



# **NoaNet Washington Rural Access Project**

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## **ENVIRONMENTAL ASSESSMENT**

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### **Washington Rural Access Project ROUND II August 2011**

**Prepared for:  
National Telecommunications and Information Administration  
Broadband Technologies Opportunities Program**

**In cooperation with the:  
US National Forest Service  
Colville and Okanogan – Wenatchee National Forests**





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### **WRAP Round II**

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**PACE Engineers, Inc.**



**CHR Solutions**



**Tierra Right-of-Way Services**





## WASHINGTON RURAL ACCESS PROJECT Round II - Environmental Assessment Executive Summary

### Executive Summary

The Environmental Assessment (EA) provides an evaluation of environmental, cultural and socio-economic resources for compliance with the National Environmental Policy Act (NEPA) as specifically outlined in the *Environmental Assessment Guidance for BTOP Award Recipients Version 1.4* (August, 2010) produced by the National Telecommunications and Information Administration (NTIA) for the Broadband Technology Opportunities Program (BTOP). This document has been authorized and developed for BTOP Grant recipient Northwest Open Access networks (NoaNet) by a team of consultants that include PACE Engineers, Inc., CHR Solutions, Inc., and Tierra Right of Way Services, Ltd.

Northwest Open Access Network (NoaNet) is a not for profit wholesale telecommunications company formed by several Public Utility Districts (PUDs) in Washington to bring high-speed telecommunication services into underserved communities for utility uses and use by their constituents.

The Washington Rural Access Project Round II (WRAP Round II) addressed herein includes the second of a two-phase project for extending broadband service to rural areas of Washington State. WRAP Round I is underway, being completed under a BTOP Round I grant and includes over 900 miles of new fiber optic cable installation and microwave facilities across Washington State.

The project area is located in 15 counties across the state and is extremely diverse in terms of the terrain covered and areas served. The overall project, including project regions and route information is shown on the Project Overview Map at the end of Section 2. Individual route maps at a granular level are provided in Appendix A. More detailed route information and tabulations of the environmental resources associated with the project are contained in Appendices A, B, and C. Appendix D provides documentation of the environmental consultation process used to solicit comment and engage agency involvement in the project. For compliance with the National Environmental Protection Act and the National Historic and Preservation Act, SHPO documentation of concurrence is provided in Appendix E and detailed in Section 4.6.

### ***Preferred Alternative (Proposed Action)***

The Preferred Alternative for the WRAP Round II Project consist of 489 miles of underground and aerial fiber broadband construction, along with installation of approximately 65 wireless antennae and communications facilities. Of the 489 miles of fiber, 162 (33%) will be constructed underground using a combination of plowing, trenching, and directional boring construction techniques. Plowing, then directional boring, followed by trenching are the preferred methods for underground construction, and this order of preference is based on the invasiveness of each method. The plowing method is the least invasive method and the trenching method, although also minimally invasive, has slightly greater impacts resulting from construction. The remaining 327 miles of fiber will be installed aurally on utility poles already in place, and will be installed mainly by using a bucket truck. In instances where

access is restricted, installation will be completed by workers physically climbing poles not accessible by bucket trucks.

The 65 wireless locations contain existing structures to which wireless facilities will be attached. All wireless collocation sites are subject to Section 106 (National Historic Preservation Act) review for visual and aesthetic impacts.

With installation of the underground and aerial fiber, along with the wireless facilities in this Preferred Alternative, 285 Anchor Institutions that include schools, hospitals, medical clinics, emergency response agencies, libraries, and tribal centers will be served with high speed broadband.

**No Action Alternative**

The No Action Alternative was also evaluated under this assessment, and there are no negative impacts associated with this alternative. However, the numerous potential positive impacts on the local economy, socioeconomic conditions, and existing fiber broadband network in rural areas of the State would not be realized under this alternative.

**Environmental Assessment of Impacts**

This Environmental Assessment provides a summary of the existing environment, anticipated potential impacts, and avoidance and mitigation measures to be employed during project design and construction. This project will utilize minimally invasive construction techniques and as planned, will not result in any long-term adverse impacts to the environment. NoaNet will satisfy appropriate mitigation measures by following the permitting and regulatory requirements to minimize the impact to the environment.

The Summary of Environmental Impacts Table shows the potential impacts on various environmental resources and includes the routes that may be impacted.

**Summary of Environmental Impacts Table**

Resource Area	Preferred Alternative		No Action Alternative	
	Summary of Impacts	Route	Summary of Impacts	Route
Noise	No long term impacts. Short term, insignificant impacts during construction.	All Routes	No long term or short term impacts.	All Routes
Air Quality	No long term impacts. Short term impacts mitigated by BMPs for reducing fugitive dust and limited machinery idling. GHG emissions are insignificant.	All Routes	No long term or short term impacts.	All Routes
Soils and Geology	No long term impacts. Short term impacts during construction mitigated through BMPs for erosion control and plowing.	All Routes except NE-3 and NW-1A	No long term or short term impacts.	All Routes
Prime Farmlands	No impacts.	All Routes	No impacts.	All Routes
Surface Water	No long term impacts. Short term impacts for underground construction mitigated through BMPs for erosion control, permitting with US Fish and Wildlife and ACE, and directional boring to avoid streams. No impacts for aerial construction.	All Routes except NE-3 and NW-1A	No long term or short term impacts.	All Routes
Wetlands	No long term impacts. Short term impacts for underground construction mitigated through BMPs for erosion control, coordination with ACE, and directional boring to avoid wetlands.	All Routes except NE-3 and NW-1A	No long term or short term impacts.	All Routes

## Summary of Environmental Impacts Table

Resource Area	Preferred Alternative		No Action Alternative	
	Summary of Impacts	Route	Summary of Impacts	Route
Coastal Zone	Coordinating and permitting with local coastal zone management programs, no impacts.	All NW and NC Routes	No long term or short term impacts.	All Routes
Floodplains	No impacts.	All Routes	No impacts.	All Routes
Wild & Scenic Rivers	No impacts.	All Routes	No impacts.	All Routes
Wildlife	No effect. Impacts avoided through BMPs and ongoing coordination with USFS agencies for protecting surface water resources and other habitats.	All Routes	No effect.	All Routes
Vegetation	No long term impacts. Minimal short term impacts with use of plowing and directional boring construction technique, along with BMPs for erosion control and re-vegetation.	All Routes	No long term or short term impacts.	All Routes
Threatened/Endangered Species	No effect expected. Impacts avoided through permitting and coordination with US FWS and USFS. Permits will be granted based on current BMPs that will avoid impacts. USFS will not invoke Section 7 for plantlife in Colville NF.	All Routes	No long term or short term impacts.	All Routes
Ecoregions	No impacts.	All Routes	No impacts.	All Routes
Historic and Cultural Resources	No Adverse Effects with approved treatment plans adopted by NTIA, SHPO, tribes, and any other involved parties.	All Routes	No adverse effects.	All Routes
Aesthetic and Visual Resources	Short and long term impacts avoided with BMP guidance from Migratory Bird Treaty Act and adopted Historic/Cultural treatment plan.	All Routes	No long term or short term impacts.	All Routes
Land Use	No impacts.	All Routes	No impacts.	All Routes
Infrastructure	No adverse impacts with traffic control plan adopted by WSDOT and local cities. Positive impacts result from improved broadband infrastructure in rural areas.	All Routes	No positive impacts realized.	All Routes
Socio Economic Conditions	No adverse impacts. Positive impacts include over 660 job created.	All Routes	No impacts.	All Routes
Brown fields & Hazardous Waste	No significant long term or short term impacts.	All Routes	No impacts.	All Routes
Health & Human Safety	No impacts with traffic safety plans for construction workers, vehicles, and pedestrians required by state and local permits.	All Routes	No impacts.	All Routes
Climate and GHG Emissions	No significant impacts.	All Routes	No impacts.	All Routes
Cumulative Impacts	Insignificant long term impacts on aesthetic and visual resources with two-foot antennae extensions on existing structures. Aesthetic and noise resources for pedestrians, businesses, residents, wildlife, and traffic will be impacted during short periods of construction. No effect is reasonably expected on endangered species. Positive socioeconomic impacts by improving access to education, job training, and health services in underserved counties.	All Routes	No impacts on the environment. No positive impacts on socioeconomic conditions.	All Routes

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**Round II - Environmental Assessment**  
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**WASHINGTON RURAL ACCESS PROJECT**  
**Round II - Environmental Assessment**  
**Section 1: Purpose and Need**

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**1. PURPOSE AND NEED**

In the state of Washington, challenging geographic barriers make it difficult to bring broadband to many of the state's remote communities and prohibitive construction costs have further limited extension of broadband services to many areas. Natural features both east and west of the Cascade mountain range, foothills, ridges, canyons, gorges, national forests, and complex waterways have thus denied vulnerable populations access to high capacity, reliable internet service. These are services that have become essential for a wide variety of day to day activities ranging from searching and applying for jobs online to live streaming for medical consultations.

This second phase of NoaNet's two-phase BTOP grant project will promote education, ensure safety, and improve the quality of life for tens of thousands subscribers across the state of Washington. When this second phase is complete, NoaNet and its consortia will have a seamless network of broadband facilities reaching more than 170 communities in rural and underserved areas. These are areas of the state where unemployment and job opportunities are lowest and education and medical facilities are fewest. The Round II project will support Washington's schools, colleges, libraries, state parks, and public health and safety agencies, many of which are located outside the heavily populated Interstate 5 corridor where mining or timber operations once thrived, yet have faced steady decline with unemployment rates greater than 13%.

Nearly 700 jobs are expected to be created or preserved as a result of the project. The areas to be served are disadvantaged, rural portions of Washington State where unemployment and under-employment are much higher than the national average.

Delivering new and enhanced broadband capabilities, this project will effectively:

- Bring a minimum of 100Mbps or higher connectivity to anchor institutions and the ability to scale beyond 10Gbps for the entire system.
- Extend at least one gigabit broadband infrastructure to each community it passes that can be scaled to meet the needs of the future.
- Bring high capacity mobile data to first responders through last mile deployments that include two dual band radio public safety projects.
- Provide affordable broadband access to a low income population.
- Facilitate more affordable and accessible broadband service for up to 86,000 households and 14,000 businesses by enabling local Internet service providers to utilize the project's open network.

- Support improved commerce, education and research, and consumer health in rural communities by enabling public access to broadband services through local libraries, and schools.
- Extend broadband and computing capacity to libraries, career and employment centers and community colleges in and around the un-served areas while working within those entities to ensure that programs and support are available to vulnerable and underserved populations.
- Enhance healthcare delivery in the state of Washington by connecting remote clinics and hospitals to allow for remote diagnostic imaging, laboratory and other health services.
- Extend broadband services into critical health, Emergency Medical Services (EMS) and public safety agencies to enable collaboration, interconnection and more prompt and effective federal, state and local emergency response, including 9-1-1.
- Increase availability to broadband services to vulnerable populations in order to expand residents' access to on-line employment and job training resources.
- Create jobs associated with planning, design, construction and long term maintenance of the expanded network.
- Deliver broadband infrastructure to law and justice organizations to enable technology advances that would streamline and make available access to justice information, processes, education and applications to rural and disadvantaged populations.



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## WASHINGTON RURAL ACCESS PROJECT Round II - Environmental Assessment Section 2: Proposed Action and Alternatives

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### 2. PROPOSED ACTION

The proposed action is for construction of the second and final phase of Northwest Open Access Network's (NoaNet's) BTOP grant funded Washington Rural Access Project and is referred to as WRAP Round II. WRAP Round II includes installation of approximately 489 miles of fiber optic cable and wireless network facilities to expand service in 15 separate counties across Washington State. Figure 2-1 provides graphic representation of this project (WRAP Round II) and shows the relationship of the 12 WRAP Round II routes to the first phase of the project (WRAP Round I). WRAP Round I is underway and consists of 921 miles of new fiber-optics constructed along 19 separate project routes serving within 20 counties across Washington State. WRAP Round II will augment and complement the Round I installation and consists of approximately 489 miles of new fiber-optic cable and wireless broadband infrastructure at 65 separate locations. The project will expand broadband service opportunities in the rural northwestern, northeastern and southern portions of Washington State. The proposed construction will take place in Benton, Clallam, Clark, Ferry, Jefferson, Kitsap, Okanogan, Pend Oreille, Skagit, Snohomish, Spokane, Stevens, Walla Walla, Whatcom, and Yakima counties, and will bring broadband service to 285 anchor institutions. These anchor institutions consist of schools, hospitals, medical clinics, emergency response agencies, libraries, and tribal centers.

The proposed action is described in Section 2.1 and summarized in Table 2-1. In addition, more detailed descriptions of the project segments are included in Table 2-2 at the back of this Section. Project maps and detailed route descriptions are provided in Appendix A. Appendix B contains information regarding the wireless facility installations included in the project. Section 3 provides summarized data for the overall project and Appendix C provides more detailed data by route regarding the environmental resources assessed in this document.

#### 2.1. Project Description

The preferred alternative for this project has been defined by NoaNet, its sub-participants and a consultant team to arrive at the most logical means of serving the communities and anchor Institutions identified in the BTOP Grant Application. Table 2-1 provides a brief summary of the 12 Routes, or project segments, included in WRAP Round II and the following paragraphs provide a description of each route. Please note that route numbering is continuous from WRAP Round I.

**Table 2-1: Route Summary**

Route	Route Name	Aerial (miles)	Under-ground (miles)	Total (miles)	Col-location Sites
NC-1A	Whatcom County	13.62	0.42	14.04	
NC-2	Skagit County	8.60	1.82	10.42	
NC-3	Snohomish County	27.68	3.05	30.73	
NE-1	Tonasket to Tiger	41.28	95.04	136.3	
NE-2	Ione to Jared Road	49.36	0.63	49.99	
NE-3	Rural Stevens and Spokane Counties	-	-	-	4
NW-1A	Port Angeles	-	-	-	41
NW-2	Jefferson County	39.81	7.01	46.82	20
NW-3	Kitsap County	58.40	2.55	60.95	
SC-2A	Washougal to Mill Plain	11.59	1.06	12.65	
SC-5	Yakima County	30.77	38.66	69.43	
SC-6	Benton County	46.36	11.73	58.09	
<b>Total</b>		<b>327</b>	<b>162</b>	<b>489</b>	<b>65</b>
<i>Percent of Total</i>		67%	33%		

**2.1.1. Route NC-1A – Whatcom County**

Route NC-1A is approximately 14 miles long and occurs within Whatcom County in the north central part of Washington State. The route is an extension of a Round I installation and is almost entirely aerial, with less than one half mile to be constructed underground. Starting at the southern end on Nooksack Indian Tribal Lands in the community of Deming, the route follows SR-542 north and east to Kendall. From Kendall, the route extends north along Kendall Road into Peaceful Valley and east to Maple Falls. Route NC-1A occurs entirely in unincorporated area.

**2.1.2. Route NC-2 – Skagit County**

The Skagit County Route is approximately 10.4 miles of fiber optic cable, with 8.6 miles of aerial installation on existing poles and 1.8 miles of underground construction. Route NC-2 starts in the City of Sedro-Woolley and will serve several anchor institutions within the City limits before branching out north to the Thornwood community, northeast to the Job Corps anchor institution on Hub Drive, and again northeast to the Upper Skagit Tribe’s Reservation Land north of Helmick Road. Most of the Route will be constructed along Washington State right of way (approximately 7 miles) with the remainder within the City of Sedro Woolley and a small portion (0.14 miles) on Upper Skagit River Tribal Lands.

**2.1.3. Route NC-3 – Snohomish County**

Route NC-3 includes nearly 31 miles of fiber optic cable installation: 27.7 miles of aerial installation on existing poles and 3.1 miles of underground installation. This Route will provide access to high-speed broadband in rural

areas of Snohomish County from Lake Stevens to Snohomish to Monroe. Starting on the north side of Lake Stevens, the route will connect several anchor institutions through aerial and underground construction before traveling south along rural roads to the City of Snohomish. At the intersection of 2<sup>nd</sup> Street and Avenue D in the City of Snohomish, the route will continue in two directions. One segment will continue south along Airport Way to the Cathcart community in Cross Valley, crossing the Snohomish River. The other segment extends east and south along US-2 to the City of Monroe. All segments contain both aerial and underground construction.

#### 2.1.4. Route NE-1- Tonasket to Tiger

Route NE-1 occurs in the northwestern most portion of Washington State and extends through Okanogan, Stevens, Ferry, and Pend Oreille Counties, with approximately 42 miles of fiber installed aerially and 95 miles to be installed underground. Starting in the City of Tonasket (Okanogan County), the proposed route will be constructed along SR-20 east through Wauconda and the Okanogan-Wenatchee National Forest to the City of Republic (Ferry County). From Republic it continues on SR-20 through the Colville National Forest and over the Lake Roosevelt National Recreation Area and Columbia River via the Kettle Falls Bridge on SR-20 and to the City of Kettle Falls (Stevens County). From Kettle Falls the route continues east through the City of Colville and the community of Park Rapids before reaching the community of Tiger at SR-31, just a few miles south of Ione (Pend Oreille County). Route NE-1 will connect to existing fiber backbone and to the proposed Route NE-2 that will be constructed north-south through Pend Oreille County. Portions of NE-1 will occur on federal land including approximately 28 miles of primarily underground installation along WSDOT right-of-way within the Coleville National Forest and 0.25 miles of aerial installation within the Okanogan – Wenatchee National Forest, and approximately 0.25 miles of aerial and underground installation on BLM lands. NoaNet has worked closely with these and other state and local agencies to ensure that this Environmental Assessment will support the future permits that are required for construction on federal lands.

#### 2.1.5. Route NE-2 – Ione to Jared Road

Route NE-2 is a north south Route in Pend Oreille County in the northwest corner of the state. The route is approximately 50 miles long, with only one small segment (less than one mile) proposed for underground construction and the remainder being aerial construction on existing poles. The route begins just south of Metaline and Metaline Falls in northern Pend Oreille County, heading south along SR-31 south through the Town of Ione and then along SR-20 through the communities of Tiger, Lost Creek, Blueslide, Ruby, Jared, and Locke before reaching the City of Cusick, eventually terminating at Jared Road. A second 1.3 mile segment includes both aerial and underground installation within the Kalispel Tribe Reservation on the east side of the Pend Oreille River along Leclerc Road and will serve the Kalispel Tribal Court Anchor Institution. Less than two miles of Route NE-2 will occur on federal lands and

NoaNet has worked closely with the affected federal agencies (US Forest Service and BLM), as well as state and local agencies to ensure that this Environmental Assessment will support the future permits that are required for construction on federal lands.

#### 2.1.6. Route NE-3 – Rural Spokane Counties

Route NE-3 will provide access to high-speed broadband to rural Spokane County by installing microwave infrastructure on existing structures. The microwave infrastructure will be co-located on four sites that contain towers and antennas with existing telecommunications equipment in place. One of the sites is located in the City of Spokane within NoaNet's pre-existing collocation facility in the US Bank building.

#### 2.1.7. Route NW-1A – Port Angeles

Route NW-1A will provide access to high-speed broadband in Clallam County and the City of Port Angeles by installing wireless infrastructure on existing structures. This portion of the project will serve a wide area of rural northwestern Washington on the Olympic Peninsula. The wireless infrastructure will be co-located on 41 sites that contain towers and antennas with existing telecommunications equipment in place. These sites include primarily public and community facilities throughout the project area and the work required is limited to installation of wireless antennas.

#### 2.1.8. Route NW-2 – Jefferson County

Route NW-2 includes approximately 46 miles of fiber installation as well as wireless facilities at 20 separate sites. The fiber optic installation includes 39.8 miles of aerial installation on existing poles and approximately 7 miles of underground construction. Starting at Fort Warden State Park in Port Townsend at the north end, the proposed route will run south along two separate alignments through Port Townsend, then south along SR-20 and SR-19 through Hadlock and Chemicum to Port Ludlow. From Port Ludlow, a parallel route extends back north to Hadlock along Oak Bay Road. At the intersection of Oak Bay Road and SR-116 the proposed fiber route extends west to Indian Island by an attachment to the Flagler Road Bridge, crossing navigable waters at the north end of Oak Bay. Route NW-2 continues across federally owned Indian Island and crosses Scow Bay to Marrowstone Island via an aerial crossing. The proposed route then runs north through the community of Nordland, past Mystery Bay State Park and ultimately to an underground segment through Fort Flagler State Park at the northwestern tip of Marrowstone Island.

The wireless portion of Route NW-2 includes site work at 20 separate locations and will support wireless equipment that will be augmented by the fiber optic cable installation. Construction at these sites is limited to collocation of new wireless equipment at existing wireless towers and antenna sites and requires no ground disturbance.

#### 2.1.9. Route NW-3- Kitsap County

Route NW-3 will provide access to high-speed broadband in three areas of Kitsap County. Approximately 58.4 miles of fiber routing will be installed aerially and just over 2.5 miles will be installed underground. The northern portion of NW-3 includes approximately 10.7 miles and provides service to the Suquamish Indian Tribe at Port Madison and surrounding rural areas. The middle portion includes approximately 32.3 miles and serves rural areas north of the City of Bremerton, and includes various segments east, north, and west of Dyes Inlet in Puget Sound. The southern portion includes approximately 17.7 miles and serves the City of Port Orchard and rural areas to the east and south of the City.

#### 2.1.10. Route SC-2A – Washougal to Mill Plain

Route SC-2A is an extension of an installation included in WRAP Round I and will provide access to high-speed broadband in Clark County from Washougal to the Mill Plain area. Approximately 0.9 miles of fiber routing will be installed underground, and 11.8 miles are proposed for aerial construction. This 12.7-mile route begins in Washougal and follows urban roads in Washougal and Camas, crossing over the Washougal River before heading north past Lacamas Lake. At Northeast Brunner Road the route continues west before crossing Lacamas Creek and heading back down into the Mill Plain community.

#### 2.1.11. Route SC-5 – Yakima County

The Yakima County Route will provide access to high-speed broadband in Yakima County as well as a small area of the City of Prosser in Benton County. The nearly 70 mile installation includes approximately 30.8 miles of aerial installation on existing poles and 38.7 miles of underground construction. There are three major segments of the route located in northern and eastern Yakima County. The northern segment includes 23.2 miles of fiber from the City of Tieton to the Town of Naches, and then southeast along US-12 through Eschbach, Gleed, and the City of Yakima ending at Terrace Heights. A 10.5 mile segment within the Yakima Nation Reservation includes both aerial and underground fiber from White Swan to just west of the Town of Harrah. A few small segments will be installed within the City of Wapato to designated anchor institutions in the vicinity. The largest, 34.1 mile segment in the SC-5 Route extends from the City of Toppenish to the City of Mabton and then eastward into Benton County to the City of Prosser, where it will connect with existing NoaNet Fiber routes. This southern segment follows SR-29 and a Burlington Northern Railroad corridor. A large portion of it is located within the Yakama Nation Reservation.

As noted above, Route SC-5 is within the limits of several cities and towns including Harrah, Mabton, Naches, Prosser, Tieton, Toppenish, Wapato and Yakima. It also occurs within the Yakama Indian Reservation and along Washington State, Benton County and Yakima County right of way.

### 2.1.12. Route SC-6 – Benton County

Route SC-6 is for just over 58 miles of fiber optic installation that includes approximately 46.4 miles of aerial installation on existing poles, and 11.7 miles of underground construction. The northern segment will extend broadband fiber within the City of Richland from existing fiber near the intersection of SR-240 and US-182 to Jones Road and SR-224, just east of the Yakima River. A segment of aerial and underground fiber will be installed north of the Burbank community and the McNary National Wildlife Refuge in Walla Walla County. The longest, 50 mile segment includes 40.9 miles of aerial and 8.5 miles of underground serves from the community of Finley located southeast of the City of Kennewick to the community of Paterson located north of the Umatilla National Wildlife Refuge along the Columbia River.

## **2.2. Construction Techniques**

A summary of underground (plow, trench, and directional bore construction methods), and aerial methods of installation is presented in the following paragraphs. It is important to note that regardless of construction technique, wherever possible new facilities will be located in previously disturbed right-of-way and/or construction easements. NoaNet will use all approved Rural Utilities Service (RUS) standard procedures and follow all state and local entity guidelines for permitting and construction practices to ensure minimal impact to the landscape. The shallow depth of cable (estimated at 36-inch minimum depth) will eliminate the need for subsurface testing. It is the intent of this project to avoid potential impacts to the environment and follow all applicable Washington State Department of Transportation (WSDOT) Standards and permit requirements to eliminate the possibility of adverse effects.



**Photo 2.1:**

Plowing Installation Method along RR easement

Approximately 33% of the project will be installed underground using the plow method of construction (See Photo 2.1), with directional boring used to avoid or mitigate specific instances where protection of the environment or existing facilities is required. The need for directional boring will be determined during the design phase of the project and be limited to areas where mitigation or avoidance is required. Factors indicating the need for directional boring may include: stream crossings, wetlands, archaeological and/or historically significant sites, existing utility conflicts and similar potential conflicts. NoaNet will work closely with other utilities in the project vicinity to avoid conflict with existing utilities and identify potential for using existing conduit where feasible. Use of existing conduit provides an economical and environmentally friendly solution by avoiding the need for directional

boring. In some instances, it will provide a favorable alternative to creating new bridge attachments.

Aerial cable installation on existing poles will be used for the remaining 67% of the fiber installation. This is the preferred method of construction in areas where existing utility poles are in place and/or there are potential environmental impacts associated with underground construction such as inadequate (rocky) soil conditions, extensive wetlands, migration routes and habitat preservation, etc. Other factors that might necessitate aerial construction are limited corridor space for installation and proximity to rivers.

