
APPENDIX F.9

Comparison of Blue Ridge Variation with Proposed Route

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

Appendix F.9

Comparison of Blue Ridge Variation 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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ATTACHMENTS

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

1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this appendix is to compare the environmental consequences of the Blue Ridge Variation¹ with those of the Proposed Route segment illustrated in figure 3.4-2 of the Jordan Cove Energy Projects Final Environmental Impact Statement (FEIS). The information in this appendix is consistent with the level of detail provided in FEIS. The Blue Ridge Variation was identified by Pacific Connector in its 2017 Application to the Federal Energy Regulatory Commission (FERC or Commission) (Resource Report 10).

Under the Mineral Leasing Act (MLA) the Bureau of Land Management (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 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.

Although there are no National Forest System (NFS) lands at the location where this alternative occurs, the U.S. Forest Service (Forest Service), as a cooperating agency with independent authority (i.e., Land and Resource Management Plan (LRMP) amendments, concurrence with any right-of-way grant), has a vested interest in ensuring that FERC's EIS is adequate for Forest Service decision-making and disclosure.

1.2 BACKGROUND

Pacific Connector Pipeline, L.P. (Pacific Connector) originally filed an application for a Right-of-Way Grant with BLM on April 17, 2006, pursuant to the MLA and in accordance with Federal Regulations 43 CFR 2800 and 2880 to construct, operate, and maintain the 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 FERC. 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 Jordan Cove and Pacific Connector's refiling of new applications.

On January 23, 2017, Jordan Cove and Pacific Connector 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 Variation,

¹ The alternative described in section 3.4.2.2 (Blue Ridge Variation) of the Final EIS.

which is the segment of the Proposed Route between milepost PR²(MP) 11.1 and 21.8. Resource Report 10 of the application identified an alternative (Blue Ridge Variation) that is the subject of this appendix. To minimize confusion in this document, all milepost references in the text of this document have been assigned a prefix, either PR for the Proposed Route identified in the 2017 application and analyzed in this FEIS as the Proposed Action or BRV for the Blue Ridge Variation as identified in section 3.4.2.2 in this FEIS.

This appendix has been revised to reflect agency and public comments on FERC's alternative analysis and recommendations in the DEIS. Key changes made to this document since the DEIS was published include: minor adjustments to the alignments for both routes to reflect updated field survey information; use of current BLM Forest Operations Inventory (FOI) spatial data to characterize stand age and location information on BLM lands; site-specific field reviews by BLM biologists that refines the nature and location of habitat for Marbled murrelet (MAMU) and Northern spotted owl (NSO); inclusion of a discussion of complexity of late successional old growth (LSOG); and an updated analysis of the impacts to complex LSOG habitat.

BLM prepared this appendix to ensure that the FERC 2019 FEIS provides a comparison of these alternatives in a manner that satisfies BLM's NEPA requirements as a cooperating agency. The comparison will enable the agencies to determine which alternative is environmentally preferable and disclose to the public and decisionmakers the environmental impacts of either the Blue Ridge Variation or the Proposed Route.

Section 3.4.2.2 of the 2019 FEIS provides a brief comparison of the Blue Ridge Variation and the segment of the Proposed Route that is the focus of this analysis using information provided by Pacific Connector in its 2017 application, as amended. This detailed desktop analysis illustrates a number of attributes compared in a tabular format (e.g., length, construction disturbance, water bodies crossed, fish-bearing streams). BLM has determined that this appendix is necessary to ensure that the Blue Ridge Variation and the Proposed Route are analyzed at an equal level of detail to satisfy BLM's NEPA requirements.

Although the BLM, Forest Service, Reclamation, and other federal agencies are cooperating agencies for 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 consider both routes and to provide information to support its 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 that provided in the DEIS, or is not relevant to either the Blue Ridge Variation or the segment of the Proposed Route to which the Blue Ridge Variation is compared:

- Coastal Zone Management
- Soils-Compaction, Displacement/Mixing

² PR-MP and BRV-MP are used as applicable in the text of this document to identify mile post associated with the Proposed Route; these labels are not used in tables or figures presented in this document.

- 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 BLUE RIDGE VARIATION

The Blue Ridge Variation that is being compared to the segment of the Proposed Route described above extends from about BRV-MP³ 11.29 to BRV-MP 21.77. From BRV-MP 11.29, this route heads southwest along the Coos River valley to approximately BRV-MP 12.6, where the route climbs moderately steep slopes. The route continues southward and at BRV-MP 9.6 briefly follows a ridge top before descending into Stock Slough at BRV-MP 10.05. After crossing Stock Slough, the route climbs up and over the nose of a ridge into East Catching Slough at BRV-MP 10.9. The route then ascends to a ridge at BRV-MP 12.6 and continues southeast and then turns south at BRV-MP 12.8. From BRV-MP 12.8, the route continues south, traversing moderate slopes within an existing Bonneville Power Administration corridor. At approximately BRV-MP 14.2, the route reaches a ridge top and follows the ridgeline, descending at BRV-MP 15.5 steep slopes to Boone Creek. The route crosses Boone Creek and climbs again to a ridge crest at BRV-MP 16, continuing to BRV-MP 17.5, where the route climbs steep slopes to BRV-MP 17.8. From there, the route turns to the southeast and traverses variable terrain to the intersection with the Proposed Route at MP 21.77⁴.

The Blue Ridge Variation would impact a total of approximately 234 acres during construction and 93 acres during operation (table 2.1-1). One temporary access road and one permanent access road would be required. Two aboveground facilities, including 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	15.2 miles <u>b/</u>	174.5	92.3 <u>c/</u>
Temporary Extra Work Areas	140 sites	57.0	0 <u>d/</u>
Uncleared Storage Areas	4 sites	1.5	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	1 road	0.2	0
Permanent Access Roads	1 road	0.3	0.3
Aboveground Facilities	2 sites	0.2 <u>e/</u>	0.3 <u>e/</u>
Hydrostatic Discharge Locations Outside Right-of-Way	0	0	0
Total		233.7	92.9

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 of a mile and a tenth of an acre.

b/ Because of realignments, the length of the pipeline is different from the MPs that 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/ Construction impacts associated with the aboveground facility MLV#2 are included in the construction land requirement for the pipeline right-of-way, while the potential Blue Ridge communication tower site, approximately 0.2 acre, is not included.

³ BRV-MP is used as applicable in the text of this document to identify mile post associated with the Blue Ridge Variation; this label is not used in tables or figures.

⁴ This is an equation station used to ensure consistency along the route.

Alignment sheets for the Blue Ridge Variation are included in Attachment 1a.

2.2 PROPOSED ROUTE

The Proposed Route for the portion of the alignment addressed in this appendix begins at about PR-MP 11.29 and generally follows a higher elevation to the east of the Blue Ridge Variation. After PR-MP 11.29R, the Proposed 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 PR-MP 12.1. From PR-MP 12.1, the route ascends a moderately steep slope and reaches the ridge top at approximately PR-MP 12.2 and follows a ridgeline for approximately 2.2 miles. From PR-MP 14.7, the route follows Laxstrom Gulch into Stock Slough. From about PR-MP 15.3, the route climbs steep north-facing slopes on the south valley wall of Stock Slough and reaches the ridge top at PR-MP 15.5. The route continues along a ridge heading southeast or south to PR-MP 19.6, where the route climbs steep slopes to the top of “Blue Ridge” at PR-MP 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 PR-MP 24.6, following the ridge to the intersection with the Proposed Route at PR-MP 25.2 (MP 21.77 on the Proposed Route)⁵. Alignment sheets for the Proposed Route are included in Attachment 1a to this appendix.

The Proposed Route would impact a total of approximately 244 acres during construction and 85 acres during operation (table 2.1-2). One temporary access road (TAR) and one permanent access road (PAR) would be built as part of the comparison segment. Two aboveground facilities, including mainline valve (MLV) #2 and the potential Blue Ridge communication site, would have a long-term effect on 0.5 acre collectively.

TABLE 2.1-2 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>	161.8	85.2 <u>c/</u>
Temporary Extra Work Areas	98 sites	37.5	0
Uncleared Storage Areas	41 sites	44.7	0
Rock Source and 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	1 road	0.2	0
Permanent Access Roads	1 road	0.1	0.1
Aboveground Facilities	2 sites	0.2 <u>d/</u>	0.3 <u>d/</u>
Hydrostatic Discharge Locations Outside Right-of-Way	0	0	0
Total		244.5	85.6

Note: There may be some minor discrepancies between the quantitative values provided in this table and those presented in chapter 3 of the FEIS, due to differences in the information included in the application to the FERC (used in the preparation of the DEIS and the subsequent FEIS) 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 of a mile or a tenth of an acre.

b/ Because of realignments, the length of the pipeline is different from the MPs that reflect the I 2015 route analyzed in FERC's 2015 FEIS.

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, while the potential Blue Ridge communication tower site, approximately 0.2 acre, is not included.

Alignment sheets for the Proposed Route are included in Attachment 1b.

⁵ This is an equation station used to ensure consistency along the route.

3.0 **AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

3.1 **LAND USE**

3.1.1 **Land Ownership**

The Blue Ridge Variation is located primarily on private land (13.8 miles, 90.8 percent) (table 3.1.1-1). The Proposed Route is evenly split between private land (6.5 miles, 46.4 percent) and federal (BLM) land (7.5 miles, 53.5 percent). The Blue Ridge Variation crosses less than 0.1 mile (table 3.1.1-1) of state land while the Proposed Route does not cross any state land. Neither the Blue Ridge Variation nor the Proposed Route would cross tribal land.

County		Federal Land		State Land		Private Land		Total
		Miles	%	Miles	%	Miles	%	
Blue Ridge Variation	Coos	1.4	9.2	<0.1	0.3	13.8	90.8	15.2
Proposed Route	Coos	7.5	53.5	-	-	6.5	46.4	14.0

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 Blue Ridge Variation and the Proposed Route would cross forested land totaling 11.6 miles (76.3 percent) and 11.2 miles (80 percent) respectively (table 3.1.2.1-1). The Blue Ridge Variation would cross 0.4 miles of agricultural land compared to 1.5 along the Proposed Route. Both routes would also cross short distances of transportation/communication lands and wetlands (mostly pasture) and water (stream crossings). Neither route would cross residential lands.

Tables 3.1.2.1-2a and 3.1.2.1-2b indicate the acres of land that would be affected by construction and operation of the Blue Ridge Variation and the Proposed Route. The Blue Ridge Variation would affect a total of 234 acres during construction, including 169 acres of forest land, 43 acres of cropland/pastureland, 19 acres of transportation/communication land, 2 acres of streams, and less than 1 acre each of residential land, industrial land, 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 for Blue Ridge Variation and Proposed Route					
U.S. Geological Survey Land Use Classification		Blue Ridge Variation		Proposed Route	
		Total Miles	Percent of Total	Total Miles	Percent of Total
Urban or Built-Up Land	Residential				
	Commercial				
	Industrial				
	Transportation/Communication	1.3	8.5	1.2	8.3
	Other Urban or Built-up Land				
Subtotal		1.3	8.5	1.2	8.3
Agricultural Lands	Cropland and Pasture	0.4	2.6	1.5	10.7
	Orchards, Groves, Vineyards, etc.				
Subtotal		0.4	2.6	1.5	10.7
Rangeland	Herbaceous Rangeland				
	Shrub and Brush Rangeland				
	Mixed Rangeland				
Subtotal		0.0	0.0	0.0	0.0
Forest Land	Deciduous Forest Land	1.2	8.0	0.3	2.1
	Evergreen Forest Land	1.4	9.2	0.4	2.9
	Clearcut Forest Land	6.8	44.7	5.0	35.7
	Regenerating Forest Land	2.2	14.5	5.5	39.3
	Mixed Forest Land				
Subtotal		11.6	76.3	11.2	80.0
Water	Streams	0.1	0.7	<0.1	0.1
	Ditches and Canals	<0.1		<0.1	<0.1
	Bays and Estuaries	<0.1			
Subtotal		0.1	0.7	<0.1	<0.1
Wetlands	Forested Wetland	<0.1			
	Non-forested Wetland	1.7	11.2	-	
Subtotal		1.7	11.2	0.0	0.0
Barren Land	Beaches				
	Mines, Quarries, Gravel Pits				
Subtotal		0.0	0.0	0.0	0.0
Project Total		15.2	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

	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/	Non-forested Wetlands a/	Beaches	Strip Mines, Quarries, Gravel Pits	Total
CONSTRUCTION DISTURBANCE ^{b/}																							
Construction Right-of-Way	<1	-	-	14	-	25	-	-	-	-	-	13	26	16	79	1	<1	1	<1	<1	-	-	175
Hydrostatic Discharge Sites	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aboveground Facility	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1
Temporary Extra Work Areas	<1	0	<1	5	-	18	-	<1	-	-	-	3	5	5	21	<1	<1	-	-	<1	-	-	57
Uncleared Storage Areas	-	-	-	<1	-	<1	-	-	-	-	-	<1	1	<1	<1	-	-	-	-	-	-	-	2
Rock Source/Disposal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contractor and Pipe Storage Yards	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Access Roads (TARs/PARs)	-	-	-	-	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1
Total	<1	<1	<1	19	0	43	0	<1	0	0	0	16	32	21	100	1	<1	1	<1	<1	0	0	234
OPERATION DISTURBANCE																							
Permanent Easement ^{c/}	<1	-	-	8	-	13	-	-	-	-	-	7	13	8	41	<1	<1	-	<1	<1	-	-	92
Permanent Access Roads	-	-	-	-	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1
Total	<1	0	0	8	0	13	0	0	0	0	0	7	13	8	41	<1	<1	0	<1	<1	0	0	92
30-Foot Maintenance Corridor	<1	-	-	5	-	8	-	-	-	-	-	4	8	5	25	<1	<1	-	<1	<1	-	-	55

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/ 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.

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 (Comparison Segment)

	Residential	Commercial	Industrial	Transportation/ Communication	Other Urban/Built- up Land	Cropland/ Pastureland	Orchards, Groves, Vineyards, Muirasac	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/}	Non-forested Wetlands ^{a/}	Beaches	Strip Mines, Quarries, Gravel Pits	Total
CONSTRUCTION DISTURBANCE ^{b/}																							
Construction Right-of-Way	-	-	-	13	-	18	-	-	-	-	-	4	65	5	57	<1	-	-	-	-	-	-	162
Hydrostatic Discharge Sites	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aboveground Facility	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	-	<1
Temporary Extra Work Areas	<1	<1	-	3	-	6	-	-	-	-	<1	14	2	12	<1	-	-	-	-	<1	-	-	38
Uncleared Storage Areas	-	-	-	1	-	<1	-	-	-	-	-	1	21	1	21	-	-	-	-	<1	-	-	45
Rock Source/Disposal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contractor and Pipe Storage Yards	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Access Roads (TARs/PARs)	-	-	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1
Total	<1	<1	0	17	0	24	0	0	0	0	5	100	8	90	<1	0	0	0	<1	0	0	0	245
OPERATION DISTURBANCE																							
Permanent Easement ^{c/}	-	-	-	7	-	9	-	-	-	-	-	2	33	3	31	<1	<1	-	-	-	-	-	85
Permanent Access Roads	-	-	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1
Total	0	0	0	7	0	9	0	0	0	0	2	33	3	31	<1	<1	0	0	-	0	0	0	85
30-Foot Maintenance Corridor	-	-	-	4	-	6	-	-	-	-	-	1	20	2	18	<1	<1	-	-	-	-	-	51
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/} 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.																							
^{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 Blue Ridge Variation and the Proposed Route would impact a total of less than 1 acre. The MLV #2 site for the Proposed Route would be located on regenerating forested land, and the MLV #2 site for the Blue Ridge Alternative would be located in mixed forest land (table 3.1.2.1-3). The proposed communication tower at Blue Ridge would be located on an existing utility site for both routes and would not expand the footprint of the existing site.

Facility	Milepost	Land Use	Acres
Blue Ridge Variation			
MLV #2 (Boone Creek Road)	15.66	Mixed Forest Land	<1
Subtotal			<1
Communication Sites Not Located at Other Aboveground Facilities			
Blue Ridge <u>a/</u>	~ 20	Transportation, Communications, and Utilities/Commercial	<1
Subtotal			<1
Total			<1
Proposed Route (Comparison Segment)			
MLV #2 (Stock Slough Rd #54)	22.18BR	Regenerating Evergreen Forest Land	<1
Subtotal			<1
Communication Sites Not Located at Other Aboveground Facilities			
Blue Ridge <u>a/</u>	~ 20	Transportation, Communications, and Utilities/Commercial	<1
Subtotal			<1
Total			<1

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/ 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 approximately 100-foot x 100-foot (0.23-acre) area in the immediate area of the existing communication tower facilities.

3.1.2.2 County Zoning

Both the Blue Ridge Variation and the Proposed Route primarily cross lands zoned by Coos County for Forest use (11.7 and 12.9 miles, respectively). The Blue Ridge Variation crosses more land zoned for Exclusive Farm Use (2.5 miles versus 1.1 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	Proposed Route
Coos County	Forest (F)	11.7	12.9
	Exclusive Farm Use (EFU)	2.5	1.1
	CBEMP (all zones)	0.8	<0.1
	Rural Residential (RR-5, RR-2)	0.2	0.0
	Industrial (IND)	0.0	0.0
	Total		15.2

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 is one residence (MP 14.2) within 50 feet of the boundary of project construction activity for the Blue Ridge Variation. There are no residences within 50 feet of the Proposed Route boundary. Table 4.7.2.4 in the FEIS lists all the residences that would be within 50 feet of the boundary of project construction activity for the entire Proposed Route.

Planned Development

Based on Pacific Connector’s communication with the Coos County Planning Department as of August 2017, concerns have been expressed by private landowners along the Blue Ridge Variation regarding potential future limitations for future development on their properties. There are no known developments within 0.25 mile of the Blue Ridge Variation. 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. Impacts to private property are discussed in section 4.9 of the FEIS, and the socioeconomic analysis is not repeated in this appendix.

3.1.3 Land Use on BLM Lands

The Blue Ridge Variation would cross 1.4 miles and affect 19 acres of BLM land within the Coos Bay District (table 3.1.3-1), nearly all of which would be forest land (16 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 that is also within the Coos Bay District, affecting a total of 131 acres during construction (table 3.1.3-1), 118 acres of which would be on forest land, 13 acres on transportation/communication land, and less than 1 acre each of commercial land, streams, and wetlands (table 3.1.3-2b). Similar data on land uses on private/state lands is not available for comparison purposes.

Pipeline Facility/Component	Blue Ridge Variation	Proposed Route
Miles Crossed by Pipeline	1.4	7.5
Temporary Construction Acreage Requirements (acres)		
Construction Right-of-Way	15.3	87.3
TEWAs	4.0	16.5
UCSAs	0.0	27.0
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)	19.3	130.8
Operational Construction Acreage Requirements (acres)		
Operational Easement	8.5	46.0
Permanent Access Roads (PAR)	0	<1
Aboveground Facilities	<1	<1
Total Operational Impacts (acres)	8.5	46.0
Right-of-Way (acres)		
30-Foot Maintained Right-of-way (acres)	5.1	27.6
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 are 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

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	Non-forested Wetlands	Beaches	Strip Mines, Quarries, Gravel Pits	Transitional Areas	Total	
Coos Bay BLM																									
Construction a/	-	-	<1	3.4	-	-	-	-	-	-	-	6.9	0.6	3.1	5.2	0.1	-	-	-	-	-	-	-	-	19.3
Aboveground Facilities Outside the Right-of-Way	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operational Easement b/	-	-	-	2.1	-	-	-	-	-	-	-	2.8	0.2	1.7	1.7	<1	-	-	-	-	-	-	-	-	8.5
Permanent Access Roads	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30-Foot Maintenance Corridor	-	-	-	1.1	-	-	-	-	-	-	-	1.9	<1	1	1	<1	-	-	-	-	-	-	-	-	5
<p>Note: Rows may not sum correctly due to rounding. Acres are rounded to nearest whole acre (values below 1 are shown as <1).</p> <p>a/ Includes the construction right-of-way, temporary extra work areas and uncleared storage areas.</p> <p>b/ The operational easement (50 feet wide) 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	Non-forested Wetlands	Beaches	Strip Mines, Quarries, Gravel Pits	Transitional Areas	Total
Coos Bay BLM																								
Construction <i>a/</i>	-	<1	-	13	-	-	-	-	-	-	-	-	74	3	41	<1	-	-	-	<1	-	-	-	131
Aboveground Facilities Outside the Right-of-Way	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operational Easement <i>b/</i>	-	-	-	5	-	-	-	-	-	-	-	-	26	1	14	<1	-	-	-	-	-	-	-	46
Permanent Access Roads	-	-	-	<1	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	-	<1
30-Foot Maintenance Corridor	-	-	-	3	-	-	-	-	-	-	-	2	15	<1	8	<1	-	-	-	-	-	-	-	28

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

a/ Includes the construction right-of-way, temporary extra work areas and uncleared storage areas.

b/ The operational easement (50 feet wide) is located within the disturbed acreage of the construction right-of-way. It is not an addition to the construction impacts.

Neither route would cross Oregon and California (O&C) lands. The Blue Ridge Variation would cross 1.4 miles of Coos Bay Wagon Road Lands, and the Proposed Route would cross 7.5 miles of Coos Bay Wagon Road lands and the Proposed Route would cross <1 mile 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	-	1.4	-	1.4
Proposed Route	-	7.5	<1	7.5

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.

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) (BLM, 2016) applicable to the Coos Bay, Northwest Oregon District, and Swiftwater Field Office of the Roseburg District. Table 3.1.4-1 provides information on BLM RMP land allocations crossed by the Blue Ridge Variation and the Proposed Route. 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 – Areas reserved from sustained yield timber production to maintain the values and resources for which BLM has established. Includes Areas of Critical Environmental Concern, lands managed for their Wilderness Characteristics, constructed facilities and infrastructure, and lands classified as unsuitable for sustained yield timber production using the Timber Production Capability System (TPCC);
- Harvest Land Base – includes Low Intensity Timber Area, Moderate Intensity Timber Area;
- Late Successional Reserve (LSR) - Lands allocated for the maintenance of nesting-roosting habitat for the northern spotted owl and nesting habitat for the marbled murrelet, including direction to promote the development of these habitats and the development and maintenance of foraging habitat for the northern spotted owl⁶. (see Southwestern Oregon RMP/ROD, 2016, page 70); and
- Riparian Reserve - Lands allocated to contribute to the conservation and recovery of ESA-listed species and their habitats, to maintain and restore natural channel dynamics, to

⁶ See Southwestern Oregon RMP/ROD, 2016, page 75.

maintain water quality and streamflows, and to meet federal and state water quality standards.⁷

Alternative	Congressionally Reserved Lands and National Conservation Lands	District-Designated Reserves	Harvest Land Base	Late Successional Reserve	Riparian Reserve
Blue Ridge Variation	-	<1	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).
Source: BLM 2016 RMP GIS Shapefile ROW_ROD_NCO_LUA.shp.

A discussion of the BLM RMPs and management direction is included in section 4.7 of the FEIS. Appendix F1 of the FEIS 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 Riparian Reserve Management

The widths and management direction for the Riparian Reserve allocation 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 relevant only to defining Riparian Reserve widths and management direction for streams and water features on BLM-administered lands within the subwatershed. The width of a Riparian Reserve is based on site-potential tree height (SPT); the average maximum height of the tallest dominant trees (200 years or older) for a given site class in Western Oregon.

The Blue Ridge Variation includes three Class 1 subwatersheds within the Coos Bay-Frontal Pacific Ocean watershed (SPT = 240 feet), Coos River, Catching Slough, and Isthmus Slough, one Class 1 subwatershed in the Coquille River watershed (SPT = 200 feet) - Cunningham Creek, and one Class 1 subwatershed within the North Fork Coquille River watershed (SPT = 240 feet) - Hudson Creek. The Proposed Route goes through three Class 1 subwatersheds within the North Fork Coquille River watershed, Coos River, Catching Slough, and Hudson Creek, and one Class 1 subwatershed within the South Fork Coos River watershed, Daniels Creek-South Fork Coos River. Within each of these watersheds, BLM manages the Riparian Reserves consistent with the requirements of the RMP. While the Forest Service manages Riparian Reserve 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 nor the Proposed Route would affect NFS lands. Table 3.1.4.3-1 provides a summary of the lands allocated as Riparian Reserve for each of these watersheds, including the respective subwatersheds.

⁷See Southwestern Oregon RMP/ROD, 2016, page 75.

TABLE 3.1.4.3-1

**Land Management (acres) and Federal Land Allocations (acres) In Fifth-Field Watersheds
Crossed by the Blue Ridge Variation and/or the Proposed Route**

Fifth-Field Watershed/ Sixth-Field Watershed	Total (acres)	Land Management (acres)		Land Allocations (acres)	
		BLM	NFS	Riparian Reserve	
		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	2,0106
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 Reserve 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 Reserve for the Blue Ridge Variation and the Proposed Route 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 for the Blue Ridge Variation and Proposed Route illustrates that under either alternative, the overall impacts to the Riparian Reserve within each fifth-field watershed would equate to less than 1 percent of the total area of the Riparian Reserve managed by BLM in these watersheds.

TABLE 3.1.4.3-2

Riparian Reserve 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
Blue Ridge Variation	Coos Bay Frontal	1	0.3
	Coquille River	1	<0.1
	North Fork Coquille River	7	8.7
Total Riparian Reserves Impacted on BLM Lands		9	9.1
Proposed Route	Coos Bay Frontal	10	6.5
	South Fork Coos River	4	2.6
	North Fork Coquille River	3	3.2
Total Riparian Reserves Impacted on BLM Lands		17	12.3

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 2016 RMP GIS Shapefile RWO_ROD_NCO_Riparian_Reserves_poly.shp.

Project Impacts to Water Quality and Aquatic Resources

The analysis of impacts related to water quality and aquatic resources is presented in sections 4.03 (Waters and Wetlands), 4.05 (Wildlife and Aquatic Resources) and 4.06 (TE and Other Special Status Species) of the FEIS. This topic is not addressed in this document as there is no information available to support a parallel analysis of impacts to both BLM and private/state lands, and therefore would not contribute to BLM's ability to compare the Blue Ridge Variation and the Proposed Route.

