BIOLOGICAL ASSESSMENT

(continued)

APPENDIX B

Pacific Connector's Plan of Development

(CONTINUED)

Appendix M

Hydrostatic Test Plan



Pacific Connector Gas Pipeline, LP

Hydrostatic Test Plan

Pacific Connector Gas Pipeline Project

(During the previous NEPA process, PCGP submitted a Plan of Development to meet BLM Right-of-Way Grant requirements based on BLM regulations. These plans will be updated in consultation with the Federal land managing agencies [BLM, USFS, and Reclamation] during the current NEPA process).

January 2018

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- Attachment B Potential Treatment Matrix
- Attachment C Hydrostatic Test Water Withdrawal Equipment Cleaning and Sanitizing Procedures
- Hydrostatic Test Dewatering Location Maps (forthcoming) Hydrostatic Test Plan Impacts Assessment Attachment D
- Attachment E

1.0 INTRODUCTION

In accordance with DOT 49 CFR Part 192, Pacific Connector Gas Pipeline, LP (Pacific Connector) will strength test (or hydrostatic test) the pipeline system (in sections) after it has been lowered into the pipe trench and backfilled. The purpose of the hydrostatic test is to verify the manufacturing and construction integrity of the pipeline before placing it in service to flow natural gas. Should a leak or break occur during the hydrostatic test, the pipeline will be repaired and retested to ensure the required specifications are achieved. Once a segment of pipe has been successfully tested, cleaned, and dried the pipe will be joined to the adjacent pipeline segment. The physical capacity of the pipeline to hold hydrostatic test water is approximately 60.7 million gallons. The actual volume to be used is reduced below the total pipe capacity through the re-use of water by cascading test water from segment to segment as practically achievable. Figure 1 in Attachment D provides an overview of the Project alignment, test segment locations, potential hydrostatic test sources, and the basins crossed by the Project as described in this Plan.

2.0 GENERAL HYDROSTATIC TESTING PROCESS

2.1 Contractor Responsibility

The construction contractor is responsible for implementing Pacific Connector's hydrostatic test design, drawings, and specifications. The contractor is also responsible for following applicable environmental stipulations, right-of-way restrictions and completing the necessary hydrostatic test documentation as required in the construction contract. The construction contractor will then provide Pacific Connector with a specific hydrostatic test plan and schedule detailing the specific methods for cleaning, filling, pressurizing, proof testing, dewatering, and drying of the pipeline during the testing process. The contractor is also responsible to provide all of the necessary equipment, instrumentation, qualified personnel and materials necessary to complete the hydrostatic test plan. Pacific Connector will review and approve the contractors hydrostatic test plan and provide final acceptance of the test.

2.2 Cleaning

As part of the construction process and prior to hydrostatic testing, the pipeline is lowered into the trench and prepared for cleaning. The majority of the pipe should be backfilled and compacted with the exception of valve sites and test header break locations which are left open to access the pipeline during the hydrostatic test process. Pig launchers and receivers are welded onto the test segment and a series of cleaning pigs are pushed through the pipeline with compressed air. All debris removed from the pipeline during the cleaning process is disposed of at an authorized waste disposal facility or other appropriate locations if approved by the landowner. Once the cleaning pig runs are complete, the pig launcher and receiver are removed from the pipeline test segment, and the hydrostatic test headers are welded into place to allow the test segment to be filled with water and tested.

2.3 Filling

Once the contractor has cleaned the pipeline test segment, the contractor uses hoses/hard piping to fill the pipeline with clean test water (see Sections 3.0 and 7.2). Water is pumped via hose from the approved water source site(s) or from the previous test segment into the new test segment. Depending on the proximity of the source water location to the test segment, water trucks may be used to transport the water. All fill lines and water pumps are rated to sustain the

hydrostatic test procedures. Water is pumped into the test segment behind fill pigs to completely fill the test segment with water and to minimize potential air entrainment during the filling process. Fill plugs/pigs are pushed in a controlled manner with pressure during the filling process from one end of the test segment and are received at the other end to ensure all air is removed from the pipeline prior to testing.

2.4 Pressurizing

Calibrated temperature recorders, pressure recorders, and deadweight testers are connected to the hydrostatic test headers to document the test. The contractor secures the test area to prevent all unauthorized personnel from being in the area. Once the test segment is completely filled with water, the fill pump is removed, the pressure pump is connected, and the pipeline test segment pressurization begins. The test pressure is brought to 500 psig and held until the pressure and temperatures are stabilized. All connections are checked for leaks. Providing there are no leaks, the pressure pump raises the internal pipe pressure slowly to 80% of the required test pressure at the low point of the test section. Once the pressure and temperatures stabilize, the stroke count is started and continued until the internal pipe pressure reaches the required test pressure.

2.5 8-Hour Test

The hydrostatic test pressure is maintained on the test section for the duration of the test, which is anticipated to last 8-hours. During the first two hours of the pressure test the time, pipe temperature, ambient temperature, and dead weight pressure readings are recorded. After the second hour, the same readings are taken every half hour for the remainder of the test. Acceptance of the hydrostatic test is done by Pacific Connector's Chief Construction Inspector. If a leak is encountered during the hydrostatic test, the test is stopped, the leak is located, and the pipe is excavated to repair the leak. If at any time during the 8-hour hydrostatic test, the test pressure falls below the minimum test pressure, the test will be unacceptable and test section shall be re-pressurized and the entire test started again.

2.6 Dewatering

At the end of the 8-hour test, the contractor lowers the pipeline pressure by slowing venting water. The water that is vented may be cascaded into the next test section, or into a dewatering structure, or into a frac tank for further testing pending the location and need in the hydrostatic test plan. Test water is only released for land application at previously approved locations through an approved dewatering structure. Where water is being released in an upland area, the contractor is responsible for taking water samples, if required, for analysis. Once the samples have been analyzed and meet the permit requirements, the water may be released through an approved dewatering structure in an upland area.

2.7 Drying

Once the hydrostatic test has been approved and the water removed from the pipeline, the contractor will use dry compressed air to push a series of drying pigs through the pipeline. Pigs will be run until the pipeline is dried to a specified dew point.

2.8 Tie-Ins

Following the pipeline drying, the test segments are welded together. The welds are x-rayed and the pipeline is prepared for service.

3.0 SOURCE WATER

Water for hydrostatic testing will be obtained from commercial or municipal sources, private supply wells, or surface water right owners (see Table 1). Hydrostatic test water for the compressor station will be obtained from nearby municipalities. If water for hydrostatic testing is acquired from public surface water sources, Pacific Connector will obtain all necessary appropriations and withdrawal permits through the Oregon Water Resources Department (OWRD). As part of the application process, OWRD provides the application(s) to the Oregon Department of Environmental Quality (ODEQ) and the Oregon Department of Fish and Wildlife (ODFW) for review. These agencies comment if there are concerns regarding the impacts the withdrawal(s) may have on water quality, or other beneficial uses, and/or fish and wildlife species and their habitat, respectively. OWRD also provides public notice of the application(s) or denies the application(s). Private owners will be contacted to discuss water acquisition during landowner negotiations in the year prior to construction.

As required by ODFW, pumps used to withdraw surface water will be screened according to NOAA Fisheries' screening criteria to prevent entrainment of aquatic species. When pumping water from a source location, the pump head will be submerged and maintained on average at the center of the water column so as to prevent sucking in sediments and/or algae lying at the water level surface or sediments (i.e. heavy metals) resting on the bed of the waterbody. The targeted ramping rate will be managed such that there is no significant decrease of river flows. Estimated ramping rates will be submitted to ODFW as part of the ODWR permitting process. The only substance that would be added to the hydrostatic test water would be chlorine to prevent the potential transfer of aquatic invasive species, which was a concern for the BLM and Forest Service, as described in Section 7.0

		Potential Hyd	rostatic Source Locati	ons							
County	MP	So	urce	Owner	Estimated Withdrawal Requirement (Longest Test Segment Volume) ¹						
South Coast E	Basin - Coos	Bay Frontal Pacific Ocea	an (1710030403) - Fifth Fie	eld Watershed							
Coos	1.47R	Coos Bay - North	Coos Bay - North Bend Water Board	4,999,228							
South Coast E	South Coast Basin - M. F. Coquille River (1710030501) - Fifth Field Watershed										
Douglas	50.20	Water Impoundment	Kinnan Lake	5-J Limited Partnership, Donald R. Johnson 29080601300	3,315,584						
Umpqua Basir	n - Olalla Cr	eek-Lookingglass Creek	(1710030212) - Fifth Field	Watershed							
Douglas	55.90	Water Impoundment	Ben Irving Reservoir	Douglas County Public Works/ Looking Glass Olalla Water District/	3,315,584						
				Winston-Dillard Water District							
Douglas	58.75	•	lalla Water District ek Crossing)	Looking Glass Olalla Water	3,315,584						

Table 1 Potential Hydrostatic Source Locations

					Estimated Withdrawal Requirement (Longest Test Segment					
County	MP	So	urce	Owner	Volume) ¹					
				District						
Umpqua Basi	n - Clark Bra	anch-South Umpqua Rive	r (1710030211) - Fifth Fie							
Douglas	71.30		ver Crossing #1	Oregon Department of Water Resources	2,037,230					
Umpqua Basi	n - Days Cre	ek-South Umpqua River	(1710030205) - Fifth Field							
Jackson	94.73	S. Umpqua Ri	ver Crossing #2	Oregon Department of Water	2,525,177					
Desus Desis	Chady Cay	(a. Dagua Diyar (1710020	Resource Rogue River (1710030707) - Fifth Field Watershed							
Rogue Basin	- Snady COV	e-Rogue River (1710030	(U) - FIIII FIEID WATERSN							
Jackson	122.5	Rogue Riv	er Crossing	Oregon Department of Water Resources	1,951,591					
Roque Basin	- Little Butte	Creek (1710030708) - Fi	ifth Field Watershed	resources						
Jackson	133.38		Aqueduct	Eagle Point Irrigation	2,256,357					
Jackson	146.70	N. Fork Little But	te Creek Crossing	Medford Irrigation	2,847,495					
Jackson	161.40	Water Impoundment	Fish Lake	District/ Rogue River Valley Irrigation District	2,847,495					
Klamath Basi	n - Fourmile	Creek (1801020302) - Fi	fth Field Watershed	•						
Klamath	168.90	Water Impoundment	Lake Of The Woods National Forest Lake	United States (Rogue River- Siskiyou NF)	5,565,825					
Klamath Basi	n -John C Bo	oyle Reservoir-Klamath R	liver (1801020602)							
Klamath	184.30	Water Impoundment	John C. Boyle Reservoir	Oregon Department of Water Resources	5,565,825					
		una-Klamath River (1801								
Klamath	189.00	Water Impoundment	Keno Reservoir	Oregon	5,565,825					
Klamath	199.20	Klama	th River	Department of Water Resources	5,565,825					
Klamath Basi	n -Mills Cree	k–Lost River (180102040)9)							
Klamath	228.1		ne Canal	Malin Irrigation District	4,560,666					
				Total	N/A ²					

The volumes in the table represent the estimated withdrawal volume from a potential hydrostatic test source, and, in some cases, multiple sources are identified for the same test segment(s) because water withdrawals would be based on conditions at the time of construction (see Table 2 for potential water sources identified for each test segment).

² Totaling the potential withdrawal volumes is not applicable because, as stated in footnote #1, multiple (alternate) sources have been identified for the same test segments. Without cascading (not proposed), the physical volume for all individual test segments would be 60.7 million gallons. With the use of cascading, which is proposed, the minimum test water volume to be withdrawn would be 15,928,725 gallons across all sources. The actual volume will be within this range and is expected to be at the lower end of the range.

4.0 DEWATERING

The pipeline will be tested in approximately 35 sections, each with varying lengths and water volume requirements (see Table 2). The required test pressure ranges, pipe strength (wall thickness and pipe grade), topography (specifically elevation changes), available access and work areas to stage testing equipment, and the availability of test water are used to determine the length of each test segment. During the test, it may be necessary to release some volume of water at each of the section breaks; however, Pacific Connector will conserve water as much as practical and minimize dewatering, where feasible, by cascading, or transferring, water between test sections. If the volume of water required to test the successive segment(s) is less than the preceding test segment, the extra test water may be stored in the previously tested segments or portable tanks and then pumped to subsequent segments for testing as necessary to minimize water withdrawals and potential water hauling requirements. After testing of the segment or series of segments is complete, the hydrostatic test water will be released to an upland area within the basin from which it was withdrawn. The hydrostatic test would be dewatered through a filter bag or straw bale structure to remove particulates and prevent the potential for sediment transport and ground surface erosion (see Attachment A). Pacific Connector does not propose to release hydrostatic test water outside the basin from which it was withdrawn (i.e., South Coast, Umpqua, Rogue, or Klamath). It is expected that the volume of water to be released within a basin would be the largest volume of water associated with the longest test segment within the basin. Table 2 provides the volume of water for each test segment and footnotes the largest volumes for each basin, which are listed below:

- South Coast Basin 4,990,228 gallons (15.31 ac/ft)
- Umpqua Basin 2,525,177 gallons (7.75 ac/ft)
- Rogue Basin 2,847,495 gallons (8.74)
- Klamath Basin 5,565,825 (17.08 ac/ft) Total = 15,928,725 (48.88 ac/ft)

At some locations it may be necessary to locate the dewatering structures outside the construction right-of-way, as allowed under FERC Procedures (IV. A. 1.), to direct water away from the disturbed right-of-way areas. In these locations, small brush or trees may be cleared by a rubber-tired rotary or flail motor (brush hog) or by hand with machetes/chainsaws. No soil disturbance will occur. A rubber-tired or track hoe will be utilized to lay the dewater line and to remove the saturated straw bales or filter bags upon completion of hydrostatic dewatering.

The hydrostatic test dewater locations are shown on the maps provided in Attachment D. The hydrostatic test design was developed from alignment and elevation surveys and detailed pipe design. The design will be provided to construction contractors, once selected. Potential stream flow effects (or ramping rates) from hydrostatic test dewatering are not expected because water will be released to an upland area and through an energy dissipation dewatering structure to promote infiltration into the ground and will not occur within 150 feet of any sensitive wetland (i.e., non-agricultural wetland) or waterbody, where feasible. Further, BMPs, as described in Section 7.0, will be implemented to control dewatering to minimize potential increases in stream flow.

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	1	1	1	Poter	ntial Hydro	static Dewat		der) Locations wit	hin the Constru	uction Right-of-Way			
Test Segment	Oregon Plan Watershed	HUC (10-digit) (Begin MP)	HUC (10-digit) (Ending MP)	Begin MP ¹	End MP	Section Length ² (feet)	Volume ^{3, 4} (gallons) (acre feet)	Potential Water Source	Jurisdiction (ending MP)	Waterbodies Closest to	Distance to Waterbodies ⁵ (feet)	End Latitude End Longitude	
Spread - Ha	ynes Inlet	1	1	1						<u>Ω</u>			
										땅coos Bay /Coos River / 벽 Jordan Cove 급 (1243397433543)	650	Beg. 43.432564	
		Coos Bay	Coos Bay				4,840 735,523 (2.26)	Coos Bay -		ਸ਼ੁੱ Haynes Inlet ∰ (1242326434319)	1000	Beg124.240191	
1	South Coast	Frontal Pacific Ocean	Ocean Ocean	0.00 (Private)	6.63R	14,840		523 North Bond	North Bend Private	Private	 μ. Trib to Haynes Inlet Ω μ. (1242017434500) 	550	
		1710030403	1710030403							 ⊢ Trib to Haynes Inlet (1242011434514) 	377	End 43.449395	
										Haynes Inlet (1242266434305)	355	End -124.198395	
Spread 1	1												
		Coos Bay	Coos Bay				2 612 411	Coos Bay -		[∞] Trib. to Stock Slough [№] (1241467433377)	90	43.338261	
2	South Coast	Frontal Pacific Ocean 1710030403	Frontal Pacific Ocean 1710030403	6.63R	10.13R	52,760	2,612,411 (8.02)	North Bend Water Board	Private	NTrib. to Stock Slough – ⊖ Monkey Gulch (1241504433368)	100	-124.147804	
3	South Coast	Coos Bay Frontal Pacific	Coos Bay Frontal Pacific	10.13R	17.11B	38,800	1,922,158	Coos Bay - North Bend	Private/BLM-	Trib. to Catching Creek (1241615432585)	275	43.255887	
3	South Coast	Ocean 1710030403	Ocean 1710030403	10.13R	R	38,800	(5.90)	Water Board	Coos	Catching Creek (1241452433077)	575	-124.160713	
4	South Coast	Coos Bay Frontal Pacific	E. F. Coquille River	17.11B	35.81	100,760	4,990,228 ⁴	Coos Bay - North Bend	BLM-Coos	Tribs. to South Fork Elk Creek (1239351431117 & 1239152431074)	415 650	43.105719	
			1710030503		κ.		(15.31)	Water Board		Trib to Big Creek (1239061430967)	363	-123.912717	
								Coos Bay - North Bend Water Board		Big Creek (1240115430262)	400	43.105499	
5	South Coast	E. F. Coquille River 1710030501	M. F. Coquille River 1710030501	35.81	37.20	7,280	360,166 (1.11)		North Bend	North Bend	BLM-Coos	Tribs to Big Creek (1240115430262, 1338946421056	395 105
										1238846431056, & 1238882431046)	375		
		M. F. Coquille	E. F. Coquille				E20 469	Coos Bay -		Tribs. To Camas Creek (1238306431319, 1238519431172 & 1238491431056)	243 350 650	43.104265	
6	South Coast	River 1710030501	River 1710030501	37.20	39.20	10,520	520,468 (1.60)	North Bend Water Board, Kinnan Lake	Private	Trib to Sandy Creek (1238500430999)	675	-123.855397	
Spreads 1 a	ind 2	l	l	I	I								
7		South Coast River	River River 39.20 51.61	lle 39.20 5	51.61	67,000	3,315,584	Coos Bay - North Bend Water Board, or Kinnan Lake, or	Private	Trib to Belieu Creek	1525	43.050453	
						(10.18)	Looking Glass Olalla Water District(Olalla Creek		(1236803430462)		-123.658493		

Table 2

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		HUC	HUC			Section	Volume ^{3, 4}			Waterbodies Closest to		End Latitude
Test Segment	Oregon Plan Watershed	(10-digit) (Begin MP)	(10-digit) (Ending MP)	Begin MP ¹	End MP	Length ² (feet)	(gallons) (acre feet)	Potential Water Source	Jurisdiction (ending MP)	ີ/Dewatering Locations ⁵ ິ (LLID)	Distance to Waterbodies ⁵ (feet)	End Longitud
	Tratoronou	(209)	(,			(1000)	(2010-1001)	Crossing), or Ben Irving Reservoir	(onum g im)	FERR C		
8	South Coast Umpqua (MP 53.16)	M. F. Coquille River 1710030501	Olalla / Lookingglass Creek 1710030212	51.61	58.86	39,320	1,946,641 (5.97)	Looking Glass Olalla Water District(Olalla Creek Crossing)or Ben Irving Reservoir	Private	PDF (Unoffici	228	43.073273 -123.531991
9		Olalla / Lookingglass	Clark Branch –	50.00	66.49	40.220	Looking GlassDistrict(Olalla1,997,530CreekCreekPrivate1,997,530CreekCreekPrivate	420	43.072111			
9	Umpqua	Creek 1710030212	South Umpqua 1710030211	58.86	66.48	40,320	(6.13)	Crossing)or Ben Irving Reservoir	³³ Tribs. to Rice Creek ²⁰ (1234180430725 & ¹¹ 1234136430721)	652 1400	-123.40666	
10	Umpqua	Clark Branch – South Umpqua 1710030211	Clark Branch – South Umpqua 1710030211	66.48	71.38	26,320	1,302,297 (4.00)	Looking Glass Olalla Water District(Olalla Creek Crossing)or Ben Irving Reservoir, or S. Umpqua River Crossing #1	Private	N N N N N N N N N N N N N N	193 83 785	43.054403 -123.329152
10A	Umpqua	Clark Branch – South Umpqua 1710030211	South Umpqua 1710030211	71.38	72.68	6,920	342,765 (1.05)	S. Umpqua River Crossing #1	Private	Tribs to South Umpqua River (1233086430593 & 1233346430680)	345 657	43.062635
11	Umpqua	Clark Branch – South Umpqua 1710030211	Myrtle Creek 1710030210	72.68	75.72	19,800	980,638 (3.01)	S. Umpqua River Crossing #1	Private	Tribs to Biger Creek (1232543430838, 1232534430792, & 1232600430803)	342 512 485	43.08197 -123.257641
12	Umpqua	Myrtle Creek 1710030210	Myrtle Creek 1710030210	75.72	82.32	35,200	1,741,192 (5.34)	S. Umpqua River Crossing #1	Private	Tribs to South Myrtle Creek (1231803430263,1231848430210, 1231837430216, & 1231921430292)	385 545 485 800	43.023663 -123.18033
13	Umpqua	Myrtle Creek	Days Creek- South Umpqua	82.32	89.50	41,160	2,037,230	S. Umpqua River Crossing	Private	Tribs to Days Creek (Doe Hollow) (1230858429848) Tribs to Days Creek (Bailey Gulch)	1145	42.979162
		1710030210	River 1710030205	02.52	89.50	41,100	(6.25)	#1	Flivale	(1230937429813 & 1231032429810)	1353 992	-123.090206
oreads 2 a	and 3	[S. Umpqua		South Umpqua River	<u> </u>	
14	Umpqua	Days Creek- South Umpqua River 1710030205	Days Creek- South Umpqua River 1710030205	89.50	94.71	27,720	1,372,593 (4.21)	River Crossing #1, or S Umpqua River Crossing #2	Private	(1234460432680) Trib. to South Umpqua River (1230442429313)	140 308	42.932972 -123.039405
15	Umpqua	Days Creek- South Umpqua River 1710030205	Days Creek- South Umpqua River 1710030205	94.71	95.51	4,240	210,102 (0.64)	S. Umpqua River Crossing #2	BLM- Roseburg	Tribs. to South Umpqua (1230357429250 & 1230382429323)	252 775	42.922722
16	Umpqua	Days Creek- South Umpgua	Days Creek- South Umpqua	95.51	100.76	27,560	1,365,564 (4.19)	S. Umpqua River Crossing	Private	Trib to Hatchet Creek (1229971428706)	205	42.870433

	Sas Pipeline Proje	ct								80 		Hydrostatic T															
Test Segment	Oregon Plan Watershed	HUC (10-digit) (Begin MP)	HUC (10-digit) (Ending MP)	Begin MP ¹	End MP	Section Length ² (feet)	Volume ^{3, 4} (gallons) (acre feet)	Potential Water Source	Jurisdiction (ending MP)	Waterbodies Closest to Dewatering Locations ⁵ C (LLID)	Distance to Waterbodies ⁵ (feet)	End Latitude End Longitude															
-		River 1710030205	River 1710030205					#2		Trib to East Fork Stouts Creek 넓 (1230111428734)	350	-123.003209															
17	Umpqua	Days Creek- South Umpqua	Upper Cow Creek	100.76	110.36	50,960	2,525,177 ⁴	S. Umpqua River Crossing	USFS-	ੌ East Fork Cow Creek ਤੂ (1229918428021) Tribs to East Fork Cow Creek	870	42.77114															
17	Ompqua	River 1710030205	1710030206	100.76	110.30	50,900	(7.75)	#2	Umpqua	੍ਰ (1229258427752 & ਸੂੰ 1229337427754)	810 830	-122.926565															
18	Umpqua	Upper Cow Creek	Trail Creek	110.36	113.66	15,600	771,945	Rogue River	Private	Tribs to Dead Horse Creek Image: Free free free free free free free free	2145 2075	42.74529															
10	Rogue (MP 111.11)	1710030206	1710030706	110.00	110.00	10,000	(2.37)	Crossing	T尚 to West Fork Trail Creek (1228839427397)	1270	-122.885218																
10	Desue	Trail Creek	Trail Creek	110.07	447.04	22.000	1,088,400	Rogue River	Drivete	¹ Trib to Trail Creek ω^{2} (1228449426932)	475	42.693386															
19	Rogue	1710030706	1710030706	113.67	117.84	22,000	(3.34)	Crossing	Private	Trib to West Fork Trail Creek	215	-122.885284															
20	Rogue	Trail Creek	Shady Cove - Rogue River	117.84	122.23	23,080	1,141,707	Rogue River	Private	[∞] Trib to Cricket Creek [№] (1228167426451 & [№] 1228177426455)	55 450	42.645528															
		1710030706	1710030707				(3.50)	Crossing		Cricket Creek (1228054426435)	233	-122.817437															
20A	Rogue	Trail Creek 1710030706	Shady Cove - Rogue River 1710030707	122.23	122.81	3,200	158,595 (0.49)	Rogue River Crossing	Private	[™] Rogue River (1244292424210)	625	42.645567 -122.805571															
		Shady Cove -	Shady Cove -				559,100	Rogue River		Tribs. to Brush Creek (1227674426310 & 1227761426291)	387 400	42.628191															
20B	Rogue	Rogue River 1710030707	Rogue River 1710030707	122.81	124.97	11,280	(1.72)																Crossing	BLM-Medford	Trib to Rogue River (1228061426243)	850	-122.780074
										Trib to Indian Creek (1227770426261)	590																
21	Rogue	Shady Cove - Rogue River 1710030707	Big Butte Creek 1710030704	124.97	132.47	39,440	1,951,591 (5.99)	Rogue River Crossing, or Medford Aqueduct, Eagle Point Irrigation	Private	Trib to Quartz Creek (1226768425794)	232	42.577736 -122.680439															
pread 4								Medford																			
22	Rogue	Big Butte Creek 1710030704	Little Butte Creek 1710030708	132.47	141.11	45,520	2,256,357 (6.92)	Aqueduct, Eagle Point	BLM-Medford	Tribs to Salt Creek (1226086424700 & 1226075424805)	550 220	42.483863 -122.610407															
		LittleButte	Little Butte				1,844,080	Irrigation Medford Aqueduct, Eagle Point		Trib to North Fork Little Butte Creek (1225688424078)	490	42.403061															
23	Rogue	Creek 1710030708	Creek Creek 141.11	141.11	147.75	37,280	(5.66)	Irrigation, or North Fork Little Butte Creek	Private	Trib to South Fork Little Butte Creek (1225728424006)	840	-122.570909															
24	Rogue	Little Butte Creek	Little Butte Creek	147.75	150.66	12,520	620,533 (1.90)	North Fork Little Butte	BLM-Medford	Trib to North Fork Little Butte Creek (1225334423894,1225327423928 & 1225339423878)	1204 1440 1369	42.383192															
		1710030708	1710030708				(1.00)	Creek		Trib to South Fork	1123	-122.539368															

Test egment	Oregon Plan Watershed	HUC (10-digit) (Begin MP)	HUC (10-digit) (Ending MP)	Begin MP ¹	End MP	Section Length ² (feet)	Volume ^{3, 4} (gallons) (acre feet)	Potential Water Source	Jurisdiction (ending MP)	ିWaterbodies Closest to ମDewatering Locations ⁵ ୍ର (LLID)	Distance to Waterbodies ⁵ (feet)	End Latitude End Longitude
										면 Little Butte Creek 면 (1225408423780 은 &1225410423779)	1180	
		Little Butte	Little Butte				2,126,306	North Fork Little Butte	USFS-Rogue	번 Trib. to Grizzly Creek 벽 (1224112423587)	280	42.364171
25	Rogue	Creek 1710030708	Creek 1710030708	150.66	158.75	42,920	(6.53)	Creek, or Fish Lake	River	Trib to North Fork Little Butte Creek (1224135423837)	5340	-122.397398
	Rogue	Little Butte					0.047.405.4	North Fork Little Butte				42.29569
26	Klamath (MP 168.00)	Creek 1710030708	Spencer Creek 1801020601	158.75	169.51	57,480	2,847,495 ⁴ (8.74)	Creek, or Fish Lake, or Lake of the Wooks	Private	a Trib to Spencer Creek ◯ (1222399423006)	1275	-122.237525
read 5										23	II	
27	Klamath	Spencer Creek 1801020601	Lake Ewauna / Upper Klamath River 1801020412	169.51	190.79	112,520	5,565,825 ⁴ (17.08)	Klamath River, or Lake of the Woods, or Keno Reservoir, or John C Boyle Reservoir	Private	²⁰¹ Trib to Klamath River ²⁰ (1219079421383, ²¹ 1219022421436 & ²² 1218746421442) ⁰ ⁰	2305 470 1750	42.144256 -121.90652
28	Klamath	Lake Ewauna / Upper Klamath River 1801020412	Lake Ewauna / Upper Klamath River 1801020412	190.79	197.51	29,480	1,459,243 (4.48)	Klamath River, or Keno Reservoir, or John C Boyle Reservoir	Private	ᅜ Trib to Klamath River (1218411421604)	3740	42.170991 -121.833676
29	Klamath	Lake Ewauna / Upper Klamath River 1801020412	Mills Creek - Lower Lost River 1801020409	197.51	199.16	8,840	438,075 (1.34)	Klamath River, or Keno Reservoir, or John C Boyle Reservoir, or Lake of the Woods	Private	Klamath River (1221913420005)	750	42.171113 -121.805705
30	Klamath	Lake Ewauna / Upper Klamath River 1801020412	Mills Creek - Lower Lost River 1801020409	199.16	210.53	60,000	2,970,150 (9.12)	Klamath River, or High Line Canal	Private	Irrigation Canal – Trib to L Canal (1217128420861 & 1216541420747)	1415	42.067422 -121.660354
31	Klamath	Mills Creek - Lower Lost River 1801020409	Mills Creek - Lower Lost River 1801020409	210.53	210.77	1,280	63,519 (0.20)	Klamath River or High Line Canal	Private	Irrigation Canal – Trib to L Canal (1217128420861 & 1216541420747)	1265 390	42.064856 -121.657176
32	Klamath	Mills Creek - Lower Lost River 1801020409	Mills Creek - Lower Lost River 1801020409	210.77	228.81	92,080	4,560,666 (14.00)	Klamath River, or High Line Canal	Private	High Line Canal (1214066420153)	1785	42.032735 -121.374896

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¹ Mileposts were not calculated from engineering stationing and may not provide a direct correlation between milepost and engineering stationing. "R" represents a revised milepost location based on the incorporation of reroutes into the Proposed Route.

³ Section volumes were calculated using section length directly from engineering stationing.

⁴ Water will be cascaded between test sections, where practical, to minimize test water volume requirements, withdrawals, and potential water hauling. It is expected that the largest volume of water to be released would be associated with the longest test segment within a basin.

⁵ Waterbodies were determined from USGS National Hydrography Dataset water course data(<u>http://nhd.usgs.gov/)</u>. Distances are between the test break/header location to the closest water course regardless of flow characteristics (*i.e.*, perennial, intermittent, or ephemeral); dewatering structures for the test break/header locations will be located a minimum of 150 feet from waterbodies/wetlands.

⁶ Without cascading (not proposed), the maximum test volume for all individual test segments would be 60,701,864 gallons. With the use of cascading, which is proposed, the minimum test water volume to be withdrawn would be 15,928,725 gallons. The actual volume will be within this range and is expected to be at the lower end of the range.

released would be associated with the longest test ardless of flow characteristics (*i.e.*, perennial, intermittent Typical dewatering rates can range from several hundred gallons per minute to several thousand gallons per minute and are dependent on the following, which will be reviewed by the contractor and EI to determine the appropriate dewatering rate prior to construction:

- Length of test section (volume);
- Profile of test section (head);
- Position of dewatering site relative to streams, drainages, roads, housing, cropland;
- Topography (slope);
- Land use (vegetation); and
- Soil type (ability to absorb).

The pipeline test segment(s) will be dewatered once the hydrostatic test has been successfully completed. Dewatering pigs driven by compressed air will be utilized to remove the water. The volumes and rates of dewatering will be determined at the time of construction based on site-specific conditions and released at a rate to prevent scour and erosion (see Section 7.3). Prior to dewatering, water quality will be tested and monitored according to permit conditions to ensure test water meets upland application requirements; however, since the pipe will be internally coated and cleaned prior to filling, the water quality is not expected to differ significantly from the quality of the fill water used. Dewatering to land will follow specific procedures developed to minimize water quality impacts and localized erosion and will comply with hydrostatic test permits and approvals (see Section 7.3). In the unlikely event a testing parameter does not meet the release requirements/limits, Pacific Connector would implement appropriate treatment methods to ensure that the limits are satisfied.

Pacific Connector will implement FERC's Wetland and Waterbody Procedures regarding hydrostatic testing as well as any conditions specified in individual state permits. Pacific Connector will follow FERC's Wetland and Waterbody Procedures (Section VII. C.4.) and will locate all hydrostatic test manifolds/dewatering structures at least 150 feet outside of wetlands and riparian areas to the maximum extent practicable based on engineering test constraints to ensure that water infiltrates into the ground and does not flow into wetlands or waterbodies (see Section 7.3).

5.0 HORIZONTAL DIRECTIONAL DRILL (HDD)/DIRECT PIPE HYDROSTATIC TESTING

Each HDD and Direct Pipe crossing require pre-installation and post-installation hydrostatic testing. Should a leak or break occur, the pipeline would be repaired and retested to ensure the required specifications are achieved. HDD segment testing requires a small volume of water due to the relatively short section of pipe involved.

6.0 TEST FAILURE

As experienced by Pacific Connector on previous pipeline projects and as reported by Kirkwood and Cosham (2000), hydrostatic test failure on new pipeline construction is extremely rare due to modern steel and construction techniques that include better controls, non-destructive testing (e.g., X-Ray or ultrasonic testing), and inspection of the whole pipeline fabrication process. In the unlikely event a failure occurs during hydrostatic testing, water may be released at the point of the failure. The quantity of water released at the point of failure is dependent on the nature and location of the failure; typically a test failure is the result of a small pin hole leak with little water loss. During testing, the contractor's testing engineers and Pacific Connector's inspectors will monitor the testing results for pressure drops. Pacific Connector's Els will monitor the length of the test section if a failure occurs to mitigate potential effects from a water release and will implement appropriate BMPs to minimize erosion or sedimentation into sensitive areas. Extra straw bales, silt fencing, stakes, fabric, and other appropriate erosion control devices will be available during the hydrostatic testing process and will be utilized as necessary to control any released water that may seep to the surface and into a sensitive area. As stated above, the water used for the test will be from surface water or municipal sources, permitted as necessary for appropriations and no additives (other than potentially chlorine, see Section 7.2.4) will be included in the water for the testing. If a discharge to surface waters occurred from a hydrostatic test, the appropriate agency would be notified if required by permit conditions. Should a leak or break occur during the hydrostatic test, the pipeline will be repaired and retested to ensure the required specifications are achieved.

7.0 POTENTIAL EFFECTS AND BEST MANAGEMENT PRACTICES

The measures outlined below are to ensure the protection of aquatic and terrestrial resources at water withdrawal and dewatering locations.

7.1 Schedule

It is projected that pipeline construction would be completed in late summer to early fall of the pipeline construction season which will also minimize potential adverse impacts to terrestrial and aquatic ecosystems. The pipeline must be tested immediately following completion of construction so that any failures could be repaired and retested. Also, the hydrostatic test must be completed prior to introducing natural gas into the pipeline system and putting it in-service. Intentionally delaying hydrostatic testing after construction activities until late fall or winter would result in unnecessarily extending the entire construction duration of the project, extending the length the construction contractor remains on-site, continued right-of-way and access disturbance as well as delaying final cleanup and restoration of the right-of-way. Winter testing would be particularly problematic in that much of the right-of-way would be under snow and in wet/muddy condition.

7.2 Water Withdrawal

Water withdrawal requirements for each identified water source are noted in Table 1 in Section 3.0. The construction contractor will filter all water removed from the source locations to ensure clean "debris free" water is used for the hydrostatic testing of the pipeline. There is a potential for transfer of water-borne aquatic pathogens, forest pathogens, and invasive species between watershed drainages. This section outlines the steps Pacific Connector will follow to prevent the potential inter-drainage transfer of pathogens and invasive species of concern of the federal and state agencies.

7.2.1 Waterbody Source Testing

During development of this Plan, Pacific Connector included commitments to test all nonmunicipal waterbody sources to determine if there is a presence of water-borne aquatic and forest pathogens. The intent of the proposed waterbody testing program was to prevent the potential transfer of these pathogens and invasive species from one watershed to another. However, during a consultation meeting with the federal land-managing agencies and the Center for Lakes and Reservoirs and Aquatic Bioinvasion Research and Policy Institute (Portland State University) on November 19, 2009, it was determined that testing was not a definitive tool to establish the absence of a potential invasive species or forest pathogens in non-municipal source waters. As suggested by Mark Sytsma with Aquatic Bioinvasion Research and Policy Institute, water testing would only confirm the absence of a potential invasive species in the sample aliquot and therefore would not confirm the potential presence of an invasive species within the entire waterbody source. Because of the lack of certainty in sampling and testing results and the impracticality of testing the entire volume of hydrostatic test water that would be required for the project, it was concluded that Pacific Connector should assume that all non-municipal test water sources could contain a potential invasive species and that water treatment methods should be implemented to prevent the potential spread of aquatic invasive species or forest pathogens.

7.2.2 Invasive Species and Pathogens

Below is a list of invasive species and pathogens that are currently of concern that potentially may occur within identified water sources that have been targeted for treatment in nonmunicipal test water sources. Attachment B provides current information on the presence of these species in the project area.

- Scotch broom
- Himalayan blackberry
- Yellow starthistle
- Port-Orford-cedar root disease
- Sudden Oak Death
- Quagga mussel
- Zebra mussel
- New Zealand mud snail
- Brackish water snail
- Whirling disease
- Didymo
- Blue-green algae (Cyanobacteria)
- Chytrid fungus
- Freshwater mold
- Other terrestrial and aquatic non-native, noxious weed fragments and seeds that may be identified at the time of construction
- Other forest and fish pathogens that may be identified at the time of construction.

7.2.3 Bio-Invasive Research

Prior to water withdrawal, Pacific Connector will review United States Geological Survey (USGS) biological research division data, as well as other pertinent presence data sources as referenced in Attachment B, to determine where known locations of invasive species and pathogen infestations exist along the project area and at proposed water source locations. Attachment B provides documentation of the presence of the aquatic invasive species and pathogens in Oregon.

Pacific Connector has evaluated the locations where the potential exists for Port-Orford-cedar root disease based on Oregon Department of Forestry statewide forest health survey data available between 2003 and 2008 (http://www.oregon.gov/ODF/privateforests/fh.shtml). Based on this data, Port-Orford-cedar root disease is most prevalent in the project area between about MPs 1.47R and 50.20. The proposed water source for hydrostatic testing between MPs 1.47R and 50.20 (see Table 1) would come from a treated municipal source (i.e., Coos Bay – North Bend Water Board). Therefore, the risk of spreading Port-Orford-cedar root disease or any other invasive species or pathogens from hydrostatic test dewatering from this source is avoided.

Other potential water sources for hydrostatic testing include Kinnan Lake located in the Middle Fork Coquille watershed which is crossed by the project between MPs 35.81 and 52.91. According to the Oregon Department of Forestry annual survey data between 2003 and 2008, Kinnan Lake is located above Port-Orford-cedar root disease infestations in the Middle Fork Coquille watershed. Ben Irving Reservoir, a potential hydrostatic test water source in the Olalla Creek-Lookingglass Creek Watershed, which is crossed by the project between MPs 52.91 and 62.41, does not have recorded infestations of Port-Orford-cedar root disease nor does any other watershed east of MP 62.41 (based on Oregon Department of Forestry survey data 2003 through 2008). Therefore, the potential for transmission of this pathogen should be low.

As noted in Attachment B, currently there are no quagga or zebra mussels known to occur in Oregon. Although both New Zealand mud snails and brackish water snails are known to occur in the Coos Bay Estuary, hydrostatic test water sources for the project between MPs 1.47R and 50.20 would be from a municipal source and would not occur from the bay, preventing the potential spread or transfer of these invasive species.

Whirling disease is known to occur in the South Umpqua Watershed (Montana Water Center, 2010); however, the potential risk of transferring or spreading this disease is low because the principle vector for the spread of whirling disease is contaminated fish parts, and according to BLM (2009), this disease is typically not spread through water withdrawal activities. The proposed treatment BMPs outlined in Section 7.2.4 are designed to minimize the potential pathways through which this disease is known to spread.

Currently, in Oregon there have been no nuisance blooms of didymo (Draheim, 2009). Bluegreen algae (Cyanobacteria) blooms are commonly found in many freshwater systems across the world and also occur in many lakes, rivers and reservoirs in Oregon. The Oregon Department of Human Services (2009a) monitors harmful algae blooms across Oregon, and Pacific Connector would verify that no health advisories have been posted¹ for a proposed hydrostatic test water source prior to withdrawal to prevent potential transfer of high levels of toxins. To date there have been no health advisories posted for any of the proposed hydrostatic test water sources posted by the Oregon Department of Human Services (2009a).

As noted in Attachment B, both chytrid fungus and freshwater mold (Saprolegnia) likely occur in the project area, but specific locations are not known from the literature Pacific Connector has reviewed. The proposed water treatment BMPs outlined in Section 7.2.4 are intended to minimize the potential spread of these species, if present.

7.2.4 Waterbody Source Best Management Practices

Pacific Connector will implement the following BMPs to avoid the potential spread of the aquatic invasive species and pathogens of concern:

• If determined to be feasible for hydrostatic testing requirements, return all water back to its withdrawal source location after use; however, cascading water from one test section to another to minimize water withdrawal requirements may make it impractical to release water within the same fifth field watershed where the water was withdrawn. Pacific Connector will return or release all water from the same basin from which it was withdrawn (i.e., South Coast, Umpqua, Rogue or Klamath).

¹ http://www.oregon.gov/DHS/ph/hab/advisories.shtml

• Because of the BLM and Forest Service concern regarding the potential for the spread of aquatic invasive species and pathogens, if hydrostatic test water cannot be returned to the same fifth field watershed from where it was withdrawn, Pacific Connector would employ an effective and practical water treatment method described below. The hydrostatic test water would be treated after it is withdrawn and prior to hydrostatic testing.

Pacific Connector researched various water treatment methods to disinfect non-municipal surface water sources that might harbor potential aquatic invasive species and pathogens. The potential treatment methods considered were previously identified and discussed with the land-managing agencies during the development of this Plan and included: various filtrations/screening treatment methods, UV treatment, Acrolein and Chlorine treatment. It was noted during the agency conversations that only chlorine has been approved for use as treatment for disinfection purposes on BLM-managed lands. The Forest Service also noted that a Pesticide Use Proposal would need to be prepared prior to the use of any chemical to treat/disinfect water on NFS lands. A Pesticide Use Proposal form is provided in Appendix 3 of the Integrated Pest Management Plan which is included as Appendix N to the POD.

The use of ultraviolet irradiation (UV) was initially considered as a potential treatment method because it is used extensively in municipal and industrial water treatment applications and is well known to be effective against a wide range of microganisms, including viruses and cysts (Lloyd's Register, 2007). However, it was concluded during the consultation meeting held on November 19, 2009, that because there is limited information available regarding the rate/dose and effectiveness of UV treatment on the various invasive species and pathogens (OSU, 2009; EPA, 1999; and Bettina, et al., 2000) that potential UV treatment methods would not be considered further at this time. UV treatment was not effective on chytrid fungus (Johnson et al., 2003). Currently, UV disinfection treatment technologies are being employed in some marine ballast water treatment applications (Lloyd's Register, 2007). Pacific Connector may consider this treatment technology in the future if additional information is available regarding its effectiveness on the aquatic invasives and pathogens of concern and if it is a cost effective and efficient treatment method.

Pacific Connector also concluded during the consultation meeting held on November 19, 2009, that while Acrolein (Magnacide H Aquatic Herbicide) is a registered aquatic herbicide for the control of invasive aquatic plants in canals, this potential treatment method would be dropped from further consideration because of its extreme toxicity to humans and fish species (Baker Hughes, 2009 and EPA, 2009). Baker Hughes, the manufacturer of Magnacide H Aquatic Herbicide, provides that fish are very sensitive to this herbicide and that fish are killed at concentrations less than those required for aquatic weed control and that as a rule, MAGNACIDE H Herbicide should not be used where fish are considered a resource (Baker Hughes, 2009).

Chlorine, an oxidizing agent, is approved for use in drinking water and is effective in disinfecting a number of aquatic invasive species. Chlorine is one of the most widely used drinking water disinfectants in the world (Oregon Department of Human Services, 2009b). Chlorine guidelines have been established to treat waterborne diseases such as cholera, typhoid, and dysentery. Chlorine also eliminates slime bacteria, molds, and algae that commonly grow in water supply reservoirs, on the walls of water mains, and in storage tanks. To disinfect drinking water, chlorine is applied as either elemental chlorine (chlorine gas) or through the use of chlorinating chemicals such as calcium hypochlorite (tablets or granules) or solutions of sodium hypochlorite (liquid bleach or Clorox[®]) (World Chlorine Council, 2008). On federal lands, Clorox[®] bleach is

registered for Port-Orford-cedar root disease management activities (Forest Service and BLM, 2004). Diluted bleach solutions are used to disinfect equipment, shoes, and boots when working in areas infested with Sudden Oak Death (California Oak Mortality Task Force, 2006) and to treat irrigation water in nurseries that grow *Phytophthora*-susceptible plants (for Port-Orford-cedar root disease and Sudden Oak Death) (OSU, 2009). Because of chlorine's use as a disinfectant for drinking water and vehicles and equipment potentially contaminated with various aquatic invasive and pathogens (see Attachment B), it was determined during the November 19, 2009 consultation meeting that chlorine treatment should be considered as a practical water treatment method for all non-municipal surface water sources that would be utilized for hydrostatic testing purposes.

Best Management Practices to Treat Non-Municipal Surface Water Sources Used for Hydrostatic Testing

Pacific Connector would implement a three-step BMP treatment process to prevent the potential spread of invasive species and forest pathogens from non-municipal surface water sources used during hydrostatic testing. The hydrostatic test water treatment process would incorporate screening/filtration during water withdrawal, chlorine treatment, and upland dewatering at least 150 feet from sensitive wetlands (i.e., non-agricultural wetlands) or waterbodies, where feasible, with no dewatering to these features. Further, all hydrostatic dewatering locations would be monitored after construction to ensure noxious weeds have not established. Any weed populations would be treated as described in the Integrated Pest Management Plan (see Appendix N to the POD). This hydrostatic test water treatment process has been developed based on the invasive species and pathogens of concern and the management information available for their control (see Attachment B). A summary of and rationale for the proposed treatment process is described below:

Screening/filtering. Hydrostatic test water withdrawal from non-municipal surface water sources would be screened during the initial intake process. The screening/filtration process would meet NOAA² and ODFW³ criteria to prevent the entrainment of small fish. These screening requirements would prevent the potential transfer of the noted noxious weeds of concern listed in Section 7.2.2 and Attachment B as the maximum screen mesh size (i.e., 2.38 mm) required by NOAA and ODFW is smaller than the smallest seed size documented for these weeds in Attachment B (i.e., 1/8 inch or about 3mm for seeds of yellow starthistle). Therefore, the screening/filtering requirements should prevent the potential transfer of noxious weed seeds and other weed propagules (i.e., rhizomes, roots, stems) from hydrostatic test dewatering.

There are other types of industrial screening technologies that exceed ODFW and NOAA fish screening criteria that Pacific Connector would also employ to further remove solids and organics from non-municipal surface water sources. These types of filters include media or sand filters, bag filters⁴, or various types of cartridge or screen filters⁵. These filters can remove solids and organic materials from water significantly smaller than 1 millimeter in size with some types having a submicron filter rating or capacity. However, smaller filtering capacities (i.e., < 100-200 µm) may not be practical because

² http://www.nwr.noaa.gov/Salmon-Hydropower/FERC/upload/Fish_Passage_Design.pdf

³ http://www.dfw.state.or.us/fish/screening/docs/pumpcert.pdf

⁴ http://www.rainforrent.com/products/filters.htm

⁵ http://www.rainforrent.com/products/filters.htm

of required hydrostatic testing pumping requirements. Depending on the filter technology selected, any potential disposal, cleaning, or backwashing of the filters would be conducted in a manner to prevent contamination of surface waters. Further, any necessary disposal of filtered materials or medium would occur to an approved disposal area or landfill.

Although currently there are no known infestations of quagga or zebra mussels in Oregon, micro filtration has been shown to be effective in preventing the potential spread of these mussels, as well as New Zealand mud snails downstream of research facilities (Cope, et al. 2002) or into hatcheries (Oplinger et al. 2009).

The principle vector for the spread of whirling disease is contaminated fish parts, and according to BLM (2009), this disease is typically not spread through water withdrawal activities. Although spores may reside in organics and mud (BLM, 2009), as noted in Section 3.0, when pumping water from a source location, the pump head will be submerged and maintained on average at the center of the water column so as to prevent sucking in organic materials, sediments and/or algae lying on the surface or in sediments resting on the bed of the waterbody. Therefore, Pacific Connector's proposed screening procedures should prevent the potential transfer of this disease.

2. <u>Chlorine Treatment.</u> As shown in Attachment B, chlorine disinfection is effective for most aquatic invasive species and forest pathogens of concern. However, most of the disinfection guidelines in the literature are for preventative treatments used on equipment, boats, boots/waders, etc. that may be infected from working or recreating in waters; they are not developed for treating entire waterbody sources. According to Oregon State University (2009), chlorine injection (Sodium hypochlorite) at a maximum concentration of 2 ppm for a contact time of at least 10 minutes is used to treat irrigation water in nurseries to kill *Phytophthora* (Port-Orford-cedar root disease and Sudden Oak Death).

For treating potentially contaminated materials and equipment, chlorine treatments as low as 0.5 ppm have also been shown to be an effective control on *Dreissenia* spp. mussels (quagga and zebra mussels) (Utah Division of Wildlife Resources, 2009; Brooks, 1993). Although higher concentrations of chlorine (i.e., 1 percent solutions) are recommended for disinfecting equipment or flushing tanks to prevent the potential spread of whirling disease, a type of zooplankton (BLM, 2009), ballast water research indicates most zooplankton are killed with filtration and chlorine treatments of 0.5 ppm (USGS, 2006). Chlorine treatments of 0.5 ppm and above have been shown to be effective in destructing cyclic peptides (toxin) of cyanobacteria, a blue-green algae (Hoeger, et. al., 2002). According to the World Health Organization (1999), chlorine is used mainly for control of algae in water treatment works but is also known to have been employed in reservoir situations. The effective dose rates are dependent on the chlorine demand of the water, but most algae are reported to be controlled by residuals of free chlorine between 0.25 and 2.0 mg/L.

Using bleach to disinfect field equipment of chytrid fungus requires a minimum exposure of 10 minutes using a concentration of 0.4 percent sodium hypochlorite (Johnson, et al, 2003). Chlorine treatment is expected to be effective on Saprolegnia, a freshwater mold, known primarily to be problematic in fish hatcheries. Oregon Department of Human Services (2009b) requires chlorinated water systems to provide a minimum free chlorine residual of 0.2 mg/L with a detention time of 30 minutes before reaching the first point of use.

Proposed Treatment Dose. Based on the various chlorine treatments methods for the various aquatic invasive species and pathogens that potentially may occur within identified water sources, Pacific Connector proposes to use a treatment of 2 ppm or 2 mg/L of free chlorine residual with a detention time of 30 minutes to treat all nonmunicipal surface waters that would be used as a water source for hydrostatic testing purposes. Higher chlorine treatment concentrations (i.e., 1 percent solutions), such as those suggested to treat potential contaminated equipment for whirling disease (zooplankton), are not proposed because, as noted by the BLM (2009), the principle vector for the spread of whirling disease is contaminated fish parts, not water withdrawal activities. Further, as noted by the USGS (2006), filtration and 0.5 ppm chlorine is shown to be effective in killing most zooplankton in ballast water research. The higher chlorine concentrations recommended to decontaminate equipment for didymo (1 minute of 2 percent bleach) are also not proposed because currently there are no nuisance blooms reported in Oregon (Draheim, 2009) and all dewatering of hydrostatic test water would occur to an upland area at least 150 feet from sensitive wetlands (i.e., nonagricultural wetlands) and waterbodies, where feasible, with no discharge to features.

3. <u>Upland Dewatering.</u> During the hydrostatic testing process, all hydrostatic test water will be released to an upland area through a dewatering device such as a straw bale structure or sediment bag, in a manner to promote inflation. All dewatering devices will be at least 150 feet from sensitive wetlands (i.e., non-agricultural wetlands) and waterbodies, where feasible, and dewatering will not occur to these features, as described in Section 7.3 below. The hydrostatic test dewatering BMPs are important measures to prevent the potential spread of aquatic invasives. As noted in Section 7.3 below, chlorinated water would be released according to the Oregon Department of Environmental Quality criteria to prevent water quality impacts, potential effects to aquatic species, and to minimize potential impacts to sensitive areas . Additionally, as described in Section 8.0 below, all dewatering locations will be monitored after construction for potential noxious weed establishment and treated if necessary.

After hydrostatic test water withdrawal, all equipment used in the withdrawal process would be cleaned and sanitized to prevent the potential spread of aquatic invasives and pathogens from the use of this equipment in other waterbody sources. Attachment C provides equipment cleaning and sanitization procedures.

These hydrostatic test water treatment BMPs are intended to ensure the prevention of invasive species and pathogen transfer between watershed drainages. The final design of the treatment BMPs will be completed once Pacific Connector has finalized the design of the pipeline and prepared the preliminary hydrostatic test plan and has selected the construction contractors for the project. Prior to implementing the final BMP treatment design, Pacific Connector would notify and receive appropriate approvals from federal land-managing agencies and state agencies.

7.2.5 Temperature and Flow Effects

Based on data from the USGS National Water Information System, anticipated average flow rate of the Rogue River near the proposed crossing location (near Dodge Bridge) is 1330 cubic feet per second (cfs). Anticipated withdrawal volumes from the Rogue for hydrostatic testing will

be approximately 800 gallons per minute (gpm) (1.78 cfs) which will have an immeasurable impact on the flow rate and temperature of the crossing at the time (average daily temperatures ranges from 68-71.6 degrees Farenheight).

Based on the estimated size of Fish Lake (483 acres of surface area and average depth ranging from 18 - 31 feet), the proposed withdrawal of approximately 8.7 acre-feet will have an immeasurable effect on lake levels and temperatures.

The one-time withdrawal of approximately 17.1 acre-feet of water from the Lake of the Woods for hydrostatic testing will likely occur in the late summer/early fall. Based on the estimated size of Lake of the Woods of just less than 1,200 acres of surface area and average depth of 27 feet, this withdrawal will have an immeasurable effect on lake levels and temperature.

Considering that water is essentially a non-compressible material, temperature increases from pressurization during hydrostatic testing is negligible. During the hydrostatic testing phase of the project, the pipeline will already be buried and is therefore not exposed to potential solar heating, except for a small area (approximately 200 feet) at either end of the test segment where the hydrostatic test headers are located. Therefore, the test water is at ground temperature and the potential to increase water temperatures during hydrostatic testing is inconsequential.

Where water source locations are proposed to be withdrawn from waterbodies, Pacific Connector's Environmental Inspectors (Els) will monitor the streamflows prior to withdrawal to ensure that aquatic biota within the streams are not adversely affected.

7.3 Dewatering – Land Application

Hydrostatic test water will be released at a rate to prevent scour, erosion, and sediment migration to sensitive resources such as wetlands and waterbodies. The test water will be released into a dewatering device such as a straw bale structure or sediment bag to minimize possible peak flow effects by dissipating the energy of the test water flow, filter the test water to avoid sedimentation, and by allowing release of the test water as sheet flow onto the ground (see Attachment A - Drawing 3430.34-X-0012 (Sheets 1-3) and Drawing 3430.34-X-0013 (Sheets 1 of 3 and 3 of 3)). The dewatering will occur to an appropriately sized dewatering structure based on the expected quantity of water. Hydrostatic test water will be released in upland areas through a dewatering structure prior to entering the ground at least 150 feet from sensitive wetlands (i.e., non-agricultural wetlands) and waterbodies, where feasible. The hydrostatic test water will not be allowed to discharge to wetlands or waterbodies.

The hydrostatic test dewatering will be conducted utilizing dewatering structures that dissipate the velocity of the release and filter out any potentially-present dirt, grit or oxidation that would be present collectively as total suspended solids (see Attachment A). All bales used to construct straw bale structures will be certified weed free. On federally managed lands, straw bales are required to consist of an annual variety of straw such as annual wheat, rye, or rice straw. The dewatering structures will be placed in upland locations that are topographically appropriate to allow the flow to "pool" and dewater uniformly through the structure to promote infiltration of the water. The water is not released at any appreciable pressure regardless of site location as the test pressure is bled off prior to dewatering the test segment. Flow rates to the dewatering structure can be controlled using the dewatering valve to ensure flows do not exceed the carrying capacity of the structure(s). Additionally, dewatering rates/volumes can be controlled by releasing the water into a central tank and then pumping the water to multiple

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dewatering structures concurrently or successively (one then the other) to promote infiltration, minimize overland flow, and to prevent overland flow to waterbodies (see Attachment A - Drawing 3430.34-X-0012 (Sheets 1-3) and Drawing 3430.34-X-0013 (Sheets 1 of 3 and 3 of 3)). Pacific Connector's Els will be responsible for monitoring dewatering activities (rate and quantity) and making appropriate adjustments to facilitate proper infiltration through the dewatering structures to stay in compliance with permit conditions. Pacific Connector's Els will also monitor the structures to prevent any potential failures or "break outs" from occurring to the structure during dewatering activities by adding additional straw bales, fabric, or stakes as needed. The success rate of straw bale structures is solely dependent on the construction, inspection, monitoring, and maintenance of each structure. Pacific Connector's Els will ensure all structures meet the performance standard of 100%.

If chlorinated municipal water or non-municipal treated water (see Section 7.2.3 above) is used, dewatering will be treated, if necessary, according to Oregon Department of Environmental Quality criteria to prevent water quality impacts, potential effects to aquatic species, and to minimize potential impacts to sensitive areas . It is not expected that contamination of the hydrostatic test water with oil and grease will occur during hydrostatic testing because the test will be conducted on a new pipeline system constructed with new pipe. Pacific Connector's Els will also ensure that all threaded valves and fittings that may be used on the hydrostatic test headers are cleaned of potential incidental oil and grease before the hydrostatic operations are conducted to minimize the potential for oil and grease contact from these potential incidental sources. Straw bales have been effective in removing oil and grease from test water (Tallon et al., 1992).

In addition, the EIs will ensure that turbid water is not discharged to waters of the state. If an inadvertent discharge to a surface water occurs, the dewatering operations would be immediately halted and modified to ensure that the discharge to surface water is stopped and/or minimized and water quality standards are not exceeded.

Permission to release the hydrostatic test water through land application will be applied for through ODEQ.

8.0 MONITORING

After project construction, Pacific Connector's operations personnel will be responsible for inspecting the right-of-way for a period of three to five years in areas where noxious weeds were identified prior to construction and were previously mapped to ensure that potential infestations do not reestablish and spread. Monitoring will also occur in areas along the right-of-way where equipment cleaning stations and hydrostatic dewatering sites were located to ensure that infestations at these locations do not occur. If necessary, Pacific Connector will contract with local weed control boards, qualified biologists, or agronomists to conduct these operations. All areas of the right-of-way will be monitored by Pacific Connector's staff over the operational life of the pipeline. Pacific Connector will fulfill easement obligations with all landowners crossed by the project during the life of the project including weed control. As stated in Section 3.0 in the Integrated Pest Management Plan (Appendix N to the POD), herbicides may be used to control weeds, if necessary, based on integrated weed management principles and landowner requirements.

9.0 **REFERENCES**

Baker Hughes. 2009. 2009 Weed Specificity. On Line at: http://www.bakerhughesdirect.com/cgi/bpc/resources/ExternalFileHandler.jsp?bookmarkable=Ye s&channelId=-4206911&programId=6587510&path=private/BPC/public/agriculture/aquatic.html.

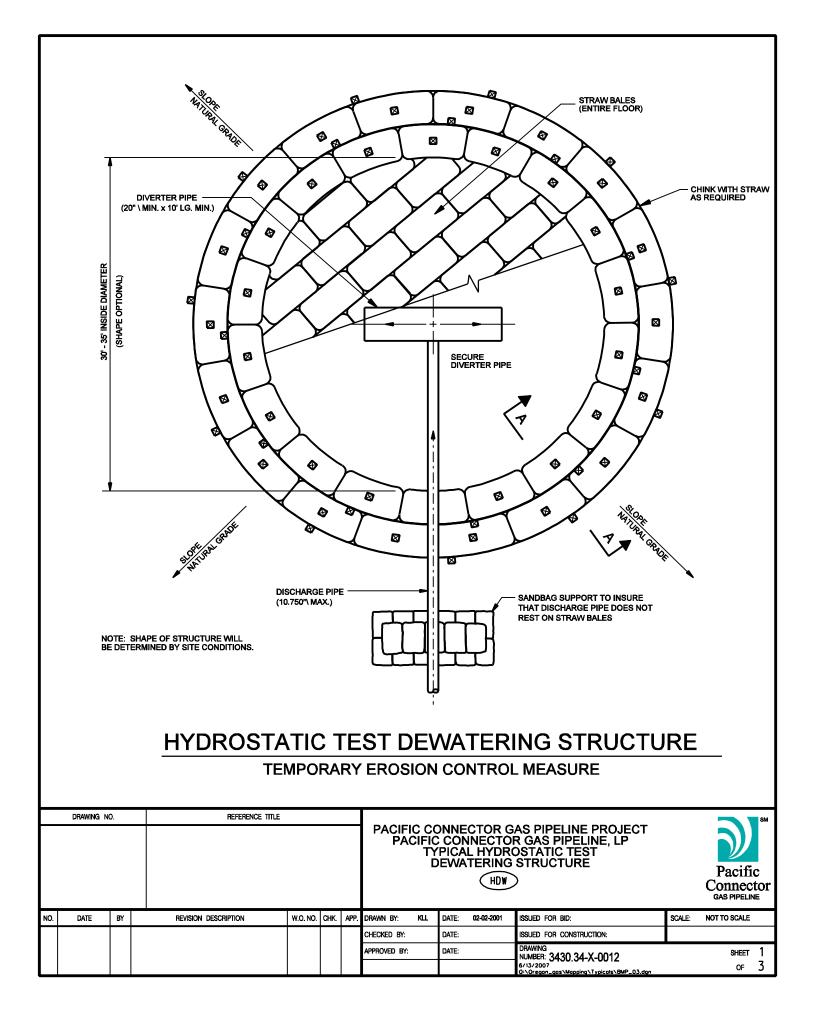
- Bettina C. Hitzfeld, Stefan J. Hoger, and Daniel R. Dietrich. 2000. Cyanobacterial Toxins: Removal during Drinking Water Treatment, and Human Risk Assessment. Environmental Health Perspectives. Vol 108, supplement 1. March: 113-122.
- Brooks, E. Gary. 1993. Treatment of fresh water for zebra mussel infestation. United States Patent 5,256,310. Oct 26.
- Bureau of Land Management (BLM). 2009. Interagency Guidance. Preventing Spread of Aquatic Invasive Organisms Common to the Southwest Region. Technical Guidelines for Fire Operations. Bureau of Land Management, National Park Service, U.S. Fish and Wildlife Service, U.S. Forest Service, Arizona Game and Fish Department, and New Mexico Department of Game and Fish.
- California Oak Mortality Task Force. 2006. Sudden Oak Death Guidelines for Forestry. Online at www.suddenoakdeath.org.
- Cope, W.G., T.J. Newton, and C.M. Gatenby. 2002. Evaluation of Techniques to Prevent Introduction of Zebra Mussels (Dreissena Polymorpha) During Native Mussel (Unionoidea) Conservation Activities. A Contract Completion to U.S Fish and Wildlife Service. Denver, CO. September.
- Draheim, C. Robyn. 2009. Pest Risk Assessment for Rock Snot (Didymo) in Oregon. Center for Lakes and Reservoirs. Portland State University. Portland, OR. January.
- Environmental Protection Agency (EPA). 1999. Wastewater Technology Fact Sheet. Ultraviolet Disinfection. EPA 932-F-99-064. Washington D.C. September.
- Environmental Protection Agency (EPA). 2009. National Recommendation Final Water Quality Criteria for Acrolein. Federal Register. Vol. No. 174. Thursday. Sept. 10, 2009.Notice
- Hoeger, Stefan J., Dainel R. Dietrich, and Bettina C. Hitzeld. 2002. Effect of Ozonation on the Removal of Cyanobacterial Toxins during Drinking Water Treatment. Environmental Health Perspectives. Vol. No. 11. November.
- Johnson, M.L., L. Berger, L. Philips., and R. Speare. 2003. Fungicidal Effects of Chemical Disinfectants, UV Light, Desiccation and Heat on the Amphibian Chytrid Batrachochytrium dendrobatidis. Diseases of Aquatic Organisms 57:255-260.
- Kirkwood M and A. Cosham. 2000. Can the Pre-service Hydrotest be Eliminated. Pipes & Pipelines International Vol. 45, No, 4 July-August.
- Lloyd's Register. 2007. Ballast Water Treatment Technology Current Status. June 2007. Houston.
- Montana Water Center, 2010. On Line at: http://whirlingdisease.montana.edu/about/map.htm.

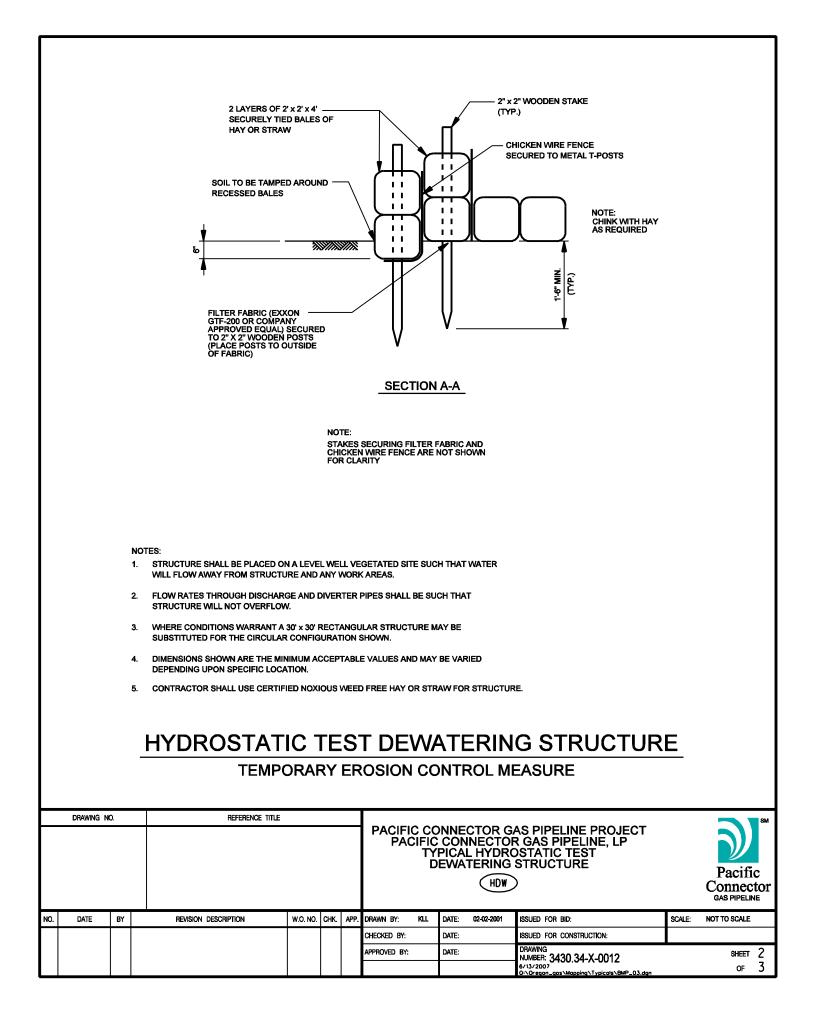
- Oplinger W. R., P. Brown and E. J. Wagner. 2009. Effect of Sodium Chloride, Tricaine Methanesulfonate, and Light on New Zealand Mud Snail Behavior, Survival of Snails Defecated from Rainbow Trout, and Effects of Epsom Salt on Snail Elimination Rate. North American Journal of Aquaculture 71:157-164.
- Oregon State University (OSU). 2009. Phytophthora Online Course: Training for Nursery Growers. http://oregonstate.edu/instruct/dce/phytophthora/module2-3d.html
- Oregon Department of Human Services. 2009a. Harmful Algae Blooms Surveillance. On line at: http://www.oregon.gov/DHS/ph/hab/index.shtml
- Oregon Department of Human Services. 2009b. Basics for Small Water Systems in Oregon. On line at: http://oregon.gov/DHS/ph/dwp/docs/BasicsForSmallPWS.pdf.
- Tallon, J.T., F.J Myerski, G.E. Mesing, J.P. Fillo. 1992. Characterization of Discharge Waters from Natural Gas Pipeline Hydrostatic Testing Operations-Volume 3. Topical Report Gas Research Institute, Environment and Safety Research Department, Chicago, IL.
- U.S. Department of Agriculture, Forest Service (Forest Service) and U.S. Department of Interior, Bureau of Land Management (BLM). 2004. Final Supplemental Environmental Impact Statement. Management of Port-Ordford-Cedar in Southwest Oregon. *Coos Bay, Medford, and Roseburg Bureau of Land Management Districts and the Siskiyou National Forest in Southwest Oregon.*
- U.S. Geological Survey (USGS). 2006. Ballast Water Research at the WFRC. U.S Department of the Interior, USGS FS 2006-3080. May 3. 2006.
- Utah Division of Wildlife Resources. 2009. Utah Aquatic Invasive Species Management Plan. Utah Aquatic Invasive Species Task Force. Publication No. 08-34. January.
- World Chlorine Council. 2008. Drinking Water Chlorination position paper. http://www.worldchlorine.org/publications/pdf/WCC_Policy_Paper_Water_Chlorination.p df.
- World Health Organization (WHO). 1999. Toxic Cyanobacteria in Water: A guide to their public health consequences, monitoring and management. Chapter 8. Preventative Measures. Edited by Ingrid Chorus and Jamie Bartram.

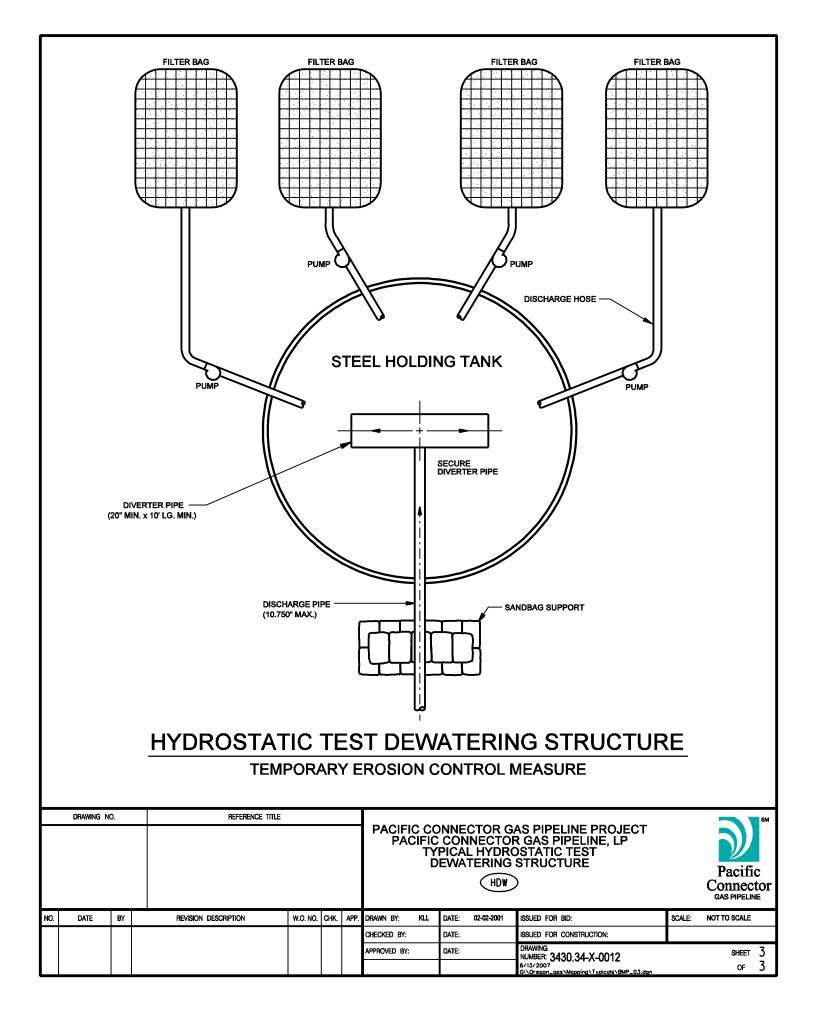
Attachment A

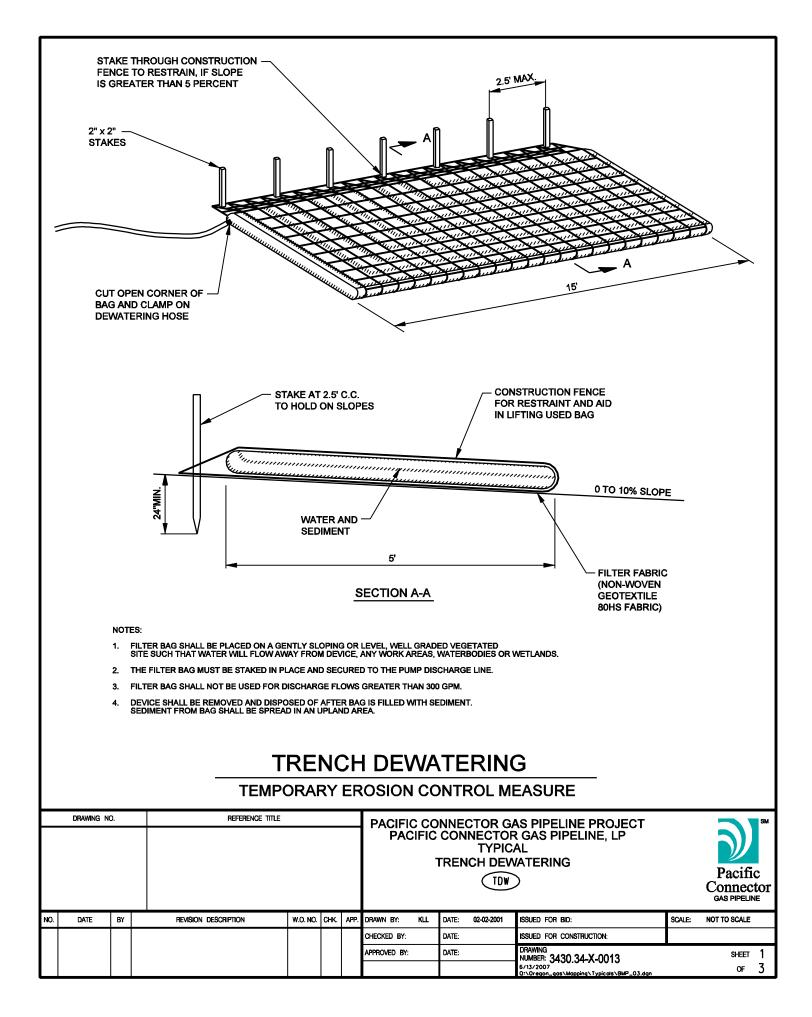
Hydrostatic Test Dewatering Structure Typicals

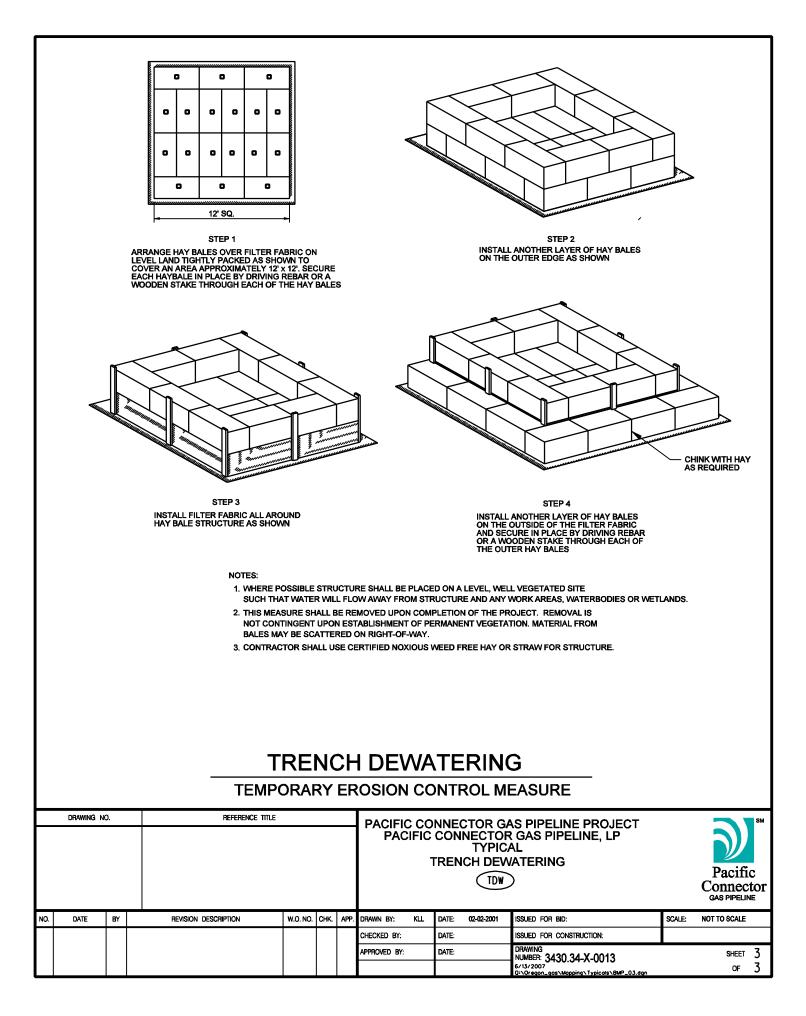
Drawing 3430.34-X-0012 (Sheets 1-3) and Drawing 3430.34-X-0013 (Sheets 1 of 3 and 3 of 3)











Attachment B

Potential Treatment Matrix

Pacific Connector Gas Pipeline Project

				hment B ent Matrix
			i i catin	Effectiveness of Potential Treatment Met
Invasive Species (<i>Scientific Name</i>)	Occurrence in the Project Area	Individual Size	Filter Intake (NOAA/ODFW Criteria) with Discharge to Upland Straw Bale Structure for Infiltration. Implement Integrated Pest Management BMPs	Chlorine Treatment
Weeds			r	Ι
Scotch broom (<i>Cytisus scoparius</i>)	Yes-Coos, Douglas & Jackson counties (PCGP, 2009 & ODA)	Plant produces a 2-5 cm long pea- pod-like fruit (Peterson and Prasad 1998). Seed size 5 mm diameter (Myers, J.H, and D. Bazely, 2003),	Yes	No data
Himalayan blackberry (<i>Rubus discolor</i>)	Yes- All Project counties (PCGP, 2009 & ODA)	Fruit: up to 0.8 in (2 cm) long, with large succulent drupelets (California Invasive Plant Council)	Yes	No data
Yellow starthistle (<i>Centaurea solstitialis</i>)	Yes- All Project counties (PCGP, 2009 & ODA)	Seeds 1/8 inch long; Fruits 2-4 mm long (California Invasive Plant Council)	Yes	No data
Forest Pathogens		· · · ·		·
Port Orford cedar root disease (<i>Phytophthora lateralis</i>)	Yes – Coos County; three locations in Douglas County distant from project area & outside crossed watersheds (PCGP, 2009 & ODF)	Zoospores form cysts, 10–12 μm diameter which germinate to produce hyphae; resting spores 50 μm diameter (CAB International, 1998). (note: 1 μm = 1 x 10-6 m)	No	Yes Treatments for cleaning equipment/potentially contaminated n Ultra Institutional (1 gallon of Clorox® to each 1,000 gallons 2003) Chlorine injection to treat irrigation water to kill <i>Phytophth</i> hypochlorite is injected, at a maximum concentration of 2 ppm, of at least 10 minutes (Oregon State University, 2009). In registration rate for the treatment of drafted water with Ultra C Phytophthora is 1 gallon infestation of Ultra Clorox Bleach per water (California Oak Mortality Task Force, 200
Sudden Oak Death (<i>Phytophthora ramorum</i>)	Outside project area - nine sites totaling less than 40 acres in Curry County (USDA, 2010 & California Oak Mortality Task Force, 2006)	Sporangia are oval-shaped, 30-90 µm (Global Invasive Species Database, 2009)	No	Yes Chlorine injection to treat irrigation water to kill <i>Phytophth</i> hypochlorite is injected, at a maximum concentration of 2 ppm, of at least 10 minutes (Oregon State University, 2 In California, the treatment of drafted water with Ultra Clorox recommended water treatment for <i>P. lateralis</i> , which causes F Root Disease. The registration rate is 1 gallon of Ultra Clorox F gallons of water (California Oak Mortality Task Force
Aquatic Invasives		•		
Mollusks				Τ
Quagga Mussels (Dreissena rostriformis bugensis)	None in OR (USGS, 2009)	Microscopic to about two inches long (U.S. Fish & Wildlife Service, 2007). Dreissena mussel larvae (planktonic veligers) are approximately 40µm in length for one to two weeks. Within two to five weeks, the larvae become too large (200 µm) and heavy to freely swim and settle out of the water column (Nichols and Black, 1994).	Yes – (i.e., upland discharge, no direct discharge to waterbodies). Current Risk = low	Yes Treatment to disinfect contaminated equipment with a bleac between 0.5 mg/L to 250 mg/L (Cope et al., 2003 & Utah Div Resources, 2009) and 3 oz of bleach to 5 gallons of water for 1hr (U.S. Fish & Wildli

ethods	
	Secondary Filtration: Media, Bag or Cartridge (filter limits to 100 μm- required pumping rate will limit filter size).
	Yes
	Yes
	Yes
materials: Clorox® s of water) (BLM, thora. Sodium n, for a contact time n California, the Clorox in areas of er 10,000 gallons of 006). thora. Sodium n, for a contact time 2009). ox is similar to the s Port-Orford Cedar c Bleach per 10,000 ce, 2006)	Sand filtration is suggested to use with other treatments but typical nursery irrigation pumping rates/volumes limit use (i.e., 250-300 GPM per acre) (Oregon State University, 2009). Sand filtration is effective at reducing chlorine demand by removing organics from source waters, which improves treatment. Sand filtration is suggested to use with other treatments but typical nursery irrigation pumping rates/volumes limit use (i.e., 250-300 GPM per acre) (Oregon State University, 2009). Sand filtration is effective at reducing chlorine demand by removing organics from source waters, which improves treatment.
ach rinse ranging Division of Wildlife Ilife Service, 2007)	No data but expected to be similar to effectiveness for zebra mussels

				20 O	
acific Connector Gas Pipeline Projec	ot			18	Hydrostatic Test Pl
				Effectiveness 👸 Potential Treatment Methods	
Invasive Species (Scientific Name)	Occurrence in the Project Area	Individual Size	Filter Intake (NOAA/ODFW Criteria) with Discharge to Upland Straw Bale Structure for Infiltration. Implement Integrated Pest Management BMPs	-5100 FERC PDF Chierine Treatment	Secondary Filtration: Media, Bag or Cartridge (filter limits to 100 µm- required pumping rate will limit filter size).
				р O	Yes - Containment procedures
Zebra Mussels (<i>Dreissena polymorpha)</i>	None in OR (USGS, 2009)	Microscopic to about two inches long. Dreissena mussel larvae (planktonic veligers) are approximately 40µm in length for one to two weeks. Within two to five weeks the larvae become too large (200 µm) and heavy to freely swim and settle out of the water column (Nichols and Black, 1994).	Yes (i.e., upland discharge, no direct discharge to waterbodies)	Treatment rates to prevent foulting of water intakes was 0.5 ppm for 24 hours (Brooks, 1993) Treatment to disinfect contaminated equipment with a bleach rinse ranging between 0.5 mg/L to 250 mg/L 3 oz of bleach to 5 gallons of water for 1hr (Cope et al., 2003; U.S. Fish & Wildlife Service, 2007; Cope, et al. 2002 & Utah Division of Wildlife Resources, 2009)	commonly used at facilities conducting zebra mussel research have included filtration or disinfectant treatments to remove or kill potential zebra mussels before water is discharged. Filtration of outflow water through small mesh bags (100 µm or smaller), chlorine treatment tanks and sand filters (Cope, et al., 2002)
New Zealand mud snails (<i>Potamopyrgus antipodarum)</i>	Yes –Coos Bay Estuary & Lower Coos River (USGS, 2009 & Montana State University, 2009)	Sexually mature females (3-6 months old); size from 3 mm long in western Montana & Idaho; average length 4-5 mm in western US, maximum 11 mm in New Zealand. Embryos born live with 3 mm shell length (US Army Corps of Engineers)	Yes (i.e., upland discharge, no direct discharge to waterbodies) No hydrostatic test water will be acquired from the Coos Bay Estuary or Lower Coos River. Municipal water is proposed for use in Coos County.	Not Effective (BLM, 2009) Ely (2009) indicated that chlorine bleach solutions were not effective on adult snails and provided a recommendation of 1 tablespoon bleach /gallon water (i.e., 0.5 oz/gallon) for cleaning equipment for zebra and quagga mussels as a minimum.	Yes - According to Oplinger et al (2009), filtration of incoming water to a hatchery is a controlling option for New Zealand mud snails. Hydrocyclones have been successfully used to remove drifting New Zealand mud snails from hatchery inflow and noted that media filters (e.g., sand) and membrane filters could also be used.
Brackish water snail (Assiminea parasitologica)	Yes – Including Coos Bay Estuary (USGS, 2009 & Carlton, J., 2008)	Mature snails up to 4-6 mm (Carlton, J., 2008).	Yes (i.e., upland discharge, no direct discharge to waterbodies)	No data, but assumed to be effective based on results with Quagga and Zebra mussels.	No data but expected to be similar to effectiveness for zebra mussels
Zooplankton			· · ·		
(Whirling Disease - <i>Myxobolus cerebralis</i>)	Present in Oregon and in South Umpqua HUC (Montana Water Center, 2010)	Microscopic myxozoan; myxospores produced in salmonids are 7-10 μm long; infectious triactinomyxon spores are 150 μm long with three tails each 200 μm long (US Army Corps of Engineers)	Yes (i.e., upland discharge, no direct discharge to waterbodies)	Yes The principle vector for spread of whirling disease is contaminated fish parts; it is not typically spread through fire water withdrawal activities. Avoiding and removing organics (the spores reside in mud), power washing, and flushing will greatly reduce or eliminate spores on external gear surfaces. 10 minutes with 1 percent bleach (e.g., Clorox – 6 percent sodium hypochlorite (NaCIO)) is recommended for washing equipment or flushing tanks (BLM, 2009). Whirling disease and New Zealand mud snails are the most difficult organisms to kill. Treatment for these species will be effective for all other species as well. Ballast water research results from experiments with filtration and chlorine are most promising: 0.5 ppm chlorine with filtration killed most of the zooplankton (USGS, 2006)	Expected to be effective since, as noted by (BLM, 2009), the principle vector for spread of whirling disease is contaminated fish parts.

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				Effectiveness of Potential Treatment Methods	
Invasive Species (<i>Scientific Name</i>) Algae	Occurrence in the Project Area	Individual Size	Filter Intake (NOAA/ODFW Criteria) with Discharge to Upland Straw Bale Structure for Infiltration. Implement Integrated Pest Management BMPs	-5100 FERC PDF Chlorige Treatment	Secondary Filtration: Media, Bag or Cartridge (filter limits to 100 μm- required pumping rate will limit filter size).
Didymo	No nuisance blooms	Cell ≈70 µm (Spaulding and Elwell,	Yes (i.e., upland discharge, no direct	뉴 Yes Decontaminate equipment for 1 min넗te in 2 percent bleach solution (BLM, 2009	
(Didymosphenia geminate)	in Oregon reported (Draheim, 2009)	2007)	discharge to waterbodies)	& Spaulding and Elwell, 2007). Also indicated that the treatment for whirling disease may apply to this species (BLM, 2009)	No data
Cyanobacteria - blue-green algae	Yes – Cyanobacteria are commonly found in many freshwater systems across the world and blooms occur in many lakes, rivers, and reservoirs across Oregon. No health advisories have been posted for any of the proposed test water sources. (Oregon Department of Human Services, 2009a).	Anabaena spp. akinetes cells 6-13 microns (μm) diameter, 20-50 μm long; heterocysts are 7-9 μm diameter, 6-10 μm long, for example (Washington State Department of Health, 2009)	Yes (i.e., upland discharge, no direct discharge to waterbodies) Pacific Connector would also review Oregon Department of Human Services, 2009a health advisories to ensure harmful algae bloom have not been posted for proposed water sources.	To be effective, a residual of ≥ 0.5 Cl ₂ mg/l with at least a 30-minute contact time is required to destruct cyanobacteria cyclic peptides (toxin) (Hoeger, et. al., 2002). Chlorine is used mainly for control of algae in water treatment works but is also known to have been employed in reservoir situations. The effective dose rates are dependent on the chlorine demaid of the water, but most algae are reported to be controlled by free chlorine residual rates between 0.25 and 2.0 mg/L (WHO, 1999).	Not effective (Bettina, et al., 2000)
Fungi/Mold	20000).				
Chytrid fungus (Batrachochytrium dendrobatidis)	Yes (Pearl et. al., 2009)	Disease-causing zoospores are 3- 5 μm with a single flagellum 19-20 μm long; zoosporangian ~30 μm across (Johnson and Speare, 2003)	Yes (i.e., upland discharge, no direct discharge to waterbodies)	Yes Bleach, was rapidly effective for disinfecting equipment at concentrations of 1 percent sodium hypochlorite and above. At 0.4 percent, it required a minimum exposure time of 10 minutes to kill Chytrid fungus. (Johnson et al., 2003) Spraying down equipment with 409 cleaner and then letting it dry in the sun also effectively kills the spores (Utah Division of Wildlife Resources, 2009)	No data
Water Mold (<i>Saprolegnia</i>)	Likely (Kiesecker, et al., 2001) Aquatic fungi (Saprolegniales) are ubiquitous in natural waters supplies of fish hatcheries (Schreck et al., 1993)	5 – 100 (µm) Spores, Oospore Mycellum and Zoosporangia (Mayer Kent, 2000)	Yes (i.e., upland discharge, no direct discharge to waterbodies)	Yes Chlorine guidelines have been established to treat waterborne diseases such as cholera, typhoid, and dysentery. Chlorine also eliminates slime bacteria, molds, and algae that commonly grow in water supply reservoirs, on the walls of water mains, and in storage tanks (World Chlorine Council, 2008). Oregon Department of Human Services (2009) requires chlorinated water systems to administer a minimum free chlorine residual of 0.2 mg/L with a detention time of 30 minutes before reaching the first point of use in the system (Oregon Department of Human Services. 2009b)	No data

References

Baker Hughes. (2009) Weed Specificity. On Line at:

http://www.bakerhughesdirect.com/cgi/bpc/resources/ExternalFileHandler.jsp?bookmark able=Yes&channelId=-4206911&programId=6587510&path=private/BPC/public/agriculture/aguatic.html

- Bettina C. Hitzfeld, Stefan J. Hoger, and Daniel R. Dietrich. 2000. Cyanobacterial Toxins: Removal during Drinking Water Treatment, and Human Risk Assessment. Environmental Health Perspectives. Vol 108, supplement 1. March:113-122
- Brooks, E. Gary. 1993. Treatment of fresh water for zebra mussel infestation. United States Patent 5,256,310. Oct 26.
- Buckley, Y.M. et al. 2003. Are Invasives Bigger? A Global Stucy of Seed Size Variaion in Two Invasive Shrubs. Ecology 84: 1434-1440.
- Bureau of Land Management (BLM). 2003. A Range-wide Assessment of Port-Orford-Cedar (*Chamaecyparis lawsoniana*) on Federal Lands. October.
- Bureau of Land Management. 2009. Interagency Guidance. Preventing Spread of Aquatic Invasive Organisms Common to the Southwest Region. Technical Guidelines for Fire Operations. Bureau of Land Management, National Park Service, U.S. Fish and Wildlife Service, U.S. Forest Service, Arizona Game and Fish Department, and New Mexico Department of Game and Fish
- CAB International. 1998. Phyotophthora lateralis. IMI Descriptions of Fungi and Bacteria No. 1065. Online at http://www.phytid.org/DS/p.%20lateralis.pdf
- California Invasive Plant Council. Invasive Plants of California's Wildlands. Centaurea solstitialis.Online http://www.calipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=28&surveynumber=1 82.php
- California Oak Mortality Task Force (2006): Sudden Oak Death Guidelines for Forestry. Online at www.suddenoakdeath.org..
- Carlton, J.T., 2008. Marine Bioinvasions: A Story of Maritime History, Marine Science, and Environmental Policy. Oregon State University. Fisheries & Wildlife Seminar Series. Oregon Sea Grant Extension. June 2, 2008.
- Cope, W.G., T.J. Newton, and C.M. Gatenby. 2002. Evaluation of Techniques to Prevent Introduction of Zebra Mussels (Dreissena Polymorpha) During Native Mussel (Unionoidea) Conservation Activities. A Contract Completion to U.S Fish and Wildlife Service. Denver, CO. September.
- Cope, W.G., T.J. Newton, and C.M. Gatenby. 2003. Review of Techniques to Prevent Introduction of Zebra Mussels (Dreissena polymorpha) During Native Mussel (Unionoidea) Conservation Activities. Journal of Shellfish Research 22:177-184.

- Draheim, C. Robyn. 2009. Pest Risk Assessment for Rock Snot (Didymo) in Oregon. Center for Lakes and Reservoirs. Portland State University. Portland, OR. January.
- Ely, Eleanor. 2009. Volunteer Monitors: Don't Spread Invasive! The National Newsletter of Volunteer Watershed Monitoring. Vol. 20, Num. 1, Spring 2009.
- Environmental Protection Agency (EPA). 1999. Wastewater Technology Fact Sheet. Ultraviolet Disinfection. EPA 932-F-99-064. Washington D.C. September.
- Environmental Protection Agency (EPA). 2009. National Recommendation Final Water Quality Criteria for Acrolein. Federal Register. Vol. No. 174. Thursday. Sept. 10, 2009.Notice.
- Goheen, D., P. Angwin, R. Sniezko, K. Marshall. Undated. Port-Odford-Cedar Rood Disease in Southwestern Oregon and Northwestern California.
- Goheen, E.M., E. Hansen, A. Kanaskie, N. Osterbauer, J. Parke, J. Pscheidt, and G. Chastagner. 2006. Sudden Oak Death and Phytophthor ramorum, A guide for Forest Managers Christmas Tree Growers, and Forest-tree Nursery Operators in Oregon and Washington. Oregon State University. Extension Service. EM 8877. April 2006. Corvallis, Oregon.

