of underground utilities.
C. Underground Utilities – Encasement	(1) Casings shall be installed for roadway crossings where required by appropriate industry code.	Consistent. The Applicant proposes two 3 foot-wide concrete casings placed 2 feet apart, each housing two sets of three 8-inch-diameter, high-density polyethylene (HDPE) conduits for transmission cables and a 2-inch-diameter HDPE conduit for fiber optic cable.
	(2) Casings may be required for the following conditions: a. As an expediency in the insertion, removal, replacement, or maintenance of a carrier line crossing or other locations where it is necessary in order to avoid open trench construction. b. As protection for carrier lines from external loads or shock either during or after construction of a road. c. For jacked or bored installations of coated carrier lines unless assurance is provided to the county that there will be no damage to the protective coating.	Consistent. See 6(C)(1)
	(3) Within the road right of way, where practicable, casing pipes shall extend beyond the toe of fill slopes, back of roadway ditch, or outside of curb.	Inconclusive. As the final design of the Project is not complete, the exact location of components. Through approved plans, the Applicant would show compliance with all applicable design requirements.
	(4) Other than for necessary vents and/or drains, casing pipes shall be sealed at both ends.	Inconclusive. As the final design of the Project is not complete, the exact location of components. Through approved plans, the Applicant would show compliance with all applicable design requirements.
	(5) Casing pipes shall be designed to support the load of the road and superimposed loads thereon and, as a minimum, shall equal the structural requirements for road drainage facilities. Casings shall be composed of materials of sufficient durability to withstand conditions to which they may normally be exposed.	Inconclusive. As the final design of the Project is not complete, the exact location of components. Through approved plans, the Applicant would show compliance with all applicable design requirements.



Policy	Objective/Guideline	Consistency Evaluation
F. Underground Utilities-Installation	Installations shall ensure safety of traffic and preservation of the roadway structure, and required construction shall, unless otherwise provided in the approved permit, be in accordance with the following controls:	Consistent. The Applicant and its contractors would comply with applicable federal, state and local health and safety standards, including. For more information see Section 4.2.2.3, Safety Standards Compliance. Areas that would be temporarily disturbed during construction activities would be restored and resurfaced to pre-construction conditions.
Section 8: Underground Utilities - One Call System		
N/A	Utility facilities shall be located and identified in accordance with Title 19 RCW, Chapter 19.122 in its entirety. (Washington State One Call System).	Consistent. The intent of RCW 19.122.010 is to "protect public health and safety and prevent disruption of vital utility services" through damage prevention. The proposed project corridor is in areas of existing ROW and developed urban areas and placed underground. The in-river corridor was selected to minimize conflicts with sensitive aquatic communities. Based on the Applicant's direct experience with the installation and operation of underwater and underground HVDC cable systems, the Applicant believes that construction and operation of the Project within the proposed corridor can be accomplished with minor and predominately temporary impacts.
Section 10: Aesthetic/Scenic Considerations		
A.	Utility installations shall be designed and constructed to minimize the adverse affect on existing roadside manmade or natural amenities. Special efforts shall be taken to minimize any potential negative impact on areas of scenic beauty (i.e., scenic strips, viewpoints, rest areas, recreation area, public parks or historic sites, etc.).	Consistent. Most known cultural resources have been avoided through project design. The Project would inherently avoid impacts to areas of scenic beauty as it is a buried cable in existing topography of previously disturbed locations.

Policy	Objective/Guideline	Consistency Evaluation
C.	If the utility intends to use herbicide to control or kill weeds and brush within the Right of Way, the county must grant prior approval and provide guidelines to the utility. The county may limit or restrict the types, amounts, and timing of applications if a significant negative impact on the aesthetics of the area is anticipated, provided such limitations or restrictions are not in conflict with State law governing utility right-of-way maintenance.	Consistent. Prior to construction and every fall season during fall operation, the Applicant or its contractor would consult with the appropriate county weed authority on timing, method, and application rates for each identified weed species of concern, to allow for adaptive weed management given changes in weed control effectiveness from noxious weed species tolerance to herbicide treatment over time. If chemical control is used, the applicant would ensure actions would be conducted by specialists that must possess a Commercial or Public Pesticide Applicator License, or possess an Immediately Supervised Pesticide Trainee License and be supervised by a licensed applicator.
D.	Refuse and debris resulting from the installation or maintenance of the utility facilities shall be promptly removed once work is completed.	Consistent. Construction of the Project would generate a small amount of non-hazardous waste. Solid waste generated during construction is anticipated to include scrap metal (e.g., wire and rebar scraps), wood, concrete, concrete washout, and other debris. Materials would be hauled to appropriate disposal sites. There would be no refuse and debris during operation as maintenance is not required.
Section 11: Installations On Roadway Bridges And Structures		
Attachment of utility lines to a roadway structure (including bridges) may be allowed where such attachment conforms to sound engineering considerations for preserving the roadway structure and its safe operation, maintenance and appearance. The attachment shall be in accordance with the following:		
A.	Attachment of a utility shall not be considered unless the structure in question is of a design that is adequate to support the additional load and can accommodate the utility facility without compromise of highway features, including reasonable ease of maintenance.	Consistent. The Project is primarily underground and in public ROW and does not propose attachment of a utility to a structure.
B.	Manholes and other utility access panels should be avoided within the roadway portion of the structure.	Consistent. The Project is primarily underground and in public ROW and does not propose work within the roadway.
C.	Attachment on a structure of a pipeline carrying a hazardous transmittant shall be avoided where practicable.	Consistent. The Project is primarily underground and in public ROW and does not propose attachment of a utility to a structure carrying hazardous transmittants.
D.	The utility attachment shall not reduce the clearance of a structure where such clearance is critical. Attachment to the outside of a structure should be avoided where there are reasonable alternative.	Consistent. See response to Section 11(A).
E.	Utility mountings shall be of a type, which shall not create noise resulting from vibration.	Consistent. The Project is primarily underground and in public ROW and would not require utility mountings.



Policy	Objective/Guideline	Consistency Evaluation
F.	The hole created in a structure abutment shall be sleeved, shall be of the minimum size necessary to accommodate the utility line, and shall be sealed to prevent any leakage of water or backfill material.	Consistent. See response to Section 11(A).
G.	The utility line back of the abutment shall curve or angle out to align outside the roadbed area in as short a distance as is operationally practicable.	Consistent. The roadbed would be avoided as the Project is proposed for construction and operation in areas of existing road ROW for the underground HVAC and HVDC transmission lines.
H.	Communication and electrical power line attachments shall be suitably insulated, grounded, and preferably carried in protective conduit or pipe from point of exit from the ground to re-entry. Carrier pipe and casing pipe shall be properly isolated from electric power line attachments.	Consistent. The underground cable would feature cross-linked polyethylene (XLPE) dielectric insulation cable design.
Section 12: Miscellaneous Provisions		
A. Preservation, restoration and cleanup	(1) The size of disturbed area necessary to install a utility shall be kept to a minimum.	Consistent. The Applicant has previous experience with the installation and operation of underground HVDC cable systems. The disturbed area is the minimum necessary for the required cables – limited to the portion of the HVDC transmission cables placed on land in road ROWs along SR-14, Ash Lake Road, and Fort Cascades Drive, where the estimated disturbance is 9.85 acres. The total volume of material excavated will depend on the final design(s) of the facilities. The trench for the underground HVDC transmission cables would be approximately 3 feet wide by 4.5 feet deep. Within the trench, a 3-foot-wide concrete casing would be placed. The transmission cables would be placed in the casing in individual conduits spaced approximately 20 inches apart; two 8-inch-diameter conduits containing 5-inch-diameter conductor cables (one positive and one negative) and one 2-inch-diameter conduit containing a 1-inch-diameter fiber optic cable for communication. HDD would be used to transition the in-river cables to land. To cross highways, railroads, or sensitive areas, the transmission cable would be placed with HDD or similar trenchless technology, such as HAB. Once constructed, the disturbance area would be returned to previous condition or better.



Policy	Objective/Guideline	Consistency Evaluation
	(2) Restoration methods shall be in accordance with the specifications of the county and/or special provisions of the franchise, permit, or agreement.	Consistent. Temporarily disturbed areas would be restored and revegetated following construction. Areas actively undergoing restoration with exposed soils would be sprayed with water to help control and prevent wind erosion. Excavated soils would be stockpiled by soil horizon to aid in replacing in the proper order. Topsoil would be added to the surface last in order to prevent mixing the subsoil and the topsoil in order to encourage and maintain productivity. Final grading of temporary construction areas would incorporate contours to manage stormwater runoff and minimize related erosion and sedimentation. Restoration methods outside of the standard requirements are expected to be provided by the appropriate permitting authority during approval.
	(3) Unsatisfactory restoration work shall be promptly corrected by the utility. If necessary, unsatisfactory restoration work may be corrected by the county and billed to the utility.	Consistent. Complete restoration of disturbed vegetation, including a post-construction maintenance period to assure the restoration is successful is anticipated as part of the Project.



Policy	Objective/Guideline	Consistency Evaluation
B. Traffic control and public safety	(1) Traffic controls, including detours for all utility work, shall conform to the currently applicable "Manual on Uniform Traffic Control Devices for Streets and Highway."	Consistent. Traffic Control Plans would be developed for work adjacent to active roadways and/or that may require road closure., Traffic Control Plans would be developed to comply with the applicable Manual on Uniform Traffic Control Devices for Streets and Highway.
	(2) All construction and maintenance operations shall be planned to keep interference with traffic to a minimum. On heavily traveled roads, construction operations interfering with traffic should not be scheduled during periods of peak traffic flow. Work shall be planned so that closure of intersecting streets, road approaches, or other access points is held to a minimum.	Consistent. Traffic Control Plans would be developed for work adjacent to active roadways and/or that may require road closure. During operation, the HVDC transmission cable would not impair traffic flow or safety because it would be buried, and no maintenance is required.
	(3) Adequate provision shall be made to safeguard any open excavation, and shall include barricades, lights, flaggers, or other protective devices as may be necessary.	Consistent. Traffic Control Plans would be developed for work adjacent to active roadways and/or that may require road closure. Traffic Control Plans would identify appropriate measures necessary for safety.
	(4) The storage of materials on roadways shall not be allowed, and parking of vehicles on roadways shall be kept to a minimum.	Consistent. Materials would not be stored on through roadways. Third-party contractors would be responsible for arrangements for additional areas that may be required for temporary laydown or staging of materials or equipment during construction; these areas would be secured in accordance with all local and municipal regulations and permits.
	(5) Above ground structures less than 60" in height shall not be placed within 50' of any intersection without permanent markers securely placed at the location of the structure that exceeds this height requirement.	Consistent. There are no above ground structures proposed within Skamania County.

F-2 Large Woodland (NSA General Management Area)

Skamania County adopts the Columbia River NSA regulations in Title 22 of the SCC. The proposed HVDC Transmission Cable meets the definition of a use consistent with “Utility Facility,” defined in SCC 22.04.010 as, “any structure which provides for the transmission or distribution of water, sewer, stormwater, fuel, electricity or communications.”

A portion of the HVDC transmission cable and the Temporary HDD Area is proposed within the GMA of the Columbia River NSA, in the “Large woodland (F-2)” land use setting. Criteria for development of a Utility Facility in the F-2 zone is in SCC 22.14.040, *Large woodland (F-2) zone*. Proposed underground utility facility uses that meet the criteria of SCC 22.10.050(K)(1) are permitted through an , *Administrative Review process*. The Administrative Review Process confirms the Project’s consistency with the substantive provisions of Skamania County Code (SCC 21.70.020(A) and (B)).

Relevant guidelines for underground utilities in the F-2 General Management Area are in the *Management Plan for the Columbia River Gorge National Scenic Area (2020)*. Analysis of the Project’s consistency with the relevant goals and policies of the *Management Plan for the Columbia River Gorge National Scenic Area* are in Table 4-10.



Table 4-10. Columbia River Gorge National Scenic Area Management Plan Consistency Review

Goal	Objective/Policy/Guideline	Consistency Evaluation
Part I, Chapter 1: Scenic Provisions, Overall Scenic Provisions		
Goal: Protect and enhance the scenic resources of the National Scenic Area.	Policy 5: New development shall retain existing landforms and strive to fit into the existing topography to the maximum extent feasible.	Consistent. The scenic resources chapter includes guidelines that only regulate uses that will be seen from key viewing areas. The portion of the Project that is within the NSA is subterranean and scenic provisions are not applicable. Applicability aside, the Project would inherently comply as it would protect scenic resources by avoidance and retain existing landforms by placing the buried cable in existing topography of previously disturbed locations. For more information on the existing topographical environment, see Section 3.1: Earth.
Part I, Chapter 2: Cultural Resources		
Goal 1: Protect and enhance cultural resources.	Objective: Survey all lands in the GMA for cultural resources as soon as funds are available. The Gorge Commission shall facilitate a multiparty effort to seek funds for such a survey. The Parties should include Indian tribal and local governments and state and federal agencies. The first phase of the inventory should consist of a Native American oral history program.	Consistent. Most known resources have been avoided through project design. The Applicant will develop a project-specific monitoring and inadvertent discovery plan, which will be implemented during construction. Archaeological and Tribal monitoring will be performed during project construction to avoid and/or minimize impacts to cultural resources. For more information, including survey methods, see Section 4.3.5: Historic and Cultural Resources.

Goal	Objective/Policy/Guideline	Consistency Evaluation
Goal 2: Ensure that proposed uses do not have an adverse effect on significant cultural resources.		Consistent. The project, considering mitigation, is designed to avoid significant impacts on historic, cultural, and archaeological resources identified within the analysis area through placement in previously disturbed areas. While the inventory area is within areas that are considered to have high risk for encountering precontact archaeological materials, due to prior extensive development from road construction, commercial and residential development, agriculture, construction of hydropower facilities, and fill deposition, a moderate to low risk for encountering such archaeological materials within the inventory area is anticipated. Evaluations of NRHP eligibility and preliminary project effects are on-going as of June 6, 2025. The USACE will consult with the NHPA Section 106 parties regarding its determinations of eligibility and project effects, which will be provided to WA EFSEC in the future. For more information, see Section 4.3.5: Historic and Cultural Resources.
Part I, Chapter 3: Natural Resources		
Wildlife Habitat, Goal 1: Ensure that new uses do not adversely affect Priority Habitats or sensitive wildlife sites.	Policy 12. Rehabilitation or enhancement shall be required to offset unavoidable impacts to wildlife habitat that result from new uses.	Consistent. The Applicant has minimized effects to habitat and vegetation associated with on-land work by predominantly locating cables in paved areas, gravel roads, road shoulders, and upland areas previously cleared. To cross highways, railroads, or sensitive areas, the transmission line would be placed with HDD. The portion of the proposal that is in the NSA in Skamania County is located along paved roadways with disturbed ROW. Several federal and state threatened and endangered species were listed as potentially occurring in the region, but do not occur in the Project vicinity nor is suitable habitat present in the corridor; these species are listed in Table 3-4 of the Habitat, Fish and Wildlife Report.