#### 2.2.1. Plowing, Trenching, and Directional Boring Methods of Construction

Wherever possible and in most instances, underground installations will be in previously disturbed ground adjacent to the paved roadway shoulder, ditches, and/or fence lines along public right-of-way. Underground innerduct installations will be accomplished using the plowing method wherever possible or directional boring if required. The depth of the innerduct will be a minimum of 36" and it will be placed near the same vertical extent as the existing cable. The combination of depth and the polyethylene conduit used to contain the fiber optic cable provides adequate protection of the installation.



**Photo 2.2:**

Plowing Method of Installation  
Source: The Fiber Optic Association

As depicted in Photos 2.2 and 2.3, plowing is a minimally invasive construction technique that does not require a substantial amount of soil excavation. A typical plowing shear is not more than 3" in width. The shear slices into the earth to allow for installation of the conduit or cable. Once the conduit or cable is in place, the plow slot is refilled and compacted with native soil. After conduit, required vaults, hand holes, and cabinetry are installed; the



**Photo 2.3:**  
Pull Cat & Static Mount Plow within Interstate  
Right-of-way

actual fiber optic cable is blown into the conduit. This method of installation has minimal impact on the landscape, and imported backfill is not required. Trenching involves similar-sized heavy equipment to plowing and requires the same access, only the trench width is slightly wider (6" to 30") than plowing, and the main difference is how the soil is disturbed. Trenching physically removes the soil from the trench slot and requires more restoration since it needs to be backfilled, packed in lifts, and in some instances re-vegetated. Because of the additional impacts on soil and vegetation, trenching will be used only in situations where plow machines or directional boring machines do not have adequate access to complete underground construction. Less than 1% of the entire underground construction of this project will require a trenching machine. In some instances, where rock is encountered and unavoidable, a rock saw may be required for conduit installation. In these cases, the rock saw will cut a trench through existing rock, the conduit installed, and a backfill of concrete slurry may be used to anchor and protect the conduit. The project at times traverses through, or travels near, agricultural lands where a variety of crops are grown, so specific coordination with property owners will be required to maintain access and avoid impacts. In addition, local restrictions, environmental concerns and habitat (i.e., nesting, spawning, critical habitats, etc.), have the potential to impact specific construction dates. It is expected that NoaNet will satisfy appropriate mitigation measures by following the usual permitting and regulatory requirements to minimize the impact to the environment.

Directional boring may be used to accommodate stream, creek, river and culvert crossings and other features that prohibit the plow method of installation to be used. Directional boring will only be used in areas of environmental concern and for compliance with specific permit requirements. Boring is a minimally disruptive technique that requires entry and exit pits (2'

x 2' x 4') for construction. Pits are backfilled and re-vegetated immediately after placement is completed. Standard depth is 48" unless governing agencies have more stringent depth requirements. Normally for water crossings, the minimum depth is 10 feet below bed. Other crossing depths vary, but will be no less than the standard 48" depth below the surface of the ground. Standard equipment bores a 1 foot vertical drop for every 6 feet of horizontal run (ie 10 ft vertical drop would require a minimum of a 60-foot setback). Installation is accomplished using acoustic or other ground sensing techniques that allows for more precise placement both horizontally and vertically. Drilling equipment will be located outside of the stream and wetland buffers.



**Photo 2.4:**  
Directional Bore Machine Working in Town  
Utility Easement (boulevard)

Directional boring may be employed if there is limited access for the plow and also to minimize the effects to landscape and urban areas (i.e., sidewalks and streets). The use of this construction method will be determined during final project staking and as permitting dictates. See Photo 2.4 for a picture of a standard boring machine.

The plowing or directional boring methods will be used to install conduit through town/ urban area as well as to buildings. When entering buildings, a small ground level hand hole will be placed at the building, coming up out of the hand hole will be a 1¼" riser that will connect to the junction box. Contractors will then drill a hole, approximately 1¼" in diameter through the outside wall of the building in which to feed the cable through to the inside of the building. The project will be constructed, in its entirety, using industry standard procedures and will follow all state and local entity guidelines for permitting and construction practices to ensure very little impact on the landscape. In the state of Washington, with the exception of the northeastern routes (NE-1 and NE-2), placement of the fiber optic network in the project can occur year-round depending on weather and ground conditions. Local requirements, environmental issues, and habitat have the potential to impact specific construction dates and activities. NoaNet will satisfy appropriate mitigation measures by following the usual permitting and regulatory requirements to minimize the impact to the environment.

The operating day will vary but usually will start within an hour after sunrise and end a couple of hours before sunset. In towns and urban areas, the

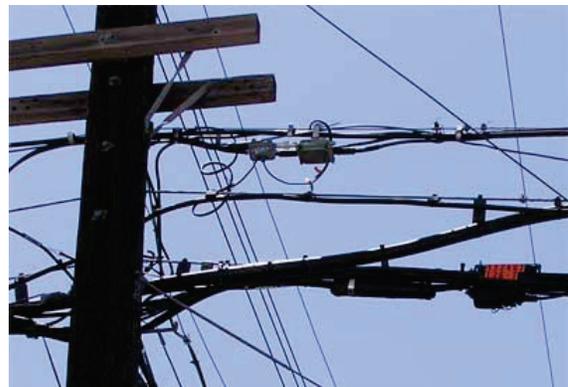
normal work day will comply with local noise ordinances with the average day starting around 8:00 a.m. and ending around 6:00 or 7:00 p.m. In rural areas, the construction day may be extended to start as early as 7:00 a.m. In all instances, construction timing will be determined by worker safety, public safety, and maintenance of access to local properties to avoid impact to emergency vehicles and agricultural and commercial vehicles.

Construction equipment required for placement will consist of the following:

- Rock saw
- Tracked plow cat with static plow
- Tracked pull cat
- Backhoe, 6" to 12" excavation bucket
- Directional boring machines
- Trenchers
- Tracked clean-up cat
- Cable reel trucks and trailers
- Rubber Tire Vibratory Plow
- Tractor trailer transport semis
- 3/4 & 1 ton trucks
- Water truck
- Dump truck
- Air compressor

#### 2.2.2. Aerial Installation

Aerial installation is the preferred method for approximately 67%, or 330 miles, of the total project length. Aerial installation on existing utility poles similar to that illustrated in Photo 2.5 is anticipated and no new poles are proposed. Pole replacement, if required, will be accomplished without the use of pile drivers and new poles will be inserted and secured in existing utility pole holes or, if required, the new pole will be placed within 1 foot of the existing pole by auguring and inserting the pole. The area around the pole will be filled with dirt from auguring and the ground surface restored to original conditions. Pole replacements attributed to height or class issues will most often be reused elsewhere by the local utility at their discretion. Poles that are deemed unsafe or unusable will be recycled. In the unlikely event that a creosote pole were discovered and required replacement, all appropriate disposal methods will be accomplished in accordance with Washington State Administrative Code (WAC) 173-303-071(3)(g).



**Photo 2.5:**

Example of Aerial Installation  
Source: The Fiber Optic Association, Inc.

Pole recycling is a preferred method to disposal, and recycled poles are often reused locally for fences, pole buildings, gates, etc.

The new fiber optic cable will be placed aerially where existing pole line facilities exist along the route. The installation technique will be determined by the accessibility to the pole. When poles are within a 40-foot distance from the shoulder of the road, the fiber optic cable is installed by man-lift trucks pulling a line out first which will be used for winching the actual fiber optic cable in place to each pole. The poles are framed, in accordance with pole owner specifications as the winch line is pulled out, with a single pulling block placed on each pole. When the proper location is reached, the winch line is hooked to the fiber optic cable and is then pulled back into place at each pole location. When the distance is greater than 40 feet or the terrain does (i.e. wetlands or steep hillsides) not allow the trucks boom to reach the pole, "an easement pole" method will be used. This method requires a lineman to climb the pole to perform the installation. When the fiber optic cable is winched into place, the pole is revisited to properly sag it from the power line and land (secure) the fiber optic cable to the framed attachment hardware.

Installation of aerial fiber optic cable is accomplished with a moving work zone and the cable can typically be placed in up to three mile lengths without a splice point. Proper signs, traffic control, and safety gear will be maintained at all times to insure a safe work zone area for the workers and the motorists traveling in the vicinity. All cable and winch trailers used in this operation are located to not obstruct the flow of traffic. Equipment typically used for aerial installations includes:

- Aerial man-lift trucks
- Line truck
- Support pick-up truck
- Trailer
- Reel loader truck

In limited circumstances, pole replacements may be necessary to accommodate clearance requirements or where poles have deteriorated past their useful life and may present a safety hazard. Replacements and clearances will be maintained as predicated by the current edition of the National Electric Safety Code (NESC).

Pole replacements, if required, will typically occur to alter the height and/or class of the structure to safely accommodate the addition of the fiber optic cable. Typically a pole replacement will displace the existing pole in the same location and erosion control measures will not be required. In certain circumstances, however, a pole replacement may occur by setting the pole next to the existing pole and then removing the displaced pole. Soils removed for pole replacements will be used to fill the hole from the displaced

pole and properly compacted to local government and utility owner specifications.

2.2.3. Wireless Facilities

Wireless facilities will be constructed within Routes NW-1A near Port Angeles in Clallam County, NW-2 in Jefferson County, and NE-3 in Spokane and Stevens Counties. Wireless facility construction will occur at a total of 65 sites. Table B-1 in Appendix B provides the location of all wireless locations for this project. All wireless facility installations are limited to collocation of wireless antennas and equipment on and within existing structures with no ground disturbing activity involved. Photos 2.6, 2.7, and 2.8 show examples of wireless collocations on buildings, street lamp posts, and towers, respectively.



**Photo 2.6:**  
Wireless Collocation on a Building  
Source: CHR Solutions, Inc



**Photo 2.7:**  
Wireless Collocation on a Street Lamp  
Source: CHR Solutions, Inc



**Photo 2.8:**  
Wireless Collocation on a Tower  
Source: CHR Solutions, Inc

## **2.3. Project Alternatives**

During preparation of the application for the original BTOP grant, major portions of the routes were field verified to assist with a determination of the preferred alternative for serving the project area(s) and connecting to the Anchor Institutions.

### 2.3.1. Preferred Alternative

The Preferred Alternative is a combination of buried (plow and directional boring, with limited trenching) and aerial cable installations, with wireless facilities collocated as described previously in this section. This alternative has been selected because it is the most cost-effective and efficient alternative and has the least amount of potential impacts to the environment and archaeological/historical sites. It also minimizes the potential for disruption of traffic, and other socio-economic factors. The cable routes for the Preferred Alternative are summarized in Table 2-2 and, as indicated, include a mixture of underground (162 miles or approximately 33%) and aerial (327 miles or approximately 67%) fiber optic cable installation.

### 2.3.2. No Action Alternative

The No Action Alternative would be to not construct the fiber cable and wireless facilities as presented. The No Action Alternative does not fulfill the requirements of the NTIA BTOP Grant awarded for the project and has been addressed in addition to the Preferred Alternative throughout this Environmental Assessment.

### 2.3.3. Alternatives Considered but Eliminated from Further Discussion

Several alternatives considered but eliminated from further discussion include:

- All aerial installation on utility poles
- An all underground installation
- An all wireless solution

Due to the lack of existing utility poles in some regions of the project, an all aerial installation could not be accomplished within the time or budget constraints of the BTOP grant. Construction of new poles to serve the estimated 162 miles of the project that are currently designated for underground cable installation would require an enormous easement and permit acquisition process that is greatly simplified by underground construction in these areas. In many instances, the lack of physical space for utility poles along existing right of way would create traffic safety concerns. Installation of utility poles to accommodate an all aerial project would be more likely to result in negative impacts to environmental and cultural resources, impact bird migration and adversely impact the aesthetic resources of some of Washington's most scenic highways. In addition, network infrastructure reliability would be compromised by an all aerial installation due adverse weather conditions such as high winds or snow that could cause cable

breaks and result in unnecessary disruptions in service. This is especially true in the rugged mountainous areas of the Northeastern region and along the coastal areas of the Northwestern portion of the project.

Consideration was also given to an all underground installation and similar constraints made it unfeasible under the time and budget constraints of the BTOP grant. Approximately 327 miles of the project have been identified for installation of cable on existing utility poles that have been inspected to confirm their adequacy to support the proposed broadband cable installation. Due to the physical geology and topography of the project area, high costs, permitting issues, and length of time required for underground construction, the all underground alternative could not be achieved to meet the goals of the BTOP Grant within the time frame provided, and therefore was eliminated from further discussion.

Microwave transmission for underground and aerial fiber optic routes was discussed as part of the project scoping and development of this Environmental Assessment and resulted in this being the preferred method on Routes NW-1A, NE-3 and a portion of NW-2. This alternative is not feasible in most cases due to limited bandwidth capacity of microwave systems in comparison to fiber systems. Microwave would not have enough capacity to carry predicted demand of total traffic served. Microwave is an alternative for last mile in some cases where a site is not predicted to ultimately carry more than 100 Mbps of traffic. After careful consideration of the identified alternatives and working closely with sub-participants and local utilities, NoaNet has determined that the preferred alternative of 67% aerial and 33% underground construction is both the most cost effective and least intrusive alternative for the project.

## Route NC-1A – Whatcom County Photos

Source: WSDOT, December 2010



**Photo 2.9:**  
NC-1A, MP 17 of SR-542,  
Northbound, Full Right-Aerial



**Photo 2.10:**  
NC-1A, MP 22 of SR-542, Northbound,  
bridge crossing of Kendall Creek-Aerial



**Photo 2.11:**  
NC-1A, MP 0.09 of SR-547, Westbound,  
Switch Aerial to Underground

## Route NC-2 – Skagit County Photos

Sources: WSDOT and Google, December 2010



**Photo 2.12:**  
NC-2, MP 67.53 of SR-20, Northeast-bound,  
Bridge over Hansen Creek–  
Underground/Bridge Attachment



**Photo 2.13:**  
NC-2, MP 58.41 of SR-9, Northbound–Aerial



**Photo 2.14:**  
NC-2, MP 60.5 of SR-9, Northbound–Underground

## Route NC-3 – Snohomish County Photos

Source: Google, December 2010



**Photo 2.15:**  
NC-3, MP 13 of SR-2, Southeast-bound–Aerial



**Photo 2.16:**  
NC-3, 2nd Street near Pilchuck River crossing,  
Eastbound–Aerial



**Photo 2.17:**  
NC-3, Airport Way near Snohomish River crossing,  
Southbound–Aerial



**Photo 2.18:**  
NC-3, 20th Street SE near 83rd Avenue SE  
intersection, Eastbound–Underground

## Route NE-1 – Tonasket to Tiger Photos

Source: WSDOT, December 2010



**Photo 2.19:**  
NE-1, MP 264 of SR-20,  
Southeast-bound–Aerial



**Photo 2.20:**  
NE-1, MP 277 of SR-20, Northeast-bound,  
beside Bonaparte Creek–Underground



**Photos 2.21:**  
NE-1, MP 318 of SR-20, Northeast-bound and Full Right photos, within Colville National Forest–Underground



**Photo 2.22:**  
NE-1, MP 241 of SR-395, Northwest-bound and Full  
Right photos, near Bridge 395/545 over Columbia  
River–Underground/Bridge Attachment



**Photo 2.23:**  
NE-1, MP 372 of SR-20, Northeast-bound,  
Little Pend Oreille River Bridge Crossing–  
Underground/Bridge Attachment

## Route NE-2 – Ione to Jared Road Photos

Sources: WSDOT and Google, December 2010



**Photo 2.24:**  
NE-2, MP 400 of SR-20, Southeast-bound,  
Railroad Crossing–Aerial



**Photo 2.25:**  
NE-2, SR-20, Southeast-bound,  
near Bridge over Ruby Creek–Aerial



**Photo 2.26:**  
NE-2, Leclerc Road N within Kalispel Indian  
Reservation, Northbound–Aerial

## Route NW-2 – Jefferson County Photos

Sources: WSDOT and Google, December 2010



**Photo 2.27:**

NW-2, Flagler Road on Indian Island along US Navy property, Northwest-bound–Aerial



**Photo 2.28:**

NW-2, SR-116 near Chimacum Creek (ESA NOAA Marine Fisheries Critical Habitat), Eastbound–Aerial



**Photo 2.29:**

NW-2, Ft. Flagler Road Bridge to Indian Island, Eastbound photo–Aerial to Underground/Bridge Attachment

## Route NW-3 – Kitsap County Photos

Sources: WSDOT and Google, December 2010



**Photo 2.30:**

NW-3, Indianola Road NE within Port Madison  
Suquamish Indian Reservation,  
Eastbound photo-Aerial



**Photo 2.31:**

NW-3, Chico Creek Crossing (ESA NOAA Marine  
Fisheries CH), Westbound-Aerial



**Photo 2.32:**

NW-3, SR 160 near Salmonberry Creek crossing,  
Eastbound-Aerial

## Route SC-2A – Washougal to Mill Plain Photos

Sources: WSDOT and Google, December 2010



**Photo 2.33:**

SC-2A SE Mill Plain Blvd crossing SE 184th Ave,  
Eastbound-Underground



**Photo 2.34:**

SC-2A NE Everett Street/SR-500  
crossing Lacamas Creek,  
Southbound-Aerial



**Photo 2.35:**

SC-2A NE 3<sup>rd</sup> Ave crossing of Washougal River  
(ESA NOAA Marine Fisheries Critical Habitat),  
Northwest-Aerial

## Route SC-5 – Yakima County Photos

Sources: WSDOT and Google, December 2010



**Photo 2.36:**  
SC-5, S Naches Road near Naches River  
(ESA NOAA Marine Fisheries Critical Habitat),  
Southbound–Underground/Bridge Attachment



**Photo 2.37:**  
SC-5, MP 16 of SR-22 (Near Toppenish National  
Wildlife Refuge), Southeast-bound–Underground

## Route SC-6 – Benton County Photos

Sources: WSDOT and Google, December 2010



**Photo 2.38:**

SC-6, MP 166 of SR-14  
near intersection with 593 PR Road,  
Northeast-bound-Aerial



**Photo 2.39:**

SC-6, SR-224 & Demoss Road looking towards  
Yakima River, Westbound photo-Aerial



**Photo 2.40:**

SC-6, S Finley Road and SR-397  
(Railroad Crossing), Northbound-Aerial

Region	Route	Route Segment Name	Associated Structures by Route (1)	Wireless	Cable Length (miles)			Total by Region (miles)
				Col-location Sites	Aerial	Under-ground	Total	
North Central	NC-1A	From Deming Rd to MP 2 of SR-547	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		10.63	0.42	11.05	Total North Central 55.2
		SR-542 from SR-547 to Silver Lake Rd	No associated structures required on aerial routes.		2.99		2.99	
	NC-2	Within the City of Sedro-Woolley	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		3.27	0.07	3.34	
		Northbound from Sedro-Woolley	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		3.85	0.34	4.19	
		Eastbound from Sedro-Woolley	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		1.48	1.41	2.89	
	NC-3	Within the City of Lake Stevens	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		7.85	1.93	9.78	
		Lake Stevens to Snohomish	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		2.13	0.08	2.21	
		Within the City of Snohomish	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		3.23	0.07	3.3	
		Snohomish to Monroe	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		4.43	0.08	4.51	
		Within the City of Monroe	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		4.55	0.26	4.81	
		Snohomish to Cathcart	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		5.49	0.62	6.11	

Region	Route	Route Segment Name	Associated Structures by Route (1)	Wireless	Cable Length (miles)			Total by Region (miles)	
				Col-location Sites	Aerial	Under-ground	Total		
North-east	NE-1	Within the City of Tonasket	No associated structures required on aerial routes.		1.58		1.58	<b>Total North-east</b>	<b>186.5</b>
		Tonasket to Republic	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		31.72	7.3	39.02		
		Within the City of Republic	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		2.07	0.41	2.48		
		Republic to Kettle Falls	Above ground outside cabinetry, buried vaults and handholes.			41.87	41.87		
		Within the City of Kettle Falls	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		1.09	0.75	1.84		
		Kettle Falls to Colville	Above ground outside cabinetry, buried vaults and handholes.			7.01	7.01		
		Within the City of Colville	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		4.47	2.14	6.61		
		Colville to Tiger	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		0.35	35.75	36.1		
	NE-2	SR-31 from Mile Post 10 to Tiger Rd E	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		9.55	0.44	9.99		
		Within the City of Ione	No associated structures required on aerial routes.		1.3		1.3		
		SR-31 from Tiger Rd E to Cusick	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		32.32	0.12	32.44		
		Within the City of Cusick	No associated structures required on aerial routes.		1.24		1.24		
		From Cusick to Usk	No associated structures required on aerial routes.		3.6		3.6		

Region	Route	Route Segment Name	Associated Structures by Route (1)	Wireless	Cable Length (miles)			Total by Region (miles)
				Col-location Sites	Aerial	Under-ground	Total	
	NE-2	Leclerc Rd N from	No associated structures required on		1.35	0.07	1.42	
		Community Hall Rd to Turtle Rd	Aerial routes. Above ground outside cabinetry, buried vaults and handholes.					
	NE-3	Rural Stevens and Spokane Counties	Wireless infrastructure will be co-located on different sites that contain towers and antennas with existing telecommunications equipment in place.	4				
<b>North-west</b>	NW-1A	Port Angeles	Wireless infrastructure will be collocated on different sites that contain towers and antennas with existing telecommunications equipment in place.	41				<b>Total North-west 107.7</b>
	NW-2	Wireless Facilities	Wireless infrastructure will be collocated on different sites that contain towers and antennas with existing telecommunications equipment in place. One new 180-foot tall freestanding tower is proposed on a site that contains a water storage facility. A 20-foot extension increasing an existing tower from 60 to 80 feet will occur on one site.	20				
		Within the City of Port Townsend	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		7.76	1.4	9.16	
		From Port Townsend to Port Hadlock-Irondale	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		4.1	1.01	5.11	
		From Port Hadlock-Irondale to Port Ludlow	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		3.67	3.8	7.47	
		From Port Hadlock-Irondale to Marrowstone	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		23.92	0.8	24.72	

Region	Route	Route Segment Name	Associated Structures by Route (1)	Wireless	Cable Length (miles)			Total by Region (miles)
				Col-location Sites	Aerial	Under-ground	Total	
	NW-3	Roads on Map NW-3.1 (Northern Area)	No associated structures required on aerial routes.		10.69		10.69	
		Roads on Map NW-3.2 (Middle Area)	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		30.34	2.55	32.89	
		Roads on Map NW-3.3 (Southern Area)	No associated structures required on aerial routes.		17.7		17.7	
<b>South Central</b>	SC-2A	Washougal to Mill Plain	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		11.59	1.06	12.65	<b>Total SC 140.2</b>
	SC-5	From White Swan to Harrah	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		8.15	2.15	10.3	
		Within the City of Harrah	No associated structures required on aerial routes.		0.18		0.18	
		Within the City of Tieton	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		0.7	0.13	0.83	
		From Tieton To Naches	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		1.51	2.7	4.21	
		Within the City of Naches	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		1.21	0.25	1.46	
		From Naches to Yakima	No associated structures required on aerial routes.		8.63		8.63	
		Within the City of Yakima	No associated structures required on aerial routes.		6.4		6.4	
		Westbound from Yakima	No associated structures required on aerial routes.		1.65		1.65	

Region	Route	Route Segment Name	Associated Structures by Route (1)	Wireless	Cable Length (miles)			Total by Region (miles)
				Col-location Sites	Aerial	Under-ground	Total	
	SC-5	Within the City of Wapato	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		0.27	0.77	1.04	
		West off the City of Toppenish	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		0.62	0.83	1.45	
		Outlying the City of Wapato	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		0.6	0.04	0.64	
		Within the City of Toppenish	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		0.86	0.44	1.3	
		From Toppenish to Mabton	Above ground outside cabinetry, buried vaults and handholes.			18.69	18.69	
		Within the City of Mabton	Above ground outside cabinetry, buried vaults and handholes.			1.66	1.66	
		From Mabton to Prosser	Above ground outside cabinetry, buried vaults and handholes.			9.38	9.38	
		Within the City of Prosser	Above ground outside cabinetry, buried vaults and handholes.			1.62	1.62	
	SC-6	Within the City of Richland	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		2.89	2.95	5.84	
		Benton City Area (inside and outside city limits)	No associated structures required on aerial routes.		1.43		1.43	
		In Walla Walla County	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		0.97	0.24	1.21	
		Finley to Paterson	No associated structures required on aerial routes. Above ground outside cabinetry, buried vaults and handholes.		41.07	8.53	49.6	
	<b>Total Preferred Alternative Length</b>				<b>65</b>	<b>327</b>	<b>162</b>	

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- NoaNet PoP Sites
- Wireless Tower
- Aerial Fiber
- Underground Fiber
- Wireless Route
- Existing NoaNet Routes
- Round I Routes
- Tribal Lands
- BLM Lands
- US Forest Service
- National Wildlife Refuge
- National Park
- 5 Interstate
- 2 US Highway
- 101 State Route
- County Boundary



**Figure 2-1**  
Project Overview Map  
NoaNet WRAP Round II

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**WASHINGTON RURAL ACCESS PROJECT**  
**Round II - Environmental Assessment**  
**Section 3: Existing Environment**

**3. EXISTING ENVIRONMENT**

**3.1. Noise**

Noise throughout the entire WRAP Round II project is typical of rural areas where the installations are proposed. Noise is typically limited to very low ambient levels associated with traffic along roadways, natural wildlife noises, and noises caused by inclement weather. In a few urban areas of the project, higher noise levels may occur due to the increased traffic and commercial activities including shipping vehicles, passenger and freight trains, and airplanes. Industrial activities also contribute to an urban area’s overall noise level.