3.1.4.2 Resources Values and Conditions on BLM Land:

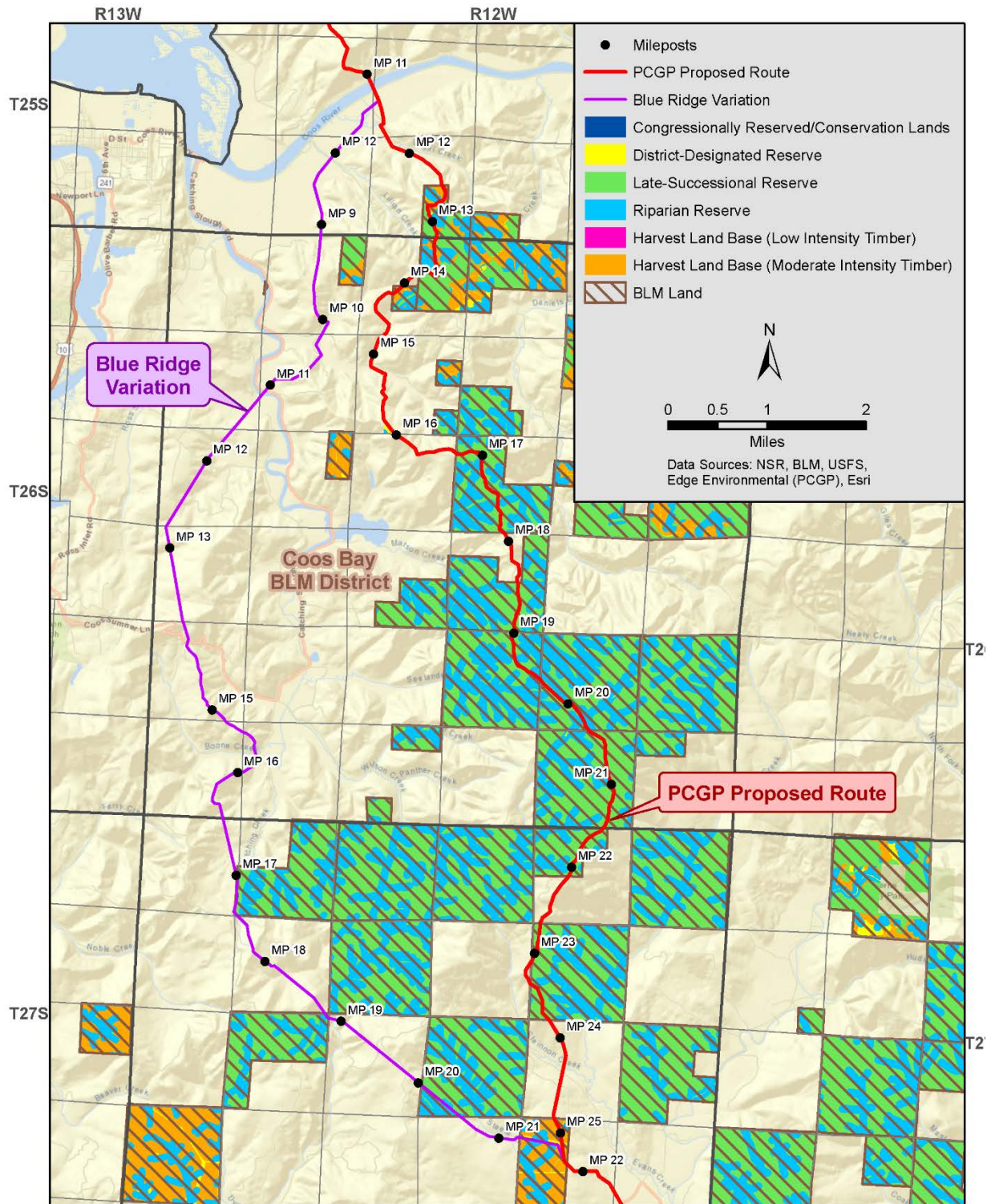
Project Impacts on BLM Land Allocations⁸

The management direction for BLM lands considered in this appendix is specific to the following land allocations described previously. As illustrated in table 3.1.3.4, the Blue Ridge Variation would cross <0.1 mile of District-Designated Reserve lands (1.3 acres), 0.4 mile of Harvest Land Base (2.4 acres), 0.4 miles of LSRs (2.4 acres), and 0.6 mile of Riparian Reserve (9.1 acres). As illustrated in table 3.1.3.4, the Proposed Route would cross 0.3 mile of District-Designated Reserve lands (4.2 acres), 0.9 mile of Harvest Land Base (16 acres), 5.5 miles of LSRs (97.3 acres), and 0.8 mile of Riparian Reserve (12.3 acres). While the Blue Ridge Variation would actually cross any Riparian Reserves, the Riparian Reserve associated with Catching Creek is clipped⁹. Figure 3.1-1 illustrates the location of these BLM land allocations with respect to the Blue Ridge Variation and the Proposed Route.

⁸ The BLM proposed plan amendment would, under both the Blue Ridge Variation and the Proposed Route re-allocate impacted LSR acres to District Designated Reserve.

⁹ A "clipped" Riparian Reserve is defined as a Riparian Reserve where clearing and/or grading would occur within the boundary of this land allocation, but the project footprint would not impact the waterbody associated with the Riparian Reserve

Figure 3.1-1 Map of BLM Land Allocations for the Proposed PCGP Blue Ridge Variation 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 2015¹⁰).

3.2.1.1 Site Geology

The site geology for the Blue Ridge Variation is provided in Resource Report 6 of Pacific Connector's 2013 application to FERC. The site geology for the Proposed Route is also described in Resource Report 6 of the Pacific Connector's 2017 application. 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, 2017).

3.2.1.2 Seismic Setting and Hazards

Seismic Hazards

Seismic hazards considered in the GeoEngineers reports (2015, 2018) 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 Blue Ridge Variation nor the Proposed Route cross mapped Quaternary-age faults.

The Blue Ridge Variation crosses four valley segments with the potential for earthquake-induced liquefaction or lateral spreading: Coos River (BRV-MP 11.1R to BRV-MP 12.6R), Stock Slough (BRV-MP 10.1 to BRV-MP 10.4), Catching Slough (BRV-MP 10.8 to BRV-MP 11.4), and Boone Creek (BRV-MP 15.72 to BRV-MP 15.77) (GeoEngineers 2015, 2017). 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. A desktop evaluation identified two alluvial valley segments along the Proposed Route with the potential for earthquake-induced liquefaction: Coos River/Vogel Creek Valley (PR-MP 11.29 to PR-MP 12.1) and Stock Slough (PR-MP 15.1 to PR-MP 15.3).

Landslide Hazards

Two types of landslide hazards were identified by the applicant in its 2017 application (Resource Report 6): deep-seated landslides and shallow-rapid landslides. Deep-seated landslide movement

¹⁰ GeoEngineers. 2015. Revised Geological Hazards Evaluation of the PCGP Modified Blue Ridge Route Alternative. July 17, 2015.

can occur where no previous movement is evident, but commonly occurs where topographic and vegetative indications of past or chronic slope movements are present.

Rapid-shallow landslides, including debris slides/avalanches and channelized debris flows, typically originate on very steep and strongly convergent hill slopes variously termed colluvial swales, hollows, or headwalls.

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 prone areas (both deep-seated and shallow) totaling 7,137 feet along the alignment. Using aerial photographs and interpretation of light detection and ranging (LiDAR) slope modeling, Geoengineers identified two slides (3,257 linear feet) along the Blue Ridge Variation. Landslide data from published sources indicate the Proposed Route would cross two landslide prone areas (both deep-seated and shallow) totaling 3,276 feet. GeoEngineers (2015) also reviewed aerial photography and light detection and ranging (LiDAR) hillshade model data to identify landslide hazards on the Proposed Route. Based on this analysis, the Proposed Route would cross two landslide hazard areas totaling 1,088 linear feet (GeoEngineers 2015). Information was unavailable to distinguish the location of these hazards specific to location on BLM and private/state lands.

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 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

Along the Blue Ridge Variation, the blasting potential is considered low because it is primarily alluvial sediment or weak marine rocks (e.g., sandstone). 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 the use of blasting (GeoEngineers 2015).

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 for each soil association. The Blue Ridge Variation crosses three soil associations, though the majority of this alternative (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).

From	To	County	Soil Association (STATSGO)	Total Crossing Length (miles) ^{a/}	Percent of Project Mileage
MLRA 4A – Sitka Spruce Belt – MPs 11.29R to 19.26					
11.29R	9.09	Coos	Nehalem- Duneland	2.5	16%
10.5	11.29	Coos	Bullards (s6398)		
9.09	10.5	Coos	Templeton- Salander- Reedsport-Fendall (s6399)	10.2	67%
11.29	19.26				
Total miles				12.7	
MLRA 1 – Northern Pacific Coast Range, Foothills, and Valleys – MPs 19.26 to 21.80					
19.26	21.8	Coos	Peavine-Olyic-Melby- Honeygrove-Blachly (S6396)	2.5	17%
Total miles				2.5	
Project Total (miles)				15.2	

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

From	To	County	Soil Association (STATSGO)	Total Crossing Length (miles) ^{a/}	Percent of Project Mileage
MLRA 4A – Sitka Spruce Belt – MPs 11.29BR to 19.22BR					
11.29	11.72	Coos	Nehalem-Duneland Bullards (s6398)	0.4	3%
11.72	13.54	Coos	Tolovana-Templeton-Salander-Reedsport-Fendall (s6399)	2.6	18%
13.63	13.90				
15.11	15.70				
Total miles				3.0	
MLRA 1 – Northern Pacific Coast Range, Foothills, and Valleys – MPs 19.22BR to 25.29BR					
20.09	22.40	Coos	Peavine-Olyic-Melby-Honegrove-Blachly (s6396)	4.3	31%
24.59	25.29				
22.40	24.59	Coos	Nekoma-Meda-Kirkendall-Eilertsen (s6402)	0.7	5%
13.54	13.63	Coos	Preacher-Bohannon (s6395)	6.0	43%
13.90	15.11				
15.70	20.09				
Total miles				10.7	
Project Total (miles)				14.0	

^{a/} Mileages are rounded to the nearest tenth of a mile; therefore, the 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 in 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 the subsections following the tables.

TABLE 3.3.1-2a

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

Sensitive Soil Groups and Estimated Crossing in Miles (acres) ^{a/}														
Milepost		Erosion from												
From	To	Total Crossing Length (miles)	County	Water ^{b/}	Wind ^{c/}	Steep Slopes ^{d/}	Large Stones ^{e/}	Restrictive Layer ^{f/}	Saline/sodic ^{g/}	Soil Compaction ^{h/}	Reclamation Sensitivity ^{i/}	High Water Table ^{j/}	Hydric Soils ^{k/}	Prime Farmland ^{l/}
11.29	9.09	2.5	Coos	0.6	0.0	0.6	0.0	0.9	0.0	2.4	0.6	1.5	1.5	1.5
10.50	11.29			(8.4)		(8.4)		(12.8)		(46)	(8.4)	(33)	(32)	(33)
9.09	10.50	10.2	Coos	6.2	0.0	6.2	0.0	8.2	0.0	10.2	6.1	0.6	0.6	2.3
11.29	19.26			(90)		(90)		(119)		(149)	(89)	(10)	(9)	(36)
19.26	21.8	2.5	Coos	1.7	0.0	1.7	0.0	0.0	0.0	2.5	1.7	0.0	0.0	0.0
				(26)		(26)		(<0.1)		(37)	(26)			
Project Total		15.2		8.5	0.0	8.5	0.0	9.1	0.0	15.2	8.4	2.1	2.1	3.8
Percentage				(124.4)		(124.4)		(131.8)		(232.0)	(132.4)	(43)	(41)	(69)
				56%	0%	56%	0%	60%	0%	100%	55%	14%	14%	25%

Rows and columns may not add correctly due to rounding. Acres are 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 parentheses. 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

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

Sensitive Soil Groups and Estimated Crossing in Miles (acres) ^{a/}														
Milepost			County	Erosion from		Steep Slopes ^{d/}	Large Stones ^{e/}	Restrictive Layer ^{f/}	Saline/sodic ^{g/}	Soil Compaction ^{h/}	Reclamation Sensitivity ^{i/}	High Water Table ^{j/}	Hydric Soils ^{k/}	Prime Farmland ^{l/}
From	To	Total Crossing Length (miles)		Water ^{b/}	Wind ^{c/}									
11.29BR	11.72BR	0.4	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)
11.72BR	13.54BR	2.6	Coos	0.7 (11)	0.2 (3)	0.7 (11)	0.0	2.1 (31)	0.0	2.4 (36)	0.4 (6)	0.5 (8)	0.2 (4)	0.5 (8)
13.63BR	13.90BR													
15.11BR	15.70BR													
20.09BR	22.40BR	4.3	Coos	3.0 (41)	0.0	1.0 (14)	0.4 (7)	0.5 (7)	0.0	3.8 (51)	3.0 (41)	0.0	0.0	0.0
24.59BR	25.29BR													
22.40BR	24.59BR													
		0.7	Coos	0.1 (2)	0.0	0.1 (2)	0.0	0.0	0.0	0.7 (9)	0.1 (2)	0.1 (2)	0.1 (2)	0.1 (2)
13.54BR	13.63BR	6.0	Coos	4.1 (58)	0.5 (7)	2.3 (31)	<0.1 (1)	3.6 (50)	0.0	5.6 (79)	2.7 (53)	0.6 (8)	0.6 (8)	0.9 (13)
13.90BR	15.11BR													
15.22BR	15.32BR													
15.70BR	20.09BR													
Project Total		14.0		7.9 (112)	0.7 (10)	4.1 (58)	0.4 (8)	6.2 (88)	0.0	12.9 (183)	6.2 (102)	1.6 (26)	1.3 (21)	1.9 (31)
Percentage				56%	5%	29%	<1%	44%	0%	92%	44%	11%	9%	14%

Rows and columns may not add correctly due to rounding. Acres are 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 (Proposed Route)	<1	S63969 (62)	Water	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 are 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 Blue Ridge Variation would cross 3.8 miles (69 acres), about 27 percent of its length (tables 3.3.1-2a and 3.3.1-2b), while the Proposed Route would cross 1.9 miles (31 acres) of prime farmland, about 14 percent of the route.

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.

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	14.67R	15.34R

Note: Due to minor adjustments, MPs 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 2.1 miles (41 acres) of hydric soils, about 14 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).

High Water Table

Soils with 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 2.1 miles (43 acres) of high water table soils, about 14 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 8.5 miles (124 acres) or 56 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 7.9 miles (112 acres), about 56 percent of the route. The Proposed Route would also cross a short distance, 0.6 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 8.4 miles (132 acres) of soils with poor revegetation potential, or reclamation sensitivity, which is about 55 percent of the route (table 3.3.1.2-1). The Proposed Route would cross 6.2 miles (102 acres) of soils with poor revegetation potential, about 44 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 15.2 miles (232 acres) (table 3.3.1.2-1). The majority of the Proposed Route also crosses soils with high compaction potential, totaling 12.9 miles (183 acres), or 92 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 9.1 miles (131.8 acres) of soils with a restrictive layer, or 60 percent of the route (table 3.3.1.2-1). The Proposed Route would cross 6.2 miles (88 acres) of soils with a restrictive layer, about 44 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 8.5 miles (124 acres) of soils with slopes greater than 30 percent, about 56 percent (table 3.3.1.2-1). The Proposed Route would cross 4.1 miles (58 acres) of soils with slopes greater than 30 percent, or 29 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 Blue Ridge Variation would cross 2.1 miles (14.6 percent) of slopes 30 percent or greater while the Proposed Route would cross 1.2 miles (8.6 percent) of slopes that are 30 percent or greater. Of the aboveground facilities, the MLV #2 site for both routes would be on steep slopes (table 3.3.1.2-1).

Large Stones

The Proposed Route would cross 0.4 mile (8 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 cleanup site to the Proposed Route is Site 2184 – Woodward Creek Oil Release, which

is approximately 1 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 1 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 limitations along the Blue Ridge Variation and the Proposed Route, by type of soil limitation. Since the Proposed Route crosses more BLM lands, acres of soils with limitations on BLM lands are less than those acres with soil limitations on BLM lands associated with the Proposed Route. Similar data for private/state lands was not available for comparison of this topic.

Watershed	Total ROW Acres of BLM lands a/	Areas with High Erosion Potential b/	Slopes >30 percent c/	High Cobble and Stone Content d/	High Compaction Potential e/	Low Revegetation Potential f/	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	27	18	0	41	24	0
South Fork Coos River	17	13	6	1	17	17	1
North Fork Coquille River	44	33	6	3	41	33	0
Total	102	73	30	4	99	74	1

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 NFS 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 known groundwater wells within 150 feet of either route, or on adjacent BLM lands. The Blue Ridge Variation would cross 2.2 miles of shallow groundwater while the Proposed Route would cross 1 mile 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 FEIS. 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 would be required for the Blue Ridge Variation.

3.4.2 Surface Water

The Blue Ridge Variation and the Proposed Route 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).

Additional information related to surface water impacts on BLM lands is provided in section 3.1.4.1 (Riparian Reserve Management). For an in-depth discussion of the general surface water issues, impacts and mitigations associated with the Pacific Connector pipeline, see section 4.4.2.2 of the FEIS. The following subsections provide a summary of key metrics between the Blue Ridge Variation and the Proposed Route.

Subbasin	Fifth-Field Watershed		
	Name	HUC	Miles Crossed a/
Blue Ridge Variation			
Coos	Coos Bay- Frontal Pacific Ocean	1710030403	11.0
Coquille	Coquille (Middle Main) River	1710030505	2.2
	North Fork Coquille River	1710030504	1.9
Total			15.2
Proposed Route			
Coos	Coos Bay- Frontal Pacific Ocean	1710030403	6.7
	South Fork Coos River	1710030401	2.1
Coquille	North Fork Coquille River	1710030504	5.2
Total			14.0

3.4.2.1 Water Quality Limited Waters

Table 3.4.2.1-1 shows the perennial streams listed as water quality limited that are crossed by the Blue Ridge Variation and the Proposed Route. The Blue Ridge Variation would cross five waterbodies on private/state lands where water quality is limited and subject to a Total Maximum Daily Load (TMDL), including one major (greater than 100-foot wide) crossing at Catching Slough. The Proposed Route would cross one waterbody listed as having limited water quality.

Waterbody	Crossing Method	FERC Classification a/	Stream Type	Category 4 or 5 Listing
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
Catching Creek	Dry Open-Cut	Minor	Perennial	Fecal Coliform/Year-Round - 5, Temperature - 5, Biocriteria - 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

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 Classification ^{a/}	Stream Type	Category 4 or 5 Listing
^{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 Blue Ridge Variation and the Proposed Route would cross one drinking water source area, which would be 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 so no impact would occur on BLM lands. No comparable data is available for private/state lands that would enable a similar comparison of impacts on potable water sources

TABLE 3.4.2.2-1						
Surface Water Public Drinking Water Source Areas 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						
20.06	25.28 BR35	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 Blue Ridge Variation and the Proposed Route would be within 150 feet of two surface water points of diversion; however, neither of these are on BLM lands. 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 are 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 Type	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

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
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 2.0 miles of floodplain, while the Proposed Route would cross 1 mile of floodplain zone. These areas are inundated by 100-year flooding, however none of the floodplains would be impacted by construction with implementation of FERC's wetland and waterbody crossing plan.

Starting Milepost	Ending Milepost	Fifth-Field Watershed	Zone a/	Miles of Pipeline b/
Blue Ridge Variation				
11.3	8.8	Coos Bay-Frontal Pacific Ocean	A	1.3
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				2.0
Proposed Route				
11.3	12.1	Coos Bay-Frontal Pacific Ocean	A	0.8
15.12	15.14	North Fork Coquille River	A	<0.1
Total				0.8

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.
Source: FEMA – Oregon Statewide Floodplain Hazards Geodatabase (2018).

3.4.3 Wetlands

Table 3.4.3-1 summarizes the acres of impacts that would occur to the general wetland types found along the Blue Ridge Variation and the Proposed Route, however there are no wetlands on BLM lands associated with either route. In total, the Blue Ridge Variation would disturb (clearing and grading) 34.2 acres of wetlands, and the Proposed Route would disturb 13.4 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.

TABLE 3.4.3-1

Summary of Wetland Impacts along the Pacific Connector Pipeline, Blue Ridge Variation Compared to Proposed Route

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	31.6	0.0
Palustrine forested wetlands	0.9	0.3
Palustrine scrub-shrub wetlands	0.0	0.0
Riverine wetlands	1.7	0.0
Estuarine	0.0	0.0
Lake	0.0	0.0
Total Wetland Impact	34.2	0.3
Proposed Route		
Palustrine unconsolidated bottom and aquatic beds	0.0	0.0
Palustrine emergent wetlands	13.1	0.0
Palustrine forested wetlands	0.0	0.0
Palustrine scrub-shrub wetlands	0.0	0.0
Riverine wetlands	0.3	0.0
Estuarine	0.0	0.0
Lake	0.0	0.0
Total Wetland Impact	13.4	0.0

Note that values may not sum correctly due to rounding. Acreages for wetlands are rounded to the nearest tenth of an acre.

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 compares the impacts on vegetation for the Blue Ridge Variation and the Proposed Route irrespective of land ownership. In this section, the use of the term LSOG (late successional-old growth) is used in general terms consistent with terminology used in the FEIS that is applicable to federal and non-federal lands along the entire alignment. Section 3.5.2 below provides a discussion of LSOG quality applicable to the Blue Ridge Variation and the Proposed Route. Of the total, 15.2 miles for the Blue Ridge Variation, 14.3 miles (94 percent) are considered vegetated, primarily forest land (table 3.5.1-1a). The Proposed Route is vegetated for 12.9 miles (92 percent), also primarily forest land (table 3.5.1-1b).

Construction of the Blue Ridge Variation would impact approximately 219 acres of vegetation, while the Proposed Route would impact 228 acres (tables 3.5.1-2a and 3.5.1-2b)¹¹. Operation of the project would impact 51 acres along the Blue Ridge Variation and 48 acres along the Proposed Route (tables 3.5.1-3a and 3.5.1-3b). The values in these tables reflect all lands along these routes and data was not available to distinguish between BLM and private/state lands for comparative purposes.

Approximately 32 acres of interior forests would be directly affected, and another 236 acres would be indirectly affected (i.e., would be within 100 meters of newly created edges¹²) by construction of the Blue Ridge Variation (table 3.5.1-4a). For the Proposed Route, 125 acres of interior forests would be directly affected, and 675 acres would be indirectly affected by construction (table 3.5.1-4b).

¹¹ Sum of vegetation excludes Developed/Barren and Open Water categories in tables 3.5.1-2a and 3.5.1-2b.

¹² This is the assumption used by the FERC for the entire FEIS. The section added below provides a comparison of impacts on LSOG complexity on BLM lands.

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	Percent of Total Late Successional or Old-Growth Forest	Mid-Seral Forest	Percent of Mid-Seral Forest	Clearcut/Regenerating Forest	Percent of Clearcut/Regenerating Forest	Total Miles	Percent of Total Vegetation Type
		Crossed <u>a</u> / (miles)	Forest <u>a</u> /	Crossed <u>b</u> / (miles)	Forest <u>b</u> /	Crossed <u>c</u> / (miles)	Forest <u>c</u> /		
Forest-Woodland	Douglas-fir-W. Hemlock-W. Red-Cedar Forest	-	-	0.9	32.1	0.5	5.8	1.4	9.2
	Douglas-Fir-Mixed Deciduous Forest	-	-	-	-	-	-	-	-
	Alder-Cottonwood	-	-	-	-	-	-	-	-
	Mixed Conifer/Mixed Deciduous Forest	0.6	100.0	1.9	67.9	8.1	94.2	10.6	69.7
	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		0.6	0.0	2.8	0.0	8.7	0.0	12.1	79.6
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	0.7
	Palustrine Shrub	-	-	-	-	-	-	-	-
	Palustrine Emergent	-	-	-	-	-	-	1.7	11.2
Subtotal		0.0	0.0	0.0	0.0	0.1	0.0	1.8	11.8
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	-	-	-	-	-	-	-	-
	Industrial	-	-	-	-	-	-	-	-
	Beaches	-	-	-	-	-	-	-	-
	Roads	-	-	-	-	-	-	0.8	5.3
Subtotal		0.0	0.0	0.0	0.0	0.0	0.0	0.8	5.3

TABLE 3.5.1-1a

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

General Vegetation Type	Mapped Vegetation Category	Late	Percent of	Mid-Seral	Percent of	Clearcut/ Regenerating	Percent of	Total Miles	Percent of Total Vegetation Type
		Successional or Old- Growth Forest Crossed <u>a/</u> (miles)	Total Late Successional or Old- Growth Forest Crossed <u>a/</u>	Forest Crossed <u>b/</u> (miles)	Mid-Seral Forest Crossed <u>b/</u> (miles)	Forest Crossed <u>c/</u> (miles)	Clearcut/ Regenerating Forest Crossed <u>c/</u> (miles)		
Open Water	Rivers and Streams	-	-	-	-	-	-	0.1	0.7
	Ditches and Canals	-	-	-	-	-	-	<1	0.1
	Palustrine Unconsolidated Bottom	-	-	-	-	-	-	-	-
	Bays and Estuaries	-	-	-	-	-	-	0.1	0.7
Subtotal		0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.9
Project Total		0.6	0.0	2.8	0.0	8.8	0.0	15.2	100.0
Percent of Project Total		3.9		18.4		57.2			

Note: 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.

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 3.5.1-1b

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	-	-	0.3	7.1	0.6	10.7	0.9	6.4
	Douglas-fir-Mixed Deciduous Forest	-	-	-	-	-	-	-	-
	Alder-Cottonwood	-	-	-	-	-	-	-	-
	Mixed Conifer/Mixed Deciduous Forest	1.6	100.0	4.0	92.9	5.0	89.3	10.5	75.0
	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		1.6	0.0	4.3	0.0	5.6	0.0	11.4	81.4
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	-	-	-	-	-	-	-	-
	Palustrine Shrub	-	-	-	-	-	-	-	-
	Palustrine Emergent	-	-	-	-	-	-	0.8	5.7
Subtotal		0.0	0.0	0.0	0.0	0.0	0.0	0.8	5.7
Agriculture	Agriculture	-	-	-	-	-	-	0.7	5.0
Subtotal		0.0	0.0	0.0	0.0	0.0	0.0	0.7	5.0
Developed / Barren	Urban	-	-	-	-	-	-	-	-
	Industrial	-	-	-	-	-	-	-	-
	Beaches	-	-	-	-	-	-	-	-
	Roads	-	-	-	-	-	-	1.1	7.9
Subtotal		0.0	0.0	0.0	0.0	0.0	0.0	1.1	7.9

TABLE 3.5.1-1b

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

General Vegetation Type	Mapped Vegetation Category	Late	Percent of	Mid-Seral Forest Crossed <u>b/</u> (miles)	Percent of Mid-Seral Forest <u>b/</u>	Clearcut/ Regenerating	Percent of	Total Miles	Percent of Total Vegetation Type
		Successional or Old- Growth Forest Crossed <u>a/</u> (miles)	Total Late Successional or Old- Growth Forest <u>a/</u>			Forest Crossed <u>c/</u> (miles)	Clearcut/ Regenerating Forest <u>c/</u>		
Open Water	Rivers and Streams	-	-	-	-	-	-	<1	0.1
	Ditches and Canals	-	-	-	-	-	-	<1	<0.1
	Palustrine Unconsolidated Bottom	-	-	-	-	-	-	-	-
	Bays and Estuaries	-	-	-	-	-	-	-	-
Subtotal		0.0	0.0	0.0	0.0	0.0	0.0	<1	0.1
Project Total		1.7	0.0	4.2	0.0	5.5	0.0	14.0	100.0
Percent of Project Total		12.1		30.0		39.3			

Note: 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.)

