
APPENDIX F.9

Blue Ridge Variation Comparison with Proposed Route

Jordan Cove Natural Gas Liquefaction and
Pacific Connector Gas Pipeline Project
Draft EIS

Appendix F9

Blue Ridge Variation Comparison with Proposed Route

**Pacific Connector Gas Pipeline
Coos Bay District – Bureau of Land Management**

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USDI Bureau of Land Management

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Attachment

Attachment 1a	Alignment Sheets for the Proposed Route
Attachment 1b	Alignment Sheets for the Blue Ridge Variation

1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this appendix is to provide a comparison of the environmental consequences of the Blue Ridge Variation with the proposed route described in chapter 2 of the DEIS consistent with the level of detail provided in DEIS. This alternative was identified by Pacific Connector in their 2017 Application (Resource Report 10).

This appendix acknowledges that a number of the resource topics discussed in the 2019 DEIS are not directly applicable to this alternative. While there are no National Forest System (NFS) lands at the location where this alternative occurs, as a cooperating agency with independent authority (i.e., LMP amendments, concurrence with Right-of-Way Grant), the U.S. Forest Service (Forest Service) has a vested interest in ensuring that FERC's EIS is adequate for Forest Service decision-making and disclosure.

Under the MLA, BLM has the authority to issue a Right-of-Way Grant across all federal lands crossed by the project, including lands managed by the Forest Service and the Bureau of Reclamation (Reclamation).

BLM has been, and continues to be, a Cooperating Agency with the FERC in preparing the Environmental Impact Statement (EIS) because of its jurisdictional responsibility to respond to Pacific Connector's application for a Right-of-Way Grant across federal lands managed by BLM, Forest Service, and Reclamation.

1.2 BACKGROUND

Pacific Connector Pipeline L.P. (Pacific Connector) originally filed an application for a Right-of-Way Grant with the Bureau of Land Management (BLM) on April 17, 2006, pursuant to the Mineral Leasing Act (MLA) of 1920 and in accordance with Federal Regulations 43 CFR 2800 and 2880 to construct, operate, and maintain the Pacific Connector Gas Pipeline (PCGP) Project. In 2006, the PCGP Project was proposed as the natural gas sendout pipeline for the Jordan Cove Liquefied Natural Gas (LNG) import terminal proposed before the Federal Energy Regulatory Commission (FERC or Commission). On May 21, 2013, Jordan Cove Energy Project, L.P. (Jordan Cove) filed an application for its liquefaction and LNG export project with the FERC under Section 3 of the Natural Gas Act (NGA). Pacific Connector filed a companion application with the FERC for the supply pipeline to Jordan Cove's LNG terminal under Section 7 of the NGA on June 6, 2013. FERC conducted an extensive environmental review thereunder, issuing an FEIS in September 2015. On March 11, 2016, the Commission denied the applications for certificates in Docket Nos. CP13-483-000 and CP13-492-000, without prejudice to JCEP's and PCGP's refiling of new applications.

On January 23, 2017, JCEP and PCGP requested approval to participate in FERC's Pre-Filing Review Process to assist in the identification and proper assessment of issues and to obtain input on the development of the environmental resource reports. FERC granted this request on February 10, 2017 and assigned Docket No. PF17-4-000.

In its 2017 application to FERC, Pacific Connector's Resource Report 1 identified its proposed route to include the segment analyzed in FERC's 2015 EIS as the Blue Ridge Route, that segment

of the proposed route between milepost (MP) 11.1 R and 21.8. Resource Report 10 of the application identified an alternative that is the subject of this Appendix. Chapter 3 of the Draft EIS identifies this as the Blue Ridge Variation (Blue Ridge Variation). BLM has prepared this appendix to ensure that the FERC 2019 Draft Environmental Impact Statement (DEIS) provides a comparison of these alternatives in a manner that satisfies BLM's NEPA requirements as a cooperating agency. The comparison will enable BLM to determine which alternative is environmentally preferable and disclose to the public and decisionmakers the environmental impacts of the proposed route and the Blue Ridge Variation alternatives.

Chapter 3 of the 2019 DEIS provides a brief comparison of the Blue Ridge Variation and the proposed route using information provided by Pacific Connector in its 2017 application. In essence, this detailed desktop analysis illustrated a number of attributes compared in a tabular format (e.g., length, construction disturbance, water bodies crossed, fish-bearing streams). BLM's has determined that this appendix is necessary to ensure that the alternatives are analyzed at an equal level of detail to satisfy BLM's NEPA requirements.

While the BLM Forest Service, Reclamation and other federal agencies are cooperating agencies in FERC's National Environmental Policy Act (NEPA) process, the BLM and the Forest Service have independent decisions that require compliance with their respective NEPA regulations, policies, and directives. Under BLM policy and regulatory standards, an alternative is carried forward for detailed analysis if it addresses a resource conflict or concern, or a scoping issue. BLM requires that this appendix provide the information to support decisions in compliance with agency statutory, regulatory and policy requirements.

1.3 TOPICS NOT REPEATED IN THIS APPENDIX

The following topics are not repeated in this appendix because the analysis does not change from the DEIS discussion or is not relevant for either the Blue Ridge Alternative or the proposed route:

- Coastal Zone Management
- Soils-Compaction, Displacement/Mixing
- Mineral Resources
- Paleontological Resources
- Aquifers
- Water Supply Wells and Springs
- Public Supply Wells
- Other Groundwater Wells
- Springs and Seeps
- Oregon Water Quality Regulations and Standards
- Public Drinking Water Intakes
- Nationwide Rivers Inventory
- Peak Flows
- Contaminated Surface Water or Sediments
- State-Listed Threatened and Endangered Species
- Socioeconomics
- Off-Highway Vehicle Use
- Air Quality and Noise on the human environment
- Reliability and Safety

2.0 ROUTE DESCRIPTIONS

2.1 PROPOSED ROUTE

The proposed route for the portion of the alignment addressed in this appendix begins about MP 11.29R, and generally follows a higher elevation to the east of the Blue Ridge Variation. After MP 11.29R, the route continues south across the Coos River valley. It then continues into the Vogel Creek Valley and begins to climb the south valley wall at Alternative MP 12.1. From Alternative MP 12.1, the route ascends a moderately steep slope and reaches the ridge top at approximately MP 12.2 and follows a ridgeline for approximately 2.2 miles. From Alternative MP 14.7, the route follows Laxstrom Gulch into Stock Slough. From about Alternative MP 15.3, the route climbs steep north-facing slopes on the south valley wall of Stock Slough and reaches the ridge top at Alternative MP 15.5. The route continues along a ridge heading southeast or south to Alternative MP 19.6, where the route climbs steep slopes to the top of “Blue Ridge” at MP Alternative 19.9. From the top of Blue Ridge, the route continues southward and descends the nose of Blue Ridge down to Evans Creek. After crossing Evans Creek, the route ascends again to a ridge top at Alternative MP 24.6, following the ridge to the intersection with the proposed route at Alternative MP 25.2 (MP 21.77 on the proposed route). Alignment sheets for the proposed route are included in Attachment 1a to this appendix. Alignment sheets for the Blue Ridge variation are included in Attachment 1b.

The proposed route would impact a total of approximately 244 acres during construction, and 85 acres during operation (table 2.1-1). No temporary or permanent access roads would be built as part of the alternative. Two aboveground facilities, including MLV#2 (at a different location than for the proposed route) and the potential Blue Ridge communication site would have a long-term effect on 0.3 acre.

TABLE 2.1-1 Land Requirements for the Pacific Connector Pipeline Project – Proposed Route			
Project Component	Length (miles) or Number of Sites <u>a/</u>	Land Affected During Construction (acres)	Land Affected During Operation (acres)
Pipeline Right-of-Way	14.0 miles <u>b/</u>	161.4	85.0 <u>c/</u>
Temporary Extra Work Areas	95 sites	37.0	0
Uncleared Storage Areas	42 sites	45.4	0
Rock Source & Disposal Sites	0 sites	0	0
Contractor and Pipe Storage Yards	0 sites	0	0
Existing Roads Needing Improvements	0 roads	0	(0)
Temporary Access Roads	0 roads	0	0
Permanent Access Roads	0 roads	0	0
Aboveground Facilities	2 sites	0.2 <u>d/</u>	0.3 <u>d/</u>
Hydrostatic Discharge Locations Outside Right-of-Way	0	0	0
Totals		244	85.3

Note: There may be some minor discrepancies between the quantitative values provided in this table compared to those presented in chapter 3 of the EIS, due to differences in the information included in the application to the FERC (used in the preparation of the EIS) and that provided to the BLM (used in the preparation of this BLM assessment).

a/ All miles and acres are rounded up to a tenth.

b/ Because of realignments, the length of the pipeline is different from the MPs which reflect the original 2007 route.

c/ 50-foot-wide operational pipeline easement.

d/ Construction impacts associated with the aboveground facility MLV #2 are included in the construction land requirement for the pipeline right-of-way except the potential Blue Ridge communication tower site which is approximately 0.2 acre.

2.2 BLUE RIDGE VARIATION – MP 11.3R TO 21.8

The segment of the Blue Ridge Variation that is being compared to the proposed route extends from about MP 11.29R to MP 21.77. From MP 11.29R, this route heads southwest along the Coos River Valley to approximately MP 12.6R, where the route climbs moderately steep slopes. The route continues southward and at MP 9.6 follows a ridge top briefly before descending into Stock Slough at MP 10.05. After crossing Stock Slough, the route climbs up and over the nose of a ridge into East Catching Slough at MP 10.9. The route then ascends to a ridge at MP 12.6 and continues southeast and turns south at MP 12.8. From MP 12.8, the route continues south traversing moderate slopes within an existing Bonneville Power Administration (BPA) corridor. At approximately MP 14.2, the route reaches a ridge top and follows the ridgeline, descending at MP 15.5 steep slopes to Boone Creek. The route crosses Boone Creek and climbs again to a ridge crest at MP 16, continuing to MP 17.5 where the route climbs steep slopes to MP 17.8. From there, the route turns to the southeast and traverses variable terrain to the intersection with the proposed route at MP 21.77.

The comparison portion of the Blue Ridge Variation would impact a total of approximately 229 acres during construction and 88 acres during operation (table 2.2-1). No temporary access roads would be built along this segment, though one permanent access road would be required. Two aboveground facilities, including mainline valve (MLV) #2 and the potential Blue Ridge communication site, would have a long-term effect on 0.3 acre.

Project Component	Length (miles) or Number of Sites <u>a/</u>	Land Affected During Construction (acres)	Land Affected During Operation (acres)
Pipeline Right-of-Way	14.4 miles <u>b/</u>	165.4	87.3 <u>c/</u>
Temporary Extra Work Areas	140 sites	62.0	(6.0) <u>d/</u>
Uncleared Storage Areas	4 sites	1.1	0
Rock Source & Disposal Sites	5 sites	(6.0) <u>e/</u>	(6.0) <u>d/</u>
Contractor and Pipe Storage Yards	0 sites	0	0
Existing Roads Needing Improvements	0 roads	0	0
Temporary Access Roads	0 roads	0	0
Permanent Access Roads	1 roads	0.1	0.1
Aboveground Facilities	2 sites	0.2 <u>f/</u>	0.3 <u>f/</u>
Hydrostatic Discharge Locations Outside Right-of-Way	0	0	0
Totals		228.8	87.7

Note: There may be some minor discrepancies between the quantitative values provided in this table compared to those presented in chapter 3 of the EIS, due to differences in the information included in the application to the FERC (used in the preparation of the EIS) and that provided to the BLM (used in the preparation of this BLM assessment).

a/ All miles and acres are rounded up to a tenth.

b/ Because of realignments, the length of the pipeline is different from the MPs which reflect the original 2007 route.

c/ 50-foot-wide permanent pipeline easement.

d/ Includes TEWAs, existing quarries, rock sources, and disposal areas that may be used as permanent storage areas. These areas would not be used during operation of the Project, and therefore are not included in the operational total.

e/ A total of 6.0 acres of rock source and disposal sites are accounted for as part of Temporary Extra Work Areas and are not double counted in the total construction acres.

f/ Construction impacts associated with the aboveground facility MLV#2 are included in the construction land requirement for the pipeline right-of-way except the potential Blue Ridge communication tower site which is approximately 0.2 acre.

3.0 **AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

3.1 **LAND USE**

3.1.1 **Land Ownership**

The comparison portion of the proposed route is evenly split between private land (6.5 miles, 46.1 percent) and federal BLM land (7.5 miles, 53.9 percent) (table 3.1.1-1) while the Blue Ridge Variation is located primarily on private land (12.9 miles, 89.8 percent). The proposed route does not cross any state land, and the comparison portion of the Blue Ridge Variation crosses less than 0.1 mile (table 3.1.1-1). Neither route would cross tribal land.

	County	Federal Land		State Land		Private Land		Total
		Miles	%	Miles	%	Miles	%	
Proposed Route	Coos	7.5	53.9	-	-	6.5	46.1	14.0
Blue Ridge Variation	Coos	1.4	9.9	<0.1	0.3	12.9	89.8	14.4

Note: Rows and columns may not add correctly due to rounding. Miles are rounded to the nearest tenth of a mile (values below 0.1 are shown as "<0.1").

3.1.2 **Existing Land Use and Zoning**

3.1.2.1 **Land Use**

Pipeline

Most of the pipeline route would cross forested land for both the proposed route and the comparison portion of the Blue Ridge Variation, totaling 11 miles (76.6 percent) and 11.4 miles (81.5 percent), respectively (table 3.1.2.1-1). The proposed route would cross slightly more agricultural land: 2.1 miles compared to 1.5 miles for the Blue Ridge Variation. Both routes would also cross short distances of transportation/communication lands and water (stream crossings). Only the comparison portion of the Blue Ridge Variation would cross wetlands (0.1 mile) or residential lands (0.1 mile).

Tables 3.1.2.1-2a and 3.1.2.1-2b indicate the acres of land affected by construction and operation of the Blue Ridge Variation and the proposed route Alternative. The Blue Ridge Variation comparison portion would affect a total of 229 acres during construction, including 165 acres of forest land, 43 acres of cropland/pastureland, 17 acres of transportation/communication land, 2 acres of streams, 1 acre of residential land, and less than 1 acre each of industrial, rangeland, ditches/canals, and wetland areas (table 3.1.2.1-2a). The proposed route would impact a slightly larger area, totaling 244 acres. This would include 203 acres of forest land, 24 acres of cropland/pastureland, 17 acres of transportation/communication land, and less than 1 acre each of residential, commercial, stream, and wetland areas (table 3.1.2.1-2b).

TABLE 3.1.2.1-1

Land Uses Crossed by the Pacific Connector Pipeline, by Alternative

U.S. Geological Survey Land Use Classification		Blue Ridge Variation (Comparison)		Proposed Route	
		Total Miles	Percent of Total	Total Miles	Percent of Total
Urban or Built-Up Land	Residential	0.1	0.5	-	-
	Commercial	-	-	-	-
	Industrial	-	-	-	-
	Transportation/Communication	0.9	6.3	1.1	7.7
	Other Urban or Built-up Land	-	-	-	-
Subtotal		1.0	6.8	1.1	7.7
Agricultural Lands	Cropland and Pasture	2.1	14.9	1.5	10.8
	Orchards, Groves, Vineyards, etc.	0.0	0.0	0.0	0.0
Subtotal		2.1	14.9	1.5	10.8
Rangeland	Herbaceous Rangeland	-	-	-	-
	Shrub and Brush Rangeland	-	-	-	-
	Mixed Rangeland	-	-	-	-
Subtotal		0.0	0.0	0.0	0.0
Forest Land	Deciduous Forest Land	-	-	-	-
	Evergreen Forest Land	1.5	10.6	0.8	5.5
	Clearcut Forest Land	0.9	6.3	0.3	2.0
	Regenerating Forest Land	6.0	41.9	5.2	37.3
	Mixed Forest Land	2.6	17.8	5.1	36.7
Subtotal		11.0	76.6	11.4	81.5
Water	Streams	0.1	1.0	<0.1	0.1
	Ditches and Canals	-	0.1	-	-
	Bays and Estuaries	-	-	-	-
Subtotal		0.2	1.0	<0.1	0.1
Wetlands	Forested Wetland	0.1	0.6	-	-
	Nonforested Wetland	-	0.1	-	-
Subtotal		0.1	0.6	0.0	0.0
Barren Land	Beaches	-	-	-	-
	Mines, Quarries, Gravel Pits	-	-	-	-
Subtotal		0.0	0.0	0.0	0.0
Project Total		14.4	100.0	14.0	100.0

Note: Rows and columns may not sum correctly due to rounding. Miles are rounded to the nearest tenth of a mile (values below 0.1 are shown as "<0.1").

TABLE 3.1.2.1-2a

Acres of Land Affected by Construction and Operation of the Pacific Connector Pipeline – Blue Ridge Variation (Comparison)

	Residential	Commercial	Industrial	Transportation/ Communication	Other Urban/Built-up Land	Cropland/Pastureland ^d	Orchards, Groves, Vineyards, Nurseries	Herbaceous Rangeland	Shrub/Brush Rangeland	Mixed Rangeland	Deciduous Forest Land	Evergreen Forest Land	Mixed Forest Land	Clearcut Forest Land	Regenerating Forest	Streams	Ditches/Canals	Bays and Estuaries	Forested Wetlands ^{a/}	Nonforested Wetlands ^{a/}	Beaches	Strip Mines, Quarries, Gravel Pits	Total
CONSTRUCTION DISTURBANCE^{b/}																							
Construction Right-of-Way	<1	-	-	9	-	25	-	-	-	-	-	17	31	10	70	2	<1	-	<1	<1	-	-	165
Hydrostatic Discharge Sites	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Klamath CS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Temporary Extra Work Areas	<1	0	<1	8	-	18	-	<1	-	-	-	3	6	3	24	<1	<1	-	-	<1	-	-	62
Uncleared Storage Areas	-	-	-	<1	-	<1	-	-	-	-	-	-	1	<1	-	-	-	-	-	-	-	-	1
Rock Source/Disposal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contractor and Pipe Storage Yards	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Access Roads (TARs/PARs)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	1	0	<1	17	0	43	0	<1	0	0	0	20	38	13	94	2	<1	0	<1	<1	0	0	229
OPERATION DISTURBANCE																							
Permanent Easement ^{c/}	<1	-	-	5	-	13	-	-	-	-	-	9	16	5	37	<1	<1	-	<1	<1	-	-	88
Permanent Access Roads	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	<1	0	0	5	0	13	0	0	0	0	0	9	16	5	37	<1	<1	0	<1	<1	0	0	88
30-Foot Maintenance Corridor	<1	-	-	3	-	8	-	-	-	-	-	6	9	3	22	<1	<1	-	<1	<1	-	-	52
Note: Rows and columns may not sum correctly due to rounding. Acres rounded to nearest whole acre (values below 1 are shown a “<1”).																							
a/ Acres of wetlands affected according to jurisdictional delineation is greater than the acreage shown based on the land use definition used in this table. See section 3.4.3 for discussion of impacts to wetlands.																							
b/ Construction disturbance associated with the aboveground facilities is included in the pipeline construction right-of-way impacts. Operation disturbance for aboveground facilities is presented separately in table 3.1-4a. Because disturbance from aboveground facilities is only 0.3-acre, total operation disturbance remains 88 acres.																							
c/ The permanent easement is located within the disturbed acreage of the construction right-of-way on non-federal lands. Only operational easements would be available on BLM lands. It is not an addition to the construction impacts.																							

TABLE 3.1.2.1-2b

Acres of Land Affected by Construction and Operation of the Pacific Connector Pipeline – Proposed Route

	Residential	Commercial	Industrial	Transportation/ Communication	Other Urban/Built-up Land	Cropland/Pastureland	Orchards, Groves, Vineyards, Nurseries	Herbaceous Rangeland	Shrub/Brush Rangeland	Mixed Rangeland	Deciduous Forest Land	Evergreen Forest Land	Mixed Forest Land	Clearcut Forest Land	Regenerating Forest	Streams	Ditches/Canals	Bays and Estuaries	Forested Wetlands a/	Nonforested Wetlands a/ Beaches	Strip Mines, Quarries, Gravel Pits	Total	
CONSTRUCTION DISTURBANCE b/																							
Construction Right-of-Way	-	-	-	13	-	18	-	-	-	-	-	9	59	3	59	<1	-	-	-	<1	-	-	161
Hydrostatic Discharge Sites	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Klamath CS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Temporary Extra Work Areas	<1	<1	-	3	-	6	-	-	-	-	-	1	13	2	12	<1	-	-	-	<1	-	-	37
Uncleared Storage Areas	-	-	-	1	-	<1	-	-	-	-	-	1	19	<1	-	-	-	-	-	<1	-	-	45
Rock Source/Disposal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contractor and Pipe Storage Yards	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Access Roads (TARs/PARs)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	<1	<1	0	17	0	24	0	0	0	0	0	11	92	5	95	<1	0	0	0	<1	0	0	244
OPERATION DISTURBANCE																							
Permanent Easement c/	-	-	-	7	-	9	-	-	-	-	-	5	31	2	32	<1	-	-	-	<1	-	-	85
Permanent Access Roads	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	0	0	0	7	0	9	0	0	0	0	0	5	31	2	32	<1	0	0	0	<1	0	0	85
30-Foot Maintenance Corridor	-	-	-	4	-	6	-	-	-	-	-	3	19	<1	19	<1	-	-	-	<1	-	-	51
Note: Rows and columns may not sum correctly due to rounding. Acres rounded to nearest whole acre (values below 1 are shown a "<1").																							
a/ Acres of wetlands affected according to jurisdictional delineation is greater than the acreage shown based on the land use definition used in this table. See section 3.4.3 for discussion of impacts to wetlands.																							
b/ Construction disturbance associated with the aboveground facilities is included in the pipeline construction right-of-way impacts. Operation disturbance for aboveground facilities is presented separately in table 3.1-4b. Because disturbance from aboveground facilities is only 0.3 acre, total operation disturbance remains 85 acres.																							
c/ The permanent easement is located within the disturbed acreage of the construction right-of-way on non-federal lands. Only operational easements would be available on BLM lands. It is not an addition to the construction impacts.																							

Aboveground Facilities

The aboveground facilities associated with the comparison portion of the Blue Ridge Variation and the proposed route would impact a total of less than one acre. The MLV #2 site for the proposed route would be located on forested land, and the MLV #2 site for the Blue Ridge Alternative would be located in a cropland pasture/wetland area (table 3.1.2.1-3). The potential communication tower at Blue Ridge would be located on an existing utility site for both routes.

TABLE 3.1.2.1-3			
Acres Affected by Operation of Pacific Connector Proposed Aboveground Facilities – Blue Ridge Variation (Comparison)			
Facility	Milepost	Land Use	Acres
Blue Ridge Variation (Comparison)			
MLV #2 (Boone Creek Road)	15.69	Mixed Forest Land	<1
Subtotal			<1
Communication Sites Not Located at Other Aboveground Facilities			
Blue Ridge ^{a/}	~ 20	Transportation, Communications, and Utilities/Commercial	<1
Subtotal			<1
Total			<1
Proposed Route			
MLV #2 (Stock Slough Rd #54)	15.08	Cropland Pasture/Emergent Wetland	<1
		Subtotal	<1
Communication Sites Not Located at Other Aboveground Facilities			
Blue Ridge ^{a/}	~ 20	Transportation, Communications, and Utilities/Commercial	<1
Subtotal			<1
Total			<1

Note: Rows and columns may not sum correctly due to rounding. Acres rounded to nearest whole acre (values below 1 are shown as "<1").

^{a/} Communication facilities would utilize existing towers and equipment buildings, where space is available for lease, with no associated disturbance. If construction of new facilities is required, Pacific Connector would obtain an approximate 100-foot x 100-foot (0.23-acre) area in the immediate area of the existing communication tower facilities.

3.1.2.2 Zoning

Both the comparison portion of the Blue Ridge Variation and the proposed route primarily cross Coos County land zoned for Forest use (10.8 and 13.1 miles, respectively). The Blue Ridge Variation crosses more land zoned for Exclusive Farm Use (2.6 miles versus 0.8 miles for the proposed route). The Blue Ridge Variation would cross 0.8 mile of land zoned as part of the Coos Bay Estuary Management Plan (CBEMP), compared to 0.1 mile for the proposed route. The Blue Ridge Variation would also cross 0.2 mile of land zoned Rural Residential (table 3.1.2.2-1).

County	Zone	Blue Ridge Variation (Comparison)	Proposed Route
Coos County	Forest (F)	10.8	13.1
	Exclusive Farm Use (EFU)	2.6	0.8
	CBEMP (all zones)	0.8	0.1
	Rural Residential (RR-5, RR-2)	0.2	0.0
	Industrial (IND)	0.0	0.0
	Total	14.4	14.0

Note: Miles are rounded to the nearest tenth of a mile.

3.1.2.3 Existing Residences, Commercial Buildings and Planned Developments

Existing Residences

There are no residences within 50 feet of the proposed route, while there is one residence (MP 14.2) within 50 feet of the Blue Ridge Variation. Table 4.7.2.4 in the DEIS lists the residences that would be within 50 feet of Project construction activity.

Planned Development

Based on Pacific Connector’s communication with the Coos County Planning Department, as of July 10, 2015, the only development in the vicinity of the proposed route (within 0.25 mile) is an existing cellular tower that would be updated as part of the project. There are no known developments within 0.25 mile of the Blue Ridge Variation. However, concerns have been expressed by private landowners along the Blue Ridge Variation regarding potential future limitations for future development on their properties. Impacts to private property are discussed in section 4.9 of the DEIS, and the socioeconomic analysis is not repeated in this appendix.