**3.2. Air Quality**

The air quality in rural Washington State meets federal Clean Air Act standards. The Clean Air Act currently regulates six air pollutants: carbon monoxide, ground-level ozone, lead, nitrogen dioxide, particulate matter, and sulfur dioxide.

The EPA has declared Greenhouse Gases (GHG) such as carbon dioxide as a pollutant that endangers health and human safety and a majority of GHG emitted throughout the State are from mobile sources such as automobiles. Section 3.12 discusses climate, GHG and global warming in more detail. Other activities affecting air quality included road dust lifted from unpaved surfaces by wind gusts, livestock operations, non-road equipment, and residential wood-burning. Primary concerns with air quality are related to dust and tailpipe emissions from construction equipment. Table 3-1 contains records on air quality for the counties served by the preferred alternative, and contains the number of days that the six regulated air pollutants were the main pollutant for the day.

**Table 3-1: 2008 Air Quality Index Records**

*All figures are number of days*

County	Carbon Monoxide	Nitrogen Dioxide	Ozone	Sulfur Dioxide	PM <2.5 <sup>1</sup>	PM <10 <sup>2</sup>	Total Days Recorded
Benton					195	110	305
Clallam			245		60		305
Clark			137		168		305
Jefferson					305		305
Kitsap					247		247
Okanogan					304		304
Pend Oreille					295		295
Skagit			198		107		305

**Table 3-1: 2008 Air Quality Index Records**

*All figures are number of days*

County	Carbon Monoxide	Nitrogen Dioxide	Ozone	Sulfur Dioxide	PM <2.5 <sup>1</sup>	PM <10 <sup>2</sup>	Total Days Recorded
Snohomish					305		305
Spokane	8		131		131	36	306
Stevens					237	68	305
Walla Walla					150	155	305
Whatcom					305		305
Yakima					300	5	305

Notes: 1 – Particulate Matter less than 2.5 micrometers  
2 – Particulate Matter less than 10 micrometers

Source: US EPA, 2011. <http://www.epa.gov/air/data/geosel.html>

Fugitive dust is described in the United States Department of Agriculture (USDA) Natural Resources Conservation Service Soil Survey as eroded soil particles that are suspended in the air during and after windstorms or various human activities, including many types of construction.

Fugitive dust is a source of PM<sub>10</sub>, one of the six air pollutants regulated by the Environmental Protection Agency (EPA) under the National Ambient Air Quality Standards (NAAQS). The suspended dust can easily be inhaled deep into the lungs which could result in premature death or disease if exposed over long periods.

The Soil Survey rates the soil features that can form the dust as follows:

- Low resistance - very favorable for the formation of dust
- Moderate resistance - favorable for the formation of dust
- High resistance - unfavorable for the formation of dust

The project area has many soil types that can contribute to the formation of dust, including stony silt loam, loamy sand, and rocky. Table 3-3 in Section 3.3 shows the soil type makeup of the project area. Fugitive dust is more prevalent in areas where unpaved roadways exist, and there are some unpaved roads that parallel the utility poles that will be used to install fiber optic cabling.

### **3.3. Geology and Soils**

This project is divided into four regions: South Central, Northeast, Northwest, and North Central. As described below, each region has its own geological characteristics and soil types.

**South Central Region:** Route SC-2A is within the developed suburban area of Washougal and Mill Plain west of Vancouver Washington while Routes SC-5 and SC-6 in the South Central Region pass over primarily flat, fertile farmlands in Yakima and Benton Counties. Soils along the banks of the

Columbia River north of the BNSF railway corridor are not prime farmlands, and approximately 96% of the soils in this region are sandy or loamy soils.

**Northeast Region:** Okanagan, Stevens, Ferry, and Pend Oreille Counties contain sandy, loamy, rocky, and complex soils along SR-20. The Proposed fiber optic Routes NE-1 and NE-2 are bordered by forested woodlands and open pastures that contain wetlands, streams, creeks and other tributaries that ultimately feed the Pend Oreille and Columbia Rivers. There are multiple sections along the proposed fiber optic route that are within rocky areas, and some soils may be susceptible to erosion. The routes in this region are located in areas that contain steep slopes, which can represent a “severe” erosion hazard as defined by the USDA.

**Northwest Region:** Route NW-1A, in the Northwest Region provides service in Port Angeles in the north while Routes NW-2 and NW-3 will serve Jefferson and Kitsap Counties respectively on the eastern side of the Olympic Peninsula. These three routes are mostly (93%) aerial construction in an area characterized by peninsulas, islands, and rock outcrops along shorelines with varying slopes. Wireless equipment will also be installed and used in this region. As defined by the Washington State Department of Ecology, the majority of the fiber cable routes in this area contain farmlands of statewide importance.

**North Central Region:** According to USDA Soils data, the majority of Routes NC-1A, NC-2 and NC-3 in Whatcom, Skagit and Snohomish counties intersect with prime farmlands or farmlands of statewide importance. The major soils along these routes are loamy or sandy/loamy in nature. Hydric and organic soils are also found along these routes.

Table 3-2 indicates the farmland status for all routes combined by the type of construction, and Table 3-3 shows the types of soils that intersect the route according to construction type. This data is broken down further by route in Appendix C.

**Table 3-2: Prime Farmlands Status - All Routes**

Farmland Status	Aerial (miles)	Underground (miles)	Total (miles)
All areas are prime farmland	51.9	18.5	70.5
Farmland of statewide importance	97.0	33.8	130.9
Farmland of unique importance	2.0	1.1	3.1
Not prime farmland	103.7	69.0	172.6
Prime farmland if drained	14.6	9.8	24.4
Prime farmland if irrigated	53.0	26.1	79.1
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	3.6	0.7	4.3
Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season	1.4	0.5	1.8

**Table 3-2: Prime Farmlands Status - All Routes**

Farmland Status	Aerial (miles)	Underground (miles)	Total (miles)
Unknown/Unclassified	2.3		2.3
<b>Total</b>	<b>329.4</b>	<b>159.6</b>	<b>489.0</b>

Source(s): United States Department of Agriculture (USDA) Soils Data, 12/2010.

**Table 3-3: Soil Types – All Routes**

Soil Type	Aerial (mileage)	Underground (mileage)	Total (mileage)	% of Project
Sandy/Loamy Soils	222.5	100.6	323.1	66.1%
Loamy Soils	73.8	42.1	115.9	23.7%
Complex	20.2	10.2	30.4	6.2%
Rock Outcrop	5.0	4.4	9.5	1.9%
Hydric Soils	1.8	0.4	2.2	0.4%
Alluvial		1.3	1.3	0.3%
Clay	0.4		0.4	0.1%
Organic Soils	0.6	0.3	0.8	0.2%
Other	0.9		0.9	0.2%
Water	2.0	0.2	2.2	0.5%
Unclassified	2.3		2.3	0.5%
<b>Total</b>	<b>329.4</b>	<b>159.6</b>	<b>489.0</b>	

Source(s): United States Department of Agriculture (USDA) Soils Data, 12/2010.

### 3.4. Water Resources

#### 3.4.1. Surface Water

Oceans, lakes, rivers, streams, wetlands, and other surface water channels will be crossed during the course of the project. Some of these surface water resources are listed on the federal and state lists of navigable waters. Tables 3-4 through 3-7 lists the various surface water resources and type of construction (aerial vs. underground) proposed in the vicinity of the resource. The data reflects each instance where a surface water resource is located within 100 feet of the preferred alternative fiber route and does not necessarily represent a stream or river crossing.

Table 3-4 includes every occurrence of a stream entering within a 100-foot buffer and includes all perennial streams from the National Hydrography Dataset maintained by the United States Geological Survey (USGS).

**Table 3-4: Stream Occurrences w/in 100 ft of Routes**

Route ID	Route Name	Aerial	Under-ground	Total
NC-1A	Whatcom County	13		13
NC-2	Skagit County	4	1	5
NC-3	Snohomish County	19	3	22
NE-1	Tonasket to Tiger	93	148	241
NE-2	Ione to Usk	39		39
NW-2	Jefferson County	13	6	19
NW-3	Kitsap County	33		33
SC-2A	Washougal to Mill Plain	8		8
SC-5	Yakima County	66	33	99
SC-6	Benton County	3	3	6
<b>Grand Total</b>		<b>291</b>	<b>194</b>	<b>485</b>

Source(s): USGS National Hydrography Dataset, 12/2010.

Note: The information shown does not necessarily indicate a stream crossing, only occurrences within a 100-foot buffer.

Table 3-5 includes the number of water bodies listed on the State's 303(d) list of impaired waters according to regulated material that can be found within 100 feet of the proposed routes. Additionally, Table 3-5 indicates whether the route in the vicinity of the water body is aerial or underground.

**Table 3-5: 303(d) Listed Waters w/in 100 ft of Routes**

Route ID	Parameter Description	Aerial	Under-ground	Total
NC-1A	Temperature	1		1
NC-3	Fecal Coliform	4		4
NE-1	Dissolved Oxygen		1	1
	Temperature		11	11
NE-2	Dissolved Oxygen	3		3
	pH	2		2
	Temperature	2		2
NW-2	Fecal Coliform	1		1
	Temperature	2		2
NW-3	Dissolved Oxygen	12		12
	Fecal Coliform	12		12
	Temperature	2		2
SC-2A	Dissolved Oxygen	2		2
	Fecal Coliform	1		1
	PCB	1		1
	pH	1		1
	Temperature	1		1
	Total Phosphorus	1		1
SC-5	4,4'-DDE	1		1
	Dissolved Oxygen	1		1
	Fecal Coliform	2		2
	PCB	1		1
	pH	1		1
	Temperature	4	1	5
SC-6	4,4'-DDE	1		1
<b>Grand Total</b>		<b>59</b>	<b>13</b>	<b>72</b>

Source(s): WA State Dept. of Ecology, 12/2010.

Table 3-6 lists the navigable waterways that may be encountered or crossed by a particular route.

**Table 3-6: Navigable Waterway Crossings**

Navigable Waterway	Route ID	Aerial	Under-ground	Location
Columbia River	NE-1, SC-6	1	-	NE-1 crosses west of Kettle Falls; SC-6 does not cross but parallels along BNSF railway corridor.
Pend Oreille River	NE-2	-	-	No crossings. Route parallels River to the west
Puget Sound, Oak Bay channel to Port Townsend Bay	NW-2	-	1	Proposed crossing by bridge attachment on SR-116 Flagler Bridge, east to Indian Island
Snohomish River	NC-3	1	-	Crosses along Airport Way south of the City of Snohomish

Source(s): US Army Corps of Engineers, 12/2010.

Detailed information such as stream or lake names, stream reach codes, and 303(d) listed parameter is provided in the surface water tables located in Appendix C.

Wetlands are located throughout the project and provide necessary natural treatment of stormwater runoff while also enhancing the natural habitat for wildlife such as migratory birds, amphibians, insects, and fisheries. Maps provided in Appendix A show the proximity of wetland resources to individual routes. Section 4 identifies wetlands of concern and impact avoidance strategies.

There are five lakes located within 100 feet of the preferred alternative, as listed in Table 3-7.

**Table 3-7: Lakes within 100 feet of Project Area**

Lake Name	Route ID	Point of Intersection
Franklin D Roosevelt Lake (Columbia River)	NE-1	SR-20
Kendall Lake	SC-1A	Kendall Road and Overland Trail Road
Lacamas Lake	SC-2A	NE Everett St and NE 35 <sup>th</sup> Ave
Lake Stevens	NC-3	Vernon Road
Lake Umatilla (Columbia River)	SC-6	SR-14 and Kent Road

Source(s): WA State Dept. of Ecology, 12/2010.

### 3.4.2. Groundwater

There are multiple groundwater supply wells providing both potable water supply and irrigation for residents and businesses along the preferred alternative routing. Groundwater aquifers along the project routes are typically located several feet below the area disturbed by installation of fiber optic cable.

### 3.4.3. Coastal Zones

There are coastal zones located in the counties served by the Northwest and North Central preferred alternative routes. Clallam, Jefferson, Kitsap, Skagit, Snohomish, and Whatcom Counties are all served by various portions of this project and contain coastal zone management programs. These counties contain routes NW-1A, NW-2, NW-3, NC-2, NC-3, and NC-1A, respectively.

### 3.4.4. Floodplains

There are 100-year floodplains located throughout the project area, many of which are adjacent to lakes, rivers and streams. The 100-year designated floodplain is land that will be covered with water during a 100-year storm event. Table 3-8 shows the total mileage by construction type within 100-year floodplains.

**Table 3-8: Route Mileage within 100-year Floodplain**

<b>Route</b>	<b>Aerial (miles)</b>	<b>Underground (miles)</b>	<b>Total (miles)</b>
NC-1A	0.10	-	0.10
NC-2	0.04	0.06	0.10
NC-3	3.82	0.06	3.88
NE-1	2.26	0.94	3.20
NE-2	2.54	-	2.54
NW-2	0.61	0.09	0.70
NW-3	0.91	-	0.91
SC-2A	0.35	-	0.35
SC-5	3.10	0.49	3.59
SC-6	1.33	0.33	1.66
<b>Total</b>	<b>15.07</b>	<b>1.95</b>	<b>17.02</b>

Source: Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps, 12/2010.

### 3.4.5. Wild and Scenic Rivers

There are three Wild and Scenic Rivers in the State of Washington, one of which is located approximately one mile south of Route NC-2. Located in Skagit County, the Skagit River is designated as a "Wild and Scenic River".

### 3.5. Biological Resources

This section includes subsections on wildlife, vegetation, wetland habitats and threatened and endangered species that are federally and state-listed in the counties served by the project. NoaNet has worked closely with a variety of agencies to ensure that biological resources of significance, endangered and threatened species, and other items of concerns have been identified and discussed. Correspondence with these agencies is provided in Appendix D. In particular, the US Forest Service (Colville and Okanogan – Wenatchee Forests), National Marine Fisheries Service (NMFS) and US Fish and Wildlife Service (USFWS) have been instrumental in identification of wildlife, vegetation, and endangered species identified in the following paragraphs.

#### 3.5.1. Wildlife and Vegetation

The State of Washington is a diverse landscape with a wide variety of environmental landscapes, habitats, and vegetation types.

The dry coniferous forest habitat found in the project area in the Northeast region has various evergreens (pine, fir, spruce, cedar, hemlock, and juniper) and deciduous trees (oak, cottonwood, maple, aspen, larch, and alder). This habitat provides homes for blacktail deer, mule deer, coyote, black bear, grizzly bear, gray wolf, ruffed and blue grouse, wild turkey, stellar’s jay and Rocky Mountain elk. The dry grassland habitat and farmlands in the South Central region support gray digger squirrels, pheasants, Hungarian partridge, quail, mule deer, blacktail deer, coyotes, hawks, various songbirds and small mammals.

The Northwest and North Central regions, in addition to supporting a variety of mammals already mentioned, contain climates and habitats more suitable to maritime wildlife including salmonid species.

NoaNet has consulted with the US Forest Service for the estimated 29 miles of the project that cross through the Colville National Forest and less than 2 miles of construction that will cross through the Okanogan - Wenatchee National Forest on Routes NE-1 and NE-2. The two neighboring forests have worked collectively and have assisted with identification of threatened, endangered and R6 Sensitive Species occurring in the Forest and outlying areas in the Northeast Region. Coordination has included numerous e-mails and phone conversations as well as two separate meetings with Forest Service specialists from both forests who also provided review and comment on this Environmental Assessment. Forest Service botanists accompanied NoaNet field crews in field reconnaissance along buried portions of the project occurring within National Forest(s). This was to confirm presence and identify avoidance opportunities to avoid impacts to threatened, endangered or sensitive species. No listed species were identified but the giant helleborine



orchid, *Epipactis gigantean*, was noted. Although it is no longer considered rare by the state it is uncommon in eastern Washington and of particular interest to Forest Service and WSDOT biologists and botanists. Documentation of consultation with the Forest Service is provided in Appendix D-6 and D-7. Appendix F includes the R6 Sensitive plant list provided by the Forest Service and specific procedures for working within the approximate 29 miles of the project that occurs on Forest Service land.

### 3.5.2. Threatened and Endangered Species

Based on the U.S. Fish and Wildlife and State of Washington Fish and Wildlife Service websites, the endangered and threatened species listed in Table 3-9 are known to exist in the counties where fiber cable and wireless tower equipment installations will occur. A comprehensive list of documented threatened or endangered species by Route and including scientific names is provided in Appendix C. Additional information regarding R6 Sensitive species associated Routes NE-1 and NE-2 and the 29 miles of cable within the National Forest is provided in Appendix F.

**Table 3-9: Threatened and Endangered Species by Route**

Common Name	Type	Federal Status	State Status	Routes
Brown Pelican	Bird	Recovery	Endangered	NC-1A, NC-2, NC-3, NW-1A, NW-2
Greater Sage-Grouse	Bird	Candidate	Threatened	All Routes
Marbled Murrelet	Bird	Threatened	Threatened	NC-1A, NC-2, NC-3, NW-1A, NW-2, NW-3, SC-5
Northern Spotted Owl	Bird	Threatened	Endangered	NC-1A, NC-2, NC-3, NE-1, NW-1A, NW-2, SC-2A, SC-5, SC-6
Short-Tailed Albatross	Bird	Endangered	Candidate	NW-1A, NW-2
Bull Trout	Fish	Threatened	Candidate	All Routes
Columbia Chum	Fish	Threatened	Candidate	SC-2A
Hood Canal Chum	Fish	Threatened	Candidate	NW-2
Lower Columbia Chinook	Fish	Threatened	Candidate	SC-2A
Lower Columbia Steelhead	Fish	Threatened	Candidate	SC-2A
Middle Columbia Steelhead	Fish	Threatened	Candidate	SC-5, SC-6
Puget Sound Chinook	Fish	Threatened	Candidate	NC-1A, NC-2, NC-3, NW-3
Upper Columbia Steelhead	Fish	Threatened	Candidate	NE-1
Bradshaw's Desert-Parsley	Flowering Plant	Endangered	None	SC-2A
Golden Paintbrush	Flowering Plant	Threatened	None	SC-2A
Nelson's Checker-Mallow	Flowering Plant	Threatened	None	SC-2A
Spalding's Catchfly	Flowering Plant	Threatened	None	NE-3
Ute Ladies'-Tresses	Flowering Plant	Threatened	None	NE-1, NE-3, SC-5, SC-6
Water Howellia	Flowering Plant	Threatened	None	NE-3, SC-2A
Canada Lynx	Mammal	Threatened	Threatened	NC-1A, NC-2, NC-3, NE-1, NE-2, SC-6
Gray Wolf	Mammal	Endangered	Endangered	All Routes

**Table 3-9: Threatened and Endangered Species by Route**

Common Name	Type	Federal Status	State Status	Routes
		<i>(Note – Although gray wolves have been removed from federal Endangered Species Act (ESA) protection in the eastern third of Washington state during the process of this EA, they remain protected as a state endangered species.</i>		
Grizzly Bear	Mammal	Threatened	Endangered	NC-1A, NC-2, NC-3, NE-1, NE-2
Pygmy Rabbit	Mammal	Endangered	Endangered	SC-5, SC-6
Tacoma Western Pocket Gopher	Mammal	Candidate	Threatened	All Routes
Woodland Caribou	Mammal	Endangered	Endangered	NE-1, NE-2
Green Sea Turtle	Reptile	Threatened	Threatened	NW-1A, NW-2
Leatherback Sea Turtle	Reptile	Endangered	Endangered	NW-1A, NW-2
USFS List of Species				

Source(s): US Fish and Wildlife Service, National Marine Fisheries Northwest Regional Office, and Washington Natural Heritage Program 12/2010.

In addition to the federally listed species listed in Table 3-9 and R-6 Sensitive put forth in Appendix F (Forest Service Requirements), there are numerous species of migratory birds that may cross the path of the project area. The Migratory Bird Treaty Act makes it unlawful to pursue, hunt, take, capture, kill or sell over 800 birds listed covered under the Treaty. According to the U.S. Fish and Wildlife Service, communication towers kill an estimated 4 to 5 million birds per year. Impacts of the Preferred and No Action Alternatives on threatened and endangered species, including migratory birds is provided in Section 4.5.1.

**3.5.3. Ecoregions**

There are six ecoregions in this project – Canadian Rocky Mountains, Columbia Plateau, Okanogan, East Cascades, Puget Lowlands, and the West Cascades. Images associated with the ecoregions described in the following paragraphs are provided by Washington Department of Natural Resources.

**Canadian Rocky Mountains**

The high, rugged Canadian Rocky Mountains Ecoregion is mountainous and lies east of the Cascades. The sparsely populated ecoregion contains Douglas fir, subalpine fir, Englemann spruce, ponderosa pine, western red cedar, western hemlock, and grand fir. Alpine meadows, dense coniferous forests, riparian woodlands, and rolling grasslands provide important habitat for a wide range of wildlife. Additionally, herbaceous wetlands are common in river and stream valleys and adjacent to lakes. Black cottonwood and willows are commonplace in the riparian zones along the Pend Oreille River. The Canadian Rocky Mountains Ecoregion is not as high or as covered by



**Canadian Rocky Mountains Ecoregion**

snow and glaciers as the neighboring Middle Rockies Ecoregion, but alpine characteristics such as glacial lakes and meadows are found at high elevations. A portion of Route NE-1 and all of Route NE-2 is found in this Ecoregion.



**Columbia Plateau Ecoregion**

### ***Columbia Plateau Ecoregion***

The semi-arid Columbia Plateau ecoregion is bordered by the Cascades to the west, the Okanogan Highlands to the north, the Rockies to the east and the Blue Mountains to the southeast. See the figure for the location of the region. This region is Washington's largest ecoregion which is home of an inland sea of sagebrush and the state's fertile agriculture heartland.

This area has a shrub-steppe and grasslands, which is home of some of the most unique plants and birds. The area produces grains and legumes, which is vital to entire country. South Central Routes are located in the Columbia Plateau region.

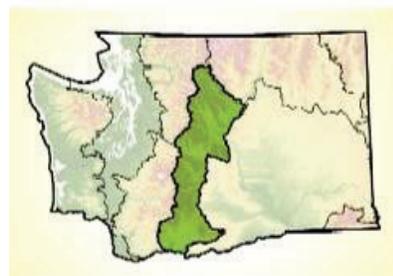
### ***Okanogan Ecoregion***

In north-central Washington, the Cascades, the Rockies, and the Columbia Plateau converge to form the Okanogan ecoregion, which boasts highland landscapes and lowland waterways, grizzly bears and sage grouse.

State Route 20 links the Puget Lowlands and the North Cascades to communities like Winthrop and Tonasket in the Methow Valley. It continues on through the Okanogan ecoregion to Republic and Kettle Falls. On the ecoregion's eastern edge, Highway 395 links Spokane, Colville, and Kettle Falls. Project Routes NE-1 and NE-2 are within the Okanogan Ecoregion.



**Okanogan Ecoregion**



**East Cascades Ecoregion**

### ***East Cascades Ecoregion***

As described by Washington Department of Natural Resources, the East Cascades ecoregion, which includes the mountains east of the Cascade divide and the foothills as they flatten into the Columbia Plateau. This ecoregion stretches from roughly Lake Chelan in the north to the Columbia River Gorge in the south.

This region has diverse landforms – broad U-shaped valleys and steep face of the eastern Cascades, open stands of ponderosa pine and Garry oak (common in the foothills) to the edge of the sagebrush steeps. South Central Routes are located in the East Cascades region.

### ***Puget Lowlands Ecoregion***

The Puget Lowlands Ecoregion is described by the U.S. Environmental Protection Agency (EPA) as broad, rolling lowland characterized by a mild maritime climate. It occupies a continental glacial trough and is composed of many islands, peninsulas, and bays in the Puget Sound area. Coniferous forest originally grew on the ecoregion’s ground moraines, outwash plains, floodplains, and terraces. The distribution of forest species is affected by the rainshadow from the Olympic Mountains. The North Central and North West routes are in the Puget Lowlands Ecoregion, as is Route SC-2A.



**Puget Lowlands Ecoregion**

### ***North Cascades Ecoregion***

The North Cascades are rugged, glaciated mountains formed by volcanic activity. The highest peaks reach more than 10,000 feet. Valleys go down as low as 500 feet above sea level. Glacially carved valleys are prominent features.

Several rivers drain the North Cascades and flow toward Puget Sound, including the Skagit, Stillaguamish, Snohomish, and Nooksack. North Central routes NC-1A and NC-2 are in the North Cascades Ecoregion.



**North Cascades Ecoregion**

## **3.6. Historic and Cultural Resources**

As this is a federally funded project, it is considered an undertaking under Section 106 of the National Historic Preservation Act (NHPA) as defined in 36 CFR Part 800. This EA has included complete evaluation of historic and cultural resources to comply with the Section 106 process and ensures that these resources are not adversely impacted during the course of this project.

As the lead federal agency, the NTIA has instructed NoaNet to conduct a records check of known archaeological and historic cultural properties within the project area. A complete analysis of the 12 separate fiber optic cable routes and wireless facilities that comprise the project was accomplished in accordance with applicable federal and state regulations. Research and analysis was performed by Secretary of the Interior qualified archaeologists

(Tierra Right of Way Services, Ltd. [Tierra]) and included a records check of the project area(s) using the State of Washington Department of Archaeology and Historic Preservation's web-based database (WISAARD) in December, 2010, and January/February, 2011. This information was compiled into four reports according to Route regions (NC, NE, NW, SC):

Montgomery, Barbara K., and Chance Copperstone

2011 *Records Review of Archaeological Sites and Historic Properties within Routes NC-1 (Black Rock Whatcom County), NC-2 (Black Rock Skagit County) and NC-3 (Black Rock Snohomish County) of Round II of the Washington Rural Access Project.* Tierra Archaeological Report No. 2011-15. Tierra Right of Way Services, Ltd., Seattle.