Global Invasive Species Data Base. 2009. Online at: http://www.issg.org/database/welcome/

- Hoeger, Stefan J., Dainel R. Dietrich, and Bettina C. Hitzeld. 2002. Effect of Ozonation on the Removal of Cyanobacterial Toxins during Drinking Water Treatment. Environmental Health Perspectives. Vol. No. 11. November.
- Johnson, M.L., L. Berger, L. Philips., and R. Speare. 2003. Fungicidal Effects of Chemical Disinfectants, UV Light, Desiccation and Heat on the Amphibian Chytrid Batrachochytrium dendrobatidis. Diseases of Aquatic Organisms 57:255-260.
- Johnson, M.L., and R. Speare. 2003. Survibval of *Batrachochytrium dendrobatidis* in Water: Quarantine and Disease Control Implications. Emerging Infectious Diseases 8:922-925.
- Kiesecker, Joseph M., Andrew R Blaustein and Cheri L. Miller. 2001. Transfer of a Pathogen from Fish to Amphibians. Conservation Biology, pp 1164-1070 Vol. 15, No. 4 August 2001.
- Mayer, Kent. 2000. Saprolegnia: There's A Fungus Among Us. Oregon State University. Department of Fisheries and Wildlife. June 1, 2000.
- Montana State University. 2009. New Zealand Mudsnails in the Wester USA. Online at: http://www.esg.montana.edu/aim/mollusca/nzms/status.html

Montana Water Center, 2010. On Line at: http://whirlingdisease.montana.edu/about/map.htm

Myers, J.H and D. Bazely. 2003. Ecology and Control of Introduced Plants. Cambridge University Press, Cambridge, UK.

- Nichols, S. J. and M. G. Black. 1994. Identification of larvae: the zebra mussel (Dreissena polymorpha), quagga mussel (Dreissena rostriformis bugensis), and Asian Clam (Corbicula fluminea). Canadian Journal of Zoology 72:406-417.
- Oplinger W. R., P. Brown and E. J. Wagner. 2009. Effect of Sodium Chloride, Tricaine Methanesulfonate, and Light on New Zealand Mud Snail Behavior, Survival of Snails Defecated from Rainbow Trout, and Effects of Epsom Salt on Snail Elimination Rate. North American Journal of Aquaculture 71:157-164.
- Oregon Department of Agriculture (ODA) WeedMapper. 2009. On line at: http://www.weedmapper.org/.
- Oregon Department of Forestry (ODF). Forest Health Management. 2009 On line at: http://www.oregon.gov/ODF/privateforests/fhMaps.shtml
- Oregon Department of Human Services. 2009a. Harmful Algae Bloom Surveillance. On line at: http://www.oregon.gov/DHS/ph/hab/index.shtml
- Oregon Department of Human Services. 2009b. Basics for Small Water Systems in Oregon. http://oregon.gov/DHS/ph/dwp/docs/BasicsForSmallPWS.pdf.
- Oregon State University. 2009. Phytophthora Online Course: Training for Nursery Growers. http://oregonstate.edu/instruct/dce/phytophthora/module2-3d.html
- Pacific Connector Gas Pipeline LP (PCGP). 2009. Intergrated Pest Management Plan (Noxious Weeds, Forest Pathogens, and Soil Pests) September. Plan of Development.
- Pearl CA, Bowerman J, Adams MJ, Chelgren ND. 2009. Widespread Occurrence of the Chytrid Fungus Batrachochytrium dendrobatidis on Oregon Spotted Frogs (Rana pretiosa). Ecohealth. June.
- Peterson, D.J., R. Prasad. 1998. The biology of Canadian weeds. 109. Cytisus scoparius (L.) Link. Canadian Journal of Plant Science 78:497-504.
- Schreck, Carl B., M. S. Fitzpatrick, R. L. Chitwood, Oregon Cooperative Fishery Research Unit; Marking, Leif L., J. J. Rach, T. M. Schreier, National Fisheries Research Center, Research to Identify Effective Antifungal Agents, Annual Report 1993, Report to Bonneville Power Administration, Contract No. 1989BP02737, Project No. 198905400, 32 electronic pages (BPA Report DOE/BP-02737-4).
- Spaulding, S. and L. Elwell. 2007. Increase in Nuisance Blooms and Geographic Explansion of the Freshwater Diatom Didymosphenia geminata: Recommendations for Response. EPA Region 8, White Paper. Denver, CO
- Stone, D. and K. Hitchko. 2009. Toxic Blooms in Oregon Waters. Oregon State University Extension Service. Corvallis, OR. EC 1631-E July 2009.
- U.S.D.A. Animal and Plant Health Inspection Service. 2010. On line at: http://www.aphis.usda.gov/plant_health/plant_pest_info/pram/

- U.S.D.A. Forest Service. 2008. Preventing Spread of Aquatic Invasives Organisms Common to the Intermountain Region. Guidance for 2008 Fire Operations. http://www.fs.fed.us/r4/resources/aquatic/guidelines/aq_invasives_interim_fire_guidance 08_final.pdf
- U.S. Fish & Wildlife Service (FWS), 2007. Western Quagga Mussels. Background Information. March 25, 2007.
- U.S. Geological Survey (USGS). 2006. Ballast Water Research at the WFRC. U.S Department of the Interior, USGS FS 2006-3080. May 3. 2006.
- USGS. 2009. NAS-Nonindigenous Aquatic Species. On Line at: http://nas.er.usgs.gov/
- U.S. Army Corps of Engineers Aquatic Nuisance Species Research Program. Online at: http://el.erdc.usace.army.mil/ansrp/species_profiles.htm
- Utah Division of Wildlife Resources. 2009. Utah Aquatic Invasive Species Management Plan. Utah Aquatic Invasive Species Task Force. Publication No. 08-34. January.
- Washington State Department of Health. 2009. Common Species of Cyanobacteria. Online at: http://www.doh.wa.gov/ehp/algae/species.htm
- World Chlorine Council. 2008. Drinking Water Chlorination position paper. http://www.worldchlorine.org/publications/pdf/WCC_Policy_Paper_Water_Chlorination.p df
- World Health Organization (WHO). 1999. Toxic Cyanobacteria in Water: A guide to their public health consequences, monitoring and management. Chapter 8. Preventative Measures. Edited by Ingrid Chorus and Jamie Bartram.

Attachment C

Hydrostatic Test Water Withdrawal Equipment Cleaning and Sanitizing Procedures

Cleaning and Sanitizing Procedures¹

- All hydrostatic test water withdrawal equipment and waterbody crossing equipment or materials that come into contact with raw water (non-municipal surface water) should be sanitized. Aquatic invasive species and pathogens can be transported in tanks, buckets, hoses, screens, bilges, flume pipe(s) and any other construction equipment or materials that hold water or aquatic plant or substrate materials.
- 2) Drying alone may be effective in some situations, depending upon the target species, types of equipment, temperature, and relative humidity; however, precautionary cleaning and/or sanitization should be performed.
- 3) Clean and/or sanitize all equipment and materials before moving from one location to another or when moving between watersheds. Cleaning and sanitizing equipment, as described here, will be necessary before use as well as after use if equipment has been obtained from a source where sanitizing history is unknown.
- 4) Pacific Connector's Environmental Inspector (EI) will establish sanitation areas where there is no potential for runoff into storm drains, waterways, or sensitive habitats. The EI will ensure that wash water will not contaminate another water source.
- 5) Remove all visible plant parts, soil, and other materials from external surfaces of equipment and gear. Powerwash all accessible surfaces with clean, hot water (≥140°F, if possible). Powerwashing with hot water will greatly reduce the likelihood that aquatic invasive species are present, and chemical sanitation of external surfaces would not be necessary (BLM, 2009).
- 6) Intake hoses, pumps, screens, and tanks can become contaminated with infected water or by sucking the organisms up from the bottom of a stream or pond. Disinfect tanks after each incident, and disinfect tanks before use if previous sanitation of the equipment has not occurred or is unknown. Set up a portable disinfection tank (e.g. fold-a-tank, 55gallon barrel, 5-gallon bucket, etc., depending on the cleaning capacity needed) using a 1 to 2 percent bleach solution.

Pump cleaning solution through portable pumps for 10 minutes. Pump the solution through the hose and then rinse with water. Discharge used cleaning solution back into the disinfection tank for re-use. Alternatively, use a 5% cleaning solution of quaternary ammonium compound. This is a common cleaning agent used in homes, swimming pools, and hospitals, and is safe when used at the recommended concentration (BLM, 2009).

Disposal

Use caution when disposing of the used cleaning solution and follow all federal, state, and local regulations. Do not dump cleaning solution into any stream or lake or on areas where it can migrate into any stormdrain, waterbody, or sensitive habitat. Chlorinated water may be released according to ODEQ criteria. Small quantities may be disposed of down sanitary drains into a municipal sewer system. Larger quantities may need to be transported to a municipal wastewater treatment facility.

¹ Developed from:

- Bureau of Land Management. 2009. Interagency Guidance. Preventing Spread of Aquatic Invasive Organisms Common to the Southwest Region. Technical Guidelines for Fire Operations. Bureau of Land Management, National Park Service, U.S. Fish and Wildlife Service, U.S. Forest Service, Arizona Game and Fish Department, and New Mexico Department of Game and Fish.
- Utah Division of Wildlife Resources. 2009. Utah Aquatic Invasive Species Management Plan. Utah Aquatic Invasive Species Task Force. Publication No. 08-34. January.

Attachment D

Maps

(forthcoming)

Attachment E

Hydrostatic Test Plan Impacts Assessment



Memorandum

Plaza 600 Building, 600 Stewart Street, Suite 1700, Seattle, Washington 98101, Telephone: 206.728.2674, Fax: 206.728.2732

www.geoengineers.com

To:	Randy Miller, PCGP		
From:	Jonathan Ambrose, Associate Hydrologist		
Date:	December 1, 2015		
File:	16724-001-10		
Subject:	Hydrostatic Test Plan Impacts Assessment		

INTRODUCTION

This memo is prepared in response to questions posed to Pacific Gas Connector Project (PCGP) by Oregon Department of Environmental Quality (ODEQ) in the October 7, 2015 Data Request II related to potential impacts associated with water withdrawals for hydrostatic testing. The proposed hydrostatic testing plan is fully documented in the Hydrostatic Test Plan document (PCGP, October 2015).

Limited licenses for water withdrawals are proposed for four water body types to fill the pipeline for pressure testing: natural streams, managed canals, natural lakes, and reservoirs. The methods used to evaluate the impacts to each water body type is outlined below.

NATURAL STREAMS CHANNELS

The United States Geological Survey's (USGS) Stream Segment Temperature Model (SSTEMP) v.0.8 was used to estimate the potential thermal impacts of water withdrawals from the six natural channel crossing locations proposed for water use: Olalla Creek (MP 58.75), South Umpqua River Crossing #1 (MP 71.30), South Umpqua River Crossing # 2 (MP 94.73), Rogue River (MP 122.5), North Fork Little Butte Creek (MP 146.70), and Klamath River (MP 199.20). Models were run to simulate water withdrawals in mid-November, the expected period of use for the limited withdrawal permits. Each site was modeled for two conditions, to analyze thermal impacts at both 0.02 miles and 0.1 mile downstream of the withdrawal location.

SSTEMP is a mechanistic, one-dimensional heat transport model that predicts the daily mean and maximum water temperatures as a function of stream distance and environmental heat flux. Net heat flux is calculated as the sum of heat to or from long-wave atmospheric radiation, direct short-wave solar radiation, convection, conduction, evaporation, streamside vegetation (shading), streambed fluid friction, and the water's back radiation. The heat flux model includes the incorporation of groundwater influx. The heat transport model is based on the dynamic temperature-steady flow equation and assumes that all input data, including meteorological and hydrological variables, can be represented by 24-hour averages.

Model manipulations may include reservoir discharge and release temperatures, irrigation diversion, riparian shading, channel alteration, or thermal loading. The model was used in this study to help assess the effects of flow diversion on stream temperature.

Model Assumptions

Ambient Flow Conditions were modeled using a 50 percent exceedance value for the site based on flow data from the USGS StreamStats Oregon program. Ambient thermal data was derived from historic measurements during the specified period. Channel geometry data was provided through site survey completed by PCGP and/or light detection and ranging (LiDAR) data. The estimated withdrawal rates are based on typical pumping rates for commonly available pumps. Total pump duration is not required for thermal modeling, but the total potential volumes are identified in the Hydrostatic Test Plan. Tables 1 and 2 summarize the key model assumptions.

Stream Name	Ambient Flow Rate (cfs) (50% Exceedance, Nov)	Withdrawal Rate (cfs)	Downstream Flow Rate (cfs)
Olalla/Lookingglass Creek	22	4.4	18
South Umpqua #1	925	11	914
South Umpqua #2	440	11	429
Rogue River	1130	11	1119
North Fork Little Butte Creek	28	4.4	24

TABLE 1. MODELED FLOWS AT TIME OF LIMITED WATER WITHDRAWALS

TABLE 2. DATA SOURCES FOR SSTEMP PARAMETERS

Data	Source	
Flow Data	USGS StreamStats for Oregon	
Stream Temperature	https://weatherspark.com/	
Accretion Temperature	Olalla/Lookingglass Watershed Assessment and Action Plan	
Latitude	GIS	
Elevation and Slope	GIS; 10m USGS DEM	
Widths A and B terms	Utilized Federal Highways Administration's Hydraulic Toolbox 4.2 and Microsoft Excel. Channel Geometry for use in the tool was obtained from previous hydraulic models generated for a site or from most recent survey of the crossings.	

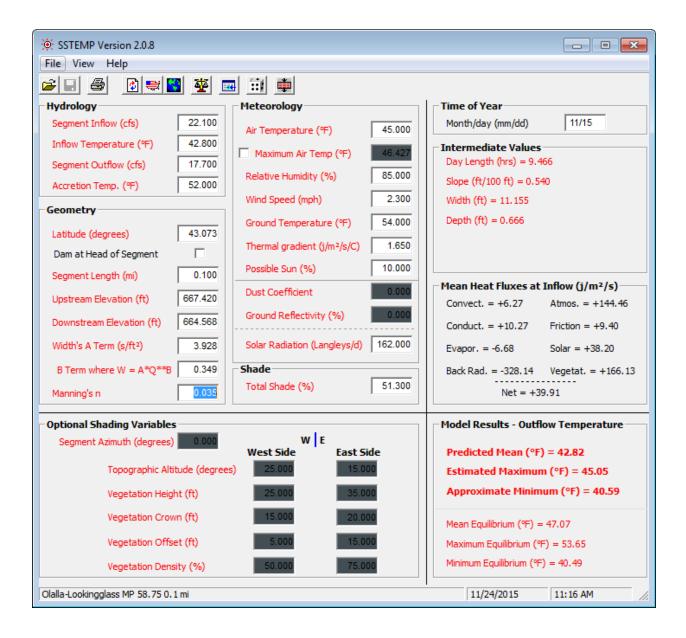
SSTEMP Model Results

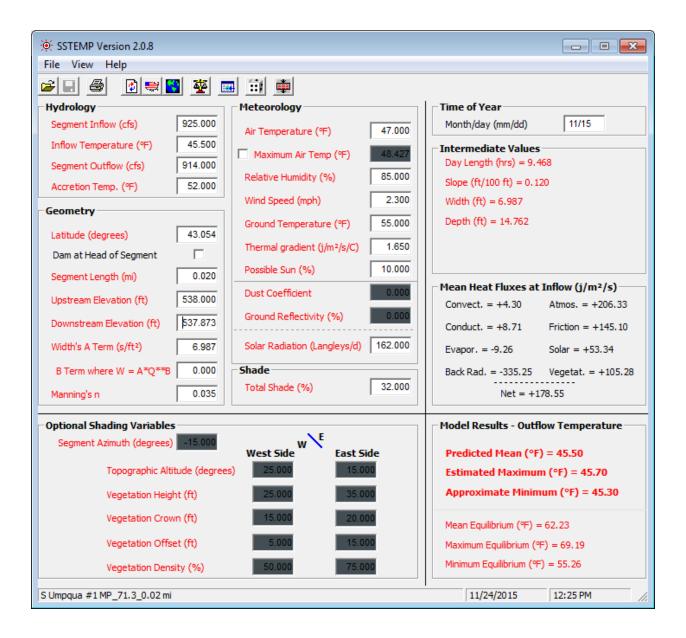
SSTEMP thermal predictions resulting from the five proposed withdrawals from natural channels are presented in Table 3 and the screenshots below. Each crossing is modeled for two runs, at 0.02 and 0.1 miles downstream of the proposed withdrawal location. Model results are provided in terms of a predicted mean, maximum, and minimum outflow temperature. The stream and model run are shown in the bottom left corner of each screen shot. Results show little predicted thermal effects of limited withdrawals during the expected season of use (mid-November), at the 50% exceedance flows for each stream at the diversion location.

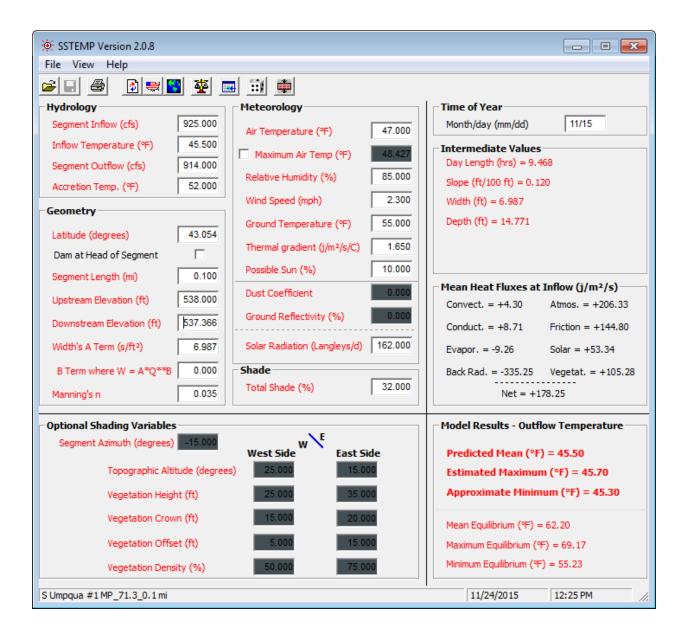
TABLE 3. SSTEMP RESULTS: ESTIMATED THERMAL EFECTS OF STREAM CHANNEL WATER WITHDRAWALS

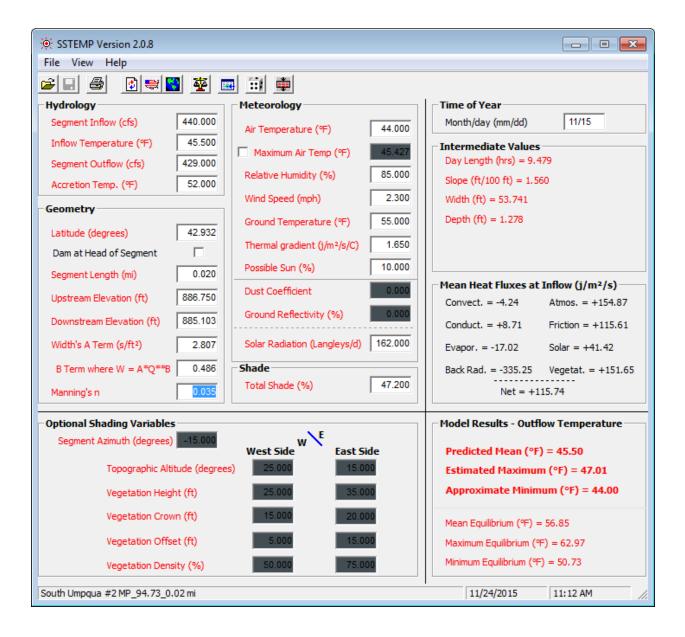
Stream Name	Estimate of Ambient Stream Temperature at time of Withdrawal (°F)	Distance Downstream of Withdrawal (mi)	Predicted Mean (°F)	Estimated Maximum (ºF)	Approximate Minimum (°F)
Olalla/Lookingglass Creek	42.8	0.02	42.80	45.03	40.57
	42.8	0.10	42.82	45.05	40.59
South Umpaus #1	45.5	0.02	45.50	45.70	45.30
South Umpqua #1	45.5	0.10	45.50	45.70	45.30
South Umpqua #2	45.5	0.02	45.50	47.01	44.00
	45.5	0.10	45.51	47.02	44.01
Rogue River	44.2	0.02	44.20	44.86	43.54
	44.2	0.10	44.21	44.86	43.55
North Fork Little	42.8	0.02	42.80	45.40	40.21
Butte Creek	42.8	0.10	42.81	45.41	40.22

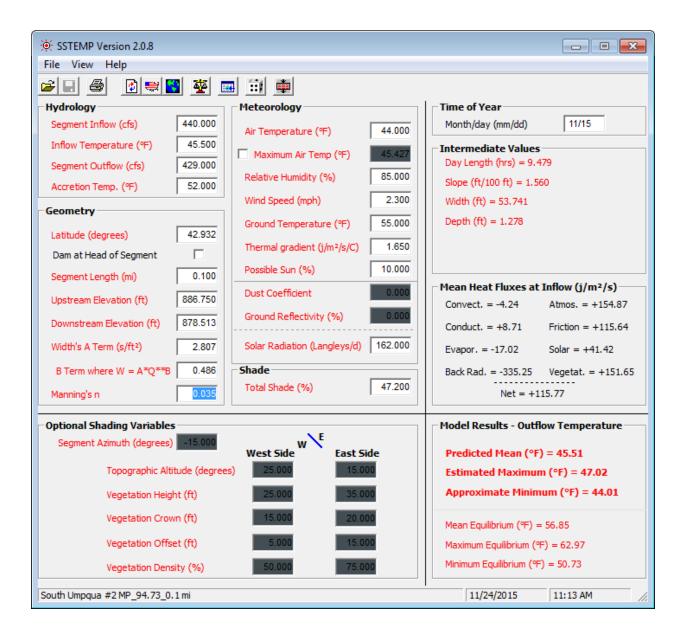
🔅 SSTEMP Version 2.0.8		
File View Help		
2 - 4 2 - 4 -		
Hydrology	Meteorology	Time of Year
Segment Inflow (cfs) 22.100	Air Temperature (°F) 45.000	Month/day (mm/dd) 11/15
Inflow Temperature (°F) 42.800	Maximum Air Temp (%) 46.427	Day Length (hrs) = 9.466
Segment Outflow (cfs) 17.700 Accretion Temp. (%) 52.000	Relative Humidity (%) 85.000	Slope (ft/100 ft) = 0.541
Geometry	Wind Speed (mph) 2.300	Width (ft) = 11.155
Latitude (degrees) 43.073	Ground Temperature (°F) 54.000	Depth (ft) = 0.666
Dam at Head of Segment	Thermal gradient (j/m²/s/C) 1.650	
Segment Length (mi) 0.020	Possible Sun (%) 10.000	
Upstream Elevation (ft) 667.420	Dust Coefficient 0.000	Mean Heat Fluxes at Inflow (j/m ² /s) Convect, = +6.27 Atmos, = +144.46
Downstream Elevation (ft) 666.849	Ground Reflectivity (%) 0.000	Conduct. = +10.27 Friction = +9.41
Width's A Term (s/ft²) 3.928	Solar Radiation (Langleys/d) 162.000	Evapor. = -6.68 Solar = +38.20
B Term where W = A*Q**B 0.349		Back Rad. = -328.14 Vegetat. = +166.13
Manning's n	Total Shade (%) 51.300	Net = +39.92
– Optional Shading Variables		☐ Model Results - Outflow Temperature
Segment Azimuth (degrees) 0.000	WE	
Topographic Altitude (degree	West Side East Side	Predicted Mean (°F) = 42.80
	Estimated Maximum (°F) = 45.03 Approximate Minimum (°F) = 40.57	
Vegetation Height (ft)	25.000 35.000	
Vegetation Crown (ft)	15.000 20.000 5.000 15.000	Mean Equilibrium (°F) = 47.07
Vegetation Offset (ft)	Maximum Equilibrium (°F) = 53.65 Minimum Equilibrium (°F) = 40.49	
Vegetation Density (%)	50.000 75.000	
Olalla-Lookingglass MP 58.75 0.02 mi		11/24/2015 11:15 AM

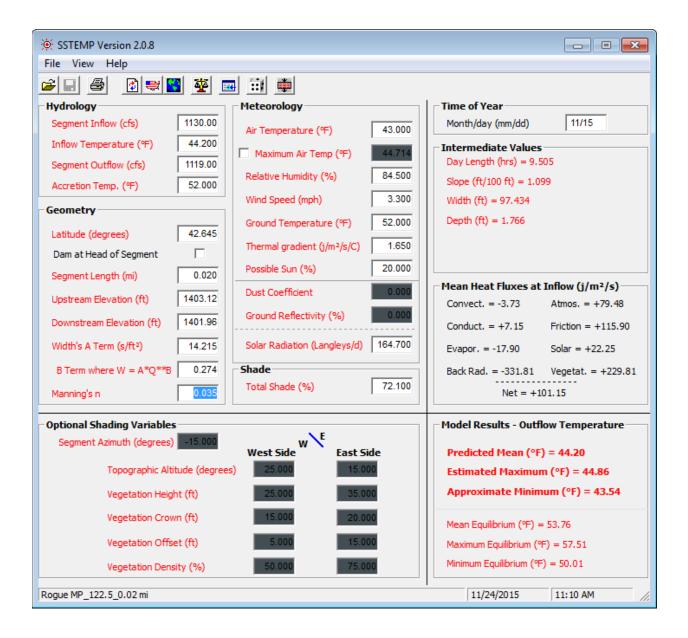


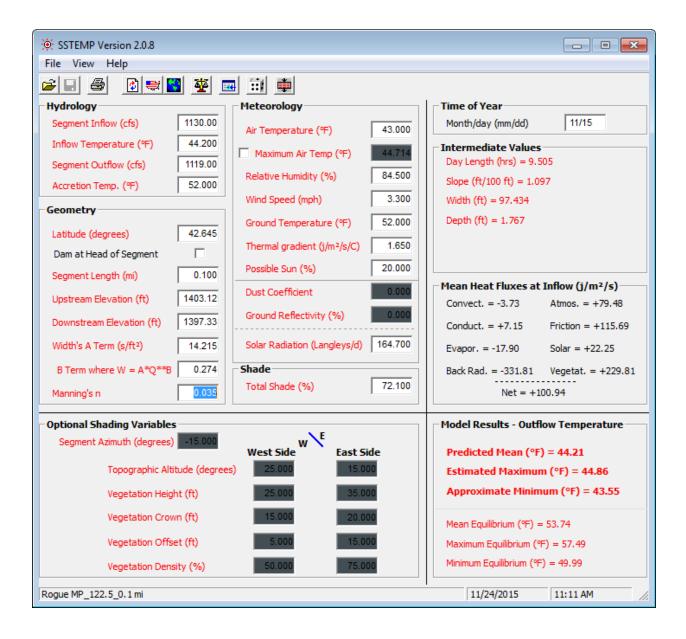


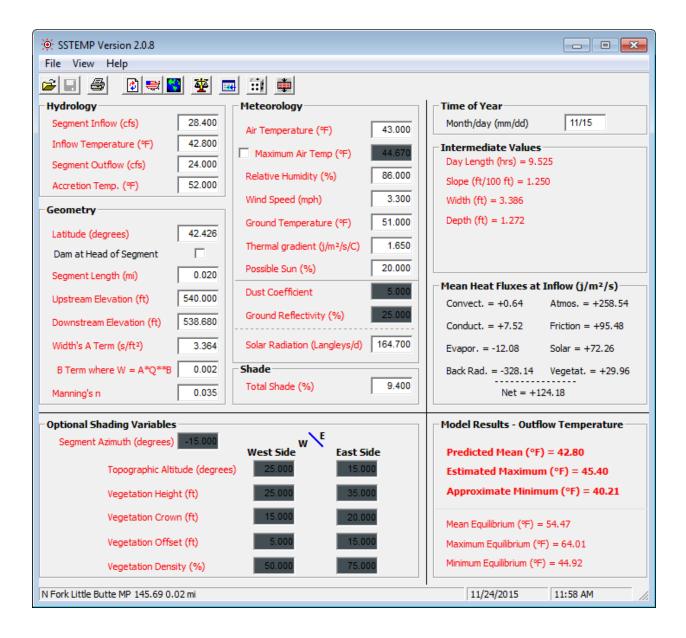


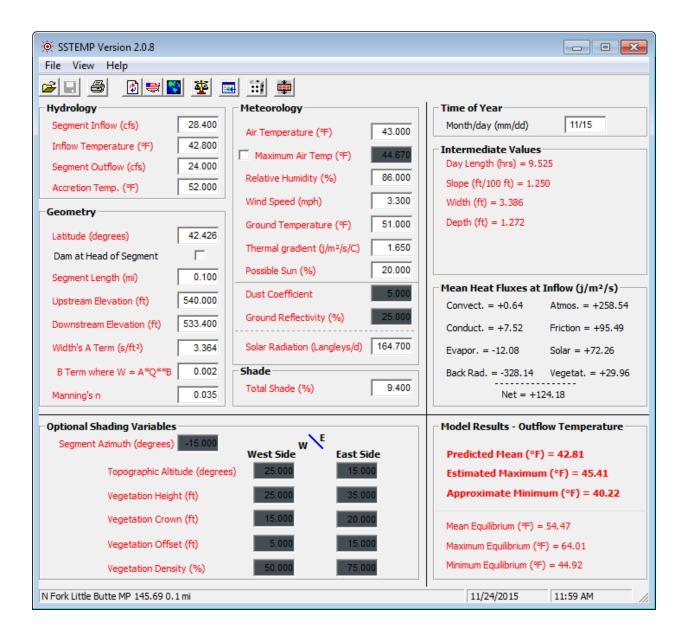












MANMADE CHANNELS/CANALS

Two manmade channels are proposed for limited withdrawal permits, the Medford Aqueduct (MP 133.38) and the Highline Canal (MP 228.1). Both water sources are owned and operated by Irrigation Districts. Fish access to both water bodies is controlled by fish screens. The water that flows through each of these water bodies is managed by water calls, the water is fully allocated to patrons/users. Withdrawal of water from these sources is their sole function. Any potential downstream thermal effects associated with a limited withdrawal permit by PCGP of allocated water would be similar to those effects experienced under the current condition as users put their water to beneficial use.

OPEN WATER BODIES

Six open water bodies are proposed for limited withdrawal permits to aid in hydrostatic testing of the pipeline. Thermal analysis was not completed to evaluate impacts to open water bodies as thermal modeling of lakes requires substantially more data input than for streams. In addition, the relative quantities of withdrawals in the open water bodies is insignificant and not expected to have thermal or other impacts beyond that experienced by typical lake level fluctuations during the period of use.

Water Body	Estimated Total Withdrawal Requirement (gallons)	Estimated Total Withdrawal Requirement (acre-feet)	Effects Evaluated in Hydrostatic Test Plan (Y/N)	Estimated Volume (acre feet)	Volumetric Impact Potential Resulting from Withdrawal (%)	Estimated Surface Area (acres)
Kinnan Lake	3,315,584	10.2	Ν	395	2.6	23.5
Ben Irving Reservoir	3,315,584	10.2	Ν	11,250	0.09	100
Fish Lake	2,847,495	8.7	Y	7,836	0.1	483
Lake of the Woods	5,565,825	17.1	Υ	30,942	0.05	1,146
John C Boyle Reservoir	5,565,825	17.1	Ν	4,200	0.4	381
Keno Reservoir	5,565,825	17.1	Ν	18,500	0.09	25.7

REFERENCES

PCGP, Hydrostatic Testing Plan. October, 2015.

United States Geological Survey, Stream Segment Temperature Model (SSTEMP). Version 2.0.8

Disclaimer: Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

Appendix N

Integrated Pest Management Plan



Pacific Connector Gas Pipeline, LP

Integrated Pest Management Plan (Noxious Weeds, Forest Pathogens, and Soil Pests)

Pacific Connector Gas Pipeline Project

January 2018

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Appendix 7	Table 7-1	Sensitive Species or Habitats Crossed or in the Vicinity of the Pipeline Project (to be updated)			

1.0 INTRODUCTION

Pacific Connector Gas Pipeline, LP (PCGP) has prepared this Integrated Pest Management Plan (IPM) for the pipeline it proposes to construct from interconnections with the Ruby pipeline and the Gas Transmission Northwest pipeline near Malin, Oregon (Pipeline) to a proposed liquefied natural gas terminal to be built on the North Spit of Coos Bay, Oregon by Jordan Cove Energy Project, LP. This IPM will provide PCGP's management and staff with the necessary Best Management Practices (BMPs) to address the control of noxious weeds, invasive plants, forest pathogens, and soil pests across the route of the Pipeline. The BMPs have been created to minimize the potential spread of invasive species and minimize the potential adverse effects of control treatments. The IPM provides BMPs and decision-making tools PCGP's managers and staff during both the construction and operational phases of the Pipeline and includes logical and easily accessible references for the protection of sensitive resources along the Pipeline route or near associated facilities.

The Oregon Department of Agriculture (ODA) (Butler, 2017), Bureau of Land Management (BLM), and USDA Forest Service (Forest Service) have been consulted for recommendations to prevent the introduction, establishment, or spread of noxious weeds, soil pests, and forest pathogens. In general, these agencies have recommended that reconnaissance surveys be conducted along the Pipeline alignment to determine the presence of noxious weeds, other invasive plants and forest pathogens so that appropriate BMPs can be developed and applied prior to and during construction to prevent the introduction or establishment of weeds and forest pathogens. Additionally, these agencies have recommended that construction equipment and vehicles be cleaned to remove all soil, mud, oil, grease, plant material or other substances that could contain weed seeds prior to moving them onto the construction right-of-way to prevent the import and spread of weeds and that vegetation clearing and grading equipment be cleaned if they pass through known noxious weed infestations. Disturbed areas will be promptly replanted as described in the Erosion Control and Revegetation Plan (ECRP) (Appendix I to the POD) with appropriate seed mixtures to help prevent noxious weed infestation. All disturbed areas of the construction right-of-way including temporary extra work areas (TEWAs), uncleared storage areas (UCSAs), temporary access roads, and road improvement areas will be monitored after construction, and any noxious weed infestations will be controlled in accordance with the requirements of the applicable permit and any conditions agreed to with landowners.

The following section describes in more detail the measures that will be implemented by PCGP during construction and operation to minimize the potential spread of noxious weeds, invasive plants, soil pests, and forest pathogens. Where treatment of weeds is required, BMPs are described that would minimize the potential effects to sensitive resources and the environment. PCGP has developed a Hydrostatic Test Plan that is included as Appendix M to the POD which describes the BMPs that would be implemented to minimize the potential spread, or introduction of noxious or invasive weeds, forest pathogens and aquatic invasive species from the Pipeline's hydrostatic testing operations. The BMPs described in the Hydrostatic Test Plan are not included or repeated in this document. Section 6.0 of this IMP includes measures that may be used to control rodents at the Pipeline's aboveground facilities (compressor station and meter stations), if necessary. All of the aboveground facilities are located on private lands.

2.0 PREVENTION AND DETECTION

Prevention and detection is a crucial component of integrated weed management principles. Early detection and proper identification of weed infestations are critical to successful weed

Pacific Connector Gas Pipeline Project

management (or maintenance of land health). PCGP has completed initial reconnaissance weed surveys and will complete preconstruction weed surveys to determine potential pretreatment requirements and construction practices that would be implemented during clearing and grading activities to minimize and avoid the potential spread of weeds and forest pathogens.

2.1 Reconnaissance Surveys

The ODA Noxious Weed Control Program and the Oregon State Weed Board (OSWB) maintain the State Noxious Weed List, which covers all lands within the State of Oregon. Noxious weeds are defined under ORS 569.175 as non-native, aggressive and invasive plants (terrestrial, aquatic, or marine) designated by the State Weed Board (OSWB) to be a menace to public welfare. The OSWB also classifies noxious weeds as any plant that has detrimental effects to agricultural economy and natural resources, endangers native flora and fauna, affects recreation, or is injurious or harmful to humans and/or animals (ODA, 2017). The ODA Noxious Weed Control Classification System establishes three categories for weeds within, or having potential habitat, in Oregon. The three ODA noxious weed classes are described below with ODA's recommended control actions.

 Class "A" weeds—a weed of known economic importance which occurs in the state in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states make future occurrence in Oregon seem imminent.

Recommended action: Infestations are subject to eradication or intensive control when and where found.

• Class "B" weeds—a weed of economic importance which is regionally abundant, but which may have limited distribution in some counties.

Recommended action: Limited to intensive control at the state, county or regional level as determined on a site-specific, case-by-case basis. Where implementation of a fully integrated statewide management plan is not feasible, biological control (when available) shall be the primary control method.

 Class "T" weeds—a designated group of weed species that is selected and will be the focus for prevention and control by the Noxious Weed Control Program. Action against these weeds will receive priority. T designated noxious weeds are determined by the Oregon State Weed Board, which directs ODA to develop and implement a statewide management plan. "T" designated noxious weeds are species selected from either the "A" or "B" list.

PCGP conducted initial reconnaissance weed surveys concurrently with wetland and waterbody inventories during the summer and fall of 2006 and 2007. Additional reconnaissance weed surveys were conducted during biological surveys in 2007 and 2008 and various supplemental surveys through 2017. These surveys were conducted by local biologists who are familiar with priority listed noxious weeds. The results of these inventories are provided in Table 1-1 of Appendix 1, which also provides the state classification. Table 1-1 includes potential ODA listed

Pacific Connector Gas Pipeline Project

weeds that may occur in the counties crossed by the Pipeline according to ODA Weedmapper¹. PCGP will complete additional preconstruction surveys for noxious weeds prior to Year One construction and will use biologists or botanists that are familiar with the noxious weeds that may occur within the Pipeline area. On federal lands, preconstruction weed surveys will be conducted to identify current ODA-listed weeds, as well as invasive weeds listed, for each National Forest, BLM, or Bureau of Reclamation (Reclamation) district. The preconstruction surveys will assist in determining where management or pretreatment may be necessary prior to construction to prevent the spread of noxious weeds. After the preconstruction surveys have been completed on federal lands, PCGP will update Table 1-1 of Appendix 1 and prepare a summary report to review the results of these surveys with the authorized agency representative. The results of these surveys would be used to determine appropriate actions to take during pre-construction weed management, clearing and grading activities as well as monitoring treatment efforts after construction (see Sections 2.2, 2.4, 2.7, and 3.0). Table 1-1 provides the weeds that are subject to control by the BLM and Forest Service. Further, the EI will be responsible for uniquely flagging and signing these weed populations and providing the preconstruction weed survey location information to all project personnel so that they are aware of the weed locations and do not inadvertently drive through and potentially spread the species.

During timber cruises that will be necessary for timber appraisals and landowner agreements prior to construction, surveys will be conducted to identify potential forest pathogens within the construction footprint (i.e., right-of-way or TEWAs). These forest pathogen surveys will help assess silvicultural treatments that may be required during clearing operations to minimize the spread of forest pathogens. Table 1-2 in Appendix 1 provides forest pathogens (tree insect and disease infestation) that have been documented in the vicinity of the Pipeline by the Oregon Department of Forestry. Current forest pathogen data provided by the Oregon Department of Forestry² would be reviewed again prior to timber cruises/surveys to assist in assessing forest pathogens in the vicinity of the Pipeline.

2.2 Pre-Project Weed Management

Preconstruction weed treatment will primarily be accomplished through mechanical treatment appropriate for the weed species. Hand-pulling methods may also be utilized if the area of infestation is small or where mechanical methods are not feasible. Infested areas will be cleared in a manner to minimize transport of weed seed, roots, and rhizomes or other vegetative materials and soil from the site along the construction right-of-way and to minimize sediment delivery to waterbodies. Spot treatments with appropriate herbicides will also be conducted where applicable depending on the specific weed and site-specific conditions using integrated weed management principles. Spot herbicide treatment would only be utilized when it is likely to be effective (i.e., where plant phenology and effective herbicide treatment windows coincide) prior to construction. Any herbicide treatment would be conducted by a licensed applicator using herbicides labeled for the targeted species and registered for the use. PCGP would only use herbicides where approved by the land-managing agency or landowner. If ODA A listed weeds are present within the construction work limits, they will be controlled by eliminating all visible plants prior to seed development and prior to construction activities.

On federal lands, PCGP would consult with the authorized agency representative on the specific method that would be used to eliminate any A listed weeds. Other Priority weeds that will be considered for pretreatment will include ODA T and some B listed weeds based on site-specific

¹ <u>http://www.oregon.gov/ODA/programs/Weeds/Pages/WeedMapper.aspx</u>

² http://www.oregon.gov/ODF/ForestBenefits/Pages/ForestHealth.aspx

conditions and direction provided by the BLM, Forest Service, Reclamation, or private landowner. Table 1-1 includes the B listed weeds noted by the BLM and Forest Service that are subject to control. On federal lands, after the preconstruction weed surveys have been completed, PCGP would consult with the authorized agency representative to determine appropriate pre-project weed control measures that would be implemented. Pretreatment consideration will be based on consultation with the landowner or land-managing agency and specific conditions on the construction right-of-way. Appendix 1 provides the ODA-listed weeds by class (A, B, and T) that may occur in the Pipeline area and lists the locations of these species where they were identified during the project reconnaissance weed surveys during 2006, 2007, and 2008, and various supplemental surveys through 2017.

Table 2-1 in Appendix 2 lists the herbicide active ingredients that are approved for use on public lands managed by the BLM and Forest Service based on their vegetation management/invasive species program Environmental Impact Statements and Records of Decision (USDI, 2010, and USDA, 2005). The BLM released a Final Vegetation Treatments Using Herbicides on BLM Lands in Oregon Environmental Impact Statement (EIS) in July 2010 and released the Final EIS and Record of Decision (ROD) in October of 2010³. PCGP would use only herbicides registered in Oregon and on federal lands only those herbicides approved for use based on existing or current management direction. Table 2-2 lists the current 2017 registered herbicides in Oregon for use on utility and road rights-of-way. The data in Table 2-2 was queried using Washington State University Pesticide Information Center Online (PICOL) Databases as directed by ODA (Riley, 2009)⁴. The PICOL database can also be queried to determine the pest (weeds) species for which specific herbicides are registered. PCGP's licensed applicators would ensure that all herbicides and adjuvants⁵ would be registered for the applicable use. PCGP would obtain applicable approvals or permits for use of herbicides on federal lands prior to use/treatment. On NFS and BLM-managed lands PCGP would submit a Pesticide-Use Proposal for agency approval prior to herbicide use. A Pesticide - Use Proposal (FSM-2150) for National Forest lands is provided in Appendix 3: this form or a similar form would also be submitted to the BLM. BMPs that would be implemented to minimize potential adverse effects of herbicide treatment are discussed below in Section 3.0.

2.3 Equipment Inspection

Prior to transporting construction equipment to the construction right-of-way, all equipment will be inspected to ensure that it is clean and free of potential weed seed or propagules (i.e., soil roots or rhizomes) and power washed, if necessary, as determined by PCGP's Environmental Inspectors (Els). In addition, initial inspections of all inspected vehicles and construction contractor vehicles will also be performed prior to being allowed on the construction right-of-way. This does not apply to local service vehicles that will stay on the existing roadway, traveling frequently in and out of the Pipeline area. The El or PCGP's authorized representative will be responsible for performing inspections and registering or tagging the equipment prior to being transported or moved to the construction right-of-way. To ensure the equipment is thoroughly inspected, the El or authorized representative will use the inspection checklist provided in Appendix 4. The inspection checklist included in Appendix 4 will also be used during the operations phase of the Pipeline to ensure that all maintenance equipment is cleaned of potential weed seed or propagules prior to entering the construction right-of-way on federal

³https://permanent.access.gpo.gov/gpo2685/gpo2685/www.blm.gov/or/plans/vegtreatmentseis/documents.php.htm ⁴ http://cru66.cahe.wsu.edu/LabelTolerance.html

⁵ Adjuvant(s) are substances added to the pesticide formulation to enhance the toxicity of the active ingredient or to make the active ingredient easier to handle.

lands. PCGP will inform contractors to clean equipment and vehicles in the contractor yards prior to moving to the construction right-of-way on federal lands. The Els would conduct environmental training at the beginning of the project, informing all contractor personnel and PCGP's inspectors about the BMPs to prevent the potential spread of noxious weeds and how to complete vehicle and equipment inspections and cleaning on a regular basis during construction. PCGP's Els would also be responsible for random verification inspections during construction to ensure all equipment and vehicles are clean of noxious weeds.

2.4 Clearing and Grading

In areas where infestations have been identified or noted in the field from preconstruction surveys (see Section 2.1), the contractor will stockpile cleared vegetation and salvage topsoil or graded material adjacent to the area from which they are stripped to eliminate the transport of soil-born noxious weed seeds, roots, or rhizomes. Where practical and feasible, construction right-of-way grading activities will occur toward any known areas of infestation to minimize the potential spread of noxious weeds or forest pathogens. During reclamation, anv graded materials and vegetative material will be returned to the infestation sites from which they were stripped or moved. Clearing equipment that is used in areas of priority A and T listed weeds, as well as selected B listed weeds, will be cleaned by hand, blown down with air, or pressure washed prior to leaving the site, as determined necessary by the EI based on the specific weed infestation, level of infestation, and stage of growth of the weed. On federal lands equipment cleaning would occur as described below (see Federal Lands). Equipment cleaning on the construction right-of-way will occur in an approved cleaning station such as that shown on Drawing 3430.34-X-0020 in Attachment C of the ECRP (Appendix I to the POD). The EI will approve the appropriate cleaning station location(s) and will be responsible for determining the effective cleaning method for the grading/clearing equipment (including power washing). Infested areas and cleaning station locations will be mapped to ensure that these areas are monitored during construction and to ensure that these weeds are controlled and not spread. PCGP would monitor these sites after construction as described in Section 2.6.

Federal Lands. Because of the contiguous pattern of NFS Lands crossed by the Pipeline, equipment will be inspected and cleaned at cleaning stations located at the borders of each National Forest prior to clearing and grading activities. Because the BLM-managed lands crossed by the Pipeline are not contiguous and are spread out in a checkerboard pattern, it is not practical to set up inspection and cleaning stations at each entry point. However, where BLM lands are contiguous to NFS Lands, the cleaning station will be located to include the adjacent BLM lands. Additionally, equipment will be inspected and cleaned at cleaning stations located adjacent to mapped noxious weed infestation areas that were identified during preconstruction surveys (see Section 2.1) on federal lands and where a treatment plan has been developed in consultation with the agency authorized representative. The cleaning station location(s) will be located and approved by the Els and authorized agency representative. The cleaning station location(s) will also be mapped for future monitoring efforts to determine if potential infestations occur at these sites and, if they do, to ensure that appropriate control treatments are applied. Timeframes for monitoring these sites are described in Section 2.7.

2.5 Weed-Free Materials

PCGP will use certified weed-free seed during seeding operations. In addition, PCGP will use certified weed-free straw for mulch and sediment barriers, dewatering structures, or other uses along the construction right-of-way, or may utilize other mulch materials that are weed free such as hydromulch or erosion control fabrics. The EI or PCGP's authorized representative will be

responsible for ensuring that all straw hauled to the construction yards will be certified weedfree and is stored so that it remains weed free. ODA has a certification process through their Weed Free Forage Program and maintains a database of weed free forage providers⁶. If other vendors are used to supply straw, PCGP's El will insure that before straw is delivered to the right-of-way documentation from straw producers/vendors is provided which indicates the straw was produced from certified weed-free fields, or the straw can be inspected by the ODA, county extension agent or qualified conservation district personnel. Where straw is to be used on federal lands, the authorized agency representative may also inspect and approve straw materials to verify that the straw is weed-free. If gravel or other fill materials are used on Forest Service or BLM-managed lands, they will be from a weed-free source and approved by the locations of potential gravel sources, including commercial sources that may be used on federal lands, in advance so that these sites can be inspected during the growing season by the authorized agency representative.

2.6 Restoration

PCGP has developed the ECRP in cooperation with the FERC, Forest Service, BLM, and Natural Resource Conservation Service (NRCS). The revegetation measures outlined in the ECRP have been prescribed to stabilize disturbed areas and to revegetate the construction right-of-way to a condition which supports the preconstruction land use (i.e., forest lands, rangelands, croplands, hayfields, and pasturelands) as quickly as possible following construction. Promptly replanting disturbed areas with appropriate seed mixtures will help prevent noxious weed establishment. The ECRP details the measures that will be implemented to restore all disturbed areas.

2.7 Monitoring

After construction and restoration, PCGP will monitor all disturbed areas of the construction right-of-way including TEWAs, UCSAs, temporary access roads, and road improvement areas for infestation of noxious and invasive weeds. Special consideration for monitoring noxious and invasive weeds will be taken in the areas where noxious weeds were identified prior to construction and were previously mapped to ensure that potential infestations do not recur and spread. Special consideration will also occur in areas along the construction right-of-way where equipment cleaning stations and hydrostatic dewatering sites were located to ensure that infestations at these locations do not occur. Monitoring in these areas will occur for a period of 3 to 5 years on federal lands; in areas where treatment is required, monitoring will occur for 3 years following the presumed eradication date. Monitoring report forms (see Appendix 5) would be submitted to the appropriate federal land-managing agency annually. PCGP's operational staff or their contractors will be responsible for these monitoring efforts. If weeds are observed during these monitoring efforts on federal lands, agency siting forms would be completed and submitted to the appropriate agency, if the report forms provided in Appendix 5 are not sufficient. PCGP may also enter into cost-recovery agreements with federal land-managing agencies to conduct or participate in monitoring efforts along the construction right-of-way on federal lands including monitoring during regular intervals during the life of the Pipeline. Payments under any cost-recovery agreements would be made to the appropriate land managing agencies and included in the annual Right-of-Way Grant payments as per payment stipulations listed in the Grant. If infestations occur in any of the disturbed areas of the construction right-of-way including TEWAs, UCSAs, temporary access roads, and road

⁶ http://www.oregon.gov/ODA/programs/MarketAccess/MACertification/Pages/WeedFreeForage.aspx

improvement areas, PCGP would make an assessment of the source of the infestation, the potential of the infestation to spread to other adjacent areas, and develop a treatment plan to control the infestation. Where infestations occur on federal lands, this assessment and treatment plan would be developed cooperatively with these agencies. The treatment plan would be developed using integrated weed management principles, and if herbicides are used, all applicable approvals would be obtained prior to their use including landowner approvals. PCGP would consult with the ODA Noxious Weed Control Program, local County Weed Program, or land-managing agency for additional support regarding noxious weed control issues that may occur during operation of the pipeline. PCGP may also contract with county or local conservation districts or Watershed Associations to conduct any necessary weed treatment programs that may arise after construction.

Monitoring of all disturbed areas of the construction right-of-way including TEWAs, UCSAs, temporary access roads, and road improvement areas where noxious weeds were not known to occur prior to construction will occur as an ongoing function of PCGP's operational personnel during the life of the Pipeline. PCGP's operational staff would also investigate noxious weed issues raised by landowners and land-managing agencies during operation of the Pipeline. In these situations, PCGP would conduct a site assessment (see Appendix 5) of the potential weed issue and would provide a proposed treatment plan to the extent the noxious weeds are attributable to actions of PCGP (to the landowner or land-managing agency), if necessary.

3.0 WEED CONTROL

Where weed control is necessary, PCGP's first priority will be to employ hand and mechanical methods (pulling, mowing, biological, disking, etc.) applicable to the species to prevent the spread of potential weed infestations, where feasible. To determine if an herbicide is to be used over other control methods, PCGP will base the decision on weed characteristics and integrated weed management principles (USDA, 2005 and USDI 2010b). Decisions will be made based on whether other methods or combinations of methods are known to be effective on the species in similar habitats. If herbicides are selected as the weed control method, the choice of herbicides will be based on the invasive species, how it reproduces, its seed viability, the size of its population, site conditions (such as proximity to waterbodies), known effectiveness under similar site conditions, and the ability to minimize effects on non-target species.

Weed infestations that will be controlled include all ODA A and T listed weeds. If these weeds are present within the Pipeline's construction work limits, all visible plants will be eliminated and eradication will be initiated prior to seed development. Other priority weeds that will be considered for treatment will include some B listed weeds in areas where they are not significantly established off of the construction right-of-way. On federal lands, treatment of B listed weeds will be made based on consultation with the agency regarding the specific weed and the site conditions. The priority weeds that are subject to control on federal lands are included in Table 1-1 in Appendix 1. This table will be updated as necessary to include additions and changes in ODA or County noxious weed lists. On federal lands, where significant infestations occur off of the construction right-of-way on adjacent lands, where PCGP has no authority to operate or is not responsible for weed control efforts, PCGP would notify the agency of the known infestation and collaborate with the federal agency to develop a cooperative weed control program. This cooperative weed control program may include PCGP contributing funds to the BLM, Forest Service or Reclamation to implement a broader weed control program that would treat both the construction right-of-way and adjacent weed infestation off of the construction right-of-way. Where noxious weed infestations occur off of the construction right-of-way on private lands, PCGP may also fund the local county weed control

boards, soil and water conservation districts, Cooperative Weed Management Area, or watershed associations that are authorized to control weeds in the specific county.

In most cases, if an herbicide is used for control, it would be used in combination with other methods. For example, initial treatment of an invasive species may be done using a manual or mechanical method followed by an herbicide treatment, and then manual or mechanical methods may be implemented as maintenance treatments over the long-term. If herbicides are used to control noxious weed infestations, they would be used when they are the most appropriate treatment method. Spot treatments and the use of selective herbicides would be utilized to minimize impact to native or non-target species. Where applicable, seeding may be necessary to revegetate the site promptly and prevent the opportunity for weeds to become reestablished. PCGP will employ a state or federally-licensed herbicide applicator to ensure that the appropriate herbicides are utilized for the targeted weed species during its proper phenological period and at the specified rate. The applicator will ensure that the herbicides and any adjuvants are used according to the labeling restrictions, and warnings, following all applicable laws and conforming to the appropriate land managing agency decision documents (see Tables 2-1 and 2-2 in Appendix 2 and USDI 2010b). The applicator will also ensure that the herbicides that are used are registered for their intended use. Permits or approvals for the use of herbicides and adjuvants on federal lands would be obtained prior to use/treatment (see Section 2.2 and Appendix 3 for requirements for Pesticide – Use Proposal on federal lands). On federal lands PCGP would utilize the appropriate Standard Operating Procedures and Mitigation Measures when applying herbicides on the right-of-way, as outlined in the USDI 2010a Attachment A.

The applicator will confirm that the herbicides are applied according to their labels to ensure effectiveness and to minimize drift to non-targeted areas. Herbicides will not be applied during precipitation events or when precipitation is forecast within 24 hours or as specified on the label, whichever is more restrictive. The licensed applicator will complete a Herbicide or Pesticide Application Record (PAR) within 24 hours (see Appendix 6) when herbicides are applied on federal lands. Copies of all PARs will be provided to the land management agency within a month of application. PCGP will maintain these records for a minimum of three years. PCGP will not utilize herbicides on the construction right-of-way without landowner consent/approval and will use wicking, wiping, injection, or spot spraying as permitted by product labels. PCGP will not use aerial herbicide applications and will not use herbicides for general brush/tree control within the 30-foot maintained easement.

Weed Control near Sensitive Areas and Habitats. Herbicides will not be used within 100 feet of a wetland or waterbody, unless allowed by the appropriate agency. PCGP and its licensed applicators will follow prescribed mitigation measures to prevent impact to sensitive species known to occur in the construction right-of-way or adjacent areas identified during biological surveys. To ensure sensitive species/habitats are not adversely impacted by the Pipeline's weed control activities, Table 7-1 in Appendix 7 provides the various sensitive species and/or associated buffers that are crossed or in the vicinity of the Pipeline, and it will be updated prior to construction. This table was developed from the Pipeline's biological surveys and includes sensitive species proposed and/or listed under the Endangered Species Act and federal (BLM and Forest Service) and state sensitive species. (i.e., botanical species, Marbled Murrelet (MAMU), Northern Spotted Owl (NSO), waterbody crossings, big game winter range, etc.). If noxious weed infestations occur in the vicinity of sensitive sites, the proper treatment buffers will be applied to avoid potential adverse impacts to non-targeted species. In these areas, site-specific controls will be designed (e.g. application rate and method, timing, wind speed and direction, nozzle type and size, buffers, etc.) to mitigate the potential for adverse disturbance

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and/or contaminant exposure. PCGP would also implement the appropriate Conservation Measures, as outlined in Attachment B of the BLM's 2010 Record of Decision for Vegetation Treatments Using Herbicides on BLM Lands in Oregon (USDI 2010a) to protect Special Status Species.

Table 7-1 in Appendix 7 will also assist PCGP and/or its licensed applicator in applying applicable buffers or timing restrictions where appropriate for the specific species and activity. As an example, PCGP would apply daily timing restrictions (DTRs) during weed control activities within ¼-mile buffers of MAMU and NSO stands or nest patch. However, seasonal timing restrictions for these species would not be applied because the seasonal timing restrictions (March 15 - July 15 for NSO and April 1 - August 5 for MAMU) would prohibit successful weed control efforts since the active plant growing season, when most weeds should be treated, would be missed. Furthermore, disturbance to these species or other raptor species from weed control activities are expected to be inconsequential because they are short-term activities lasting only a few hours, are only conducted periodically at specific spot locations along the construction right-of-way, and are implemented by only one or two individuals.

4.0 SOIL PESTS

In the Klamath Basin there are two organisms of regulatory concern. These include *Verticillium* (fungus), which is a concern in mint and potato fields, and *Meloidogyne chitwoodii* (nematode), which is a concern in potatoes. Both of these organisms inhabit the soil and can be easily spread on tires, boots, or other soil-moving mechanisms. To minimize the potential spread of these organisms, PCGP will wash all equipment and vehicles before entering or leaving any mint or potato field crossed by the proposed Pipeline. Further, contractor personnel and inspectors will wash boots of soil or mud prior to entering and leaving mint and potato fields.

5.0 FOREST PATHOGENS AND INSECTS

As stated in Section 2.1 (and repeated here), during timber cruises for timber appraisals and landowner agreements prior to construction; surveys will be conducted to identify potential forest pathogens within the construction footprint (i.e., right-of-way or TEWAs). These forest pathogen surveys will help assess silvicultural treatments that may be required during clearing operations to minimize the potential spread of forest pathogens. Current on-line forest pathogen data provided by the Oregon Department of Forestry would be reviewed prior to timber cruises/surveys to assist in assessing forest pathogens in the vicinity of the Pipeline. Table 1-2 in Appendix 1 provides the existing tree insects and disease infestations that are documented in the vicinity of the Pipeline from the Oregon Department of Forestry survey data.

BMPs to Minimize the Spread of Forest Pathogens and Insects. To minimize or prevent the spread of Port-Orford-cedar root disease (*Phytophthora lateralis*) within the Pipeline area, PCGP will implement the following in areas with Port-Orford-cedar (POC) whether stands are infested or not (adapted from BLM, 1994 and USDA, 2004): 1) pressure wash equipment, vehicles and boots with non-infested water prior to entering uninfested POC areas and prior to departure of infested POC areas; 2) limit ground-disturbing construction and maintenance activities to the dry season, if feasible; 3) designate access and egress routes and parking areas in POC infested areas; 4) where possible, schedule clearing/grading activities in uninfested areas prior to infested areas; and 5) prevent use of right-of-way in POC areas from OHV recreationists by blocking access. Additionally, within areas of POC infestations impacted by the Pipeline, PCGP would ensure that excavated materials from trenching or any necessary grading activities are confined to the local area of the POC infection and not spread down the

construction right-of-way or moved to other areas. Stumps or other large woody debris from any POC infected areas would be left onsite within the infected area and not moved to other areas along the construction right-of-way or offsite such as for use in OHV barriers or habitat structures to minimize the potential spread of P. lateralis infection. PCGP will also revegetate using POC-resistant strains of seedlings if recommended and available for the seed zone affected by the Pipeline. PCGP's Hydrostatic Test Plan, included as Appendix M to the POD, also describes the BMPs that would be implemented to minimize the potential spread of forest pathogens, including Port Orford cedar root disease and Sudden Oak Death (*Phytophthora ramorum*) from the Pipeline's hydrostatic testing operations. The BMPs described in the Hydrostatic Test Plan are not included or repeated in this document since they are specific to the testing operations and the potential transfer of aquatic invasives from hydrostatic test water sources.

During timber cruising prior to Year One construction, sites infected with annosus root and butt disease will be documented. Management to reduce tree loss from the annosus root rot pathogen (*Heterobasidion annosum*) varies depending on tree species affected. To reduce the spread of annosus root rot in the project area overall, dry borax could be applied, if directed by land-managing agencies to freshly cut stumps and wounds on trees adjacent to the construction right-of-way in areas identified with infestations of annosus root rot, especially when true firs are the tree species present.

A naturally occurring beetle repellent, methylcyclohexenone (MCH), can be applied to downed logs or standing green trees to prevent Douglas-fir beetle attacks (EPA, 1999). In areas within the Pipeline right-of-way where Douglas-fir beetle infestations have been documented, PCGP could apply MCH capsules, if directed by the land-managing agencies, to Douglas-fir trees on the edges of the construction right-of-way and any Douglas-fir down logs within that area before beetle flight in April to preserve the remaining standing trees from infestation and prevent an increase in beetle infestation.

When clearing the construction right-of-way within true fir stands, PCGP will utilize the standard logging practices that directionally fall timber into the construction right-of-way, as well as store logs away from trees adjacent to the construction right-of-way to minimize or prevent damage to standing trees by fir engraver, western pine beetles, flatheaded borer, and mountain pine beetle. Additionally, fresh slash greater than 4 inches provides breeding material for the beetles and can contribute to outbreaks. PCGP will utilize the BLM and Forest Service fuel loading specifications outlined in Section 10.2 of the ECRP to minimize slash accumulations.

Thinning overstocked ponderosa pine stands and removing trees infested with western pine beetles will help reduce the hazard of additional attacks. In overstocked, infested stands, PCGP will remove infested trees before beetle emergence in early June (outside the ¼-mile buffer of NSO nest patches) to reduce potential for infestation, if feasible. If a mature ponderosa pine tree is identified with western pine beetle infestation within, but on the immediate edge of the construction right-of-way and will not pose a safety or construction hazard, it will be retained for future snag recruitment to benefit wildlife.

Flatheaded borer outbreaks are usually associated with dead or severely damaged trees, especially after disturbance events such as drought, storm damage, or fire. PCGP will take standard precaution to minimize damage to adjacent trees when clearing and maintaining the construction right-of-way, including felling trees within the construction right-of-way away from adjacent, standing trees, reducing risk of infection by flatheaded borer.

The most effective method for managing dwarf mistletoe is harvesting, burning, and/or girdling infected trees, because this parasite needs a live host. Roads, treeless ridgetops, and openings can serve as potential barriers to dwarf mistletoe spread. All branches with witches' brooms should be cut and nearby branches pruned because they most likely would be infected. If mistletoe is identified within the Pipeline Project area, PCGP will implement recommended BMPs following consultation and recommendation by agency staff.

Aboveground Facility Interiors. Rodent populations inside facilities such as the Klamath Compressor/Meter Stations (MP 228.13), and the Jordan Cove Meter Station at MP 0.00, which are all located on private lands, can pose a human health risk and may damage components of the facilities (control panels, wiring, etc.). Therefore, rodent control may be required in these aboveground facilities. If necessary, PCGP would implement rodent control in facility interiors using non-restricted rodenticides and trapping (e.g., snap traps).

6.0 REFERENCES

- Butler, Tim 2017. Oregon Department of Agriculture, Plant Division, Noxious Weed Control Manager. Personal communication with Edge Environmental, Inc.
- Oregon Department of Agriculture. 2017. Noxious Weed Policy and Classification System. Oregon Department of Agriculture, Noxious Weed Control Program, Salem, OR.
- Riley, Steve. 2009. Personal Communications with Edge Environmental, Inc. September 2, 2009.
- USDA, 2004. Management of Port-Orford-Cedar in Southest West Oregon. Final Supplemental Environmental Impact Statement. Coos Bay, Medford, and Roseburg Bureau of Land Management Districts and the Siskiyou National Forest - U.S. Department of Agriculture. Forest Service and U.S. Department of Interior Bureau of Land Management. Portland, OR. January.
- USDA, 2005. Pacific Northwest Region, Invasive Plant Program, Preventing and Managing Invasive Plants, Record of Decision, Forest Service, Pacific Northwest Region. States of Oregon and Washington, Including Portions of Del norte and Siskiyou Counties in California, and Portions of Nez Perce, Salmon, Idaho and Adams Counties in Idaho. October, 2005. Portland, Oregon.
- USDI, 2010a. Record of Decision, Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in Oregon. October, 2010.
- USDI, 2010b. Final Environmental Impact Statement for Vegetation Treatments Using Herbicides on BLM Lands in Oregon. Oregon State Office. , 2010.

Other Resource links:

- CDMS Applied Intelligence Agro-chemical database product search, allow search of registrant company specific product labels (http://www.cdms.net/Label-Database).
- Extension Toxicology Network (EXTOXNET) Pesticide Information Profiles. Cooperative effort of University of California-Davis, Oregon State University, Michigan State University, Cornell University and University of Idaho through Oregon State University, Corvallis, Oregon. (http://extoxnet.orst.edu/pips/ghindex.html).

Pesticide Fact Sheets. National Pesticide Information Center. (http://npic.orst.edu/npicfact.htm).

Appendix 1

Table 1-1Oregon State Listed Noxious Weeds that Could Occur or
Are Documented in the Vicinity of the Pipeline Project

Table 1-2Tree Insect and Disease InfestationDocumented within 0.5 Mile of the Pipeline Project

0.0300	ate Listed Noxious Weeds' that Cou					Oregon DOA Target	Documented Occurrence in Vicinity of Pipeline ⁵
Common Name Scientific Name	Characteristics	County ²	e/Subject to 0 Forest Service ³	BLM Districts ⁴	Oregon DOA Class		
Oregon A-Listed Weeds							
Plumeless thistle Carduus acanthoides	Found in pastures, valleys, fields, roadsides, and open native habitats.	Douglas ⁶ Klamath (L)		RO-D LV-D	А	Yes	
Woolly distaff thistle Carthamus lanatus	Invades pasture and range; difficult to eliminate because of persistent seedbank.	Douglas (L) Jackson ⁶		RO-D MD-D	A	Yes	Three locations documented in 2004 near MP 66.9 in ROW and within 30 feet of ROW/TEWA; Six sites identified N/S of ROW near MP 71.6 in 2004
Squarrose knapweed Centaurea virgata	A rangeland and pasture invader, rendering these areas unsuitable for productive grazing. Spreads fastest in sheep rangeland	Klamath ⁶		MD-D LV	A	Yes	
Paterson's curse Echium plantagineum	Invades oak woodland, native prairie, dry upland slopes; spreads rapidly; seeds spread by vehicles, humans, animal, water, wind, contaminated commercial seed.	Douglas (L)			A	Yes	
Orange hawkweed Hieracium (Piolsella) aurantiaca	Occurs in native meadows, gravel pits, forest openings, permanent pastures, roadsides, and hayfields.	Coos (L) Klamath (L)			А	Yes	
Matgrass Nardus stricta	Occurs in damp areas near swamps, estuaries, and watercourses; found in seasonally saturated mountain meadows.	Klamath (L)		СВ	A	Yes	
Yellow floating heart Nymphoides peltata	Aquatic plant that grows on slow- moving rivers, lakes, reservoirs, and ponds.	Douglas (L) Jackson (L)	UMP-D RRS-D		А	Yes	
Taurian thistle Onopordium tauricum	Most often occurs in rangeland and openings in ponderosa pine forests; reproduces from seed.	Klamath (L)			А	Yes	
Smooth cordgrass Spartina alterniflora	Perennial aquatic grass; ≤ 5 ft.; grows on intertidal mud or sand flats with minimal wave action	Coos (H)			А	Yes	

Table 1-1
Oregon State Listed Noxious Weeds ¹ that Could Occur or Are Documented within the Vicinity of the Pipeline Project

		Occurrenc	e/Subject to (Control		Oregon	Documented Occurrence in
Common Name Scientific Name	Characteristics	County ²	Forest Service ³	BLM Districts ⁴	Oregon DOA Class	DOA Target "T" Weed	Vicinity of Pipeline ⁵
Dense-flowered cordgrass Spartina densiflora	Well adapted to lower to middle salt marsh areas where it aggressively out competes native grasses, sedges and Salicornia stands	Coos (L)			A	Yes	
Oregon B-Listed Weeds							·
Velvetleaf Abutilon theophrasti	Commonly found in cultivated fields, gardens, fencerows, and waste aresas; spread by seed.	Coos (L) Douglas (L) Jackson (L)		CB-D LV-D	В	No	Crosses ROW at MP 18.4BR
Biddy-biddy Acaena novae-zelandiae	Prefers open, disturbed, well- drained sites, including stable dunes, open scrub, grassy areas, and trampled sites in coastal habitats.	Coos (L)	RRS-NF	CB-D	В	No	Along EARs 31.51, 32.10, 31.69-31.81; ROW MP 31.68-31.82
Russian knapweed Acroptilon repens	Infests native range and irrigated croplands; spread by rootstocks and seed.	Douglas (L) Jackson (L) Klamath (L)	FW-D	MD-D LV-D	В	No	
Pheasant's eye Adonis aestivalis	Prefers moist, well-drained soils but is adapted to seasonally dry soils.	Klamath (L)		LV-D	В	No	
Jointed goatgrass Aegilops cylindrical	Grows in cultivated fields; invades grasslands; introduced as contaminant in equipment and seed.	Jackson (L) Klamath (L)	_	MD-D	В	No	
Tree-of-heaven Ailanthus altissima	Creates problems in natural systems by forming large thickets via root suckering. Riparian areas are especially affected.	Douglas (L) Jackson (L)		RO-D MD-D	В	No	
Garlic mustard Alliaria petiolata	Displaces native forest under story species; frequenly invades forest opening edges, roads, streamsides, trails, and agricultural land. Thrives in partial shade of oak savanna.	Jackson (L)		MD-D	В	Yes	
Ragweed Ambrosia artemisiifolia	Found along ditches and waste areas.	Coos (L) Douglas (L) Jackson (W)		MD-D	В	No	
False brome Brachypodium sylvaticum	Grows in a variety of habitats and competes for early season moisture; threat to natural areas and commercial timber production.	Coos (L) Douglas (L) Jackson ⁶	UMP-D RRS-D	CB-D RO-D MD-D	В	No	Along EAR 24.36; ROW at MP 24.37
Butterfly bush <i>Buddleja davidii</i>	Pioneering species that dominates open habitats, such as meadows, open slopes and dunes, and	Coos (W) Douglas (L) Jackson (L)		CB-D	В	No	Adjacent to Menasha and K-2 Pipeyards; Along

		Occurrenc	e/Subject to (Control		Oregon	Documented Occurrence in
Common Name Scientific Name	Characteristics	County ²	Forest Service ³	BLM Districts ⁴	Oregon DOA Class	DOA Target "T" Weed	Vicinity of Pipeline ⁵
	reforested sites.	,					EARs 31.51, 32.10, 31.69- 31.81; ROW MP 31.68-31.82
Lens-podded whitetop Cardaria chalapensis	Very invasive weed forms dense patches that can completely dominate meadows and fields, restricting the growth of other species and degrading pastures.	Coos (L) Jackson (L) Klamath (L)		LV-D	В	No	
Musk thistle Carduus nutans	Found in pasture, range and timberlands; spreads by seeds, taking advantage of human disturbance; prolific in moist condition; commonly infests ditch banks, roadsides, and cereal fields.	Jackson (L) Klamath (W)	Yes FW-D	MD-D LV-D	В	No	Near MP 174.28; in ROW near MP 204.65; EAR 209.00, 221.92 near ROW
Italian thislte Carduus pycnocephalus	Infests roadsides and waste areas; spreads rapidly; replaces desirable forage species.	Coos (W) Douglas (W) Jackson (L)	UMP-D RRS-D	RO-D MD-D	В	No	MP 70.79
Slender-flowered thistle <i>Carduus tenuiflorus</i>	Infests roadsides and waste areas; outcompetes more desireable forage vegetation.	Coos (W) Douglas (W) Jackson			В	No	
Diffuse knapweed Centaurea diffusa	Grow in dense stands in a variety of open land, excluding more desirable forage species.	Douglas (L) Jackson (L) Klamath (L)	Yes UMP-D RRS-D FW-D	RO-D MD-D LV-D	В	No	
Spotted knapweed Centaurea maculosa	Form dense stands on any open ground, eliminating more desirable forage.	Coos (L) Douglas (L) Jackson (L) Klamath (W)	Yes UMP-D RRS-D	MD-D LV-D	В	Yes	MP 39.78; EAR 39.60-39.72; MP 89.97; EAR 23.42BR-23.53BR; MPs 23.51- 23.54BR; EAR to Starveout Creek comm site; MP 157.88; near MP 187.44/PAR 187.46; adjacent to K-Falls Memorial Drive 2 Pipe Yard

		Occurrenc	e/Subject to (Control		Oregon	Documented Occurrence in
Common Name Scientific Name	Characteristics	County ²	Forest Service ³	BLM Districts ⁴	Oregon DOA Class	DOA Target "T" Weed	Vicinity of Pipeline ⁵
Meadow knapweed Centaurea pratensis	In moist roadsides, sand or gravel bars, river banks, irrigated pastures, moist meadows, forest openings.	Coos (L) Douglas (W) Jackson (W) Klamath (H)	UMP-D RRS-D FW-D	CB-D RO-D MD-D	В	No	54.3, ≈56.3, 56.75, 56.8-57.4, 57.6, 57.7-57.9, 119.25; TEWA 160.54-W (RRS); ROW MP 23.52BR and along EAR 23.42BR-23.53BR; along EARs 31.51, 32.10, 31.69- 31.81; ROW MP 31.68-31.82; EAR to Starveout Creek comm site
Yellow starthistle Centaurea solstitialis	In dry slopes, grasslands, overgrazed rangelands, pastures, edges of cropland, roadsides, and disturbed areas; toxic to horses.	Coos (L) Douglas (W) Jackson (W) Klamath (L)	Yes UMP-D RRS-D FW-D	MD-D LV-D	В	No	MPs 67.17-67.28, 67.85, 67.95- 68.03, 68.25, 68.5, 68.55, 69, ≈69.1, 70.8, 80.43, 80.5, 80.6-80.82, 121.99, 126.3- 126.5, 128.5- 128.7, 141.65- 141.9, 142.1-144, 150.16, 160.7, 224.78, 224.87, 224.94; LTM, Inc. Pipe Yard; Winchester Pipe Yard; Umpqua River; Access Roads; MP 150.82-150.9; TEWA 142.02-W; EAR 141.80; MP 126.47; EAR 126.27-126.59; near MP 151.3; EARs 89.50, 19.89-80.42; UCSA 79.17-W.

		Occurrenc	e/Subject to 0	Control		Oregon	Documented Occurrence in
Common Name Scientific Name	Characteristics	County ²	Forest Service ³	BLM Districts ⁴	Oregon DOA Class	DOA Target "T" Weed	Vicinity of Pipeline ⁵
Rush skeletonweed Chondrilla juncea	In rangeland and cropland.	Douglas (W) Jackson (W) Klamath (L)	UMP-D RRS-D FW-D	RO-D MD-D LV	В	Yes	63.55-63.8, 64.1- 64.2, 67.17-67.28, 67.95, 69, ≈69.1, 70.23-70.3, 76.36, 94.7, 98.3-98.4, 102.2, MP 104.2/EAR 104.24; EAR 138.63; EAR to Starveout Creek comm site
Canada thistle Cirsium arvense	Found in cultivated fields, riparian areas, pastures, rangeland, forests, lawns, gardens, roadsides, and waste areas; most commonly spread by root tillage.	Widespread throughout Oregon	Yes FW-D	CB-D RO MD-D LV-D	В	No	MPs 37.65-38.9, 47-47, 48.27-48.4, 55.1, 78.4, 91.1- 91.6, 93.4-93.4, 96.7-96.9, 105.7, 109.8, 109.9, 199.57, 203.95; EARs 24.37BR, 23.32BR, 24.10, 24.36, 24.55, 26.95; EARs 150.43-150.65, Starveout Ceek Rd; EARs 46.51, 91.19-91.74, 206.50; TEWA 152.85-N; near MP 91.54; near MP 91.54; near MP 91.54; near MP 191.47, 200.37, 201.0 (in ROW); near TEWA 201.01-W; along State Highway 39
Bull thistle <i>Cirsium vulgare</i>	Found in pastures, rangelands, and newly logged sites; replaces native grasses and forbs.	Widespread throughout Oregon	Yes UMP-D RRS-D	CB-D	В	No	Numerous EARs along BR route; EAR 24.10; EAR 24.55; EAR 115.36; near MP 149, 195.56

		Occurrenc	e/Subject to C	Control		Oregon	Documented Occurrence in
Common Name Scientific Name	Characteristics	County ²	Forest Service ³	BLM Districts ⁴	Oregon DOA Class	DOA Target "T" Weed	Vicinity of Pipeline ⁵
Old man's beard Clematis vitalba	A "creeper" found along roadsides, river banks, gardens, hedges, shelter belts, disturbed forest, and forest edges.	Coos (L) Douglas (L)	RRS-D	CB-D MD-D	В	No	
Poison hemlock Conium maculatum	Grows in pastures, streams, and irrigation ditches; extremely poisonous.	Widespread throughout Oregon	FW-D	MD-D LV-D	В	No	Near MP 195.56; adjacent to K-Falls Memorial Drive 2 Pipe Yard
Field bindweed Convolvulus arvensis	Competitive crop weed.	Coos (W) Douglas (W) Jackson (W) Klamath (W)	FW-D	CB-D RO-D MD-D LV-D	В	Yes	
Jubata grass Cortaderia jubata	Found within coastal regions in forests.	Coos (L) Douglas (L)	RRS-D(?)	CB-D	В	No	
Dodder Cuscuta spp.	Parasite on agricultural crops; drastically reduces yield.	Douglas (L) Jackson (L)	FW-D	MD-D	В	No	
Houndstongue Cynoglossum officinale	Highly invasive; significantly reduce forage; toxic to cattle and horses.	Jackson (L) Klamath (L)	Yes RRS-D FW-D	CB-D MD-D LV-D	В	No	FW: MP 171.4- 171.6; near MP 171.38
Yellow nutsedge Cyperus esculentus	Invades cultivated agricultural lands.	Coos (W) Douglas (W) Jackson (W)			В	No	
Scotch broom Cytisus scoparius	Pioneer species which invades disturbed sites, natural areas, dunes, forestlands; prolific seed producer; costly to control.	Coos (W) Douglas (W) Jackson (W) Klamath (L)	Yes UMP-D RRS-D	CB-D RO MD	В	No	47.3-47.3, 52.15- 52.15, 53.65, 55.1, 56.1, 63.65, 82.94, 90.35, 94.7, 95.54; LTM, Inc. Pipe yard; Access Roads; MPs 36.2, 37.02, 38.64, 39.5; TEWA 38.86-W; TEWA 40.24-N; MP 44.84; along numerous EARs in CB, RO, and MD BLM; near MP 54.24; MP 64.25; MP 78.4; TEWA 79.85-N; MP

		Occurrenc	e/Subject to (Control		Oregon	Documented Occurrence in
Common Name Scientific Name	Characteristics	County ²	Forest Service ³	BLM Districts ⁴	Oregon DOA Class	DOA Target "T" Weed	Vicinity of Pipeline ⁵
							80.13; MP 91.55; adjacent to K-Falls Memorial Drive 2 Pipe Yard
Portuguese [Striated] broom <i>Cytisus striatus</i>	Prolific in savannahs, scrubs, and open forests; highly competitive in commercial timberlands with canopies up to 20 feet across.	Douglas (L)	UMP-D	RO-D MD-D	В	Yes	
Spurge laurel Daphne laureola	Prefers better-drained clay loams and forest loams with neutral to acidic soils. Escaped populations form dense stands mostly under tree canopies.	Douglas (L)		RO-D MD-D	В	No	
Cutleaf teasel Dipsacus laciniatus	Invasive in grasslands, savannahs, and waste areas.	Jackson (L) Klamath (L)	RRS-D	CB-D MD-D	В	No	EAR 23.32BR; EAR 24.36; EAR 26.95; EAR 20.05BR
South American waterweed Egeria (Elodea) densa	Aquatic herb that grows under water; invades new aquatic environments, impedes waterways, increases flooding.	Coos (W) Douglas (W) Jackson (L)			В	No	
Spanish heath Erica lusitanica	Found along utility rights-of-ways, riparian areas, and roadsides; spread rapidly by seed.	Coos (L)			В	No	
Leafy spurge Euphorbia esula	Invades disturbed sites, including roadsides, prairies, savannahs, pastures, and abandoned fields; difficult to control.	Coos ⁵ Jackson (L) Klamath (L)	FW-D	CB-D MD-D LV-D	В	Yes	
Myrtle spurge <i>Euphorbia nyrsinites</i>	Displaces desirable native species; caustic to human skin.	Jackson (L) Klamath (L)			В	No	
French broom Genista monspesslana	Aggressive pioneer species of land disturbances; costly to control because of persistence.	Coos (W) Douglas (W)	UMP-D RRS-D	CB-D RO-D MD-D	В	No	Multiple EARs in CB BLM (23.42BR- 23.53BR, 28.50; 24.36); MP 23.48; MP 23.52; EARs 51.54 (SH 42), 79.89-80.42; MP 98.13

		Occurrenc	e/Subject to (Control		Oregon	Documented Occurrence in
Common Name Scientific Name	Characteristics	County ²	Forest Service ³	BLM Districts ⁴	Oregon DOA Class	DOA Target "T" Weed	Vicinity of Pipeline ⁵
Herb Robert Geranium robertianum	Habitats that have been opened up through weed control activities	Douglas (L)	RRS-D	CB-D RO-D MD-D	В	No	
English ivy <i>Hedera helix</i>	Very invasive west of cascades; displaces native vegetation on forest floors.	Coos (W) Douglas (W) Jackson (W)	UMP-D RRS-D	CB-D RO-D MD-D	В	No	≈69.1; EAR 24.37BR; EAR 16.97BR-18.14BR; MP 16.97BR- 17.02BR
St. Johnswort Hypericum perforatum	Invades rangelands to open timber; rapidly spreads on well-drained, disturbed sites; poisonous to livestock.	Widespread throughout Oregon	Yes UMP-D RRS-D FW-D	CB-D RO-D MD-D LV-D	В	No	102.3, 104.2, 106.8, 108.1- 108.4, 108.9, 168.3, 168.5- 168.8, near MP 170.56, 170.7, 174.6, 174.85, 180.55, 180.87, 186.26, 186.47, 186.96; TEWA 168.85; TEWA 168.69; along EAR 168.69; along EAR 168.69; along EAR 168.84; near TEWA 174.52-W; EAR 119.03; MP 176.56; EAR 209.00
Policeman's helmet Impatiens glandulifera	Forms dense stands in riparian areasand moist lowlands, excluding native forbs.	Coos (L)			В	No	
Yellow flag iris Iris pseudacorus	Invades riparian, open water features, irrigation ditches; can reduce the carrying-capacity of wetlands for waterfowl and disrupt other ecological relationships; can restrict flow in waterways; difficult and expensive to control.	Coos (L) Douglas (W) Klamath (L)	FW-D	CB-D RO-D MD-D	В	No	
Dyers woad Isatis tinctoria	Occurs in rangeland, grain fields, pastures, waste areas, roadsides, and fencerows. Also found in orchards aind cultivated crops.	Douglas (L) Jackson (L) Klamath (L)	RRS-D FW-D	MD-D LV-D	В	No	

		Occurrenc	Occurrence/Subject to Control			Oregon	Documented Occurrence in
Common Name Scientific Name	Characteristics	County ²	Forest Service ³	BLM Districts ⁴	Oregon DOA Class	DOA Target "T" Weed	Vicinity of Pipeline ⁵
Kochia <i>Kochia scoparia</i>	Invades a wide variety of dry habitats; resistent to many herbicides.	Jackson (W) Klamath (W)			В	No	
Perennial peavine Lathyrus latifolius	Occurs on rights-of-ways, forested regions, and other natural areas.	Coos (L) Douglas (W) Jackson (L) Klamath (L)	UMP-D RRS-D	CB-D RO-D MD-D	В	No	MP 16.98BR; EARs 20.05BR, 24.37BR, 16.97BR-18.14BR; EAR 49.76
Whitetop (hoary cress) <i>Lepidium draba</i>	Common weed species on alkaline soils, but is not restricted to them.	Coos (L) Jackson (L) Klamath (L)	Yes	MD-D	В	No	
Perennial pepperweed Lepidium latifolium	Found in disturbed areas or bare soil (i.e., agriculture, rangeland, roadside ditches; degrades nesting habitat for wildlife; colonizes rapidly.	Jackson (L) Klamath (W)	FW-D	LV-D	В	Yes	Along State Highway 39 near MP 211.43
Hairy whitetop Lepidium pubescens	Common on alkaline soils, but is not restricted to them. Forms dense patches that can completely dominate sites.	Coos (L) Jackson (L) Klamath (L)			В	No	
Dalmation toadflax Linaria dalmatica (L. genista)	Out-competes desirable forage plants for moisture and nutrients; thrives in arid rangelands, pastures, and railways.	Coos (L) Douglas (L) Jackson (L) Klamath (W)	Yes UMP-D RRS-D FW-D	MD-D LV-D	В	Yes	160.37-160.42; TEWA 160.54-W; near MP 174.28
Yellow toadflax <i>Linaria vulgaris</i>	Aggressive weed in rangeland where it quickly replaces grasses and herbs.	Douglas (L) Jackson (L) Klamath (L)	UMP-D RRS-D FW-D	MD-D LV-D	В	No	
Waterprimrose Ludwigia hexapetala, peploides	Perennial occurring in marshes, swamps, ditches, ponds, and around lake margins, where they form dense floating mats up to 3 feet tall, crowding out native species.	Jackson (L)		MD-D	В	Yes	
Purple loosestrife <i>Lythrum salicaria</i>	Crowds out marsh vegetation required by wildlife for food and shelter; found along shorelines of shallow ponds, streams, and wetlands.	Coos (W) Douglas (W) Jackson (W) Klamath (L)	RRS-D	CB-D RO-D MD-D	В	No	MP 69
Parrot's feather Myriophyllum aquaticum	Aquatic plant found in freshwater lakes, ponds, streams, and canals; generally slower moving water.	Coos (W) Douglas (W) Jackson (L)		RO-D MD-D	В	No	

		Occurrenc	e/Subject to (Control		Oregon	Documented Occurrence in
Common Name Scientific Name	Characteristics	County ²	Forest Service ³	BLM Districts ⁴	Oregon DOA Class	DOA Target "T" Weed	Vicinity of Pipeline ⁵
Eurasian watermilfoil Myriophyllum spicatum	Adverse impact to fish habitat; expensive to control.	Coos (L) Douglas (L) Jackson (L)			В	No	•
Scotch thistle Onopordum acanthium	Inhabits moist sites or drainages in dry locations.	Douglas (L) Jackson (L) Klamath (W)	Yes FW-D	CB-D MD-D LV-D	В	No	Along EAR 206.50, 209.00, 217.67; Along EAR 228.36 adjacent to TEWA 228-01-N (Klamath Compressor Station)
Common reed Phragmites australis	Grows in sites that hold shallow water, including roadside ditches, marshes, swamps, brackish estuaries, and alkaline wetlands.	Klamath (L)			В	No	
Japanese knotweed Polygonum cuspidatum	Grows vigorously along roadsides, waste areas, streams, ditches; rapidly establishes on scoured shorelines, islands, and adjacent forested areas.	Coos (L) Douglas (W) Jackson (L)	Yes UMP-D RRS-D	CB-D RO-D MD-D	В	No	≈MP 69.1
Himalayan knotweed Polygonum polystachyum	Rapidly colonize scoured shores and islands; threat to riparian areas.	Coos (L) Douglas (L)		CB-B	В	No	
Giant knotweed Polygonum sachalinense	Prevents streamside regeneration in riparian areas.	Coos (L) Douglas (L)	UMP-D	CB-D RO-D MD-D	В	No	
Sulphur cinquefoil Potentilla recta	In disturbed areas (i.e., roadsides, pastures, abandoned fields).	Douglas (L) Jackson (L) Klamath (L)	UMP-D RRS-D FW-D	MD	В	No	MP 160.0/EAR 159.99-160.62
Himalayan [Armenian] blackberry Rubus armeniacus (R. procerus, R. discolor)	Aggressively displaces native vegetation; dominates most riparian habitat; costly to manage.	Coos (W) Douglas (W) Jackson (W) Klamath (L)	Yes UMP-D RRS-D FW-D	CB-D RO MD	В	No	53.55, 53.65, 54- 54.2, 54.3, 55.1, ≈56.3, ≈56.55, 56.75, 57.6-59.5, 59.6-60.1, 60.5, 62.5-63.9, 63.9- 64.9, 65.5-65.6, 65.8, 70.2-70.45, 78.4, 78.5, 78.6, 79.9, 80, 80.1, 80.2, 80.3, 80.4,

		Occurrenc	e/Subject to C	Control		Oregon	Documented Occurrence in
Common Name Scientific Name	Characteristics	County ²	Forest Service ³	BLM Districts ⁴	Oregon DOA Class	DOA Target "T" Weed	Vicinity of Pipeline ⁵
							84.2, 89.9-90, 90.22-90.45, 95.54, 102.6- 102.82, 105.9, ≈119.2-119.7, 133.2, 142.1- 145.5, 147.4, 149.6-149.7, 149.8, 150.25- 150.3, 151.6; near 152.5 and 153.03; along numerous access roads in CB, RO, and MD BLM
Mediterranean sage Salvia aethiopis	In rangeland, alfalfa, and wheat on dry, south-facing slopes.	Jackson (L) Klamath (W)	FW-D	LV-D	В	No	Adjacent to K-Falls Industrial oil Pipe Yard
Tansy ragwort <i>Senecio jacobaea</i>	Prolific in pastures, clearcuts, and disturbed roadside areas; toxic to cattle and horses.	Coos (W) Douglas (W) Jackson (L) Klamath (H)	Yes UMP-D RRS-D FW-D	CB-D MD-D RO-D LV-D	В	Yes	31.58-32.5; 36.5- 38.95; 47.7-47.7, 48.27-48.4, 51.5- 51.5, 75.4, 79.6- 80.70; 90.33, 91.5- 91.7, 93-93, 93.4- 93.5, 97.1-97.7, 98.6-99.3, 102.3/EAR 102.30, 105.7- 105.8, 108.13/EAR 108.32, 109.8, 110.2
Milk thistle Silybum marianum	Infests roadsides, waste and disturbed areas, grazing lands; poisonous to livestock.	Coos (W) Douglas (W) Jackson (L)		RO-D MD-D	В	No	
Buffalobur Solanum rostratum	Drought-resistant; survives in disturbed, dry areas (i.e., meadows, dry rangelands, pastures, roadsides, waste areas).	Coos (H) Douglas (L) Jackson (L) Klamath (L)			В	No	
Johnsongrass Sorghum halepense	Extremely competitive weed of corn.	Douglas (L) Jackson (L)			В	No	

Common Name Scientific Name		Occurrence/Subject to Control				Oregon	Documented Occurrence in
	Characteristics	County ²	Forest Service ³	BLM Districts ⁴	Oregon DOA Class	DOA Target "T" Weed	Vicinity of Pipeline ⁵
Spanish broom Spartium junceum	Grows in drier sites; costly to control because of persistent seed bank (> 80 years).	Douglas (L) Jackson (L)	RRS-D	RO-D MD-D	В	No	
Medusahead rye Taeniatherum caput- medusae	Outcompetes other grasses by extracting moisture before native perennial grasses begin to grow.	Coos (L) Douglas (W) Jackson (W) Klamath (L)	Yes UMP-D RRS-D FW-D	RO-D MD-D LV-D	В	No	MP 129.05-129.1 and adjacent
Saltcedar Tamarix ramosissima	Occurs along streams, canals, and reservoirs.	Jackson (L) Klamath (L)		LV-D	В	Yes	
Puncturevine Tribulus terrestris	Infests pastures, ditches, fields, and roadsides; seeds easily spread by animals, humans, and vehicles.	Douglas (L) Jackson (W) Klamath (L)	RRS-D	RO-D MD-D LV-D	В	No	Along State Highway 39 near MP 211.15; adjacent to Merril Oregon RR Siding Pipe Yard
Gorse Ulex europaeus	Persistent pioneer species adapted to a variety of habitats; plant growth and stand density increase rapidly; persistent seed bank.	Coos (W) Douglas (L)	UMP-D RRS-D	CB-D RO-D MD-D	В	Yes	Adjacent to Coquille Yard; MF 21.4 BR; MP 21.97BR; MP 22.08BR; EAR 20.95BR; near TEWA 25.72-W; several EARs in CB BLM; MP 47.74
Spiny cocklebur <i>Xanthium spinosum</i> ¹ Sources: ODA, 2017a;	In highly disturbed waste areas and barnyards; surrounds small reservoirs; seeds and seedlings are poisonous.	Coos (L) Douglas (L) Jackson (L) Klamath (L)		MD-D LV-D	В	No	

not indicate the species was located in counties crossed by the Proposed Route.

³ Forest Service Codes ("D"=documented in National Forest, although not always in County crossed by Pipeline; Forest Service 2005 and 2017b): UMP-Umpqua N.F., RRS-Rogue River-Siskiyou N.F., FW- Fremont-Winema N.F. "Yes" indicates that it is documented or suspected to occur in USDA-FS Region 6 but not necessarily within forests crossed by the Pipeline and subject to control if located in the Forest (Forest Service, 2005).

⁴ BLM District Codes ("D"=documented in BLM District, although not always in County crossed by Pipeline; BLM 1995a, 1995b, 1995c, 1995d, and 2017b): CB-Coos Bay BLM, RO-Roseburg BLM, MD-Medford BLM, LV- Lakeview BLM.

⁵ Documented within 100 feet of Pipeline project during survey efforts for the Pipeline by Siskiyou BioSurvey, LLC from 2007 through 2017, or included in data provided to PCGP (Forest Service, 2017b; BLM, 2017b; ODA 2018).

⁶ BLM District (BLM 2017b) indicated that this species is found in the listed county.