Goal	Objective/Policy/Guideline	Consistency Evaluation
Rare Plants, Goal 1: Ensure that new uses do not adversely affect rare plant species and ecosystems.	Objective 1. Use regulations to avoid adverse effects of development and land use within and near rare plant species and ecosystems.	Consistent. Habitats within the Project corridor were mapped and verified in field surveys. The survey area, which is primarily within existing roadway ROW, was almost entirely void of vegetation except for sparse ruderal plant species growing on the road shoulder. The study area that extends outside of the road ROW, which includes the land to water transition site, contained vegetation that includes developed open space, mixed forest, woody wetland, and grassland herbaceous and barren land (rock, sand, clay). Special status plant surveys were conducted in May and June 2024, concurrently with the habitat verification and mapping surveys. No special status plant species were observed during these surveys within the Project corridor in areas where ground disturbance from Project construction would occur.
Rare Plants, Goal 3: Enhance the natural habitat of rare plant species.		Consistent. Since there were no special status species observed, enhancement is not proposed. Consistent. See response to Goal 1. If rare plant species are discovered, the Gorge Commission will be notified for updates.
Part II, Chapter 2: Forest Land		
Forest Land, Goal 1: Protect and enhance lands that are used for or suitable for the production of forest products.	Guideline 2: The following uses may be allowed on lands designated Commercial Forest Land or Large or Small Woodland, subject to compliance with the guidelines for the protection of scenic, cultural, natural, and recreation resources and the "Approval Criteria for Specified Review Uses" in this chapter. A. Construction, reconstruction, or modification of roads, utility facilities, and railroads necessary for public service upon a showing that: (1) there is no practicable alternative location with less adverse effect on agricultural and forest lands and on scenic, cultural, natural and recreation resources and; (2) the size is the minimum necessary to provide the service.	Consistent. The placement of the HVDC transmission cables in the road right-of-way is the least adverse option. Any other option outside of ROW could have been on forest or agricultural lands. Once constructed, the HVDC transmission cables would be underground and not interfere with any above-ground land uses, placement in the road ROW is still the alternative with the least adverse effect on neighboring agricultural land.

Goal	Objective/Policy/Guideline	Consistency Evaluation
Part II, Chapter 7: General Policies and Guidelines		
Standard for Application 1: Complete Application Required	Any proposed use, development or structure shall be reviewed according to the standards in effect on the date an applicant submitted a complete land use application to the reviewing agency. A complete application is one that the reviewing agency determines meets the Management Plan's requirements for: (1) a complete application form, (2) a complete site plan, and (3) all applicable information specified in the parts of the Management Plan titled Resource Protection and Enhancement, Land Use Designations, and Indian Tribal Treaty Rights and Consultation. Incomplete applications shall not be reviewed.	Consistent. In addition to this application and supporting documentation, a completed application form and site plan will be provided as part of the materials for compliance. No other information required was identified in the Resource Protection and Enhancement, Land Use Designations, and Indian Tribal Treaty Rights and Consultation sections of the Management Plan.



Shoreline Master Program

Skamania County codifies the Shoreline Master Program in Chapter 20.04 of the SCC. The proposed HVDC transmission cable meets the definition of a use consistent with “Utilities,” defined in Chapter 7 of the SMP as, “services and facilities that produce, convey, store, process or dispose of electric power, oil, gas, water, stormwater, sewage, waste, communications, and similar.”

The HVDC transmission cable spans through the Natural and High Intensity Shoreline Environments and would be subject to the following provisions: SMP 4.2.4 *Shoreline Environment Designation Provisions for Natural Environment*; SMP 4.2.7, *Shoreline Environment Designation Provisions for High Intensity Environment*; SMP 5.2.13, and *Shoreline Use Regulations for Utilities Policies and Regulations*. Compliance with these requirements in the Natural Shoreline Environment would be demonstrated through a Shoreline Conditional Use Permit and in the High Intensity Shoreline Environment, a Shoreline Substantial Development Permit process administered by EFSEC in consultation with the County.

The proposed temporary HDD area meets the definition of a use consistent with a “Shoreline Modification,” defined in Chapter 7 of the SMP as, “those actions that modify the physical configuration or qualities of the shoreline area... such as clearing, grading, or application of chemicals.” The temporary HDD area is in the High Intensity Shoreline Environment and would be subject to the following provisions: SMP 4.2.7, *Shoreline Environment Designation Provisions for High Intensity Environment*; and SMP 6.3.2, *Shoreline Modification Provisions for Fills*. Fill upland of the OHWM is permitted in the High Intensity Environment (Table 6-1). Compliance with these requirements would be demonstrated through the Shoreline Substantial Development Permit process.

The Applicant must comply with the applicable shoreline jurisdiction requirements of the *Skamania County Shoreline Master Program (2020)*. Analysis of the Project’s consistency with the relevant goals and policies of the *Skamania County Shoreline Master Program* are in Table 4-11.

Table 4-11. Skamania County Shoreline Master Program Consistency Review

Goal	Objective/Policy/Guideline	Consistency Evaluation
4.2.4 Natural Environment, Policy 2	The following new uses should not be allowed in the Natural environment: Commercial uses. a. Industrial uses. b. Non-water-oriented recreation. c. Roads, utility corridors, and parking areas that can be located outside of Natural designated shorelines.	Consistent. The Project was selected to be constructed in areas of existing road ROW and developed urban areas and placed underground. The alignment was sited to avoid or minimize disturbing wetland and waters of the state/U.S., shoreline/riparian areas, woody vegetation, and areas with known cultural resources (inclusive of historical and archaeological resources and traditional cultural places and properties). Based on the Applicant's direct experience with the installation and operation of underwater and underground HVDC cable systems, the Applicant believes that construction and operation of the Project within the proposed corridor can be accomplished with minor and predominately temporary impacts. Moreover, siting the Project within the proposed corridor would produce fewer impacts and less risk to the natural environment, is more feasible than a range of other possible alternatives intended to materially increase the availability of non-fossil fuel energy to load centers, and meets state and regional renewable energy goals.
4.2.7 High Intensity Environment Policies	1. In regulating uses in the high-intensity environment, priority should be given to water-dependent uses. Second priority should be given to water-related, and water-enjoyment uses. Non-water-oriented uses should not be allowed except as part of mixed-use developments. Non-water-oriented uses may also be allowed in limited situations where they do not conflict with or limit opportunities for water-oriented uses or on sites where there is no direct access to the shoreline.	Consistent. The Project is a non-water-oriented use but was sited to minimize use conflicts and potential impacts to the aquatic communities such as avoiding near shore/shallow habitats, sensitive fish and benthic habitat, inundated historic shorelines with cultural resources, and areas of known sediment contamination. When construction equipment and crews are present, the shoreline would be temporarily inaccessible. During operation, the Project would not conflict or limit opportunities for water-oriented uses and would not interfere with access to the shoreline.



Goal	Objective/Policy/Guideline	Consistency Evaluation
	2. Policies and regulations should assure no net loss of shoreline ecological functions as a result of new development. Where applicable, new development shall include environmental cleanup and restoration of the shoreline to comply with any relevant state and federal law.	Consistent. Based on the Applicant's direct experience with the installation and operation of underwater and underground HVDC cable systems, the Applicant believes that construction and operation of the Project within the proposed corridor can be accomplished with minor and predominately temporary impacts.
	6. Aesthetic objectives should be implemented through development standards, and maintenance of natural vegetative buffers.	Consistent. The survey area, which is primarily within existing roadway ROW, was almost entirely void of vegetation except for sparse ruderal plant species growing on the road shoulder. Disturbed areas would be restored and revegetated to pre-construction conditions or better (i.e., replanting with native vegetation).
5.3.13 Utilities, Policies, General	1. Design and locate utility structures to minimize disruption of public access to the shoreline, obstruction of visual access to the water, and loss of shoreline ecological function.	Consistent. The proposed locations of the utility corridor would not interfere with other land uses or the street system as they would be underground. The requirement for separation from nearby land uses would not be an issue because there is no above-ground physical structure that would require separation for compatibility.
	2. Design and location of utility facilities should provide for no net loss of shoreline ecological functions.	Consistent. The proposal would not interfere with the needs of river-dependent and river-related uses. Once constructed, the Facility will be underground, and ecological sensitivity would be supported.
	3. Utility installation or maintenance projects on shorelines should restore areas to pre-project configuration, replant the shoreline with native species, and provide maintenance care until the newly planted vegetation is established.	Consistent. Areas that would be temporarily disturbed during construction activities would be restored and revegetated to pre-construction conditions or better (i.e., replanting with native vegetation).
5.3.13 Utilities, Policies, Transmission Facilities	2. Ensure new utilities use existing transportation and utility rights-of-way, easements, or existing cleared areas to the greatest extent feasible.	Consistent. The Project is primarily underground and in public ROW, which is typically a cleared area.

Goal	Objective/Policy/Guideline	Consistency Evaluation
Regulations – General	1. Utility facilities shall meet the setback requirements of Table 5-1.	Consistent. Utilities in the High Intensity Environment have a setback of 0-ft. Utilities in the Natural Environment have a 150-ft setback requirement. See Figure 4-2, which shows a portion of the project within the 200-ft shoreline environment buffer of the Natural Environment. There is a potential that portions of the Project could be within the 150ft setback required for utility facilities in the natural environment. There would be one HDD entry area near Stevenson above the Bonneville Lock and Dam and one HDD entry area near North Bonneville below the Bonneville Lock and Dam. However, under policy Transmission Facilities can be sited within shoreline if they can result in no net loss of shoreline ecological functions. The Project would be established underneath the shoreline via HDD. The shoreline setback and depth would avoid disturbance of the bed or banks of the Columbia River. The bore pits would be set back from the shoreline. As such, a net loss of shoreline ecological functions is not anticipated because permanent impacts would be avoided.
	2. Upon completion of utility installation/maintenance projects on shorelines or banks shall, at a minimum, be restored to pre-project configuration, replanted, and provided with maintenance care until the newly planted vegetation is fully established. Plantings shall be native species and/or be similar to vegetation in the surrounding area.	Consistent. Areas that would be disturbed during construction activities would be restored and revegetated to pre-construction conditions or better (i.e., replanting them with native vegetation). The Project would not measurably alter shoreline habitat.
	3. Existing utilities located in shoreline areas shall not be a sole justification for more intense development.	Consistent. The Project would be underground in the existing right-of-way and would not intensify development.
Transmission Facilities	1. Non-water-oriented utility transmission facilities, such as power lines, cables, and pipelines, shall be located outside shoreline jurisdiction whenever feasible. When located within shoreline jurisdiction, utility facilities shall result in no net loss of shoreline ecological functions.	Consistent. Areas that would be disturbed during construction activities would be restored and revegetated to pre-construction conditions or better (i.e., replanting them with native vegetation).



Goal	Objective/Policy/Guideline	Consistency Evaluation
	2. Utility transmission facilities shall be located in existing rights-of-way whenever possible, cross shoreline jurisdiction by the most direct route feasible, and generally be located perpendicular to the shoreline, unless an alternative route would result in less impact on shoreline ecological functions;	Consistent. In Skamania County, the Project is underground and in public ROW. The Applicant has minimized effects to habitat and vegetation associated with on-land work by predominantly locating cables in paved areas, gravel roads, road shoulders, and upland areas previously cleared.
	3. Where environmental impacts are less significant, utility transmission lines, pipes, and wires shall be bored under a river, stream, or CMZ, or permanently affixed to a bridge or other existing above-ground structure, where feasible;	Consistent. To cross highways, railroads, or sensitive areas, the transmission line would be placed with HDD.

4.3.1.2 City of Stevenson

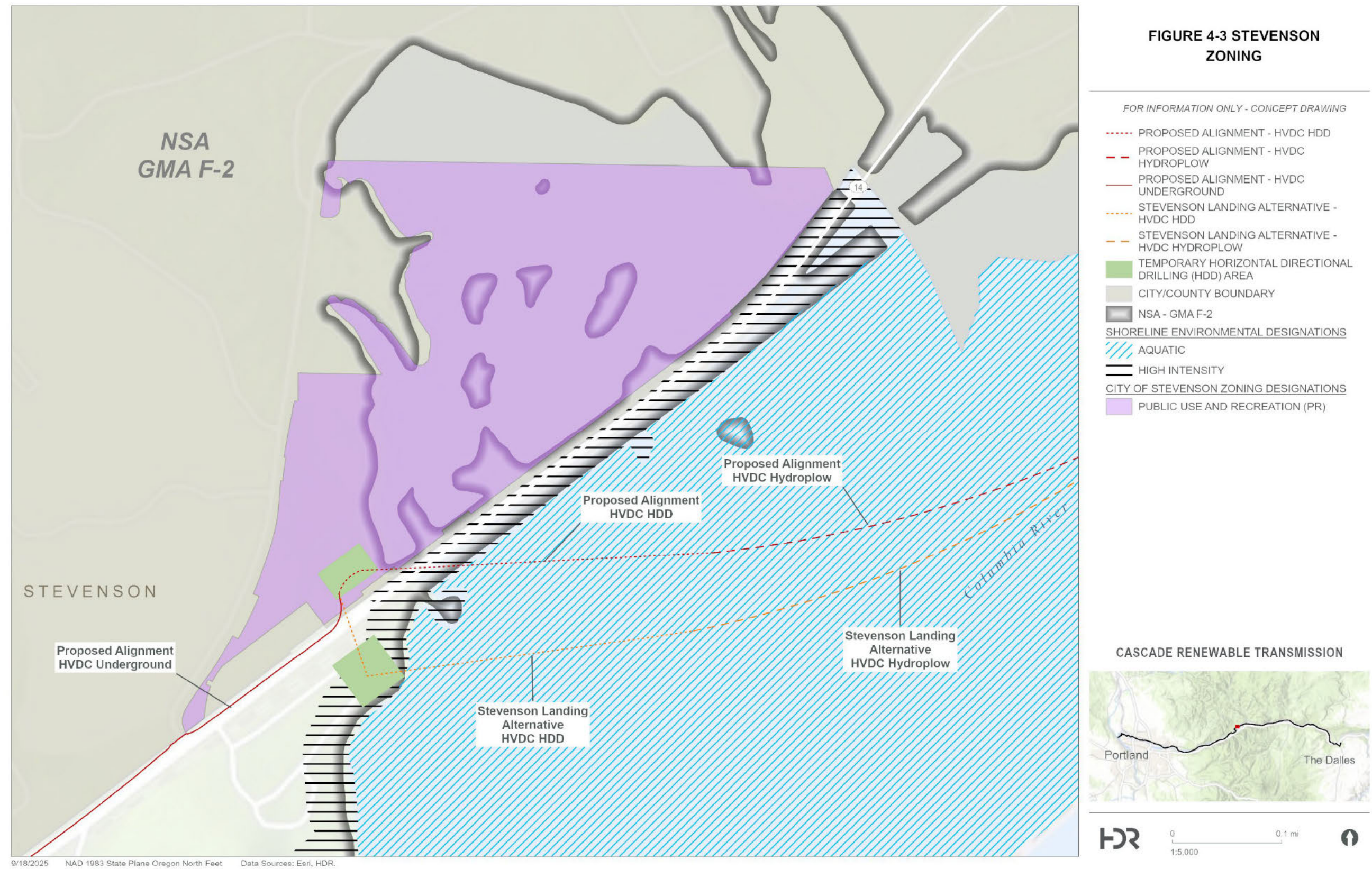
The components of the Project within the City of Stevenson include a portion of the HVDC transmission cable primarily in Stevenson's road ROW and one temporary HDD area on a private parcel.