2011 *Records Review of Archaeological Sites and Historic Properties within Routes NW-1A (Port Angeles), NW-2 (Jefferson County), and NW-3 (Kitsap County) of Round II of the Washington Rural Access Project.* Tierra Archaeological Report No. 2011-17. Tierra Right of Way Services, Ltd., Seattle.

2011 *Records Review of Archaeological Sites and Historic Properties within Routes SC-2A (Washougal to Camas), SC-5 (Yakima and Kittitas Counties), and SC-6 (Benton PUD) of Round II of the Washington Rural Access Project.* Tierra Archaeological Report No. 2011-18. Tierra Right of Way Services, Ltd., Seattle.

Montgomery, Barbara K., and April Whitaker

2011 *Records Review of Archaeological Sites and Historic Properties within Routes NE-1 (Tonasket to Ione), NE-2 (Tiger to Newport), and NE-3 (Spokane Microwave) of Round II of the Washington Rural Access Project.* Tierra Archaeological Report No. 2011-16. Tierra Right of Way Services, Ltd., Seattle.

As noted in Section 3, Project Archaeologists (Tierra) found documented archaeological sites within the general proximity of the proposed project routes. Known archaeological sites, cemeteries, and historic properties along the route (within a half-mile on either side) were identified. Tierra then identified which of those could potentially be impacted by the project (i.e., which are within the Area of Potential Effect [APE]). The APE is defined as the area along the project line and any other area needed for staging, construction equipment, etc. This area is defined as within approximately 100 feet on either side of the line as visible on the maps provided in Appendix E.

Table 3-10 at the end of this Section provides a summary of documented cultural resources (i.e., archaeological sites, historic properties and cemeteries) by region for route segments that will be buried. Subsequent to the requisite records check, Tierra prepared a summary letter of findings and submitted it to NTIA for transmittal to the Washington Department of Historic

Preservation (DAHP). A copy of that letter and subsequent communications between NoaNet, its representatives, with NTIA and the DAHP are provided in Appendix E – Section 106 Compliance. Appendix B includes a list of cell tower and microwave tower locations proposed for Routes NW-1A, NW-2 and NE-3.

As outlined in Tierra's letter to Mr. Frank Monteferrante, the NEPA Environmental Specialist at NTIA (see Appendix E), the general approach for the project is to avoid potential sites of significance, or install the fiber aerially on existing poles. If these two alternatives are not possible, site reconnaissance is recommended with construction monitoring in culturally sensitive areas.

The total number of cultural properties along planned buried routes include: 42 archaeological sites, 8 cemeteries, 32 historic properties, 10 buildings on the National Register of Historic Places, and 2 Historic Districts. Cultural properties along planned aerial routes are not of concern because the aerial fiber will be installed on existing poles and therefore there will be no ground disturbance. Aerial portions of the fiber are exempt from the Section 106 process per the established Programmatic Agreement among the NTIA, Rural Utilities Services (RUS), and others.

### **Wireless Installations**

Three of the routes (NW-1A, NW-2, and NE-3) have planned collocations on buildings and existing towers for cellular service. These are listed in Appendix B, Table B-1. Based on background research for these locations, all but six are exempt from Section 106 treatment. The basis for these determinations is also provided in Table B-1. Any potential effects of construction of cell collocations will be mitigated by following the requirements outlined in the Federal Communications Commission Nationwide Programmatic Agreement. After completing the cultural research, reports or exemption letters for each cell location, including Forms 620/621, will be submitted to the Washington DAHP and the FCC through the E-106 System. Interested tribes will also receive copies of these documents.

Each of the non-exempt collocations were entered into the Tower Construction Notification System (TCNS) on August 26, 2011. Any tribes requesting further communication will be contacted upon receipt of such a request and NoaNet and its consultants will make every effort to address and mitigate any potential concerns. Those requesting formal, government to government consultation will be referred to the FCC.

### **Fiber Installation**

NoaNet plans to install fiber routes on five of the Native American reservations in the state of Washington, including the Nooksack, Upper Skagit, Kalispel, Port Madison (Suquamish Tribe), and Yakama Indian Reservations. The Tower Construction Notification System (TCNS) was used by NTIA to notify these five Tribes as well as additional Tribes with interests

in various regions of the WRAP II project. This TCNS entry was separate from that that referred to above for wireless installation locations. A copy of the letter sent to the tribes via TCNS is provided in Appendix E-8 and for Wireless facilities, detailed information can be found in SPPendix E-8.1. The list of Tribes notified through TCNS includes:

- Upper Skagit Tribe
- Kalispel Tribe
- Suquamish (Port Madison)
- Confederated Tribes and Bands of the Yakama Nation
- Nooksack Tribe
- Confederated Tribes of the Umatilla Indian Reservation
- Skokomish Tribe
- Samish Tribe
- Prairie Band Potawatomi
- Tulalip Reservation

NTIA has used the TCNS system to provide tribes and State Historic Preservation Officers with early notification of proposed fiber installation as a means of streamlining the review process. TCNS provides Tribes and SHPOs with early notification of tower construction or collocations in order to streamline the review process. The TCNS system automatically provided the information to the tribes listed above as well as the Washington State SHPO/DAHP. Tribes and the Washington DAHP (SHPO).

**Table 3-10: Summary of Potential Historical/Cultural Impacts**

*(includes properties potentially within the APE along buried segments of routes)*

Route	Report #	Property Designation	Property Type	Description	NRHP Status
NC-1	2011-15	None			
NC-2	2011-15	None			
NC-3	2011-15	None			
NE-1	2011-16	CF00196	Archaeological site	Kirkpatrick homestead	Determined not eligible
NE-1	2011-16	CF00284	Archaeological site	Historic Depression Era Properties	Determined not eligible
NE-1	2011-16	CF00417	Archaeological site	Shoutell homestead	Determined not eligible
NE-1	2011-16	CF00418	Archaeological site	Historic cabin	Determined not eligible
NE-1	2011-16	CF00419	Archaeological site	Historic homestead	Determined not eligible
NE-1	2011-16	DT00048	Archaeological site	Kettle Falls Archaeological District	Listed, date unknown
NE-1	2011-16	FE00036	Archaeological site	Pre Contact Cairn, Pre Contact Camp, Pre Contact Petroglyph	Not evaluated
NE-1	2011-16	FE00154	Archaeological site	Pre Contact Feature, Pre Contact Lithic Material, Pre Contact Pictograph	Not evaluated
NE-1	2011-16	FE00206	Archaeological site	Historic logging property	Potentially eligible
NE-1	2011-16	FE00383	Archaeological site	Historic homestead	Potentially eligible
NE-1	2011-16	FE00524	Archaeological site	Pre Contact lithic scatter and	Not evaluated

**Table 3-10: Summary of Potential Historical/Cultural Impacts**

*(includes properties potentially within the APE along buried segments of routes)*

Route	Report #	Property Designation	Property Type	Description	NRHP Status
				Historic refuse scatter/dump	
NE-1	2011-16	FE00567	Archaeological site	Historic Homestead	Potentially eligible
NE-1	2011-16	FE00570	Archaeological site	Pre Contact Isolate	Not evaluated
NE-1	2011-16	FS01072	Archaeological site	Historic Agriculture, Historic Homestead, Historic Object(s), Historic Refuse Scatter/Dump	Determined not eligible
NE-1	2011-16	FS01224	Archaeological site	Historic Depression Era Properties	Determined not eligible
NE-1	2011-16	FE00001	Cemetery	Kettle Falls Bridge burials	Not evaluated
NE-1	2011-16	FE00038	Cemetery	Burials	Not evaluated
NE-1	2011-16	ST00030	Cemetery	Burial ground	Not evaluated
NE-1	2011-16	ST00323	Cemetery	St. Francis Regis Mission Cemetery	Listed 1981 as part of the Mission
NE-1	2011-16	ST00417	Cemetery	Historic Burials	Determined eligible
NE-2	2011-16	PO00623	Cemetery	Kalispel Indian Cemetery #2	Unknown
NW-2	2011-17	JE00324	Cemetery	Fort Worden Military Cemetery	National Historic Landmark
NW-2	2011-17	JE00025	Archaeological site	Pre-contact shell midden	Not Evaluated
NW-2	2011-17	JE00080	Archaeological site	Port Ludlow sawmill and towns	Potentially eligible
NW-2	2011-17	JE00211	Archaeological site	FCR, Shellfish, lithics	Not Evaluated
NW-3	2011-17	None			
SC-2A	2011-18	CL00405	Archaeological Site	Lithic Scatter/Quarry/Misc Tool/Debitage, Short Term Occupation Site	Not Evaluated
SC-5	2011-18	BN01458	Archaeological Site	Historic Isolate	Not Evaluated
SC-5	2011-18	YA00636	Archaeological Site	Single Artifact- Flake, Knife, Point, Pestle, Canoe Anchor, Net Sinker, etc.	Not Evaluated
SC-5	2011-18	YA00823	Archaeological Site	Includes Homes, Cellars, Garages, Sheds, Privies	Not Evaluated
SC-6	2011-18	BN01501	Cemetery	Sunset Memorial Gardens	NA
SC-6	2011-18	BN01533	Archaeological Site	Pre Contact Isolate, Pre Contact Lithic Material	Not Evaluated
SC-6	2011-18	BN00344	Archaeological Site	Pre Contact and Historic Components	Not Evaluated
SC-6	2011-18	BN00244	Archaeological Site	Pre Contact Cairn, Pre Contact Rock Alignment	Unknown
SC-6	2011-18	BN00295	Archaeological Site	Pre Contact Lithic Material, Pre Contact Shell Midden	Not Evaluated
SC-6	2011-18	BN00293	Archaeological Site	Historic Homestead	Potentially Eligible
SC-6	2011-18	BN00292	Archaeological Site	Pre Contact Camp, Pre Contact Lithic Material	Not Evaluated
SC-6	2011-18	BN00291	Archaeological Site	Pre Contact Camp, Pre Contact Lithic Material	Not Evaluated
SC-6	2011-18	BN00274	Archaeological Site	Historic Residential Structures	Potentially Eligible
SC-6	2011-18	DT00215	Archaeological Site	Pre Contact and Historic Components	Eligible
SC-6	2011-18	BN00071	Archaeological Site	Pre Contact Cairn, Pre Contact Camp, Pre Contact Lithic Material	Potentially Eligible
SC-6	2011-18	BN00328	Archaeological Site	Pre Contact Camp, Pre Contact Lithic Material	Not Evaluated
SC-6	2011-18	BN00294	Archaeological Site	Pre Contact Camp, Pre Contact Lithic Material, Pre Contact Talus Pit	Not Evaluated
SC-6	2011-18	BN00322	Archaeological Site	Pre Contact Camp, Pre Contact Lithic Material	Not Evaluated
SC-6	2011-18	BN00181	Archaeological Site	Pre Contact Lithic Scatter	Not Evaluated
SC-6	2011-18	BN01443	Archaeological Site	Pre Contact Lithic Material	Not Evaluated

**Table 3-10: Summary of Potential Historical/Cultural Impacts**

*(includes properties potentially within the APE along buried segments of routes)*

Route	Report #	Property Designation	Property Type	Description	NRHP Status
SC-6	2011-18	BN01486	Archaeological Site	Pre Contact Lithic Material	Not Evaluated
SC-6	2011-18	BN00613	Archaeological Site	Pre Contact Isolate	Not Evaluated
SC-6	2011-18	BN00187	Archaeological Site	Pre Contact Camp	Not Evaluated
SC-6	2011-18	BN00188	Archaeological Site	Pre Contact Camp, Pre Contact Lithic Material, Pre Contact Rock Alignment, Pre Contact Shell Midden	Not Evaluated
SC-6	2011-18	WW00284	Archaeological Site	Pre Contact Lithic Material	Not Evaluated

Source: Tierra Archaeological Reports. February, 2011

### **3.7. Aesthetic and Visual Resources**

Natural resources in most of the project area vary from rolling croplands, forested areas, range and pasture lands. Most of the project area is located in rural parts of the counties to be served, and the proposed fiber optic routes run along a substantial amount of irrigated croplands. Several creeks, streams, and rivers are located adjacent to the roadway and/or crossing beneath the proposed cable route alignment. The Skagit River is considered a Wild and Scenic River, and is located approximately one mile south of Route NC-2. Fiber cable installation will occur along several scenic byways, including the Sherman Pass Scenic Byway (along Route NE-1), the International Selkirk Loop (Route NE-2), Mt. Baker Scenic Byway (Route NC-1A), North Pend Oreille Scenic Byway (Route NE-2), Cascade Loop (NC-3), Stevens Pass Greenway (NC-3), Columbia River Gorge (Route SC-6), and Pacific Coast Scenic Byway (Northwest Routes).

Various routes will pass through the Colville and Okanagan National Forest Lands; and will run adjacent or through the Umatilla National Wildlife Refuge, the Toppenish National Wildlife Refuge, and Little Pend Oreille National Wildlife Refuge, as well as alongside Olympic National Park.

### **3.8. Land Use**

The majority of the land use for this route is agriculture and forestland located outside of the small communities, towns, and cities to be served by the preferred alternative. Urban and community land uses and activities are present within established city limits and adjacent areas.

### **3.9. Infrastructure**

Most areas of the project have potable water and sewer services are provided in urban areas by a variety of purveyors throughout the State. If potable water and sewer services are not available, private water wells and septic tanks are installed on individual properties. Electrical and natural gas services are available through the state. Garbage collection and solid waste transfer stations are available for disposal of solid waste. Burning of residential and land clearing debris is strictly prohibited except as allowed by individual county requirements. Freight and passenger rail

corridors exist throughout the State. An 18.5 mile aerial portion of fiber cable in Route SC-6 in Benton County will be installed on existing utility poles located adjacent to the Burlington Northern Santa Fe (BNSF) railroad and under an existing easement between the sub-participant and BNSF. This railroad and portion of the route is located just north of the Columbia River.

Telecommunications infrastructure in the project area is limited due to the uniquely challenging geographic barriers in Washington State. Mountain ranges, foothills, canyons, national forests, and complex waterways which make it cost-prohibitive for private companies to build needed telecommunications infrastructure improvements. Several of the anchor institutions for this project are currently limited to speeds of 1.5 Mbps (T1). Fire fighting, police, and ambulance services are susceptible to response time disruptions and/or delays in some remote areas of the project that do not currently have network redundancy.

The preferred project alternative is primarily located along major and minor highways and local roadways throughout the state. In some instances, however, cable installation will be along utility easement corridors and railroad corridors. Microwave antenna will be installed on a variety of structures throughout the project areas for Routes NW-1A, NW-2 and NE-3 as described in Appendix B.

### **3.10. Socioeconomic Resources**

As demonstrated by Census data presented in Appendix C, the project is installed in rural areas of Washington State without consideration of any specific socio-economic category of the population. The current socio-economic condition of the project area varies by county, but overall the weighted average of the unemployment rate for the counties served by this project is estimated to be approximately 9.8% for December, 2010.

### **3.11. Human Health and Safety**

This subsection describes any potentially hazardous waste sites within the vicinity of the proposed route. Potentially hazardous waste sites include Superfund sites, brownfields, and general hazardous waste facilities and are provided in Appendix C.

A Superfund Site is defined by USEPA as:

*"Superfund is the name given to the environmental program established to address abandoned hazardous waste sites. It is also the name of the fund established by the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). This law was enacted in the wake of the discovery of toxic waste dumps in the 1970s. It allows the EPA to clean up such sites and to compel responsible parties to perform cleanups or reimburse the government for EPA-lead cleanups."*

USEPA defines Brownfields as:

*Real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties protects the environment, reduces blight, and takes development pressures off green spaces and working lands.*

Hazardous waste is waste that is dangerous or potentially harmful to our health or environment. The waste can be liquid, solids, gases, or sludges. They can be discarded commercial products, like cleaning fluids or pesticides, or the by-products of manufacturing processes. These facilities handle hazardous waste-either by generating, storing, transporting, disposal, or recycling.

Human safety in the project area was also assessed. Washington Traffic Safety Commission, Traffic Research and Data Center provide a comparison of factors involved in traffic fatalities in each county of the State. This fiber optic cable will be installed in public right-of-way, typically along state highways and local roadways. Recent highway fatality statistics are presented in Table 3-11.

**Table 3-11: 2007 Highway Fatality Statistics by County**

County	Interstate	State Route/ US Highway	County Road	City Street	Other	Total
Benton	2	2	3	1	0	8
Clallam	0	9	0	3	2	14
Clark	2	7	14	9	0	32
Ferry	0	2	1	0	0	3
Jefferson	0	8	1	0	0	9
Kitsap	0	2	15	4	0	21
Okanogan	0	6	5	0	0	11
Pend Oreille	0	2	0	0	0	2
Skagit	0	4	5	1	0	10
Snohomish	3	14	13	9	1	40
Spokane	0	13	8	12	0	33
Stevens	0	6	4	0	1	11
Walla Walla	0	11	1	0	0	12
Whatcom	1	7	5	3	0	16
Yakima	4	13	16	5	4	12

Source: Washington Traffic Safety Commission, Traffic Research and Data Analysis Center, rev. 3/18/2009

### **3.12. Climate, Greenhouse Gases, and Global Warming**

The proposed project area is located throughout Washington State where the climate is characterized by temperatures ranging as low as negative 20 degrees Fahrenheit in the winter to 90 degrees in the summer. Rainfall and snowfall varies heavily throughout the State.

Greenhouse gases (GHGs) are components of the atmosphere that trap heat relatively near the surface of the earth, and therefore, contribute to the greenhouse effect and global warming. Most GHGs occur naturally in the atmosphere, but increases in their concentration result from human activities such as the burning of fossil fuels. Global temperatures are expected to continue to rise as human activities continue to add carbon dioxide, methane, nitrous oxide, and other greenhouse (or heat-trapping) gases to the atmosphere. Since 1900, the Earth's average surface air temperature has increased by about 1.2 to 1.4°F. The warmest global average temperatures on record have all occurred within the past 10 years, with the warmest year being 2005 (USEPA, 2007b). Most of the U.S. is expected to experience an increase in average temperature. Precipitation changes, which are also very important to consider when assessing climate change effects, are more difficult to predict. Whether or not rainfall will increase or decrease remains difficult to project for specific regions (USEPA, 2010a; IPCC, 2007). The extent of climate change effects, and whether these effects prove harmful or beneficial, will vary by region, over time, and with the ability of different societal and environmental systems to adapt to or cope with the change. Human health, agriculture, natural ecosystems, coastal areas and heating and cooling requirements are examples of climate-sensitive systems. Rising average temperatures are already affecting the environment. Some observed changes include shrinking of glaciers, thawing of permafrost, later freezing and earlier break-up of ice on rivers and lakes, lengthening of growing seasons, shifts in plant and animal ranges and earlier flowering of trees (USEPA, 2010a; IPCC, 2007).



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**WASHINGTON RURAL ACCESS PROJECT  
Round II - Environmental Assessment  
Section 4: Environmental Consequences**

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## **4. ENVIRONMENTAL CONSEQUENCES**

This Section presents a summary of the analyses of environmental consequences for the Preferred and No Action Alternatives. The analyses includes avoidance and mitigation strategies that when implemented, will allow for a Finding of No Significant Impact. The determination of no adverse impacts is a result of these analyses, design diligence, and development of Best Management Practices (BMP) to be performed by design and field personnel and contractors. In general, the 12 routes included in this project have been adjusted and refined during the Environmental Assessment process as a result of visual surveys, consultations and coordination with agencies, data research, and evaluation of potential environmental impacts. NoaNet, its sub-participants, and contractors will all follow the avoidance and mitigation measures identified in this Section and follow all permitting and regulatory requirements associated with the project.

### **4.1. Noise**

For the Preferred Alternative there will be no long-term impacts on noise levels. During construction, minor short-term noise impacts will be incurred. Under most conditions, approximately five miles of aerial cable can be installed in one day, so the short term construction noise impacts in any given area would be limited to a few hours. For underground installation, depending on soil conditions and routing, 1-2 miles of cable will be installed per day. Noise impacts from underground construction would occur for less than one day for any given area. Antenna installations for collocation sites will be accomplished without the use of heavy machinery and will be limited to a few hours per site. Mitigation measures to be employed also include limiting construction times to comply with the requirements of local ordinances.

In summary, no long term impacts on noise levels will occur as a result of the Preferred Alternative.

Under the No Action Alternative, noise levels would remain unchanged.

### **4.2. Air Quality**

Impacts to air quality associated with the Preferred Alternative are limited to temporary and incidental increases in particulate matter (fugitive dust) during construction and Greenhouse Gas (GHG) emissions from construction equipment. Section 4.12 discusses climate, GHG and global warming in greater detail.

Although the majority (67%) of the project will be installed aerially, underground construction will be accomplished using minimally invasive plowing construction techniques that will minimize dust. The narrow blade used for underground cable installation causes soils to be cut and not tumbled, and limits the vegetative clearing and disruption of soils to a small trench approximately three inches in width.

The soils located within a 100-foot buffer of the fiber cabling have a low to moderate resistance to fugitive dust. Fugitive dust and exhaust emissions can impact air quality. Construction equipment will create short-term exhaust emissions in excess of normal levels and potentially create additional dust.

In accordance with information obtained from the Washington State Department of Ecology:

- Dust suppression, including use of water trucks, will be employed as required.
- There will be no burning of debris or scrub organic material, and composting and/or chipping with appropriate disposal will be used.
- All construction equipment will be properly maintained and equipped with appropriate air filters.

The Preferred Alternative would constitute a short-term minor increase in the use of fossil fuel and GHG emissions into the air during construction. Section 4.12 discusses the release in metric tons of Carbon Dioxide (CO<sub>2</sub>) and its impacts on the local climate. Limiting greenhouse gas emissions in accordance with Federal policies and EPA guidelines will be accomplished through use of modern construction equipment and by prohibiting excessive idling of equipment when not in use.

With these typical mitigation measures, construction will have no long-term impacts to air quality and short-term impacts will be minimized.

In summary, no long term significant impacts on air quality will occur under the Preferred Alternative. Fugitive dust emissions will be minimized because of the plow method of construction, and water trucks will be utilized as required by state and local agencies. GHG emissions resulting from construction will not have an adverse impact on air quality.

Under the No Action Alternative, air quality would remain unchanged.

### **4.3. Geology and Soils**

An estimated 33% of the Preferred Alternative will be installed underground by the plowing method discussed in Section 2. Hydric soils, prime farmlands, and floodplains were identified during the Environmental Assessment (EA) process and the frequency of their presence along each route is provided in Appendix C.

Impacts on the soil will not be significant or long term because of the narrow width of the plowing machine blade (no wider than three inches). For directional boring, the technique requires digging entry and exit pits (2' x 2' x 4') for construction. Pits

are backfilled and re-vegetated immediately after fiber conduit placement is completed. Standard depth is 48" unless local governing agencies have more stringent depth requirements.

Aerial installations will not cause lasting adverse impacts on geology and soils because the ground would only be disturbed in limited instances where new utility poles are required. New utility poles will only be required if existing poles are not adequate for additional installations or are not structurally sound. If a new pole is required, it will be placed adjacent to the existing pole, and the soil removed to install the new pole will be used to fill the hole of the existing pole just removed. The BMPs included in Table 4-1 will be employed for controlling erosion and preventing any adverse impacts on soils and geology: Within utility corridors, a maintenance procedure and implementation schedule will be prepared for vegetative, gravel or equivalent cover that minimizes bare or thinly vegetated ground surfaces within the corridor, to prevent the erosion of soil. Table 4-1 provides a summary of additional BMP's to be employed on the project. The following are specific to erosion control measures :

1. To prevent storm water from accumulating and draining across and/or onto roadways, grassy roadside ditches discharge to surface waters will be maintained.
2. Ditches and culverts will be maintained to ensure that plugging and flooding across the roadbed, with resulting overflow erosion, does not occur.
3. Implement temporary erosion and sediment control in areas where clear-cuts are conducted and new roads are construction.
4. If necessary, water bars will be constructed diagonally across a road or right-of-way to divert storm water runoff from the road surface, wheel tracks, or a shallow road ditch.
5. No vegetation removal will occur within 100-year floodplains.
6. Straw wattles are temporary erosion and sediment control barriers which consist of straw that is wrapped in biodegradable tubular plastic or similar encasing material. Wattles may be placed in shallow trenches and staked along the contour of disturbed or newly constructed slopes.
7. Temporary and Permanent Seeding:
  - a. Seeding will be used throughout the project on disturbed areas.
  - b. If channels are disturbed, the vegetated areas will be hydroseeded with a Bonded Fiber Matrix. Mulch will be used at all times to protect the seeds from heat, moisture loss, and transport due to runoff.
  - c. All disturbed areas will be review prior to the beginning of the optimum seeding windows.

- d. At final site stabilization, all disturbed areas not otherwise vegetated or stabilized will be seeded and mulched.
8. Mulching:
    - a. Mulch will be used as a temporary cover for disturbed areas that require cover for less than 30 days.
    - b. Mulch will be used as a cover for seed during the wet season and during the hot summer months.
    - c. Mulch will be used during wet seasons on slopes steeper than 3H:1V and with more than 10 feet of vertical relief.
    - d. Mulch will be refreshed periodically.
    - e. All mulch and seed used for erosion control or re-vegetation shall be certified weed free to prevent introduction or spread of noxious weeds.
  9. The Contractor will designate at least one person to be responsible for erosion and spill control. This person, the Contractor Erosion and Spill Control Lead (CESCL) will be responsible for ensuring compliance with all local, State, and Federal erosion and sediment control requirements.