I ree II	nsect and Disease Infest	ation Documented with		e Pipeline	
Milepost (if crossed by Pipeline)	Location Within Vicinity of Pipeline	Identified Insect or Disease	Number of trees, if known	Year	Land Owner
MP 6.7R– MP 22.0	Along ROW. Common throughout entire west coast forest.	Swiss Needle Cast	U	2007-2017	BLM/PV
	0.2 mi S of MP 1.23	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	1	2008	PV
	0.3 mi N of MP 2.3	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	2	2010	PV
	0.1 mi N of MP 2.43	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	1	2009	PV
	near Kentuck Slough; 0.4 mile NE of MP 6.4R	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	1	2014	PV
	0.3 mi W of MP 7.2R	Douglas-fir Beetle	2	2012	PV
	0.04 mi N of MP 9.57R	Douglas-fir Beetle	1	2017	PV
	0.3 mi W of MP 10.19R	Douglas-fir Beetle	1	2017	PV
	0.1 mi S of MP 13.6BR	Douglas-fir Beetle	1	2017	BLM
	0.7 mi W of MP 14.4BR	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	0.9 acre	2017	PV
	0.7 mi W of MP 15.2BR	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	0.99 acre	2011	PV
	0.1 mi W of MP 15.8BR	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	2.5 acres	2010	PV
	0.3 mi E of MP 20.9BR	Douglas-fir Beetle	1	2015	BLM
	0.9 mi W of MP 21.7BR	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	0.5 acre	2010	PV
	0.5 mi E of MP 22.8BR	Flatheaded Borer	0.5 acre	2008	BLM
	0.1 mi W of MP 25.2BR	Douglas-fir Beetle	1	2014	BLM
	0.2 to 0.5 mi SW of MP 21.8	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	5	2012, 2015	BLM
	0.3 mi SW of MP 22.3	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	1	2013	PV
	0.2 mi SW of MP 22.45	Flatheaded Borer	1	2007	PV
MP 23.1	Construction ROW	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	1	2013	PV
	0.1 mi SW of MP 23.2	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	1	2015	PV
	0.3 mi SW of MP 23.2	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	1	2014	BLM
	0.05 mi S of MP 23.46; 0.2 mi SE of MP 23.53	Douglas-fir Beetle	2	2006, 2008	BLM
	SW of ROW near MP 23.46	Flatheaded Borer	1	2008	BLM

 Table 1-2

 Tree Insect and Disease Infestation Documented within 0.5 Mile of the Pipeline

Milepost (if crossed by Pipeline)	Location Within Vicinity of Pipeline	Identified Insect or Disease	Number of trees, if known	Year	Land Owner
	0.13 mi W of MP 23.8	Douglas-fir Beetle	1	2017	BLM
	0.4 mi NE of MP 25.1	Flatheaded Borer	2	2009	BLM
	0.2 mi SW of MP 25.3	Flatheaded Borer	2	2009	PV
	0.3 mi NE of MP 26.9	Douglas-fir Beetle	2	2010	PV
	0.2 mi E of MP 27.0	Douglas-fir Beetle	2	2015	BLM
	0.1 mi E of MP 30.2	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	2	2014	PV
	0.3 mi E of MP 30.5	Port-Orford-Cedar Root Disease (Phytophthora lateralis)	2	2014	BIA
MP 30.44 – MP 30.50	Construction ROW	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	11	2004, 2011	PV
	0.3 mi E of MP 30.5	Flatheaded Borer	1	2016	BIA
MP 30.51 – MP 30.55	Construction ROW	Flatheaded Borer	3	2007	PV
MP 30.84 – MP 30.89; TEWA 30.86	Construction ROW	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	1	2011	PV
	0.3 mi S of MP 31.0	Fir Engraver	1	2007	BLM
MP 32.14 – MP 32.20	Construction ROW	Douglas-fir Beetle	1	2010	BLM
	0.3 mi SW of MP 33.6	Flatheaded Borer	2	2008	BIA
	0.4 mi SW of MP 33.6	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	2	2010	BIA
	0.4 mi SW of MP 33.8	Flatheaded Borer	2	2008	BIA
	0.3 mi SW of MP 34.86	Flatheaded Borer	4	2006	PV
	0.3 mi SW of MP 34.7	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	2	2008	BIA
	0.3 mi N of MP 34.9	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	10	2008, 2009	PV
MP 35.62 – MP 35.67	Construction ROW	Flatheaded Borer	1	2008	BLM
	0.3 mi SE of MP 36.4	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	2	2012	BLM
	0.5 mi S of MP 35.81	Douglas-fir Beetle	5	2006	PV
	0.1 mi S of MP 36.75	Fir Engraver	5	2005	BLM
	0.1 mi NW of MP 37.3	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	2	2012	PV
	0.07 mi S of MP 37.42	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	1	2011	BLM
	0.3 mi SE of MP 37.4	Douglas-fir Beetle	2	2015	BLM
	0.2 mi S of MP 37.5	Flatheaded Borer	2	2016	BLM
	0.2 mi N of MP 37.6	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	2	2011	BLM
	0.4 mi S of MP 39.4	Port-Orford-Cedar Root Disease (<i>Phytophthora</i> <i>lateralis</i>)	2	2016	PV

Milepost (if crossed by Pipeline)	Location Within Vicinity of Pipeline	Identified Insect or Disease	Number of trees, if known	Year	Land Owner
MP 39.65	Construction ROW	Root disease	10	2016	PV
	0.3 mi NE of MP 40.0	Douglas-fir Beetle	2	2015	BLM
TEWA 40.87-N	TEWA	Flatheaded Borer	1	2007	BLM
	NE of ROW near MP 48.04	Douglas-fir Beetle	1	2010	PV
	0.3 mi NE of MP 42.7	Douglas-fir Beetle	2	2015	BLM
	0.3 mi NE of MP 43.3	Flatheaded Borer	2	2014	BLM
	0.3 to 0.5 mi NE of MP 43.4	Flatheaded Borer	8	2016	BLM
	0.4 mi S of MP 45.2	Douglas-fir Beetle	2	2010	BLM
	0.3 mi S of MP 45.3	Douglas-fir Beetle	2	2010	BLM
	0.1 mi S of MP 45.6	Flatheaded Borer	2	2016	BLM
	0.3 mi S of MP 46.0	Flatheaded Borer	2	2009	PV
	0.4 mi SW of MP 47.1	Mountain Pine beetle, Sugar Pine	2	2015	BLM
	0.4 mi SW of MP 47.2	Flatheaded Borer	2	2015	BLM
	0.02 mi N of MP 48.18	Douglas-fir Beetle	2	2010	PV
	0.02 mi S of MP 48.3	Douglas-fir Beetle	2	2010	PV
	0.04 mi S of MP48.29	Douglas-fir Beetle	1	2010	BLM
MP 48.29 – MP 48.44	Construction ROW	Fir Engraver	20	2005	BLM
	0.04 mi N of MP 48.61	Flatheaded Borer	1	2007	PV
	0.3 mi S of MP 49.77	Flatheaded Borer	10	2005	PV
	0.2 mi N of MP 50.48	Flatheaded Borer	2	2007	PV
	0.3 mi N of MP 50.7	Flatheaded Borer	4	2007	PV
MP 50.88 – MP 51.1	Construction ROW	Flatheaded Borer	6	2007, 2008	BLM
	0.2 mi N of MP 50.9	Flatheaded Borer	2	2016	PV
	0.3 mi N/NE of MP 51.1	Flatheaded Borer	4	2016	PV
	0.2 mi S of MP 51.12	Fir Engraver	5	2005	BLM
	0.2 mi SW of MP 51.4	Flatheaded Borer	2	2007	BLM
	0.02 mi N of MP 51.61	Fir Engraver	10	2005	BLM
	0.4 mi N of MP 52.15	Fir Engraver	5	2005	BLM
	0.4 mi S of MP 52.2	Flatheaded Borer	2	2008	PV
	0.3 mi N of MP 53.3	Flatheaded Borer	2	2015	PV
	0.2 mi SW of MP 53.5	Flatheaded Borer	3	2016	PV
	0.2 mi N of MP 54.3	Flatheaded Borer	34	2016	PV
	0.3 mi NW of MP 54.9	Flatheaded Borer	4	2012	PV
	0.3 mi N of MP 56.6	Flatheaded Borer	8	2016	PV
	0.3 mi S of MP 58.0	Pine Engraver	2	2015	PV
	0.3 mi S of MP 58.3	Pine Engraver	4	2015	BLM
	0.3 mi S of MP 59.0	Flatheaded Borer	2	2012	BLM
	0.05 mi N of MP 59.50	Flatheaded Borer	1	2007	PV
	S of ROW near MP 59.90	Flatheaded Borer	1	2007	PV
	0.4 mi S of MP 60.4	Flatheaded Borer	1	2013	PV
	0.03 mi N of MP 61.14	Flatheaded Borer	2	2010	BLM
	0.2 mi SW of MP 61.4	Douglas-fir Engraver	5	2007	PV
	0.1 mi N of MP 61.9	Western Pine Beetle	5	2014	PV

Milepost (if crossed by Pipeline)	Location Within Vicinity of Pipeline	Identified Insect or Disease	Number of trees, if known	Year	Land Owner
/	0.4 mi S of MP 62.7	Douglas-fir Beetle	3	2015	PV
	0.2 mi SW of MP 63.6	Flatheaded Borer	10	2016	PV
	0.4 mi NE of MP 63.8	Flatheaded Borer	2	2016	PV
	0.4 mi NE of MP 64.2	Flatheaded Borer	2	2016	BLM
	0.3 mi S of MP64.8	Flatheaded Borer	2	2012	PV
	0.3 mi S of MP 65.07	Douglas-fir Engraver	5	2006	PV
	0.1 mi S of MP 65.7	Flatheaded Borer	2	2012	PV
	0.1 mi S of MP 67.3	Flatheaded Borer	2	2010	PV
	0.1 mi SW of MP 68.6	Flatheaded Borer	1	2017	PV
	0.01 mi N of MP 72.81	Flatheaded Borer	2	2011	PV
	0.4 mi S of MP 73.7	Flatheaded Borer	2	2013	BLM
	0.3 mi E of MP 73.8	Flatheaded Borer	2	2016	BLM
	0.3 mi E of MP 73.9	Flatheaded Borer	2	2010	BLM
	0.4 mi SE of MP 74.5	Flatheaded Borer	2	2011	BLM
MP 74.9-75.2	0.0 to 0.04 mi N of MPs; 0.5 mi S of MPs	Flatheaded Borer	5	2017	BLM
	0.4 mi SW of MP 76.8	Fir Engraver	15	2016	PV
	0.3 mi N of MP 77.0	Flatheaded Borer	24	2016	PV
	0.4 mi NE of MP 77.7	Flatheaded Borer	2	2008	BLM
	0.2 mi NE of MP 78.3	Flatheaded Borer	2	2009	BLM
	0.4 mi NE of MP 78.4	Pine Engraver	3	2016	BLM
	0.6 mi N of MP 79.41	Flathead Borer	1	2009	PV
	0.3 mi NE of MP 79.8	Flatheaded Borer	2	2013	BLM
	0.45 mi W of MP 80.7	Flatheaded Borer	9	2017	BLM
MP 82.00 – MP 82.31	Construction ROW	Fir Engraver	10	2005	BLM
	0.4 mi N of MP 82.5	Flatheaded Borer	2	2017	BLM
	0.4 mi NE of MP 82.9	Flatheaded Borer	2	2016	PV
	0.1 mi NE of MP 83.3	Flatheaded Borer	2	2016	BLM
	0.2 mi NE of MP 84.6	Flatheaded Borer	2	2016	PV
	0.3 mi SE of MP 84.7	Flatheaded Borer	1	2016	BLM
	0.2 mi S of MP 84.9	Flatheaded Borer	1	2016	BLM
MP 84.34 – MP 84.47	Construction ROW	Fir Engraver	5	2005	PV
	0.1 mi SW of MP 85.0	Flatheaded Borer	1	2016	BLM
	0.1 mi N of MP 85.31	Fir Engraver	20	2004	BLM/PV
	0.1 mi N of MP 85.2	Flatheaded Borer	4	2016	PV
	0.1 mi N of MP 85.7	Fir Engraver	3	2015	PV
	0.1 mi N of MP 86.0	Fir Engraver	3	2015	BLM
	0.1 mi NE of MP 86.52	Fir Engraver	20	2004	BLM
	0.2 mi W of MP 86.6	Flatheaded Borer	1	2016	PV
	0.4 mi W of MP 86.7	Flatheaded Borer	1	2016	PV
	W of ROW near MP 86.72	Mountain Pine Beetle, Sugar Pine	1	2009	BLM
	0.1 mi E of MP 86.98	Fir Engraver	30	2004	BLM
	0.5 mi W of MP 86.8	Douglas-fir Beetle	10	2011	PV
	0.1 mi E of MP 86.8	Douglas-fir Beetle	1	2014	PV
	0.1 mi NE of MP 87.6	Flatheaded Borer	1	2015	BLM
	0.06 mi SW of MP 89.08	Flatheaded Borer	1	2010	PV

Milepost (if crossed by Pipeline)	Location Within Vicinity of Pipeline	Identified Insect or Disease	Number of trees, if known	Year	Land Owner
	0.4 mi NE of MP 89.0	Flatheaded Borer	4	2017	PV
	0.3 mi W of MP 89.5	Flatheaded Borer	1	2014	PV
	0.4 mi W of MP 89.7	Flatheaded Borer	2	2009	PV
	0.2 mi SW of MP 90.5	Flatheaded Borer	2	2016	BLM
	0.4-0.5 mi NE of MP 93.0	Flatheaded Borer	2	2017	BLM, PV
	0.2 mi W of MP 93.4	Pine Engraver	30	2016	PV
	0.4 mi W of MP 94.7	Flatheaded Borer	10	2010	BLM
	0.2 mi S of MP 94.7	Flatheaded Borer	10	2010	BLM
	0.1 mi E of MP 94.27	Flatheaded Borer	5	2005	PV
	0.3 mi W of MP 94.3	Western Pine Beetle	1	2015	PV
95.2-95.5	0.04-0.2 mi E of MPs	Flatheaded Borer	6	2017	BLM
	0.3 mi W of MP 95.3	Needle Cast in Ponderosa	Medium	2014	PV
	0.4 mi E of MP 95.6	Mountain Pine Beetle, Sugar Pine	1	2007	BLM
	0.04 mi NE of MP 96.07	Flatheaded Borer	1	2009	PV
	0.14 mi S of MP 97.45	Mountain Pine Beetle, Sugar Pine	1	2017	BLM
MP 96.88 to 109.00 below areas:	Stout's Crk bridge at Milo south to 109.000 on FS.	Burned	Majority of vegetation inside and within varying distances of the ROW.	2015	FS, BLM, PV
MP 96.88 - MP 97.04	Construction ROW	Western Pine Beetle	5	2005	PV
	0.3 mi SW of MP 98.1	Douglas-fir Beetle	3	2010	BLM
	0.4 mi NE of MP 98.2	Douglas-fir Beetle	2	2010	BLM
	0.2 mi SW of MP 98.3	Douglas-fir Beetle	3	2010	BLM
	0.4 mi E of MP 98.37	Douglas-fir Beetle	5	2006	FS
	0.2 mi E of MP 98.40	Fir Engraver	10	2004	FS
MP 98.43 – MP 98.50	Construction ROW	Douglas-fir Beetle	3	2010, 2012	BLM
	0.03 mi W of MP 98.62	Douglas-fir Beetle	3	2010	BLM
	0.03 mi E of MP 99.12	Douglas-fir Beetle	5	2010	PV
	0.05 mi W of MP 99.55	Flatheaded Borer	1	2009	FS
	0.3 mi E of MP 99.7	Douglas-fir Beetle	5	2010	FS
	0.2 mi E of MP 100.12	Fir Engraver	no data	2004	FS
	0.3 mi E of MP 100.12	Fir Engraver	10	2005	FS
MP 100.26	Construction ROW	Flatheaded Borer	1	2007	BLM
MP 100.31 – 100.38	Construction ROW	Douglas-fir Beetle	5	2010	BLM
MP 100.52 – MP 100.59	Construction ROW; 0.13 W of MP 100.57; 0.07 E of MP 100.57	Douglas-fir Beetle	15	2010	BLM/FS
	0.2 mi W of MP 100.72	Fir Engraver	5	2005	BLM/PV
	0.4 mi E of MP 101.1	Flatheaded Borer	2 - Fire	2017	FS
	0.2 mi W of MP 101.7	Douglas-fir Beetle	1	2013	BLM
MP 101.84–MP 101.90	Construction ROW	Douglas-fir Beetle	1	2012	FS
	0.2 mi NW of MP 101.9	Douglas-fir Beetle	2	2010	BLM
	0.06 mi SE of 101.92	Flatheaded Borer	2	2009	FS
	NW of ROW near MP	Douglas-fir Beetle	2	2010	BLM

Milepost (if crossed by Pipeline)	Location Within Vicinity of Pipeline	Identified Insect or Disease	Number of trees, if known	Year	Land Owner
	102.01				
	0.3 mi W of MP 102.0	Western Pine Beetle	2	2017	BLM
TEWA 102.19-N	TEWA near MP 102.21	Douglas-fir Beetle	5	2010	BLM
	0.4 mi SE of MP 102.25	Douglas-fir Beetle	5	2006	FS
	0.01 mi E of MP 102.47	Douglas-fir Beetle	2	2010	FS
	0.2 mi E of MP 102.6	Flatheaded Borer	1 - Fire	2017	FS
	0.3 mi SW of MP 103.11	Pine Engraver	5	2004	FS/PV
	0.2 mi SW of MP 103.1	Douglas-fir Beetle	1	2015	PV
	0.3 mi SW of MP 103.2	Fir Engraver	1	2015	PV
	0.2 mi SW of MP 103.2	Douglas-fir Beetle	1	2015	PV
	0.2 mi SW of MP 103.4	Fir Engraver	1	2015	PV
	0.1 mi E of MP 103.5	Flatheaded Borer	2	2014	PV
MP 103.92 – MP 104.22	Construction ROW	Fir Engraver	35	2004	FS/PV
MP 104.36 – MP 104.41	Construction ROW	Flatheaded Borer	1	2007	FS
	0.3 mi SW of MP 104.96	Mountain Pine Beetle, Sugar Pine	1	2004	FS
	0.02 mi S of MP 105.07	Douglas-fir Beetle	2	2010	FS
	0.2 mi NE of MP 105.4	Western Pine Beetle	1 - Fire	2017	FS
	0.2 mi E of MP 105.9 0.07 mi W of MP106.10	Fir Engraver	1 4	2015 2010	FS FS
	0.2 mi E of MP 106.2	Douglas-fir Beetle Fir Engraver	4	2010	FS
	W of MP 106.32	Douglas-fir Beetle	4	2011	FS
	0.4 mi W of MP 103.4	Flatheaded Borer	1	2016	FS
	0.04 mi W of TEWA 106.46; 0.1 mi SW of MP 106.42	Douglas-fir Beetle	4	2010	FS
	0.2 mi W of MP 106.8	Needle Cast in Ponderosa	Medium	2016	FS
MP 107.00 – MP 108.6	Construction ROW / 0.07 mi E of MPs	Flatheaded Borer	1, 5-Fire	2015, 2017	FS
	E of MP 107.79	Mountain Pine Beetle, Sugar Pine	1	2011	FS
	0.5 mi SE of MP 108.6	Flatheaded Borer	2	2017	FS
MP 110.16 – MP 110.69	Construction ROW	Fir Engraver	no data	2004	FS
	0.1 mi W of MP 110.1	Flatheaded Borer	1	2015	FS
	0.04 mi SW of MP 110.21	Flatheaded Borer	1	2007	FS
MP 110.28 – MP 110.34	Construction ROW	Flatheaded Borer	2	2010	FS
	0.4 mi SW of MP 110.3	Flatheaded Borer	1	2013	FS
	0.5 mi SW of MP 110.4	Flatheaded Borer	1	2017	FS
	0.06 mi S of MP 111.14	Flatheaded Borer	2	2010	FS
	0.3 mi N of MP 111.24	Fir Engraver	5	2004	FS
	0.05 mi NE of MP 111.37	Flatheaded Borer	2	2010	FS

Milepost (if crossed by Pipeline)	Location Within Vicinity of Pipeline	Identified Insect or Disease	Number of trees, if known	Year	Land Owner
	0.1 mi SW of MP 111.5	Flatheaded Borer	9	2016	FS
	MP 112 to 113	Douglas-fir Beetle	157 acres	2010	FS
MP 112.27 - MP 112.33	Construction ROW	Mountain Pine Beetle, Sugar Pine	1	2005	FS
	0.1 mi SW of MP 112.4	Flatheaded Borer	2	2016	FS
	0.4 mi NE of MP 112.54	Mountain Pine Beetle, Sugar Pine	1	2004	FS
	0.4 mi NE of MP 112.54	Fir Engraver	5	2005	FS
MP 113.40 – MP 113.66	Construction ROW	Fir Engraver	0.25 acres	2010	PV
	0.1 mi NE of MP 113.8	Fir Engraver	8 acres	2016	PV
	0.45 mi NE of MP 114.2	Fir Engraver	10	2017	BLM
MP 116.58 – MP 116.65	Construction ROW	Western Pine Beetle	1	2013	BLM
MP 116.99 – MP 117.12	Construction ROW	Western Pine Beetle	6	2005	BLM
	0.3 mi W of MP 117.4	Western Pine Beetle	1	2015	BLM
	0.4 mi W of MP 117.6	Western Pine Beetle	1	2015	BLM
	0.3 mi W of MP 118.3	Flatheaded Borer	2	2016	BLM
	0.02 mi W of MP 119.1	Western Pine Beetle	2	2017	BLM
MP 119.10 – MP 119.15	Construction ROW	Flatheaded Borer	1	2015	BLM
	0.2 mi E of MP 119.3	Western Pine Beetle	1	2013	PV
	0.2 mi W of MP 119.6	Flatheaded Borer	1	2017	BLM
	0.3 mi SW of MP 119.8	Western Pine Beetle	2	2016	PV
	0.2 mi SW of MP 119.97	Western Pine Beetle	5	2004	BLM
MP 120.25 – MP 120.31	Construction ROW	Western Pine Beetle	2	2008	BLM/PV
	0.2 mi SW of MP 120.5	Flatheaded Borer	1	2015	PV
	0.2 mi E of MP 121.0	Flatheaded Borer	2	2017	PV
	0.1 mi W of MP 121.81	Western Pine Beetle	5	2004	PV
	MP 32.1	Flatheaded Borer	4 acres	2016	PV
	0.05 mi NE of MP 123.2	Flatheaded Borer	6	2016	PV
	0.4 mi SW of MP123.2 0.05 mi SW of MP 123.0	Flatheaded Borer	12	2016	PV
	0.05 mi SvV of MP 123.0		6	2016	BLM
	0.14 mi S of MP 123.2 0.3 mi SW of MP 123.9	Flatheaded Borer Flatheaded Borer	2 acres 19 acres	2017 2016	BLM BLM
	0.05 mi SW of MP 123.9	Flatheaded Borer	+ +		BLM
	0.05 mi SW of MP 124.0	Flathead Borer	8 acres 5	2016	BLM
MP 124.15 – MP 124.23	Construction ROW	Flatheaded Borer	9 acres	2011 2016	BLM
	0.4 mi NE of MP 124.31	Western Pine Beetle	10	2005	BLM
	0.34-0.45 mi NE/E of MP 124.3	Flatheaded Borer	2 acres	2017	BLM
	0.1 mi NE of MP 124.3	Flatheaded Borer	8 acres	2016	BLM/PV
	0.5 mi SW of MP 125.24	Western Pine Beetle	2	2005	PV

Milepost (if crossed by Pipeline)	Location Within Vicinity of Pipeline	Identified Insect or Disease	Number of trees, if known	Year	Land Owner
	0.4 mi NE of MP 125.41	Western Pine Beetle	10	2005	BLM
	0.1 mi NE of MP 125.42	Pine Engraver	5	2014	BLM
MP 125.4-126.1	0.01-0.3mi N of MPs	Flatheaded Borer	11 acres	2017	BLM
	0.3 mi NE of MP 125.5	Western Pine Beetle	1	2013	BLM
	0.2 mi S of MP 125.72	Flatheaded Borer	1	2017	BLM
MP 125.62 – MP 125.72	Construction ROW	Flatheaded Borer	9 acres	2016	PV
MP 125.71 – MP 125.76	Construction ROW	Western Pine Beetle	3	2008	PV
	0.4 mi NE of MP 125.83	Flathead Borer	5	2004	BLM
MP 125.87 – MP 125.93	Construction ROW	Western Pine Beetle	8	2005	PV
	0.2 mi E of MP 126.54	Western Pine Beetle	10	2005	BLM/PV
	0.2 mi SW of MP 126.1	Flatheaded Borer	6.5 acres	2016	BLM
	0.2 mi NE of MP 126.2	Pine Engraver	3	2014	PV
	0.3 mi NE of MP 126.2	Flatheaded Borer	9 acres	2016	BLM
	0.4 mi NE of MP 126.3	Western Pine Beetle	5	2015	BLM
	0.3 mi NE of MP 126.3	Pine Engraver	3	2014	BLM
	0.3 mi NE of MP 126.4	Flatheaded Borer	25	2016	BLM
MP 126.64 – MP 126.72	Construction ROW	Flatheaded Borer	22 acres	2016	PV
TEWA 126.73-N	near 126.76	Pine Engraver	1	2010	PV
	0.1 mi E of MP 126.8	Flatheaded Borer	1	2016	PV
	0.2 mi E of MP 126.8	Western Pine Beetle	2	2012	PV
	0.3 mi E of MP 126.8	Western Pine Beetle	3	2014	PV
	0.3 mi W of MP 127.0	Flatheaded Borer	2	2016	BLM
MP 127.06 – MP 127.15	Construction ROW	Western Pine Beetle	10	2005	BLM/PV
	0.2 mi SW of MP 127.5	Flatheaded Borer	10	2016	BLM
	0.5 mi SW of MP 127.8	Western Pine Beetle	1	2012	BLM
	0.2 mi SW of MP 127.8	Western Pine Beetle	1	2015	BLM
	0.1 mi NE of MP 127.8	Western Pine Beetle	2	2015	BLM
	0.2 mi NE of MP 127.84	Pine Engraver	5	2005	BLM
	0.2 mi SW of MP 127.84	Western Pine Beetle	5	2005	BLM
	0.1 mi W of MP 128.46	Pine Engraver	15	2004	PV
	0.4 mi W of MP 128.61	Western Pine Beetle	5	2005	PV
MP 128.75 –MP 128.82	Construction ROW	Flatheaded Borer	2	2016	BLM
	0.2 mi SW of MP 128.80	Pine Engraver	10	2005	BLM/PV
	MP 128.9	Western Pine Beetle	1	2013	BLM
	0.1 mi NE of MP 129.0	Flatheaded Borer	2	2016	BLM
MP 129.6 – MP 129.7	Construction ROW	Flatheaded Borer	2	2016	BLM
	0.05 mi N of MP 130.40	Flatheaded Borer	2	2011	PV
MP130.52-MP 130.59	Construction ROW	Flatheaded Borer	2	2011	PV
	0.01 mi N of MP 131.07	Flatheaded Borer	2	2011	PV
	0.2 mi S of MP 131.14	Western Pine Beetle	5	2005	BLM
	0.3 mi NE of MP 131.39	Flatheaded Borer	5	2000	PV
	0.04 mi SW of MP 131.75	Western Pine Beetle	1	2004	BLM/PV

Milepost (if crossed by Pipeline)	Location Within Vicinity of Pipeline	Identified Insect or Disease	Number of trees, if known	Year	Land Owner
MP 131.78 – MP 131.82	Construction ROW	Flatheaded Borer	3	2016	BLM
101.02	0.1 mi E of MP 131.80	Western Pine Beetle	5	2005	BLM/PV
	0.1 mi W of MP 132.9	Western Pine Beetle	1	2015	PV
	0.3 mi W of MP 133.0	Western Pine Beetle	1	2015	PV
	0.3 mi W of MP 134.1	Flatheaded Borer	24.5 a	2016	BLM
	0.3 mi SW of MP 134.1	Western Pine Beetle	1	2015	PV
	0.3 mi W of MP 135.2	Flatheaded Borer	50 acres	2016	PV
	W of MP 135.56	Western Pine Beetle	1	2008	PV
	0.2 mi NE of MP 135.8	Flatheaded Borer	42 acres	2016	BLM
	0.4 mi NE of MP 138.3	Flatheaded Borer	1	2013	BLM
MP 139.32 – MP 139.38	Construction ROW	Flatheaded Borer	3	2014	PV
	0.2 mi NE of MP 139.3	Flatheaded Borer	9 acres	2016	PV/BLM
	0.4 mi NE of MP 139.3	Flatheaded Borer	4	2016	BLM
MP 139.95 – MP 140.10	Construction ROW	Western Pine Beetle	10	2005	BLM
	0.4 mi E of MP 140.7	Flatheaded Borer	1	2015	BLM
MP 140.10 – MP 140.17	Construction ROW	Flatheaded Borer	5	2004	BLM
	0.2 mi E of MP 142.5	Western Pine Beetle	1	2015	PV
	0.03 mi NE of MP 142.93	Flatheaded Borer	2 acres	2017	PV
	0.4 mi NE of MP 143.0	Flatheaded Borer	1	2015	BLM
	0.3 mi NE of MP 143.2	Flatheaded Borer	1 acre	2017	BLM
	0.4 mi NE of MP 143.2	Flatheaded Borer	15 acres	2016	BLM
MP 143.47 – MP 143.51	Construction ROW	Western Pine Beetle	5	2009	PV
	0.1 mi SW of MP 143.5	Flatheaded Borer	1	2015	PV
	0.3 mi NE of MP 143.7	Flatheaded Borer	10 acres	2016	PV
	0.2 mi SW of MP 144.5	Flatheaded Borer	1	2015	PV
	0.3 mi W of MP 145.7	Flatheaded Borer	1	2015	PV
	0.4 mi SE of MP 146.82	Western Pine Beetle	25	2005	PV
MP 147.73 – MP147.78	Construction ROW	Western Pine Beetle	10	2005	PV
MP 148.12 – MP148.38	Construction ROW	Flatheaded Borer	60 acres	2016	BLM/PV
MP 148.42 – MP 148.52	Construction ROW	Flatheaded Borer	0.25 acres	2011	BLM
	Adjacent to MPs 148.6- 148.8	Flatheaded Borer	2 acres	2017	BLM
	0.1 mi NE of MP 148.95	Flatheaded Borer	25	2005	BLM/PV
	0.1 mi S of MP 148.81	Western Pine Beetle	5	2006	BLM
	0.06 mi E of MP 149.29	Flatheaded Borer	1	2008	BLM
	0.07 mi N of MP 149.95	Flatheaded Borer	2 acres	2017	BLM
	0.3 mi SW of MP 150.11	Western Pine Beetle	5	2005	BLM
	0.3 mi SW of MP 150.1	Flatheaded Borer	5 acres	2017	BLM
	0.1 mi SW of MP 150.2	Flatheaded Borer	65 acres	2016	BLM/PV
	0.3 mi NE of MP 150.62	Western Pine Beetle	15	2005	BLM
	0.1 mi NE of MP 151.24	Western Pine Beetle	3	2005	BLM

Milepost (if crossed by Pipeline)	Location Within Vicinity of Pipeline	Identified Insect or Disease	Number of trees, if known	Year	Land Owner
	0.5 mi NE of MP 151.3	Flatheaded Borer	2	2012	BM
	0.4 mi N of MP 151.5	Flatheaded Borer	0.5 acre	2017	BLM
	0.3 mi SW of MP 151.58	Western Pine Beetle	25	2005	BLM
MP 151.69 – MP 151.77	Construction ROW	Western Pine Beetle	3	2015, 2016	PV
-	0.2 mi N of MP 151.9	Fir Engraver	60 acres	2016	BLM/PV
	0.4 mi N of MP 151.9	Fir Engraver	37 acres	2015	BLM/PV
	0.4 mi SW of MP 151.9	Fir Engraver	8 acres	2016	BLM
	0.4 mi N of MP 152.15	Fir Engraver	25	2005	BLM/PV
	0.05 mi N of MP 152.20	Flatheaded Borer	20	2004	BLM
MP152.24 – MP 152.27	Construction ROW	Western Pine Beetle	1	2014	BLM
MP 152.34 – MP 152.55; MP 152.95 – MP 153.22	Construction ROW & north	Fir Engraver	80	2004	BLM
	0.4 mi S of MP 152.37	Fir Engraver	10	2005	BLM
	N of MP 153.35	Flatheaded Borer	0.25 acres	2007	BLM
	0.3 mi NE of MP 153.8	Flatheaded Borer	12 acres	2015	FS
MP 153.86 – MP 153.99	Construction ROW	Flatheaded Borer	10	2010	FS
MP 153.92 – MP 153.98	Construction ROW	Western Pine Beetle	2	2009, 2010	FS
MP 153.92 – MP 153.98	Construction ROW	Fir Engrave	2	2014	FS
	0.4 mi NE of MP 154.0	Fir Engraver	22 acres	2016	FS
MP 154.2-MP 154.26	Construction ROW	Flatheaded Borer	2	2012	FS
MP 154.25 - MP 154.5	Area has perimeter radius of +/- 375 ft of this ROW segment.	Laminated root rot	550-700	2015	FS
Mp 154. 25-154.7	0.03-0.12 mi N and S of MPs	Flatheaded Borer		2017	
	0.3 mi S of MP 154.3	Western Pine Beetle	2	2014	FS
	0.4 mi S of MP 154.3	Fir Engraver	2	2014	FS
MP 154.35 – MP154.47	Adjacent to and within Construction ROW	Fir Engraver	28 acres	2016	FS
	0.03 mi N of MP 154.53	Flatheaded Borer	2	2011	FS
	0.4 mi N of MP 154.5	Flatheaded Borer	5	2015	FS
	0.2 mi N of MP 154.5	Flatheaded Borer	5	2015	FS
	0.3 mi SW of MP 154.7	Flatheaded Borer	1	2015	FS
	0.4 mi SW of MP 154.7	Fir Engraver	2	2014	FS
	0.2 mi S of MP 154.9	Flatheaded Borer	2	2012	FS
MP 154.84 – MP 154.92	Construction ROW	Flatheaded Borer	2	2011	FS
	0.02 mi S of MP 155.30	Fir Engraver	25	2004	FS/PV
	0.3 mi N of MP 155.42	Fir Engraver	15	2004	FS
	0.4 mi SE of MP 155.66	Fir Engraver	5	2006	FS
MP 155.87 – MP 156.3	Construction Row	Fir Engraver	30	2004, 2017	FS
	0.3 mi N of MP 156.2	Flatheaded Borer	2	2012	FS
	0.02 mi N of MP 156.48	Fir Engraver	10	2005	FS

Milepost (if crossed by Pipeline)	Location Within Vicinity of Pipeline	Identified Insect or Disease	Number of trees, if known	Year	Land Owner
	0.3 mi S of MP 156.5	Flatheaded Borer	1	2014	FS
	0.1 mi N of MP 156.6	Fir Engraver	6	2016	FS
	0.4 mi S of MP 156.6	Western Pine Beetle	4	2016	FS
MP 156.64 – MP 156.70	Construction ROW	Fir Engraver	0.25 acres	2007	FS
MP 156.65 – MP 156.81	Construction ROW	Flatheaded Borer	25	2010	FS
	0.08 mi N of MP 156.66	Western Pine Beetle	0.25 acres	2007	FS
	0.1 mi N of MP 156.67	Flatheaded Borer	2	2014	FS
	N of MP 157.30	Mountain Pine Beetle, Sugar Pine	1	2007	FS
MP 157.14 – MP 157.27	Construction ROW	Flatheaded Borer	10	2010	FS
MP 157.44 – MP 157.67	Construction ROW	Fir Engraver	no data	2004	FS
	0.02 mi NE of MP 157.78	Flatheaded Borer	10	2010	FS
MP 158.01 – MP 158.07	Construction ROW	Flatheaded Borer	2	2010	FS
	0.2 mi SW of MP 157.99	Mountain Pine Beetle, Sugar Pine	1	2004	FS
	0.1 mi S of MP 158.09	Mountain Pine Beetle, Sugar Pine	1	2005	FS
	0.2 mi N of MP 158.1	Flatheaded Borer	18 acres	2014	FS
	0.3 mi S of MP 158.1	Fir Engraver	2	2013	FS
MP 158.17 – MP 158.31	Construction ROW	Fir Engraver	no data	2004	FS
MP 158.6 – MP 159.35	Construction ROW	Fir Engraver	226 acres	2014, 2017	FS
MP 159.5-160.0	Construction ROW	Mountain Pine Beetle in Ponderosa	5	2017	FS
	0.03 mi N of MP 160.15	Flatheaded Borer	3	2010	FS
	0.1 mi N of MP 160.64	Fir Engraver	5	2004	FS
	0.4 mi S of MP 161.0	Needle Cast in Ponderosa	60 acres	2014	FS
	N of MP 161.07	Flatheaded Borer	1	2009	FS
	0.4 mi N of MP 161.3	Fir Engraver	14 acres	2016	FS
	0.3 mi S of MP 161.53	Fir Engraver	5	2006	FS
MP 161.46 – MP 161.61	Construction ROW	Needle Cast in Ponderosa	18 acres	2016	FS
	0.4 mi N of MP 161.6	Western Pine Beetle	308 acres	2014	FS
	0.3 mi NE of MP 162.3	Needle Cast in Ponderosa	78 acres	2014	FS
	0.3 mi NE of MP 162.3	Needle Cast in Ponderosa	57 acres	2015	FS
	0.4 mi NE of MP 162.6	Needle Cast in Ponderosa	166 acres	2014	FS
	0.2 mi E of MP 162.67	Needle Cast, Lodgepole Pine	no data	2005	FS
	0.3 mi NE of MP 162.7	Fir Engraver	2	2012	FS
	0.2 mi E of MP 163.2	Fir Engraver	2	2012	FS

Milepost (if crossed by Pipeline)	Location Within Vicinity of Pipeline	Identified Insect or Disease	Number of trees, if known	Year	Land Owner
	0.3 mi SW of MP 163.8	Needle Cast in Ponderosa Pine	79 acres	2015	FS
	0.3 mi W of MP 163.9	Needle Cast in Ponderosa Pine	79 acres	2015	FS
	0.3 mi SW of MP 164.12	Mountain Pine Beetle, Sugar Pine	2	2006	FS
MP 164.05 – MP 164.35	Construction ROW	Needle Cast in Ponderosa Pine	74 acres	2014, 2016	FS
	0.04 mi NE of MP 164.6	Fir Engraver	1	2012	FS
MP164.42 - MP165.1	Construction ROW	Needle Cast in Ponderosa Pine	no data	2013, 2016	FS
	0.1-0.3 mi NE of MP 165.1	Fir Engraver	1	2012, 2017	FS
MP165.12 – MP 165.2	Construction ROW	Fir Engraver	no data	2016	FS
	0.1 mi S of MP 165.18	Needle Cast, Lodgepole Pine	no data	2004	FS
	0.3 mi SW of MP 165.3	Fir Engraver	no data	2016	FS
MP 165.8 – MP165.9	Construction ROW	Needle Cast, Lodgepole Pine	11 acres	2016	FS
MP 165.88 – MP 166.06	Construction ROW	Needle Cast in Ponderosa Pine	63 acres	2014	FS
	0.4 mi N of MP 165.94	Fir Engraver	5	2005	FS
MP 166.35-166.8	Construction ROW	Fir Engraver	2	2017	FS
	0.1 mi N of MP 166.63	Fir Engraver	20	2005	FS
	0.1 mi NE of MP 167.2	Needle Cast in Ponderosa Pine	20 acres	2012	FS
	0.07 mi N of MP 167.21	Needle Cast, Lodgepole Pine	Medium	2010	FS
	0.1 mi SW of MP 167.75	Fir Engraver	5	2004	FS
MP 168.43 –168.75	Construction ROW	Needle Cast in Ponderosa Pine	114 acres	2016	FS
MP 168.77 –MP 169.50	Construction ROW	Mountain Pine Beetle, Lodgepole Pine	400 acres	2013-2016	FS
	0.02 mi SW of MP 168.84	Mountain Pine Beetle, Western White Pine	1	2008	FS
MP 170.63 – MP 171.17	Construction ROW	Fir Engraver	0.5 acres	2010-2011	FS
MP 170.68 – MP 171.17	Construction ROW	Mountain Pine Beetle, Lodgepole Pine	194 acres	2012-2017	FS
	S of MP 171.97	Fir Engraver	3 acres	2007-2011	FS
MP 171.7 – MP172.63	Construction ROW	Mountain Pine Beetle, Lodgepole Pine	no data	2012-2017	FS
	0.3 mi NE of MP 172.7	Mountain Pine Beetle, Lodgepole Pine	no data	2014	FS
	0.1 mi S of MP 171.4	Mountain Pine Beetle, Lodgepole Pine	416 acres	2012-2013	FS
MP 173.05 – MP 175.29	Construction ROW	Mountain Pine Beetle, Lodgepole Pine	no data	20012-2017	FS
MP 173.20 – MP 173.80	Construction ROW	Mountain Pine Beetle, Lodgepole Pine	0.5 acres	2007, 2010	FS
	0.1 mi NW of MP 176.5	Mountain Pine Beetle, Ponderosa Pine	2	2016	FS
	0.4 mi NW of MP 176.5	Mountain Pine Beetle, Ponderosa Pine	2	2016	FS
	0.3 mi N of MP 176.5	Mountain Pine Beetle,	2016	FS	

Milepost (if crossed by Pipeline)			Number of trees, if known	Year	Land Owner	
• •		Ponderosa Pine				
MP 177.65 – MP 177,72	Construction ROW	Fir Engraver	5	2011	PV	
	0.4 mi NE of MP 178.1	Fir Engraver	102 acres	2016	PV	
	0.4 mi NE of MP 179.1	Fir Engraver	29 acres	2015	BLM/PV	
	0.2 mi SW of MP 179.4	Fir Engraver	44 acres	2015	BLM/PV	
TEWA 179.67-N	MP 179.7	Fir Engraver	2	2012	BLM	
	0.3 mi SW of MP 179.8	Fir Engraver	134 acres	2016	BLM	
	0.4 mi NE of MP 180.8	Mountain Pine Beetle, Ponderosa Pine	2	2013	PV	
	0.4 mi S of MP 182.0	Fir Engraver	2	2016	PV	
	0.3 mi S of MP 182.1	Fir Engraver	2	2016	PV	
	0.4 mi N of MP 182.3	Fir Engraver	2	2016	PV	
	0.4 mi N of MP 182.3	Fir Engraver	6.5 acres	2015, 2017	PV	
	0.3 mi SW of MP 183.1	Fir Engraver	2	2016	PV	
	0.2 mi SW of MP 185.7	Mountain Pine Beetle, Ponderosa Pine	1	2013	PV	
	0.4 mi SW of MP 189.6	Fir Engraver	1	2014	PV	
	0.3 mi NE of MP 189.7	Mountain Pine Beetle, Ponderosa Pine	1	2015	PV	
	0.2 mi NE of MP 189.9	Mountain Pine Beetle, Ponderosa Pine	1	2015	PV	
	0.3 mi SW of MP 190.0	Fir Engraver	1	2014	PV	
	0.06 mi NE of MP 190.83	Western Pine Beetle	1	2009	PV	
MP 224.25 – MP 224.35	Construction ROW	Mountain Pine Beetle, Ponderosa Pine	37 acres	2011; 2013- 2105	BLM/PV	
MP 224.69 – MP 224.89	Construction ROW	Mountain Pine Beetle, Ponderosa Pine	15 acres	2013	BLM/PV	
Source: ODF, 2018 (O	DF 2004 through 2017 aerial	GIS data).				

Appendix 2

Table 2-1Herbicides Approved for Use on Public and Private Lands in Oregon

Table 2-2Herbicide Products Registered in Oregon for Use of Rights-of-Ways

	Herbicides Approved for Us							
	BLM &		Area	Areas where Registered Use Is Appropriate ²				
		FS Approved						
Herbicide (Active Ingredient) ^{1, 2}	Herbicide Characteristics and Target Vegetation	Registered in OR (Current 2017) ³	Rangeland	Forestland	Riparian and Aquatic	Oil, Gas and Minerals	ROW	
2,4-D	Selective; foliar absorbed; postemergent; annual/perennial broadleaf weeds. Key species treated include kochia, mustard species, and Russian thistle.	BLM (W &E) BOR ⁴ OR	•	•	•	•	•	
Bromacil	Non-selective; inhibits photosynthesis; controls wide range of weeds and brush. Key species treated include annual grasses and broadleaf weeds, kochia, and Russian thistle.	BLM (E) OR				•	•	
Chlorsulfuron	Selective; inhibits enzyme activity; broadleaf weeds and grasses. Key species treated include biennial thistles and annual and perennial mustards.	BLM (E) FS OR	•			•	•	
Clopyralid	Selective; mimics plant hormones; annual and perennial broadleaf weeds. Key species treated include knapweeds, Canada thistle, and starthistle and other thistles.	BLM (W&E) FS OR	•	•		•		
Dicamba	Growth regulator; annual and perennial broadleaf weeds, brush, and trees. Key species treated include knapweeds, kochia, and Russian thistle and other thistles.	BLM (W&E) OR	•			•	•	
Diuron	Preemergent control; annual and perennial broadleaf weeds and grasses. Key species treated include annual grasses and broadleaf weeds, kochia, and Russian thistle. The primary use for diuron would be on communications sites or similar facilities where no vegetation is desired.	BLM (W&E) OR				•	•	
Glyphosate	Non-selective; annual and perennial grasses and broadleaf weeds, sedges, shrubs, and trees. Key species treated include annual, biennial, and perennial grasses and broadleaf	BLM (W&E) FS, BOR ⁴ OR	•	•	•	•	•	

 Table 2-1

 Herbicides Approved for Use on Public and Private Lands in Oregon

		BLM &	Are	as where Reg	istered Use	ls Appropriat	e²
Herbicide (Active Ingredient) ^{1, 2} Hexazinone	Herbicide Characteristics and Target Vegetation weeds and woody shrubs. Foliar or soil applied; inhibits photosynthesis; annual and perennial grasses and broadleaf weeds, brush, and trees. Key species treated	FS Approved Registered in OR (Current 2017) ³ BLM (W&E) OR	Rangeland	Forestland ●	Riparian and Aquatic	Oil, Gas and Minerals ●	ROW
	include African rue, . Non-selective; preemergent and postemergent uses; absorbed through foliage and roots; annual and perennial broadleaf	BLM (W&E) FS					
lmazapyr	weeds, brush, and trees. Key species treated include African rue, Japanese knotweed, and leafy spurge. Selective; postemergent; inhibits cell division	BOR ⁴ OR	•	•	•	•	•
Metsulfuron methyl	in roots and shoots; annual and perennial broadleaf weeds, brush, and trees. Key species treated include annual and perennial mustards biennial thistles and blackberries.	BLM (W&E) FS OR	•	•		•	•
Picloram	Selective; foliar and root absorption; mimics plant hormones; certain annual and perennial broadleaf weeds, vines, and shrubs. Key species treated include knapweeds, leafy spurge, and starthistle.	BLM (W&E) FS BOR ⁴ OR	•	•		•	•
Sulfometuron methyl	Broad-spectrum pre- and post-emergent control; inhibits cell division; grasses and broadleaf weeds. Key species include downy brome, mustards, and medusahead.	BLM (W&E) FS OR		•		•	•
Tebuthiuron	Relatively non-selective soil activated herbicide; pre- and post-emergent control of annual and perennial grasses, broadleaf weeds, and shrubs. Key species treated include oak, Russian olive, and sagebrush (thinning).	BLM (E) OR	•			•	•
Triclopyr	Growth regulator; broadleaf weeds and woody plants. Key species treated include	BLM (W&E) FS	•	•	•	•	•

	BLM &	Are	as where Reg	istered Use	s Appropriat	e ²
Herbicide Characteristics and Target Vegetation	FS Approved Registered in OR (Current 2017) ³	Rangeland	Forestland	Riparian and Aquatic	Oil, Gas and Minerals	ROW
mesquite and tamarisk, Russian olive, blackberries, brooms	OR					
Post-emergent control of annual and perennial grass weeds in broadleaf crops.	FS OR					•
Herbicides Pro	posed for Use or	n Public Land	S			
Postemergent; inhibits auxin transport; broadleaf weeds. Key species treated include knapweeds, kochia, and Russian thistle and other thistles.	BLM (E&W)	•			•	•
Aquatic herbicide to control submersed aquatic plants. Key species treated include hydrilla and watermilfoils.	BLM (E&W)			•		
Selective postemergent herbicide; inhibits broadleaf weeds and some grasses. Key species treated include downy brome, leafy spurge, medusahead, and mustards.	BLM (E&W) BOR ⁴ FS OR	•	•		•	•
	and Target Vegetation mesquite and tamarisk, Russian olive, blackberries, brooms Post-emergent control of annual and perennial grass weeds in broadleaf crops. Herbicides Prop Postemergent; inhibits auxin transport; broadleaf weeds. Key species treated include knapweeds, kochia, and Russian thistle and other thistles. Aquatic herbicide to control submersed aquatic plants. Key species treated include hydrilla and watermilfoils. Selective postemergent herbicide; inhibits broadleaf weeds and some grasses. Key species treated include downy brome, leafy	FS Approved 1, 2Herbicide Characteristics and Target VegetationRegistered in OR (Current 2017) 3mesquite and tamarisk, Russian olive, blackberries, broomsORPost-emergent control of annual and perennial grass weeds in broadleaf crops.FS ORPostemergent; inhibits auxin transport; broadleaf weeds. Key species treated include knapweeds, kochia, and Russian thistle and other thistles.BLM (E&W)Aquatic herbicide to control submersed aquatic plants. Key species treated include hydrilla and watermilfoils.BLM (E&W)Selective postemergent herbicide; inhibits broadleaf weeds and some grasses. Key species treated include downy brome, leafyBLM (E&W)	FS Approved 1, 2Herbicide Characteristics and Target VegetationRegistered in OR (Current 2017) 3mesquite and tamarisk, Russian olive, blackberries, broomsORPost-emergent control of annual and perennial grass weeds in broadleaf crops.ORHerbicides Proposed for Use on Public LandPostemergent; inhibits auxin transport; broadleaf weeds. Key species treated include knapweeds, kochia, and Russian thistle and other thistles.BLM (E&W)Aquatic herbicide to control submersed aquatic plants. Key species treated include hydrilla and watermilfoils.BLM (E&W) BOR 4Selective postemergent herbicide; inhibits broadleaf weeds and some grasses. Key species treated include downy brome, leafyBLM (E&W)	FS Approved 1, 2FS Approved Registered in OR (Current 2017) 3ForestlandHerbicide Characteristics and Target Vegetation(Current 2017) 3RangelandForestlandmesquite and tamarisk, Russian olive, blackberries, broomsOR ORORImage and tamarisk, Russian olive, Dest-emergent control of annual and perennial grass weeds in broadleaf crops.OR ORImage and tamarisk, Russian olive, DRImage and tamarisk, Russian olive, 	FS Approved 1,2FS Approved Registered in OR (Current 2017) 3RangelandRiparian and AquaticHerbicide Characteristics and Target Vegetation(Current 2017) 3RangelandForestlandAquaticmesquite and tamarisk, Russian olive, blackberries, broomsORORPost-emergent control of annual and perennial grass weeds in broadleaf crops.ORPost-emergent; inhibits auxin transport; broadleaf weeds. Key species treated include knapweeds, kochia, and Russian thistle and other thistles.BLM (E&W) BLM (E&W)•Aquatic herbicide to control submersed aquatic plants. Key species treated include hydrilla and watermilfoils.BLM (E&W) BLM (E&W)••-Selective postemergent herbicide; inhibits broadleaf weeds and some grasses. Key species treated include downy brome, leafyBLM (E&W) FS•••	FS Approved 1/2FS Approved Registered in OR (Current 2017) 3RangelandRiparian and AquaticOil, Gas and AquaticHerbicide Characteristics and Target VegetationOR (Current 2017) 3ForestlandAquaticOil, Gas and Aquaticmesquite and tamarisk, Russian olive, blackberries, broomsOR ORForestlandAquaticOil, Gas and AquaticPost-emergent control of annual and perennial grass weeds in broadleaf crops.OR ORImage: Construction of annual and Post-emergent; inhibits auxin transport; broadleaf weeds. Key species treated include knapweeds, kochia, and Russian thistle and other thistles.BLM (E&W)Image: Construction of annual and Post-emergent; inhibits auxin transport; broadleaf weeds and some grasses. Key species treated include downy brome, leafyBLM (E&W)Image: Construction of annual and Post-emergent herbicide; inhibits BLM (E&W)Image: Construction of annual and Post-emergent herbicide; inhibits BLM (E&W)Image: Construction of annual and Post-emergent herbicide; inhibits BLM (E&W)Image: Construction of annual and Post-emergent herbicide; inhibits Post-emergent herbicide; inhibits Post-emergent herbicide; inhibitsImage: Construction of annual and Post-emergent herbicide; inhibits Post-emergent herbicide; inhibits Post-emergent herbicide; inhibitsImage: Construction of annual and Post-emergent herbicide; inhibits Post-emergent herbicide; inhibits Post-emergent herbicide; inhibitsImage: Construction of annual and Post-emergent emergent herbicide; inhibits Post-emergent emergent emer

² USDI, 2010a. Record of Decision, Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in Oregon. The USDI 2010a ROD makes available 14 herbicides west of the Cascades (2,4-D, clopyralid, dicamba, dicamba + diflufenzopyr, diuron, fluridone, glyphosate, hexazinone, imazapic, imazapyr, metsulfuron methyl, picloram, sulfometuron methyl, and triclopyr) and 17 herbicides east of the Cascades (bromacil, chlorsulfuron, tebuthiuron, and the 14 herbicides available west of the Cascades). W = West of the Cascades; E = East of the Cascades.

³ http://cru66.cahe.wsu.edu/LabelTolerance.html

⁴ United States Bureau of Reclamation. 2007. Statement of Work-General Specifications for Lost River Weed Control. Bureau of Reclamation Klamath Basin Area Office, Klamath Falls, Oregon.

• = Areas where USEPA approved registration exists and the BLM has approval or proposes to use on public lands.

Table 2-2 (Excel Spread Sheet – ROW_OR)

Appendix 3

Pesticide – Use Proposal (FSM 2150) for Use on National Forests Lands

	DEPARTMENT/AGENO	CY	CONTACT/PHONE NO.
PESTICIDE - USE PROPOSAL (Reference FSM 2150)	REGION	FOREST	DATE SUBMITTED
1) OBJECTIVE			
a) Project No.			
b) Specific Target Pest			
c) Purpose			
2) PESTICIDE a) Common Name			
b) Formulation			
c) % AI,AE,or lb / Gal.			
d) Registration No.			
3) a) Form Applied			
b) Use Strength (%) or Dilution Rate			
c) Diluent			
4) Lbs. AL per Acre or Other Rate			
5) APPLICATION			
a) Method			
b) Equipment			
6) a) Acres or Other Unit to be treated			
b) Number of Applications			
c) Number of Sites			
d) Specific Description of Sites			
7) a) Month(s) of Year			
b) States			
8) SENSITIVE AREAS			
a) Areas to be avoided			
b) Areas to be Treated with caution			
9) REMARKSa) Precautions to be taken			
b) Use of Trained/ Certified Personnel			

Pacific Connector Gas Pipeline Project	Integrated Pest Management Plan
c) State and Local Coordination	
d) Other Pesticides being applied to Same Site	
e) Monitoring	
d) Other	

Date (mm/dd/yy):

Approval (Signatures of Approving Official)

Instructions for completing Form FS-2100-2, Pesticide Use Proposal

Heading - Provide requested information.

OBJECTIVE (Block 1)

- a) Project Number Assign in accordance with field IPMWG procedures.
- b) Specific Target Pest Identify the target pest by common and scientific name. Identify life cycle stage for animals or stage of growth for plants (e.g. emergent or pre-emergent, seedling, sapling, etc.)
- c. Purpose State exact purpose of pesticide use.

PESTICIDE (Block 2)

- a) Common name of active ingredient(s) as indicated on the pesticide label. When a combination of pesticides are to used on a single pest, use the word "AND" in listing the pesticide names. When alternate materials are proposed, use the word "OR" in listing the names.
- b) Indicate product formulation (i.e., amine, ester, emulsifiable concentrate, granules, solution, etc.).
- c) Percentage active ingredient, acid equivalent, or pounds per gallon (as indicated on the pesticide label).
- d) List the EPA registration number from the pesticide label.

PESTICIDE - continued (Block 3)

- a) Form Applied e.g., dust, granule, emulsion, bait, solution, gas, etc.
- b) Use strength or Dilution Rate List the quantity of concentrate mixed with the quantity of diluent or indicate the percentage strength of the formulation.
- c) Diluent Identify the pesticide carrier, i.e., water, oil, talc, kerosene, etc.

PESTICIDE - continued - (Block 4)

Pounds of Active Ingredient Per Acre or Other Rate - State pounds of active ingredient per acre to be applied, unless some other unit is indicated. If reporting in acreage is not appropriate, indicate units used. Indoor applications of residual sprays may be expressed as percent of actual ingredient in the prepared spray in gallons per M (1,000) square feet. Point of runoff, which may appear on a label is generally considered to be 1 gallon per 1,000 square feet on most indoor surfaces. If dusts are used instead of sprays, express as ounces or pounds of prepared dust per M (1,000) square feet. Treatment of trees is listed by number of trees or is application is by hydraulic sprayer, is expressed as pounds or quarts of concentrate per 100 gallons of diluent - oil or water, whichever is used. If the pesticide for trees or brush is applied by air or mist blower, express as pounds of active ingredient per acre. Fumigants or inside aerosols are expressed as pounds of the fumigant or aerosol per M (1,000) cubic feet. Rodent baits should be listed as ounces or pounds of the prepared bait per bait station. Treatments in water may be expressed in parts per million (ppm) by weight or volume - specify. In spot applications, the rate of application is expressed in pounds or gallons per 1,000 square feet indoors or pounds per acre of active ingredient outdoors applied to the spot area treated.

APPLICATION - (Block 5)

Indicate as specifically as possible the method (i.e., aerial, ground, etc.) of application and the type of equipment such as helicopter, hand compression sprayer, mist-dust blower, hydraulic sprayer, injector, etc.

APPLICATION - (Block 6)

- a) Acres or Other Unit to be Treated. State in terms of acres, unless otherwise indicated. Some projects may require
 - repeat applications. Report only the units to be treated for the first application.
- b) Number of Applications For projects that require repeat applications to the same area, indicate their estimated

number and their timing.

- c) Number of Sites If the reported figures are a consolidation from several locations, indicate the number of locations.
- d) Specific Descriptions of Sites Indicate the type of area and pertinent portion of the area to be treated; such as ditchbank, rangeland, powerline right-of-way, tree nursery, etc. Specify if pesticide is to be applied in or around water and whether it will be applied directly to water or to the shore. Where applicable, indicate the slope of the treated area. For aquatic use, indicate water quality (hardness and pH) if available or applicable.

APPLICATION (Block 7)

- a) Month(s) of Year State month(s) of year.
- b) State(s) Indicate State and other designation that identifies the area geographically.

SENSITIVE AREAS (Block 8)

- a) Areas to be Avoided Identify sensitive areas to be avoided. Indicate if the area is subject to inadvertent treatment as a result of drift. Describe fully in "remarks" (Block 9) what protective measures are to be taken.
- b) Areas to be Treated with Caution Identify sensitive areas to be treated with special precautions to avoid contamination.

REMARKS (Block 9)

Use this line for information which will be helpful to the field IPMWG in evaluating the project.

- a) Precautions to be Taken Describe specific precautions be taken to protect sensitive areas; for example, no application within 100 feet of streams.
- b) Use of Trained / Certified Personnel Provide information on the status of training and/or certification of personnel doing the actual work and of those supervising. Has project been reviewed by a field biologist, agronomist, entomologist, or other appropriate subject matter specialist?
- c) State and Local Coordination Indicate coordination on the project at a State or local level.
- d) Other Pesticides Being Applied to Same Site Indicate what other pesticides are being or will be applied on the same site within the year.
- e) Monitoring Describe any monitoring of the operation be to conducted. Indicate effectiveness of prior projects and mention undesirable side effects observed.
- f) Other Indicate if the project is to be accomplished by contract.

Environmental analyses (EA's and/or EIS's) may be referred for additional information.

APPROVAL (Block 10)

- a) Signature of Approving Official
- b) Date of Signature

Appendix 4

Equipment Cleaning Checklist

EQUIPMENT CLEANING CHECKLIST

The purpose of this checklist is to provide guidance to appropriate PCGP staff in the cleaning of equipment, to control or prevent the spread of invasive plants, noxious weeds and *Phytopthera lateralis* (PL). This is a guide to direct attention to specific areas on equipment that are likely to accumulate soil and organic material. On-site judgments still need to be made about overall equipment cleanliness.

- 1) Does the equipment appear to have been cleaned?
- 2) Is the equipment clean of clumps of soil and organic matter?

Rubber-Tired Vehicles:

Tires

- □ Wheel Rims (underside and outside)
- □ Axles
- □ Fenders/wheel wells/trim
- □ Bumpers

Track-Laying Vehicles:

- □ Tracks
- □ Road Wheels
- Drive Gears
- □ Sprockets
- Roller Frame
- □ Track Rollers/Idlers

All Vehicles as Appropriate:

- Frame
- □ Belly Pan (inside)
- □ Stabilizers (jack pads)
- □ Grapple and Arms
- Dozer Blade or Bucket and Arms
- □ Ripper
- □ Brush Rake
- □ Winch
- □ Shear Head
- □ Log Loader
- □ Water Tenders (empty or with treated water)
- □ Trailers (Low-boys)
- □ Radiator/grill
- □ Air filter/pre-cleaner
- □ Struts/Spring/Shocks
- □ Body seams

Other Materials

Equipment Mats / Temporary Bridge Materials

Appendix 5

Weed Monitoring Report Form

Pacific Connector Weed Monitoring Report Form

Date:	
Monitoring Year 1:	
Observer:	

Pacifi	c Connector Monitorir	ng Report	Form	
Monitoring location ²	Mileposts/Stations:	<u> </u>	Alignment	Sheets:
Project Component ³				
County				
Landowner/Jurisdiction				
Legal Location	1/4/1/4 & Section (s)	Tow	nship	Range
Infestation Number or Site				
Number (if previously				
recorded)			•	
UTM – Zone 10 NAD 83	UTM Easting/(Longit	tude)	UTM	Northing/(Latitude)
(Or substitute Latitude and				
Longitude for UTM Coordinates) Attach copy of location map ⁴				
Access Routes ⁵				
	Weed Observation	ons		
Common Weed Name				
(scientific name/code)				
Weed Infestation Condition				
General Abundance ⁶				
Estimated # Individuals				
Size of Infestation (sq. ft/acres)				
Infestation Pattern (patchy,				
continuous, etc.)				
Notes on Previous Treatment				
success (if applicable)				
Potential for Infestation to				
Spread to Adjacent Areas &				
Recommended Actions				
Other Site Conditions Notes				
1				
¹ First, second, third year etc. following	g construction/restoration or a	fter weed tr	eatment. Or	if during routine
operations monitoring. ² Provide area of weed surveyed (PCC	CP milepost/engineering stati	on range)		
³ Indicate if equipment/weed cleaning	station hydrostatic test water	discharge l	ocation cons	struction right-of-way
temporary extra work areas or tempor	ary access roads or road imp	rovement ar	eas.	struction right of way,
⁴ Attach copy of map (alignment sheet) identifying infestation.			
⁵ Provide Road Names/Numbers and	Transportation Map Drawing	Numbers.		
⁶ Weed Abundance Chart.				
Abundance Rating Indicat	ors of Abundance			
	found, but only after much searc	ching		
Common Weeds	easily found during typical searc	hing		
Abundant Weeds	found in large numbers obvious	without searc	ching.	
Innumerable Weeds	extremely numerous obvious with	thout searchir	ng.	

Appendix 6

Herbicide Application Record for BLM-Managed and NFS Lands

Components in Spreadsheet for Pesticide Reporting

The Pesticide Application Record spreadsheet will contain the data fields listed below. This information should be completed at the time of the application. The spreadsheet will contain a new entry for each herbicide application.

Infestation Number or Site Number: Needed when List A, T, or List B species are inventoried and treated. This is the unique number or code associated with each weed infestation.

Pesticide-Use Proposal Number (see Appendix 3)

Reference or EA Number

Date: Date of the weed inventory and/or treatment.

Application timing: Include beginning and ending time of application

Applicator (Appl): Person applying the herbicide.

Weed Name: Common name of the weed that is primarily being targeted.

UTM Easting (UTM E), Northing (UTM N) and Zone (Z) (should always be in NAD 83) or use Lat and Long if preferred. Be consistent with which one is used.

Infested Acres: List how many acres are covered with the weed.

Density (Dens) i.e. Cover: L= Low (less than 5% total canopy cover) M = Moderate (5% - 25% canopy cover) H = High (more than 25% canopy cover)

Surface ownership (Own): BLM, FS, or private. For federal managed lands included Forest Name, BLM District and Resource Area.

Herbicide Trade Name (Tr Name) and Treatment Method – The formulation name on the herbicide container (e.g. Accord or Weedone). Treatment method (e.g. spot spray with backpack sprayer, truck or atv mounted sprayer; wicking; wiping; hack and squirt). Include description of the type of equipment used during application.

Chemical Names (Chem Name) – Common name of all herbicide active ingredients used (e.g. Glyphosate or 2,4-D) Pesticide manufacturer (PM)

Pesticide Form: include if liquid or granular formulation

Adjuvant(s) are substances added to the pesticide formulation to enhance the toxicity of the active ingredient or to make the active ingredient easier to handle. List any used and include application rate.

Application Rate (Pounds Active Ingredient (A.I.)/Acre): For those formulations or tank mixes with multiple active ingredients, multiple columns for the application rates are provided. Application rates should be entered in the same order chemical names are entered. For

Pacific Connector Gas Pipeline Project

example, for Sahara DG, the A.I./acre of imazapyr would be entered in the first Application Rate (AR #1) column. The A.I./acre of diuron would be entered in the second Application Rate (AR #2) column. If an additional chemical was used in the mix it would be entered in the third Application Rate (AR #3) column.

Total Pounds Active Ingredient (A.I.) Applied: For those herbicides with multiple chemicals, multiple columns for the pounds of A.I. are provided. Pounds of A.I. should be entered in the same order chemical names are entered. For example, for Sahara DG, the pounds of A.I. of imazapyr would be entered in the first Total Pounds A.I. (AI #1) column. The pounds of A.I. of diuron would be entered in the second Total Pounds A.I./ (AI #2) column. If an additional chemical was used in the mix, it would be entered in the third Total Pounds A.I./ (AI #3) column.

Volume of output per acre (Vol):

Acres Treated: This should equal the Total Pounds A.I. divided by the Application Rate in Pounds A.I..

Stage of Pest Development (Pest Stage): Provide descriptions of the phonological stage of the weed being treated at the time of treatment.

Site Treated: include description of the site such as native vegetation, seeded vegetation and briefly describe site such as road right-of-way, meadow, forests, etc.

Weather Conditions (Weather): provide weather conditions during application including wind velocity, wind direction, temperature, cloud cover

Other. If necessary, provide other observations or notes relevant to application conditions

Pesticide Application Record ¹

Infestation Number or S	Site Number		Pesticide-Use Proposa	al Number			
Reference or EA Number							
Date of Inventory and/or Treatment							
Application Time	Beginning of Application	tion End of Application					
Applicator (name of person applying herbicide)							
Common Weed Name							
UTM & Zone	UTM Easting		UTM N	Zone in NAD 83			
Infested Acre	es	Infestation Density					
Ownership	BLM		Forest Service	Private			
Herbicide Trade	Name	Treatment Method					
Chemical Name	Manufacturer	Manufacturer		Form			

Adjuvant(s) N	ame	Application Rate							
Application Rates	AR #1		AR #2	AR #3					
	A1 #4		AL #2	A1 #0					
Active Ingredients (total pounds)	AI #1		AI #2	AI #3					
Volume of Output	Per Acre	Acres Treated							
Stage of Pest Development									
Site Treated									
Weather Conditions	Wind Velocity	Wind Direction	Temperature	Cloud Cover					
Other Observations									
Adapted from Noxious and Invasive Weed	Management Plan for Oil and Gas (Operators, BLM Glenwoo	d Springs Enerav Office. M	arch 2007.					

Appendix 7

Table 7-1Sensitive Species or Habitats Crossed or in the Vicinity of the Pipeline Project
(To Be Updated)

Appendix O

Klamath Project Facilities Crossing Plan



Pacific Connector Gas Pipeline, LP

Klamath Project Facilities Crossing Plan

Pacific Connector Gas Pipeline Project

January 2018

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List of Attachments

Klamath Project Facilities Crossing Location Map and Site-Specific Drawings Site Photos of Selected Facility Crossings Attachment 1

- Attachment 2
- Typical Drawings Attachment 3

1.0 INTRODUCTION

The Klamath Project Facilities Crossing Plan (Crossing Plan) identifies the locations within Klamath County, Oregon where the Pacific Connector Gas Pipeline (Pipeline or Pipeline Project) alignment crosses facilities within the Klamath Project that are administered by the Klamath Basin Area Office of the U.S. Bureau of Reclamation (Reclamation) and the methods proposed to construct the Pipeline Project across Reclamation facilities. These facilities comprise a portion of the Reclamation irrigation infrastructure and include canals, laterals, and drains. The Pipeline will cross Reclamation facilities at 20 locations. These locations are listed in Table 1 and are shown on the crossing maps and individual plan and profile drawings included in Attachment 1.

The Pipeline Project is within the boundaries of five irrigation districts in the Klamath Basin. All 20 Reclamation facilities crossed by the Pipeline Project are in the Klamath Irrigation District (KID). All of the 20 facilities are proposed to be crossed by boring. This trenchless crossing method is further described in Section 2.0.

PCGP is working with all affected irrigation districts in the Klamath Basin to address their specific concerns relative to the proposed pipeline installation. Below is a complete list of affected irrigation districts in the Klamath Basin:

- Pioneer District Improvement Company (no Reclamation facilities crossed)
- Plevna District Improvement Company (no Reclamation facilities crossed)
- Klamath Irrigation District
- Van Brimmer Ditch Company (no Reclamation facilities crossed)
- Shasta View Irrigation District (SVID, no Reclamation facilities crossed)

2.0 PIPELINE CROSSING METHODS

The Pipeline Project has been routed to minimize impacts to Reclamation facilities by avoiding or minimizing the number of facility crossings whenever possible. This was generally accomplished by locating the Pipeline on highlands and avoiding drainages to the extent practicable. Due to the topography within the Klamath Valley and the linear nature of Reclamation facilities, complete avoidance is impossible and Reclamation facility crossings are necessary (see Resource Report 10 Section 10.4.3.8 and Figure 10.4-7).

PCGP proposes to install the pipeline with a minimum of five feet of cover across Reclamation facility crossings. Five feet of cover is consistent with industry standards and has been proven sufficient to protect against scour and third-party damage. Cover depth exceeding five feet would require additional construction measures and excessive land disturbance associated with dramatically increased excavation volumes and dewatering efforts. Proposed crossing methods, peak/average winter and summer flows, location coordinates, and underlying landowner information are provided in Table 1. Site photos of the majority of the crossing locations are available in Attachment 2. A brief explanation of trenchless crossing methods provided below.

2.1 Trenchless Installation

This method is completed using a boring machine to bore/auger a hole under a feature facilitating pipe installation without any surface disturbance. This is accomplished by excavating a large pit on either side of the crossing at a depth sufficient to accommodate the boring machine and achieve the required crossing depth. The excavation length is governed by the bored crossing length and must accommodate the length of the pipe to be installed. The

excavation depth is approximately one to two feet below the bottom of pipe elevation at the crossing. A boring machine is assembled in the entry pit and is used to advance an auger or cutter and temporary steel casing beneath the crossing area. After the auger and casing are advanced to the exit pit, the auger assembly is removed leaving the casing pipe in place. The product pipe is then welded to the casing and is either pushed or pulled through the bored hole completing the installation. In some geologic conditions, the product pipe may be installed without the use of a temporary steel casing. A typical drawing of this crossing method is available in Attachment 3.

All Reclamation canal and drain crossings will be completed using trenchless conventional bore methodology. Crossing the canals and drains using trenchless methodology will preserve the existing canal and drain embankments and avoid disruption of the underlying hardpan.

2.2 Compliance with Reclamation Requirements

All crossings of Reclamation facilities in the Klamath Project will be constructed in accordance with Reclamation's *Engineering and O&M Guidelines for Crossings*, December 2014 edition (Guidelines). PCGP will also implement the Guidelines for pipeline installation in each of the affected irrigation districts.

Compliance with the majority of the requirements in the Guidelines has been demonstrated on the drawings in Attachment 1. The following bullets provide additional clarification of PCGP's compliance. The section number of each bullet item references the corresponding section in the Guidelines.

- Section 4.6.3 #1 Facility crossings will be made nearly perpendicular (between 70 and 90 degrees) to the axis of the channel. Some exceptions exist due to adherence to FERC guidelines that emphasize co-location with existing utilities when siting new utilities. In these locations where the crossing angle is less than 70 degrees, the alignment is co-located (parallel) with existing high voltage transmission lines, or was aligned based on other routing constraints or based on landowner requests. Modifying the crossing angle would increase project disturbance, landowner encumbrances, and eliminate the benefit of co-location.
- Section 4.6.3 #5 Plans for the bored crossings will be prepared once the services of a qualified drilling contractor have been procured. Plans will be submitted to Reclamation for approval prior to the commencement of any drilling work.
- Section 4.6.3 #10b At the conclusion of construction and prior to placing the pipeline in-service, PCGP will conduct a strength test as required by CFR Title 49, Part 192.505. All crossings of Reclamation facilities are in Class 1 areas.
- Section 4.6.3 #10f Because the welded, steel pipeline will be buried in a predominantly linear alignment and will be carrying compressible natural gas at a nearly steady state temperature, expansion and contraction of the pipe are not significant risks to Reclamation facilities. If any crossings require pipeline fittings be installed in close proximity to Reclamation embankments to obtain the required depth of cover across short distances, adequate padding will be used around the fittings to ensure movement of the fitting will be minimal.
- Section 5.0 PCGP will install an impressed current cathodic protection (CP) system in compliance with CFR Title 49, Part 192, as opposed to Part 195 as mentioned in the Guidelines. However, the CP system may not be installed until up to one year after installation of the pipeline. This allows for accurate soil resistivity readings along the

Pacific Connector Gas Pipeline Project

alignment, to adequately design the CP system for pipeline protection. No CP infrastructure will be installed within Reclamation easements.

2.3 Specifications

PCGP will design, construct, and operate all pipeline and facilities in compliance with the Code of Federal Regulations Title 49, Part 192 – Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards and all industry standards referenced therein. Part 192 addresses specific questions raised by Reclamation during collaboration with PCGP, such as surveillance (192.613), emergency response (192.615), and public awareness (192.616). Although 192.707 indicates installing aboveground line markers at waterway crossings is not required for buried pipelines, PCGP has committed to install them at all aboveground and buried crossings of Reclamation facilities, as seen in the General Notes on each of the drawings in Attachment 1.

2.4 Approval of Crossing Plans

As specified by the Reclamation Guidelines, PCGP will submit this Crossing Plan and the associated design package (joint submittal of the Crossing Plan and design package hereafter referred to as Design Submittal) for approval of the Klamath Basin Area Office. PCGP's Design Submittal will follow the Reclamation *Mid-Pacific Region Guidelines for the Review of Design Drawings and Specification and Oversight of Related Activities on Transferred Works*, April 2014. As requested by the Klamath Basin Area Office, all PCGP Design Submittals will utilize Reclamation form MP-620 – *Request for Review and Acceptance of Design Drawings and Specifications*. Submittal of the final Design Submittal will not occur until PCGP has contracted with an engineering, procurement, and construction contractor (EPC Contractor), who will be responsible for all final designs and submittals.

This Design Submittal and pending approval are not intended to satisfy the requirements of Section 2.0 of the Guidelines, which requires applicants obtain a written land use authorization for Reclamation crossings. It is expected that Reclamation will authorize the Pipeline Project by issuing a memorandum to the Bureau of Land Management (BLM) State Director acknowledging concurrence with the BLM Record of Decision and subsequent issuance of a Right of Way Grant and Temporary Use Permit to cross lands under federal jurisdiction and/or easements. In order to maintain the schedule for issuance of the Record of Decision, a conditional approval by Reclamation of PCGP's Design Submittal will be necessary. The conditional approval should address any outstanding items required of PCGP to satisfy Reclamation requirements. This same procedure was used by Reclamation to authorize the Ruby Pipeline Project in the formal concurrence memorandum to the BLM State Director dated July 9, 2010.

3.0 KLAMATH FACILITY CROSSING LOCATIONS

The proposed Reclamation facility crossing locations are listed in Table 1, along with other pertinent information. Additional location and design information are provided on the individual drawings in Attachment 1.

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				Table 1 ہے۔ Klamath Project Facility Crossing Locations O												
Crossing ID Number	Facility	Index No	2009 Proposed Crossing Method	Proposed Crossing Method	PCGP Drawing Number	PCGP Milepost	Township	Range	Section	QQ	Winter Peak/Avg Flow (cfs)	Summer E Peak Flow/Avg Plow U (cfs)	Irrigation District	Reclamation Type of Rights	How Acquired by Reclamation	Grantor, Grantee
NA	C-4-E Lateral	KO-20-080	Dry Open Cut	Not Crossed	3430.5- X-117	NA	39S	9E	20	SWNE	NA	(Un NA	KID	NA	NA	NA
NA	Withdrawn Land	KO-20	Dry Open Cut	Not Crossed	3430.5- X-117	NA	39S	9E	20	SWNE	NA	offina	KID	NA	NA	NA
1	No. 1 Drain	KO-20-276	Dry Open Cut	Bore	3430.5- X-117	200.54	39S	9E	20	SWNE	20 / 2	ອີ- ອີ- 15 / 8	KID	Perpetual, reserved	Patents	USA, Heater, and USA, Parker
2	C-4-E Lateral	KO-20-164	Dry Open Cut	Bore	3430.5- X-118	201.63	39S	9E	28	NENW	2 / < 1	1/20 / 10 /23,	KID	Perpetual, fee	Bargain and Sale instrument	Miller, USA
3	C-4 Lateral	KO-09-013	Dry Open Cut	Bore	3430.5- X-119	204.13	40S	9E	3	NWNE	5 / < 1	`20 1450 / 70	KID	Canal Act 1890, reservation	Patent	USA, Melhare
4	C-4-F Lateral	KO-09-013	Dry Open Cut	Bore	3430.5- X-120	204.33	40S	9E	3	NWNE	1 / < 1	2: 1220 / 10 ∶0	KID	Canal Act 1890, reservation	Patent	USA, Melhare
5	No. 3 Drain	KO-09-014	Dry Open Cut	Bore	3430.5- X-121	204.74	40S	9E	2	NWNW	4 / < 2	9 PM 5 / 2	KID	Canal Act 1890, reservation	Patent	USA, Sayres
6	C-4-C Lateral	KO-09-018	Dry Open Cut	Bore	3430.5- X-122	205. 50	40S	9E	2	SWNE	2 / < 1	15 / 7	KID	Perpetual, fee	Bargain and Sale instrument	Carolan, USA
7	C Canal	KO-09-027	Bore	Bore	3430.5- X-123	205.96	40S	9E	1	NWSW	5 / < 1	270 / 200	KID	Canal Act 1890, reservation	Patents	USA, Manning, and USA, Koontz
8	D-2 Lateral	KO-09-050	Dry Open Cut	Bore	3430.5- X-124	206.51	40S	9E	12	NWNE	< 1 / < 1	7 / 4	KID	Perpetual, fee	Warranty Deed	Johnson, USA
9	5-A-1 Drain	KO-09-053	Dry Open Cut	Bore	3430.5- X-125	207.11	40S	9E	12	NESE	3 / < 1	2 / 1	KID	Perpetual, easement	Bargain and Sale instrument	Case
10	5-A Drain	KO-09-054	Dry Open Cut	Bore	3430.5- X-126	207.26	40S	9E	12	NESE	5 / < 1	5/2	KID	Canal Act 1890, reservation	Patent	USA, Shaw
11	C-4-7 Lateral	KO-10-031	Dry Open Cut	Bore	3430.5- X-127 &128	207.4	40S	10E	7	NWSW	< 1 / < 1	25 / 15	KID	Perpetual, fee	Bargain and Sale instrument	Kershner, USA
12	5-A Drain	KO-10-032	Dry Open Cut	Bore	3430.5- X-127 &128	207.42	40S	10E	7	NWSW	5 / < 1	5/2	KID	Perpetual, fee	Quitclaim	Cheyne, USA
13	5-A Drain	KO-10-032	Dry Open Cut	Bore	3430.5- X-129	207.6	40S	10E	7	SWSW	7 / < 1	6 / 3	KID	Perpetual, fee	Quitclaim	Cheyne, USA
14	5-A Drain	KO-10-034	Dry Open Cut	Bore	3430.5- X-130	207.98	40S	10E	18	NENW	7 / < 1	6/3	KID	Canal Act 1890, reservation	Patent	USA, Uerling
15	5-A Drain	KO-10-034	Dry Open Cut	Bore	3430.5- X-131	208.18	40S	10E	18	SENW	7 / < 1	6 / 3	KID	Canal Act 1890, reservation	Patent	USA, Uerling

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Crossing ID Number	Facility	Index No	2009 Proposed Crossing Method	Proposed Crossing Method	PCGP Drawing Number	PCGP Milepost	Township	Range	Section	QQ	Winter Peak/Avg Flow (cfs)	Summer ○ Peak Flow/Avg 편Flow RC (cfs)	Irrigation District	Reclamation Type of Rights	How Acquired by Reclamation	Grantor, Grantee
16	5-K Drain	KO-10-048	Dry Open Cut	Bore	3430.5- X-132	209.02	40S	10E	18	SESE	2 / < 1	PDF 5 / 2	KID	Canal Act 1890, reservation	Patent	USA, Steele
17	C-9 Lateral	KO-10-047	Dry Open Cut	Bore	3430.5- X-133	209.15	40S	10E	20	NWNW	1 / < 1	Unof 10 / 6	KID	Perpetual, fee	Warranty Deed	Henley, USA
18	No. 5 Drain	KO-10-061	Dry Open Cut	Bore	3430.5- X-134	210.26	40S	10E	20	SESE	40 / < 5	fi 040 / 15	KID	Canal Act 1890, reservation	Patent	USA, Crawford
19	5-H Drain	KO-10-074	Dry Open Cut	Bore	3430.5- X-135	210.85	40S	10E	28	SWNW	5 / < 1) ⊢5/<2	KID	Perpetual, easement	Bargain and Sale instrument	Bunnell/O'Connor, USA
23	G Canal	KO-10-086	Bore	Bore	3430.5- X-140	213.87	40S	10E	26	SESE	50 / < 1	3/330/200	KID	Canal Act 1890, reservation	Patent	USA, Hill

Pacific Connector Gas Pipeline Project

4.0 RECLAMATION BRIDGES AND CULVERTS

PCGP conducted a review of potential crossings of Reclamation bridges and culverts and determined that two bridges and sixteen culverts could potentially be crossed by construction traffic, as listed in Table 2. Each potential crossing is also depicted in the crossing map in Attachment 1, labeled with the Object ID and Feature Crossed. All crossing locations except the private bridge over G Canal (Object ID 399) are along public roadways, and PCGP's construction contractor will comply with state and county load requirements. The private bridge over G Canal is a wooden structure that will not support heavy equipment loads. If PCGP's construction contractor determines that crossing this bridge with heavy loads is necessary, plans for bridge upgrade or replacement will comply with Reclamation Guidelines, Section 4.1. A design package will be submitted to Reclamation for review and approval prior to the commencement of any bridge work.

Object	Facility	Feature	Baad	Reclamation		D	Quatient
ID	Туре	Crossed	Road	ID Number	Township	Range	Section
4	Culvert	A3 Lateral	Tingley Lane		39S	9E	16
5	Culvert	A3 Lateral	Tingley Lane		39S	9E	16
6	Culvert	No. 1 Drain	Midland Highway		39S	9E	20
18	Culvert	A3 Lateral	Villa Drive		39S	9E	11
19	Culvert	A3 Lateral	Summers Lane		39S	9E	15
20	Culvert	A3 Lateral	Anderson Avenue		39S	9E	15
22	Culvert	A3 Lateral	Ditch Rider Road		39S	9E	16
25	Culvert	Drain Ditch	Joe Wright Road		39S	9E	20
26	Culvert	Drain Ditch	Joe Wright Road		39S	9E	20
39	Culvert	Irrigation Canal	Old Midland Road		40S	9E	4
40	Culvert	Irrigation Canal	Anderson Road		41S	10E	2
49	Culvert	G-3 Lateral	Hill Road	KLAM-160	40S	10E	25
50	Culvert	J-1 Lateral	State Line Road (Hwy 161)		48N	4E	18
53	Culvert	Irrigation Canal	Old Midland Road		40S	9E	4
54	Culvert	Drain Ditch	State Line Road (Hwy 161)		48N	3E	13
113	Culvert	A3 Lateral	Southside Expressway (Hwy 140)		39S	9E	16
399	Bridge	G Canal	Private	KLAM-117	40S	10E	27
432	Bridge	D Canal	North Malin Road (6th Street)	KLAM-146	41S	12E	15

Table 2 Klamath Project Culvert and Bridge Crossings

5.0 TEMPORARY EQUIPMENT CROSSINGS

To maintain the movement of equipment along the construction corridor and reduce impacts to Reclamation roads, bridges, and public roads, it will be necessary for PCGP's construction contractor to install temporary equipment bridges across Reclamation facilities. The need for installation and the type and length of these bridges are independent of the bored pipeline crossing method. These bridges will be placed without impact to the canal or drain embankments. Any bridge abutments necessary to install the bridge will be placed so as not to transfer load to the facility embankments. All temporary bridges will be removed following construction. A typical drawing of a temporary equipment bridge is provided in Attachment 3.

6.0 ENVIRONMENTAL CONSIDERATIONS

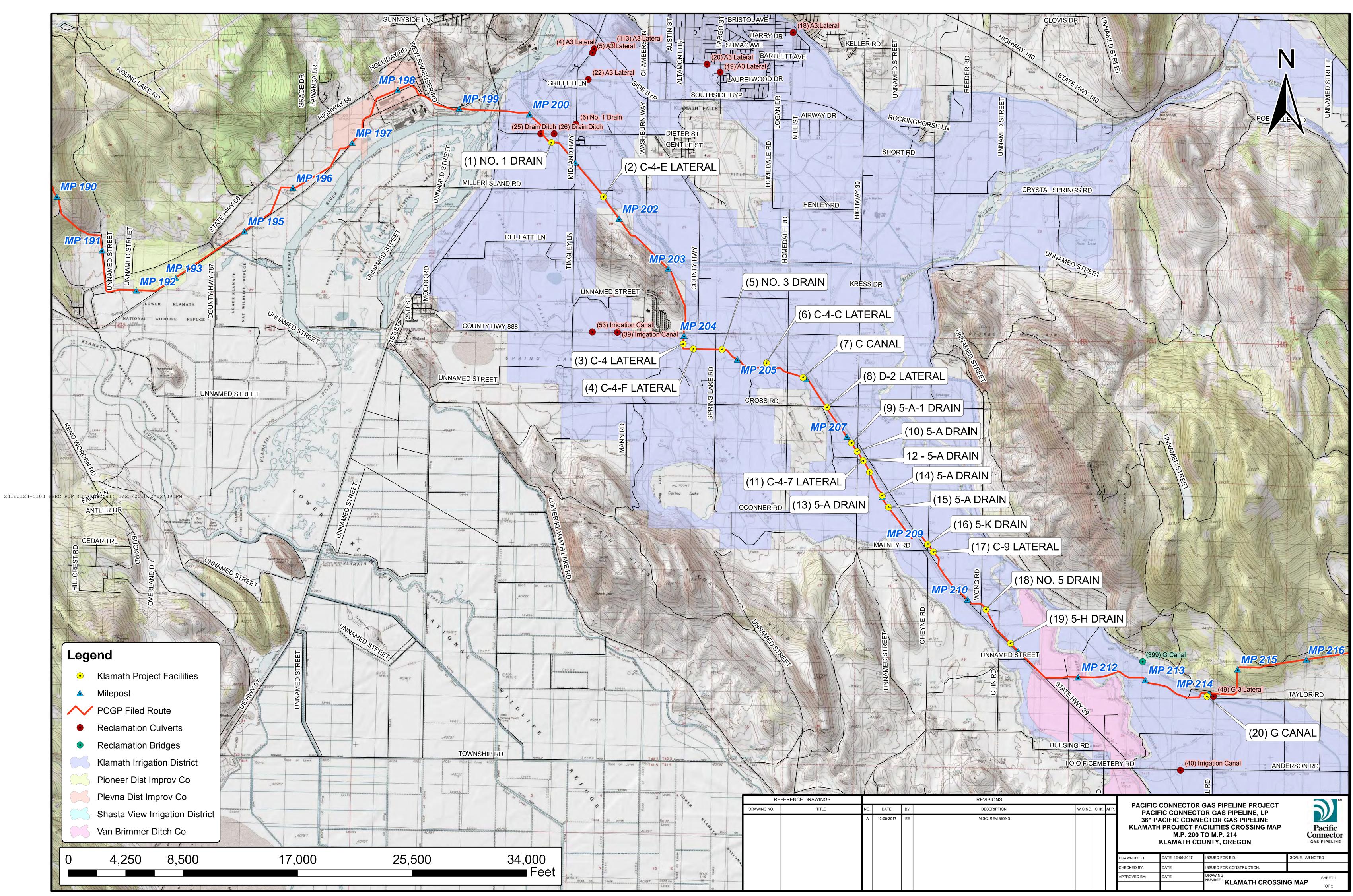
PCGP will follow the procedures outlined in the pertinent Plans of Development to ensure environmental compliance and conformance with the federal right-of-way grant. These plans primarily include:

- Air/Noise and Fugitive Dust Control Plan
- Environmental Briefings Plan
- Erosion Control and Revegetation Plan
- Environmental Response Plan
- Fire Prevention and Suppression Plan
- Integrated Pest Management Plan
- Right-of-Way Marking Plan
- Safety and Security Plan
- Sanitation and Waste Disposal Management Plan
- Spill Prevention, Containment, and Countermeasures Plan
- Transportation Management Plan
- Unanticipated Discovery Plan

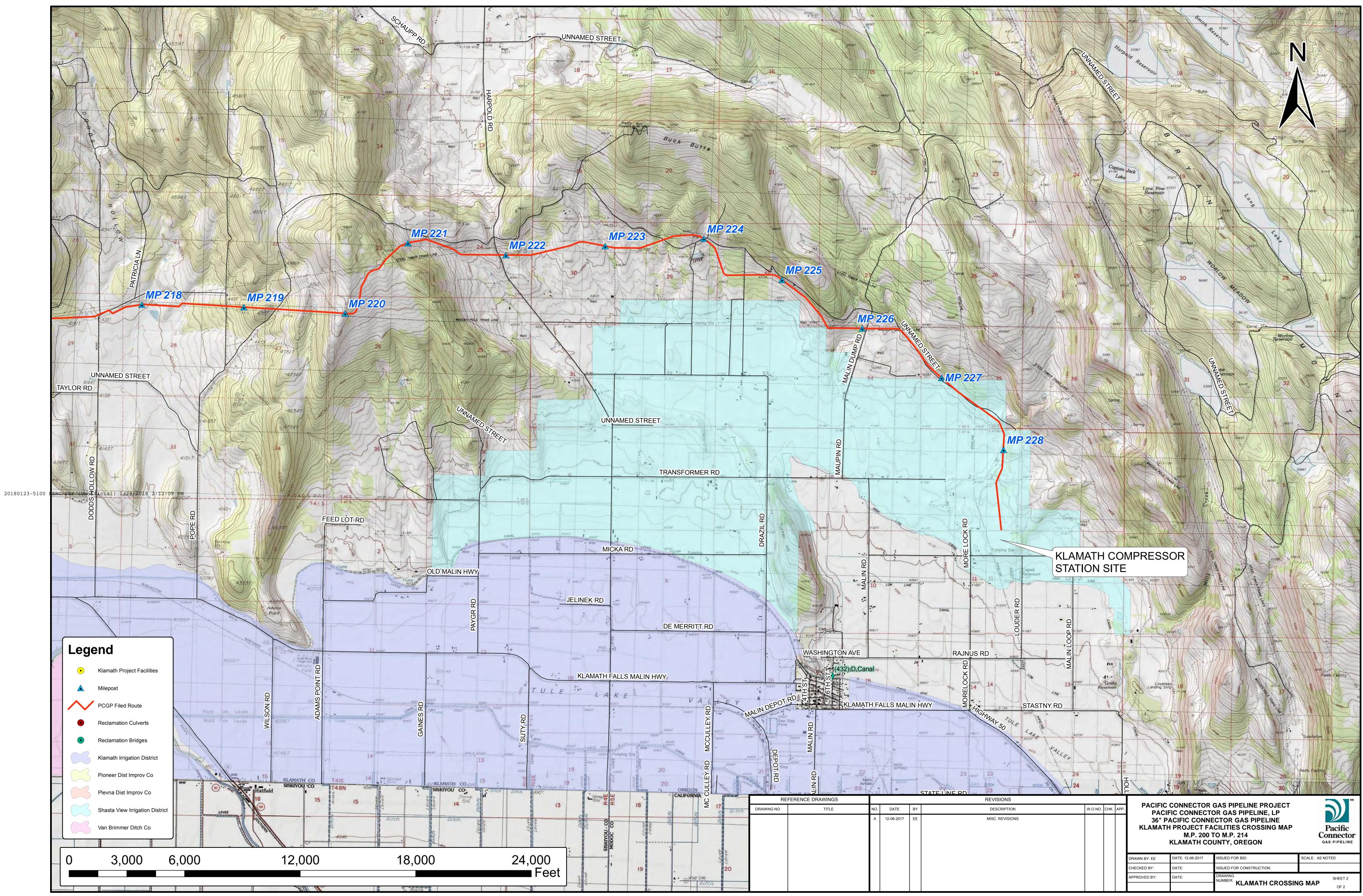
Although not expected because of the trenchless crossing method, any sensitive fish species discovered in Reclamation facilities potentially impacted by construction of the Pipeline Project will be handled in accordance with the Fish Salvage Plan (see Appendix L to the POD). PCGP will retain contracted fish removal and handling personnel authorized to conduct the fish removal operations in coordination with Reclamation and the Klamath Falls U.S. Fish and Wildlife Service office. During construction, PCGP will provide weekly schedules to Reclamation indicating projected or anticipated work that would occur on or near Reclamation facilities for the following week. PCGP will also provide Reclamation a 48-hour notice prior to conducting work on a Reclamation facility that would require fish removal.