3.1.3 Land Use for Pacific Connector Components on BLM Lands

The Blue Ridge Variation would cross 1.4 miles and affect 20 acres of BLM land within the Coos Bay District (table 3.1.3-1), nearly all of which would be forest land (19 acres), with the remainder affecting transportation/communication land, industrial land, and streams (table 3.1.3-2a). The proposed route would cross 7.5 miles of BLM land also within the Coos Bay District, affecting a total of 130 acres during construction (table 3.1.3-1), 118 acres of which would be on forest land, 12 acres on transportation/communication land, and less than one acre each of commercial, streams, and wetlands (table 3.1.3-2b).

TABLE 3.1.3-1

BLM Lands Affected by the Pacific Connector Pipeline Project – By Alternative

Pipeline Facility/Component	Blue Ridge Variation (Comparison)	Proposed Route
Miles Crossed by Pipeline	1.4	7.5
Temporary Construction Acreage Requirements (acres)		
Construction Right-of-Way	15.5	86.4
TEWAs	4.1	16.2
UCSAs	0.0	27.5
Off-site Source/Disposal	0	0
Existing Roads Needing Improvements in Limited Locations	0	0
Temporary Access Roads (TAR)	0	0
Hydrostatic Discharge Locations Outside the right-of-way	0	0
Total Temporary Impacts (acres)	19.6	130.1
Operational Construction Acreage Requirements (acres)		
Operational Easement	8.6	45.7
Permanent Access Roads (PAR)	0	0
Aboveground Facilities	<1	<1
Total Operational Impacts (acres)	8.6	45.7
Right-of-Way (acres)		
30-Foot Maintained Right-of-way (acres)	5.2	27.4
Note: Columns may not sum correctly due to rounding. Miles rounded to the nearest tenth of a mile (values below 0.1 are shown as "<0.1"). Acres rounded to the nearest whole acre (values less than 1 shown as "<1").		

TABLE 3.1.3-2a

BLM Lands Required for Construction and Operation of the Pacific Connector Pipeline by Land Use Type (acres) – Blue Ridge Variation (Comparison)

Jurisdiction/ Project Element	Residential	Commercial	Industrial	Transportation/ Communication	Other Urban/Built-up Land	Cropland/Pastureland	Orchards, Groves, Vineyards, Nurseries	Herbaceous Rangeland	Shrub/Brush Rangeland	Mixed Rangeland	Deciduous Forest Land	Evergreen Forest Land	Mixed Forest Land	Clearcut Forest Land	Regenerating Forest Land	Streams	Ditches	Bays and Estuaries	Forested Wetlands	Nonforested Wetlands	Beaches	Strip Mines, Quarries, Gravel Pits	Transitional Areas	Total
Coos Bay BLM																								
Construction	-	-	<1	1	-	-	-	-	-	-	-	14	2	-	3	<1	-	-	-	-	-	-	-	20
Aboveground Facilities Outside the ROW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operational Easement ^{a/}	-	-	-	<1	-	-	-	-	-	-	-	6	<1	2	<1	-	-	-	-	-	-	-	-	9
Permanent Access Roads	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30-Foot Maintenance Corridor	-	-	-	<1	-	-	-	-	-	-	-	4	<1	<1	<1	-	-	-	-	-	-	-	-	5
<p>Note: Rows may not sum correctly due to rounding. Acres rounded to nearest whole acre (values below 1 are shown as "<1").</p> <p>^{a/} The operational easement is located within the disturbed acreage of the construction right-of-way. It is not an addition to the construction impacts.</p>																								

TABLE 3.1.3-2b

BLM Lands Required for Construction and Operation of the Pacific Connector Pipeline by Land Use Type (acres) – Proposed Route

Jurisdiction/ Project Element	Residential	Commercial	Industrial	Transportation/ Communication	Other Urban/Built-up Land	Cropland/Pastureland	Orchards, Groves, Vineyards, Nurseries	Herbaceous Rangeland	Shrub/Brush Rangeland	Mixed Rangeland	Deciduous Forest Land	Evergreen Forest Land	Mixed Forest Land	Clearcut Forest Land	Regenerating Forest Land	Streams	Ditches	Bays and Estuaries	Forested Wetlands	Nonforested Wetlands	Beaches	Strip Mines, Quarries, Gravel Pits	Transitional Areas	Total	
Coos Bay BLM																									
Construction	-	<1	-	12	-	-	-	-	-	-	-	6	67	3	42	<1	-	-	-	<1	-	-	-	-	130
Aboveground Facilities Outside the ROW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operational Easement ^{a/}	-	-	-	5	-	-	-	-	-	-	-	3	23	<1	14	<1	-	-	-	-	-	-	-	-	46
Permanent Access Roads	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30-Foot Maintenance Corridor	-	-	-	3	-	-	-	-	-	-	-	2	14	<1	8	<1	-	-	-	-	-	-	-	-	27
<p>Note: Rows may not sum correctly due to rounding. Acres rounded to nearest whole acre (values below 1 are shown as "<1").</p> <p>^{a/} The operational easement is located within the disturbed acreage of the construction right-of-way. It is not an addition to the construction impacts.</p>																									

Neither route would cross Oregon and California (O&C) lands, while the Blue Ridge Variation would cross 1.4 miles of Coos Bay Wagon Road Lands and the proposed route would cross 1.4 miles of Public Domain lands (table 3.1.3-3).

Alternative	O&C Lands	Coos Bay Wagon Road Lands	Public Domain Lands <u>a/</u>	Total
Blue Ridge Variation (Comparison)	-	1.4	-	1.4
Proposed Route	-	-	1.4	1.4

Note: Rows and columns may not sum correctly due to rounding. Miles are rounded to the nearest tenth of a mile (values below 0.1 are shown as "<0.1").
a/ Reserved Public Domain Lands are the remaining lands not classified as O&C or Coos Bay Wagon Road lands.

Alternative	Congressionally Reserved Lands and National Conservation Lands	District-Designated Reserves	Harvest Land Base	Late Successional Reserve	Riparian Reserve
Blue Ridge Variation	-	-	0.4	0.4	0.6
Proposed Route	-	0.3	0.9	5.5	0.8

Note: Rows and columns may not sum correctly due to rounding. Miles are rounded to the nearest tenth of a mile (values below 0.1 are shown as "<0.1").

3.1.4 BLM Resource Management Plans

All BLM lands associated with both the proposed route and the Blue Ridge Variation are managed by the Coos Bay District under the Northwestern and Coastal Oregon Record of Decision (ROD) and Approved Resource Management Plan (RMP) applicable to the Coos Bay, Northwest Oregon District and Swiftwater Field Office of the Roseburg District. This RMP revised the 1995 RMP in its entirety, including fundamental changes to BLM land allocations that were considered in FERC’s 2015 FEIS. These land allocations are listed below.

- Congressionally Reserved Lands and National Conservation Lands - includes Designated and Suitable Wild and Scenic Rivers and Designated Wilderness and Wilderness Study Areas;
- District-Designated Reserves – includes Areas of Critical Environmental Concern, Lands managed for their Wilderness Characteristics Timber Production Capability System (TPCC);
- Harvest Land Base - includes Low Intensity Timber Area, Moderate Intensity Timber Area;
- Late Successional Reserve (LSR); and
- Riparian Reserve

The management direction for BLM lands considered in this appendix is specific to the following land allocations:

As illustrated in table 3.1.3.4, the proposed route would cross 0.3 miles of District-Designated Reserve lands (3.3 acres) , 0.9 mile of Harvest Land Base (15.8 acres), 5.5 miles of LSRs (97.2 acres), and 0.8 mile of Riparian Reserve (13.5 acres). Under the BLM RMP, approximately 32 acres of MAMU habitat and 21 occupied or presumed occupied stands would be impacted by the proposed route. For the Blue Ridge Variation, about 3 acres of MAMU habitat and six occupied or presumed occupied stands would be impacted.

A discussion of the BLM RMPs and management direction is included in section 4.7 of the DEIS. Appendix F1 of the DEIS provides a comprehensive description of the management direction applicable to the PCGP Project on lands managed by the Coos Bay District, including those associated with the proposed route and the Blue Ridge Variation.

3.1.4.1 Proposed Amendment to BLM Resource Management Plans

Because several aspects of the proposed pipeline do not conform to BLM’s applicable plans, the BLM’s proposed amendment to the RMP would re-allocate all lands within the proposed temporary use area and right-of-way described in Chapter 2 of the DEIS to a District-Designated Reserve. This amendment would also be applicable to BLM lands crossed by the Blue Ridge Variation, if adopted.

Appendix F1 of the DEIS evaluates the proposed pipeline for consistency with the BLM’s Northwestern and Coastal Oregon Record of Decision (ROD) and Approved Resource Management Plan (RMP). This evaluation also applies to the Blue Ridge Variation even though the length and distances between the proposed route and the Blue Ridge Variation vary slightly.

3.1.4.2 Riparian Reserves

The widths and management direction for the Riparian Reserve vary among three classes of subwatersheds. As noted above, the ROD only makes decisions on lands that fall under BLM jurisdiction; as such, the identification of subwatershed classes within the planning area is only relevant to defining Riparian Reserve widths and management direction for streams and water features on BLM-administered lands within the subwatershed.

As described previously, the proposed route would affect three Class 1 fifth-field watersheds; two of these—Coos Bay-Frontal and North Fork Coquille River—would also be affected by the Blue Ridge Variation. The Riparian Reserve is based on site potential tree heights – Coos Bay Frontal and North Fork (240 feet), Coquille River (200 feet), and South Fork (220 feet). Within each of these watersheds, BLM manages the Riparian Reserve consistent with the requirements of the RMP. While the Forest Service manages Riparian Reserves under the Siuslaw National Forest Land and Resource Management Plan (Oregon Dunes National Recreation Area) in the Coos Bay-Frontal watershed, neither the Blue Ridge Variation or the proposed route would affect NFS lands. Table 3.1.4.3-1 provides a summary of the Riparian Reserves for each of these watersheds, including the respective subwatersheds.

TABLE 3.1.4.3-1

Land Management (acres) and Federal Land Allocations (acres) Along the Proposed Route					
Fifth-Field Watershed	Total (acres)	Land Management (acres)		Land Allocations (acres)	
		BLM	NFS	Riparian Reserves	
		BLM	NFS	BLM	NFS
Coos Bay- Frontal Pacific Ocean (Total)	151,608	5,409	4,914	1,894	2,556
Big Creek	16,945	73		16	
Catching Slough	16,837	3,092		1,520	
Coos Bay	38,812	825	668	95	348
Coos River	4,539	430		138	
Haynes Inlet	26,401	0	389		202
Isthmus Slough	21,623	60		24	
North Spit	6,815	929	3,857	101	2,006
Winchester Slough	19,636	0			
North Fork Coquille River (Total)	98,404	36,852		12,266	
Hudson Creek	23,018	7,814		3,010	
Johns Creek	18,779	3,171		1,474	
Middle Creek	32,467	19,399		5,710	
Moon Creek	24,140	6,468		2,072	
Coquille River (Total)	111,645	2,737		1,181	
Bear Creek	15,422	0			
Beaver Slough	13,314	430		163	
Coquille River Estuary	18,349	0			
Cunningham Creek	21,354	2,050		922	
Hall Creek	24,077	257		96	
Lampa Creek	19,129	0			
South Fork Coos River (Total)	160,144	32,639		10,358	
Bottom Creek	11,400	446		74	
Cedar Creek-Williams River	34,809	3,477		1,202	
Daniels Creek-South Fork Coos River	25,484	4,017		1,277	
Fall Creek	9,867	0			
Tioga Creek	24,605	15,766		5,498	
Williams River-South Fork Coos River	26,549	7,218		1,867	
Wilson Creek-Williams River	27,430	1,715		440	

As table 3.1.4.3-1 indicates, the proportion of Riparian Reserves within these four fifth-field watersheds varies between about 32 and 43 percent of federal lands, in part due to ownership patterns but also as a result of underlying landforms. Table 3.1.4.3-2 compares the impacts to Riparian Reserves between the proposed route and the Blue Ridge Variation by fifth-field watershed. Impacts to the Riparian Reserve include areas where the actual waterbody that forms the basis for this land allocation (e.g., Steinnon Creek) is impacted as well as those areas that essentially clip the Riparian Reserve. A clip occurs when the polygon that entails the Riparian Reserve land allocation is intersected by some aspect of the route; not an actual waterbody crossing. The comparison of impacts to the Riparian Reserve between the proposed route and the Blue Ridge Variation illustrates that under either alternative, the overall impacts to the Riparian Reserve within each fifth-field watershed would equate to less than one percent of the total area of the Riparian Reserve managed by BLM in these watersheds.

TABLE 3.1.4.3-2

Riparian Reserves Impacted by the Blue Ridge Variation and the Proposed Route on BLM Lands (acres)

Alternative	Watershed (Name)	Number of Riparian Reserves Impacted	Approximate Acres Impacted	Watershed Analysis Completed
Blue Ridge Variation (Coos Bay Frontal	1	0.7	2010
	Coquille River	1	0.9	1997
	North Fork Coquille River	7	14.2	2001
Total Riparian Reserves Impacted on BLM Lands		9	15.8	
Proposed Route	Coos Bay Frontal	9	7.1	2010
	South Fork Coos River	6	3.2	2001
	North Fork Coquille River	4	3.2	1997
Total Riparian Reserves Impacted on BLM Lands		19	13.5	

Note that acres may not sum correctly due to rounding. Acres are rounded to the nearest tenth of a unit; values below 0.1 are noted as <0.1.
Source: BLM RMP

Project Impacts to Water Quality and Aquatic Resources

Water Temperature Impacts

In 2015 BLM directed Stantec (formerly North State Resources, Inc. [NSR]) to prepare site-specific water temperature impacts assessments for perennial streams on BLM lands subject to impacts from the Blue Ridge Variation and the proposed route (NSR 2015a,b)¹ in order to demonstrate compliance with the ACS objectives of the applicable BLM RMP at that time². Subsequently, in order to assess consistency with BLM’s RMP for the proposed route and to compare it with the Blue Ridge Variation, an additional site-specific assessment for the Steinnon Creek crossing at MP 20.25 in the North Fork Coquille River watershed was prepared. Under the 2016 BLM RMP, ACS is not applicable but the assessment of the Steinnon Creek crossing is still relevant.

This assessment was conducted similar to those performed for other perennial stream crossings on the Coos Bay District. BLM hydrologists provided NSR with current information on baseline conditions with respect to stream temperature, streamflow, shade and air temperature adequate to develop and run the temperature models (SSTEMP and Brown) used to analyze impacts to Steinnon Creek. A full discussion of this assessment is provided in Attachment 2 to Appendix Q in FERC’s 2015 FEIS).

A key distinction between the two models used in this assessment is that the Brown model is only relevant for complete shade removal; SSTEMP does provide for modeling of effective shade. Results of the SSTEMP and Brown modeling indicate that with 0 percent effective shade retention (construction impacts with no mitigation), the modeled 7-day moving average (7DMA) maximum stream temperature increase of 0.4°F–0.5°F (0.2°C–0.3°C) at the Steinnon Creek crossing would

¹ NSR. 2015a. Pacific Connector Gas Pipeline Project – Technical Memorandum for Water Temperature Impact Assessment. Prepared for USDI Bureau of Land Management. January 2015. North State Resources, Redding, CA.

NSR. 2015b. Pacific Connector Gas Pipeline Project – Technical Memorandum for Water Temperature Impact Assessment. Prepared for USDA Forest Service. January 2015. North State Resources, Redding, CA.

² This assessment focused on what is now the proposed route as described in the 2019 DEIS.

exceed the Antidegradation Policy threshold of 0.25°F (0.14°C). However, the expected change in the 7DMA maximum stream temperature does not exceed the threshold of 0.5°F (0.3°C), the criteria necessary to meet the State of Oregon policy to protect cold water (PCW).

The SSTEMP model was used to predict the expected change in the 7DMA stream temperature at the Steinnon Creek crossing with different shade levels. With 50 percent effective shade established after disturbance, the 7DMA stream temperature is expected to increase 0.2°F (0.1°C). Both the PCW criteria and the Antidegradation Policy threshold would be met under these conditions. With 75 percent effective shade established at the Steinnon Creek crossing, there are very minimal impacts to the stream temperature (0.1°F [0.06°C]) and both the PCW criteria and the Antidegradation Policy threshold would be met.

Based on these modeling results, at least 50 percent effective shade needs to be attained at the hydrofeature to meet RMP objectives as well as ODEQ temperature standards. Mitigation measures that would quickly reestablish 50 percent effective shade can easily be achieved and possibly surpassed by placement of large wood/boulders, planting larger conifers, and planting lush riparian vegetation such as salal, salmonberry, and sword fern. The assessment documents that there is an abundant source of small wood, shading the creek and trapping substrate, at the crossing site. Compliance with the site-specific requirements to place large woody debris (LWD) post-construction would help shade the creek, raise the stream bed, and promote some hyporheic exchange. This channel is narrow, and LWD, boulders, planted trees, and shrubs can create extensive and effective shade.

Restoration of Steinnon Creek Crossing

A site-specific restoration plan was prepared by BLM for the Steinnon Creek crossing. This plan was included as attachment 3 to Appendix Q in FERC's 2015 FEIS, and is incorporated by reference. Similar to the restoration plans prepared for other perennial stream crossings on federal lands (see discussion in section 4.04 of the DEIS), this plan focused on ensuring that the desired condition of Steinnon Creek at this location would be reestablished consistent with BLM's RMP after clearing, construction and restoration activities are completed by Pacific Connector. This plan would be used to supplement the applicants' POD (e.g., Erosion Control and Revegetation Plan, Wetlands and Waterbody Crossing Plan) as well as FERC's *Wetland and Waterbody Crossing Plan*.

In summary, this plan provides a general set of best management practices that would be applied based on the crossing risk rating identified by GeoEngineers for the Steinnon Creek crossing. At the site scale, it summarizes the desired condition that would ensure compliance with the RMP; acknowledges specific resource concerns identified by the BLM during site visits; and provides a list of site-specific prescriptive measures that would be applied in addition to those listed in the applicants' POD as well as FERC's *Wetland and Waterbody Crossing Plan*.

The desired condition upon completion is that the crossing and associated Riparian Reserve provides the functions and values of processes and resources that occur prior to disturbance related to the PCGP Project. The elements of BLM's desired condition include:

- Soils have been decompacted with hydraulic equipment and are left mounded and discontinuous so that water cannot run straight downhill.

- Effective ground cover has been reestablished prior to the onset of seasonal precipitation to prevent bank erosion and provide shade. Salal/Salmonberry is likely to quickly reoccupy site; however, placement of erosion control fabric, annual rye or slash may be required for ground cover during the first winter after construction. Riparian vegetation typical to the site has been reestablished to its pre-crossing extent with the exception of the 30-foot corridor that would be maintained for operation and inspection purposes.
- Large woody debris and slash has been used liberally throughout disturbed areas on all slopes within the authorized construction corridor to provide effective ground cover and intercept surface runoff. If waterbars have been used, location has been staked on the ground by an Agency representative prior to construction of the waterbar.
- Small woody debris is placed across the channel to initially provide shade. As the wood decays and drops into the channel, the logs but will help raise the streambed and promote some hyporheic exchange.
- Stream channel banks, substrate composition, streambed gradient, and morphology have been restored to their pre-crossing condition.
- Water temperatures reflect the pre-crossing temperature regime.
- Surface flows have not been intercepted by fractured geology.
- Hyporheic/subsurface flows have not been altered by PCGP Project trench backfill.

The primary resource concerns identified by BLM at the Steinnon Creek (Alternative MP 20.25) crossing are:

- Potential increased bank erosion and attendant excess fine sediment accumulation in the channel during peak flow events from construction impacts and crossing configuration during peak flow events,
- Soil compaction and sediment mobilization that may result from stream-side construction during rainy periods in the summer.
- Maintaining likely subsurface flows. It is probable that there is a functioning hyporheic zone associated with Steinnon Creek.
- Whether the trenching operation may capture part of the surface flows. The local massive and brecciated basalt is highly fractured which may intercept surface flows if they are exposed by the trenching operation. Interception or disruption of surface flows would be problematic given the minimal flows in Steinnon Creek during the summer months.
- Effective revegetation of disturbed soils. Soils derived from underlying volcanic deposits may lack sufficient organic material to adequately establish vegetation after disturbance.
- Stream temperatures may increase slightly as a result of shade removal.

Under circumstances where the Blue Ridge Variation is authorized by FERC and adopted by BLM in its ROD, the BLM would require the following site-specific measures during and following

clearing, construction, and restoration activities to comply with the RMP and ensure that the desired condition of this segment of Steinnon Creek would be met. Any instream work in Riparian Reserves would occur in compliance with BLM RMP best management practices and consistent with authorizations from the National Marine Fishery Service and Oregon Department of Fish and Wildlife.

Construction planning should anticipate at least one bank-full event during the winter, and several moderate to high intensity rainstorms during winter months. Some storm cycles may last several days and be followed in quick succession by another storm. It is critical to leave the site “buttoned up” with effective ground cover in place and earthwork completed prior to the onset of seasonal precipitation.

1. Multiple sediment barriers reinforced with erosion control fabric may be needed on the streambank and the slopes immediately above the channel in the first year of construction before effective ground cover and erosion control work are completed.
2. Retain organic material including LWD removed during clearing and construction activities within the Riparian Reserve for placement on exposed soils to provide ground cover and prevent overland flow from occurring. Redistributing organic material (e.g., LWD) generated from the right-of-way clearing operation would be highly successful in preventing raindrop impact and rill erosion. LWD and coarse woody slash would be liberally applied to all disturbed areas above the high water mark as defined on the ground by the BLM.
3. Aggressive erosion control seeding to establish 100 percent effective ground cover needs to be in place on the slope prior to the beginning of seasonal precipitation. Although salal and salmonberry is likely to quickly occupy the site, grass seed and mulch combined with coarse woody debris is the preferred erosion control method for immediate surface cover. Heavy application of grass seed, fertilizer and mulch has proven to be highly successful in preventing rain generated erosion in this area. The applicants’ POD as well as FERC’s *Wetland and Waterbody Crossing Plan* lists the preferred species for the Coos Bay District BLM. For immediate ground cover, erosion control blankets may be used. The use of wood chips at this site for ground cover is not recommended because wood chips may inhibit success of erosion control seeding.
4. Place LWD across the channel, above the ordinary high water mark to provide shade, maintain the stream gradient, and promote some hyporheic exchange.
5. Replant the area outside the operational right-of-way corridor with conifers using a 50 percent Douglas-fir, 25 percent hemlock and 25 percent red cedar mix. Conifer seedlings need to be protected from browsing deer and elk with biodegradable vexar tubing approved by the BLM until the seedlings are established. Minor amount of dogwood and elderberry may be planted within this zone as well. The applicants’ POD as well as FERC’s *Wetland and Waterbody Crossing Plan* provides details with respect to species and planting specifications.

6. Limit stream-side operations during periods of wet weather. Stream-side operations during wet weather have been shown to significantly increase soil compaction and sediment mobilization.
7. Silt barriers may be needed as a temporary measure. If necessary, install appropriate sediment barriers adjacent to the stream channel. This may include silt fences backed with hay bales, fiber rolls and other mechanical methods of intercepting sediment. If upland soils are decompacted and coarse wood and grass seed are used to maximum advantage, silt barriers would likely not be needed once construction is completed.

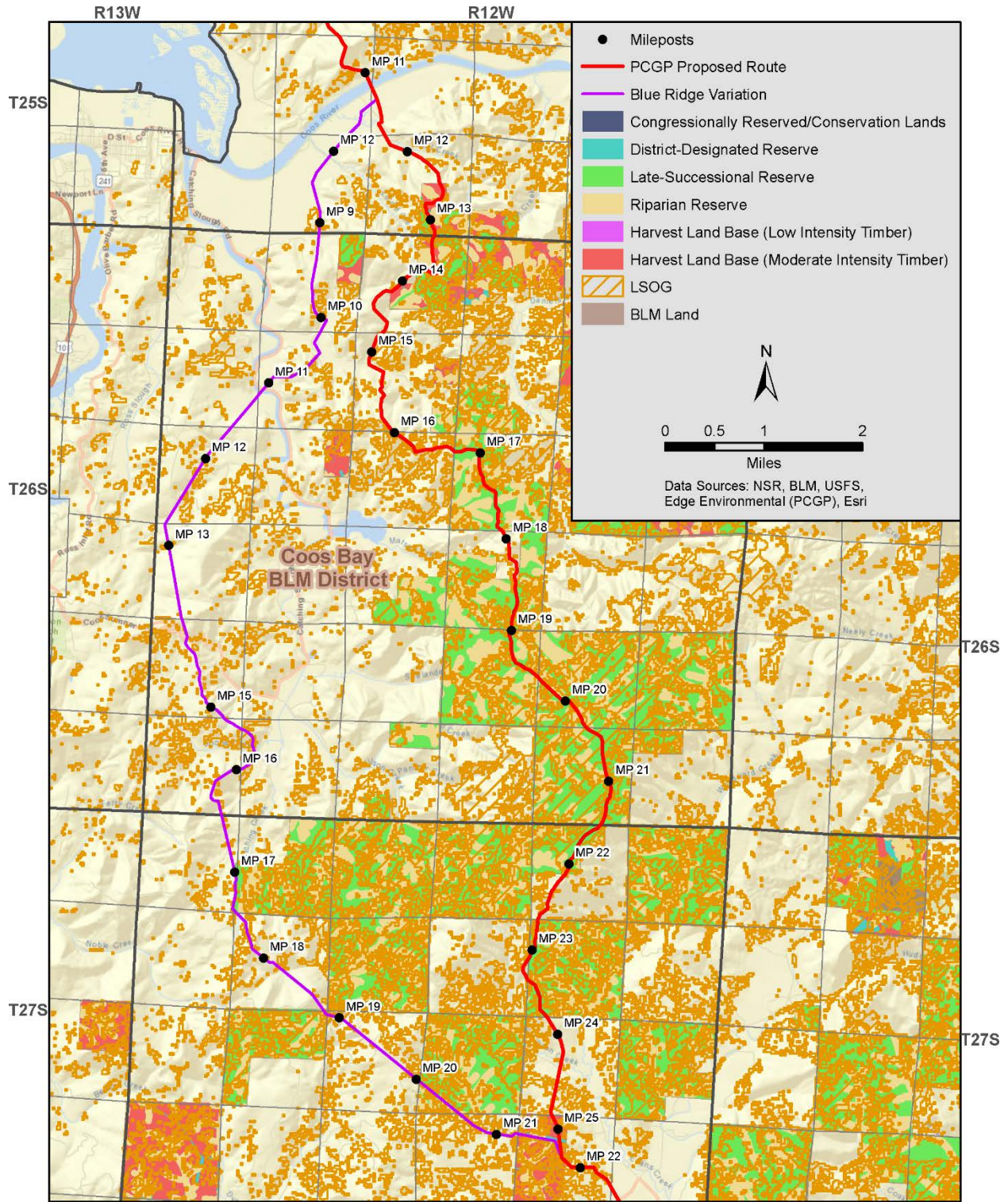
3.1.4.3 Resources Values and Conditions on BLM Lands: LSRs

Project Impacts of the Blue Ridge Variation on BLM LSRs³

LSRs and their relationship to BLM's RMPs are discussed in section 4.7 of the DFEIS. Table 3.1.3.4 illustrates the comparison of impacts to LSR between the proposed route and the Blue Ridge Variation. The proposed route would impact 5.5 acres of LSR and the Blue Ridge Variation would impact less than one acre. Figure 3.1-1 illustrates the location of LSRs on BLM lands for the proposed route and the Blue Ridge Variation.