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 3.5.1-2a

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

		Pipeline Facilities										Subtotals				
General Vegetation Type	Mapped Vegetation Category Type	Forest Stand by Age a,b,c/	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
Forest-Woodland	Douglas-fir-W. Hemlock-W. Redcedar Forest	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		M-S	9	-	3	-	-	-	-	-	-	12	10	23	13.1	9.8
		C-R	7	-	3	-	-	-	-	-	-	-	-	-	-	-
	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	6	-	2	-	-	-	-	-	-	-	-	-	-	-
		M-S	23	-	3	1	-	-	-	-	9	26	118	153	86.9	65.4
		C-R	92	-	25	<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	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Western Juniper Woodland	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

		Pipeline Facilities										Subtotals					
General Vegetation Type	Mapped Vegetation Category Type	Forest Stand by Age a,b,c/	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	
	Ponderosa Pine/Western Juniper Woodland	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		C-R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Subtotal Forest-Woodland by Age Class		L-O	6	-	2	-	-	-	-	-	-	-	-	-	5.1	-	
		M-S	32	-	5	1	-	-	-	-	9	38	128	176	21.6	75.5	
		C-R	100	-	28	<1	-	-	-	-	-	-	-	-	72.7	-	
Subtotal Forest-Woodland			139	-	36	1	-	-	-	-	9	38	128	176	-	-	
Percent of All Forest-Woodland			79.0	-	20.5	0.6	-	-	-	-	5.1	21.6	72.7	100.0	-	-	
Grasslands/Shrubland	Sagebrush Steppe	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Shrublands	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Grasslands (West of Cascades)	n/a	-	-	<1	-	-	-	-	-	-	-	-	<1	0.7	0.2	
	Grasslands (East of Cascades)	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Subtotal Grasslands-Shrubland			-	-	<1	-	-	-	-	-	-	-	-	<1	0.7	0.2	
Wetland / Riparian	Palustrine Forest	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		M-S	-	-	-	-	-	-	-	-	-	-	1	1	1.8	0.4	
		C-R	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Palustrine Shrub	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Palustrine Emergent	n/a	20	-	12	<1	-	-	-	-	-	-	32	56.1	13.7		
Subtotal Wetland / Riparian			21	-	12	<1	-	-	-	-	-	1	32	56.1	13.9		
Agriculture	Agriculture	n/a	5	-	6	<1	-	<1	-	-	-	-	11	19.3	4.7		
Subtotal Agriculture			5	-	6	<1	-	<1	-	-	-	-	11	19.3	4.7		
Developed /Barren	Urban	n/a	<1	-	<1	-	-	-	-	<1	-	-	-	<1	0.6	0.2	
	Industrial	n/a	-	-	<1	-	-	-	-	-	-	-	-	<1	0.0	0.0	
	Beaches	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Roads	n/a	9	-	3	<1	-	-	-	-	-	-	11	19.7	4.8		
Subtotal Developed/Barren			9	-	3	<1	-	-	-	<1	-	-	12	20.3	5.0		

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	1	-	<1	<1	-	-	-	-	-	-	-	1	1.3	0.3
	Ditches and Canals	n/a	<1	-	<1	<1	-	-	-	-	-	-	-	<1	0.4	0.1
	Palustrine Unconsolidated Bottom	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Bays and Estuaries	n/a	1	-	-	-	-	-	-	-	-	-	-	1	1.3	0.3
Subtotal Open Water			2	-	<1	<1	-	-	-	-	-	-	-	2	3.0	0.7
Subtotal Non-forest			36	-	21	<1	-	-	-	-	-	-	1	57	100.0	24.5
Percent of All Non-Forest			63.2	-	36.8	0.3	-	-	-	-	-	-	1.8	100.0	-	-
Project Total		n/a	175	-	57	1	-	<1	-	<1	9	38	129	233	-	100.0
Percent of Pipeline Facilities		n/a	74.8	-	24.4	04	-	0.0	-	0.0	3.8	16.2	55.1	100.0	-	-

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 “Clearcut or Regenerating” category (C-R) describes those forest areas that are either clearcut (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

		Pipeline Facilities									Subtotals					
General Vegetation Type	Mapped Vegetation Category Type	Forest Stand by Age a,b,c/	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
Forest-Woodland	Douglas-fir-W. Hemlock-W. Redcedar Forest	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		M-S	4	-	<1	1	-	-	-	-	-	5	9	14	6.9	5.7
		C-R	7	-	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	19	-	4	9	-	-	-	-	-	-	-	-	-	-
		M-S	46	-	9	12	-	-	-	-	32	67	91	190	93.6	77.6
		C-R	56	-	13	21	-	<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	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 3.5.1-2b

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

		Pipeline Facilities										Subtotals					
General Vegetation Type	Mapped Vegetation Category Type	Forest Stand by Age a,b,c/	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	
	Oregon White Oak Forest	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		C-R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Western Juniper Woodland	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		C-R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Ponderosa Pine/Western Juniper Woodland	L-O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		M-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		C-R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		L-O	19	-	4	9	-	-	-	-	-	-	-	-	16.3	-	
		M-S	50	-	10	12	-	-	-	-	32	72	99	203	35.0	82.9	
		C-R	63	-	14	22	-	<1	-	-	-	-	-	-	48.8	-	
	Subtotal Forest-Woodland by Age Class																
	Subtotal Forest-Woodland		132	-	28	43	-	<1	-	-	32	72	99	203	-	-	
	Percent of All Forest-Woodland		65.0	-	13.8	21.2	-	<1	-	-	15.8	35.5	48.8	100.0	-	-	
	Grasslands Sagebrush Steppe - Shrubland	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	-	-	-	<1	-	-	-	-	-	-	-	<1	0.1	<0.1	
	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	-	<1	-	-	-	-	-	11	26.8	4.5	
	Subtotal Agriculture		8	-	3	<1	-	<1	-	-	-	-	-	11	26.8	4.5	

TABLE 3.5.1-2b

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

		Pipeline Facilities									Subtotals					
General Vegetation Type	Mapped Vegetation Category Type	Forest Stand by Age a,b,c/	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
Developed / Barren	Urban	n/a	-	-	<1	-	-	-	-	<1	-	-	-	<1	0.1	0.0
	Industrial	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Beaches	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Roads	n/a	12	-	3	1	-	<1	-	-	-	-	-	17	41.5	6.9
Subtotal Developed / Barren			12	-	3	1	-	<1	-	<1	-	-	17	41.5	6.9	
Open Water	Rivers and Streams	n/a	<1	-	<1	<1	-	-	-	-	-	-	-	<1	0.5	0.1
	Ditches and Canals	n/a	<1	-	<1	<1	-	<1	-	-	-	-	-	<1	0.1	<0.1
	Palustrine Unconsolidated Bottom	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Bays and Estuaries	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Open Water			<1	-	<1	<1	-	<1	-	-	-	-	<1	0.6	0.1	
Subtotal Non-Forest			30	-	9	2	-	<1	-	<1	-	-	41	100.0	16.7	
Percent of All Non-Forest			73.2	-	22.0	2.4	-	-	-	0.0	-	-	100.0	-	-	
Project Total		n/a	162	-	38	45	-	<1	-	<1	32	72	99	245	-	-
Percent of Pipeline Facilities		n/a	66.0	-	15.2	18.4	-	-	-	0.0	13.5	29.1	40.6	100.0	-	-

General: 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 “Clearcut or Regenerating” category (C-R) describes those forest areas that are either clearcut (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 a/)							Above-ground Facilities (acres a/) BVA #2	Total Operation Impacts by Vegetation Type e/	
		Forest Stand by Age b/,c/,d/	30-foot Maintenance Corridor	Permanent Access Roads	Subtotal LSOG	Subtotal Mid-Seral Forest	Subtotal Clearcut / Regenerating Forest	Subtotal Pipeline Facilities By Vegetation Type			Permanent Easement (50-foot)
Forest-Woodland	Douglas-fir-W. Hemlock-W. Redcedar Forest	L-O	-	-	-	3	2	5	5	-	5
		M-S	3	-	-	-	-	-	3	-	-
		C-R	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	-	-	-	-	-	4	-	-
		M-S	7	-	2	7	30	39	12	-	39
		C-R	30	-	-	-	-	-	50	<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 a/)							Above-ground Facilities (acres a/) BVA #2	Total Operation Impacts by Vegetation Type e/	
		Forest Stand by Age b/,c/,d/	30-foot Maintenance Corridor	Permanent Access Roads	Subtotal LSOG	Subtotal Mid-Seral Forest	Subtotal Clearcut / Regenerating Forest	Subtotal Pipeline Facilities By Vegetation Type			Permanent Easement (50-foot)
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						4	-	-	
	M-S	10		2	10	32	44	17	-	-	
	C-R	32						53	-	-	
Subtotal Forest-Woodland			44		2	10	32	44	73	<1	44
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	10	-	6	
Subtotal Wetland/Riparian			7					10		7	
Agriculture	Agriculture	n/a	2	-	-	-	2	3	-	2	
Subtotal Agriculture			2				2	3		2	
Developed / Barren	Urban	n/a	<1	-	-	-	<1	<1	-	<1	
	Industrial	n/a	-	-	-	-	-	-	-	-	
	Beaches	n/a	-	-	-	-	-	-	-	-	
	Roads	n/a	3	-	-	-	3	5	-	3	
Subtotal Developed / Barren			3				3	5		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 <i>a/</i>)							Above-ground Facilities (acres <i>a/</i>) BVA #2	Total Operation Impacts by Vegetation Type <i>e/</i>	
		Forest Stand by Age <i>b/,c/,d/</i>	30-foot Maintenance Corridor	Permanent Access Roads	Subtotal LSOG	Subtotal Mid-Seral Forest	Subtotal Clearcut / Regenerating Forest	Subtotal Pipeline Facilities By Vegetation Type			Permanent Easement (50-foot)
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	<1	-	-	-	<1	<1	-	<1	
Subtotal Open Water			1	-	-	-	1	1	-	1	
Subtotal Non-Forest			11	-	-	-	<1	11	19	-	11
Project Total			55	<1	2	10	32	55	92	<1	55

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). If percentages were less than 1/100ths, they were not included in the table. Acres of impacts to non-vegetated areas are included within this table for consistency with values reported in the FEIS.

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 clearcut (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).

TABLE 3.5.1-3b

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

Mapped Vegetation Category Type		Pipeline Facilities (acres <u>a/</u>)							Above-ground Facilities (acres <u>a/</u>) Blue Ridge Block Valve	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			Permanent Easement (50-foot)
Forest-Woodland	Douglas-fir-W. Hemlock-W. Redcedar Forest	L-O	-	-	-	-	-	-	-	-	
		M-S	1	-	-	1	2	3	5	-	3
		C-R	2	-	-	-	-	-	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	6	-	-	-	-	-	10	-	-
		M-S	14	-	-	6	14	18	38	-	38
		C-R	-	-	-	-	-	-	24	-	-
	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 3.5.1-3b

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

Mapped Vegetation Category Type		Pipeline Facilities (acres <i>a/</i>)							Above-ground Facilities (acres <i>a/</i>) Blue Ridge Block Valve	Total Operation Impacts by Vegetation Type <i>e/</i>	
		Forest Stand by Age <i>b/,c/,d/</i>	30-foot Maintenance Corridor	Permanent Access Roads	Subtotal LSOG	Subtotal Mid-Seral Forest	Subtotal Clearcut / Regenerating Forest	Subtotal Pipeline Facilities By Vegetation Type			Permanent Easement (50-foot)
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	6	-	-	-	-	-	-	-	-	
	M-S	-	-	-	-	-	-	-	-	-	
	C-R	16	-	6	16	20	42	26	-	16	
Subtotal Forest-Woodland			42	<1	6	15	20	42	70	<1	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	L-O	-	-	-	-	-	-	-	-	-	
	M-S	-	-	-	-	-	-	-	-	-	
	C-R	-	-	-	-	-	-	-	-	-	
	Palustrine Shrubland	n/a	-	-	-	-	-	-	-	-	
	Palustrine Emergent	n/a	3	-	-	-	3	5	-	3	
Subtotal Wetland/Riparian			3	-	-	-	3	5	-	3	
Agriculture	Agriculture	n/a	3	-	-	-	3	4	-	3	
Subtotal Agriculture			3	-	-	-	3	4	-	3	
Developed / Barren	Urban	n/a	-	-	-	-	-	-	-	-	
	Industrial	n/a	-	-	-	-	-	-	-	-	
	Beaches	n/a	-	-	-	-	-	-	-	-	
	Roads	n/a	4	<1	-	-	-	4	6	4	
Subtotal Developed / Barren			4	<1	-	-	4	6	-	4	

TABLE 3.5.1-3b

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

Mapped Vegetation Category Type		Pipeline Facilities (acres <i>a/</i>)							Above-ground Facilities (acres <i>a/</i>) Blue Ridge Block Valve	Total Operation Impacts by Vegetation Type <i>e/</i>	
		Forest Stand by Age <i>b/,c/,d/</i>	30-foot Maintenance Corridor	Permanent Access Roads	Subtotal LSOG	Subtotal Mid-Seral Forest	Subtotal Clearcut / Regenerating Forest	Subtotal Pipeline Facilities By Vegetation Type			Permanent Easement (50-foot)
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	-	-	-	-	-	-	-	-	
	Bays and Estuaries	n/a	-	-	-	-	-	-	-	-	
	Subtotal Open Water		<1	-	-	-	-	<1	<1	-	<1
Subtotal Non-Forest			9	<1	-	-	10	16	-	10	
Project Total			51	<1	6	15	20	51	85	<1	51

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

Acres of impacts to non-vegetated areas are included in this table for consistency with values reported in the FEIS.

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 clearcut (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).

TABLE 3.5.1-4a¹³

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

Landowner	Land Use Allocation	Age Classes a/, b/, c/	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	-	-	-	-	-	-	1		
		M-S	<1	<1	-	-	1	1	13	14	
		Regen	-	-	-	-	-	-	<1		
	Other	L-O	-	-	-	-	-	-	1		
		M-S	<1	<1	-	-	<1	<1	8	18	
		Regen	<1	-	-	-	<1	<1	9		
Subtotal - Coos Bay	L-O	-	-	-	-	-	-	3			
	M-S	<1	<1	-	-	1	1	21	32		
	Regen	<1	-	-	-	<1	<1	9			
TOTAL			1	<1	-	-	1	32			
Other Landowners	None	L-O	3	1	-	-	4		24	236	
		M-S	2	<1	<1	-	3	32	13		
		Regen	20	4	-	-	24		157		
Subtotal - Other Landowners		TOTAL	25	6	<1	-	31	204			
Total Indirect/Direct Effects to Interior Forest		L-O	3	1	-	-	4		26	236	
		M-S	3	1	<1	-	3	32	44		
		Regen	20	4	-	-	24		166		
TOTAL			26	6	<1	-	32		236		

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 or older. 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).

¹³ Data in this table reflects overall approach used in FEIS for all lands; it is not based on BLM FOI data.

TABLE 3.5.1-4b¹⁴

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)					Indirect Effects to Interior Forest (acres)		
			Construction Right-of-Way	Temporary Extra Work Areas	Uncleared Storage Areas	Rock Source/ Disposal / Pipe Yards	Total by Age Class	Total Direct Effects	100 meter Buffer from Vegetation Removal	Total Indirect Effects
BLM - Coos Bay	LSR	L-O	10	2	5	-	17		72	
		M-S	17	4	5	-	26	56	156	285
		Regen	8	2	4	-	14		57	
	Other	L-O	1	<1	1	-	2		19	
		M-S	3	1	<1	-	4	15	49	152
		Regen	6	1	3	-	9		85	
Subtotal - Coos Bay		L-O	11	2	6	-	19		90	
		M-S	20	4	5	-	29		204	437
		Regen	14	2	7	-	23	71	142	
TOTAL			45	9	18	-	71		418	
Other Landowners	None	L-O	3	1	1	-	5		29	
		M-S	11	3	4	-	18	54	67	238
		Regen	19	4	8	-	31		142	
Subtotal - Other Landowners		TOTAL	33	7	13	-	54		217	
Total Indirect/Direct Effects to Interior Forest		L-O	14	3	7	-	24		119	
		M-S	31	7	10	-	48	125	271	675
		Regen	33	6	14	-	54		285	
TOTAL			78	16	31	-	125		675	

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 "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).

¹⁴ Data in this table reflects overall approach used in FEIS for all lands; it is not based on BLM FOI data.

3.5.2 LSOG Quality on BLM Lands

LSOG quality analysis was completed by BLM and its consultant using the BLM Forest Operations Inventory (FOI) stand ages, RMP land allocation data, LiDAR, and field review by BLM biologists. This analysis is specific to BLM lands; BLM FOI data and site visits by BLM biologists were not available for private/state lands. Direct effects were calculated based on the footprint of the right-of-way GIS layer provided by the applicant. In the BLM RMP land allocation data set, roads are identified as Designated Reserves and are not considered forested when calculating impacts on forested land or associated wildlife habitat. The calculation of LSOG habitat impacts described in this section excluded all roads and other disturbed areas (e.g., communication sites, quarries) from this impacts assessment and used the age class and site-specific field review data to characterize LSOG habitat with respect to quality and complexity. Indirect effects, including changes to microclimate and an increased windthrow and predation risk, are assumed to occur within 300 feet of the right-of-way clearing. The analysis reports total acres directly and indirectly impacted by the Blue Ridge Variation and the proposed project. Various factors play into the indirect effects that the gap created by the pipeline will have on current and future habitat for threatened and endangered (T&E) species. These factors include proximity to current stand edge, location on slope, current stand age, and proximity to existing cleared rights-of-way. However, without extensive on-the-ground analysis, these variances in effects are unquantifiable; thus, indirect effects are assumed to occur within 300 feet of the right-of-way clearing.

Consistent with its 2016 RMP, BLM uses the following definitions related to LSOG quality and habitat for NSO and MAMU in the following assessment of the Blue Ridge Variation and the Proposed Route:

- **LSOG:** To remain consistent with the analysis in the FEIS, all stands over 80 years and older, plus NSO nesting roosting and foraging habitat, based on the BLM FOI stand ages, are reported as LSOG.
- **Complex LSOG:** Stands with multiple stories, a multi-species canopy and understory, large snags, large down wood, and decadence. Total acres of complex LSOG are calculated using the Coos Bay district spotted owl nesting (NRF) and roosting-foraging (RF) GIS layers.
- **Spotted owl nesting habitat:** consistent with complex LSOG definition (77 Fed. Reg. 71876).
- **Spotted owl roosting-foraging habitat:** stands supporting many of the characteristics of complex LSOG, but lacking the large features necessary for spotted owl nesting, such as large snags, broken tops, or cavities within live trees (77 Fed. Reg. 71876).
- **Marbled murrelet nesting platforms:** a minimum 4-inch flat area on a limb or deformity, with moss or duff, with vertical cover, and access from below; at least 33 feet above the ground. Platforms are in trees greater than 19 inch DBH and over 100 feet tall (USDI-BLM 2016).
- **Marbled murrelet nesting habitat:** Stands with multiple trees supporting murrelet-nesting platforms.

The analysis completed in the 2019 DEIS accurately reports the number of acres of defined LSOG stands that would be removed or impacted by the construction of the pipeline. Unfortunately, defining stands 80 years and older as LSOG does not reflect stand characteristics, other than age, that contribute to species habitat quality for MAMU and NSO. Stands on the younger end of this range can lack late successional defining characteristics, such as canopy diversity, species diversity, and large snags and downed wood. These characteristics occur in large areas on BLM lands along the Proposed Route. The following analysis prepared in response to public comment, describes the quality of LSOG removed for both the Blue Ridge Variation and the Proposed Route and the effects of this removal on NSO and MAMU.

Of the 33 acres of BLM lands associated with the Blue Ridge Variation (includes areas subject to clearing and grading - direct modification), 0.22 acres are considered LSOG. However, none of these acres meet the criteria of complex LSOG. The complex LSOG is concentrated between BRV-MP 12.8 and BRV-MP 19. Of the 105 acres of BLM lands within 300 feet of the proposed construction area (indirect modification distance), 2.5 acres are classified as LSOG but none of these acres meet the criteria of complex LSOG.

Of the 130 acres of BLM lands associated with the Proposed Route (includes areas subject to clearing and grading - direct modification), 49 acres are considered LSOG. However, of the LSOG, only 18 acres are complex LSOG. The complex LSOG is concentrated between PR-MP 12.8 and PR-MP 19. Of the 660 acres of BLM within 300 feet of proposed construction (indirect modification distance), 363 acres are classified as LSOG. However, only 89 acres are complex LSOG.

The Blue Ridge Variation would not remove any MAMU habitat on BLM lands, nor is there any known occupied MAMU sites on BLM along the alignment. For the Proposed Route between PR-MP 12.8 and PR-MP 13.8, MAMU habitat in three contiguous occupied murrelet sites would be removed: Vogel Creek, Stock Creek, and Lillian Creek. In the occupied sites, the pipeline would remove 10.4 acres and downgrade 34.3 acres of nesting habitat, totaling 23.2 percent of the occupied sites. Between PR-MP 17.1 and PR-MP 17.6 (T26S-R12W-Sec 15), the pipeline would remove 6 acres of murrelet nesting habitat and indirectly modify 23.4 acres, totaling 48.6 percent of the contiguous stand. Although there are only two stands that are subject to some level of disturbance along this section of the alignment within the Blue Ridge area, the effects to these two stands would be substantial.

The Blue Ridge Variation would not remove any NSO habitat on BLM lands. There is no NRF or high NRF habitat on BLM lands along the Blue Ridge Variation alignment. Suitable NSO nesting habitat is clustered between PR-MP 12.8 and PR-MP 17.6 along the Proposed Route with additional roosting-foraging habitat south toward PR-MP 19.6. The Proposed Route would remove 16.4 acres of NSO nesting habitat and indirectly modify 60 acres within the two northern stands, which are the same the two stands described in the MAMU discussion above. As described above, effects in the nesting habitat stands would be substantial. The third stand, between PR-MP 18.4 and PR-MP 19.6, is a mixed hardwood-conifer stand with conifers lacking the decadence and size required for NSO nesting. The Proposed Route would directly impact 1.4 acres of NSO roosting-foraging habitat and indirectly modify 11.4 acres of NSO roosting-foraging habitat, about 7.7 percent of the contiguous stands.

3.5.3 Timber

3.5.3.1 Private Forest

Timber removal along the Blue Ridge Variation would affect 155 acres. The Proposed Route would affect a total of 68 acres of private forestland. In both cases, the majority of affected forestland (73 and 65 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 temporary extra work areas (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 BRV-MP 18.1 to BRV-MP 19.3 along the Blue Ridge Variation. Helicopter logging may also occur along the Proposed Route to be determined consistent with POD requirements.

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 resources¹⁵ however data in these tables was not available specific to BLM lands. The values in these tables provides a comparison for all lands associated with both routes. 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 (12.1 miles and 11.4 miles, respectively), as well as short distances of wetland/riparian habitat.

Construction of the Blue Ridge Variation would impact approximately 176 acres of forest-woodland habitat and 32 acres of wetland/riparian habitat (table 3.6.1-2a). The Proposed Route 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 impact 44 acres and 42 acres of forest-woodland habitat and 7 acres and 3 acres of wetland/riparian habitat, respectively (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 (Category 1) during construction, and the Proposed Route would remove 25 acres of Category 1 habitat during construction (table 3.6.1-4). The operational impact to Category 1 habitat would be 1 acre and 6 acres for the Blue Ridge Variation and the Proposed Route, respectively (table 3.6.1-4). Pacific Connector is continuing to consult with ODFW regarding the appropriate definition and application of the habitat categories identified in table 3.6.1-4.

¹⁵ 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.”

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	Total Miles	Percent of Total Project Mileage per Vegetation Type	Number of Species Associated
Forest- Woodland	Westside Lowland Conifer- Hardwood Forest	12.1	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		12.1	79.6
Grass- lands				22 – Herpetofauna
Shrubland	Shrub-steppe	-	-	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	0.1	0.7	38 – Herpetofauna 154 – Birds 76 – Mammals
	Herbaceous Wetlands	1.7	11.2	18 – Herpetofauna 136 – Birds 43 – Mammals
Subtotal		1.8	11.8	
Agriculture	Agriculture, Pastures, and Mixed Environs	0.4	2.6	32 – Herpetofauna 173 – Birds 77 – Mammals
Subtotal		0.4	2.6	
Developed/ Altered	Urban and Mixed Environs	0.8	5.3	37 – Herpetofauna 131 – Birds 63 – Mammals
Subtotal		0.8	5.3	
Barren	Coastal Dunes and Beaches	-	-	6 – Herpetofauna 100 – Birds 26 – Mammals
Subtotal		0.0	0.0	

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	Total Miles	Percent of Total Project Mileage per Vegetation Type	Number of Species Associated
Open Water	Open Water - Lakes, Rivers, and Streams	0.1	0.7	17 – Herpetofauna 94 – Birds 20 – Mammals
	Bays and Estuaries	0.1	-	1 – Herpetofauna 132 – Birds 12 – Mammals
Subtotal		0.1	0.7	
Project Total		15.2	-	
Note: Mileages rounded to nearest tenth of a mile; values less than 0.1 miles are 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	Total Miles	Percent of Total Project Mileage per Vegetation Type	Number of Species Associated
Forest- Woodland	Westside Lowland Conifer-Hardwood Forest	11.4	81.5	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		11.4	81.5
Grass- lands	Shrub- steppe	-	-	22 – Herpetofauna 75 – Birds 46 – Mammals
Shrubland				26 – Herpetofauna 84 – Birds 37 – Mammals
				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	0.8	5.9	18 – Herpetofauna 136 – Birds 43 – Mammals
Subtotal		0.8	5.9	

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	Total Miles	Percent of Total Project Mileage per Vegetation Type	Number of Species Associated
Agriculture	Agriculture, Pastures, and Mixed Environs	0.7	4.8	32 – Herpetofauna 173 – Birds 77 – Mammals
Subtotal		0.7	4.9	
Developed/ Altered	Urban and Mixed Environs	1.1	7.7	37 – Herpetofauna 131 – Birds 63 – Mammals
Subtotal		1.1	7.7	
Barren	Coastal Dunes and Beaches	-	-	6 – Herpetofauna 100 – Birds 26 – Mammals
Subtotal		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	0.1	
Project Total		14.0	0.0	

Note: Mileages rounded to nearest tenth of a mile; values less than 0.1 miles are 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 Vegetation Removal (acres a) to Corresponding Habitat Type – Blue Ridge Variation

General Habitat Type	Mapped Habitat Type	Forest Stand by Age	Pipeline Facilities								Subtotals		
			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	Subtotal by Age Class	Subtotal by Habitat Type	Percent of Total Habitat
Forest- Woodland	Westside Lowland	L-O <u>a</u> /	6	-	2	-	-	-	-	-	9		
	Conifer-Hardwood Forest	M-S <u>b</u> /	32	-	5	1	-	-	-	-	38	176	75.5
		C-R <u>c</u> /	100	-	28	<1	-	-	-	<1	128		
	Montane Mixed Conifer Forest	L-O <u>a</u> /	-	-	-	-	-	-	-	-	-	-	-
		M-S <u>b</u> /	-	-	-	-	-	-	-	-	-	-	-
		C-R <u>c</u> /	-	-	-	-	-	-	-	-	-	-	-
	Southwest Oregon	L-O <u>a</u> /	-	-	-	-	-	-	-	-	-	-	-
	Mixed Conifer-Hardwood Forest	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			139	-	36	1	-	-	-	<1	176	176	75.5
Percent of All Forest-Woodland			79.0	-	20.5	0.6	-	-	-	-	100.0	-	-
Grasslands	Sagebrush Steppe	n/a	-	-	-	-	-	-	-	-	-	-	-
Shrubland	Shrublands	n/a	-	-	-	-	-	-	-	-	-	-	-
	Westside Grasslands	n/a	-	-	<1	-	-	-	-	-	<1	-	0.2
	Eastside Grasslands	n/a	-	-	-	-	-	-	-	-	-	-	-
Subtotal Grasslands-Shrubland			-	-	<1	-	-	-	-	-	<1	<1	0.2

TABLE 3.6.1-2a

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

General Habitat Type	Mapped Habitat Type	Forest Stand by Age	Pipeline Facilities								Subtotals		
			Construc- tion Right- of-Way	Hydro- static Discharge Sites	Temporary Extra Work Areas	Uncleared Storage Areas	Rock Source/ Disposal	Access Roads (TARs/ PARs/ Improve- ments)	Pipe Yards	Above- ground Facilities	Subtotal by Age Class	Subtotal by Habitat Type	Percent of Total Habitat
Wetland / Riparian	Westside Riparian-	M-S b/	-	-	-	-	-	-	-	-	-	1	0.4
	Wetlands/Eastside	C-R c/	1	-	-	-	-	-	-	-	1	-	-
	Riparian-Wetlands	Shrub	-	-	-	-	-	-	-	-	-	-	-
	Herbaceous Wetlands	n/a	20	-	12	<1	-	-	-	-	-	32	13.7
Subtotal Wetland / Riparian			21	-	12	<1	-	-	-	-	-	32	13.9
Agriculture	Agriculture, Pastures, and Mixed Environs		5	-	6	<1	-	<1	-	-	-	11	4.7
Subtotal Agriculture			5	-	6	<1	-	<1	-	-	-	11	4.7
Developed / Barren	Urban and Mixed Environs	n/a	<1	-	<1	-	-	-	-	-	-	<1	0.2
	Roads	n/a	9	-	3	<1	-	-	-	-	-	11	4.8
	Beaches	n/a	-	-	-	-	-	-	-	-	-	-	-
Subtotal Developed / Barren			9	-	3	<1	-	-	-	-	-	12	5.0
Open Water	Open Water - Lakes, Rivers, Streams	n/a	1	-	<1	<1	-	-	-	-	-	1	0.4
	Bays and Estuaries	n/a	1	-	-	-	-	-	-	-	-	1	0.3
Subtotal Open Water			2	-	<1	<1	-	-	-	-	-	2	0.7
Subtotal Non-Forest			36	-	21	<1	-	-	-	-	-	57	24.5
Percent of All Non-Forest			62.4	-	37.5	0.0	-	-	-	-	-	-	-
Project Total		n/a	175	-	57	1	-	<1	-	<1	-	233	100.0
Percent of Pipeline Facilities		n/a	74.8	-	24.4	0.4	-	0.0	-	-	-	-	-

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 clearcut (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 although they 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