ATTACHMENT 1

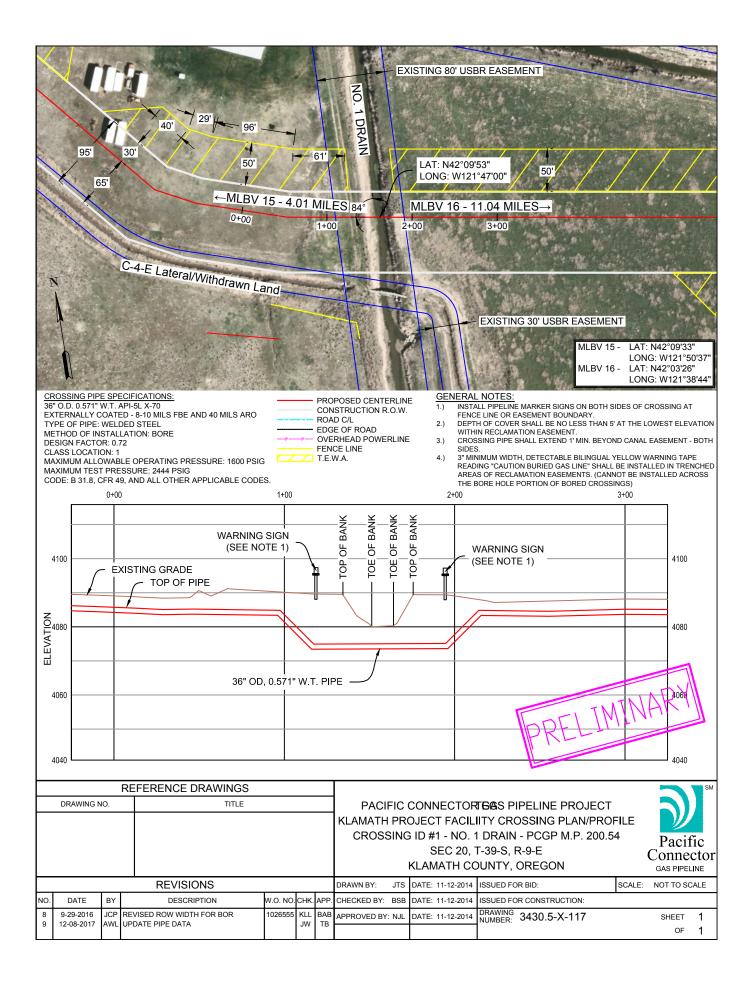
Klamath Project Facilities Crossing Location Map and Site-Specific Drawings

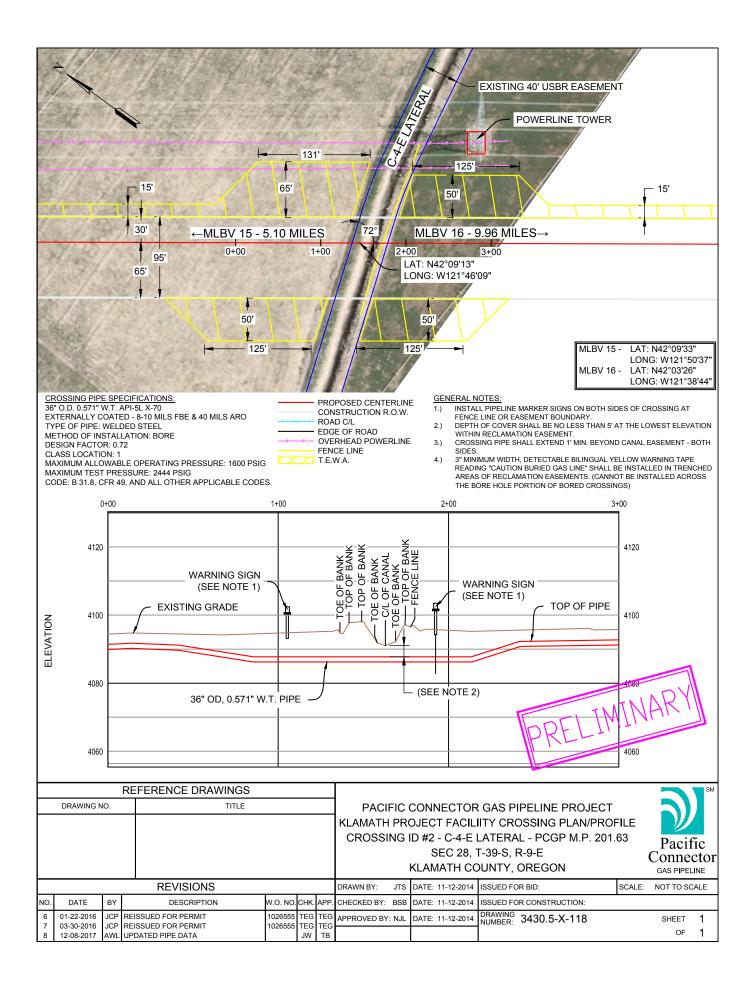


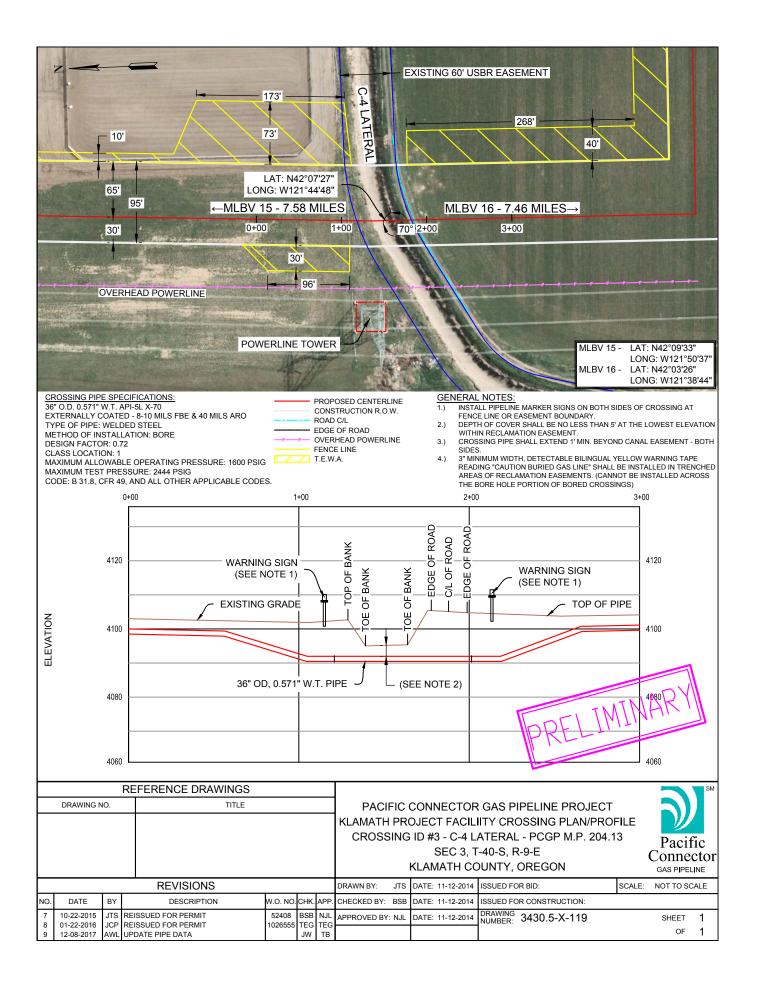
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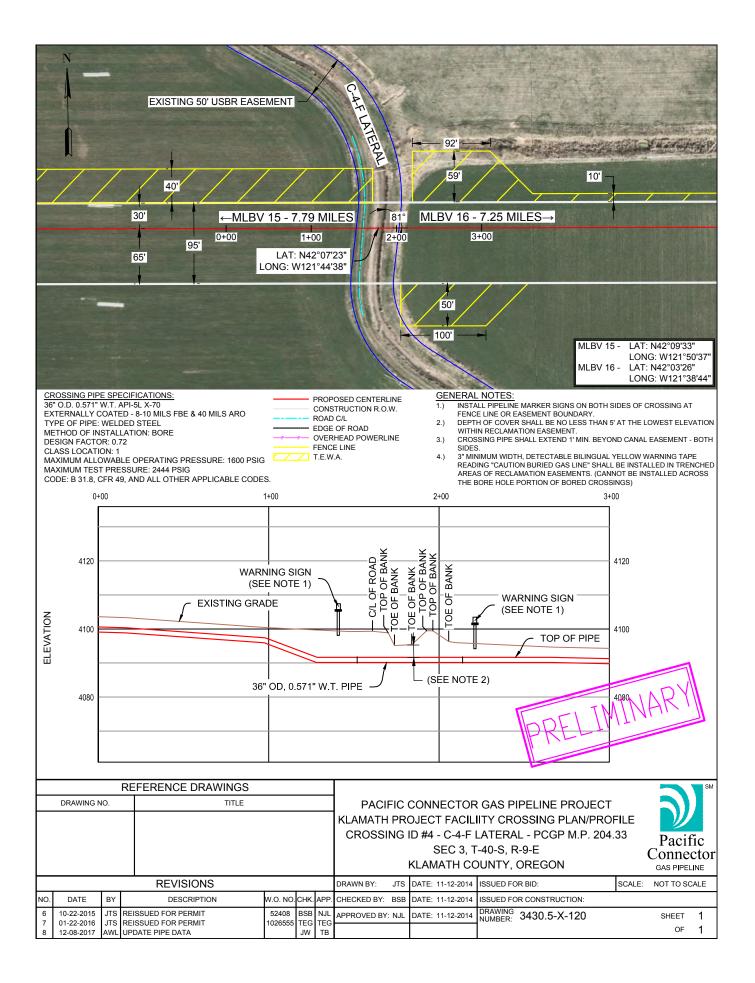


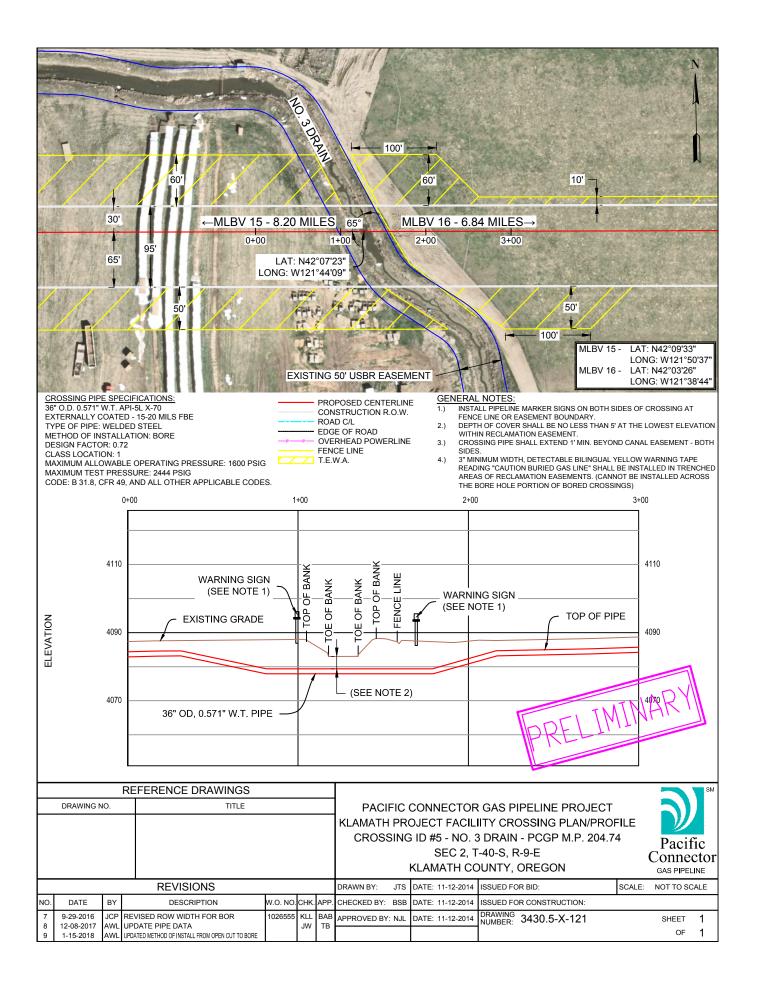
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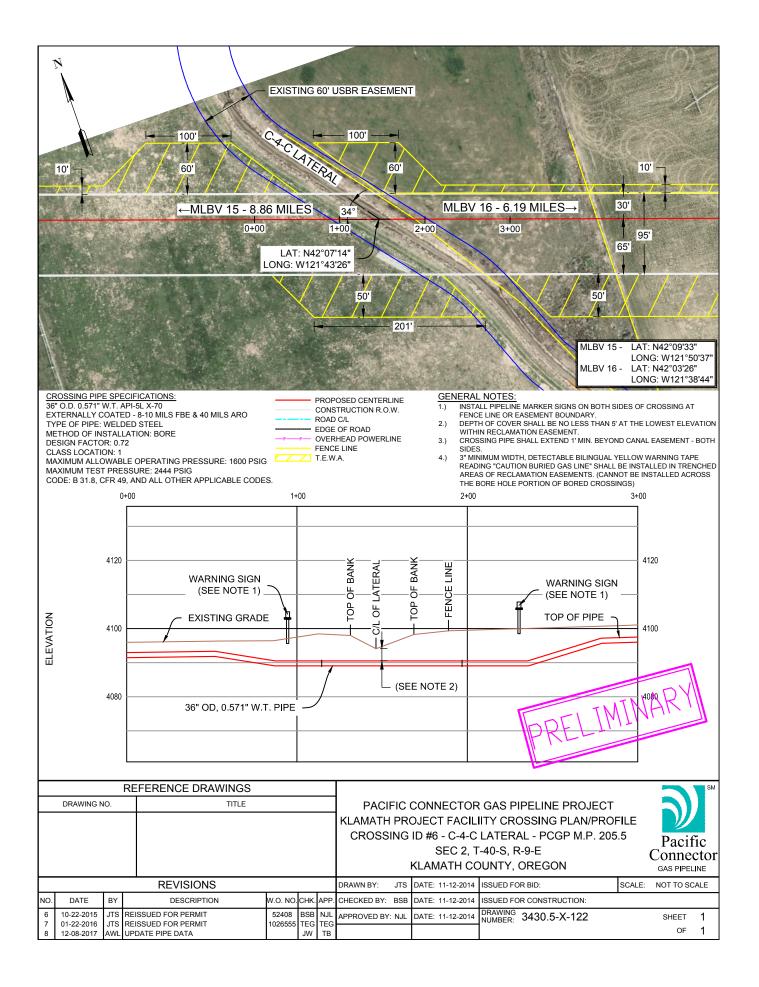


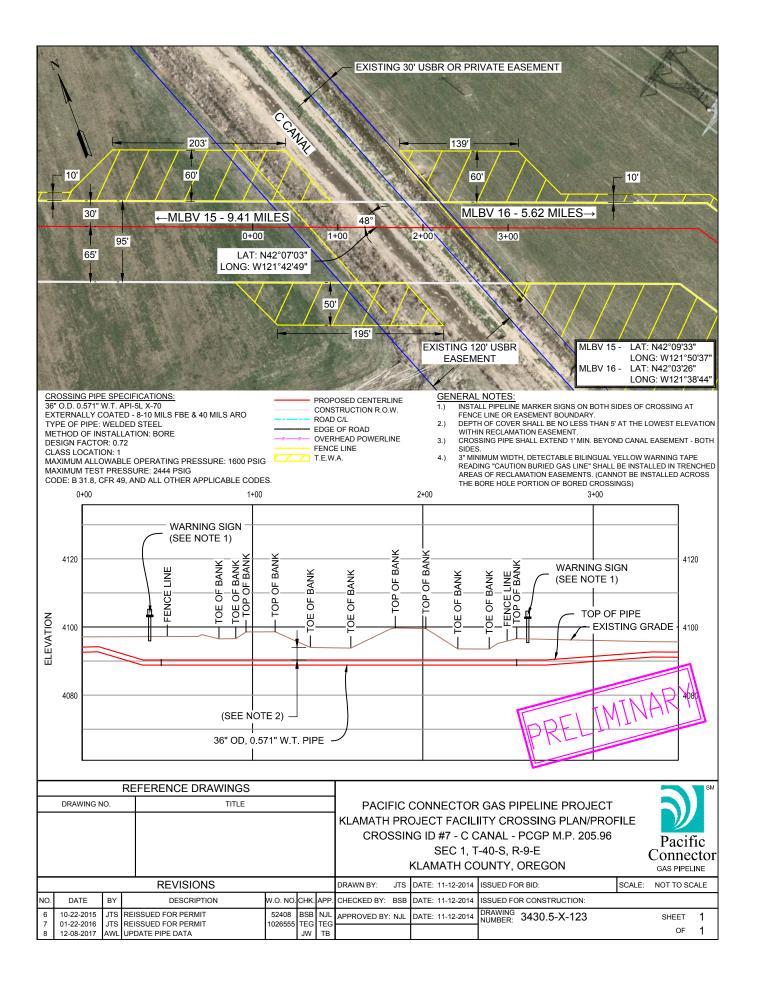


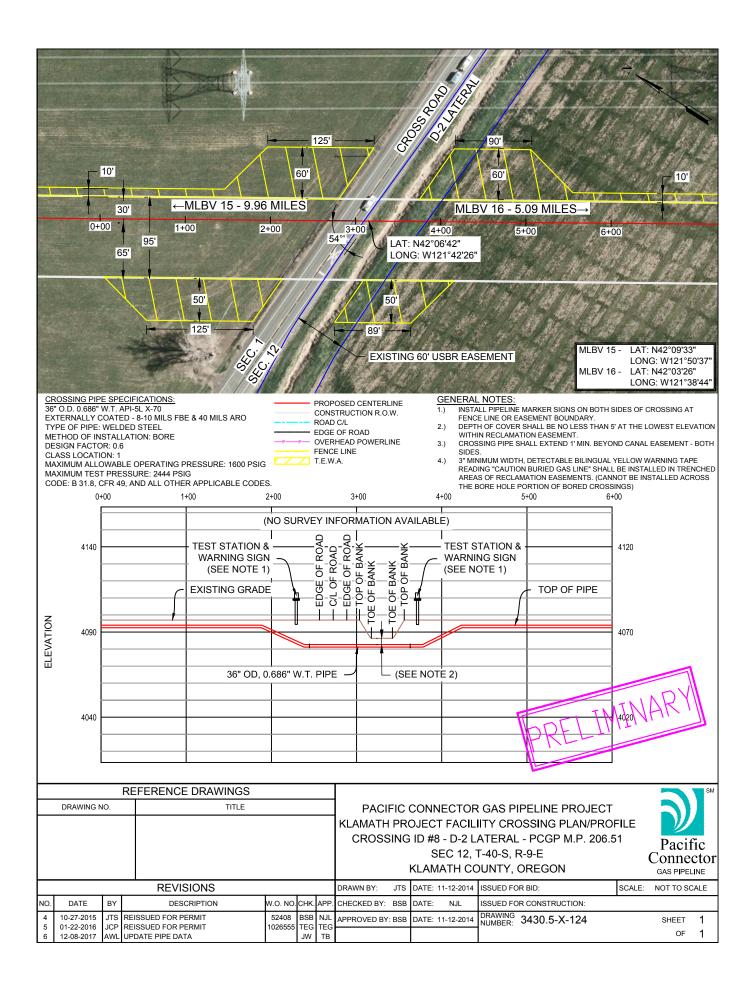


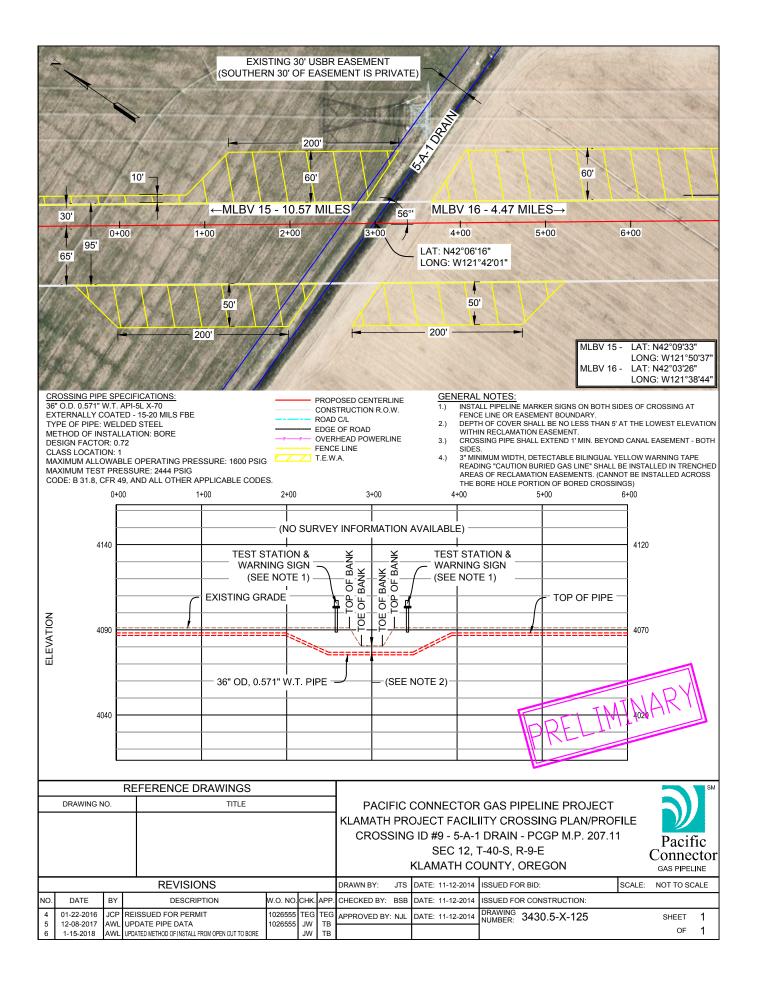


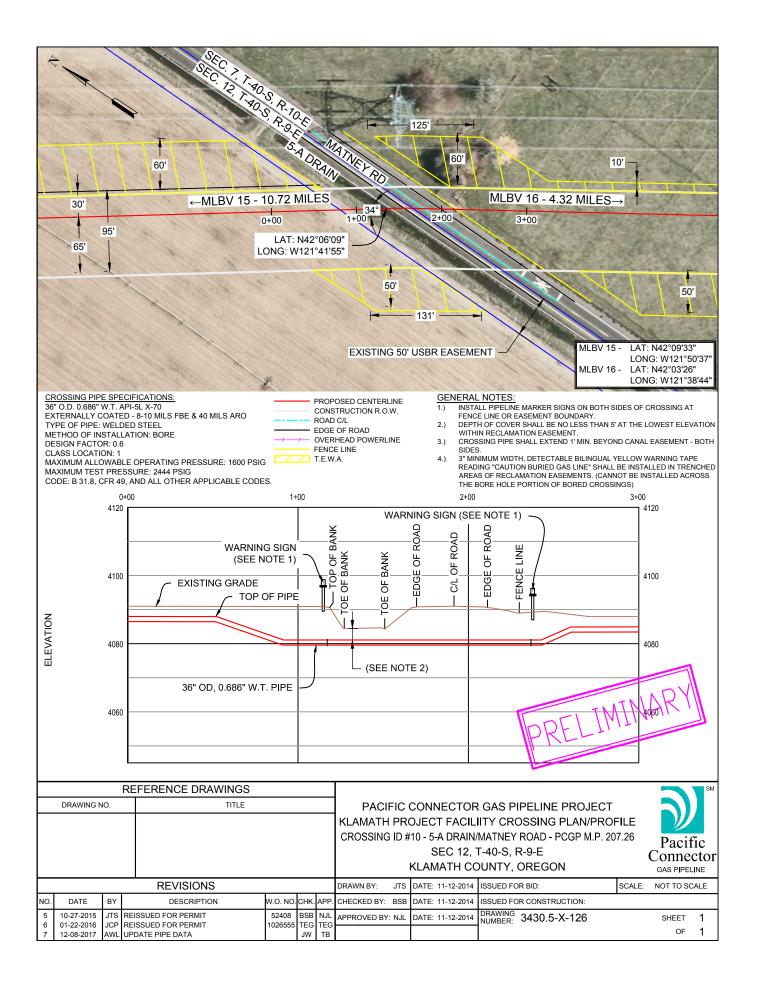


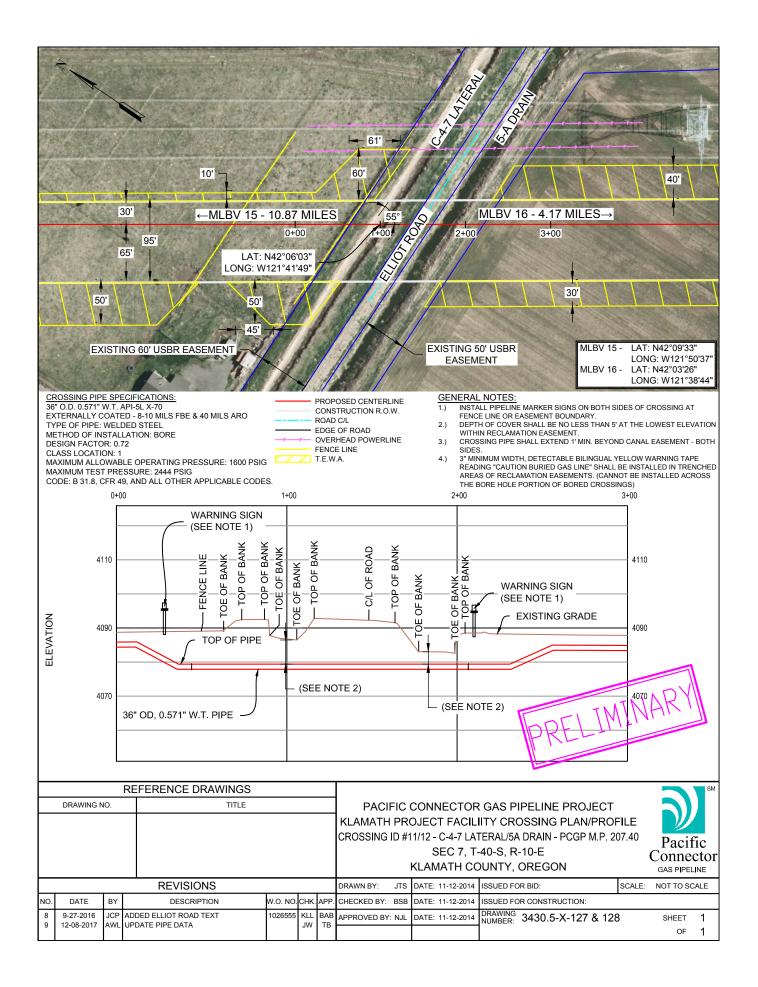


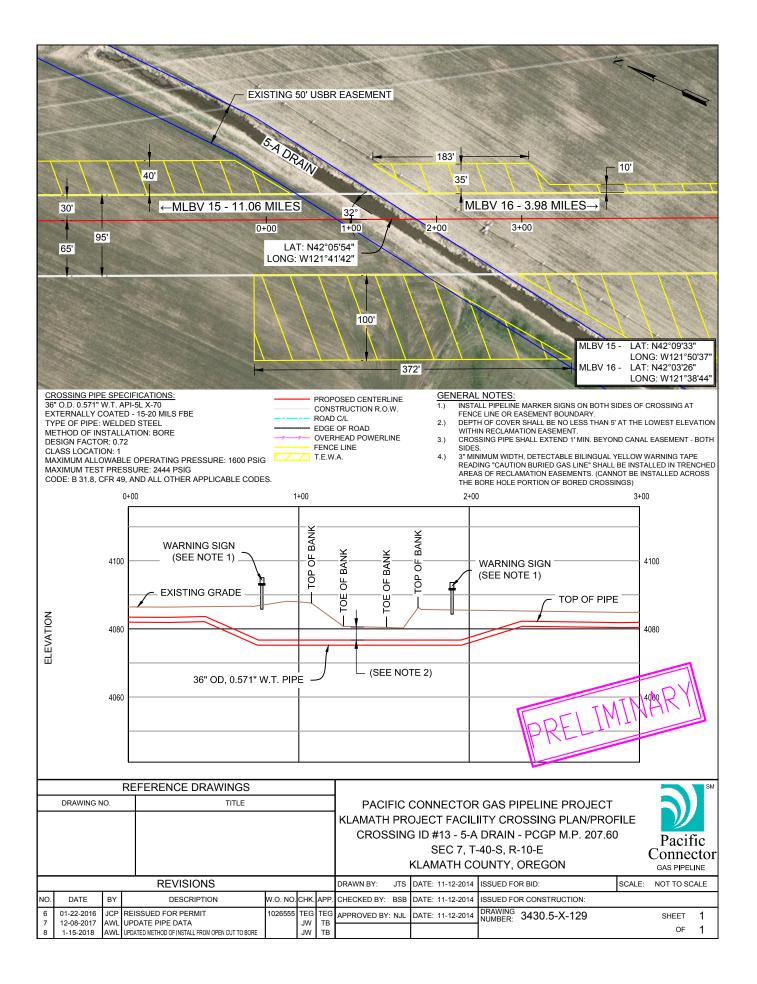


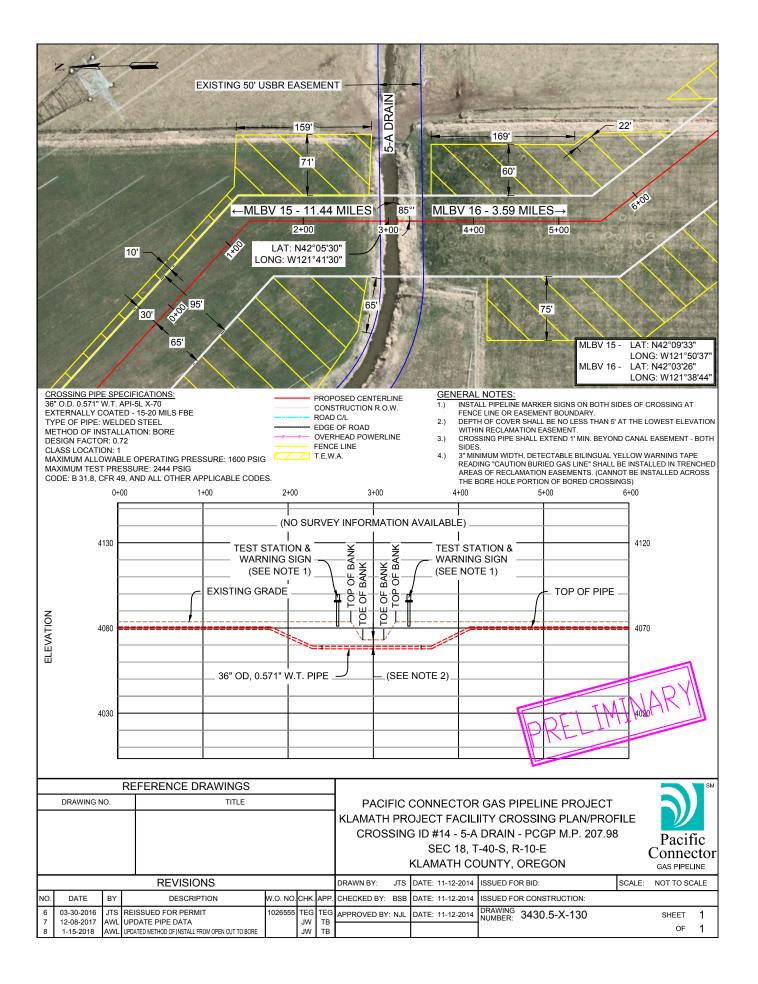


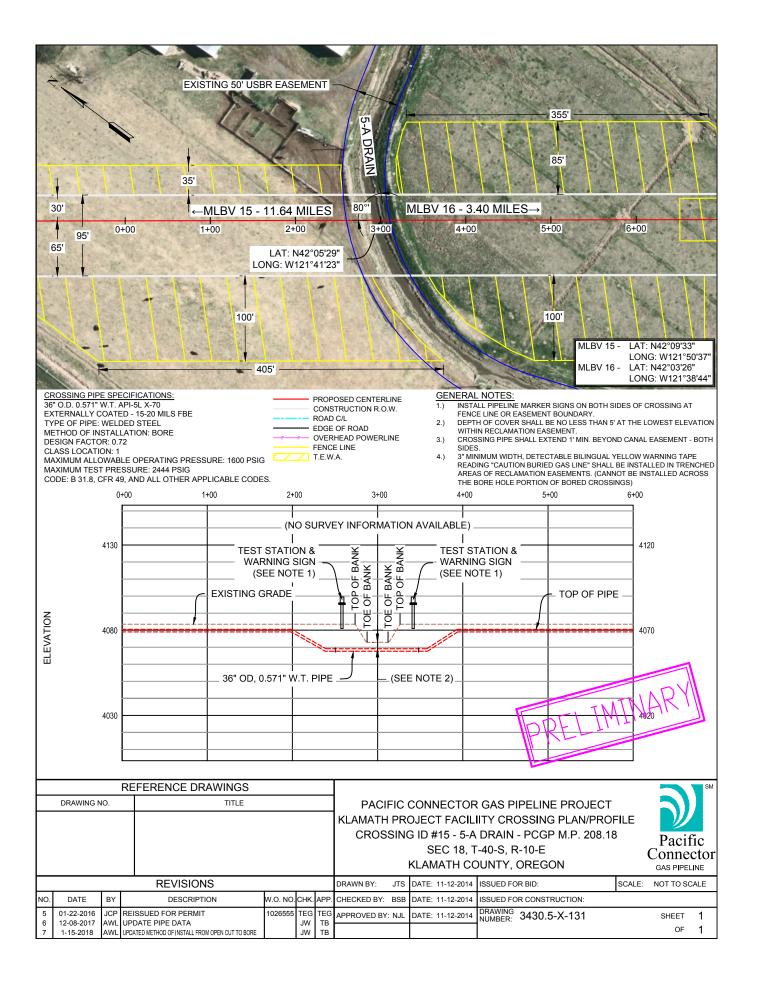


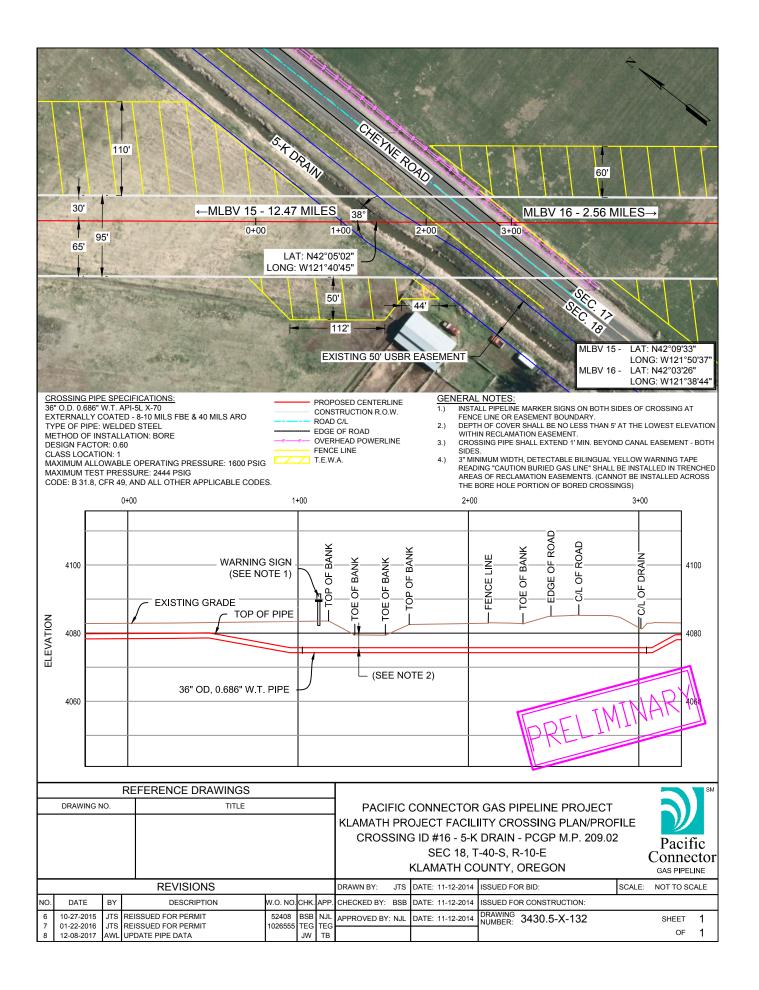


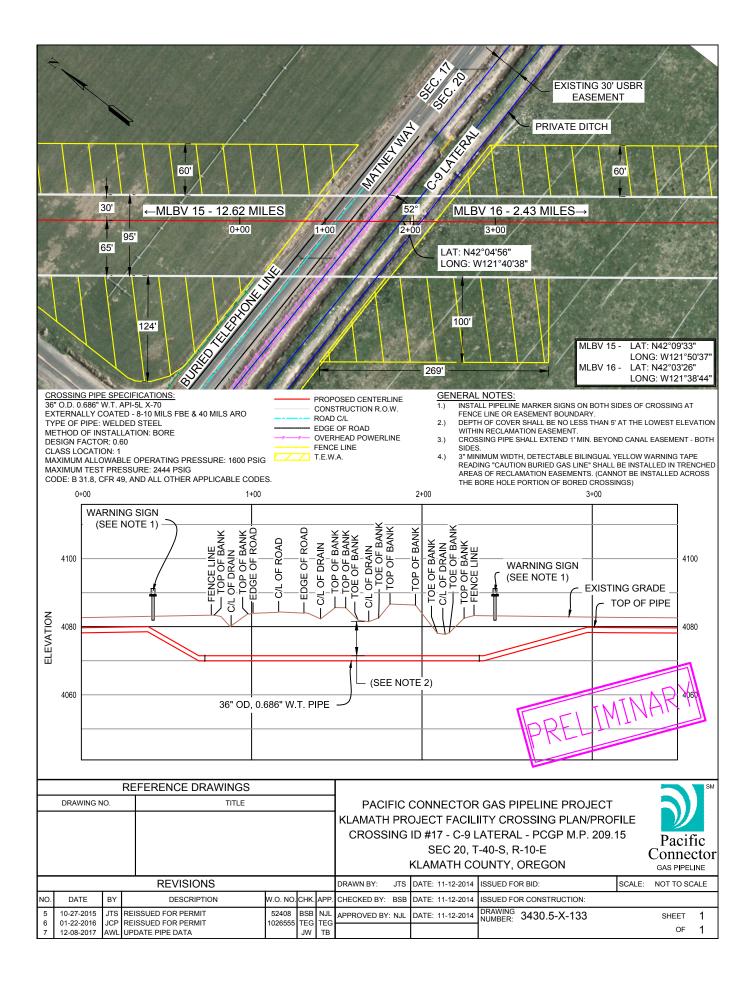


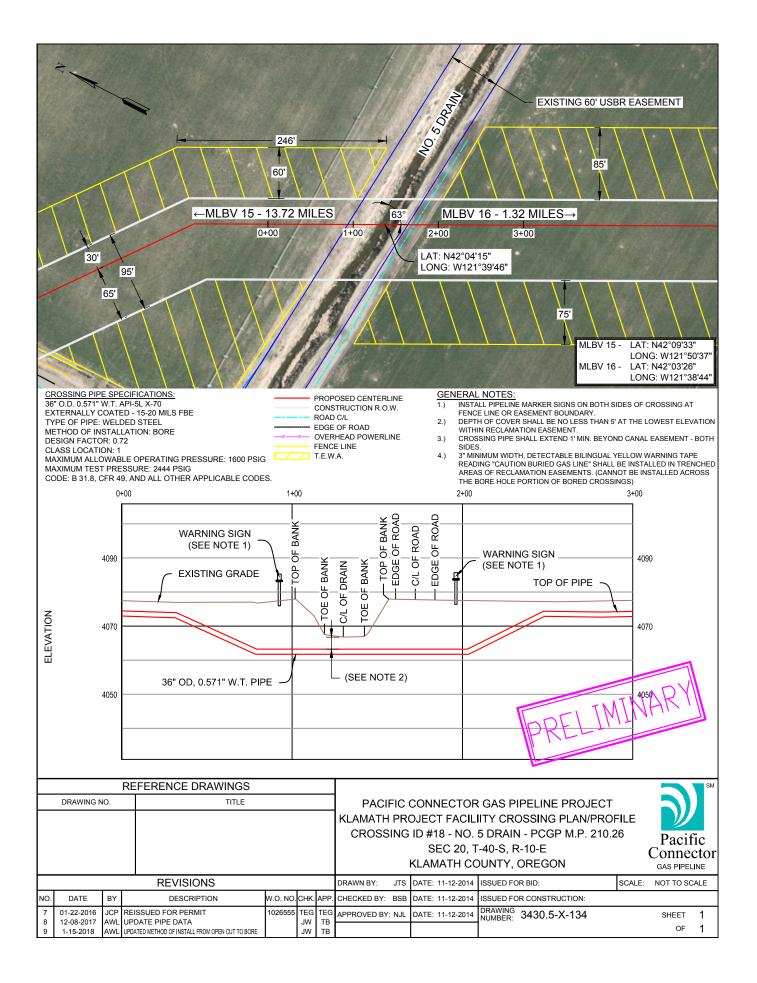


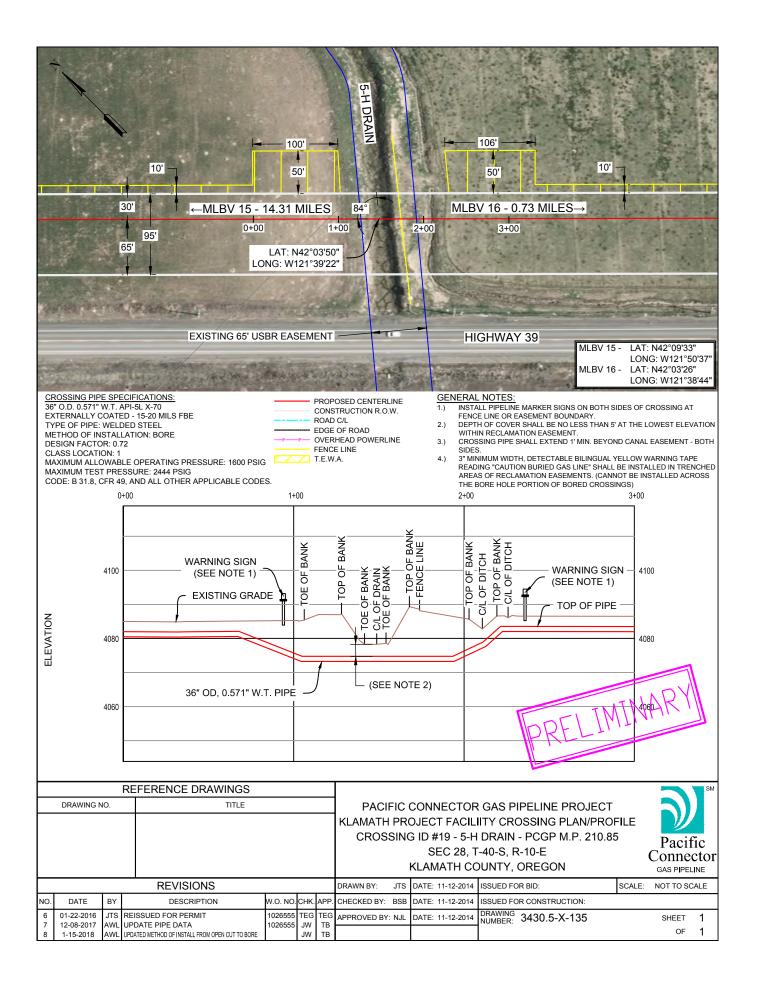


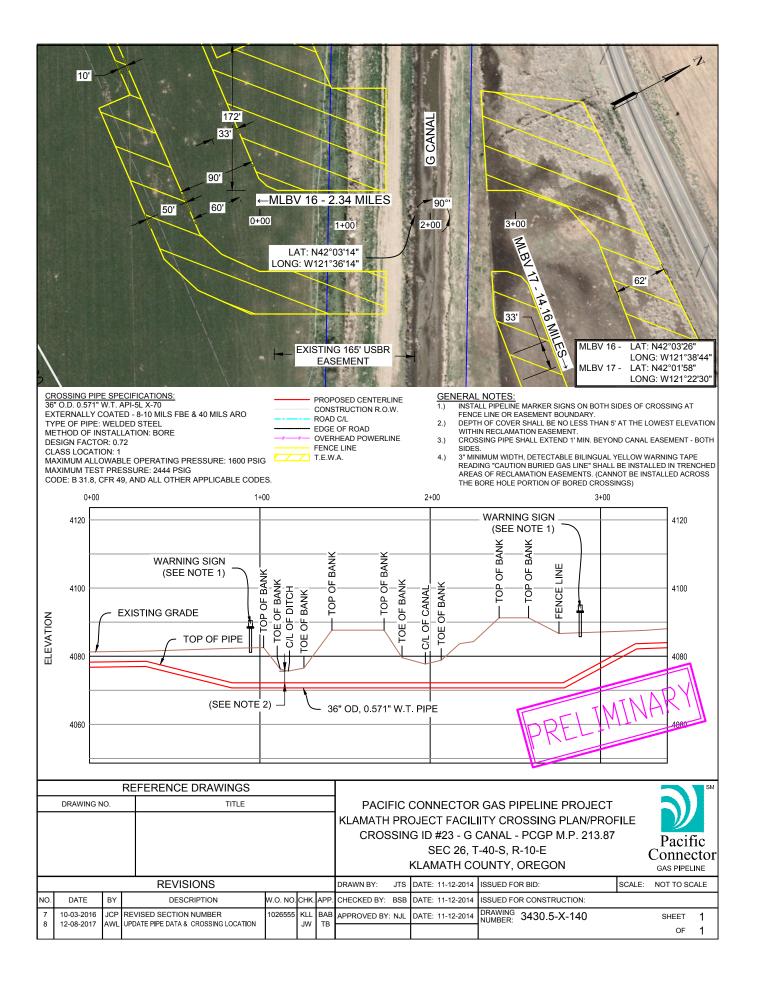












ATTACHMENT 2

Site Photos of Selected Facility Crossings

Pacific Connector Gas Pipeline Project



Crossing 1, No. 1 Drain looking east (left image) and north (right image)



Crossing 1, No. 1 Drain looking southeast



Crossing 4, C-4-F Lateral looking west (left image) and Crossing 5, No.3 Drain looking east (right image)



Crossing 6, C-4-C Lateral looking north (left image) and Crossing 8, D-2 Lateral looking south (right image)



Crossing 7, C Canal looking southeast (left image) and southwest (right image)



Crossing 10, 5-A Drain looking east (left image) and Crossing 12, 5-A Drain looking northwest (right image)



Crossing 15, 5-A Drain looking southeast



Crossing 17, C-9 Lateral panorama looking west, Matney Way to the right

Pacific Connector Gas Pipeline Project



Crossing 18, No. 5 Drain looking west



Crossing 19, 5-H Drain looking northeast



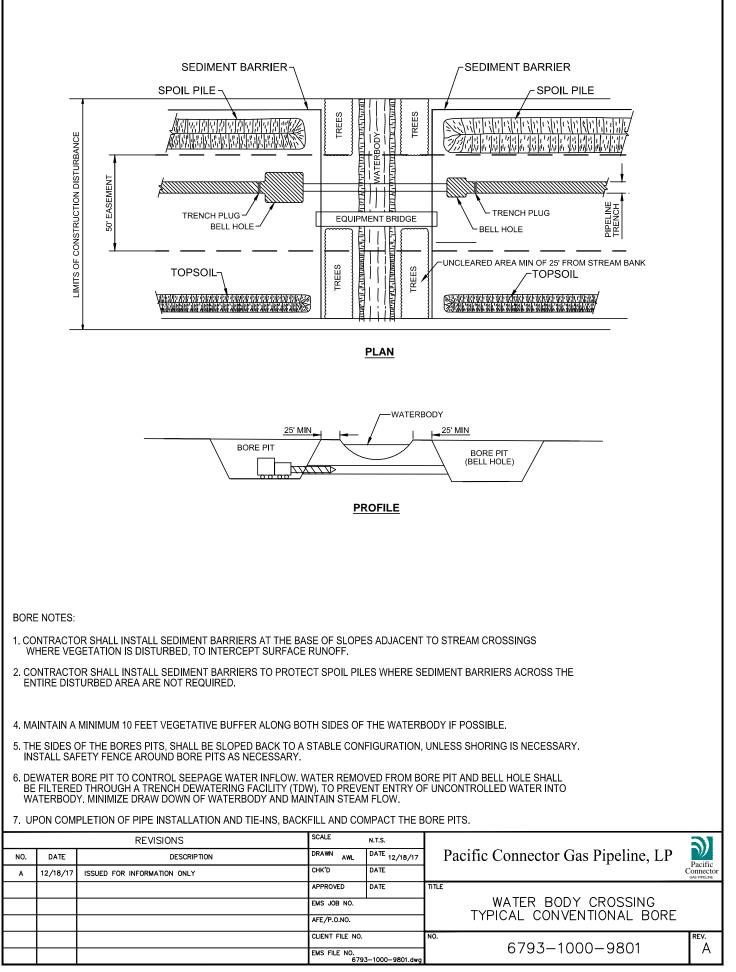
Crossing 21, D-3-A Lateral looking southeast. Image was taken approximately 650-ft northwest of the proposed crossing location.



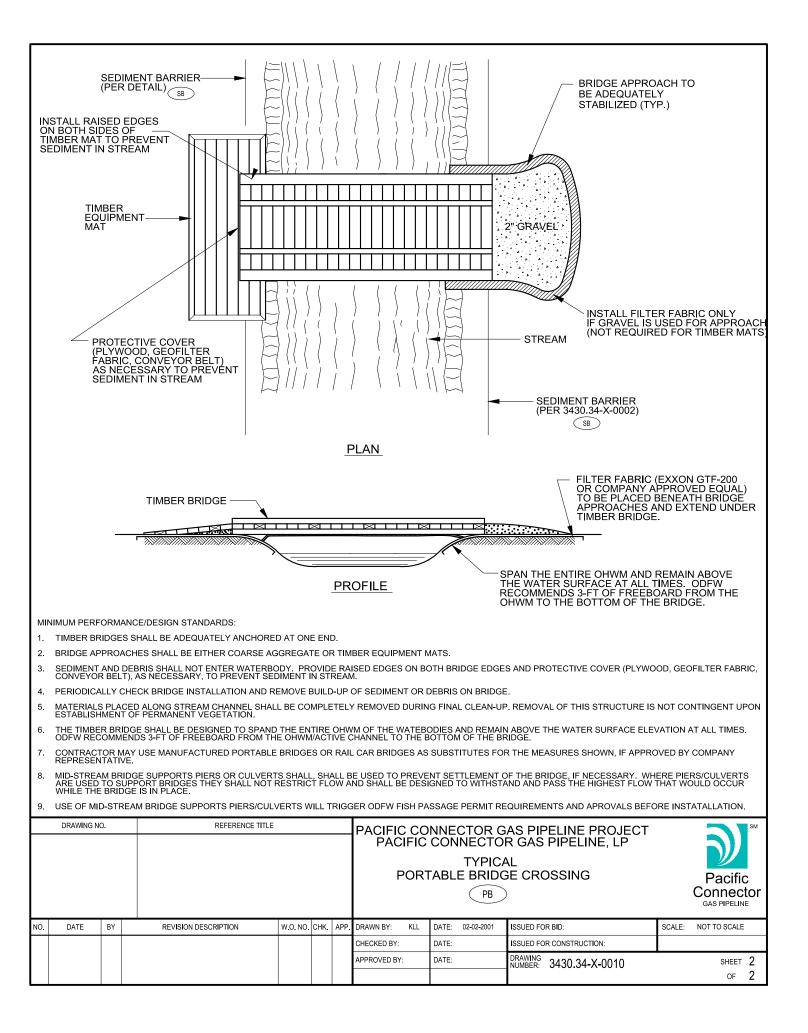
Crossing 23, G Canal looking northeast (left image) and east (right image)

ATTACHMENT 3

Typical Drawings



alittleton



Appendix P

Leave Tree Protection Plan



Pacific Connector Gas Pipeline, LP

Leave Tree Protection Plan

Pacific Connector Gas Pipeline Project

January 2018

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1.0	Introduction	1
2.0	Preconstruction Survey	1
	Forest/Timber Clearing	
	Uncleared Storage Areas	

List of Attachments

Attachment 1 Uncleared Storage Areas Typical Best Management Practices

1.0 INTRODUCTION

The intent of this plan is to describe the measures that will be implemented during construction of the Pacific Connector Gas Pipeline Project (Pipeline or Pipeline Project) to identify, conserve and protect selected trees (living and snags) within or along the edges of the Pipeline Project's certificated work limits (i.e., construction right-of-way, uncleared storage areas (UCSAs) and temporary extra work areas (TEWAs). This plan describes the preconstruction surveys that will be completed to clearly mark the boundaries of the Pipeline Project's certificated working limits; the procedures that will be conducted to identify individual trees within or along the edges of the certificated work limits that can be conserved or left standing; and the measures that would be employed to ensure these trees are saved and protected from clearing activities. This plan describes the Best Management Practices (BMPs) that would be employed to minimize damage to trees within UCSAs, where slash, stumps or other materials may be temporarily stored. This Plan is intended to describe the measures that will be used to protect trees not removed from the construction right-of-way and TEWAs and protect trees within UCSAs on federal lands.

PCGP will be required to purchase all timber located within the construction right-of-way clearing limits and all trees outside of the construction clearing limits that are damaged excessively by clearing and construction activities (including road construction, renovation and repair), as determined by the authorized representative of the BLM or USFS. If PCGP damages any BLM trees outside of the authorized clearing area and the UCSAs, PCGP may be subject to trespass under BLM regulations and Oregon Revised Statutes.

2.0 PRECONSTRUCTION SURVEY

Prior to construction, the certificated construction right-of-way limits, including the boundaries of UCSAs, TEWAs, temporary disposal sites, temporary and permanent access roads, and other areas of ground-disturbing activities, as shown on the Environmental Alignment Sheets, will be surveyed and clearly marked with stakes and flagging in accordance with stipulations found within the Right-of-Way Marking Plan (see Appendix T to the POD).

3.0 FOREST/TIMBER CLEARING

Prior to clearing operations and before or concurrently with timber cruising, the EI or PCGP's authorized representative in conjunction with the construction contractor will identify and flag existing snags on the edges of the construction right-of-way or TEWAs where it is feasible to save/conserve them from clearing operations. These snags will be saved as mitigation to benefit primary and secondary cavity nesting birds, mammals, reptiles, and amphibians. In addition, during this process the EIs will identify and flag other large-diameter trees on the edges of the construction right-of-way and TEWAs that can be saved/protected as green recruitment or as habitat/shade trees. Some of these trees would be girdled to create snags to augment the number of snags along the right-of-way providing habitat structures. The feasibility to salvage snags and trees on the edges of the construction activities or the potential safety of construction personnel. This decision will ultimately be made by PCGP's Chief Inspector if there is disagreement between inspectors. As required by Oregon's regulations, PCGP will cut

hazard/danger trees¹ that have been designated by PCGP's professional forester and/or certified arborist that may be on the edges of the certificated construction work limits. PCGP has requested a Danger/Hazard Tree Modification to FERC's Upland Plan (se Table A.1-1 in Appendix A.1 to Resource Report 1).

The specific method to mark snags or trees to be conserved/saved will be determined prior to clearing operations based on PCGP's consultation with the clearing contractors. The selected marking method will be a common method that will be used on all construction spreads and will be selected based on the clearing contractor's experience to ensure maximum protection as well as marking efficiency. PCGP's EI or authorized representative would prioritize evaluating the trees that can be saved/conserved (within the certificated working limits) that are within or adjacent to sensitive areas including riparian areas, wetlands, northern spotted owl (NSO) home ranges and marbled murrelet (MAMU) stands (i.e., known occupied, and potential occupied stands).

During the evaluation process to identify the trees that can be conserved/saved within the construction working limits, the EI, in consultation with, the BLM/FS designated representative would identify trees that would be used for instream habitat structures or Large Woody Debris (LWD), which would be salvaged with the root wads attached. These trees would be selected based on their site-specific use. For example, if these trees are to be used for on-site instream habitat, these trees would be selected based on their proximity to the stream to minimize hauling/moving requirements and based on the size of the specific stream where the LWD is to be placed. If LWD is required for use off-site, selected trees would be identified in areas near suitable landings, TEWAs, and ingress/egress locations to minimize moving the LWD and to improve the efficiency in storing and hauling this material. The specific method to mark trees within the construction right-of-way and TEWAs that would be used for various habitat purposes/LWD will be determined prior to clearing operation based on PCGP's consultation with the clearing contractors. The selected marking method will be a common method that will be used on all construction spreads and will be selected based on the clearing contractor's experience to ensure maximum protection as well as marking efficiency. Where LWD is acquired from the certificated construction limits, this material will be collected from areas outside riparian zones to maintain root structure within the riparian zone. The exception is where the LWD can be obtained from the trenchline or construction right-of-way cut areas where root systems would be removed during trench excavation or grading operations. Trees selected for LWD would be selected from the interior of the construction right-of-way or TEWAs, as much as possible, because pulling trees with root wads could extend disturbance off of the construction right-of-way or TEWAs, and a large depression, where the root wad was removed, may need to be filled during construction right-of-way restoration efforts. Any timber cleared from the construction right-of-way that will be used for instream or upland wildlife habitat diversity structures will be stored on the edge of the construction right-of-way or in TEWAs for later use during restoration efforts.

Once PCGP has selected the construction contractors and the pipeline centerline and construction limits have been surveyed and marked, the construction limits will be reviewed by the contractors and PCGP to determine if any TEWAs could be potentially eliminated or reduced in size to avoid tree clearing in these areas and minimize overall Pipeline Project effects. Where feasible, the review of the construction limits by the contractor would occur prior

¹ <u>OAR 437, Division 7 Forest Activities - Oregon OSHA</u>: Danger tree – A standing tree, alive or dead, that presents a hazard to personnel due to deterioration or physical damage to the root system, trunk (stem), or limbs, and the degree and direction of lean.

to, or concurrently with the timber cruises so that these areas could be eliminated from the timber appraisals. However, if this review occurs after the timber cruises/forest appraisals, any areas of TEWAs that can be eliminated or reduced in size would be marked to be saved from clearing operations. The specific method to mark TEWAs that can be eliminated or reduced in size will be determined prior to clearing operation based on PCGP's consultation with the clearing contractors. The selected marking method will be a common method that will be used on all construction spreads and will be selected based on the clearing operations, PCGP's clearing inspectors or the construction contractors may also identify other trees on the edges of the construction right-of-way or within TEWAs that can be saved from clearing operations. In these situations, PCGP's clearing inspector would flag/mark these trees that can be saved/conserved, as previously noted in this Plan.

If PCGP's construction contractor determines that it is necessary to clear any of the identified/designated saved trees within the certificated working limits, the contractor would notify PCGP with the rationale to remove these trees. PCGP would review the contractor's rationale and confirm if any appropriate seasonal timing restrictions apply, such as a buffer (1/4 mile) from MAMU stands or NSO nest patches, prior to removing any of these trees in year two.

4.0 UNCLEARED STORAGE AREAS

The UCSAs will not be cleared of trees during construction. All UCSAs are shown on the Environmental Alignment Sheets. These areas will be used for temporary storage of equipment and construction spoils. In addition, these UCSAs will be used to store materials (e.g., forest slash, stumps, and dead and downed logs) generated during timber clearing and pipeline construction. These materials will be scattered back across the construction right-of-way after pipeline construction during restoration efforts. The amount of this type of material is expected to be large enough to hinder construction activities if it were stored within the 95-foot construction right-of-way.

Generally, the forests in these areas are characterized by mature trees that are spaced such that sufficient storage space is available between them to store forest slash, stumps, dead and downed logs, and spoil.

Vegetation disturbance within the UCSAs would generally depend on the site-specific vegetation characteristics – with younger precommercial forests being potentially more susceptible to damage (limb breakage or tree damage). However, use of UCSAs that contain precommercial size forest stands will be accredited special consideration and care when implementing the protection measures described below. PCGP Environmental Inspectors (EIs) or Utility Inspectors would monitor the use of UCSAs that are in a regenerating age class and which could be more susceptible to tree damage to ensure potential impacts from their use are minimized.

PCGP will implement protection measures to minimize damage to live trees in the UCSAs. Measures that will be employed to protect live trees located in the UCSAs would include, but are not limited to:

- PCGP's Chief and Environmental Inspectors will be trained on the importance of protecting live trees within UCSAs;
- PCGP's equipment operators will leave as much space between the stored material and live trees as practical, as depicted in Drawing 3430.34-X-0021 provided in Attachment 1;

- Train and educate the construction contractors and the equipment operators to place materials such that placement and retrieval will minimize potential impacts (i.e., soil compaction and bark damage);
- Train equipment operators to strategically place various slash materials using techniques to minimize resource damage within the UCSAs. These techniques would include sorting, sizing, stacking, or placing these materials to facilitate their use, retrieval, and redistribution back across the construction right-of-way;
- Haphazard dozing/pushing of slash materials off the construction right-of-way or TEWAs into UCSAs will not be allowed;
- Along steep and narrow ridgeline areas, logs, slash, and dead and downed material may be used as cribbing to contain excavated materials during construction (construction right-of-way grading and trenching activities);
- In limited locations, the UCSAs may be used to store spoil or to temporarily park equipment between the mature trees. However, storage and temporary parking of equipment/vehicles will not occur immediately adjacent to the tree to minimize soil compaction or tree damage; and
- PCGP's inspectors will ensure that the protective measures are followed during construction.

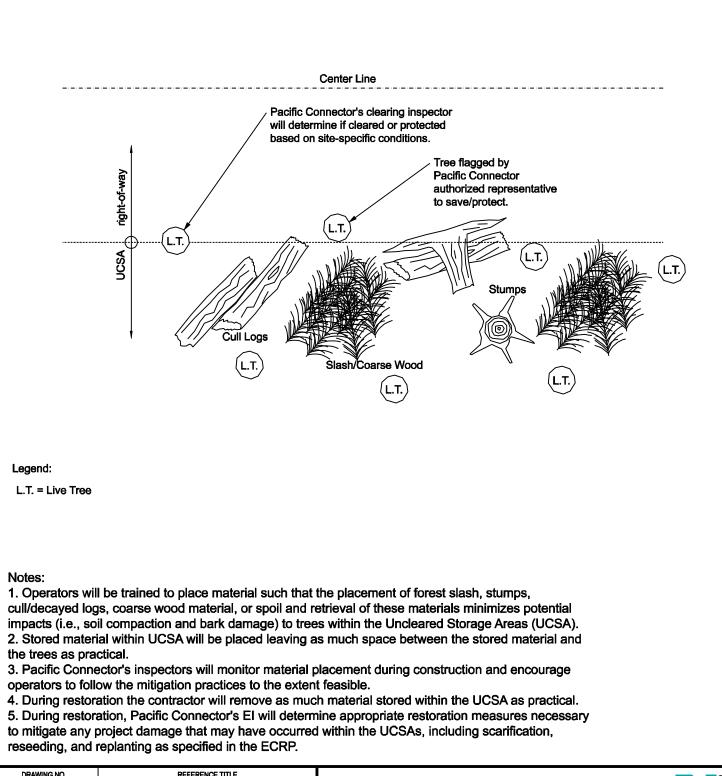
Following completion of construction, PCGP, BLM and USFS authorized representatives will assess tree damage (on their respective federal lands) within the UCSAs and other Pipeline Project areas for excessive live tree damage.

During restoration, some of the materials that are pulled out of the UCSAs may roll beyond the construction limits. In these circumstances, PCGP will act to retrieve as much of the overcast material as possible without undertaking additional tree clearing and grading to reach the overcast material, as determined appropriate by PCGP's EI, in coordination with a BLM/FS designated representative

During restoration, PCGP's EI, in coordination with a BLM/FS designated representative, will determine appropriate measures necessary to mitigate any Pipeline Project damage that may have occurred within the UCSAs, including scarification, reseeding, and replanting, as specified in the Erosion Control and Revegetation Plan (ECRP) provided as Appendix I to the POD.

Attachment 1

Uncleared Storage Areas Typical Best Management Practices



	DRAWING N).							FIC C	NECTOR CONNECT RED STO		Pacific Connector GAS PIPELINE	
NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	СНК.	APP.	DRAWN BY:	JST	DATE:	JUNE 2007	ISSUED FOR BID:	SCALE:	NONE
							CHECKED BY:		DATE:		ISSUED FOR CONSTRUCTION:		
							APPROVED BY:		DATE:		DRAWING NUMBER:3430.34-X-0021		SHEET
											%TIME% %PATH%		OF

Appendix Q

Overburden and Excess Material Disposal Plan



Pacific Connector Gas Pipeline, LP

Overburden and Excess Material Disposal Plan

Pacific Connector Gas Pipeline Project

January 2018

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2.0	Excess Material Disposal Locations	1
2.1	Environmental Controls	2
2.2	Temporary Disposal Locations	2
2.3	Permanent Disposal Locations	
3.0	Conclusion	2

List of Attachments

Attachment A	Table 1 - Rock Source and Permanent Disposal Sites Identified for Construction of the
	Pipeline Project on Federal Lands
	Typical 1 – Sample Quarry Drawing for Permanent Disposal Sites
Attachment C	Site Maps

Pacific Connector Gas Pipeline Project

1.0 INTRODUCTION

The purpose of this Overburden and Excess Material Disposal Plan is to identify the proposed locations on federal lands that may be used for the permanent and temporary storage of excess rock, timber, and spoil generated during timber removal and pipeline construction of the Pacific Connector Gas Pipeline Project (Pipeline or Pipeline Project). Existing federal rock quarries and select temporary extra work areas (TEWAs) along the construction right-of-way have been identified for potential use as both permanent and temporary storage sites. These locations are listed in Attachment A - Table 1. Pacific Connector Gas Pipeline, LP (PCGP) will obtain federal Right-of-Way Grant approval prior to utilizing any of the existing quarries, pits or TEWAs for storage of excess materials. This plan goes hand in hand and must be read with the Exhibit H to the PCGP right-of-way grant.

2.0 ROCK SOURCE AND EXCESS MATERIAL DISPOSAL LOCATIONS

At existing federal rock quarries, excess rock, overburden and other materials removed from the construction right-of-way will be separated and stored based on the type, size, quality and quantity of material excavated. Details of the preconstruction survey and right-of-way marking are described in the Right-of-Way Marking Plan provided in Appendix T to the POD. PCGP is aware that some of the existing federal quarries identified for potential disposal storage may still contain high quality rock resources and the storage methodology will need to be approved by the land-managing agency prior to material placement to minimize potential encumbrance to the existing rock resources.

Large slash and timber debris, such as stumps or large wood debris (LWD) that may be removed from the construction right-of-way and decked in designated disposal sites may also occur at these disposal sites. This material would be of a size and quality that could be used in various habitat restoration projects or as OHV barriers as stipulated by the land-managing agencies. This excess timber material could also be of a size and quality that could be made available to the public.

Table 1 in Attachment A lists the rock source and disposal sites that have been identified for potential permanent or temporary use during construction of the Pipeline Project on federal lands. PCGP may need to use material sources on federal lands for the production of aggregate for road surfacing, pipe bedding, slope armoring, or other Pipeline Project needs, as stated in Section 3.2.3 of the Transportation Management Plan (TMP – Appendix Z to the POD). PCGP's contractor will abide by the applicable regulations (including 36CFR228 Subpart C & FSM 2850) and apply for the appropriate removal permits from the federal land-managing agencies for any material to be removed from a federal quarry for Pipeline Project use. Prior to use, PCGP shall prepare a Site Development and Reclamation Plan for agency review and approval for each source of mineral material for Pipeline Project use. PCGP does not plan to expand the existing quarry sites on federal lands beyond the previously disturbed footprints for material storage. Attachment C contains site maps identifying the footprints of the proposed TEWAs and quarries listed in Attachment A – Table 1.

Access to all temporary and permanent federal quarry disposal locations will utilize existing roads and in some cases the construction right-of-way. All proposed access roads are identified in the TMP. PCGP will determine the average daily traffic for the access roads and will be responsible for the maintenance and upgrading activities based on the existing commensurate road share agreements.

2.1 ENVIRONMENTAL CONTROLS

For both temporary and permanent disposal sites, PCGP's Contractor will be responsible for installing appropriate environmental controls to prevent material transport outside the Pipeline Project or quarry boundaries, and to ensure potential sedimentation of area drainage does not occur from the material storage. Appropriate environmental controls may include among other best management practices (BMPs) adequate signing, placement, sloping, mulching, seeding, staking or fencing and the use of sediment barriers, berms, or diversion ditches where necessary. These erosion control measures will follow the BMPs outlined in the Erosion Control and Revegetation Plan (ECRP) provided in Appendix J to the POD or as determined necessary by PCGP's Environmental Inspector or an authorized Federal agency representative.

2.2 TEMPORARY DISPOSAL LOCATIONS

Temporary disposal sites will be needed to store rock, timber, and other material depending on the specific phase of the Pipeline Project. Appropriate environmental controls and BMPs will be used to ensure the temporary storage of materials will not cause sedimentation issues or other offsite impacts or interfere with other on-site users. PCGP will provide a Site Development and Reclamation Plan that will include surveyed drawings of the temporary disposal sites that identify the storage location of material based on material type and material size for agency At the conclusion of the Pipeline Project, the temporary storage sites will be approval. reclaimed to their previous condition as detailed in the ECRP, or as stipulated by an authorized Federal agency representative. Excess material that cannot be used by the Pipeline Project or redistributed across the construction right-of-way will be relocated to one of the approved permanent disposal sites, or potentially to a permanent disposal site located on private lands approved by FERC, or to a state-approved, offsite disposal site (i.e. landfill). Additionally, in areas where slash has been concentrated, such as on landings, and cannot be evenly scattered across the right-of-way according to the fuel loading standards, the slash may be mechanically or hand piled and burned according to state burning requirements and federal land-managing agency stipulations. PCGP has developed a Prescribed Burning Plan which is included as Appendix R to the POD that describes the proposed burning of forest slash as a disposal method.

2.3 PERMANENT DISPOSAL LOCATIONS

At permanent disposal sites, excess material will be deposited and treated in a manner that will be agreed upon with the corresponding federal land-managing agencies. PCGP will provide a Site Development and Reclamation Plan that will include surveyed drawings of the permanent disposal sites that identify the storage location of material based on material type and material size for agency approval. The disposal drawings will also show any temporary and/or permanent erosion control measures that may be required. Attachment B – Typical 1 shows the information that would be included in the sample quarry drawing for permanent disposal sites.

3.0 CONCLUSION

This Overburden and Excess Material Storage Plan shall be updated and finalized prior to construction based upon the Contractor(s) material quantity estimates and evaluation of the proposed disposal sites' proximities to the construction right-of-way. Draft proposed disposal site-specific drawings and Site Development and Reclamation Plans, depicting maximum footprint impacted, type of materials to be stored, general storage locations within the overall footprint, typical placement methods and material treatment will be submitted to the federal

Pacific Connector Gas Pipeline Project

land-managing agencies after PCGP selects the construction Contractor(s). Finalized sitespecific drawings and plans will be submitted by the Contractor through PCGP to the federal agencies for final approval prior to actual use.

Attachment A

	Rock S	Source and	I Disposal Sites	Identified for	Table 1 Construction of the l	Pipeline Projec	t on Federal I	ands
Rock Source and/or Permanent Disposal Sites	Size (acres)	Pipeline MP location	Purpose	Jurisdiction	Land Use	Permanent/ Temporary Use	Vegetation	Access
Douglas County		•		•	·			
Signal Tree Road Quarry – Sec. 3 (3430.26-X-0004)	1.22	45.86	Rock source and overburden disposal; spoil storage, staging	BLM- Roseburg district	Quarries	Permanent or Temporary	Industrial, Douglas fir-W, Hemlock W., red cedar (regenerating)	Upper Signal Tree (BLM 28-9-35) 45.85 - 45.92 (3430-31-Y-008)
Signal Tree Road Quarry – Sec. 35 (3430.26-X-0002)	1.09	47	Rock source and overburden disposal	BLM-Coos Bay district	Quarries	Permanent or Temporary	Industrial, Douglas fir-W, Hemlock W., red cedar (regenerating)	Upper Signal Tree (BLM 28-9-35) 45.85 - 45.92 (3430-31-Y-008b)
Weaver Road Quarry Site 1 (3430.26-X-0003)	1.62	47	Rock source and overburden disposal	BLM-Coos Bay district	Quarries	Permanent or Temporary	Industrial, Douglas fir-W, Hemlock W., red cedar	Weaver Road (BLM 28-8-18) 42.03 – 42.50 (3430-31-Y-008b)
Weaver Road Quarry Site 2 (3430.26-X-0003)	1.30	47	Rock source and overburden disposal	BLM-Coos Bay district	Quarries	Permanent or Temporary	Industrial, Douglas fir-W, Hemlock W., red cedar	Weaver Road (BLM 28-8-18) 42.03 – 42.50 (3430-31-Y-008b)
Signal Tree Quarry Site – Sec. 15 (3430.26-X-0005)	1.75	47	Rock source and overburden disposal	BLM- Roseburg district	Quarries	Permanent or Temporary	Industr ia l, Douglas fir-W, Hemlock W., red cedar	Lower Signal Tree (BLM 29-9-36.0) 46.51 (3430-31-Y-008)
TEWA 79.85-N (BLM Quarry Site) ¹	3.61	79.85	Overburden disposal, Pl, spoil storage, log landing, steep slope staging	BLM- Roseburg district	Transportation, communication, utilities corridors, regenerating evergreen forest land; quarries	Permanent or Temporary	Roads, corridors, Douglas fir dominant - mixed conifer	Pack Saddle Road (BLM 29-4-17) 79.89 - 80.42 & Construction Right-of-Way (3430-31-Y-013)
Hatchet Quarry MP 102.30 (3430.26-X-0016)	2.00	102.30	Log (mitigation) storage	FS-Umpqua	Strip mines, quarries, gravel pit and evergreen	Permanent	Industrial	FS 3220000 (3430-31-Y-016c)

Table 1

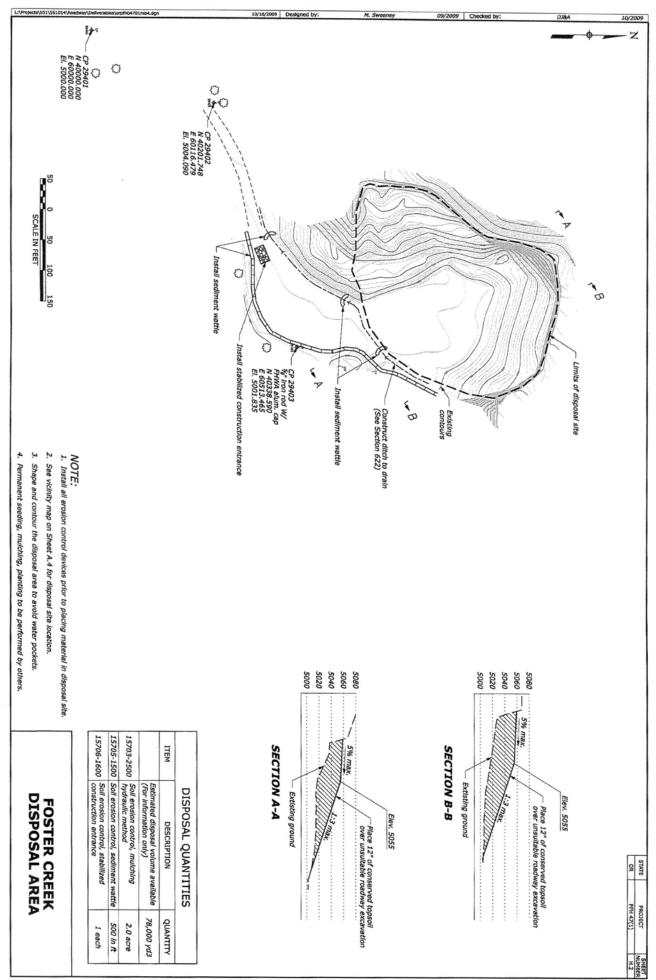
1

Rock Source and/or Permanent Disposal Sites	Size (acres)	Pipeline MP location	Purpose	Jurisdiction	Land Use	Permanent/ Temporary Use	Vegetation	Access
•			•		forest.			
C&D Pit MP 104.12 (3430.26-X-0017)	3.36	104.12	Overburden disposal, Log (mitigation) storage	FS-Umpqua/ Private	Strip mines, quarries, and gravel pits, transportation, communication, utilities corridors, regenerating forest land	Permanent or Temporary	Industrial, roads and corridors, Douglas fir dominant – mixed conifer	FS 3230135 & C&D Lumber (3430-31-Y-017)
Jackson County								
TEWA 110.73-W (Peavine Quarry) (3430.26-X-0019)	15.87	110.54	Staging, parking, overburden disposal, hydrostatic discharge, log (mitigation) storage	FS- Umpqua	Strip mines, quarries, gravel pit and evergreen forest	Temporary	Industrial and Douglas fir dominant - mixed conifer	South Fork Cow Creek FS 3232000 FS 3232895 (3430-31-Y-018)
TEWA 150.31-W (Heppsie Mountain Quarry) ¹	5.56	150.31	Ingress/egress, staging, parking, spoil storage, rock source and disposal	Private and BLM-Medford district	Mixed rangeland, strip mines, quarries, and gravel pits, evergreen forest land, mixed forest land, transportation, communication, utilities corridors, regenerating evergreen forest land, clearcut forest land, herbaceous rangeland	Temporary	Grasslands (W. Cascades), industrial, Ponderosa Pine/white oak, roads, corridors, grass-shrub- sapling or regenerating young forest	Heppsie Mountain Quarry Spur (BLM 37-2E-1.3 Includes BLM 37-2E-1.1) 150.35 - 150.64 & Construction Right-of-Way (3430-31-Y-024)
Rum Rye (3430.26-X-0026)	4.91	160.41	Log (mitigation) storage	FS-Rogue River- Siskiyou	Strip mines, quarries and gravel pits.	Permanent	Industrial	FS 3740000 FS 3740100 (3430-31-Y-041)
TEWA 160.54-W (Big Elk Cinder Pit) ¹	15.26	160.54	Log landing/decking / hauling,	FS-Rogue River- Siskiyou	Strip mines, quarries, and gravel pits, transportation, communication,	Temporary	Industrial, grasslands (W. Cascades),	FS 373000 (S. Fork Little Butte Creek Road) FS 3700130

Rock Source and/or Permanent	Size	Pipeline MP				Permanent/ Temporary		
Disposal Sites	(acres)	location	Purpose	Jurisdiction	Land Use	Use	Vegetation	Access
			ingress/egress,		utilities corridors,		roads,	FS3700133
			staging, rock		evergreen forest		corridors,	FS 3700134
			source and		land		true-fir	&
			overburden				hemlock	Construction Right-of-Way
			disposal				montane,	(3430-31-Y-025)
			•				Douglas fir	
							dominant -	
							mixed conifer	
Total	57.55							

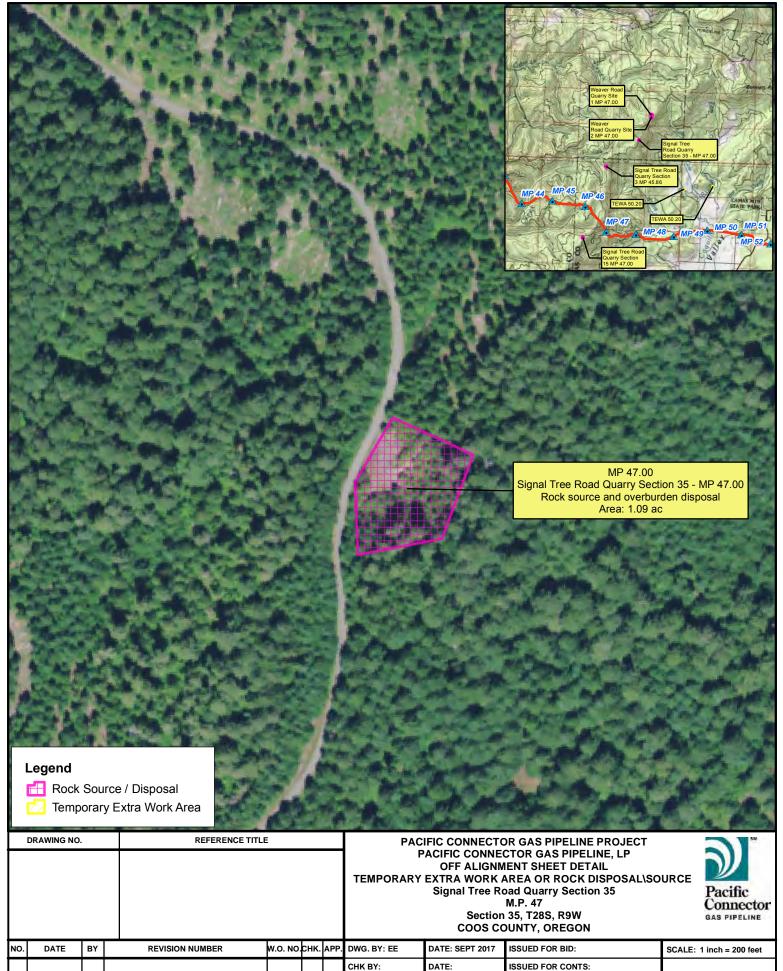
Attachment B – Typical 1

Foster Creek Disposal Area



Attachment C

Site Maps



APPR. BY:

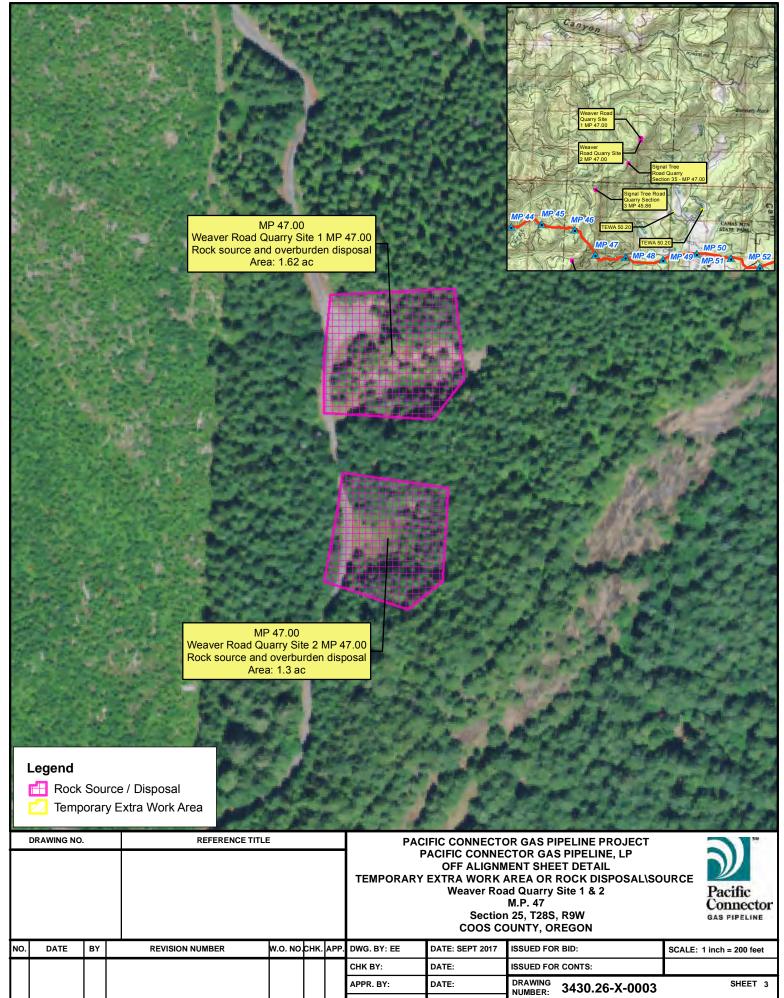
DATE:

DRAWING NUMBER:

3430.26-X-0002

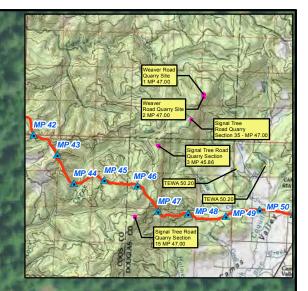
SHEET 2

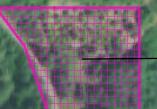
OF 36



OF

36





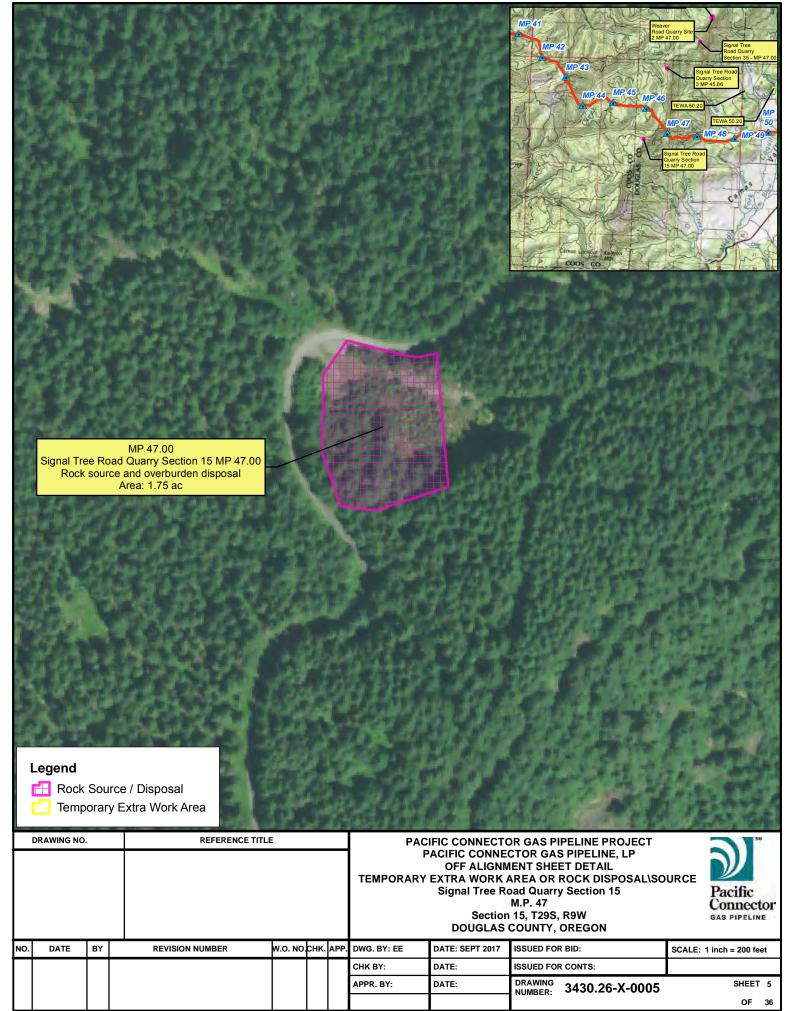
MP 45.86 Signal Tree Road Quarry Section 3 MP 45.86 Rock source and overburden disposal; spoil storage, staging Area: 1.22 ac

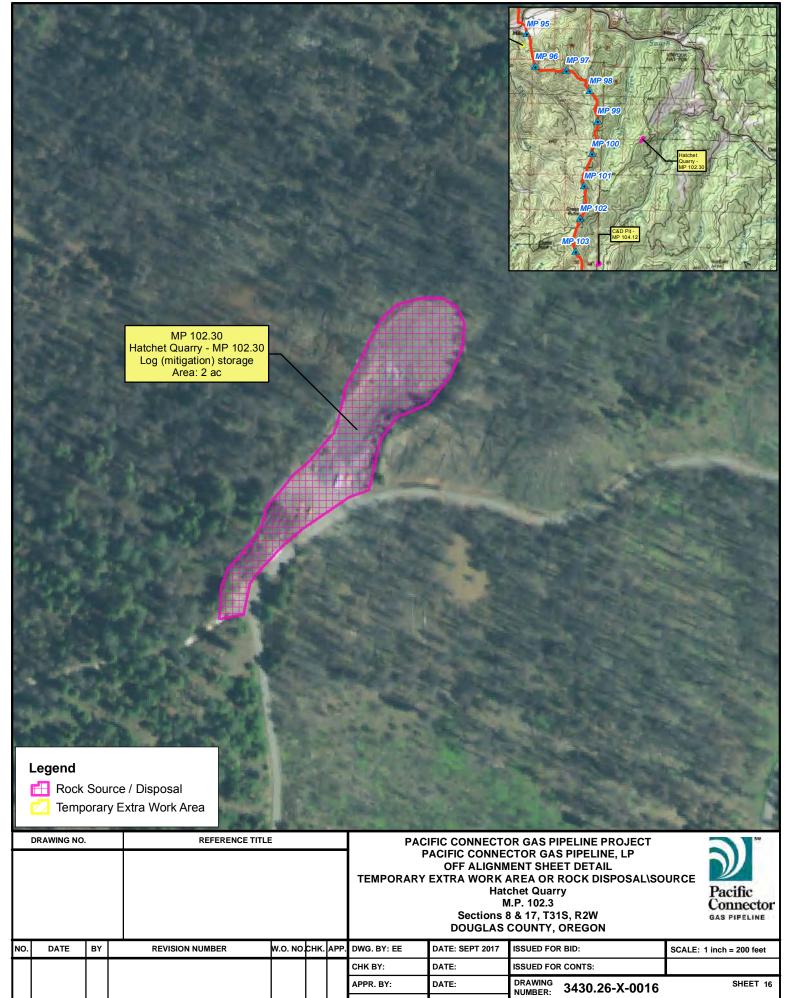
Legend

 Rock Source / Disposal

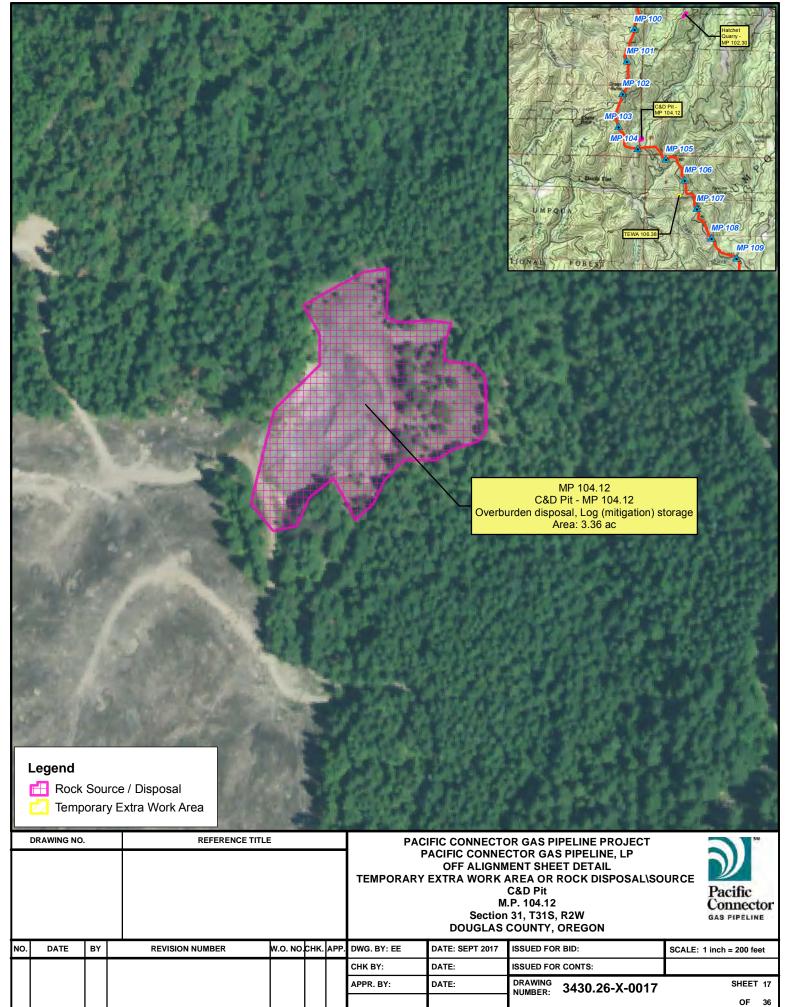
 Image: Temporary Extra Work Area

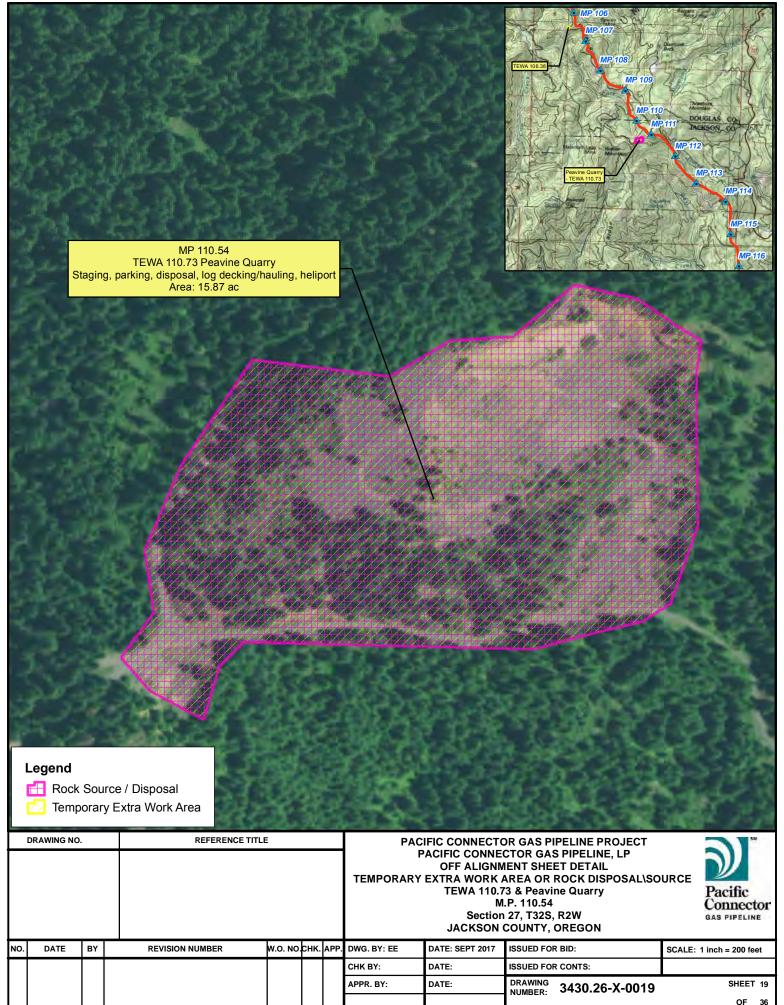
DRAWING NO.		REFERENCE TITLE			PACIFIC CONNECTOR GAS PIPELINE PROJECT PACIFIC CONNECTOR GAS PIPELINE, LP OFF ALIGNMENT SHEET DETAIL TEMPORARY EXTRA WORK AREA OR ROCK DISPOSAL\SOURC Signal Tree Road Quarry Section 3 M.P. 45.86 Section 3, T29S, R9W DOUGLAS COUNTY, OREGON			URCE Pacific Connector GAS PIPELINE		
N	D. DATE	BY	REVISION NUMBER	W.O. NO.	снк.	APP.	DWG. BY: EE	DATE: SEPT 2017	ISSUED FOR BID:	SCALE: 1 inch = 200 feet
Γ							СНК ВҮ:	DATE:	ISSUED FOR CONTS:	
							APPR. BY:	DATE:	DRAWING NUMBER: 3430.26-X-0004	SHEET 4
									NUMBER.	OF 36

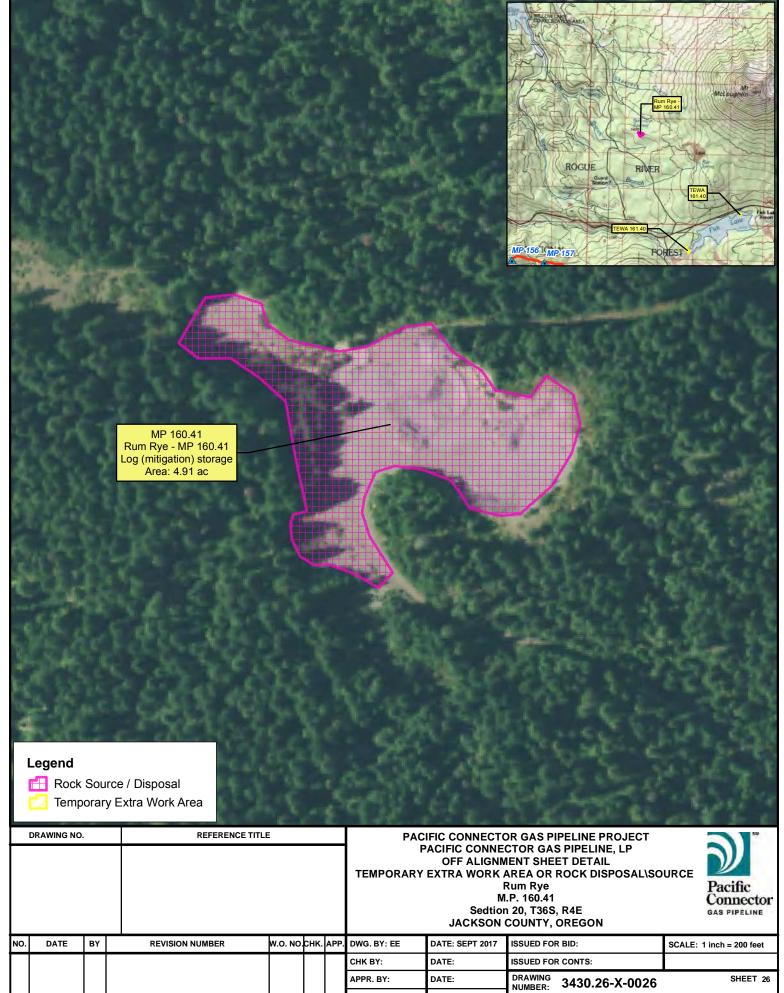




OF 36







Appendix R

Prescribed Burning Plan



Pacific Connector Gas Pipeline, LP

Prescribed Burning Plan

Pacific Connector Gas Pipeline Project

January 2018

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Table 1	Agency Contacts	.1
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List of Attachments

Notification Application Forms OAR 629-615-0300
Burn, Data Reporting, Slash Burn Fees instructions
Westside Example of Burn Permit
Eastside Example of Burn Permit
Examples of Slash Burn Plans
Examples of Oregon Smoke Management Accomplishment forms
Prescribed Fire Plan for BLM and NFS

1.0 INTRODUCTION

Pacific Connector Gas Pipeline, LP (PCGP) developed this Prescribed Burning Plan according to the applicable protocols and Best Management Practices (BMPs) that would be implemented if it is necessary to burn excess forest slash generated from right-of-way clearing operations for the Pacific Connector Gas Pipeline Project (Pipeline or Pipeline Project). PCGP has determined that it may be necessary to dispose of forest slash in areas where this material exceeds the fuel loading specifications outlined by the Forest Service or Bureau of Land Management (BLM) in the Erosion Control and Revegetation Plan (ECRP – Appendix I to the POD). This Prescribed Burning Plan describes the protocols that PCGP would follow to obtain appropriate agency authorization on all lands (federal, state and private) crossed by the Pipeline, where it is necessary to dispose of forest slash by burning. This plan also outlines the appropriate BMPs that would be utilized to safely conduct slash burning operations. PCGP would not use burning as a method to dispose of any construction debris that may be generated during Pipeline Project activities.