Table 4-12 shows a breakdown of the Project components within the City of Stevenson, the zone, and proposed land use.

Table 4-12. Project Components in the City of Stevenson

Facility Component	Description	Zone	Proposed Land Use
HVDC Transmission Cable	Approximately 0.4 miles	Public Use and Recreation (PR)	Utility Facility
Temporary HDD Area	Approximately 1.26 acres to establish HDD drill entry pits and stage equipment to support HVDC cables transitioning from land-to-water.		

Figure 4-3. Stevenson Zoning





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Land Use Plans

Applicable land use plans include the *City of Stevenson Comprehensive Plan (2022)*. Analysis of the Project's consistency with the relevant goals and policies of the *City of Stevenson Comprehensive Plan* are in Table 4-13.

Table 4-13. City of Stevenson Comprehensive Plan Consistency Review

Goal/Objective	Policy/Guideline	Consistency Evaluation
Goal/Objective 8.22: Reduce visual blights and hazards associated with aboveground utility lines.	8.22-2: Require the burial of new utility lines.	Consistent. In the City of Stevenson, the Project is a new Utility Facility use that would be buried.

Public Use and Recreation (PR)

A portion of the HVDC transmission cable and the temporary HDD area are proposed within the PR zoning designation. The public use and recreation District (PR) is intended to designate a central city area to accommodate existing uses, to minimize possible conflicts of use and to maintain and conserve the environmental qualities of the Rock Creek Pond area (SMC 17.35.020). Both of these Facility components meet the definition of a use consistent with Utility facility as an unstaffed location designed for transmission of electrical power.

Any staffed or unstaffed location designed for the transmission, distribution, collection, treatment, and/or routing of water, wastewater, gas, electrical power, wired telecommunications or similar commodities or wastes.

This category generally includes substations, transfer stations, pump stations, lift stations, booster pumps, reservoirs, switchboards, and storage facilities. This category generally excludes a wireless telecommunications facility, storm water ponds, overhead elements and wires, underground cables, pipelines, vaults and the like.

The intent of the exclusions in the Utility facility definition is to prohibit unnecessary development in the PR zone. Since the portions of the Project in the PR zone are either temporary (HDD area) or for the purposes of transmitting electrical power (HVDC transmission cable), the use of Utility Facility is the most attributable land use definition for regulating the portion of the Project in the PR zone.

Utility facilities are a permitted use in the PR zone (Table 17.35.040-1 Public Districts Use Table), subject to all the applicable provisions of 17.35.040(A)(1). Utility facilities must also comply with other related criteria, including SMC 17.13.040 - *Transportation, communication, information, and utility uses* and SMC 17.35.100 - *Public districts landscaping(A)*. Any grading, excavation and earthwork requires a grading permit from the City of Stevenson Planning Department.

Table 4-14. City of Stevenson Municipal Code Consistency Review

Ordinance	Policy/Guideline	Consistency Evaluation
SMC 17.35.100(A) - Public districts landscaping – PR Landscaping	(1) Minimum landscaping shall include the area between the building line and the street right-of-way line excluding drives, parking areas and pathways.	Consistent. The on land portion of the Project would be trenched and placed in road ROWs, areas between building lines and ROW would be limited to the existing Columbia Gorge Discovery Center and Museum. Vegetation that occurs within this area is primarily ruderal species (i.e., species that colonize or thrive in disturbed areas) and it would be restored and revegetated to pre-construction conditions or better (i.e., replanting them with native vegetation) to comply with landscaping requirements.
	(2) New trees, shrubs, groundcover and other materials shall be compatible with other nearby landscaping.	Consistent. Areas of disturbance would be restored and revegetated to pre-construction conditions or better (i.e., replanting them with native vegetation) to comply with landscaping requirements and compatibility implemented based the approved planting plan.
	(3) New plantings shall be of such size and density that they are initially effective.	Consistent. Generally, the timing of the plantings will occur in the late fall and winter seasons to increase survivability. Temporary erosion prevention and sediment management practices will remain in place until seeding has become established.

4.3.1.3 Impacts

Impacts on land use would occur if the Project were inconsistent with applicable plans and policies and the zoning codes that implement them. Each of the proposed uses would be allowable through established permit compliance pathways, as demonstrated in Table 4-15.

Table 4-15. Proposal Requirements and Compliance Pathway

Proposal	Compliance Pathway
Skamania County – Planning and Development Department	
Public facilities and utilities (Rural I, designation 10) in the Industrial (MG) zoning designation	Administrative Review
Grading (temporary) in the MG zone	Grading Permit
Skamania County – Public Works Department	
Utility installation in Skamania County Road right-of-way	ROW Permit and Resolution No. 2010-15 Approval from Skamania County Department of Public Works -.
NSA General Management Area in Skamania County	
Underground utility facilities in F-2 Large Woodland (NSA General Management Area)	Administrative Review
Skamania County Shoreline Master Program	
A non-water oriented utility/parallel transmission facility in the Natural Environment and High Intensity Environment	Shoreline Conditional Use Permit*
A non-water oriented utility/parallel transmission facility in the High Intensity Environment	Shoreline Substantial Development Permit*
Shoreline modification – fills upland of OHWM in the High Intensity Environment	Shoreline Substantial Development Permit*
City of Stevenson Planning Department	
Utility facility in the PR zone	Grading Permit

*Will submit all three as one Shoreline Master Use Permit for efficient Hearing Examiner process.

If a use is allowed outright, the jurisdiction has identified that the use is compatible with the zoning district and the comprehensive plan. The Project is a use allowed outright in each identified zoning



district, except in the Shoreline jurisdiction of Skamania County where it is allowed through approval of the Shoreline Conditional Use Permit and a Shoreline Substantial Development Permit.

A permitted use generally means that it is permissible and, if needed, can be conditioned to ensure the goals and objectives so the intent of the development code is satisfied. Through permit compliance, the Project would demonstrate consistency with existing and future land uses and impacts to land use are not anticipated.

4.3.1.4 Mitigation Measures

The Applicant would be required to comply with mitigation measures specified by code, conditions of approval imposed by the local jurisdiction and/or Applicant funds collected through voluntary agreements. Mitigation requiring specific design features or BMPs to avoid or further reduce temporary impacts would be developed during design and permitting prior to construction.

4.3.1.5 Land Use Consistency Determination

For every WA EFSEC project, the rules contemplate that the county issue a certificate of consistency that determines land use consistency.¹² A WA EFSEC project can use expedited review if WA EFSEC finds that the proposed site is “consistent and in compliance with city, county, or regional land use plans or zoning ordinances.”¹³

The relevant inquiry for WA EFSEC’s initial land use analysis under RCW 80.50.090(2) is “whether the pertinent local land use provisions prohibit the Cascade Renewable Transmission Project ‘expressly or by operation clearly, convincingly and unequivocally.’”¹⁴ If a proposed project “can be permitted either outright or conditionally, it is consistent and in compliance with the local land use provisions” for purposes of RCW 80.50.090(2).¹⁵ The Project can be permitted through the compliance pathway identified in Table 4-11.

The Applicant has provided a preliminary consistency evaluation for all substantive criteria. If a local jurisdiction believes that a proposed WA EFSEC project is consistent and in compliance with its land use plans and zoning ordinances, it may provide—and the applicant may enter—a “certificate from local authorities...attesting to the fact that the proposal is consistent and in compliance with land use plans and zoning ordinances” (“Certificate of Consistency”).¹⁶ The Certificate of Consistency provides prima facie proof of consistency and compliance with applicable land use plans and zoning

¹² WAC ch. 463-26.

¹³ RCW 80.50.075(1); *see also* RCW 80.50.090(2); WAC 463-26-050. Expedited processing also requires that WA EFSEC determines that the project’s environmental impact is not significant outright or as mitigated, under the State Environmental Policy Act. *See* RCW 43.21C.031. That analysis is outside the scope of this memorandum.

¹⁴ *In the Matter of Application No. 2017-01 of Tuusso Energy, LLC Columbia Solar Project*, Council Order Granting Expedited Processing (“Columbia Solar Order”), at ¶ 35 (Apr. 17, 2018) (quoting *In re TransMountain Pipeline*, Council Order 616, at 3) (internal quotations omitted); *see also In the Matter of Docket No. EF-210011, Scout Clean Energy, LLC, for Horse Heaven Wind Farm, LLC*, Council Order No. 883, Order Finding Proposed Site Consistent with Land Use Regulations, at 7 (May 17, 2022).

¹⁵ *Id.*

¹⁶ WAC 463-26-090.

ordinances, and the inquiry ends there.¹⁷ The Applicant is requesting that the County provide a Certificate of Consistency.

Absent a Certificate of Consistency, WA EFSEC issues its decision regarding consistency after reviewing the applicable land use plans and zoning ordinances. First, the applicant and local authorities are directed to “address compliance or noncompliance with land use plans or zoning ordinances.”¹⁸ WA EFSEC generally gives deference to the determinations of local authorities regarding compliance with local land use plans and zoning ordinances.¹⁹ Then, WA EFSEC determines “whether the proposed site is consistent and in compliance with land use plans and zoning ordinances pursuant to RCW 80.50.090(2).”²⁰

4.3.2 Light and Glare (WAC 463-60-362)(2)

WAC 463-60-362: (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.

4.3.2.1 Existing Environment

In the construction area on land, existing sources of light are limited to roadway lighting and light from automobile traffic.

4.3.2.2 Impacts

During operation, the Project would not cause light or glare impacts because it would be entirely underground or within the bed of the Columbia River and not emit light or glare.

During construction, if nighttime construction is required or authorized by the WSDOT, lighting would be required for safety. As such, work zone and construction lighting would follow the WSDOT design Manual M 22-01.23, Section 1040.06 (WSDOT 2024). The Applicant does not anticipate that construction lighting will create glare; however, would follow WSDOT approved measures to eliminate or lessen construction lighting glare, if needed.

4.3.2.3 Mitigation Measures

No significant light and glare impacts are anticipated from the Project; therefore, no mitigation measures are proposed other than measures taken to minimize lighting impacts during nighttime construction, if any.

¹⁷ *Id.*; See also *In the Matter of Docket No. EF-220212, Cypress Creek Renewables for High Top Solar, LLC and Ostrea Solar, LLC*, Council Order No. 884, Order Granting a Finding of Land Use Consistency, at 8 (Oct. 31, 2022).

¹⁸ WAC 463-26-100.

¹⁹ See e.g. *In the Matter of Docket No. EF-230001, Carriger Solar Project for Cypress Creek Renewables, LLC for Carriger Sollar, LLC, Applicant*, Council Order No. 889, Order Granting a Finding of Land Use Consistency, at 9 (Sept. 25, 2023) (using prior county decisions to determine that a Solar Energy Project is an allowed use in the zone); *In the Matter of Docket No. EF-170823, Tuusso Energy, LLC – Columbia Solar Project*, Council Order Granting Expedited Processing, at 14 (Apr. 17, 2018) (noting that the County’s interpretation was contrary to prior interpretation).

²⁰ WAC 463-26-110.

4.3.3 Aesthetics (WAC 463-60-362)(3)

WAC 463-60-362: (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).

4.3.3.1 Impact Analysis

Because the proposed HVDC cables would be either underground or within the Columbia River, there would be no visual impacts or alteration of the surrounding terrain during operation.

During construction, visual impacts would be temporary, resulting from construction activity and the presence of equipment and work crews. Visual impacts during construction would be evident primarily to local residents and travelers along SR 14, Ash Lake Road, Dam Access Road, and Fort Cascades Drive. Visual impacts that occur as a result of construction activities would be short term because cable installation, both on land and in water, is progressive, meaning it affects only a small area at any given time as it moves to the next area, so the aesthetics impact in any given location is temporary as construction equipment and crews would be continually moving.

Construction disturbance would be limited to the extent practicable in accordance with the Project's site certificate conditions. After construction is complete, disturbed areas would be restored to pre-project conditions.

4.3.3.2 Mitigation Measures

No mitigation measures are proposed, as there would be no visual impacts during Project operations.

4.3.4 Recreation (WAC 463-60-362)(4)

WAC 463-60-362: (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.

4.3.4.1 Existing Environment and impacts

Table 4-16 lists recreational sites near the Project. The primary activities in the vicinity of the Project include outdoor-based activities such as hiking, camping, birdwatching, fishing, swimming, boating, and windsurfing, either on shore or within the Columbia River. Water-dependent recreation areas are of high use around the Bonneville Lock and Dam. Additionally, cultural and historical experiences, community engagement and sports, and leisure opportunities are provided in the area.

For a direct loss of opportunity to occur, the proposed project would need to physically disturb the ground located within the affected recreational resource area. An indirect loss of opportunity could occur if 1) a recreational opportunity near the proposed Project would not be physically disturbed by construction activity but might need to be temporarily closed to public use in response to safety

concerns; or 2) if development of the Project were to so alter the environment of a recreational opportunity through indirect effects that it substantially adversely impacted the quality of the recreation experience at that site. Indirect loss of opportunity for safety concerns is unlikely to occur. Potential sources of indirect disturbance impact to important recreational opportunities include noise, traffic, and changes in visual quality associated with the proposed project.

Temporary impacts would occur to recreational users of the Pacific Crest Trail during construction along the section of SR 14 that the Pacific Crest Trail crosses; however, impacts would be temporary, as users would be transient. Temporary loss of recreational opportunities may occur on the Columbia River during cable installation if individuals choose to remain out of the river due to the hydroplow installation vessel's presence and the presence of temporary cofferdams during the in-water work windows. However, any recreational effects would be temporary, and individuals could choose to recreate upstream or downstream of the hydroplow location.

Table 4-16. Recreation sites within the Project area

Recreational site	Project feature that may create impacts	Impacts
Columbia Gorge Museum	Where the HVDC cables would transition from the Columbia River to land in the southwestern corner of Stevenson, WA, a temporary HDD area would be placed on the north side of SR 14 on Skamania County Parcel 02070100130100 owned by the Columbia Gorge Interpretive Center. The City of Stevenson zoning for this area is Public Use and Recreation. This location is approximately 0.025 miles (50 yards) from the Columbia Gorge Museum.	The temporary HDD work area would be located on museum property but would not affect public access to the museum or parking areas, so no impacts would occur.
Pacific Crest Trail	The Pacific Crest Trail crosses over the Columbia River on the Bridge of the Gods and then briefly enters the ROW of SR 14 within the area where HVDC cables would be installed.	Temporary impacts would occur during the short construction window along SR 14. Access for hikers across SR 14 during construction would be coordinated during construction to minimize impacts.
Trailheads on Hamilton Island	Several hiking trails intersect with Fort Cascades Drive, where underground HVDC cables would be installed in the ROW. At the southern end of Fort Cascades Drive there would be a temporary HDD area in the parking lot that provides access to a hiking trail and the Columbia River waterfront.	Temporary impacts would occur on Hamilton Island during the allowed in water work windows during the winter months. Access for hikers would be coordinated during construction to allow for safe access. There are other access areas to Hamilton Island trailheads, so impacts would be minimal.
The Columbia River	Two temporary cofferdams would be installed in the river, one near Rock Cove and one near the Hamilton Island Recreation Area. The hydroplow installation vessel would be transient through the river during in-water work windows.	The hydroplow installation vessel and cofferdams may temporarily displace recreational boaters, kayakers, and other recreational river uses. However, the in-water work would be conducted during the allowed in water work windows in the winter months, when recreational use of the river is very low.