³ The proposed BLM proposed plan amendment would, under both the proposed route and the Blue Ridge Variation re-allocate impacted LSR acres to District Designated Reserve.

Figure 3.1-1 Map of BLM Land Allocations for the Proposed PCGP Blue Ridge Alternative and Proposed Route



3.2 GEOLOGICAL RESOURCES

3.2.1 Coast Region

The proposed route and the Blue Ridge Variation are located entirely within the Oregon Coast Range Physiographic Province. This province extends more than 200 miles from the Columbia River south past Coos Bay to the Klamath Mountains. The Coast Range is 30 to 60 miles wide and averages 1,500 feet in elevation, with the highest point reaching 4,097 feet.

Coastal uplift of the present Coast Range over the past 10 to 15 million years has occurred simultaneously with stream incision and coastal erosion and depositional processes. Inland from the coastal areas, the Coast Range is generally composed of relatively soft marine sedimentary rock units that overlie basalt at depth. The wet conditions of the western slopes of the Coast Range, along with steep terrain underlain by relatively weak rock, contribute to an active erosional environment with frequent landslides (GeoEngineers 2015⁴).

3.2.1.1 Site Geology

The site geology for the Blue Ridge Variation is provided in Resource Report 6 of Pacific Connector's June 2013 application to FERC. The site geology for the proposed route is described in Resource Report 6 of Pacific Connector's January 2017 application to FERC. The geologic environment associated with both routes includes Quaternary-age marine terrace deposits as well as sedimentary and volcanic rocks of Eocene age (GeoEngineers 2015).

3.2.1.2 Seismic Setting and Hazards

Seismic Hazards

Seismic hazards considered in the GeoEngineers (2015) updated evaluation of the proposed route and the Blue Ridge Variation included ground surface fault rupture, earthquake-induced liquefaction and earthquake-induced lateral spreading. Neither the proposed route nor the Blue Ridge Variation cross mapped Quaternary-age faults.

A desktop evaluation identified two alluvial valley segments along the proposed route with the potential for earthquake-induced liquefaction: Coos River/Vogel Creek Valley (MP 11.29R to MP 12.1) and Stock Slough (MP 15.1 to MP 15.3). Analysis of boring data indicate a high risk for liquefaction associated with the Coos River Valley segment. Additional data would be needed to further assess the hazard at Stock Slough. The Blue Ridge Variation crosses four valley segments with the potential for earthquake induced liquefaction or lateral spreading: Coos River (MP 11.1R to MP 12.6R), Stock Slough (MP 10.1 to MP 10.4), Catching Slough (MP 10.8 to MP 11.4), and Boone Creek (MP 15.72 to MP 15.77) (GeoEngineers 2015).

Landslide Hazards

Based on published sources, including the Oregon Department of Geology and Mineral Industries (DOGAMI) open file report 0-11-01 and Statewide Information Database for Oregon (SLIDO), the Blue Ridge Variation would cross five landslide features for a total of 7,137 feet along this

⁴ GeoEngineers. 2015. Revised Geological Hazards Evaluation of the PCGP Modified Blue Ridge Route Alternative. July 17, 2015.

alignment. The proposed route would cross two landslide features for a total of 3,267 feet. GeoEngineers (2015) also reviewed aerial photography and light detection and ranging (LiDAR) hillshade model data to identify landslide hazards. Based on this analysis, the Blue Ridge Variation and the proposed route would both cross two landslide hazard areas totaling 3,257 feet and 1,088 feet, respectively (GeoEngineers 2015).

3.2.1.3 Rock Sources and Permanent Disposal Sites

Table 3.2.1.3-1 lists the rock source and disposal sites for the Blue Ridge Variation. All rock sources would be located on private land, primarily forestland that has been harvested previously. There are no rock source and disposal sites on BLM lands within the relevant section of the proposed route.

Site	Size (acres)	Milepost	Land Use	Jurisdiction
Coos County				
TEWA-11.90-W	0.10	11.90	Mixed forest land, regenerating evergreen forest land	Private
TEWA 12.53-N	2.32	12.53	Clearcut forest land, transportation, communication, utilities corridors	Private
TEWA 14.60-N	0.61	14.60	Regenerating evergreen forest land, transportation, communication, utilities corridors	Private
TEWA 17.82-W	0.93	18.11	Regenerating evergreen forest land	Private
TEWA 20.96	2.00	20.96	Clearcut forest land, regenerating evergreen forest land	Private
TOTAL	5.96			

3.2.1.4 Blasting During Trench Excavation

The proposed route would cross 2,379 feet of terrain with soils less than 5 feet from the ground surface to non-rippable bedrock, which is rated as having a high potential for blasting (GeoEngineers 2015). Along the Blue Ridge Variation, the blasting potential is considered low because it is primarily alluvial sediment or weak marine rocks (e.g., sandstone).

3.3 SOILS AND SEDIMENTS

3.3.1 Pacific Connector Pipeline and Associated Facilities

Soil associations crossed by the Blue Ridge Variation and the proposed route are shown in tables 3.3.1-1a and 3.3.1-1b by MP, including the mileage percentage of the route lengths. The Blue Ridge Variation crosses three soil associations, though the majority (66 percent) crosses just one, the Templeton-Salander-Reedsport-Fendal association. The proposed route crosses five associations dominated by two groups: Preacher-Bohannon (41 percent) and Peavine-Olyic-Melby-Honeygrove-Blachly (32 percent).

TABLE 3.3.1-1a						
Soil Associations Crossed by the Pacific Connector Pipeline – Blue Ridge Variation						
From	To	County	Soil Association (STATSGO)	Total Crossing Length (miles) <i>a/</i>	Percent of Project Mileage	
MLRA 4A – Sitka Spruce Belt – MPs 11.29R to 19.22						
11.29R	9.11	Coos	Nehalem- Duneland	2.4	16%	
10.6	11.34		Bullards (s6398)			
9.11	10.6	Coos	Templeton- Salander- Reedsport-Fendall (s6399)	9.4	66%	
11.34	19.22					
Total miles				11.8		
MLRA 1 – Northern Pacific Coast Range, Foothills, and Valleys – MPs 19.22 to 21.77						
19.22	21.8	Coos	Peavine-Olyic-Melby- Honeygrove-Blachly (S6396)	2.6	18%	
Total miles				2.6		
Project Total (miles)				14.4		

a/ Mileages are rounded to the nearest tenth of a mile; therefore, column may not sum correctly.

TABLE 3.3.1-1b						
Soil Associations Crossed by the Pacific Connector Pipeline – Proposed Route						
From	To	County	Soil Association (STATSGO)	Total Crossing Length (miles) <i>a/</i>	Percent of Project Mileage	
MLRA 4A – Sitka Spruce Belt – MPs 11.29R R to 19.22						
11.29	11.72	Coos	Nehalem-Duneland	0.4	3%	
			Bullards (s6398)			
11.72	13.95	Coos	Tolovana-Templeton- Salander-Reedsport-Fendall (s6399)	2.6	19%	
15.34	15.73					
Total miles				3.0		
MLRA 1 – Northern Pacific Coast Range, Foothills, and Valleys – MPs 19.22 to 23.35R						
20.14	23.92	Coos	Peavine-Olyic-Melby- Honeygrove-Blachly (s6396)	4.5	32%	
24.64	25.34					
23.92	24.64	Coos	Nekoma-Meda- Kirkendall- Eilertsen (s6402)	0.7	5%	
13.95	15.34	Coos	Preacher-Bohannon (s6395)	5.8	41%	
15.73	20.14					
Total miles				11.0		
Route Total (miles)				14.00		

a/ Mileages are rounded to the nearest tenth of a mile; therefore, column may not sum correctly.

Tables 3.3.1-2a and 3.3.1-2b provide a summary of soil limitations that could be encountered by the comparison portion of the Blue Ridge Variation and the proposed route, respectively. Table 3.3-3 summarizes soil limitations associated with the aboveground facilities. These limitations are described further in subsections following the tables.

TABLE 3.3.1-2a

Acres and Soil Characteristics Crossed by the Pacific Connector Pipeline – Blue Ridge Variation

Sensitive Soil Groups and Estimated Crossing in Miles (acres) <i>a/</i>														
Milepost		Total Crossing Length (miles)	County	Erosion From		Steep Slopes <i>d/</i>	Large Stones <i>e/</i>	Restrictive Layer <i>f/</i>	Saline/Sodic <i>g/</i>	Soil Compaction <i>h/</i>	Reclamation Sensitivity <i>i/</i>	High Water Table <i>j/</i>	Hydric Soils <i>k/</i>	Prime farmland <i>l/</i>
From	To			Water <i>b/</i>	Wind <i>c/</i>									
11.29R	9.11	2.4	Coos	0.4	0.0	0.4	0.0	0.7	0	2.4	0.4	1.6	1.6	1.6
10.60	11.34			(7)		(7)		(11)		(45)		(34)	(34)	
9.11	10.60	9.4	Coos	5.5	0.0	5.5	0.0	7.7	0.0	9.4	5.5	0.6	0.6	2.3
11.34	19.22			(81)		(81)		(118)		(144)		(81)	(10)	(9)
19.22	21.77	2.6	Coos	1.8	0.0	1.8	0.0	0.0	0.0	2.6	1.8	0.0	0.0	0.0
	Project Total	14.4	All	7.7	0.0	7.7	0.0	8.4	0.0	14.4	7.7	2.2	2.2	3.9
			Percentage	53%	0%	53%	0%	58%	0%	100%	53%	15%	15%	27%

Rows and columns may not add correctly due to rounding. Acres rounded to nearest whole acre, miles to nearest tenth of a mile (values below 1 or 0.1, respectively, are shown as "<1"/ "<0.1").

a/ Numerical values shown are miles crossed by construction, including construction right-of-way and TEWAs. Acres affected shown in parenthesis. Soil data from NRCS 2004; SCS (1985, 1989, 1993); Forest Service 1976, 1977, and 1979. NRCS State Soil Geographic Database (STATSGO and SSURGO) soil classifications (NRCS 2012a).

b/ Soils with NRCS rating of high or severe.

c/ Soils with NRCS wind erodibility groups 1 and 2.

d/ Soils with slopes greater than 30 percent. Based on NRCS mapping unit slope range.

e/ Soils with greater than 25 percent cobbles and/or stones within pipeline trench depth.

f/ Soils with a restrictive soil layer (bedrock or cemented layer) within 60 inches of the soil surface.

g/ Soils with an electrical conductivity of 8 mmhos/cm or greater and/or a Sodium Adsorption Ratio (SAR) of 13 or greater.

h/ Soils with an NRCS rating of high or severe for the Haul Roads, Log Landings, and Soil Rutting category.

i/ Combined rating for soils with high or severe erosion potential, steep slopes, large stones, shallow soils, saline/sodic conditions, clayey soils (greater than 40 percent), and soil map units with dominant amounts of rock outcrop.

j/ Soils saturated within 60 inches of the surface in most years.

k/ Soils with at least one major named map unit included on the county hydric soil list.

l/ Soils with dominant map unit included on either the state or county list of farmland of importance.

TABLE 3.3.1-2b

Acreages and Soil Characteristics Crossed by the Pacific Connector Pipeline – Proposed Route

Sensitive Soil Groups and Estimated Crossing in Miles (acres) <i>a/</i>														
Milepost		Total Crossing Length (miles)	County	Erosion From		Steep Slopes <i>d/</i>	Large Stones <i>e/</i>	Restrictive Layer <i>f/</i>	Saline/Sodic <i>g/</i>	Soil Compaction <i>h/</i>	Reclamation Sensitivity <i>i/</i>	High Water Table <i>j/</i>	Hydric Soils <i>k/</i>	Prime farmland <i>l/</i>
From	To			Water <i>b/</i>	Wind <i>c/</i>									
11.29	11.72	0.43	Coos	0.0	0.0	0.0	0.0	0.0	0.0	0.4 (8)	0.0	0.4 (8)	0.4 (7)	0.4 (8)
11.72	13.95	2.61	Coos	0.7	0.2	0.8	0.0	2.1	0.0	2.4	0.5	0.5	0.2	0.5
15.34	15.73			(9)	(3)	(10)	(31)	(9)		(8)	(4)	(8)		
20.14	23.92	4.48	Coos	3.2	0.0	1.3	0.5	0.5	0.0	4.0	3.2	0.0	0.0	0.0
24.64	25.35			(44)		(17)	(7)	(7)		(54)	(44)			
23.92	24.64	0.72	Coos	0.1	0.0	0.1	0.0	0.0	0.0	0.7	0.1	0.1	0.1	0.1
22.40	30.31			(2)		(2)	(9)	(2)		(2)	(2)	(2)		
13.95	15.34	5.75	Coos	2.7	0.5	3.2	<0.1	4.5	0.0	5.3	2.7	0.6	0.6	0.9
15.73	20.14			(37)	(7)	(45)	(0.5)	(63)		(75)	(37)	(8)	(8)	(13)
Project Total		14.0		6.7 (92)	0.7 (10)	5.4 (74)	0.5 (7.5)	7.1 (101)	0.0	12.8 (182)	6.5 (92)	1.6 (26)	1.3 (21)	1.9 (31)
Percentage				48%	5%	39%	4%	51%	0%	91%	46%	11%	9%	14%

Rows and columns may not add correctly due to rounding. Acres rounded to nearest whole acre, miles to nearest tenth of a mile (values below 1 or 0.1, respectively, are shown as "<1"/ "<0.1").

a/ Numerical values shown are miles crossed by construction, including construction right-of-way and TEWAs. Acres affected shown in parenthesis. Soil data from NRCS 2004; SCS (1985, 1989, 1993); Forest Service 1976, 1977, and 1979. NRCS State Soil Geographic Database (STATSGO and SSURGO) soil classifications (NRCS 2012a).

b/ Soils with NRCS rating of high or severe.

c/ Soils with NRCS wind erodibility groups 1 and 2.

d/ Soils with slopes greater than 30 percent. Based on NRCS mapping unit slope range.

e/ Soils with greater than 25 percent cobbles and/or stones within pipeline trench depth.

f/ Soils with a restrictive soil layer (bedrock or cemented layer) within 60 inches of the soil surface.

g/ Soils with an electrical conductivity of 8 mmhos/cm or greater and/or a Sodium Adsorption Ratio (SAR) of 13 or greater.

h/ Soils with an NRCS rating of high or severe for the Haul Roads, Log Landings, and Soil Rutting category.

i/ Combined rating for soils with high or severe erosion potential, steep slopes, large stones, shallow soils, saline/sodic conditions, clayey soils (greater than 40 percent), and soil map units with dominant amounts of rock outcrop.

j/ Soils saturated within 60 inches of the surface in most years.

k/ Soils with at least one major named map unit included on the county hydric soil list.

l/ Soils with dominant map unit included on either the state or county list of farmland of importance.

TABLE 3.3.1-3

Summary of Soils Limitations – Pacific Connector Pipeline Aboveground Facilities

Proposed Facility	Area (ac) <u>a/</u>	Soil Mapping Unit (STATSGO)	High Erosion Potential <u>b/</u>	Steep Slopes <u>c/</u>	Large Stones <u>d/</u>	Restrictive Layer <u>e/</u>	Saline/Sodic <u>f/</u>	High Compaction Potential <u>g/</u>	Poor Revegetation Potential <u>h/</u>	High Water Table <u>i/</u>	Hydric Soil <u>j/</u>	Prime Farmland <u>k/</u>
MLV #2 (Boone Creek Road) (Blue Ridge Variation)	<1	S6399 (54F)	Water	Yes	No	Yes	No	No	Yes	No	No	No
MLV #2 (Stock Slough Rd # 54) (Proposed Route)	<1	S6399 (62)	No	No	No	No	No	No	No	Yes	Yes	Yes
Blue Ridge Communication Site (Both routes)	<1	S6396 (4D)	Water	No	No	No	No	Yes	Yes	No	No	No

Notes refer to complete project (232 miles).

Soil data from NRCS (2004); SCS (1985, 1989, 1993); Forest Service (1976, 1977, and 1979). NRCS State Soil Geographic Database (STATSGO and SSURGO) soil classifications (NRCS 2012a).

a/ Area of construction and operation disturbance. Construction disturbance is included within the pipeline construction right-of-way. Acreages rounded to nearest whole acre; values less than 1 are reported as <1.

b/ Soils with NRCS rating of high or severe.

c/ Soils with slopes greater than 30 percent.

d/ Soils with greater than 25 percent cobbles and/or stones within pipeline trench depth.

e/ Soils with a restrictive soil layer (bedrock or cemented layer) within 60 inches of the soil surface.

f/ Soils with an electrical conductivity of 8 mmhos/cm or greater and/or a SAR of 13 or greater.

g/ Soils with an NRCS rating of high or severe for the Haul Roads, Log Landings, and Soil Rutting category.

h/ Combined rating for soils with high or severe erosion potential, steep slopes, large stones, shallow soils, saline/sodic conditions, clayey soils (greater than 40 percent), and soil map units with dominant amounts of rock outcrop.

i/ Soils saturated within 60 inches of the surface in most years.

j/ Soils with at least one major named map unit included on the county hydric soil list.

k/ Soils with dominant map unit included on either the state or county list of farmland of importance.

3.3.1.1 Project-Specific Soil Limitations

Prime Farmland

The proposed route would cross 1.9 miles (31 acres) of prime farmland, about 14 percent of the route, while the Blue Ridge Variation would cross 3.9 miles (74 acres), about 27 percent of its length (tables 3.3.1-2a and 3.3.1-2b). Of the aboveground facilities for this section of the route, only the proposed route MLV #2 site would affect prime farmland (table 3.3.1-3).

Topsoil salvaging and segregation would occur in areas mapped as prime farmland or where there are active crops to minimize potential impacts to soil and agricultural productivity. Areas where topsoil salvaging and segregation would occur are shown by MP for each route in table 3.3.1.1-1.

TABLE 3.3.1.1-1 Areas Where Topsoil Would be Salvaged Along the Pacific Connector Pipeline – Comparison of Blue Ridge Variation and Proposed Route		
Area/Land Use	From (MP)	To (MP)
Blue Ridge Variation		
Wetland/Pasture	11.29R	12.39R
Wetland/Pasture	8.58	8.67
Wetland/Pasture	10.05	10.40
Wetland/Pasture	10.81	11.08
Wetland/Pasture	11.14	11.39
Residential	14.24	14.29
Wetland/Pasture	15.70	15.78
Proposed Route		
Wetland/Pasture	11.29R	12.11R
Wetland/Pasture	14.66R	15.34R
Wetland/Pasture	24.31R	24.34

Note: Due to minor adjustments, MP are approximate.

Hydric Soils

Construction activities have the potential to result in structural damage to wet soils and soils with poor drainage. The Blue Ridge Variation would cross 2.2 miles (41 acres) of hydric soils, about 15 percent of the route, and the proposed route would cross 1.3 miles (21 acres) of hydric soils, about 9 percent of the route (table 3.3.1.2-1). Of the aboveground facilities for this section of the route, only the proposed route MLV #2 site would affect hydric soils (table 3.3.1.2-1).

High Water Table

Soils that have a high water table have a saturated zone in the soil profile within 60 inches of the surface in most years. Soils that are wet or poorly drained can experience structural damage from construction equipment. The Blue Ridge Variation would cross 2.2 miles (41 acres) of high water table soils, about 15 percent of the route, and the proposed route would cross 1.6 miles (26 acres), about 11 percent of the route (table 3.3.1.2-1). Of the aboveground facilities for this section of the route, only the proposed route MLV #2 site would affect soils with a high water table (table 3.3.1.2-1).

Erosion Potential

The Blue Ridge Variation crosses soils with a high or severe water erosion rating for 7.7 miles (116 acres), or 53 percent of the route. No soils identified as sensitive to wind erosion are crossed by the Blue Ridge Variation (table 3.3.1.2-1). The proposed route would cross soils with a high or severe water erosion rating for 6.7 miles (92 acres), about 48 percent of the route. The proposed route would also cross a short distance, 0.7 mile (10 acres), of soils sensitive to wind erosion (table 3.3.1.2-1). The MLV #2 site for the Blue Ridge Variation and the Blue Ridge Communication Site (both routes) would be on soils with high water erosion potential (table 3.3.1.2-1).

Revegetation Potential

The Blue Ridge Variation would cross 7.7 miles (116 acres) of soils with poor revegetation potential, or reclamation sensitivity, which is about 53 percent of the route (table 3.3.1.2-1). The proposed route would cross 6.5 miles (92 acres) of soils with poor revegetation potential, about 46 percent of the route (table 3.3.1.2-1). The MLV #2 site for the Blue Ridge Variation and the Blue Ridge Communication Site (both routes) would be on soils with poor revegetation potential (table 3.3.1.2-1).

Compaction Potential

The Blue Ridge Variation crosses soils that are highly susceptible to compaction, for a total of 14.4 miles (227 acres) (table 3.3.1.2-1). The majority of the proposed route also crosses soils with high compaction potential, totaling 12.8 miles (182 acres), or 91 percent of the route (table 3.3.1.2-1). Of the aboveground facilities, only the potential Blue Ridge Communication Site (both routes) would affect soils with high compaction potential (table 3.3.1.2-1).

Restrictive Layer

Soils that are rated as having a restrictive layer are shallow soils that have a lithic, paralithic, or other restrictive soil layer within 60 inches of the soil surface. The Blue Ridge Variation would cross 8.4 miles (129 acres) of soils with a restrictive layer, or 58 percent of the route (table 3.3.1.2-1). The proposed route would cross 7.1 miles (101 acres) of soils with a restrictive layer, about 51 percent of the route (table 3.3.1.2-1). Of the aboveground facilities, only the MLV #2 site for the Blue Ridge Variation would be on soils with a restrictive layer (table 3.3.1.2-1).

Steep Slopes

The Blue Ridge Variation would cross 7.7 miles (116 acres) of soils with slopes greater than 30 percent, about 53 percent (table 3.3.1.2-1). The proposed route would cross 5.4 miles (74 acres) of soils with slopes greater than 30 percent, or 39 percent of the route (table 3.3.1.2-1). These crossing lengths are based on soil mapping units. However, when reviewing detailed contour data developed from a digital elevation model (DEM), both routes would cross fewer steep slope areas. Based on the DEM, the proposed route would cross 1.2 miles (8.6 percent) of slopes that are 30 percent or greater, and the Blue Ridge Variation would cross 2.1 miles (14.6 percent) of slopes 30 percent or greater. Of the aboveground facilities, only the MLV #2 site for the Blue Ridge Variation would be on steep slopes (table 3.3.1.2-1).

Large Stones

The proposed route would cross 0.5 mile (7.5 acres) of soils that have a content of cobbles or stones greater than 25 percent, and the Blue Ridge Variation would not cross any such soils (table 3.3.1.2-1). None of the aboveground facilities would affect soils with large stones (table 3.3.1.2-1).

Contaminated Soils

There are no identified cleanup sites along either the proposed route or the Blue Ridge Variation. The closest site to the proposed route is Site 2184 – Woodward Creek Oil Release, which is approximately one mile east of MP 21.9. The closest site to the Blue Ridge Variation is Site 746 – JGS Precision Machine, which is approximately 0.75 mile east of MP 15.4. No other sites are within one mile of the right-of-way of either route.

3.3.1.2 Soil Limitations on BLM Lands

Table 3.3.1.2-1 presents the acres of soil conditions along the Blue Ridge Variation and the proposed route, by type of soil limitation. As the proposed route crosses more BLM lands, acres of soils with limitations are also greater than the Blue Ridge Variation on BLM lands.

Watershed	Total ROW Acres of BLM lands <i>a/</i>	Areas with High Erosion Potential <i>b/</i>	Slopes >30 percent <i>c/</i>	High Cobble and Stone Content <i>d/</i>	High Compaction Potential <i>e/</i>	Low Revegetation Potential <i>f/</i>	Areas with Shallow Soils 12-20 inches / <12 inches
Blue Ridge Variation							
Coos Bay Frontal	3	2	2	0	3	2	0
Coquille River	1	1	1	0	1	1	0
North Fork Coquille River	15	10	10	0	15	10	0
Total	19	13	13	0	19	13	0
Proposed Route							
Coos Bay Frontal	41	21	23	0	41	21	0
South Fork Coos River	17	13	10	0.5	17	13	0.5
North Fork Coquille River	44	33	9	3	41	33	0
Total	102	67	42	3.5	99	67	0.5

Rows and columns may not add correctly due to rounding. Acreages are rounded to nearest whole acre.

a/ Figures shown are acres affected by construction, including construction right-of-way and TEWAs. Soil data from NRCS (2004, 2006a, 2006b); SCS (1985, 1989, 1993); and Forest Service (1976, 1977, 1979).

b/ Soils with NRCS rating of high or severe.

c/ Soils with slopes greater than 30% based on NRCS soil mapping unit slope ranges.

d/ Soils with greater than 25 percent cobbles and/or stones within pipeline trench depth.

e/ Soils with an NRCS rating of high or severe for the *Haul Roads, Log Landings, and Soil Rutting* category, Or NF SRI compaction potential ratings.

f/ Combined rating for soils with high or severe erosion potential, steep slopes, large stones, shallow soils, saline/sodic conditions, clayey soils (greater than 40 percent), and soil map units with dominant amounts of rock outcrop.

g/ Soils saturated within 60 inches of the surface in most years.