There will be no impacts on prime farmlands located within 200 feet of the preferred alternative fiber route. The plowing and directional boring methods are minimally invasive and will occur within the right-of-way of major state roads and highways.

In summary, there will be no lasting adverse impacts on the geology, soils, and farmlands in the project area. Erosion control BMPs will be utilized to ensure soils, slope, and farmlands are not impacted by construction activities.

Under the No Action Alternative, soils and geology would not be impacted.

#### **4.4. Water Resources**

This section discusses potential impacts on surface water resources and provides protection measures to be utilized for avoiding adverse impacts under the Preferred and No Action alternatives. As noted in Section 3, there are nearly 500 streams, rivers, lakes, ocean bodies located within 100 feet of the proposed 489 miles of cable installation. In addition, there are wetlands, floodplains, groundwater resources, coastal zones, and wild and scenic rivers that exist alongside or in close proximity of the proposed route alignments. As demonstrated in the following paragraphs, the Preferred Alternative will not impact surface waters or the aquatic life that may reside in them. This will be achieved by avoidance of streams and wetlands as described below.

##### 4.4.1. Surface Water

The purpose of Executive Order 11990, Protection of Wetlands, 1977 is:

*"to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands."*

To meet this purpose, the Executive Order requires federal agencies to consider alternatives to wetland sites where wetlands cannot be avoided. FEMA's Regulations at 44 CFR Part 9: Floodplain Management and Protection of Wetlands require that a determination be made of whether or not the proposed project affects wetlands in floodplains.

For the Preferred Alternative, existing wetlands and/or water bodies will be avoided to minimize the potential for impact. In most instances, avoiding impact to wetlands and surface waters will be accomplished by aerial installations on existing poles. In areas where fiber optic cable will be installed underground, all rivers, creeks, and streams will be avoided either by attaching cable conduit on bridges in accordance with Washington State Department of Transportation (WSDOT) or local permit requirements, or if necessary, by directional boring at a minimum of 10 feet below the stream bed. To avoid wetlands on underground routes, the fiber can also be constructed within the road prism or shoulder.

The U.S. Army Corps of Engineers (ACE) requires a Section 404 Nationwide 12 Permit (NWP-12) for all construction occurring in or over surface water, including wetlands, discharges of dredged or fill material associated with excavation, backfill, or bedding for utility lines including intake and outfall structures. The NWP-12 authorizes mechanized land clearing necessary for the installation of utility lines including any pipe or pipeline, but does not authorize changes in pre-construction contours. No changes to contours will occur with this project. The ACE requires any river crossings of navigable waterways to receive authorization from the Corps under the Nationwide Permit 12 process. Where directional boring is required drilling equipment will be located outside of the stream and wetland buffers. To reach a depth of 10 feet below the stream bed, boring equipment for both entry and exit would need to be staged a minimum of 60 feet away.

Impacts on navigable waterways will be minimized in areas where the route crosses navigable waters. As mentioned in Section 3.4.1, there are four navigable waterways that will be crossed under the Preferred Alternative. The Columbia River, Snohomish River, and Yakima River will be crossed aerially, and crossings will require that new fiber cabling is installed at least as high as the lowest existing cable crossing. In all cases, existing cables are in place and the elevations of these existing cables will dictate additional cable alignments. Route NW-2 includes a salt water crossing using an existing bridge attachment. At the intersection of Oak Bay Road and SR-116, the Preferred Alternative extends west to Indian Island using an attachment to the Flagler Road Bridge to cross the saltwater channel connecting Oak Bay and Port Townsend Bay. This area is identified in Photo 2.27 located at the end of Section 2. Correspondence with the ACE concerning these navigable waterway crossings is provided in the Communications Plan contained in Appendix D.

Table 4-1 provides a summary of the key Best Management Practices (BMPs) that will be utilized to prevent adverse impacts on the environment. In addition, erosion control and water pollution control measures will be in accordance with the County and US ACE requirements and/or the WSDOT Standard Specifications for Road, Bridge, and Municipal Construction. The following erosion and sediment control inspection and maintenance practices will be used to protect surface waters and presents the general requirements of specific BMPs identified in Table 4-1. In addition to the BMPs outlined in Table 4-1, NoaNet has received the following March 18, 2011 Draft document from the U.S. Forest Service as a precursor to application for permits for work within National Forests: *U.S. Forest Service National Best Management Practices Program, Nonpoint Source Pollution Control for Water Quality Management on National Forest System Lands, Technical Guide Volume 1-The National Core BMPs.* Although this is a draft document, it is expected to be the basis for developing terms and conditions for required permits and NoaNet intends to work closely with the Forest Service to implement appropriate surface water protection measures. Key Forest Service BMP's are included below. In addition, Appendix F includes additional guidelines for work on Forest Service property.

In summary, under the Preferred Alternative no adverse impacts will occur to surface water resources. Erosion control and the other BMPs in Table 4-1 to be employed will ensure surface water resources are protected and ensure the project does not negatively impact the critical ecological and environmental resources provided by streams, lakes, rivers, wetlands, ocean, and other surface water resources.

Under the No Action Alternative, surface water resources will not be impacted in any way.

**Table 4-1: Best Management Practices (BMPs) for Cable Installation**

<b>Recommended BMPs from U.S. Fish and Wildlife (3)</b>		<b>Type of Practice</b>
1	Where stream crossings would include excavation or other activities that would result in suspended sediment, disturbance or modification of stream banks and beds, and/or removal of native riparian vegetation, measures will be employed to avoid or reduce the effect of these impacts.	Protection
2	Where suspended sediments or the potential for "frac-out" exists, monitoring for elevated turbidity levels will be planned, with contingencies in place to avoid elevated levels of suspended sediment that could result in adverse effect to bull trout, where these fish are present. Similar measures may be advised for other fish-bearing streams.	Protection
3	Removal of mature native riparian vegetation will be avoided, where avoidance is not possible, as few trees as possible will be removed to support the construction.	Protection
4	Where restoration of the stream banks or other impacts are needed, FWS recommends that sufficient site-specific information to design and implement long-term site restoration measures at each waterbody crossing be collected, and the project proponent (or other representative) monitor success and immediately ameliorate any problems.	Protection
5	Where placement of cable or other infrastructure would result in removal of nest trees for migratory birds, surveys for all species of concern will be performed, and survey findings will be applied to include protective timing measures or other protections that ensure compliance with ESA and/ or MBTA, as applicable.	Protection
6	Removal of trees may need to be avoided where such activities would result in mortality of	Protection

**Table 4-1: Best Management Practices (BMPs) for Cable Installation**

	eggs or nestlings or abandonment of eggs or nestlings by the adult for birds protected under the MBTA.	
<b>Recommended BMP's From US Forest Service</b>		
<b>7</b>	<p><b>Sensitive Plants</b></p> <ul style="list-style-type: none"> <li>If sensitive plant species are found in the planning area while project activities are occurring, the Forest Botanist or their designee would be consulted as to measures required to protect the species and its essential habitat.</li> <li>Flag and exclude all sensitive plant sites from the meadow retention proposed in the Bartlett South and Delaney South units. When laying these units out, a botanist would be consulted and the sensitive plant GIS layer reviewed.</li> </ul>	Protection
<b>8</b>	<p><b>Seeding</b></p> <ul style="list-style-type: none"> <li>Revegetation will be required where soil is disturbed by project activities. The goal is to provide long-term soil cover and reduce the risk of weed infestation. Native plant materials are the first choice in revegetation, but non-native, non-invasive plant species may also be used.</li> <li>Revegetation efforts would be monitored to insure successful site revegetation has occurred and reseed if necessary.</li> <li>Where native plant seed is used for revegetation, the seed needs to be chosen from a suitable area for where it will be applied and must be certified as "Prohibited and Restricted Noxious Weed"</li> </ul>	Erosion Control and Planting
<b>9</b>	<p><b>Noxious Weeds (As recommended by US Forest Service and other agencies)</b></p> <p>Noxious weeds that occur within the project area and on Forest Service routes used to access the project area will be treated prior to any harvest or ground disturbing activities. Contract provisions will provide for cleaning of equipment prior to move in and use off of landings.</p> <ul style="list-style-type: none"> <li>Noxious weed prevention within when working in the vicinity of Forest Service Land will be conducted as prescribed in the <i>Colville National Forest Weed Prevention Guidelines</i>. This document sets forth the practices to be followed to minimize the introduction of noxious weeds and minimize conditions that favor the establishment and spread of noxious weeds.</li> <li>Equipment and vehicles are to be cleaned of soil and potential noxious weed seeds and plant parts and are to be inspected by a designated Forest Service representative (or on-site project construction manager as appropriate) for other project areas) prior to being brought onto National Forest System lands. The purpose of this measure is to reduce the risk of introducing noxious weed plant parts or seeds to the disturbed area.</li> <li>Any seed mix used for re-vegetation must be certified as "Prohibited and Restricted Noxious Weed Free for the State of Washington."</li> <li>All pits will be weed free and fill material will be Washington certified weed free.</li> </ul> <p><b>Monitoring Recommendations:</b></p> <ul style="list-style-type: none"> <li>Revegetation: Revegetation efforts would be monitored to insure successful site revegetation has occurred and reseed if necessary.</li> <li>All aggregate and borrow sources will be monitored and inspected by the noxious weed coordinator or a designated representative prior to use to determine if the material is free from noxious weed seeds.</li> </ul>	Protection and Prevention
<p>Additional BMPs for work on USFS land are provided in Appendix F – USFS Requirements and taken from <b>U.S. Forest Service National Best Management Practices Program</b>  <i>Nonpoint Source Pollution Control for Water Quality Management on National Forest System Lands</i>  <b>Technical Guide Volume 1 The National Core BMPs</b>            March 18, 2011 Draft</p>		
<b>Additional BMPs are listed as follows:</b>		
10	<p><i>Preserving Natural Vegetation Purpose -</i></p> <p>A. Construction equipment injury will be prevented by placing a fenced buffer zone around plants to be saved prior to construction to prevent construction equipment injuries.            B. Changing the natural ground level will alter grades and will affect trees and shrubs. This project will not have any fills during installation.</p>	Protection

**Table 4-1: Best Management Practices (BMPs) for Cable Installation**

	C. Special care will be used to protect trees during the installation of the fiber optic conduit.	
11	<p><i>Buffer Zones</i></p> <p>A. Preserving natural vegetation or plantings in clumps, blocks, or strips will be the method of protecting buffer areas during installation of the fiber optic cable.</p> <p>B. All unstable steep slopes will be left with natural vegetation.</p> <p>C. Excavations will be outside of drip lines of trees and shrubs.</p> <p>D. Extra soil will not be pushed into buffer areas.</p> <p>E. Vegetative buffer zones for streams, lakes or other waterways will be established by the jurisdiction or other state or federal permit and/or approvals.</p>	Protection
12	<p><i>Stake and Wire Fence</i></p> <p>A. At boundaries of sensitive areas, their buffers, and other areas stake or wire fences may be used.</p> <p>B. The fences will assist in controlling vehicle access to and on these areas.</p>	Protection
13	When water or sediments are removed from vaults, inspect for the presence of oil or sheen. If oil or sheen is present, the liquid will be pumped out and disposed of properly via the sanitary sewer or directly at a wastewater plant.	Protection
14	Within utility corridors, a maintenance procedure and implementation schedule will be prepared for vegetative, gravel or equivalent cover that minimizes bare or thinly vegetated ground surfaces within the corridor, to prevent the erosion of soil.	Erosion Control
15	To prevent storm water from accumulating and draining across and/or onto roadways, grassy roadside ditches discharge to surface waters will be maintained.	Erosion Control
16	Ditches and culverts will be maintained to ensure that plugging and flooding across the roadbed, with resulting overflow erosion, does not occur.	Erosion Control
17	Implement temporary erosion and sediment control in areas where clear-cuts are conducted and new roads are construction.	Erosion Control
18	<i>Water Bars:</i> If necessary water bars will be constructed diagonally across a road or right-of-way to divert storm water runoff from the road surface, wheel tracks, or a shallow road ditch.	Erosion Control
19	No vegetation removal will occur within 100-year floodplains.	Erosion Control
20	<i>Straw Wattles:</i> Straw wattles are temporary erosion and sediment control barriers which consist of straw that is wrapped in biodegradable tubular plastic or similar encasing material. Wattles are usually placed in shallow trenches and staked along the contour of disturbed or newly constructed slopes.	Erosion Control
20	Fueling is not to be done in close proximity to sensitive aquifers designated wetlands, wetland buffers, or other waters of the State.	Spill Prevention
21	<p><i>Temporary and Permanent Seeding</i></p> <p>A. Seeding will be used throughout the project on disturbed areas. Where native plant seed is used for revegetation, the seed needs to be chosen from a suitable area for where it will be applied and must be certified as "Prohibited and Restricted Noxious Weed</p> <p>B. If channels are disturbed, the vegetated areas will be hydroseeded with a Bonded Fiber Matrix. Mulch will be used at all times to protect the seeds from heat, moisture loss, and transport due to runoff.</p> <p>C. All disturbed areas will be review prior to the beginning of the optimum seeding windows.</p> <p>D. At final site stabilization, all disturbed areas not otherwise vegetated or stabilized will be seeded and mulched.</p>	Erosion Control and Planting
22	<p><i>Mulching</i></p> <p>A. Mulch will be used as a temporary cover for disturbed areas that require cover for less than 30 days.</p> <p>B. Mulch will be used as a cover for seed during the wet season and during the hot summer months.</p> <p>C. Mulch will be used during wet seasons on slopes steeper that 3H:1V and with more than 10 feet of vertical relief.</p> <p>D. Mulch will be refreshed periodically.</p>	Erosion Control and Planting
23	<p><i>Contractor Erosion and Spill Control Lead</i></p> <p>The Contractor will designate at least one person to be responsible for erosion and spill control. This person, the Contractor Erosion and Spill Control Lead (CESCL) will be</p>	Erosion Control & Spill Response

**Table 4-1: Best Management Practices (BMPs) for Cable Installation**

	responsible for ensuring compliance with all local, State, and Federal erosion and sediment control requirements.	
24	Directional Drilling equipment will be located outside of stream buffers - typically 20 feet or more from stream shore.	Protection
25	During directional boring operations the following mitigation if seeping or "frac-out" occurs: A. Containment and cleanup equipment will be present for use at the site, as needed B. If boring under stream crossings, a qualified hydrological monitor will be present at all bore sites to monitor construction activities for prompt detection of any releases. C. Releases will be immediately controlled and the drilling fluid will be contained and removed D. A remediation plan will be developed based on the site-specific conditions.	Protection
26	Upon completion of a directional bore, all slurry will be removed from the construction site and deposited at an approved site.	Protection
27	Safety netting will be installed under aerial and bridge attachment installations over water bodies to avoid equipment, tools, or workers from falling into the water body.	Protection
28	<i>Storm Drain Inlet Protection</i> Storm drain inlets will be protected to prevent coarse sediment from entering drainage systems prior to permanent stabilization of the disturbed areas. It may be necessary to build a temporary dike, use a block and gravel filter around the inlet using standard concrete blocks and gravel. An alternative design may include a gravel donut. Other methods recommended are gravel and wire mesh filters, catch basin filters, curb inlet protection with wooden weir, block and gravel curb inlet protection, or curb and gutter sediment barrier.	Protection
29	The presence and constant observation/monitoring of the driver/operator at the fuel transfer location at all times will be implemented. Fueling will be located at least 25 feet from the nearest storm drain or inside on impervious containment with a volumetric holding capacity equal to or greater that 110 percent of the fueling tank volume or covering the storm drain to ensure no inflow of spilled or leaked fuel.	Spill Prevention
30	Minimum spill clean-up materials will be in all fueling vehicles: non-water absorbents, storm drain plug or cover kit, non-water absorbent containment boom of minimum 10 feet in length with a 12-gallon absorbent capacity, non-metallic shovel, and two five-gallon buckets with lids.	Spill Response
31	The local fire department (911) and the appropriate regional office of the Department of Ecology contact names and numbers will be on-site in case of any spill entering the surface or ground waters.	Spill Response
<p><b>References:</b></p> <p>(1) Stormwater Management Manual for Western Washington dated February 2005  (2) Stormwater Management Manual for Eastern Washington dated September 2004  (3) Appendix D: Section on U.S. Fish and Wildlife Communications, email correspondence from Karen Myers to Susan Boyd dated August 30, 2010</p>		

4.4.2. Groundwater

Along the project routes, it is expected that groundwater supply wells exist. Approximately 67% of the construction will be aerial and will have no impacts to the existing groundwater. The remaining project length will be buried a minimum of 36-inches deep. Burying the fiber optic conduit will not impact the existing groundwater in any way. The plowing method and directional drilling equipment used for underground construction will not require de-watering in the event a high underground water table is discovered. Both the blades on the equipment and the fiber cable conduit used for underground installation are absent of materials that could negatively impact water quality. BMPs No. 24-26 and No. 29 listed in Table 4-1 will assist in the prevention of fuel spills that could potentially contaminate underground water resources. In

summary, no impacts to groundwater resources will occur under the Preferred Alternative.

No impacts will occur for the Preferred Alternative or the No Action Alternative.

#### 4.4.3. Coastal Zone

Washington State Coastal Zone Management Program affects the following counties within which WRAP Round II is proposed: Whatcom, Skagit, Snohomish, Clallam Jefferson and Kitsap. However, in all but Jefferson County, the proposed project is either located inland and away from coastal areas and/or is entirely wireless. The Jefferson County installation (Route NW-2) is directly impacted by regulations associated with Washington State's Coastal Zone Management (CZM) Program. The CZM provides guidelines for preventing erosion, protecting natural habitats and shell fishing designations, providing recreational areas and other activities deemed critical to maintaining a healthy coastline. It is implemented thorough Local Shoreline Management Plans.

On January 26, 2011, the Washington State Department of Ecology approved, with recommended and required changes, Jefferson County's Shoreline Master Program (SMP) comprehensive update. The comprehensive update revises the existing shoreline program, including the goals, policies, regulations, shoreline environment designations, and administrative procedures and definitions. The proposed action is consistent with the Shoreline Management Plan and Coastal Zone Management Program for Jefferson County. New fiber optic line will be placed on existing poles insofar as possible. Where poles do not exist the cable will be installed underground. Underground installation occurs within Fort Flagler State Park on the northernmost tip of Marrowstone Island and in the vicinity of the shoreline community of Port Ludlow. This provides avoidance of impacts to ecological functions and processes and visual resources and will be accomplished in accordance with the local regulations and permits.

In summary, it is expected that NoaNet will coordinate and comply with the requirements put forth in various County and State CZM Programs, as required under state and local permitting processes. No adverse impacts on Shoreline or Coastal Zone Management Areas will occur as a result of this project. .

Under the No Action Alternative, no impacts of any kind would occur to Coastal Zones.

#### 4.4.4. Floodplains

Section 3.4.4 of this report identifies the areas that will be in the vicinity of designated floodplain areas. This project will not, however, modify the flow paths. As a result, no increased flooding problems and/or erosion will occur.

There will be no dredging, filling, dumping or backfilling of the floodplain areas. Most of the cable routes encroaching existing floodplains will be aerial installations where the fiber optic cable will be hung on existing poles. The natural ground cover will be protected during the construction phase and all permit requirements will be adhered to. Any potential ground disturbance will be restored to preconstruction condition.

Neither the placement of the fiber optic cable nor the operation of the cable to provide data transmission would alter any floodplains as they are currently delineated. Less than two miles of fiber cabling will be installed underground within a 100-year floodplain, and the cable will be secured underground to provide additional fortification in floodplains. Fiber optic cables and conduits will be placed via directional boring at a minimum of 36" below the surface in floodplains. The spacing between underground vaults will be governed by the specific terrain encountered. The closer the vaults are located to each other, the more secure the cable and conduit will be. Less spacing in floodplains may be warranted.

An attempt to contact FEMA for further coordination has been made, and although no comments have been received as of the submittal of this EA, it is expected that NoaNet will coordinate with FEMA to ensure the requirements of Executive Order 11988 are satisfied.

In summary, the Preferred Alternative will not have an adverse impact on floodplains.

Under the No Action Alternative, no impacts to floodplains would occur.

#### 4.4.5. Wild and Scenic Rivers

The Skagit River is the only Wild and Scenic River that is located near the project area. The Preferred Alternative for the project is located about one mile north of the Skagit River in the City of Sedro-Woolley, and this distance will ensure that no impacts to the Wild and Scenic River will occur. The project crosses Hansen Creek, a major tributary of the Skagit River, and this will be accomplished by a bridge attachment to ensure no disruption or impact. Hansen Creek is not on the State of Washington's list of Federal Navigable Waterways.

Under both the Preferred and No Action Alternatives, no impacts to Wild and Scenic Rivers would occur.

### **4.5. Biological Resources**

The following discussion identifies the potential impacts, along with avoidance protection and mitigation measures associated with wildlife, vegetation, and threatened and endangered species in the project area defined by the various alternatives discussed in Section 2. Table 4-2 provides a summary of the habitat for all federally listed endangered species, and lists the avoidance measures to be

employed to minimize or eliminate any adverse impacts on these species. Table 4-2 was developed using detailed information collected and mapped from a variety of state and federal sources. A summary of sources is provided in Section 7.

As demonstrated in Section 7 of this document and within the Communications Plan in Appendix D, NoaNet has contacted and collaborated with a variety of agencies to ensure that biological resources of significance are protected. Endangered and threatened species and critical habitats have been identified and will be sufficiently protected against adverse impacts.

This EA has been developed using information from communications with USFWS, NMFS, Washington State DOE, and Washington State Department of Fish and Wildlife to determine appropriate measures for avoidance of adverse impacts under the Preferred Alternative. NoaNet is committed to working with these agencies through project permitting and construction to ensure impacts are minimized.

Although no specific instances of lasting habitat disturbance are known or anticipated, construction equipment used during specific times of the year would avoid impacts on any nesting, migratory, or other wildlife activities. The project will not exceed normal construction noise levels associated with excavation equipment and will be within the limits established for all right-of-way permits. NoaNet will satisfy appropriate mitigation measures by following permitting and regulatory requirements, and in some instances by utilizing BMPs outlined in Table 4-1.

#### 4.5.1. Wildlife and Vegetation

Implementation of this project will have no effect on wildlife and vegetation as all work will be performed within previously disturbed public right-of-way or existing utility corridor easements. Impacts that might occur due to elevated construction noise would be limited to songbirds, rodents, deer, etc. The project is almost entirely along existing, previously disturbed right of ways. The plow method of construction requires minimal clearing of vegetation and results in minimal, if not entirely absent, impacts and disturbances. Grasses and small scrub vegetation removed within the right-of-way will be re-vegetated in accordance with WSDOT and/or county specifications.

The southwest portion of Route SC-6 near Patterson is adjacent to the Umatilla National Wildlife Refuge (NWR), and construction activities will be coordinated with the U.S. Fish and Wildlife Service (USFWS) to ensure that the resident wildlife population is not impacted by construction activities. Along Route NE-1 starting just east of Starvation Lake Road on SR-20, the route passes alongside and through the Little Pend Oreille NWR until just before Joliff Road. The SC-5 Route passes through the Toppenish NWR along SR-22 from Satus Road to Newland Road, but the underground construction in this area will remain within the State Dept. of Transportation right-of-way in pre-disturbed soil. Coordination with USFWS may be warranted in this area.

For the wireless collocation sites, in most cases the microwave antenna will not increase the height of most existing structures, but in some instances may increase the height no more than two feet above existing buildings or structures. The number of collocated facilities is provided in Table 2-2 for the three routes that contain wireless facilities (NW-1A, NW-2, and NE-3). Examples of antenna installations on existing structures can be found in Photos 2.6, 2.7, and 2.8 in Section 2. No significant impacts on migratory birds will be caused by these two-foot extensions.

Critical Habitats established for threatened and endangered species will not be adversely impacted by this project as discussed in Section 4.5.2 and Table 4-2.

In summary, the Preferred Alternative will have no effect on migratory birds, wildlife, and vegetation. Wildlife and vegetation would not be adversely impacted, and migratory birds will be minimally impacted by the two foot extensions on all wireless collocation sites.

Under the No Action Alternative, wildlife and vegetation resources would not be adversely impacted.

#### 4.5.2. Threatened and Endangered Species

Under the Endangered Species Act of 1973, critical species are protected from extinction as a consequence of economic growth and development. This Act is administered by two federal agencies: U.S. Fish and Wildlife Service (USFWS) under the Department of Interior and National Marine Fisheries Service (NMFS) under the National Oceanic and Atmospheric Administration (NOAA). Section 3 summarizes documented plant, fish, or wildlife species that are federally or state-listed as endangered, threatened, candidate, monitor, or species of concern along or in the immediate vicinity of the projects.

USFWS, NMFS, Washington Department of Ecology, USFS, and Washington State Department of Fish and Wildlife records were used to determine if any federally or state-listed species have been documented in the immediate vicinity of the project. Thorough research of available information regarding threatened and endangered species has been accomplished as documented in Section 3 and summarized in Table 4-2. Based on this information and review of the individual project routes and construction methods to be employed and the BMPs outlined in Table 4-1, all field work will satisfy appropriate mitigation measures by following the usual permitting and regulatory requirements.