4.3.4.2 Mitigation Measures

This Project would not significantly interfere with recreation in conjunction with the current land use. As applicable, the 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. Those measures would minimize impacts to recreational users; therefore, no mitigation measures specific to recreation are proposed.

4.3.5 Historic and Cultural Resources (WAC 463-60-362)(5)

WAC 463-60-362: (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.*

4.3.5.1 Existing Environment

[REDACTED]

[REDACTED]

[REDACTED]



[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

4.3.6 Agricultural Crops/Animals (WAC 463-60-362)(6)

WAC 463-60-362: (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.

Project construction and operation would not affect agricultural crops or agricultural animals. The portions of the proposal on land would not be on agricultural land as identified in Section 4.3.1. Because no impacts to agricultural crops/animals are expected, no mitigation measures are proposed.

4.4 Transportation (WAC 463-60-372)

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.

4.4.1 Existing Environment

4.4.1.1 Local transportation Infrastructure

Project traffic would come into the area via SR 14 from the west or from across the Bridge of the Gods from I-84 in Oregon.

The Project HVDC transmission cables would be brought on land near Stevenson via HDD and buried under the pavement of SR 14, Ash Lake Road, Dam Access Road, and Fort Cascades Drive near North Bonneville for approximately 7.6 miles. From Fort Cascades Drive, the HVDC transmission cables would be placed via HDD back into the Columbia River. The HDD work would occur during the in-water work window over the winter months.

The portion of the Project on SR 14 would occur between milepost 43 and 38.²¹ This stretch of the state route has three restrictions on vehicles: loads over 14 feet wide require pilot vehicles, trailers or loads over 125 feet in length are prohibited, and off of SR 14 the Bridge of the Gods, which crosses the Columbia River to Oregon, prohibits legal axle/gross weights above 80,000 pounds.²² Between mileposts 43 and 38, the pavement condition is mostly rated as fair.²³ In this context, fair means that the pavement shows wear, but the underlying structure is undamaged.

Approximately 1.8 miles of the Project is planned to occur on Ash Lake Road. Ash Lake road is a county road with low levels of activity, an overall pavement condition of poor, and has no weight restrictions.²⁴

Approximately 0.1 miles of the Project is planned to occur on Dam Access Road. Dam Access Road is a public road with low levels of activity, unknown pavement condition, and no weight restrictions.

Approximately 1.7 miles of the Project is planned to occur Fort Cascades Drive. Fort Cascades Drive is a public road with low levels of activity, unknown pavement condition, and no weight restrictions.

4.4.1.2 Vehicular Traffic Patterns/ Movement/Circulation of People and Goods

SR 14 between milepost 43 to 38 ranges from an average daily traffic (ADT) count of 7,560 to 4,524.²⁵ The measurements of ADT for the sections of SR 14 that would be affected are in Table 4-30. The percentage of the volume from trucks along this stretch has ranged from 7 to 12

²¹ WSDOT: <https://wsdot.com/Travel/Real-time/Map/>

²² WSDOT: <https://wsdot.com/travel/real-time/truck-restrictions/road/014/Stevenson/North%20Bonneville>

²³ WSDOT: <https://www.arcgis.com/home/item.html?id=f49a4724610548c693680fa745b0a44e>

²⁴ Personal Communication between Ruthann Richards and Tony Hegewald of the Skamania County Public Works via email on January 23, 2025

²⁵ WSDOT: <https://wsdot.public.ms2soft.com/tcds/tsearch.asp?loc=Wsdot&mod=TCDS>

percent between 2022 and 2024.²⁶ This low amount of truck traffic indicates that traffic is mostly commuter rather than freight.

Table 4-30. ADT Measurements Along SR 14

Traffic Count Location ID	Milepost	Year	Most Recent 2-Way ADT
CS09051	44.18	2023	7560
CS04735	43.09	2023	6440
CS04706	41.69	2023	7223
CS03652	41.55	2023	5909
CS06028	37.43	2023	4524

Users of SR 14 are mostly tourists for environmental recreational opportunities and wine orchards, remote residences, as well as commuters to Vancouver and other areas to the west. This section of SR 14 is also an important freight route and farm to market route providing service to many agricultural businesses located along the Columbia River Gorge.²⁷

Ash Lake Road has an ADT of approximately 60, according to the Skamania County office of Public Works. Ash Lake Road can serve as a bypass around SR 14 but also serves as a route to get to natural attractions and parks such as Crescent Lake and Table Mountain. It can also be used as route to move goods to or from the nearby North Bonneville Rock Quarry; however, it is mainly used for local traffic.

Dam Access Road and Fort Cascades Drive provide public access to the Hamilton Island Boat Ramp²⁸ and the Strawberry Island Trail loop²⁹. ADT measurements are not available for Dam Access Road or Fort Cascades Drive.

There is no multiuse transportation infrastructure on the affected routes.

²⁶ WSDOT: <https://wsdot.public.ms2soft.com/tcds/tsearch.asp?loc=Wsdot&mod=TCDS>

²⁷ WSDOT: <https://wsdot.wa.gov/sites/default/files/2021-10/CSS131-SR14-Washougal-US97JctMaryhill.pdf>

²⁸ USACE: <https://www.nwp.usace.army.mil/Missions/Recreation/Columbia-River/> (Click Washington Side)

²⁹ Friends of the Columbia Gorge: <https://gorgefriends.org/hike-the-gorge/strawberry-island-loop.html>



4.4.1.3 Waterborne, Rail, and Air Traffic

The Columbia River is a freight route for transporting goods such as grain, logs, cement, steel, and chemicals on cargo ships along with oil and other fuel on oil tankers and tug barges.³⁰

BNSF Rail and Union Pacific³¹ railways follow the path of the Columbia River adjacent to SR 14.

Nearby Airports³² include but are not limited to Columbia Gorge Regional/The Dalles Municipal Airport³³, Pearson Field,³⁴ and Grove Field Airport.³⁵ These airports are small and mostly support general aviation.

4.4.1.4 Parking

SR 14 and Ash Lake Road do not have dedicated parking areas; however, there are areas to pull off of SR 14 for scenic viewing. Fort Cascades Drive has a dedicated parking area at the end where visitors can access the trailhead.

4.4.1.5 Local Comprehensive Transportation Plans

The City of Stevenson Comprehensive Plan (2022) has a focus on the creation of multimodal infrastructure managing the transportation system “in a manner which contributes to community appearance and livability, recognizes and respects the characteristics of natural features, and minimizes the effects on abutting land uses.” In general, Stevenson plans to focus on “improving the function, management, and look of existing transportation options and increasing the nonautomotive aspects of the system.”

The Skamania County Regional Transportation Plan (2024) identifies SR 14 as an important conduit between all three counties that are part of the Southwest Washington Regional Transportation Council, the region’s Regional Transportation Planning Organization. Chapter 6 of this plan outlines suggested improvements and enhancements, while emphasizing the idea of maintenance and preservation. Maintenance is seen as a priority in Skamania County and involves “the day-to-day activities needed to keep the transportation system in good working order and keep the system safe, clean, reliable, and efficient” (Skamania County 2024c).

4.4.2 Impacts

4.4.2.1 Project Trip Generation

Traffic generated by Project construction would include workers commuting in personal vehicles, equipment being transported to temporary HDD areas, and equipment being transported for trenching (truck trips). HDD equipment would be transported to the temporary HDD areas using a

³⁰ Ecology: <https://apps.ecology.wa.gov/publications/documents/1708019.pdf>

³¹ BNSF: <https://www.bnsf.com/bnsf-resources/pdf/ship-with-bnsf/maps-and-shipping-locations/bnsf-network-map.pdf>

³² WSDOT: <https://wsdot.wa.gov/sites/default/files/2021-10/aviation-washington-aviation-system-plan-summary.pdf>

³³ WSDOT: <https://wsdot.wa.gov/travel/aviation/airports-list/columbia-gorge-regional-dalles-municipal>

³⁴ City of Vancouver: <https://www.cityofvancouver.us/pearson-field-airport/>

³⁵ WSDOT: <https://wsdot.wa.gov/travel/aviation/airports-list/grove-field>

flatbed truck, a water truck would also be on site. Equipment transported for trenching in roadways would include a backhoe, a utility truck, a dump truck for spoilage haul, and a concrete truck.

Construction activities (Section 2.15.1) are estimated to generate 898 heavy truck trips in total. Including worker commutes, this results in a range of 76.6 to 33.3 vehicles added to indicated routes on average per day, depending on the tasks identified in Table 27. Increased traffic would increase the likelihood of traffic hazards such as vehicular accidents and congestion.

Table 4-31 presents the number of truck trips and commute trips expected during construction. The anticipated numbers of workers are based on expected employment needs for each task of the project. The anticipated worker commute trips were calculated by assuming that employees will commute at a rate of 1.25 workers per vehicle per roundtrip. This was multiplied by two to get the anticipated worker commute trips per day. Average heavy truck trips per day and anticipated worker commutes per day were summed to find the total calculated trips per day for each row.

Table 4-31. Construction Traffic Volume

Tasks in Washington	Approximate Length of Time	Anticipate Heavy Truck Trips	Average Truck Trips per Day	Anticipated Number of Workers	Anticipated Worker Commute Trips per Day	Total Calculated Trips per Day
HDD Work	10 weeks (not continuous)	134 trips (67 round trips)	2.3	20	32	34.3
Civil Work (trenching, conduit install, and restoration)	5.75 months (not continuous)	734 trips (367 round trips)	6.2	44	70.4	76.6
Land Cable Installation	5 months (not continuous)	20 trips (10 round trips)	0.2	26	41.6	41.8

Waste products transported from the construction site would include trenching spoils and HDD drilling mud solids, which would be hauled off by contractors and disposed of at an appropriate landfill facility. The specific routes for waste products transport would be determined by the construction contractor(s).

The movement of goods and people along affected route sections would be slowed during an approximate 5-month timeframe when a short section (approximately 600 feet) of a through lane of each of the roadways will experience a rolling closure during trenching, conduit placement, and restoration occurring in sequence as described in Section 2.15.1.

The Applicant will consult with WSDOT and Skamania County prior to construction to develop a construction Traffic Management Plan designed to meet state and local requirements to reduce and manage construction related transportation impacts. During the restoration, the Project team will follow Skamania County and WSDOT standards for restoration.

Project related traffic would be at its highest during trenching and would create an approximate 1 to 2 percent increase in traffic on SR 14. Ash Lake Road has low levels of traffic and the trenching along Ash Lake Road would likely double the traffic. There is no previously measured ADT for Dam



Access Road and Fort Cascades Drive. The increase of project related traffic along with a rolling closure of a short section of a through lane of each of these roads is expected to have a temporary low to moderate impact on flow of traffic.

During operations, the facility would be underground and would not impact traffic or limit public access to the roadways.

4.4.2.2 Waterborne, Rail, and Air Traffic

No additional access will be needed for waterways, railways, or air traffic spaces during construction or operation. No improvements will be made to existing transportation facilities, and no new permanent or temporary access facilities will be constructed.

During construction, potential in-water traffic incidents would be minimized through compliance with existing recreation, navigation, and barge interaction regulations. Vessel traffic would be coordinated through the U.S. Coast Guard (USCG) local notices to mariners. The Applicant anticipates minimal to no impact to in-water traffic based on required USCG coordination and management. Because the transmission line would be buried under the bed of the Columbia River, there would be no impacts to in-water traffic during operation.

HAB would be used to place the transmission cables under the railway and would not interrupt railway traffic. Because the transmission cables would be placed under the railway, there would be no impacts to railway traffic during operation.

During construction, no equipment would be used that would be tall enough to impact air traffic. Because the transmission cables would be placed underground there would be no impacts to air traffic during operation.

4.4.2.3 Parking

During construction, most of the Fort Cascades Drive dedicated parking area would be closed to public parking during a 5-week timeframe during the winter in-water work window. Vehicles necessary for construction would be parked within the construction zone along the roadways and within the temporary HDD work areas.

The discharge of stormwater runoff from the Project during construction would be regulated by WA EFSEC based on the State Water Pollution Control Act, which requires compliance with the NPDES permit, which would be handled through a Construction Stormwater General Permit from Ecology. Refer to Section 2.11 for more details on BMPs that would be used to manage surface water runoff.

During operation, there would be no project activity involving commuting or parking. Based on this, no impacts to parking would occur during operation.

4.4.2.4 Consistency with Local Comprehensive Transportation Plans

This project will not introduce permanent changes to the function of SR 14, Ash Lake Road, Dam Access Road, or Fort Cascades Drive. The roads will be returned to a similar or improved state after construction; therefore, this goal will be consistent with the Stevenson Comprehensive Plan and the Skamania County Regional Transportation Plan.

4.4.3 Mitigation Measures

The following measures are examples of typical mitigation measures that can be implemented to reduce or control transportation impacts and ensure access for emergency vehicles.

Before construction, the construction contractor will consult with WSDOT and Skamania County to determine if segments of any roadway or bridge are restricted for travel and obtain any permits required. In addition, a construction Traffic Management Plan would be developed to meet state and local requirements to reduce and manage construction related transportation impacts.

Because state highways are built to accommodate overweight vehicles with permits, impacts to safety or roadway pavement conditions are not expected. However, pavements managed by WSDOT and rated below fair could be impacted by over-dimension vehicles or substantial use. BMPs would be put in place, when needed, to minimize hazards, road closures, disruption of emergency services, and disruption of traffic flow. Examples of these practices include:

- Use signage denoting a construction entrance and warning slowing and turning traffic.
- Coordinate the timing and locations of road closures or oversize load movements in advance with emergency services such as fire, paramedics, and essential services such as mail delivery and school buses.
- Maintain emergency vehicle access to private property.
- Minimize movements of normal heavy trucks (dump trucks, concrete trucks, standard size tractor-trailers or flatbeds, etc.; essential deliveries only) and prohibit movements of oversize trucks, to the extent practicable, during peak traffic times.
- Develop plans, as required by city, county, or state permit, to accommodate traffic where construction would require closures of city, state, or county maintained roads for longer periods.
- Post signs on city, county, and state maintained roads, where appropriate, to alert motorists of construction and warn them of slow, merging, or oversized traffic.
- Maintain at least one travel lane at all times so that roadways will not be closed to traffic due to construction vehicles entering or exiting public roads.

With the above measures, no significant adverse impacts to traffic safety or road conditions are expected from construction of the Project.

4.5 Socioeconomic Impact (WAC 463-60-535)

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.*

4.5.1 Existing Environment

The primary socioeconomic study area for this analysis is the Portland-Vancouver-Hillsboro Metropolitan Statistical Area (MSA), which consists of Clark and Skamania counties in Washington, and Columbia, Washington, Multnomah, Yamhill, and Clackamas counties in Oregon. For the purposes of this application, only areas in Washington state will be considered. Therefore, only Clark and Skamania counties would be considered.