3.4 WATER RESOURCES AND WETLANDS

3.4.1 Groundwater

There would be no groundwater wells within 150 feet of the proposed route or the Blue Ridge Variation. The proposed route would cross one mile of shallow groundwater, and the Blue Ridge Variation would cross 2.2 miles of shallow groundwater. Overall, both routes have a low potential for impacting groundwater resources. For a general discussion of impacts from blasting, see section 4.4.1.2 of the DEIS. Potential impacts will be avoided or minimized by the use of standard construction techniques and adherence to FERC’s Wetland and Waterbody Procedures and BLM BMPs described in the RMP. As indicated above, less than a half mile of the proposed route may require blasting, and none on the Blue Ridge Variation.

3.4.2 Surface Water

The proposed route and the Blue Ridge Variation would both be within the Coos and Coquille subbasins, and both cross the Coos Bay-Frontal Pacific Ocean and North Fork Coquille River fifth-field watersheds. In addition, the Blue Ridge Variation would cross the Coquille (Middle Main) River watershed, and the proposed route would cross (near the watershed divide) the South Fork Coos River watershed (table 3.4.2-1).

For an in-depth discussion of surface water issues associated with the Pacific Connector pipeline, see section 4.4.2.2 of the DEIS. The following subsections provide a summary of key metrics between the proposed route and the Blue Ridge Variation.

Subbasin	Fifth-Field Watershed		
	Name	HUC	Miles Crossed <u>a/</u>
Blue Ridge Variation			
Coos	Coos Bay- Frontal Pacific Ocean	1710030403	10.4
Coquille	Coquille (Middle Main) River	1710030505	2.0
	North Fork Coquille River	1710030504	1.9
Total			14.4
Proposed Route			
Coos	Coos Bay- Frontal Pacific Ocean	1710030403	6.7
	South Fork Coos River	1710030401	2.0
Coquille	North Fork Coquille River	1710030504	5.2
Total			14.0

a/ Mileages are rounded to nearest tenth of a mile.

3.4.2.1 Water Quality Limited Waters

Table 3.4.2.1-1 presents the streams listed as water quality limited that are crossed by the Blue Ridge Variation and the proposed route. The comparison portion of the Blue Ridge Variation would cross five waterbodies where water quality is limited and a TMDL is required, including one major (greater than 100-foot wide) crossing at Catching Slough. The proposed route would cross one waterbody listed with limited water quality.

TABLE 3.4.2.1-1				
ODEQ Water Quality Limited Streams Crossed by the Pacific Connector Pipeline, Blue Ridge Variation Compared to Proposed Route				
Waterbody	Crossing Method	FERC		Category 4 or 5 Listing
		Classification a/	Stream Type	
Blue Ridge Variation				
Coast Range Ecoregion, Coos Subbasin Coos Bay-Frontal Pacific Ocean Fifth-field Watershed, Coos County				
Stock Slough	Dry Open-Cut	Intermediate	Perennial	Fecal Coliform/Year-Round - 5
Catching Slough	Conventional Bore	Major	Perennial	Fecal Coliform/Year-Round - 5
Ross Slough	Dry Open-Cut	Minor	Perennial	Temperature/Year-Round - 5
Catching Creek	Dry Open-Cut	Minor	Perennial	Fecal Coliform/Year-Round - 5
Coast Range Ecoregion, Coquille Subbasin, Coquille River Fifth-field Watershed, Coos County				
Cunningham Creek	Dry Open-Cut	Intermediate	Perennial	Fecal Coliform/Year Round - 5; Dissolved Oxygen/Year Round - 5; Habitat Modification - 4C; Flow Modification - 4C
Proposed Route				
Coast Range Ecoregion, Coos Subbasin Coos Bay-Frontal Pacific Ocean Fifth-field Watershed, Coos County				
Stock Slough	Dry Open-Cut	Intermediate	Perennial	Fecal Coliform/Year-Round - 5
a/ Minor waterbody includes all waterbodies less than or equal to 10 feet wide at the water's edge at the time of construction; intermediate waterbody includes all waterbodies greater than 10 feet wide but less than or equal to 100 feet wide at the water's edge at the time of construction; and major waterbody includes all waterbodies greater than 100 feet wide at the water's edge at the time of construction.				

3.4.2.2 Drinking Water Source Areas

Both the proposed route and the Blue Ridge Variation would cross one drinking water source area for the City of Myrtle Point (table 3.4.2.2-1). There are no known sources of potable water on BLM lands associated with either alignment.

TABLE 3.4.2.2-1					
Surface Water Public DWSAs Crossed by the Pacific Connector Pipeline, Blue Ridge Variation Compared to Proposed Route					
Starting Milepost	Ending Milepost	County	Drinking Water Source Area	Public Drinking Water System ID	Source Water
Blue Ridge Variation					
19.86	21.8	Coos	City of Myrtle Point	4100551	N. F. Coquille River
Proposed Route					
20.10	25.35	Coos	City of Myrtle Point	4100551	N. F. Coquille River

3.4.2.3 Points of Diversion

Table 3.4.2.3-1 describes the surface water points of diversion near the Blue Ridge Variation and the proposed route. Both the proposed route and the Blue Ridge Variation would be within 150 feet of two surface water points of diversion. Both of the diversions near the Blue Ridge Variation are for domestic water usage, and one of them would be within the construction right-of-way. The points of diversion near the proposed route are both used for irrigation, and at least 75 feet from construction activities.

TABLE 3.4.2.3-1									
Points of Diversion within 150 feet of the Pacific Connector Pipeline Construction Work Area, Blue Ridge Variation Compared to Proposed Route									
Water Right	Water Right Owner	Nearest MP	Permit/Certificate Number	Type of Diversion	Diversion Source	Usage Description	Distance to Construction Work Area (feet)	Type of Construction Work Area Containing Points of Diversion	Number of Water Rights
Blue Ridge Variation									
Surface Water	Private	12.07	53679	Stream	Unnamed Stream	Domestic (including Lawn and Garden)	79.83	n/a	1
		13.80	36042	Spring	A spring	Domestic	0.00	Construction Right-of-Way	1
Surface Water Total									2
Grand Total									2
Proposed Route									
Surface Water	Private	15.14	33911	Stream	Stock Slough	Irrigation	75.25	n/a	1
		15.32	33911	Stream	Catching Slough Trib.	Irrigation	99.42	n/a	1
Surface Water Total									2
Grand Total									2

3.4.2.4 Floodplains

Table 3.4.2.4-1 lists the floodplain areas crossed by the pipeline routes by MP. The Blue Ridge Variation would cross 2.3 miles of floodplain, while the proposed route would cross 1 mile of floodplain zone. These areas are inundated by 100-year flooding.

TABLE 3.4.2.4-1					
Floodplain Areas Crossed by the Pacific Connector Pipeline, Blue Ridge Variation Compared to Proposed Route					
Starting Milepost	Ending Milepost	Fifth-Field Watershed	Zone a/	Miles of Pipeline b/	
Blue Ridge Variation					
11.29 R	8.8	Coos Bay-Frontal Pacific Ocean	A	1.6	
10.1	10.4	Coos Bay-Frontal Pacific Ocean	A	0.3	
11	11.4	Coos Bay-Frontal Pacific Ocean	A	0.4	
11.8	11.9	Coos Bay-Frontal Pacific Ocean	A	<0.1	
15.7	15.7	Coos Bay-Frontal Pacific Ocean	A	<0.1	
Total				2.3	
Proposed Route					
11.3 R	11.6 R	Coos Bay-Frontal Pacific Ocean	A	0.3	
11.7 R	12.06	Coos Bay-Frontal Pacific Ocean	A	0.3	
15.0	15.4	Coos Bay-Frontal Pacific Ocean	A	0.4	
24.4	24.4	North Fork Coquille River	A	<0.1	
Total				1.0	

a/ Zone A: An area inundated by 100-year flooding, for which no Base Flood Elevations have been determined.
b/ Mileages are rounded to the nearest tenth of a mile; values less than 0.1 mile are noted as <0.1. Column may not sum correctly due to rounding.

3.4.2.5 Surface Water Body Crossings

Temporary Bridges at Stream Crossings

No temporary bridges would be used at stream crossings for either route.

Minor or Intermediate Waterbody Crossings

The proposed route would cross one waterbody classified as intermediate and 7 minor waterbodies. The Blue Ridge Variation would include one major waterbody crossing, 9 intermediate crossings, and 56 minor waterbody crossings. See section 4.4.2.2 of the DEIS for a description of waterbody crossing methods.

Neither route would have crossings identified as a Level 2 scour hazard.

3.4.2.6 General Pipeline Construction Impacts on Waterbodies and Proposed Mitigation Measures

For the complete discussion of construction impacts on waterbodies and proposed mitigation measures, see section 4.4.2.2 of the DEIS. The discussion in section 4.4.2.2 of the DEIS is applicable to waterbodies crossed by the proposed route and the Blue Ridge Variation.

3.4.3 Wetlands

Table 3.4.3-1 summarizes the acres of impact that would occur to the general wetland types found along the Blue Ridge Variation and the proposed route. In total, the Blue Ridge Variation would disturb (clearing and grading) 34.5 acres of wetlands, and the proposed route would disturb 13 acres. No wetlands affected by the proposed route would require long-term restoration (grading and revegetation), and 0.3 acre would need long-term restoration for the Blue Ridge Variation.

Wetland Type	Total Construction Disturbance in Wetland (acres)	Wetland Vegetation Affected Requiring Long-Term Restoration (acres)
Blue Ridge Variation		
Palustrine unconsolidated bottom and aquatic beds	0.0	0.0
Palustrine emergent wetlands	32.3	0.0
Palustrine forested wetlands	0.9	0.3
Palustrine scrub-shrub wetlands	0.0	0.0
Riverine wetlands	1.3	0.0
Estuarine	0.0	0.0
Lake	0.0	0.0
Total Wetland Impact	34.5	0.3
Proposed Route		
Palustrine unconsolidated bottom and aquatic beds	0.0	0.0
Palustrine emergent wetlands	12.9	<0.1 ^{a/}
Palustrine forested wetlands	0.0	0.0
Palustrine scrub-shrub wetlands	0.0	0.0
Riverine wetlands	0.1	0.0
Estuarine	0.0	0.0
Lake	0.0	0.0
Total Wetland Impact	13.0	0.0

Note that values may not sum correctly due to rounding. Acreages for wetlands are rounded to the nearest tenth of an acre.
^{a/} 0.06 acre of palustrine emergent wetland would be filled to install MLV#2 on the proposed route.

3.5 UPLAND VEGETATION AND TIMBER

3.5.1 Upland Vegetation

Tables 3.5.1-1a&b, 3.5.1-2a&b, 3.5.1-3a&b, and 3.5.1-4a&b detail the impacts on vegetation between the Blue Ridge Variation and the proposed route. Of the total 14.4 miles for the Blue Ridge Variation, 13.6 miles (94 percent) are considered vegetated, primarily forest land (table 3.5.1-1a). The proposed route is vegetated for 13 miles (93 percent), also primarily forest land (table 3.5.1-1b).

Construction of the Blue Ridge Variation would impact approximately 218 acres of vegetation, while the proposed route would impact 227 acres (tables 3.5.1-2a and 3.5.1-2b). Operation of the project would impact 64 acres along the Blue Ridge Variation, and 68 acres along the proposed route (tables 3.5.1-3a and 3.5.1-3b).

Approximately 17 acres of interior forests would be directly affected, and another 201 acres would be indirectly affected (i.e., would be within 100 meters of newly created edges) by construction of the Blue Ridge Variation (table 3.5.1-4a). For the proposed route, 111 acres of interior forests would be directly affected, and 787 acres would be indirectly affected by construction (table 3.5.1-4b).

TABLE 3.5.1-1a

Vegetation Cover Types Crossed by the Pacific Connector Pipeline – Blue Ridge Variation

General Vegetation Type	Mapped Vegetation Category	Late Successional or Old-Growth Forest Crossed <u>a</u> / (miles)	Percent of Total Late Successional Forest <u>a</u> /	Mid-Seral Forest Crossed <u>b</u> / (miles)	Percent of Mid-Seral Forest <u>b</u> /	Clearcut/ Regenerating Forest Crossed <u>c</u> / (miles)	Percent of Clearcut/ Regenerating Forest <u>c</u> /	Total Miles	Percent of Total Vegetation Type
Forest-Woodland	Douglas-fir-W. Hemlock-W. Red-Cedar Forest	-	-	1.5	42.3	0.3	4.0	1.8	12.7
	Douglas-Fir-Mixed Deciduous Forest	-	-	-	-	-	-	-	-
	Alder-Cottonwood	-	-	-	-	-	-	-	-
	Mixed Conifer/Mixed Deciduous Forest	0.4	100.0	2.1	57.7	6.9	96.0	9.4	65.4
	Shasta Red Fir – Mountain Hemlock Forest	-	-	-	-	-	-	-	-
	Douglas-fir-White Fir/Tanoak-Madrone Mixed Forest	-	-	-	-	-	-	-	-
	Douglas-fir Dominant-Mixed Conifer Forest	-	-	-	-	-	-	-	-
	Ponderosa Pine/White Oak Forest and Woodland	-	-	-	-	-	-	-	-
	Ponderosa Pine Forest and Woodland	-	-	-	-	-	-	-	-
	Oregon White Oak Forest	-	-	-	-	-	-	-	-
	Western Juniper Woodland	-	-	-	-	-	-	-	-
Ponderosa Pine/Western Juniper Woodland	-	-	-	-	-	-	-	-	
Subtotal		0.4	0.0	3.7	0.0	7.2	0.0	11.3	78.1
Grasslands-Shrubland	Sagebrush Steppe	-	-	-	-	-	-	-	-
	Shrublands	-	-	-	-	-	-	-	-
	Grasslands (West of Cascades)	-	-	-	-	-	-	-	-
	Grasslands (East of Cascades)/Forest-Grassland Mosaic	-	-	-	-	-	-	-	-
Subtotal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetland / Riparian	Palustrine Forest	-	-	-	-	0.1	-	0.1	0.6
	Palustrine Shrub	-	-	-	-	-	-	-	-
	Palustrine Emergent	-	-	-	-	-	-	1.8	12.4
Subtotal		0.0	0.0	0.0	0.0	0.1	0.0	1.9	13.0
Agriculture	Agriculture	-	-	-	-	-	-	0.4	2.6
Subtotal		0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.6
Developed / Barren	Urban	-	-	-	-	-	-	0.1	0.5
	Industrial	-	-	-	-	-	-	-	-
	Beaches	-	-	-	-	-	-	-	-
	Roads	-	-	-	-	-	-	0.7	4.8
Subtotal		0.0	0.0	0.0	0.0	0.0	0.0	0.8	5.3
Open Water	Rivers and Streams	-	-	-	-	-	-	0.1	1.0
	Ditches and Canals	-	-	-	-	-	-	<1	0.1
	Palustrine Unconsolidated Bottom	-	-	-	-	-	-	-	-
	Bays and Estuaries	-	-	-	-	-	-	-	-

TABLE 3.5.1-1a

Vegetation Cover Types Crossed by the Pacific Connector Pipeline – Blue Ridge Variation

General Vegetation Type	Mapped Vegetation Category	Late Successional or Old-Growth Forest Crossed <u>a/</u> (miles)	Percent of Total Late Successional or Old-Growth Forest <u>a/</u>	Mid-Seral Forest Crossed <u>b/</u> (miles)	Percent of Mid-Seral Forest <u>b/</u>	Clearcut/ Regenerating Forest Crossed <u>c/</u> (miles)	Percent of Clearcut/ Regenerating Forest <u>c/</u>	Total Miles	Percent of Total Vegetation Type
Subtotal		0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0
Project Total		0.4	0.0	3.7	0.0	7.2	0.0	14.4	100.0
Percent of Project Total		3.2		25.4		50.2			

a/ Late Successional (80 to 175 years) and Old-Growth Forest (175 + years).
b/ Mid-Seral Forest (40 to 80 years).
c/ Clearcut (0 to 5 years) and Regenerating Forest (5 to 40 years).
 General: Mileages may not sum correctly due to rounding. Mileages are rounded to nearest tenth of a mile; values less than 0.1 are shown as “<0.1”.

TABLE 3.5.1-1b

Vegetation Cover Types Crossed by the Pacific Connector Pipeline – Proposed Route

General Vegetation Type	Mapped Vegetation Category	Late Successional or Old-Growth Forest Crossed <u>a/</u> (miles)	Percent of Total Late Successional or Old-Growth Forest <u>a/</u>	Mid-Seral Forest Crossed <u>b/</u> (miles)	Percent of Mid-Seral Forest <u>b/</u>	Clearcut/ Regenerating Forest Crossed <u>c/</u> (miles)	Percent of Clearcut/ Regenerating Forest <u>c/</u>	Total Miles	Percent of Total Vegetation Type
Forest-Woodland	Douglas-fir-W. Hemlock-W. Red-Cedar Forest	-	-	0.8	26.2	0.2	3.5	1.0	7.1
	Douglas-Fir-Mixed Deciduous Forest	-	-	-	-	-	-	-	-
	Alder-Cottonwood	-	-	-	-	-	-	-	-
	Mixed Conifer/Mixed Deciduous Forest	2.9	100.0	2.2	73.9	5.3	96.5	10.5	74.8
	Shasta Red Fir – Mountain Hemlock Forest	-	-	-	-	-	-	-	-
	Douglas-fir-White Fir/Tanoak-Madrone Mixed Forest	-	-	-	-	-	-	-	-
	Douglas-fir Dominant-Mixed Conifer Forest	-	-	-	-	-	-	-	-
	Ponderosa Pine/White Oak Forest and Woodland	-	-	-	-	-	-	-	-
	Ponderosa Pine Forest and Woodland	-	-	-	-	-	-	-	-
	Oregon White Oak Forest	-	-	-	-	-	-	-	-
	Western Juniper Woodland	-	-	-	-	-	-	-	-
Ponderosa Pine/Western Juniper Woodland	-	-	-	-	-	-	-	-	
Subtotal		2.9	0.0	3.0	0.0	5.5	0.0	11.5	81.8
Grasslands-Shrubland	Sagebrush Steppe	-	-	-	-	-	-	-	-
	Shrublands	-	-	-	-	-	-	-	-
	Grasslands (West of Cascades)	-	-	-	-	-	-	-	-
	Grasslands (East of Cascades)/Forest-Grassland Mosaic	-	-	-	-	-	-	-	-
Subtotal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE 3.5.1-1b

Vegetation Cover Types Crossed by the Pacific Connector Pipeline – Proposed Route

General Vegetation Type	Mapped Vegetation Category	Late Successional or Old-Growth Forest Crossed <u>a/</u> (miles)	Percent of Total Late Successional or Old-Growth Forest <u>a/</u>	Mid-Seral Forest Crossed <u>b/</u> (miles)	Percent of Mid-Seral Forest <u>b/</u>	Clearcut/ Regenerating Forest Crossed <u>c/</u> (miles)	Percent of Clearcut/ Regenerating Forest <u>c/</u>	Total Miles	Percent of Total Vegetation Type
Wetland / Riparian	Palustrine Forest	-	-	-	-	-	-	-	-
	Palustrine Shrub	-	-	-	-	-	-	-	-
	Palustrine Emergent	-	-	-	-	-	-	0.8	6.0
Subtotal		0.0	0.0	0.0	0.0	0.0	0.0	0.8	6.0
Agriculture	Agriculture	-	-	-	-	-	-	0.7	4.9
Subtotal		0.0	0.0	0.0	0.0	0.0	0.0	0.7	4.9
Developed / Barren	Urban	-	-	-	-	-	-	-	-
	Industrial	-	-	-	-	-	-	-	-
	Beaches	-	-	-	-	-	-	-	-
	Roads	-	-	-	-	-	-	1.0	7.4
Subtotal		0.0	0.0	0.0	0.0	0.0	0.0	1.0	7.4
Open Water	Rivers and Streams	-	-	-	-	-	-	<1	0.1
	Ditches and Canals	-	-	-	-	-	-	-	-
	Palustrine Unconsolidated Bottom	-	-	-	-	-	-	-	-
	Bays and Estuaries	-	-	-	-	-	-	-	-
Subtotal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Project Total		2.9	0.0	3.0	0.0	5.5	0.0	14.0	100.0
Percent of Project Total		20.7		21.6		39.5			

a/ Late Successional (80 to 175 years) and Old-Growth Forest (175 + years).

b/ Mid-Seral Forest (40 to 80 years).

c/ Clearcut (0 to 5 years) and Regenerating Forest (5 to 40 years).

General: Mileages may not sum correctly due to rounding. Mileages are rounded to nearest tenth of a mile; values less than 0.1 are shown as "<0.1".

TABLE 3.5.1-2a

Summary of Construction-Related Disturbance to Vegetation by the Pacific Connector Pipeline(acres) – Blue Ridge Variation

General Vegetation Type	Mapped Vegetation Category Type	Forest Stand by Age a/,b/,c/	Pipeline Facilities								Aboveground Facilities	Subtotals							
			Construction Right-of-Way	Hydrostatic Discharge Sites	Temporary Extra Work Areas	Uncleared Storage Areas	Rock Source/ Disposal	Access Roads (TARs/PARs/ Improvements)	Pipe Yards	Subtotal Late Successional – Old Growth		Subtotal Mid-Seral	Subtotal Clearcut or Regenerating	Subtotal by Habitat Type	Percent of Vegetation Type	Percent of Total Vegetation Type			
Forest-Woodland	Douglas-fir-W. Hemlock-W. Redcedar Forest	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		M-S	17	-	3	-	-	-	-	-	-	-	-	20	6	26	15.0	11.4	
		C-R	3	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Douglas-fir – Mixed Deciduous Forest	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		C-R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Alder-Cottonwood	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Mixed Conifer/Mixed Deciduous Forest	L-O	5	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
		M-S	25	-	4	1	-	-	-	-	-	-	-	7	31	110	148	85.0	64.7
		C-R	80	-	30	<1	-	-	-	-	-	<1	-	-	-	-	-	-	
	Shasta Red Fir – Mountain Hemlock Forest	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Douglas-fir-White Fir/Tanoak-Madrone Mixed Forest	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Douglas-fir Dominant-Mixed Conifer Forest	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Ponderosa Pine/White Oak Forest and Woodland	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Ponderosa Pine Forest and Woodland	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
M-S		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Oregon White Oak Forest	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		C-R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

TABLE 3.5.1-2a

Summary of Construction-Related Disturbance to Vegetation by the Pacific Connector Pipeline(acres) – Blue Ridge Variation

General Vegetation Type	Mapped Vegetation Category Type	Forest Stand by Age a/,b/,c/	Pipeline Facilities								Subtotals						
			Construction Right-of-Way	Hydrostatic Discharge Sites	Temporary Extra Work Areas	Uncleared Storage Areas	Rock Source/ Disposal	Access Roads (TARs/PARs/ Improvements)	Pipe Yards	Aboveground Facilities	Subtotal Late Successional – Old Growth	Subtotal Mid-Seral	Subtotal Clearcut or Regenerating	Subtotal by Habitat Type	Percent of Vegetation Type	Percent of Total Vegetation Type	
Western Juniper Woodland		L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		C-R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ponderosa Pine/Western Juniper Woodland		L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		C-R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Forest-Woodland by Age Class		L-O	5	-	1	-	-	-	-	-	-	-	-	-	-	-	3.9
		M-S	43	-	8	1	-	-	-	-	-	7	51	116	174	-	29.4
		C-R	84	-	33	<1	-	-	-	-	<1	-	-	-	-	-	66.7
Subtotal Forest-Woodland			131	-	-	1	-	-	-	<1	-	7	51	116	174	-	-
Percent of All Forest-Woodland			75.5	-	23.9	0.6	-	-	-	0.0	-	3.9	29.4	66.7	100.0	-	-
Grasslands/ Shrubland	Sagebrush Steppe	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Shrublands	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Grasslands (West of Cascades)	n/a	-	-	<1	-	-	-	-	-	-	-	-	-	<1	0.3	0.1
	Grasslands (East of Cascades)	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Grasslands-Shrubland			-	-	<1	-	-	-	-	-	-	-	-	-	<1	0.3	0.1
Wetland / Riparian	Palustrine Forest	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		M-S	-	-	-	-	-	-	-	-	-	-	-	<1	<1	1.7	0.4
	C-R	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Palustrine Shrub	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	n/a	20	-	12	-	-	-	-	-	-	-	-	-	-	33	59.8	14.3
Subtotal Wetland / Riparian			21	-	12	-	-	-	-	-	-	-	-	<1	34	61.5	14.7
Agriculture	Agriculture	n/a	5	-	6	<1	-	-	-	-	-	-	-	-	10	19.0	4.5
Subtotal Agriculture			5	-	6	<1	-	-	-	-	-	-	-	-	10	19.0	4.5
Developed / Barren	Urban	n/a	<1	-	<1	-	-	-	-	-	-	-	-	-	1	2.0	0.5
	Industrial	n/a	-	-	<1	-	-	-	-	-	-	-	-	-	<1	0.0	0.0
	Beaches	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Roads	n/a	5	-	2	<1	-	-	-	-	-	-	-	-	8	13.8	3.3
Subtotal Developed / Barren			6	-	2	<1	-	-	-	-	-	-	-	-	9	15.8	3.8