Prior to harvesting or burning on private and BLM-managed lands, PCGP must first obtain a Notification of Operation/Application Permit (NOAP-Attachment A). The application can be obtained from the Oregon Department of Forestry (ODF) district offices along the Pipeline (see Table 1). The NOAP may have up to a 15-day waiting period unless waived by the ODF Forester. The NOAP must be renewed yearly for continuing operations. The ODF districts, through which the Pipeline crosses, may utilize different protocols (i.e., application forms/processes, notifications, BMPs, etc.); therefore, PCGP or PCGP's Contractor(s) will contact the appropriate district to obtain the applicable permit(s). Section 3.2 describes the burn permit process on Forest Service (USFS) lands.

Agency Contacts					
Agency	Phone Number				
Coos Forest Patrol – Coos District	541-267-3161				
Douglas Forest Protective Association	541-672-6507				
Bureau of Land Management (BLM)					
BLM Coos Bay District	541-756-0100				
BLM Lakeview District	541-947-2177				
BLM Medford District	541-618-2200				
BLM Roseburg District	541-440-4930				
Oregon Department of Forestry (ODF)					
ODF Klamath Unit Office	541-883-5681				
ODF Southwest Oregon District, Medford Unit	541-664-3328				
U.S. Forest Service (USFS)					
USFS - Fremont-Winema National Forest, Lakeview	541-947-3334				
Ranger District	041-947-0004				
USFS - Rogue River-Siskiyou National Forest, High	541-560-3400				
Cascades North Ranger District - Prospect	041-000-0400				
USFS - Umpqua National Forest, Tiller Ranger District	541-825-3100				

Table 1

2.0 STATUTORY FRAMEWORK

2.1 Private Lands

ORS 477.552 Policy

It is the policy of the State of Oregon:

- 1) To improve the management of prescribed burning as a forest management and protection practice; and
- To minimize emissions from prescribed burning consistent with the air quality objectives of the federal Clean Air Act and the State of Oregon Clean Air Act Implementation Plan developed by the Department of Environmental Quality under ORS 468A.035.

ORS 477.013 Smoke Management Plan

- For the purpose of maintaining air quality, the State Forester and the Department of Environmental Quality shall approve a plan for the purpose of managing smoke in areas they shall designate. The plan shall delineate restricted areas to which this subsection applies. The plan shall also include but not be limited to considerations of weather, volume of material to be burned, distance of the burning from designated areas, burning techniques and provisions for cessation of further burning under adverse air quality conditions. All burning permitted within the restricted areas shall be according to the plan. The plan shall be developed by the State Forestry Department in cooperation with federal and state agencies, landowners and organizations that will be affected by the plan. The approved plan shall be filed with the Secretary of State and may thereafter be amended in the same manner as its formation.
- 2) The State Forester shall promulgate rules to carry out the provisions of the smoke management plan approved under this subsection.
- 477.560 Oregon Forest Smoke Management Account; moneys paid to account; use.
 - 1) The Oregon Forest Smoke Management Account is established separate and distinct from the General Fund in the State Treasury.
 - 2) The following moneys shall be credited to the Oregon Smoke Management Account:
 - a) Nonrefundable registration fees received by the State Forestry Department for Class I forestlands classified under ORS 526.324 to be burned west of the summit of the Cascade Mountains, not including Hood River.
 - b) Fees received by the State Forester for Class 1 forestland classified under ORS 526.324 and treated by a prescription burn method under ORS 477-515(1) west of the summit of the Cascade Mountains, not including Hood River.

- c) Fees for federal forestland included within the regulated area under ORS 477.013 to be treated by any prescription burn method subject to the provisions of the State of Oregon Clean Air Act Implementation Plan and the federal Clean Air Act received the State Forester.
- The moneys in the Oregon Forest Smoke Management Account are appropriated continuously for all and shall be used by the State Forester exclusively for the administration of the Smoke Management Program under ORS 477.013 and 477.554.

477.515 Permits required for fires on forestlands; waiver; permit conditions; cooperative agreements for permit administration.

- It is unlawful to set or cause to be set an open fire inside or within one-eighth of one mile of a forest protection district, either on one's own land or the land of another, without first securing a written permit for burning from the forester and complying with the conditions of the permit. In granting permits for burning:
 - a) The forester may waive the requirement that permits be secured prior to burning except during fire season or when required under rules promulgated pursuant to subsection (4) of this section.
 - b) The forester shall prescribe conditions necessary to be observed in setting fire and preventing it from spreading out of control.
 - c) The forester may prescribe conditions necessary to be observed in maintaining air quality.
- 2) Any permit obtained through willful misrepresentation is void.
- To avoid confusion or duplication of administration and to promoted government efficiency, the forester may enter into a cooperative agreement with a county, a city or a rural fire protection district that:
 - a) Allows the forester to administer the requirements of this section, in conjunction with the enforcement authority of ORS 477.980 and 477.985, on lands not otherwise subject to the requirements of this chapter; or
 - b) Allows the cooperating agency to administer the burning permit requirements of ORS Chapter 476 and 478, as appropriate, including applicable enforcement authority, on lands otherwise subject to the requirements of this chapter.
- Holders of permits for burning shall comply with applicable rules that may be promulgated by the State Board of Forestry and the Department of Environmental Quality.

2.2 Federally-Managed Lands

Federal Clean Air Act

1) Congress passed the Clean Air Act (CAA) in 1963, with major amendments in 1970 and 1990. The purpose of the act is to protect and enhance air quality

while ensuring the protection of public health and welfare. The 1970 amendments established National Ambient Air Quality Standards (NAAQS), which must be met by most state and federal agencies, including the Forest Service.

State Guidance

- 2) In compliance with the Clean Air Act, the Forest Service is operating under the Oregon Administrative Rules OAR 629-048-0001 through OAR 629-048-0500 (Smoke Management rules) that apply to prescribed burning of Oregon's forested lands. The Forest Service is complying and will continue to comply with the requirements of the Oregon Smoke Management Plan (OSMP) which is administered by the Oregon Department of Forestry.
- 3) The Environmental Protection Agency has approved the OSMP as meeting the requirements of the Clean Air Act, as amended. The OSMP regulates the amount of emissions from forestry-related burning that can accumulate in an air shed at any one time. The amount of burning that can occur on any one day depends upon the specific type of burning, the tons of material to be burned, and the atmospheric conditions available to promote mixing and transportation of smoke away from sensitive areas.
- 4) Section 118 of the federal Clean Air Act provides for enforcement of state air quality regulations against federal agencies. It will be the policy of the Board of Forestry (BOF), in the event of a failure of a federal land management agency to comply with the smoke management plan, that the forester will first inform the responsible agency of the failure and coordinate efforts to ensure timely correction of any breakdowns in procedure that may have resulted in the failure. However, if this method does not appear in the judgment of the State Forester to result in necessary correction of procedures, or under other circumstances that in the judgment of the State Forester warrant further action, enforcement action may be taken as with any other responsible party.

Stat. Auth: ORS 477.013, 477.562 (Registration fee), 526.016 (General duties), 526.041 (General duties of State Forester).

Stats. Implemented: ORS 477.013, 477.515, 477.562.

3.0 PROTOCOL FOR PRESCRIBED BURNING

3.1 Private Lands and BLM-Managed Lands

Burning on federal lands would follow the Interagency Prescribed Fire Planning and Implementation Procedures Guide issued by the National Wildfire Coordinating Group in July 2017. The document addresses requirements for all Prescribed Fire Burn Plans for federal lands and can be found on-line at:(www.nwcg.gov/sites/default/files/publications/pms484.pdf). Attachment H provides the Prescribed Fire Plan Template that would be utilized for Prescribed Fire Plans on BLM lands. BLM does not submit burn plans to ODF; for registering prescribed fire activities to ODF smoke management on BLM lands, the BLM uses the "Fastrax" system.

OAR 629-048-0020 (Necessity of Prescribed Burning)

Prescribed burning is used as a management technique to reduce forest fuels either as the primary mechanism such as in grass and brush areas for maintenance of grazing, and underburning of open forest stands for forest health purposes; or as a secondary fuel reduction method following thinning or final harvest. It is typically conducted at a time and under planned fuel and weather conditions whereby the fine fuels that more readily ignite and carry fire across the landscape are consumed but the larger fuels are consumed to a lesser degree than in a wildfire. Resulting emissions are both reduced overall, and more likely carried into higher altitudes and dissipated by high level winds, away from concentrations of people.

When adequate forest fuel reduction can be achieved economically without the use of burning, because of other fire associated risks, that choice is usually favored. Even so, there are often silivicultural or agricultural advantages to prescribed burning such as site preparation, nutrient cycling and reduction of pests and disease that may not be achieved by simply removing the forest fuels. For these reasons, the Oregon Legislative Assembly (ORS 477.552) and the Board of Forestry have found it necessary to maintain the viability of prescribed burning as a forest management practice. Refer to OAR 629-615-0300 Prescribed Burning of the Oregon Forest Practices Act (see Attachment B).

- 1) Process
 - a) In all instances of prescribed burning on forestland within a protection district, the operator, federal land manager, landowner, or timber owner must first register with Oregon Department of Forestry (State Forester) all forestland debris that is intended to be burned. Burn registration must be completed at least seven days before the first day of ignition.
 - b) The State forester may waive the seven day waiting period required upon the forester's approval of a burn plan or conditions of federally prescribed fire policies having already been met.
 - c) Information provided for burn registration must be complete and recorded in a standard format approved by the State forester (see Attachment C for background information on fire season).
 - d) Any prescribed burning on forestland requires payment of a non-refundable registration fee of \$.50/acre.
 - e) Burn fees for all forms of prescribed burning, including but not limited to, broadcast burning and burning of piles shall be assessed.
 - f) If only land or right-of-way piles are burned, the burn fee shall be \$.50/acre. Subsequent attempts to improve accomplishment only in the landing or rightof way piles in the same unit, in the same calendar year or the two following calendar years, shall not incur additional fees.
 - g) If subsequent to burning only landing or right-of-way piles, the first time fire is applied to any other portion of a registered unit an additional burn fee of \$2.60 per acre shall be required.

- h) Obtain a burn permit/plan. A burn permit is required for debris created by forest management activities (see Attachment D – Westside and Attachment E – Eastside).
- i) For a single unit, the burn permit/plan will cover; for multiple units, ODF will complete a Unit Worksheet and note on the Burn permit/plan that the attached Unit Worksheet will be covered under this plan (see example and form in Attachment F).
- j) Once ODF receives the burn permit/plan (see Attachment F for applications for private lands and Attachment H for application on BLM lands) and if applicable the Unit Worksheet, the information will be entered into the Oregon Smoke Management Database and fee system. On BLM lands, the BLM Line Officer must approve the burn permit/plan application before it is submitted to ODF (see Attachment H). As previously noted, the BLM does not submit burn plans to ODF; for reporting prescribed fire activities to ODF on BLM lands, the BLM uses a "Fastrax" system.
- k) When planning to burn you are required to call the day prior to the burn to obtain clearance. There are occasions when clearance cannot be granted, which is normally based upon weather and smoke dispersion issues.
- Once the burn is completed the permit holder must call the appropriate district with estimated 'accomplishments.' This information is then entered by the district into the database for tracking and fee purposes (see Attachment G).
- 2) Burning Factors
 - a) Weather: Extra caution is needed when weather conditions are unstable. Wind, humidity and temperature play the biggest roles when determining the best time to burn debris. High temperatures result in low humidity, which increases the chances of a fire starting and spreading.
 - b) Time: Depending on the severity of fire season, the time of day in which burning is conducted may be restricted to morning and evening hours. Relative humidity tends to be at it's highest during these hours allowing for better control.
 - c) Site Preparation: The steps needed to prepare the burn site are determined by the type of materials that are to be burned and the fuels in the surrounding area. A fire trail must be clear of all flammable debris. Trails must encircle the entire burning area and must meet the approval of the Fire Warden
 - d) Fire Suppression Equipment: The permit holder must have a shovel and a supply of water on hand at the burn site or other equipment or manpower as outlined in the permit and slash burn plan.
 - e) Burning prescriptions will be strictly adhered to on highly sensitive soils. These soils include: shallow, rocky soils on 70 percent or greater slopes with

south or west aspects. The same kinds of soils on extremely steep (80 percent or greater), and north and east aspects.

- 3) Alternatives to Burning:
 - a) When planning forest management prescriptions owners are encouraged to use practices that will eliminate or significantly reduce the volume of prescribed burning necessary to meet their management objectives.
 - Maximize the cost-effective use of woody material for manufacture of products.

Where cost-effective, using wood or other biomass for energy production or mulch.

Biomass contactors may also be available such as Biomass One of White City, Oregon (541-826-9422, www.biomassone.com).

- Lopping and scattering limbs and other woody material.
- Re-arranging woody materials, as necessary to accomplish reforestation through the slash.
- 4) Burn Procedures:
 - a) Before any prescribed burning is initiated, PCGP's burn bosses should have a well thought-out plan that takes into account:
 - How weather will be monitored and changes in conditions will be communicated;
 - Resources necessary to accomplish ignition and ignition sequences;
 - Resources and methodology necessary to contain and control the fire and prevent its escape, including communications to access additional resources, if necessary; and
 - How the burn will be conducted to avoid smoke from entering smoke sensitive areas and to minimize smoke effects on other communities.
 - b) On BLM lands, the BLM may elect to have an agency Burn Boss retain oversight or responsibility or have a presence during prescribed burns for slash disposal. Further, as indicated in the Interagency Prescribed Fire Planning and Implementation Procedures Guide (2017) and in Attachment H, the BLM Line Officer must sign a "Go/No-Go" checklist prior to ignition.
 - c) Burn Accomplishments for both BLM and ODF Protected lands need to be reported within 24 hours to the Oregon Department of Forestry District office.

3.2 BLM and USFS Lands

Authorization to burn on BLM and USFS lands will be granted through the development and approval of a Prescribed Fire Plan (see Attachment H). All burning activities will be conducted in compliance with the approved Prescribed Fire Plan. Burning on BLM and USFS Lands will also include continued efforts to meet the National Ambient Air Quality Standards, Prevention of Significant Deterioration, and the Oregon Visibility Protection Plan and Smoke Management Plan goals.

When preparing site-specific burn plans, the BLM and USFS will obtain all necessary air pollutant emission permits and approvals from the State of Oregon prior to initiating a prescribed burn. The agency will follow and implement the terms of the interagency Oregon Smoke Implementation Plan and MOU as well as any site-specific open burning permit.

USFS personnel may prepare burn plans for the Pipeline Project and the Ranger Districts would issue a special use permit to conduct the prescribed burn. The USFS may also conduct the prescrided burns. If the USFS prepares and conducts the prescribed burn, arrangenments for specifc contracting would be made during the timber sales contract for the Pipeline Project in the Brush Disposal Plan which is a component of the timber sales contract.

All personnel involved in burning on federal lands must meet minimum requirements under the NIMS Wildland Fire Qualification System Guide 310-1 (October 2017). This guide can be accessed at https://www.nwcg.gov/publications/310-1.

The Oregon Department of Forestry's (ODF) smoke management section has developed two computer aids to calculate fuel consumption for the Oregon Smoke Management system. They are Automatic Calculation of Slash Tonnage (ACOST) and Pile Calculation of Slash Tonnage (PCOST). The USFS is required to input these spreadsheets to the Salem Office of ODF.

PCOST uses pile shape codes found in the Oregon Smoke Management directive, pile dimensions, wood species, piles per acre and unit acres. The program uses this information to calculate tons per pile and unit total tons. ACOST and PSCOST can be accessed at: www.odf.state.or.us/Divisions/protection/fire_protection/Daily/ACOST/ACOST.HTM.

Washington State University has developed a 'Piled Fuels Biomass Calculator.' Refer to: https://depts.washington.edu/nwfire/piles/.

- When the decision to use prescribed fire is made, a prescribed fire burn plan must be created. But considerably more than just preparing a burn plan is involved when anticipating the use of prescribed fire. Input from other resource managers is important, because prescribed burning can benefit or impact other resource objectives such as siliviculture, range, wildlife, archeology, aesthetics, air, soil, and water quality.
- 2) The Burn Plan prepared would define specific parameters for burning operations. These parameters include acceptable ranges for weather conditions (temperature, relative humidity, wind direction and wind speed ranges), forecasted weather conditions, fuel moisture in the pile, and fuel moisture in adjacent fuels (Attachment H).
- The Burn Plan would also specify personnel needs, equipment needs, and escape fire Prevention plans in order to conduct safe, efficient and effective burning operations.
- 4) The Burn Plan:
 - a) Review.
 - All federal plans will have reviews before implementation.
 - Technical review by someone qualified and not part of the project team.

- The Fire Management Officer (FMO) and line officer signature of approval is required. Technical Reviewer qualifications and responsibilities are outlined on pages 9 and 10 of the Interagency Prescribed Fire Planning and Implementation Procedures Guide at: https://www.nwcg.gov/sites/default/files/publications/pms484.pdf
- b) Pre-burn checklist,
 - Every burn plan should include a checklist to be reviewed immediately prior to ignition. The checklist should include the factors essential to safe execution of the burn project, and a list of points to review with the crew during the pre-burn briefing.

Operations,

- The burn plan must describe in detail how fire will be used.
- Safety. Include provisions to be made to ensure the safety of the crew.
- Communications. How will the crew communicate with each other, and with dispatch or emergency support.
- Equipment and Personnel. What resources are needed to effectively accomplish the burn and how will they be deployed.
- Fire lines. If required what is the width and condition of the existing fire line(s).
- Ignition Pattern and Sequence. Describe how the burn will be ignited.
- Holding. Determine how the fire will be kept within its predetermined boundaries. Determine how snags will be dealt with.
- Mop-up. Determine resources needed to extinguish the fire and determine what standard will be used to determine the fire is safe to leave.

Accomplishment must be reported to the Oregon Department of Forestry, Fire Protection Program: 503-945-7451 or through the Fastrax system.

4.0 REFERENCES

Bureau of Land Management: www.blm.gov

Coos Forest Protective Association: www.coosfpa.net

Douglas Forest Protective Association: www.dfpa.net

Leuschen, Tom; Dale Wade; Paula Seamon. 2001. Fire Use Planning. Smoke Management Guide for Prescribed and Wildland Fire. National Wildfire Coordinating Group. Accessed at: www.fs.usda.gov/treesearch/pubs/7174.

Oregon Administrative Rule (OAR) and Revised Statute (ORS) citations:

OAR 629-048-0230(4) and 629-048-0300 – Register burns prior to ignition OAR 629-048-0230(2) and 629-043-0026(4) – Obtain approval for and follow a burn plan.

OAR 629-048-0230(5) and ORS 477-515 – Obtain a burn permit and comply with any conditions included therein.

OAR 629-048-0230(6) – Obtain and comply with daily smoke management instructions and updates.

OAR 629-048-0210(4) - Comply with restriction regarding use of polyethylene covers on burn piles. OAR 629-048-0100(4) and 629-048-0230(10) – Cease burning when directed by the forester. OAR 629-048-0320 – Report accomplishments. OAR 629-048-0310 – Pay fees.

Oregon Department of Forestry: www.oregon.gov/ODF Klamath Falls unit office: www.oregon.gov/ODF/AboutODF/Pages/MapOffices.aspx

Grants Pass unit office: www.oregon.gov/ODF/AboutODF/Pages/MapOffices.aspx

- National Wildfire Coordinating Group (NWCG). 2017. Prescribed Fire Complexity Rating System Guide. PMS 424. July. Accessed at: https://www.nwcg.gov/sites/default/files/publications/pms424.pdf.
- NWCG. 2017. Interagency Prescribed Fire Planning and Implementation Procedures Guide. PMS 484. July. Accessed at: https://www.nwcg.gov/sites/default/files/publications/pms484.pdf.
- NWCG. 2017. NIMS Wildland Fire Qualification System Guide. PMS 310-1. October. Accessed at: https://www.nwcg.gov/publications/310-1.

Prichard, Susan., Roger Ottmar, Gary Anderson. 2013. Consume 3.0 User's Guide. Pacific Wildland Fire Sciences Laboratory. USDA Forest Service. Pacific Northwest Research Station. Accessed at: www.fs.fed.us/pnw/fera/research/smoke/consume/consume30 users guide.pdf

USDA Forest Service website: www.fs.fed.us Umpqua National Forest: www.fs.usda.gov/umpqua Rogue Siskiyou National Forest: www.fs.usda.gov/rogue-siskiyou Fremont-Winema National Forest: www.fs.usda.gov/fremont-winema

USDI/USDA. 2005. Wildland Fire Use. Implementation Procedures Reference Guide. May. Accessed at: http://www.wilderness.net/toolboxes/documents/fire/Wildland%20Fire%20Use%20-%20Implementation%20Procedures%20Reference%20Guide.pdf.

Attachment A Notification Application Forms



NOTIFICATION OF OPERATION/APPUCATION FOR' PERMIT

OREGON DEPARTMENT OF FORESTRY

OREGON DEPARTMENT OF REVENUE



Filing this notification does not grant permission to remove forest products! First obtain permission from the landowner and timber owner.

For activities or operations within an urban growth boundary, the applicant is advised to contact the appropriate local government regarding land use regulations which may apply to the future use or development of this site.

On-site inspections may be conducted by Oregon Department of Forestry (ODF) employees to ensure compliance with all the laws and rules governing fire protection and forest practices on private land.

File a new Notification of Operation/Application for Permit form at an ODF office if any of the following conditions apply:

- e Your operation area is new.
- You are adding a new activity to the operation.

- It is after February 28, and you are continuing an operation that has been idle since the end of the previous calendar year and you have not informed ODyou intend to continue the operation before now.
- You are changing or increasing the area involved in an existing operation.

ODF must also be informed in writing of any other changes in the information on an existing notification, but completion of a new form may not be required.

Provide PHOTOCOPIES of the completed original notification form and map to the local offices of the Water Resources Department and the Oregon Department of Fish and Wildlife ONLY IF you plan to use on-site water to mix pesticides or to control slash burns.

Multiple harvest units may be listed on one notification. BUT, if HARVEST units are separated by a mile or more (in a straight line) or are in different counties, file separate notifications for each unit. An operation can be any combination of forest activities. See OAR 629-605-0140 for a complete list. OAR 629-600-0100 defines "operation," "commercial," and "unit."

[. · CJ! \41/fliiJ, Ji⊂cii{ iiJ; jtl The instructions are printed in italics. Please print or type the information on the form. Fife notice with the State Forester at least 15 days prior to the date you would like to start operating. A notification is not considered accepted until it is properly filled out, has a map attached, and is received by the appropriate ODF office. Mail, fax, or deliver the form to one of the Oregon Department of Forestry offices that accepts notifications.

COUNTY (Enter only one) :		NOTIFICATION NUMBER (Office Use)				
NOTICE &	Notice to the State Forester that an operation will be conducted on lands described here (ORS 527.670). 15 day waiting period required, unless waived.	DATE RECEIVED:				
Check box(es)	Application for permit to operate power driven machinery (ORS 477.625). Expires at end of calendar year.	TIME RECEIVED;	INITIALS:			
	Notice to the State Forester and the Dept. of Revenue of he intent to harvest timber (ORS 321.550).					
	f person to be contacted in case of fire emergency. This irces they have available for fire and have the authority to a of fire.	OFFICE				
REPRESENTATIVE:						
AREA CODE: PH	HONE NUMBER:	DATE OF CORRECTION:				
Check the appropriate box as toOperator	o who is completing this form: Landowner D Timber Owner	CORRECTION:				
IMBER SALE NAME AND/OF	R NUMBER (If applicable):					
	Enter the Operator informa	tion				
OPERATOR	Name:					
OPERATOR	Business Name:					
(Person and/or company						
conducting the operation)	Mailing Address:					
	City, State, & Zip Code:					
	Area Code: Phone No.:					
	odes: UDF1: UDF2: UDF3:	UDF4: UDF5:				
ATTENTION: If you are conducting timber harvesting or road construction within 100 feet of overhead or underground utility lines, call the Oregon Utility Notification Center at 1-800-332-2344. Request that the owner of the line be notified, and record the number issued to you by the Oregon Utility Notification Center here:						

	E	Enter and check the Landowner information	Page2						
LANDOWNER									
RC/EG/S Codes									
Information about the forest landowner in Recipient Class (RC), Ethnic Group (EG}, and Land Ownership-Size (S) is needed for annual reports. We ask you to voluntarily enter this information.									
RC: (Recipient Class) Check box that best identifies the landowner:	the E.G.	(Ethnic Group) Check the box that best identifies the landowner (Codes 2-7 apply to recipient class 4 [individual} only]:	S: (Land Ownership Size) Check the box that best identifies the total forest ownership of the landowner:						
D 1. Local Gover	nment	D 1. Does not apply	D 1. Does not apply						
\mathbf{D} 1. Eddal Govern \mathbf{D} 2. State Govern		\mathbf{D} 2. White	\mathbf{D} 1. Does not apply \mathbf{D} 2. 0-9 acres						
D 3. Federal Age		\mathbf{D} 3. Black	D 3. 10-99 acres						
	on-industrial private	\mathbf{D} 4. Hispanic	D 4. 100 – 499 acres						
	Corporation/Industrial	\mathbf{D} 5. American Indian/Alaskan Native	D = 5.500 - 999 acres						
	e (church, nonprofit	D 6. Asian/Pacific Islander	$D = \frac{5.500 - 999}{6.1,000 - 4,999} \text{ acres}$						
organization		D 7. All other	$D_{7, 5,000}$ + acres						
			\mathbf{D} 7. 3,000 Factors						
	Name:								
(Landowner is responsible for reforestation)	Business Name:	1070-Aş:							
	Mailing Address:	an haa							
	City, State, & Zip C	ode:							
	Area C	ode Phone Nc							
	·								
		It in a tree planting requirement on the landowner. ults in an under stocked condition.	The landowner has the responsibility						
Landownei	Codes: UDF1:	UDF2: UDF3: U	JDF4: UDF5;						
		11111111111111111111111111111111111111							
-	r · · · · · · · · · · · · · · · · · · ·	Enter the Timber Owner and Tax							
TIMBER OWNER AND TAXPAYER	Name:								
	Business Name:								
(Responsible for paying the	Mailing Address:								
harvest and, if applicable, severance taxes)	City, State, & Zip Co	ode:							
	Area C								
	Aiea O								
ATTENTION: You a	ATTENTION: You are required to provide a Timber Owner Employer Identification Number OR a Social Security Number by the Oregon								
Depar	Department of Revenue's Statute ORS 321.015. The Social Security Number will be used ONLY for the purpose of								
identifying you to the Dept. of Revenue for the collection of timber tax. The Social Security number will be held in confidence.									
Enter the Timber Owner Employer Identification No. OR a Social Security No. in the box:									
a limber Ow	ner Codes: UDF1	UDF3:	UDF4: UDF5:						
			(Continued on Next Page)						

Page 3

UNIT NO	0.		Page 3				
	Enter Unit No. If more Check appropriate box(es) & fill i	unit, use Unit Addendum Sheets. in acres/feet/etc.	Check appropriate box(es) & fill in acres, etc.				
D	ACTIVITY CODE 1A COMMERCIAL THINNING, SELECTIVE CUTTING (leaving most of the	METHODS USED Ocable O Ground O Other (explain)	ACTIVITY CODE METHODS USED 5 CHANGING LAND USE to a non-forest use (house site, agricultural, etc.) METHODS USED WARNING: Local government land use approval may be required. A land use change				
	1B CLEAR-CUT, OVERSTORY		7 PRE-COMMERCIAL D Mechanical				
	merchantable timber on the unit after harvesting) Acres		Acres may not exempt the landowner from all reforestation requirements.				
	ESTIMATED MBF REMOVED:		SLASH O Manual				
D	REMOVAL (most or all of the merchantable timber will be removed during harvesting) Acres	Ocable O Ground O Other (explain)	Acres O Burning D THINNING Acres D 8 OTHER (any noncommercial activities, i.e, rockpits, etc.)				
D	ESTIMATED MBF REMOVED: . 1C FELLING only Acres		Enter starting and ending dates. ESTIMATED STARTING DATE: (Must be 15 days after the appropriate office receives notification) ESTIMATED ENDING DATE:				
D	10 OTHER HARVEST TYPES not covered in 1A or 1B (wind storm salvage, hauling r/w logs, selling chips, etc.)	Explain on lines below	(Excires fE '1 Check the appropriate Waters, Topography, and Sbi/ site codes. One of each code must be checked on eac, h unit. WATERS W100 Within 100' of any lake or stream, (a channel that carries flowing surface water during some time of the year)				
	Acres		 W300 Within 300' of any estuary or any wetland greater than 8 acres WNA Waters not applicable 				
D	1E SORT YARD		TOPOGRAPHY (over the steepest third of operation)				
D	2A ROAD CONSTRUCTION Feet Est MBF	$egin{array}{c} 0 & { t Dozer} \ 0 & { t Backhoe} \ 0 & { t Other} \ (explain) \end{array}$	D T1 Slope of 0% to 35% D T2 Slope of 36% to 65% D T3 Slope greater than 65%				
D	2B ROAD RECONSTRUCTION Feet Est MBF	$egin{array}{c} 0 & {\sf Dozer} \\ 0 & {\sf Backhoe} \\ 0 & {\sf Other (explain)} \end{array}$	SOILD51No evidence of mass soil movement (slips, landslides, etc.)D52Evidence of old slides, small failuresD53Recent or active movement; wet areas				
D	3 SITE PREPARATION (Do not use for building construction site)	$egin{array}{c} \mathbf{O} & Manual \\ \mathbf{D} & Mechanical \\ \mathbf{O} & Burning \end{array}$	APPLICANT REMARKS: Please describe the intent of the operation, what equipment will be used and any other information that may be				

-

CAUTION: Fill out MethodsJ!sed for each type of chemical application.

D 4A HERBICIDE application Acres	D AerialD Ground	
D 4B INSECTICIDE application	D Pressurized & Broadcast D Other methods	
Acres	Write in common name, brand name (if known), carrier, additives, or, for fertilizer only,	
D 4D FERTILIZER applicationAcres	the application rate. For triclopyr and 2,4-D only, specify whether amine or ester_formulation:	
Acres		
D 4F REPELLENT application Acres on Next		on Next Page)

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D ARC O cgg D cgs O sh D sw D ugb	Archaeological si Columbia Gorge Columbia Gorge Scenic Highway Operation near a Operation takes	General management area Scenic management area (operation near a FPA scenic h state Scenic Waterway place within an Urban Growth E	ighway) Boundary	RESOURCES Check any of the Resources that you are aware of in the boxes below. O BEN Bald Eagle Nesting site O BEP Bald Eagle Perch and foraging Site D BER Bald Eagle Roosting site D 810 Biological site of a rare life form or community D BPS Band-tailed Pigeon mineral, watering, or springs site D cc Operation will result in a single clear-cut or continuation of contiguous clear-cuts that exceed 120 acres
		ace in the Willamette Greenway		D CWOColumbia Whitetail Deer D GBH Great Blue Heron nest site D GLD Golden eagle nest site D HLH High Landslide Hazard Location D MUR Marbled Murrelet nest site
D dws D ll D othe D othe	R LAKES R WETLANDS LANDS	WATERS s that you are aware of in the bo Domestic Water Supply Lake greater than 8 acres Less than 8 acres Less than 8 acres Bog, estuary, significant wetla acres), important springs in E	ınd (>8	 NSO Northem Spotted Owl site O OSP Osprey nest site D RAP Other Raptor nest site D SBS Sensitive Bird nesting, roosting, or watering site D T&E Threatened or Endangered species site
Rule:		Continue to Next Column)	AP:	(Continue to Legal Description) Rule: Non stat. WP: Stat. WP: AP:
Govt. Lot#	Check each	n 1116 of every section that applie	LEGAL DE s. Enter information	ESCRIPTION Ton for government lots (if applicable), section, township, and range. Egal Description Addendum Sheet.
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if outside	SV	V SE	F	ŵ	G REGULAT	
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Subscriber:	Subscriber:	W. R. Subscribe	nteren en en es	S. Angel	AAccmp	
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There is a 15 day waiting per the Stewardship Forester.	od in effect unless otherwise informe	d by	an with a will be a first to be fast with a second			
the Stewardship Forester.			Waiting period	walwod byr		
	15 day waiting period is requested.		waning period	walved by.		Charles and Charles B
Check this box if a waiver of th	e 15 day waiting period is requested: essarily mean a waiver will be granted.	D		waived by.		
Check this box if a waiver of th Checking the box does not nec	essarily mean a waiver will be granted.	D			Date:	
Check this box if a waiver of th	essarily mean a waiver will be granted.	D	s series of the series of a strategic series of series of a strategic series of series			rrect.
Check this box if a waiver of th Checking the box does not nec	essarily mean a waiver will be granted.	D	s series of the series of a strategic series of series of a strategic series of series		Date: I have provided is true & co Date:	rrect.

AITACH MAP AND/OR AERIAL PHOTOS (The notification form is NOT complete unless a map or aerial photo of the operation area is attached. Either one of these must show the o eration area, access route, north arrow, scale, etc.

	NOTIFICATION OF OPERATION/APPLICATION FOR PERMIT STATE OF OREGON	B or <u>line Lo</u>
FILING THIS NOTIFICATION DOES NOT GRANT PERMISSION TO RI	MOVE FOREST PRODUCTS! FIRST OBTAIN PERMISSION FROM THE LANDOWNER AND TIMBER OWNER. OREST PRACTICES FORESTER TO ENSURE COMPLIANCE WITH ALL THE LAWS AND RULES GOVERNING FIRE PROTECTION AND FOREST PRACTICES ON PRIVATE LAND.	Geographic Area: Date Received: Time: Initials: District: Office: Correction:
2. NOTICE AND PERMIT TYPE Check Appropriate Boxes (2A, 26, and/or 2C). 2. NOTICE AND PERMIT TYPE Check Appropriate Boxes (2A, 26, and/or 2C). 2. NOTICE AND PERMIT TYPE 2. NOTICE AND PERMIT TYPE	NOTICE TO THE STATE FORESTER AND THE DEPARTMENT OF REVENUE OF THE INTENT TO HARVEST TIMBER (ORS 321.550).	(Unoffici.
 4. Timber Sale Name and/or Number: CHECK ONE SHADED BOX BELOW TO INDICATE WHO ALLED OUT THE APPUCATION. 5. OPERATOR ATIENTION If you are conducting timber harvesting or road construction Withm 1D0 feet of overhead or underground utility lines, call the Oregon Utility Nottficabon Center at 1 800 332-2344 Request that the owner of the Ime be nobfled, and record the number issued to you by the Oregon Utility NotIficabon Center here	Name Bus ness Name Mailing Address- Street Address CitYI stab and Zip Code —	Please describe the intent of the operation, and any other information that may be relevant to the Forest Practices Forester. APPLICANT REMARKS:
6. LANDOWNER Timber harvesting may result in a tree planting requirement on the landowner. The landowner has the responsibility to reforest if the harvest results in an understocked condition. Call a Department of Forestry office for more information.	None Contraction of the Contract	
For activities or operations within an urban grow1h boundary, the applicant is advised to contact the appropriate local government regarding land use regulations which may apply to the future use or development of this site. 8. TIMBER OWNER AND TAX PAYER	7. WESTERN OREGON PRIVATE LAND ONLY None Part Ial Is any imber being harvested certified under the Western WOSTOT Certificate 0. Onegon Small Tract (WOSTOT) program? If you have checked "Part" or "All" please list the number in the 'WOSTOr' Certificate Number box to the ri!lht. WOSTOT Certificate Name	-
You are required to provide a Soctal Secunty number OR Tax payer Identification number by the Oregon Department of Revenue's statute ORS 321.015. The Social Secunty number Will be used ONLY for the purpose of identifying you to the Department of Revenue for the collection of Timber Tax.	s isTness-Name	-

			9. TYPE OF ACT	IVITY				CTIVITY RIOD	Conditions	11. SITE CO								0	>			PERAT	ION			13.
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FPF	Un	it Activity	Methods		antity unit)	Estim.	Activity	Activity	W100, W300	CGS, SH	LAKES >8 OTHER LAKES	BPS, CC, CWO, GBH_GLD	N	E		W/		S₩		5	SE	s	т	R	Severance	\$ ""0
No.(s) FPA	N.	_	Used	()		MBF	Starting	Ending	S1, S2, S3	SW, UGB	STREAMS EOS, BOG	HRA, HRS, MUR,	NIN	SS WE	NN	ı s	SN	ΝŔ	şs	NN	s s	Ē	W	G	Tax Unit	iii
FPA				Acres	Feet	Removed	Date	Date	T1, T2, T3	WG	ES, DWS, SEEP	NSO, OSP, RAP, SBS, T&E	EIV	W E	EV	VW	E	Wc	; E	EIW	WE	C	р	E	Number	
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NOTIFICATION	STATE OF OREGON DEPARTMENT OF FORESTRY DEPARTMENT OF REVENUE	Notification Number:
FILING THIS NOTIFICATION DOES NOT GRANT PERMISS	SION TO REMOVE FOREST PRODUCTS! ARST OBTAIN PERMISSION FROM THE LANDOWNER AND TIMBEROWNER -	Date Received:
COUNTY (Enter only one): NOTICE AND	Check Appropriate Boxes (2A, 28, and/or 2C).	O O O r-ime Received: Initials: Initials: Initials: Initials:
PERMIT TYPE	X 2B APPLICATION FOR PERMIT TO OPERATE POWER ORIVEN CHINERY (ORS 77.625). Exp(res at end of eakIndar year. 2C NOTICE TO THE STATE FORESTER AND THE DEPARTMENT OF REVENUE OF THE INTENT TO HARVEST TIMBER (ORS 321.550).	
 REPRESENTATIVE: Timber Sale Name and/or Number: 	PLEASE PRINT! Person to be contacted in case of Fire Emergency (Designated Representative). Area Code & Phone Number 503 777-7722	Date of Correction:
CHECK ONE BOX IN THE FAR LEFT COLUMN TO INDICATE WHO FILLED OUT TH		
5. OPERATOR	Name Jim Clark Business Name Logging, Inc. Mailing Address - Street Address	On-sire Spections may be conducted by the State Forester/Forest Practice Forester to ensure complance with all the laws and rules governing fire protection and forest practices on private land.
	1432 SE Boon Ave. City, State and Zip Code Molalla, OR 97308 Area Code & Phone No. 503-888-8888	APPLICANT REMARKS:
6. LANDOWNER	Name 4 Jane Mackie RC: Business Name 2 Lazy Acres EG: Mailing Address - Street Address 3	09 - PM
Timber harvesting may result in a tree planting requirement on the landowner. Call a Department of Forestry office for more information.	32076 SE 1st. Ave. S: City, State and Zip Code Darwin, OR Area Code & Phone No. 541 333-8989 7 WESTERN OREGON PRIVATE LAND ONLY Nonex IPart IAir Oregon Small Tract (WOSTOT) program? If you have checked "Part" or "All please list the number in the 'WOSTOT' Certificate Number box to the right WOSTOT Certificate t	_
⁸ . TIMBER OWNER AND TAX PAYER	Name Same as Landowner Business Name	_
You are required to provide a Social Security number or Taxpayer Identification number by the Oregon Department of Revenue's statute ORS 371.015. The Social Security number will be used	Mailing Address - Street Address City, State and Zip Code Area Code & Phone No.	-
ONLY for the purpose of identifying you to the Department of Revenue for the collection of Timber Tax.	Timberowner Employer Identification Number OR Social Security Number	

				9. TYPE OF ACTIVITY		-		10. AC				11. SITE CODES					_	-	12	22									13.
\vdash		-		3. THE OF ACTIVITY				PER								12. CLOCATION OF OPERATION							Regulated						
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Provide PHOTOCOPIES of the completed notification form and map to the local offices of the Water Resources epartment and the Oregon Department of Fish and Wildlife IF AND ONLY IF you plan to use on-site water to mix pesticides or to control slash burns. In the applicant remarks section of the notification form identify the proposed water source. Addresses of the Water Resources and ODF&W offices are available in each Forestry office.

A notification is not considered accepted until it is received by the Forestry office that handles the location of your planned activity. Mail, fax or hand-deliver the notification form to the offices whose addresses are shown below.

	For assistance filling			
OFFICE	COUNTIES COVERED	ADDRESS	PHONE NO.	FAX NO.
ASTORIA	Clatsop	92219 Hwy #202, 97103	503-325-5451	503-325-2756
BAKER CITY	Baker	2995 HUGHES LANE, 97814	541-523-5831	541-523-5874
CENTRAL POINT	Jackson	5286 TABLE ROCK ROAD, 97502	541-664-3328	541-776-6184
COLUMBIA CITY	Columbia, Clatsop	405 E STREET, 97018	503-397-2636	503-397-6361
COOS BAY	Coos, Curry, Douglas	63612 FIFTH STREET, 97420	541-2674136	541-269-2027
DALLAS	Polk, Yamhill	825 OAK VILLA ROAD, 97338	503-623-8146	503-623-9034
FOREST GROVE	nllamook, Wasr,gton, West Multnomah, Yamhill	801 GALES CREEK ROAD 97116-1199	503-357-2191	503-3574548
FOSSIL	Wheeler, Morrow, Gilliam	45945 HWY 19, 97830	541-763-2575	541-763-2027
GRANTS PASS	Josephine	5375 MONUMENT DRIVE, 97526	541474-3152	541474-3158
JOHN DAY	Grant	PO BOX 546 97845 (400 NW 9"')	541-575-1139	541-575-2253
KLAMATH FALLS	Klamath, Lake	3200 DELAP ROAD 97601	541-883-5681	541-883-5555
LAGRANDE	Baker, Malheur, Union	611 20TH STREET, 97850	541-963-3168	541-962-1058
LAKEVIEW	Lake, Klamath	2290 NORTH 4TH STREET, 97630	541-947-3311	541-947-3078
MEHAMA	Linn, Marion	22965 N. FORK ROAD SE, LYONS 97358	503-859-2151	503-859-2158
MOLALLA	Clackamas, East Multnomah	14995 S.HWY 211,97038	503-829-2216	503-8294736
MONUMENT	Grant, Wheeler	PO BOX 386,97864 (MAY STREET)	541-934-2300	541-934-2301
PENDLETON	Umatilla, Grant, Morrow	1055 AIRPORT ROAD 97801	541-276-3491	541-276-0710
PHILOMATH	Benton	24533 ALSEA HWY, 97370	541-929-3266	541-929-5549
PRINEVILLE	Crook, Deschutes, Jefferson	3501NE 3RD, 97754	541-447-5658	541-447-1469
ROSEBURG	Douglas	1758 NE AIRPORT ROAD, 97470-1499	541-440-3412	541-440-3424
SPRINGFIELD	Lane	3150 E.MAIN STREET, 97478	541-726-3588	541-726-2501
SWEET HOME	Linn	4690 HWY 20, 97386	541-367-6108	541-367-5613
THE DALLES	Hood River,Sherman, Wasoo	3701 W.13TH ST., 97058	541-2964626	541-2984993
TILLAMOOK	nnamook	5005 THIRD STREET,97141-2934	503-842-2545	503-842-3143
TOLEDO	Linooln	763 NW FORESTRY ROAD, 97391	541-336-2273	541-336-5261
VENETA	Lane, Douglas	PO BOX 157, 97487 (87950 TERRITORIAL HWY)	541-935-2283	541-935-0731
WALLOWA	Wallowa	802 WEST HWY 82,97885	541-886-2881	541-886-9085

PLEASE PRINT OR TYPE INFORMATION ONTO THE FORM. Please don't write in shaded areas. The instructions are numbered to match numbered areas on the notification form.

Instructions For Filling Out The Notification Operation/Application For Permits form 629-2 002A		
 File a notification (form 629-2-1-002A) at an Oregon Depart conditions apply: Your operation area is brand new. You are adding a new activity to the operation. You are changing or increasing the area involved in an It is after February 28, and you are continuing an opera calendar year and you have not informed ODF you interest. 	existing operation. tion that has been idle since the e	nd of the previous
 "COUNTY (Enter only one)." Fill in the county name spans two or more counties, file a separate notification for e handled by which offices. "NOTICE AND PERMIT TYPE" Check Appropriate B the notices you are giving and/or the permit you need. Any 3. "REPRESENTATIVE" The person ODF should cont phone number. This person must know what resources you to commit those resources. "Timber Sale Name and/or Number: This information optional for private land sales. "CHECK ONE BOX NEXT TO 5, 6, OR 7 TO INDIO 5. "OPERATOR" The name, address and phone of the 6. "LANDOWNER" The name, address and phone of may result in a tree planting requirement for the landow (Size of land ownership) boxes gather information about the information which we will use for annual reports. In these resources. 	ach county. The address list show Boxes (2A, 2B and/or 2C). Check one filing a notification for hauling act in base of fire emergency. Prir u have available to fight the fire ar n is required for all state and fede CATE (2HO FILLED OUT THE AF e person or company who is doing the person who owns the land. H vner. RC (Recipient Class) EG (E e landowner. We ask you to volur	es which counties are mark in the boxes next to only should check box 2B. In the name and had have the authority ral sales and is PLICATION." the work. arvesting timber Ethnic Group) and S itarily enter this
Recipient Class	© Ethnic Group	Size
1. Local Government	1.Doeghot apply	1.Does not aoolv
2. State Government	2.White	2.0-9 acres
3. Federal Government	3.Black	3. 10-99 acres
4. Individual/Non-industrial Private Forest Landowner (someone who owns 5,000 or fewer acres of forest land, and makes less than 50% of his or her annualinoome from the primary processing of forest	4.Hispanic	4.100499 acres

	owns 5,000 or fewer acres of forest land, and makes less than 50% of his or her annualinoome from the primary processing of forest products.)			
ſ	5. Partnership/Corp. Industrial Forest Landowner	5. American Indian/Alaskan Native	5. 500-999 acres	
Ĩ	6. Other (private landowner such as a church or non-profit organization.)	6. Asian/Pacific Islander	6.1,0004,999 acres	
	No number seven.	7. All Other	7.5,000 + acres	

7. "TIMBER OWNER AND TAX PAYER" Enter the name of the person or company, their address and phone number. Fill in EITHER the timber owner's Employer Identification number OR the timber owner's Social Security number. The Social Security number will be held in confidence. The party who owns timber at the point of first measure is the timber owner, and is responsible for paying the harvest and, if applicable. severance taxes.

- 8. "TYPE OF ACTIVITY." "UNIT NUMBERS" Assign a unit number between 1 and 99. A unit can be:
- A single operating area within a continuous boundary; or
- An operating area with a state or federal sale unit number; or
- A separate area within your total operation area on which you plan to conduct a single type of activity (for example, 30 acres of harvest type 3 only).

Multiple harvest units may be listed on one notification. BUT, if HARVEST units are separated by a mile or more (in a straight line), file separate notifications for each unit.

In all cases, all activities you plan on that unit should be listed beside the unit number. For example, road construction activity needed prior to starting a commercial timber harvest should be described along with the harvest activity. Multiple lines may be used for each unit to describe the activity.

	Activity Code	Methods Used		Activity Code	Methods Used
1a.	Commercial Thinning. Most of the conifer timber or large hard woods will	Cable/Ground/Other	2a. 2b. 3.	Road Construction Road Reconstruction Site Preparation. (Do not	Dozer/Backhoe/Other Dozer/Backhoe/Other Manual/Mechanical/
	remain uncut on the unit after harvesting (such as commercial thinning or selective cutting).			use for building site preparation, this is preparing for planting.)	Burning (not slash)
1b.	Most, or all, oonifer timber or large hardwoods will be cut and removed from the unit during harvesting (such as in clearcuts, shelterwood, and seed tree harvests).	Cable/Ground/Other	4a. 4b. 4c. 4d. 4e. 4f.	Herbicide Application Insecticide Application Rodenticide Application Fertilizer Application Fungicide Application Repellent Application	 Ground or Aerial/Common Name/Brand Name/ Carrier/Additives/ Application Rate (For fertilizer application only list all of the above plus
1c.	Felling only (no yarding or decking involved).		5.	Land Use Change Plannedto agricultural use	'- the application rate)
1d.	Other Harvest Type not covered in 1a. or 1b. Describe in applicant's remarks box. (Examples are removal of just cedar	Other		 to residential use to other uses Local government land use approval may be required. 	
	timber from a mixed conifer stand, or creating salable chips.)		6.	Treatment of Slash	Manual/Chemical/ Burning/Mechanical
1e.	Sort Yard. A single location where woods-		7.	Pre-commercial Thinning	
	direct logs are stored prior to being taken to a mill.		8.	Others	Explain: EXAMPLES: rockpits used in roadway construction and chiooina.

"Quantity by Unit." Enter either the acres (A) or lineal feet (F) involved in the activity.

"Approximate Thousand Board Feet (MBF) Removed." List the approximate MBF to be removed, for each unit with commercial timber harvesting. For example 50 MBF = 50,000 Board Feet.

9. The starting date must be at least 15 days after the date the notification form is received by the appropriate ODF office.

10. "Site Codes." You must enter the W, S, and T conditions code(s) for each unit. Fill in concerns, waters, and resources code(s) when known. We are asking for your assistance in identifying under swith characterics that we are bound by law to protect. If you don't know whether any of these characteristics exist, go to item $\mathbf{12}$.

	CONDITIONS		CONCERNS			RESOURCES
W100	Within 100 feet of any lake, stream (a channel flowing surface water during	ARC(ha CGG	aeological) site. Columbia Gorge Generalmanagement area.	SIGNIFUWET. A wetland 8+ acres. O OTHEREWET (land). LAKE &+ acres.	BEN BEP BER	Bald Eagle Nesting site. Bald Eagle foraging site (A perch.) Bald Eagle Roosting site
W300	some part of the year). Within 300 ft. of any estuary or any	CGS SH	Columbia Gorge Scenic management area. Scenic Highway. The operation takes place	LAKE &+ acres. OTHERE-AKES STREAM A channel flowing surface water during some part of the year.	BIO(log	ical) site of a rare life form or community: example, a rare snake pit.
	wetland greater than 8 acres.		near a FPA Scenic Highway	EOS, inportant spring in Eastern Oregon.	BPS	Band-tailed Pigeon Spring.
WNA 51	Waters Not Applicable. No evidence of mass	SW	The operation takes place near a state Scenic VVale	BOG Any size Bog. ES(tuag) A type of bay.	СС	The operation will result in a single ClearCut or continuation of
51	soil movement (landslides, slips,	UGB	The operation takes place wthin an Uriban	DWS ₿mestic Water Supply⊨n SEEP ₩ater seeps out of		contiguous clearcuts that exceed 120 acres.
52	s l umps). Evidence of old	WG	Growth Boundary. The operation takes	ground for flow evident.	CWO	Columbia White Tail Deer.
53	slides, small failures. Recent or active		place in the Willamette Greenway.	a L	GBH	Great Blue Heron nest site.
	movement; wet areas.		·		GLD HLH	Golden eagle nest site. High Landslide Hazard
T1 T2	is a slope of 0 to 35%			/23	MUR	Location. Maribled Murrelet nestir
12 T3	is a slope of 36% to 65%			/20	NSO	site. Northern Spotted Owl
15	is a slope greater than 65%			18	OSP	nesting sites. Presence of Osprey ne and key components.
				2:1	RAP	Other Raptor nests.
				12:	SBS	Sensitive Bird roosting, nesting, watering site.
				60	TorE	Threatened or Endangered species.

- 11. "Government Lot Numbers." Special numbers for map locations that do not fit the standard Township/Range grid.
- 12. "Location of Operation." If the activities codes description for a unit takes up several lines, REPEAT THE CODES ON EACH LINE: DO NOT REPEAT THE LEGAL DESCRIPTION.
- 13. To request a waiver of the 15-day waiting period, check the box and contact the Stewardship Forester (SF) at the ODF office where the notification is filed. The SF will decide if a waiver will be granted.
- 14. Print your name in 14a.; sign your name and write the date in 14b.
- 15. ATTACH MAP AND/OR AERIAL PHOTOS!" The notification form is <u>NOT</u> complete unless a map or aerial photo of the operation area is attached.

On-site inspections may be conducted by the Stewardship Forester to ensure compliance with state laws and rules governing fire protection and forest practices on private land.

Attachment B

OAR 629-615-0300

Attachment B

629-615-0300

Prescribed Burning

(1) Prescribed burning is a tool used to achieve reforestation, maintain forest health, improve wildlife habitat and reduce wildfire hazard. Prescribed burning is to be done consistent with protection of air and water quality, and fish and wildlife habitat. The purpose of this rule is to ensure that necessary prescribed burning is planned and managed to maximize benefits and minimize potential detrimental effects.

(2) When planning and conducting prescribed burning, operators shall:

(a) Comply with the rules of Oregon's "Smoke Management Plan."

(b) Adequately protect reproduction and residual timber, humus and soil surface.

(c) Consider possible detrimental effects of prescribed burning upon riparian management areas, streams, lakes, wetlands, and water quality, and how these effects can be best minimized.

(d) Lay out the unit and use harvesting methods that minimize detrimental effects to riparian management areas, streams, lakes, wetlands, and water quality during the prescribed burning operation.

(e) Fell and yard the unit to minimize accumulations of slash in channels and within or adjacent to riparian management areas.

(f) Minimize fire intensity and amount of area burned to that necessary to achieve reforestation, forest health, or hazard reduction needs.

(3) When burning within 100 feet of Type F and Type D streams, within 100 feet of large lakes, and within 300 feet of significant wetlands, operators shall describe in the written plan how detrimental effects will be minimized within riparian management areas; especially when burning on highly erosive soils, for example decomposed granite soils and slopes steeper than 60 percent.

(4) During prescribed burning operations, operators shall protect components such as live trees, snags, downed wood, and understory vegetation required to be retained by OAR 629-635-0310 through 629-650-0040. When the operator has taken reasonable precautions to protect the components, but some detrimental effects occur, the intent of the rule is met if the overall integrity of the riparian management area is maintained. Operators shall not salvage trees killed by prescribed fire in a riparian management area if the trees were retained for purposes of 629-635-0310 through 629-655-0000.

(5) When the need for prescribed burning outweighs the benefits of protecting components required to be left within the riparian area, aquatic area and wetlands, protection requirements may be modified through a plan for an alternate practice. Approval of such a plan shall consider the environmental impacts and costs of alternative treatments.

(6) (For information only) When water is to be withdrawn from the waters of the state for use in mixing pesticides or for slash burning, ORS 537.141 requires operators to notify the Water Resources Department and the Department of Fish and Wildlife. Notification to the State Forester does not satisfy this requirement.

Stat. Auth.: ORS 527.710 Stats. Implemented: ORS 527.674 & 527.715 History: DOF 1-2017, f. 6-9-17, cert. ef. 7-1-17 DOF 2-2013, f. 7-11-13, cert. ef. 9-1-13 DOF 8-2005, f. 12-13-05, cert. ef. 1-1-06 DOF 6-2005(Temp), f. & cert. ef. 8-2-05 thru 1-27-06 FB 9-1996, f. 12-2-96, cert. ef. 1-1-97, Renumbered from 629-024-0302 FB 3-1994, f. 6-15-94, cert. ef. 9-1-94

Available at: https://secure.sos.state.or.us/oard/viewSingleRule.action?ruleVrsnRsn=162542

Attachment C Burn, Data Reporting, Slash Burn Fees Instructions



"STEWARDSHIP IN FORESTRY"

Oregon Department of Forestry

Southwest Oregon District

Fall 2009 & spring 2010

Smoke Management

Information & Processes Guide

Contents

- ~ Introduction
- ~ Southwest Oregon District Smoke Management Directory
- ~ Process
- Unit Worksheet Instructions
- Burn Fee Information
- ~ Information Sources
- ~ Forms

Introduction

The Oregon Department of Forestry, Southwest Oregon District, provides the enclosed instructions, and information documents to assist you in the Smoke Management processes, rules and regulations.

The Southwest Oregon District will operate under the Smoke Management Plan.

It is our intent to continue to:

To protect public health

Provide a quality service to our customers wishing to utilize the Smoke Management Plan to burn debris caused by the harvesting and growing of timber.

As a result of such burning, prevent smoke from being carried to or accumulating in designated areas and other areas sensitive to smoke.

To provide maximum opportunity for burning while coordinating with other state and federal smoke management programs and users.

To conform to state and federal air quality and visibility requirements.

To encourage the reduction of emissions with alternative methods.

Southwest Oregon District – Directory

Southwest Oregon District - 541-664-3328 Fax 776-6184

Business Hours: Monday – Friday 0800-1700

District Forester

Dan Thorpe

Medford Unit - 541-664-3328 Fax 776-6184

Business Hours: Monday – Friday 0800-1700

Unit Forester * Stewardship Forester Protection Supervisor Protection Supervisor Greg Alexander Bob Marcu Tyler McCarty Bill Smith

<u> Grants Pass Unit – 541-474-3152 Fax 474-3158</u>

Business Hours: Monday – Friday 0800-1700

Unit Forester * Stewardship Forester Protection Supervisor Protection Supervisor Rick Dryer Steve Wetmore Aaron Whiteley Karl Witz

* = Stewardship foresters are the primary contact to obtain slash burning permits.

Smoke Management Coordinators

There are specific hours when you may call either office to plan or accomplish a burn. These are established so that we can accomplish our other tasks during the day.

Established hours are <u>8:30 to 9:30 a.m.</u> and between the hours of <u>3:00 and 4:00 p.m.</u> Monday through Friday.

|--|

Kristina Sheppard – Dispatch Supervisor Matt Fumasie - Dispatcher

Mailing Address: Medford Unit, 5286 Table Rock Road, Central Point OR 97502

Business Number: 664-3328 ask for dispatch Fax Number: 776-6260

Email Address:ksheppard@odf.state.or.uscmarshall@odf.state.or.us

*** Burns to be conducted in Josephine County - Grants Pass Unit Dispatch office.

Shelly Hoffer – Dispatch S	Supervisor Sar	Sandy Schwab – Dispatcher					
Mailing Address;	Grants Pass Unit, 5375	Monument Drive, Gran	nts Pass OR 97526				
Business Number:	471-2855	Fax Number:	471-3892				
Email address:	shoffer@odf.state.or.us	sschwab@odf.state	e.or.us				

Process

Obtain a burn permit/plan; A burn permit is required for debris created by Forest Management activities which are the growing and harvesting of timber.

For a single unit the Burn permit/plan will cover; for multiple units, complete a Unit Worksheet and note on the Burn permit/plan that the attached Unit Worksheet will be covered under this permit.

Once we receive the Burn permit/plan and if applicable, Unit Worksheet, the information will be entered into the Oregon Smoke Management database and fee system.

When you plan on burning, you are required to call the day prior to the burn to obtain clearance. There are occasions when clearance can not be granted, which is normally based upon weather and smoke dispersion issues. At this time the unit(s) you plan on burning will be "planned" in the Oregon Smoke Management database. This will allow Salem and others to pull reports on current planned burns.

Once you have completed your burn, even if you have still more to burn, call in your "accomplishment" the working day after you have burned. This information will also be entered into the database for tracking and fee purposes.

Registrations. Required Form(s) and Burn Permits/Plans

Landing and Piled debris: The Landing and Piled Units Worksheet (instructions below & Worksheet attached) shall be completed. After the worksheet(s) has been received and reviewed, a Burn Permit may be created and either faxed, mailed or personally picked up.

NOTE: Please make every attempt to have your Worksheets into us 7 days prior to requesting to burn. This helps us audit the information, make corrections and coordinate the issuing of a permit. We understand there are times when this timeframe can not be met; we just ask that you make that the exception, not the rule.

The information will be entered into the Smoke Management computer tracking system. Once entered, registered units requiring burn fees will be gathered and processed by the Oregon Department of Forestry Finance Section in Salem Oregon.

Broadcast and Underburn Units: These units require additional paper work and closer coordination than other burning. If you have a unit in which you want to broadcast or underburn, please contact either the Forest Practice Forester or Protection Supervisor in which the Unit resides to receive further direction.

Planning to Burn

The afternoon prior to the day you would like to burn, call the appropriate office between the hours of 3:00 p.m. and 4:00 p.m. Monday - Friday.

The information needed at the time you call in, will be; Unit name (if available), where the unit is (legal location) and how much tonnage you are requesting to burn.

Accomplishments

Burning accomplishments must be reported the following workday after the burn!

Unit Worksheet Instructions

<u>Unit Number (Facts #):</u>	This is the 12-digit number assigned to the Unit from ODF.					
District/Forest ID	711 = Medford Unit 71	2 = Grants Pass Unit				
<u>Owner Name</u>	Name of the company/landow	ner				
<u>Ownership</u>	P = Private S = State, local	government				
FPF Number	Optional					
Sale Name:	Enter the name of the Unit.					
<u>Sale Unit Number (Unit #):</u>	IF available, enter the number	r of the unit.				
Legal Description (T) (R) (S):	Enter location by Township, R If a 1/2 township, enter it as .5 35 1/2)	0				
<u>County Number (Co.#):</u>	15 = Jackson County	17 = Josephine County				
Distance from nearest SSRA:	SSRA=Smoke Sensitive Rece Area. # of miles from the bou	eptive Area i.e. old Designated ndary				
Special Protection Zone:	M = Medford N = None					
Acres in Unit:	Total acres in the harvest/trea	itment unit.				
Date when 70% of the cutting was completed (Cutting Date):	Enter the month and year (example; March 1997 = 0397). For Natural Fuels, or no cutting enter " 9999".					
<u>Minimum Harvest Log Diamete</u>	e r: 2 = Whole Tree Yarding 6 = 6 inches 9 = Other	4 = 4 inches 8 = 8 inches 1 = Not Applicable				
Elevation of the burn (Elev.):	Use the average elevation to the nearest 100 feet.					
<u>Slope (% Slope):</u>	Enter the actual average slope	е.				
Average Duff Depth:	in 1/10 th of an inch without the decimal i.e. 1.6 inches of duff would = 16					

<u>Type of Burn:</u>	B = Broadcast Activity R = Right-of-way L = Landing only G = Grapple Pile T = Tractor Pile	Underburn Activity = U Broadcast Natural = F H = Handpile S = Rangeland					
Predominant Species of Fuel:	D = Douglas Fir, Cedar M = Mixed Conifer B = Brush	P = Ponderosa Pine H = Hardwood G = Grass					
Fuel Loading Method:	C = Ocular Photo Series	R = Random Sample T = Transect					
Landing & Right-of-way Acres	Enter the acres from which mate	rial was gathered.					
Landing & Right-of-way Piles: Total TONS of material in landing and Right-of-venture unit.							
Other Acres:	Acres of in-unit piles, broadcast, and/or Underburn.						
<u>Unit Pile Tons:</u>	Total tons in unit piles						
Broadcast/Underburn loading:	tons per acre by size class, roun	d to whole tons,					
Acres in the Unit:	Enter the actual number of acres	to be treated.					
	<u>Piled acres</u> , enter the total # of a material was collected.	acres from which the					
	Landing acres , enter the # of landings for the unit. Example; you have a 20 acre unit with 3 landings, the acres entered would be 3.						
Landing Piles (Landing Tons):	<u>):</u> Enter the total tons.						
<u> Piled Burns (Piled Tons):</u>	Enter the total tons.						
Primary Reason for the Burn:	H = Hazard Reduction R = Other	S = Silviculture B = Hazard & Silviculture					

We have received direction through Salem ODF to use the attached form which will standardize the forms used across the state for those of you working with more than one District.

The Unit Worksheet can be completed electronically and e-mailed to the appropriate dispatch office if you prefer the electronic method. If you do not already have the new form, e-mail your host dispatch and they can reply with a copy of the form.

Burn Fees

Broadcast Burns / Under Burns / Tractor Piles / Hand Piles / Grapple Piles

	Registration	Burn	
Acres	Fee	Fee	Notes
8 acres or less	\$5.00	\$25.00	= \$30.00 minimum
9 acres or more	\$.50	\$ 3.10	per acre

Landings

	Registration	Burn	
Acres	Fee	Fee	Notes
29 acres or less	\$15.00	\$15.00	= \$30.00 minimum
30 acres or more	\$.50	\$.50	per acre

Combined Registrations

If a unit is initially registered as a Landing Unit and then within the 3 year timeframe has piled or broadcast tons

added to it, once burned an additional burn fee of \$2.60 per acre based upon the accomplished acres is then billed to bring it up to the \$3.10 per acre burn fee for piles and broadcast burning.

Fees are good for 3 years per Unit.

Information Sources

Smoke Management Instruction Internet Address:

http://www.odf.state.or.us/DIVISIONS/protection/fire_protection/smoke/smkfcst.asp

Land Management Forecast Internet Address:

http://nimbo.wrh.noaa.gov/Medford/fire/

Smoke Management Plan, Burn Fee Rules and much more

http://www.odf.state.or.us/DIVISIONS/protection/fire_protection/smp/smokemgt_onthe_w eb.asp

ODF, Southwest Oregon District, Medford Unit

http://oregon.gov/ODF/FIELD/MED/aboutus.shtml ODF, Southwest Oregon District, Grants Pass Unit

http://oregon.gov/ODF/FIELD/GP/aboutus.shtml



Smoke Management Burn Procedures Data Reporting and Consumption Estimation (Level 1

Regulated Areas)

Accurate, timely reporting of smoke management data is essential. Information in the data system is used to manage daily burning to; avoid impacting Smoke Sensitive Receptor Areas and overloading the airshed with particulates, facilitate coordination of burning between adjacent districts and landowners, enable calculation of emissions from burns, administer the fee program, and respond to enquiries about burning.

Fuel Loading and Consumption Estimation

The first step in the reporting burning activities is determining the amount of material that will be burned. Accurate estimation of pre-burn fuel loading is essential. Numerous techniques are available to assist in making accurate estimates of the amount of material available to be burned. A number of photo series publications have been developed to assist in this need. Links to on-line versions of these publications can be accessed from: http://oregon.gov/ODF/FIRE/SMP/FLET.shtml.

The publications referenced above may also be used after a unit is burned to help estimate consumption. In addition computer applications for calculating consumption are also available via the Internet, at: http://www.odf.state.or.us/DIVISIONS/protection/fire protection/Daily/ACOST/ACOST.htm.

Reporting Requirements

Once the amount of material to be burned has been determined, this and other pertinent information must be reported. This is divided into three areas:

Registration: All units intended to be burned must be pre-registered in the Forestry smoke management data system. Units should be registered through the ODF district or the federal data system, FASTRAXS.

Planning: The day prior to ignition, a plan for the unit(s) to be burned is entered into the data system. This plan includes the location, an estimation of the amount of material intended to be burned and planned time for ignition. This facilitates coordination with adjacent landowners.

Accomplishment: The business day after the burn, the actual amount of material consumed and other pertinent data needed to produce emissions estimates is entered into the data system.

Specific requirements for data reports are contained in the smoke management directive. Approved data collection forms are available either on paper or electronically. Invoices for burn fees are based on the reports submitted, so accurate reporting of burning cannot be overemphasized.

Changes That Impact Data Reporting

Landings represent the most significant change in the data reporting system.

- The acres reported for landings are the acres that the material came from, not the area covered by the pile(s). Thus, unless additional material is yarded to the landing, the reported acres for landings will normally be the same as the harvested acres in the unit.
- Piles that include additional material yarded to the landing site (e.g., YUM) are not considered landing piles but are classed as "in-unit" piles.
- Landings must be registered in the data system, prior to burning.
- Landings are no longer fee exempt but will be charged both registration and burning fees.

Small units are no longer exempted from reporting or fees. If the burning is related to harvesting and replanting, the unit is reported regardless of size.



Smoke Management Burn Procedures Data Reporting and Consumption Estimation (Level 2

Regulated Areas)

Accurate, timely reporting of smoke management data is essential. Information in the data system is used to manage daily burning to; avoid impacting Smoke Sensitive Receptor Areas and overloading the airshed with particulates, facilitate coordination of burning between adjacent districts and landowners, enable calculation of emissions from burns, and respond to enquiries about burning.

Fuel Loading and Consumption Estimation

The first step in the reporting burning activities is determining the amount of material that will be burned. Accurate estimation of pre-burn fuel loading is essential. Numerous techniques are available to assist in making accurate estimates of the amount of material available to be burned. A number of photo series publications have been developed to assist in this need. Links to on-line versions of these publications can be accessed from: http://oregon.gov/ODF/FIRE/SMP/FLET.shtml.

The publications referenced above may also be used after a unit is burned to help estimate consumption. In addition computer applications for calculating consumption are also available via the Internet, at: http://www.odf.state.or.us/DIVISIONS/protection/fire protection/Daily/ACOST/ACOST.htm.

Reporting Requirements

Once the amount of material to be burned has been determined, this and other pertinent information must be reported. There are two reports that are required for burning in areas of level 2 regulation:

Registration: All units intended to be burned must be registered in the Forestry smoke management data system through the ODF district or the federal data system, FASTRAXS.

Planning: Planning prior to the actual burn is not required for areas under level 2 regulation but may be done if desired. This plan includes the location, an estimation of the amount of material intended to be burned and planned time for ignition. Entering plans the afternoon before ignition will aid coordination with other burning.

Accomplishment: On the first business day of the week after the burn, the actual amount of material consumed and other pertinent data needed to produce emissions estimates is entered into the data system.

Specific requirements for data reports are contained in the smoke management directive. Data collection forms are available either on paper or electronically through the local ODF district.

Changes That Impact Data Reporting

Landings represent the most significant change in the data reporting system.

- The acres reported for landings are the acres that the material came from, not the area covered by the pile(s). Thus, unless additional material is yarded to the landing, the reported acres for landings will be the same as the harvested acres in the unit.
- Piles that include additional material yarded to the landing site (e.g., YUM) are not considered landing piles but are classed as "in-unit" piles.
- Landings only units are no longer exempt from reporting but must be entered into the data system as is done for any other type of burn.

Small units are no longer exempted from reporting. If the burning is related to harvesting and replanting, the unit is reported regardless of size.



Smoke Management Fees (Level 1 Regulated Areas)

Smoke management fees are assessed to nearly all burning conducted in areas under Level 1 regulation. This includes federal forest land statewide and Class 1 forestland in western Oregon.

Fee structure

The basic fees are assessed against the number of acres registered to burn. Thus, the burn fees are assessed for the number of acres registered, regardless of the area actually burned.

Type of Burn	Registration	Burn (Accomplishment)
Landing, Right-of-Way Piles	\$.50/acre	\$.50/acre
Forest Health Maintenance *	\$.50/acre	\$.50/acre
In-unit piles	\$.50/acre	\$3.10/acre
In-unit piles (landings already	\$.50/acre (if registered	\$2.60/acre
burned)	separately from landing acres)	
Broadcast/underburn	\$.50/acre	\$3.10/acre
Broadcast/underburn	\$.50/acre (if registered	\$2.60/acre
(landings already burned)	separately from landing acres)	

*Condition Class 1 land burned within 5 years of previous burn.

Minimum fee

Burns are charged a minimum fee of \$30 per unit.

OFFICE/CALL IN SMOKE MANAGEMENT ACCOMPLISHMENT (Piles)									
2 Notification#	5 Landowner Name	7 Township; Range; Sec; 1/4 Sec	Date of Burn	Ignition Time	Acres Burned*1	Piled Tons Burned (Within Unit)*2	15 Landing Pile Tons (Only)*3		
 *1 Acres Burned: Total acres of the unit from which the material was gathered from to form the piles. Report only those acres treated by fire, not the total unit size, if different. *2 Piled Tons Burned Within the Unit: Total tons of material burned in the piles within the unit. Do not include landing piles in this colum. *3 Landing Pile Tons Burned: Total Tons of material burned in the piles at the landing. See Instructions #15 for Tonnage Calculations 									

OFFICE/CALL IN SMOKE MANAGEMENT ACCOMPLISHMENT (Piles)

Smoke Management District Identification Numbers

Oregon Department of Forestry

72	Coos 721 Bridge 722 Coos Bay
73	Douglas 731 North Douglas 732 South Douglas
71	Medford 711 Medford Unit 712 Grants Pass Unit
98	Klamath-Lake 981 Klamath Falls 982 Lakeview
National Forest	
15	Umpqua 152 Tiller
10	Umpqua Rogue 103 Butte Falls 106 Prospect 112 Galice
02	Fremont-Winema 021 Bly 022 Lakeview 201 Chemult 202 Chiloquin 203 Klamath

SLASH BURN FEE REGISTRATION

Registration Fee - \$.50/acre Landing Burns (Total Harvest Acres) - \$.50/acre Broadcast Burns (Actual Acreage of Burn Area) - \$2.60/acre with landings; \$3.10/acre without landings Piled Burns (Actual Acreage of Burn Area) - \$2.60/acre with landings; \$3.10/acre without landings **All burns must meet a \$30.00 minimum.**

THIS IS NOT A BURNING PERMIT

BILLING NAMI	E:				
ADDRESS:				VID:	
				SIGNATURE:	
PHONE NO.:	()		DATE:	

UNITS MUST BE REGISTERED 7 DAYS PRIOR TO BURNING. ALL CHARGES WILL BE BILLED OUT OF SALEM AT THE END OF EACH MONTH. PAYMENTS WILL BE SENT TO OREGON DEPARTMENT OF FORESTRY. ALL MONIES RECEIVED GO TO FUND THE OREGON SMOKE MANAGEMENT PROGRAM IN SALEM. REFER TO OAR 629-43-041 (3) AND (4) FOR FEE REQUIREMENTS.

NOTIFICATION NUMBER	UNIT NAME	ACRES	TYPE OF BURN Broadcast(B) Landing (L) Piled (P)	TOWN- SHIP	RANGE	SEC.	ELEV.	HARVEST DIAMETER (1=n/a) (2,4,6,8=INCHES) (9=OTHER)	CUTTING DATE (MO/YR)
-740-				S	W				1
-740-				S	W				/
-740-				S	W				/
-740-				S	W				/
-740-				S	W				/
-740-				S	W				/
-740-				S	W				/
-740-				S	W				/
-740-				S	W				/
-740-				S	W				1
-740-				S	W				/

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COOS FPA

Oregon Department of Forestry – Smoke Management Registration Form

1. County:	1. County: 2. Notification/Permit						ermit ‡	t # 3. Year:									
4. Person to be contacted in case of a Fire Emergency:									P	hone:							
5. Landowner Information: Name: Mailing Address: City/State/Zip:				:					Ph	one: _							
6. Person Conducting Burn: Name (If different than Landowner) Maili			Name: Phone: Mailing Address:														
								l Desc									
Township	Range	Section		N	E			N	W			S	E			S	W
Township	Kange	Section	NE	NW	SE	SW	NE	NW	SE	SW	NE	NW	SE	SW	NE	NW	SE

8	8. Acres in Unit	9. Cutting Date	10. Harvest Diameter (DBH)	11. Elevation	12. Type of Burn

13. Fuel Species	14. Fuel Load	15. Landing Piled Ton (Only)	16. Piled Tons (Within Unit)	17. Reason for Burning	18. Planned Ignition Date

PLEASE CALL FOR SMOKE MANAGEMENT INFORMATION BEFORE ANY BURNING Klamath Falls: 541-883-5681 or Lakeview: 541-947-3311

Smoke Management Data is available online @ http://egov.oregon.gov/ODF/FIRE/fire.shtml#Smoke Management SW

Instructions:

- 1. **County (enter only one):** Fill in the county where the operation will take place. If an operation spans two or more counties, file a separate Notification/Permit for each county.
- 2. Notification/Permit #: 7 digit number assigned to you by your local ODF office.
- 3. Year: Fill in the year in which the registration form is being filed.
- 4. **Person to be contacted in case of fire emergency and phone #:** Print the name and phone number of the person to contact in case a fire starts on the operation. This person should know what resources are available to fight the fire and have the authority to commit those resources in case of a fire.
- 5. Landowner Information: Enter the person or company name, address and phone number.
- 6. **Person Conducting Burn:** Enter the person or company name, address, and phone number, if different than the landowner.
- 7. Legal Description of Burn: Enter the legal description of the burn unit.
- 8. Acres in Unit: Enter the total number of acres from which the material was collected for each burn unit. An operation can be divided up into more than one burn unit for fire management purposes so this figure doesn't necessarily have to be the total acres logged.
- 9. Cutting Date: Enter the date that at least 70% of the cutting was completed on the operation.
- 10. **Minimum Harvest Log Diameter (DBH:** Use one of the following: Less than 4" (2) 4 inches (4) 6 inches (6) 8 inches (8) Other (9) Not applicable (1)
- 11. Elevation: Enter the elevation of the burn in feet, using the average elevation to the nearest 100 feet.
- 12. **Type of Burn:** Use one of the following: Tractor piles (T) Handpiles (H) Broadcast (B) Grapple piles (G) Underburn (U) Landing only (L)
- 13. Fuel Species: Enter the predominate species of fuel on the operation. Use one of the following: Mixed Conifer (M) Ponderosa Pine (P) Lodgepole Pine (L) Sagebrush or Bitterbrush (S) Brush (B) Grass (G) Juniper (J) Hardwood (H) Douglas Fir, Hemlock Cedar (D)
- 14. Fuel Load: Enter (C) for ocular fuel tonnage measurement.
- 15. Landing Piled Tons: Enter total tons of material gathered in piles at the landing. See tonnage calculation under Piled Tons. If you need help, call your local ODF office.

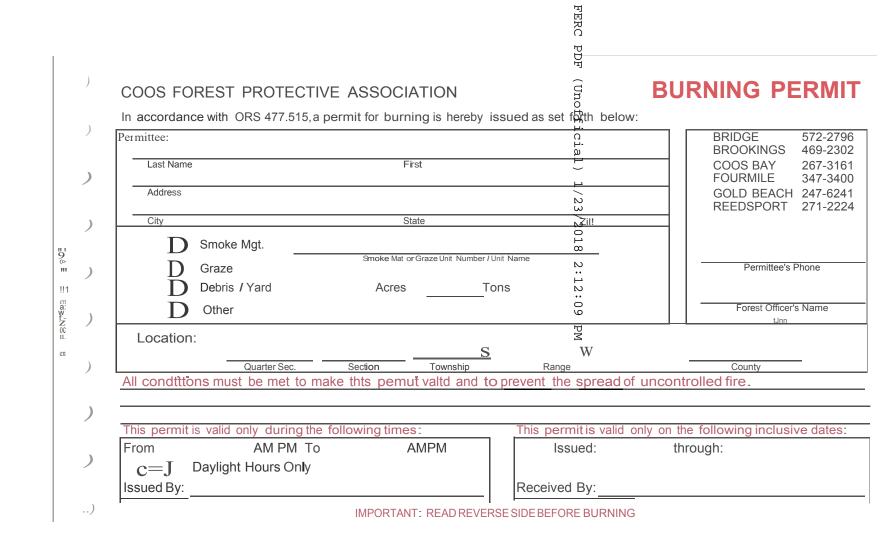
Tonnage (for 1 pile) = (pile length x pile width x pile height x .0001 x wood density) Wood density: White fir/Spruce = 21; Pine = 26; Douglas fir/Larch = 31 Example: Pile of pine slash that is 25 long by 20 feet wide by 12 feet high: 25 x 20 x 12 x .0001 x 26 = 15.6 Tons

- 16. **Piled Tons:** Enter the total tons piled in the unit.
- 17. **Reason for Burning:** Use one of the following: Hazard Reduction (H) Silviculture (S) Forest Health (F) Hazard & Silviculture (B)
- 18. Planned Ignition Date: Enter the date you plan to burn.

1	Baker	10	Douglas	19	Lake	28	Sherman
2	Benton	11	Gilliam	20	Lane	29	Tillamook
3	Clackamas	12	Grant	21	Lincoln	30	Umatilla
4	Clatsop	13	Harney	22	Linn	31	Union
5	Columbia	14	Hood River	23	Malheur	32	Wallowa
6	Coos	15	Jackson	24	Marion	33	Wasco
7	Crook	16	Jefferson	25	Morrow	34	Washington
8	Curry	17	Josephine	26	Multnomah	35	Wheeler
9	Deschutes	18	Klamath	27	Polk	36	Yamhill

County Number

Attachment D Westside Example of Burn Permit



20180123-5100

Attachment E Eastside Example of Burn Permit

Oregon Department of Forestry • APPLICATION FOR US PERMIT TO OPERATE POWER ORS 477.625	SE OF FIR	E C	OR	NERY	Received: Date: Time: Initial
Starting Date:End Date	FPF#:		Fire		
Operator:	FOR OFF Notification				
Address:					
City/State/Zip:	Phone/Ce	ell			
Landowner:					
Address/City/State/Zipcode:	Phone/Ce	11			
County you will be working in:					
Representative Name:	_Phone/C	Cell_			
Describe the type of activity being performed (i.e., broadcast or pildrilling, etc.) # of Piles and size.	_			ction, se	-
1. List equipment being used:		<u>/ (C)</u>			_
1. List equipment being used.					
2. Legal: (Township, Range, Section) Include Map with area high	lighted.				
Govt.Lot# NE NW SW SW	SE	S E C	Т W p	R G E	REGULATED USE AREA
0000000000000000	0 0				
In Klamath CountyFire DangerCall (541) 883-5681Level	In Lake C Call (541)				
	on Departn 290 North Lakeview	4th S	Street		_

The landowner/operator can still be liable for up to \$300,000. Of fire suppression costs when afire starts within a legally operating activity.

I have read the above and understand the requirements and the potential liability. This permit expires at the end of this calendar year.

(Print Name) Signature: _____ Date_____

Attachment F Examples of Slash Burn Plans

PMS 484 Appendix A Prescribed Fire Plan Template

Updated April 2014. This is Appendix A of the Prescribed Fire Planning and Implementation Procedures Guide. This document is an editable Word document.

Accessed at: https://www.wildfirelessons.net/communities/communityhome/librarydocuments/viewdocument?DocumentKey=c376b950-e1b6-4e85-a3e2-10ef7008f222

Interagency Prescribed Fire Planning and Implementation Guidance

The Interagency Prescribed Fire Planning and Implementation Procedures Guide (PMS 484) provides standardized procedures specifically associated with planning and implementation of prescribed fire. These procedures meet all policy requirements described in the 2009 Guidance for Implementation of Federal Wildland Fire Management Policy (USDA, USDI, et al, 2009). The PMS 484 provides unified direction and guidance for prescribed fire planning and implementation for the U.S. Department of the Interior Bureau of Indian Affairs (BIA), Bureau of Land Management (BLM), National Park Service (NPS), Fish and Wildlife Service (FWS), and the U.S. Department of Agriculture Forest Service (USFS). The National Wildfire Coordinating Group (NWCG) member agencies agree with the principles identified in the PMS 484.

The Interagency Prescribed Fire Planning and Implementation Procedures Guide (PMS 484) was updated in July 2017. Available at: https://www.nwcg.gov/sites/default/files/publications/pms484.pdf

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Element 1: Signature Page

PRESCRIBED FIRE PLAN

ADMINISTRATIVE UNIT NAME(S):	
PRESCRIBED FIRE NAME: Prescribed Fire Unit (Ignition Unit):	
PREPARED BY: Name (print):	
Signature:	
Signature:	 Date:
MINIMUM BURN BOSS QUALIFICATION:	
APPROVED BY: Name – Agency Administrator (print):	
Signature – Agency Administrator:	 Date:

Element 2A: Agency Administrator Ignition Authorization

Replace this page with the signed: Agency Administrator Ignition Authorization, PMS 485

The Agency Administrator Ignition Authorization form is a separate PDF file that must be printed and signed.

The Agency Administrator Ignition Authorization must be completed before a prescribed fire can be implemented. If ignition of the prescribed fire is not initiated prior to expiration date determined by the agency administrator, a new authorization will be required.

Element 2B: Prescribed Fire Go/No-Go Checklist

Replace this page with the signed: *Prescribed Fire Go/No-Go Checklist*, PMS 486

The Prescribed Fire Go/No-Go Checklist form is a separate PDF file that needs to be printed and signed by the burn boss.

Element 3: Complexity Analysis Summary

This summary should include the same summary rationale that is in the complexity analysis in Appendix C of the prescribe fire plan.

ELEMENT	RISK	POTENTIAL CONSEQUENCE	TECHNICAL DIFFICULTY
1. Potential for escape			
2. The number and dependence of activities			
3. Off-site values			
4. On-site values			
5. Fire behavior			
6. Management organization			
7. Public and political interest			
8. Fire treatment objectives			
9. Constraints			
10. Safety			
11. Ignition procedures/methods			
12. Interagency coordination			
13. Project logistics			
14. Smoke management			
COMPLEXITY RATING SUMMARY	1	OVERALL RA	ATING
RISK			
CONSEQUENCES			
TECHNICAL DIFFICULTY			
SUMMARY COMPLEXITY DETERMI	NATION		

Rationale:

Fill out Elements 4 through 21 based on the guidance provided in the *Interagency Prescribed Fire Planning and Implementation Procedures Guide*, PMS 484.

Element 4: Description of Prescribed Fire Area

A. Physical Description

- 1. Location:
- 2. Size:
- 3. Topography:
- 4. Project area:
- 5. Ignition units:

B. Vegetation/Fuels Description:

- 1. On-site fuels data:
- 2. Adjacent fuels data:
- 3. Percent of vegetative type and fuels model(s):

C. Description of Unique Features, Natural Resources, Values:

D. Maps - Attach in Appendix A

- 1. Vicinity (Required)
- 2. Project/Ignition Unit(s) (Required)
- 3. Significant or Sensitive Features (Optional):

 Included
 Not Included
- 4. Fuels or Fuel Model(s)(Optional): \Box Included \Box Not Included
- 5. Smoke Impact Area (Optional): \Box Included \Box Not Included

Element 5: Objectives

A. Resource objectives:

B. Prescribed fire objectives:

Element 6: Funding

A. Cost:

B. Funding source:

Element 7: Prescription

A. Prescription Narrative:

1. Describe how fire behavior will meet objectives

B. Prescription Parameters:

- 1. Environmental or fire behavior (or both)
- 2. Fire Modeling or empirical documentation (or both)

Element 8: Scheduling

A. Implementation Schedule:

1. Ignition Time Frames or Season(s) (or both)

B. Projected Duration:

C. Constraints:

Element 9: Pre-burn Considerations and Weather

A. Considerations:

- 1. On-site
- 2. Off-site

B. Method and Frequency for Obtaining Weather and Smoke Management Forecast(s):

C. Notifications:

Element 10: Briefing

A. Briefing Checklist; including, but not limited to: (additional items may be added)

- $\hfill\square$ Burn organization and assignments
- □ Prescribed Fire objectives and prescription
- □ Description of prescribed fire project area
 - □ Special considerations and sensitive features
- \Box Expected weather and fire behavior
- □ Communications
- □ Ignition plan
- □ Holding plan
- □ Contingency plan and assignments
- \Box Wildfire declaration
- \Box Safety and medical plan
- □ Aerial ignition briefing (if aerial ignition devices will be used)

Element 11: Organization and Equipment

- A. Positions:
- **B. Equipment:**
- C. Supplies:

Element 12: Communication

A. Radio Frequencies:

- 1. Command frequency(ies):
- 2. Tactical frequency(ies):
- 3. Air operations frequency(ies):
- **B. Telephone Numbers:**

Element 13: Public and Personnel Safety, Medical

- A. Safety Hazards:
- B. Mitigation: Measures Taken to Reduce the Hazards:
- **C. Emergency Medical Procedures:**

D. Emergency Evacuation Methods:

E. Emergency Facilities:

Element 14: Test Fire

A. Planned Location:

B. Test Fire Documentation:

- 1. Weather conditions on site
- 2. Test fire results

Element 15: Ignition Plan

A. Firing Methods:

- 1. Techniques, sequences and patterns
- **B. Devices:**
- C. Minimum Ignition Staffing:

Element 16: Holding Plan

- A. General Procedures for Holding:
- B. Critical Holding Points and Actions:
- C. Minimum Organization or Capabilities Needed:

Element 17: Contingency Plan

Management Action Points or Limits:

(Optional MAP Table Format)

Management Action Point - Documentation Element	Management Action Point Narrative
Designator and Description:	
Condition:	

Management Action Point - Documentation Element	Management Action Point Narrative
Management Intent:	
Recommended Action(s) to Consider:	
Recommended Resources:	
Time Frame:	
Describe the consequences of not taking the recommended action(s) (Optional):	
Responsibility:	
Date Each Action is Initiated (Optional):	

(if you need to include more MAPs, copy and paste the above template)

B. Actions Needed:

C. Minimum Contingency Resources and Maximum Response Time(s):

Element 18: Wildfire Declaration

A. Wildfire Declared By:

B. IC Assignment:

- C. Notifications:
- D. Extended Attack Actions and Opportunities to Aid in Fire Suppression (Optional):

Element 19: Smoke Management and Air Quality

- A. Compliance:
- **B.** Permits to be Obtained:
- C. Smoke-Sensitive Receptors:
- **D. Potential Impacted Areas:**

E. Mitigation Strategies and Techniques to Reduce Smoke Impacts:

Element 20: Monitoring

- A. Fuels Information Required and Procedures:
- B. Weather Monitoring (Forecasted and Observed) Required and Procedures:
- C. Fire Behavior Monitoring Required and Procedures:
- D. Monitoring Required to Ensure that Prescribed Fire Plan Objectives are Met:
- E. Smoke Dispersal Monitoring Required and Procedures:

Element 21: Post-burn Activities

A. Post-Burn Activities that must be Completed:

Prescribed Fire Plan Appendices

Appendix A: Maps: Vicinity, Project or Ignition Units (or both), Optional: Significant or Sensitive Features, Fuels or Fuel Model, Smoke Impact Areas

Appendix B: Technical Reviewer Checklist

Appendix C: Complexity Analysis

Appendix D: Agency-Specific Job Hazard Analysis or Risk Assessment

Appendix E: Fire Behavior Modeling Documentation or Empirical Documentation

Appendix F: Smoke Management Plan and Smoke Modeling Documentation (Optional)

Appendix A: Vicinity Map

Insert your vicinity maps here. Refer to Element 4D in the *Interagency Prescribed Fire Planning and Implementation Procedures Guide*, PMS 484, to fill out this appendix.

Appendix A: Project (Ignition Units) Maps

Insert your project (ignition unit) map(s) here. Refer to Element 4D in the *Interagency Prescribed Fire Planning and Implementation Procedures Guide*, PMS 484, to fill out this appendix.

Appendix A: Significant or Sensitive Features: (Optional) Maps

Insert your significant or sensitive feature map(s) here. Refer to Element 4D in the *Interagency Prescribed Fire Planning and Implementation Procedures Guide*, PMS 484, to fill out this appendix.

Appendix A: Fuels or Fuel Model: (Optional) Maps

Insert your fuel or fuel model map(s) here. Refer to Element 4D in *the Interagency Prescribed Fire Planning and Implementation Procedures Guide*, PMS 484, to fill out this appendix.

Appendix A: Smoke Impact Areas: (Optional) Maps

Insert your significant or sensitive feature map(s) here. Refer to Element 4D in *the Interagency Prescribed Fire Planning and Implementation Procedures Guide*, PMS 484, to fill out this appendix.

Appendix B: Technical Reviewer Checklist

Fill out this checklist based on the guidance provided in the Technical Review section in the Interagency Prescribed Fire Planning and Implementation Procedures Guide, PMS 484.

Rate each element in the following table with an "S" for Satisfactory or "U" for Unsatisfactory. Use Comment field as needed to support the element rating.

PRESCRIBED FIRE PLAN ELEMENTS	RATING	COMMENTS
1. Signature page		
2. A. Agency Administrator Ignition Authorization, PMS 485		
2. B. Prescribed Fire GO/NO-GO Checklist, PMS 486		
3. Complexity Analysis Summary		
4. Description of Prescribed Fire Area		
5. Objectives		
6. Funding		
7. Prescription: Prescription Narrative and Prescription Parameters		
8. Scheduling		
9. Pre-Burn Considerations and Weather		
10. Briefing		
11. Organization and Equipment		
12. Communication		
13. Public and Personnel Safety, Medical		
14. Test Fire		
15. Ignition Plan		
16. Holding Plan		
17. Contingency Plan		
18. Wildfire Declaration		
19. Smoke Management and Air Quality		
20. Monitoring		
21. Post-Burn Activities		
Appendix A: Maps		
Appendix C: Complexity Analysis		
Appendix D: Agency-Specific Job Hazard Analysis or Risk		
Appendix E: Fire Behavior Modeling Documentation or Empirical		
Documentation		
Appendix F: Smoke Management Plan and Smoke Modeling		
Documentation (Ontional) Other		

Approval is recommended subject to the completion of all requirements listed in the comments section, or on the Prescribed Fire Plan.

Recommendation for approval is not granted. Prescribed fire plan should be re-submitted for technical review subject to the completion of all requirements listed in the comments section, or on the Prescribed Fire Plan.

Technical Reviewer Signature: ______ Qualification and Currency: _____

Date Signed:

Appendix C: Complexity Analysis

Please refer to Element 3: Complexity Analysis Summary in the *Interagency Prescribed Fire Planning and Implementation Procedures Guide*, PMS 484, and the procedures in *the Prescribed Fire Complexity Analysis Rating System Guide*, PMS 424, to fill out this appendix.

Appendix D: Agency-Specific Job Hazard Analysis or Risk Assessment

Please refer to your specific agency guidance to fill out this appendix.

Appendix E: Fire Behavior Modeling Documentation or Empirical Documentation

Refer to Element 7: Prescription, *in the Interagency Prescribed Fire Planning and Implementation Procedures Guide*, PMS 484, to fill out this appendix.

Appendix F: Smoke Management Plan and Smoke Modeling Documentation

(OPTIONAL)

Refer to the *Smoke Management Guide for Prescribed and Wildland Fire* (National Wildfire Coordinating Group, 2001) and Appendix B. Basic Smoke Management Practices in the *Interagency Prescribed Fire Planning and Implementation Procedures Guide*, PMS 484 to fill out this appendix.

Attachment G Examples of Oregon Smoke Management Accomplishment forms

Oregon Department of Forestry-Smoke Management Accomplishment Form

Notify the Oregon Department of Forestry at **541-947-3311 (Lakeview) or 541-883-5681 (Klamath Falls)**, **PRIOR** to burning, to obtain smoke management advisories, and as a courtesy to avoid fire suppression equipment and personnel being dispatched to your controlled bum. Advisories are also available @ <u>http://egov.oregon.gov/ODF/FIRE/fire.shtml#Smoke Management</u>

Please use this log to record your burn accomplishments each day you burn. **It** is required to report this information on a weekly basis if burning activity is occurring.