MSAs include a core area that has a substantial population nucleus, along with adjacent communities that have a high degree of economic and social integration with the core area (U.S. Census Bureau 1994). In Washington, the City of Vancouver is at the core of the Portland-Vancouver-Hillsboro MSA. Clark and Skamania counties are the economically related counties in Washington that share a high degree of economic integration with the urbanized core and one another. City of Vancouver is in Clark County.

The Portland-Vancouver-Hillsboro MSA is the area within a one-hour commute and is most likely to be affected by Project employment. Seven of the eight incorporated communities in Clark County and both incorporated communities in Skamania County are within an approximate one-hour commute of the Project Alignment. These communities are La Center, Ridge Field, Battle Ground, Vancouver, Camas, Washougal and Woodland in Clark County and North Bonneville and Stevenson in Skamania County.

Other counties that are partially within an approximate one-hour commute include Klickitat, Cowlitz, and Yakima counties, Washington. These counties would be excluded from the study area because the total land area (acres) of these counties that fall within the one-hour commute is lower compared to Clark and Skamania counties. Furthermore, existing employment and commuting patterns suggest that Project employment would have limited impacts on these counties. Approximately 87 percent of the workforce presently employed in Clark County resides in Clark County, and approximately 85 percent of the workforce presently employed in Skamania County resides in Skamania County (Table 4-32).

Table 4-32. Residence County to Workplace County Commuting Flows for Clark and Skamania County

Residence County	Percent of Total Clark County Workforce	Percent of Total Skamania County Workforce
Clark County	86.63	9.09
Skamania County	0.57	84.83
Cowlitz County	2.84	0.69
Klickitat County	0.03	1.94
Yakima County	Not Reported*	Not Reported*
Other states/counties ^{1/}	9.92	3.46

¹ Note: "Not Reported" indicates that data is not found in the U.S. Census Data Table "Residence County to Workplace County Commuting Flows for the United States and Puerto Rico Sorted by Residence Geography: 5-Year ACS, 2016-2020".

Source: U.S. Census Bureau 2020

4.5.1.1 Population

Clark County had an estimated population of 503,311 in 2020 (Table 4-33). An estimated 54 percent of the population lived in incorporated communities, and an estimated 46 percent lived in unincorporated communities. Among the incorporated communities, Vancouver had the highest population estimates (71 percent), followed by Camas (10 percent). The fifth most populated county in Washington, Clark County had an average population density of 816.4 persons per square mile in 2020 compared to a statewide average of 115.9 persons per square mile (OFM 2024a).

Table 4-33. Population

Geographic Area	Population Estimates ²		2010 to 2020		Annual Growth Rate (Percent)
	2010	2020	Net Change	Percent Change	
Clark County	425,363	503,311	77,948	18.3	1.8
Battle Ground	17,571	20,743	3,172	18.1	1.8
Camas	19,355	26,065	6,710	34.7	3.5
La Center	2,800	3,424	624	22.3	2.2
Ridgefield	4,763	10,325	5,562	116.8	11.7
Vancouver	161,791	190,915	29,124	18.0	1.8
Washougal	14,095	17,039	2,944	20.9	2.1
Woodland	83	84	1	1.2	0.1
Other Incorporated ¹	1,566	1,668	102	6.5	0.7
Unincorporated	203,339	233,048	29,709	14.6	1.5
Skamania County	11,066	11,604	538	4.9	0.5
North Bonneville	956	965	9	0.9	0.1
Stevenson	1,465	1,491	26	1.8	0.2
Unincorporated	8,645	9,148	503	5.8	0.6
Washington	6,724,540	7,706,310	981,770	14.6	1.5

Source: OFM 2024b

Note:

- 1 The other incorporated community in Clark County (Yacolt) is an approximately one-hour commute or more from the Project Boundary and unlikely to be affected by Project employment.
- 2 Intercensal estimates are used for population estimates. Intercensal estimates are bracketed on both sides by decennial census or state-certified special census counts. As such, they yield a more consistent series than postcensal estimates which only reference the prior census point.

Total Clark county population increased by 77,948 people or 18.3 percent between 2010 and 2020, an increase above the state average of 14.6 percent (Table 4-33). 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 2010 and 2020, with natural increase accounting for the remaining 34 percent. Similar to state trends, migration played a bigger role than natural increase in Clark County, accounting for approximately 72 percent of population growth over this period, with natural increase accounting for the remaining 28 percent (OFM 2024c).

Skamania County had an estimated population of 11,604 in 2020 (Table 4-33). The majority of the population (79 percent) lives in unincorporated communities, with the remaining population in incorporated communities (North Bonneville and Stevenson) at 21 percent. Skamania County had an average population density of 7.0 persons per square mile in 2020 compared to a statewide average of 115.9 persons per square mile (OFM 2024a).

Total population in Skamania County increased by 538 people or 4.9 percent between 2010 and 2020, a decrease below the state average of 14.6 percent (Table 4-33). Migration accounted for majority (81 percent) of the increase, with natural increase making up the remaining 19 percent (OFM 2022).

Population Projections

The Washington OFM prepares county population projections for planning under Washington State's Growth Management Act. 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 (OFM 2022). The latest 20-year Growth Management Act population projections were developed in December 2022 and extend through 2050 (RCW 43.62.035; OFM 2023).

The Project is expected to have an operational life of 50 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 to grow from 2025 through 2050 in the study area counties, as well as statewide (Table 4-34).

From 2020 to 2025, population is projected to increase by 8 percent and 4 percent in Clark and Skamania counties, respectively, compared to a statewide average of 5 percent. Subsequently, from 2020 to 2050, population is projected to increase by 46 percent (232,413 people) and 21 percent (2,402 people) in Clark and Skamania counties, respectively, compared to a statewide average of 29 percent (2.2 million people). Overall, population is projected to increase at a higher rate in Clark County compared to smaller increases in Skamania County and statewide (Table 4-34). Annual growth rates in Clark County are expected to be more than Skamania County and the state average over the entire 2020 to 2050 period (Table 4-34).

Table 4-34. Population Projections 2025 to 2050

Geographic Area	2020 Census (OFM Adjusted)	2025	2030	2040	2050
Clark	503,311	543,507	583,307	660,653	735,724
Skamania	11,604	12,079	12,529	13,322	14,006
Washington	7,706,310	8,100,384	8,502,764	9,248,473	9,937,575

Source: OFM 2022.

*Note: The population projections here are Medium series projections developed in 2022 in support of Washington State's Growth Management Act.

Race and Ethnicity

According to the most recent Census estimates, more than half (64 percent) of the population of Washington State is White. Persons of Hispanic or Latino origin were identified as the single largest minority³⁶ group, accounting for 14 percent of the total population (Table 4-35). A similar share of the total population in Clark County was identified as White (73 percent), with persons of Hispanic or Latino origin as the single largest minority group (12 percent), followed by Two or More Races (6 percent) (Table 4-35). Most of the populations in the incorporated communities in Clark County were White, with White populations ranging from 65 percent (Vancouver) to 86 percent (Battle Ground) (Table 4-35). The largest minority group for the incorporated communities varies, with all incorporated communities having a large share of persons with Hispanic or Latino origin (ranging from 17 to 26 percent) except Camas and La Center, which both have persons of Asian origin as the single largest minority group at 11 to 12 percent.

Most of the population in Skamania County identified as White (84 percent), with White populations ranging from 78 percent (North Bonneville) to 81 percent (Stevenson) (Table 4-35). The largest minority group for the incorporated communities varies, with North Bonneville having a large share of persons of Hispanic or Latino origin at 9 percent; and Stevenson with Some Other Race at 6 percent.

Table 4-35. Race and Ethnicity by County and City, 2019-2023

Geographic Area	Total ¹	Percent of Total							
		White ²	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some Other Race	Two or More Races	Hispanic or Latino
Clark County	510,516	73.5	2.0	0.3	4.7	0.8	0.6	6.1	12.0
Battle Ground	21,293	86.2	0.6	0.2	1.2	0.1	0.0	4.7	7.1
Camas	26,779	73.0	1.6	0.9	11.0	0.2	0.6	7.2	5.5
La Center	3,885	78.7	0.0	0.5	11.9	0.0	0.0	2.3	6.7
Ridgefield	12,576	79.9	0.9	0.1	1.8	0.0	0.2	7.2	9.9
Vancouver	192,696	65.4	3.0	0.4	5.2	1.8	0.5	6.5	17.2
Washougal	16,945	81.4	0.6	0.3	1.9	0.0	0.6	4.2	10.9
Woodland	6,513	69.4	1.4	0.2	0.3	0.0	0.0	2.8	25.8
Skamania County	12,276	83.9	0.3	1.5	1.2	0.2	1.1	5.2	6.6

³⁶ 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.



Geographic Area	Total ¹	Percent of Total							
		White ²	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some Other Race	Two or More Races	Hispanic or Latino
North Bonneville	1,151	78.5	0.9	0.0	4.4	0.0	0.0	7.3	8.9
Stevenson	1,676	80.8	0.4	1.2	0.0	1.3	6.4	3.8	6.1
Washington	7,740,984	64.3	3.8	0.8	9.3	0.7	0.5	6.5	14.0
United States	332,387,540	58.2	12.0	0.5	5.7	0.2	0.5	3.9	19.0

Source: U.S. Census Bureau 2023a

Notes:

- 1 Estimates are annual totals developed as part of the 2019-2023 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.

The on-land portion of the Project Alignment crosses two census block groups in Skamania County, Washington (Washington Project Alignment Block Groups). A census block group is a statistical subdivision of a census tract, generally defined to contain between 600 and 3,000 people.

The majority of the population in the two census block groups are White, ranging from 78 percent to 80 percent of the total (Table 4-36). Persons of Hispanic or Latino origin is the largest minority group in block group 3, census tract 9502, at 8 percent, while people who identified as Some Other Race is the single largest minority group in block group 1, census tract 9503 at 12 percent. The minority population of the two block groups is 20.9 percent of the combined block group total population.

Table 4-36. Race and Ethnicity by Block Group, 2019-2023

Geographic Area	Total ¹	Percent of Total							
		White ²	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some Other Race	Two or More Races	Hispanic or Latino
Block Group 3, Census Tract 9502, Skamania County	1,627	79.6	0.6	0.0	5.5	0.0	0.5	6.1	7.6
Block Group 1, Census Tract 9503, Skamania County	908	78.3	0.0	1.3	0.0	0.3	11.8	0.9	7.4
Block Group Total	2,535	79.1	0.4	0.5	3.6	0.1	4.5	4.3	7.5

Source: U.S. Census Bureau 2023a

Notes:

- 1 Estimates are annual totals developed as part of the 2019-2023 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.

Income and Poverty

The U.S. Census Bureau measures poverty using a set of monetary income thresholds that vary by family size and composition to determine who is in poverty. If a family's total income is less than the family's threshold, then that family and every individual in it is considered in poverty. The official poverty thresholds do not vary geographically, but they are updated for inflation using the Consumer Price Index (CPI-U) (U.S. Census Bureau, 2023e). The estimated share of total households below the poverty level in Washington State is 6 percent. Levels were similar in Clark and Skamania counties, at 6 percent and 5 percent, respectively. In Clark County, the share of households below the poverty level in the incorporated communities ranged from about 3 percent (La Center) to 8 percent (Washougal). Incorporated communities in Skamania County ranged from about 0 percent (North Bonneville) to 8 percent (Stevenson), respectively (Table 4-37).

Table 4-37. Income and Poverty by County and City, 2019-2023

Geographic Area	Per Capita Income ¹		Median Household Income ¹		Households Below the Poverty Level (Percent) ¹
	2023 Dollars	Percent of State Per Capita	2023 Dollars	Percent of State Median	
Clark County	46,391	90.1	94,948	100.0	5.8
Battle Ground	39,326	76.4	100,185	105.5	5.2
Camas	61,518	119.5	140,053	147.5	4.1
La Center	46,581	90.5	118,629	124.9	2.8
Ridgefield	53,996	104.9	117,550	123.8	4.7
Vancouver	42,839	83.2	78,156	82.3	7.5
Washougal	46,165	89.7	100,916	106.3	8.4
Woodland	33,992	66.0	83,193	87.6	7.2
Skamania County	44,514	86.4	90,085	94.9	5.0
North Bonneville	40,717	79.1	81,809	86.2	0.0
Stevenson	40,368	78.4	77,841	82.0	7.6
Washington	51,493	100.0	94,952	100.0	6.4
United States	43,289	na	78,538	na	8.7

Sources: U.S. Census Bureau, 2023b, 2023c, 2023d

Notes:

1 Estimates are annual totals developed as part of the 2019-2023 American Community Survey 5-Year Estimates.

na – not applicable

Per capita and median household incomes were slightly below or at the state average in Clark and Skamania counties, which ranged between 86 to 100 percent of the state average. Most incorporated communities in Clark County had incomes above the state average, with Camas and Ridgefield in Clark County having per capita income above the state average; and Battle Ground, Camas, La Center, Ridgefield and Washougal in Clark County with median household incomes above the state median. The rest of the incorporated communities, including the two incorporated communities in Skamania County, had per capita and median household income slightly below the state average (76 to 91 percent of the state average) (Table 4-37).

In the Washington Project Alignment Block Groups, Block Group 3, Census Tract 9502 had a lower percentage of households below poverty level than the state average at 0.7 percent. However, Block Group 1, Census Tract 9503, had higher percentage of households below poverty level than the state average at 7.4 percent (Table 4-38). In both block groups, per capita incomes were lower than the state per capita; and median household income was lower than the state median (Table 4-38).

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.” When compared to county median household incomes, both block groups were above the 80 percent threshold, where Block Group 3, Census Tract 9502, was at 96 percent of Skamania County’s median; and Block Group 1, Census Tract 9503 was at 81 percent of Skamania County’s median. However, if compared to state medians, Block Group 1, Census Tract 9503 was equivalent to 76 percent of the state median household income, which is less than the 80 percent median family income threshold. However, Block Group 3, Census Tract 9502 is at 91 percent of the state median, which is higher than the threshold and hence not considered low-income.

Table 4-38. Income and Poverty by Block Group, 2019-2023

Geographic Area	Per Capita Income ¹			Median Household Income ¹			Households Below the Poverty Level (Percent) ^{1/}
	2023 Dollars	Percent of State Per Capita	Percent of County Per Capita	2023 Dollars	Percent of State Median	Percent of County Median	
Block Group 3, Census Tract 9502, Skamania County	45,856	89.1	103.0	86,058	90.6	95.5	0.7
Block Group 1, Census Tract 9503, Skamania County	31,823	61.8	71.5	72,536	76.4	80.5	7.4
Skamania County	44,514	86.4	na	90,085	94.9	na	5.0
Washington	51,493	100.0	na	94,952	100.0	na	6.4

Sources: U.S. Census Bureau, 2023b, 2023c, 2023d, 2023f, 2023g, 2023h

Notes:

1 Estimates are annual totals developed as part of the 2019-2023 American Community Survey 5-Year Estimates.

na – not available

4.5.1.2 Economic conditions

An estimated 263,530 people were employed in Clark County in 2022. Health care and social assistance, along with the Government sectors, were the largest economic sectors based on employment, accounting for about 10.5 to 12.2 percent of total employment each (Table 4-39). Health care and social assistance employment is likely tied to PeaceHealth, a healthcare institution, which is the top employer in the county (CREDC 2024). Government employment is related to school district employment from Vancouver Public Schools and Evergreen Public Schools, which are the second and third largest employers in the county, respectively (CREDC 2024). The county also has large retail trade and construction economic sectors (8.7 to 9.9 percent of total employment in the county) and are both higher than statewide percentages Table 4-39). Construction is identified as one of the fastest-growing industries in the county; and retail trade is attributed to increasing consumer spending and sales in the county (WA ESD 2022a).