General Habitat Type	Mapped Habitat Type	Forest Stand by Age	Pipeline Facilities								Subtotals		
			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	Subtotal by Age Class	Subtotal by Habitat Type	Percent of Total Habitat
Forest-Woodland	Westside Lowland	L-O <u>a</u> /	19	-	4	9	-	-	-	-	32	203	82.9
	Conifer-Hardwood Forest	M-S <u>b</u> /	50	-	10	12	-	-	-	-	72		
		C-R <u>c</u> /	63	-	14	22	-	<1	-	<1	99		
		L-O <u>a</u> /	-	-	-	-	-	-	-	-	-		
	Montane Mixed Conifer Forest	M-S <u>b</u> /	-	-	-	-	-	-	-	-	-		
		C-R <u>c</u> /	-	-	-	-	-	-	-	-	-		
		L-O <u>a</u> /	-	-	-	-	-	-	-	-	-		
	Southwest Oregon Mixed Conifer- Hardwood Forest	M-S <u>b</u> /	-	-	-	-	-	-	-	-	-		
		C-R <u>c</u> /	-	-	-	-	-	-	-	-	-		
		L-O <u>a</u> /	-	-	-	-	-	-	-	-	-		
	Ponderosa Pine Forest and Woodlands	M-S <u>b</u> /	-	-	-	-	-	-	-	-	-		
		C-R <u>c</u> /	-	-	-	-	-	-	-	-	-		
		L-O <u>a</u> /	-	-	-	-	-	-	-	-	-		
	Westside Oak and Dry Douglas-fir Forest and Woodlands	M-S <u>b</u> /	-	-	-	-	-	-	-	-	-		
		C-R <u>c</u> /	-	-	-	-	-	-	-	-	-		
L-O <u>a</u> /		-	-	-	-	-	-	-	-	-			
Western Juniper and Mountain Mahogany Woodlands	M-S <u>b</u> /	-	-	-	-	-	-	-	-	-			
	C-R <u>c</u> /	-	-	-	-	-	-	-	-	-			
	L-O <u>a</u> /	-	-	-	-	-	-	-	-	-			
Subtotal Forest-Woodland			132	-	28	43	-	<1	-	<1	203	203	82.9
Percent of All Forest-Woodland			65.0	-	13.8	21.2	-	<0.1	-	<0.1	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	-	-	-	<1	-	-	-	-	-	-	<1	<0.1
	Herbaceous Wetlands	n/a	10	-	3	<1	-	<1	-	-	-	13	5.3
Subtotal Wetland / Riparian			10	-	3	<1	-	<1	-	-	13	13	5.4
Agriculture	Agriculture, Pastures, and Mixed Environs		8	-	3	<1	-	<1	-	-	-	11	4.5
Subtotal Agriculture			8	-	3	<1	-	<1	-	-	-	11	4.5

TABLE 3.6.1-2b

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

General Habitat Type	Mapped Habitat Type	Pipeline Facilities									Subtotals		
		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 -	Subtotal by Age Class	Subtotal by Habitat Type	Percent of Total Habitat
Developed /Barren	Urban and Mixed Environs	n/a	-	-	<1	-	-	-	-	-	-	<1	0.0
	Roads	n/a	12	-	3	1	-	<1	-	-	-	17	6.9
	Beaches	n/a	-	-	-	-	-	-	-	-	-	-	-
Subtotal Developed / Barren			12	-	3	1	-	<1	-	-	-	17	6.9
Open Water	Open Water - Lakes, Rivers, Streams	n/a	<1	-	<1	<1	-	<1	-	-	-	<1	0.1
	Bays and Estuaries	n/a	-	-	-	-	-	-	-	-	-	-	-
Subtotal Open Water			<1	-	<1	<1	-	<1	-	-	-	<1	0.1
Subtotal Non-Forest			30	-	9	2	-	<1	-	-	-	41	16.8
Percent of All Non-Forest			73.2	-	22.0	4.9	-	0.7	-	-	-	100.0	41.1
Project Total		n/a	162	-	38	45	-	<1	-	<1	-	245	100.0
Percent of Pipeline Facilities		n/a	66.1	-	15.5	18.4	-	0.1	-	-	-	-	-

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 clearcut (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 although they occur within construction right-of-way impacts)

TABLE 3.6.1-3a

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

General Vegetation Type	Mapped Vegetation Type	Forest Stand 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-Seral Forest	Subtotal Clearcut / Regenerating Forest				
Forest-Woodland	Westside Lowland	L-O <u>b/</u>	2	-	-	-	-	4	-	-	
	Conifer-Hardwood Forest	M-S <u>c/</u>	10	-	-	-	44	17	<1	44	
		C-R <u>d/</u>	32	-	-	-	-	53	-	-	
	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>	-	-	-	-	-	-	-	-	
	L-O <u>b/</u>	-	-	-	-	-	-	-	-		
	M-S <u>c/</u>	-	-	-	-	-	-	-	-		
	C-R <u>d/</u>	-	-	-	-	-	-	-	-		
Subtotal Forest-Woodland			44	0	2	10	32	44	73	<1	44
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>	-	-	-	-	<1	-	-	<1	
		C-R <u>d/</u>	<1	-	-	-	-	<1	-	<1	
		Shrub	-	-	-	-	-	-	-	-	-
	Herbaceous Wetlands		6	-	-	-	6	10	-	6	
Subtotal Wetland/Riparian			7	0	0	0	0	7	10	0	7
Agriculture	Agriculture, Pastures, and Mixed Environs	n/a	2	-	-	-	-	2	3	-	2
Subtotal Agriculture			2	0	0	0	0	2	3	0	2

TABLE 3.6.1-3a

Summary of Operation-Related Vegetation Removal Impacts 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-Seral Forest	Subtotal Clearcut / Regenerating Forest				
Developed / Barren	Urban and Mixed Environs	n/a	<1	-	-	-	-	<1	<1	-	<1
	Roads	n/a	3	-	-	-	-	3	5	-	3
	Beaches	n/a	-	-	-	-	-	-	-	-	-
Subtotal Developed / Barren			3	0	0	0	0	3	5	0	3
Open Water	Open Water - Lakes, Rivers, and Streams	n/a	<1	-	-	-	-	<1	<1	-	<1
	Bays and Estuaries	n/a	<1	-	-	-	-	<1	<1	-	<1
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			55	<1	2	10	32	55	92	<1	55

Note:: Columns and rows do not necessarily sum correctly due to rounding. Acres are rounded to nearest whole acre. Values less than 1 acre shown as <1. Acres of impacts to non-vegetated areas are included in this table for consistency of values reported in 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 clearcut (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 Vegetation Removal Impacts to Habitat (acres a/) – Proposed Route

General Vegetation Type	Mapped Vegetation Type	Forest Stand by Age	Pipeline Facilities								Total Operation Impacts by Habitat Type
			30-foot Maintenance Corridor	Permanent Access Roads	Subtotal Late Successional Old-Growth Forest	Subtotal Mid-Regenerating Seral Forest	Subtotal Clearcut / Forest	Subtotal By Habitat Type e/	Permanent Easement (50-foot) f/	Above-ground Facilities	
Forest-Woodland	Westside Lowland	L-O <u>b/</u>	6	-	-	-	-	-	10	-	-
	Conifer-Hardwood Forest	M-S <u>c/</u>	16	-	6	16	20	42	26	<1	42
	Montane Mixed Conifer Forest	C-R <u>d/</u>	20	<1	-	-	-	-	34	-	-
		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	<1	6	16	20	42	70	<1	42
Grasslands-Shrubland	Sagebrush Steppe		-	-	-	-	-	-	-	-	-
	Shrublands		-	-	-	-	-	-	-	-	-
	Westside Grasslands		-	-	-	-	-	-	-	-	-
	Eastside Grasslands		-	-	-	-	-	-	-	-	-
Subtotal Grasslands-Shrubland			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>	-	-	-	-	-	-	-	-	-
		Shrub	-	-	-	-	-	-	-	-	-
	Herbaceous Wetlands		3	-	-	-	-	3	5	-	3
Subtotal Wetland/Riparian			3	0	0	0	0	3	5	0	3
Agriculture	Agriculture, Pastures, and Mixed Environs	n/a	3	-	-	-	-	3	4	-	3
Subtotal Agriculture			3	0	0	0	0	3	4	0	3

TABLE 3.6.1-3b

Summary of Operation-Related Vegetation Removal Impacts to Habitat (acres a/) – Proposed Route

General Vegetation Type	Mapped Vegetation Type	Forest Stand by Age	Pipeline Facilities					Subtotal Clearcut / Regenerating Forest	Subtotal By Habitat Type e/	Permanent Easement (50-foot) f/	Above-ground 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					
Developed / Barren	Urban and Mixed Environs	n/a	-	-	-	-	-	-	-	-	-	-
	Roads	n/a	4	<1	-	-	-	4	6	-	4	
	Beaches	n/a	-	-	-	-	-	-	-	-	-	
Subtotal Developed / Barren			4	<1	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	<1	0	0	0	9	16	0	9	
Project Total			51	<1	0	0	0	51	85	<1	51	

Notes refer to complete project (232 miles). General: Columns and rows do not necessarily sum correctly due to rounding. Acres are rounded to nearest whole acre. Values less than 1 acre shown as "<1". Acres of impacts to non-vegetated areas are included in this table for consistency of 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 clearcut (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
for Blue Ridge Variation and Proposed Route**

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	85	23	90	<1	11
Impact	Modified <u>c/</u>	0	<1	1	<1	<1	<1
Operational Impact	30' Maintenance Corridor <u>d/</u>	1	19	5	22	<1	3
	Aboveground Facilities <u>e/</u>	-	-	-	-	-	-
Impact on Federal Lands							
Construction	Removed <u>b/</u>	<1	10	2	8	0	<1
Impact	Modified <u>c/</u>	0	0	0	0	0	0
Operational Impact	30' Maintenance Corridor <u>d/</u>	<1	2	1	2	0	<1
	Aboveground Facilities <u>e/</u>	-	-	-	-	-	-
Total Pipeline Project Impacts (Federal and Non-Federal Lands)							
Construction	Removed <u>b/</u>	3	95	24	98	<1	11
Impact	Modified <u>c/</u>	0	<1	1	<1	<1	<1
Operational Impact	30' Maintenance Corridor <u>d/</u>	1	22	6	24	<1	3
	Aboveground Facilities <u>e/</u>	-	-	-	-	-	-
Proposed Route							
Impact on Non-Federal Lands							
Construction	Removed <u>b/</u>	5	34	24	30	<1	4
Impact	Modified <u>c/</u>	1	6	4	6	0	<1
Operational Impact	30' Maintenance Corridor <u>d/</u>	1	8	6	8	<1	1
	Aboveground Facilities <u>e/</u>	-	-	-	-	-	-
Impact on Federal Lands							
Construction	Removed <u>b/</u>	20	59	5	8	<1	11
Impact	Modified <u>c/</u>	7	15	2	1	0	1
Operational Impact	30' Maintenance Corridor <u>d/</u>	5	16	2	2	0	3
	Aboveground Facilities <u>e/</u>	-	-	-	-	-	-
Total Pipeline Project Impacts (Federal and Non-Federal Lands)							
Construction	Removed <u>b/</u>	25	93	29	38	<1	15
Impact	Modified <u>c/</u>	9	21	7	7	0	1
Operational Impact	30' Maintenance Corridor <u>d/</u>	6	24	7	10	<1	4
	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 uncleared storage areas (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, 0.22 acres of this is LSOG, and no wetland/riparian habitat. Tables 3.6.1.1-1a and 3.6.1.1-1b also summarize the number of species associated with these mapped vegetation types. Construction of the Proposed Route would impact approximately 119 acres of forest-woodland habitat, including 27 acres of LSOG (using FERC approach), 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.

TABLE 3.6.1.1-1a			
Acres of Construction-Related Disturbance to Forest-Woodland 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	Total Acres	Number of Species Associated
Forest- Woodland	Westside Lowland Conifer-Hardwood Forest	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
	Project Total		19

Note: Rows and columns may not sum correctly due to rounding. Acreages are 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 Forest-Woodland 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	Total Acres	Number of Species Associated
Forest- Woodland	Westside Lowland Conifer-Hardwood Forest	119	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
	Project Total		131

Note: Rows and columns may not sum correctly due to rounding. Acreages are 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 BLM and private/state lands from construction of the Blue Ridge Variation and the Proposed Route. there is only one crossing of a perennial water body (Steinnon Creek) associated with the Proposed Route on BLM lands and none associated with the Blue Ridge Variation on BLM lands.

Category	Facility	Location	Notes	Effects to Aquatic Resources
Pipeline-related facilities	Hydrostatic testing	2 potential hydrostatic test break sites are located within the construction right-of-way.,	One site (HT 10.14) is 76 feet and the other (HT17.13) is 550 feet from waterbodies supporting ESA-listed coho and green sturgeon, critical habitat, and EFH. A <i>Hydrostatic Testing Plan</i> addressing protection procedures has been developed.	Potential effects to ESA-listed species, critical habitat, and EFH. 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 143 TEWAs would impact 11.8 acres of wetlands and 0.1 acre of waterbodies and ditches	18 waterbodies 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)	1 UCSA is within a riparian zones but would not impact wetlands.	No waterbodies directly affected	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.
	Rock sources, and permanent disposal sites	No rock source/disposal sites – also identified as TEWAs	-	-
Construction access roads	1 new Temporary Access Road (TAR 13.80)	The new TAR is within the riparian zone of a non-fish bearing stream	The TAR is 140 feet from the waterbody.	Potential sediment runoff to stream. Measures from the ECRP, SPCCP, and other POD items would avoid adverse effects.
	1 new Permanent Access Road (PAR 15.65)	The new PAR partially coincides with an existing road.	The PAR is 85 feet from a waterbody supporting ESA-listed green sturgeon and coho, with critical habitats for both species, and EFH.	Potential effects to ESA-listed species, critical habitat, and EFH. Potential erosion with sediment delivery to streams and invasive species introduction if not properly managed. ECRP, SPCCP, and other POD items would avoid potential adverse effects.
	Improved Existing Access Roads	None proposed	-	-
Above-ground facilities	AGF 15.66 (Block Valve Assembly #2)	The site is within the construction right-of-way..	The site is 180 feet from a waterbody supporting ESA-listed coho, critical habitat, and EFH.	Potential effects to ESA-listed species, critical habitat, and EFH. Potential erosion with sediment delivery to streams and invasive species introduction if not properly managed. ECRP, SPCCP, and other POD items would avoid potential adverse effects.

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	1 potential hydrostatic test break site is located within the construction right-of-way.,	A <i>Hydrostatic Testing Plan</i> addressing protection procedures has been developed. No waterbodies directly affected. Nearest ESA waterbody >0.5 mile away.	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 3 acres of wetland and 0.1 acre of waterbodies	7 waterbodies 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 1 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.
	Rock sources, and permanent disposal sites	None proposed	-	-
Construction access roads	1 New Temporary Access Road (TAR 12.08) segment.	New TAR location would cross a waterbody on private lands.	The TAR would cross waterbody supporting ESA-listed coho, critical habitat, and EFH	Potential effects to ESA-listed species, critical habitat, and EFH. Potential erosion with sediment delivery to stream and invasive species introduction if not properly managed. 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.
	1 New Permanent Access Road (PAR 22.16BR)	New PAR would affect regenerating mixed conifer/mixed deciduous forest	No waterbodies are within 700 feet of the PAR.	-
	Improved Existing Access Roads	None proposed	-	-
Above-ground facilities	AGF 22.2BR (Block Valve Assembly #2)	< 0.1 acre of permanent wetland fill	Block valve located in an emergent pasture wetland (NWI - interpreted). The site is 46 feet from a waterbody supporting ESA-listed coho, critical habitat, and EFH.	Potential effects to ESA-listed species, critical habitat, and EFH. Potential erosion with sediment delivery to stream and invasive species introduction if not properly managed. 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 31 perennial streams (none on BLM lands) and 29 intermittent streams while the Proposed Route would cross three perennial (one on BLM lands) and four intermittent streams (table 3.6.2-2). Of the streams crossed by the Blue Ridge Variation, 15 are known or assumed to support anadromous species (including essential fish habitat [EFH])

and Endangered Species Act [ESA] species¹⁶⁾ and 19 are known or assumed to support resident fish species. Of the streams crossed by the Proposed Route, six are known or assumed to support anadromous fish species (including EFH and ESA species) and seven are assumed to support resident species (table 3.6.2-2). Although the Proposed Route crosses the boundary line of the South Fork Coos River watershed, no streams are crossed in that watershed.

Fifth-Field Watershed	Perennial/ Estuarine Streams	Intermittent Streams	Fish-bearing Streams with:			
			Anadromous Species (assumed) <u>a/</u>	Resident Species (assumed) <u>a/, b/</u>	EFH Species and Habitat Present (assumed) <u>a/</u>	ESA Species or Habitat Present (assumed) <u>a/</u>
Blue Ridge Variation						
Coos Bay Frontal	28	21	10(3)	14(0)	9(1)	9(1)
Coquille River	2	-	1(1)	2(0)	0(1)	0(1)
North Fork Coquille River	1	8	0(0)	3(0)	0(0)	0(0)
TOTAL	31	29	11(4)	19(0)	9(2)	9(2)
Proposed Route						
Coos Bay Frontal	1	7	4(1)	5(0)	4(0)	4(0)
South Fork Coos River	-	-	-	-	-	-
North Fork Coquille River	2	-	1(0)	2(0)	1(0)	1(0)
TOTAL	3	7	5(1)	7(0)	5(0)	5(0)

a/ Known 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 two bore operations and 55 dry open-cut crossings. The proposed route includes eight dry open-cut crossings.

¹⁶⁾ ESA listed fish species with potential to occur within waters associated with the Blue Ridge Variation and/or the Proposed Route on BLM or private/state lands include: North American green sturgeon (Southern DPS) *Acipenser medirostris*, Coho salmon (South OR/North CA Coast ESU) *Oncorhynchus kisutch*, Coho salmon (Oregon Coast ESU) *Oncorhynchus kisutch*

TABLE 3.6.2-3

Proposed Waterbody Crossing Methods for Waterbody Crossings by Fifth-Field Watersheds for Blue Ridge Variation and Proposed Route

Fifth-Field Watershed	Number of Waterbodies Crossed, by Construction Method						Total Crossed	Adjacent Not Crossed	
	HDD or Direct Pipe	Bore	Wet Open-Cut	Diverted Open-Cut	Dry Open-Cut	a/		Bedrock b/	
Blue Ridge Variation									
Coos Bay Frontal	-	2	-	-	45	47	2	1	
Coquille River	-	-	-	-	2	2	-	2	
North Fork Coquille River	-	-	-	-	9	9	-	2	
TOTAL	0	2	0	0	56	58	2	5	
Proposed Route Alternative									
Coos Bay Frontal	-	-	-	-	6	6	2	-	
South Fork Coos River	-	-	-	-	-	0	-	-	
North Fork Coquille River	-	-	-	-	2	2	-	-	
TOTAL	0	0	0	0	8	8	2	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 be initiated only 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 impacts to riparian areas¹⁷ 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 88 acres of riparian area, while the Proposed Route would affect 50 acres. The effects on riparian areas are similar to those described in FERC FEIS section 4.3.2.2.

¹⁷ Riparian area is a general term that applies to those areas adjacent to a waterbody on both federal and non-federal lands. It is not a term used by BLM, nor should it be confused with Riparian Reserve (a BLM land allocation under the RMP).

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 the Pacific Connector Pipeline for the Blue Ridge Variation and the Proposed Route

Landowner	Forest Habitat b/					Other Habitat b/					Total Riparian Area Impact (acres)	
	Late Successional Old-Growth Forest	Mid-Seral Forest	Forest Regeneration	Clearcut Forest	Forest Total	Wetland Forested	Wetland Non-forested	Non-forested Habitat Unaltered	Agriculture	Altered Habitat		Other Total
Blue Ridge Variation												
BLM-Coos Bay District	-	6	1	2	9	-	-	-	-	<1	<1	9
Non-Federal Subtotal	3	13	27	3	46	1	23	-	7	2	32	79
Overall Total	3	19	28	5	55	1	23	0	7	2	32	88
Proposed Route												
BLM-Coos Bay District	3	3	4	-	11	-	-	-	-	3	3	14
Non-Federal Subtotal	1	5	6	3	14	-	12	-	10	1	23	37
Overall Total	4	8	10	3	25	0	12	0	10	3	26	51

Note: Rows/columns may not sum correctly due to rounding. Acres are 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 Non-forested 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. 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 FEIS. The Orange category is considered of greatest risk from project actions on bank and bed stability. The Blue Ridge Variation would include six stream crossings ranked Orange but there are no perennial stream crossings on BLM lands (Geoengineers 2018). While the Proposed Route does have one perennial stream crossing on BLM land (Steinnon Creek), it is ranked Yellow. With the adoption of the site-specific stream restoration plan required by the BLM as part of the POD, the bed and banks of the crossing would be restored to pre-construction conditions; therefore, ensuring the stability of this crossing post-construction is consistent with BLM BMPs set forth in its RMP.

TABLE 3.6.2.1-1
Summary of Stream Crossing Site-Specific Rankings and Management Categories for Blue Ridge Variation and Proposed Route

Ranking	Blue Ridge Variation	Proposed Route
Blue	8	0
Green	0	0
Yellow	20	5
Orange	6	0
Total Crossings	34	5

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. Four intermittent streams would also be crossed when these channels are typically dry (table 3.6.2.2-1). The Proposed Route would cross one perennial stream but no intermittent streams. One perennial stream, Steinnon Creek, supports resident fish species but no EFH or ESA species (table 3.6.2.2-1).

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	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.

Table 3.6.2.2-2 lists the number of anadromous, resident fish species, as well as those aquatic species where essential fish habitat (EFH) under the Magnuson-Stevens Fishery Conservation and Management Act, or species listed under ESA in water bodies on both BLM and private/state lands.

	Blue Ridge Variation	Proposed Route
BLM Lands		
Anadromous	0	0
Resident	0	1
EFH Species	0	0
ESA Species	0	0
Private/State Lands		
Anadromous	15	5
Resident	19	5
EFH Species	9	5
ESA Species	9	5

3.7 THREATENED, ENDANGERED, AND OTHER SPECIAL STATUS SPECIES

3.7.1 Federally Listed Threatened and Endangered Species

The discussion of these federally listed endangered, threatened, and proposed species that potentially occur in the project area was revised based on additional data and analysis and consideration of public comments on the DEIS. These species are listed in table 4.6.1-1 of the

FEIS and analyzed in section 4.6.1 of the FEIS. 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) on BLM managed lands.

Tables 3.7.1-1 and 3.7.1-2 summarize the acres of affected MAMU and NSO habitat in the alignments of the Blue Ridge Variation and the Proposed Route on both BLM and state/private lands consistent with the analysis provided in section 4.0 of the FEIS¹⁸. The Blue Ridge Variation would impact 3 acres of suitable, 45 acres of recruitment, and 129 acres of capable MAMU habitat for a total of 177 acres (table 3.7.1-1). The Proposed Route would impact 34 acres of suitable, 68 acres of recruitment, and 103 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 177 and 204 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 9 acres of NRF habitat, while the Proposed Route affects 16.3 acres of high NRF nesting habitat, 59.7 acres of high NRF indirectly and 28 acres of NRF habitat for the NSO (table 3.7.1-2).

		Acres of MAMU Habitat Affected					
		Suitable			Recruitment	Capable	Total
Route	Proposed Action <u>a/</u>	Occupied Stand	Presumed Occupied	Total			
Blue Ridge Variation	Habitat Removed (Direct)	-	3	3	44	129	175
	Habitat Modified (Indirect)	-	-	-	1	<1	1
	Total	0	3	3	45	129	177
Proposed Route	Habitat Removed (Direct)	6	19	25	56	81	161
	Habitat Modified (Indirect)	4	5	9	12	22	43
	Total	10	24	34	68	103	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

		Acres of NSO Habitat Affected				
Route	Proposed Action <u>a/</u>	High NRF	NRF	Dispersal Only	Capable	Total
Blue Ridge Variation	Habitat Removed (Direct)	-	9	38	129	175
	Habitat Modified (Indirect)	-	-	1	<1	1
	Total	0	9	38	129	177
Proposed Route	Habitat Removed (Direct)	16.3	20	60	78	174.3
	Habitat Modified (Indirect)	59.7	8	12	22	101.7
	Total	76.0	28	72	99	275

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

¹⁸ A discussion of impacts to MAMU and NSO specific to BLM lands for the Blue Ridge Variation and the Proposed Route is provided in section 3.5.1.

The USFWS has proposed the listing of the coastal distinct population segment of the Pacific marten, *Martes caurina*, referred to as the coastal marten. While information on populations of this species in the general vicinity of the Blue Ridge Variation or the Proposed Route is limited, BLM biologists have determined that habitat for this species is available on BLM lands on both of these alignment segments.

While there are several federally listed fish (e.g., coho, green sturgeon) that occupy habitat associated with perennial waterbodies crossed by the Blue Ridge Variation and the Proposed Route, none of these ESA-listed species occupy habitat on BLM lands associated with either alignment.

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. While other BLM sensitive species could be impacted by either route, information is unavailable to provide a comparison of impacts between these routes. Section 4.06 of the FEIS provides a general discussion of the impacts to these species.

3.8 RECREATION AND VISUAL RESOURCES

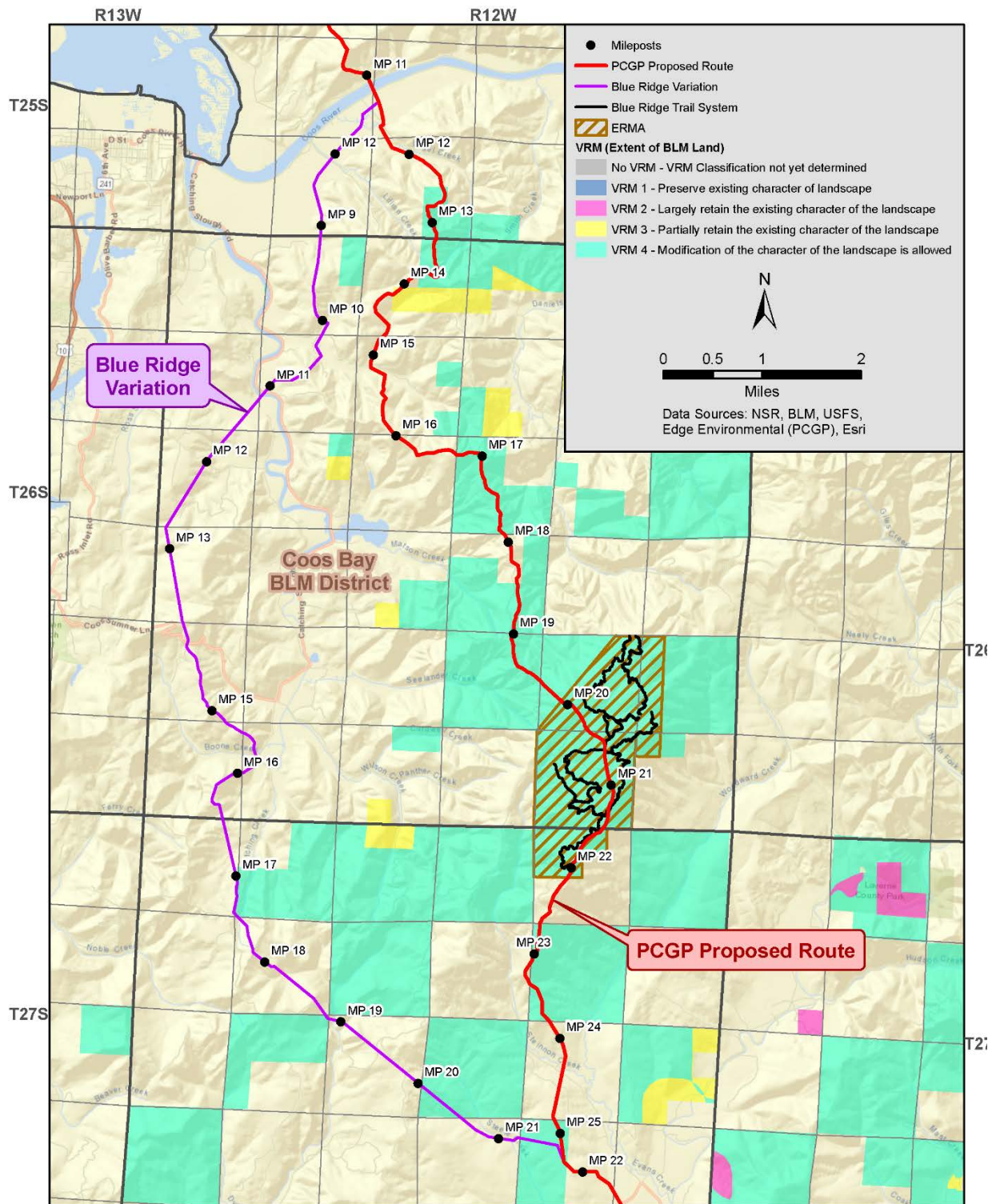
3.8.1 Parks and Recreational Areas or Facilities on BLM Lands

Figure 3.8-1 shows the Blue Ridge Variation and the Proposed Route with respect to ownership and the location of BLM's designated Extended Recreation Management Area (ERMA) that encompasses 1,405 acres in the general vicinity of the Blue Ridge Variation and the Proposed Route approximately 15 miles southeast of Coos Bay. The Blue Ridge Variation would not affect the Blue Ridge Trail System or other uses within the ERMA. This trail system is crossed by the Proposed Route between approximately PR-MPs 20.5 and PR-MP 22.0. 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. If the Proposed Route (see figure 3.8-1) is selected, portions of the trail may be unavailable to the public during construction.