Mail, phone, fax Klamath Falls: Lakeview:	or bring into the office: 3200 Delap Road Klamath Falls, OR 97601 2290 North 4 ¹ / _h Street Lakeview, OR 97630	Phone: 541-883-5681 Phone: 541-947-3311	Fax: 541-883-5555 Fax: 541-947-3078
Landowner Name		tion/Permit #	

Date of Burn	Ignition Time	Acres Burned	Piled Tons Burned Within Unit	Landing Pile Tons Burned

Contractor**	ů		1:00 : IIE : M	≣ ⊻∎≣	HomeTown	Area of Operation	Contact	Phone	Address
Bar Seven A	v'	v'	v'	v'	Redmond	Oregon	Binny Skidgel	541-548-4747	!060 SE Lake Road – PO Box 890 Redmond, OR 97756
Bar Trucking		./	./		John Day	Oregon	Tim Nelson	541-910-0621	P9 Box 388, John Day, OR 97845
Better Bark & More		v'	v'		Toledo	1-5 Corridor	Zack Dahl	541-336-21 51	5441 U.S. 20, Toledo, OR 97391
Biomass Harvesting LLC	v'	v'	./		Banks	50-100 miles of Banks	Harve Dethlefs	503-324-2422 503-720-6589	120 N. Main, Banks, OR 97106
FCO Inc		v'	v'		Bend	Eastern OR / WiL Vly	Wade Fagen	541-382-4997	1328 Seward Ave, Bend, OR 97701
Forest Energy Group, LLC	v'	v'	v'	v'	Central Point	Roseburg and south / Lakeview and west	Jack LeRoy	541-664-3476 541-840-1444	4953 Glen Echo Way, Central Point, OR97502
Gilbert Cutting and Contracting	./	./	./		Longview, WA	Oregon / Wash	Charles Gilbert, James Arndt	360-425-8078 541-413-1927	3211 Oak St, Longview, WA 98632
Godfrey & Yeager Excavating	v'	v'			Coos Bay	West side	Kevin Yeager	541-269-53 I6 541-297-7197	PO Box 719, Coos Bay, OR 97420
Huffman-Wright	./				Canyonville	Douglas, s. Lane, n. Jackson & Josephine	Butch Wright	541-839-4251 541-863-2894	PO Box 910, 3rd & Huffman St, Canyonville, OR 97417
James Forest Products	v'	v'			Coquille	Curry, Coos, Douglas	Chase Carlson, Ron Robinson	541-396-3726	PO Box 40, Coquille, OR 97423
Lane Forest Products		v'		v'	Eugene	West side	Oren Posner	541-345-9085	2111 Prairie Road, Eugene, OR 97402
MarkGwillim	v'				Monroe	McMinnville to Roseburg	MarkGwillim	541-953-6235	PO Box 518, Monroe, OR 97456 .
McFarlane's Bark		./	v'	v'	Milwaukie	Oregon / Wash	Dan McFarlane	503-659-4240	13345 SE Johnson Rd, Milwaukie, OR 97222
Melcher Logging	v'				Sweet Home	depends on job	Scott Melcher	541-367-3232	1328 Clark Mill Road, Sweet Home, OR97386
Miller Timber Services	v'				Philomath	Oregon	Lee Miller, Dan Mase	541-929-2840	PO Box 638, 24745 Alsea Hwy, Philomath, OR 97370
Pacific Biomass	v'	v'	./	./	Lebanon	Wil.VIy I Snow Peak Area / Central OR	Ryan Wolfenburger	541-258-7188 541-979-8007	PO Box 2259, Lebanon, OR 97355
Pacific Hog		./	V'		Yamhill	Oregon	Carl Greenlund	503-871-3331	PO Box 57, Yamhill, OR 97148
PJF, Inc		./			Roseburg	Douglas County	Paul Fenter	541-863-7847 541-580-2685	2400 Clarks Branch Rd, MyrtleCreek, OR 97457
Quicksilver Contracting	v'	v'	v'		Bend	Eastern OR / WiL Vly	John Williams	541-382-3653 541-419-9446	64682 Cook Avenue #99, Bend, OR 97701-8465
Rexius Forest Products		./		v'	Eugene	200 miles of Eugene	Jack Hoek	541-335-8008	1275 Bailey Hill Rd, PO 22838, Eugene, OR 97402
S & H Landscape & Recycling		v'	v'	./	Tualatin	Oregon	Casey Stroupe	503-638-1011	20200, SW Stafford Rd, Tualatin, OR 97062
T2	v'	./	./	./	Sweet Home	Oregon	Steve Lawn	541-913-8681	44501 Wiley Creek Dr, Sweet Home, OR 97386-9767
Trails End Recovery, Inc.		v'	v'	v'	Warrenton	Oregon	Dean Larson Bud Van Norman,	503-861-6030 503-741-0376	34661 Airport Ln, Warrenton, OR 97146-7402
Custom Excavating)								541-660-4665	

Biomass Contractors *

* No endorsement or recommendation is implied in providing this information. When choosing any contractor: verifY documentation, check referrals, and evaluate previous we **Contractors** to change information or to be included on this list please call: (541) 440-3412 ext 172

OREGON SMOKE MANAGEMENT REPORTING SYSTEM CODING SHEET PART ONE, PAGE 1

Date Unit Number District/ Owner Name Owner FPF No. Sale Name Sale Unit Township Range Sec. County Distance SPZ Acres in Cutting Harvest (FACTS #) entered Forest (optional) ship (Opt) (optional) No. No. Unit Date Diameter from SSRA (optional) ID (optional) 3 1 2 4 5 6 7 8 9 12 13 14 15 16 10 11 Method Landing or R/W Acres Elev. Slope % Duff Type of Burn Species Landing Other Piled 0-1/4" 1⁄4-1" 1-3" Fuel 3-9" 9-20" 20+" Reason & R/W of Fuel Fuel Fuel Fuel per per Acre Fuel Fuel per Fuel per for Burn Depth Acres Tons Load **Pile Tons** Acre Acre Acre per per Acre * Acre 25 25 22 17 18 19 20 21 23 24 26 27 28 29 30 31

Forest/District:

Fee Structure:

Agency: ____

Registration (All units) \$0.50/acre Landing/ROW Only \$0.50/acre Broadcast/In-unit piles after landings \$2.60/acre Broadcast/In-unit piles w/o landings \$3.10/acre 20180123-5100) FERC PDF (Unofficial) 1/23/2018 2:12:09 ΡM

Minimum fee = \$30

OREGON SMOKE MANAGEMENT REPORTING SYSTEM CODING SHEET Part 2 and Part 3, Page 1

AGENCY:						FOREST	I/DISTRICT			:::	=_===_	=_		
PART2		NED BURI							ACCOMPL					
Date entered (optional)	Unit Number (FACTS#)	District/ PI Forest [ID		Acres Planned	Landing Pile Tons	y Unit Pile Tons	Best/ Underburn Tons/Acre	Unit Nui (FACTS			f Ignition Time	Landing R-0-W Acres Burned	/ Landing d RJWTon Burned	s Acres Burned
-	1	2 clQ <j000<< td=""><td>3 4</td><td>5)00000</td><td>6)00000(</td><td>7</td><td>8 _)Q9<_</td><td>1 xjooo000</td><td>2</td><td>3 xxxxxx</td><td>4</td><td>5 xxxx</td><td>6)000000</td><td>7</td></j000<<>	3 4	5)00000	6)00000(7	8 _)Q9<_	1 xjooo000	2	3 xxxxxx	4	5 xxxx	6)000000	7
											I			

OREGON SMOKE MANAGEMENT REPORTING SYSTEM CODING SHEET Part 3(cont.),Page 2

Enter for Broadcast and Underburn Only

					1										
Unit Pile	BcsUUbrn	Ignition	Ignition	Rapid	WX	10-Hr	1000-	1000-Hr	Number	Air	Rei.	Wind	Wind	Snow	Remarks (optional)
Tons	Tons per	Our.	Method	Ignition	Station	Fuel	Hr Fuel	Moist	Days	Temp	Humidity	Dir.	Speed	off	
Burned	Acre			(YIN)	Used	Moist	Moist	Method	Since Sig.		-		(mph)	Month	
	Burned								Rain						
8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	(Not entered in data system)
)00000(XXX	XXX	Х	Х	XXXX	XX	XX	Х	XXX	XXX	XXX	XX	XX	XX	

							EMENT UNIT INF			
D):									
FOREST ID:	721 CB	722 BR	723 _{GB}					NOTIFICATION#:	(1111-740#	#)
LANDOWNER			-			COUNTY:		FU	EL SPECIES:	
OPERATOR									FUEL LOAD:	
OWNERSHIP	:				Bion		Ν		ACRES	TONS
FPF NO.						-		LANDING A	CRES/TONS:	
SALE NAME	:						,≡,		PILE TONS:	
SALE UNIT NO	0							- BDCST AC — — — —		
TWP: OS		- OW SE	EC:					PILEAC		
ADD'L LEGAL:	_						PE:		1.1-3"/ACRE:	
LATITUDE.	Ţ				D				3.1-9"/ ACRE:	
LONGITUDE	:						PE:	-	9.1-20"/ACRE	
	CON FACT 30%	BURN TONS 0	CON FACT 25%	BURN TONS 0	CON FACT 20%		CON FACT	D	20" +/ACRE TAL TONS!AC: UFF TONS!AC:	
	0.38 0.16 0.08	0 0 0.00 0.00 0.00	0.59 0.26 0.13	0 0.00 0.00 0.00	0.70 0.18				L BURN TONS: RN REASON:	B
TOTAL TONS/AC DUFF TONS/AC TOTAL BURN TONS	z. 7	0 0 0	0 8 8	0 0 0	0 9 9	0 0 0		BURN F	EE EXEMPT:	N
				ι	JNIT ACCOM	IPLISHMEN	INFORMATION	1		
PLANNED							ACRES			TONS
PLANNED							ACRES			TOI

Reviewed by (initial):

SMK MGT

* If Exempt Status (Fee Status) is coded "N", attach Fee Registration form prior to submitting to Coos Bay Dispatch office.

Tracking:

0 0 20180123-5100 FERC

PDF (Unofficial) 1/23/2018

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Attachment H Prescribed Fire Plan for BLM and USFS

Appendix B: Prescribed Fire Plan Template

A standardized, reproducible template form for the Prescribed Fire Plan development process is included in this appendix. A standardized format is provided for the Prescribed Fire Plan in PDF. An electronic version editable in Word is also available. Users should prepare the plan using the electronic version.

PRESCRIBED FIRE PLAN

ADMINISTRATIVE UNIT(S):	
PRESCRIBED FIRE NAME:	
PREPARED BY:	
	J
TECHNICAL REVIEW BY:	
COMPLEXITY RATING:	
MINIMUM RXB REQUIREMENT:	
APPROVED BY:Agency Administrator	DATE:

ELEMENT 2: AGENCY ADMINISTRATOR GO/NO-GO PRE-IGNITION APPROVAL CHECKLIST

Instructions: The Agency Administrator's GO/NO-GO Pre-Ignition Approval is the intermediate planning review process (i.e. between the Prescribed Fire Complexity Rating System Guide and Go/No-Go Checklist) that should be completed before a prescribed fire can be implemented. The Agency Administrator's Go/No-Go Pre-Ignition Approval evaluates whether compliance requirements, Prescribed Fire Plan elements, and internal and external notifications have been or will be completed and expresses the Agency Administrator's intent to implement the Prescribed Fire Plan. If ignition of the prescribed fire is not initiated prior to expiration date determined by the Agency Administrator, a new approval will be required.

YES	NO	KEY ELEMENT QUESTIONS
		Is the Prescribed Fire Plan up to date? <i>Hints: amendments, seasonality.</i>
		Will all compliance requirements be completed? Hints: cultural, threatened and endangered species, smoke management, NEPA.
		Is risk management in place and the residual risk acceptable? Hints: Prescribed Fire Complexity Rating Guide completed with rational and mitigation measures identified and documented?
		Will all elements of the Prescribed Fire Plan be met? Hints: Preparation work, mitigation, weather, organization, prescription, contingency resources
		Will all internal and external notifications and media releases be completed? <i>Hints: Preparedness level restrictions</i>
		Will key agency staff be fully briefed and understand prescribed fire implementation?
		Are there any other extenuating circumstances that would preclude the successful implementation of the plan?
		Have you determined if and when you are to be notified that contingency actions are being taken? Will this be communicated to the Burn Boss?
		Other:

_____ Date: _____ Date: _____

Approved by:

Date: Agency Administrator

Approval expires (date):

ELEMENT 2: PRESCRIBED FIRE GO/NO-GO CHECKLIST

A . Has the burn unit experienced unusual drought conditions or does it contain above normal fuel loadings which were not considered in the prescription development? If <u>NO</u> proceed with checklist below, if <u>YES</u> go to item B.	YES	NO
B . Has the prescribed fire plan been reviewed and an amendment and technical review been completed; or has it been determined that no amendment is necessary? If <u>YES to any</u> , proceed with checklist below, if NO, STOP.		

YES	NO	QUESTIONS
		Are ALL pre-burn prescription parameters met?
		Are ALL smoke management specifications met?
		Has ALL required current and projected fire weather forecast been obtained and are they favorable?
		Are ALL planned operations personnel and equipment on-site, available, and operational?
		Has the availability of ALL contingency resources been checked and are they available?
		Have ALL personnel been briefed on the project objectives, their assignment, safety hazards, escape routes, and safety zones?
		Have all the pre-burn considerations identified in the Prescribed Fire Plan been completed or addressed?
		Have ALL the required notifications been made?
		Are ALL permits and clearances obtained?
		In your opinion, can the burn be carried out according to the Prescribed Fire Plan and will it meet the planned objective?

If all the questions were answered "YES" proceed with a test fire. Document the current conditions, location, and results

Burn Boss

Date

Г

PRESCRIBED FIRE NAME				
ELEMENT	RISK	POTENTIAL CONSEQUENCE	TECHNICAL DIFFICULTY	
1. Potential for escape				
2. The number and dependence of activities				
3. Off-site Values				
4 On-Site Values				
5. Fire Behavior				
6. Management organization				
7. Public and political interest				
8. Fire Treatment objectives				
9 Constraints				
10 Safety				
11. Ignition procedures/ methods				
12. Interagency coordination				
13. Project logistics				
14 Smoke management				

ELEMENT 3 COMPLEXITY ANALYSIS SUMMARY

COMPLEXITY RATING SUMMARY		
	OVERALL RATING	
RISK		
CONSEQUENCES		
TECHNICAL DIFFICULTY		
SUMMARY COMPLEXITY DETERMINATION		
RATIONALE:		

ELEMENT 4: DESCRIPTION OF PRESCRIBED FIRE AREA

A. Physical Description

- 1. Location:
- 2. Size:
- 3. Topography:
- 4. Project Boundary:

B. Vegetation/Fuels Description:

- 1. On-site fuels data
- 2. Adjacent fuels data

C. Description of Unique Features:

ELEMENT 5: OBJECTIVES

A. Objectives:

- 1. Resource objectives:
- 2. Prescribed fire objectives:

ELEMENT 6: FUNDING:

- A. Cost:
- **B.** Funding source:

ELEMENT 7: PRESCRIPTION

A. Environmental Prescription:

B. Fire Behavior Prescription:

ELEMENT 8: SCHEDULING

A. Ignition Time Frames/Season(s):

B. Projected Duration:

C. Constraints:

ELEMENT 9: PRE-BURN CONSIDERATIONS AND WEATHER

A. Considerations:

- 1. On Site:
- 2. Off Site

B. Method and Frequency for Obtaining Weather and Smoke Management Forecast(s):

C. Notifications:

ELEMENT 10: BRIEFING

Briefing Checklist:

Burn Organization Prescribed Fire

Objectives Description of

Prescribed Fire Area Expected

Weather & Fire Behavior

Communications

Ignition plan

Holding Plan

Contingency Plan

Wildfire Conversion

Safety and Medical Plan

Aerial Ignition Briefing (if Required)

ELEMENT 11: ORGANIZATION AND EQUIPMENT

- A. Positions:
- **B.** Equipment:
- C. Supplies:

ELEMENT 12: COMMUNICATION

A. Radio Frequencies

- 1. Command Frequency(s):
- 2. Tactical Frequency(s):
- 3. Air Operations Frequency(s):

B. Telephone Numbers:

ELEMENT 13: PUBLIC AND PERSONNEL SAFETY, MEDICAL

- A. Safety Hazards:
- **B.** Measures Taken to Reduce the Hazards:
- C. Emergency Medical Procedures:
- **D.** Emergency Evacuation Methods:
- E. Emergency facilities:

ELEMENT 14 TEST FIRE

A. Planned location:

B. Test Fire Documentation:

- 1. Weather conditions On-Site:
- 2. Test Fire Results:

ELEMENT 15: IGNITION PLAN

A. Firing Methods (including Techniques, Sequences and Patterns):

- **B.** Devices:
- **C. Ignition Staffing:**

ELEMENT 16: HOLDING PLAN

- A. General Procedures for Holding:
- **B.** Critical Holding Points and Actions:
- C. Minimum Organization or Capabilities Needed:

ELEMENT 17: CONTINGENCY PLAN

- A. Trigger Points:
- **B.** Actions Needed:
- C. Additional Resources and Maximum Response Time(s):

ELEMENT 18: WILDFIRE CONVERSION

A. Wildfire Declared By:

- **B.** IC Assignment:
- C. Notifications:
- **D.** Extended Attack Actions and Opportunities to Aid in Fire Suppression:

ELEMENT 19: SMOKE MANAGEMENT AND AIR QUALITY

A. Compliance:

- **B.** Permits to be Obtained:
- C. Smoke Sensitive Receptors:
- **D.** Potential Impacted Areas:
- E. Mitigation Strategies and Techniques to Reduce Smoke Impacts:

ELEMENT 20: MONITORING

- A. Fuels Information Required and Procedures:
- B. Weather Monitoring (Forecasted and Observed) Required and Procedures:
- C. Fire Behavior Monitoring Required and Procedures:
- D. Monitoring Required To Ensure That Prescribed Fire Plan Objectives Are Met:
- E. Smoke Dispersal Monitoring Required and Procedures:

ELEMENT 21: POST-BURN ACTIVITIES

Post-Burn Activities That Must Be Completed:

APPENDICES

- A. Maps: Vicinity and Project
- **B.** Technical Review Checklist
- C. Complexity Analysis
- D. Agency Specific Job Hazard Analysis
- E. Fire Behavior Modeling Documentation or Empirical Documentation (unless it is included in the fire behavior narrative in Element 7; Prescription)

A: MAPS

1. Vicinity Map:

2. Project Map:

	1	
PRESCRIBED FIRE PLAN ELEMENTS:	S /U	COMMENTS
1. Signature page		
2. GO/NO-GO Checklists 3. Complexity Analysis Summary		
3.Complexity Analysis Summary4.Description of the Prescribed Fire		
4. Description of the Prescribed File		
5. Objectives		
6. Funding		
7. Prescription		
8. Scheduling		
9. Pre-burn Considerations and Weather		
10. Briefing		
11. Organization and Equipment		
12. Communication		
13. Public and Personnel Safety, Medical		
14. Test Fire		
15. Ignition Plan		
16. Holding Plan		
17. Contingency Plan		
18. Wildfire Conversion		
19. Smoke Management and Air Quality		
20. Monitoring		
21. Post-burn Activities		
Appendix A: Maps		
Appendix C: Complexity Analysis		
Appendix D: Agency specific job hazard analysis		
Appendix E: Fire Prediction Modeling Runs or Empirical Evidence		
Other		
S = Satisfactory U = Unsatisfactory		

B: TECHNICAL REVIEWER CHECKLIST

Recommended for Approval: _____ Not Recommended for Approval: _____

Technical Reviewer

Qualification and currency (Y/N)

Date

Approval is recommended subject to the completion of all requirements listed in the comments section, or on the Prescribed Fire Plan.

C: COMPLEXITY ANALYSIS

D: AGENCY SPECIFIC JOB HAZARD ANALYSIS

E: FIRE BEHAVIOR MODELING DOCUMENTATION OR EMPIRICAL DOCUMENTATION

Appendix S

Recreation Management Plan



Pacific Connector Gas Pipeline, LP

Recreation Management Plan

Pacific Connector Gas Pipeline Project

January 2018

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	Recreation Impacts	
2.1	Recreation Areas	. 3
3.0	Mitigation	
3.1	Specific Mitigation for Recreation Sites/Types	. 6

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List of Attachments

Attachment	1	Figures

- Figure 1 Typical Rock/Slash OHV Barriers Figure 2 Typical Trench/Earthen Berm Barrier Specifications Figure 3 Examples of Signs that Could Be Posted to Discourage OHV Traffic on the Construction Right-of-Way

1.0 INTRODUCTION

The public lands and waters crossed by the Pacific Connector Gas Pipeline Project (Pipeline or Pipeline Project) provide users with many opportunities for group and individualized forms of recreation. These include, but are not limited to: harvesting non-timber forest products, sightseeing, hunting, fishing, camping, cross-country skiing, mountain biking, snowmobiling and off-highway vehicle (OHV) use. Where the Pipeline Project is located on federal lands managed by the USDA Forest Service (Forest Service) and USDI Bureau of Land Management (BLM), Pacific Connector Gas Pipeline, LP (PCGP) recognizes the importance of maintaining safe access to outdoor recreation areas. In some cases, controlling access to the right-of-way to facilitate restoration activities and prevent damage to other resources is also a major concern. In addition the Coos Bay Estuary, crossed by the Pipeline (using two horizontal directional drills), and Kentuck Inlet support boating and other water-related recreation. To aid in maintaining recreation opportunities, limiting right-of-way access, and preventing user conflict on public lands and in the waterway within the Pipeline Project area, PCGP has prepared this Recreation Management Plan (Plan).

1.1 Purpose

The purpose of the Plan is to assist in the management of existing recreation resources on lands within the Pipeline Project area or impacted by the Pipeline. This Plan establishes goals for managing recreation in the vicinity of the Pipeline and describes actions to provide continued safe access, prevent resource damage, and to avoid potential user conflict.

1.2 Goals

- <u>Goal 1: Provide for Safe and Continual Access to the Pacific Crest National Scenic Trail</u> throughout the construction and revegetation phases, to the extent practicable.
- <u>Goal 2: Minimize Potential User Conflicts at Trail Intersections</u> used by hikers, skiers, snowmobilers, OHVs, and others.
- <u>Goal 3: Prevent Unauthorized OHV Use</u> on federal land where the Pipeline right-of-way could create additional access points.
- Goal 4: Provide Boaters and Anglers Safe Access within the Coos Bay Estuary.
- <u>Goal 5: Minimize Recreation Access Disruption</u> on public lands.

2.0 **RECREATION IMPACTS**

The impacts on a particular recreational activity and specific public land or waterway will depend on the timing of construction and the recreational activity. However, the various forms of recreation typical of the Pipeline Project area will not be permanently impacted by construction and operation of the Pipeline. During construction there would be temporary land and water access restrictions to recreationists on the construction right-of-way for safety reasons. Because construction and restoration along the proposed alignment will span a period of two to three years, there may be areas that remain off limits to recreationists until restoration is complete, revegetation has established, and the construction right-of-way is stabilized.

Temporary access restrictions would be dealt with on a case-by-case basis and in consultation with agency recreation specialists and user groups.

Extended periods of solitude or peaceful off-road camping, hiking or sightseeing in dispersed recreation sites (i.e., Peavine Camp, Project Camp, Brown Mountain Shelter, or dispersed recreation camps) within the vicinity of construction could be temporarily disrupted by the noise and dust from heavy equipment use and traffic. Appendix B to the Plan of Development (POD) provides PCGP's Air, Noise and Fugitive Dust Control Plan that describes the BMPs that would be utilized to control noise emissions and fugitive dust in more detail. Table 2-1 provides the major recreation areas in the Pipeline Project area.

Milepost	Recreation Site/Area	Recreation Type	Agency ¹	Direct Impacts
0.00-0.3	Oregon Dunes National Rec. Area	Hiking, OHVs, Sightseeing	FS-S	No
0.3-3.00	Coos Bay Estuary	Boating, Fishing, Boat Launch	ODFW, OPRD	No (HDDs)
167.86	Pacific Crest National Scenic Trail	Skiing, Hiking, Horses	FS-RRS	Yes
158.50-168.90	Brown Mountain Trail Network	Snowmobiles, Skiing, OHVs, Hiking, Horses	FS-RRS, FW	Yes
¹ FS=Forest Service; S=Siuslaw; ODFW=Oregon Dept. of Fish and Wildlife; OPRD=Oregon Parks and Recreation Dept; RRS=Rogue River-Siskiyou; FW=Fremont-Winema				

Table 2-1Major Recreation Areas in the Pipeline Project Area

Forest Service and BLM access roads in proximity to the Pipeline will experience short-term traffic increases during construction, and some roads may be temporarily closed to ensure safe transport of construction equipment to and from the construction right-of-way, as well as to facilitate construction in areas where the Pipeline is aligned within existing roads. As outlined in Section 3.1 (Notifications) of the Transportation Management Plan (see Appendix Y to the POD), PCGP will ensure that construction schedules are communicated to minimize potential access impacts.

During operations, the cleared right-of-way could be utilized by recreational users, including hikers, equestrians, skiers, and mountain bikers, especially where the corridor crosses existing roads and is easily visible and accessible. Although motorized travel would be discouraged and prevented by barricades suited to the particular area, other users may access the corridor and utilize it to connect with roads and trails. In higher elevations during the winter months, the pipeline corridor may be used by cross country skiers and possibly snowmobilers, depending on the effectiveness of the barricades and the preferences of the land owner/manager. PCGP is inclined to allow incidental use of the right-of-way as long as it does not result in resource damage, erosion, and/or conflict with land owner/manager preferences.

PCGP will make every effort to notify the agency(ies) at least seven (7) days in advance of road and trail closures. District recreation managers from both the Forest Service and BLM will be contacted, as necessary. In some instances, unforeseen schedule changes may limit the seven-day notice goal; in such cases, a minimum 48-hour notice will be provided. Mitigation measures are detailed in Section 3.0 below.

2.1 Recreation Areas

<u>Coos Bay Estuary.</u> Clamming, crabbing, and fishing are common year-round recreation activities in Coos Bay. Canoeing, kayaking, and boating are also common in the sloughs, feeder streams, and tidal waters of the bay.

The Coos Regional Trails Partnership, a consortium of land management agencies and economic development groups developed a brochure that maps Coos Bay's water trails for kayakers and other paddlers. Portions of a water trail is in proximity to the proposed alignment. The Coos Bay Trail starts near North Point, at the south end of the Conde B. McCullough Memorial Bridge (SH 101) (however, the nearest boat ramp is to the south, at the California Avenue Boat Ramp). From the bridge, the trail heads to the east, and then south along the western side of Coos Bay. The Pipeline would cross this water trail approximately 0.35 mile to the southeast of the water trail starting point (at North Point). However, Coos Bay (and the water trail) would be crossed using a horizontal directional drill (HDD). At Kentuck Inlet, the HDD would exit in uplands outside of the open waters of the inlet. Therefore, there would be no impacts to boaters using the water trail or in eastern Coos Bay.

Similarly, from Jordan Cove to the North Point area, an HDD would be used to cross Coos Bay from MPs 0.29 to 0.9. While this part of Coos Bay does not have a designated water trail, this is an active shipping channel area with commercial and recreational boat use. No impacts to boaters would occur from the HDD operations from Jordan Cove to North Point.

There is also a popular fall Chinook salmon fishery throughout the southern portion of Coos Bay and in the Coos River. Anglers fish from late August through late October and would not be affected by Project activities because the alignment has been routed away from this area and the Coos River at MP 11.13R would be crossed using a Horizontal Directional Drill.

<u>Blue Ridge Trail System.</u> This 1,405-acre BLM recreation area (Extensive Recreation Management Area-ERMA) is within the BLM's Coos Bay District. It was designated for hiking, biking, equestrian, and motorcycle trails. This area supports approximately 12 miles of trails, but these trails interconnect with a large network of logging roads which can also be utilized. Active timber harvest and management operations occur in this area; as such, road closures occur intermittently for logging operations. The Pipeline would cross this ERMA from MP 19.92 to MP 22.11 for approximately 2.2 miles. In addition, PCGP would utilize several of the existing roads in this ERMA for construction access.

The Pipeline would cross three Blue Ridge trails. During construction these trail segments would need to be closed, similar to when logging activities occur in the area, and there will be increased traffic volumes on existing roads. Travelers may experience increased traffic congestion and short delays, and access to some of the trails may be precluded. After construction is complete, PCGP would restore trail alignments affected by the Pipeline.

<u>Pacific Crest National Scenic Trail.</u> The Pipeline crosses the Pacific Crest National Scenic Trail (PCT) at approximately MP 167.8. This section of the trail is used year-round by hikers, equestrian users, cross-country skiers, and snow-shoers. The PCT users could be temporarily impacted by construction and might experience short-term (potentially 48 hours or less) delays and/or temporary detours at the trail-pipeline intersection.

<u>Off-Highway Vehicles and Right-of-Way Access.</u> The right-of-way could increase unauthorized OHV, snowmobile, and dispersed motorized access and its associated potential resource

impacts. Locations where unauthorized access could be exacerbated by the right-of-way include: the area around the PCT near MPs 167.0-169.0; the Camel Hump area between MPs 123 and 128; the Obenchain area between MPs 132 and 137.2; and along the Clover Creek Road between MPs 168.9 and 175.4 (on Forest Service-administered land), MPs 176.2 to 177, and MPs 179.6 to 179.7 (on BLM lands). In the Obenchain area, four-wheel drive vehicles have caused extensive resource damage, and there is concern that the right-of-way might create opportunities for more access and impacts. The Camel Hump and Obenchain areas are located within the Jackson Access and Cooperative Travel Management Area, which encompasses both private and BLM lands, and is generally closed to motorized use from mid-October through April. Because the Pipeline will closely parallel Clover Creek Road for 18 miles on public and private lands, the right-of-way clearing could potentially see increased unauthorized OHV use, without appropriate barriers and mitigation.

<u>Brown Mountain Multi-Use Trails.</u> In addition to summer recreation, the PCT and surrounding/connecting trails form a popular cross-country ski trail system during the winter. Snowmobile use is also a popular winter activity in the general area around MPs 160.0-170.0. Due in part to a housing development at Clover Creek Road, land managers have noted that snowmobile users have been accessing and crossing the PCT between Dead Indian Memorial Road and Forest Road (FR) 700. The Pipeline Project could potentially contribute to this problem without appropriate mitigation.

Lake of the Woods. This popular lake in the Fremont-Winema National Forest hosts fishing, camping, and various forms of boating and water-based recreation during summer months. A private resort and marina on the lake provides seasonal lodging and food service. During the winter, cross country skiing and snowmobiling are common activities in the area. Lake of the Woods is a potential source for water used in the Pipeline Project's hydrostatic testing requirements. The proposed withdrawal would likely occur in late summer/fall. No road or recreation facility closures are anticipated for water withdrawals and transport. The water would be withdrawn from the east side of the lake near the Sunset Campground and boat launch, and transported using tanker trucks on Forest Service Road FS 3700240 and Dead Indian Road (see Drawing 3430.31-Y-Map 27a of the Transportation Management Plan included as Appendix Y to the POD). As noted in Section 3.1, once PCGP has selected a Contractor and the Contractor has assessed the water withdrawal requirements, the Contractor will work through PCGP to submit a water withdrawal plan to the Forest Service to minimize recreational user impacts and encumbrances at the lake.

Fish Lake. Located on the Rogue River-Siskiyou National Forest near the crest of the Cascades, this scenic lake provides year-round recreational opportunities. The Fish Lake Recreation area provides Forest Service campgrounds, picnic areas, a boat-launch ramp, as well as a privately-operated resort with cabins, a trailer park, additional camp sites, food service, and a marina. During the winter, ice fishing, cross-country skiing and snowmobiling are common activities in the area. Fish Lake is a potential source for water used in for the Pipeline Project's hydrostatic testing requirements. The proposed withdrawal would likely occur in late summer/fall. No road or recreation facility closures are anticipated for water withdrawals and transport. The water would be potentially withdrawn from two locations; with one location located at the lower end of the lake near the dam and the second at the upper end of the lake near Fish Lake Campground and the boat ramp. Water would be transported using tanker trucks on Forest Service Roads 2800700 and 2800705 for access near the Dam, and Forest Service Road 2800800 for access near the Campground (see Drawing 3430.31-Y-Map 025a of the Transportation Management Plan included as Appendix Y to the POD). As noted in Section 3.1, once PCGP has selected a Contractor and the Contractor has assessed the water

withdrawal requirements, the Contractor will work through PCGP to submit a water withdrawal plan to the Forest Service to minimize recreational user impacts and encumbrances at the lake.

3.0 MITIGATION

Generally, recreation mitigation on federal lands will be ongoing through all phases of construction and will consist of trail barriers, signage, agency and user group consultation, and adaptive construction techniques. Detours will be established for trails, if necessary, and PCGP will coordinate with the appropriate agencies to minimize construction-related impacts. If unanticipated recreational impacts occur during construction or operations, the appropriate land managing agency will notify and request that PCGP address/mitigate the impact. Construction near these areas will be short-term in nature. Following construction, all disturbed areas will be restored to pre-construction contours and recreational activities will continue unimpeded. Where practical, PCGP will design recreation resource mitigation measures in ways that do not conflict with the area's visual resources. Pipeline operation activities will not be noticeable to recreationists, except in periodic cases of inspection and maintenance during the life of the Pipeline.

Where necessary during construction in areas of recreational use, PCGP will water roads and areas of active construction when site-specific conditions require dust suppression to minimize potential impacts associated with fugitive dust. Watering for fugitive dust abatement will be directed by PCGP's Environmental Inspectors (EIs) and will take into account recommendations and concerns raised by the federally-authorized representative on federally-managed land. The water for dust control will be acquired from an approved source. The Air, Noise and Fugitive Dust Control Plan (Appendix B to the POD) describes the Best Management Practices that will be employed to minimize fugitive dust. Overall, construction-related impacts to recreation will be minimized by:

- Not allowing construction workers to camp on federal lands;
- Continued coordination with each affected land management agency, as necessary, to finalize site-specific mitigation measures to address recreational land impacts; and
- Effective post-construction reclamation of the construction right-of-way as outlined in the Erosion Control and Revegetation Plan (ECRP) (see Appendix I to the POD).

After construction, pipeline monitoring methods will be conducted which will benefit vegetation restoration and discourage vehicle access. Specifically, where necessary, steep portions of the pipeline corridor should be posted closed to all vehicles. Successful revegetation efforts and the absence of vehicle tracks on these areas will help discourage unauthorized vehicle use by not attracting attention to "hill climbs." Monitoring-related impacts to recreation will be minimized by:

- Conducting inspections of pipeline sections on foot instead of by vehicle, where steep pipeline corridor sections are visible from nearby roads.
- Conducting vehicle monitoring only during dry conditions.

Descriptions of specific mitigation measures are detailed below. These measures are subject to change and could be expanded, substituted, or abandoned as a result of ongoing consultations with agency recreation specialists.

3.1 Specific Mitigation for Recreation Sites/Types

<u>Coos Bay.</u> Initial routes would have impacted recreational boater use in Coos Bay and in various inlets. With PCGP's proposed route (i.e., HDDs of Coos Bay), there will be no impact to water trails or boater traffic in the Bay.

Recreationists accessing beach and shoreline activities at the Coos Bay Shorelands Recreation Management Area and Oregon Dunes National Recreation Area would likely see some traffic impacts on Jordan Cove Road, Trans Pacific Lane, and on the other local roads near Jordan Cove. This would be due to mobilization of equipment, supplies, and workers to the Pipeline location at Jordan Cove; these traffic impacts, as related to pipeline construction, may last for up to two years. However, in this area pipeline construction and associated traffic would be occurring at the same time as the terminal construction activities, therefore traffic related to the pipeline would be unnoticeable with the larger volume of traffic associated with the terminal activities. Access would not be precluded to recreation sites in this area, but some delays are likely during some periods of construction.

<u>Pacific Crest National Scenic Trail Crossing.</u> To minimize impacts to trail users, PCGP has necked down the construction right-of-way from 95 feet to 75 feet in width for more than 300 feet on both sides of the trail. Additionally, at the request of the Forest Service, the alignment in the PCT area was designed with a "dog leg" to avoid a perpendicular crossing of the trail, thereby reducing visibility of the pipeline corridor for users. Construction of the trail crossing will also be completed as a "tie-in" so that trenching, pipe stringing, and installation activities do not interrupt trail users for extended periods. It is expected that construction of the trail tie-in would be completed within 48 hours or less to minimize potential impacts to trail users and reduce the need for trail detours. Additionally, PCGP will implement the following:

- Establish a roughed-in trail tread within 24 hours of construction crossing completion with temporary directional signs posted at each end of the crossing.
- Remediate trail to full design standards within two weeks (weather permitting) of the trail crossing construction.
- Install standard Nordic ski trail markers, as needed, post-construction.
- Provide as much advance notice as possible to the Forest Service District Ranger and the Pacific Crest Trail Association (PCTA) as to the estimated construction dates in the area of the trail.
- Notify the Forest Service District Ranger 48 hours in advance if any anticipated delays for PCT users would exceed one hour.
- Provide at least 7 days advance notice if the PCT needs to be detoured.
- Obtain Forest Service approval and install detailed signage for detour routes.
- Plan, if practicable, for PCT disruption outside of the trail's busiest hiking season (mid-July to early August).
- Use a combination of rocks, logs, slash, and gates to deter motorized vehicles and OHVs from gaining access to the PCT, in such a manner as to not adversely impact the area's visual resource qualities, to the extent practicable.

Upon completion of construction in the area, PCGP will revegetate the construction right-of-way using native trees (not within the 30 foot-operational easement), shrubs, and plants. Section 3.0

of the Aesthetics Management Plan – (Appendix A to the POD) describes additional measures to be used on federal lands for protecting and mitigating for visual resources. PCGP will coordinate with the Forest Service and the Pacific Crest Trail Association regarding the need for and location of trail detours.

Representatives of PCGP and the Forest Service conducted a site visit to the PCT in November 2016. The purpose of the site visit was to develop additional measures that could be implemented at the PCT crossing to minimize impacts and to shorten vegetative recovery to achieve a VQO of Modification within five years. Additional measures include:

- Identify trees along the edge of the construction right-of-way that can be saved from clearing, based on hazard tree and construction safety.
- Scallop adjacent edges of timber as directed by the Forest Service landscape architect.
- Salvage topsoil (duff and A horizon) to a depth of 12-inches along the trench line, segregate from spoil material, and replace during restoration.
- Minimize grading within the 75-foot construction right-of-way based on safety requirements. Stumps would be removed, or gridded as necessary to provide a safe equipment working plane.
- A 75-foot wide visual screen on either side of the trail would be replanted with nursery trees and shrubs within 6 days of final grading, dependent on seasonal planting constraints (and not within the 30 foot-operational easement). Replanting would be with mixed conifer species of differing age class per the USFS landscape plan and would include hydro-mulch seeding.
- Revegetate the remaining right-of-way with nursery trees and shrubs planted along the edges of the right-of-way in scalloped arrangement.
- Hydro-mulch seeding all disturbed soils.
- Place logs and LWD in the construction right-of-way as directed by the USFS landscape plan.
- A gravity drip irrigation system would be used, with a water source from the well at Brown Mountain Shelter, to improve replanting establishment.
- Replanting would occur if mortality exceeds 30 percent.

<u>Off-Highway Vehicle Control and Right-of-Way Access.</u> PCGP prefers to limit OHV use on the right-of-way to avoid problems with revegetation efforts, prevent potential erosion, avert user conflicts, and because it is typically the preference of the landowner. To minimize OHV access on the right-of-way, PCGP will install barriers at appropriate locations in coordination with the land management agencies or landowner. The proposed OHV barriers will be designed and constructed in a manner that attempts to prevent unauthorized motor vehicle/OHV use of and along the right-of-way. It has been PCGP's experience that unauthorized OHV trespass can be difficult to control in some heavy OHV use areas.

The need for OHV control measures will be assessed primarily where the right-of-way intersects roads, OHV trails, or other trails. These areas will be identified by the EI and/or authorized agency representative. PCGP will consult with the land management agencies for review and approval of site-specific designs for OHV control. All designs will meet agency standards, and, where applicable, will not conflict with visual resource management objectives or impact the area's visual resources.

To deter potential user conflicts and resource damage caused by unauthorized OHV use (including snowmobiles), PCGP will provide various natural and constructed control measures at select intersections of the right-of-way with road and trail crossings. These would include, but are not limited to the PCT area, the Camel Back, and Obenchain Road areas, Dead Indian Memorial Highway, FR 700, and along the Clover Creek Road. Where feasible, and depending on the site-specific conditions at the area of concern and management agency/landowner preferences, one or more of the following items may be used to control OHV access (see Figures 1 through 3 in Attachment 1 for typical diagrams of OHV control measures):

- Dirt/rock berms placed across the right-of-way, sometimes coupling as part of erosion control measures;
- Non-merchantable logs, slash and/or stumps strategically placed along the construction right-of-way as prohibitive barriers (see Figure 1);
- Large rocks and boulders partially buried along the right-of-way and at road crossings to block access but also positioned in such a manner as to not form an attractive OHV "obstacle course" (see Figure 1);
- At the request of the BLM and Forest Service, trench/earthen barriers would not be installed on federal lands. These types of barriers (see Figure 2) may be utilized on private lands at the direction of or where approved by the landowner.
- Signs (see Figures 3) and/or locked gates and fencing;
- Additional signing and gating needs within the Jackson Access and Cooperative Travel Management Area (Camel Hump and Obenchain areas) will be coordinated with the Oregon Department of Fish and Wildlife.
- Vegetative screens planted or transplanted to block and/or disguise the right-of-way;
- Salvaged woody debris (slash) scattered across the right-of-way to discourage OHV use;
- OHV barriers in sensitive viewsheds will be developed and installed in accordance with guidelines found in PCGP's Aesthetics Management Plan (see Appendix A to the POD); and/or
- Where necessary, OHV control structures would extend out beyond the right-of-way to prevent drive-around and would be built at an appropriate height to prevent passage.

Additionally, PCGP will establish a line of communication between the federal management agencies and landowners in the vicinity of Clover Creek Road, Dead Indian Memorial Highway, and FR 3720 in order to help prevent current and potential future snowmobile and OHV use on non-motorized trails in the area.

PCGP will coordinate with each affected land management agency during construction and restoration to finalize site-specific OHV control measures. Following construction, the effectiveness of the site-specific measures will be assessed in consultation with the land management agencies, on a periodic basis. Generally, these assessments will be made in conjunction with revegetation monitoring and in response to identified problem areas. Adjustments will be made to OHV control measures as indicated by such assessments. PCGP will be responsible for monitoring and managing unauthorized OHV use during the life of the Pipeline, will implement additional measures as necessary, and will continue to coordinate with

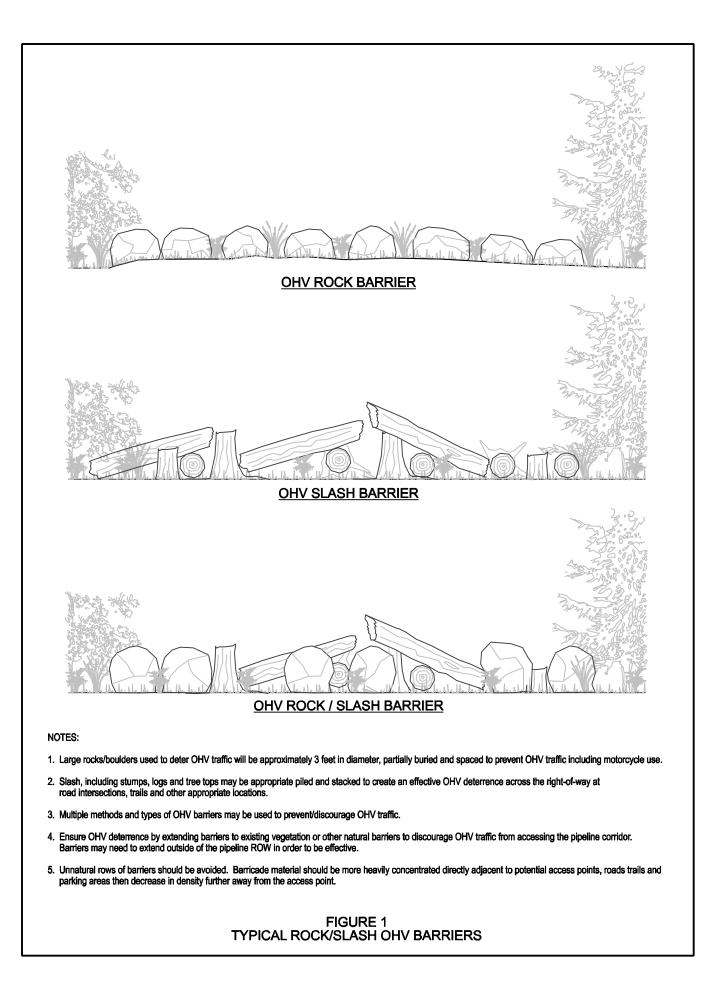
federal land management agencies during operations to ensure deterrence of unauthorized OHV use on the right-of-way.

<u>Brown Mountain Multi-Use Trails.</u> To help prevent potential user conflict, PCGP will provide OHV and snowmobile control measures, to the extent practicable and safe, at key right-of-way road and trail crossings as described above. These include the Dead Indian Memorial Highway, FR 700, and other appropriate locations. PCGP will engage in ongoing consultation and monitoring with local recreation groups and land managers during the construction phases and, if necessary, following construction to assess and modify the mitigation.

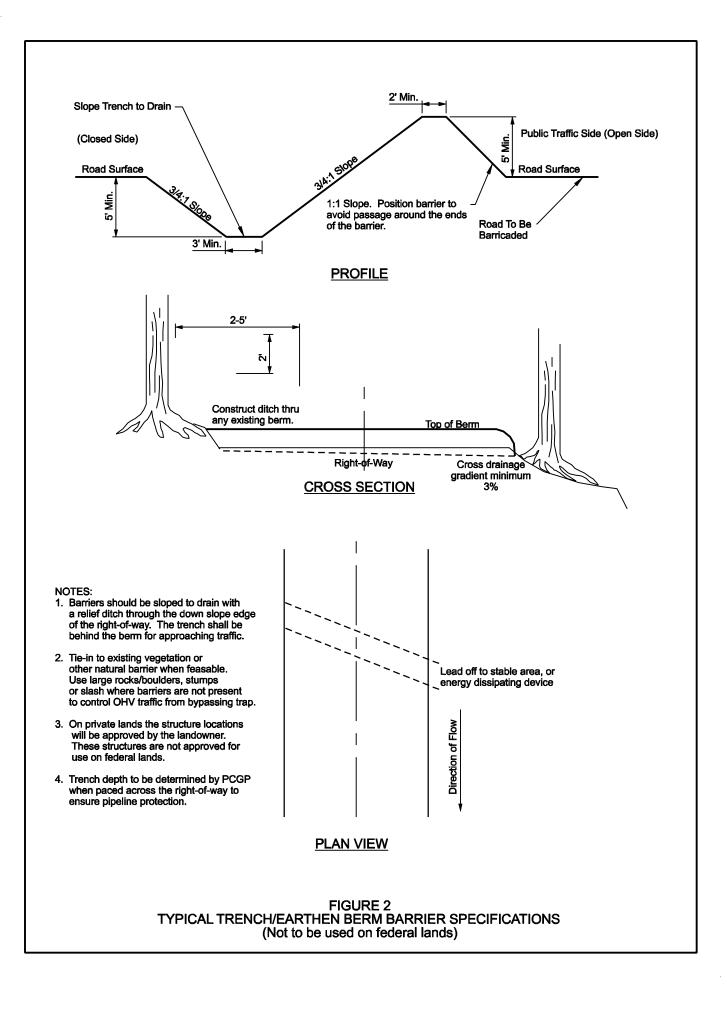
Lake of the Woods and Fish Lake Hydrostatic Test Water Withdrawals. Lake of the Woods and Fish Lake are potential sources of water for use in the Pipeline Project's hydrostatic testing requirements. The proposed withdrawals would likely occur in late summer/fall. Although no roads or recreation facility closures are anticipated for water withdrawals and transport, potential localized impacts to the lakes' recreational users could occur, if construction activities are not properly planned. Therefore, once PCGP has selected a Contractor, and the Contractor has assessed the water withdrawal requirements, the Contractor will work through PCGP to submit a water withdrawal plan to the Forest Service to minimize potential recreational user impacts and encumbrances at these lakes. The plan will address operational requirements, workspace requirements, schedule of operations, and Best Management Practices to ensure environmental protection and measures to minimize potential impacts to the lakes' recreational users.

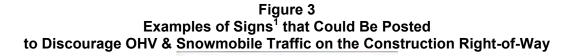
Attachment 1 Figures

- Figure 1 Typical Rock/Slash OHV Barriers Figure 2 Typical Earthen Barrier Specifications Figure 3 Examples of Signs that Could Be Posted to Discourage OHV Traffic on the Construction Right-of-Way



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¹ http://www.benmeadows.com/

Appendix T

Right-of-Way Marking Plan



Pacific Connector Gas Pipeline, LP

Right-of-Way Marking Plan

Pacific Connector Gas Pipeline Project

January 2018

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List of Attachments

- Attachment A Definitions and Guidelines
- Attachment A-1 BLM Tree Markings (Bearing Trees, Blazes, Hacks, Markings Boundary Line)
- Attachment A-2.1 Right-of-Way Staking and Flagging Guidelines
- Attachment A-2.2 Right-of-Way Monuments
- Attachment A-3 Right-of-Way Painting, Signing, and Posting Guidelines
- Attachment B Pacific Connector Gas Pipeline Mile Markers
- Attachment C BLM Boundary Signs and Posters
- Attachment D USFS Boundary Signs and Posters

1.0 INTRODUCTION

The purpose of this Right-of-Way Marking Plan is to identify the survey standards and types of survey markings that will be used by Pacific Connector Gas Pipeline LP (PCGP) on federal lands during the pre-construction, construction, and operational phases of the Pacific Connector Gas Pipeline Project (Pipeline). Survey markings will be used to identify the pipeline centerline, construction right-of-way, temporary extra work areas (TEWAs), uncleared storage areas (UCSAs), monuments, property boundaries, wetlands and endangered species areas (ESAs), known archaeological sites, and access road improvement locations. Survey work will commence during the pre-construction right-of-way clearing, pipeline construction, final clean up and restoration. All survey markings will be approved by an authorized federal agency representative in coordination with PCGP or its authorized representative.

2.0 SURVEY STANDARDS

All work described herein will be performed by professional land surveyors licensed in the State of Oregon and which hold a valid and current Certified Federal Surveyor certificate. All surveys related to the Pipeline Project will be performed in accordance with procedures found in the Manual of Surveying Instructions (2009), and all applicable State or County statutes, codes and regulations, and specifications of the County Surveyor. These surveys will meet the minimum degree of precision and accuracy defined by the State of Oregon's minimum standard requirement for the recording of surveys.

All monumentation on and along the right-of-way clearing limits, shall be established as described in ORS 92.060, shall meet or exceed the accuracy standards described in ORS 92.050 (2), and shall be platted and recorded as described in ORS 209.250.

Copies of the filed plats shall be sent to both of the following. Electronic copies are acceptable.

- a) BLM Chief of Geographic Sciences PO Box 2965 Portland, OR 97208
- b) Oregon Lands Zone Boundary Lead Willamette National Forest
 3106 Pierce Parkway, Suite D Springfield, OR 97477

3.0 RIGHT-OF-WAY MARKING

3.1 MONUMENT PROTECTION AND PRESERVATION

PCGP will identify and protect all existing survey monuments and accessories found on or near the right-of-way which might be disturbed by its construction operation, maintenance or decommissioning of the Pipeline. Reasonable efforts will be made to avoid disturbing these monuments. Survey monuments include, but are not limited to, all marks of the Public Land Survey System (PLSS), all land ownership parcel and subdivision corners, witness corners, reference monuments, witness points, U.S. Coastal and Geodetic benchmarks and triangulation stations, and military control monuments.

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Prior to the commencement of ground-disturbing activities on Federal lands, PCGP shall conduct a records search of any survey monument on or near the right-of-way which has the potential for loss or disturbance during its construction, operation, maintenance, or decommissioning of the Pipeline. PCGP shall be responsible for recording all searched-for survey monuments, found or not, on the appropriate County form, in the appropriate County, and send a copy to the BLM and Forest Service addresses in Section 2.0 above. A copy of the recorded corner search, location and perpetuation of previously-monumented corners shall be recorded and received within one (1) month following the commencement of activities that might disturb the identified monuments. The above requirement does not override State or County filing and recording regulations.

If the disturbance of a survey monument or any of its accessories becomes necessary, PCGP will provide written notification to the authorized federal agency representative, respective installing authority, and professional land surveyor who established the survey monument (if known) before such disturbance occurs. Perpetuation of all PLSS or other property corners shall be to current federal and state standards and include a permanent monument with bearing trees or accessories. In the event that damaged monuments cannot be buried at the re-established position they are to be returned to the party (if known) who originally established the monument. Temporary reference monuments will be established so that the survey monument or accessory may be remonumented in its original position after the completion of ground-disturbing activities. Instruction for the remonumentation of the disturbed monument will be in accordance with the authority upon which the corner was monumented (i.e. federal authority survey, federal standards; state authority survey, state standards). Such remonumentation(s) will be recorded in the proper County Surveyor's office and/or in federal records, as appropriate. If a survey monument or accessory cannot be remonumented in its original location, PCGP will establish permanent reference monuments and record the location(s) in the same manner as described herein and return the original monument to the party (if known) who established it. Nothing in these provisions shall relieve PCGP's liability for the willful destruction or modification of any Government survey monument as provided at 18 U.S.C. §1858 or ORS 209.140 and 209.150.

A written report to the appropriate jurisdictional Agency Officials will also be made immediately by PCGP in the event that a survey monument is inadvertently damaged. If Federal Surveyors are used to restore a survey monument disturbed as a result of pipeline construction activities, PCGP will be responsible for the survey costs. Pending discussions with the agencies, the federal land-managing agency may elect to perform a portion of the survey work in coordination with PCGP and be reimbursed by PCGP for the reasonable costs of such work in accordance with the terms of a separate agreement between PCGP and any such federal land managing agency.

3.2 PROPERTY MONUMENTATION AND MARKING

Prior to the commencement of timber cruising activities or ground-disturbing activities on federal lands, the property boundaries of the federal lands will be located and identified consistent with the guidelines established by the Agency Official. PCGP will monument the property boundary at all intersecting points where the construction right-of-way clearing limits enter or leave BLM, Forest Services, and Private lands according to ORS 92.060 standards (see Attachment A-1 and A-2). These monuments and their corner positions will be maintained, before, during and after construction. Any monumented corner positions disturbed or destroyed will be reestablished.

When the right-of-way clearing limits cross federal lands, a monument is required, at each angle point and at each boundary crossing. Monuments on the right-of-way clearing limits shall not be more than 2,500 feet apart. When the lengths of courses exceed that distance, witness point monuments shall be established on the right-of-way clearing limits in a location which is readily accessible, has a low likelihood of disturbance, and can be occupied by conventional survey instruments. Said monuments shall be located and mapped to ORS 209.250 standards, recorded in the local county surveyor's office and a copy of said document furnished to the applicable agencies. If the point of intersection of the right-of-way clearing limits and a federal property boundary cannot be practically established, a reference monument shall be established along the property boundary no greater than 50 feet from the true intersecting point. During construction, care shall be taken to minimize destroying or disturbing these monumented corner positions. If monumented corner positions are lost, sufficient corners will be reestablished and monumented, to ensuring a minimum linear distance of 2,500 feet between existent corner monuments along either side of the right-of-way clearing limits.

All property boundaries along federal lands monumented, marked and posted prior to clearing or construction activities shall be maintained during construction by PCGP if their location does not hinder construction activities or reposted to agency standards after the completion of construction.

3.3 TEMPORARY RIGHT-OF-WAY, TEWA and UCSA MARKING

The centerline of the Pipeline and the exterior boundaries of the construction right-of-way will be marked with stakes at all angle points and tangents and at the entrance to and exit from BLM, Forest Service, Bureau of Reclamation, and Private lands at no more than 200 foot intervals and to establish a line-of-sight between two points. The top of each survey stake will be painted and/or flagged with a distinct color to identify its purpose. The survey station numbers will be clearly marked on stakes that identify angle points and property boundaries.

All TEWA and UCSA boundaries will be clearly marked at all corners. Stakes and/or flags will be placed at no more than 200-foot intervals, establish a line-of-sight between two points, and/or as agreed upon with the authorized federal agency representative. The top of each survey stake and/or tree will be flagged with a distinct color to identify its purpose. TEWA or UCSA boundaries will be marked at the entrance to and exit from BLM, Forest Services, Bureau of Reclamation, and private lands according to ORS 92.060 standards.

Attachment A identifies the flagging, posting and painting guidelines and corresponding colors and signs to be used for right-of-way marking prior to and during pipeline construction activities (see Attachment A-1, A-2 and A-3).

Lath/stakes used for marking will be premium grade survey lath $\frac{1}{4}$ " x 1-1/2" x 36" (nominal). Survey lath will be firmly set and the top of the lath will be painted or flagged with the appropriate distinct color as described in Attachment A.

All temporary right-of-way, TEWA and UCSA boundaries on federal lands marked by stakes and flags prior to clearing or construction activities shall be maintained during construction by PCGP.

3.4 OTHER (RESTRICTED/SENSITIVE AREAS) MARKING

Specific sites (e.g. known archaeological sites, areas with threatened and endangered species, or wetlands), where construction equipment and vehicles will be restricted, will be clearly staked

and flagged onsite by PCGP before any construction or surface-disturbing activities begin and will be maintained during construction activities. PCGP will be responsible for ensuring that construction personnel are adequately trained to recognize these markers and understand any equipment movement restrictions that may be involved with these areas.

3.5 REFERENCE STAKES

Reference stakes will be placed to allow accurate re-staking of the pipeline angle points once clearing is complete. All reference stakes will have station and distance information clearly marked on them, and will be flagged accordingly.

3.6 ACCESS ROAD MARKING

All access roads/bridges that will require new construction and/or minor improvements such as widening, grading, sloping, and clearing, will be clearly staked and flagged as specified in Attachment A and maintained during construction. In addition to the centerline and construction right-of-way boundaries being staked, where necessary, an Agency Official specified distance beyond the top of the cutslope and below the toe of the fill slope will be marked to identify further clearing limits. This additional distance will be site-specific, depending on existing vegetation and/or safety concerns. The stakes will have a description written on them to specify fill/cut details, footages, and limits of any required clearing, along with the appropriate flagging. All approved access roads will have "PCGP Approved Construction Access" signage erected at the beginning and end points as well as at road intersections.

3.7 EXCESS MATERIAL MARKING

Within the locations identified in the Overburden and Excess Material Disposal Plan of Development (POD) (see Appendix Q to the POD), PCGP will mark and maintain the boundaries of the material placement locations as depicted on the surveyed drawings as part of the Site Development and Reclamation Plan. All areas will be staked and flagged as agreed upon with the federal agencies and will have a description written on them to specify the type of material to be stored.

3.8 TREE MARKING

Along the edge of the construction right-of-way and TEWA boundaries, trees identified as boundary trees will be designated by the surveyors and foresters utilizing an array of monumentations designed to meet the specific needs of the corresponding federal agencies. Paint, tags, posters, thick mill plastic placards, ribbon, and bark chopping are examples of monumentation methods. Attachment A and Illustrations provided in Attachment A-1 identify the tree marking guidelines and corresponding paint colors to be used on BLM lands prior to and during pipeline construction activities. Right-of-way clearing boundaries will be marked by Agency personnel using the paint guidelines in Attachment A and the signage as shown in Attachment C for BLM lands and Attachment D for USFS lands. Any paint used to mark boundaries of right-of-way clearing areas on federal lands or for marking individual trees to cut will be applied by agency personnel. Unless otherwise directed by the Agency, all paint shall include a tracer element specific to the BLM and USFS that can be tested for in the field. PCGP will coordinate with the authorized federal agency representative to ensure that paint color designations are understood by construction contractors. Hazard trees will also be marked with paint accordingly to the guidelines in Attachment A. See Attachments A, C and D for agency paint colors and posters to be used for tree marking.

3.9 PERMANENT MARKING

Permanent pipeline markers will be installed once final clean up and restoration is complete. The purpose of pipeline markers is to reduce the possibility of third-party damage. Per DOT 49 CFR 192.707, PCGP will install and maintain pipeline markers on both sides of each public road crossing and all railroad crossings. Line markers will also be installed wherever necessary to identify the location of the pipeline.

The pipe markers will be located over the centerline of the pipeline and may include signs mounted on fences or steel posts, or commercially available plastic fabricated line markers. Pipeline marker color will follow American Public Works Association (APWA) uniform color code for natural gas (yellow). The height of the markers or signage will be selected based on the construction right-of-way condition to ensure visibility. Where placement of line markers is impractical, other methods shall be used to mark the presence of the pipeline such as plaques, painted street markings, etc.

Pipeline markers will contain the following information:

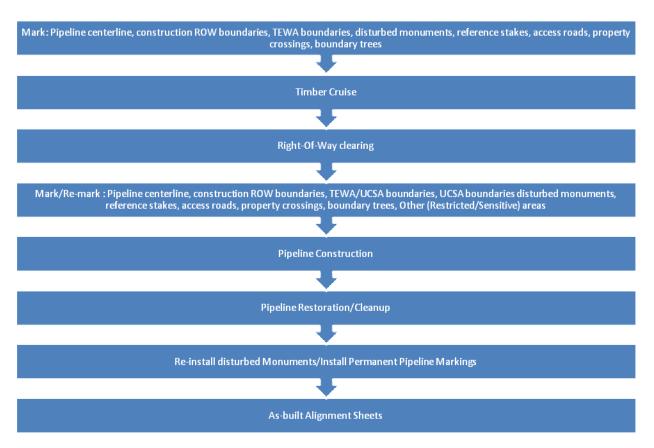
- The word "Warning, Caution, or Danger" followed by the words "Gas Pipeline." The letters will be at least (1) inch high with 1/4 stroke.
- Company name (Pacific Connector Gas Pipeline, LP) and telephone number where an operator can be reached at all times.

Pipeline markers will be maintained by replacing damaged line markers during pipeline patrols and surveys, which shall be at intervals of at least once each calendar year, but not to exceed 15 months. Vegetation around pipeline markers will be controlled so that line markers are visible.

Milepost markers (see Attachment B) will be installed every mile along the pipeline where feasibly possible and will be used for aerial patrol requirements.

4.0 **RIGHT-OF-WAY MARKING TIMELINE**

The following depicts the sequence of events in which survey markings will be conducted.



5.0 AS-BUILT ALIGNMENT SHEETS

Within six (6) months after the completion of ground-disturbing activities, PCGP will provide the federal agencies with a digital survey of the as-built location of the pipeline and related facilities, including coordinates for all previously monumented property corners located within the construction and permanent right-of-way or identified in the establishment of intersecting points where entering and leaving federal land. The digital data will be geo-referenced and based on NAD-83, state plane coordinates. Said coordinates shall be computed in NAD-83 to within three (3) feet at a ninety-five (95) percent confidence level of National Geodetic Reference System (NGRS) positions. Digital data will meet FGDC standards and be in the form of ASCII files of data, comma delineated, and formatted to be compatible with the federal agency's automated land status mapping programs. Meta Data for each previously-monumented or established corner shall include Township and Range, GCDB number, Datum, Latitude and Longitude. If Global Positioning System (GPS) data is used, metadata shall also include the equipment used, GPS date, PDOP, number of filtered position, horizontal precision, and standard deviation. Asbuilt photo-based alignment sheets will be provided to the proper federal agencies upon completion.

	FLAGGING (Attachment A-2.1)			
Flagging Code	Colors	Description		
(Y)	Yellow	WGP Pipelines (Existing)		
(O/W)	Orange/White	Pipeline Centerline		
(B/W)	Blue/ White	Construction ROW / Access Road ROW		
(P/B)	Pink/Blue	Temporary Extra Work Space Boundary (TEWA)		
(W)	White	Uncleared Storage Area (UCSA) Boundary		
(P/W)	Pink/ White	Survey Reference Point (Offset)		
(B/Y)	Blue/Yellow	Wetland Delineation Line/Environmentally Restricted/Sensitive Areas		
(O/G)	Orange/Green	Silt Fence / Sediment Barrier		
(W/G)	White /Green	Access Road Centerline		
(O/B)	Orange/Blue	Overburden and Excess Material Storage		
Killer Tree	Orange with the words Killer Tree	Flagging contains the printed words Danger Tree/Killer Tree or other variations to denote a Hazard/Safety/Danger Tree. This flagging is used in combination with Green Paint listed below. Flagging will be placed on the tree and at an offset along the edge of the Timber Cutting Area.		
Cut Tree	Cut Tree White with Blue Polka Designates individual trees on the civil surveyed line as being within the Timber Cu Dots Area.			
	The American Public Works Association (APWA) has established the following color code guidelines. Pacific Connector Surveys shall conform to these guidelines.			
(Y)	Yellow	Gas, Petroleum, Oil Lines, etc.		
(R/W)	Red/White	Hazard Site		
		TAGS (Attachment A-3)		
Yellow Tag				
reliuw ray		cholourou cloluge Allous (CCCA) Doundury		

Attachment A – Definitions and Guidelines

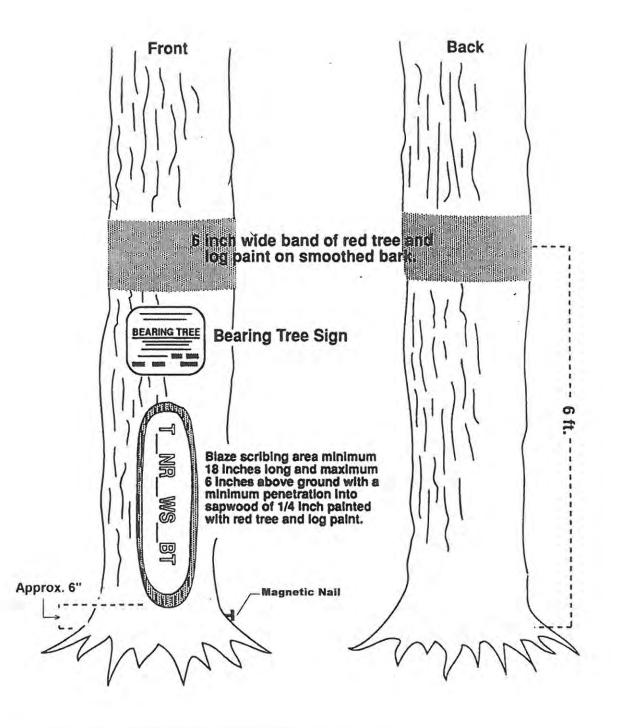
	PAINTING (Attachment A-3)		
Blue	Private and USFS – Dots for tally trees and cruise tree numbers on trees inside the Timber Cutting Area designated to be sold and removed. Painted by PCGP.		
Green	Private, BLM and USFS - Hazard/Safety/Danger trees outside of Timber Cutting Area designated to be sold. Painted by PCGP. Green letter C denotes tree to be cut; green letter T denotes tree to be trimmed.		
Pink	Private, BLM and USFS - Trees inside Timber Cutting Area to be sold and used during construction to hold/place brush against in order to store spoil material. Painted by PCGP. If significant damage is incurred during construction, trees may be removed or retained as habitat trees. Trees marked with a pink L will be used for LWD.		
Red	Property Boundary of Private/Federal Lands. Painted by PCGP.		
Orange w/Tracer	Boundary of Timber Cutting Area. Painted by BLM/FS		
Blue w/Tracer	Hazard/Safety/Danger Trees painted blue by BLM or FS.		
Black w/Tracer	Painting out marks from old timber sale activity by BLM or FS.		

POSTINGS (Attachment A-1, A-3, C & D)		
	Boundary Signs: Federal Lands	
Signs and Posters	Clearing Limit Tags/Posters: Temporary Extra Work Area (TEWA), or Temporary Access Road (TAR) Right-of-way	

Attachment A-1 BLM

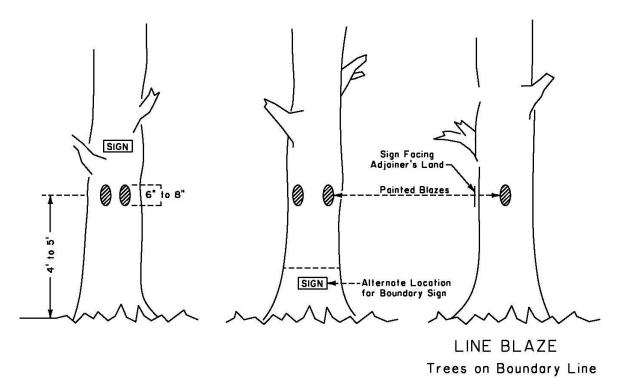
Tree Markings (Bearing Trees, Blazes, Hacks, Markings Boundary Line)

BEARING TREE DETAIL



Attachment A-1 BLM

BLAZES, HACKS AND MARKING, BOUNDARY LINE



Permission shall be obtained from adjoining landowners before their side of the boundary line is cleared, marked, painted or signed.

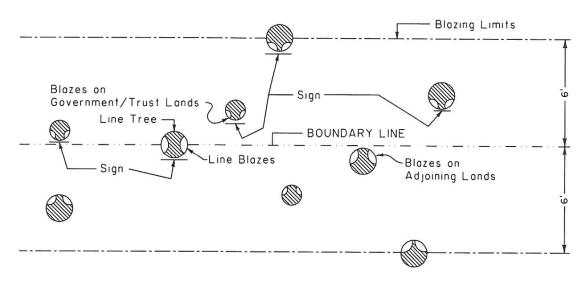
Notes:

- I. The markings are used at the locations shown on page 2 of this exhibit. The blaze orientation indicates its distance from the line.
- 2. A blaze is made by cutting off a vertical strip of bark and a very thin layer of the underlying wood tissue. The strip shall be about 6 to 8 inches wide, and the top and bottom ends shall be smoothed out.
- 3. The Alternate location for the boundary sign will be utilized only when instructed to do so.

Attachment A-1 BLM

BLAZES, HACKS AND MARKING, BOUNDARY LINE

GOVERNMENT/TRUST LANDS



ADJOINING LANDS

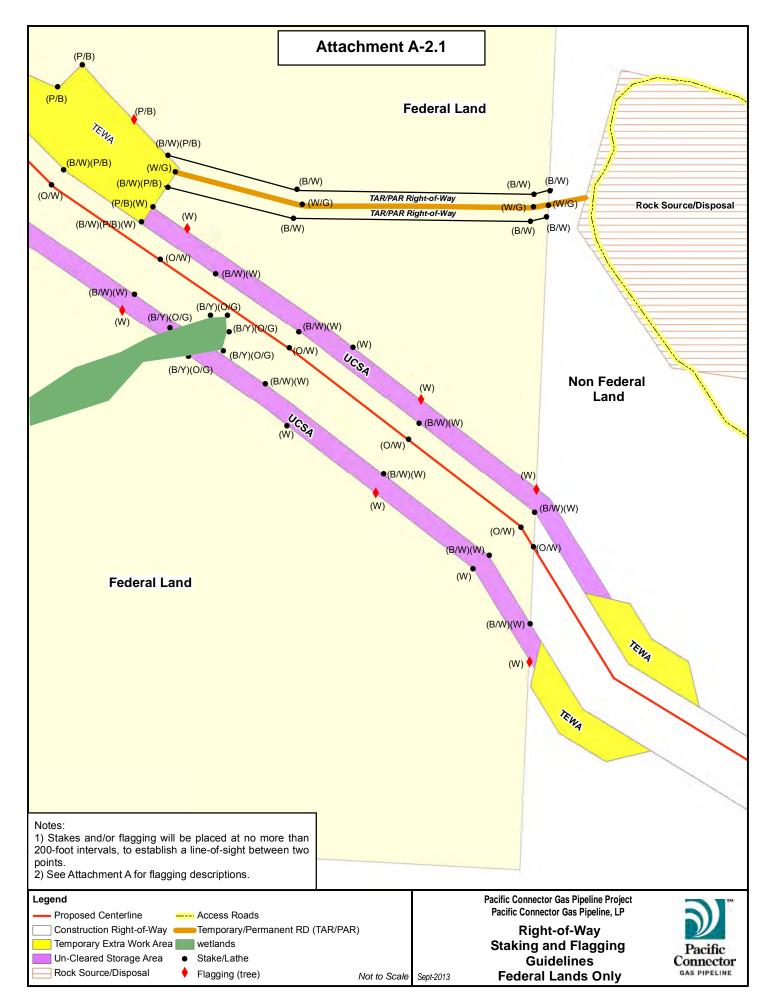
Notes:

- I. Permission shall be obtained from adjoining landowners before side of the boundary line is cleared, marked, painted or signed.
- 2. Trees less than 4" in diameter shall not be blazed but shall be painted as if blazed.
- 3. Trees on Government/ Trust Land, and within 6' of the boundary line shall be blazed and signed, as shown in these exhibits.
- 4. Trees on Adjoining Land, and within 6' of the boundary line shall be blazed, as shown in these exhibits.
- 5. Trees on the Boundary Line, shall be line blazed on both sides of the tree along the direction of the line, as shown in these exhibits.
- 6. Paint shall be neatly applied. Only blazes shall be painted, except as indicated in Item No. 2.

page 2

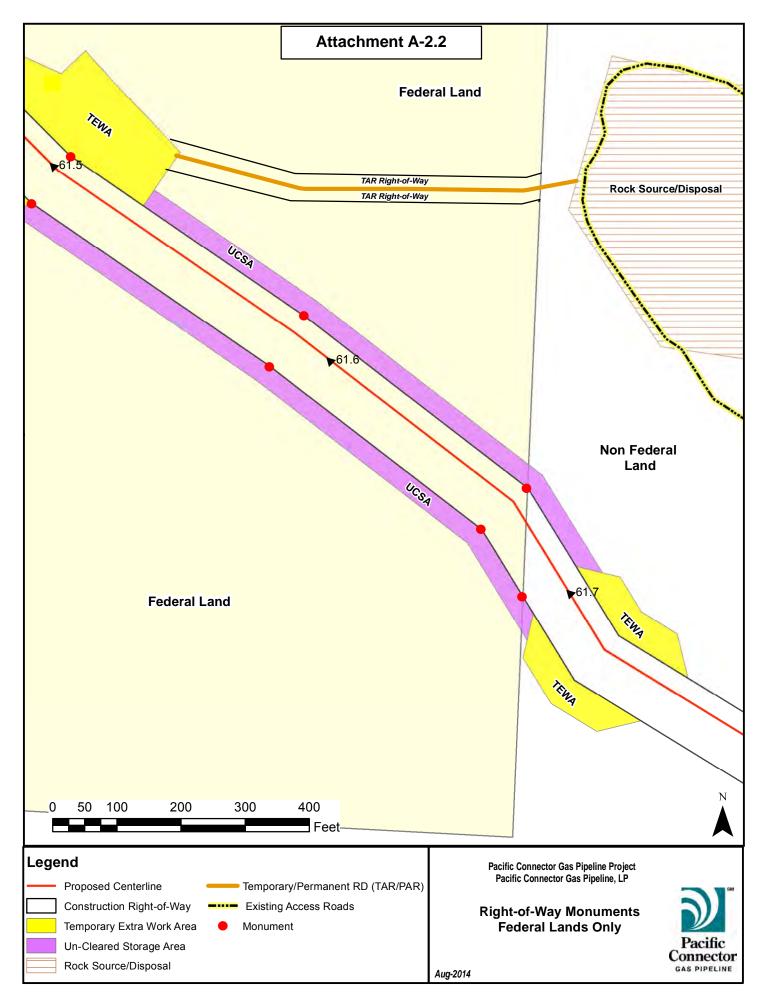
Attachment A-2.1

Right-of-Way Staking and Flagging Guidelines



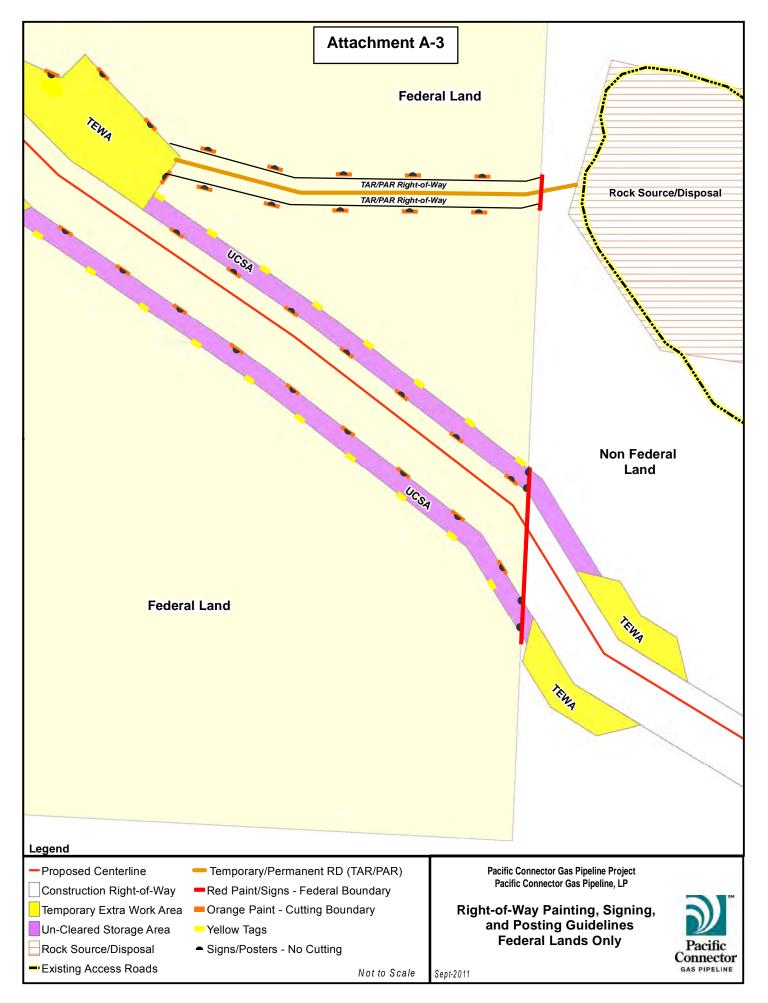
Attachment A-2.2

Right-of-Way Monuments



Attachment A-3

Painting, Signing, Tagging and Posting Guidelines



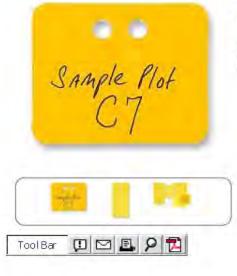
Attachment A-3

Description

Example of Yellow Tag

http://www.forestry-suppliers.com/product_pages/Viev

1189



79604 2" x 2-1/2" with 2 holes

Qty Item #

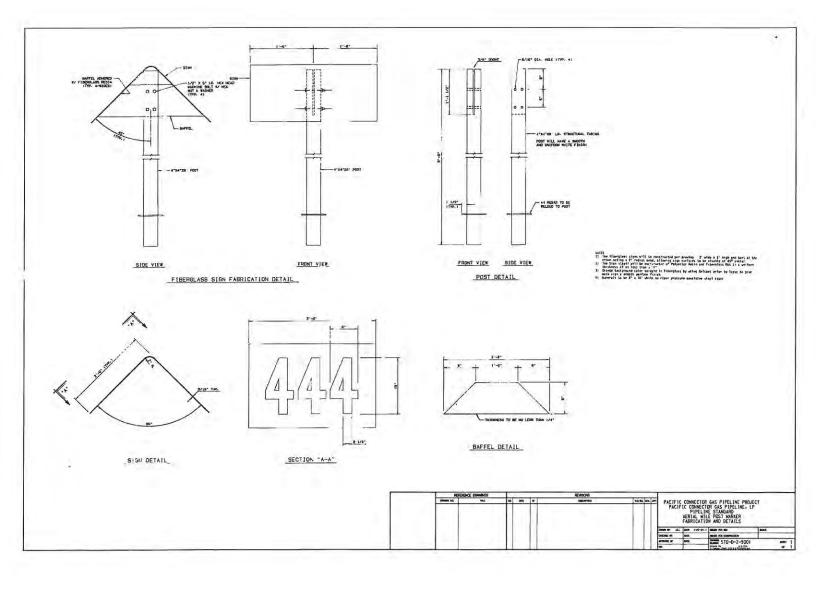
0

Weatherproof Sealable Tags

Write on the tag, remove the backing, and press both sides together to seal. Four styles are available, each style comes in a pack of 100 tags. Hi-vis yellow.



Pacific Connector Gas Pipeline Mile Markers



BLM Boundary Signs and Posters



U.S. Department of the Interior Bureau of Land Management





Right-of-Way

NO UNAUTHORIZED CUTTING BEYOND THIS BOUNDARY

Prevent Forest and Range Fires

S-148 (Sept. 1988)

Sign Number S-148

Use to mark the reserve area boundary adjacent to the area to be cleared along the rightof-way. May also be used to post the tree clearing limits across private lands when such clearing is required for roads constructed under terms of reciprocal right-of-way agreements or United States road easements.

Note: Sign faces into (towards) the right-of-way clearing area.

BLM Boundary Signs and Posters

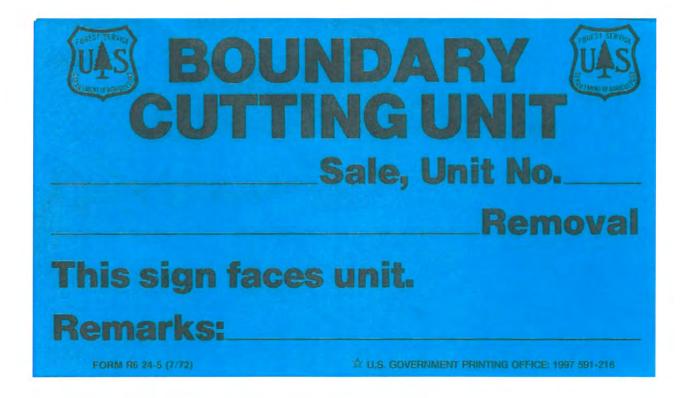
0	B	Departme	ted States ont of the Interior and Management NDAR	There was a second of
	No		Be Cut or Remove Authorization	ed
	R	Sec.	Liffie is Apprex.	H P
			Согдет Арргох	R. E.
Posted	By		Date 1	
BLM Office (∖_O	15 LOCA	ned at		s 7 (Apr 1974) ()

Sign Number S-7

Use to mark the property boundary for BLM lands.

Note: Sign faces away (outward) from BLM lands.

USFS Boundary Signs and Posters

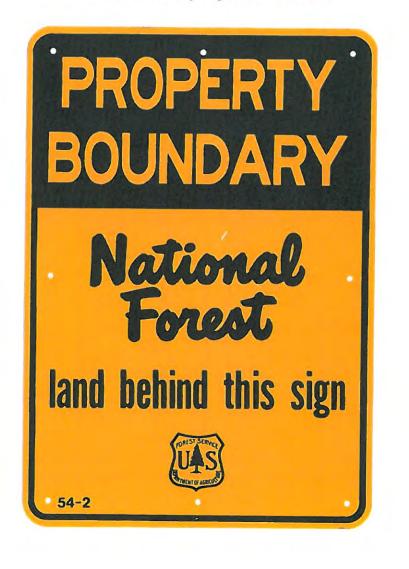


Form R6 24-5

Use to mark the cutting boundary on USFS lands to be cleared along the right-of-way.

Note: Sign faces into (towards) the right-of-way clearing area.

USFS Boundary Signs and Posters

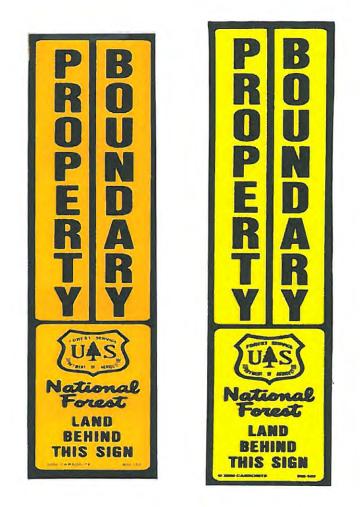


Sign 54-2

Use to mark property boundary of National Forest System Lands.

Note: Sign faces away (outward) from National Forest. Signs must be affixed to metal posts.

USFS Boundary Signs

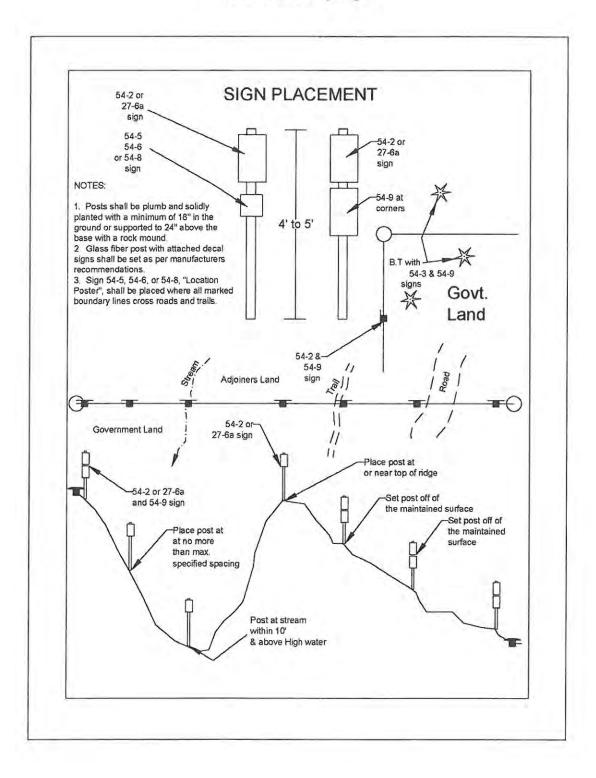


Decal BM-102

Use decal on Carsonite post to mark boundary of National Forest System Lands.

Note: Decal faces away (outward) from National Forest.

USFS Boundary Signs



Appendix U

Right-of-Way Clearing Plan for Federal Lands



Pacific Connector Gas Pipeline, LP

Right-of-Way Clearing Plan for Federal Lands

Pacific Connector Gas Pipeline Project

January 2018

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1.0 INTRODUCTION

The Pacific Connector Gas Pipeline Project (Pipeline or Pipeline Project) area extends across portions of the Southern Coast, Klamath Mountains and Cascade Mountain Range in southwest Oregon. The Pipeline crosses a variety of forested terrain and forest types between Coos Bay and Malin, Oregon. The primary goal of Pacific Connector Gas Pipeline, LP (PCGP) is to safely and efficiently install and operate a high-pressure underground natural gas transmission pipeline. The Pipeline will facilitate broad market access via existing pipeline facilities.

Prior to pipeline construction activities, all vegetation (including timber) will be cleared from the 95-foot wide construction right-of-way and the additional temporary extra work areas (TEWAs). . Pipeline installation will require bulldozers, trackhoes, backhoes, side-booms, welding trucks, and support vehicles along the construction right-of-way. PCGP's timber/vegetation removal and construction activities will span a proposed two-year period. Generally, Year One construction will consist of timber and other vegetation removal along the majority of the right-of-way, including some pipeline construction in select areas. Year Two construction will consist of the remaining timber and other vegetation removal not completed during Year One and the majority of pipeline construction.

2.0 PURPOSE

The purpose of this Right-of-Way Clearing Plan (Plan) is to outline the methods that PCGP will implement during timber (and other vegetation) removal within the construction right-of-way and TEWAs. At the request of the federal land-managing agencies, PCGP previously developed a "desktop" analysis that details how right-of-way clearing is to be completed. PCGP has identified and documented the existing timber and other vegetation conditions on all federal lands crossed by the Pipeline and documented the acreage of each type of forest product by land owner parcel. As part of this Plan, PCGP developed vegetation clearing scenarios for the construction right-of-way and TEWAs. This Plan was developed utilizing applicable best management practice (BMP) compliance protocols outlined in the Erosion Control and Revegetation Plan (ECRP) for the Pipeline Project. Attachment A - Regulatory Compliance and Definitions references applicable sections of the ECRP. Attachment B describes the timber harvest methods that would be expected to be utilized and summarizes estimated volume data for each potential harvest method. Timber removal for access road improvements is not Access road improvement information is described in the included in this document. Transportation Management Plan previously reviewed and approved by the Bureau of Land Management (BLM), U.S.D.A. Forest Service (USFS), and the Bureau of Reclamation (Reclamation). If requirements governing timber removal activities differ between agencies, the specific agency requirements are listed separately in this document.

2.1 ROLES AND RESPONSIBILITIES

The USFS has authority in 36 CFR 223.12 to sell merchantable timber required for removal on National Forest System (USFS) Lands directly to PCGP at the current appraised value. The intent would be to execute one contract covering the three National Forests crossed by the proposed Pipeline. Payment for the timber sold would be made in a lump sum in advance of cutting and removal.

The BLM has authority under 43 CFR 5400 to sell the pipeline right-of-way timber through a negotiated sale when determined to be impracticable to obtain competitive bids through an

advertised sale. The BLM intends to sell the right-of-way timber directly to PCGP under lump sum timber sale contracts at not less than the appraised value as determined by the BLM. Timber sale contracts would be prepared, negotiated, and administered by each BLM office involved (Coos Bay, Roseburg, Medford, and Lakeview). Payment for the timber sold would be made lump sum in advance of cutting and removal.

The USFS and BLM would administer their own timber sale contract(s). PCGP would be the Purchaser for timber removal on federal lands, although logging would likely be done by a subcontractor. All federal timber purchased by PCGP will be prohibited from log export and will require domestic processing consistent with existing agency policy and federal law.

In order to comply with ORS 527.670(3), PCGP would be required to provide a written timber harvest plan to the federal land management agencies and the ODF State Forester for each state forest region that would be crossed. Timber harvest plans would include such information as timber sale boundary designation, volume estimation, appraisal, and contract preparation. PCGP indicated that it would file its final logging plans for both federal and non-federal lands after completion of timber cruises and the selection of its timber removal contractor. PCGP has also developed a Prescribed Burning Plan which describes the proposed burning of forest slash as a disposal method and which is included as Appendix R to the Plan of Development (POD).

PCGP would be responsible for log removal, log accountability and disposal of the federal timber. The BLM and USFS would be responsible for monitoring payment, log accountability, and trespass. Many of the operational requirements typically detailed in a timber sale contract, such as erosion control, road use and maintenance, slash disposal, etc. are contained in the Plan of Development and incorporated by reference into the Temporary Use Permit and Right-of-Way Grant. Performance bonding typically required in a timber sale contract would also be included as part of the Right-of-way Grant requirements in a sufficient amount to cover operations performed under the timber sale contracts. BLM and USFS timber sale administrators will review PCGP timber harvest plans and BMPs and may be present during timber/vegetation removal operations to ensure compliance with these plans as well as to ensure payment and proper log accounting for specially designated revenues.

Prior to the commencement of timber cruising and valuation as describe below in Section 2.1.1, PCGP will identify the pipeline centerline, construction right-of-way boundaries, TEWA boundaries, disturbed monuments, reference stakes, access roads, property crossings, and boundary trees, following the guidelines included in the approved PCGP Right-of-Way Marking Plan.

2.1.1 TIMBER CRUISE AND VALUATION

PCGP estimates approximately 29,948 thousand board feet (MBF) of timber may be cleared on federal lands crossed by the Pipeline route, including about 14,564 MBF on BLM lands and 15,384 MBF on USFS lands. The expected volumes of harvested timber, tree types cleared, and their values are further discussed in section 3.2 of this document. Table 2 summarizes the estimated volume of timber that would be harvested on federally managed lands. The timber volume estimates were derived using professional forestry methodologies and protocols to provide a basic timber volume inventory for the proposed Pipeline Project. A preliminary cruise-inventory of stand types (conifer, brush, riparian, roads, rock pits, etc.) was compiled along forested areas of the proposed route using aerial photography and ground visits. Each stand type was ground visited and inventory-cruise plots were established in each stand type to achieve a 5 to 8 percent level of accuracy for determining Scribner decimal C log rule gross and net volumes. Twenty percent of plots were full measure quarter-acre (58.9 feet circular). To

determine Gross MBF timber volumes, "Local" volume tables were developed for each species by stand type to determine gross volume by two inch diameter class total height. Dilworth, MB&G, Atterbury, & FS Cruise timber cruising protocols were used to determine volume, grade, and cruise downfall. No further deductions were taken for harvesting breakage, or local scaling rules-of-thumb factors for hidden defects.

Prior to right-of-way easement acquisition, agency (BLM or FS) representatives or their designated contractors will conduct timber cruises to verify timber volumes and species composition on forested lands to determine timber values. Final timber cruises would be conducted prior to vegetation clearing in order to determine timber volumes, values, and species composition within forested lands. Timber cruise schedules will be determined with the BLM and USFS after PCGP completes survey and marking of property lines and actual right-of-way and TEWA areas. The time needed to complete cruises will depend on actual acres, ease of access and the volume of actual timber to be cruised. Timber cruises will be financed by PCGP.

PCGP would complete a check cruise on the cruises and appraisals completed by the BLM and USFS. The timber cruise would be used to validate PCGP's Right-of-Way Clearing Plan in the field, and help identify the logging systems that would be practical along the route based on the pipeline alignment, construction right-of-way configuration, topographic conditions, existing access, timber types and volumes to be removed, and the various logging system limitations.

2.1.1.1 Execution of Timber Cruises

Timber cruises on federal lands would be conducted by the land management agencies or by an agency approved third party contractor. The BLM and USFS will each determine how timber will be cruised and appraised on their respective lands according to their respective agency policies.

BLM

The BLM is required by regulation to oversee the measurement of the timber it sells. The BLM will determine whether to conduct the cruise itself or oversee the cruise by a qualified third party at the time the Right-of-Way Grant is issued, and the actual construction period is determined. At that time, the BLM will assess contractor and workforce availability. If the BLM chooses the contracting option, the BLM will work with PCGP to ensure contracts meet BLM specifications and contractors are qualified. The BLM will sell its timber in lump-sum based on the cruise volume. The BLM estimates cruising would typically proceed at the approximate rate of 4 acres per day per cruising team.

<u>USFS</u>

The USFS will determine the method by which the USFS timber cruise is implemented. The USFS may complete cruising in-house, or may allow a third party to conduct the cruises, provided the contractor is certified by USFS standards, including a written test and field test plots. The USFS will determine cruise method at the time right-of-way designation has been completed. If a third party contractor is used, the USFS would complete check cruises. Since there will be one timber sale contract for all National Forest land, with multiple payment units, the USFS may execute the contract with Incompletely Measured Payment Units. This would allow USFS cruising to continue while operations have begun in another payment unit. The USFS intent at this time is to complete all cruising before the contract is executed.

2.1.1.2 Timber Valuation

The BLM and USFS will each be responsible to establish the value of timber on their lands within the right-of-way clearing limits.

<u>BLM</u>

The BLM will require PCGP to purchase all merchantable timber (7 inches Diameter at Breast Height with minimum 5-inch top diameter inside bark at 16 feet and larger) located within the right-of-way construction clearing area, TEWA and damaged trees in the Uncleared Storage Areas (UCSAs). The contract period for cutting and removing the timber will be up to 36 months (maximum allowed by BLM regulations). PCGP may use the purchased timber as needed to meet other project requirements such as OHV barriers, LWD for stream restoration, redistribution across the construction right-of-way, etc.