Table 4-39. Employment by Economic Sector, 2022

Economic Sector	Clark County	Skamania County	Washington State
Total Employment	263,530	3,961	4,815,623
Percent of Total			
Agriculture	0.8	4.0	1.9
Forestry, fishing, and hunting	0.3	(D)	0.9
Mining, quarrying, oil and gas	0.2	(D)	0.1
Utilities	0.0	0.3	0.1
Construction	8.7	5.7	6.1
Manufacturing	6.0	9.5	5.9
Wholesale trade	3.2	1.7	3.1
Retail trade	9.9	7.3	8.9
Transportation & warehousing	5.9	2.9	5.2
Information	2.0	0.6	4.0
Finance and insurance	5.6	3.4	4.4
Real estate, rental and leasing	6.0	7.2	5.4
Professional, scientific, and technical services	7.3	6.5	8.1
Management of companies and enterprises	1.6	(D)	2.3
Administrative and waste management and remediation services	5.4	(D)	4.9
Educational services	1.4	0.6	1.7
Healthcare and social assistance	12.2	5.2	10.6
Arts, entertainment, and recreation	1.9	2.3	2.1
Accommodation and food services	6.3	14.8	6.2
Other services (except public administration)	5.1	5.9	4.5
Government	10.5	16.3	13.5

Source: U.S. Bureau of Economic Analysis 2023*

Notes: *This 2022 data was published on November 16, 2023. The data is part of an archived and discontinued dataset as of 2024, due to budget constraints (U.S. Bureau of Economic Analysis, Table ID: CAEMP25N, 2024).

(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).

The government sector, particularly public sector employment, accounted for the largest percentage of Skamania County employment at 16.3 percent. This number is a much higher proportion than for the state and nation overall (WA ESD 2022b). Another key industry in the county includes accommodation and food services at 14.8 percent, which is likely tied to Skamania Lodge, who is a large employer in the Stevenson area providing tourism, restaurant, and retail services (WA ESD 2022a). Manufacturing also dominated private sector employment and county job growth, accounting for 9.5 percent of total county employment (WA ESD 2022a).

The average annual work force size, total number of employed workers, and the number and percentage of unemployed workers are presented for Clark and Skamania counties and Washington state in in Table 4-40. Average annual unemployment rates were higher than the state average in

both Clark and Skamania counties in 2023, 4.3 and 4.8 percent, respectively, compared to 4.1 percent (Table 4-40).

Table 4-40. Annual Average Workforce, 2023

Geographic Area	Resident Civilian Labor Force	Employment	Unemployment	Unemployment Rate
Clark County	248,606	237,866	10,740	4.3%
Skamania County	5,542	5,276	266	4.8%
Washington State	4,025,762	3,860,883	164,879	4.1%

Source: WA ESD 2024

4.5.1.3 Housing and Property Values

Housing resources are summarized by city, county, and state in Table 4-42 and Table 4-42. Given that the U.S. Census Bureau does not provide 10-year data estimates, two of the most recent five-year data estimates (2019 to 2023) and (2014 to 2018) are used to describe the change within the ten-year period for housing characteristics in the study area. Table 4-42 shows comparisons between the two five-year estimates.

The data presented in Table 4-41 are 5-year estimates (2014 to 2018) prepared by the U.S. Census Bureau (U.S. Census Bureau 2018). 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.

Table 4-41. Housing Characteristics, 2014-2018

Geographic Area	Total Housing Units	Occupied Housing Units	Vacant Housing Units		Median Home Value (dollars)	Median Gross Rent (dollars)
			Number	Percent of Total		
Clark County	179,523	171,522	8,001	4.5	296,800	1,180
Battle Ground	6,940	6,632	308	4.4	263,200	1,147
Camas	8,330	7,972	358	4.3	403,800	1,217
La Center	1,099	1,036	63	5.7	319,900	1,700
Ridgefield	2,588	2,497	91	3.5	369,700	1,467
Vancouver	74,970	71,595	3,375	4.5	260,400	1,142
Washougal	5,986	5,666	320	5.3	295,600	1,108
Woodland	2,243	1,990	253	11.3	223,500	862
Skamania County	5,818	4,685	1,133	19.5	282,400	779
North Bonneville	530	492	38	7.2	240,600	772
Stevenson	745	646	99	13.3	259,600	705
Washington	3,064,381	2,800,423	263,958	8.6	311,700	1,194

Source: U.S. Census Bureau 2018

Notes:

1 Estimates are annual totals developed as part of the 2014-2018 American Community Survey 5-Year Estimates.

The data presented in Table 4-42 are 5-year estimates (2019 to 2023) prepared by the U.S. Census Bureau (U.S. Census Bureau 2023i).

Table 4-42. Housing Characteristics, 2019-2023

Geographic Area	Total Housing Units	Occupied Housing Units	Vacant Housing Units		Median Home Value (dollars)	Median Gross Rent (dollars)
			Number	Percent of Total		
Clark County	201,114	193,387	7,727	3.8	487,900	1,668
Battle Ground	7,384	7,242	142	1.9	452,000	1,469
Camas	9,450	9,138	312	3.3	656,100	1,900
La Center	1,556	1,368	188	12.1	549,900	1,947
Ridgefield	4,407	4,317	90	2.0	590,200	2,324
Vancouver	83,450	79,747	3,703	4.4	440,300	1,632
Washougal	6,269	6,054	215	3.4	492,100	1,592
Woodland	2,685	2,605	80	3.0	384,100	1,369
Skamania County	5,899	4,965	934	15.8	472,600	1,024
North Bonneville	546	493	53	9.7	378,900	1,021
Stevenson	782	673	109	13.9	472,700	980
Washington	3,262,667	3,020,558	242,109	7.4	519,800	1,682

Source: U.S. Census Bureau, 2023i

Notes:

1 Estimates are annual totals developed as part of the 2019-2023 American Community Survey 5-Year Estimates.

Common major trends in both 5-year periods (2014 to 2018 and 2019 to 2023) include:

- Total housing units in the City of Vancouver accounted for close to half of the Clark County total (about 41 percent of the county's total housing units). Vancouver also has the highest number of housing units among all the study area incorporated communities.
- Three incorporated communities in Clark County: Camas, La Center, and Ridgefield had median owner-occupied home values and median gross rents above the other incorporated communities as well as county and state medians.
- Woodland in Clark County and North Bonneville in Skamania County had the lowest median home values (below \$250k in 2014-2018 and below \$400k in 2019-2023) compared to other incorporated communities; these values were also below the county and state medians.
- Skamania County, along with North Bonneville and Stevenson, had median gross rents lower than Clark County and the state median, ranging from \$705 to \$772 in 2014-2018 and \$980 to \$1,021 in 2019-2023.
- Skamania County had a far higher percentage of vacant units than Clark County and Washington state.
- Majority of the Skamania County housing units were in unincorporated areas, as housing units in North Bonneville and Stevenson only comprised of 9 to 13 percent of the county's total.
- Median owner-occupied home values and median gross rents were lower in Skamania County compared to Clark County and Washington state.

Trends between 2014 to 2023 include:

- Total housing units, occupied housing units, median home values, and median gross rents have increased statewide, as well as in Clark and Skamania counties along with all

incorporated communities between 2014 to 2023. These trends are further explored in the following tables: Table 4-43, Table 4-44, and Table 4-45.

- Battle Ground, Camas, and Ridgefield in Clark County along with county and state totals had a decrease in vacant housing units and/or percentages, whereas the rest of the incorporated communities had an increase in vacancies between 2014 to 2023.

Housing Trends and Growth Rates

The number of housing units has increased statewide and in Clark and Skamania counties over the last decade (2014 to 2023), with net gains of about 21,591 units (12 percent increase) and 81 units (1.4 percent increase) in Clark and Skamania counties, respectively (see Table 4-43). Viewed by community, Clark County had the largest absolute increases over this period, with Ridgefield (70.3 percent increase) at an approximate 5.5 percent annual growth rate in housing units, followed by La Center (41.6 percent increase) at an approximate 3.5 percent annual growth rate, and Woodland (19.7 percent increase) at an approximate 1.8 percent annual growth rate. Table 4-43 shows total housing units for 2014 to 2023 for the study area counties.

Table 4-43. Number of Housing Units

Geographic Area	2014-2018	2019-2023	2014 to 2023		
			Net Change	Percent Change	Annual Growth Rate (%)
Clark County	179,523	201,114	21,591	12.0	1.1
Battle Ground	6,940	7,384	444	6.4	0.6
Camas	8,330	9,450	1,120	13.4	1.3
La Center	1,099	1,556	457	41.6	3.5
Ridgefield	2,588	4,407	1,819	70.3	5.5
Vancouver	74,970	83,450	8,480	11.3	1.1
Washougal	5,986	6,269	283	4.7	0.5
Woodland	2,243	2,685	442	19.7	1.8
Skamania County	5,818	5,899	81	1.4	0.1
North Bonneville	530	546	16	3.0	0.3
Stevenson	745	782	37	5.0	0.5
Washington	3,064,381	3,262,667	198,286	6.5	0.6

Source: U.S. Census Bureau, 2018, 2023i, 2023j

Notes:

1 Estimates are annual comparison profiles developed as part of the 2014-2018 and 2019-2023 American Community Survey 5-Year Estimates.

Median home values have also increased statewide and in Clark and Skamania counties over the last decade (2014 to 2023), with increases of 64 to 66 percent and annual growth rates of about 5 percent (see Table 4-44). Between the counties, Skamania County had the highest percentage increase in median home values at 67.4 percent, with an annual growth rate of 5.3 percent surpassing the statewide growth rate. Viewed by community, Stevenson in Skamania County had the largest percentage increase (82.1 percent increase) in median home values, at an approximate 6.2 percent annual growth rate. This is followed by other communities in Clark County, including Battle Ground (71.7 percent increase), La Center (71.9 percent increase) and Woodland (71.9 percent increase) at an approximate 5.6 percent annual growth rate. Table 4-44 shows median home values for 2014 to 2023 for the study area counties.

Table 4-44. Median Home Values

Geographic Area	2014-2018 (dollars)	2019-2023 (dollars)	2014 to 2023		
			Net Change	Percent Change	Annual Growth Rate (%)
Clark County	296,800	487,900	191,100	64.4	5.1
Battle Ground	263,200	452,000	188,800	71.7	5.6
Camas	403,800	656,100	252,300	62.5	5.0
La Center	319,900	549,900	230,000	71.9	5.6
Ridgefield	369,700	590,200	220,500	59.6	4.8
Vancouver	260,400	440,300	179,900	69.1	5.4
Washougal	295,600	492,100	196,500	66.5	5.2
Woodland	223,500	384,100	160,600	71.9	5.6
Skamania County	282,400	472,600	190,200	67.4	5.3
North Bonneville	240,600	378,900	138,300	57.5	4.6
Stevenson	259,600	472,700	213,100	82.1	6.2
Washington	311,700	519,800	208,100	66.8	5.2

Source: U.S. Census Bureau, 2018, 2023i, 2023j

Notes:

1 Estimates are annual comparison profiles developed as part of the 2014-2018 and 2019-2023 American Community Survey 5-Year Estimates.

Median gross rents have also increased statewide and in Clark and Skamania counties over the last decade (2014 to 2023), with increases of 31 to 41 percent and annual growth rates of about 2.8 to 3.5 percent (see Table 4-45). Between the counties, Clark County had the highest percentage increase in median gross rents at 41.4 percent, with an annual growth rate of 3.5 percent. Viewed by community, Ridgefield, Camas, and Woodland in Clark County had the largest percentage increase in median home values ranging from 56 to 59 percent, at an approximate 4.6 to 4.7 percent annual growth rate. This is followed by Vancouver and Washougal, which had median gross rents that increased by 42 to 43 percent. Table 4-45 shows median gross rents for 2014 to 2023 for the study area counties.



Table 4-45. Median Gross Rent

Geographic Area	2014-2018 (dollars)	2019-2023 (dollars)	2014 to 2023		
			Net Change	Percent Change	Annual Growth Rate (%)
Clark County	1,180	1,668	488	41.4	3.5
Battle Ground	1,147	1,469	322	28.1	2.5
Camas	1,217	1,900	683	56.1	4.6
La Center	1,700	1,947	247	14.5	1.4
Ridgefield	1,467	2,324	857	58.4	4.7
Vancouver	1,142	1,632	490	42.9	3.6
Washougal	1,108	1,592	484	43.7	3.7
Woodland	862	1,369	507	58.8	4.7
Skamania County	779	1,024	245	31.5	2.8
North Bonneville	772	1,021	249	32.3	2.8
Stevenson	705	980	275	39.0	3.3
Washington	1,194	1,682	488	40.9	3.5

Source: U.S. Census Bureau, 2018, 2023i, 2023j

Notes:

1 Estimates are annual comparison profiles developed as part of the 2014-2018 and 2019-2023 American Community Survey 5-Year Estimates.

Temporary Housing Resources

Rental housing resources are summarized in Table 4-46 for two of the most recent 5-year data estimates (2019 to 2023) and (2014 to 2018) to describe the 10-year period for rental vacancy rates in the study area. Rental vacancy rate is the proportion of the rental inventory that is vacant for rent. Viewed by county over a 10-year period, these estimates suggest that rental housing is available in both counties, with Clark County increasing from a 3.0 to 3.1 percent vacancy rate and Skamania County decreasing from 4.0 to 3.6 percent. Over the 10-year period, Camas, La Center, and Ridgefield have increasing rental vacancy rates, with Vancouver having the same rental vacancy rate, and the rest of the incorporated communities having decreased rental vacancy rates. In Skamania County, North Bonneville increased from 0.0 to a 5.0 percent rental vacancy rate in the 10-year period. Areas with the highest rental vacancy rates over the 10-year period includes La Center and Ridgefield in Clark County.

Table 4-46. Rental Housing

Geographic Area	2014 to 2018		2019 to 2023	
	Total Housing Units ^{1/}	Rental Vacancy Rate ^{1,2}	Total Housing Units ^{1/}	Rental Vacancy Rate ^{1,2}
Clark County	179,523	3.0	201,114	3.1
Battle Ground	6,940	5.4	7,384	1.0
Camas	8,330	3.0	9,450	3.8
La Center	1,099	7.7	1,556	8.0
Ridgefield	2,588	12.7	4,407	7.0
Vancouver	74,970	3.3	83,450	3.3
Washougal	5,986	4.5	6,269	0.8
Woodland	2,243	5.2	2,685	1.4
Skamania County	5,818	4.0	5,899	3.6
North Bonneville	530	0.0	546	5.0

Geographic Area	2014 to 2018		2019 to 2023	
	Total Housing Units ^{1/}	Rental Vacancy Rate ^{1,2}	Total Housing Units ^{1/}	Rental Vacancy Rate ^{1,2}
Stevenson	745	3.8	782	0.0
Washington	3,064,381	3.7	3,262,667	4.3

Sources: U.S. Census Bureau, 2018, 2023i

Notes:

¹ All data are annual estimates from the American Community Survey 5-year estimates for 2014-2018.