Considerable effort has been made to ensure that the NE-1 and NE-2 Routes of the project will not impact the remote and unique landscape of Routes NE-1 and NE-2. NoaNet has worked closely with the staff of the Colville and Wenatchee National Forests to ensure no impact to listed or sensitive species in the area. A meeting took place on April 26, 2011 to discuss how to best

proceed with construction through protected forest lands where endangered species may be encountered. The meeting included an overview of the project by NoaNet and detailed project information by consultants. The USFS representatives provided specific information on the Forest Service procedures for conducting an environmental evaluation and issuance of a FONSI as well as an overview of what to expect in terms of permitting for work on Forest Service land. USFS staff provided a list of species that are known to inhabit the Colville National Forest. This list is more comprehensive than those listed federally by USFWS. Appendices D-5 and D-6 contain correspondence with the US Forest Service while Appendix F contains the referenced list of species as well as specific requirements for work on Forest Service land, a Biological and Management Indicator Species Evaluation prepared for the USFS and other information pertaining to the USFS permitting and review process. A summary of specific BMPs recommended by the US Forest Service is presented in Table 4-1 earlier in this section.

USFS botanists accompanied NoaNet personnel on field reconnaissance along the NE-1 Route to identify listed or sensitive species and chart a mutually agreeable route that avoids adverse effects. No listed plants were identified, although as stated in Section 3, one rare orchid species was noted. Final project alignment and design will include consideration of avoidance measures to protect this plant species. A second meeting was held with USFS specialists on July 11, 2011 to confirm the adequacy of evaluations and analyses to date and develop a strategy for using this EA to satisfy USFS needs in developing their own FONIS for the project. Exchange of information with the Forest Service has been helpful in refining this document and has confirmed the analysis summarized in Table 4-2 for each of the threatened and endangered species. Additional information on R-6 sensitive species is contained in Appendix F.

Conversations with USFS representatives Kim DiRienz, Kathy Ahlenslager, Chris Loggers and Jim McGowan have confirmed that no effect is anticipated for endangered or sensitive species along Routes NE-1 and NE-2 and that based on information to date, formal consultation under Section 7 of the Endangered Species Act will not be required. Ongoing coordination between NoaNet, the US Fish and Wildlife and US Forest Service during permitting will ensure impacts on endangered species and critical habitats are avoided.

In summary, it is expected there will be no effect on ESA-listed species for the Preferred Alternative. It is expected that NoaNet will continue to coordinate with these agencies throughout the local, state, and special use permitting processes. Doing so will ensure all practical and appropriate BMPs are implemented during the design, staking, and construction of fiber and wireless facilities, and a result of no effect on threatened and endangered wildlife is expected.

Under the No Action Alternative, impacts on endangered species would not occur.

**Table 4-2: Potential Impacts and Mitigation Strategies for Endangered Species**

Common Name (Scientific Name)	Type	Federal Listing	Description/Habitat	Location, Avoidance or Protection Measure	Anticipated Effect	Routes
Marbled Murrelet (Brachyramphus marmoratus)	Bird	Threatened	The marbled murrelet is a small, chubby seabird that has a very short neck. Marbled murrelets are found on land and at sea in portions of six geographic zones: Puget Sound; Western Washington Coast Range; Oregon Coast Range; Siskiyou Coast Range; Mendocino; and Santa Cruz Mountains. They are generally in the vicinity of large tracts of older forests in proximity to the coast. The primary cause of marbled murrelet population decline is the historic and ongoing loss and modification of nesting habitat through commercial timber harvests, human-induced fires, and land conversions, and to a lesser degree, through natural causes such as wild fires and wind storms. This species is known to occur in the western-most counties of Western Washington. Nesting is from April to mid-September at which time the species can be found in the Puget Sound and northern part of Washington’s outer coast. Marbled murrelet are typically associated with the (1) proximity of old-growth forest, (2) distribution of rocky shoreline/substrate versus sandy shoreline/substrate, and (3) abundance of kelp.	Work on NC-1A and a portion of NW-2 includes installation of antenna on existing structures and will not affect the marbled murrelet or its habitat. Work on NC-1A, NC-2, NC-3 and SC-5 is well outside the vicinity of any old growth forest or shoreline/substrate and no occurrences of the marbled murrelet can reasonably be expected. Portions of NW-2 and NW-3 could provide suitable habitat for this species. Prior to any construction activities in these portions of NW-2 and NW-3, surveys will be performed by a qualified individual to determine presence/absence of Marbled Murrelet individuals or suitable habitat. If the presence of individuals or suitable habitat is found in these areas or within a ¼ mile buffer, the area will be avoided for the duration of the Marbled Murrelet nesting season.	No Effect with precautions and avoidance	NC-1A, NC-2, NC-3, NW-1A, NW-2, NW-3, SC-5

**Table 4-2: Potential Impacts and Mitigation Strategies for Endangered Species**

Common Name (Scientific Name)	Type	Federal Listing	Description/Habitat	Location, Avoidance or Protection Measure	Anticipated Effect	Routes
Northern Spotted Owl (Strix Occidentalis caurina)	Bird	Threatened	The spotted owl was listed under the Endangered Species Act as threatened on June 26, 1990, because of widespread loss of suitable habitat across the spotted owl's range and the inadequacy of existing regulatory mechanisms to conserve the spotted owl. Many populations of spotted owls have continued to decline, especially in the northern parts of its range, despite extensive efforts toward maintenance and restoration habitat. While habitat management is critical, it is becoming more evident that securing habitat alone will not recover the spotted owl. Based on the best available scientific information, competition from the barred owl poses a significant and complex threat to the spotted owl. The Northern spotted owl occurs in many counties across Washington State. (Source information: U.S. Fish and Wildlife Service - Spotted Owl Species Plan, 2008; and USFWS Website; September 2010.)	No impact to this species is associated with construction of the project, which will not disturb any vegetation of significance or potential habitat for the spotted owl, which typically resides in old growth forests. Although the majority of the project will be by aerial installation, all such work will be accomplished on existing poles and no new poles or guy wires are proposed. Prior to any construction activities, a qualified individual will determine any potential locations of old-growth forest in the vicinity of the project routes. These potential locations will then be surveyed by a qualified individual prior to any construction to determine the presence/absence of individuals or suitable habitat. If the presence of individuals or suitable habitat is found along any of the project routes, these areas and all areas within a ¼ mile buffer area will be avoided for the duration of the Spotted Owl nesting season.	No Effect with precautions and avoidance	NC-1A, NC-2, NC-3, NW-1A, NW-2, SC-2A, SC-5, SC-6

**Table 4-2: Potential Impacts and Mitigation Strategies for Endangered Species**

Common Name (Scientific Name)	Type	Federal Listing	Description/Habitat	Location, Avoidance or Protection Measure	Anticipated Effect	Routes
Short-Tailed Albatross (Phoebastria diomedea Albatrus)	Bird	Endangered	The Short-tailed albatross is the largest and only white-bodied albatross in the north Pacific. A seabird found in Pacific Ocean and estuaries, this species is known to occur in Jefferson, Clallam, Grays Harbor and Pacific Counties of Washington State. The Short-Tailed Albatross is known to nest on isolated, windswept, offshore islands, with restricted human access. There are no documented critical habitat areas or conservation plans in place for the Short-Tailed Albatross, but a Recovery Plan approved by the USFWS in Sept, 2008 indicates that the albatross is most frequently sighted near the heads of canyons along the Bering Sea shelf in Alaska and near isolated locations off the Pacific coast of Japan. The seabird has not been known to inhabit the Puget Sound area. It is more likely the seabird is sighted along the Pacific coast in portions of Clallam, Pacific, Grays Harbor, and Jefferson Counties. This species typically nests on isolated offshore islands.	All of the proposed routes associated with the Proposed Action are located inland.	No Effect.	NW-1A, NW-2

**Table 4-2: Potential Impacts and Mitigation Strategies for Endangered Species**

Common Name (Scientific Name)	Type	Federal Listing	Description/Habitat	Location, Avoidance or Protection Measure	Anticipated Effect	Routes
Bull Trout (Salvelinus confluentus)	Fish	Threatened	Bull Trout is a threatened species that occurs throughout streams in Washington State. The primary concern related to this species is avoidance of any increase in the levels of suspended sediment and/or any discharge of foreign material into the stream. Bull trout spawn from August to November, during which time, it is imperative that special precautions be taken when working in the vicinity of streams and surface waters that support this species. Construction is often limited during the spawning system to limit the potential for increasing suspended solids or otherwise disrupting habitat. This project, however, has identified avoidance of streams altogether to protect all aquatic habitat.	Critical Habitats for Bull trout have been identified for the streams listed in Table C-6 provided in Appendix C. No impacts are associated with the preferred option of attaching cable to existing bridge structures. If bridge crossings cannot be accomplished, directional drilling at a depth of 10 feet or more below the stream bed will be required. Directional drilling equipment will be located outside of stream buffers (typically 20 feet or more) and using appropriate protective measures (i.e. silt fencing, bales, etc.) to prevent erosion and the possibility of foreign substances from entering the water. Monitoring and coordination with USFWS and NMFS will be accomplished as required. No directional drilling will occur during spawning season and additional care will be administered from August to November). A variety of protective measures will be taken when working in the vicinity of all stream crossings associated with the project including erosion control and protection of riparian vegetation. Key BMPs to be employed are identified Table 4-1.	No Effect with precautions and avoidance.	All Routes
Dolly Varden (Salvelinus malma)	Fish	Threatened	Dolly Varden is a type of trout, very similar to the bull trout discussed above. Please refer to discussion on bull trout for information on avoidance and protective measures associated with the Dolly Varden.	See previous discussion on bull trout.	No Effect with precautions and avoidance.	All Routes

**Table 4-2: Potential Impacts and Mitigation Strategies for Endangered Species**

Common Name (Scientific Name)	Type	Federal Listing	Description/Habitat	Location, Avoidance or Protection Measure	Anticipated Effect	Routes
<p>Columbia Chum (Oncorhynchus Kketa)</p> <p>Hood Canal Chum (Oncorhynchus keta)</p> <p>Lower Columbia Chinook (Oncorhynchus Tshawytscha)</p> <p>Puget Sound Chinook (Oncorhynchus Tshawytscha)</p>	Fish	Threatened	<p>Chum, Coho and Chinook Salmon are all listed as threatened species under the Endangered Species Act, 4(d) Rule and occur in many streams across Washington state. The primary concern related to protection of salmonid habitat is avoidance of any increase in the levels of suspended sediment and/or discharge of foreign material into salmon bearing waters. Salmon spawn from August to November in the Pacific Northwest, during which time, additional precautions are taken when working in the vicinity of salmon bearing streams and surface waters. Construction is often limited during the spawning system to limit the potential for increasing suspended solids or otherwise disrupting habitat.</p>	<p>Using USFWS, NMFS and various Washington state databases, the Critical Habitats for threatened salmon species (Chum, Coho and Chinook) have been identified in the Project Area. The streams that intersect the project, and require crossing are listed in Table B-5 located in Appendix C. No impacts are associated with the preferred option of attaching cable to existing bridge structures. If bridge crossings cannot be accomplished, directional drilling at a depth of 10 feet or more below the stream bed will be required. Directional drilling equipment will be located outside of stream buffers (typically 20 feet or more) and using appropriate protective measures (i.e. silt fencing, bales, etc.) to prevent erosion and the possibility of foreign substances from entering the water. Monitoring and coordination with USFWS and NMFS will be accomplished as required. No directional drilling will be performed during spawning season (August-November) and additional care will be taken for all types of construction during the season. A variety of protective measures will be taken when working in the vicinity of all stream crossings associated with the project including erosion control and protection of riparian vegetation. Key BMPs to be employed are identified Table 4-1.</p>	No Effect with precautions and avoidance.	SC-2A, NW-2, NW-3, NC-1A, NC-2, NC-3
<p>Columbia Steelhead (Oncorhynchus mykiss)</p>	Fish	Threatened	<p>Lower, Middle, and Upper Columbia Steelhead are listed as a threatened and have been identified as occurring in the similar streams/rivers as other salmonid species. As described in the following column, the same protection measures will be employed. Please refer to the discussion of protection of salmonids above.</p>	<p>Critical Habitats for Steelhead have been identified in the streams listed in Table B-5 of Appendix C. The Steelhead will be avoided using the same techniques discussed for the federally listed Bull Trout and Coho, Chum, and Chinook Salmon species. Table 4-1 contains BMPs associated with minimizing impacts on Steelhead.</p>	No Effect with precautions and avoidance.	SC-2A, SC-5, SC-6, NE-1

**Table 4-2: Potential Impacts and Mitigation Strategies for Endangered Species**

Common Name (Scientific Name)	Type	Federal Listing	Description/Habitat	Location, Avoidance or Protection Measure	Anticipated Effect	Routes
Bradshaw's Desert-Parsley (Lomatium Bradshawii)	Flowering Plant	Endangered	The habitat of Lomatium bradshawii is within areas intermediate between wetlands and uplands, and appears to be sensitive to hydrologic conditions. The species appears to be adapted for survival in wet areas with seasonal flooding, but standing water during the growing season is reported to have dramatically reduced plant growth and fruit production in Oregon. Fires have been extremely important in shaping and maintaining prairie plant communities in this region by reducing or eliminating the invasion of woody species, and by reducing the build-up of grasses and herbaceous litter. In Washington, there are only two known occurrences, both located in Clark County. Inventory Needs: Threats and Management Concerns: Residential and commercial development and resultant changes in hydrology represent a significant threat to the species. Fire suppression and resulting secondary succession of grasses and woody species also threaten the species' survival.	Bradshaw's Desert-Parsley is listed as potentially occurring in Clark County. All work on Route SC-2A is within developed areas in and around the Cities of Vancouver, Washougal, and Camas. There is a documented habitat of the endangered plant located near proposed aerial and underground construction as the Route crosses Lacamas Creek on NE Goodwin Road, as illustrated on Map SC-2A.1. Prior to any construction activities at this location, a survey of potential habitat areas will be performed by a qualified individual. If any plants are found within the proposed construction or staging areas, all areas will be avoided during construction. If an alternate route to avoid all impacts cannot be identified, directional boring will be utilized to install fiber cable a minimum of 10 feet below the surface. Staging for boring activities will occur at least 25 feet away from any individuals.	No Effect with precautions and avoidance.	SC-2A
Golden Paintbrush (Castilleja Levisecta)	Flowering Plant	Threatened	Golden paintbrush (Castilleja levisecta) is listed as a threatened species under the federal Endangered Species Act. Historically known from the Willamette Valley in Oregon, it currently is known to occur in about one dozen locations that range from the southern end of Vancouver Island, British Columbia to just south of Olympia, Washington. USFWS identifies the species as potentially occurring in Thurston, King, Island, San Juan, Pierce and Clark Counties of Washington state. Golden paintbrush grows in lowland grassland habitats. Key factors responsible for the species decline have been development and conversion of its habitat, fire suppression resulting in shrub and tree invasion of the grassland habitat, and non-native species invasions. There are significant conservation efforts underway for this species.	Golden Paintbrush is listed as potentially occurring in Clark County. All work on Route SC-2A is within developed areas in and around the Cities of Vancouver, Washougal, and Camas. There are no known or recorded habitats for Golden Paintbrush documented by the WA State Natural Heritage Program within the vicinity of Route SC-2A, however, field staking and construction crews will be educated to identify the plant and provided with specific procedures for work stoppage and notifications in the event that it is identified during staking or construction staging.	No Effect	SC-2A

**Table 4-2: Potential Impacts and Mitigation Strategies for Endangered Species**

Common Name (Scientific Name)	Type	Federal Listing	Description/Habitat	Location, Avoidance or Protection Measure	Anticipated Effect	Routes
Nelson's Checker-Mallow (Sidalcea Nelsoniana)	Flowering Plant	Threatened	Sidalcea nelsoniana is a perennial herb that was listed as threatened, without critical habitat, on February 12, 1993. The native prairie species is frequently found at the margins of sloughs, ditches, and streams; roadsides; fence rows; drainage swales; and fallow fields. Soil textures of the occupied sites vary from gravelly, well drained loams to poorly drained, hydric clay soils. Sidalcea nelsoniana is threatened by urban and agricultural development, ecological succession that results in shrub and tree encroachment of open prairie habitats, and competition with invasive weeds. Lewis, Cowlitz and Clark Counties of Washington.	Nelson's Checker-Mallow is listed as potentially occurring in Clark County. All work on Route SC-2A is within developed areas in and around the Cities of Vancouver, Washougal, and Camas. There are no known or recorded habitats for Nelson's Checker Mallow documented by the WA State Natural Heritage Program within the vicinity of Route SC-2A, however field staking and construction crews will be educated to identify the plant and provided with specific procedures for work stoppage and notifications in the event that it is identified during staking or construction staging.	No Effect	SC-2A
Spalding's Catchfly (Silene Spaldingii)	Flowering Plant	Threatened	Silene spaldingii (Spalding's catchfly) is a long-lived perennial in the pink or carnation family. The green portions of the plant are covered in sticky hairs that often catch debris and small insects. This plant occurs primarily within open grasslands with a minor shrub component and occasionally with scattered conifers. Some sites occur in a mosaic of grassland and ponderosa pine forest. Occupied habitat in Washington includes the Palouse Grasslands in southeastern Washington and the Channeled Scablands in eastern Washington. USDFWS indicates that populations occur in Whitman, Asotin, Lincoln, Adams, and Spokane Counties of Washington. Silene spaldingii is impacted by habitat loss due to human development, habitat degradation associated with domestic livestock and wildlife grazing, and invasions of aggressive nonnative plants. Other impacts include changes in fire frequency and seasonality, off-road vehicle use, and herbicide spraying and drift.	No known presence of Spalding's Catchfly is located near the collocation sites identified for wireless antenna installation as part of Route NE-3. Antenna installation will be limited to existing public building with no ground disturbance or fiber optic cable installation involved.	No Effect	NE-3

**Table 4-2: Potential Impacts and Mitigation Strategies for Endangered Species**

Common Name (Scientific Name)	Type	Federal Listing	Description/Habitat	Location, Avoidance or Protection Measure	Anticipated Effect	Routes
Ute Ladies'-Tresses (Spiranthes Diluvialis)	Flowering Plant	Threatened	Information provided by Washington State Department of Natural Resources indicates that there are four sites in Washington that support this variety of orchid, three of which are near the Columbia River and are quite near each other. The riparian wetland vegetation habitats that support the species are threatened and impacted by urban development, stream channelization, and other stream alterations that degrade natural stream diversity and stability.	Ute Ladies'-Tresses is listed as potentially occurring for Routes NE-1, NE-3, SC-5, and SC-6. There are no habitats for Ute Ladies'-Tresses documented by the WA State Natural Heritage Program within the vicinity of these routes. Prior to any construction activities in potential habitat areas along these four routes, surveys will be performed by a qualified individual. If any plants are found within the proposed construction or staging areas, all are to be avoided during construction. If an alternate route to avoid all impacts cannot be identified, directional boring will be utilized to install fiber cable a minimum of 10 feet below the surface. Staging for boring activities will occur at least 25 feet away from any individuals.	No Effect with precautions and avoidance	NE-1, NE-3, SC-5, SC-6
Water Howellia (Howellia Aquatilis)	Flowering Plant	Threatened	Water howellia (Howellia aquatilis) is a winter annual aquatic plant that grows 4-24 inches high. It has extensively branched, submerged or floating stems and narrow, linear, alternate (sometimes opposite) leaves up to 2 inches in length. Water howellia usually flowers in May and June, with small trumpet-shaped blooms ranging from white to light purple in color, at or above the water surface. Flowering occurs from June to August. The plant grows in areas that were once associated with glacial potholes and former river oxbows that flood in the spring, but usually dry at least partially by late summer. It is often found in shallow water (1-2 meters) and on the edges of deep ponds that are partially surrounded by deciduous trees such as black cottonwood and aspen. Currently known from California, Idaho, Montana, and Washington. Historically found in Oregon. The plant has also been found on Turnbull National Wildlife Refuge in Washington. The plant has been identified as potentially occurring in Thurston, Pierce, Clark and Spokane Counties of Washington State. This species is associated with shallow water and the edges of deep ponds.	Water Howellia is listed as potentially occurring in Clark County and Spokane County. All work on Route SC-2A is within developed areas in and around the Cities of Vancouver, Washougal, and Camas, and work within Route NE-3 will take place on existing communications. There are no known or recorded habitats for Water Howellia documented by the WA State Natural Heritage Program within the vicinity of Routes SC-2A or NE-3. The project does not occur in the vicinity of any ponds or surface water bodies that would provide suitable habitat.	No Effect	NE-3, SC-2A

**Table 4-2: Potential Impacts and Mitigation Strategies for Endangered Species**

<b>Common Name (Scientific Name)</b>	<b>Type</b>	<b>Federal Listing</b>	<b>Description/Habitat</b>	<b>Location, Avoidance or Protection Measure</b>	<b>Anticipated Effect</b>	<b>Routes</b>
Canada Lynx (Lynx Canadensis)	Mammal	Threatened	Habitat for the Canada Lynx characterized by dense cover of a brushy forest understory. Snag-rich older forests are needed for covers for hunting and large woody hidey holes for denning. The desired habitat it not present in the vicinity of the project, which will occur in pre-disturbed, cleared right of way.	No presence of Canada Lynx is anticipated in the established right-of-way along Routes NC-1A, NC-2, NC-3, NE-1, NE-2, or SC-6 and the Canadian Lynx would not be expected to approach construction activity or crews. However, field staff will be provided with a field guide to endangered species prior to construction and instructed on work stoppage procedures in the unlikely event that the species is encountered.	No Effect	NC-1A, NC-2, NC-3, NE-1, NE-2, SC-6
Gray Wolf (Canis Lupus)	Mammal	Endangered	The Gray Wolf was listed as a threatened species in the State of Washington in 1980, and was federally listed in 1967 by the USFWS. Wolves were extirpated in Washington prior to the 1930s and are now re-colonizing in the Cascade Mountains coming down from Canada. Their habitats include coniferous and hardwood forest lands, wetlands, and aquatic and riparian habitats associated with all stream types, snags, and other special habitat types. Since 1984, the gray wolf has been seen roaming in the vicinity of Ross Lake (Ross Lake National Recreation Area in Washington and Skagit Valley Recreation Area in British Columbia) on both sides of the International Boundary.	The surrounding environment along the proposed Routes may contain gray wolves. The presence of such listed species is not anticipated and would not be expected to approach construction activity or crews. However, as a precaution, field staff will be briefed on the appearance and characteristics of the gray wolf and will be instructed to stop work and notify the WA State Department of Fish and Wildlife in the event that one is identified.	No Effect	All Routes
Grizzly Bear (Ursus Arctos Horribilis)	Mammal	Threatened	Grizzly bear habitat is typically very rugged and remote and information from the USFWS website indicates that only "remnant" population remains, incapable of enduring without active recovery efforts. Grizzly are associated with the North Cascades, where the population is estimated to be fewer than 20 animals within a 9,500 square mile area.	The surrounding environment along Routes NC-1A, NC-2, NC-3, NE-1, and NE-2 may contain Grizzly Bears. The presence of such listed species is not anticipated and would not be expected to approach construction activity or crews. However, as a precaution, field staff will be briefed on the appearance and characteristics of the grizzly bear and will be instructed to stop work and notify the WA State Department of Fish and Wildlife in the event that one is identified.	No Effect.	NC-1A, NC-2, NC-3, NE-1, NE-2

**Table 4-2: Potential Impacts and Mitigation Strategies for Endangered Species**

Common Name (Scientific Name)	Type	Federal Listing	Description/Habitat	Location, Avoidance or Protection Measure	Anticipated Effect	Routes
Pygmy Rabbit (Brachylagus Idahoensis)	Mammal	Endangered	Literature indicates that Pygmy Rabbits are primarily located in Idaho, although they are a listed species for Lincoln County. Habitat requires big (tall sagebrush of 34-Inches or greater and deep soils greater than 20 inches. High use areas have tall, dense shrub cover with thick canopy cover. Basin big sagebrush is critical. Habitat has been fragmented by the decline of suitable sagebrush habitat from urbanization, agriculture and invasive weeds. Habitat restoration or enhancement typically includes using a seed mix that contains suitable mixtures of sagebrush, native forbs (especially legumes), and grasses.	The surrounding environment along the roadways in the proposed alignment for Routes SC-5 and SC-6 does not provide an ideal habitat for Pygmy Rabbit. The presence of such listed species is not anticipated. However, since marginal habitat can still be utilized, this species may be present. In order to prevent any potential adverse impacts to this species, presence/absence surveys will be performed by a qualified individual prior to any construction along the SC-5 and SC-6 routes. If individuals or suitable burrows are found, the affected area will be avoided by installing the fiber-optic cable and conduit within the road prism of the affected area.	No Effect with precautions and avoidance	SC-5, SC-6
Woodland Caribou (Rangifer Tarandus Caribou)	Mammal	Endangered	The Selkirk Mountains caribou population is estimated to be less than 50. Woodland caribou were federally listed as endangered in 1984, and can be found above 4,000 feet elevation in spruce/subalpine fir and western red cedar/western hemlock forested areas.	The surrounding environment along Routes NE-1 and NE-2, particularly in the vicinity of the Selkirk Mountains, may contain Woodland Caribou. The presence of such listed species is not anticipated and it would not be expected to approach construction activity or crews. However, as a precaution, field staff will be briefed on the appearance and characteristics of the Woodland Caribou and will be instructed to stop work and notify the WA State Department of Fish and Wildlife in the event that one is identified.	No Effect.	NE-1, NE-2
Green Sea Turtle (Chelonia Mydas)	Reptile	Threatened	The green sea turtle grows to a maximum size of about 4 feet and a weight of 440 pounds. Hatchling green turtles eat a variety of plants and animals, but adults feed almost exclusively on sea grasses and marine algae. Green Sea Turtles have been identified by USFWS as occurring in Island, Jefferson, Clallam, Grays Harbor, San Juan and Pacific Counties of Washington. No known nesting of green turtles occurs along the U.S. West Coast.	Green Sea Turtles are not known to nest in the Pacific Northwest. In Washington State they are known to occur in offshore open water of the Pacific Ocean and are rarely found in offshore waters of the Puget Sound. This species will not be impacted in any way by the project.	No Effect	NW-1A, NW-2

**Table 4-2: Potential Impacts and Mitigation Strategies for Endangered Species**

Common Name (Scientific Name)	Type	Federal Listing	Description/Habitat	Location, Avoidance or Protection Measure	Anticipated Effect	Routes
Leatherback Sea Turtle ( <i>Dermochelys Coriacea</i> )	Reptile	Endangered	The leatherback is the largest, deepest diving, and most migratory and wide ranging of all sea turtles. The adult leatherback can reach 4 to 8 feet in length and 500 to 2000 pounds in weight. Jellyfish are the main staple of its diet, but it is also known to feed on sea urchins, squid, crustaceans, tunicates, fish, blue-green algae, and floating seaweed. Some of the largest nesting populations of leatherback turtles in the world border the Pacific Ocean, but no nesting occurs on beaches under U.S. jurisdiction.	Leatherback Turtles are not known to nest in the Pacific Northwest. In Washington State they are known to occur in offshore open water of the Pacific Ocean and are rarely found in offshore waters of the Puget Sound. This species will not be impacted in any way by the project.	No Effect	NW-1A, NW-2

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#### 4.5.3. Ecoregions

As discussed in Section 3.5.3, this project lies within the Canadian Rocky Mountains, Okanogan, Columbia Plateau, East Cascades, Puget Lowlands, and the North Cascades ecoregions. The unique characteristics that define the ecoregion will not be impacted by either the Preferred Alternative or the No Action Alternative.