TABLE 3.5.1-2a

Summary of Construction-Related Disturbance to Vegetation by the Pacific Connector Pipeline(acres) – Blue Ridge Variation

General Vegetation Type	Mapped Vegetation Category Type	Forest Stand by Age a/,b/,c/	Pipeline Facilities								Subtotals					
			Construction Right-of-Way	Hydrostatic Discharge Sites	Temporary Extra Work Areas	Uncleared Storage Areas	Rock Source/ Disposal	Access Roads (TARs/PARs/ Improvements)	Pipe Yards	Aboveground Facilities	Subtotal Late Successional – Old Growth	Subtotal Mid-Seral	Subtotal Clearcut or Regenerating	Subtotal by Habitat Type	Percent of Vegetation Type	Percent of Total Vegetation Type
Open Water	Rivers and Streams	n/a	2	-	<1	-	-	-	-	-	-	-	-	2	3.1	0.7
	Ditches and Canals	n/a	<1	-	<1	-	-	-	-	-	-	-	-	<1	0.3	0.1
	Palustrine Unconsolidated Bottom	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Bays and Estuaries	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Open Water			2	-	<1	-	-	-	-	-	-	-	-	2	3.3	0.8
Subtotal Non-Forest			34	-	20	<1	-	-	-	-	-	<1	54	100.0	23.8	
Percent of All Non-Forest			62.4	-	37.5	0.0	-	-	-	-	-	1.7	100.0	-	43.7	
Project Total		n/a	165	-	62	1	-	-	-	<1	7	51	117	229	-	100.0
Percent of Pipeline Facilities		n/a	72.4	-	27.2	0.5	-	-	-	0.0	3.0	22.4	51.2	100.0	-	-

General: Rows and columns may not sum correctly due to rounding. Acres rounded to nearest whole acre (values below 1 are shown as "<1").
a/ The "Late Successional and Old-Growth" category (L-O) describes those forest areas with a majority of trees over 80 years of age. Forests with stands greater than 175 years are considered to have old-growth characteristics.
b/ The "Mid-Seral" category (M-S) describes those forest areas with a majority of trees over 40 years of age but less than 80 years of age.
c/ The "Clearcut or Regenerating" category (C-R) describes those forest areas that are either clear-cut (tree age 0-5 years) or regenerating (tree age 5 to 40 years). Forest areas in this category are divided into forest vegetation types based on their potential to become those types of forests.
Note: Aboveground facilities not included in overall total (occur within construction right-of-way impacts)

TABLE 3.5.1-2b

Summary of Construction-Related Disturbance to Vegetation by the Pacific Connector Pipeline(acres) – Proposed Route

General Vegetation Type	Mapped Vegetation Category Type	Forest Stand by Age a/,b/,c/	Pipeline Facilities								Aboveground Facilities	Subtotals						
			Construction Right-of-Way	Hydrostatic Discharge Sites	Temporary Extra Work Areas	Uncleared Storage Areas	Rock Source/ Disposal	Access Roads (TARs/PARs/ Improvements)	Pipe Yards	Subtotal Late Successional – Old Growth		Subtotal Mid-Seral	Subtotal Clearcut or Regenerating	Subtotal by Habitat Type	Percent of Vegetation Type	Percent of Total Vegetation Type		
Forest-Woodland	Douglas-fir-W. Hemlock-W. Redcedar Forest	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		M-S	9	-	1	1	-	-	-	-	-	-	11	3	14	6.9	5.8	
		C-R	2	-	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-
	Douglas-fir – Mixed Deciduous Forest	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		C-R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Alder-Cottonwood	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mixed Conifer/Mixed Deciduous Forest	L-O	34	-	7	11	-	-	-	-	-	-	-	-	-	-	-	-
		M-S	26	-	6	9	-	-	-	-	-	-	51	41	97	189	93.1	77.6
		C-R	61	-	13	23	-	-	-	-	-	-	-	-	-	-	-	-
	Shasta Red Fir – Mountain Hemlock Forest	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Douglas-fir-White Fir/Tanoak-Madrone Mixed Forest	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Douglas-fir Dominant-Mixed Conifer Forest	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ponderosa Pine/White Oak Forest and Woodland	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ponderosa Pine Forest and Woodland	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M-S		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Oregon White Oak Forest	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		C-R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

TABLE 3.5.1-2b

Summary of Construction-Related Disturbance to Vegetation by the Pacific Connector Pipeline(acres) – Proposed Route

General Vegetation Type	Mapped Vegetation Category Type	Forest Stand by Age a/,b/,c/	Pipeline Facilities								Aboveground Facilities	Subtotals						
			Construction Right-of-Way	Hydrostatic Discharge Sites	Temporary Extra Work Areas	Uncleared Storage Areas	Rock Source/ Disposal	Access Roads (TARs/PARs/ Improvements)	Pipe Yards	Subtotal Late Successional – Old Growth		Subtotal Mid-Seral	Subtotal Clearcut or Regenerating	Subtotal by Habitat Type	Percent of Vegetation Type	Percent of Total Vegetation Type		
Western Juniper Woodland		L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		C-R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ponderosa Pine/Western Juniper Woodland		L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		C-R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Subtotal Forest-Woodland by Age Class		L-O	34	-	7	11	-	-	-	-	-	-	51	52	100	203	25.1	83.4
		M-S	35	-	7	10	-	-	-	-	-	-	-	-	-	-	25.4	-
		C-R	63	-	14	23	-	-	-	-	-	-	-	-	-	-	49.4	-
Subtotal Forest-Woodland			132	-	28	44	-	-	-	-	-	-	51	52	100	203	-	-
Percent of All Forest-Woodland			64.7	-	13.7	21.6	-	-	-	-	-	-	25.1	25.4	49.4	100.0	-	-
Grasslands-Shrubland	Sagebrush Steppe	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Shrublands	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Grasslands (West of Cascades)	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Grasslands (East of Cascades)	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Grasslands-Shrubland			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetland / Riparian	Palustrine Forest	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		C-R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Palustrine Shrub	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Palustrine Emergent	n/a	10	-	3	<1	-	-	-	-	-	<1	-	-	-	13	31.7	5.3	
Subtotal Wetland / Riparian			10	-	3	<1	-	-	-	-	<1	-	-	-	13	31.7	5.3	-
Agriculture	Agriculture	n/a	8	-	3	<1	-	-	-	-	-	-	-	-	11	27.0	4.5	
Subtotal Agriculture			8	-	3	<1	-	-	-	-	-	-	-	-	11	27.0	4.5	-
Developed / Barren	Urban	n/a	-	-	-	-	-	-	-	-	-	-	-	-	<1	0.1	0.0	
	Industrial	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Beaches	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Roads	n/a	12	-	3	1	-	-	-	-	-	-	-	-	17	40.8	6.8	
Subtotal Developed / Barren			12	-	3	1	-	-	-	-	-	-	-	-	17	40.8	6.8	

TABLE 3.5.1-2b

Summary of Construction-Related Disturbance to Vegetation by the Pacific Connector Pipeline(acres) – Proposed Route

General Vegetation Type	Mapped Vegetation Category Type	Forest Stand by Age a/, b/, c/	Pipeline Facilities								Subtotals						
			Construction Right-of-Way	Hydrostatic Discharge Sites	Temporary Extra Work Areas	Uncleared Storage Areas	Rock Source/ Disposal	Access Roads (TARs/PARs/ Improvements)	Pipe Yards	Aboveground Facilities	Subtotal Late Successional – Old Growth	Subtotal Mid-Seral	Subtotal Clearcut or Regenerating	Subtotal by Habitat Type	Percent of Vegetation Type	Percent of Total Vegetation Type	
Open Water	Rivers and Streams	n/a	<1	-	<1	-	-	-	-	-	-	-	-	-	<1	0.4	0.1
	Ditches and Canals	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Palustrine Unconsolidated Bottom	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Bays and Estuaries	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Open Water			<1	-	<1	-	-	-	-	-	-	-	-	<1	0.4	0.1	
Subtotal Non-Forest			30	-	9	1	-	-	-	-	<1	-	-	-	41	100.0	16.6
Percent of All Non-Forest			73.7	-	22.8	3.5	-	-	-	-	0.0	-	-	-	100.0	-	-
Project Total		n/a	161	-	37	45	-	-	-	-	<1	51	52	100	244	-	-
Percent of Pipeline Facilities		n/a	66.2	-	15.2	18.6	-	-	-	-	0.0	20.9	21.2	41.2	100.0	-	-

General: Rows and columns may not sum correctly due to rounding. Acres rounded to nearest whole acre (values below 1 are shown as “<1”).

a/ The “Late Successional and Old-Growth” category (L-O) describes those forest areas with a majority of trees over 80 years of age. Forests with stands greater than 175 years are considered to have old-growth characteristics.

b/ The “Mid-Seral” category (M-S) describes those forest areas with a majority of trees over 40 years of age but less than 80 years of age.

c/ The “Clearcut or Regenerating” category (C-R) describes those forest areas that are either clear-cut (tree age 0-5 years) or regenerating (tree age 5 to 40 years). Forest areas in this category are divided into forest vegetation types based on their potential to become those types of forests.

Note: Aboveground facilities not included in overall total (occur within construction right-of-way impacts)

TABLE 3.5.1-3a

Summary of Operation-Related Disturbance to Vegetation by the Pacific Connector Pipeline – Blue Ridge Variation

Mapped Vegetation Category Type	Pipeline Facilities (acres <u>a</u>)							Permanent Easement (50-foot)	Aboveground Facilities (acres <u>a</u>) BVA #2	Total Operation Impacts by Vegetation Type <u>e</u>	
	Forest Stand by Age <u>b</u> , <u>c</u> , <u>d</u>	30-foot Maintenance Corridor	Permanent Access Roads	Subtotal LSOG	Subtotal Mid-Seral Forest	Subtotal Clearcut / Regenerating Forest	Subtotal Pipeline Facilities By Vegetation Type				
Forest-Woodland	Douglas-fir-W. Hemlock-W. Redcedar Forest	L-O	-	-	-	-	-	-	-	-	
		M-S	6	-	-	6	1	7	9	-	7
		C-R	1	-	-	-	-	-	2	-	-
	Douglas-fir – Mixed Deciduous Forest	L-O	-	-	-	-	-	-	-	-	-
		M-S	-	-	-	-	-	-	-	-	-
		C-R/	-	-	-	-	-	-	-	-	-
	Alder-Cottonwood	L-O	-	-	-	-	-	-	-	-	-
		M-S	-	-	-	-	-	-	-	-	-
		C-R	-	-	-	-	-	-	-	-	-
	Mixed Conifer/Mixed Deciduous Forest	L-O	2	-	-	-	-	-	3	-	-
		M-S	8	-	2	8	25	34	13	-	35
		C-R	25	-	-	-	-	-	42	<1	-
	Shasta Red Fir – Mountain Hemlock Forest	L-O	-	-	-	-	-	-	-	-	-
		M-S	-	-	-	-	-	-	-	-	-
		C-R	-	-	-	-	-	-	-	-	-
	Douglas-fir-White Fir/Tanoak-Madrone Mixed Forest	L-O	-	-	-	-	-	-	-	-	-
		M-S	-	-	-	-	-	-	-	-	-
		C-R	-	-	-	-	-	-	-	-	-
	Douglas-fir Dominant-Mixed Conifer Forest	L-O	-	-	-	-	-	-	-	-	-
		M-S	-	-	-	-	-	-	-	-	-
C-R		-	-	-	-	-	-	-	-	-	
Ponderosa Pine/White Oak Forest and Woodland	L-O	-	-	-	-	-	-	-	-	-	
	M-S	-	-	-	-	-	-	-	-	-	
	C-R	-	-	-	-	-	-	-	-	-	
Ponderosa Pine Forest and Woodland	L-O	-	-	-	-	-	-	-	-	-	
	M-S	-	-	-	-	-	-	-	-	-	
	C-R	-	-	-	-	-	-	-	-	-	
Oregon White Oak Forest	L-O	-	-	-	-	-	-	-	-	-	
	M-S	-	-	-	-	-	-	-	-	-	
	C-R	-	-	-	-	-	-	-	-	-	

TABLE 3.5.1-3a

Summary of Operation-Related Disturbance to Vegetation by the Pacific Connector Pipeline – Blue Ridge Variation

Mapped Vegetation Category Type		Pipeline Facilities (acres <u>a/</u>)						Subtotal Pipeline Facilities By Vegetation Type	Permanent Easement (50-foot)	Aboveground Facilities (acres <u>a/</u>) BVA #2	Total Operation Impacts by Vegetation Type <u>e/</u>
		Forest Stand by Age <u>b/,c/,d/</u>	30-foot Maintenance Corridor	Permanent Access Roads	Subtotal LSOG	Subtotal Mid-Seral Forest	Subtotal Clearcut / Regenerating Forest				
Western Juniper Woodland	L-O	-	-					-			
	M-S	-	-	-	-	-	-	-	-	-	
	C-R	-	-					-			
Ponderosa Pine/Western Juniper Woodland	L-O	-	-					-			
	M-S	-	-	-	-	-	-	-	-	-	
	C-R	-	-					-			
Subtotal Forest-Woodland by Age Class	L-O	2						3			
	M-S	13		2	13	26	41	22			
	C-R	26						44	<1	26	
Subtotal Forest-Woodland			41	2	13	26	41	69	<1	41	
Grasslands-Shrubland	Sagebrush Steppe	n/a	-	-	-	-	-	-	-	-	
	Shrublands	n/a	-	-	-	-	-	-	-	-	
	Grasslands (West of the Cascades)	n/a	-	-	-	-	-	-	-	-	
	Grasslands (East of the Cascades)	n/a	-	-	-	-	-	-	-	-	
Subtotal Grasslands-Shrubland											
Wetland/Riparian	L-O	-	-					-			
	M-S	-	-	-	-	<1	<1	-	-	<1	
	C-R	<1	-					<1			
	Palustrine Shrubland	n/a	-	-	-	-	-	-	-	-	
	Palustrine Emergent	n/a	6	-	-	-	6	11	-	6	
Subtotal Wetland/Riparian			7					11		7	
Agriculture	Agriculture	n/a	1	-	-	-	1	2	-	1	
Subtotal Agriculture			1					2		1	
Developed / Barren	Urban	n/a	<1	-	-	-	<1	<1	-	<1	
	Industrial	n/a	-	-	-	-	-	-	-	-	
	Beaches	n/a	-	-	-	-	-	-	-	-	
	Roads	n/a	2	-	-	-	2	4	-	2	
Subtotal Developed / Barren			3					4		3	

TABLE 3.5.1-3a

Summary of Operation-Related Disturbance to Vegetation by the Pacific Connector Pipeline – Blue Ridge Variation

Mapped Vegetation Category Type	Pipeline Facilities (acres <u>a/</u>)							Permanent Easement (50-foot)	Aboveground Facilities (acres <u>a/</u>) BVA #2	Total Operation Impacts by Vegetation Type <u>e/</u>
	Forest Stand by Age <u>b/,c/,d/</u>	30-foot Maintenance Corridor	Permanent Access Roads	Subtotal LSOG	Subtotal Mid-Seral Forest	Subtotal Clearcut / Regenerating Forest	Subtotal Pipeline Facilities By Vegetation Type			
Open Water	Rivers and Streams	n/a	<1	-	-	-	<1	<1	-	<1
	Ditches and Canals	n/a	<1	-	-	-	<1	<1	-	<1
	Palustrine Unconsolidated Bottom	n/a	-	-	-	-	-	<1	-	-
	Bays and Estuaries	n/a	-	-	-	-	-	-	-	-
Subtotal Open Water		<1	-	-	-	-	-	-	-	<1
Subtotal Non-Forest		11	-	-	-	<1	11	19	-	11
Project Total		52	-	2	13	26	52	87	<1	52

General: Rows and columns may not sum correctly due to rounding. Acres rounded to nearest whole acre (values below 1 are shown as "<1").

a/ Acres disturbed were evaluated using GIS; footprints for each component (aboveground facilities, 50-foot permanent easement, and 30-foot maintenance corridor) were overlaid on the digitized vegetation coverage.

b/ The "Late Successional and Old-Growth" category (L-O) describes those forest areas with a majority of trees over 80 years of age. Forests with stands greater than 175 years are considered to have old-growth characteristics.

c/ The "Mid-Seral" category (M-S) describes those forest areas with a majority of trees over 40 years of age but less than 80 years of age.

d/ The "Clearcut or Regenerating Young Forest" category (C-R) describes those forest areas that are either clear-cut (tree age 0-5 years) or regenerating (tree age 5 to 40 years).

e/ Total by Habitat Type includes the 30-foot maintenance corridor, permanent access roads, and only aboveground facilities with a meter station or compressor station (mainline block valves are located within the 30-foot maintenance corridor).

General: If percentages were less than 1/100ths, they were not included in the table.

Columns and rows do not necessarily sum correctly due to rounding.

Acres of impacts to non-vegetated areas are included within this table for consistency in values reported within this EIS.

TABLE 3.5.1-3b

Summary of Operation-Related Disturbance to Vegetation by the Pacific Connector Pipeline – Proposed Route

Mapped Vegetation Category Type	Forest Stand by Age <u>b/,c/,d/</u>	Pipeline Facilities (acres <u>a/</u>)						Permanent Easement (50-foot)	Above-ground Facilities (acres <u>a/</u>) Blue Ridge Block Valve	Total Operation Impacts by Vegetation Type <u>e/</u>	
		30-foot Maintenance Corridor	Permanent Access Roads	Subtotal LSOG	Subtotal Mid-Seral Forest	Subtotal Clearcut / Regenerating Forest	Subtotal Pipeline Facilities By Vegetation Type				
Forest-Woodland	Douglas-fir-W. Hemlock-W. Redcedar Forest	L-O	-	-	-	-	-	-	-	-	
		M-S	3	-	-	3	1	4	5	-	4
		C-R	1	-	-	-	-	-	1	-	-
	Douglas-fir – Mixed Deciduous Forest	L-O	-	-	-	-	-	-	-	-	-
		M-S	-	-	-	-	-	-	-	-	-
		C-R/	-	-	-	-	-	-	-	-	-
	Alder-Cottonwood	L-O	-	-	-	-	-	-	-	-	-
		M-S	-	-	-	-	-	-	-	-	-
		C-R	-	-	-	-	-	-	-	-	-
	Mixed Conifer/Mixed Deciduous Forest	L-O	11	-	-	-	-	-	18	-	-
		M-S	8	-	11	8	19	38	13	-	38
		C-R	19	-	-	-	-	-	32	-	-
	Shasta Red Fir – Mountain Hemlock Forest	L-O	-	-	-	-	-	-	-	-	-
		M-S	-	-	-	-	-	-	-	-	-
		C-R	-	-	-	-	-	-	-	-	-
	Douglas-fir-White Fir/Tanoak-Madrone Mixed Forest	L-O	-	-	-	-	-	-	-	-	-
		M-S	-	-	-	-	-	-	-	-	-
		C-R	-	-	-	-	-	-	-	-	-
	Douglas-fir Dominant-Mixed Conifer Forest	L-O	-	-	-	-	-	-	-	-	-
		M-S	-	-	-	-	-	-	-	-	-
C-R		-	-	-	-	-	-	-	-	-	
Ponderosa Pine/White Oak Forest and Woodland	L-O	-	-	-	-	-	-	-	-	-	
	M-S	-	-	-	-	-	-	-	-	-	
	C-R	-	-	-	-	-	-	-	-	-	
Ponderosa Pine Forest and Woodland	L-O	-	-	-	-	-	-	-	-	-	
	M-S	-	-	-	-	-	-	-	-	-	
	C-R	-	-	-	-	-	-	-	-	-	
Oregon White Oak Forest	L-O	-	-	-	-	-	-	-	-	-	
	M-S	-	-	-	-	-	-	-	-	-	

TABLE 3.5.1-3b

Summary of Operation-Related Disturbance to Vegetation by the Pacific Connector Pipeline – Proposed Route

Mapped Vegetation Category Type	Forest Stand by Age <u>b/,c/,d/</u>	Pipeline Facilities (acres <u>a/</u>)						Permanent Easement (50-foot)	Above-ground Facilities (acres <u>a/</u>) Blue Ridge Block Valve	Total Operation Impacts by Vegetation Type <u>e/</u>	
		30-foot Maintenance Corridor	Permanent Access Roads	Subtotal LSOG	Subtotal Mid-Seral Forest	Subtotal Clearcut / Regenerating Forest	Subtotal Pipeline Facilities By Vegetation Type				
Western Juniper Woodland	C-R	-	-					-	-		
	L-O	-	-					-	-		
	M-S	-	-	-	-	-	-	-	-	-	
Ponderosa Pine/Western Juniper Woodland	C-R	-	-					-	-		
	L-O	-	-					-	-		
	M-S	-	-	-	-	-	-	-	-	-	
Subtotal Forest-Woodland by Age Class	C-R	-	-					-	-		
	L-O	11	-					18	-	11	
	M-S	11	-	11	11	20	42	18	-	11	
Subtotal Forest-Woodland	C-R	20	-					34	-	20	
	L-O	11	-	11	11	20	42	69	-	42	
	M-S	20	-	11	11	20	42	69	-	42	
Grasslands-Shrubland	Sagebrush Steppe	n/a	-	-	-	-	-	-	-	-	
	Shrublands	n/a	-	-	-	-	-	-	-	-	
	Grasslands (West of the Cascades)	n/a	-	-	-	-	-	-	-	-	
	Grasslands (East of the Cascades)	n/a	-	-	-	-	-	-	-	-	
Subtotal Grasslands-Shrubland											
Wetland/Riparian	Palustrine Forest	L-O	-	-					-	-	
		M-S	-	-	-	-	-	-	-	-	-
		C-R	-	-					-	-	
	Palustrine Shrubland	n/a	-	-	-	-	-	-	-	-	-
Palustrine Emergent	n/a	3	-	-	-	3	5	<1	3		
Subtotal Wetland/Riparian											
Agriculture	Agriculture	n/a	3	-	-	-	3	4	-	-	
Subtotal Agriculture											
Developed / Barren	Urban	n/a	-	-	-	-	-	-	-	-	
	Industrial	n/a	-	-	-	-	-	-	-	-	
	Beaches	n/a	-	-	-	-	-	-	-	-	
	Roads	n/a	4	-	-	-	4	6	-	-	

TABLE 3.5.1-3b

Summary of Operation-Related Disturbance to Vegetation by the Pacific Connector Pipeline – Proposed Route

Mapped Vegetation Category Type	Forest Stand by Age <u>b/,c/,d/</u>	Pipeline Facilities (acres <u>a/</u>)					Subtotal Pipeline Facilities By Vegetation Type	Permanent Easement (50-foot)	Above-ground Facilities (acres <u>a/</u>) Blue Ridge Block Valve	Total Operation Impacts by Vegetation Type <u>e/</u>
		30-foot Maintenance Corridor	Permanent Access Roads	Subtotal LSOG	Subtotal Mid-Seral Forest	Subtotal Clearcut / Regenerating Forest				
Subtotal Developed / Barren		4	-	-	-	-	4	6	-	-
Open Water	Rivers and Streams	n/a	<1	-	-	-	<1	<1	-	-
	Ditches and Canals	n/a	-	-	-	-	-	-	-	-
	Palustrine Unconsolidated Bottom	n/a	-	-	-	-	-	-	-	-
	Bays and Estuaries	n/a	-	-	-	-	-	-	-	-
Subtotal Open Water		<1	-	-	-	-	<1	-	-	
Subtotal Non-Forest		9	-	-	-	-	9	16	<1	9
Project Total		51	-	-	-	-	51	85	<1	51

General: Rows and columns may not sum correctly due to rounding. Acres rounded to nearest whole acre (values below 1 are shown as "<1").

a/ Acres disturbed were evaluated using GIS; footprints for each component (aboveground facilities, 50-foot permanent easement, and 30-foot maintenance corridor) were overlaid on the digitized vegetation coverage.

b/ The "Late Successional and Old-Growth" category (L-O) describes those forest areas with a majority of trees over 80 years of age. Forests with stands greater than 175 years are considered to have old-growth characteristics.

c/ The "Mid-Seral" category (M-S) describes those forest areas with a majority of trees over 40 years of age but less than 80 years of age.

d/ The "Clearcut or Regenerating Young Forest" category (C-R) describes those forest areas that are either clear-cut (tree age 0-5 years) or regenerating (tree age 5 to 40 years).

e/ Total by Habitat Type includes the 30-foot maintenance corridor, permanent access roads, and only aboveground facilities with a meter station or compressor station (mainline block valves are located within the 30-foot maintenance corridor).

General: If percentages were less than 1/100ths, they were not included in the table.

Columns and rows do not necessarily sum correctly due to rounding.

Acres of impacts to non-vegetated areas are included within this table for consistency in values reported within this EIS.

