

Appendix B. Packwood Hydroelectric Project Road/Trail Inventory

Road	Segment	Start Station (ft)	End Station (ft)	Drainage Point Station	Delivery to Stream	Drainage Point Type	Ditch Width (ft)	Ditch Veg or Rocked	Ditch Eroding	Ditch Depth	Tread Gradient (%)	Full Tread Width (ft)	Travel Width (ft)	Road Configuration	Portion of Tread Delivering	Surfacing	Road Shape	Cutslope Cover Density	Cutslope Average Height (ft)	Cutslope Angle (Degrees)	Cutslope Issues	Road Issues	Fillslope Issues	Comments	
Snyder Road	1	0	509		0	Ditchout	4	Y	N	>2 ft	12	25	20	Full Bench	None	Asphalt	Outsloped	90-100%	10	50-70	Stable Cut Bank			Station 0 = 0.826 miles up Road (4361 ft); at USFS sign	
Snyder Road	2	509	726	509	Direct	Culvert	5	Y	N	>2 ft	5	25	20	Partial Bench	Half	Asphalt	Crowned	90-100%	5	45-50	Stable Cut Bank		Sidecast cracking Sta 520); 10 ft long	Very minor sidecast cracking	
Snyder Road	3	726	994	726	None	Culvert	5	Y	slightly	>2 ft	6	25	20	Partial Bench	None	Asphalt	Outsloped	90-100%	10	45-50	Stable Cut Bank			Milepost 1 at Station 906	
Snyder Road	4	994	1439	994	Direct via gully	Culvert	5	Y	Y	>2 ft	7	25	20	Partial Bench	Half	Asphalt	Crowned	90-100%	5	45-50	Stable Cut Bank				
Snyder Road	5	1439	1680	1439	None	Culvert	5	Y	Y	>2 ft	6	25	20	Full Bench	Half	Asphalt	Crowned	90-100%	5	45-50	Stable Cut Bank			Driveway at Sta 1540	
Snyder Road	6	1680	1844	1680	Direct	Culvert	5	Y	N	>2 ft	7	25	20	Partial Bench	Half	Asphalt	Crowned	90-100%	5	<45	Stable Cut Bank				
Snyder Road	7	1844	2255	1844	Direct	Culvert	4	Y	N	>2 ft	8	25	20	Partial Bench	Half	Asphalt	Crowned	90-100%	5	<45	Stable Cut Bank			JCT USFS 022 at Sta 1962; End County Road Sign Sta 1997	
Snyder Road	8	2255	7109	2255, 2896, 3147, 4187, 5409, 6698	None	Culvert	4	Y	N	1-2 ft	9.5	25	18	Partial Bench	None	Asphalt	Crowned	90-100%	5	45-50	Stable Cut Bank; Solid Rock (Sta 2727-2827; 4039-4187; 4415-4850; 4415-4960; 6757-7109)		Sidecast Cracking (Sta 4930-5073; 5084-5284; 5414-5529); 5-10 ft wide	Turnout Sta 4187-4400; Road JCT Sta 4415; Jct 030 Sta 6002; Milepost 2 Sta 6241	
Snyder Road	9	7109	7912	7185	Direct	Culvert	3.5	Y	N	1-2 ft	3.5	25	18	Partial Bench	None	Asphalt	Crowned	90-100%	10	45-50	Stable Cut Bank			Oversteepened Fill; Sidecast Cracking (Sta 7473-7529; 7356)	
Snyder Road	10	7912	9478	7912, 8278, 8508, 9115	None	Culvert	4	Y	N	1-2 ft	9.5	25	19	Partial Bench	None	Asphalt	Crowned	90-100%	10	45-50	Stable Cut Bank				
Snyder Road	11	9478	10085	9478	Direct	Culvert	5	Y	N	1-2 ft	7.5	25	20	Partial Bench	Half	Asphalt	Crowned	90-100%	5	<45	Stable Cut Bank				
Snyder Road	12	10085	10419	10085	None	Culvert	4.5	Y	N	1-2 ft	7.5	25	18	Partial Bench	None	Asphalt	Outsloped	90-100%	5	45-50	Stable Cut Bank		Potential to Deliver; Soft fill on shoulder; Sidecast cracking; fill could deliver at Sta 10330 (stream) or 10340-10419 (5 ft of roadway cracked)	Culvert at Sta 10302 (stream) - ditch bypasses culvert so no delivery	
Snyder Road	13	10419	10739	10454	Direct	Culvert	4	Y	N	1-2 ft	9.5	25	18	Partial Bench	Half	Asphalt	Outsloped	90-100%	10	45-50	Stable Cut Bank				
Snyder Road	14	10739	11485	10739, 10844, 11210	None	Culvert	5	Y	N	1-2 ft	8.5	25	18	Partial Bench	None	Asphalt	Crowned	90-100%	10	45-50	Stable Cut Bank				
Snyder Road	15	11485	11861	11502	Direct	Culvert	5	Y	N	>2 ft	10	25	18	Partial Bench	Half	Asphalt	Crowned	90-100%	10	45-50	Stable Cut Bank			Milepost 3 at Sta 11559	
Snyder Road	16	11861	12024	11896	Direct	Arched Culvert	5	Y	N	1-2 ft	2	25	18	Partial Bench	Half	Asphalt	Crowned	90-100%	5	<45	Stable Cut Bank				
Snyder Road	17	12024	13887	12102, 12450, 12576, 12757, 13348, 13887, 13704, 13887	None	Culvert	5	Y	N	1-2 ft	2	25	18	Partial Bench	None	Asphalt	Outsloped	90-100%	2.5	<45	Stable Cut Bank			Jct 043 Road at Sta 12823	