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

The only developed parks or other recreational facilities in the vicinity of the Blue Ridge Variation and the Proposed Route are on non-federal lands. Coos County owns and operates two county parks in the general vicinity of the Blue Ridge Variation and the Proposed Route; Rock Prairie and Laverne. 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 the Blue Ridge Variation route at BRV-MP 22. Laverne County Park is a 350-acre park located approximately 2.5 miles east of PR-MP 22 on the Proposed Route. This 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. This park also has a softball field, playground, horseshoe pits, volleyball area, hiking trails, and covered shelters. Neither route should affect park use or associated recreational opportunities.

Figure 3.8-1 BLM VRM Classes, ERMA Location and Blue Ridge Trail System



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)¹⁹. Either route would be consistent with BLM VRW class designations.

3.9 TRANSPORTATION

3.9.1 Construction Access Roads

The Blue Ridge Variation does not require any TARs; however, one short PAR affecting 0.1 acre is proposed to access MLV #2 (BVR-MP 15.66). One temporary access road (TAR 12.08/0.2 acres) and one permanent access road (PAR 22.16BR/0.1 acres) are proposed for the Proposed Route. MLV #2 (PR-MP 22.2BR) is located immediately adjacent to an existing private road.

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 Blue Ridge Variation or the Proposed Route 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).

During construction, 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 (BRV-MP 12.08R); private roads (BRV- MPs 10.04, 10.59, 11.33, 14.25), Raven Wood Lane (BRV-MP 10.39), Anchor Drive (BRV-MP 11.33), Eastside-Sumner-County Road 53 (BRV-MP 11.96), Alder Wood Lane and Skyline Drive, Boone Creek Road (BRV-MP 15.70), and South Sumner-County Road 58 (BRV-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 (PR-MP 15.13R) above the crossing of the Proposed Route, as well as to residences along BLM Road 26-12-4.2 (BRV-MP 17.00R-19.68R) and a private road (BRV-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 Road-55 and portions of Coos River Highway County Road 241 (BRV-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. The Blue Ridge Variation has only one area where existing roads are located within the construction right-of-way (i.e., Menasha Logging Spur [BRV-MP 14.60–15.01]) and where road closure would be required during construction. There are eight areas along the Proposed Route where the pipeline right-of-way would encompass existing roads and where road closures would be required during construction. Pacific Connector's application does not

¹⁹ This segment is associated with an existing BLM route.

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 either the Blue Ridge Variation or the Proposed Route to minimize impacts on other road users, including local and emergency traffic, as described their current application. In addition, the POD (Attachment 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 Transportation 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 cultural resources are located on and no newly identified archaeological resources have been recorded in areas on BLM lands within the area of potential effect that have been surveyed for cultural resources on the Blue Ridge Variation.

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 PR-MP 11.3 and PR-MP 23.4. 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 PR-MP 24.3 of the Proposed Route. However, a cultural survey has not been conducted on this non-federal 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 (SHPO).

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

3.11 CONCLUSION

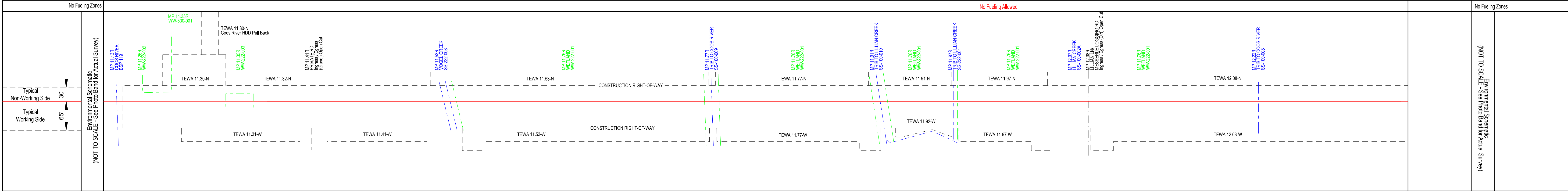
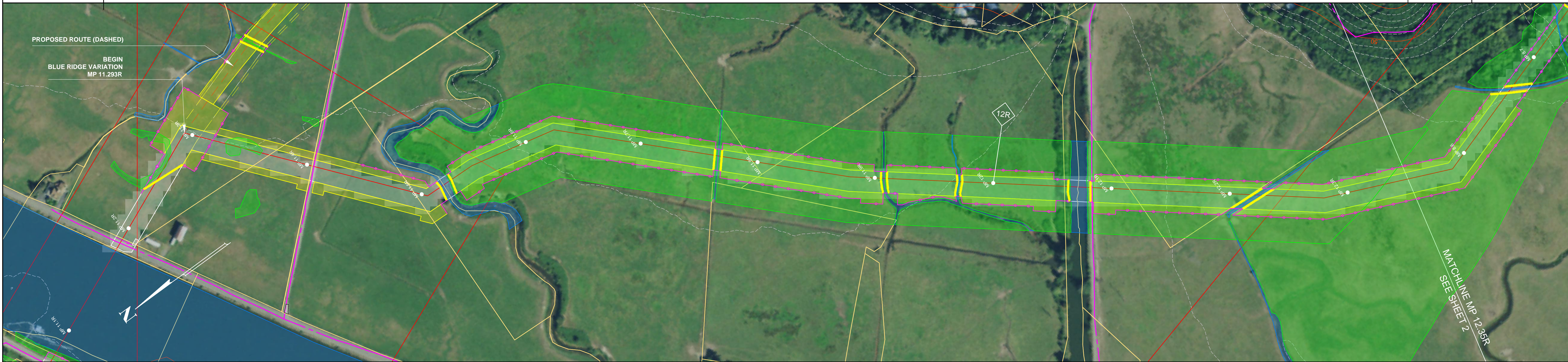
Table 3.11-1 provides a summary of information available to the BLM that provides the basis for a comparison of the impacts to the lands and resources managed by the Coos Bay District between the Blue Ridge Variation and the Proposed Route.

TABLE 3.11-1		
Summary of Comparative Impacts		
	Blue Ridge Variation	Proposed Route
Land Requirements for PCGP Project (All Lands)		
Pipeline Right-of-Way	15.2 miles	14.0 miles
Construction Impacts	233.7 acres	244.5 acres
Operation Impacts	92.9 acres	85.6 acres
Land Ownership Crossed by PCGP Project		
Federal Land	1.4 miles	7.5 miles
Private Land	13.8 miles	6.5 miles
State Land	<0.1 miles	0.0 miles

TABLE 3.11-1		
Summary of Comparative Impacts		
	Blue Ridge Variation	Proposed Route
BLM Lands Affected by PCGP Project		
Miles Across BLM Land	1.4 miles	7.5 miles
Temporary Construction Requirements	19.3 acres	130.8 acres
Operational Requirements	8.5 acres	46.0 acres
BLM O&C, Coos Bay Wagon Road and Public Domain Lands Crossed by PCGP Project		
O&C Lands	0.0 miles	0.0 miles
Coos Bay Wagon Road Lands	1.4 miles	7.5 miles
Public Domain Lands	0.0 miles	<1.0 miles
BLM RMP Land Allocations Crossed by PCGP Project		
Congressional Reserve	0.0 miles	0.0 miles
District-Designated Reserve	<1.0 miles	0.3 miles
Harvest Land Base	0.4 miles	0.9 miles
Late Successional Reserve	0.4 miles	5.5 miles
Riparian Reserve	0.6 miles	0.8 miles
Landslide Prone Areas Crossed by PCGP (All Lands)		
Number of Areas Crossed	5	2
Total Length Crossed	7,137 feet	1,088 feet
Soil Resources Impacts – Miles (Acres All Lands)[Acres BLM Lands]		
Prime Farmland	3.8 (69)	1.9 (31)
Hydric Soils	2.1 (41)	1.3 (21)
High Water Table	2.1 (43)	1.6 (26)
Severe Water Erosion Potential	8.5 (124)[13]	7.9 (112)[73]
Revegetation Potential	8.4 (132)[13]	6.2 (102)[74]
Compaction Potential	15.2 (232)[19]	12.9 (183)[99]
Restrictive Layer	9.1 (131.8)	6.2 (88)
Steep Slopes (+30%)	8.5 (124)[13]	4.1 (58)[30]
Floodplains and Wetlands Crossed by PCGP Project (All Lands)		
Floodplains	2.0 miles	0.8 miles
Wetlands	34.2 acres	13.4 acres
Vegetation Cover Types Crossed by PCGP (All Lands)		
Forest-Woodland	12.1 miles	11.4 miles
Wetland/Riparian	1.8 miles	0.8 miles
Developed/Barren	0.8 miles	1.1 miles
Direct and Indirect Effects of PCGP Project on Interior Forest Habitat (All Lands)		
BLM Lands Direct Effects	1 acre	71 acres
BLM Lands Indirect Effects	32 acres	437 acres
Non-Federal Lands Direct Effects	32 acres	54 acres
Non-Federal Effects Indirect Effects	236 acres	238 acres
PCGP Project Effects on LOSG Quality on BLM Lands		
Direct LSOG Effects	0.2 acres	49 acres
Direct Effects on complex LSOG	0.0 acres	18 acres
Indirect LSOG Effects	2.5 acres	363 acres
Indirect Effects on complex LSOG	0.0 acres	89 acres
PCGP Project Effects to MAMU on BLM lands		
Occupied/Potential MAMU Sites	0/0	3/1
Direct Effects on nesting habitat	0.0 acres	10.4 acres
Indirect Effects on nesting Habitat	0.0 acres	34.3 acres
PCGP Project Effects to NSO on BLM lands		
Direct Effects on NSO nesting habitat	0.0 acres	16.4 acres
Indirect Effects on NSO nesting habitat	0.0 acres	60 acres
Direct Effects on NRF habitat	0.0 acres	1.4 acres
Indirect Effects on NRF habitat	0.0 acres	11.4 acres
PCGP Project Effects on ODFW Category 1 – Irreplaceable Essential Habitat		
BLM Lands Construction	<1 acre	27 acres
BLM Lands Operational	<1 acre	5 acres
Non-Federal Lands Construction	3 acres	5 acres
Non-Federal Lands Operational	1 acre	1 acre

TABLE 3.11-1		
Summary of Comparative Impacts		
	Blue Ridge Variation	Proposed Route
PCGP Project Effect on Wildlife Species on BLM Lands – Number of Species		
Forest Woodland Habitat		
Herpetofauna	35	35
Birds	125	125
Mammals	66	66
Riparian Habitat		
Herpetofauna	38	38
Birds	154	154
Mammals	76	66
Coastal		
Herpetofauna	6	6
Birds	100	100
Mammals	26	26
Open Water		
Herpetofauna	17	17
Birds	94	94
Mammals	20	20
PCGP Project Effects on Fish-Bearing Rivers and Streams – Number of Species		
BLM Lands		
Anadromous	0	0
Resident	0	1
EFH Species	0	0
ESA Species	0	0
Non-Federal Lands		
Anadromous	15	5
Resident	19	5
EFH Species	9	5
ESA Species	9	5
PCGP Project Effects on BLM Sensitive Species		
Non-vascular Plants	36	34
PCGP Project Stream Crossing Risk Ranking – Number of Crossings (All Lands)		
Blue	8	0
Green	0	0
Yellow	20	5
Orange	6	0
PCGP Project Effects ON BLM Blue Ridge Trail System ERMA		
PCGP Project Effects ON BLM Blue Ridge Trail System ERMA	0.0 Miles (0 acres)	2.2 miles (32.6 acres)
PCGP Project Effects on MAMU Habitat (All Lands)		
Direct Effect on Occupied/Presumed Occupied Habitat	3 acres	25 acres
Direct Effect on Recruitment Habitat	44 acres	56 acres
Direct Effect on Capable Habitat	129 acres	81 acres
Indirect Effect on Occupied/Presumed Occupied	0 acres	9 acres
Indirect Effect on Recruitment Habitat	1 acre	12 acres
Indirect Effect on Capable Habitat	<1 acre	22 acres
PCGP Project Effects on BLM VQM Management Areas		
Class IV VQM	1.4 miles	7.4 miles
Class III VRM	0.0	0.1 miles

Legal Location	SEC 28, T2SS, R12W		SEC 29, T2SS, R12W		SEC 32, T2SS, R12W		Legal Location				
Ownership / Management	CO-045.055	CO-045.056	CO-045.057	CO-045.058	CO-045.060	CO-045.062	CO-045.063	CO-059.000	Ownership / Management		
Jurisdiction	COOS COUNTY							Jurisdiction			
Federal Landuse Allocation	NOV - MAY							JAN - DEC	Federal Landuse Allocation		
Areas of High Groundwater (Potential Trench Dewatering)	NOV - MAY							JAN - DEC	Areas of High Groundwater (Potential Trench Dewatering)		
Wetland / Waterbody	WW-222-002	WW-500-001	WW-222-003	Vogel Creek	WW-222-001	Trib to Coos River	WW-222-001	Trib to Lillian Creek	WW-222-001	Lillian Creek	WW-222-001
Crossing Method / Instream Construction Window	Dry Open Cut / Jul. 1 - Sep. 15			Dry Open Cut / Jul. 1 - Sep. 15			Dry-Open Cut / Jul. 1 - Sep. 15			Dry-Open Cut / Jul. 1 - Sep. 15	
Biological Seasonal Construction Window (as of September 2017)	MARBLE MURRELET (APRIL 1 - AUGUST 5 (DTR))										
Topsoil Salvage / Federal Lands Soil Risk	Hydrostatic Test Water Release / Aboveground Facilities / Residential										



- NOTES:
- In wetlands cut vegetation off at ground level, leaving existing root systems in place and remove the vegetation from the wetland for disposal.
 - In wetlands limit pulling of tree stumps and grading activities to directly over the trench line. Do not grade or remove stumps or root systems from the rest of the construction right-of-way.
 - In wetlands segregate the top one foot of topsoil from the trench line, except in areas where standing water or saturated soils are present.
 - Topsoil will be stripped from the trench line and spoil storage area only in croplands, hayfields, pastures and residential areas. Topsoil may be imported in residential areas as necessary to assure adequate reclamation.
 - If streams proposed to be open cut are flowing at the time of construction, they will be crossed using a dry open cut method (i.e., flume, dam & pump, etc.). If streams proposed to be dry open cut are not flowing at the time of construction, they will be open cut.
 - Right-of-way grading or vegetation clearing will occur as necessary.
 - Seed mixes in the ECRP or according to landowner agreements or as directed by E.I.
 - Pacific Connector understands that fisheries' construction windows only apply to those waterbodies flowing at the time of construction and that the windows do not apply to HDD crossings.

LEGEND

- Proposed Pipeline
- Construction Right-of-Way
 - Temporary Construction Right-of-Way
 - Temporary Extra Work Area
 - Uncleared Storage Area
 - Pipe Yard
 - Aboveground Facility
 - Rock Source/Disposal
- Tax Parcel Boundaries
- Wetland
- Stream
- Access Road
- Permanent / Temporary Access Road (PAR / TAR)
- Note: BMP type and placement to be determined by Environmental Inspector based on site-specific conditions.
 - Drivable Berm or Sediment Barrier / Portable Bridge / Wetland Crossing (DB) (SB) (PB) (VC)
 - Silt Fence (SF)
 - Safety Fence (SAF)
 - Slash Filter Windrow (SFW)
 - Construction Entrance Pad (CE)

BLM LANDUSE - 2016 RMP

2a - District Designated Reserve (No Harvest)	2b - District Designated Reserve (Non-Forest)	3a - Late-Successional Reserve (Dry Forest)	3b - Late-Successional Reserve (Moist Forest)	4a - Riparian Reserve (Dry Forest)	4b - Riparian Reserve (Moist Forest)	5 - Estate Management Area	6 - Harvest Land Base (Uneven-Aged Timber Area)	7 - Harvest Land Base (Low Intensity Timber Area)	8 - Harvest Land Base (Moderate Intensity Timber Area)
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FEDERAL LANDS SOIL RISK SENSITIVITY RANK

1-Very Low	2-Low	3-Moderate	4-High	5-Very High
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REVISIONS

NO.	DATE	BY	DESCRIPTION	CHK.	APP.
1	Jul-2019	EE	Issued in Response to DEIS	EE	EE

Scale: 200 0 200 400 FEET

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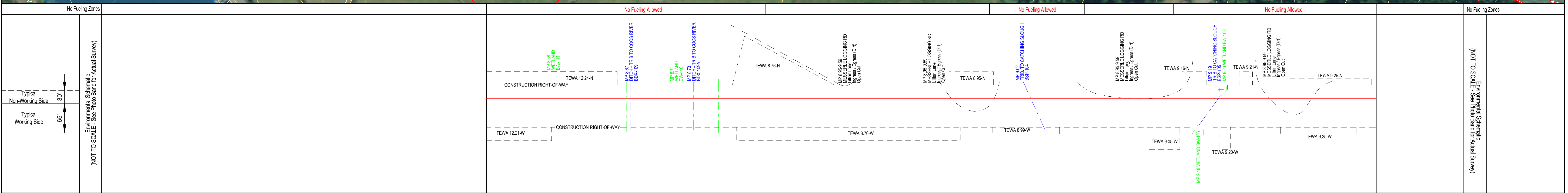
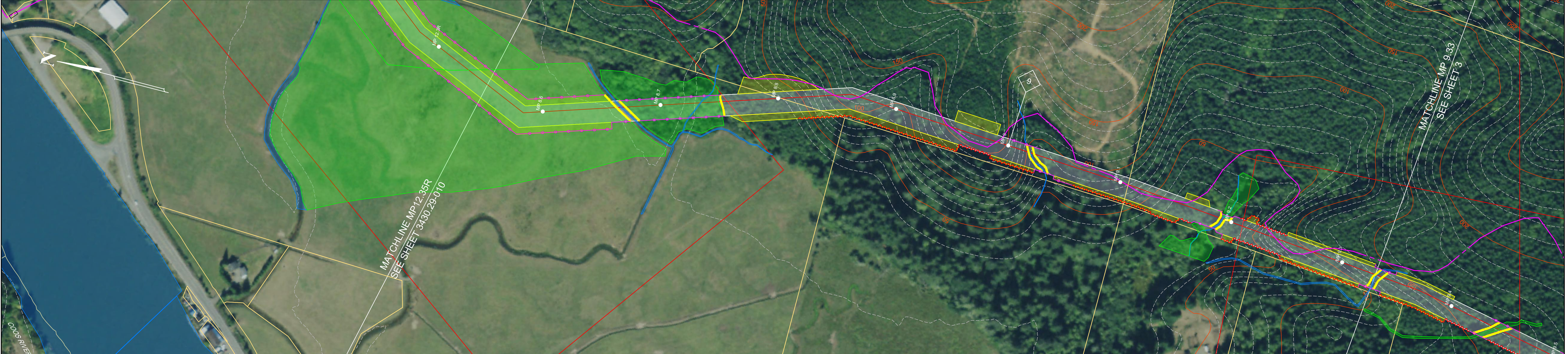
PACIFIC CONNECTOR GAS PIPELINE PROJECT
PACIFIC CONNECTOR GAS PIPELINE, LP
ENVIRONMENTAL ALIGNMENT

BLUE RIDGE VARIATION
MP 11.29R TO 12.35R
COOS COUNTY, OREGON

DRAWN BY: EE DATE: JUL 2019 ISSUED FOR BID: 24x36 SCALE: 1 Inch = 200 Feet
 CHECKED BY: EE DATE: JUL 2019 ISSUED FOR CONSTRUCTION: 11x17 SCALE: 1 Inch = 450 Feet
 APPROVED BY: EE DATE: JUL 2019 DRAWING NUMBER: 3430.29-010 SHEET 1 OF 15

Pacific Connector
GAS PIPELINE

Legal Location	SEC 32, T2S, R12W (Mineral Lease No.: 25898-0G)		SEC 5, T2S, R12W		Legal Location
Ownership / Management	CO-059.000	CO-061.000	CO-062.000		Ownership / Management
Jurisdiction	COOS COUNTY				Jurisdiction
Federal Landuse Allocation					Federal Landuse Allocation
Areas of High Groundwater (Potential Trench Dewatering)					Areas of High Groundwater (Potential Trench Dewatering)
Wetland / Waterbody	JAN - DEC NOV - MAY OCT - APR		Trib to Catching Slough Trib to Catching Slough Trib to Catching Slough		Wetland / Waterbody
Crossing Method / Instream Construction Window	BW-111 Ditch - Trib to Coos River Dry Open-Cut / July 1 - Sept. 15		BW-110 Trib to Coos River Dry Open-Cut / July 1 - Sept. 15		Crossing Method / Instream Construction Window
Biological Seasonal Construction Window (as of September 2017)					Biological Seasonal Construction Window (as of September 2017)
Topsoil Salvage / Federal Lands Soil Risk					Topsoil Salvage / Federal Lands Soil Risk
Hydrostatic Test Water Release / Aboveground Facilities / Residential					Hydrostatic Test Water Release / Aboveground Facilities / Residential



NOTES:

- In wetlands cut vegetation off at ground level, leaving existing root systems in place and remove the vegetation from the trench line for disposal.
- In wetlands limit pulling of tree stumps and grading activities to directly over the trench line. Do not grade or remove stumps or root systems from the rest of the construction right-of-way.
- In wetlands segregate the top one foot of topsoil from the trench line, except in areas where standing water or saturated soils are present.
- Topsoil will be stripped from the trench line and spoil storage area only in croplands, hayfields, pastures and residential areas. Topsoil may be imported in residential areas as necessary to assure adequate reclamation.
- If streams proposed to be open cut are flowing at the time of construction, they will be crossed using a dry open cut method (i.e., flume, dam & pump, etc.). If streams proposed to be dry open cut are not flowing at the time of construction, they will be open cut.
- Right-of-way grading or vegetation clearing will occur as necessary.
- Seed mixes in the ECRP or according to landowner agreements or as directed by E.I.
- Pacific Connector understands that fisheries' construction windows only apply to those waterbodies flowing at the time of construction and that the windows do not apply to HDD crossings.

LEGEND

- Proposed Pipeline
- Construction Right-of-Way
 - Temporary Construction Right-of-Way
 - Temporary Extra Work Area
 - Uncleared Storage Area
 - Pipe Yard
 - Aboveground Facility
 - Rock Source/Disposal
- Tax Parcel Boundaries
- Wetland
- Stream
- Access Road
- Permanent / Temporary Access Road (PAR / TAR)
- Note: BMP type and placement to be determined by Environmental Inspector based on site-specific conditions.
 - Drivable Berm or Sediment Barrier / Portable Bridge / Wetland Crossing
 - Silt Fence
 - Safety Fence
 - Slash Filter Windrow
 - Construction Entrance Pad

BLM LANDUSE - 2016 RMP

2a - District Designated Reserve (No Harvest)	NO.	DATE	BY	DESCRIPTION	CHK.	APP.
2b - District Designated Reserve (Non-Forest)		Jul-2019	EE	Issued in Response to DEIS	EE	EE
3a - Late-Successional Reserve (Dry Forest)						
3b - Late-Successional Reserve (Moist Forest)						
4a - Riparian Reserve (Dry Forest)						
4b - Riparian Reserve (Moist Forest)						
5 - Estate Management Area						
6 - Harvest Land Base (Uneven-Aged Timber Area)						
7 - Harvest Land Base (Low Intensity Timber Area)						
8 - Harvest Land Base (Moderate Intensity Timber Area)						

FEDERAL LANDS SOIL RISK SENSITIVITY RANK

1-Very Low	2-Low	3-Moderate	4-High	5-Very High
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REVISIONS

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Scale: 200 0 200 400 FEET

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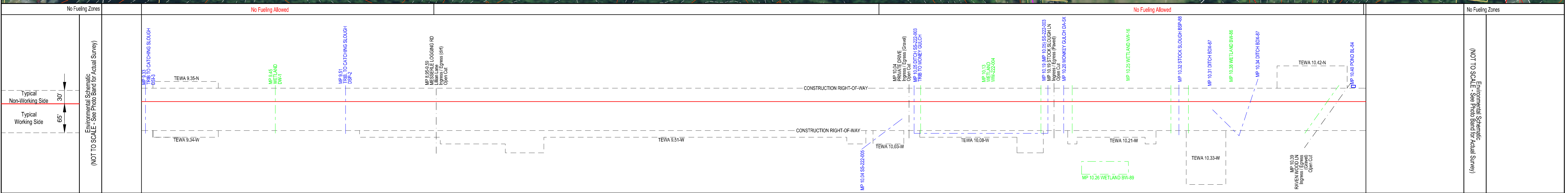
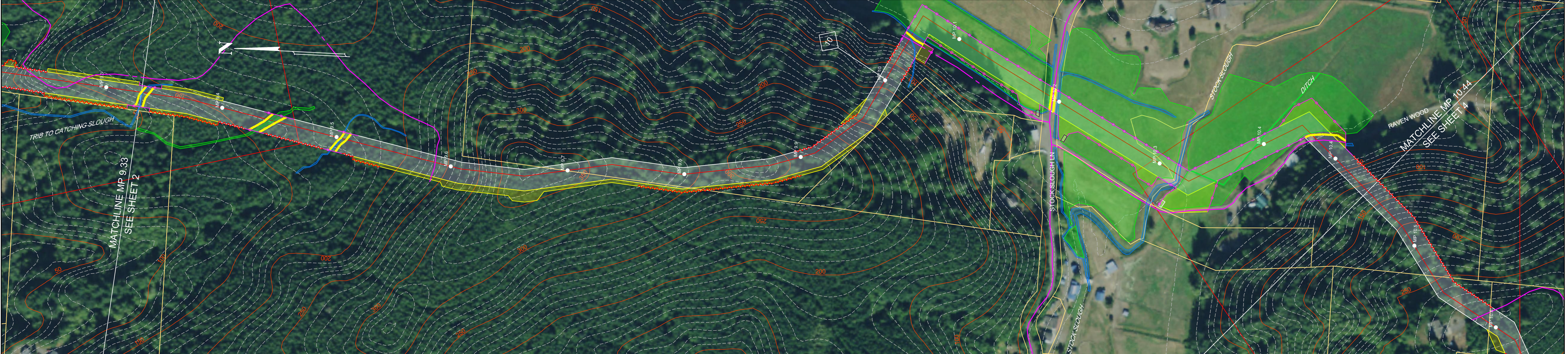
PACIFIC CONNECTOR GAS PIPELINE PROJECT
PACIFIC CONNECTOR GAS PIPELINE, LP
ENVIRONMENTAL ALIGNMENT

BLUE RIDGE VARIATION
MP 12.35R TO 9.33
COOS COUNTY, OREGON

DRAWN BY: EE	DATE: JUL-2019	ISSUED FOR BID:	24x36 SCALE: 1 Inch = 200 Feet
CHECKED BY: EE	DATE: JUL-2019	ISSUED FOR CONSTRUCTION:	11x17 SCALE: 1 Inch = 450 Feet
APPROVED BY: EE	DATE: JUL-2019	DRAWING NUMBER: 3430.29-011	SHEET 2 OF 15

Pacific Connector
GAS PIPELINE

Legal Location	SEC 5, T26S, R12W (Mineral Lease No.: 25900-0G)				SEC 8, T26S, R12W (Mineral Lease No.: 25900-0G)				Legal Location
Ownership / Management	FRED MESSERLE & SONS, INC. 463790 CO-062.000				CO-067.002				Ownership / Management
Jurisdiction	COOS COUNTY								Jurisdiction
Federal Landuse Allocation									Federal Landuse Allocation
Areas of High Groundwater (Potential Trench Dewatering)									Areas of High Groundwater (Potential Trench Dewatering)
Wetland / Waterbody	Trib to Catching Slough DW-1 Trib to Catching Slough				NOV - APR NOV - MAY Ditch Trib to Monkey Gulch WW-222-004 Ditches BVI-89 NW-16 Stock Slough Ditch BVI-86 Ditch				Wetland / Waterbody
Crossing Method / Instream Construction Window (as of September 2017)	Dry Open-Cut / July 1 - Sept. 15 Dry Open-Cut / July 1 - Sept. 15				Dry Open-Cut / July 1 - Sept. 15				Crossing Method / Instream Construction Window (as of September 2017)
Biological Seasonal Construction Window (as of September 2017)	MARBLED MURRELET (APRIL 1 - AUGUST 5 (DTRs))								Biological Seasonal Construction Window (as of September 2017)
Topsoil Salvage / Federal Lands Soil Risk	HYDROSTATIC TEST BREAK								Topsoil Salvage / Federal Lands Soil Risk
Hydrostatic Test Water Release / Aboveground Facilities / Residential									Hydrostatic Test Water Release / Aboveground Facilities / Residential