TABLE 3.5.1-4a

Direct and Indirect Effects to Interior Forests from Construction of the Pacific Connector Pipeline – Blue Ridge Variation

Landowner	Land Use Allocation	Age Classes <i>a/</i> , <i>b/</i> , <i>c/</i>	Direct Effects to Interior Forest (acres)					Total by Age Class	Total Direct Effects	Indirect Effects to Interior Forest (acres)	
			Construction Right-of-Way	Temporary Extra Work Areas	Uncleared Storage Areas	Rock Source/ Disposal / Pipe Yards	100 meter Buffer from Vegetation Removal			Total Indirect Effects	
BLM - Coos Bay	LSR	L-O	-	-	-	-	-	5	-	26	
		M-S	2	-	-	-	2		16		
		Regen	2	1	-	-	3		10		
	Other	L-O	-	-	-	-	-	14	-	65	
		M-S	12	2	-	-	14		60		
		Regen	-	-	-	-	-		5		
Subtotal - Coos Bay	L-O	-	-	-	-	-	19	-	91		
	M-S	14	2	-	-	16		76			
	Regen	2	1	-	-	3		15			
	TOTAL	16	3	-	-	19		91			
Other Landowners	None	L-O	5	1	-	-	6	145	38	737	
		M-S	29	5	1	-	34		223		
		Regen	71	27	-	6	104		476		
		TOTAL	105	33	1	6	145		737		
Total Indirect/Direct Effects to Interior Forest	L-O	5	1	-	-	6	164	38	828		
	M-S	43	7	1	-	51		299			
	Regen	73	28	-	6	107		491			
	TOTAL	121	36	1	6	164		828			

General: Rows and columns may not sum correctly due to rounding. Acres rounded to nearest whole acre (values below 1 are shown as "<1").

a/ The "Late Successional and Old-Growth" category (L-O) describes those forest areas with a majority of trees over 80 years of age. Forests with stands greater than 175 years are considered to have old-growth characteristics.

b/ The "Mid-Seral" category (M-S) describes those forest areas with a majority of trees over 40 years of age but less than 80 years of age.

c/ The "Regenerating" category (Regen) describes those forest areas that are regenerating (tree age 5 to 40 years), but do not include recently harvested but regenerating forest (approximately 5 to 10 years – or early regenerating forest).

TABLE 3.5.1-4b

Direct and Indirect Effects to Interior Forests from Construction of the Pacific Connector Pipeline – Proposed Route

Landowner	Land Use Allocation	Age Classes <i>a</i> , <i>b</i> , <i>c</i>	Direct Effects to Interior Forest (acres)					Total by Age Class	Total Direct Effects	Indirect Effects to Interior Forest (acres)	
			Constructi on Right-of-Way	Temporary Extra Work Areas	Uncleared Storage Areas	Rock Source/ Disposal / Pipe Yards	100 meter Buffer from Vegetation Removal			Total Indirect Effects	
BLM - Coos Bay	LSR	L-O	15	3	8	-	26	94	95	376	
		M-S	29	4	6	-	39		180		
		Regen	18	4	7	-	29		101		
	Other	L-O	2	-	-	-	2	31	19	203	
		M-S	8	1	1	-	10		85		
		Regen	12	2	5	-	19		99		
Subtotal - Coos Bay		L-O	17	3	8	-	28	125	114	579	
		M-S	37	5	7	-	49		265		
		Regen	30	6	12	-	48		200		
		TOTAL	84	14	27	-	125		579		
Other Landowners	None	L-O	-	-	-	-	-	1	-	5	
		M-S	1	-	-	-	1		5		
		Regen	-	-	-	-	-		-		
Subtotal - Other Landowners		TOTAL	1	-	-	-	1	5			
Total Indirect/Direct Effects to Interior Forest		L-O	17	3	8	-	28	126	114	584	
		M-S	38	5	7	-	50		270		
		Regen	30	6	12	-	48		200		
		TOTAL	85	14	27	-	126		584		

General: Rows and columns may not sum correctly due to rounding. Acres rounded to nearest whole acre (values below 1 are shown as "<1").

a/ The "Late Successional and Old-Growth" category (L-O) describes those forest areas with a majority of trees over 80 years of age. Forests with stands greater than 175 years are considered to have old-growth characteristics.

b/ The "Mid-Seral" category (M-S) describes those forest areas with a majority of trees over 40 years of age but less than 80 years of age.

c/ The "Regenerating" category (Regen) describes those forest areas that are regenerating (tree age 5 to 40 years), but do not include recently harvested but regenerating forest (approximately 5 to 10 years – or early regenerating forest).

3.5.2 Timber

3.5.2.1 Private Forest

The proposed route would affect (timber removal) a total of 68 acres of private forestland and the Blue Ridge Variation would affect 155 acres. In both cases, the majority of affected forestland (65 percent and 73 percent, respectively) includes areas previously harvested with current trees aged 0 to 40 years. To mitigate effects to private forest landowners, Pacific Connector would negotiate an easement, which would account for the value of timber to be cleared within the construction right-of-way and TEWAs, lost timber production within the temporary and permanent easement, as well as potential operational easement effects.

While the specific logging methods would not be determined until after a contractor has been selected, Pacific Connector expects that isolated areas may need helicopter logging. Currently, helicopter yarding is proposed for MP 18.1 to 19.3 along the Blue Ridge Variation. No helicopter logging is proposed along the proposed route at this time.

3.5.2.2 BLM Forest

Section 4.4.3 provides a brief discussion of this topic. Further detail regarding Right-of-Way clearing activities for the Blue Ridge Variation and the proposed route are not available at this time.

3.6 WILDLIFE AND AQUATIC SPECIES

3.6.1 Wildlife Resources

Tables 3.6.1-1a&b, 3.6.1-2a&b, 3.6.1-3a&b, and 3.6.1-4 detail the potential impacts of the Blue Ridge Variation and the proposed route on wildlife resources⁵. As shown in tables 3.6.1-1a and 3.6.1-1b, both the Blue Ridge Variation and the proposed route would cross forest-woodland habitat types for the majority of their lengths (11.3 miles and 11.5 miles, respectively), as well as short distances of wetland/riparian habitat.

Construction of the Blue Ridge Variation would impact approximately 174 acres of forest-woodland habitat, and 34 acres of wetland/riparian habitat (table 3.6.1-2a). The proposed project would impact approximately 203 acres of forest-woodland habitat and 13 acres of wetland/riparian habitat during construction (table 3.6.1-2b). Operation of the Blue Ridge Variation and the proposed route would each impact 69 acres of forest-woodland habitat and less than one acre of wetland/riparian (tables 3.6.1-3a and 3.6.1-3b).

According to Oregon Department of Fish and Wildlife (ODFW) habitat categories, the Blue Ridge Variation would remove 3 acres of irreplaceable, essential habitat that is limited (Category 1) during construction, and the proposed route would remove 47 acres of Category 1 habitat during construction (table 3.6.1-4). Operational impact to Category 1 habitat would be 1 acre and 12 acres for the Blue Ridge Variation and the proposed route, respectively (table 3.6.1-4). Pacific

⁵ The federally-listed endangered, threatened, and proposed wildlife species that potentially occur in the project area are listed in table 4.7.1-1 of the FEIS and would not change when considering the proposed route and the Blue Ridge Variation.”

Connector is continuing to consult with ODFW regarding appropriate definition and application of the habitat categories identified in table 3.6.1-4.

TABLE 3.6.1-1a							
Wildlife Habitat Types Crossed by the Pacific Connector Pipeline and Wildlife Species Associated with Habitats – Blue Ridge Variation							
General Vegetation Type	Mapped Vegetation Type	Late Successional or Old-Growth Forest Crossed <u>a</u> / (miles)	Mid-Seral Forest Crossed <u>b</u> / (miles)	Clearcut/ Regenerating Forest Crossed <u>c</u> / (miles)	Total Miles	Percent of Total Project Mileage per Vegetation Type	Number of Species Associated
Forest-Woodland	Westside Lowland Conifer-Hardwood Forest	0.4	3.7	7.2	11.3	79.6	32 – Herpetofauna 113 – Birds 66 – Mammals
	Montane Mixed Conifer Forest	-	-	-	-	-	21 – Herpetofauna 94 – Birds 60 – Mammals
	Southwest Oregon Mixed Conifer-Hardwood Forest	-	-	-	-	-	35 – Herpetofauna 125 – Birds 64 – Mammals
	Ponderosa Pine Forest and Woodlands	-	-	-	-	-	31 – Herpetofauna 124 – Birds 56 – Mammals
	Westside Oak and Dry Douglas-fir Forest and Woodlands	-	-	-	-	-	32 - Herpetofauna 113 – Birds 62 – Mammals
	Western Juniper and Mountain Mahogany Woodlands	-	-	-	-	-	19 - Herpetofauna 86 – Birds 34 – Mammals
Subtotal		0.4	3.7	7.2	11.3	79.6	
Grasslands Shrubland	Shrub-steppe	-	-	-	-	-	22 – Herpetofauna 75 – Birds 46 – Mammals
	Westside Grasslands	-	-	-	-	-	26 – Herpetofauna 84 – Birds 37 – Mammals
	Eastside Grasslands	-	-	-	-	-	20 – Herpetofauna 79 – Birds 44 - Mammals
Subtotal		0.0	0.0	0.0	0.0	0.0	
Wetland/Riparian	Westside Riparian-Wetlands/ Eastside Riparian-Wetlands	-	-	0.1	0.1	0.6	38 – Herpetofauna 154 – Birds 76 – Mammals
	Herbaceous Wetlands	-	-	-	1.8	12.4	18 – Herpetofauna 136 – Birds 43 – Mammals
Subtotal		0.0	0.0	0.0	1.9	13.0	
Agriculture	Agriculture, Pastures, and Mixed Environs	-	-	-	0.4	2.6	32 – Herpetofauna 173 – Birds 77 – Mammals
Subtotal		0.0	0.0	0.0	0.4	2.6	
Developed/ Altered	Urban and Mixed Environs	-	-	-	0.8	5.3	37 – Herpetofauna 131 – Birds 63 – Mammals
Subtotal		0.0	0.0	0.0	0.8	5.3	

TABLE 3.6.1-1a

**Wildlife Habitat Types Crossed by the Pacific Connector Pipeline and
Wildlife Species Associated with Habitats – Blue Ridge Variation**

General Vegetation Type	Mapped Vegetation Type	Late Successional or Old-Growth Forest Crossed <u>a/</u> (miles)	Mid-Seral Forest Crossed <u>b/</u> (miles)	Clearcut/ Regenerating Forest Crossed <u>c/</u> (miles)	Total Miles	Percent of Total Project Mileage per Vegetation Type	Number of Species Associated
Barren	Coastal Dunes and Beaches	-	-	-	-	-	6 – Herpetofauna 100 – Birds 26 – Mammals
Subtotal		0.0	0.0	0.0	0.0	0.0	
Open Water	Open Water - Lakes, Rivers, and Streams	-	-	-	0.2	1.0	17 – Herpetofauna 94 – Birds 20 – Mammals
	Bays and Estuaries	-	-	-	-	-	1 – Herpetofauna 132 – Birds 12 – Mammals
Subtotal		0.0	0.0	0.0	0.2	1.0	
Project Total		0.0	0.0	0.0	14.4	0.0	

Note: Mileages rounded to nearest tenth of a mile; values less than 0.1 miles shown as "<0.1". Rows/columns may not sum correctly due to rounding.

a/ Late Successional (80 to 175 years) and Old-Growth Forest (175 + years).
b/ Mid-Seral Forest (40 to 80 years).
c/ Clearcut (0 to 5 years) and Regenerating Forest (5 to 40 years).

TABLE 3.6.1-1b

**Wildlife Habitat Types Crossed by the Pacific Connector Pipeline and
Wildlife Species Associated with Habitats – Proposed Route**

General Vegetation Type	Mapped Vegetation Type	Late Successional or Old-Growth Forest Crossed <u>a/</u> (miles)	Mid-Seral Forest Crossed <u>b/</u> (miles)	Clearcut/ Regenerating Forest Crossed <u>c/</u> (miles)	Total Miles	Percent of Total Project Mileage per Vegetation Type	Number of Species Associated
Forest- Woodland	Westside Lowland Conifer- Hardwood Forest	2.9	3.0	5.5	11.5	81.7	32 – Herpetofauna 113 – Birds 66 – Mammals
	Montane Mixed Conifer Forest	-	-	-	-	-	21 – Herpetofauna 94 – Birds 60 – Mammals
	Southwest Oregon Mixed Conifer- Hardwood Forest	-	-	-	-	-	35 – Herpetofauna 125 – Birds 64 – Mammals
	Ponderosa Pine Forest and Woodlands	-	-	-	-	-	31 – Herpetofauna 124 – Birds 56 – Mammals
	Westside Oak and Dry Douglas- fir Forest and Woodlands	-	-	-	-	-	32 - Herpetofauna 113 – Birds 62 – Mammals
	Western Juniper and Mountain Mahogany Woodlands	-	-	-	-	-	19 - Herpetofauna 86 – Birds 34 – Mammals
Subtotal		2.9	3.0	5.5	11.5	81.7	

TABLE 3.6.1-1b

**Wildlife Habitat Types Crossed by the Pacific Connector Pipeline and
Wildlife Species Associated with Habitats – Proposed Route**

General Vegetation Type	Mapped Vegetation Type	Late Successional or Old-Growth Forest Crossed <u>a/</u> (miles)	Mid-Seral Forest Crossed <u>b/</u> (miles)	Clearcut/ Regenerating Forest Crossed <u>c/</u> (miles)	Total Miles	Percent of Total Project Mileage per Vegetation Type	Number of Species Associated
Grass- lands Shrubland	Shrub-steppe	-	-	-	-	-	22 – Herpetofauna 75 – Birds 46 – Mammals
	Westside Grasslands	-	-	-	-	-	26 – Herpetofauna 84 – Birds 37 – Mammals
	Eastside Grasslands	-	-	-	-	-	20 – Herpetofauna 79 – Birds 44 – Mammals
Subtotal		0.0	0.0	0.0	0.0	0.0	
Wetland/ Riparian	Westside Riparian- Wetlands/ Eastside Riparian- Wetlands	-	-	-	-	-	38 – Herpetofauna 154 – Birds 76 – Mammals
	Herbaceous Wetlands	-	-	-	0.8	5.9	18 – Herpetofauna 136 – Birds 43 – Mammals
Subtotal		0.0	0.0	0.0	0.8	5.9	
Agriculture	Agriculture, Pastures, and Mixed Environs	-	-	-	0.7	4.8	32 – Herpetofauna 173 – Birds 77 – Mammals
Subtotal		0.0	0.0	0.0	0.7	4.8	
Developed/ Altered	Urban and Mixed Environs	-	-	-	1.0	7.4	37 – Herpetofauna 131 – Birds 63 – Mammals
Subtotal		0.0	0.0	0.0	1.0	7.4	
Barren	Coastal Dunes and Beaches	-	-	-	-	-	6 – Herpetofauna 100 – Birds 26 – Mammals
Subtotal		0.0	0.0	0.0	0.0	0.0	
Open Water	Open Water - Lakes, Rivers, and Streams	-	-	-	0.0	0.1	17 – Herpetofauna 94 – Birds 20 – Mammals
	Bays and Estuaries	-	-	-	-	-	1 – Herpetofauna 132 – Birds 12 – Mammals
Subtotal		0.0	0.0	0.0	0.0	0.1	
Project Total		0.0	0.0	0.0	14.0	0.0	

Note: Mileages rounded to nearest tenth of a mile; values less than 0.1 miles shown as "<0.1". Rows/columns may not sum correctly due to rounding.

a/ Late Successional (80 to 175 years) and Old-Growth Forest (175 + years).

b/ Mid-Seral Forest (40 to 80 years).

c/ Clearcut (0 to 5 years) and Regenerating Forest (5 to 40 years).

TABLE 3.6.1-2a

Summary of Construction-Related Disturbance (acres a) to Corresponding Habitat Type – Blue Ridge Variation

		Pipeline Facilities								Subtotals				
General Habitat Type	Mapped Habitat Type	Forest Stand by Age	Construction Right-of-Way	Hydro-static Discharge Sites	Temporary Extra Work Areas	Uncleared Storage Areas	Rock Source/Disposal	Access Roads (TARs/PARs/Improvements)	Pipe Yards	Above-ground Facilities - Klamath Compressor Station	Subtotal by Age Class	Subtotal by Habitat Type	Percent of Total Habitat	
Forest-Woodland	Westside Lowland Conifer-Hardwood Forest	L-O <u>a</u> / M-S <u>b</u> / C-R <u>c</u>	5 43 84	- - -	1 8 33	- 1 <1	- - -	- - -	- - -	- - <1	7 51 116	174	76.1	
	Montane Mixed Conifer Forest	L-O <u>a</u> / M-S <u>b</u> / C-R <u>c</u>	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	-	-	
	Southwest Oregon Mixed Conifer-Hardwood Forest	L-O <u>a</u> / M-S <u>b</u> / C-R <u>c</u>	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	-	-	
	Ponderosa Pine Forest and Woodlands	L-O <u>a</u> / M-S <u>b</u> / C-R <u>c</u>	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	-	-	
	Westside Oak and Dry Douglas-fir Forest and Woodlands	L-O <u>a</u> / M-S <u>b</u> / C-R <u>c</u>	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	-	-	
	Western Juniper and Mountain Mahogany Woodlands	L-O <u>a</u> / M-S <u>b</u> / C-R <u>c</u>	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	-	-	
	Subtotal Forest-Woodland			131	-	42	1	-	-	-	<1	174	174	76.1
	Percent of All Forest-Woodland			75.5	-	23.9	0.6	-	-	-	-	100.0	-	-
	Grasslands-Shrubland	Sagebrush Steppe	n/a	-	-	-	-	-	-	-	-	-	-	-
		Shrublands	n/a	-	-	-	-	-	-	-	-	-	-	-
		Westside Grasslands	n/a	-	-	<1	-	-	-	-	-	-	<1	0.1
		Eastside Grasslands	n/a	-	-	-	-	-	-	-	-	-	-	-
	Subtotal Grasslands-Shrubland			-	-	-	-	-	-	-	-	-	<1	0.1

TABLE 3.6.1-2a

Summary of Construction-Related Disturbance (acres a/) to Corresponding Habitat Type – Blue Ridge Variation

		Pipeline Facilities								Subtotals			
General Habitat Type	Mapped Habitat Type	Forest Stand by Age	Construction Right-of-Way	Hydrostatic Discharge Sites	Temporary Extra Work Areas	Uncleared Storage Areas	Rock Source/Disposal	Access Roads (TARs/PARs/Improvements)	Pipe Yards	Above-ground Facilities - Klamath Compressor Station	Subtotal by Age Class	Subtotal by Habitat Type	Percent of Total Habitat
Wetland / Riparian	Westside Riparian-Wetlands/Eastside Riparian-Wetlands	M-S <u>b/</u>	-	-	-	-	-	-	-	-	-	<1	0.4
		C-R <u>c/</u>	<1	-	-	-	-	-	-	-	<1	-	-
		Shrub	-	-	-	-	-	-	-	-	-	-	-
		Herbaceous Wetlands	n/a	20	-	12	-	-	-	-	-	33	14.3
Subtotal Wetland / Riparian			21	-	12	-	-	-	-	-	34	14.7	
Agriculture	Agriculture, Pastures, and Mixed Environs		5	-	6	<1	-	-	-	-	10	4.5	
Subtotal Agriculture			5	-	6	<1	-	-	-	-	10	4.5	
Developed / Barren	Urban and Mixed Environs	n/a	<1	-	<1	-	-	-	-	-	1	0.5	
	Roads	n/a	5	-	2	<1	-	-	-	-	8	3.3	
	Beaches	n/a	-	-	-	-	-	-	-	-	-	-	
Subtotal Developed / Barren			6	-	2	<1	-	-	-	-	9	3.8	
Open Water	Open Water - Lakes, Rivers, Streams	n/a	2	-	<1	-	-	-	-	-	2	0.8	
	Bays and Estuaries	n/a	-	-	-	-	-	-	-	-	-	-	
Subtotal Open Water			2	-	<1	-	-	-	-	-	2	0.8	
Subtotal Non-Forest			34	-	20	<1	-	-	-	-	54	23.9	
<i>Percent of All Non-Forest</i>			62.4	-	37.5	0.0	-	-	-	-	-	-	
Project Total		n/a	165	-	62	1	-	-	-	<1	229	100.0	
Percent of Pipeline Facilities		n/a	72.4	-	27.2	0.5	-	-	-	-	-	-	

Note: Rows and columns may not sum correctly due to rounding. Acres are rounded to nearest whole acre (values below 1 are shown as "<1").

a/ The "Late Successional and Old-Growth" category (L-O) describes those forest areas with a majority of trees over 80 years of age. Forests with stands greater than 175 years are considered to have old-growth characteristics.

b/ The "Mid-Seral" category (M-S) describes those forest areas with a majority of trees over 40 years of age but less than 80 years of age.

c/ The "Grass-shrub-sapling or Regenerating Young Forest" category (C-R) describes those forest areas that are either clear-cut (tree age 0-5 years) or regenerating (tree age 5 to 40 years). Forest areas in this category are divided into forest vegetation types based on their potential to become those types of forests.

Note: Aboveground facilities not included in overall total (occur within construction right-of-way impacts)

TABLE 3.6.1-2b

Summary of Construction-Related Disturbance (acres a) to Corresponding Habitat Type – Proposed Route

		Pipeline Facilities								Subtotals				
General Habitat Type	Mapped Habitat Type	Forest Stand by Age	Construc- tion Right-of- Way	Hydro- static Discharge Sites	Temporary Extra Work Areas	Uncleared Storage Areas	Rock Source/ Disposal	Access Roads (TARs/ PARs/ Improvements)	Pipe Yards	Above- ground Facilities - Klamath Com- pressor Station	Subtotal by Age Class	Subtotal by Habitat Type	Percent of Total Habitat	
Forest- Woodland	Westside Lowland	L-O <u>a</u> /	34	-	7	11	-	-	-	-	51	203	83.6	
	Conifer-Hardwood	M-S <u>b</u> /	35	-	7	10	-	-	-	-	52			
	Forest	C-R <u>c</u> /	63	-	14	23	-	-	-	-	100			
	Montane Mixed Conifer Forest	L-O <u>a</u> /	-	-	-	-	-	-	-	-	-	-	-	-
		M-S <u>b</u> /	-	-	-	-	-	-	-	-	-	-	-	-
		C-R <u>c</u> /	-	-	-	-	-	-	-	-	-	-	-	-
	Southwest Oregon Mixed Conifer- Hardwood Forest	L-O <u>a</u> /	-	-	-	-	-	-	-	-	-	-	-	-
		M-S <u>b</u> /	-	-	-	-	-	-	-	-	-	-	-	-
		C-R <u>c</u> /	-	-	-	-	-	-	-	-	-	-	-	-
	Ponderosa Pine Forest and Woodlands	L-O <u>a</u> /	-	-	-	-	-	-	-	-	-	-	-	-
		M-S <u>b</u> /	-	-	-	-	-	-	-	-	-	-	-	-
		C-R <u>c</u> /	-	-	-	-	-	-	-	-	-	-	-	-
	Westside Oak and Dry Douglas-fir Forest and Woodlands	L-O <u>a</u> /	-	-	-	-	-	-	-	-	-	-	-	-
		M-S <u>b</u> /	-	-	-	-	-	-	-	-	-	-	-	-
		C-R <u>c</u> /	-	-	-	-	-	-	-	-	-	-	-	-
Western Juniper and Mountain Mahogany Woodlands	L-O <u>a</u> /	-	-	-	-	-	-	-	-	-	-	-	-	
	M-S <u>b</u> /	-	-	-	-	-	-	-	-	-	-	-	-	
	C-R <u>c</u> /	-	-	-	-	-	-	-	-	-	-	-	-	
Subtotal Forest-Woodland			132	-	28	44	-	-	-	-	203	203	83.6	
Percent of All Forest-Woodland			64.7	-	13.7	21.6	-	-	-	-	100.0	-	-	
Grasslands -Shrubland	Sagebrush Steppe	n/a	-	-	-	-	-	-	-	-	-	-	-	
	Shrublands	n/a	-	-	-	-	-	-	-	-	-	-	-	
	Westside Grasslands	n/a	-	-	-	-	-	-	-	-	-	-	-	
	Eastside Grasslands	n/a	-	-	-	-	-	-	-	-	-	-	-	
Subtotal Grasslands-Shrubland			-	-	-	-	-	-	-	-	-	-	-	
Wetland / Riparian	Westside Riparian- Wetlands/Eastside Riparian-Wetlands	L-O <u>a</u> /	-	-	-	-	-	-	-	-	-	-	-	
		M-S <u>b</u> /	-	-	-	-	-	-	-	-	-	-	-	
		C-R <u>c</u> /	-	-	-	-	-	-	-	-	-	-	-	
		Shrub	-	-	-	-	-	-	-	-	-	-	-	
	Herbaceous Wetlands	n/a	10	-	3	-	-	-	-	-	<1	13	5.3	

TABLE 3.6.1-2b

Summary of Construction-Related Disturbance (acres a) to Corresponding Habitat Type – Proposed Route

		Pipeline Facilities								Subtotals			
General Habitat Type	Mapped Habitat Type	Forest Stand by Age	Construction Right-of-Way	Hydrostatic Discharge Sites	Temporary Extra Work Areas	Uncleared Storage Areas	Rock Source/Disposal	Access Roads (TARs/PARs/Improvements)	Pipe Yards	Above-ground Facilities - Klamath Compressor Station	Subtotal by Age Class	Subtotal by Habitat Type	Percent of Total Habitat
Subtotal Wetland / Riparian			10	-	3	-	-	-	-	<1	-	13	5.3
Agriculture	Agriculture, Pastures, and Mixed Environs		8	-	3	<1	-	-	-	-	-	11	4.5
Subtotal Agriculture			8	-	3	<1	-	-	-	-	-	11	4.5
Developed / Barren	Urban and Mixed Environs	n/a	-	-	<1	-	-	-	-	-	-	<1	0.0
	Roads	n/a	12	-	3	1	-	-	-	-	-	17	6.8
	Beaches	n/a	-	-	-	-	-	-	-	-	-	-	-
Subtotal Developed / Barren			12	-	3	1	-	-	-	-	-	17	6.8
Open Water	Open Water - Lakes, Rivers, Streams	n/a	<1	-	<1	-	-	-	-	-	-	<1	0.1
	Bays and Estuaries	n/a	-	-	-	-	-	-	-	-	-	-	-
Subtotal Open Water			<1	-	<1	-	-	-	-	-	-	<1	0.1
Subtotal Non-Forest			30	-	9	1	-	-	-	-	-	41	16.6
Percent of All Non-Forest			73.8	-	22.8	3.4	-	-	-	-	-	100.0	41.1
Project Total		n/a	161	-	37	45	-	-	-	<1	-	244	100.0
Percent of Pipeline Facilities		n/a	66.2	-	15.2	18.6	-	-	-	-	-	-	-