The BLM will not designate snags or "wolfy" trees within the cleared area for retention. If PCGP elects to retain specific trees for mitigation purposes, those trees must still be purchased from the BLM.

<u>USFS</u>

The USFS will require PCGP to pay for and remove all designated timber meeting minimum merchantable specifications located within the right-of-way clearing area (including TEWAs and damaged trees within UCSAs). Timber will be cruised and evaluated for two products, each with specific minimum specifications. The timber cruise will determine the volume of each species and product in each payment unit. The USFS will appraise and establish a separate contract rate for each species (or group of like species) and product.

- 1. Sawtimber: minimum piece is 6" diameter inside bark (dib), 10' long, 40% sound wood.
- 2. Non-sawtimber: minimum piece is 3" dib, 10' long, no minimum sound wood requirement.

The USFS is required to adjust the contract rate charged for sawtimber during the life of the contract according to changes in the appropriate Western Wood Products Association index specified in the contract. The actual rate paid for timber removed in a payment unit is established when the payment unit is "released" for cutting. That rate is the current contract rate, adjusted at the end of the calendar quarter in which the payment unit is released.

The contract period for cutting and removing the timber on USFS lands may be up to 5 years. The actual termination date will be set when the timber sale contract is executed. There are provisions for extensions and additions to the contract term for specific circumstances.

On USFS lands, snags or "wolfy" trees identified for retention prior to the cruise, may be designated as leave trees and will not be included in the timber appraisal. PCGP will not be required to pay for these trees. The leave tree designation would be at the discretion of PCGP and its Contractor in coordination with the USFS. If these leave trees subsequently need to be cut, they will be individually cruised and paid for prior to cutting.

The USFS timber sale contract will include requirements for painting and branding logs and log export restrictions. If feasible, logs of one ownership shall be removed from a mixed landing prior to skidding another owner's logs to the same landing. All logs of one ownership will be

uniquely marked and segregated from logs of another ownership at any mixed landing location (see Section 2.2).

The USFS will need at least two months after the timber cruise is complete to review and finalize their appraisal, write the contract specifications, sign the contract and receive all advance deposits before clearing may begin.

2.1.1.3 Reproduction Units

BLM

The BLM does not intend to establish a value for reproduction (young trees below merchantable size threshold) destroyed during construction within the designated Pipeline Project area. If reproduction is destroyed within an UCSA, PCGP shall replant the area where reproduction was destroyed as specified in the ECRP (see Appendix I to the POD).

<u>USFS</u>

The USFS has established a value for reproduction destroyed during construction within the designated Pipeline Project area. Compensation for damaged reproduction is not included in the timber sale contract. If reproduction is destroyed within an UCSA, PCGP will rehabilitate the area as specified in the ECRP (see Appendix I to the POD).

2.1.1.4 Credit for Uncleared Timber

Prior to commencement of clearing operations within a payment unit, PCGP will attempt to identify any TEWA or area not required for construction such that these areas may be excluded from timber cruises. If, at the conclusion of construction, any TEWA areas remain fully intact, unentered and unharvested, the BLM or USFS, respectively, would cruise the unharvested, intact TEWA and refund the appraised value to PCGP at the established contract price if the Contracting Officer determines it is within the interests of the agency to do so. If TEWAs are sporadically cleared and/or trees are scattered throughout the TEWA, the BLM or USFS will not cruise the remaining trees, nor will PCGP receive a refund for the value of such trees.

2.1.1.5 Uncleared Storage Area Provisions

Within UCSAs, PCGP has committed to protect standing trees to prevent damage (see the Leave Tree Protection Plan/Appendix P to the POD).

<u>BLM</u>

If a tree is damaged during construction operations, the BLM Authorized Officer will evaluate the extent of the damage and determine whether PCGP will be required to purchase the tree. Considering that a Right-of-Way Grant will have been issued for the Pipeline Project, the BLM will recognize that PCGP may cause inadvertent damage to trees within UCSAs during construction, and the BLM will accordingly abstain from penalizing PCGP for unauthorized use (trespass). However, if PCGP damages any BLM trees outside of the authorized clearing area and the UCSAs, PCGP may be subject to trespass under BLM regulations and Oregon Revised Statutes.

<u>USFS</u>

If trees within UCSAs are damaged by PCGP, these trees are treated under standard provision BT2.13- Damaged Timber, in the USFS timber sale contract. By agreement, such trees may be left without charge if their removal would cause undue damage or be grossly uneconomic. If the USFS determines that a damaged tree should be cut and removed, payment for the tree is

made at current contract rates under BT3.43 – Undesignated Timber Damaged Without Negligence.

There is still the possibility that unnecessary damage will occur, either through negligence or willful action. This timber is handled differently and liquidated damages are assessed under BT3.45.

2.1.2 TREES USED FOR ENVIRONMENTAL MITIGATION

PCGP may elect to use purchased BLM or USFS timber for environmental mitigation. The BLM and USFS will not provide credit, nor will BLM or USFS provide a refund to PCGP, for purchased timber that is used for mitigation purposes. Examples, include timber used for LWD at stream crossings to mitigate the effects of the Pipeline Project as well as timber used to satisfy compensatory mitigation requirements which may be used in offsite mitigation projects implemented by federal agencies or conservation groups.

Prior to clearing operations, PCGP may designate trees as leave trees for green recruitment trees on the edges_of the construction right-of-way or TEWAs to protect those trees from removal during timber cutting; where feasible, some of these trees would be girdled to create snags to benefit wildlife. Snags and habitat trees would be retained if they do not pose a safety hazard to construction activities, as per the regulations outlined by OSHA¹. Measures that will be implemented during construction of the Pipeline Project to identify conserve and protect selected trees within or along the edges of the certificated work limits (i.e., construction right-of-way, UCSAs, and TEWAs) are included in the Leave Tree Protection Plan (see Appendix P to the POD).

2.1.3 HAZARD TREES

Hazard trees are those trees at risk of falling on workers or vehicles and thus would require removal for safety reasons. A tree may be at risk of falling for a number of reasons, including the tree's location and the presence of defects, insects, disease, work activities, and weather conditions. Such trees would be felled in advance of road construction/reconstruction or maintenance, and clearing and construction activities. Additionally, hazard trees could be created from trees felled during the Pipeline Project. This would occur if trees outside of approved construction areas are damaged during felling of harvested timber. This could result in growth loss and PCGP would compensate the Agency for any trees removed and any loss in timber productivity.

All hazard trees along the surveyed edges and inside the right-of-way will be felled. Hazard trees exterior to the right-of-way would be designated by qualified PCGP representatives, in accordance with OSHA standards and the USFS / BLM published "Field Guide for Danger Tree Identification and Response." Hazard trees exterior to the surveyed right-of-way boundary would be directionally felled, when consistent with OSHA guidelines, away from the construction right-of-way if trees are to be left and towards the construction right-of-way if trees are to be removed. PCGP has requested a modification from FERC's Plan for removing hazard trees outside the construction right-of-way limits. PCGP would compensate the respective Agency for any merchantable hazard trees felled.

¹ <u>OAR 437, Division 7 Forest Activities - Oregon OSHA</u>: Danger tree – A standing tree, alive or dead, that presents a hazard to personnel due to deterioration or physical damage to the root system, trunk (stem), or limbs, and the degree and direction of lean.

The extent or existence of hazard trees will be identified following the creation of the construction right-of-way, TEWAs or new access roads by PCGP or on roads that have not triggered land managing agency hazard tree removal based on limited road use.

2.2 FELLING AND YARDING

PCGP will ensure that all operations and tree felling would occur within the FERC-certificated construction work area limits, and that trees and other vegetation to be cleared within the certificated construction work area limits would be felled or sheared so as to prevent damage to adjacent trees, facilities, or structures. This may not be practical in steep areas where trees often must be felled on the contour to reduce breakage. Much of the forested portion of the proposed route crosses steep mountainous terrain. Failure to fall trees properly would result in a loss of timber available to local industries and loss of value to the land owners and land management agencies.

Some TEWAs, that are already vacant areas adjacent to existing roads, have been identified for log storage and decking. In addition, some slash and other debris from clearing activities may be temporarily stored in UCSAs.

BLM and USFS timber contracts will include requirements for marking and branding logs and log export restrictions. As part of the written timber logging plan, PCGP will be responsible for detailing how they will handle logs to meet BLM contract stipulations for marking, branding, and conforming to export restrictions. All BLM logs will be branded with a unique registered brand and will be marked with highway yellow paint. The BLM will be responsible for monitoring logging activities on BLM lands.

On USFS and BLM lands, logs from different ownerships will be segregated at shared landings. Where feasible, logs should be removed from one ownership at a time to shared landings. Where this is not feasible, PCGP will be responsible to insure that segregation is maintained. At a minimum, each ownership will have its own log brand assigned. If logs of one owner are decked on the landing and not hauled, the deck would need to be painted its own unique color, all logs branded, and a count made.

All trees designated for cutting within the construction clearing limits shall be felled into the clearing limits, not into the reserved timber located outside the construction clearing limits (see Appendix AA to the POD).

Trees and other vegetation will be felled or cleared in a manner that would minimize impact to adjacent forests or structures outside of the construction right-of-way. Trees will also be felled and directionally removed away from wetlands, waterbodies, and riparian reserves. However, as noted above, PCGP has requested a modification from FERC's Plan where, in some situations during right-of-way clearing/timber felling operations, it may not be possible for specific trees or portions of trees to be completely felled within the construction right-of-way limits (i.e., alignment ascends/descends steep slopes with mature trees [some more than 200 feet tall]; diseased/decayed trees are present; trees are leaning in unmanageable directions or degrees; or other site-specific conditions, based on OSHA safety guidance).

Where tree/woody material inadvertently falls outside the construction right-of-way limits, PCGP will compensate the landowner or the land-managing agency for the value of the danger/hazard

tree, or for any tree damage that may result from felling activities. This modification request complies with best management forest practices and with OSHA regulations². Because timber clearing will be conducted within appropriate seasonal windows to protect sensitive species, this modification will ensure worker safety and will minimize effects to sensitive resources.

PCGP will not remove stumps or root systems from wetlands, except along the trench line, unless necessary for safety reasons during construction. In uplands PCGP will limit stump removal to the trench line and working areas where grading would be necessary to create a level working surface. Any debris as a result of tree cutting that falls into a waterbody would be removed, if practical. Logs and slash would not be yarded across perennial streams unless fully suspended or supported by a temporary bridge crossing or other methods consistent with ODF forest practice rules or BLM or USFS requirements. Existing logs firmly embedded into the bed or banks of streams will not be disturbed, unless their removal is necessary for clearing the construction right-of-way, trenching, fluming or other waterbody crossing methods. Any existing logs removed from waterbodies during installation of the pipeline will be flagged or marked and set aside for return to the waterbody during restoration. Landings for clearing operations will not be located in wetlands or riparian reserves. Where feasible, logs yarded out of wetlands or riparian zones will be skidded with at least one end suspended from the ground so as to minimize soil disturbance and compaction. Any cut timber designated for in-stream or upland wildlife habitat enhancements would be stored at the edge of the construction right-of-way or in TEWAs for later use during restoration activities. Where large woody debris (LWD) is acquired for in-stream habitat use, this material will only be obtained from the certified construction limits and will be collected outside riparian zones to maintain root structure within the riparian zone. An exception to this is where the LWD can be obtained from the trenchline or construction rightof-way cut areas where root systems would be removed during trench excavation or grading operations.

Merchantable timber and other vegetation will be cut and removed from the construction rightof-way and TEWAs to ensure that these areas are cleared prior to construction. In very limited areas, TEWAs have been identified for log storage and decking. These are existing cleared areas adjacent to existing roads where log storage could occur for extended periods of time. The construction right-of-way has been designed to minimize additional TEWAs and overall disturbance. The construction footprint is currently not large enough in many areas to accommodate log clearing and efficient construction activities simultaneously. Therefore, cut timber must be removed from the construction right-of-way to avoid unnecessary delays.

PCGP will be required to pay the appropriate land managing agency for all merchantable trees cut within the construction right-of-way and temporary use areas authorized in the federal Right-of-Way Grant, including trees felled within Riparian Reserves and LSRs. PCGP do not intend to transport cut trees back into these areas, except for those appropriately sized logs that are salvaged (with root-balls attached) for use as LWD and habitat enhancement. PCGP developed a Supplemental Mitigation Plan, which includes the funding of USFS and BLM restoration projects, to mitigate for the impact on these sensitive areas caused by the permanent removal of the trees that are not transported back into the areas or replanted. PCGP has designed and sized the construction right-of-way and TEWAs to be the minimum necessary to safely construct the Pipeline Project. Therefore, it is impractical to store all felled trees within Riparian Reserves

² OAR 437, Division 7 Forest Activities - Oregon OSHA: Danger tree – A standing tree, alive or dead, that presents a hazard to personnel due to deterioration or physical damage to the root system, trunk (stem), or limbs, and the degree and direction of lean.

and LSRs onsite for placement back onto these areas after construction. Significantly more TEWAs areas, requiring habitat removal and disturbance would be necessary to store fallen trees within these areas if this material was replaced within the riparian reserves and LSRs.

BLM

Trees cut within the Riparian Reserves and LSRs on BLM lands will be disposed of as determined by PCGP. The BLM will not direct removal or retention of felled trees.

<u>USFS</u>

Trees cut within the Riparian Reserves and LSRs on USFS lands will be left in place or decked as specified by the USFS to meet land management objectives if determined necessary by the USFS. Prior to any timber removal activity, authorized representatives from the USFS and PCGP would evaluate whether felled trees should be removed and which should be retained to meet land management objectives (within LSR and Riparian Reserves).

2.3 LOGGING METHODS

The construction right-of-way will be cleared of all timber and other vegetation using all logging practices and methodologies, in accordance with PCGP's harvest plans approved by the BLM, USFS, and ODF. PCGP expects that a variety of logging methods may be necessary to efficiently remove timber from the construction right-of-way, depending on the specific location (see Section 3.0 – Timber Clearing Operations).

Most of the pipeline route in forested areas is expected to be logged by mechanical cutting and ground skidding equipment. Hand-felling would likely occur on steep slopes; and skidding patterns would be laid out to minimize erosion. Most timber removal would be accomplished through ground skidding and cable yarding; helicopter yarding may be used in some areas that are difficult to access. Where ground skidding is used, the following measures would be employed to minimize significant detrimental soil disturbance (compaction and displacement):

- Low ground weight (pressure) vehicles would be used whenever practicable;
- Logging machinery would be restricted to the 50-foot permanent right-of-way where practical to prevent soil compaction, subject to topographic, safety and other construction considerations;
- The removal of soil duff and surface slash layers would be minimized in order to maintain a cushion between the soil and the logs and the logging equipment;
- Designated skid trails would be used to restrict detrimental soil disturbance (compaction and displacement) to a smaller area of the construction right-of-way (preferably over the pipeline trenching area); and
- Compacted landing, yarding, and load-out areas used for timber harvesting during Year One construction will be scarified after use and prior to the rainy season where the potential for sediment delivery to waterbodies is possible. Scarification will promote infiltration, minimize run-off and the potential for sedimentation.

PCGP may use helicopters for logging and pipe stringing in areas where there are steep slopes and limited access to the right-of-way. PCGP has identified the following areas where helicopters may be utilized, however clearing and construction contractors selected for the Pipeline Project may identify additional areas where helicopter use may be appropriate based on site and seasonal conditions.

Begin MP	End MP	Helicopter Staging
		TEWAs 6.49-W, 7.21-N, 7.44-W, 10.22-W, 13.79-W, 14.62-W, 15.75-W, 16.71-W,
		18.05, 21.12-W, 23.99-N, 21.87-N
37.10	38.42	TEWAs 36.63-W, 36.97-W, 37.15-N, 38.32-W, 38.32-N, 38.90-W, 39.18-N
46.70R	47.20R	TEWAs 46.75-N, 47.53-N, 47.52-W
60.50	61.50	TEWAs 60.52-N, 60.54-W, 60.59-N, 60.87-W, 60.88-N, 61.43-N
77.80	79.90	TEWAs 77.72-N, 77.95-W, 78.99-W, 79.85-N
92.46	94.50	TEWAs 92.62, 92.62-N, 92.63-W, 93.01, 93.01-N, 94.56-W
95.10	97.05	TEWAs 95.39, 96.22-N, 96.23-W 97.02-N, 97.04-W
97.70	98.00	TEWAs 97.63, 97.79-N, 97.91-W
101.30	102.30	TEWAs 101.62-N, 101.75-N, 102.19-N
108.50	110.40	TEWAs 109.10-W, 110.34-W, 110.73 (Helicopter landing Peavine Quarry)
116.30	117.85	TEWAs 116.59-W, 117.67-N
123.30	125.15	TEWAs 123.53-W, 123.71-N, 124.30-N, 124.54-W, 124.71-W, 124.96-N

2.4 SLASH DISPOSAL

If the size of trees to be cleared in forested areas along the route is considered too large by PCGP to be taken whole for yarding, trees may be felled, topped, limbed, and bucked on-site where they were felled. Merchantable pieces will be yarded to a landing for decking, loadout, and transport. Some portion of the wood debris from clearing (i.e. limbs, cull logs or broken log pieces, tops) would remain on the ground within the construction right-of-way where the trees were cut. During logging, tree tops and limbs would be broken or crushed creating a volume of small slash that would be impractical to remove from the construction right-of-way. Some of the slash on the ground would act as erosion control between the time the construction right-of-way is cleared and the pipeline is installed.

Residual slash from timber clearing would be stockpiled on or at the edge of the construction right-of-way or TEWAs or within UCSAs, and scattered/redistributed across the construction right-of-way during final cleanup and restoration, after seeding, according to BLM and USFS fuel loading specifications to minimize fire hazard risks. Scattering the slash across the construction right-of-way would hinder off-highway vehicle traffic on the reclaimed construction right-of-way and would act as a natural mulch to minimize erosion. In general, the equipment used for slash pull-back and spreading on the construction right-of-way could include equipment used for pipeline construction. Specific equipment and methods would be determined on-the-ground based on the terrain, equipment capabilities and in consultation with BLM and USFS representatives. On federal lands, larger slash pieces (more than 8 inches in diameter), may be removed from the construction right-of-way and decked in designated storage sites or at road crossings. This material would be made available to the public. Large woody debris would be retained on the construction right-of-way according to agency specifications, as mitigation, to provide down wood for wildlife habitat and to aid in soil productivity.

PCGP has determined that it may be necessary to dispose of forest slash in areas where this material exceeds the BLM or USFS fuel loading specifications (see ECRP in Appendix I to the POD). The Prescribed Burning Plan (see Appendix R to the POD) describes the protocols that PCGP would follow to obtain appropriate agency authorizations to burn forest slash materials on all lands crossed by the Pipeline. This Plan also describes the protocols and BMPs that would be implemented to safely conduct slash burning operations.

2.5 **PROTECTING LIVE TREES**

Where logs are stored next to conifer trees bordering the sides of the construction right-of-way, they would be decked in a manner to avoid damage to live trees. Logs planned for removal from the site would be hauled off-site as soon as practical following yarding in order to prevent

insect and disease problems, as well as potential theft problems. However, PCGP has stated that LWD may be placed in UCSAs adjacent to standing conifers. The Leave Tree Protection Plan (see Appendix P to the POD) describes the measures that will be implemented during construction of the Pipeline Project to identify, conserve and protect selected trees within or along the edges of the certificated work limits (i.e., construction right-of-way, UCSAs, and TEWAs).

2.6 BEST MANAGEMENT PRACTICES

BLM and USFS contracts for the sale of timber to PCGP will close after the purchased timber has been removed, any damaged timber has been identified, purchased, and removed (including any trespass trees), and any intact TEWA has been cruised for refund. All applicable paperwork required for contract closure, such as the BLM "Log Scale and Deposition Report for Timber Removed" will be completed and submitted by PCGP before the Temporary Use Permit expires unless otherwise arranged in writing with the Authorizing Officer. Potentially, the operations associated with the contracts for sale of timber may end before construction is complete. Soil compaction will be relieved during final restoration following construction. Therefore, the contracts for sale of timber will not include provisions for relief of soil compaction or restoration.

PCGP would implement the measures outlined in its ECRP to prevent erosion of exposed soils along the construction right-of-way between clearing and final restoration. Some of the BMPs that would be implemented during timber and other vegetation clearing operations to minimize the potential for erosion and sedimentation would include:

- Scarification or subsoiling with a self-drafting winged subsoiler to relieve soil compaction, where practical, to promote infiltration and reduce runoff;
- Use of slash/brushpiles at appropriate locations to limit water and sediment from running off the right-of-way (slash filter windrows);
- Installation of temporary slope breakers at appropriate locations and at spacings to shorten slope lengths, prevent concentrated flow and to divert runoff to stabilized areas;
- Installation of silt fences or certified weed free straw bales as sediment barriers;
- Temporary seeding (using appropriate quick-germinating cover crops such as annual ryegrass or other appropriate quick-growing temporary cover species; this measure would not occur on federal lands where introduced species are restricted); and/or
- Selective mulching of areas without effective surface cover.

The BMPs would be designed and implemented to meet the requirements of the CWA, BLM RMPs, USFS LRMPs, and *National Forest Plan Water Quality and Soils Standards and Guidelines* on USFS lands and would include:

- All tree felling and vegetation clearing would occur within the certificated construction work areas, except for hazard trees adjacent to the construction right-of-way, additional work areas, and travel corridors;
- Hazard trees would be designated by qualified company or third-party personnel;
- Trees within the certificated construction work areas would be directionally sheared or felled so as to prevent damage to adjacent trees, facilities, or structures;
- Log landings would not be located in wetlands or Riparian Reserves;

- Logs and slash would not be yarded across perennial streams unless fully suspended over the stream and adjacent banks. Where yarding across intermittent streams is necessary, log movement would be designed to minimize sediment delivery to streams;
- Logs firmly embedded in the bed or bank of waterbodies that are in place prior to felling timber would not be disturbed during logging and yarding operations unless they prevent trenching and fluming operations;
- All timber clearing from the construction right-of-way would be completed in accordance with PCGP's harvest plan requirements. Merchantable timber (and slash, as necessary) would be cut and removed except for trees left to meet resource objectives;
- In limited areas, logs would be decked and stored in TEWAs located outside of the construction right-of-way. These TEWAs generally would be in currently cleared areas next to roads;
- Logging slash material designated to remain on-site as environmental mitigation would be placed in designated UCSAs or TEWAs along the edge of the construction right-ofway and then scattered/redistributed across the construction right-of-way during final cleanup and reclamation (following seeding), in accordance with BLM and USFS fuel loading specifications in order to minimize fire hazard risks. Please see the Leave Tree Protection Plan (Appendix P to the POD), Prescribed Burning Plan (Appendix R to the POD) and the Overburden and Excess Material Disposal Plan (Appendix Q to the POD) for additional measures regarding handling and disposal of excess logging slash and materials. No Douglas-fir felled trees, 12 inches or larger in diameter, would be left in areas on federal lands where there is the potential to create infestations of Douglas-fir beetle;
- Slash concentrations on federal lands would be chipped in areas where yarding out is not feasible; slash on federal lands would not be permanently stored in UCSAs within Riparian Reserves, as noted in the ECRP;
- All landing slash will be utilized to the maximum extent possible. Larger pieces may be made available to the general public, or chipped to be removed for manufacturing chips or hog fuel. Remaining debris may be chipped and spread back across the Right-of-Way without inhibiting revegetation (typically less than 1 inch thick);
- In upland areas, stump removal would be limited to the trenchline and areas where grading is necessary to construct a safe, level working plane;
- Off-site slash disposal and/or burning may occur in areas where slash is concentrated, such as landings. Slash would be machine or hand-piled with the outer edge of piles no closer than 20 feet from the outer drip line of live trees, and burned according to state burning requirements and BLM or USFS stipulations. Burns would occur during the wet season (i.e., November 1 to April 30). PCGP has developed a Prescribed Burning Plan which is included as Appendix R to the POD and describes the procedures that would be implemented if prescribed burning is to be conducted;
- Each construction spread would have one lead Environmental Inspector (EI) and several assistant EIs. The inspectors would ensure compliance with federal, state, and local regulations and permit requirements, including the Right-of-Way Grant and FERC Certificate;
- Els in coordination with federal agency authorized representatives, would have the authority to stop activities that violate the measures set forth in the timber harvest contracts and Grant with the respective federal land managers and in other permits and authorizations, and would have the authority to order corrective actions;
- PCGP's lead EI would have the authority to stop activities when wet weather or other conditions make it necessary to restrict activities to avoid excessive rutting in sensitive areas; and

 Forested lands disturbed by the construction of the Pipeline Project would be replanted according to state and/or federal (BLM and USFS) requirements. Planting would occur on all forested lands disturbed by construction except for 15 feet from either side of the pipeline centerline. Replanting prescriptions are included in the ECRP which is included as Appendix I to the POD.

The EI would also utilize other effective BMPs as discussed in the ECRP to prevent sedimentation beyond the approved construction right-of-way and associated TEWAs or into waterbodies or wetlands. As stated in the ECRP, effective ground cover is the amount of cover necessary for maintaining a disturbed site in a low hazard category for erosion. The ECRP provides effective ground cover requirements based on potential erosion hazard of areas disturbed by the construction. PCGP assumes that the soils within the construction right-of-way will be categorized within the high to very high erosion hazard classes and would apply the appropriate mulching cover requirements for these erosion hazards classes.

2.7 TIMING RESTRICTIONS FOR RIGHT-OF-WAY CLEARING

The following is a summary of the Applicant Prepared Biological Assessment and provides a brief overview of the proposed timing for timber clearing. The U.S. Fish & Wildlife Service will either approve or modify the timing restrictions in their Biological Opinion and this section will be updated at that time.

PCGP will clear timber and other vegetation as permitted by weather conditions and outside of applicable timing (daily and seasonal) restriction windows. PCGP would apply temporal and spatial restrictions recommended by U.S. Fish & Wildlife Service (FWS) and other agencies to protect nesting marbled murrelets (MAMU), northern spotted owls (NSO), migratory birds, and other raptor species (see Attachment C).

To minimize impacts to MAMU, PCGP is proposing to fell timber and mow other vegetation in occupied or presumed occupied MAMU stands and within 300 feet of those stands after the entire breeding season (April 1 to September 15). Timber or other vegetation removal (including brush mowing) could occur within 0.25 mile of MAMU stands but beyond 300 feet of occupied or presumed occupied stands between April 1 and August 5; however, PCGP would apply daily timing restrictions (activities would occur between 2 hours after sunrise and 2 hours before sunset). The purpose of the daily timing restrictions is to minimize risk of disturbance to adult MAMU entering and leaving the stand and possible dispersal of juveniles. If biologists identify a nest tree or potential nest trees within 0.25 mile of the MAMU stand that would be cleared, timber clearing activities would not occur until after the entire breeding season (after September 15). Daily timing restrictions would also be applied during other construction activities within occupied and presumed occupied stands and within 0.25 mile of those stands during the critical breeding season (April 1 through August 5).

To minimize impacts to NSO from "habitat" removal, PCGP would not remove timber (tree cutting or brush mowing) in active NSO nest patches and within a 0.25-mile buffer of the NSO activity center until after the entire nesting season (March 1 to September 30), provided existing access roads to the construction right-of-way through NSO nest patches or core areas would NOT be restricted. Additionally, other vegetation removal, timber processing, and construction activities, not requiring tree cutting or brush mowing, would not occur between the critical breeding season (March 1 to July 15) in active NSO nest patches and within a 0.25-mile buffer of the NSO activity center.

Prior to timber clearing and brush mowing, ,PCGP would have experienced MAMU biologists survey both the occupied and unoccupied suitable habitat stands in which habitat would be modified by construction and mark trees that currently have nest platforms or potential for nests. If feasible, PCGP would avoid removal of those marked trees. Stands within the analysis area where no occupancy of a site was detected during both years of surveys are considered unoccupied for 5 years after the 2-year survey protocol is complete, and timing constraints and buffers would not apply. However, some of the sites unlikely to be occupied would have daily and seasonal restrictions applied because of their proximity to known occupied stands. Prior to timber clearing (including brush mowing), other vegetation removal, and construction activities, PCGP would also have experienced NSO biologists survey within a 0.25 mile of NSO activity centers to determine nesting activities and construction activities. Construction, clearing, and/or ground-disturbing activities would adhere to conservation measures specified in the FWS Biological Opinion.

To minimize impacts to other nesting raptors in the Pipeline Project area, PCGP would survey for eagles and other raptors within 0.25 mile to 0.5 mile of the Pipeline Project prior to tree clearing and/or construction and apply appropriate seasonal nesting buffers; no timber removal. other vegetation removal, or construction activities would occur during the appropriate nesting seasons. Additionally, outside areas considered for MAMU and NSO, as described above, and other applied seasonal raptor buffers, PCGP would clear vegetation in woodland and forest (wooded habitats) in all seral stages outside of the primary migratory bird nesting season, which is April 1 to July 15, to minimize effects to nesting migratory birds in the Pipeline Project area (see Attachment C). PCGP would also employ biological monitors to identify migratory bird nests at risk in non-wooded habitats or wooded habitats where felling and brush clearing is necessary during the primary migratory bird season (April 1 to July 15) to further minimize effects to migratory birds nesting in the Pipeline Project area. If nests are identified during the primary nesting bird season, PCGP would work with FWS to identify appropriate buffers based on the species' ecology and relative sensitivity to disturbance, which could include avoiding activity until fledging or nest failure is verified, and if avoidance is not possible, move or remove an active nest, eggs, and/or juveniles.

3.0 TIMBER CLEARING OPERATIONS

Operational Scenario(s) are descriptions of "standard method" "forest / timber clearing" harvest technique designs specific to a distinct terrain / landscape and forest vegetation type.

3.1 HARVEST TECHNIQUES

Harvest techniques are discussed in context of "standard method" traditional capabilities. Two sequential harvesting operations are outlined: tree and timber felling, and methods of retrieving [yarding] material to a site for demolition or hauling to a purchase point. Site by site advantage(s) or disadvantage(s) [pros and cons] via comparative analysis of "standard method" to each other and alternative methods is not assessed in this document.

3.1.1 TREE FELLING

Mechanical -

 Feller-buncher [shear or saw, come in different configurations, small to large]. Can operate efficiently on slopes to 50%. Versatile in large regeneration [R] to small dbh medium saw [MS] trees of merchantable and non-merchantable timber. Directional felling, species sorting, and volume control of cut trees stacked for accelerated volume skidding.



2) Chainsaw [hand]. Hand tree felling with chainsaws will be used in all vegetation types and Scenarios. Chainsaws will be necessary for trees that are too large or small, leaning, crooked, steep slopes, riparian areas, inaccessible spots [rock piles, etc.], or have defects that may prevent using the mechanical felling method.



3.1.2 TREE YARDING

Two methods:

- 1) Aerial [Helicopter, Cable yarder, Cable Yoader]
- 2) Ground-based [tracked or rubber-tired skid equipment, shovel, dangle-head].

Helicopter [aerial]

 ECRP "3.3.2" - "... in some isolated rugged topographic areas with poor access, helicopter logging may be utilized." Helicopters come in an assortment of configurations and have the capability to clear the vast majority of timbered areas along the alignment during any time of year pending mitigation of restriction(s) [aka – noise, crossing public roadway, environmental, other regulatory].

Example of Helicopter Alternative Method: Helicopter operations can continue clearing when and where ground-based or yarder harvesting operations cease for extended period of times due to seasonal weather. If environmental and regulatory restriction(s) are mitigated and road conditions are within BMP compliance, clearing may continue.

Single engine rotor helicopter configured for harvesting small to large pole size to small sawlog size timber. Capable of removing bundles of choked small to large sapling size trees.



Dual engine and rotor helicopter configured for harvesting all sizes of timber.

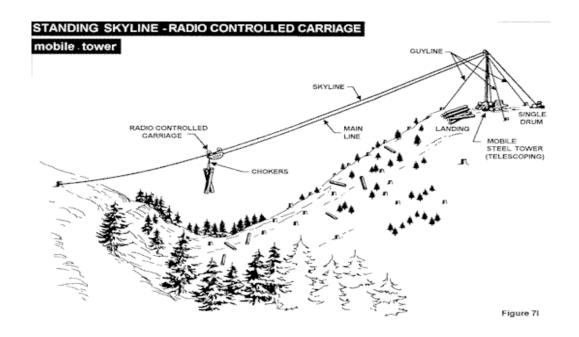


Yarder [stationary cable system, aerial]

Three basic configurations –

1) Standing Skyline. Normally has a single tail block and requires the skyline to remain elevated or standing while a carriage [motorized, drift, interlock, running] is winched and/or drifted back and forth from the yarder to retrieve felled trees or logs.





 Live or Running Skyline. Skyline can be live [raised and lowered] via yarder drum winches [haul back, main line] to allow increased yarding capabilities with different carriage types.

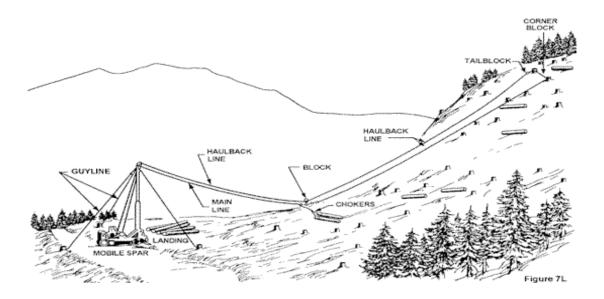


Diagram Reference: U.S. Department of Labor, Occupational Safety & Health Administration, Compliance Assistance, eTools, www.osha.gov.

Self-propelled tracked swing-yarder. Versatile configurations. Can operate on road width area as shown below. Requires larger area than small side-mounted yarder. Usually longer spans and lift capacity for bucked long logs from medium to large size trees.



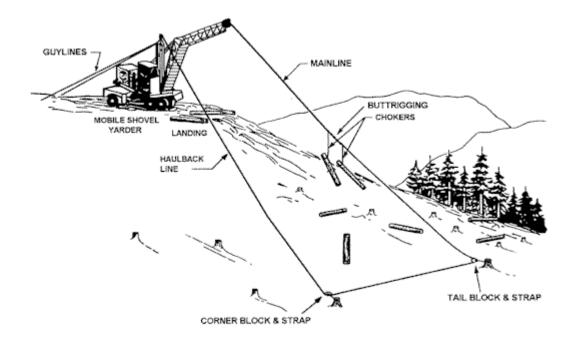
Rubber-tired self-propelled side-mounted cable yarder operating on narrow road width. Versatile configurations and mobile if safe access to tight rough terrain areas that can be yarder harvested.



3) Yoader [aerial or ground-based]. Preferred base equipment is hydraulic heel boom log loader equipped with at least two winches. Mobile, extremely versatile, multi-tasking equipment: cable yard, log loading, shovel logging, tree pulling, slash piling. Needs minimal area for operation. Suited for cable yarding smaller timber, but can yard short length large diameter logs.



Yoader mobile shovel yarder configuration. Can utilize standing or live skyline setup for drifting carriages [motorized, Christy, buttrigging].



3.1.3 SHOVEL LOGGING

- 1) Feller-buncher is considered a shovel logging method.
- 2) Hydraulic grapple heel boom. Versatile operation method. Can be configured as Yoader, log loader at landing, multi-tasking with hand or mechanical tree felling ops. Can sort and stack logs into skid pile for quick removal and clean tree felling area [bunching under carriage corridor for cable or helicopter ops where landscape allows]. Can assist felling ops with pull / push of tree, and remove unmerchantable material pre and during felling ops for storage and later retrieval.



 Dangle-head processor. Slope limited to +/-30%. Primarily delimbing, log manufacturing, and piling logs by species sort for efficient volume skidding. Production option.



3.1.4 GROUND-BASED SKIDDING

Tracked grapple skid equipment. May also be equipped with cable winch.



Rubber-tired grapple skid equipment. May also be equipped with cable winch.



3.1.5 ALTERNATIVE HARVEST ASSISTANCE EQUIPMENT

1) Tracked crawler stroke-delimber. Primarily oriented for delimbing and log processing of skidded whole trees [YP to SS stand type size class] to a landing site for sorting and truck haul. On allowable terrain following hand or mechanical tree felling, a delimber can receive same type skidded material outside and away from traditional landing sites and develop limbed and bucked logs for skidding to a landing. Or, develop a continuous log landing along one or both sides of an existing road or main skid trail to be converted into a haul road. Both types are very versatile in regards to accelerated clearing operations. This leaves the majority of unmerchantable material at its origin for later treatment [burning, chipping, erosion control, wildlife, etc.].



2) Tracked crawler-chipper. Unique machine comes in several horse-power and grinding capability configurations. The machine can crawl and grind on a range of slopes to process unmerchantable material at site of origin versus additional equipment that requires multiple-handling tasks of collection, skidding, and processing.



3.2 FOREST/TIMBER VEGETATION TYPES

Vegetation forest type data is relational in proposing timber clearing scenarios. Traditional forestry business decisions dictate such information is considered crucial by foresters, forest product buyers, and contractors when designing contracts, particularly when there is significant diversity in board foot volumes and number of trees per acre to be cleared across an atypical elongated project harvest site with a variety of terrains utilizing a variety of scenarios.

Data origin is the pipeline alignment timber volume estimate presented to PCGP in December 2007 [not attached to this document]. Estimated forest type data of interest is two-fold:

- 1) Table 1 Trees per acre by forest stand type data utilized to determine the weighted average number of trees per acre [TPA] by size, species, gross and net volume. This data is the building block for extrapolating Table 2.
- 2) Table 2 Acres of forest stand type and total net Scribner volume by landowner group of interest [USFS, BLM, All Other Landowners]. Forest stand types along the alignment are by project proxy, specific quantified units of timber size and quantity [volume and number of pieces] to be cleared. This allows for best-fit harvest equipment selection necessary to complete the clearing project and maintain BMP compliance, schedule, etc.

 Table 1 (Data is updated from 2006 field sample plots to 2015 plots used to develop the approved Cruise Plans for the 3 USFS districts [Umpqua, Rogue, and Fremont Winema]. Same data used to generate Table 2)

Trees per acre estimate [TPA]. Low [L] to High [H] TPA range. Average [Avg] - weighted average TPA [+/- number of clearance pieces per acre by type]. The QMD [quadratic mean diameter] is the weighted average diameter at breast height of the average tree by type

Size Class		R ¹			YP ¹			SS ¹			MS ¹			LS ¹	
L/Avg/H	L	Avg	Н	L	Avg	Н	L	Avg	Н	L	Avg	Н	L	Avg	Н
TPA	273	365	733	243	323	523	169	264	429	103	174	343	91	162	233
QMD		5"			9"			14"			22"			31"	
¹ Definitions provided in notes to Table 2 below.															

 Table 2 (5/2017: revised data to projected start year of clearing 2020 that matches up with revised data projected to 2020 in Table 3.3-5 of Resource Report 3)

Estimated acres of forest stand type and net volume [mbi] Scribner Dec. C by ownership								
Owner:	HMC	R	YP	SS	MS	LS	Total:	
FS acres	0	33	50	142	154	37	416	
Mbf Vol	0M	465M	171M	3,841M	7,558M	3,349M	15,384M *	
BLM acres	20	14	73	221	136	20	484	
Mbf Vol	529M	293M	901M	4,416M	6,462M	1,963M	14,564M	
Other acres	101	199	88	485	162	36	1,071	
Mbf Vol	342M	109M	1,213M	5,915M	4,319M	1,134M	13,032M	
Total Acres	121	246	211	848	452	93	1,971 *	
Total Mbf Vol	871M	867M	2,285M	14,172M	18,339M	6,446M	42,980M	

Estimated acres of forest stand type and net volume [Mbf] Scribner Dec. C by ownership

General Forest Stand Type Information [types include arboricultural related data for each]:

HMC – Hardwood/Mixed Conifer; R – Regeneration/Plantation; YP – Young Pole [6-10" dbh];

SS - Small sawlog [10-20" dbh];

MS – Medium sawlog [20-30" dbh]; LS – Large sawlog [30"+ dbh].

*Note: Combined FS and BLM volume of 29,948 17,379MBF. Volume estimate from Table 1.

**Note: The differences in acreage between Table 2 and Table B-1 in Attachment B are explained by 1) the estimated acres provided in Table 2 for forest stand and volumes are based on the PCGP's original route filed in the September 4, 2007 FERC Application and only includes forested acres. Miscellaneous land slivers of roads, landings, open areas such as rock pits, grasslands, shrublands or watercourses, etc. that are intermixed with stand types and do not have timber volumes were not included in the estimate acreage. 2) The acres of harvest scenarios provided in Table B-1 of Attachment B are based on the final May 2009 FERC FEIS route which incorporated various route modifications that affected both federal (BLM and FS) and private lands. The final FERC recommended route modifications were included to avoid or minimize impacts to Marbled Murrelet and Northern Spotted Owl as well as landowners. Examples of these route modifications included the Camas Valley East Route Variation, Oregon Women's Land Trust Route Variation, the Umpqua National Forest Route Variation (Peavine reroute) Clover Creek Road modifications, including other minor route or workspace adjustments. The Harvest Scenario acres provided in Table B-1 also include areas and land types affected by the project such as miscellaneous land roads, landings rock pits and some miscellaneous land type slivers such as grasslands and shrub lands intermixed with forested stands.

Harvest Method Codes:

"Harvest Method Code(s)" were generated to signify a selected "standard method" or "combined method [alternate]" harvest technique Scenario. Harvest method codes are listed in Table 3.

Harvest Method Codes	
Harvest Method Category	Harvest Method Code
Tree / Timber Felling:	
*Chainsaw [hand felling]	С
*Mechanical [feller-buncher, saw or shear]	F
Yarding [Aerial]:	
*Helicopter	Н
*Cable Yarder	Ya
*Cable Yoader	Yo
Yarding [Ground-based]:	
*Shovel Logging [tree/log skidding assist] -	
- Hydraulic heel boom	S
- Dangle-head processor	D
- Feller-buncher	F
*Ground-based skidding equipment -	
- Track or rubber-tire	G
*Construction – scattered small amounts of material, veg clearing completed by second phase of construction after forest / clearing.	Const2

Table 3 Harvest Method Codes

The "forest / timber clearing" process is a two-step sequential process: tree and timber felling, followed by yarding. To quantify the two-step list of proposed harvest methods, a tree and timber felling code or codes is algorithmically fused (combined with) to a yarding method code or codes. Each fused code set then represents the area [polygon] of proposed harvest operation scenarios as exhibited on the pipeline alignment maps by landowner, and as listed in the modified PCGP Master Line List.

The scenario code set-up is a two-part [two-halves] alpha based delineation that depicts proposed sequential harvest processes:

Code Set-Up -

- a. Yarding [left half] [separated by slash /] Tree and timber felling [right half].
- b. Either half may contain more than one method. This would indicate a "staged" combination of methods for felling, yarding, or both.

Note: Primary yarding operations are determined first, followed by felling. Logistics being, if timber is not felled to lead or in a pattern conducive to benefit the selected method of yarding, then there is an increased probability that forest clearing BMPs, safety, excessive forest product damage, regulatory compliance, etc. will be compromised.

Harvest Scenario Code List -

The table list displays a permutative compilation of fifteen scenarios. Not all scenarios are utilized for plan development, but are recognized as an option. There may be one or more scenarios presented by a landowner or agency that is different than any proposed [ECRP "3.3.2, … If, based on site-specific conditions, the landowner or land management agency-recommended timber harvesting method is not feasible, an alternate timber harvesting method will be utilized with approval from the landowner or land managing agency."]

Harvest Scenario Code List							
Code	Yarding	Comments	1	Felling	Felling	Description Comments:	
H/C	Н	any terrain	1	С	Specify minimum falling specs.	100% hand felling.	
H/FC	н	<40-50% slopes	1	F,C	Favorable terrain for feller-buncher	Moderately dense stand of R to MS trees for feller-buncher, hand fall large trees if any, stage felling option.	
H/FDC	Н	<25-50% slopes	I	F,D,C	Same, option for use of dangle- head processor	High density stand, same scenario, dangle-head option to process high number density of small trees, retain slash at felling site, hand fell large trees if any, stage felling option.	
Ya/C	Ya	>40-50% slopes	1	С	Hand felling, ground too steep for mechanical	Narrow alignment corridor and lack of lateral road access limits use, may require more than normal moves.	
Ya/FC	Ya	<40-50% slopes	1	F,C	Favorable terrain for feller-buncher	Moderately dense stand of R to MS trees for feller-buncher, hand fell large trees, stage felling option.	
Ya/CS	Ya	<30-40% slopes	1	C,S	Hand felling, shovel assist	Ground favorable to shovel doodling felled trees to cable corridor for accelerated tree and log removal, stack slash, push-pull tree assist.	
Yo/C	Yo	any terrain	1	С	Hand felling	Versatile, work odd pockets, very mobile compared to yarder, yard steep slopes for skid equip. log forwarding.	

Table 4 Jarvest Scenario Code List

Code	Yarding	Comments	1	Felling	Felling	Description Comments:
Yo/FC	Yo	<40-50% slopes	1	FC	Favorable terrain for feller-buncher	Dense R to MS type, fell and bunch understory, hand fell larger material, stage felling option.
Yo/FD	Yo	<25-50% slopes	1	F,C	Favorable terrain for feller-buncher	Dense YP to MS type, fell and bunch, yard bundles, hand fell larger material, stage felling option.
Yo/FDC	Yo	<25-50% slopes	1	F,D,C	Favorable terrain for feller-buncher, optional use with dangle-head	High density stand, feller-bunch for dangle-head option at stump processing, leave slash at site, hand fell large trees if any, stage felling option.
G/C	G	<40-50% slopes	1	С	Hand felling, large MS to LS trees	If dense stand, may require stage hand felling and yarding option.
G/CS	G	<40-50% slopes	1	CS	Primarily large MS to LS trees	Dense stand, may need stage felling, heel boom loader sorting assist.
G/F	G	<40-50% slopes	1	FC	Large R to small MS trees	Efficient at shearing and making bundles for skidding & mobile chipper.
G/FC	G	<40-50% slopes	1	FC	Stage felling	Dense understory of R to SS type for feller-buncher, hand fell larger trees, stage felling option.
G/FD	G	<25-50% slopes	1	FD	Stage felling	High density stand, feller-buncher, dangle-head option at stump, leave slash at site, stage felling option.
G/FDC	G	<25-50% slopes	1	FDC	Stage felling	High density stand, feller-bunch understory, dangle-head option at stump site, leave slash, hand fell large trees, stage felling option.

Support Information:

Table 2 exhibits the six basic forest stand types [HMC, R, YP, SS, MS, LS]. The following is a pictorial presentation to aid plan development clarification of what each forest type generally looks like in a range of areas along the alignment. Each photo has an associated proposed harvest scenario code or codes that could be efficiently used to operate this type and terrain. All terrain associated with each type are not presented; e.g., HMC on helicopter or yarder cable terrain.

3.2.1 HARDWOOD/MIXED CONIFER [HMC]

Distinctly a hardwood type [no estimated tonnage or board foot volume per acre]. Small percentage of conifer stocking by density. Approximately +/- 500 board foot gross volume per acre for conifers. Stand is usually lower elevation and south slope; or, shallow, rocky, xeric soils with a low capacity to stock and sustain a significant presence of conifers.





HMC, G/F [Alternate option – F/ grind all with crawler chipper]

HMC, G/F [Alternate option – F/ grind all with crawler chipper]



3.2.2 REGENERATION [R]

Average TPA – 512, QMD – 5" dbh. Plantation. No board foot volume per acre. Older matured plantations considered harvestable if market conditions exist for fuel or clean chips. May be isolated scattered overstory residual associated with wildlife. Plantations range in age from new or recent [0-12 years +/-], to matured plantation [12-20 years +/-] with tree growth and size intersect at entering a marketable harvest size in the YP forest type stage.



R, G/FD [Alternate option – F/ grind all with crawler chipper]

R, G/FD [Alt option – F, grind all with crawler chipper]



3.2.3 YOUNG POLE [YP]

Average TPA – 471, QMD – 9" dbh. Originally a plantation. Stand is generating merchantable logs and chips. Approximate board foot stocking per acre 1MBF of high-taper low volume trees. A few areas of 3-5MBF per acre per stand at high-end micro sites. Fast growing dense stands causing mortality of understory competition.



YP, G/FD [Alternate option – grind slash with crawler chipper]



YP, G/FD [Alternate option – grind slash with crawler chipper]

3.2.4 SMALL SAW AND PEELER LOG [SS]

Average TPA – 372, QMD – 16" dbh. Maturing young growth stand of fast growing timber. Stand primarily generates small saw and peeler log size trees, with secondary production of clean and fuel chips. Approximate 12MBF per acre board foot stocking. Tall and dense stands with higher-end production of overstory competition, and understory mortality. Tight stands with much less understory stocking.



SS, G/FC [Alternate option – grind slash with crawler chipper]

SS, G/FC [Alternate option – grind slash with crawler chipper]



3.2.5 MEDIUM SAW AND PEELER LOG [MS]

Average TPA – 268, QMD – 26" dbh. Growing matured young growth stand. Growth beginning to culminate. Stand primarily generates medium saw and peeler log size trees, and minimum production of clean or fuel chips. Approximate 27MBF per acre board foot stocking. Tall and dense stands with higher-end production of overstory competition, and understory mortality. Mortality now on forest floor and lesser quantities still vertical. Unlogged stands are tight with small amounts of understory stocking, hardwood at fringes, etc.





3.2.6 LARGE SAW AND PEELER LOG [LS]

Average TPA – 193, QMD – 39" dbh. Matured to over-mature. Some stands very defective trees, some not. Stand primarily generates MS to LS saw and peeler log size trees. Cull logs good for LWD recruitment to riparian areas and other areas lacking of such material. Approximate 89MBF per acre board foot stocking. Tall trees to 130 and 180 feet not uncommon. Unlogged stands exist, and are very dense in tree count stocking and crown canopy. These are usually stocked with more large MS size trees and scattered large LS trees, little understory vegetation. Previously logged stands with spaced trees and natural regeneration filling in the understory.



G/C



Attachment A Regulatory Compliance & Definitions

Assessment Development Procedure

Development Protocol – Regulatory and BMP Compliance

The plan was developed via utilization of applicable BMP compliance protocol outlined in PCGP document "Erosion Control and Revegetation Plan (ECRP), Pacific Connector Gas Pipeline, LP, September 2017." Specifically:

- 1) ECRP "Table of Contents" Sections
 - 1.0 Introduction
 - 1.1 Project Description
 - 2.0 Existing Site Conditions
 - 3.0 Proposed Construction Activities
 - 3.1 Project Routing and Design
 - 3.2 Construction Schedule
 - 3.3 Pipeline Construction Sequence
 - 3.3.1 Preconstruction Survey
 - 3.3.2 Forest / Timber Clearing

<u>Development Protocol</u> – "Forest / Timber Clearing" Operation Scenarios

The plan was developed via application of proposed "forest / timber clearing" operation Scenarios designed relative to:

- 1) Project Schedules
 - a) ECRP "Table 3.3-1 Spread Locations" within the "3.2 Construction Schedule."
 - b) "Draft Biological Assessment, Section 2.1.2.3 Construction Methods and Potential Impacts and Table 3.4-15 Summary of Seasonal Timing Restrictions for Migratory Birds, Endangered Species and Raptors Based on Pipeline Activity
- 2) "Forest / Timber Clearing" Operation Scenarios -

Scenarios are developed via application of professional forest harvest engineering methodology to identify and assess the site by site specific best-case techniques to achieve:

a) Operations designed in response to achieve timely systematic BMP compliance and completion of ECRP "3.3.2 Forest / Timber Clearing."

ECRP "3.3.2" - "All timber cleared from the right-of-way will be cut and cleared in accordance with landowner and land management agency requirements, where practical. If, based on site-specific conditions, the landowner or land management agency-recommended timber harvesting method is not feasible, an alternate timber harvesting method will be utilized with approval from the landowner or land managing agency."

<u>Response</u>: Clearing development regardless of ownership, assumes this process to include removal of merchantable and non-merchantable "trees" and "timber" as a function of site-specific conditions and in compliance of sequential construction operations requirements.

ECRP "3.3.2" – "Merchantable timber will be cut and removed from the construction right-of-way and TEWAs to ensure that these areas are cleared prior to construction.

<u>Response</u>: Scenarios are considered best-case fit BMPs for clearing merchantable and non-merchantable "trees" and "timber." Scenario utilization to clear and harvest is expected to result in production of high quality forest product(s).

ECRP "3.3.2" - "PCGP expects that the use of all logging methods may be necessary during the project to efficiently remove timber from the right-of-way depending on the specific location. Ground-based skidding and cable (where feasible) logging methods will likely be the standard method; however in some isolated rugged topographic areas with poor access, helicopter logging may be utilized. The specific logging methods will not be determined until a contractor has been selected through the bidding process for each spread."

ECRP "4.1.1 Construction Ingress and Egress," "PCGP has identified ingress/egress points to the construction right-of-way using existing public and private roads. These ingress/egress points are shown on the Environmental Alignment Sheets [...]. Traffic will move along the construction right-of-way within the construction right-of-way limit."

ECRP "11.0 Steep and Rugged Terrain," top of pg.47, "The orientation of the ridges requires the pipeline, in numerous areas, to descend and ascent steep ridge slopes to cross stream drainages [...]"

<u>Response</u>: Scenario design takes into consideration the projects primary intent of constructing a pipeline that crosses many hundreds of private and government parcels and acreages in mountainous forested terrains. Clearing Scenarios will generally parallel ECRP "standard (logging) methods." The Pipeline Project is not designed as a traditionally engineered forest products harvesting plan with respect to ECRP excerpts "4.1.1" and "11.0," and will require a subset of non-traditional or alternate forest product harvesting techniques to satisfy clearing and BMP compliance.

- b) Forest clearing is the initial construction operation and precedes other construction phases as defined in ECRP "3.3 Pipeline Construction Sequence." PCGP construction operations are designed as a "sequence or in assembly-line fashion along the right-of-way with one crew following the next from clearing until final cleanup."
- c) Proposed "forest / timber clearing" Scenarios guided by "EI" and contractor compliance is anticipated to successfully initiate, maintain, and achieve desired BMP completion outcomes in advance of proposed sequential construction operations.

Plan Support Information

"Forest / Timber Clearing" Interrelated Terminology

Plan Development Protocol ECRP sections mention three operative interrelated forestry terms. It is important to clarify these terms in context to proposing operational Scenarios in regards to:

- 1) professional forestry interpretation and usage of terminology utilized in clarifying operations standards.
- 2) formulating a quantifiable and validatable approach to satisfy the "Mission" intent.
- 3) enhanced understanding of plan development for non-forestry project proponents.

Interrelated Terms -

"forest" - It is necessary to recognize a basic "forest" term concept in context to what type of landscape vegetation exist interior to project right-of-way alignment and TEWAs. This is strategic to plan development regarding what and how designated "forest" vegetation is proposed for ECRP "3.3.2 Forest / Timber Clearing" Scenario operations. BMP compliance will require knowledge of what shall, and shall not be cleared during this initial construction phase.

To establish an estimate of "forest" contents, vegetation type data was quantified for PCGP in November/December 2007 [ACRT] for each parcel intersected by the alignment. Alignment shifts have occurred since December 2007. A retrospect overview of October 2007 to October 2008 Master Line parcel owners and alignment ortho photography comparing "forest" vegetation types indicate variations. Alignment modifications are compensated for in this plan. [Referenced 2007 PCGP delivered documents not attached. Available upon request: Excel files – "County Info Summary," and APN Owner Master Nov06"].

"**tree**" – Generally, "trees" include all woody plants that have genetic capacity to achieve heights greater than twenty feet with one to a few main stems. "Trees" are the primary vegetation make-up of "forest" areas proposed for clearing, and from which "timber" is derived and determined as either merchantable, or not.

"**timber**" – "tree[s] suitable for conversion into industrial forest products." [wordnet.princeton.edu/perl/webwn]. The "timber" definition impacts plan development regarding two *key* "forest / timber clearing" Scenario elements:

1) The plan was designed to determine on a site by site landscape and forest vegetation basis, the designated merchantable timber [trees] suitable for harvest and conversion into industrial forest products [logs, chips, etc.] to be sold. This will include clearing a portion of non-merchantable timber [trees] not suitable for conversion, and will remain at site.

2) Same process as (1); however, pertains to which designated non-merchantable and merchantable trees are not suitable or determined for commercial harvest and shall remain onsite for proposed ECRP environmental mitigation.

<u>"Forest / Timber Clearing" Assumptions</u> ECRP "3.3.2 Forest / Timber Clearing" states:

"All timber cleared from the right-of-way will be cut and cleared in accordance with landowner and land management agency requirements, where practical. If, based on sitespecific conditions, the landowner or land management agency-approved timber harvesting method is not feasible, an alternate timber harvesting method will be utilized with approval from the landowner or land managing agency."

<u>Response</u>: Clearing scenario development regardless of ownership, assumes this process to include removal of merchantable and non-merchantable "trees" and "timber" as a function of site-specific conditions and in consideration of sequential construction operations.

"Merchantable timber will be cut and removed from the construction right-of-way and TEWAs to ensure that these areas are cleared prior to construction.

<u>Response</u>: Cleared merchantable and non-merchantable "trees" and "timber" is proposed for removal by proposed Scenarios that are designed for maximizing utilization of potential marketable forest products. Basically, two product types: logs and chips.

Attachment B TIMBER CLEARING OPERATION DRAWINGS (To be provided during development of the Timber Harvest Plans)

I. Maps

The "PCGP Environmental Alignment sheets, Spreads 1 through 5" are utilized [11"x17" and 24"x36", 226 page set provided in Attachment AA]. These were balanced against the most current PCGP pdfs for updated alignment and transportation corrections. By landowner parcel and each map, the following "Forest/ Timber Clearing" Scenario Map Legend Items were scribed to geographically indicate a generalized pictorial map format of proposed clearing operation scenarios. Certain Items are discussed to enhance Item clarification.

II. Timber Clearing Operation Legend Items and Notes

Code Harvest Scenario Code List.

<u>L</u> Potential temporary landing area [all scenarios].

Mild slope areas [0 to 25-30%+/-]: Landing position is selected to allow for uncongested clearing operation. Continuous landings are recommended within and paralleling the alignment. Using a continuous landing allows for uncongested and accelerated clearing operations whereby trees / logs are yarded or skidded short distances to mild terrain along a road and stacked accordingly for processing equipment and haul trucks to arrive. This leaves most slash at the felling site [erosion control BMP], or can be processed at the continuous landing [option]. Skid trails are kept to a minimum, short length, and mitigates soil impacts. Continuous landings negate existing landings since the areas are relatively flat and will be regenerated. For the same slope type, "standard method" traditional type landings are a sized specific area, and would be congested with a significant variety and quantity of trees and logs in a limiting space, pending flow of forest products trucked off-site. This results in a myriad of repetitive continual short to long skid patterns to bring trees, logs, and slash to a central location for processing. The alignment is well stocked with trees of assorted species and sizes in a regulated, compressed, elongated harvest area that is atypical to traditional forest harvests. As such, operations are spread out linearly, versus a specific set of conducive ingress / egress roads designed specifically for forestry operations.

<u>Steeper than mild slope areas [>25-30%+/-]:</u> These would be more conducive to "standard method" traditional landings within a specified area of confinement due to steepness of slope, watercourses, etc.

- **HP** PCGP designated "Helicopter Usage" [service, etc.]. Designated by PCGP for specified TEWA location.
- **H,HL** Potential new temporary helicopter landing for clearing operations only. Primarily selected to account for ECRP "3.3.2 ... areas of rough terrain."

- **HS** Potential new temporary helicopter service landing for clearing operations only. Primarily selected to account for ECRP "3.3.2 ... areas of rough terrain."
- <,>,<> Tree or Log Yarding Direction. The legend symbology will be indicated on maps when yarding or skidding scenario logistics are impaired by obstacles such as unfavorable slope [e.g. slope too steep for adverse ground-based skidding (25-30%+/-)], blind lead [cable yarder skid lines not visible in hazardous area such as cliff, erratic terrain, etc.], watercourse [stream, spring, ditch], public infrastructure, utilities, fence, wildlife, archaeological, property line, etc. Generally, skid direction is given +/- towards a landing [continuous or otherwise].

Where no directional skid symbology is shown, it is estimated there is sufficient volume of material that can be skidded favorably in either direction [i.e. slopes / gravity in favor of terrain to landing; or unfavorably (function of machine efficiency to skid logs upslope)]. Basically, terrain is favorable for any direction of skid.

- **Const2** ECRP "3.3.3 Clearing and Grading" "non-forested lands." Areas with small amounts of vegetation in concentration, or scattered pockets. Recent conifer plantations several feet in height +/- or less, brushfields, etc.. Not conducive to having traditional forest harvesting type operations attempt to clear.
- E Existing vehicle road or main skid trail that may be needed as additional TRA [temporary road access] for isolated alignment areas between watercourses, or long stretches of alignment basically too steep for adverse skidding and a secondary TRA is available.
- Proposed temporary "forest / timber clearing" road. Quantity and lengths minimized. Strictly proposed to connect nearby existing road with alignment for harvest scenario logistics [e.g. tree/log flow direction downhill vs. uphill].
- Alignment Road Construction ECRP "4.1.1 Construction Ingress and Egress," ... "Traffic will move along the construction right-of-way within the construction right-of-way limit." PCGP alignment and transportation maps indicate the current primary transportation system. The majority of (TRA) roads exist outside the alignment right-of-way. There is an assortment of TRAs that exist within. Identified TRA roads do not satisfy the totality of roads required to facilitate clearing scenarios. The additional road system required to satisfy proposed scenarios is the +/- alignment location. Specifically, where pipeline alignment [red line] exists on terrain and slopes favorable to satisfy favorable adverse or downhill usage of forest product haul vehicles [log truck, chip van, etc.] to and from landings and public road access, then it is assumed permissible to develop the necessary temporary road system to facilitate "forest / timber clearing" operations. Sequential construction operations will utilize the "forest / timber clearing" road system.
- **O** Temporary installed small stream crossing for log skidding and haul road at alignment areas in between watercourses and no existing TRA for access and landing. Favorable slopes [15%+/-] within the alignment are equal in usage as ingress / egress access for tree / log skidding, hauling, and other vehicle use.

III. Data

The following Table B-1 s a summary of estimated "Forest / Timber Clearing" harvest scenario acres per landowner group:

Harvest Scenario per Landowner (acres)										
	Scenario									
Owner:	H/C	Ya/C	Yo/C	Yo/FC	G/C	G/CS	G/FC	G/F	Const2	Total:
USFS Winema	0	0	0	0	3.8	0	74.5	2.6	1.0	81.8
USFS Umpqua	0	0	4.2	0	122.8	0	36.0	0	13.4	176.4
USFS Rogue	0	0	0	0	69.8	0	90.7	14.5	27.3	202.3
BLM-USA- CBWRGL	22	5.8	1.2	0	49.4	0	65.9	22.5	2	168.8
BLM-USA	12.9	0	0.9	0	23.1	0	80.9	0.2	0.2	118.2
BLM Public Domain	0.6	0	0	0	1.4	0	1.5	0	0	3.5
BLM O & C	25.2	3.2	1.7	0	58.3	0	79.4	1.5	0	169.3
All Others	22.1	47.5	7.2	1.7	291.2	1.8	426.5	48.8	199.7	1046.5
Total:	82.8	56.5	15.2	1.7	619.8	1.8	855.4	90.1	243.6	1966.9

Table B-1	
Harvest Scenario per Landowner (acre	es)

Note: The differences in acreage between Table 2 and Table B-1 in Attachment B are explained by 1) the estimated acres provided in Table 2 for forest stand and volumes are based on PCGP's original route filed in the September 4, 2007 FERC Application and only includes forested acres. Miscellaneous land slivers of roads, landings, open areas such as rock pits, grasslands, shrublands or watercourses, etc. that are intermixed with stand types and do not have timber volumes were not included in the estimate acreage. 2) The acres of harvest scenarios provided in Table B-1 of Attachment B are based on the final May 2009 FERC FEIS route which incorporated various route modifications that affected both federal (BLM and FS) and private lands. The final FERC recommended route modifications were included to avoid or minimize impacts to Marbled Murrelet and Northern Spotted Owl as well as landowners. Examples of these route modifications included the Camas Valley East Route Variation, Oregon Women's Land Trust Route Variation, the Umpqua National Forest Route Variation (Peavine reroute) Clover Creek Road modifications, including other minor route or workspace adjustments. The Harvest Scenario acres provided in Table B-1 also include areas and land types affected by the project such as miscellaneous land roads, landings rock pits and some miscellaneous land type slivers such as grasslands and shrub lands intermixed with forested stands.

	Seasonal Timing Restrictions for Timber Felling, Logging, Clearing and Construction Activities						
Pipeline Activity	All Migratory Birds	Northern Spotted Owl	Marbled Murrelet	Great Grey Owl	Bald Eagle	Golden Eagle	Peregrine Falcon
Felling and Brush Mowing *	NO WORK Apr 1 - Jul 15 in wooded habitats	NO WORK Mar 1 - Sept 30	NO WORK Apr 1 - Sep 15, 300-ft buffer from stand	NO WORK Mar 1 - Jul 31	NO WORK Jan 1 - Aug 31	NO WORK Jan 1 - Aug 31	NO WORK Jan 1 - Jul 31
Logging, Skidding and Processing	NO RESTRICTION If trees and brush* previously removed	NO WORK Mar 1 - Jul 15	DTR** Apr 1 - Aug 5, 1/4-mi buffer from stand; Apr 1 - Sep 15 w/ helicopters	NO WORK Mar 1 - Jul 31	NO WORK Jan 1 - Aug 31	NO WORK Jan 1 - Aug 31	NO WORK Jan 1 - Jul 31
Clearing, Grubbing, and Stump Removal	NO RESTRICTION If trees and brush* previously removed	NO WORK Mar 1 - Jul 15	DTR** Apr 1 - Aug 5, 1/4-mi buffer from stand	NO WORK Mar 1 - Jul 31	NO WORK Jan 1 - Aug 31	NO WORK Jan 1 - Aug 31	NO WORK Jan 1 - Jul 31
Driving Through Restricted Area on Right-of-Way	NO RESTRICTION If trees and brush* are not impacted or have been previously removed	NO RESTRICTION If trees previously removed	DTR** Apr 1 - Aug 5, 1/4-mi buffer from stand if trees have been previously removed	NO RESTRICTION	NO RESTRICTION	NO RESTRICTION	NO RESTRICTION
Driving Through Restricted Area on Existing Access Road	NO RESTRICTION	NO RESTRICTION	NO RESTRICTION	NO RESTRICTION	NO RESTRICTION	NO RESTRICTION	NO RESTRICTION
Pipeline Construction	NO RESTRICTION If trees and brush* previously removed	NO WORK Mar 1 - Jul 15	DTR** Apr 1 - Aug 5, 1/4-mi buffer from stand; Apr 1 - Sep 15 w/ helicopters	NO WORK Mar 1 - Jul 31	NO WORK Jan 1 - Aug 31	NO WORK Jan 1 - Aug 31	NO WORK Jan 1 - Jul 31
Maintenance on Existing Access Roads	NORESTRICTION If trees and brush* previously removed	NO WORK Mar 1 - Jul 15	DTR** Apr 1 - Aug 5, 1/4-mi buffer from stand	NO WORK Mar 1 - Jul 31	NO WORK Jan 1 - Aug 31	NO WORK Jan 1 - Aug 31	NO WORK Jan 1 - Jul 31
Access Road Improvement and New Road Construction	NO WORK Apr 1 - Jul 15 If cutting trees or brush*	NO WORK Mar 1 - Sep 30 If cutting trees NO WORK Mar 1 - Jul 15 If no tree removal	NO WORK Apr 1 - Sep 15, 300-ft buffer from stand if cutting trees; DTR** Apr 1 - Aug 5, 1/4-mi buffer from stand if no tree removal	NO WORK Mar 1 - Jul 31	NO WORK Jan 1 - Aug 31	NO WORK Jan 1 - Aug 31	NO WORK Jan 1 - Jul 31
Affected Spreads *All forest regenerating areas	ALL	ALL in defined locations	1 & 2 in defined locations	2 & 4 in defined locations	1 in defined location	5 in defined location	3 in defined location

Attachment C

** DTR - Daily Timing Restrictions stipulate no work until two hours after sunrise and work must stop two hours before sunset.

Appendix V

Safety & Security Plan



Pacific Connector Gas Pipeline, LP

Safety & Security Plan

Pacific Connector Gas Pipeline Project

January 2018

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1.0 INTRODUCTION

This Safety & Security Plan identifies measures to be taken by Pacific Connector Gas Pipeline, LP (PCGP) and its contractors (Contractor) to minimize hazards to persons working on and visiting the Pacific Connector Gas Pipeline Project (Pipeline or Pipeline Project) during construction as well as to the general public and to comply with all applicable safety requirements and regulations.

This plan is not an all inclusive plan covering all areas relating to pipeline construction activities. The following Plans of Development address specific concerns relating to specialized construction activities along the pipeline right-of-way. These other plans should be consulted for more specific detail relating to safety practices to be followed during and after construction.

- Blasting Plan
- Air/Noise and Fugitive Dust Control Plan
- Fire Prevention and Suppression Plan
- Contaminated Substances Discovery Plan
- Prescribed Burning Plan
- Transportation Management Plan
- Cathodic Protection Plan
- Emergency Response Plan
- Spill Prevention Containment and Countermeasures Plan

It also should be noted that PCGP and its contractors will follow the safety guidelines found in existing Federal Codes of Regulation as mandated by the Occupational Safety and Health Act (1997) and all other applicable laws, ordinances, rules, regulations and orders of any body having jurisdiction over safety and health of persons or property for construction activities and operations and maintenance activities. The intent of this plan is not to identify each safety stipulation or security scenario, but rather explain the procedure that PCGP will follow to address, notify and resolve safety or security issues during construction and operations of the PCGP.

The purpose of this plan is to describe safety standards and practices that will be implemented to minimize health and safety concerns related to the construction of the Pipeline Project.

2.0 **RESPONSIBILITIES**

2.1 PCGP

PCGP will comply and ensure compliance by its employees, suppliers, and visitors with all applicable occupational safety and health laws and regulations. PCGP will observe and monitor the Contractor's practices and procedures and will inform the Contractor of any observed, or otherwise informed, violations to the aforementioned regulations. If PCGP becomes aware of a violation of safety or security requirements that presents immediate danger to human life or property, PCGP will order an immediate stoppage of work until unsafe conditions or practices are corrected. PCGP will also notify the Agency Official or designated representative regarding the safety issue once work has been stopped. Where identified, PCGP will provide trained security personnel with communications capability with Federal, State, and local law enforcement and emergency services at all times. PCGP's Inspection Staff will also be trained to identify and report security issues to the Federal, State, and local law enforcement agencies.

The construction right-of-way will be closed to the general public and monitored by PCGP on a regular basis during all construction activities. After the pipeline has been put in service, PCGP will conduct routine inspections of the permanent right-of-way (aerial fly over's, on the ground visits, etc.) to identify and correct any security or safety concerns.

Only authorized personnel will have access to the construction right-of-way and areas of active construction. PCGP will require all authorized personnel and visitors to be safety trained and to wear appropriate protective gear (i.e., hard hat, vests, boots, etc.) for the site conditions. All visitors, workers, or monitors to the site during construction shall be required to attend safety training. After receipt of training, all employees and visitors will be issued a safety hardhat decal. The safety decal shall be visible at all times and be good for one year. A record of employee and visitor training will be kept at the jobsite. During construction, site safety meetings will be held on a daily basis to provide additional training, discussion concerning safety, and any other issues or concerns that need to be addressed. Those not completing the safety training will not be allowed on the right-of-way.

2.2 Notification

Prior to the installation of the Pipeline Project facilities, PCGP will provide the detailed construction schedule to Federal and State Agencies at least 90 days in advance identifying all Federal lands, roads, trails, or waterways that may require temporary closure or restriction orders to protect public health and safety. The schedule closure requests shall specify the period of time during which the closure restriction would apply and the personnel who are exempt from the closure or restriction. PCGP will follow the rules of conduct established by the Agency for the protection of Federal lands and resources, and for the protection, comfort and well being of the public.

During the operation phase of the Pipeline, PCGP will make every effort to notify the Federal and State Agencies 90 days prior to performing construction activities on Federal lands, trails, or waterways that may require a temporary shutdown. Where overriding code requirements commit PCGP to respond in a shorter time frame or handle an emergency condition on the construction right-of-way, PCGP will notify the Federal Agency as soon as the problem and remedy has been identified.

Federal road closure notifications guidelines and requirements are discussed in the Transportation Management Plan (Appendix Y to the POD), Section 3.0.

2.3 Contractor

The Contractor has the prime responsibility for the safe construction of the pipeline and associated facilities. The Contractor has the responsibility to provide PCGP with its comprehensive safety plan, which shall, at a minimum, comply with all regulatory and industry safety practices and Agency requirements. The Contractor is responsible for providing safety orientation to all Contractor personnel. Although the construction right-of-way will be closed to the general public, the Contractor will ensure that appropriate precautions are utilized to ensure public safety. The Contractor's comprehensive safety plan will address the precautionary measures that will be utilized at appropriate locations, such as installing signs and/or safety fence near areas of open trench at public road crossings or other areas where public use is likely. The Contractor's plan will also contain a communications section with local emergency response contact information and notification protocol in the event of an emergency. Section

3.3 of the Transportation Management Plan (Appendix Y to the POD) also describes the safety and traffic flow management measures that would be implemented to protect public safety.

2.4 Construction Inspectors

PCGP's Construction Inspectors will be responsible for ensuring Contractor compliance with its safety plan or any other regulatory requirements regarding safety. It is the Construction Inspectors' responsibility to be an attentive, willing and proactive monitor, and observer of the Contractor's work practices and to record, report and if necessary halt all seemingly unsafe work practices. The Construction Inspectors will also facilitate safety training for all visitors, agency personnel, and new construction personnel prior to entering the construction right-of-way during construction. During construction, the Construction Inspectors will guide all unauthorized personnel off of the construction right-of-way on public and private lands to protect public safety.

3.0 HEALTH AND SAFETY REQUIREMENTS

3.1 Safety Training

Prior to initiating construction activities, PCGP will arrange a meeting between the Contractor and PCGP's Construction management personnel and Inspection Staff to discuss safety aspects of the work, safety hazards particular to the work site, and to outline safety responsibility and authority of PCGP and Contractor personnel. During construction, it will be the responsibility of the Contractor to train workers and keep them up-to-date regarding safety matters. The Contractor will provide pre-job orientation as well as daily tail-gate meetings to discuss safety topics relevant to the work being completed that day as well as, any safety issues that were previously encountered, how they were dealt with, and how they will be addressed if similar incidents should occur in the future. The Contractor will ensure all workers are competent to perform any job requested. The Contractor will also make all of its workers available for any required PCGP orientation or safety training.

3.2 General Requirements

The Contractor will ensure that the following measures are implemented:

- Adhere to procedures presented in the Contractor's approved safety plan and to applicable federal, state, and local statutory requirements.
- Report all accidents and injuries to the Construction Inspector.
- Remedy any unsafe conditions or situations as requested by the Construction Inspector.
- Work safely so other employees are not placed at risk.
- Use specified and required personal safety equipment in performance of all duties.
- Maintain all construction sites in a safe, secure, and sanitary condition.
- Cease normal pipeline construction activities, except hydrostatic testing activities, by sunset unless approved by PCGP and all necessary precautions are made including supplemental lighting as deemed necessary.
- Provide fugitive dust control in accordance with federal, state, or local requirements.
- Ensure that equipment is properly maintained to reduce emissions and comply with federal, state, and local air quality emission standards and regulations.
- Prohibit firearms, hunting, alcohol, and drugs on the construction right-of-way, temporary extra work areas, access roads, and off-right-of-way work areas and facilities.

- Ensure, when radiographic equipment is used, that the area is clear and that all personnel are at a safe distance from the radiation source. Radiation warning signs will be placed at the edges of the safe area.
- Heed all OSHA, federal, state, and local trenching regulations, and implement measures as necessary to ensure the safety of workers working in the trench by using trench boxes, sheet piling, proper sloping, etc.
- Comply with all federal, state, and local fire regulations pertaining to the prevention of uncontrolled fires (see Fire Prevention and Suppression Plan (Appendix K to the POD).
- Ensure that all hazardous and potentially hazardous materials are transported, stored, and handled in accordance with all applicable legislation (see Spill Prevention, Containment, and Countermeasures Plan (Appendix X to the POD).
- Implement safety precautions during hydrostatic testing as specified in this plan.
- Comply with requirements in the Transportation Management Plan where personnel or equipment are working at or near road crossings.
- Allow emergency access
- Meet OSHA Competent person guidelines for all Pipeline Project related excavations.

3.3 Working Hours

With the exception of hydrostatic testing and horizontal directional drilling, working hours will generally be from sunrise to sunset Monday through Saturday unless approved otherwise by PCGP.

3.4 Hydrostatic Safety Measures

The Contractor will provide for the safety of all pipeline construction personnel and the general public during hydrostatic testing. The Contractor will:

- Place warning signs in or near populated areas.
- Restrict access to the area involving the hydrostatic test (i.e., test shelter, manifolds, pressure pumps, instruments, etc.) to only those personnel engaged in the testing operations.
- Prohibit major pipeline work not directly associated with the test operations around the pipeline sections being tested. While the pipeline facilities are being pressurized and during the test, all personnel not required for direct operations (checking for leaks, tightening gaskets, checking valve status, operating pumps, recording data, etc.) will be restricted from the area where the pipeline is being tested.
- Provide and maintain a reliable transportation and communication system during the test operations whereby all personnel directly involved in the test will be able to communicate test status or problems that develop during the test.
- Check all hoses, fittings, connectors, and valves for proper pressure rating.
- Restrain and secure fill and discharge lines/hoses.

3.5 Emergency Response

PCGP and the Contractor will utilize the Coos County, Douglas County, Jackson County, and Klamath County Emergency Contact Information. This information is attached to this plan.

Satellite phones will be issued to the PCGP Chief Inspector's along the construction right-ofway. These phones will be used when cell phones do not have service in remote areas of the Pipeline Project. PCGP's operations personnel are required to carry satellite phones in their trucks at all times.

3.6 Incident Reporting

All injuries, fires, accidents and security incidents will be recorded and reported to PCGP and the required regulatory agencies within the required timeframes. The BLM has primary authority to enforce the Right-of-Way Grant and Temporary Use Permit. County and State have jurisdiction over all lands crossed by the Pipeline Project by statute and/or ordinance. The BLM and USFS also have an MOU which provides for law enforcement reciprocity on each respective agency's land. The federal land managing agencies will take the necessary and appropriate actions to formally close the federal lands to unauthorized users for public health and safety reasons.

If an incident occurs on National Forest System (NFS) lands, the appropriate Federal agent or designee will be notified as soon as reasonably possible, and certainly within 24 hours of the occurrence. Table 3-1 provides contact information for the Forest Service District Coordinators.

Table 3-1 Forest Service District Coordinator Contact Information					
National Forest	MPs	District Coordinator			
Forest Service – Umpqua	99.31 to 99.83 100.39 to 100.68 101.20 to 101.89 102.32 to 102.85 104.10 to 113.20	David Krantz 541-618-2082			
Forest Service – Rogue River-Siskiyou	153.81 to 154.93 155.45 to 168.01	Jeff VonKienast 541-560-3406			
Forest Service – Fremont-Winema	168.01 to 169.37 170.04 to 171.39 171.59 to 172.71 173.11 to 174.81 174.95 to 175.37	Catherine Callaghan 541-947-6326			

If an incident occurs on BLM-managed land, the appropriate District Coordinator will be notified within 24 hours of the occurrence. Table 3-2 provides contact information for the BLM District Coordinators.

Table 3-2 BLM District Coordinator Contact Information					
BLM District	MPs ¹	District Coordinator			
Coos Bay District	0.00 to 45.70	Aimee Hoefs 541-756-0100			
Roseburg District	45.70 to 109.10	Dorothy Dickey 541-440-4930			
Medford District	109.10 to 166.41	Miriam Liberatore 541-618-2200			
Lakeview District	166.4 to 228.81	Terry Austin 541-883-6916			
¹ See Environmental Alignment Sheets for BLM-managed lands within the mileposts for each BLM District.					

If an incident occurs on lands under Bureau of Reclamation's jurisdiction, the appropriate Klamath Basin Area Office (KBAO) Coordinator will be notified within 24 hours of the occurrence. Table 3-3 provides contact information for the KBAO Coordinator.

Table 3-3 KBAO Coordinator Contact Information					
Bureau of Reclamation	MPs ¹	Coordinator			
KBAO – Klamath Project	200.51 to 214.18	Lila Black 541-883-6935			
¹ See Environmental Alignment Sheets for Reclamation-managed lands within the mileposts for the Klamath Project.					

Table 3-4 provides contact information for the local county sheriff's offices and state police should an incident occur on federal lands that will require coordination and/or notification to local or state law enforcement.

Table 3-4 Law Enforcement Contacts for Federal Lands					
Department	Office Location	Phone Number			
Coos County Sheriff	Coquille, Oregon	541-396-7800			
Douglas County Sheriff	Roseburg, Oregon	541-440-4463			
Jackson County Sheriff	Medford, Oregon	541-776-7206			
Klamath County Sheriff	Klamath, Oregon	541-883-5130			
Oregon State Police	Salem, Oregon – main office Central Point, Southern Command - Dispatch	503-378-3720 541-776-6111			
Emergencies - 911					

3.7 Mechanical Damage to Underground Facilities

The Contractor will give at least three day advance notification of all work that will be performed within existing pipeline easements, right-of-ways, or property so that site preparation and supervision can be provided. Before commencing any excavation, the Contractor will receive authorization to proceed from PCGP's Construction Inspector.

PACIFIC CONNECTOR GAS PIPELINE PROJECT

The Contractor will utilize the "One Call" system to locate and stake the centerline and limits of all underground facilities in the area of proposed excavation.

3.8 Damaged Pipe

Any dents, gouges, scratches or other similar defects will be brought to the attention of PCGP's Inspectors as soon as they are detected. Where these observations are not within tolerances specified in the construction contract, they will be repaired according to PCGP's Policies and Procedures provided in the construction contracts.

911 Emergency Contact Information

Coos, Douglas, Jackson, and Klamath Counties

Due to the unique location of the Pipeline Project, cell phones and satellite phones may not connect to the nearest 911 call center. If a 911 call center is not available, a direct 24-hour emergency contact number should be used as indicated below by county in the event of an emergency.

PRIMARY PUBLIC SAFETY ANSWERING POINTS FOR 911 DISPATCH

Organization	24-Hour Contact Number	City
Coos County		
Coos County Sheriff	541-396-2106	Coquille
Douglas County		
Douglas County Emergency Communications District	541-440-4471	Roseburg
Jackson County		
Medford Police Department	541-770-4784	Medford
Southern Oregon Regional Communications	541-776-7206	Medford
Klamath County		
Klamath County 9-1-1 Communications	541-884-2152	Klamath Falls

SECONDARY PUBLIC SAFETY ANSWERING POINTS FOR 911 DISPATCH

Organization	Phone	City		
Coos County				
Bay Cities Ambulance	541-269-1155	Coos Bay		
Coos Bay Police Department	541-269-8911	Coos Bay		
Myrtle Point Police Department	541-396-2106	Myrtle Point		
North Bend Police Department	541-756-3161	North Bend		
Oregon State Police – Central Point Area Command	541-776-6236	Central Point		
Oregon State Police – Coos Bay Area Command	541-888-2677	North Bend		
Douglas, Jackson, and Klamath Counties				
Oregon State Police Southern Region Communications Center	541-776-6114	Central Point		
Oregon State Police – Klamath Falls Area Command	541-883-5713	Klamath Falls		
Oregon State Police – Roseburg Area Command	541-440-3334	Roseburg		

City/Department	Phone			
· · · · · ·				
Medford	800-903-9000			
North Bend	541-756-6802			
· · ·				
Coos Bay	541-269-1155			
Level 3 trauma center	541-269-8111			
Level 4 trauma center	541-396-1059			
No trauma rating	541-347-2426			
· · · ·				
Roseburg	541-673-3225			
Level 3 trauma center	541-673-0611			
Level 4 trauma center	541-201-4100			
Level 3 trauma center	541-789-7100			
Level 3 trauma center	541-732-6400			
Klamath County				
1				
Level 3 trauma center	541-882-6311			
	Medford North Bend Coos Bay Level 3 trauma center Level 4 trauma center No trauma rating Roseburg Level 3 trauma center Level 4 trauma center Level 3 trauma center			

Emergency Medical Services Coos, Douglas, Jackson, and Klamath Counties

WHEN YOU CONTACT THE DISPATCH CENTER THE DISPATCHER WILL INITIALLY REQUEST THE FOLLOWING INFORMATION:

For medical:

- Exact location
- > Your call-back number
- > Chief complaint
- Gender and approximate age of subject/victim
- > Is the subject /victim conscious and breathing

For fire:

- Exact location
- Your call-back number
- > Any persons injured
- > What: brush, structure, tree, etc.

For law:

- Exact location
- > Your call-back number
- > Chief complaint
 - Dispatch will then contact the appropriate emergency personnel. It is important that you stay on the line with the dispatcher unless: the situation calls for the need to leave the area, the subject/victim needs your immediate assistance and you are unable to take the phone with you, or the dispatcher advises that it is ok to hang up.
 - At this point the dispatcher may have several more questions for you depending on the situation.
 - It is helpful to have someone available to meet and escort emergency personnel from a known location (i.e. a mapped county road) to the site of the emergency.

Attached is a form to be used in the event of an emergency. The form should be filled out and placed with any phone line that may be used to call for emergencies.

911 <u>Coos County</u> <u>Douglas County</u> <u>Jackson County</u> <u>Klamath County</u>

THIS FORM SHOULD BE GIVEN TO YOUR SAFETY PERSONNEL, FILLED OUT AND PLACED IN AN ACCESSIBLE LOCATION IN THE EVENT OF AN EMERGENCY.

	-	
DIRECTIONS TO LOCATION		
	_	
CALL BACK NUMBER(S)		
SUPERVISOR CONTACT		
LANDING ZONE COORDINATES		
THE LANDING ZONE (LZ) SHOULD BE THE CLOSEST LARGE FLAT AREA TO YOUR M. LOCATION. AN OFFICER SHOULD BE ABLE TO GET THESE COORDINATES FOR YOU		

Appendix W

Sanitation and Waste Management Plan



Pacific Connector Gas Pipeline, LP

Sanitation and Waste Management Plan

Pacific Connector Gas Pipeline Project

January 2018

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1.0 INTRODUCTION

The purpose of the Plan is to outline the procedures that will be implemented by Pacific Connector Gas Pipeline, LP (PCGP) and its contractors (Contractor) to manage sanitation and waste materials during construction and operations of the Pacific Connector Gas Pipeline Project (Pipeline or Pipeline Project). The Sanitation and Waste Management Plan is the principal source of direction for the management of solid and construction wastes that will be generated during construction. Definitions of these wastes, according to the Oregon Administrative Rules (OAR 340-093-0030), are provided in Section 2.0. The PCGP Project Plan of Development includes additional plans that describe waste management procedures; these plans include:

1) the Contaminated Substances Discovery Plan (Appendix E to the POD), which describes the procedures that would be implemented in the unlikely event that contaminated material is encountered during construction;

2) the Overburden and Excess Material Disposal Plan, which describes the measures and locations on federal lands that may be used for the permanent and temporary storage of excess rock, timber, and spoil generated during timber removal and pipeline construction; and

3) the Prescribed Burning Plan (Appendix R to the POD), which describes the procedures and Best Management Practices (BMPs) that would be utilized where burning is used to dispose of excess forest slash generated during the construction right-of-way clearing operations; and 4) the Spill Prevention, Containment, and Countermeasures (SPCC) Plan, which includes provisions for the disposal of contaminated articles and soils recovered during a spill event. The Sanitation and Waste Management Plan will be implemented consistently with these other Plans.

2.0 DEFINITIONS

Under OAR 340-093-0030

"Construction and Demolition Waste" means solid waste resulting from the construction, repair, or demolition of buildings, roads and other structures, and debris from the clearing of land, but does not include clean fill when separated from other construction and demolition wastes and used as fill materials or otherwise land disposed. Such waste typically consists of materials including concrete, bricks, bituminous concrete, asphalt paving, untreated or chemically treated wood, glass, masonry, roofing, siding, plaster; and soils, rock, stumps, boulders, brush and other similar material. This term does not include industrial solid waste and municipal solid waste generated in residential or commercial activities associated with construction and demolition activities.

<u>"Solid Waste"</u> means all useless or discarded putrescible and non-putrescible materials, including but not limited to garbage, rubbish, refuse, ashes, paper and cardboard, sewage sludge, septic tank and cesspool pumpings or other sludge, useless or discarded commercial, industrial, demolition and construction materials, discarded or abandoned vehicles or parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid and semi-solid materials, dead animals and infectious waste. The term does not include:

(a) Hazardous waste as defined in ORS 466.005;

(b) Materials used for fertilizer, soil conditioning, humus restoration, or for other productive purposes or which are salvageable for these purposes and are used on land

in agricultural operations and the growing or harvesting of crops and the raising of fowls or animals, provided the materials are used at or below agronomic application rates.

3.0 RESPONSIBILITIES

3.1 PCGP

PCGP will be responsible for:

- Ensuring that all company and Contractor management personnel understand and follow the sanitation and waste management requirements for the Pipeline Project.
- Ensuring that all wastes generated during the Pipeline Project are properly characterized/classified (hazardous, non-hazardous, sanitary, municipal, recyclable, universal and electronic waste).
- Providing the waste classification to the Contractors.
- Arranging for sampling, if waste classification is unknown, to determine classification according to EPA-approved analytical protocols.
- Approving all waste vendors/facilities prior to waste disposal.
- Ensuring that all waste is handled in a manner consistent with the health and safety standards set by federal, state, and local waste regulations, and the Pipeline Project's waste management requirements.
- Ensuring that all spills are handled in a manner consistent with the health and safety code standards set by federal, state and local waste regulations, and the Pipeline Project's waste management requirements (see SPCC Plan Section VI, included as Appendix X to the POD).

3.2 Contractor(s)

The Contractor(s) shall be responsible for:

- Ensuring that all applicable Contractor personnel, including subcontractors, understand and follow the requirements set forth in PCGP's Sanitation and Waste Management Plan.
- Preparing a Pipeline Project-specific Waste Management Plan for PCGP's review and approval.
- Managing and disposing of all waste materials generated during the Pipeline Project according to applicable federal, state, and local regulations, and the Pipeline Project's waste management requirements. In addition, all disposal will be at approved waste disposal facilities.
- Ensuring that all personnel handling waste materials are trained according to the standards set forth by federal, state, and local regulations, and the Pipeline Project's waste management requirements.
- Packaging and labeling all wastes and hazardous materials for storage or shipment in accordance with the requirements set forth by federal, state, and local regulations.
- Keeping records of sanitation and waste management training and disposal manifests and providing copies of these records to PCGP upon request.
- Ensuring that all spills are handled in a manner consistent with the health and safety code standards set by federal, state and local waste regulations, and the Pipeline Project's waste management requirements (see SPCC Plan Section VI, included as Appendix X to the POD).

4.0 POLICY

PCGP and their Contactor(s) will ensure personnel are properly trained in techniques to minimize the volume of waste generation during construction, operations, and maintenance activities. Materials that would otherwise become a waste will be reused and waste materials will be recycled whenever feasible.

5.0 SANITATION

During construction, the Contractors will comply with sanitation rules under Oregon Occupational Safety and Health Division - OAR 437, Division 3 (Subdivision D, §1926.51). These rules include providing adequate potable water and toilets along the construction right-of-way. PCGP's Contractor(s) will be responsible for contracting with local vendors to supply the adequate number of portable toilets along the construction right-of-way, to maintain and service the toilets, as well as to move the toilets as necessary along the construction right-of-way to ensure areas of active construction are adequately serviced. PCGP will approve the Contractor's(s') selection of vendors and ensure that sanitary wastes are properly disposed of according to federal, state, and local regulations. On federal lands the agency-authorized representative would approve the location of portable toilets. Portable toilets will not be located in Riparian Reserves or other sensitive areas.

6.0 TRASH, FOOD WASTES, AND OTHER CONSTRUCTION DEBRIS

During timber removal, construction, operations and maintenance activities, PCGP will ensure that all trash, food waste, and other items attractive to crows, jays, and other corvids will be contained and removed from the project area on a daily basis to minimize potential predation of murrelet nestlings. PCGP and their Contactor(s) will be responsible for training all project personnel to remove these wastes from the right-of-way and to save/collect these wastes for disposal at the construction yards. PCGP Inspector and Contractor vehicles, crew buses, and equipment shall carry litter bags at all times." PCGP's Environmental Inspectors (EIs) and Utility Inspectors will ensure that these daily "house-keeping" measures are being conducted. The Contractor will provide adequate waste bins/receptacles, including recyclable material receptacles, for the collection and storage of these wastes materials at construction yards. The Contractor will be responsible for properly emptying/disposing of wastes in these receptacles at the construction yards on a weekly or an alternate regular basis in a permitted landfill and contracting with a disposal service to complete these responsibilities. During final cleanup, all construction debris (e.g., mats, garbage, pipe skids, and rope padding, etc.) will be cleared from the construction right-of-way and disposed of in accordance with state and local regulations. PCGP has identified potential solid waste disposal companies, landfills and recycling facilities that may be utilized during construction (see Table 1) and will require the Contractor(s) to identify all disposal locations proposed for use prior to construction.

County	Facility	Location
	Bandon Disposal & Recycling	3432 Cedar Street, North Bend
	Coos County Solid Waste/Beaver Hill Disposal	55722 Highway 101, Coos Bay
Coos	Site	
	Public Disposal & Recycling	1210 South Broadway, Coos Bay
	West Coast Recycling & Transfer	1210 South Broadway, Coos Bay
Douglas	Canyonville Transfer Station	600 Jordan Creek Road, Canyonville
	Douglas County Disposal and Recycling Center	I-5 Exit 121, McLain Ave., Roseburg
	Glide Transfer Station	13921 Glide Transfer Road, Glide

 Table 1

 Solid Waste Disposal Companies, Potential Landfills and Recycling Facilities

 Available for Solid Waste Disposal during Construction of the Pipeline Project

County	Facility	Location
	Murtle Creek Transfer Station	300 Myrtle Creek Transfer Road, Myrtle
	Myrtle Creek Transfer Station	Creek
	Roseburg Disposal	1308 NW Park Street, Roseburg
	Roseburg Landfill and Transfer Station	165 McLain West Ave., Roseburg
	Reedsport Transfer Station	300 Reedsport Landfill Rd., Reedsport
Jackson	Ashland Recycling Center	220 Water Street, Ashland
	North Pacific Recycling & Textiles	407 Boardman Street, Medford
	Recology Ashland	170 Oak Street, Ashland
	Rogue Disposal & Recycling, Transfer Station	8001 Table Rock Road, White City
	Southern Oregon Sanitation	42 Ball Road, Eagle Point
	Valley View Transfer Station	3000 North Valley View Rd., Ashland
Klamath	Klamath County Solid Waste – Landfill	801 Old Fort Road, Klamath Falls

7.0 TREATMENT OF FOREST SLASH

Treatment of forest slash is described in detail in Section 3.3.2 of the Erosion Control and Revegetation Plan (ECRP) (Appendix I to the POD).