² All data are annual estimates from the American Community Survey 5-year estimates for 2019-2023.

³ Housing units for seasonal, recreational, or occasional use are not included in the estimated number of housing units available for rent.

Additional units classified for seasonal, recreational, or occasional use may also be available in both counties, which are not included in the table above. 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 described in the following paragraphs.

According to Expedia.com, Booking.com, Airbnb.com and Visit Vancouver, there are at least 30 or more hotels, motels or short-term rentals (e.g., Airbnb) clustered in the Vancouver, Camas, Washougal areas in Clark County closer to the Portland-Vancouver-Hillsboro MSA. Areas further from the Columbia River such as Battle Ground, Ridgefield or La Center have fewer accommodations available. In Skamania County, 10 to 15 hotels and motels along with at least 40 Airbnbs or short-term rentals are available in Stevenson, whereas North Bonneville does not have any available accommodations within city limits.

Temporary accommodation in the study area also includes recreational vehicle (RV) parks and campsites. There are at least 11 RV parks and campground facilities around the Vancouver area in Clark County. Other parks and campgrounds are available along Interstate 5 (I-5) and SR 205; clustered around state parks in the area (Paradise Point State Park and Battle Ground Lake State Park); and the Clark County Fairgrounds. In Skamania County, there are two RV and campground facilities within North Bonneville and Stevenson city limits, along with various other facilities surrounding the Columbia River Gorge along SR 14; and closer to hot springs in the area³⁷.

4.5.1.4 Fiscal Conditions

Annual filings with the Washington State Auditor (2024) indicate that Clark County had total revenues of \$478.7 million in 2023, with property taxes and intergovernmental revenues accounting for 28 percent and 29 percent of the total, respectively (Table 4-47). Clark County had total expenditures of \$412.2 million in 2023, with spending on general government and public safety both accounting for 25 percent of the total, respectively (Table 4-48).

Skamania County had total revenues of \$30.9 million in 2023, with intergovernmental revenues and charges for services accounting for 39 percent and 24 percent of the total, respectively (Table 4-47). Skamania County had total expenditures of \$27.1 million in 2023, with spending on general

³⁷ Data on RV parks and campsites were compiled from a number of online sources, including Google Maps, yelp.com, as well as individual campground web sites.



government, public safety, transportation, and social services accounting for 88 percent of the total (Table 4-48).

Table 4-47. Revenues by County, 2023

Revenues ^{1/}	Clark County		Skamania County	
	Governmental Amounts (\$)	Percent of Total Revenues	Governmental Amounts (\$)	Percent of Total Revenues
Total Revenues	478,751,775	100%	30,954,547	100%
Property Taxes	132,129,853	28%	8,429,510	27%
Sales & Use Taxes	84,866,883	18%		
Excise and Other Taxes	12,361,164	3%		
Licenses & Permits	20,014,987	4%	327,134	1%
Intergovernmental	137,385,659	29%	12,160,552	39%
Charges for Services	59,151,060	12%	7,568,958	24%
Fines & Forfeitures	1,820,138	0%	96,273	<1%
Interest Earnings (Loss)	24,070,244	5%	na	
Donations	498,578	0%		
Other Revenue ^{1/}	6,453,209	1%	2,372,120	8%

Source: Washington State Auditor 2024, Report #1035442 (Clark County) and Report #1035642 (Skamania County)

Notes:

- 1 Revenues and expenditures are part of governmental funds (all of the county's funds), which includes amounts from the General Fund, Special Revenue Major Funds, and Capital Project Major Fund.

Table 4-48. Expenditures by County, 2023

Expenditures ^{1/}	Clark County		Skamania County	
	Governmental Amounts (\$)	Percent of Total Expenditures	Governmental Amounts (\$)	Percent of Total Expenditures
Total Expenditures	412,299,571	100%	27,140,402	100%
General Government	101,263,104	25%	8,026,036	30%
Public Safety	103,935,366	25%	6,035,497	22%
Utilities	na	na	1,449,426	5%
Transportation	69,004,023	17%	5,496,125	20%
Natural & Economic Environment	34,612,423	8%	1,547,681	6%
Social Services	72,373,137	18%	4,295,741	16%
Culture and Recreation	20,376,356	5%	289,896	1%
Other Expenditures ²	10,735,162	3%	na	na

Source: Washington State Auditor 2024, Report #1035442 (Clark County) and Report #1035642 (Skamania County)

- 1 Revenues and expenditures are part of governmental funds (all of the county's funds), which includes amounts from the General Fund, Special Revenue Major Funds, and Capital Project Major Fund.

- 2 Other Expenditures in Clark County includes debt service (principal, interest and other charges).

Sales Tax and Use

Washington State collects a 6.5 percent retail sales tax. Clark and Skamania Counties each collect 1.3 percent and 1.2 percent retail sales tax, respectively. Uses of the counties' revenue are presented in Table 4-48.

Property Tax

Property taxes levied by the county depend on the type and size of the property. Table 4-49 presents property tax rates by property for each county.

Table 4-49. Property Tax Rates by County

Property	Dollars per Thousands of Dollars in Property Value	
	Clark County	Skamania County
State	2.2439	2.3169
County (general levy)	0.772	0.980
County (roads levy)	1.036	1.002
Cities	2.006	1.484
Emergency medical services	0.4133	0.3758
Fire protection	1.215	0.793
Hospital	0.000	0.332
Library	0.3025	0.2678
Local school	3.048	1.999
Port	0.2044	0.2319

4.5.1.5 Public Services and Utilities

Given that the majority of the proposed alignment is under water or underground components in Washington, and the aboveground components are in Oregon, the project elements do not fall within the jurisdiction of any Clark County public service and utility areas and, therefore, are not analyzed. As mentioned previously, the on-land portion of the proposed alignment in Washington state only crosses two census block groups in Skamania County: Block Group 3, Census Tract 9502; and Block Group 1, Census Tract 9503 (Washington Project Alignment Block Groups). Two of these block groups overlap with the cities of Stevenson and North Bonneville. Public services and utilities available in the Washington Project Alignment Block Groups are analyzed in the sections to follow.

Fire Protection

The two incorporated communities and portions of the remaining unincorporated areas are served by various municipal and rural fire departments. North Bonneville Fire and Rescue Department serves areas within North Bonneville city limits, and Stevenson Fire Department serves areas within Stevenson city limits. The unincorporated areas of Skamania County are served by seven fire districts: Skamania County Fire Districts #1 through #6; along with Cowlitz-Skamania County Fire District.

The Washington Project Alignment Block Groups primarily fall within the jurisdiction of three fire departments and districts: North Bonneville Fire and Rescue Department, Skamania County District #5, and a joint fire department between Skamania County District #2 and Stevenson Fire Department. All districts and departments are part of the Five County Cooperative Mutual Aid Agreement, which includes all fire departments and fire districts within Skamania and Klickitat counties in Washington; and Wasco, Hood River, Sherman counties in Oregon. Mutual aid agreements allow a jurisdiction to provide resources, facilities, services, and other required support to another jurisdiction in the event where mutual aid services are necessary to control the disaster (Skamania County Fire District No. 1, 2024).



North Bonneville Fire and Rescue Department protects within and around the North Bonneville city limits, serving a population of at least 960+ residents. Areas served by the fire department include residential, commercial, industrial areas, and some swaths of state and federally owned lands (Skamania County GIS, 2011). The fire department includes a fire chief, captain, lieutenant and secretary, along with volunteers and junior cadets (City of North Bonneville 2024). The department offers emergency response and fire prevention services. The department operates out of the North Bonneville Fire Department located at 33 Cascade Dr, North Bonneville, WA 98639.

Fire District #5 protects unincorporated areas west of North Bonneville. Areas served by the fire department include Beacon Rock State Park, Franz Lake National Wildlife Refuge, accompanying recreational facilities, and various scenic areas or trailheads overlooking the Gorge. The department also serves Skamania, an unincorporated community that consists of some residential areas and Skamania Elementary School. The fire department is mostly made up of volunteers (Skamania County Fire District #5 Facebook Page, 2024). The district operates out of the Skamania County Fire District #5 Station located at 33241 WA-14, Stevenson, WA 98648.

Stevenson Fire Department and Fire District #2 work together as a joint fire department to protect areas within Stevenson city limits and the unincorporated areas north of Stevenson city limits, serving a population of at least 1,500+ residents. Within Stevenson city limits, developed areas served by the fire department include commercial, residential, and community spaces, including schools and churches. Unincorporated areas include open forest land, creeks, Key Way Airport/Air Strip, along with single-family homes. The fire department mainly operates with a fire chief and active volunteers from both Fire District #2 and Stevenson Fire Department. The department responds to various incidents, which could include a fire response, assistance at motor vehicle collisions or assisting the Skamania County EMS on emergency medical calls. The department operates out of the Stevenson City Fire Hall located at 160 SW First St, Stevenson, WA 98648 (City of Stevenson, n.d.).

Law Enforcement

The Skamania County Sheriff's Office would provide law enforcement services to the Washington Project Alignment Block Groups. The Sheriff's Office consists of multiple divisions: Civil, Corrections, and Patrol. The Patrol Division is comprised of 13 dedicated professional Deputy Sheriffs and responds to any criminal activity reported. Additionally, the Patrol Division also has two detectives assigned to major crime investigation (Skamania County Sheriff, 2025).

Other law enforcement agencies providing service in the vicinity of the Project Alignment Block Groups include the Washington State Patrol. Skamania County is served by the Washington State Patrol District 5, which also covers adjacent Clark, Klickitat, Cowlitz, and Lewis counties. District 5's headquarters is in Vancouver and serves approximately 9,666 square miles of land, which includes two Interstate Highways and 27 State Routes. There are approximately 172 employees assigned to law enforcement, traffic investigations, license fraud, narcotics investigations, vehicle inspections, communications, and support services. A crime laboratory is also located within district confines (Washington State Patrol 2021).

Health Care

The Washington Project Alignment Block Groups fall within the jurisdiction of Skamania County Public Health District #1 (Association of Washington Public Hospital Districts, 2025). The hospital district is operated by Skamania EMS and Rescue and does not operate a hospital. Skamania EMS and Rescue provides specialty response to medical emergencies, vehicle, rope and trail rescues; and is staffed by part-time, full-time, and volunteer Emergency Medical Technicians (EMTs) and paramedics. Skamania EMS and Rescue has a service area of approximately 1,672 square miles and operates 24 hours a day and 7 days a week (Skamania EMS and Rescue 2025). There are also various healthcare facilities and clinics available in the area.

Schools

Summary information on schools is presented for Skamania County in Table 4-50. 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 2023-2024 school year was 15.2 (National Center for Education Statistics (NCES), 2023-24). The statewide average ratio in Washington was 17.5 (National Center for Education Statistics (NCES), 2023-24) (Table 4-50).

Skamania County is served by four school districts, with a combined total student enrollment of 1,020 in the 2023-2024 school year. Most of these students were enrolled in the Stevenson-Carson School District, which accounted for 78 percent of total enrollment (see Table 4-50).

Table 4-50. Schools by County, 2023-2024 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)
Skamania County	4	10	1,020	69.35	18.9
Mill A School District	-	2	72	9.70	7.42
Mount Pleasant School District	-	1	65	5.01	12.97
Skamania School District	-	1	83	6.69	12.41
Stevenson-Carson School District	-	6	800	47.95	16.68
Washington	342	2,553	1,093,745	62,552	17.5

Source: National Center for Education Statistics (NCES) 2023-24a

Notes: FTE—full-time equivalent

Parks and Other Recreational Facilities

Parks and other recreational facilities are discussed in Section 4.3.4 of this ASC.

Public Utilities

The public utility providing electric service in Skamania County is Skamania Public Utility District (PUD). The Skamania PUD service area is throughout southern Skamania County, which includes the cities of North Bonneville and Stevenson (Skamania County PUD, 2025; City of North Bonneville 2024; City of Stevenson n.d.).



Natural gas service is provided by Avista Utilities and Northwest Natural to the cities of Stevenson and North Bonneville respectively (City of North Bonneville 2024; City of Stevenson n.d.).

Several companies supply internet and cellular telecommunications service in the cities of Stevenson and North Bonneville (City of North Bonneville 2024; City of Stevenson n.d.).

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 Skamania County. Two WUTC regulated solid waste haulers, Columbia River Disposal and Waste Connections, provide solid waste services to Skamania County and the cities of Stevenson and North Bonneville, respectively (WUTC 2022; City of North Bonneville 2024; City of Stevenson n.d.).

Skamania County has three solid waste transfer stations: Mt. Pleasant Transfer Station, Stevenson Transfer Station, and Underwood Transfer Station. Stevenson Transfer Station is located within the boundaries of Project Alignment Block Groups (Skamania County, n.d.). The site provides full service to include the collection of recyclable materials.

The Project would not require wastewater treatment.

4.5.2 Impacts

4.5.2.1 Population

Construction activities will require approximately 100 employees over the course of construction (6 to 26 employees for any given activity). Non-local employment is not expected. While the Project is expected to provide jobs for local and regional workers, once the Project is complete, there are no expected long-term impacts on the existing population or future growth trends.

Minority and Low-Income Populations

As discussed previously, the on-land portion of the proposed alignment in Washington State crosses two census block groups in Skamania County: Block Group 3, Census Tract 9502; and Block Group 1, Census Tract 9503 (Washington Project Alignment Block Groups) which overlay with the city of Stevenson and North Bonneville.

No residential units exist in or near the land where the on-land portion of the proposed alignment would be located, therefore the construction and operation of the Project would not displace any minority or low-income 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 4.4. During operation, no Project related traffic would occur.

Project construction would result in short-term, unavoidable noise impacts. During operation, the HVDC cables are not expected to generate audible noise. Noise-related impacts and mitigation measures designed to reduce potential impacts are discussed in Section 4.2.1.

The primary sources of construction-related air pollution would be vehicle exhaust emissions and fugitive dust disturbed by construction activities. 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. During operation, no Project related vehicle traffic or emissions would occur. 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 4.2.2.

Short-term visual impacts would result from construction activities and the presence of equipment and work crews. During operation, no visual impacts would occur because the Project would be underground and not visible. Visual impacts and mitigation measures designed to reduce potential impacts are discussed in Section 4.3.3.

4.5.2.2 Economic conditions

An economic impact analysis was performed to determine the likely economic impact from project implementation on the local and statewide economy. Bureau of Economic Analysis (BEA) Regional Input-Output Modeling System (RIMS II) multipliers are used to estimate the local and regional (statewide) impacts of Project spending, and these results are presented in this section.³⁸ For the purposes of this analysis, the cost for the portion of the Project occurring in Washington State is assumed at \$128 million. Ten percent, \$12.8 million, of spending is assumed to occur within Washington state. Of this, 80 percent is assumed to be spent in Clark County, 10 percent in Skamania County, and 10 percent in other Washington State counties. The analysis also assumes that construction activities will require about 100 employees over the course of construction (6 to 26 employees for any given activity), producing a total of 16 full-time equivalent job years.