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 - Silt Fence (SF)
 - Safety Fence (SAF)
 - Slash Filter Windrow (SFV)
 - Construction Entrance Pad (CE)

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5 - Estate Management Area
6 - Harvest Land Base (Unweaned Timber Area)
7 - Harvest Land Base (Low Intensity Timber Area)
8 - Harvest Land Base (Moderate Intensity Timber Area)

FEDERAL LANDS SOIL RISK SENSITIVITY RANK

1-Very Low
2-Low
3-Moderate
4-High
5-Very High

REVISIONS

NO.	DATE	BY	DESCRIPTION	CHK.	APP.
	Jul-2019	EE	Issued in Response to DEIS	EE	EE

Scale: 200 0 200 400 FEET

PUBLIC

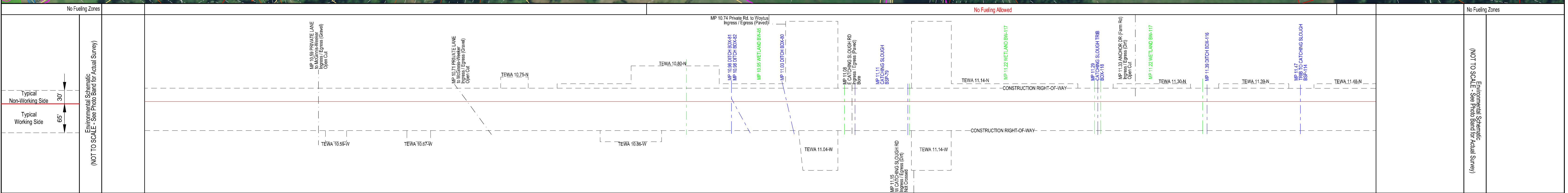
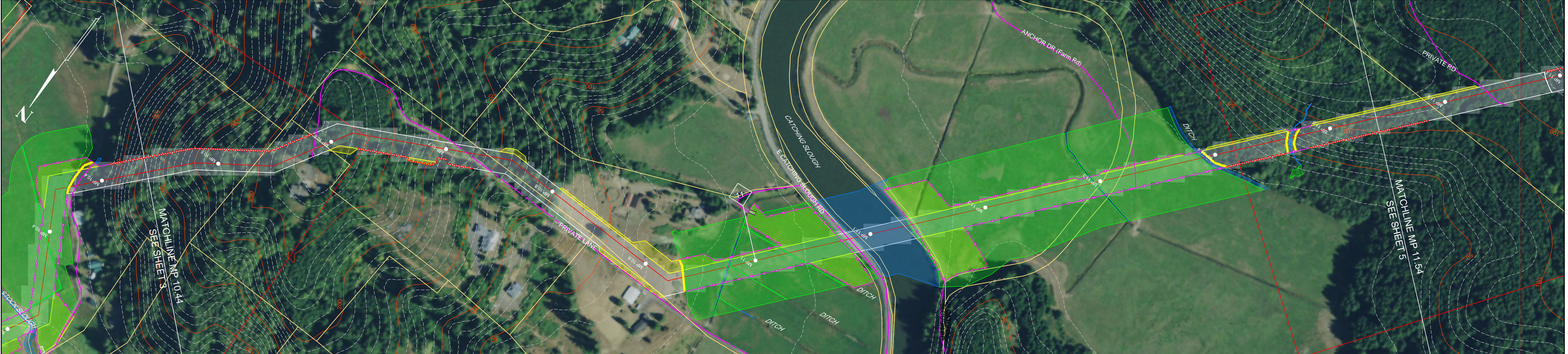
PACIFIC CONNECTOR GAS PIPELINE PROJECT
PACIFIC CONNECTOR GAS PIPELINE, LP
ENVIRONMENTAL ALIGNMENT

BLUE RIDGE VARIATION
MP 9.33 TO 10.44
COOS COUNTY, OREGON

DRAWN BY: EE	DATE: JUL-2019	ISSUED FOR BID:	24x36 SCALE: 1 Inch = 200 Feet
CHECKED BY: EE	DATE: JUL-2019	ISSUED FOR CONSTRUCTION:	11x17 SCALE: 1 Inch = 450 Feet
APPROVED BY: EE	DATE: JUL-2019	DRAWING NUMBER: 3430.29-012	SHEET 3 OF 15

Pacific Connector
GAS PIPELINE

Legal Location	SEC 8, T26S, R12W (Mineral Lease No.: 25900-0G)				SEC 7, T26S, R12W (Mineral Lease Nos.: 25900-0G & 25904-0G)				Legal Location	
Ownership / Management	CO-071.000	CO-074.000	CO-076.000	CO-077.000	CATCHING SLOUGH MKT RD #23 CO-079.000	CATCHING SLOUGH CO-080-000WC	WEST CATCHING SLOUGH CO-081.000RD	ANCHOR DR CO-082.000	CO-082.000	Ownership / Management
Jurisdiction	COOS COUNTY								Jurisdiction	
Federal Landuse Allocation									Federal Landuse Allocation	
Areas of High Groundwater (Potential Trench Dewatering)	NOV - MAY JAN - DEC JAN - DEC								Areas of High Groundwater (Potential Trench Dewatering)	
Wetland / Waterbody	BW-55 Ditches - Trenches to Catching Slough BW-55 Catching Slough BW-117 Ditch - Trib to Catching Slough BW-117 Ditch Trib to Catching Slough								Wetland / Waterbody	
Crossing Method / Instream Construction Window	Dry Open-Cut / July 1 - Sept. 15 Conventional Bore / July 1 - Sept. 15 Dry Open-Cut / July 1 - Sept. 15 Dry Open-Cut / July 1 - Sept. 15								Crossing Method / Instream Construction Window	
Biological Seasonal Construction Window (as of September 2017)	MARBLE MURRELET (APRIL 1 - AUGUST 5 (DTRs))								Biological Seasonal Construction Window (as of September 2017)	
Topsoil Salvage / Federal Lands Soil Risk									Topsoil Salvage / Federal Lands Soil Risk	
Hydrostatic Test Water Release / Aboveground Facilities / Residential									Hydrostatic Test Water Release / Aboveground Facilities / Residential	



- NOTES:
- In wetlands cut vegetation off at ground level, leaving existing root systems in place and remove the vegetation from the wetland for disposal.
 - In wetlands limit pulling of tree stumps and grading activities to directly over the trench line. Do not grade or remove stumps or root systems from the rest of the construction right-of-way.
 - In wetlands segregate the top one foot of topsoil from the trench line, except in areas where standing water or saturated soils are present.
 - Topsoil will be stripped from the trench line and spoil storage area only in croplands, hayfields, pastures and residential areas. Topsoil may be imported in residential areas as necessary to assure adequate reclamation.
 - If streams proposed to be open cut are flowing at the time of construction, they will be crossed using a dry open cut method (i.e., flume, dam & pump, etc.). If streams proposed to be dry open cut are not flowing at the time of construction, they will be open cut.
 - Right-of-way grading or vegetation clearing will occur as necessary.
 - Seed mixes in the ECRP or according to landowner agreements or as directed by E.I.
 - Pacific Connector understands that fisheries' construction windows only apply to those waterbodies flowing at the time of construction and that the windows do not apply to HDD crossings.

LEGEND

- Proposed Pipeline
- Construction Right-of-Way
 - Temporary Construction Right-of-Way
 - Temporary Extra Work Area
 - Uncleared Storage Area
 - Pipe Yard
 - Aboveground Facility
 - Rock Source/Disposal
- Tax Parcel Boundaries
- Wetland
- Stream
- Access Road
- Permanent / Temporary Access Road (PAR / TAR)
- Note: BMP type and placement to be determined by Environmental Inspector based on site-specific conditions.
 - Drivable Berm or Sediment Barrier / Portable Bridge / Wetland Crossing (DB, SB, TB, VC)
 - Silt Fence (SF)
 - Safety Fence (SAF)
 - Slash Filter Windrow (SFV)
 - Construction Entrance Pad (CE)

BLM LANDUSE - 2016 RMP

2a - District Designated Reserve (No Harvest)	2b - District Designated Reserve (Non-Forest)	3a - Late Successional Reserve (Dry Forest)	3b - Late Successional Reserve (Moist Forest)	4a - Riparian Reserve (Dry Forest)	4b - Riparian Reserve (Moist Forest)	5 - Estate Management Area	6 - Harvest Land Base (Unmatured Timber Area)	7 - Harvest Land Base (Low Intensity Timber Area)	8 - Harvest Land Base (Moderate Intensity Timber Area)
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FEDERAL LANDS SOIL RISK SENSITIVITY RANK

1-Very Low	2-Low	3-Moderate	4-High	5-Very High
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REVISIONS

NO.	DATE	BY	DESCRIPTION	CHK.	APP.
1	Jul-2019	EE	Issued in Response to DEIS	EE	EE

Scale: 200 0 200 400 FEET

PUBLIC

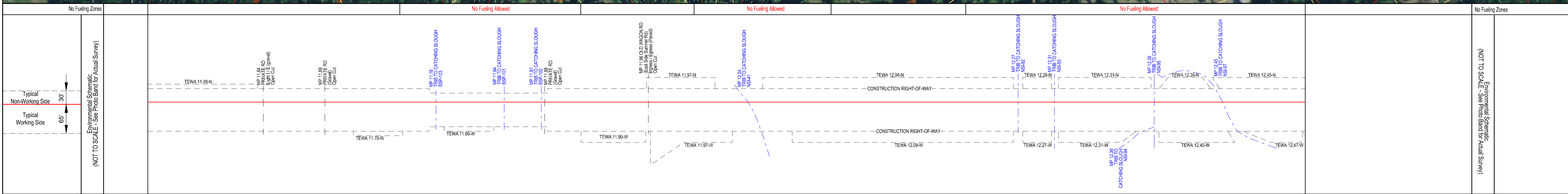
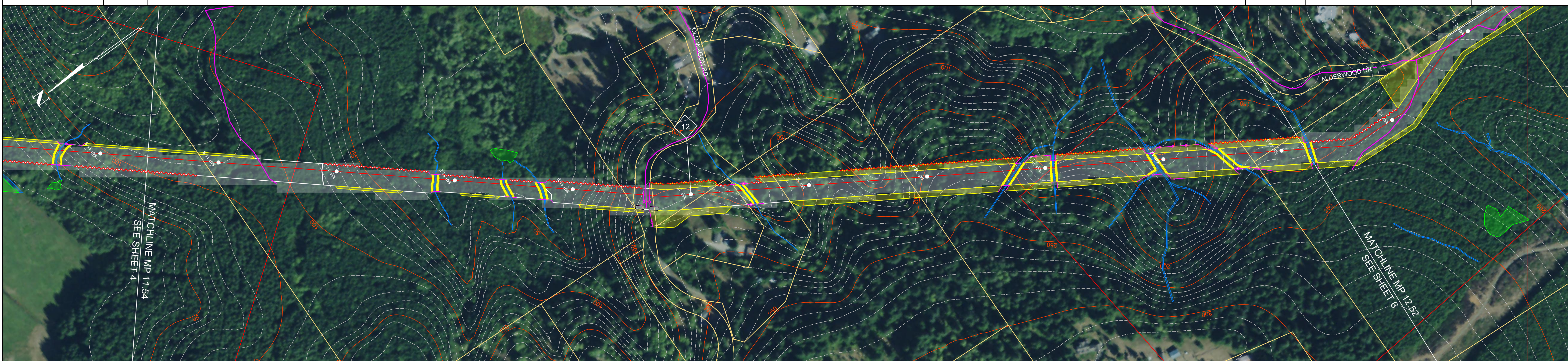
PACIFIC CONNECTOR GAS PIPELINE PROJECT
PACIFIC CONNECTOR GAS PIPELINE, LP
ENVIRONMENTAL ALIGNMENT

BLUE RIDGE VARIATION
MP 10.44 TO 11.54
COOS COUNTY, OREGON

DRAWN BY: EE	DATE: JUL-2019	ISSUED FOR BID:	24x36 SCALE: 1 Inch = 200 Feet
CHECKED BY: EE	DATE: JUL-2019	ISSUED FOR CONSTRUCTION:	11x17 SCALE: 1 Inch = 450 Feet
APPROVED BY: EE	DATE: JUL-2019	DRAWING NUMBER: 3430.29-013	SHEET 4 OF 15

Pacific Connector
GAS PIPELINE

Legal Location	SEC 7, T26S, R12W (Mineral Lease Nos.: 25900-OG & 25904-OG)										SEC 18, T26S, R12W										Legal Location						
Ownership / Management	CO-082.000		CO-084.000			CO-085.000		OLD WAGON RD CR CO-086.000RD	CO-086.000		CO-086.000		CO-086.000		CO-090.000		MUNCHRATH, A. JOHN & MARY M. 476704 CO-091.000										Ownership / Management
Jurisdiction	COOS COUNTY																				Jurisdiction						
Federal Landuse Allocation																					Federal Landuse Allocation						
Areas of High Groundwater (Potential Trench Dewatering)																					Areas of High Groundwater (Potential Trench Dewatering)						
Wetland / Waterbody	Trib to Catching Slough Trib to Catching Slough Trib to Catching Slough Trib to Catching Slough Trib to Catching Slough Trib to Catching Slough																				Wetland / Waterbody						
Crossing Method / Instream Construction Window ¹	Dry Open-Cut / July 1 - Sept. 15 Dry Open-Cut / July 1 - Sept. 15 Dry Open-Cut / July 1 - Sept. 15 Dry Open-Cut / July 1 - Sept. 15 Dry Open-Cut / July 1 - Sept. 15																				Crossing Method / Instream Construction Window ¹						
Biological Seasonal Construction Window (as of September 2017)	MARBLE MURRELET (APRIL 1 - AUGUST 5 (DTRs))																				Biological Seasonal Construction Window (as of September 2017)						
Topsoil Salvage / Federal Lands Soil Risk	NONE																				Topsoil Salvage / Federal Lands Soil Risk						
Hydrostatic Test Water Release / Aboveground Facilities / Residential																					Hydrostatic Test Water Release / Aboveground Facilities / Residential						



NOTES:

- In wetlands cut vegetation off at ground level, leaving existing root systems in place and remove the vegetation from the wetland for disposal.
- In wetlands limit pulling of tree stumps and grading activities to directly over the trench line. Do not grade or remove stumps or root systems from the rest of the construction right-of-way.
- In wetlands segregate the top one foot of topsoil from the trench line, except in areas where standing water or saturated soils are present.
- Topsoil will be stripped from the trench line and spoil storage area only in croplands, hayfields, pastures and residential areas. Topsoil may be imported in residential areas as necessary to assure adequate reclamation.
- If streams proposed to be open cut are flowing at the time of construction, they will be crossed using a dry open cut method (i.e., flume, dam & pump, etc.). If streams proposed to be dry open cut are not flowing at the time of construction, they will be open cut.
- Right-of-way grading or vegetation clearing will occur as necessary.
- Seed mixes in the ECRP or according to landowner agreements or as directed by E.I.
- Pacific Connector understands that fisheries' construction windows only apply to those waterbodies flowing at the time of construction and that the windows do not apply to HDD crossings.

LEGEND

Proposed Pipeline	Tax Parcel Boundaries
Wetland	Stream
Construction Right-of-Way	Access Road
Temporary Construction Right-of-Way (Shown white on photography)	Permanent / Temporary Access Road (PAR / TAR)
Temporary Extra Work Area	Note: BMP type and placement to be determined by Environmental Inspector based on site-specific conditions.
Uncleared Storage Area	Drivable Berm or Sediment Barrier / Portable Bridge / Wetland Crossing (DB) (SB) (PB) (VC)
Pipe Yard	Silt Fence (SF)
Aboveground Facility	Safety Fence (SAF)
Rock Source/Disposal	Slash Filter Windrow (SFV)
	Construction Entrance Pad (CE)

BLM LANDUSE - 2016 RMP

2a - District Designated Reserve (No Harvest)	NO.	DATE	BY	DESCRIPTION	CHK.	APP.
2b - District Designated Reserve (Non-Forest)		Jul-2019	EE	Issued in Response to DEIS	EE	EE
3a - Late-Successional Reserve (Dry Forest)						
3b - Late-Successional Reserve (Moist Forest)						
4a - Riparian Reserve (Dry Forest)						
4b - Riparian Reserve (Moist Forest)						
5 - Estate Management Area						
6 - Harvest Land Base (Uneven-Aged Timber Area)						
7 - Harvest Land Base (Low Intensity Timber Area)						
8 - Harvest Land Base (Moderate Intensity Timber Area)						

FEDERAL LANDS SOIL RISK SENSITIVITY RANK

1-Very Low	2-Low	3-Moderate	4-High	5-Very High
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REVISIONS

NO.	DATE	BY	DESCRIPTION	CHK.	APP.
1	Jul-2019	EE	Issued in Response to DEIS	EE	EE

Scale: 200 0 200 400 FEET

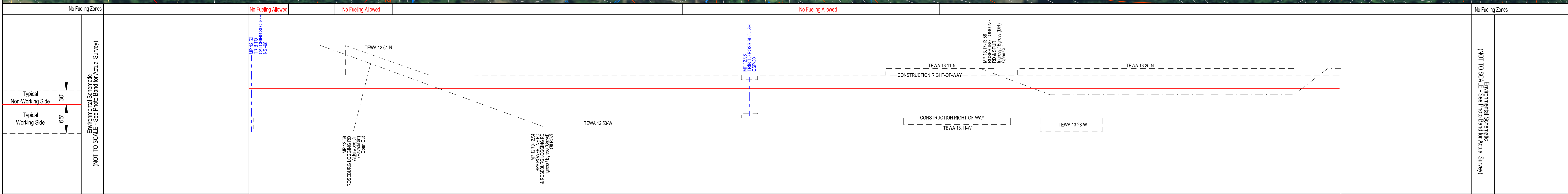
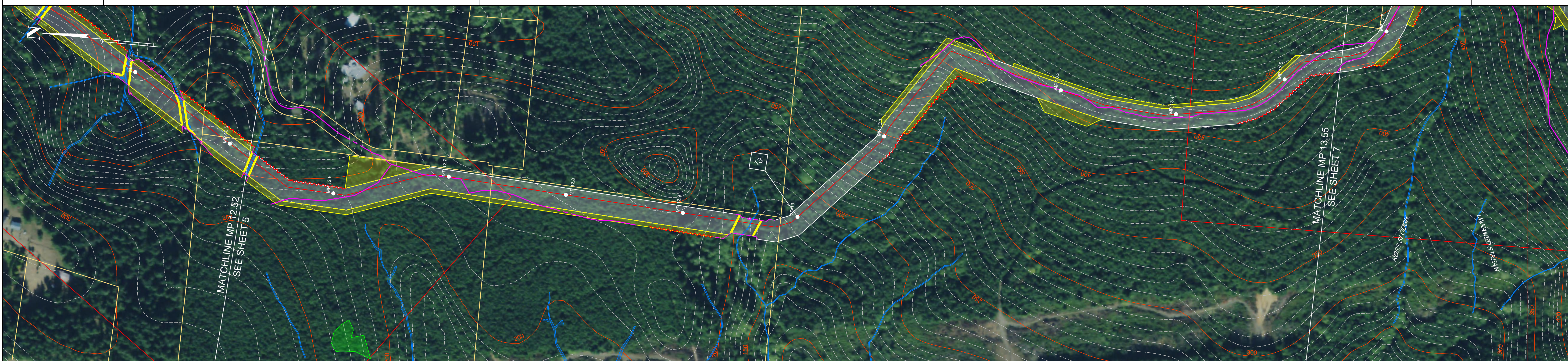
PUBLIC

PACIFIC CONNECTOR GAS PIPELINE PROJECT
PACIFIC CONNECTOR GAS PIPELINE, LP
ENVIRONMENTAL ALIGNMENT

BLUE RIDGE VARIATION
MP 11.54 TO 12.52
COOS COUNTY, OREGON

DRAWN BY: EE	DATE: JUL-2019	ISSUED FOR BID:	24x36 SCALE: 1 Inch = 200 Feet
CHECKED BY: EE	DATE: JUL-2019	ISSUED FOR CONSTRUCTION:	11x17 SCALE: 1 Inch = 450 Feet
APPROVED BY: EE	DATE: JUL-2019	DRAWING NUMBER: 3430.29-014	SHEET 5 OF 15

Legal Location	SEC 18, T26S, R12W	SEC 19, T26S, R12W	Legal Location
Ownership / Management	CO-093.000	CO-094.000	CO-095.000
Jurisdiction	COOS COUNTY		
Federal Landuse Allocation	COOS COUNTY		
Areas of High Groundwater (Potential Trench Dewatering)	NONE		
Wetland / Waterbody	NONE		
Crossing Method / Instream Construction Window	NONE		
Biological Seasonal Construction Window (as of September 2017)	NONE		
Topsoil Salvage / Federal Lands Soil Risk	NONE		
Hydrostatic Test Water Release / Aboveground Facilities / Residential	NONE		



NOTES:

- In wetlands cut vegetation off at ground level, leaving existing root systems in place and remove the vegetation from the wetland for disposal.
- In wetlands limit pulling of tree stumps and grading activities to directly over the trench line. Do not grade or remove stumps or root systems from the rest of the construction right-of-way.
- In wetlands segregate the top one foot of topsoil from the trench line, except in areas where standing water or saturated soils are present.
- Topsoil will be stripped from the trench line and spoil storage area only in croplands, hayfields, pastures and residential areas. Topsoil may be imported in residential areas as necessary to assure adequate reclamation.
- If streams proposed to be open cut are flowing at the time of construction, they will be crossed using a dry open cut method (i.e., flume, dam & pump, etc.). If streams proposed to be dry open cut are not flowing at the time of construction, they will be open cut.
- Right-of-way grading or vegetation clearing will occur as necessary.
- Seed mixes in the ECRP or according to landowner agreements or as directed by E.I.
- Pacific Connector understands that fisheries' construction windows only apply to those waterbodies flowing at the time of construction and that the windows do not apply to HDD crossings.

LEGEND

- Proposed Pipeline
- Construction Right-of-Way
 - Temporary Construction Right-of-Way
 - Temporary Extra Work Area
 - Uncleared Storage Area
 - Pipe Yard
 - Aboveground Facility
 - Rock Source/Disposal
- Tax Parcel Boundaries
- Wetland
- Stream
- Access Road
- Permanent / Temporary Access Road (PAR / TAR)
- Note: BMP type and placement to be determined by Environmental Inspector based on site-specific conditions.
 - Drivable Berm or Sediment Barrier / Portable Bridge / Wetland Crossing (DB) (SB) (PB) (VC)
 - Silt Fence (SF)
 - Safety Fence (SAF)
 - Slash Filter Windrow (SFV)
 - Construction Entrance Pad (CE)

BLM LANDUSE - 2016 RMP

2a - District Designated Reserve (No Harvest)
2b - District Designated Reserve (Non-Forest)
3a - Late Successional Reserve (Dry Forest)
3b - Late Successional Reserve (Moist Forest)
4a - Riparian Reserve (Dry Forest)
4b - Riparian Reserve (Moist Forest)
5 - Estate Management Area
6 - Harvest Land Base (Low-Intensity Timber Area)
7 - Harvest Land Base (Moderate Intensity Timber Area)
8 - Harvest Land Base (High Intensity Timber Area)

FEDERAL LANDS SOIL RISK SENSITIVITY RANK

1-Very Low
2-Low
3-Moderate
4-High
5-Very High

REVISIONS

NO.	DATE	BY	DESCRIPTION	CHK.	APP.
1	Jul-2019	EE	Issued in Response to DEIS	EE	EE

Scale: 200 0 200 400 FEET

PUBLIC

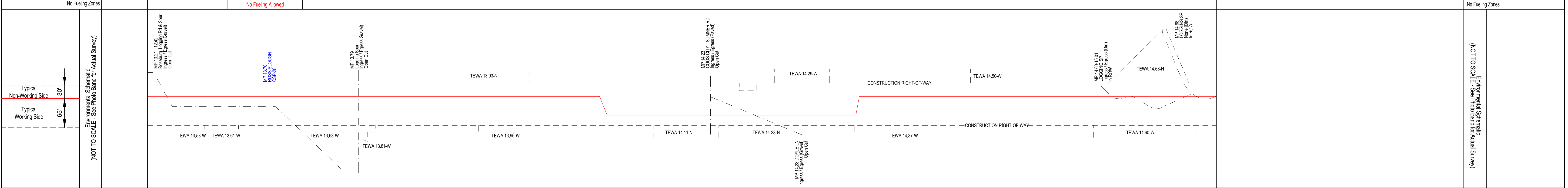
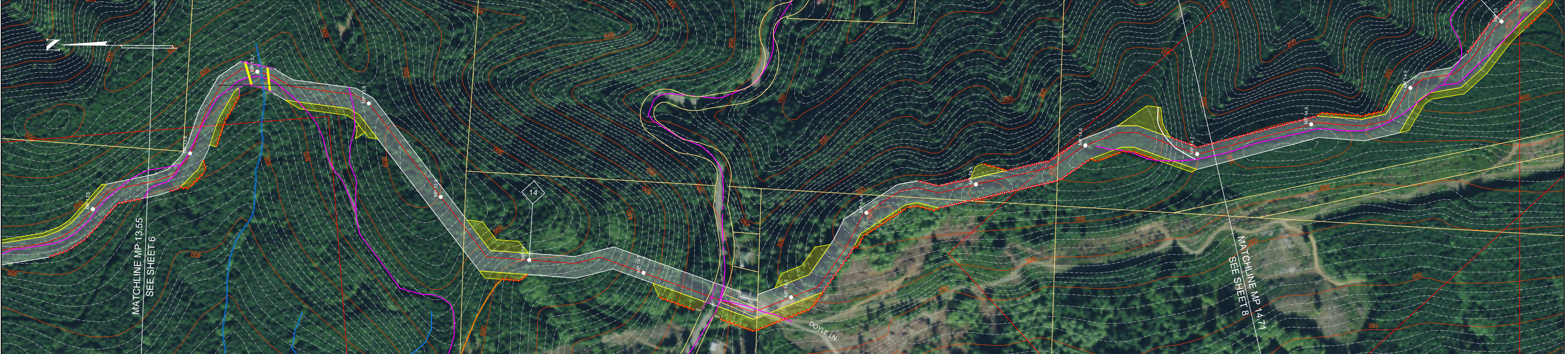
PACIFIC CONNECTOR GAS PIPELINE PROJECT
PACIFIC CONNECTOR GAS PIPELINE, LP
ENVIRONMENTAL ALIGNMENT

BLUE RIDGE VARIATION
MP 12.52 TO 13.55
COOS COUNTY, OREGON

DRAWN BY: EE	DATE: JUL-2019	ISSUED FOR BID:	24x36 SCALE: 1 Inch = 200 Feet
CHECKED BY: EE	DATE: JUL-2019	ISSUED FOR CONSTRUCTION:	11x17 SCALE: 1 Inch = 450 Feet
APPROVED BY: EE	DATE: JUL-2019	DRAWING NUMBER: 3430.29-015	SHEET 6 OF 15

Pacific Connector
GAS PIPELINE

Legal Location	SEC 19, T26S, R12W				SEC 30, T26S, R12W				Legal Location
Ownership / Management	CO-095.000		CO-097.000		CO-099.001 CO-099.000		CO-100.000		Ownership / Management
Jurisdiction	COOS COUNTY								Jurisdiction
Federal Landuse Allocation	RESIDENTIAL - 3430.33-X-0013								Federal Landuse Allocation
Areas of High Groundwater (Potential Trench Dewatering)									Areas of High Groundwater (Potential Trench Dewatering)
Wetland / Waterbody	Ross Slough								Wetland / Waterbody
Crossing Method / Instream Construction Window	Dry Open-Cut / July 1 - Sept. 15								Crossing Method / Instream Construction Window
Biological Seasonal Construction Window (as of September 2017)									Biological Seasonal Construction Window (as of September 2017)
Topsoil Salvage / Federal Lands Soil Risk									Topsoil Salvage / Federal Lands Soil Risk
Hydrostatic Test Water Release / Aboveground Facilities / Residential									Hydrostatic Test Water Release / Aboveground Facilities / Residential



No Fueling Zones	No Fueling Allowed	No Fueling Zones
Typical Non-Working Side 30'	Typical Working Side 65'	Environmental Schematic (NOT TO SCALE - See Photo Band for Actual Survey)

NOTES:

- In wetlands cut vegetation off at ground level, leaving existing root systems in place and remove the vegetation from the wetland for disposal.
- In wetlands limit pulling of tree stumps and grading activities to directly over the trench line. Do not grade or remove stumps or root systems from the rest of the construction right-of-way.
- In wetlands segregate the top one foot of topsoil from the trench line, except in areas where standing water or saturated soils are present.
- Topsoil will be stripped from the trench line and spoil storage area only in croplands, hayfields, pastures and residential areas. Topsoil may be imported in residential areas as necessary to assure adequate reclamation.
- If streams proposed to be open cut are flowing at the time of construction, they will be crossed using a dry open cut method (i.e., flume, dam & pump, etc.). If streams proposed to be dry open cut are not flowing at the time of construction, they will be open cut.
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- Seed mixes in the ECRP or according to landowner agreements or as directed by E.I.
- Pacific Connector understands that fisheries' construction windows only apply to those waterbodies flowing at the time of construction and that the windows do not apply to HDD crossings.