8.0 ROCK REMOVAL/EXCESS OVERBURDEN

FERC's Upland Plan requires the removal of excess rock from the top 12 inches of soil to the extent practicable in all rotated and permanent croplands, hayfields, pastures, residential areas, and other areas as agreed between landowner and PCGP. In these areas, PCGP will clean up excess rock to a condition similar to adjacent portions of the construction right-of-way (e.g., size, density, and distribution of rock) unless the landowner and PCGP negotiate different stipulations. Excess rock and spoil materials will be redistributed along the construction right-ofway in upland areas during restoration regrading in a manner that reflects the original contours and preconstruction drainage patterns. Excess materials will be disposed of in existing guarries and in permanent disposal sites that have been identified along the construction right-of-way. Appendix Q to the POD provides PCGP's Overburden and Excess Material Disposal Plan which describes how these materials will be stored and disposed of on federal lands. (Table A.8-4 in Appendix A.8 to Resource Report 8 of PCGP's Certificate application also identifies the permanent disposal areas that will be located on private lands.) Large rock may be provided to the federal land-managing agencies to be used for instream restoration projects and habitat features. Large rocks and boulders may also be used as OHV barriers along the right-of-way and at road crossings to block access at OHV points to restrict traffic on the right-of-way as described in the Recreation Management Plan (Appendix S to the POD). Additionally, large rocks and boulders may be piled in upland areas along the construction right-of-way to create habitat diversity features where approved by the EI or PCGP's authorized representative and the landowner or land-managing agency. The use of alternate disposal locations will be approved by FERC and, if on federal lands, the respective land-managing agency.

9.0 HAZARDOUS WASTES

All spills will be cleaned up in accordance with the applicable federal, state and local regulations, and the Pipeline Project's SPCC Plan. The Pipeline Project's SPCC Plan, included as Appendix X to the POD, describes the BMPs to store oil; fuel and other hazardous materials; prevent spills of these materials; respond to spills if they occur; and to clean up and dispose of contaminated material resulting from a spill. Attachment B to the SPCC Plan includes a Hazardous Substance Inventory including hazardous waste. This inventory will include a listing of all hazardous waste, quantity of each hazardous waste, and its storage location. The Contractor(s) will store all hazardous waste in a secured location (i.e., fenced and locked) until such time as the material is transported off-site in accordance with the SPCC Plan (provided as

Appendix X to the POD). PCGP's EI(s) will inspect these storage areas on a weekly basis to ensure that the waste materials are properly packaged, labeled, and stored according to federal, state, and local regulations. All waste characterized as "hazardous" must have the words "Hazardous Waste" marked on the outside of the storage container along with the date the container was put into storage as well as other OSHA-required labeling requirements. PCGP will ensure that the Contractor(s) disposes of all hazardous waste materials in approved facilities according to applicable federal, state, and local hazardous waste regulations and the SPCC Plan (Appendix X to the POD). PCGP will also ensure that the Contractor(s) transports all waste materials with the proper shipping papers, placards, labels, and manifests, as required by transportation regulations. The Contractor(s) will provide PCGP with all copies of hazardous waste transport manifests and hazardous waste disposal documentation. The Contractor(s) may utilize a remediation firm or a PCGP-approved waste management firm to complete waste disposal activities.

Appendix X

Spill Prevention, Containment, and Countermeasures Plan



Pacific Connector Gas Pipeline, LP

Spill Prevention, Containment, and Countermeasures Plan

Pacific Connector Gas Pipeline Project

(During the previous NEPA process, PCGP submitted a Plan of Development to meet BLM Right-of-Way Grant requirements based on BLM regulations. These plans will be updated in consultation with the Federal land managing agencies [BLM, USFS, and Reclamation]) during the current NEPA process.).

September 2017

SPILL PREVENTION, CONTAINMENT, AND COUNTERMEASURES PLAN FOR OIL & HAZARDOUS SUBSTANCES

1.0 INTRODUCTION

This Spill Prevention, Containment, and Countermeasures (SPCC) Plan identifies measures to be taken by Pacific Connector Gas Pipeline, LP (Pacific Connector) and its contractors (Contractor) to prevent, contain and respond to spills during the construction of the Pacific Connector Gas Pipeline (PCGP) Project.

2.0 PLAN DETAILS

The following is a description and listing of the different components of the SPCC Plan:

- I. Provisions of Plan and Responsibilities of Employees
 - A. The goal of the plan:
 - 1. To minimize the potential for a spill.
 - 2. In the event of a spill to contain the spillage in the smallest area possible.
 - 3. To protect areas that are of environmental concern.
 - B. Responsibilities:

It is Pacific Connector's intent that everything practical is done to minimize the potential for and consequences of a spill during the construction of the Pacific Connector Gas Pipeline Project. Therefore, it is the responsibility of every person associated with the project to be on the lookout for spills or leaks from equipment and take the appropriate action. *Pacific Connector will complete Attachment A (Emergency Contact List) prior to beginning work, provide the attachment to the contractor and inspection personnel and update as required during construction.*

II. Training

The Chief Environmental Inspector (EI) will hold Spill Prevention, Containment, and Countermeasure (SPCC) training prior to the start of any construction for all personnel involved with the project. All personnel added during the course of the project must receive the pre-job SPCC training. No one will be allowed to work on the construction right-of-way without project-specific SPCC training. A second training session will be held for all project personnel just prior to hydrostatic testing of the pipeline to train all those involved on response procedures in case of a hydrostatic test failure. Individual training sessions will also be conducted by the EI for those contractor employees responsible for completing the horizontal directional drills (HDDs). The contractor will be required to maintain a record of those workers that have received training.

III. Hazardous Materials Inventory

Attachment B provides an anticipated inventory of oil, fuel and hazardous substances that will be utilized during construction which, if released, may pose a threat to human health or the environment. In addition, Attachment B provides the reportable quantity

(RQ)¹ for each of these materials. Material Safety Data Sheets (MSDS) for each of these chemicals is presented in Attachment B. *Attachment B must be completed by the contractor and MSDSs provided by the contractor prior to beginning work and updated as required during construction.*

Any materials brought to the construction right-of-way, yard or temporary extra work areas will be inventoried, reported to the EI and managed in accordance with the guidelines in this plan.

- IV. Precautions for Spill Prevention and Control Equipment and Material Locations
 - A. Spill Prevention and Control:

Hazardous substances, chemicals, fuels and lubricating oils will not be stored within 150 feet of waterbody banks or wetlands or within 200 feet of water supply wells (400 feet of municipal or community water supply wells). Equipment will not be fueled or maintained in wetlands or within 150 feet of waterbody banks or wetlands or within 200 feet of water supply wells (400 feet of municipal or community water supply wells) (400 feet of municipal or community water supply wells) unless the procedures specified in Section IV. A. 1. e. of this Plan are utilized. Each of the no fueling areas will be clearly identified and their limits staked in the field. To assure that storage and fueling occur in an environmentally acceptable location, the El must approve the location of all oil, hazardous substance, and chemical storage and fueling areas, other material storage areas and construction equipment maintenance areas prior to their use.

In compliance with 48 CFR Chapter 4 Part 452.236-74, pollutants such as fuels, lubricants, bitumens, raw sewage, and other harmful materials shall not be discharged on the ground; into or nearby rivers, streams, or impoundments; or into natural or man-made channels. Wash water or waste from concrete or aggregate operations shall not be allowed to enter live streams prior to treatment by filtration, settling, or other means sufficient to reduce the sediment content to not more than that of the stream into which it is discharged.

- 1. Fueling, lubricating or maintaining equipment.
 - Fuels and lubricating oils will not be stored and equipment will not be fueled, lubricated or otherwise maintained in wetlands or within 150 feet of waterbody banks, wetlands, or Bureau of Reclamation (Reclamation) facilities or within 200 feet of water supply wells (400 feet of municipal or community water supply wells), unless the procedures specified in Section e. below are utilized. Each of these areas will be clearly identified and their limits staked in the field.
 - b. All vehicles used to transport lubricants and fuel must be equipped with an emergency spill response kit. At a minimum this kit must include:
 - Ten, 48" x 3" oil socks;

 ¹ RQs for specific constituents can be found from one or more of the following:
 1) 49 CFR 172;

^{2) 40} CFR Part 302; or

³⁾ MSDS documents.

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- Five, 17" x 17"oil pillows;
- One, 10' x 4" oil boom;
- Twenty, oil absorbent mat pads (Pigalog MAT415 or equivalent);
- Garden size, 6 mil, polyethylene bags;
- Ten pair of liquid proof gloves compatible with materials onsite; and
- One, 55-gallon polyethylene open-head drum.
- c. Any fuel or lubricant spilled to the ground during fueling or maintenance of equipment will be cleaned up and properly disposed of immediately. This includes all soil contaminated by the spill.
- d. If vehicles/equipment require maintenance on-site, the contractor will install drip pans or other suitable containment devices to collect all fluids. Under no circumstances will the contractor allow material from the liner to spill on the ground surface. All waste fluids will be removed from the site and disposed of properly.
- e. Where site-specific conditions/constraints require equipment (including boring machines) to be refueled in wetlands or within 150 feet of waterbody banks, wetlands, or Reclamation facilities or within 200 feet of water supply wells (400 feet of municipal or community water supply wells), the following procedures will be implemented to avoid or minimize potential spills.
 - 1. Where possible, the refueling location will be selected with the best topography to prevent or limit any potential spill from entering a wetland or waterbody.
 - 2. The equipment being refueled will only be filled to ³/₄ capacity to prevent accidental spills from overtopping.
 - Oil absorbent mat pads or diapers will be placed around the equipment's fuel tank opening to absorb any drips/spills.
 - 4. Drip pans or other suitable containment/liner materials (i.e., plastic sheeting) will also be placed under equipment to ensure that any fuel spills or drips are contained. Under no circumstances will the contractor allow material from the liner to spill on the ground surface. All waste fluids will be removed from the site and disposed of properly.
- 2. Dewatering pumps, generators and hydrostatic test pumps.
 - a. Pumps and generators used for dewatering or hydrostatic testing within or in the vicinity (within 150 feet) of waterbodies, wetlands, or Reclamation facilities or within 200 feet water supply wells (400 feet of municipal or community water supply wells) will be set in containment structures.
 - Containment structures may be constructed out of strawbales and lined with a minimum of 2 plastic sheets (6 mil plastic) that drape to the ground outside the structure. However, containment structures for small portable pumps/generators may consist of plastic basins such as a child's pool or other similar containers as approved by the EI. The EI may consult with a federal inspector to

determine appropriate types of containment structures on federal lands. The basins shall not be reused if cracked, punctured or contaminated with oil or grease.

- 2. Fuel for pumps and generators will be carried in by hand and removed immediately after fueling takes place. Under no circumstances will fuel or lubricants be stored within the containment structure.
- 3. "Heavy Duty" garbage bags for disposal of used materials and a supply of 40 absorbent pads will be kept in the containment structure.
- 4. When the containment structure is dismantled, the plastic sheeting will be placed in trash bags and immediately hauled away for proper disposal.
- 3. Leaks in hoses or fittings on equipment.
 - a. The contractor will visually inspect all equipment for leaks and repair all leaks prior to moving the equipment onto the construction right-of-way.
 - b. Any leaks that develop while equipment is in use will be repaired immediately. The equipment will not be utilized until repairs are completed.
 - c. A minimum of 40 absorbent pads will be kept on all pieces of equipment. When used, they will be properly disposed of and replaced immediately.
- 4. Hose or fitting (valves, seals, gaskets) failure or rupture. Contain spills immediately to reduce spill to the smallest area possible and follow the procedures in this plan.
- 5. Fuel storage tanks and hazardous materials containers
 - a. All fuel storage tanks/hazardous material containers will be located inside earthen-diked berms designed to hold 1.5 times the capacity of the largest tank/container within the berm. The diked area will incorporate a 12-mil (or thicker) liner in its design. The tank will be set directly on the liner. Non-abrasive padding may be used under the tank to provide stability as long as the integrity of the liner is not compromised. The purpose of this liner is to protect soils located under the tank or used in dike construction from contamination. Any spilled materials located on the liner will be removed immediately and prior to dismantling the tank and dike.
 - Prior to their use, the contractor will visually inspect each tank for cracks, excessive corrosion, or other flaws which may compromise the integrity of the tank. Hoses and valves will be similarly inspected. If the contractor determines that the equipment is in good mechanical condition, it may be moved onto the right-of-way which includes staging areas and pipe yards. Otherwise, the equipment will be rejected and alternative equipment in good condition employed.
 - c. The contractor will inspect the integrity of all dikes and the liner at least daily and repair the dikes or replace the liner immediately if they become breached or torn.

- d. It may be necessary to drain accumulated stormwater from within the diked area containing fuel storage tanks. If the stormwater has been contaminated with fuel or other pollutants, all water will be removed by vacuum truck or similar means and hauled to a disposal facility approved by the State of Oregon. However, if no oil sheen is present and there are no other visible signs of pollution, the stormwater may be left to evaporate within the dike after the tank has been removed. Under no circumstances will the contractor allow the surface discharge or other release of water contained within the diked area without the prior approval of the EI or a federal inspector on federal lands.
- B. Material locations:
 - 1. Each work site will have on hand and <u>maintain</u> emergency response equipment. While construction activities are ongoing, all such equipment will be inspected daily for operability and accessibility. The location of fire extinguishers and related emergency response equipment will be clearly marked with signs. Each foreman in charge of construction activities will be provided with and will maintain readily accessible, a copy of this plan.
 - 2. The contractor will designate a single individual who will be responsible for maintenance of all emergency response/spill response materials and equipment.
 - 3. Spill absorbent material and booms of adequate size and number to handle a spill of fuel or other hazardous materials will be stored at a central location(s) readily accessible to each construction crew for immediate response in case of emergency. The location of these stockpiled materials will be at designated locations to be determined prior to the start of construction. If these materials are not stockpiled at the site as required by this plan, construction will not be allowed to commence.
 - 4. At a minimum the following spill control materials will be included in each centrally located spill response kit stockpile:
 - Six bales (200 count each) of absorbent mat pads (Pigalog MAT423 or equivalent);
 - Four boxes of absorbent spaghetti strips (Pigalog PLP402 or equivalent);
 - Four boxes of absorbent pulp (Pigalog SA8010 or equivalent);
 - 300 feet of 5 or 8-inch diameter absorbent skimmer boom material (Pigalog BOM 408 or equivalent);
 - 20 straw bales;
 - 10 packages of garden size, 6 mil, polyethylene bags;
 - Ten pair of liquid proof gloves compatible with materials on site; and
 - One, 55-gallon polyethylene open-head drum.

Absorbent pads, spaghetti, pulp, and booms will be of the type that is capable of absorbing petroleum products but repels water. (The above list may be modified by the El in consultation with Pacific Connector's Environmental Representative to better fit the needs of the project).

5. A minimum of 40 absorbent pads will be kept on each piece of equipment. When used, they will be properly disposed of and replaced immediately.

- 6. The contractor will stockpile bales of straw on or adjacent to the construction right-of-way for the sole purpose of emergency response. After construction is complete, the unused straw may be utilized as mulch in upland areas during reclamation.
- 7. Contractor foremen and Els will keep a minimum of one bale (200 count) of absorbent pads in their vehicles.
- V. Spill Response: Initial response to an emergency will be to <u>protect human health and</u> <u>safety</u>, and then the environment.
 - A. Initiate Control, If Safe. Make every effort to stop source of spill and contain spill.
 - Shut off equipment;
 - Shut off source of spill, if possible;
 - Warn all personnel at the construction site, stop all vehicular traffic and work in the area, and remove unnecessary personnel;
 - Immediately contact the EI and report observer's name, location, nature and extent of spill;
 - Contain the spill to the smallest area possible and stop it from reaching waterways or other sensitive areas (i.e., wetlands, waterbodies, wells, etc.);
 - Block spill with backhoe or other equipment as necessary;
 - Construct ditch or dike around spill as necessary earthen dike, strawbales, sand bags;
 - Install straw barriers and booms in stream;
 - Excavate side pool and isolate spill; and
 - Dam stream channel to stop movement of the spill, if necessary.
 - B. Conduct Initial Assessment (note the following):
 - Observers name;
 - Any injuries and their extent;
 - Location, time and approximate size of spill area;
 - Type and approximate amount of material spilled;
 - Status of source;
 - Did the spill enter a waterbody? Is there a threat to a waterbody; and
 - If not contained, direction spill is heading and rate of release.
 - C. Contact Pacific Connector's Environmental Inspector (EI) Or Chief Inspector
 - Provide the information collected above;
 - El or Alternate will be the Emergency Coordinator; and
 - The EI will contact and dispatch necessary personnel. If the accident is beyond the capabilities of the equipment and material located on-site to handle, the EI will contact appropriate County emergency assistance (i.e., County HazMat Team) and Pacific Connector's Environmental Representative.
 - D. El or Alternate Contact Pacific Connector's Environmental Representative (ER)
 - Obtain initial assessment Information;

- Contact County emergency response agency as appropriate;
- Notify appropriate State officials;
- Report any spill that enters any water to the U.S. Coast Guard National Response Center (800) 424-8802;
- Report any spill that enters any facility, land, or waterbody under the Bureau of Reclamation, Klamath Project's jurisdiction (541) 883-6935 (Environmental Management Systems Coordinator);
- Assist contractor and EI in coordinating response and clean-up; and
- Assist contractor and EI to ensure proper dispose of all waste.
- E. Pacific Connector's Construction Superintendent
 - Provide equipment and manpower as necessary to quickly and safely control and cleanup the spill; and
 - Evaluate spill source and determine if procedural changes are necessary to prevent similar future events.
- F. Pacific Connector's Environmental Representative
 - Evaluate initial assessment information and assist as required in notification of agencies;
 - Coordinate and approve disposal of waste materials;
 - Conduct cleanup inspection if required; and
 - Evaluate spill source and determine if procedural changes are necessary to prevent similar future events
- VI. Cleanup and Disposal of Spills

The following section outlines specific procedures to be followed by the Contractor and Pacific Connector when addressing releases. At all times, worker and public safety is a paramount consideration and should be contemplated in all spill response situations.

- 1. All spilled liquids and contaminated materials will be cleaned up immediately. Restrict spills to the containment area if possible by stopping or diverting flow from the oil/fuel tank. Every effort shall be made to prevent the seepage of oil into soils and waterways.
- 2. If a release occurs into a facility drain, nearby stream, or wetland, immediately pump any floating layer into drums. For streams and wetlands, place a barrier between the release area and the site boundary. This barrier may include but is not limited to oil booms, hay bales, and under flow dams. As soon as possible excavate contaminated soils and sediments.
- 3. Cleanup of contaminated materials includes the removal of all soils which have been subjected to the pollutant. If necessary, the EI may require the contractor to collect samples of soil strata below the spill to assure that all contaminated soils have been removed from the site. On federal lands, soil samples may be required by a third party after any cleanup of contaminated materials. For larger quantities of soils, construct temporary waste piles using plastic liners. Plastic-lined roll-off bins shall be leased for storing this material as soon as feasible.

- 4. All materials used to clean-up the spill will be double bagged and inspected prior to removal from the spill site. All vegetation contaminated by the spilled material will be similarly collected, bagged and disposed at an approved State of Oregon Department of Environmental Quality (DEQ) disposal facility.
- 5. Dispose of oily soils and contaminated articles in accordance with applicable federal, state and local regulations. Decontaminate all emergency response equipment used during the incident before storing. Decontamination of equipment used to clean any spill shall occur within a containment structure such as a drip pan or other suitable container/liner such that the contaminated material can be properly contained and hauled off to a DEQ approved disposal facility.
- 6. Transportation manifests, disposal receipts and weight tickets will be supplied to the EI and be made available to federal inspectors upon request.

Disposal of Contaminated Materials/Soils

- 1. The Contractor shall be responsible for the proper disposal of wastes generated by their actions, including obtaining applicable authorization, registrations, and/or EPA/State I.D. Numbers.
- 2. All contaminated articles and soils recovered during a release event shall be properly handled and stored in approved DOT containers.
- In accordance with Pacific Connector's policy, all wastes generated as a result of spill response activities shall be analyzed to determine if they are hazardous, unless knowledge of contaminant(s) is applied to classify these wastes/spill materials as non-hazardous.
- 4. Those wastes determined to be hazardous shall be properly labeled, profiled, and manifested to an authorized DEQ hazardous waste treatment, storage, and disposal facility.
- 5. Pacific Connector may utilize a remediation firm or a waste management firm to initiate waste disposal activities.
- 6. At no time shall hazardous waste be stored on-site for a period exceeding 90 days.
- 7. Hazardous wastes shall be stored in a secured location (i.e., fenced and locked) until such time as this material is transported off-site.
- 8. Non-hazardous, oil contaminated soils and articles shall be properly disposed of at authorized non-hazardous land disposal facilities. While on-site, these materials shall be managed in accordance with the procedures outlined previously, and with applicable federal, state, and local regulations.
- VII. Response to Hydrostatic Test Failure

All available personnel will be put into groups of 2 or 3. The groups will be strategically located along the test section. Each group will have a radio, a minimum of one bale (200 count) of absorbent pads, 200 feet of double absorbent booms, 10 fence posts, 1 post driver, 200 feet of rope, and a knife. Radio communication will be used to alert others of the rupture location. Booms and pads will be used at the site and downstream of the rupture on any waterbody to which the ruptured water may be headed. The El will take water samples to check for oil and grease residues from the rupture pit and downstream of each set of booms installed. A proper chain of custody form will be completed and samples sent to a local laboratory for analysis. On federal lands, all hydrostatic test failure sites resulting in any breach shall be reviewed by a federal inspector in conjunction with El.

ATTACHMENT A Emergency Contact List

Emergency all Counties- 911 Coos County Fire and Sheriff's Department - 541-488-1095 Douglas County Fire and Sheriff's Department - 541-440-4450 Jackson County Fire and Sheriff's Department - 541-774-6800 Klamath County Fire and Sheriff's Department - 541-883-5130 Oregon Department of Environmental Quality - Spills contact nearest DEQ office Coos Bay - 541-269-2721 Medford - 541-776-6010 Roseburg - 541-440-3338 Oregon Emergency Response System (OERS) - 800-452-0311 National 24-Hour Spill Response Center (Coast Guard) - 1-800-424-8802

Forest Service Contacts					
Name	Title	Telephone Number			
Umpqua National Forest					
Robert Marshall	Tiller Ranger District Hazardous Materials Coordinator & Spill Coordinator	541-825-3122			
Kevin Sands	Tiller Ranger Alternate	541-825-3132			
John Beagle	Forest-wide Hazardous Materials Coordinator	541-957-3397			
Mikeal Jones	Forest-wide Spill Coordinator	541-957-3356			
Debra Gray	Forest-wide Alternate	541-957-3405			
If above personnel are unavailable	Forest Dispatcher	During business hours: 541-957-3325 After business hours: 541-672-6601			
Rogue River-Siskiyou Na	tional Forest				
Steve Rucker	High Cascades Ranger District Hazardous Materials & Spill Coordinator	541-560-3421 (cell: 541-944-9916)			
Pete Jones	Forest-wide Hazardous Materials & Spill Coordinator	541-858-2632			
If above personnel are unavailable	Forest Dispatcher	During business hours: 841-618-2510 After business hours: 541-776-7114 or 541-858-2200			
Fremont-Winema Nationa	al Forest				
Waiyen Yee	Hazardous Materials & Spill Coordinator	541-883-6813 (cell: 541-891-6977)			
Rich Kehr	Alternate Contact	541-883-6722 (cell: 541-891-0143)			
If above personnel are unavailable	Forest Dispatcher	During business hours: 541-883-6850 After business hours: 541-884-0516 or 541-947-6200			
	nent – Coos Bay & Roseburg Districts				
Paul Gammon	Hazardous Materials and Spill	541-751-4463			

	Coordinator				
Bureau of Land Management – Medford District					
Sonia Mason	Hazardous Materials Alternate	541-618-2287			
Bureau of Land Management – Lakeview District					
Tom Cottingham	Hazardous Materials Coordinator	541-883-6916			
Bureau of Reclamation					
Timothy Thompson	Klamath Basin Area Office Contact	541-880-2568			
Kristen Hiatt	Alternate Contact	541-883-6935			

EMERGENCY SPILL COORDINATOR (ESC), usually the Chief El

Name: _____ Method of Contact: _____ Alternate Phone #:

<u>AUTHORIZED ALTERNATE</u> (Contact only if you are unable to reach the ESC)

Name: ______Method of Contact: ______Alternate Phone #:

CONTRACTOR

Name of construction foreman and his/her designated representative, and method of contact. This information to be provided by contractor.

Name: ______Method of Contact: ______Alternate Phone #:

CONTRACTOR SPILL MATERIAL COORDINATOR

This person is responsible for maintaining all spill control equipment and material. This information to be provided by contractor.

PACIFIC CONNECTOR'S ENVIRONMENTAL REPRESENTATIVE

Name: Mike Warson (Office) 713-400-2839 (Cell) 713-647-1118

PACIFIC CONNECTOR'S ALTERNATE ENVIRONMENTAL REPRESENTATIVE

Name: Mike Warson (Office) 713-400-2839 (Cell) 713-647-111

ATTACHMENT B

HAZARDOUS MATERIALS INVENTORY

Material	Quantity (gallons)	Storage Location	Reportable Quantity (include reference)
Oil/Fuel:			
Commercial Chemicals		-	
Hazardous Wastes:			

The contractor will designate an individual who will be primarily responsible for maintenance and placement of spill control materials and equipment. This individual will assure that all control equipment is in place and operational prior to the start of construction.

Appendix Y

Transportation Management Plan



Pacific Connector Gas Pipeline, LP

Transportation Management Plan

Pacific Connector Gas Pipeline

January 2018

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- Appendix B1 Road Maintenance Maps Timber Removal and Construction
- Appendix C1 BLM/COQ Authorized Roads Table Timber Removal and Construction
- Appendix C2 BLM/COQ Authorized Roads Table Timber Removal Only (Federal and Non-Federal)
- Appendix C3 BLM/COQ Authorized Roads Table Federal Timber Removal Only
- Appendix D1 FS/BOR Authorized Roads Table Timber Removal and Construction

Operations and Maintenance (to be generated in coordination with BLM/FS/BOR)

- Appendix A Authorized Roads Maps Operation and Maintenance of the Pipeline
- Appendix B Road Maintenance Maps Operation and Maintenance of the Pipeline
- Appendix C BLM Authorized Roads Table Operation and Maintenance of the Pipeline
- Appendix D FS/BOR Authorized Roads Table Operation and Maintenance of the Pipeline

Appendix E Definitions

1.0 INTRODUCTION

Federal regulations require a Plan of Development (POD) for gas pipeline rights-of-way over federal lands with the estimated schedule for constructing, operating, maintaining and terminating the project. This Transportation Management Plan (TMP) describes the measures to be employed by Pacific Connector Gas Pipeline, LP (PCGP) and its contractors (Contractor) in the construction, use, and maintenance of Roads under the jurisdiction of the BLM, USFS and Bureau of Reclamation (Reclamation), (Agency(ies)) which are necessary to provide and maintain access to the Pacific Connector Gas Pipeline (Pipeline or Pipeline Project) during construction and operation. This TMP describes the anticipated use of these Roads for construction and/or timber removal for the duration of the Temporary Use Permit (TUP), serial No. OR 63542-01 and for operation, maintenance and/or termination of the pipeline during the duration of the Right-of-Way Grant (Grant) serial No. OR 63542. This TMP also includes details regarding timber removal and construction access Road improvements, Road maintenance and management of use before, during, and after construction. A final TMP will be submitted by PCGP to the Agencies for approval prior to issuance of the TUP and Grant. This TMP applies to Agency-jurisdiction Roads located on Agency and privately-owned land. PCGP will be required to comply with this TMP during the term of the TUP and Grant.

This TMP includes sections covering the following topics:

- Defines Agency and PCGP roles and responsibilities and identifies required agreements and permits and necessary coordination with other non-project activities.
- Identifies activities related to the construction, reconstruction, upgrading, decommissioning, and maintenance of Pipeline Project-affected roads, bridges, culverts, and other miscellaneous Pipeline Project-induced impacts; as well as traffic management and reporting requirements.
- Discusses the procedures for how the TMP may be updated and revised over the term of the TUP and Grant. Supplementing this TMP are 1) the TUP Exhibit F – Transportation Stipulations (for construction, timber removal and Initial Operation Period) of the pipeline which provides authorizations, definitions, Road use reporting and license agreement requirements as well as general Road use rules and construction stipulations that apply for all Agency-jurisdiction roads, and 2) the Grant Exhibit F – Transportation Stipulations which provides authorizations, definitions and requirements for Road use for operations, maintenance and/or termination of the Pipeline and PCGP shall also comply with all provisions and requirements found in the Grant and TUP Exhibits F. The Exhibits F go hand-in-hand with and must be administered with the TMP.

1.1 PURPOSE AND INTENT

The TMP is intended to cover all Pipeline Project transportation-related activities involving Agency-jurisdiction roads or rights-of-way and identifies ongoing cooperative procedures. The purpose and intent of the TMP is to:

• Identify a process to annually coordinate all transportation-related activities required for the continued operation of the Pipeline.

- Identify all Agency-authorized Roads and bridges necessary for the continued efficient operation of the Pipeline through the term of the Grant.
- Provide for a uniform federal response to Pipeline-related actions within Federal Lands through the identification and consistent application of roadway policies, requirements, and construction and maintenance specifications and Best Management Practices (BMPs).
- Provide for the protection of Road and adjacent off-road resources during road use and construction and as per any agreements or stipulations set forth in the Grant or TUP.
- Comply with policies and prescriptions identified in the Agencies Land and/or Resource Management Plans.
- Maintain the authorized transportation-related facilities to agreed-upon standards and avoid or mitigate impacts to off-road resources.
- Provide for public health and safety during and following Pipeline activities.

1.2 PLAN IMPLEMENTATION ACTIVITIES SUMMARY

The TMP addresses resource management needs and related transportation system actions for the Pipeline. The TMP includes a number of specific activities:

- Road Maintenance, Modifications and Reconstruction: defines the Road maintenance, reconstruction and related modification activities of PCGP and discusses road reconstruction, modification and maintenance standards, design proposal review and approval scheduling and coordination.
- Road Decommissioning: defines Roads to be decommissioned by PCGP and scheduling and decommissioning standards.
- Culvert/Bridge Upgrades: defines culverts and/or bridges to be replaced or upgraded by PCGP and identifies applicable standards, design review and approval requirements and scheduling.
- New Road Construction: defines a process for new or temporary Road development for Pipeline Project purposes.
- Traffic Management: addresses road and work area signing standards, and hazard analysis. Discusses the process for PCGP proposing and implementing measures for management of Off-Highway Vehicle (OHV) use of Pipeline facilities to the extent feasible.
- Annual Transportation Meeting: to facilitate efficient coordination and action with the Agencies. The annual transportation meeting will be held prior to March 1 of each construction year and will identify activities within the Pipeline Project area and coordination with other planned activities. At the completion of Pipeline construction, transportation management meetings will be held between PCGP

Operations and Agency staff specialists to address road access requirements for the operation of the Pipeline.

• Consistency with Other Plans: the TMP is one of several Plans of Development that provide implementation direction and guidance for PCGP. The TMP is the principal source of implementation direction for the activity listed and will be implemented to be consistent with other applicable Plans.

2.0 **RESPONSIBILITIES**

PCGP will be responsible for ensuring that all company and Contractor personnel understand the requirements for transportation uses over Federal Lands and Roads. PCGP will be responsible for performing or paying their commensurate share for maintenance and cost recovery/cost share in accordance with applicable federal regulations, including but not limited to 36 CFR §212.5(c), 36 CFR §212.5(d), and 43 CFR §§429, 2812, 2800 and 2880. All reconstruction and use activities on Road segments affected by Pipeline Project activities will abide by all stipulations shown in the Grant and/or TUP. Any damage to Roads as a result of PCGP's use will be repaired to match pre-existing or better condition in accordance with Agency-specific guidelines. Roads will be maintained as necessary to minimize resource impacts and prevent Road damage. Maintenance standards shall be consistent with the Maintenance Level of the Road. All maintenance, Road modifications, reconstruction and decommissioning shall comply with applicable Agency BMPs. All required permitting, surveys (biological, cultural, etc.) and NEPA activities will be performed by PCGP and performed to a standard to comply with current Agency requirements. PCGP will provide funding to reimburse the Agencies for any expenses incurred by the Agency in performing required design reviews, approvals, and monitoring during planning, construction and operation. PCGP will ensure that access is maintained where pipeline construction crosses existing roads.

PCGP will provide open communication with other Road users, landowners, and land managing agencies to ensure they are apprised of the pipeline construction schedule so that all appropriate measures can be taken to minimize potential Road use impacts and conflicts. Where necessary, PCGP will enter into Road maintenance agreements with third-party users to ensure that adequate maintenance is performed. PCGP will ensure that construction schedules are developed and communicated to Contractors to minimize potential Road use impacts. PCGP will notify the Agencies, private landowners, and interested third parties at least seven (7) business days in advance of planned road work. This notification will include planned road work on any non-federal roads that would directly affect access to federally-managed Roads or lands. In some instances, unforeseen changes to the construction schedule or emergency actions may limit the advance notice to agencies and landowners. PCGP will make every effort to provide at least a 48-hour notice in these cases.

2.1 Existing Access to the Right-of-Way

Existing Agency-jurisdiction Roads proposed for use by PCGP are shown on the <u>TMP Maps</u> as follows:

- Appendix A Authorized Roads Maps Operation and Maintenance of the Pipeline
- Appendix B Road Maintenance Maps Operation and Maintenance of the Pipeline

- Appendix A1 Authorized Roads Maps Timber Removal and Construction
- Appendix B1 Road Maintenance Maps -- Timber Removal and Construction

The authorized Roads are also listed in tabular form on the following **<u>TMP Tables</u>**:

 Appendix C - BLM Authorized Roads Table – Operation and Maintenance of the Pipeline

Appendix D - FS/BOR – Authorized Roads Table – Operation and Maintenance of the Pipeline

- Appendix C1 BLM/COQ Authorized Roads Table Timber Removal and Construction
- Appendix C2 BLM/COQ Authorized Roads Table Timber Removal Only (Federal and Non-Federal)
- Appendix C3 BLM/COQ Authorized Roads Table Federal Timber Removal Only
- Appendix D1 FS/BOR Authorized Roads Table Timber Removal and Construction

Roads are also shown on the following **<u>Grant and TUP Exhibits</u>**:

- Grant Exhibit A As-Built Alignment Sheets and Site Location Drawings (to be provided after project completion)
- Grant and TUP Exhibit A1 Alignment Sheets and Site Location Drawings Issued for Construction

These Roads are either located on lands administered by the Agency or acquired via an easement obtained by the Agency from a private landowner.

Roads were selected by PCGP to minimize transportation impacts and allow for safe, efficient construction and movement of equipment and materials. The Agencies will authorize PCGP to use these Roads to the extent that existing access rights are available and use is consistent with the limitations and stipulations as presented in this TMP and all Appendices herein. PCGP will be required to secure any additional access rights where necessary. Authorized uses in the TUP and/or Grant will include access for timber removal and/or construction, ingress and egress, and operation, maintenance and/or termination of the pipeline as presented in the Appendices, with some Roads being limited to removal of timber only.

The TMP document and corresponding appendices will be updated by PCGP prior to any commensurate share Road maintenance cost calculations and during the construction and maintenance phases of the Pipeline Project as access roads are added or removed from use. The updated information provided by PCGP will include actual truck counts per access Road segment in a format acceptable to the jurisdictional agency. Any additional Roads proposed for Pipeline Project use will be submitted for approval through the Federal Agencies having jurisdiction over the requested access Road.

2.1.1 Federal, State, and County

PCGP will acquire all required federal, state, and county road use permits and approvals and the Contractor will be responsible for following any maintenance or improvement requirements associated with the Road use permits or approvals.

2.1.2 Private

PCGP will obtain landowner agreements for any use of private roads. All conditions agreed to with the landowner must be met by the Contactor for continued use of the road. Where access is not available to Agency lands or Roads, and in cases of private roads of mutual interest, PCGP will coordinate with the appropriate Agency(ies) in the identification and acquisition of access rights related to the right-of-way locations for the Grant and TUP.

2.2 Anticipated Road Work

Road maintenance and improvement/reconstruction (i.e., spot rocking, grading to remove ruts, resurfacing, culvert replacement, clearing of vegetation, dust abatement, danger tree removal, drainage cleanout, road widening, turnout construction, etc.) may be needed on some Agency roads to accommodate oversized and heavy construction equipment. In general, roadwork will involve a minimal amount of site disturbance and earthwork necessary to make the roads useable for timber removal and construction access needs. However, where construction schedules require Road use outside of the normal operating season, more substantial work such as surfacing or resurfacing of Roads may be necessary. No maintenance or improvements will be allowed on any road not authorized for use or approved for improvements. All construction, reconstruction and improvement of Road crossings of Reclamation canals or drains will meet the standards of the Reclamation document, "Engineering and O&M Guidelines for Crossings," (April 2008) (Exhibit H of the Grant and TUP). All maintenance and improvements will be completed in accordance with Pipeline Project requirements and Agency, state, county and private landowner standards. PCGP has initiated and will complete all required cultural and environmental surveys along the proposed access Roads identified on the Alignment Sheets (Grant Exhibit A and TUP/Grant Exhibit A1) and in Appendices A and A1 to this TMP prior to approval of the Grant and TUP.

2.2.1 New Permanent and Temporary Road Construction

PCGP proposes to construct new temporary access Roads (TARs) and permanent access Roads (PARs) across Federal Lands at locations shown on maps in:

TMP Appendices A, A1 TMP Appendices C, C1, C2, C3, D and D1.

PCGP will submit design drawings, including plan and profile sheets, to the affected land managing agency for review and written approval prior to the commencement of Road construction activity. PCGP will be responsible for performing Road maintenance on all newly-constructed Roads on Federal Lands and decommissioning of temporary Roads as specified in this plan. New Permanent and Temporary Access Roads constructed for Pipeline Project use will meet Agency engineering design and road management standards consistent with the intended use of the road and all applicable Agency BMP's.

2.2.2 Maintenance Standards

PCGP will perform or make commensurate share payment(s) for maintenance on existing Agency roads used during construction and any subsequent non-casual use in accordance with USDA-FS Manual Chapter 7730, the USDA-FS Handbook section 7709.59, Chapter 60, BLM Manual 9100 Series and the various BLM District Resource Management Plans and as shown in TMP Appendices C1, C2, C3, D, and D1.

Existing Agency-jurisdiction Roads will be maintained to ensure compliance with any applicable Road Use Permit, Reclamation standards for "Engineering and O&M Guidelines for Crossings" (Exhibit H of the Grant and TUP), the Grant and TUP, this TMP and in consultation with the Agencies regarding current standards for the maintenance level identified for the Road(s). Roads constructed by PCGP on Agency lands will be maintained to standards approved by the Agency.

To facilitate consistency across the Pipeline Project, Agencies have agreed to utilize the most current USDA-FS, Pacific Northwest Region (Region 6), standard timber sale road maintenance specifications ("T-specs") and Pipeline Project specific supplemental specifications as appropriate. Agency Roads requiring PCGP maintenance and associated specifications are shown on maps in TMP Appendices B and B1 and in tables in TMP Appendices C, C1, C2, C3, D, and D1. Copies of the specifications are available from the Supervisor's Office of any National Forest in Region 6.

Paved Roads will be kept free of mud and other debris that may be deposited by construction equipment. Track-driven equipment would cross paved Roads on tires or equipment pads to minimize Road damage. Any paved, gravel, or dirt roadways damaged by construction activities will be repaired to a condition equal to or better than the condition prior to damage. Agencies may require PCGP to provide selected pre-use Road and/or sign condition surveys, including photos or video, to aid in assessing use-induced changes.

2.2.3 Straightening, Widening, Cut and Fill, Culverts and Bridges

In general, BLM- and USFS-jurisdiction Roads are single-lane forest Roads designed and built primarily for removal of timber using conventional log trucks. PCGP's pipe-stringing trucks will be hauling 40- to 80-foot sections of pipe to the construction right-of-way. The total length of these vehicles will be approximately 100 feet. These vehicles may track outside of the existing Road width, especially on corners. Due to the size of vehicles that will use access Roads, some minor improvements (straightening, widening, cut and fill, and/or culvert improvements) may be required to some of these existing Roads. These Roads have been identified and are shown or described on:

TMP Appendices B and B1 maps

TMP Appendices C, C1, C2, C3, D and D1 tables

In some circumstances, it may also be necessary to construct turnouts for oncoming traffic to "pull out" of the existing Road footprint for passing purposes.

Areas requiring these minor improvements will be flagged by PCGP for field review by the authorizing Agency prior to construction. Proposed modifications to existing Roads to accommodate equipment access will be submitted for review to the applicable Agency Office

and will meet the agreed-upon Agency design criteria. No improvements will be made until signed approval from the Agency is received.

All required permitting, surveys (biological, cultural, etc.), and NEPA activities will be performed by PCGP and performed to a standard to comply with current Agency requirements. All applicable Agency BMPs will be implemented. PCGP will be responsible for their commensurate share of expenses incurred in the use of existing Roads and will provide funding to reimburse the Agencies for any expenses incurred by the Agency in performing required design reviews, monitoring, and approvals during planning and construction.

These improvements will be accomplished by PCGP and with the Agency's and/or landowner's approval. For all TEWAs (Temporary Extra Work Areas), disposal sites and other temporary and permanent site modifications, PCGP will ensure that existing drainage features (culverts, ditches, dips, grade sags, etc.) continue to function properly, or employ suitable substitute measures to ensure that drainage is controlled to prevent off-site erosion or other resource damage. All applicable Agency BMPs for erosion control will be implemented.

Culverts or other drainage features damaged during construction or operations will be repaired or replaced in consultation with the applicable Agency. PCGP's Contractors will conduct an assessment of major culverts crossed by PCGP access Roads to determine those that may require modifications or replacement for necessary equipment access. Any subsequent culvert modifications or replacements shall be developed in consultation with the Agency and will adhere to the Agency standards.

PCGP will develop and submit site specific proposals for bridge modifications required for pipeline construction to the applicable Agency. If an existing publicly accessible bridge is not suitable for Pipeline Project use, PCGP may elect to construct an adjacent temporary bridge provided all Agency requirements are satisfied and access is restricted to PCGP and Contractor vehicles and personnel. Similarly, PCGP may also install temporary bridges on the construction ROW provided all Agency requirements are satisfied and access is restricted to PCGP and Contractor vehicles and personnel. PCGP will accept liability for all temporary construction bridges and any damage to existing bridges caused as a result of construction activities. Refer to the "Wetland and Waterbody Crossing Plan (Appendix BB of the Grant/TUP Exhibit G, Plan of Development (POD))" for additional criteria regarding the use of temporary bridges.

2.2.4 Reconstruction, Resurfacing and Decommissioning

Where reconstruction and/or resurfacing are necessary on an existing Agency-jurisdiction Road segment, PCGP will comply with the engineering standards established for the individual Road. Crossings of Reclamation water conveyance facilities will be in accordance with the Reclamation document, "Engineering and O&M Guidelines for Crossings (Exhibit H of the Grant and TUP)." All proposed reconstruction designs (including those of section 2.2.3) shall be submitted to the Forest Service, Reclamation and BLM for review. Unless directed otherwise by the Agency in writing, the general guideline will be to reconstruct/resurface the road segment to its previous alignment, grade and width, such that drainage features and surfacing standards function as originally intended or better. Backfill and compaction practices at pipeline road crossings shall comply with or exceed Agency standards to prevent roadway subsidence. Any subsequent subsidence shall be repaired by PCGP. PCGP shall consult with the jurisdictional Agency to ensure that pipeline Road crossing reconstructions include any mitigation measures and specialized road design features needed to allow heavy equipment access for the anticipated future Road use (i.e. adequate for timber harvesting yarder, dozer/lowboy or other vehicle configurations that may exceed ODOT load limits but permitted by the Agencies for

timber sale, fire suppression or other land management activities). All applicable Agency BMPs will be implemented.

TARs and previously decommissioned Roads that are constructed or reconstructed for use during the Pipeline Project will be reclaimed or decommissioned as specified by the Agency. In addition, as mitigation for impacts to various late-successional and riparian-dependent species as well as soil productivity losses, PCGP proposes to decommission off-site Roads in cooperation with the Agency in accordance with Agency specifications and the Compensatory Mitigation Plan (Exhibit G, Appendix CC to the Grant and TUP).

2.3 Wet and/or Freezing Weather Access

PCGP's construction equipment access to the right-of-way may be outside of the normal operating period in order to conduct timber clearing in forested areas and pipeline construction in specific areas. Road surfaces during the late fall, winter and early spring are generally more susceptible to damage because of moisture conditions and freeze/thaw cycles. Agency roads are classified as limited-strength roads and may not be designed or constructed for all-weather use. To minimize the potential for both road-related and off-road resource damage, PCGP will perform road surfacing structural capacity assessments to a standard acceptable to the Agency and place additional road surfacing (aggregate or bituminous as appropriate) as needed for the planned use. It is anticipated that this work will be performed prior to the start of Year 1 or Year 2 activities. PCGP shall submit proposed surfacing enhancements to the jurisdictional Agency for approval prior to implementation. In addition, PCGP will install appropriate erosion and sediment control BMPs along the access Roads as determined necessary by PCGP's Environmental Inspector (EI) in cooperation with Agency Officials. All Agency-jurisdiction Roads are subject to short term traffic restrictions and/or closures due to seasonal or unusual weather conditions, user safety or when necessary to prevent facility or resource damage. Anv commercial use of an Agency-jurisdiction Road must be suspended when such use is unsafe and/or will cause damage to the Roads or other Agency resources. Such suspension shall be effective when the commercial user is notified in writing or by Road closure orders posted on the Road per applicable CFR regulations. PCGP will abide by applicable Forest Service Road Rules and Road Damage policies related to Road use (Reference Regulation 36 CFR 261.10(a), 36 CFR 261.12, 36 CFR 261.54, 36 CFR 261.56 and individual Forest Road Rules and Road Damage policies). All work necessary to place the Roads in a useable condition for seasonally weakened use will be completed prior to use and monitored during use. PCGP will obtain an approved snow plowing permit from the Agency prior to removal of snow from any Agency-jurisdiction Road.

2.4 Controlling Off-Highway Vehicle Use of the Right-of-Way

To minimize OHV access on the construction right-of-way, PCGP will install OHV barriers at appropriate locations in coordination with the land management Agency. PCGP will consult with the land managing Agencies for review and approval of site-specific designs for OHV barriers. OHV barrier protection measures are described in PCGP's Erosion Control and Revegetation Plan (ECRP) (Appendix I to the POD) and Recreation Management Plan (Appendix S to the POD). All designs will meet Agency standards, and may include dirt/rock berms, log barriers, vegetative screens, signs, and locked gates. Slash from clearing operations will also be redistributed on the right-of-way which will help discourage OHV use. The proposed OHV barriers will be designed and constructed in a manner that attempts to prevent unauthorized motor vehicle/OHV use to and along the Pipeline right-of-way. It has been PCGP's experience that unauthorized OHV trespass can be difficult to control in some heavy OHV use areas.

PCGP will be responsible to annually monitor and control unauthorized OHV use during the life of the Grant and will implement additional measures as necessary to control OHV access.

3.0 TRANSPORTATION MANAGEMENT PRACTICES

PCGP will acquire all necessary overweight and oversize permits for the use of Agencyjurisdiction Roads and at structural crossings (bridges, culverts, canals, ditches). Any loads in excess of limitations set forth in Oregon Revised Statutes (ORS) 818.010 (Maximum Allowable Weight – Tables I, II, or III only, as applicable), or 818.080 (Maximum Size Limits), or as posted on any Road(s) will require prior approval of the Authorized Officer or Agency Official. PCGP will contact each applicable Agency prior to the start of construction to verify restrictions that may apply to Agency facilities on Roads which are authorized for use. Noxious weed control measures as outlined in section 12.0 of the ECRP, Appendix I to the POD, shall be implemented by PCGP. Such measures include requirements for equipment cleaning and inspections and the use of noxious weed free materials.

3.1 Notifications

PCGP will provide open communication with landowners and land managing agencies to ensure they are apprised of the pipeline construction schedule so that all appropriate measures can be taken to minimize potential access impacts. PCGP will make every effort to notify the Agency(ies) at least seven (7) days in advance of road closures. This includes work on any non-federal roads that would directly affect access to Agency-managed roads. In some instances, unforeseen changes to the construction schedule may limit the advance notice to agencies and landowners. At a minimum, a 48-hour notice will be provided in these cases.

3.2 Road Crossing Methods

3.2.1 Bore

Some major Roads may be crossed by conventional boring to avoid traffic disruptions. Boring requires the excavation of a pit on each side of the crossing, placement of boring equipment in the pit, boring a hole under the Road equal to or greater than the diameter of the pipe and installation of a prefabricated pipe section that will be pushed through the borehole. For long crossings, pipe joints/sections may be welded onto a pipe string before being pushed through the borehole. PCGP will ensure that little or no disruption to traffic at the Road or highway crossings will occur.

3.2.2 Open Cut

The majority of the Road crossings are proposed as open cut crossing method. During an open cut Road crossing, PCGP will attempt to maintain at least one lane of traffic with detours around construction, plating over the open portion of the trench or other suitable methods. However, in some cases, the open cut construction method may require the Road to be closed for up to approximately 24 hours. Traffic control measures such as flaggers, signs, lights, and barriers will be used during construction to ensure public safety, to provide for efficient movement of traffic through or around work areas and to provide safe working conditions for construction workers. Traffic control measures used by PCGP on Agency-jurisdiction Roads will meet the most current standards of USDA-FS FSM 7100-15 regarding signs, posters and traffic control measures. In addition, advanced signage may be utilized in some situations which would provide notice of construction activities and expected delays. Where Road closures occur, PCGP will communicate with landowners and Agencies regarding construction scheduling to minimize potential access impacts and allow emergency vehicles and residential access.

3.2.3 Material Sources and Disposal Sites

PCGP may need to use material sources on USDA-FS or BLM-managed lands for the production of aggregate for Road surfacing, pipe bedding, slope armoring, or other Pipeline Project needs. PCGP's contractor will apply for the appropriate removal permit from the federal land managing agency for any material to be removed from a federal quarry for Pipeline Project use. TMP Appendices, as applicable, shall be amended as needed during the permit application process to include any necessary maintenance and upgrading of Roads used for access to the material source(s) and disposal site(s).

PCGP has prepared an Overburden and Excess Material Disposal Plan (Appendix Q to the POD) which will include a detailed site survey of the disposal site(s) to show how surplus Pipeline Project material is planned for placement and how the site will be reclaimed and the erosion control and revegetation measures implemented. The Overburden and Excess Material Disposal Plan will be approved in writing by the Agency as part of the Grant and TUP and shall be updated upon the Contractor(s) final material quantity estimates and evaluation of the proposed disposal sites.

Once available, PCGP will provide a listing of Roads necessary for the transporting of water for pipeline hydrostatic testing (see Hydrostatic Testing Plan (Appendix M of the POD). These Roads, and the associated traffic type and quantity, shall be added to the TMP Appendices A1-D1 as appropriate. PCGP shall perform or pay their commensurate share for Road maintenance and cost recovery on these Roads as determined by the jurisdictional Agency.

3.3 Safety and Traffic Flow Management

Agency Roads are used by the public, timber companies, contractors, adjacent landowners, etc. PCGP will conduct construction activities during the average workday, as practical, to minimize traffic congestion impacts to other valid users. The construction yards will be used as the primary parking area for personal vehicles, and the majority of pipeline construction workers are anticipated to be transported to the construction right-of-way by buses, as practical. Construction equipment would remain on-site during construction. Construction equipment will be dropped off in one location on the right-of-way and will move generally in a linear direction along the construction right-of-way as work progresses, minimizing traffic on local roads. The amount of equipment moved by hauling from site-to-site will be minimized via the accessibility created along the construction right-of-way. PCGP will comply with local road and bridge weight limits or restrictions as well as Agency, Oregon Department of Transportation, local or private hauling permit requirements regarding weight and size restrictions as defined in the Grant and TUP.

Appropriate traffic control signs will be used at equipment crossings of improved Roads (paved or gravel), and when a high volume of traffic will be entering or exiting an improved Road from the right-of-way, or where engineering judgment shows there is a need. All traffic control measures used by PCGP on Agency Roads will meet the most current standards of USDA-FS FSM 7100-15 and Manual on Uniform Traffic Control Devices (MUTCD) regarding signs, posters and traffic control measures. Flaggers, signs, barricades, guard rails, safety fence, and signals will be placed and maintained at road crossings as required in federal, state, or county permit stipulations. In the absence of such regulations, PCGP will place signs 500 feet or as feasible in each direction from the crossing identifying that construction or flagmen are ahead. Certified Flaggers will be used on each side of the Road crossing whenever equipment is working in or crossing over any improved Road. Flaggers will be equipped with high visibility

safety apparel and stop/slow paddles. At the Agencies' request, PCGP will provide appropriate signing to identify roads not authorized for Pipeline Project access to prevent inadvertent unauthorized use. Posted speed limits will be observed on highways, county roads, and Agency-jurisdiction Roads. If necessary to protect public health and safety, the Agency(ies) may issue temporary closure orders on some roads used by PCGP.

3.4 Fugitive Dust Control

Fugitive dust generated from Road construction or use will be controlled as described in the Air/Noise and Fugitive Dust Control Plan (Appendix B of the POD) and as specified by the Agencies in TMP Appendices C, C1, C2, C3, D, and D1. Whenever vehicles or equipment will access a paved Road directly from the right-of-way, a dust control apron adjacent to the paved structure would be installed to keep all paved Roadways free of accumulated mud and dirt. Construction entrances will be constructed in accordance with the appropriate Agency Road design requirements.

3.5 Potential Federal Facility or Resource Damage Related to Pipeline Project Activities

Refer to Slope Stability Stipulation D.20 of Exhibit D to the Grant and TUP.

3.6 Emergency Response Plan

PCGP has prepared, will maintain, and as it is updated, provide to the Agency(ies) an Emergency Response Plan (ERP) (Appendix H to the POD). The ERP shall contain contact names, organizations, and phone numbers to be used in the event of a Pipeline Project emergency. Both jurisdictional Agency and PCGP personnel information shall be included. In addition, PCGP shall provide to the agencies a listing of access Roads necessary for operation and maintenance during the life of the Pipeline Project. This list should consider that many Agency system Roads are not routinely maintained and may be inaccessible due to snow, downed trees, slope failures, etc. for extended periods of time.

Timber Removal and Construction

Appendix A1

Authorized Roads Maps - Timber Removal and Construction

Timber Removal and Construction

Appendix B1

Road Maintenance Maps – Timber Removal and Construction

Timber Removal and Construction

Appendix C1

<u>BLM/COQ</u> – Authorized Roads Table -Timber Removal and Construction

Timber Removal and Construction

Appendix C2

<u>BLM/COQ</u> - Authorized Roads Table -Timber Removal Only (Federal and Non-Federal)

Timber Removal and Construction

Appendix C3

BLM/COQ – Authorized Roads Table – Federal Timber Removal Only

Timber Removal and Construction

Appendix D1

FS/BOR – Authorized Roads Table – Timber Removal and Construction

Pacific Connector Gas Pipeline Project

Operations and Maintenance

Appendix A

Authorized Roads Maps – Operation and Maintenance of the Pipeline

Operations and Maintenance

Appendix B

Road Maintenance Maps – Operation and Maintenance of the Pipeline

Operations and Maintenance

Appendix C

<u>BLM/COQ</u> – Authorized Roads Table – Operation and Maintenance of the Pipeline

Operations and Maintenance

Appendix D

FS/BOR – Authorized Roads Table – Operation and Maintenance of the Pipeline

Appendix E

Definitions

Definitions:

EXPLANATION OF TERMS AND DEFINITIONS

The definitions of terms and concepts used in this TMP are relevant to Pipeline Project-related transportation system facilities, operations, maintenance and termination.

<u>Approval</u> - Confirmation or concurrence with plans, design, projects and schedules prior to implementation by the party or parties assigned responsibility in the Right-of-Way Grant (Grant).

<u>Authority</u> - The legal right to approve or modify an action or proposed action; this is based on statute, regulations, or legal agreements.

<u>Capital Improvement</u> - The construction, installation, or assembly of a new fixed asset, or the significant alteration, expansion, or extension of an existing fixed asset, to accommodate a change of purpose.

<u>Casual Use or Insignificant Use</u> - Occasional commercial use by pickups and line and bucket service vehicles on an intermittent basis that does not generate a significant maintenance requirement. Also, non-commercial activities that are not prohibited by closure of lands to such activities, and involve practices that do not ordinarily cause any appreciable disturbance or damage to the public lands, resources or improvements thereon, and, therefore, do not require a written authorization (i.e., ingress and egress on existing Roads and trails where no commercial activity is being conducted such as hauling logs, ore, or use of heavy equipment). The determination of whether the use is casual or insignificant will rest with the Agency depending upon the jurisdictional location. If a need to control the use through stipulations exists, then the use would be formally authorized using the appropriate agreement.

<u>Construction</u> - The erection, construction, installation, or assembly of a new fixed asset.

<u>Consultation</u> - Formal or informal discussions for the purposes of developing and/or reviewing proposed projects and implementation plans. Consultation involves providing another party an opportunity for review and input regarding a proposed plan or project. The objective of consultation is to obtain input and reach a joint understanding of requirements for the proposed project or plans. The results of consultation are generally documented in reports or letters. Informal consultation generally pertains to the results of meetings, exchange of e-mail, or other informal communication between parties. Formal consultation involves procedures that are covered by agency regulations, such as consultation with USDI Fish and Wildlife Service under the Endangered Species Act, and tribal consultation.

<u>Decommissioning -</u> Activities that result in the stabilization and restoration of unneeded Roads to a more natural state (36 CFR 212.1, revised as of July 1, 2006). Existing Roads that are no longer needed for access to and management of Agency lands are candidates for decommissioning. The objectives for decommissioning of a road are to reestablish vegetation and, as necessary, to restore ecological processes interrupted or adversely impacted by the

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road and its operation. Decommissioning includes various levels of treatments to stabilize and rehabilitate the road. Treatments may include one or more of the following activities:

- Blocking the entrance to the road;
- Removing culverts and reestablishing former drainage patterns;
- Installing waterbars on the road surface;
- Pulling back road shoulders and removing unstable road fills;
- Ripping of the roadbed to promote water infiltration;
- Stabilizing slopes;
- Scattering slash over the roadbed;
- Restoring vegetation in the road prism; and
- Other methods designed to meet specific conditions associated with the road.

In some instances, road decommissioning may involve complete elimination of the roadbed by restoring natural contours and slopes.

The specific treatments for an individual road are best identified by an interdisciplinary team of resource specialists based on the site specific conditions along that road.

<u>Emergency Access</u> - Access required because of a facility failure, such as a transmission line, canal, or penstock, or because of a disruption of service where power cannot be rerouted on the grid system. Such access is allowed, though immediate agency notification is required and possible mitigation may follow.

<u>Engineering Judgment</u> - The evaluation of available pertinent information, and the application of appropriate principles, standards, guidelines, and practices as contained in agency manuals and other sources, for the purpose of deciding upon the applicability, design, operation, or maintenance of Roads or facilities. Engineering judgment will be exercised by an engineer, or by an individual working under the supervision of an engineer, through the application of procedures and criteria established by the engineer. Documentation of engineering judgment is not required.

"Federal Lands" means all lands or interests in lands to be included in the Grant and associated TUP and owned by the United States, except lands in the National Park System, lands held in trust for an Indian or Indian Tribe, and lands on the Outer Continental Shelf.

<u>Flood Emergency Road Maintenance Plan (FERM)</u> - Flooding conditions are common to federal lands in southwest Oregon. The resultant damage varies with the intensity of the runoff and local conditions. It is important to recognize the potential for flooding damage and take positive action to minimize it through preventative measures and aggressive action prior to and during high runoff periods.

The FERM is designed to align the project with FSM 7734 (Repairs Performed with Emergency Relief-Federally Owned Funds) and also to provide an outline to follow in the event of a storm with enough magnitude to cause damage to forest Roads and resources.

Emergency actions begin when damaging conditions are imminent and continue until the need for immediate action diminishes.

The Agency Official will declare a flood emergency when it can be determined that the storm will cause damage severe enough to warrant such action.

<u>Guideline</u> - A statement of recommended, but not mandatory, practice in typical situations, with deviations allowed if professional judgment or scientific/engineering study indicates the deviation to be appropriate.

<u>Implementation</u> – Accomplishment of on-the-ground or on-site construction, restoration, reconstruction, maintenance, or operational activities. Implementation may involve actual ground or habitat disturbance. Implementation normally will not take place until the appropriate agencies or officials approve required permits, NEPA decisions, designs and/or implementation plans.

<u>Maintenance</u> - The ongoing upkeep of a road necessary to retain or restore the road to the approved road management objective. The act of keeping fixed assets in acceptable condition. It includes preventive maintenance, normal repairs, replacement of parts and structural components, and other activities needed to preserve a fixed asset so that it continues to provide acceptable service and achieves its expected life. Maintenance excludes activities aimed at expanding the capacity of an asset or otherwise upgrading it to serve needs different from, or significantly greater than, those originally intended.

Maintenance includes work needed to adhere to laws, regulations, codes, and other legal direction as long as the original intent or purpose of the fixed asset is not changed.

Four types of maintenance are identified in the Plan including annual (recurrent), deferred, critical deferred, and emergency.

- <u>Annual Maintenance</u> Maintenance that is recurrent. Such road maintenance is performed to comply with standards and policies and does not arise out of an emergency condition, and is not reconstructive in nature. This includes both traffic-generated and non-traffic-generated road maintenance. Recurrent maintenance is conducted as a matter of course on a periodic basis.
- <u>Deferred Maintenance</u> Deferred maintenance is maintenance that was not performed when it normally would have been or when it was scheduled; and therefore, was put off or delayed for a future period of one or more years until it can be economically or efficiently performed. When allowed to accumulate without limits or consideration of useful life, deferred maintenance typically leads to deterioration of performance, increased costs to repair, and decrease in asset value. Deferred maintenance needs may be categorized as critical or noncritical at any point in time. Continued deferral of noncritical maintenance will normally result in an increase in critical deferred maintenance.

Code compliance (e.g. life safety, ADA, OSHA, environmental, etc.), Forest Plan Direction, Best Management Practices, Biological Evaluations other regulatory or Executive Order compliance requirements, or applicable standards not met on schedule are considered deferred maintenance.

• <u>Critical Deferred Maintenance</u> - Maintenance that was not performed when it should have been or when it was scheduled and which, therefore, was put off or delayed for a future period; and is to the point that its is a serious threat to public health or safety, a natural resource or the ability to carry out the mission of the organization.

• <u>Emergency Maintenance</u> - An urgent maintenance need that may result in injury, illness, or loss of life, natural resource, or property; and must be satisfied immediately. Emergency needs generally require a declaration of emergency or disaster, or a finding by an Agency Official that an emergency exists.

<u>New Construction - Activities that result in the addition of National Forest authorized or temporary road miles (36 CFR 212.1).</u>

<u>Parties</u> - Parties to the TMP including PCGP, the USDI-BLM, the USDA-FS, and the Bureau of Reclamation.

<u>Pipeline Project</u> - The Pacific Connector Gas Pipeline, including all lands associated therewith as described in the BLM Right-of-Way Grant (Grant), serial number OR 63542.

<u>Pipeline Project-Induced Traffic</u> - Traffic occurring on a road or bridge that is a direct result of the existence or continued operation of the Pipeline Project and would not otherwise occur without the Pipeline Project.

<u>Re-commissioning</u> – Improve a previously decommissioned road for transportation needs required for the construction of the Pipeline Project.

<u>Reconstruction (Rehabilitation)</u> - Replacement of an existing facility involving the reconstruction, reinstallation, or reassembly of a fixed asset. Activity that results in improvement or realignment of an existing road, including: 1) road improvement - where an activity results in an increase in an existing road's traffic service level, an expansion of its capacity, or a change in its original design function, and 2) road realignment – where an activity results in a new location of an existing road or portions of an existing road and treatment of the old roadway (36 CFR 212.1).

<u>Restoration</u> - Work necessary, as a result of major damage, to restore a road, bridge or other transportation facility to the designated standard and serviceability.

<u>Right-of-Way</u> - the Federal Lands which PCGP will be authorized to use or occupy under the Grant or associated TUP.

"Roads" means existing roads located on Federal Lands and/or under the jurisdiction of the Agency (including United States easements) or roads approved for construction on Federal Lands which are necessary for access to and from the Right-of-Way for construction, operation, maintenance or termination of the PCGP.

<u>Road and Bridge Operations</u> - The management and control of traffic, road use, and inspection and evaluation of the condition and safety of roads and bridges.

<u>Road Maintenance Levels (USDA-FS)</u> - The USDA-FS levels of service provided by, and maintenance required for, a road consistent with road management objectives and maintenance criteria. The USDA-FS has defined five road maintenance levels listed below.

• <u>USDA-FS Level 1</u> - Assigned to intermittent service roads during the time they are closed to vehicular traffic. The closure period must exceed one year. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road

deterioration may occur at this level. Appropriate traffic management strategies are "prohibit" and "eliminate."

Roads receiving Level 1 maintenance may be of any type, class, or construction standard, and may be managed at any other maintenance level during the time they are open for traffic. However, while being maintained at Level 1, they are closed to vehicular traffic, but may be open and suitable to non-motorized uses.

- <u>USDA-FS Level 2</u> Assigned to roads open for use by high clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Log hauling may occur at this level. Appropriate traffic management strategies are either to (1) discourage or prohibit passenger cars, or (2) accept or discourage high clearance vehicles.
- <u>USDA-FS Level 3</u> Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities.

Roads in this maintenance level are typically low speed (nominally 15-25 mph), single lane with turnouts and spot surfacing. Some roads may be fully surfaced with either native or processed material. Appropriate traffic management strategies are either "encourage" or "accept." "Discourage" or "prohibit" strategies may be employed for certain classes of vehicles or users.

- <u>USDA-FS Level 4</u> Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced. However, some roads may be single lane. Some roads may be paved and/or dust abated. The most appropriate traffic management strategy is "encourage." However, a "prohibit" strategy may apply to specific classes of vehicles or users at certain times.
- <u>USDA-FS Level 5</u> Assigned to roads that provide a high degree of user comfort and convenience. These roads are normally double lane, paved facilities. Some may be aggregate surfaced and dust abated. The appropriate traffic management strategy is "encourage."

<u>Road Maintenance Levels (USDI-BLM)</u> - The USDI-BLM levels of service provided by, and maintenance required for, a road consistent with road management objectives and maintenance criteria. Like the USDA-FS, the USDI-BLM also has defined five maintenance levels. All of the USDI-BLM road maintenance levels, including Western Oregon guidance, are listed in Exhibit S. However, under the USDI-BLM road maintenance definitions, Level 2 roads are defined differently compared to the USDA-FS system. In addition, one special road/trail requirement exists in the Susan Creek area. For transmission line access roads on USDI-BLM-managed land, Level 1 and 2 roads are defined as the following plus special considerations for the Susan Creek Trail:

• <u>USDI-BLM Level 1</u> - This level is assigned to roads where minimum maintenance is required to protect adjacent lands and resource values. These roads are no longer needed and are closed to traffic. The objective is to remove these roads from the transportation system. In Western Oregon, the objective of this maintenance level

should also include road segments which are closed to vehicles on a long-term basis, but that may be used again in the future. This will facilitate assigning decommissioned roads at this level.

- <u>USDI-BLM Level 2</u> This level is assigned to roads where management objectives require the road to be opened for limited administrative traffic. Typically, these roads are passable by high clearance vehicles. In Western Oregon, traffic is generally administrative with some minor specialized use, or moderate seasonal use. These roads are typically low standard, low volume single lane roads, natural and aggregate surfaced, and are functionally classified as a resource road.
- <u>Special Road/Trail Consideration</u> Special requirements exist for the road alignment that
 is also used as the Susan Creek Trail (road to access TL39_04/23). This road alignment
 is shared for both purposes for approximately 500 feet. The accessible hiking trail was
 constructed to Americans with Disabilities Act (ADA) guidelines to a width of 3.5 feet
 using compacted crushed rock. To protect both the investment in the trail and the public
 recreation opportunity, a special standard applies to this segment when transmission line
 maintenance activities may damage the trail.

<u>Road Maintenance Specifications</u> - The guidelines for the maintenance of roads as identified in the TMP and Appendices B and D (USDA-FS, USDI-BOR) and Appendices B, C1, C2 and C3 (USDI-BLM).

<u>Standard</u> - A statement of required, mandatory, or specifically prohibitive practice regarding land management, safety, or other procedures.

<u>Temporary Roads</u> - Roads authorized by contract, permit, lease, other written authorization, or emergency operation not intended to be a part of the Forest Service transportation system and not necessary for long-term resource management (36 CFR 212.1).

<u>Transportation Management Plan (TMP)</u> - The transportation planning and policy document that describes implementation activities and policies related to the coordination of all transportation-related needs of the Pipeline Project and the agencies for roads and bridges necessary for Pipeline Project operations in the Pipeline Project vicinity for the term of the new right-of-way.

<u>Watershed Analysis</u> - Watershed analysis is a process used to characterize the human, biological and physical conditions, processes, and interactions within a watershed. It is an intermediate analysis between land management planning and project planning. The analysis focuses on specific issues, values and uses identified within the landscape that are essential for making sound management decisions.

Appendix Z

Unanticipated Discovery Plan (Cultural Resource Preservation)



Jordan Cove LNG, LLC

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Unanticipated Discovery Plan

Jordan Cove Energy Project and Pacific Connector Gas Pipeline Project

August 2017

Unanticipated Discovery Plan

1.0 Introduction

This document provides an Unanticipated Discovery Plan (UDP) that will be followed by Jordan Cove Energy Project, LP (JCEP) and Pacific Connector Gas Project, LP (PCGP) (JCEP and PCGP are collectively referred to as "Jordan Cove"). JCEP is seeking authorization from the Federal Energy Regulatory Commission (FERC) to site, construct and operate a natural gas liquefaction and liquefied natural gas (LNG) export facility on the North Spit of Coos Bay, Oregon (LNG Terminal). PCGP will simultaneously be seeking an authorization from FERC to construct and operate an approximately 229-mile long, 36 inch diameter natural gas transmission pipeline from near Malin, Oregon to the LNG Terminal (the LNG Terminal and Pipeline are collectively referred to as the "Project"). This UDP provides the procedures Jordan Cove, its personnel and consultants will follow in the event that unanticipated discoveries of historic properties, archaeological objects, archaeological sites, or human remains are made during the construction and operation of the Project.

Potential unanticipated discoveries fall into two primary classes. The first class includes archaeological objects, materials or features such as hearths, pit features, or remains of dwellings. The second class consists of human remains. The two classes are governed by different laws and regulations and require different treatment procedures.

Procedures for dealing with unanticipated discovery of human remains are outlined in Section 3.0, and procedures for dealing with the unanticipated discovery of archaeological objects are outlined in Section 4.0.

This UDP is intended to:

- Comply with applicable Federal and State laws and regulations the National Historic Preservation Act of 1966, 16 U.S.C. § 470 and its implementing regulations at 36 CFR Part 800, 36 CFR Part 63; 36 CFR Part 61; the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA), 25 U.S.C. §§ 3001 et. seq and its implementing regulations at 43 CFR Part 10; Archaeological Resources Protection Act of 1979, as amended and its implementing regulations at 36 CFR Part 296; Oregon Revised Statutes (ORS) 97.740-97.760 for Indian Graves and Protected Objects; ORS 358.905-358.955 for the Protection of Archaeological Objects and Sites; ORS 390.235 for Archaeological Permit Requirements; OAR 736-051-0080 through 0090 Administrative Rules for Oregon Archaeological Excavation Permits; the Oregon State Historic Preservation Office's (SHPO's) "Treatment of Native American Human Remains Discovered Inadvertently or Through Criminal Investigations on Private and Non-Federal Public Lands in Oregon"; and Federal Energy Regulatory Commission's Guidelines for Reporting on Cultural Resources Investigations for Pipeline Projects (July 2017);
- Describe to regulatory and review agencies the procedure Jordan Cove and its contractors will follow to address the unanticipated discovery of archaeological objects, historic properties or human remains; and
- Provide direction and guidance to Project personnel as to the proper procedure to be followed should an unanticipated discovery occur.

• Provide contact information for all parties that require notification.

2.0 Training and Orientation

Jordan Cove, in consultation with the FERC, will designate a Cultural Resources Coordinator (CRC) who will be responsible for all archaeological materials and historic properties-related activities on the Project. The CRC will be a professional archaeologist (meeting the Secretary of the Interior's Guidelines as defined in 36 CFR 61). For practical purposes, the CRC may designate an Environmental Inspector (EI) or other supervisor to provide notifications required under this UDP but may not delegate any of the CRC's other responsibilities, unless the EI is a professional archaeologist and meets the requirements of 36 C.F.R. Part 61, in which case the EI may act in the CRC's place if the CRC is unavailable. The CRC will provide archaeological/cultural resource orientation for Jordan Cove and advise construction contractors and personnel on the procedures to follow in the event that an unanticipated discovery is made. Training will occur as part of the preconstruction on-site training program for foremen, environmental inspectors (Els), construction supervisors, and all other supervisory personnel who supervise any construction or inspection activities. Training will involve both general and detailed instructions regarding how to follow the requirements of the UDP, basic archaeological artifact and site identification, and an overview of the state and federal laws pertaining to the protection of archaeological resources. General instructions shall include:

- Ensure that all construction supervisors have contact information for the CRC.
- Stop work immediately if archaeological objects (artifacts, historic or prehistoric features [wells, privies, shell middens, etc.], bones, or any item suspected of being archaeological) are identified.
- Contact the construction supervisor immediately. The construction supervisor shall notify the CRC or its designee as soon as possible.
- Restrict access to the discovery.
- Drawings, photographs, or analysis will not be permitted without consultation and approval from the appropriate Indian Tribes.
- The discovery will not be shared with the media or individuals not pertinent to the assessment or protection of the remains.
- Comply with all unanticipated discovery procedures.
- Treat human remains, funerary objects, sacred objects, and objects of cultural patrimony with dignity and respect.
- A description of the potential penalties for failure to report discoveries or to comply with the procedures outlined in this UDP.
- The penalties that could be incurred by anyone who illegally collects or destroys any archaeological objects, archaeological sites, or historical artifacts and associated materials and/or their context.

3.0 **Procedures for the Inadvertent Discovery of Human Remains or Burial Sites**

Any human remains, burial sites, or burial related objects that are discovered during construction will at all times be treated with dignity and respect.

Pursuant to ORS 97.745(4), if suspected Native American remains are encountered on private or non-federal public lands, Jordan Cove will notify the state police, SHPO, the Oregon Commission on Indian Services (OCIS), the FERC, and the appropriate Indian Tribe(s) as soon as possible but in all cases, within twenty-four hours of the determination.

In accordance with NAGPRA, if the remains are found on federal lands, in addition to contacting those entities listed in the previous paragraph, the CRC will immediately contact the applicable federal land management agency in accordance with the requirements of 43 C.F.R. § 10.4. The federal land management agency will then be responsible for further contact with any appropriate Indian Tribes.

Indian Tribes that may have ancestral burial sites in the Project area include, but are not limited to, the Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians, the Confederated Tribes of Grand Ronde, the Confederated Tribes of Siletz, the Coquille Indian Tribe, the Cow Creek Band of Umpqua Tribe of Indians, and the Klamath Tribes.

The CRC will, in all cases of a potential discovery, complete a form or provide other written documentation acceptable to FERC and SHPO to document a potential discovery. The CRC and all EIs will comply with the following procedures:

- 1. If any Jordan Cove personnel or contractors believe he or she has made an unanticipated discovery of human skeletal remains, the remains will not be moved or disturbed, and the construction supervisor shall be immediately notified. The construction supervisor shall, in turn, immediately notify the CRC and the appropriate EI.
- 2. The CRC or its designee will be responsible for taking appropriate steps to protect the discovery. The construction activity that resulted in the exposure of the discovery will be immediately halted, followed, as soon as possible, by the cessation of all other ground-disturbing activity within 300 ft (91 m) of the discovery, unless a greater distance is required by SHPO to protect a discovery. Construction activities may continue elsewhere on the Project site. After all construction activity within 300 ft (91 m) of the discovery has been halted, the following steps will be taken to ensure that no further disturbance occurs to the discovery:
 - a) secure an area at least 300 ft (91 m) around the discovery using orange safety fencing or a similar material, as necessary;
 - b) prevent vehicle traffic through the area immediately surrounding the discovery except as necessary to remove vehicles and equipment already present in the area;
 - c) consult with the SHPO to determine whether a 24-hour guard is needed to ensure that the find is secure at all times or consult with the applicable federal land management agency if the lands are federal;
 - d) limit access to the area surrounding the discovery to essential personnel; and
 - e) No photographs will be allowed except those taken by state police or archaeologists. If the remains are suspected to be Native American, no photographs will be allowed unless approval is provided by the appropriate Indian Tribe(s).
- 3. The CRC or its designee will immediately call FERC, the state police, the appropriate Indian Tribe(s), SHPO, and the LCIS who will examine the discovery and determine whether it should be treated as a crime scene or as a human

burial/cemetery. The CRC or its qualified designee will also have a professional archaeologist trained in human remains identification examine the discovery to concur with the coroner on whether the remains are human and whether or not they are contemporary. A forensic anthropologist may also be required to determine whether the remains are of Native American ancestry. If the remains are determined to be or suspected to be of Native American ancestry, no photographs will be taken. If the discovery occurs on federal lands, the CRC will also immediately notify the applicable federal land management agency, and the Federal Land Archaeologist, if qualified to do so, will make, in consultation with the appropriate Indian Tribe(s), the determination as to whether the remains are human and of possible Native American ancestry. If the Federal Land Archaeologist is not qualified to determine whether the remains are human, the Federal Land Archaeologist will engage a forensic anthropologist or osteoarchaeologist to determine whether the remains are of Native American ancestry. All work within 300 ft buffer around the discovery will halt until permission to resume work is provide by FERC, the SHPO or the applicable federal agency for finds on federal lands.

- 4. If the remains are determined to be non-human by the archaeologist and/or forensic anthropologist, and there are no archaeological objects identified in association with the remains, then the archaeologist or forensic anthropologist will inform the CRC, who will notify the Construction Superintendent that construction can resume. The CRC will complete the Discovery Form and take photographs of any find. The photographs shall be sufficient for a trained archaeologist to determine that the remains are not human by reviewing them. The Discovery Form and photographs shall be submitted to FERC and the SHPO within 15 days of the discovery.
- 5. If the remains are determined to be non-human by the archaeologist and/or forensic anthropologist, but associated with an archaeological site, the CRC shall follow the procedures identified in Part 4 below.
- 6. If the remains are determined to be human and associated with a crime scene by the appropriate county coroner, then the CRC shall immediately inform the Construction Superintendent to follow the coroner's protocol for removal of the remains. The CRC will complete the Discovery Form and take photographs of the find to the extent allowed by State law. The Discovery Form and photographs shall be submitted to FERC and the SHPO within 15 days of the discovery.
- 7. If the remains are determined to be human and not to be the result of criminal activity, the CRC or its designee will notify the SHPO within 24 hours. The SHPO will be kept informed of all discussions regarding the remains until their final status is resolved.

The CRC or its designee will contact the OCIS as well as all appropriate Indian Tribes and notify them of the discovery by phone or e-mail as soon as possible but in all cases within twenty-four hours of the discovery. The appropriate Indian Tribe(s) also will be notified in writing within three days of the discovery, and this notification shall include information on the site of the human remains along with the name of the person or agency in charge of the find.

8. If the remains are determined to be human, within an archaeological context, and of Native American ancestry, the CRC shall follow the steps in Section 4

subparagraphs (5)-(13) for the unanticipated discovery of an archaeological site and the following:

- Notifications to the appropriate agencies and Indian Tribes shall indicate that human remains have been identified.
- No photographs shall be taken of Native American human remains.
- No further assessment shall be conducted until a Tribal representative(s) is present.
- The public and non-essential personnel will be excluded from the site.
- The discovery will not be shared with the media or any individuals who are not required for the assessment and protection of the remains.
- The CRC shall request that the appropriate Indian Tribe(s) inform them of any requests they have regarding the treatment of the remains and such requests shall be honored to the greatest extent possible.
- Field investigations to determine the NRHP-eligibility of archaeological materials shall avoid contact with the human remains.
- The CRC will consult with the SHPO and appropriate Tribe(s) to develop field investigations designed to evaluate the potential for additional human remains to be present without disturbing them.
- The CRC will consult with the Construction Superintendent, the SHPO, and appropriate Tribe(s) to determine if the remains can be avoided by an alternative construction technique. If such a technique is possible, construction shall resume upon approval from SHPO and will be monitored by a professional archaeologist and the appropriate Indian Tribe(s) if they request to do so.
- If disturbance of the remains cannot be avoided and the remains are not part of a crime scene or are part of an historic cemetery, the CRC will consult with the SHPO and appropriate Indian Tribe(s), if applicable, or likely descendants to develop a treatment plan. The treatment plan will outline measure to be implemented, including addressing how the remains should be excavated, repatriated, reinterred and reported. The treatment plan will clearly state that Jordan Cove shall be responsible for all costs associated with implementation of an approved treatment plan. Human remains will not be permanently curated.
- If disturbance of the remains cannot be avoided and the remains are part of an archaeological site that will also be affected by construction, the CRC will consult with the SHPO and appropriate Tribe(s) to develop a treatment plan for the site that includes provisions for temporary curation, reporting, repatriation and re-internment of the human remains and disposition of any artifacts. The treatment plan will be implemented after approval from the SHPO.
- 9. The FERC will consult with the appropriate Indian Tribes to determine best practices for handling human remains of Native American ancestry. No work is to take place 300 feet of the area of the delineated discovery until a treatment plan has been approved and implemented.
- 10. Jordan Cove will offer to compensate the appropriate Indian Tribe(s) for their time and expenses related to any activities associated with the implementation of this UDP. In the event Jordan Cove has entered into a cost recovery agreement with a Tribe addressing such costs, Jordan Cove will abide by the terms of such agreement.

11. Jordan Cove will be responsible for any reburial costs associated with any human remains encountered during construction of the Project that are not associated with a criminal site.

4.0 **Procedures for the Inadvertent Discovery of Archaeological Objects or Sites**

In Oregon, it is illegal to disturb an archaeological site or object on private or nonfederal public land without obtaining an archaeological excavation permit (ORS 358.920[1] [a]). When archaeological objects or archaeological sites are identified inadvertently, this law applies once the discovery is determined to be archaeological. The CRC and the Els will be aware of and follow the procedures set out below:

- 1. If any Jordan Cove personnel or contractors believe he or she has found archaeological object or an archaeological site, all work within 100 ft (30 m) of the discovery will stop and the Construction Superintendent will be notified immediately. The Construction Superintendent shall notify the EI and the CRC or its designee within 24 hours of the discovery. The area of work stoppage will be adequate to provide for the security, protection, and integrity of the objects found and therefore may need to be greater than 100 ft depending on the nature of the find. Examples of archaeological objects include but are not limited to:
 - a) An area of charcoal or charcoal-stained soil;
 - b) An arrowhead, stone tool, or stone flakes (chips);
 - c) A cluster of animal bones or burned rocks in association with stone tools or flakes (chips); or
 - d) A cluster of tin cans, bottles, or other historic materials older than 50 years that have not previously been identified as objects that can be removed.
 - e) A dense pocket of shells
- 2. If the CRC believes that the discovery consists of archaeological objects or a site, the Construction Superintendent and/or EI will take appropriate steps to protect the discovery site. At a minimum, the construction activity that resulted in the exposure of the discovery will be immediately halted, followed as soon as possible by the cessation of all other ground-disturbing activity within 100 ft (30 m) of the discovery. Vehicles, equipment, and unauthorized personnel will not be permitted to traverse the buffer zone around the site, provided, however, a travel corridor will be allowed along the edge of the buffer zone furthest removed from the discovery, provided that:
 - a) vehicles will not be allowed to pass closer than 45 ft from the discovery;
 - b) the edge of the travel corridor nearest the discovery will be secured using orange safety fencing or similar material; and
 - c) the CRC will consult with the SHPO to determine whether a 24-hour guard is needed to ensure that the find is secure at all times or if the discovery occurs on federal lands, the CRC will consult with the applicable federal land management agency regarding implementation of any security measures.
- 3. Work in the immediate area will not be re-started until treatment of the discovery has been completed and authorization to proceed has been provided by FERC and/or the SHPO as applicable, and after any required permits have been issued.

- 4. The buffer zone of 100 ft (30 m) will be established using orange safety fencing or a similar material.
- The CRC or its gualified designee will arrange for the discovery to be evaluated by a professional archaeologist as soon as possible. The archaeologist must meet the Secretary of the Interior standards as described in 36 CFR Part 61. The appropriate Indian Tribe(s) shall be notified, afforded and opportunity to monitor the examination and provide comments on any written reports provided to Jordan Cove by the archaeologist. The professional archaeologist shall examine the find within 48 hours of notification. The archaeologist will recommend whether the discovery is potentially eligible for listing in the National Register of Historic Places (NRHP) pursuant to 36 CFR §800.4 and 36 CFR Part 63. The CRC will consider the archaeologist's conclusion, make its own recommendation, and then submit documentation, including any documentation or comments provided by an Indian Tribe(s), about the find, the archaeologist's recommendation and its recommendation to FERC, the SHPO and any appropriate Indian Tribe(s) for concurrence within 72 hours of receipt of the professional archaeologist's The documentation will be in memorandum form with recommendation. appropriate photographs included to facilitate FERC and SHPO's review of the conclusions reached.
- If FERC, in consultation with the SHPO, Jordan Cove, and the appropriate Indian Tribe(s) determines that the discovery is an NRHP-eligible precontact deposit, FERC, Jordan Cove, the SHPO, and the appropriate Indian Tribe(s) will consult to determine if the Project will adversely affect the resource pursuant to 36 CFR 800.5.
- 7. If FERC, in consultation with the SHPO, Jordan Cove, and the appropriate Indian Tribe(s) determines that the discovery is not NRHP-eligible, then Jordan Cove will prepare a memorandum to this effect and deliver it to the SHPO and the FERC for concurrence. A copy will also be provided to the appropriate Indian Tribe(s). To the extent any Indian Tribe disagrees with the conclusions in such memorandum, the Indian Tribe reserves its rights pursuant to paragraph 12 below.
- 8. If FERC, in consultation with the SHPO, Jordan Cove, and the appropriate Indian Tribe(s) determines that the resource is NRHP-eligible and that the Project will have an adverse effect on it, Jordan Cove will first propose whether or not avoidance or minimization of adverse effects is possible via alternative construction techniques.
- 9. If it is determined that avoidance or minimization of adverse effects via alternative construction techniques to an NRHP-eligible site is not possible, then Jordan Cove will develop a treatment plan in consultation with the appropriate Indian Tribe(s), designed to mitigate the adverse effect pursuant to 36 CFR 800.6. Jordan Cove will consult with the FERC, SHPO, and the appropriate Indian Tribe(s) and follow state and federal regulations for applicable treatment measure(s). Jordan Cove will provide FERC, the SHPO and the appropriate Indian Tribe(s) with a draft treatment plan for review and comment. The SHPO will provide approval of the treatment plan, which will be implemented in accordance with any schedule set out in the plan. Treatment measures may include mapping, photography, subsurface testing and sample collection, complete data recovery, or other activities. Jordan Cove will provide a report on the methods, analysis, and results in compliance with

36 CFR 800.11 and in accordance with the treatment plan. The specific work plan and schedule for these procedures will be included in the treatment plan.

- 10. If FERC, in consultation with the SHPO, Jordan Cove, and the appropriate Indian Tribe(s) determines that the resource is NRHP-eligible but that the Project will not adversely affect it, then Jordan Cove will prepare a memorandum to this effect and deliver it to the SHPO and the FERC for concurrence and provide a copy to the appropriate Indian Tribe(s).
- 11. Jordan Cove will ensure that field investigations, research, analysis, reporting, and curation of any materials collected during these investigations are sufficiently funded and implemented and follow all federal and state guidelines and procedures. All treatment efforts shall be conducted under an Oregon permit for archaeological excavation (OAR 736-051-0080 through 0090).
- 12. If any Indian Tribe does not agree with the findings of the SHPO and Jordan Cove's archaeologist, such Tribe reserves the right to address its concerns with the Advisory Council on Historic Preservation pursuant to 36 C.F.R. Part 800, and otherwise reserves all rights under state and federal law to obtain relief.
- 13. Upon completion of the treatment plan, Jordan Cove will submit a summary report to the SHPO and appropriate Indian Tribe(s) within thirty (30) days of completion of the treatment plan. If archaeological data recovery is a component of the treatment plan, a full report will be submitted to the SHPO, appropriate Indian Tribes, and the OCIS in accordance with any schedule set out in the treatment plan.

5.0 Parties to Contact

Notice required under this UDP shall be made to those parties set out in the table below. Any party may update its contact information at any time. An effort will be made to update this information on an annual basis during the life of the Project.

Contacts for the Discovery of Archaeological Resources				
Organizatio n	Name	Role	Contact Information	Mailing Address
Jordan Cove	To Be Determined	Cultural Resource Coordinator (CRC)	Office: Mobile: Email:	
Historical Research Associates	Bradley Bowden	Archaeologica I/Historical Consultant	Office: (503) 247-1319 Direct: (971) 386-2042 Mobile: (206) 898-5781 Email: bbowden@hrassoc.com	1825 SE 7 th Ave, Portland, OR 97214
Oregon State Historic Preservation Office (SHPO)	Dr. Dennis Griffin	State Archaeologist	Office:(503) 986-0674 Fax: (503) 986-0793 Email: <u>dennis.griffin@state.or.us</u>	Heritage Conservation Division Oregon Parks and Recreation Dept., 725 Summer Street NE, Suite C, Salem, OR 97301- 1266

Contacts for the Discovery of Archaeological Resources				
Organizatio n	Name	Role	Contact Information	Mailing Address
Oregon State Historic Preservation Office (SHPO)	John Pouley	Assistant State Archaeologist	Office: (503) 986-0675 Fax: (503) 986-0793 Email: john.pouley@state.or.us	Heritage Conservation Division Oregon Parks and Recreation Dept., 725 Summer Street NE, Suite C, Salem, OR 97301- 1266
Federal Energy Regulatory Commission (FERC)	Paul Friedman	FERC Cultural Resources Contact	Office: (202) 502-6353 Fax: (202) 208-0353 Email: paul.friedman@ferc.gov	888 First Street NE, Washington, D.C. 20426
Federal Energy Regulatory Commission (FERC)		Alternate FERC Contact	Office: Fax: (202) 208-0353 Email:	888 First Street NE, Washington, D.C. 20426
		Federal	Land Owners	
BLM—Coos Bay District	William Kerwin	Archaeologist	Office: (541) 756-0100 Phone: (541)751-4306-3246 Email: <u>wkerwin@blm.gov</u>	1300 Airport Lane North Bend, OR 97459
BLM— Medford District	Cheryl Foster-Curley	Archaeologist	Office: (541) 618-2200 Phone: (541) 618-2280 Email: cfostercurley@blm.gov	3040 Biddle Road Medford, OR 97504
BLM— Roseburg District	Molly Casperson	Archaeologist	Office: (541) 440-4930 Phone: Email: mcasperson@blm.gov	777 NW Garden Valley Blvd. Roseburg, OR 97471
BLM— Lakeview District: Klamath Falls Resources Area	Laird Naylor II	Archaeologist	Office: (541) 883-6916 Email: Inaylor@blm.gov	2795 Anderson Avenue, Bldg. #25 Klamath Falls, OR 97603
Umpqua National Forest	Christopher Kelly	Heritage Program Manager/Tribal Liaison	Office: (541) 957-3200 Email:	2900 NW Stewart Parkway, Roseburg, OR 97471
Rogue River – Siskiyou National Forest	Melissa Schroeder	Heritage Program Manager/Tribal Liaison	Office: (541) 618-2200 Phone: (541) 618-2077 Email:	3040 Biddle Road, Medford, OR 97504
Fremont – Winema National Forest	John Kaiser	Klamath Ranger District Forest Archaeologist	Office: (541) 883-6714 Phone: (541) 947-6260 Email:	2819 Dahlia Street Suite A, Klamath Falls, OR 97601

Contacts for the Discovery of Archaeological Resources				
Organizatio	Name	Role	Contact Information	Mailing Address
n				
Fremont – Winema National Forest	Amy Gowen	Tribal Government Relations	Office: (541) 883-6741 Email:	
Bureau of Reclamation Klamath Basin	Adam Nickels	Archaeologist	Office: (541) 883-6935 Fax: (916) 978-5005 Phone (916) 978-5053 Email:	6600 Washburn, Klamath Falls, OR 97603

Contacts for the Discovery of Human Remains				
Organizatio n	Name	Role	Contact Information	Mailing Address
Oregon State Police	Sergeant Chris Allori		Office: (503) 731-4717 Mobile: (503) 708-6461 Dispatch: (503) 731-3030	
Coos Bay Area Command State Police	Lieutenant Jeff Lewis		Office: (541) 888-2677 Email: jeffrey.lewis@state.or.us	
Oregon Medical Examiner's Office	Karen Gunson	Oregon State Medical Examiner	Office: (971) 673-8200	
Oregon Medical Examiner's Office	Eugene Gray	Forensic Administrator	Office: (971) 673-8200 Email: Eugene.Gray@state.or.us	
Oregon Medical Examiner's Office	James Olson, M.D.	Deputy State Medical Examiner- Southern Region	Office: (541) 440-4453	
			Contacts	
Oregon Commission on Indian Services (OCIS)	Karen Quigley	Executive Director	Office: (503) 986-1067 Fax: (503) 986-1071 Email: Karen.Quigley@state.or.us	900 Court Street NE, Rm. 167, Salem OR 97301-1347
Coquille Indian Tribe	Kassandra Rippee	THPO & Archaeologis t	Office: (541) 756-0904 ext. 1216 Mobile: (541) 808-5554 Fax: (541) 756-0847 Email: <u>kassandrarippee@coquill</u> <u>etribe.org</u>	3050 Tremont Street, North Bend, OR 97459
Confederate d Tribes of Coos, Lower Umpqua & Siuslaw Indians	Stacy Scott	THPO, Cultural Resources Protection Specialist	Office: (541) 888-7513 Mobile: (541) 297-5543 Fax: (541) 888-2853 Email: sscott@ctclusi.org	1245 Fulton Avenue, Coos Bay, OR 97420

	Contacts for the Discovery of Human Remains				
Organizatio n	Name	Role	Contact Information	Mailing Address	
Confederate d Tribes of Grand Ronde	David Harrelson	THPO, Cultural Resources Protection Specialist	Office: (503) 879-1630 Fax: (503) 879-2126 Email: <u>david.harrelson@grandro</u> <u>nde.org</u>	9615 Grand Ronde Road, Grand Ronde, OR 97347	
Confederate d Tribes of Siletz	Robert Kentta	Cultural Resource Program Director	Office: (541) 444-2532 Home: (541) 444-2204 Mobile: (541) 351-0148 Fax: (541) 444-2307 Email: Rkentta@ctsi.nsn.us	PO Box 549, Siletz, OR 97380	
Cow Creek Band of Umpqua Tribe of Indians	Jessie Plueard	THPO and Cultural Programs Manager	Office: (541) 677-5575 X5577 Fax: (541) 677-5574 Email: jpluard@cowcreek.com	2371 NE Stephens St. Suite 100, Roseburg OR 97470	
The Klamath Tribes	Perry Chocktoot	Director of Culture and Heritage	Office: (541) 783-2219 X159 or (800) 524-9787 Fax: (541) 783-2029 Email: <u>perry.chocktoot@klamath</u> tribes.com	PO Box 436, Chiloquin, OR 97624	

Appendix AA

Environmental Alignment Sheets

(provided to FERC September 2017)