### **4.6. Historic and Cultural Resources**

As a federally funded project, this project must undergo the Section 106 process of the National Historic Preservation Act (NHPA) as defined in 36 CFR Part 800. This EA has included complete evaluation of cultural resources to comply with the Section 106 process and ensure that these resources are not adversely impacted during the course of this project.

As noted in Section 3, Project Archaeologists (Tierra) found numerous documented archaeological sites within the general proximity of the proposed project routes. Known archaeological sites, cemeteries, and historic properties along the route (within a half-mile on either side) were identified. Four cultural resource reports were prepared for the project, one for each region of the Preferred Alternative. Tierra then identified which of those could potentially be impacted by the project (i.e., which are within the Area of Potential Effect (APE). The APE is defined as the area along the project line and any other area needed for staging, construction equipment, etc. This area is defined as within approximately 100 feet on either side of the line as visible on the maps provided in Appendix E.

Planned wireless facilities also have been researched and will be addressed following the Federal Communications Commission's Nationwide Programmatic Agreement (FCC NPA) for cell towers and microwave towers. All of the project installations involve collocations on existing buildings or towers.

Appendix E provides an effect determination summary (e.g., ranging from "no effect" to "no adverse effect") for all 12 routes and associated mitigation recommendation for each route. Additionally, it documents communications regarding protection of sites of archaeological and historical significance and compliance with Section 106 of the National Historic Preservation Act. NoaNet and its consultants, in consultation with the Washington State Department of Historic Preservation (the State Historic Preservation Office), Native American tribes, and NTIA, developed a template establishing the required format for archaeological treatment plans for WRAP Round I. An example treatment plan has been developed as a starting point for WRAP Round II and it is included in Appendix E. The templates will be customized once routes are final in ongoing consultation with affected tribes, DAHP, and NTIA, and the detailed procedures will be executed before any ground-disturbing activities commence. The following documentation is included in Appendix E:

- Jill Dowling, Federal Preservation Officer, NTIA, letter to Dr. Allyson Brooks, Washington State Historic Preservation Officer, November 17, 2010, RE:

Initiation of National Historic Preservation Act, Section 106, Consultation Regarding Broadband Technology Opportunities Program Grantee #5376, Northwest Open Access Network, State of Washington Broadband Consortium. Letter notifying the SHPO of the WRAP II project, including project summary attached to letter.

- Rob Whitlam, PhD, Washington State Historic Preservation Office, to Jill Dowling, Federal Preservation Officer, November 22, 2010, RE: Grantee #5376 NoaNet Broadband Initiatives Project (Log No.: 112210-37-DOC). Letter concurring with the proposed Area of Potential Effect (APE) and asking for further consultation in addressing the cultural resources. A letter dated March 2, 2011 was received from Dr. Whitlam that indicates concurrence with NTIA's determination of No Adverse Effect for all areas of the project outside of the jurisdiction of THPOs.
- Tierra letter to Frank Monteferrante, February 14, 2011, RE: Cultural Resources Recommendations for NoaNet's Washington Rural Access Project Round II. Letter indicating areas of particular concern, where on-site monitoring is likely to be required.
- Draft Historic Properties Treatment Plan for the Washington Rural Access Project Round II, Tierra. This is a template Historic Properties Treatment Plan to be used as a basis for detailed mitigation requirements for specific project areas. Note that that this document also includes a communication element that outlines a process for coordination with the Washington State DAHP, NTIA and interested tribal governments.
- Colville National Forest Section 106 Compliance received from Forest Service Forest Archaeologist Steve Kramer on July 6, 2011 indicating that the project is an Appendix B undertaking and that:

"Some areas may be archaeologically sensitive and will be required to be monitored during implementation. When exact ground disturbing areas are identified, the forest archaeologist will determine the need for monitoring during implementation. Project may proceed as planned with the above (and to be determined) mitigations. NHPA Section 106 compliance requirements have been met on the above project."
- Okanogan – Wenatchee National Forest Archaeologists are in the process of reviewing cultural resources along that portion of Route NE-2 that occurs within the Forest. This aerial installation is exempt under the NTIA Programmatic Agreement regarding overhead installations but the Forest Service requires review of cultural resources and potential impacts. A Section 106 compliance form similar to that provided for the neighboring Coleville National Forest is expected after site review on July 19, 2011. Any additional requirements will be determined during development of Historic Property Treatment Plans and documentation in Forest Service permits acquired for the

project. No installation work will occur on Forest Service property prior to receipt of required permits.

The Grantee will continue to work with the Department of Commerce, the Washington State DAHP/SHPO, the US Forest Service, other state and federal agencies and interested tribes as required to ensure identification and preservation of historic and cultural resources.

In all areas of the project, the general approach will be to avoid archaeological sites whenever possible. Avoidance may be accomplished by 1) modification of the route alignment, 2) use of directional boring, or 3) aerial installation. In any event, it is critical that installation equipment and vehicles remain on the paved road surfaces while working in the vicinity of a site that extends into the right-of-way. If avoidance cannot be achieved or unexpected material is found, further investigation would be required. If a site is thought to be within the APE and cannot be avoided, then it is recommended that the site be relocated in the field and the site form updated as necessary to include information such as current site condition, NRHP eligibility status, and a current map of the site.

If the site is determined to be outside of the APE, no longer present, or otherwise not impacted after site reconnaissance, no further archaeological work would be recommended. If the site is found to be within the APE, directional boring, monitoring, or further archaeological work will be recommended and will be determined on a case-by-case basis. This approach will necessitate a series of treatment plans subsequent to the February 2011 reports prepared for this Environmental Assessment, which include exact construction details of the project, and results of site reconnaissance, which sites will be avoided, eligibility recommendations, etc. Once these details have been determined and construction takes place, a final monitoring report will be completed and submitted to NTIA and the Washington SHPO.

For cemeteries, Tierra recommends monitoring for those with boundaries within 200 feet of the APE. In some instances, cemeteries date prior to the 20<sup>th</sup> century and their original boundaries may not be consistent with those delineated today. Results of any additional monitoring performed would be included in the final monitoring report.

For historic properties and districts there will be no visual impacts, whether the line is to be placed aurally or buried. Aerial placement will take place on existing poles with existing lines, creating no impact. Buried cable will not be visible. Buildings and contributing properties to historic districts are outside of the road right-of-way (where the majority of placement is taking place) and therefore will not be directly impacted. Our recommendation for these properties would be to discontinue use of high vibration construction equipment while in their vicinity.

Should the proposed construction inadvertently encounter buried cultural deposits, NoaNet and its contractor will halt construction in that vicinity and immediately

contact the staff at the State Historical Preservation Office in Olympia, WA to assess the significance of the discovery.

For cell/microwave tower collocations on buildings, the structures are researched to determine when the structure itself was built to determine if it is historic in age (45 years or older) and whether or not the structure is within 250 feet of a Historic District listed on the National Register of Historic Districts. If either of these qualifications is true, then a field visit by the archaeologist and submittal of a written report is necessary, following the FCC NPA.

For cell collocations on existing towers, if the tower was built prior to March 16, 2001 and the tower will not increase "substantially in size", then Section 106 consultation is not required per the FCC Nationwide PA for the Collocation of Wireless Antennas. If the collocation tower was built after that date, and Section 106 consultation was not completed, the consultation must be completed. (See the FCC Nationwide PA for the Collocation of Wireless Antennas for more details on requirements). Of the 65 structural and tower collocations planned as part of this project, a maximum of six collocations will require Section 106. Table B-1 in Appendix B, lists all collocations and provides additional information regarding the need for Section 106 consultation at each location.

Appendix B summarizes the cell tower research to date and Table B-2 lists the building/tower-collocations.

As outlined in Section 3.6, several Native American Tribes were notified of the WRAP II project through TCNS and letter correspondence. Table 4-3 lists those notifications and the responses received by NoaNet as of the submittal date of this EA. Table 4-3.1 indicates Tribal responses to TCNS notifications regarding wireless installations.

**Table 4-3: Native American Tribe Consultations: Fiber Installations**

Tribe Name	TCNS Notify	Date of TCNS Response	Notification to THPOs <sup>1</sup>	Cultural Reports Submitted	Response/Notes
Upper Skagit Tribe	X	No response	1/6/2011	2/28/2011; Resubmitted 5/2	Resubmitted on 5/2, waiting for response from Tribe
Kalispel Tribe	X	No response	1/6/2011	2/28/2011	4/19/11 Received concurrence letter from Kevin Lyons, THPO
Suquamish (Port Madison)	X	1/25/2011	1/6/2011	2/28/2011	Email dated 1.25.11 stating they have no concerns and that an official correspondence letter is to be sent
Confederated Tribes and Bands of the Yakama Nation	X	No response	1/6/2011	2/28/2011	Response letter from the Yakama Nation is included in Appendix E-11. Tierra Response dated 5/4/2011 and sent to Jill Dowling 5/9/2011, along with a summary of subsequent communications with the Yakama Nation are included in Appendix E-11.
Nooksack Tribe		No response	1/6/2011	2/28/2011	4/27/11 Rec'd email from George Swanaset: No concern.

Tulalip Reservation	X		1/6/2011 (no longer relevant)	N/A	Route changes occurring after TCNS notification concluded Tulalip Tribe no longer affected
Confederated Tribes of the Umatilla Indian Reservation	X	11/29/2010	N/A - Not crossing	2/28/2011	NTIA notified via TCNS that CTUIR requests copies of cultural reports for project. Currently working with Jill Dowling to approach Umatilla and identify and address their concerns. Construction will not occur in these areas until resolution is arrived at and documented in a specific Historic Properties Treatment Plan.
Skokomish Tribe	X	11/29/2010	N/A - Not crossing	N/A	TCNS Response - No interest; Requested notification only if remains encountered during construction
Samish Tribe		12/3/2010	N/A - Not crossing	N/A	TCNS Response - No interest; Requested notification only if remains encountered during construction
Prairie Band Potawatomi	X	12/23/2010	N/A - Not crossing	N/A	TCNS Response - No interest; Requested notification only if remains encountered during construction
Spokane Tribe	X	12/6/2010	N/A - Not crossing	N/A	TCNS Response - No interest; Requested notification only if remains encountered during construction
Lummi Tribe	X	10/21/2010	N/A - No crossing	N/A	TCNS Response - Lummi THPO identified cultural resources within project area via desktop review, recommend a professional cultural resources assessment prior to construction
Muckleshoot Tribe	X		N/A	N/A	TCNS Response - Muckleshoot Tribe requested a map of project within King, Pierce and Snohomish County. This project only occurs within Snohomish County A letter has been drafted to respond to the request, although the project is not in the vicinity of tribal lands. No further consultation or correspondence is expected.

Notes: 1 - Affected tribes where project crosses into tribal lands were sent cultural reports. Rows that contain affected tribes are shaded gray. Umatilla Tribe also requested cultural reports, even though the preferred alternative does not enter the reservation.

**Table 4-3.1 : Native American Tribe Consultations: Wireless Installations**

TCNS Notification ID: 79107 Route NW-2 – Fairfield Public Library, 305 East Main Street, Fairfield, Washington			
Spokane Tribe	TCNS Notify	Date of TCNS Response	Response/Notes
Confederated Tribes and Bands of the Yakama Nation	8/19/11	8/29/11	THPO indicates interest and requested applicant contact Randy Abrahamson. Applicant will discuss the proposed installation of an antenna on an existng building in Fairview, Washington. As appropriate and/or desired by the Tribe, any remaining concerns will be addressed through development of a treatment plan or memorandum of understanding.
Coeur d’Alene	8/19/11	None Received*	
Confederated Tribes of the Colville Reservation	8/19/11	None Received*	
Confederated Salish and Kootenai Tribes of the Flathead Nation	8/19/11	None Received*	
Spokane Tribe of Indians	8/19/11	None Received*	If no response within 30 days, no interest.
TCNS Notification ID: 79108 Route NW-2: Fort Warden, 200 Battery Way, Port Townsend, Washington			
Port Gamble S’Klallam Tribe	8/19/11	None Received*	
Suquamish Tribe	8/19/11	None Received*	
Tulalip Tribes of the Tulalip Reservation	8/19/11	None Received*	
Confederated Tribes and Bands of the Yakama Nation	8/19/11	None Received*	If no response within 30 days, no interest.
Hoh Tribe	8/19/11	None Received*	
Jamestown S’Klallam Tribe	8/19/11	None Received*	
Quinault Indian Nation	8/19/11	None Received*	
Makah Tribe	8/19/11	None Received*	
Skokomish Indian Tribe	8/19/11	None Received*	
TCNS Notification ID: 79109 Route NW-2: Jefferson County Courthouse, 1820 Jefferson Street, Port Townsend, Washington			
Port Gamble S’Klallam Tribe	8/19/11	None Received*	
Suquamish Tribe	8/19/11	None Received*	
Tulalip Tribes of the Tulalip Reservation	8/19/11	None Received*	
Confederated Tribes of the Colville Reservation	8/19/11	None Received*	If no response within 30 days, no interest.
Hoh Tribe	8/19/11	None Received*	
Jamestown S’Klallam Tribe	8/19/11	None Received*	
Quinault Indian Nation	8/19/11	None Received*	
Makah Tribe	8/19/11	None Received*	
Skokomish Indian Tribe	8/19/11	None Received*	
TCNS Notification ID: 79110 Route NW-2: NW School of Boat Building, 42 North Water Street, Port Hadlock, Washington			
Port Gamble S’Klallam Tribe			
Suquamish Tribe			
Tulalip Tribes of the Tulalip Reservation			
Confederated Tribes and Bands of the Yakama Nation			If no response within 30 days, no interest.
Hoh Tribe			
Jamestown S’Klallam Tribe			
Quinault Indian Nation			

Makah Tribe			
Skokomish Indian Tribe			
TCNS Notification ID: 79111 Route NW-2: Quilcene School District, 294715 US Highway 1, Quilcene, Washington			
Port Gamble S'Klallam Tribe			
Suquamish Tribe			
Tulalip Tribes of the Tulalip Reservation			
Confederated Tribes and Bands of the Yakama Nation			If no response within 30 days, no interest.
Hoh Tribe			
Jamestown S'Klallam Tribe			
Quinault Indian Nation			
Makah Tribe			
Skokomish Indian Tribe			
TCNS Notification ID: 79112 Route NE-3: Krell Mountain Free Standing Tower, SE ¼ NW ¼ NW ¼ S 18 T24N R44E, Spokane, Washington			
Spokane Tribe			No Interest
Confederated Tribes and Bands of the Yakama Nation			If no response within 30 days, no interest.
Coeur d'Alene			
Confederated Tribes of the Colville Reservation			
Confederated Salish and Kootenai Tribes of the Flathead Nation			If no response within 30 days, no interest.
*All attempts will be made to resolve any concern if concerns are raised at a later date. A process for resolution of concerns or issues has been established for fiber portions of the project. A similar collaborative effort between the Tribe(s), NTIA and the applicant would be employed to establish the need for a treatment plan. Work will not commence in the vicinity of areas of concern until resolution of concerns or issues is accomplished.			

Recommendations for the cultural properties (archaeological sites, cemeteries, historic properties, etc.) include either No Effect or No Adverse Effect, as summarized in Tables 1 and 2 in Appendix E. For Routes NC-1 and NW-3, the recommendation is No Effect because there are no cultural properties located within areas where buried routes are planned. The remaining 10 routes will have No Adverse Effect. For these routes, sites and cemeteries along planned buried routes will be field visited and a historic properties treatment plan will be developed, if warranted. Historic structures and registered properties will not be impacted by adjacent plow insertion of fiber cable and we recommend only discontinued use of high-vibration construction equipment when working in the vicinity of structures whose integrity is in question.

In Summary, the Preferred Alternative will not have an adverse impact on historic and cultural resources. NoaNet will satisfy appropriate mitigation measures by following the usual permitting and regulatory requirements to minimize the impact to these resources and adhere to the requirements established by the SHPO and put forth documented in Appendix E and final, route specific treatment plans as required. A phased approach to Section 106 compliance is required because effects on historic properties cannot be fully determined prior to start of construction.

Under the No Action Alternative, historic and cultural resources would not be impacted.

#### **4.7. Aesthetic and Visual Resources**

As discussed in Section 4.6, for historic properties and districts there will be no visual impacts, whether the line is to be placed aerially or buried. Aerial placement will take place on existing poles alongside existing lines, creating minimal, if any, impact on visual or aesthetic resources, and buried cable will not be visible. Temporary impacts to visual and aesthetic resources will occur because of the presence of construction equipment such as plow machines, directional boring machines, road safety equipment and other construction related items. View sheds along highways and near the construction corridor will be impacted occur during construction. As agreed upon in a meeting on April 26, 2011, NoaNet and its design team, as part of the pre-staking process, will drive the route with USFS staff to ensure aesthetic and visual resources are not adversely impacted along the scenic areas of Routes NE-1 and NE-2. Records of the discussions with USFS at the meeting are provided in Appendix D.

Approximately five miles of aerial construction and one mile of underground construction will occur each day. Along the construction route, sidewalks within cities may be temporarily closed for safety reasons, and impacts on pedestrians and drivers will be insignificant and temporary in nature.

For the wireless collocation sites, two foot extensions on various types of existing multi-story public buildings, structures, utility poles, power substations, and other structures will be installed. In most cases the height of existing structures will not increase, and the added equipment will not significantly impact visual or aesthetic resources. Long term impacts include any impacts maintenance crews may have during routine maintenance or repairs.

In summary, no significant impacts to visual or aesthetic resources are anticipated with the Preferred Alternative. Temporary and insignificant impacts will occur during construction, but it is not anticipated that any construction equipment or activities will be present in any particular location within the project area for more than three days.

Under the No Action Alternative, aesthetic or visual resources would not be impacted.

#### **4.8. Land Use**

The WRAP Round II project will bring middle mile backbone infrastructure to communities and properties. The fiber route will be constructed within the rights of way of roads used for transportation by the general public. In cases where fiber routing is not along a road or city street, some aerial installation will occur within existing easements on existing utility poles. During construction, land use on adjacent properties may be temporarily impacted by construction equipment and work crews. Construction crews and equipment will be moving at a pace of five miles per day for aerial construction and 1 mile or more per day for underground construction. The wireless collocation sites can be found on a variety of properties,

most of which contain land uses for public purposes such as utility poles at power substations, street lamps, water system tanks, schools, community centers, fire stations, and other government and public facilities. Figure 2-2 provides examples of typical collocation sites in Section 2.2.3. Table B-1 in Appendix B lists the type of property, location, and name of the facility for each of the wireless collocation sites.

Route SC-6 in Benton County will run adjacent to a BNSF railroad corridor. Coordination between Benton County PUD and BNSF is ongoing, and there will be no impacts on the use of the railroad during construction. Sub-participant Benton County PUD maintains ownership of the utility poles along this corridor and coordinates regularly with BNSF on maintenance and installation activities on the poles. A notification process has been in place and it is expected that ongoing coordination will continue for the Preferred Alternative.

Additional land use coordination with the State Departments of Natural Resources and Transportation concerning State owned lands will occur as part of the state and local permitting process. The NRCS has been contacted regarding impacts on farmlands and have responded that the project "will not be irreversibly converting prime and unique farmland or farmland of Statewide importance to nonagricultural use". A copy of this correspondence from NRCS is provided in Appendix D.

Coordination with Ferry County PUD as advised by Phil Christy of the USFS has occurred to ensure that existing PUD utility poles can be used where appropriate through forest lands. Records of correspondence with Ferry County PUD are provided in Appendix D.

In summary, it is expected that NoaNet will adhere to agreed upon BMPs as required through local and state permitting processes. For both the Preferred Alternative and the No Action Alternative, neither the placement of the cable or wireless facilities, nor the long term services provided by these facilities will have an adverse affect on land use in the project area.

#### **4.9. Infrastructure**

The Preferred Alternative will have no adverse impacts on existing infrastructure within the project area. It will add redundant capabilities and new broadband service infrastructure that will lower costs and increase access to both anchor institutions and for the general public. The new infrastructure will be placed in existing rights-of-way and utility corridors consistent with the requirements of the agency owning the right of way and/or governing agency.

The wireless tower structure that is an in kind donation from the sub participant is located on an existing site that contains a water storage tank has been placed on the property far enough from the water tank such that ongoing maintenance and emergency response activities by water utility staff are not impacted. All other infrastructure located within the project area, including roads, highways, railroads, water, telephone, electrical, and wastewater infrastructure will not be impacted by this project.

Under the No Action Alternative, inconsistent and gaps in existing infrastructure will continue to exist in rural areas of Washington State. The existing broadband telecommunications infrastructure in remote, rural areas will remain susceptible to cable breaks that negatively impact response times for emergency services. Additionally, the current level of broadband service in some of the rural, remote areas to be served by this project is inadequate for education and workforce training, commerce, medical care, and other online services that are vital to economic growth and public health. As discussed in Section 3.9, several of the anchor institutions are currently limited to speeds of 1.5 Mbps (T1). The project will bring a minimum of 100 Mbps to each anchor institution along the route, as well as an ability to scale the entire system to 10 Gbps, vastly improving the telecommunication infrastructure currently in place.

For aerial construction on existing utility poles, installation will occur on poles that have ample space for additional lines. In seldom cases where additional space is warranted, make ready work such as adding additional support or cross beams will occur to accommodate the extra lines. Make ready work will only occur on utility poles that are not found to be structurally sound for additional weight. Fiber cable installation will not obstruct or interfere with other existing utility infrastructure, nor will it impact the maintenance, repair, or replacement activities in the future.

During fiber cable construction, one lane of traffic may be obstructed and shut down. In the seldom occurrences where fiber needs to cross a road, both directions of traffic would be shut down for no more than twenty minutes. Traffic will be managed according to the traffic plan submitted for WSDOT and City right-of-way permits. For underground road crossings, directional boring would prevent both lanes from being shut down simultaneously, so traffic will not be significantly impacted. Proper hazard mitigation for construction crews in accordance with WSDOT and city standards will take place during road lane closures as discussed further in Section 4.11.

In summary, numerous positive and significant impacts on existing infrastructure will result from the Preferred Alternative. Broadband capacity will increase from 1.5 Mbps to over 100 Mbps for many of the remotely located anchor institutions. Emergency responders will have less disruptions and faster response times. Only minor adverse impacts will occur during brief and infrequent road closures to cross a street during aerial fiber installation. However, because of the BMPs designed to increase safety for traffic, construction worker, and pedestrian safety, no significant adverse impacts will occur.

Other infrastructure such as highways, water, wastewater, telephone, electrical, and waste services would not be impacted under the No Action Alternative.

#### **4.10. Socioeconomic Resources**

The Preferred Alternative will not have an adverse impact on socio-economic resources. The broadband infrastructure to be installed and the properties and anchor institutions that will receive broadband service will provide a significant positive impact to the rural areas served by the project. These impacts include

providing disadvantaged and vulnerable populations with access to affordable broadband services in un-served and underserved areas and tribal lands in rural Washington State. As discussed in Section 3.10, the combined unemployment rate for the project area is approximately 9.8% as of December, 2010. The positive impacts are improvement of educational opportunities, and access to information and data that can improve quality of life in a variety of ways. The project will connect to medical facilities, and in doing so will become part of the community lifeline for medical services and emergency response. The project also targets educational and job training facilities and creates improved access to job training.

Determination of the number of jobs created by the project is based on Table 5 of the U.S. Federal Government document "Estimates of Job Creation from the American Recovery and Reinvestment Act of 2009". Using that methodology, the total spending request for the WRAP Round II project will create or preserve a total of 663 job years. Of that total, 64% of the total job years, or 424 job years, represent direct and indirect effects. Of these 424 job years it is estimated that 105 job years will be direct while 319 will be indirect. Approximately 36%, or 239 job years, represent induced effects of the program. This demonstration of long term job growth is important to the socio-economic well being of the state of Washington and communities that the project will serve.

In summary, numerous positive and significant impacts will result from the Preferred Alternative. Over 660 job years are expected to be created, and the unemployment rate will decrease with an increased access to job-training and long-distance learning programs previously unavailable with lower bandwidth rates. Medical services will be more widely and readily accessible to residents and businesses in remote areas of the project area.