LEGEND

- Proposed Pipeline
- Construction Right-of-Way
 - Temporary Construction Right-of-Way
 - Temporary Extra Work Area
 - Uncleared Storage Area
 - Pipe Yard
 - Aboveground Facility
 - Rock Source/Disposal
- Tax Parcel Boundaries
- Wetland
- Stream
- Access Road
- Permanent / Temporary Access Road (PAR / TAR)
- Note: BMP type and placement to be determined by Environmental Inspector based on site-specific conditions.
 - Drivable Berm or Sediment Barrier / Portable Bridge / Wetland Crossing (DB) (SB) (PB) (VWC)
 - Silt Fence (SF)
 - Safety Fence (SAF)
 - Slash Filter Windrow (SFV)
 - Construction Entrance Pad (CE)

BLM LANDUSE - 2016 RMP

- 2a - District Designated Reserve (No Harvest)
- 2b - District Designated Reserve (Non-Forest)
- 3a - Late-Successional Reserve (Dry Forest)
- 3b - Late-Successional Reserve (Moist Forest)
- 4a - Riparian Reserve (Dry Forest)
- 4b - Riparian Reserve (Moist Forest)
- 5 - Estate Management Area
- 6 - Harvest Land Base (Unweeded Timber Area)
- 7 - Harvest Land Base (Low Intensity Timber Area)
- 8 - Harvest Land Base (Moderate Intensity Timber Area)

FEDERAL LANDS SOIL RISK SENSITIVITY RANK

- 1-Very Low
- 2-Low
- 3-Moderate
- 4-High
- 5-Very High

REVISIONS

NO.	DATE	BY	DESCRIPTION	CHK.	APP.
1	Jul-2019	EE	Issued in Response to DEIS	EE	EE

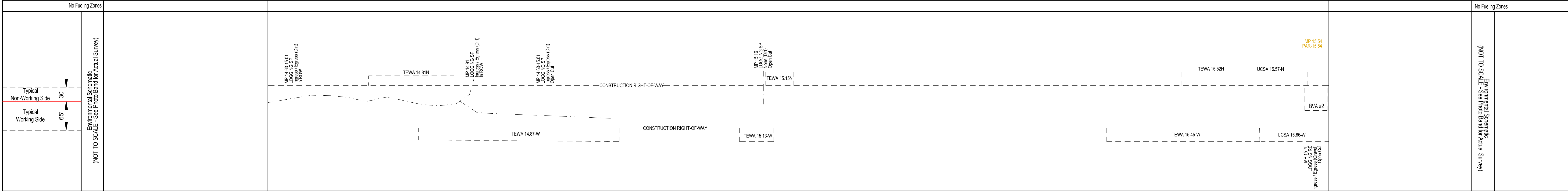
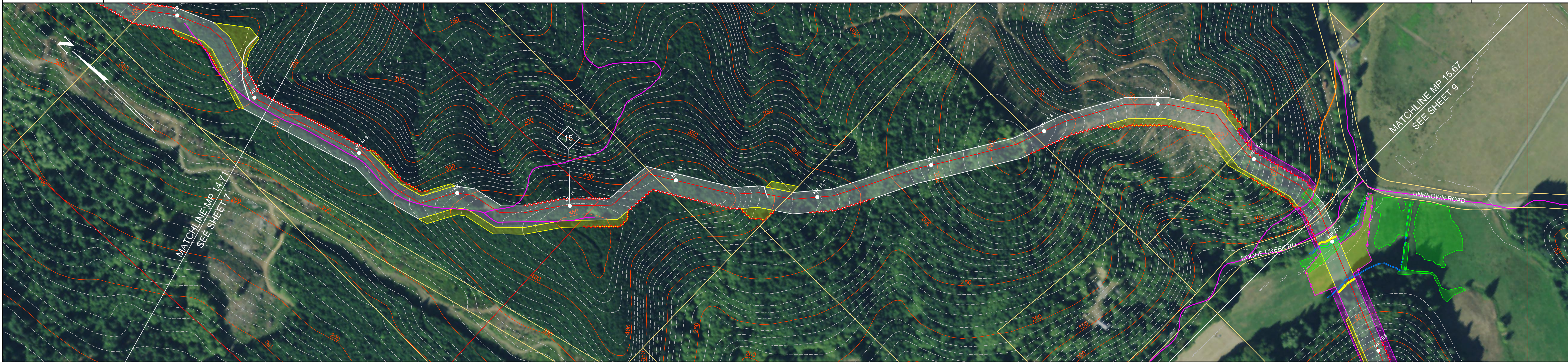
PUBLIC

PACIFIC CONNECTOR GAS PIPELINE PROJECT
PACIFIC CONNECTOR GAS PIPELINE, LP
ENVIRONMENTAL ALIGNMENT

BLUE RIDGE VARIATION
MP 13.55 TO 14.71
COOS COUNTY, OREGON

DRAWN BY: EE DATE: JUL 2019 ISSUED FOR BID: 24x36 SCALE: 1 Inch = 200 Feet
 CHECKED BY: EE DATE: JUL 2019 ISSUED FOR CONSTRUCTION: 11x17 SCALE: 1 Inch = 450 Feet
 APPROVED BY: EE DATE: JUL 2019 DRAWING NUMBER: 3430.29-016 SHEET 7 OF 15

Legal Location	SEC 30, T26S, R12W				SEC 32, T26S, R12W		Legal Location
Ownership / Management	CO-104.000	CO-106.000	CO-107.000	CO-110.000	CO-111.000	Ownership / Management	
Jurisdiction	COOS COUNTY						Jurisdiction
Federal Landuse Allocation							Federal Landuse Allocation
Areas of High Groundwater (Potential Trench Dewatering)							Areas of High Groundwater (Potential Trench Dewatering)
Wetland / Waterbody							Wetland / Waterbody
Crossing Method / Instream Construction Window ¹							Crossing Method / Instream Construction Window ¹
Biological Seasonal Construction Window (as of September 2017)							Biological Seasonal Construction Window (as of September 2017)
Topsoil Salvage / Federal Lands Soil Risk	NONE						Topsoil Salvage / Federal Lands Soil Risk
Hydrostatic Test Water Release / Aboveground Facilities / Residential							Hydrostatic Test Water Release / Aboveground Facilities / Residential
							BVA #2



NOTES:

- In wetlands cut vegetation off at ground level, leaving existing root systems in place and remove the vegetation from the wetland for disposal.
- In wetlands limit pulling of tree stumps and grading activities to directly over the trench line. Do not grade or remove stumps or root systems from the rest of the construction right-of-way.
- In wetlands segregate the top one foot of topsoil from the trench line, except in areas where standing water or saturated soils are present.
- Topsoil will be stripped from the trench line and spoil storage area only in croplands, hayfields, pastures and residential areas. Topsoil may be imported in residential areas as necessary to assure adequate reclamation.
- If streams proposed to be open cut are flowing at the time of construction, they will be crossed using a dry open cut method (i.e., flume, dam & pump, etc.). If streams proposed to be dry open cut are not flowing at the time of construction, they will be open cut.
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- Pacific Connector understands that fisheries' construction windows only apply to those waterbodies flowing at the time of construction and that the windows do not apply to HDD crossings.

LEGEND

- Proposed Pipeline
- Construction Right-of-Way
 - Temporary Construction Right-of-Way
 - Temporary Extra Work Area
 - Uncleared Storage Area
 - Pipe Yard
 - Aboveground Facility
 - Rock Source/Disposal
- Tax Parcel Boundaries
- Wetland
- Stream
- Access Road
- Permanent / Temporary Access Road (PAR / TAR)
- Note: BMP type and placement to be determined by Environmental Inspector based on site-specific conditions.
 - Drivable Berm or Sediment Barrier / Portable Bridge / Wetland Crossing (DB) (SB) (PB) (VC)
 - Silt Fence (SF)
 - Safety Fence (SAF)
 - Slash Filter Windrow (SFW)
 - Construction Entrance Pad (CE)

BLM LANDUSE - 2016 RMP

2a - District Designated Reserve (No Harvest)	2b - District Designated Reserve (Non-Forest)	3a - Late-Successional Reserve (Dry Forest)	3b - Late-Successional Reserve (Moist Forest)	4a - Riparian Reserve (Dry Forest)	4b - Riparian Reserve (Moist Forest)	5 - Estate Management Area	6 - Harvest Land Base (Uneven-Aged Timber Area)	7 - Harvest Land Base (Low Intensity Timber Area)	8 - Harvest Land Base (Moderate Intensity Timber Area)
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FEDERAL LANDS SOIL RISK SENSITIVITY RANK

1-Very Low	2-Low	3-Moderate	4-High	5-Very High
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REVISIONS

NO.	DATE	BY	DESCRIPTION	CHK.	APP.
1	Jul-2019	EE	Issued in Response to DEIS	EE	EE

Scale: 200 0 200 400 FEET

PUBLIC

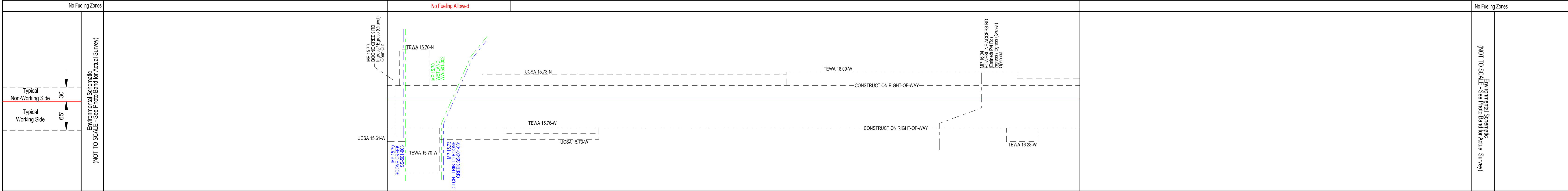
PACIFIC CONNECTOR GAS PIPELINE PROJECT
PACIFIC CONNECTOR GAS PIPELINE, LP
ENVIRONMENTAL ALIGNMENT

BLUE RIDGE VARIATION
MP 14.71 TO 15.67
COOS COUNTY, OREGON

DRAWN BY: EE DATE: JUL-2019 ISSUED FOR BID: 24x36 SCALE: 1 Inch = 200 Feet
 CHECKED BY: EE DATE: JUL-2019 ISSUED FOR CONSTRUCTION: 11x17 SCALE: 1 Inch = 450 Feet
 APPROVED BY: EE DATE: JUL-2019 DRAWING NUMBER: 3430.29-017 SHEET 8 OF 15

Pacific Connector
GAS PIPELINE

Legal Location	SEC 32, T26S, R12W	SEC 31, T26S, R12W (Mineral Lease No.: 25900-0G)	Legal Location
Ownership / Management	CO-111.000	PCO-112.000	Ownership / Management
Jurisdiction	COOS COUNTY		Jurisdiction
Federal Landuse Allocation			Federal Landuse Allocation
Areas of High Groundwater (Potential Trench Dewatering)			Areas of High Groundwater (Potential Trench Dewatering)
Wetland / Waterbody	NOV - APR Boone Creek WW-501-002 Ditch - Trib to Boone Creek		Wetland / Waterbody
Crossing Method / Instream Construction Window ¹	Dry Open-Cut / July 1 - Sept 15		Crossing Method / Instream Construction Window ¹
Biological Seasonal Construction Window (as of September 2017)			Biological Seasonal Construction Window (as of September 2017)
Topsoil Salvage / Federal Lands Soil Risk	NONE		Topsoil Salvage / Federal Lands Soil Risk
Hydrostatic Test Water Release / Aboveground Facilities / Residential			Hydrostatic Test Water Release / Aboveground Facilities / Residential



- NOTES:
- In wetlands cut vegetation off at ground level, leaving existing root systems in place and remove the vegetation from the wetland for disposal.
 - In wetlands limit pulling of tree stumps and grading activities to directly over the trench line. Do not grade or remove stumps or root systems from the rest of the construction right-of-way.
 - In wetlands segregate the top one foot of topsoil from the trench line, except in areas where standing water or saturated soils are present.
 - Topsoil will be stripped from the trench line and spoil storage area only in croplands, hayfields, pastures and residential areas. Topsoil may be imported in residential areas as necessary to assure adequate reclamation.
 - If streams proposed to be open cut are flowing at the time of construction, they will be crossed using a dry open cut method (i.e., flume, dam & pump, etc.). If streams proposed to be dry open cut are not flowing at the time of construction, they will be open cut.
 - Right-of-way grading or vegetation clearing will occur as necessary.
 - Seed mixes in the ECRP or according to landowner agreements or as directed by E.I.
 - Pacific Connector understands that fisheries' construction windows only apply to those waterbodies flowing at the time of construction and that the windows do not apply to HDD crossings.

LEGEND

Proposed Pipeline	Tax Parcel Boundaries
Wetland	Stream
Construction Right-of-Way	Access Road
Temporary Construction Right-of-Way	Permanent / Temporary Access Road (PAR / TAR)
Temporary Extra Work Area	Note: BMP type and placement to be determined by Environmental Inspector based on site-specific conditions.
Uncleared Storage Area	Drivable Berm or Sediment Barrier / Portable Bridge / Wetland Crossing (DB) (SB) (PB) (WC)
Pipe Yard	Silt Fence (SF)
Aboveground Facility	Safety Fence (SAF)
Rock Source/Disposal	Slash Filter Windrow (SFV)
	Construction Entrance Pad (CE)

BLM LANDUSE - 2016 RMP

2a - District Designated Reserve (No Harvest)
2b - District Designated Reserve (Non-Forest)
3a - Late-Successional Reserve (Dry Forest)
3b - Late-Successional Reserve (Moist Forest)
4a - Riparian Reserve (Dry Forest)
4b - Riparian Reserve (Moist Forest)
5 - Estate Management Area
6 - Harvest Land Base (Unmatured Timber Area)
7 - Harvest Land Base (Low Intensity Timber Area)
8 - Harvest Land Base (Moderate Intensity Timber Area)

FEDERAL LANDS SOIL RISK SENSITIVITY RANK

1-Very Low
2-Low
3-Moderate
4-High
5-Very High

REVISIONS

NO.	DATE	BY	DESCRIPTION	CHK.	APP.
1	Jul-2019	EE	Issued in Response to DEIS	EE	EE

Scale: 200 0 200 400 FEET

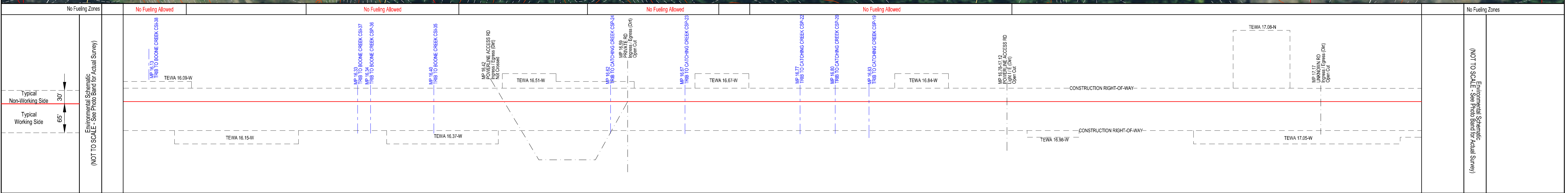
PUBLIC

PACIFIC CONNECTOR GAS PIPELINE PROJECT
PACIFIC CONNECTOR GAS PIPELINE, LP
ENVIRONMENTAL ALIGNMENT

BLUE RIDGE VARIATION
MP 15.67 TO 16.10
COOS COUNTY, OREGON

DRAWN BY: EE	DATE: JUL-2019	ISSUED FOR BID:	24x36 SCALE: 1 Inch = 200 Feet
CHECKED BY: EE	DATE: JUL-2019	ISSUED FOR CONSTRUCTION:	11x17 SCALE: 1 Inch = 450 Feet
APPROVED BY: EE	DATE: JUL-2019	DRAWING NUMBER: 3430.29-018	SHEET 9 OF 15

Legal Location	SEC 31, T26S, R12W (Mineral Lease No.: 25900-0G)	SEC 6, T27S, R12W	SEC 5, T27S, R12W	Legal Location
Ownership / Management	CO-112.000	CO-115.000	CO-117.000	Ownership / Management
Jurisdiction	COOS COUNTY			Jurisdiction
Federal Landuse Allocation	BLM - COOS DISTRICT			Federal Landuse Allocation
Areas of High Groundwater (Potential Trench Dewatering)	4b 3b			Areas of High Groundwater (Potential Trench Dewatering)
Wetland / Waterbody	CSI-38	Tribes to Boone Creek	Tribes to Catching Creek	Wetland / Waterbody
Crossing Method / Instream Construction Window	Dry Open-Cut / July 1 - Sept. 15	Dry Open-Cut / July 1 - Sept. 15	Dry Open-Cut / July 1 - Sept. 15	Crossing Method / Instream Construction Window
Biological Seasonal Construction Window (as of September 2017)	NONE			Biological Seasonal Construction Window (as of September 2017)
Topsoil Salvage / Federal Lands Soil Risk	NONE			Topsoil Salvage / Federal Lands Soil Risk
Hydrostatic Test Water Release / Aboveground Facilities / Residential	HYDROSTATIC TEST BREAK			Hydrostatic Test Water Release / Aboveground Facilities / Residential



NOTES:

- In wetlands cut vegetation off at ground level, leaving existing root systems in place and remove the vegetation from the wetland for disposal.
- In wetlands limit pulling of tree stumps and grading activities to directly over the trench line. Do not grade or remove stumps or root systems from the rest of the construction right-of-way.
- In wetlands segregate the top one foot of topsoil from the trench line, except in areas where standing water or saturated soils are present.
- Topsoil will be stripped from the trench line and spoil storage area only in croplands, hayfields, pastures and residential areas. Topsoil may be imported in residential areas as necessary to assure adequate reclamation.
- If streams proposed to be open cut are flowing at the time of construction, they will be crossed using a dry open cut method (i.e., flume, dam & pump, etc.). If streams proposed to be dry open cut are not flowing at the time of construction, they will be open cut.
- Right-of-way grading or vegetation clearing will occur as necessary.
- Seed mixes in the ECRP or according to landowner agreements or as directed by E.I.
- Pacific Connector understands that fisheries construction windows only apply to those waterbodies flowing at the time of construction and that the windows do not apply to HDD crossings.

LEGEND

- Proposed Pipeline
- Construction Right-of-Way
 - Temporary Construction Right-of-Way
 - Temporary Extra Work Area
 - Uncleared Storage Area
 - Pipe Yard
 - Aboveground Facility
 - Rock Source/Disposal
- Tax Parcel Boundaries
- Wetland
- Stream
- Access Road
- Permanent / Temporary Access Road (PAR / TAR)
- Note: BMP type and placement to be determined by Environmental Inspector based on site-specific conditions.
 - Drivable Berm or Sediment Barrier / Portable Bridge / Wetland Crossing (DB) (SB) (PB) (VC)
 - Silt Fence (SF)
 - Safety Fence (SAF)
 - Slash Filter Windrow (SFV)
 - Construction Entrance Pad (CE)

BLM LANDUSE - 2016 RMP

2a - District Designated Reserve (No Harvest)
2b - District Designated Reserve (Non-Forest)
3a - Late-Successional Reserve (Dry Forest)
3b - Late-Successional Reserve (Moist Forest)
4a - Riparian Reserve (Dry Forest)
4b - Riparian Reserve (Moist Forest)
5 - Estate Management Area
6 - Harvest Land Base (Uneven-Aged Timber Area)
7 - Harvest Land Base (Low Intensity Timber Area)
8 - Harvest Land Base (Moderate Intensity Timber Area)

FEDERAL LANDS SOIL RISK SENSITIVITY RANK

1-Very Low
2-Low
3-Moderate
4-High
5-Very High

REVISIONS

NO.	DATE	BY	DESCRIPTION	CHK.	APP.
1	Jul-2019	EE	Issued in Response to DEIS	EE	EE

Scale: 200 0 200 400 FEET

PUBLIC

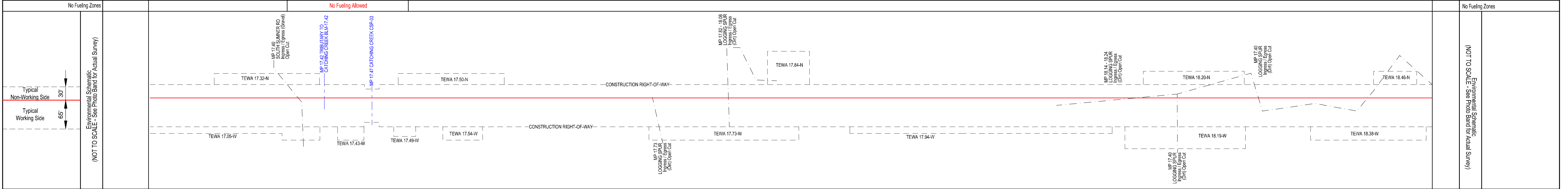
PACIFIC CONNECTOR GAS PIPELINE PROJECT
PACIFIC CONNECTOR GAS PIPELINE, LP
ENVIRONMENTAL ALIGNMENT

BLUE RIDGE VARIATION
MP 16.10 TO 17.26
COOS COUNTY, OREGON

DRAWN BY: EE	DATE: JUL 2019	ISSUED FOR BID:	24x36 SCALE: 1 Inch = 200 Feet
CHECKED BY: EE	DATE: JUL 2019	ISSUED FOR CONSTRUCTION:	11x17 SCALE: 1 Inch = 450 Feet
APPROVED BY: EE	DATE: JUL 2019	DRAWING NUMBER: 3430.29-019	SHEET 10 OF 15

Pacific Connector
GAS PIPELINE

Legal Location	SEC 6, T27S, R12W		SEC 8, T27S, R12W		Legal Location
Ownership / Management	CO-118.000	CO-117.000	CO-120.000		Ownership / Management
Jurisdiction	BLM - COOS DISTRICT	COOS COUNTY	COOS COUNTY		Jurisdiction
Federal Landuse Allocation	3b		3b		Federal Landuse Allocation
Areas of High Groundwater (Potential Trench Dewatering)	Trib to Catching Creek Catching Creek				Areas of High Groundwater (Potential Trench Dewatering)
Wetland / Waterbody					Wetland / Waterbody
Crossing Method / Instream Construction Window	Dry Open-Cut / July 1 - Sept. 15 Dry Open-Cut / July 1 - Sept. 15				Crossing Method / Instream Construction Window
Biological Seasonal Construction Window (as of September 2017)					Biological Seasonal Construction Window (as of September 2017)
Topsoil Salvage / Federal Lands Soil Risk	NONE				Topsoil Salvage / Federal Lands Soil Risk
Hydrostatic Test Water Release / Aboveground Facilities / Residential					Hydrostatic Test Water Release / Aboveground Facilities / Residential



NOTES:

- In wetlands cut vegetation off at ground level, leaving existing root systems in place and remove the vegetation from the wetland for disposal.
- In wetlands limit pulling of tree stumps and grading activities to directly over the trench line. Do not grade or remove stumps or root systems from the rest of the construction right-of-way.
- In wetlands segregate the top one foot of topsoil from the trench line, except in areas where standing water or saturated soils are present.
- Topsoil will be stripped from the trench line and spoil storage area only in croplands, hayfields, pastures and residential areas. Topsoil may be imported in residential areas as necessary to assure adequate reclamation.
- If streams proposed to be open cut are flowing at the time of construction, they will be crossed using a dry open cut method (i.e., flume, dam & pump, etc.). If streams proposed to be dry open cut are not flowing at the time of construction, they will be open cut.
- Right-of-way grading or vegetation clearing will occur as necessary.
- Seed mixes in the ECRP or according to landowner agreements or as directed by E.I.
- Pacific Connector understands that fisheries' construction windows only apply to those waterbodies flowing at the time of construction and that the windows do not apply to HDD crossings.