Employment and Income

The portion of the Project that will be implemented in Washington state is expected to create jobs for people in the area (locally and statewide) as well as some employment for non-local workers. According to the Applicant, all of the civil roadway construction workers will be from the local area (Skamania and Clark counties, including Vancouver, Washington and Portland, Oregon). In addition, about 30 to 40 percent of workers for the HDD, electrical cable install, and electrical accessory install specialty work will be local.

The Project will employ several full-time positions through construction. HDD work and open trenching would employ laborers and equipment operators, electricians would be employed for cable

³⁸ The economic impact analysis uses Power and Communication Structures Construction (2332PC) RIMS II Category to estimate economic impacts from Project spending. RIMS II multipliers are available through the Bureau of Economic Analysis, U.S. Department of Commerce. Multipliers for this analysis were purchased in January 2025 and represent 2017 U.S. Benchmark I-O data and 2022 Regional Data. National Gross Domestic Product (GDP) Deflators were used to translate jobs per million 2022 dollar impacts to jobs per million 2025 dollar impacts.

installation and jointing, and civil construction/roadway laborers and operators would be employed to open and close pits and restore SR 14 to its previous state of repair. The existing local work force in the Portland-Vancouver-Hillsboro MSA would be sufficient to meet project demand, as confirmed by the applicant with the International Brotherhood of Electrical Workers and the International Union of Operating Engineers (Appendix J).

Average hourly wages are expected to follow regional trends, there is no reason to believe wages for this project will vary significantly from existing wage levels. Since most of the labor is expected to be sourced from within an hour's commute of the study area, which includes the Portland-Vancouver metropolitan area, wages are likely to be similar to those offered in this population center. Table 4-51 summarizes average hourly wages listed by the Bureau of Labor Statistics for relevant geographies to the study area, including the Portland-Vancouver metropolitan statistical area.

Table 4-51. Average Hourly Wage in the Study Area³⁹

Occupation Title (Code)	Average Hourly Wages	
	Washington State	Portland-Vancouver-Hillsboro, OR-WA
Construction Managers (11-9021)	\$64.87	\$65.86
Construction Laborers (47-2061)	\$28.69	\$26.26
Operating Engineers and Other Construction Equipment Operators (47-2073)	\$40.29	\$36.71

Table 4-52 presents the total employment demand created by the project (including spinoff effects), and associated income, from the project spending in Washington.

Table 4-52. Final-Demand Employment Impacts

Employment Impacts	Employment Income	Employment
Total Impact within Washington State	\$7.5 M	95.96
Total Impact within Clark County	\$6.0 M	76.77
Total Impact within Skamania County	\$0.8 M	9.60

Once the Project is constructed, operations of the roadway would continue as they did before. The new transmission line would be buried beneath the roadway, so no on-going maintenance would be required. As such, no long-term impacts are expected on employment or income in the region.

Overall Economic Benefits

Project expenditures within the state (direct impacts) create indirect (business-to-business spending) and induced (employment, income, and personal consumption spending) effects in the local and statewide economy. The \$12.8 million investment in the state creates \$22.9 million increased value of industry output across the state, and \$14.5 million value added in income generated from all direct and indirect spending. This comprises employee compensation, payments to government, and returns on investment, and can be interpreted as the change to gross domestic product.

³⁹ U.S. Bureau of Labor Statistics, Occupational Employment and Wage Statistics for Washington State and Portland-Vancouver-Hillsboro, OR-WA. Last accessed February 2025. [Overview of BLS Wage Data by Area and Occupation : U.S. Bureau of Labor Statistics](https://www.bls.gov/charts/occupational-employment-and-wage-statistics/overview-of-bls-wage-data-by-area-and-occupation)

Table 4-53. Direct, Indirect, and Induced Economic Impacts

Economic Impacts	Total Expenditure	Output	Value Added	Job Years Created
Total Impact within Washington State	\$12.8 M	\$22.9 M	\$14.5 M	96
<i>Total Impact within Clark County</i>	<i>\$10.2 M</i>	<i>\$18.4 M</i>	<i>\$11.6 M</i>	<i>77</i>
<i>Total Impact within Skamania County</i>	<i>\$1.3 M</i>	<i>\$2.3 M</i>	<i>\$1.4 M</i>	<i>10</i>

In addition to the economic impacts, the Project could have relatively small, localized effects for people driving the roadway, in terms of additional drive-time and detour-miles during construction. The trenching work may require some partial roadway closures or detour, which could affect local traffic. However, these impacts should be short (less than 4 months), access to local roads leading to residences would be maintained, and the contractor would follow local and state requirements related to maintaining traffic and controlling noise pollution to mitigate temporary impacts (for more discussion about noise impacts, see Section 4.2.1). Since the localized negative impacts are expected to be relatively short, and travel conditions should return to normal after construction, no long-lasting negative impacts are expected to affect the localized area.

The Project would also bring indirect economic benefits throughout the Cascades by meeting future electricity needs for new technology centers, manufacturing, and electrification of buildings and transportation. Presently, there is minimal to no available east to west transmission capacity. Furthermore, additional jobs would be generated to build and operate new renewable generation facilities east of the Cascades that would use the new transmission capacity. These new renewable energy projects would provide ongoing economic support to the local communities, and the Project converter stations would bring new local tax revenues.

4.5.2.3 Housing and Property Values

The Project would require no employees to relocate to the immediate area or within commuting distance of the work site during construction, and it is expected that all employees would be available and sourced from within a one-hour commute of the work site. As discussed, once the project is constructed, no on-going maintenance, roadway closures, or detours would be required. Therefore, no temporary or long-term effects are expected from the Project on housing availability or property values in the study area.

4.5.2.4 Fiscal Conditions

Tax revenues would be collected on direct spending, business-to-business transactions, and spending from employee salaries. Beyond these revenues, the Project should have minimal impact on fiscal conditions of Washington State and counties in the study area. The Project should not significantly impact fiscal responsibilities or spending.

Sales and Use Tax

There should be no changes to the sales and use tax rates due to the Project.

Sales tax would be collected from the contractor on the total contract price, and use tax on all materials used, applied, or installed by the contractor.



Property Tax

There should be no changes to the property tax rates due to the Project.

Local Government Revenues and Additional Service Expenditures

Project spending will be subject to state and local taxes. The Project's broader economic impacts would produce more than \$520,000 in state sales and gross receipts tax and more than \$702,000 in tax revenues for the state. In addition, Project spending and resulting economic impacts and activity locally would produce more than \$337,000 for Clark County and \$42,000 for Skamania County. Table 4-54 summarizes the tax revenues generated from direct Project spending and the value added across industries in Washington State, Clark County, and Skamania County, based on the spending distribution across geographies during construction.

Table 4-54. State and Local Tax Revenues from Project

Fiscal Impacts	Washington State				Total
	State Taxes	Clark County Local Taxes	Skamania County Local Taxes	Local Taxes for other counties	
Total Tax Revenue	\$702,670	\$337,575	\$42,197	\$42,197	\$1,124,639
<i>Property Tax</i>	<i>\$85,707</i>	<i>\$173,447</i>	<i>\$21,681</i>	<i>\$21,681</i>	<i>\$302,516</i>
<i>Sales and Gross Receipts Tax</i>	<i>\$520,884</i>	<i>\$131,539</i>	<i>\$16,442</i>	<i>\$16,442</i>	<i>\$685,307</i>
<i>Other Taxes</i>	<i>\$96,079</i>	<i>\$32,589</i>	<i>\$4,074</i>	<i>\$4,074</i>	<i>\$136,816</i>

The Project would have no long-term impacts; the Project would leave the work site and area functionally the same as it was before, and require no on-going maintenance, employment, or other activities beyond the initial implementation. Therefore, there are no expected impacts on service expenditures required due to the project, and no impacts to local government revenues beyond those revenues collected from the contract itself.

4.5.2.5 Public Services and Utilities

The on-land portion of the proposed alignment in Washington state crosses two census block groups in Skamania County: Block Group 3, Census Tract 9502; and Block Group 1, Census Tract 9503 (Washington Project Alignment Block Groups). These block groups overlap with the cities of Stevenson and North Bonneville. As discussed in Section 2, given that the majority of the proposed alignment is under water or underground components in Washington, and the aboveground components are in Oregon, the project elements do not fall within the jurisdiction of any Clark County public service and utility areas and, therefore, the impacts are not analyzed.

The short and long-term impacts from the Project on public services and utilities in the study area are analyzed in the sections to follow.

Fire Protection

The Project would employ workers that already reside in the regional area (within a 1-hour commute of the work site) and use the existing fire protection services. Therefore, during construction, there should be no impacts that would require a change to fire protection responders or locations due to the project.

Similarly, because there will be no changes to populations or above-ground roadway infrastructure after the project is complete, there should be no long-term impacts to fire protection needs in Skamania County.

Law Enforcement

The Project would employ workers that reside in the regional area (within a 1-hour commute of the work site). Therefore, during construction, there should be no impacts that would require a change to law enforcement employment, patrols, or presence due to the project.

Similarly, because there would be no changes to populations or above-ground roadway infrastructure after the project is complete, there should be no long-term impacts to law enforcement in Skamania County.

Health Care

The Project would employ workers that already reside in the regional area (within a 1-hour commute of the work site) and use the existing health care providers and services. Therefore, during construction, there should be no impacts that would require a change to health care providers or locations due to the project.

Similarly, because there would be no changes to populations or above-ground roadway infrastructure after the project is complete, there should be no long-term impacts to health care in Skamania County.

Schools

The Project would employ workers that already reside in the regional area (within a 1-hour commute of the work site) and already use the existing school system for their families. Therefore, during construction, there should be no impacts that would require a change to the school system due to the project.

Similarly, because there would be no changes to populations or above-ground roadway infrastructure after the project is complete, there should be no long-term impacts to schools in Skamania County.

Parks and Other Recreational Facilities

Parks and other recreational facilities are discussed in Section 4.3.4 of this ASC.

Public Utilities

The Project would employ workers that already reside in the regional area (within a 1-hour commute of the work site) and already use the existing public utilities. Construction would comprise temporary HDD work and roadway trenching, which would not require use of electricity or natural gas. If utility relocations are required during construction, the contractor would coordinate with the appropriate utility. Therefore, during construction, there should be no impacts to public utility service, operations, or demand due to the project.



During operations, there would be no changes to populations and Project infrastructure in Washington would not require electricity or natural gas. Therefore, there would be no impacts to public utilities in Skamania County.

Water and Stormwater

Water and stormwater are discussed in Section 3.3 of this ASC.

Solid Waste and Wastewater

The Project would employ workers that already reside in the regional area (within a 1-hour commute of the work site) and already use the existing solid waste and wastewater infrastructure. Therefore, during construction, there should be no impacts to public utility service, operations, or demand due to the project.

Similarly, because there would be no changes to populations or aboveground roadway infrastructure after the project is complete, there should be no long-term impacts to solid waste and wastewater infrastructure in Skamania County.

4.5.3 Mitigation Measures

Socioeconomic impacts are expected to be beneficial in terms of additional jobs, increased economic activity, and increased tax revenues. The Applicant will consult with WSDOT and Skamania County prior to construction to develop a construction Traffic Management Plan designed to meet state and local requirements to reduce and manage construction related transportation impacts. The Applicant will also consult with North Bonneville Fire and Rescue Department, Stevenson Fire Department, and Skamania County fire districts, Skamania County Sheriff's Office and other law enforcement agencies as needed, prior to construction, to develop and finalize an Emergency Response Plan, and to coordinate with local emergency services personnel. Construction of the Project will follow site-specific BMPs to minimize potential impacts from noise and air quality, as described in the respective resource sections of this application.



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5 Applications for Permits and Authorizations

5.1 Air Emissions Permits and Authorizations (WAC 463-60-536)

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 463-60-563, a PSD permit application is typically required for energy facilities requiring site certification to be submitted with the WA EFSEC ASC. However, as an underground and in-river HVDC transmission line, 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 WAS 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 K).

Table 2-4 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 WA EFSEC jurisdiction. The Project as an underground and in-river HVDC transmission line, the Project would not produce point source air emissions during operations and would only produce negligible dust and vehicular air emissions during construction; therefore, the Applicant does not intend to submit requests for authorization for any emissions otherwise regulated by a local air agency.

5.2 Wastewater/Stormwater Discharge Permit Applications (WAC 463-60-537)

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, WA 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 that would disturb one or more acres of land. Because the Project would disturb one or more acres of land, NPDES permit compliance is required through WA EFSEC. 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)

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.*

Impacts discussed here are reflective of those identified in the CWA 404 JPA submitted to the USACE in June 2024.

As described in Section 3.5, due to the installation of the HVDC cable bundle, there would be temporary and permanent impacts to one wetland (Wetland 18), and temporary impacts to Wetland 18 buffer. Wetland 18 is located along a roadside ditch north of SR 14 and has surface water connection to the Columbia River (Appendix F figures). There would be a total of 40 square feet of temporary and 26.6 square feet of permanent unavoidable impacts to Wetland 18, and 200 square feet of temporary impacts to the buffer. Permanent fill within Wetland 18 would consist of the HVDC cable materials and cable protection (as described in Section 2.3.3.) buried three feet below the surface in a trench, which will be backfilled with native wetland soils, and revegetated. Wetland soils that were excavated to make the trench would be used to fill in the remaining wetland area. Wetland 18 and the associated buffer would be restored post construction to match or improve pre-construction vegetation condition. No other wetlands are proposed to be impacted (temporary or permanent) as a result of the Project. The wetland would be restored to existing or improved functions after cable installation. As described in Section 3.3, there would be temporary disturbance to waters associated with installation of the HVDC transmission cable and permanent fill associated with the transmission cable bundle and cable protection in the Columbia River, as described in Section 2.17.1. A Hydraulic Project Approval may be required and would be developed upon final design of the Project.

There are no anticipated impacts to runoff/absorption, groundwater, or city water supplies; therefore, no mitigation is warranted. Temporary impacts that have been identified within the 100-year floodplain of the Columbia River as a result of the HDD work areas will be mitigated by returning the areas impacted to their pre-existing conditions. For mitigation measures related to water quality, please see Section 3.4.3.1.



Ecology's Sand and Gravel General Permit regulates discharges of process water, stormwater, and water from mine dewatering associated with sand and gravel operations, rock quarries, and similar mining operations. The permit also covers concrete batch plant and hot mix asphalt operations.⁴⁰ In the event that a hot mix asphalt operation would be needed to repair portions of SR 14 during Project construction, an Ecology Sand and Gravel General Permit would be obtained by the Applicant or Applicant's contractor in coordination with WA EFSEC prior to use.

The Applicant or Applicant's contractor will file a NOI to be covered under other permits that are otherwise issued by state agencies as identified in Section 2.23, Table 2-4.

⁴⁰ Ecology. 2024. "Sand & Gravel General Permit." Accessed December 2024: <https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Sand-Gravel-General-Permit>



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