Note: Rows and columns may not sum correctly due to rounding. Acres are rounded to nearest whole acre (values below 1 are shown as "<1").
a/ The "Late Successional and Old-Growth" category (L-O) describes those forest areas with a majority of trees over 80 years of age. Forests with stands greater than 175 years are considered to have old-growth characteristics.
b/ The "Mid-Seral" category (M-S) describes those forest areas with a majority of trees over 40 years of age but less than 80 years of age.
c/ The "Grass-shrub-sapling or Regenerating Young Forest" category (C-R) describes those forest areas that are either clear-cut (tree age 0-5 years) or regenerating (tree age 5 to 40 years). Forest areas in this category are divided into forest vegetation types based on their potential to become those types of forests.
 Note: Aboveground facilities not included in overall total (occur within construction right-of-way impacts)

TABLE 3.6.1-3a

Summary of Operation-Related Disturbance to Habitat (acres a) – Blue Ridge Variation

General Vegetation Type	Mapped Vegetation Type	Forest Stand by Age	Pipeline Facilities					Subtotal By Habitat Type <u>e</u> /	Permanent Easement (50-foot) <u>f</u> /	Aboveground Facilities	Total Operation Impacts by Habitat Type
			30-foot Maintenance Corridor	Permanent Access Roads	Subtotal Late Successional Old-Growth Forest	Subtotal Mid- Serai Forest	Subtotal Clearcut / Regenerating Forest				
Forest- Woodland	Westside Lowland Conifer-Hardwood Forest	L-O <u>b</u> /	2	-	-	-	-	41	3	<1	41
		M-S <u>c</u> /	13	-	-	-	-	22			
		C-R <u>d</u> /	26	-	-	-	-	44			
	Montane Mixed Conifer Forest	L-O <u>b</u> /	-	-	-	-	-	-	-	-	-
		M-S <u>c</u> /	-	-	-	-	-	-			
		C-R <u>d</u> /	-	-	-	-	-	-			
	Southwest Oregon Mixed Conifer- Hardwood Forest	L-O <u>b</u> /	-	-	-	-	-	-	-	-	-
		M-S <u>c</u> /	-	-	-	-	-	-			
		C-R <u>d</u> /	-	-	-	-	-	-			
	Ponderosa Pine Forest and Woodlands	L-O <u>b</u> /	-	-	-	-	-	-	-	-	-
		M-S <u>c</u> /	-	-	-	-	-	-			
		C-R <u>d</u> /	-	-	-	-	-	-			
Westside Oak and Dry Douglas-fir Forest and Woodlands	L-O <u>b</u> /	-	-	-	-	-	-	-	-	-	
	M-S <u>c</u> /	-	-	-	-	-	-				
	C-R <u>d</u> /	-	-	-	-	-	-				
Western Juniper and Mountain Mahogany Woodlands	L-O <u>b</u> /	-	-	-	-	-	-	-	-	-	
	M-S <u>c</u> /	-	-	-	-	-	-				
	C-R <u>d</u> /	-	-	-	-	-	-				
Subtotal Forest-Woodland			41	0	0	0	0	41	69	<1	41
Grasslands- Shrubland	Sagebrush Steppe		-	-	-	-	-	-	-	-	-
	Shrublands		-	-	-	-	-	-	-	-	-
	Westside Grasslands		-	-	-	-	-	-	-	-	-
	Eastside Grasslands		-	-	-	-	-	-	-	-	-
Subtotal Grasslands-Shrubland			0	0	0	0	0	0	0	0	0
Wetland/ Riparian	Westside Riparian- Wetlands/Eastside Riparian-Wetlands	L-O <u>b</u> /	-	-	-	-	-	-	-	-	<1
		M-S <u>c</u> /	-	-	-	-	-	<1			
		C-R <u>d</u> /	<1	-	-	-	-	<1			
	Herbaceous Wetlands	Shrub	-	-	-	-	-	-	-	-	-
			6	-	-	-	-	6	-	-	6

TABLE 3.6.1-3a

Summary of Operation-Related Disturbance to Habitat (acres a/) – Blue Ridge Variation

General Vegetation Type	Mapped Vegetation Type	Forest Stand by Age	Pipeline Facilities					Subtotal Clearcut / Regenerating Forest	Subtotal By Habitat Type <u>e/</u>	Permanent Easement (50-foot) <u>f/</u>	Aboveground Facilities	Total Operation Impacts by Habitat Type
			30-foot Maintenance Corridor	Permanent Access Roads	Subtotal Late Successional Old-Growth Forest	Subtotal Mid- Seral Forest						
Subtotal Wetland/Riparian			7	0	0	0	0	7	<1	0	7	
Agriculture	Agriculture, Pastures, and Mixed Environs	n/a	1	-	-	-	-	1	2	-	1	
Subtotal Agriculture			1	0	0	0	0	1	2	0	1	
Developed / Barren	Urban and Mixed Environs	n/a	<1	-	-	-	-	<1	<1	-	<1	
	Roads	n/a	-	-	-	-	-	-	-	-	-	
	Beaches	n/a	2	-	-	-	-	2	4	-	2	
Subtotal Developed / Barren			3	0	0	0	0	3	4	0	3	
Open Water	Open Water - Lakes, Rivers, and Streams	n/a	<1	-	-	-	-	<1	<1	-	<1	
	Bays and Estuaries	n/a	-	-	-	-	-	-	-	-	-	
Subtotal Open Water			<1	0	0	0	0	<1	<1	0	<1	
Subtotal Non-Forest			11	0	0	0	0	11	19	0	11	
Project Total			52	0	0	0	0	52	87	<1	52	

General: Columns and rows do not necessarily sum correctly due to rounding. Acres rounded to nearest whole acre. Values less than 1 acre shown as "<1".

Acres of impacts to non-vegetated areas are included within this table for consistency in values reported within this document.

a/ Acres disturbed were evaluated using GIS; footprints for each component (aboveground facilities, permanent easement, and 30-foot maintenance corridor) were overlaid on the digitized vegetation coverage.

b/ The "Late Successional and Old-Growth" category (L-O) describes those forest areas with a majority of trees over 80 years of age. Forests with stands greater than 175 years are considered to have old-growth characteristics.

c/ The "Mid-Seral" category (M-S) describes those forest areas with a majority of trees over 40 years of age but less than 80 years of age.

d/ The "Grass-shrub-sapling or Regenerating Young Forest" category (C-R) describes those forest areas that are either clear-cut (tree age 0-5 years) or regenerating (tree age 5 to 40 years). Forest areas in this category are divided into forest vegetation types based on their potential to become those types of forests.

e/ Subtotal by Habitat Type includes the 30-foot maintenance corridor, permanent access roads, and only aboveground facilities with a meter station or compressor station (mainline block valves located within the 30-foot maintenance corridor).

f/ On BLM-managed lands, there would not be a "permanent easement", only an "operational easement."

TABLE 3.6.1-3b

Summary of Operation-Related Disturbance to Habitat (acres a) – Proposed Route

General Vegetation Type	Mapped Vegetation Type	Forest Stand by Age	Pipeline Facilities					Subtotal Permanent Easement (50-foot) <u>f</u>	Aboveground Facilities	Total Operation Impacts by Habitat Type	
			30-foot Maintenance Corridor	Permanent Access Roads	Subtotal Late Successional Old-Growth Forest	Subtotal Mid-Seral Forest	Subtotal Clearcut / Regenerating Forest				Subtotal By Habitat Type <u>e</u>
Forest-Woodland	Westside Lowland Conifer-Hardwood Forest	L-O <u>b</u> /	11	-				18		42	
		M-S <u>c</u> /	11	-	11	11	20	42	18		-
		C-R <u>d</u> /	20	-					34		
	Montane Mixed Conifer Forest	L-O <u>b</u> /	-	-				-			
		M-S <u>c</u> /	-	-	-	-	-	-	-	-	-
		C-R <u>d</u> /	-	-					-		
	Southwest Oregon Mixed Conifer-Hardwood Forest	L-O <u>b</u> /	-	-				-			
		M-S <u>c</u> /	-	-	-	-	-	-	-	-	-
		C-R <u>d</u> /	-	-					-		
	Ponderosa Pine Forest and Woodlands	L-O <u>b</u> /	-	-				-			
		M-S <u>c</u> /	-	-	-	-	-	-	-	-	-
		C-R <u>d</u> /	-	-					-		
	Westside Oak and Dry Douglas-fir Forest and Woodlands	L-O <u>b</u> /	-	-				-			
		M-S <u>c</u> /	-	-	-	-	-	-	-	-	-
C-R <u>d</u> /		-	-					-			
Western Juniper and Mountain Mahogany Woodlands	L-O <u>b</u> /	-	-				-				
	M-S <u>c</u> /	-	-	-	-	-	-	-	-	-	
	C-R <u>d</u> /	-	-					-			
Subtotal Forest-Woodland			42	0	0	0	0	0	69	0	42
Grasslands-Shrubland	Sagebrush Steppe		-	-	-	-	-	-	-	-	-
	Shrublands		-	-	-	-	-	-	-	-	-
	Westside Grasslands		-	-	-	-	-	-	-	-	-
	Eastside Grasslands		-	-	-	-	-	-	-	-	-
Subtotal Grasslands-Shrubland			0	0	0	0	0	0	0	0	0
Wetland/Riparian	Westside Riparian-Wetlands/Eastside Riparian-Wetlands	L-O <u>b</u> /	-	-				-			
		M-S <u>c</u> /	-	-	-	-	-	-	-	-	-
		C-R <u>d</u> /	-	-	-	-	-	-	-	-	-
	Herbaceous Wetlands	Shrub	-	-	-	-	-	-	-	-	-
			3	-	-	-	-	3	5	<1	3

TABLE 3.6.1-3b

Summary of Operation-Related Disturbance to Habitat (acres a/) – Proposed Route

General Vegetation Type	Mapped Vegetation Type	Forest Stand by Age	Pipeline Facilities						Subtotal Aboveground Facilities	Total Operation Impacts by Habitat Type	
			30-foot Maintenance Corridor	Permanent Access Roads	Subtotal Late Successional Old-Growth Forest	Subtotal Mid-Seral Forest	Subtotal Clearcut / Regenerating Forest	Subtotal By Habitat Type <u>e/</u>			Permanent Easement (50-foot) <u>f/</u>
Subtotal Wetland/Riparian			3	0	0	0	0	3	5	<1	3
Agriculture	Agriculture, Pastures, and Mixed Environs	n/a	3	-	-	-	-	3	4	-	3
Subtotal Agriculture			3	0	0	0	0	3	4	0	3
Developed / Barren	Urban and Mixed Environs	n/a	-	-	-	-	-	-	-	-	-
	Roads	n/a	4	-	-	-	-	4	6	-	4
	Beaches	n/a	-	-	-	-	-	-	-	-	-
Subtotal Developed / Barren			4	0	0	0	0	4	6	0	4
Open Water	Open Water - Lakes, Rivers, and Streams	n/a	<1	-	-	-	-	<1	<1	-	<1
	Bays and Estuaries	n/a	-	-	-	-	-	-	-	-	-
Subtotal Open Water			<1	0	0	0	0	<1	<1	0	<1
Subtotal Non-Forest			9	0	0	0	0	9	16	0	9
Project Total			51	0	0	0	0	51	85	0	51

Notes refer to complete project (232 miles).

General: Columns and rows do not necessarily sum correctly due to rounding. Acres rounded to nearest whole acre. Values less than 1 acre shown as "<1".

Acres of impacts to non-vegetated areas are included within this table for consistency in values reported within this document.

a/ Acres disturbed were evaluated using GIS; footprints for each component (aboveground facilities, permanent easement, and 30-foot maintenance corridor) were overlaid on the digitized vegetation coverage.

b/ The "Late Successional and Old-Growth" category (L-O) describes those forest areas with a majority of trees over 80 years of age. Forests with stands greater than 175 years are considered to have old-growth characteristics.

c/ The "Mid-Seral" category (M-S) describes those forest areas with a majority of trees over 40 years of age but less than 80 years of age.

d/ The "Grass-shrub-sapling or Regenerating Young Forest" category (C-R) describes those forest areas that are either clear-cut (tree age 0-5 years) or regenerating (tree age 5 to 40 years). Forest areas in this category are divided into forest vegetation types based on their potential to become those types of forests.

e/ Subtotal by Habitat Type includes the 30-foot maintenance corridor, permanent access roads, and only aboveground facilities with a meter station or compressor station (mainline block valves located within the 30-foot maintenance corridor).

f/ On BLM-managed lands, there would not be a "permanent easement", only an "operational easement."

TABLE 3.6.1-4

Summary of ODFW Habitat Categories and Impact (Acres) from the Pacific Connector Pipeline, by Alternative

Proposed Action	Project Component	ODFW Habitat Category (acres) <u>a/</u>					
		1	2	3	4	5	6
Blue Ridge Variation							
Impact on Non-Federal Lands							
Construction	Removed <u>b/</u>	3	68	54	74	1	7
Impact	Modified <u>c/</u>	0	0	1	0	0	0
Operational	30' Maintenance Corridor <u>d/</u>	1	17	12	15	0	2
Impact	Aboveground Facilities <u>e/</u>	-	-	-	-	-	-
Impact on Federal Lands							
Construction	Removed <u>b/</u>	0	11	6	3	0	0
Impact	Modified <u>c/</u>	0	0	0	0	0	0
Operational	30' Maintenance Corridor <u>d/</u>	0	2	2	1	0	0
Impact	Aboveground Facilities <u>e/</u>	-	-	-	-	-	-
Total Pipeline Project Impacts (Federal and Non-Federal Lands)							
Construction	Removed <u>b/</u>	3	79	60	78	1	8
Impact	Modified <u>c/</u>	0	0	1	0	0	0
Operational	30' Maintenance Corridor <u>d/</u>	1	19	14	16	0	2
Impact	Aboveground Facilities <u>e/</u>	-	-	-	-	-	-
Proposed Route							
Impact on Non-Federal Lands							
Construction	Removed <u>b/</u>	8	31	26	27	0	4
Impact	Modified <u>c/</u>	3	5	4	5	0	0
Operational	30' Maintenance Corridor <u>d/</u>	2	7	6	7	0	1
Impact	Aboveground Facilities <u>e/</u>	-	-	-	-	-	-
Impact on Federal Lands							
Construction	Removed <u>b/</u>	39	18	28	7	0	11
Impact	Modified <u>c/</u>	11	5	8	3	0	1
Operational	30' Maintenance Corridor <u>d/</u>	10	5	7	2	0	3
Impact	Aboveground Facilities <u>e/</u>	-	-	-	-	-	-
Total Pipeline Project Impacts (Federal and Non-Federal Lands)							
Construction	Removed <u>b/</u>	47	49	53	34	0	15
Impact	Modified <u>c/</u>	14	10	12	8	0	1
Operational	30' Maintenance Corridor <u>d/</u>	12	12	14	9	0	4
Impact	Aboveground Facilities <u>e/</u>	-	-	-	-	-	-

Note: Rows and columns may not sum correctly due to rounding. Acres are rounded to nearest whole acre (values below 1 are shown as "<1").

- a/ Category 1 – irreplaceable, essential habitat that is limited
- Category 2 – essential habitat that is limited
- Category 3 – essential habitat, or important habitat that is limited
- Category 4 – important habitat
- Category 5 – habitat having a high potential to become essential or important habitat
- Category 6 – habitat that has a low potential to become essential or important habitat

b/ Construction components considered for habitat removal include construction right-of-way, TEWAs, aboveground facilities, pipe storage yards, hydrostatic test sites, rock source and disposal sites, and temporary and permanent access roads.

c/ Modified acres include habitat potentially affected within identified UCSAs.

d/ Within the 30-foot maintenance corridor, habitat would be maintained in an herbaceous and/or shrub state, cutting or removing vegetation greater than 6 inches in height; however, in areas with pre-construction habitat types of agricultural land, bare ground such as beaches, waterbodies, wetlands, and estuarine habitat types, the maintenance corridor would be restored to its pre-construction habitat type or land use. This acreage does not include aboveground facilities.

e/ Aboveground facilities, including meter stations and communication towers, block valves, and a compressor station, would be maintained in a non-herbaceous, industrial state (graveled and/or concrete) for the life of the project.

3.6.1.1 Wildlife Resources on BLM Lands

On BLM lands, construction of the Blue Ridge Variation would impact approximately 19 acres of forest-woodland habitat, none of which would be LSOG, and no wetland/riparian habitat (table 3.6.1.1-1a). Construction of the proposed route would impact approximately 118 acres of forest-woodland habitat, including 46 acres of LSOG, and no wetland/riparian habitat (table 3.6.1.1-1b). Additional discussion of special status species on BLM-managed lands is included below in Section 3.7.

General Vegetation Type	Mapped Vegetation Type	Late Successional or Old-Growth Forest Crossed <u>a/</u> (acres)	Mid-Seral Forest Crossed <u>b/</u> (acres)	Clearcut/Regenerating Forest Crossed <u>c/</u> (acres)	Total Acres	Number of Species Associated
Forest-Woodland	Westside Lowland Conifer-Hardwood Forest	-	15	4	19	32 – Herpetofauna 113 – Birds 66 – Mammals
	Montane Mixed Conifer Forest	-	-	-	-	21 – Herpetofauna 94 – Birds 60 – Mammals
	Southwest Oregon Mixed Conifer-Hardwood Forest	-	-	-	-	35 – Herpetofauna 125 – Birds 64 – Mammals
	Ponderosa Pine Forest and Woodlands	-	-	-	-	31 – Herpetofauna 124 – Birds 56 – Mammals
	Westside Oak and Dry Douglas-fir Forest and Woodlands	-	-	-	-	32 – Herpetofauna 113 – Birds 62 – Mammals
	Western Juniper and Mountain Mahogany Woodlands	-	-	-	-	19 – Herpetofauna 86 – Birds 34 – Mammals
Subtotal		0	15	4	19	
Grasslands Shrubland	Shrub-steppe	-	-	-	-	22 – Herpetofauna 75 – Birds 46 – Mammals
	Westside Grasslands	-	-	-	-	26 – Herpetofauna 84 – Birds 37 – Mammals
	Eastside Grasslands	-	-	-	-	20 – Herpetofauna 79 – Birds 44 – Mammals
Subtotal		0	0	0	0	
Wetland/Riparian	Westside Riparian-Wetlands/Eastside Riparian-Wetlands	-	-	-	-	38 – Herpetofauna 154 – Birds 76 – Mammals
	Herbaceous Wetlands	-	-	-	-	18 – Herpetofauna 136 – Birds 43 – Mammals
Subtotal		0	0	0	0	
Agriculture	Agriculture, Pastures, and Mixed Environs	-	-	-	-	32 – Herpetofauna 173 – Birds 77 – Mammals
Subtotal		0	0	0	0	

TABLE 3.6.1.1-1a

Acres of Construction-Related Disturbance to Wildlife Habitat Types by the Pacific Connector Pipeline on BLM Land, and Wildlife Species Associated with Johnson and O'Neal (2001) Habitats – Blue Ridge Variation

General Vegetation Type	Mapped Vegetation Type	Late Successional or Old-Growth Forest Crossed <u>a/</u> (acres)	Mid-Seral Forest Crossed <u>b/</u> (acres)	Clearcut/ Regenerating Forest Crossed <u>c/</u> (acres)	Total Acres	Number of Species Associated
Developed/Altered	Urban and Mixed Environs	-	-	-	<1	37 – Herpetofauna 131 – Birds 63 – Mammals
	Roads	-	-	-	<1	N/A
Subtotal		0	0	0	<1	
Barren	Coastal Dunes and Beaches	-	-	-	-	6 – Herpetofauna 100 – Birds 26 – Mammals
Subtotal		0	0	0	0	
Open Water	Open Water - Lakes, Rivers, and Streams	-	-	-	<1	17 – Herpetofauna 94 – Birds 20 – Mammals
Subtotal		0	0	0	0	
Project Total		0	15	4	20	

Note: Rows and columns may not sum correctly due to rounding. Acreages rounded to nearest whole acre; values less than 1 acre shown as "<1".

a/ Late Successional (80 to 175 years) and Old-Growth Forest (175 + years).
b/ Mid-Seral Forest (40 to 80 years).
c/ Clearcut (0 to 5 years) and Regenerating Forest (5 to 40 years).

TABLE 3.6.1.1-1b

Acres of Construction-Related Disturbance to Wildlife Habitat Types by the Pacific Connector Pipeline on BLM Land, and Wildlife Species Associated with Johnson and O'Neal (2001) Habitats – Proposed Route

General Vegetation Type	Mapped Vegetation Type	Late Successional or Old-Growth Forest Crossed <u>a/</u> (acres)	Mid-Seral Forest Crossed <u>b/</u> (acres)	Clearcut/ Regenerating Forest Crossed <u>c/</u> (acres)	Total Acres	Number of Species Associated
Forest-Woodland	Westside Lowland Conifer-Hardwood Forest	46	27	45	118	32 – Herpetofauna 113 – Birds 66 – Mammals
	Montane Mixed Conifer Forest	-	-	-	-	21 – Herpetofauna 94 – Birds 60 – Mammals
	Southwest Oregon Mixed Conifer-Hardwood Forest	-	-	-	-	35 – Herpetofauna 125 – Birds 64 – Mammals
	Ponderosa Pine Forest and Woodlands	-	-	-	-	31 – Herpetofauna 124 – Birds 56 – Mammals
	Westside Oak and Dry Douglas-fir Forest and Woodlands	-	-	-	-	32 – Herpetofauna 113 – Birds 62 – Mammals
	Western Juniper and Mountain Mahogany Woodlands	-	-	-	-	19 – Herpetofauna 86 – Birds 34 – Mammals
Subtotal		46	27	45	118	
Grasslands Shrubland	Shrub-steppe	-	-	-	-	22 – Herpetofauna 75 – Birds 46 – Mammals

TABLE 3.6.1.1-1b

Acres of Construction-Related Disturbance to Wildlife Habitat Types by the Pacific Connector Pipeline on BLM Land, and Wildlife Species Associated with Johnson and O'Neal (2001) Habitats – Proposed Route						
General Vegetation Type	Mapped Vegetation Type	Late Successional or Old-Growth Forest Crossed a/ (acres)	Mid-Seral Forest Crossed b/ (acres)	Clearcut/ Regenerating Forest Crossed c/ (acres)	Total Acres	Number of Species Associated
	Westside Grasslands	-	-	-	-	26 – Herpetofauna 84 – Birds 37 – Mammals
	Eastside Grasslands	-	-	-	-	20 – Herpetofauna 79 – Birds 44 – Mammals
Subtotal		0	0	0	0	–
Wetland/ Riparian	Westside Riparian-Wetlands/Eastside Riparian-Wetlands	-	-	-	-	38 – Herpetofauna 154 – Birds 76 – Mammals
	Herbaceous Wetlands	-	-	-	-	18 – Herpetofauna 136 – Birds 43 – Mammals
Subtotal		0	0	0	0	
Agriculture	Agriculture, Pastures, and Mixed Environs	-	-	-	-	32 – Herpetofauna 173 – Birds 77 – Mammals
Subtotal		0	0	0	0	
Developed/Altered	Urban and Mixed Environs	-	-	-	<1	37 – Herpetofauna 131 – Birds 63 – Mammals
	Roads	-	-	-	12	N/A
Subtotal		0	0	0	12	
Barren	Coastal Dunes and Beaches	-	-	-	-	6 – Herpetofauna 100 – Birds 26 – Mammals
Subtotal		0	0	0	0	
Open Water	Open Water - Lakes, Rivers, and Streams	-	-	-	<1	17 – Herpetofauna 94 – Birds 20 – Mammals
Subtotal		0	0	0	<1	
Project Total		46	27	45	130	

Note: Rows and columns may not sum correctly due to rounding. Acreages rounded to nearest whole acre; values less than 1 acre shown as "<1".

a/ Late Successional (80 to 175 years) and Old-Growth Forest (175 + years).

b/ Mid-Seral Forest (40 to 80 years).

c/ Clearcut (0 to 5 years) and Regenerating Forest (5 to 40 years).

3.6.2 Aquatic Resources

Tables 3.6.2-1a and 3.6.2-1b summarize the effects to aquatic resources on private and BLM lands from construction of the Blue Ridge Variation and the proposed route.

TABLE 3.6.2-1a

Approximate Associated Construction Disturbance and Aboveground Facilities and Their Potential Effects to Aquatic Resources – Blue Ridge Variation

Category	Facility	Location	Notes	Effects to Aquatic Resources
Pipeline-related facilities	Hydrostatic testing	3 potential sites, 1 site located outside of construction right-of-way.	A <i>Hydrostatic Testing Plan</i> addressing protection procedures has been developed.	Potential erosion to streams and invasive species introduction if not properly managed. Potential flow reduction during withdrawal. Measures from ECRP and <i>Hydrostatic Testing Plan</i> (part of the POD) would avoid adverse effects.
	Construction Right-of-Way and Temporary extra work areas (TEWAs)	Construction right-of-way and 140 TEWAs would impact 33.6 acres of wetlands and 1.8 acres of waterbodies and ditches	9 are known anadromous fish bearing	Potential for erosion or hazardous spills. Slight LWD and shade reduction Measures from ECRP and SPCC and other measures in the POD would avoid adverse effects.
	Uncleared storage areas (UCSAs)	No UCSAs within riparian zones	No waterbodies directly affected	
	Rock sources, and permanent disposal sites	5 rock source/disposal sites – also identified as TEWAs	None are within 50 feet of a wetland or waterbody	Potential sediment runoff to stream. Measures from the ECRP, SPCCP, and other POD items would avoid adverse effects.
Construction access roads	New Temporary Access Roads (TARs) segments to be constructed, near streams	None proposed	-	-
	1 new Permanent Access Road (PAR)	No wetlands, waterbodies, or riparian areas affected	-	ECRP, SPCCP, and other POD items would avoid potential adverse effects.
	Improved Existing Access Roads	None proposed	-	
Above-ground facilities	BV#2	No wetlands or waterbodies affected.	-	No effect due to distance and use of measures from the ECRP, SPCCP, and other POD items.