LEGEND

- Proposed Pipeline
- Construction Right-of-Way
 - Temporary Construction Right-of-Way
 - Temporary Extra Work Area
 - Uncleared Storage Area
 - Pipe Yard
 - Aboveground Facility
 - Rock Source/Disposal
- Tax Parcel Boundaries
- Wetland
- Stream
- Access Road
- Permanent / Temporary Access Road (PAR / TAR)
- Note: BMP type and placement to be determined by Environmental Inspector based on site-specific conditions.
 - Drivable Berm or Sediment Barrier / Portable Bridge / Wetland Crossing
 - Silt Fence
 - Safety Fence
 - Slash Filter Windrow
 - Construction Entrance Pad

BLM LANDUSE - 2016 RMP

2a - District Designated Reserve (No Harvest)
2b - District Designated Reserve (Non-Forest)
3a - Late Successional Reserve (Dry Forest)
3b - Late Successional Reserve (Moist Forest)
4a - Riparian Reserve (Dry Forest)
4b - Riparian Reserve (Moist Forest)
5 - Estate Management Area
6 - Harvest Land Base (Uneven-Aged Timber Area)
7 - Harvest Land Base (Low Intensity Timber Area)
8 - Harvest Land Base (Moderate Intensity Timber Area)

FEDERAL LANDS SOIL RISK SENSITIVITY RANK

1-Very Low
2-Low
3-Moderate
4-High
5-Very High

REVISIONS

NO.	DATE	BY	DESCRIPTION	CHK.	APP.
1	Jul-2019	EE	Issued in Response to DEIS	EE	EE

Scale: 200 0 200 400 FEET

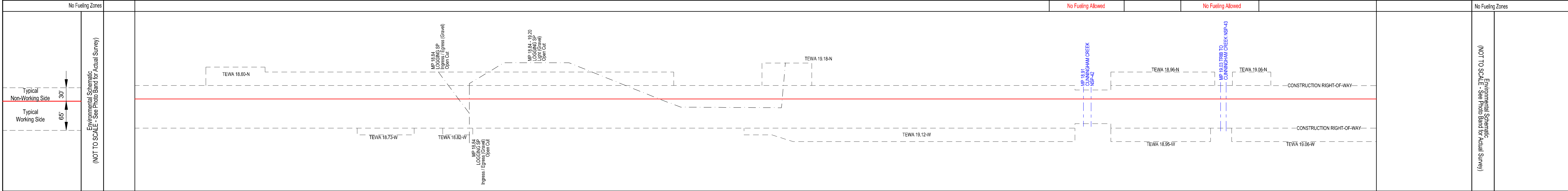
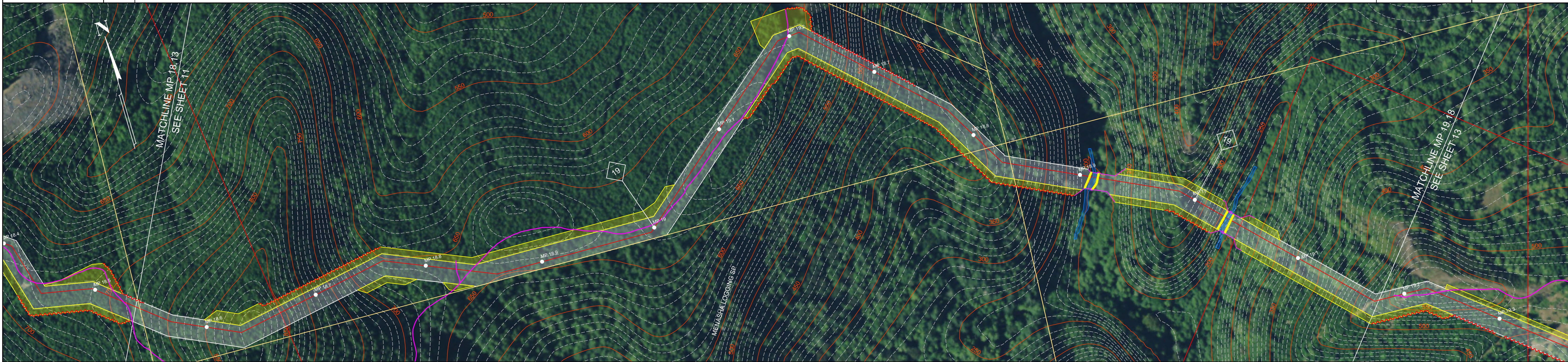
PUBLIC

PACIFIC CONNECTOR GAS PIPELINE PROJECT
PACIFIC CONNECTOR GAS PIPELINE, LP
ENVIRONMENTAL ALIGNMENT

BLUE RIDGE VARIATION
MP 17.26 TO 18.53
COOS COUNTY, OREGON

DRAWN BY: EE	DATE: JUL 2019	ISSUED FOR BID:	24x36 SCALE: 1 Inch = 200 Feet
CHECKED BY: EE	DATE: JUL 2019	ISSUED FOR CONSTRUCTION:	11x17 SCALE: 1 Inch = 450 Feet
APPROVED BY: EE	DATE: JUL 2019	DRAWING NUMBER: 3430.29-020	SHEET 11 OF 15

Legal Location	SEC 8, T27S, R12W	SEC 17, T27S, R12W	SEC 16, T27S, R12W	Legal Location
Ownership / Management	CO-122.000	CO-123.000	CO-124.000	Ownership / Management
Jurisdiction	COOS COUNTY	BLM - COOS DISTRICT	COOS COUNTY	Jurisdiction
Federal Landuse Allocation		3b		Federal Landuse Allocation
Areas of High Groundwater (Potential Trench Dewatering)			Cunningham Creek Trib to Cunningham Creek	Areas of High Groundwater (Potential Trench Dewatering)
Wetland / Waterbody				Wetland / Waterbody
Crossing Method / Instream Construction Window			Dry Open-Cut / July 1 - Sept. 15 Dry Open-Cut / July 1 - Sept. 15	Crossing Method / Instream Construction Window
Biological Seasonal Construction Window (as of September 2017)			MARBLED MURRELET (APRIL 1 - AUGUST 5 (DTRs))	Biological Seasonal Construction Window (as of September 2017)
Topsoil Salvage / Federal Lands Soil Risk		NONE		Topsoil Salvage / Federal Lands Soil Risk
Hydrostatic Test Water Release / Aboveground Facilities / Residential				Hydrostatic Test Water Release / Aboveground Facilities / Residential



- NOTES:**
- In wetlands cut vegetation off at ground level, leaving existing root systems in place and remove the vegetation from the wetland for disposal.
 - In wetlands limit pulling of tree stumps and grading activities to directly over the trench line. Do not grade or remove stumps or root systems from the rest of the construction right-of-way.
 - In wetlands segregate the top one foot of topsoil from the trench line, except in areas where standing water or saturated soils are present.
 - Topsoil will be stripped from the trench line and spoil storage area only in croplands, hayfields, pastures and residential areas. Topsoil may be imported in residential areas as necessary to assure adequate reclamation.
 - If streams proposed to be open cut are flowing at the time of construction, they will be crossed using a dry open cut method (i.e., flume, dam & pump, etc.). If streams proposed to be dry open cut are not flowing at the time of construction, they will be open cut.
 - Right-of-way grading or vegetation clearing will occur as necessary.
 - Seed mixes in the ECRP or according to landowner agreements or as directed by E.I.
 - Pacific Connector understands that fisheries' construction windows only apply to those waterbodies flowing at the time of construction and that the windows do not apply to HDD crossings.

LEGEND

Proposed Pipeline	Tax Parcel Boundaries
Wetland	Stream
Construction Right-of-Way	Access Road
Temporary Construction Right-of-Way (Shown white on photography)	Permanent / Temporary Access Road (PAR / TAR)
Temporary Extra Work Area	Drivable Berm or Sediment Barrier / Portable Bridge / Wetland Crossing (DB) (SB) (PB) (VC)
Uncleared Storage Area	Silt Fence (SF)
Pipe Yard	Safety Fence (SAF)
Aboveground Facility	Slash Filter Windrow (SFV)
Rock Source/Disposal	Construction Entrance Pad (CE)

Note: BMP type and placement to be determined by Environmental Inspector based on site-specific conditions.

BLM LANDUSE - 2016 RMP

2a - District Designated Reserve (No Harvest)	NO.	DATE	BY	DESCRIPTION	CHK.	APP.
2b - District Designated Reserve (Non-Forest)		Jul-2019	EE	Issued in Response to DEIS	EE	EE
3a - Late-Successional Reserve (Dry Forest)						
3b - Late-Successional Reserve (Moist Forest)						
4a - Riparian Reserve (Dry Forest)						
4b - Riparian Reserve (Moist Forest)						
5 - Estate Management Area						
6 - Harvest Land Base (Unweeded Timber Area)						
7 - Harvest Land Base (Low Intensity Timber Area)						
8 - Harvest Land Base (Moderate Intensity Timber Area)						

FEDERAL LANDS SOIL RISK SENSITIVITY RANK

1-Very Low	2-Low	3-Moderate	4-High	5-Very High
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REVISIONS

NO.	DATE	BY	DESCRIPTION	CHK.	APP.
	Jul-2019	EE	Issued in Response to DEIS	EE	EE

Scale: 200 0 200 400 FEET

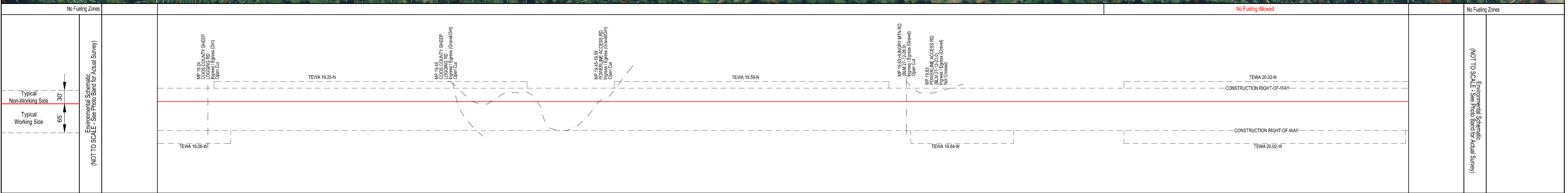
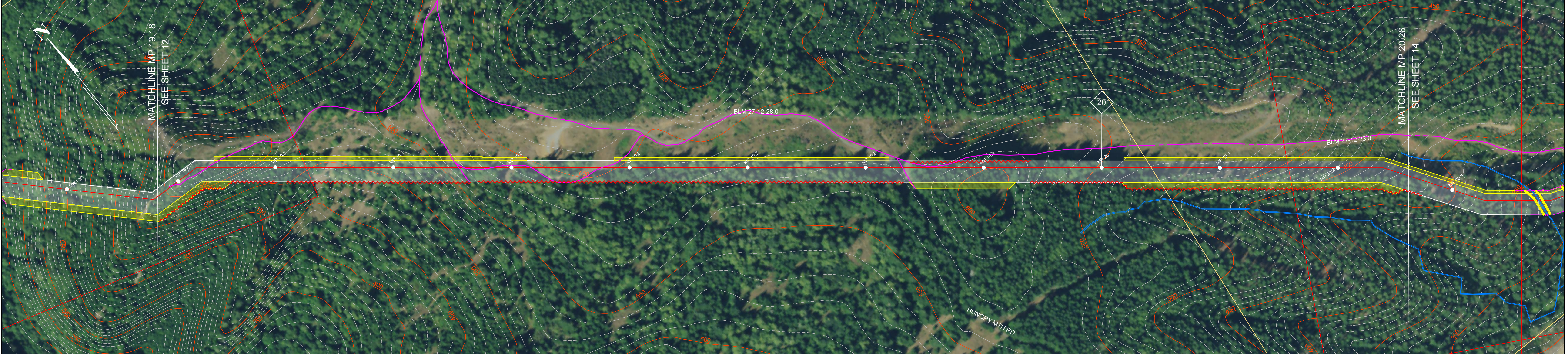
PUBLIC

PACIFIC CONNECTOR GAS PIPELINE PROJECT
PACIFIC CONNECTOR GAS PIPELINE, LP
ENVIRONMENTAL ALIGNMENT

BLUE RIDGE VARIATION
MP 18.13 TO 19.18
COOS COUNTY, OREGON

DRAWN BY: EE	DATE: JUL-2019	ISSUED FOR BID:	24x36 SCALE: 1 Inch = 200 Feet
CHECKED BY: EE	DATE: JUL-2019	ISSUED FOR CONSTRUCTION:	11x17 SCALE: 1 Inch = 450 Feet
APPROVED BY: EE	DATE: JUL-2019	DRAWING NUMBER: 3430.29-021	SHEET 12 OF 15

Legal Location	SEC 16, T27S, R12W	SEC 15, T27S, R12W	Legal Location
Ownership / Management	CO-124.000	CO-125.000	Ownership / Management
Jurisdiction	COOS COUNTY	BLM - COOS DISTRICT	Jurisdiction
Federal Landuse Allocation		4b 3b	Federal Landuse Allocation
Areas of High Groundwater (Potential Trench Dewatering)			Areas of High Groundwater (Potential Trench Dewatering)
Wetland / Waterbody			Wetland / Waterbody
Crossing Method / Instream Construction Window ¹			Crossing Method / Instream Construction Window ¹
Biological Seasonal Construction Window (as of September 2017)	—MARBLED MURRELET (APRIL 1 - AUGUST 5 (DTRs))—		Biological Seasonal Construction Window (as of September 2017)
Topsoil Salvage / Federal Lands Soil Risk		NONE	Topsoil Salvage / Federal Lands Soil Risk
Hydrostatic Test Water Release / Aboveground Facilities / Residential			Hydrostatic Test Water Release / Aboveground Facilities / Residential



NOTES:

- In wetlands cut vegetation off at ground level, leaving existing root systems in place and remove the vegetation from the wetland for disposal.
- In wetlands limit pulling of tree stumps and grading activities to directly over the trench line. Do not grade or remove stumps or root systems from the rest of the construction right-of-way.
- In wetlands segregate the top one foot of topsoil from the trench line, except in areas where standing water or saturated soils are present.
- Topsoil will be stripped from the trench line and spoil storage area only in croplands, hayfields, pastures and residential areas. Topsoil may be imported in residential areas as necessary to assure adequate reclamation.
- If streams proposed to be open cut are flowing at the time of construction, they will be crossed using a dry open cut method (i.e., flume, dam & pump, etc.). If streams proposed to be dry open cut are not flowing at the time of construction, they will be open cut.
- Right-of-way grading or vegetation clearing will occur as necessary.
- Seed mixes in the ECRP or according to landowner agreements or as directed by E.I.
- Pacific Connector understands that fisheries' construction windows only apply to those waterbodies flowing at the time of construction and that the windows do not apply to HDD crossings.

LEGEND

- Proposed Pipeline
- Construction Right-of-Way
 - Temporary Construction Right-of-Way
 - Temporary Extra Work Area
 - Uncleared Storage Area
 - Pipe Yard
 - Aboveground Facility
 - Rock Source/Disposal
- Tax Parcel Boundaries
- Wetland
- Stream
- Access Road
- Permanent / Temporary Access Road (PAR / TAR)
- Note: BMP type and placement to be determined by Environmental Inspector based on site-specific conditions.
 - Drivable Berm or Sediment Barrier / Portable Bridge / Wetland Crossing (DB) (SB) (PB) (VC)
 - Silt Fence (SF)
 - Safety Fence (SAF)
 - Slash Filter Windrow (SFV)
 - Construction Entrance Pad (CE)

BLM LANDUSE - 2016 RMP

2a - District Designated Reserve (No Harvest)
2b - District Designated Reserve (Non-Forest)
3a - Late-Successional Reserve (Dry Forest)
3b - Late-Successional Reserve (Moist Forest)
4a - Riparian Reserve (Dry Forest)
4b - Riparian Reserve (Moist Forest)
5 - Estate Management Area
6 - Harvest Land Base (Uneven-Aged Timber Area)
7 - Harvest Land Base (Low Intensity Timber Area)
8 - Harvest Land Base (Moderate Intensity Timber Area)

FEDERAL LANDS SOIL RISK SENSITIVITY RANK

1-Very Low
2-Low
3-Moderate
4-High
5-Very High

REVISIONS

NO.	DATE	BY	DESCRIPTION	CHK.	APP.
1	Jul-2019	EE	Issued in Response to DEIS	EE	EE

Scale: 200 0 200 400 FEET

PUBLIC

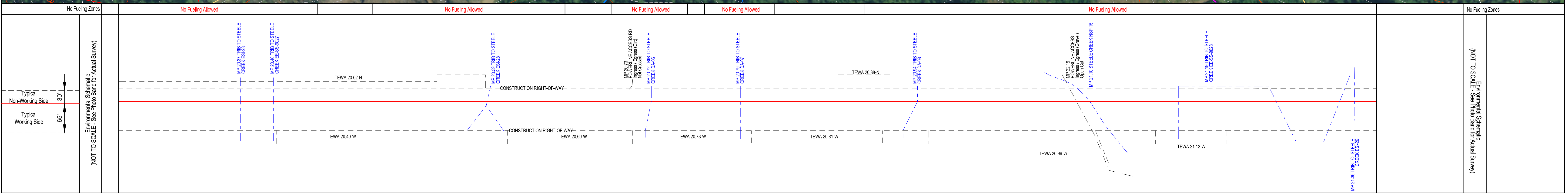
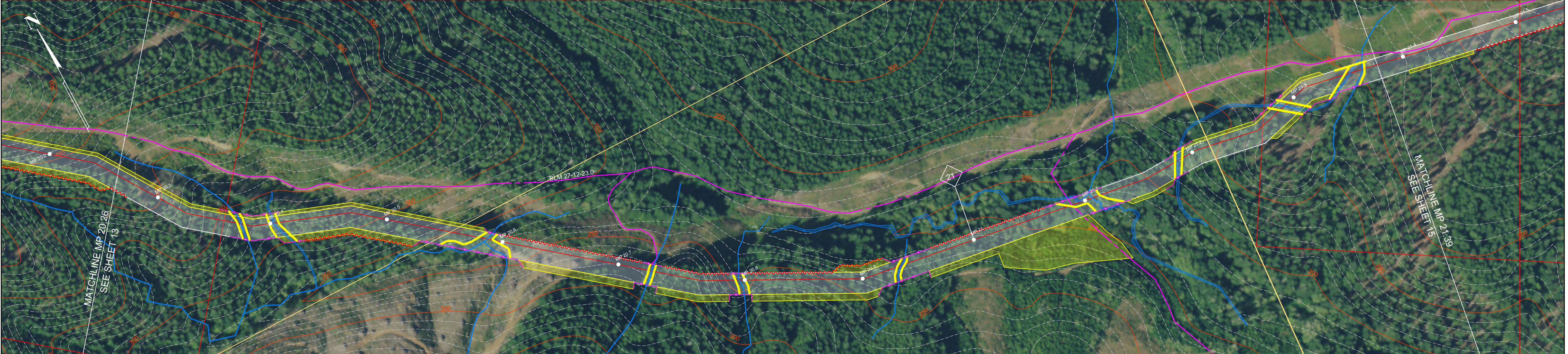
PACIFIC CONNECTOR GAS PIPELINE PROJECT
PACIFIC CONNECTOR GAS PIPELINE, LP
ENVIRONMENTAL ALIGNMENT

BLUE RIDGE VARIATION
MP 19.18 TO 20.26
COOS COUNTY, OREGON

DRAWN BY: EE	DATE: JUL-2019	ISSUED FOR BID:	24x36 SCALE: 1 Inch = 200 Feet
CHECKED BY: EE	DATE: JUL-2019	ISSUED FOR CONSTRUCTION:	11x17 SCALE: 1 Inch = 450 Feet
APPROVED BY: EE	DATE: JUL-2019	DRAWING NUMBER: 3430.29-022	SHEET 13 OF 15

Pacific Connector
GAS PIPELINE

Legal Location	SEC 15, T27S, R12W				SEC 22, T27S, R12W				SEC 23, T27S, R12W				Legal Location
Ownership / Management	CO-125.000				CO-126.000				CO-127.000				Ownership / Management
Jurisdiction	BLM - COOS DISTRICT				COOS COUNTY				BLM - COOS DISTRICT				Jurisdiction
Federal Landuse Allocation	3b	4b	3b	4b					8	4b			Federal Landuse Allocation
Areas of High Groundwater (Potential Trench Dewatering)	Trib to Steele Creek				Trib to Steele Creek				Trib to Steele Creek				Areas of High Groundwater (Potential Trench Dewatering)
Wetland / Waterbody	Trib to Steele Creek				Trib to Steele Creek				Trib to Steele Creek				Wetland / Waterbody
Crossing Method / Instream Construction Window	Dry Open-Cut / July 1 - Sept. 15				Dry Open-Cut / July 1 - Sept. 15				Dry Open-Cut / July 1 - Sept. 15				Crossing Method / Instream Construction Window
Biological Seasonal Construction Window (as of September 2017)					MARBLED MURRELET (APRIL 1 - AUGUST 5 (DTRs))								Biological Seasonal Construction Window (as of September 2017)
Topsoil Salvage / Federal Lands Soil Risk					NONE								Topsoil Salvage / Federal Lands Soil Risk
Hydrostatic Test Water Release / Aboveground Facilities / Residential													Hydrostatic Test Water Release / Aboveground Facilities / Residential



NOTES:

- In wetlands cut vegetation off at ground level, leaving existing root systems in place and remove the vegetation from the wetland for disposal.
- In wetlands limit pulling of tree stumps and grading activities to directly over the trench line. Do not grade or remove stumps or root systems from the rest of the construction right-of-way.
- In wetlands segregate the top one foot of topsoil from the trench line, except in areas where standing water or saturated soils are present.
- Topsoil will be stripped from the trench line and spoil storage area only in croplands, hayfields, pastures and residential areas. Topsoil may be imported in residential areas as necessary to assure adequate reclamation.
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- Right-of-way grading or vegetation clearing will occur as necessary.
- Seed mixes in the ECRP or according to landowner agreements or as directed by E.I.
- Pacific Connector understands that fisheries' construction windows only apply to those waterbodies flowing at the time of construction and that the windows do not apply to HDD crossings.

LEGEND

- Proposed Pipeline
- Construction Right-of-Way
 - Temporary Construction Right-of-Way
 - Temporary Extra Work Area
 - Uncleared Storage Area
 - Pipe Yard
 - Aboveground Facility
 - Rock Source/Disposal
- Tax Parcel Boundaries
- Wetland
- Stream
- Access Road
- Permanent / Temporary Access Road (PAR / TAR)
- Note: BMP type and placement to be determined by Environmental Inspector based on site-specific conditions.
 - Drivable Berm or Sediment Barrier / Portable Bridge / Wetland Crossing (DB) (SB) (PB) (VC)
 - Silt Fence (SF)
 - Safety Fence (SAF)
 - Slash Filter Windrow (SFV)
 - Construction Entrance Pad (CE)

BLM LANDUSE - 2016 RMP

2a - District Designated Reserve (No Harvest)	2b - District Designated Reserve (Non-Forest)	3a - Late-Successional Reserve (Dry Forest)	3b - Late-Successional Reserve (Moist Forest)	4a - Riparian Reserve (Dry Forest)	4b - Riparian Reserve (Moist Forest)	5 - Estate Management Area	6 - Harvest Land Base (Uneven-Aged Timber Area)	7 - Harvest Land Base (Low Intensity Timber Area)	8 - Harvest Land Base (Moderate Intensity Timber Area)
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FEDERAL LANDS SOIL RISK SENSITIVITY RANK

1-Very Low	2-Low	3-Moderate	4-High	5-Very High
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REVISIONS

NO.	DATE	BY	DESCRIPTION	CHK.	APP.
1	Jul-2019	EE	Issued in Response to DEIS	EE	EE

Scale: 200 0 200 400 FEET

PUBLIC

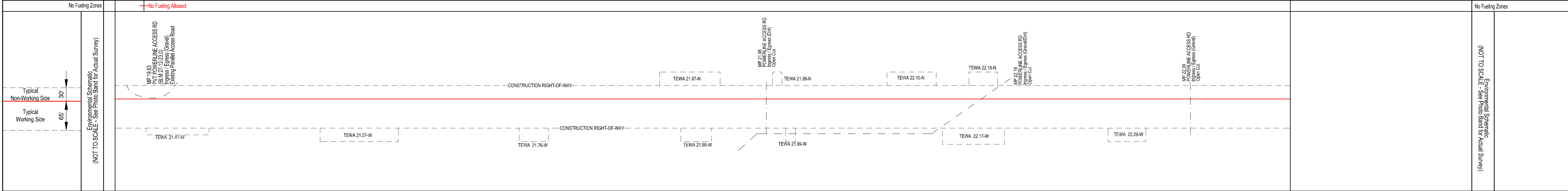
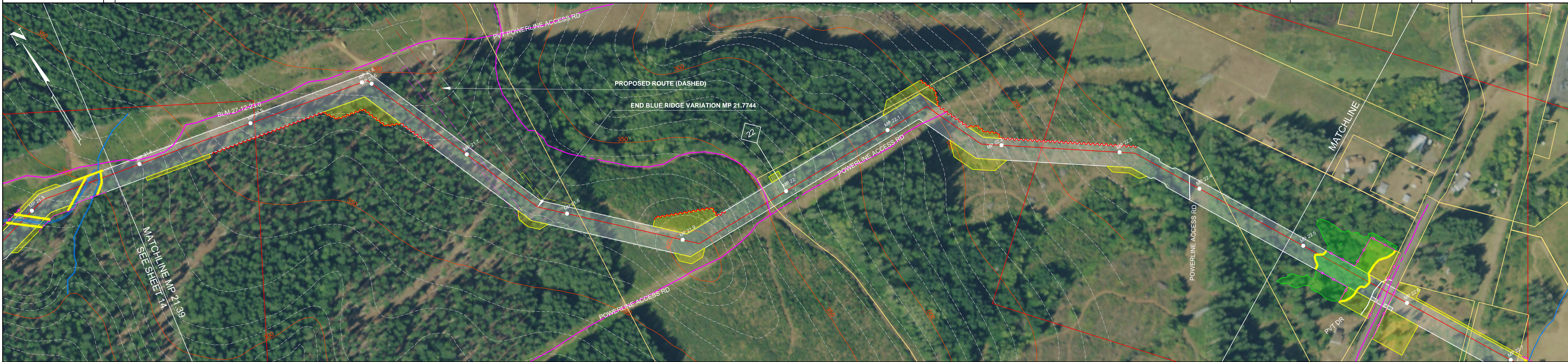
PACIFIC CONNECTOR GAS PIPELINE PROJECT
PACIFIC CONNECTOR GAS PIPELINE, LP
ENVIRONMENTAL ALIGNMENT

SPREAD #1
 MP 20.26 TO 21.39
 COOS COUNTY, OREGON

DRAWN BY: EE	DATE: JUL-2019	ISSUED FOR BID:	24x36 SCALE: 1 Inch = 200 Feet
CHECKED BY: EE	DATE: JUL-2019	ISSUED FOR CONSTRUCTION:	11x17 SCALE: 1 Inch = 450 Feet
APPROVED BY: EE	DATE: JUL-2019	DRAWING NUMBER: 3430.29-023	SHEET 14 OF 15

Pacific Connector
GAS PIPELINE

Legal Location	SEC 23, T27S, R12W						SEC 24, T27S, R12W		Legal Location
Ownership / Management	CC-127.000		CO-128.000		CO-129.000		CO-131.000		Ownership / Management
Jurisdiction	BLM - COOS DISTRICT						COOS COUNTY		Jurisdiction
Federal Landuse Allocation	4b		8		2b		8		Federal Landuse Allocation
Areas of High Groundwater (Potential Trench Dewatering)									Areas of High Groundwater (Potential Trench Dewatering)
Wetland / Waterbody									Wetland / Waterbody
Crossing Method / Instream Construction Window									Crossing Method / Instream Construction Window
Biological Seasonal Construction Window (as of September 2017)	MARBLE MURRELET (APRIL 1 - AUGUST 5 (DTRs))								Biological Seasonal Construction Window (as of September 2017)
Topsoil Salvage / Federal Lands Soil Risk	NONE								Topsoil Salvage / Federal Lands Soil Risk
Hydrostatic Test Water Release / Aboveground Facilities / Residential									Hydrostatic Test Water Release / Aboveground Facilities / Residential



NOTES:

- In wetlands cut vegetation off at ground level, leaving existing root systems in place and remove the vegetation from the wetland for disposal.
- In wetlands limit pulling of tree stumps and grading activities to directly over the trench line. Do not grade or remove stumps or root systems from the rest of the construction right-of-way.
- In wetlands segregate the top one foot of topsoil from the trench line, except in areas where standing water or saturated soils are present.
- Topsoil will be stripped from the trench line and spoil storage area only in croplands, hayfields, pastures and residential areas. Topsoil may be imported in residential areas as necessary to assure adequate reclamation.
- If streams proposed to be open cut are flowing at the time of construction, they will be crossed using a dry open cut method (i.e., flume, dam & pump, etc.). If streams proposed to be dry open cut are not flowing at the time of construction, they will be open cut.
- Right-of-way grading or vegetation clearing will occur as necessary.
- Seed mixes in the ECRP or according to landowner agreements or as directed by E.I.
- Pacific Connector understands that fisheries construction windows only apply to those waterbodies flowing at the time of construction and that the windows do not apply to HDD crossings.

LEGEND

Proposed Pipeline	Tax Parcel Boundaries
Wetland	Stream
Temporary Construction Right-of-Way (Shown white on photography)	Access Road
Temporary Extra Work Area	Permanent / Temporary Access Road (PAR / TAR)
Uncleared Storage Area	Note: BMP type and placement to be determined by Environmental Inspector based on site-specific conditions.
Pipe Yard	Drivable Berm or Sediment Barrier / Portable Bridge / Wetland Crossing (DB) (SB) (PB) (VBC)
Aboveground Facility	Silt Fence (SF)
Rock Source/Disposal	Safety Fence (SAF)
	Slash Filter Windrow (SFV)
	Construction Entrance Pad (CE)

BLM LANDUSE - 2016 RMP

2a - District Designated Reserve (No Harvest)
2b - District Designated Reserve (Non-Forest)
3a - Late Successional Reserve (Dry Forest)
3b - Late Successional Reserve (Moist Forest)
4a - Riparian Reserve (Dry Forest)
4b - Riparian Reserve (Moist Forest)
5 - Estate Management Area
6 - Harvest Land Base (Unweaned Timber Area)
7 - Harvest Land Base (Low Intensity Timber Area)
8 - Harvest Land Base (Moderate Intensity Timber Area)

FEDERAL LANDS SOIL RISK SENSITIVITY RANK

1-Very Low
2-Low
3-Moderate
4-High
5-Very High

REVISIONS

NO.	DATE	BY	DESCRIPTION	CHK.	APP.
1	Jul-2019	EE	Issued in Response to DEIS	EE	EE

Scale: 200 0 200 400 FEET

PUBLIC

**PACIFIC CONNECTOR GAS PIPELINE PROJECT
PACIFIC CONNECTOR GAS PIPELINE, LP
ENVIRONMENTAL ALIGNMENT**

**SPREAD #1
MP 21.39 TO 21.77
COOS COUNTY, OREGON**

DRAWN BY: EE	DATE: JUL-2019	ISSUED FOR BID:	24x36 SCALE: 1 Inch = 200 Feet
CHECKED BY: EE	DATE: JUL-2019	ISSUED FOR CONSTRUCTION:	11x17 SCALE: 1 Inch = 450 Feet
APPROVED BY: EE	DATE: JUL-2019	DRAWING NUMBER: 3430.29-024	SHEET 15 OF 15