Under the No Action Alternative, the positive socio-economic impacts of the project will not be realized. The project service area will continue to be underserved or un-served, which will result in limited opportunities for improved education, medical, employment, and economic development in rural Washington State.

#### **4.11. Human Health and Safety**

The Preferred Alternative will not have an adverse impact on human health and safety. As has been discussed throughout this Environmental Assessment, NoaNet will satisfy appropriate mitigation measures by following all relevant permitting and regulatory requirements to minimize the impact to the environment. Human health and safety will be improved by the project through the provision of improved broadband service to rural communities, including direct connection to medical facilities and emergency services providers.

Section 3 and the supplemental tables in Appendix C identify a variety of potentially hazardous sites and material in the vicinity of the project service area. The following is a summary of the general practices that will be used to protect the general population and environment from the risks associated with hazardous materials.

- Petroleum products will be stored in tightly sealed containers which are clearly marked.
- All onsite vehicles will be checked for leaks and receive regular preventive maintenance to reduce the chance of leakage.
- Original Material Safety Data Sheets (MSDS) will be retained.
- Manufacturer or local and state recommendations will be followed if surplus material needs disposal.
- Any asphalt substances used onsite will be applied according to the manufacturer's instructions.
- Concrete trucks will not be allowed to wash out or discharge surplus concrete or drum wash water.

In addition to the good housekeeping and material management practices discussed above, the following practices will be followed for spill prevention and cleanup:

- Manufacturer-recommended methods, materials, and equipment for spill cleanup will be available on site, and personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- All spills will be cleaned up immediately after discovery. Personnel will wear appropriate protective clothing to prevent contact with hazardous substances.
- Spills of toxic or hazardous material will be reported to the appropriate state or local government agencies, regardless of the size.
- The Spill Prevention Plan will be adjusted to include a description of the spill, what caused it, cleanup procedures, and measures to prevent this type of spill from recurring.
- The project representative will be responsible for day-to-day site operations, spill prevention, and cleanup. Additional personnel will be trained on spill prevention and cleanup to assist the project representative.
- If contaminated soil is unexpectedly encountered near known brownfield sites during underground construction, crews will be instructed to stop work and contact the appropriate state and local authorities.

Protection of health and safety will be an integral part of the contract documents developed for the Preferred Alternative and include a detailed Traffic Safety Plan in accordance with local permits and construction requirements.

The construction activities under the Preferred Alternative will have minimal impact on human health and safety. Construction will not be located directly in the path of traffic and be limited to ditches and utility corridors along highways and roads. All contractors will comply with Federal Highway Administration (FHWA) requirements and the Manual on Uniform Traffic Control Devices to promote highway safety and efficiency by providing warning and guidance to all elements of traffic. The contractors working within the public right-of-way who are exposed either to traffic (vehicles using the highway for purposes of travel) or to construction equipment within the work area shall wear high-visibility safety apparel that is clearly visible at

all times and meeting the Performance Class 2 or 3 requirements of the ANSI/ISEA 107-2004 publication entitled "American National Standard for High-Visibility Safety Apparel and Headwear." This applies to all projects subject to the provisions of the WSDOT Standard Specifications and all other work performed along federal-aid highways. All contractors will comply with OSHA Regulation 29 CFR 1926, by having an accident prevention program in place that provides regular inspections of job sites, materials and equipment by competent persons.

Under the No Action Alternative, health and human safety will be negatively impacted due to the lack of telemedicine and health education opportunities that require high speed broadband. Broadband services being temporarily disabled by a cable break to the existing fiber backbone also remains a possibility under the No Action Alternative. Should the existing network be temporarily disrupted, the ability of emergency responders to respond quickly and effectively would be impacted.

#### **4.12. Climate, Greenhouse Gases, and Global Warming**

The Preferred Alternative would constitute a short-term minor increase in the use of fossil fuel and GHG emissions into the air during construction. Overall, the Preferred Alternative would result in the release of approximately 1,307 metric tons of Carbon Dioxide (CO<sub>2</sub>) into the air. This figure is based on an estimated 38 gallons of gasoline and 37 gallons of diesel fuel being consumed per mile of aerial construction, and 242 gallons of gasoline and 443 gallons of diesel fuel being consumed per mile of underground construction. EPA guidelines stipulate using 8.8 kg of CO<sub>2</sub> for each gallon of gasoline consumption and 10.1 kg of CO<sub>2</sub> emissions for one gallon of diesel consumption. Rural vs. urban construction activities can vary fuel consumption, as can directional boring vs. underground construction. These considerations have been included in the calculations provided.

The Preferred Alternative will have higher GHG emissions than the all wireless or all aerial alternatives, and lower GHG emissions than the all buried alternative. The Council on Environmental Quality (CEQ) has issued draft guidance on when and how federal agencies should consider GHG emissions and climate change in NEPA. The draft guidance includes a presumptive effects threshold of 25,000 metric tons of CO<sub>2</sub> equivalent emissions from an action (CEQ, 2010). The GHG emissions associated with the Preferred Alternative are well below the CEQ threshold. Therefore, GHG emissions from the Preferred Alternative would not contribute appreciably to climate change or global warming.

Under the No Action Alternative, GHG emissions would be zero and the climate would not be altered from its current state.

#### **4.13. Cumulative Summary of Impacts**

The recommendations for environmental protection outlined throughout Section 4 and especially in Tables 4-1 and 4-2 allows for the consultant team for NoaNet to conclude that installation of broadband fiber cable throughout rural Washington State under the Preferred Alternative described in Section 2.3.1 will not have any lasting

adverse environmental impacts on the project area. This determination of no effect is the result of careful analysis during the finalization of route alignments and selection of the wireless facilities, coupled with comprehensive environmental consultations and development of reasonable avoidance strategies.

Direct impacts on birds from the additional cabling suspended from existing utility poles and the potential two-foot antenna extensions at the 65 collocation sites will be insignificant. Other direct, insignificant impacts will occur on aesthetic and visual resources for all wireless collocation facilities. In the short term, both aesthetic and noise resources for pedestrians, businesses, residents, wildlife, and traffic will be impacted during short periods of construction. Positive impacts include improved access to online education, job training, and medical services and a more reliable network for emergency responders. Other positive impacts include the creation of over 660 job years as discussed in Section 4.10.

In addition to the direct impacts of this project, there are several indirect impacts. Indirect impacts include:

- Economic growth resulting from increased job training, education, and commercial opportunities that can be attributed to higher speed broadband infrastructure
- An improved broadband network that expands competition, reducing overall cost of service to consumers
- The presence of construction crews will immediately help stimulate remote, localized economies as construction takes place in these regions

With the preliminary information provided and demonstrated commitment of the Grantee, it is reasonable to believe that final project staking and the permitting process will further ensure that no lasting adverse environmental impacts will occur.

Although there are no known projects by other agencies planned within the project areas, during design and permitting of the project, every attempt will be made to coordinate efforts to minimize disruptions and potential cumulative impacts. Since NoaNet and its sub-participants were awarded a federal grant for this project, the Grantee has been identifying and negotiating opportunities to collaborate with other utilities, and federal, state, local, and tribal entities. Examples include the Washington State Department of Natural Resources (DNR), WSDOT, Avista Energy's DOE Smart Grid project, the BTOP-funded Pend Oreille "Fiber to the Premise" Project, various tribes, and Emergency Management Service organizations. Continued coordination with other agencies will assist in minimizing disruption within the project area. Further opportunities for collaboration will be explored, including coordinating with road widening projects, utility service projects, and other similar proposals that might also reduce overall project costs. Otherwise, there are no cumulative impacts with other projects identified for the Washington Rural Access Project (WRAP) Round II as identified, described and analyzed in this Environmental Assessment.

The No Action Alternative would have no negative impacts on the existing environmental and social resources but the positive socio-economic and infrastructure impacts would also not be realized under this alternative.

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**WASHINGTON RURAL ACCESS PROJECT**  
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**Section 5: Permits and Regulatory Requirements**

**5. PERMITS AND REGULATORY REQUIREMENTS**

A summary of the known permits required for the project is summarized in Table 5-1. Additional local permits may be identified in the design process and in that case, all requirements will be adhered to and appropriate permits and permissions attained prior to construction. Identification of permits has included consultation with the State of Washington Office of Regulatory Assistance (ORA). Further coordination with ORA is anticipated as the project progresses to maximize coordination between agencies.

**Table 5-1: Summary of Federal, State, Public, Private and Local Permits**

Agency	Permit Name	Purpose
<b>Federal Permits</b>		
Department of Archaeology & Historic Preservation	Section 106 –Programmatic Agreement with FCC	The Department of Archaeology and Historic Preservation (DAHP) and affected tribes must be consulted when projects are subject to review under Section 106 of the National Historic Preservation Act of 1966 (NHPA). This act requires that all federal agencies take into account the affect of its actions on historic properties. Requirements of Section 106 review apply to any federal undertaking, funding, license, or permit. A programmatic agreement with the FCC allows for certain collocated facilities to be exempt from Section 106, and this exemption may occur for the sites chosen.
US Forest Service	Application for Transportation and Utility Systems and Facilities on Federal Lands – Standard Form 299	Required for any encroachment by utility work into the US Forest Service lands.
Bureau of Land Management	Application for Transportation and Utility Systems and Facilities on Federal Lands – Standard Form 299	Required for any encroachment by utility work onto or through BLM Lands.
U.S. Army Corps of Engineers, Regulatory Branch issues Section 10 permits	Work in Navigable Waters (Section 10 Permit)	To protect against the obstruction or alteration of navigable waters of the United States, any work in, over, or under navigable water of the United States requires this permit.
U.S. Army Corps of Engineers	Section 404 Nationwide 12 Permit	Required if construction occurs in or over water including wetlands. NWP 12 is required for utility line construction in or over water or through wetland. Discharges of dredged or fill material associated with excavation, backfill, or bedding for utility lines including intake and outfall structures is prohibited.

**Table 5-1: Summary of Federal, State, Public, Private and Local Permits**

Agency	Permit Name	Purpose
<b>State Permits</b>		
Department of Natural Resources	Aquatic Use Authorization (Aquatic Lease)	Most activities taking place on state-owned aquatic lands may require a lease or other form of use authorization (easement or right-of-way)
Department of Natural Resources	Uplands Right-of-Way Permit	Any work within DNR lands will need right-of-way permits even in WSDOT ROW. Application will need to be submitted.
Local Government - City or County	State Environmental Policy Act (SEPA)	Requires a state or local agency decision to license, fund, or undertake a project or the proposed adoption of a policy, plan or program can trigger environmental review under SEPA - WAC 197-11-704.
Department of Ecology	Shoreline Conditional Use Permit	Determined by local government and specified in their Shoreline Master Program
Department of Ecology	NPDES Construction Stormwater General Permit	Any construction activity which disturbs one acre or more and which may result in a discharge of stormwater to surface waters of the state requires this permit.
Department of Ecology	Wetland Permit	Wetlands are regulated by Federal, State, and Local government. Multiple permits may be required for any project involving work in or near a wetland.
State Parks	ROW permit	Any work within or near State Parks will need to verify if a ROW permit is needed
Department of Archaeology and Historic Preservation (DAHP)	Section 106	All Projects are subject to review under Section 106 of the National Historic Preservation Act of 1966 (NHPA)
Department of Transportation	Franchise Agreement or Right-of-Way Permit	Any form of work done within or crossing WSDOT right-of-way (ROW). If the work is within the ROW, a franchise agreement is required. If the work crosses a state road, a ROW permit is required.
<b>Public and Private Lands</b>		
Bureau of Land Management (BLM)	BLM Right-of-Way	Permit to installation over or under BLM lands
Eastern Washington Gateway Railway BNSF Railway	Application for Wire Line Crossing	Permit to installation over or under railway lands
<b>Typical County/Local Permits and Regulations</b>		
City and/or County	JARPA application - Shoreline Permit	Any form of work done within 200' of a surface water body
City and/or County	Franchise Agreement	
City and/or County	Building Permit	Construction of permanent buildings or additions to existing facilities
City and/or County	Wetland Permit	Critical Areas Ordinance
City and/or County	Mitigation Plan	Any activity that impacts a wetland or wetland buffer triggers a Mitigation Plan
City and/or County	Right of Way Permits	
City and/or County	Critical Areas Permit	Resource Lands and Critical Areas Protection Ordinance
City and/or County		Habitat Conservation Ordinance

Source: Washington State Department of Ecology and Washington State Governor's Office of Regulatory Assistance, Publication No. 90-29 Revised July 2010.



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**WASHINGTON RURAL ACCESS PROJECT**  
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**Section 6: List of Preparers**

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**6. LIST OF PREPARERS**

The following is a list of key researchers and authors responsible for the Environmental Assessments (EA) presented herein. Additional assistance was provided by a team of engineers from CHR Solutions, Inc., PACE Engineers, Inc. and Tierra Right-of-Way Services. These individuals performed field reconnaissance of most routes in the project, identified key environmental elements and provided information for verification of route alignments to minimize potential impacts. Information from the reconnaissance team was instrumental in developing this Environmental Assessment and will also be used as the basis for design of the project, right-of-way acquisition, permitting and coordination with local governments.

The following EA Development Team reviewed the information from the reconnaissance team, researched environmental impacts, and authored the EA document.

EA Development Team, PACE Engineers

Susan Boyd, Environmental Assessment Project Manager  
Beau Schilz, Project Planner and Principal Author and Analyst  
Mike Sullivan, GIS Data Management and Map Production  
Michael Maranan, Data Analyst and Junior Engineer

Additional support and review was required and provided by the following individuals:

PACE Engineers, Inc.

Marty Penhallegon, P.E. CEO, Project Oversight and EA Reviewer  
Jean Cutter, P.E., Engineering Lead and Permitting Specialist  
April Cook, Document Review, Production, and Distribution

Tierra Right-of-Way Services

Barbara Montgomery, Archaeological Assessment / Section 106 Compliance  
Jennifer Hushour, Archaeological Assessment / Section 106 Compliance

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David Fridley, Project Executive, EA Reviewer  
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Joe Mendez, Mapping and Project Layout  
Ray Streu, Background Data

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**WASHINGTON RURAL ACCESS PROJECT**  
**Round II - Environmental Assessment**  
**Section 7: References**

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**7. REFERENCES**

The following references were used in the development of the Environmental Assessment (EA). The reference includes the agency source, information gathered, and website link.

Please refer to Appendix D for documentation of the Environmental Consultations requested and received for the project. Appendix D includes a Communications Plan Matrix that lists all people and agencies contacted during the consultation process of this Environmental Assessment.

**Archeological and Cultural Resource Information:**

Montgomery, Barbara K., and Chance Copperstone

2011 Records Review of Archeological Sites and Historic Properties within Routes NC-1 (Black Rock Whatcom County), NC-2 (Black Rock Skagit County) and NC-3 (Black Rock Snohomish County) of Round II of the Washington Rural Access Project. Tierra Archaeological Report No. 2011-15. Tierra Right of Way Services, Ltd., Seattle.

2011 Records Review of Archeological Sites and Historic Properties within Routes NW-1A (Port Angeles), NW-2 (Jefferson County), and NW-3 (Kitsap County) of Round II of the Washington Rural Access Project. Tierra Archaeological Report No. 2011-17. Tierra Right of Way Services, Ltd., Seattle.

2011 Records Review of Archeological Sites and Historic Properties within Routes SC-2A (Washougal to Camas), SC-5 (Yakima and Kittitas Counties), and SC-6 (Benton PUD) of Round II of the Washington Rural Access Project. Tierra Archaeological Report No. 2011-18. Tierra Right of Way Services, Ltd., Seattle.

Montgomery, Barbara K., and April Whitaker

2011 Records Review of Archeological Sites and Historic Properties *within* Routes NE-1 (Tonasket to Ione), NE-2 (Tiger to Newport), and NE-3 (Spokane Microwave) of Round II of the Washington Rural Access Project. Tierra Archaeological Report No. 2011-16. Tierra Right of Way Services, Ltd., Seattle.

**Other Data:**

The following table provides a summary of websites and GIS Data sources used for compilation of data and analyses during the course of this Environmental Assessment.

**Table 7-1: Summary of References****Environmental Assessment Resources***Washington Rural Access Project Round II (WRAP Round II)*

<b>Element / Category</b>	<b>Agency</b>	<b>Web Resource</b>
State Parks		<a href="http://www.stateparks.com/wa.html">http://www.stateparks.com/wa.html</a>
Lewis and Clark Trail		<a href="http://www.lewisandclarktrail.com/101.htm">http://www.lewisandclarktrail.com/101.htm</a>
County T&E Species	U.S. Fish & Wildlife	<a href="http://www.fws.gov/wafwo/species_EW.html">http://www.fws.gov/wafwo/species_EW.html</a>
Wildlife Areas	Washington Department of Fish & Wildlife	<a href="http://wdfw.wa.gov/">http://wdfw.wa.gov/</a>
Wild and Scenic Rivers	National Wild and Scenic River System	<a href="http://www.rivers.gov/kids/states.html">http://www.rivers.gov/kids/states.html</a>
100-year Floodplains	Federal Emergency Management Agency	<a href="http://www.msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&amp;catalogId=10001&amp;langId=-1">http://www.msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&amp;catalogId=10001&amp;langId=-1</a>
Coastal Zones	Washington State Dept of Ecology	<a href="http://www.ecy.wa.gov/programs/sea/czm/prgm.html">http://www.ecy.wa.gov/programs/sea/czm/prgm.html</a>
Coastal Atlas	Washington State Dept of Ecology	<a href="http://www.ecy.wa.gov/programs/sea/sma/atlas_home.html">http://www.ecy.wa.gov/programs/sea/sma/atlas_home.html</a>
Human Safety - Traffic Collision Data	Washington Traffic Safety Commission	<a href="http://www.wtsc.wa.gov/statistics-reports/crash-data/">http://www.wtsc.wa.gov/statistics-reports/crash-data/</a>
Hazardous Waste Sites	US EPA	<a href="http://www.epa.gov/myenv/MYENVIEW.results2?minx=-118.35194&amp;miny=47.80889&amp;maxx=-118.39194&amp;maxy=47.83889">http://www.epa.gov/myenv/MYENVIEW.results2?minx=-118.35194&amp;miny=47.80889&amp;maxx=-118.39194&amp;maxy=47.83889</a>
Federal Endangered/Threatened Marine Species	National Marine Fisheries Service	<a href="http://www.nmfs.noaa.gov/pr/species/esa/">http://www.nmfs.noaa.gov/pr/species/esa/</a>
Federal Endangered/Threatened Species	U.S. Fish and Wildlife	<a href="http://www.fws.gov/endangered/">http://www.fws.gov/endangered/</a>
Endangered/Threatened Plant life	WA Dept of Natural Resources	<a href="http://www1.dnr.wa.gov/nhp/refdesk/lists/plantsxco/pacific.html">http://www1.dnr.wa.gov/nhp/refdesk/lists/plantsxco/pacific.html</a>
US National Wildlife Refuges	US Fish and Wildlife Service	
Threatened Bull Trout	U.S. Fish & Wildlife	<a href="http://www.fws.gov/pacific/bulltrout/pdf/Justificationdocfinal.pdf">http://www.fws.gov/pacific/bulltrout/pdf/Justificationdocfinal.pdf</a>
Threatened Water howellia plant	U.S. Fish & Wildlife	<a href="http://fieldguide.mt.gov/detail_PDCAM0A010.aspx">http://fieldguide.mt.gov/detail_PDCAM0A010.aspx</a>
Threatened Spalding's silene	U.S. Fish & Wildlife	<a href="http://www1.dnr.wa.gov/nhp/refdesk/fguide/pdf/sisp.pdf">http://www1.dnr.wa.gov/nhp/refdesk/fguide/pdf/sisp.pdf</a>
Threatened Ute ladies'-tresses	U.S. Fish & Wildlife	<a href="http://www.fws.gov/mountain-prairie/species/plants/uteladiestress/">http://www.fws.gov/mountain-prairie/species/plants/uteladiestress/</a>
Other Endangered Plantlife	United States Dept. of Agriculture	<a href="http://plants.usda.gov/java/profile?symbol=SPDI6">http://plants.usda.gov/java/profile?symbol=SPDI6</a>

**Table 7-1: Summary of References****Environmental Assessment Resources***Washington Rural Access Project Round II (WRAP Round II)*

<b>Element / Category</b>	<b>Agency</b>	<b>Web Resource</b>
Canada Lynx	Conservation Northwest	<a href="http://www.conservationnw.org/wildlife-habitat/canada-lynx">http://www.conservationnw.org/wildlife-habitat/canada-lynx</a>
Canada Lynx	Washington Department of Fish & Wildlife	<a href="http://wdfw.wa.gov/wlm/diversty/soc/recovery/lynx/finallylynx.pdf">http://wdfw.wa.gov/wlm/diversty/soc/recovery/lynx/finallylynx.pdf</a>
Short-Tailed Albatross	U.S. Fish & Wildlife	<a href="http://alaska.fws.gov/fisheries/endangered/pdf/stal_recovery_plan.pdf">http://alaska.fws.gov/fisheries/endangered/pdf/stal_recovery_plan.pdf</a>
Pacific Flyway - Migratory birds	U.S. Fish & Wildlife	<a href="http://www.pacificflyway.gov/Documents/Pacific_map.pdf">http://www.pacificflyway.gov/Documents/Pacific_map.pdf</a>
Soils	United States Dept. of Agriculture	<a href="http://www.or.nrcs.usda.gov/pnw_soil/wa_reports.html">http://www.or.nrcs.usda.gov/pnw_soil/wa_reports.html</a>
Farmland, Fugitive Dust	Natural Resources Conservation Service	<a href="http://websoilsurvey.nrcs.usda.gov/app/">http://websoilsurvey.nrcs.usda.gov/app/</a>
Ecoregions	WA Dept of Natural Resources	<a href="http://www.biodiversity.wa.gov/ecoregions/columbia_plateau/columbia_plateau.html">http://www.biodiversity.wa.gov/ecoregions/columbia_plateau/columbia_plateau.html</a>
Hazardous waste sites	US EPA	<a href="http://www.epa.gov/myenv/MYENVIEW.results2?minx=-118.35194&amp;miny=47.80889&amp;maxx=-118.39194&amp;maxy=47.83889">http://www.epa.gov/myenv/MYENVIEW.results2?minx=-118.35194&amp;miny=47.80889&amp;maxx=-118.39194&amp;maxy=47.83889</a>
Air Quality Index	US EPA	<a href="http://oaspub.epa.gov/enviro/ef_home2.air">http://oaspub.epa.gov/enviro/ef_home2.air</a>
Climate Data (Rainfall)	NOAA	<a href="http://www.wrh.noaa.gov/images/pqr/prec_WA.gif">http://www.wrh.noaa.gov/images/pqr/prec_WA.gif</a>
Infrastructure, Roads Data for Stevens, Ferry, and Snohomish County	ESRI®, Inc.	No website. ESRI® Data and Maps 9.3.1 and StreetMap™ North America, 2008.
Benton County Infrastructure (Roads Data)	Benton County	<a href="http://www.co.benton.wa.us/pView.aspx?id=725&amp;catid=45">http://www.co.benton.wa.us/pView.aspx?id=725&amp;catid=45</a>
Clallam County Infrastructure (Roads Data)	Clallam County	<a href="http://www.clallam.net/m">http://www.clallam.net/m</a> Data received from Clallam County Department of Community Development
Clark County Infrastructure (Roads Data)	Clark County	<a href="http://gis.clark.wa.gov/applications/gishome/digitaldata/index.cfm?pid=dataprices">http://gis.clark.wa.gov/applications/gishome/digitaldata/index.cfm?pid=dataprices</a>
Jefferson County Infrastructure (Roads Data)	Jefferson County	<a href="http://maps.co.jefferson.wa.us/Website/mspub/viewer.htm?mapset=parcels">http://maps.co.jefferson.wa.us/Website/mspub/viewer.htm?mapset=parcels</a>
Kitsap County Infrastructure (Roads Data)	Kitsap County	<a href="http://www.kitsapgov.com/gis/metadata/">http://www.kitsapgov.com/gis/metadata/</a>
Okanogan County Infrastructure (Roads Data)	Okanogan County	<a href="http://www.okanogancounty.org/planning/data.htm">http://www.okanogancounty.org/planning/data.htm</a>
Pend Oreille County Infrastructure (Roads Data)	Pend Oreille County	<a href="http://www.pendoreilleco.org/county/data_downloads.asp">http://www.pendoreilleco.org/county/data_downloads.asp</a>
Skagit County Infrastructure (Roads Data)	Skagit County	<a href="http://www.skagitcounty.net/Common/Asp/Default.asp?d=GIS&amp;c=General&amp;p=Digital/main.htm">http://www.skagitcounty.net/Common/Asp/Default.asp?d=GIS&amp;c=General&amp;p=Digital/main.htm</a>
Spokane County Infrastructure (Roads Data)	Spokane County	<a href="http://www.spokanecounty.org/gis/content.aspx?c=1156">http://www.spokanecounty.org/gis/content.aspx?c=1156</a>

## Table 7-1: Summary of References

### Environmental Assessment Resources

*Washington Rural Access Project Round II (WRAP Round II)*

Element / Category	Agency	Web Resource
Walla Walla County Infrastructure (Roads Data)	Walla Walla County	<a href="http://wallawallagis.com/RequestForms.htm">http://wallawallagis.com/RequestForms.htm</a>
Whatcom County Infrastructure (Roads Data)	Whatcom County Public Works	<a href="http://www.whatcomcounty.us">http://www.whatcomcounty.us</a>
Yakima County Infrastructure (Roads Data)	Yakima County	<a href="http://www.yakimacounty.us/gis/GIS/PriceSheet.html">http://www.yakimacounty.us/gis/GIS/PriceSheet.html</a>