TABLE 3.6.2-1b

Approximate Associated Construction Disturbance and Aboveground Facilities and Their Potential Effects to Aquatic Resources – Proposed Route

Category	Facility	Location	Notes	Effects to Aquatic Resources
Pipeline-related facilities	Hydrostatic testing	Not currently designed, but expected to be similar to the proposed route segment (3 potential sites with 1 possible site outside of construction right-of-way).	A <i>Hydrostatic Testing Plan</i> addressing protection procedures has been developed.	Potential erosion to streams and invasive species introduction if not properly managed. Potential flow reduction during withdrawal. Measures from ECRP and <i>Hydrostatic Testing Plan</i> (part of the POD) would avoid adverse effects.
	Construction Right-of-Way and Temporary extra work areas (TEWAs)	Construction right-of-way and 95 TEWAs would impact 12 acres of wetland and 0.2 acre of waterbodies	4 are known fish bearing	Potential for erosion or hazardous spills. Slight LWD and shade reduction Measures from ECRP and SPCC and other measures in the POD would avoid adverse effects.
	Uncleared storage areas (UCSAs)	42 UCSAs with 0.4 acre in riparian zones of 2 known fish bearing streams	No waterbodies directly affected	Some potential for sedimentation effects to aquatic resources. Slight LWD and shade reduction. Measures from ECRP would avoid or reduce adverse effects.

Category	Facility	Location	Notes	Effects to Aquatic Resources
	Rock sources, and permanent disposal sites	None proposed	-	-
Construction access roads	New Temporary Access Roads (TARs) segments to be constructed, near streams	None proposed	-	-
	New Permanent Access Road (PAR)	None proposed	-	-
	Improved Existing Access Roads	None proposed	-	-
Above-ground facilities	BV-2	< 0.1 acre of permanent wetland fill	Block valve located in an emergent pasture wetland (NWI - interpreted)	Compensatory mitigation would occur within Pacific Connector Proposed Kentuck Slough Mitigation Site Potential sedimentation effects. Measures from the ECRP, SPCCP, and other POD items would minimize adverse effects.

Overall, the Blue Ridge Variation would cross 41 perennial streams and 23 intermittent streams, while the proposed route would cross 4 perennial and 4 intermittent streams (table 3.6.2-2). Of the streams crossed by the Blue Ridge Variation, 14 are known or assumed to support anadromous species (including essential fish habitat [EFH] and Endangered Species Act [ESA] species) and 12 are known or assumed to support resident fish species. Of the streams crossed by the proposed route, 4 are known or assumed to support anadromous fish species (including EFH and ESA species) and 5 are assumed to support resident species (table 3.6.2-2). Though the proposed route crosses the boundary line of the South Fork Coos River watershed, no streams are crossed within that watershed.

Fifth-Field Watershed	Perennial Streams	Intermittent Streams	Fish-bearing Streams with:		EFH Species and Habitat Present (assumed) <u>a/</u>	ESA Species or Habitat Present (assumed) <u>a/</u>
			Anadromous Species (assumed) <u>a/</u>	Resident Species (assumed) <u>a/, b/</u>		
Blue Ridge Variation						
Coos Bay Frontal	35	15	8(3)	4(5)	8(3)	8(3)
Coquille River	5	1	1(1)	1	0(2)	0(2)
North Fork Coquille River	1	7	0(1)	1	0(1)	0(1)
TOTAL	41	23	9(5)	6(6)	8(6)	8(6)
Proposed Route						
Coos Bay Frontal	2	4	3	0(3)	3	3
South Fork Coos River	-	-	-	-	-	-
North Fork Coquille River	2	-	1	0(2)	1	1
TOTAL	4	4	4	0(5)	4	4

a/ Known and assumed, possible or likely (value in parentheses) crossings or pipeline proximity with indicated fish category designation.

b/ Includes primarily cold water trout, but also estuarine species in lower Coos system.

Table 3.6.2-3 indicates the proposed waterbody crossing methods for both routes. Neither route would require a horizontal directional drill (HDD) crossing. The Blue Ridge Variation includes one bore operation, and 61 dry open-cut crossings. The proposed route includes eight dry open-cut crossings.

Fifth-Field Watershed	Number of Waterbodies Crossed, by Construction Method						Total Crossed	Adjacent Not Crossed <u>a/</u>	Bedrock <u>b/</u>
	HDD or Direct Pipe	Bore	Wet Open-Cut	Diverted Open-Cut	Dry Open-Cut				
Blue Ridge Variation									
Coos Bay Frontal	-	1	-	-	47	48	5	1	
Coquille River	-	-	-	-	6	6	-	2	
North Fork Coquille River	-	-	-	-	8	8	-	2	
TOTAL	0	1	0	0	61	62	5	5	
Proposed Route Alternative									
Coos Bay Frontal	-	-	-	-	6	6	-	-	
South Fork Coos River	-	-	-	-	-	0	-	-	
North Fork Coquille River	-	-	-	-	2	2	-	-	
TOTAL	0	0	0	0	8	8	0	0	

a/ Waterbodies within the construction right-of-way that would not be crossed.
b/ Bedrock streambeds would be crossed by dry open-cuts but may require special construction techniques to ensure pipeline design depth including rock hammering, drilling and hammering, or blasting. The need for blasting would be determined by the contractor and would only be initiated after ODFW blasting permits are obtained. Numbers are not in addition to Total Crossed as they are already included in the Dry-Open Cut counts shown.

Table 3.6.2-4 summarizes the acres of impact to riparian areas within one site-potential tree height of perennial and intermittent waterbodies crossed or near the Blue Ridge Variation and the proposed route. Overall, the Blue Ridge Variation would affect 103 acres of riparian area, while the proposed route would affect 50 acres.

TABLE 3.6.2-4

Total Riparian Area (acres within one site-potential tree height distance) Disturbed (a/) by Construction Activities Adjacent to Perennial and Intermittent Waterbodies Crossed/Near by the Pacific Connector Pipeline, by Alternative												
Landowner	Forest Habitat <u>b/</u>					Other Habitat <u>b/</u>					Total Riparian Area Impact (acres)	
	Late Successional Old-Growth Forest	Mid-Seral Forest	Forest Regenerating	Clearcut, Forest	Forest Total	Forested Wetland <u>c/</u>	Wetland Nonforested <u>c/</u>	Nonforested Habitat Unaltered	Agriculture	Altered Habitat		Other
Blue Ridge Variation												
BLM-Coos Bay District	-	8	<1	<1	9	-	-	-	-	<1	<1	9
Non-Federal Subtotal	<1	14	43	4	62	-	23	-	5	2	2	94
Overall Total	<1	21	43	5	70	0	23	0	5	2	2	103
Proposed Route												
BLM-Coos Bay District	5	<1	4	-	9	-	-	-	-	2	<1	11
Non-Federal Subtotal	<1	7	8	<1	16	-	12	-	10	<1	<1	39
Overall Total	6	7	13	<1	26	0	12	0	10	3	<1	50

Note: Rows/columns may not sum correctly due to rounding. Acres rounded to nearest whole acre; acreages less than 1 are shown as <1.

a/ Project components considered in calculation of habitat "Disturbed": Pacific Connector construction right-of-way, temporary extra work areas, aboveground facilities, and permanent and temporary access roads. Note that federal lands have "riparian reserve" areas along streams that differ in size than those areas shown here.

b/ Habitat Types within Riparian Zones generally categorized as: Late Successional (Mature) or Old-Growth Forest (coniferous, deciduous, mixed ≥80 years old); Mid-Seral Forests (coniferous, deciduous, mixed ≥40 but ≤80 years old); Regenerating Forest (coniferous, deciduous, mixed ≥5 but ≤40 years old); Clearcut Forests; Wetland Forested, Unaltered Nonforested Habitat (grasslands, sagebrush, shrublands), and Altered Habitats (urban, industrial, residential, roads, utility corridors, quarries).

3.6.2.1 Stream Crossing Risk Analysis

Table 3.6.2.1-1 summarizes the results of the stream crossing risk analysis for the Blue Ridge Variation and the proposed route. The Orange category is considered of greatest risk from project actions on bank and bed stability. The Blue Ridge Variation would include 6 stream crossings ranked Orange, while the proposed route would have none. Most of the crossings for both routes are either Blue or Yellow, with Blue representing the lowest risk and Yellow a moderate risk. All ranking categories and the risk assessment are further described in section 4.3.2.2 of the EIS.

TABLE 3.6.2.1-1

Summary of Stream Crossing Site-Specific Rankings and Management Categories, by Alternative

Ranking	Blue Ridge Variation	Proposed Route
Blue	20	4
Green	0	1
Yellow	21	3
Orange	6	0
Total Crossings	47	8

Notes:
 Blue = Pacific Connector Project Typical Construction
 Green = Pacific Connector Project Typical Construction with Habitat Enhancement BMPs
 Yellow = Pacific Connector Project Typical Construction with BMPs for sensitive bed, bank, or riparian revegetation conditions to be selected by Environmental Inspector during construction
 Orange = Pacific Connector Project Typical Construction with BMPs for sensitive bed, bank or riparian vegetation conditions selected by qualified professional prior to construction based on site-specific information from pre-construction evaluation

3.6.2.2 Aquatic Resources on BLM Land

The Blue Ridge Variation would not cross any perennial streams on BLM-managed lands and 4 intermittent streams (table 3.6.2.2-1). The proposed route would cross one perennial stream, no intermittent streams, and the perennial stream may support resident fish species but no EFH or ESA species (table 3.6.2.2-1).

TABLE 3.6.2.2-1

Number of Streams Crossed on BLM-Managed Lands by Fish Status Category within Each Fifth-Field Watershed Coinciding with the Pacific Connector Project, by Alternative

Fifth Field Watershed	Perennial Streams	Intermittent Streams	Fish-bearing Streams with (a/):		EFH Species and Habitat Present (assumed) a/	ESA Species or Habitat Present (assumed) a/
			Anadromous Species (assumed) b/	Resident Species (assumed) a/,b/		
Blue Ridge Variation						
Coos Bay Frontal	0	1	0	0	0	0
Coquille River	0	0	0	0	0	0
North Fork Coquille River	0	3	0	0	0	0
TOTAL	0	4	0	0	0	0
Proposed Route						
Coos Bay Frontal	0	0	0	0	0	0
South Fork Coos River	0	0	0	0	0	0
North Fork Coquille River	1	0	0	(1)	0	0
TOTAL	1	0	0	0(1)	0	0

a/ Known and assumed (value in parentheses) crossings by the pipeline with indicated fish category designation
 b/ Trout
 Note: Numbers based on federal agency analysis of streams, which may differ from Pacific Connector's analysis in some watersheds.

3.7 THREATENED, ENDANGERED, AND OTHER SPECIAL STATUS SPECIES

3.7.1 Federally Listed Threatened and Endangered Species

The federally-listed endangered, threatened, and proposed species that potentially occur in the project area are listed in table 4.6.1-1 of the DEIS and analyzed in section 4.6.1 of the DEIS. While the level of impact with respect to area and duration would vary slightly between these alternatives, either alternative would require compliance with the BLM RMP (e.g., seasonal restrictions).

Tables 3.7.1-1 and 3.7.1-2 summarize the acres of affected MAMU and northern spotted owl (NSO) habitat by the comparison portion of the Blue Ridge Variation and the proposed route. The Blue Ridge Variation would impact 3 acres of suitable, 45 acres of recruitment, and 127 acres of capable MAMU habitat for a total of 175 acres (table 3.7.1-1). The proposed route would impact 54 acres of suitable, 31 acres of recruitment, and 117 acres of capable MAMU habitat for a total of 203 acres (table 3.7.1-1).

For both routes, the total acreage of NSO habitat affected mirrors MAMU habitat affected at 175 and 203 acres for the Blue Ridge Variation and the proposed route, respectively (table 3.7.1-2). Of that total, the Blue Ridge Variation affects no high NRF habitat and 7 acres of NRF habitat, while the proposed route affects 23 acres of high NRF and 43 acres of NRF habitat for the NSO (table 3.7.1-2).

Route	Proposed Action ^{a/}	Acres of MAMU Habitat Affected					
		Suitable			Recruit-ment	Capable	Total
		Occupied Stand	Presumed Occupied	Total			
Blue Ridge Variation	Habitat Removed	-	3	3	44	126	174
	Habitat Modified	-	-	-	1	<1	1
	Total	0	3	3	45	127	175
Proposed Route	Habitat Removed	25	16	41	26	91	159
	Habitat Modified	9	4	13	5	26	44
	Total	34	21	54	31	117	203

Note: Rows and columns may not sum correctly due to rounding. Acres are rounded to nearest whole acre (values below 1 are shown as "<1").
^{a/} Habitat Removed = right-of-way, TEWAs; Habitat Modified = UCSAs

TABLE 3.7.1-2
Summary of Affected Northern Spotted Owl Habitat (acres), by Alternative

Route	Proposed Action ^{a/}	Acres of NSO Habitat Affected				
		High NRF	NRF	Dispersal Only	Capable	Total
Blue Ridge Variation	Habitat Removed	-	7	50	117	174
	Habitat Modified	-	-	1	<1	1
	Total	0	7	51	117	175
Proposed Route	Habitat Removed	20	33	30	77	159
	Habitat Modified	3	11	7	23	44
	Total	23	43	37	100	203

Note: Rows and columns may not sum correctly due to rounding. Acres are rounded to nearest whole acre (values below 1 are shown as "<1").
a/ Habitat Removed = right-of-way, TEWAs; Habitat Modified = UCSAs

3.7.2 Other Special Status Species

3.7.2.1 BLM Sensitive Species

The proposed route would cross 36 populations of non-vascular plants on Coos Bay BLM District-managed lands, as compared to 34 for the Blue Ridge Variation. Under either alternative, these populations would be lost, although some populations may reestablish along the corridor in the future. No other BLM sensitive species would be impacted by either route.

3.8 RECREATION AND VISUAL RESOURCES

3.8.1 Parks and Recreational Areas or Facilities on Non-Federal Lands

Figure 3.8-1 shows parks and recreation areas along the proposed route and the Blue Ridge Variation. The Blue Ridge Trail System, located approximately 15 miles southeast of Coos Bay is within a designated Extended Recreation Management Area that encompasses 1,405 acres. This trail system is crossed by the proposed route between approximately MPs 20.5R and 22.0R. The hiking, biking, equestrian, and motorcycle trail system is a web of trails approximately 12 miles in length which can be ridden alone or linked with gravel roads. Periodically, management activities occur within this management area and trails and roads are subject to closures associated with management actions or climatic events (e.g., windstorms) intermittently. The Blue Ridge Variation would not affect the Blue Ridge Trail System or other uses within this management area. If the proposed route (see figure 3.1-1) was selected, portions of the trail may need to be closed during construction, similar to the trail closure for past logging activities in the area.

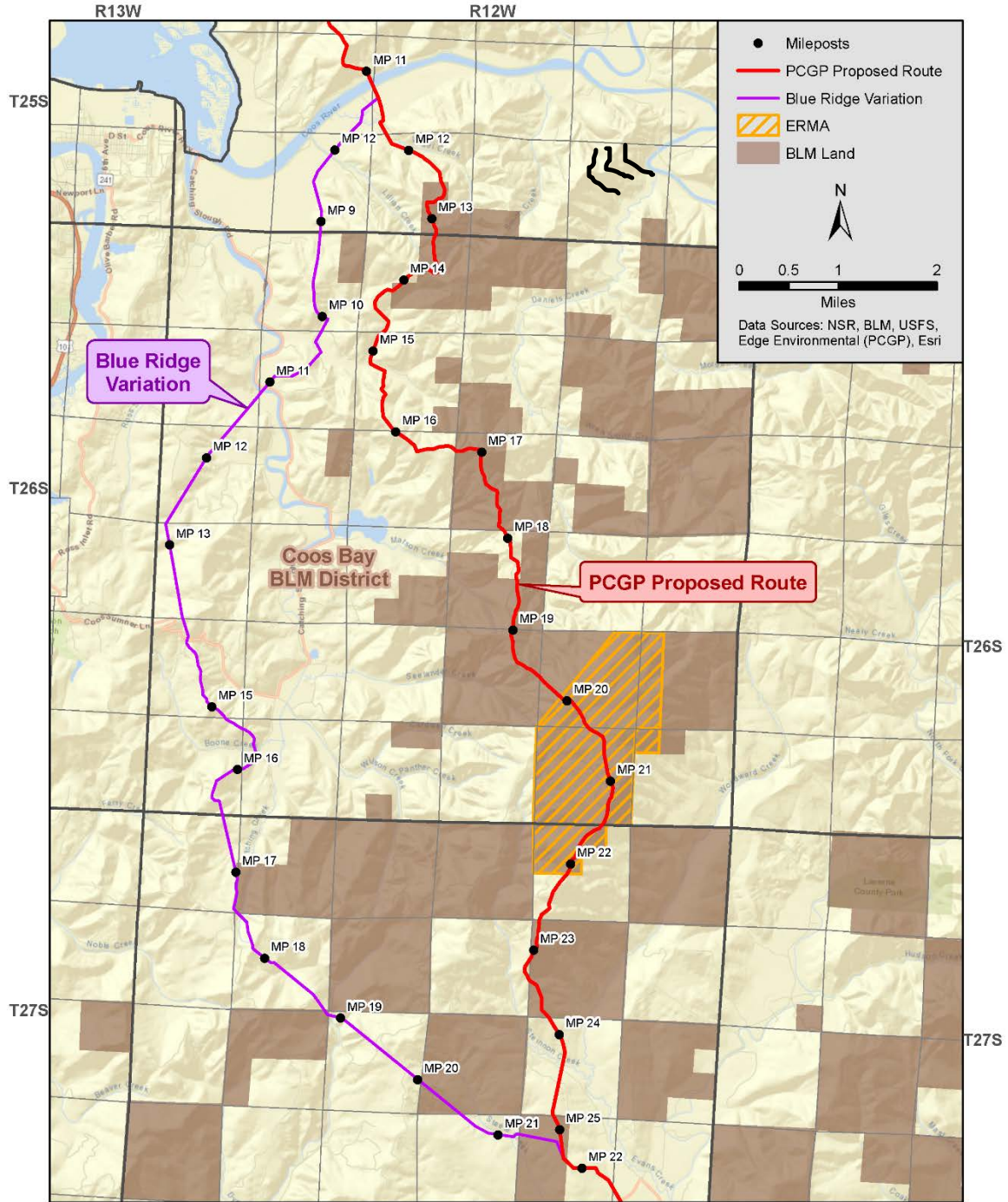
The only other parks in the vicinity of the proposed route and Blue Ridge Variation are Rock Prairie and Laverne County parks. Rock Prairie County Park is an unimproved picnic-day use park located along the North Fork of the Coquille River approximately 2 miles south of Blue Ridge Variation route at MP 22 (see figure 3.1-1). Laverne County Park is a 350-acre park located approximately 2.5 miles east of MP 22 on the proposed route. The park is located on the North Fork Coquille River and encompasses Laverne County Park and West Laverne Park View Park. Laverne County Park consists of 76 campsites including 46 RV sites and 30 tent sites. West Laverne Park (Area A) caters to reserved picnics and (Area B) large group camping. The parks contain a softball field, playground, horse pits, volleyball area, hiking trails, and covered shelters. Neither route should affect park use or associated recreational opportunities, however limitations

on the use of the BLM's designated Extended Recreation Management Area, specifically the Blue Ridge Trail System under the proposed route may result in some decrease in use of county parks in the general vicinity of the management area..

3.8.2 Recreation and Special Use Areas Specific to Consistency with BLM RMPs

In BLM's 2016 RMP that provides management direction for the Coos Bay District, BLM designated the Blue Ridge Trail System Extended Recreation Management Area, This area offers hiking, biking and off-highway vehicle recreation opportunities. Approximately 2.2 miles (32.6 acres) of the proposed route would cross this management area. The Blue Ridge Variation would not impact this management area.

Figure 3.8-1 BLM VRM Classes, Designated Trails, and Local Parks



3.8.3 Visual Resources on Federal Lands

As shown on figure 3.8-1, the Blue Ridge Variation would cross 1.4 miles of Visual Resource Management (VRM) Class IV (Major Modification), while the proposed route would cross 7.4 miles of VRM Class IV and 0.13 mile of VRM Class III (Partial Retain)⁶. Either route would be consistent with BLM VRW class designations.

3.9 TRANSPORTATION

3.9.1 Construction Access Roads

No temporary access roads (TARs) or permanent access roads (PARs) are proposed for the proposed route. MLV #2 (MP 15.08R) is located immediately adjacent to an existing private road. The Blue Ridge Variation does not require any TARs; however, one short PAR affecting 0.1 acre is proposed to access MLV #2 (MP 15.69).

3.9.2 Additional Traffic on Local Roads (All Jurisdictions)

It is expected that construction traffic volumes and use (i.e., heavy truck, light duty traffic on the primary public roads connecting the comparison portion of the proposed route or the Blue Ridge Variation with the cities of Coos Bay and Coquille and the proposed construction yards in these cities would be similar for either route. The primary public roads that would be utilized during construction of both routes include: South Coos River Road (County Road 6), Stock Slough Road (County Road 54), Fairview-Lavern Park Road (County Road 9C), and Coos Bay Wagon Road (County Road 60).

With construction of the proposed route, local traffic volumes and potential effects to rural residences would be minimized or avoided along the Blue Ridge Variation on the following existing roads: Lillian Lane/Messerle Logging Road (Alternative MP 12.08R); private roads (Alternative MPs 10.04, 10.59, 11.33, 14.25), Raven Wood Lane (Alternative MP 10.39), Anchor Drive (Alternative MP 11.33), Eastside-Sumner-County Road 53 (Alternative MP 11.96), Alder Wood Lane & Skyline Drive, Boone Creek Road (Alternative MP 15.70), and South Sumner-County Road 58 (Alternative MP 17.40). Construction of the proposed route would increase local traffic volumes and potential effects to residences located along Stock Slough-County Road-54 (MP 15.13R) above the crossing of the proposed route, as well as to residences along BLM Road 26-12-4.2 (Alternative MP 17.00R-19.68R) and private road (Alternative MP 15.7R). Further, all traffic that utilizes Daniels Tie Road (BLM 26-12-14.0) for construction of the proposed route would increase local traffic volumes and potential effects to the residences along the entire length of Daniels Creek County Rd-55 and portions of Coos River Highway County Rd 241 (Alternative MP 11.07R) east of the crossing of the Blue Ridge Variation.

Frequent and extended road closures would be required along sections of the proposed route during pipeline construction, where portions of the pipeline would be placed in the stable ridgeline beneath road surfaces. There are eight areas along the proposed route where the pipeline right-of-way would encompass existing roads and where road closure would be required during construction. The corresponding area of the Blue Ridge Variation only has one area where existing roads are located within the construction right-of-way (i.e., Menasha Logging Spur [Alternative MP 14.60–15.01]) and where road closure would be required during construction. Pacific

⁶ This segment is associated with an existing BLM route.

Connector's application does not specify work required on BLM roads; it is likely that some improvements would be required by BLM prior to use.

Pacific Connector has developed a traffic management plan that would be utilized for construction of the proposed route to minimize impacts on other road users, including local and emergency traffic, as described their current application. In addition, the POD, Appendix Y (*Transportation Management Plan*), would provide the basis for managing transportation features and uses on BLM lands subject to activities associated with the proposed route. The BMPs outlined in the *Traffic Management Plan* for the proposed route would also be utilized where appropriate along the proposed route to minimize potential construction traffic related effects.

3.10 CULTURAL RESOURCES

3.10.1 Cultural Resources

No previously recorded archaeological resources are located within the area of potential effect of the proposed route, and no newly identified archaeological resources were located during cultural survey of all federal lands between MP 11.29R and MP 23.35R. The historic Barker-Morris Families Cemetery, dating to 1872, is located on private land in Township 27 S., Range 12 W., Section 14.

The historic cemetery is situated at MP 24.3 of the proposed route. However, a cultural survey has not been conducted on this privately owned parcel, and the exact location of the cemetery has not been verified. The cemetery is listed in the Oregon Burial Site Guide but has not been recorded as an archaeological site with the Oregon State Historic Preservation Office.

Similarly, no previously recorded cultural resources are located on, and no newly identified archaeological resources have been recorded in areas within the area of potential effect that have been surveyed for cultural resources on the Blue Ridge Variation.

If the either route were recommended, Pacific Connector would conduct further consultation with the SHPO and local area Indian Tribes regarding any potential impacts to cultural resources.

3.11 CUMULATIVE EFFECTS

3.11.1 Scope of the Analysis

The fifth-field HUC or watershed is used as the basic analysis area for cumulative effects in the EIS and is continued in this appendix. Current and reasonably foreseeable projects within the fifth-field watersheds crossed by the Blue Ridge Variation and the proposed route are listed in table 4.13.2.3-1 in Chapter 4 of the DEIS. In addition, the proposed route would cross one watershed not crossed by the Blue Ridge Variation, the South Fork Coos River Watershed. Projects that may affect that watershed are described in section 4.14 of the DEIS. Watersheds are shown in figure 3.11-1. For both routes, project activities would affect less than 0.1 percent of the respective watershed areas, totaling less than 1 to 3 percent when added to other identified projects and project-related mitigation on federal lands.

3.11.2 Mitigation Proposed to Offset Unavoidable Project Impacts

The BLM has not identified any off-site mitigation associated with these environmental impacts for either route.

Figure 3.11-1. Watersheds Crossed by the Proposed Route and Ridge Variation