Snyder Road	18	13887	16835	15552, 15886	None	Culvert	3	Y	N	1-2 ft	3.5	25	18	On Grade/ Thru fill	None	Asphalt	Crowned	90-100%	2.5	<45	Stable Cut Bank			Milepost 4 at Sta 16765	
Snyder Road	19	16835	17304	16835, 17087	None	Culvert	5	Y	N	>2 ft	9	25	18	Partial Bench	None	Asphalt	Crowned	70-90%	50	45-50	Raveling, Large (Sta 16835-17304)		Oversteepened fill; Soft fill on shoulder; Sidecast cracking; Sidecast erosion (Sta 17056-17129)	Keep an eye on this area - watch for additional cracking or crack widening.	
Snyder Road	20	17304	22918	17609, 18125, 18761, 19076, 20602, 21021, 21369, 21560, 22693	None	Culvert	5	Y	N	1-2 ft	10	25	18	Partial Bench	None	Asphalt	Outsloped	90-100%	10	45-50	Raveling lines (Sta 18414-18600 50-100'H 70% veg; 20610-20792 30'H 30-50%veg; 21369-21488 20'H 50%veg); Solid rock (Sta 22185-22383 20-30' H)		Oversteepened Fill, Sidecast cracking (Sta 18125 slight settling over 3/4 of road bed; Sta 20554-20650; 21936-22031)	Jct old road Sta 18414; Milepost 4.5 at Sta 20135; Milepost 5 Sta 22918; short road to surge tank Sta 22722	
Snyder Road	21	22918	25918	23274, 24112, 24332, 24951, 25373, 25873	None	Culvert	4.5	Y	N	1-2 ft	2	25	18	Partial Bench	None	Asphalt	Crowned	90-100%	10	45-50	Stable Cut Bank		Sidecast cracking (Sta 23364-23580 half of road, minor settling)	Concrete house/surge tank Sta 22995; Jct 4830 road 23931 (sediment plume from eroding spur road 4830 extends onto main road) Road sign Sta 24110 Jct w/Pipeline Road Sta 23918	
Snyder Road	22	25918	26254	25918	None	Culvert	3.5	Y	N	1-2 ft	10	25	18	Partial Bench	None	Asphalt	Crowned	90-100%	10	45-50	Stable Cut Bank				
Snyder Road	23	26254	26949	26254	Direct	Culvert	5	Y	N	1-2 ft	10	25	18	Partial Bench	Half	Asphalt	Crowned	70-90%	25	45-50	Raveling, lines				
Snyder Road	24	26949	27048		None	Dispersed	0	n/a	n/a	n/a	2	50	50	Partial Bench	None	Asphalt	Outsloped	90-100%	10	45-50	Stable Cut Bank			Parking Lot sta 26693-27048; end of road - Trail 78 goes from here	
Pipeline Road	1	0	397	237	1-100 ft	Sag Point	0	n/a	n/a	n/a	2	25	15	Partial Bench	Full	Native/pitrun	Outsloped	n/a	n/a	n/a	n/a				
Pipeline Road	2	397	6932		None	Dispersed	0	n/a	n/a	n/a	1	25	17.5	Partial Bench	None	Native blocky	Flat	n/a	n/a	n/a	n/a	Potholes/puddles		Oversteepened fill; sidecast cracking (Sta 2115-2364 road sags; 2852-2924; 3114-3334; 3937-4006)	Could use brushing; driveable dips or puddle drainage.; Manhole at 5704
Pipeline Road	3	6932	7021		None	Dispersed	0	n/a	n/a	n/a	1	50	50	Partial Bench	None	Native blocky	Flat	n/a	n/a	n/a	n/a			Parking lot; Jct short trail up to Pipeline trail	
Pipeline Road to Access Port	4	7021	7509		None	Dispersed	0	n/a	n/a	n/a	3	12	18	Partial Bench	None	Gravel	Outsloped	90-100%	25	45-50	Stable Cut Bank			Raveling cutslope at access point; fence contains debris. Slowly moving hillside. 7509 - end at manhole w/swingset	
Pipeline Trail	1	0	572		None	Dispersed	0	n/a	n/a	n/a	13	8	5.5	Partial Bench	None	Native blocky	Outsloped	90-100%	5	45-50	Stable Cut Bank; Solid Rock (Sta 100)			Fillslope steep but mostly stable; mesh on fillslope at Sta 425	

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Road	Segment	Start Station (ft)	End Station (ft)	Drainage Point Station	Delivery to Stream	Drainage Point Type	Ditch Width (ft)	Ditch Veg or Rocked	Ditch Eroding	Ditch Depth	Tread Gradient (%)	Full Tread Width (ft)	Travel Width (ft)	Road Configuration	Portion of Tread Delivering	Surfacing	Road Shape	Cutslope Cover Density	Cutslope Average Height (ft)	Cutslope Angle (Degrees)	Cutslope Issues	Road Issues	Fillslope Issues	Comments	
Pipeline Trail	2	572	1144		None	Dispersed	0	n/a	n/a	n/a	5	10	7.5	Partial Bench	None	Gravel	Outsloped	90-100%	25	45-50	Raveling fines (Sta 1036; 1109)	Potholes/puddles	Oversteepened fill; Sidecast erosion		
Pipeline Trail	3	1144	1480	1389	Direct via gully	Culvert	2	Y	N	<1 ft	5	10	6.5	Partial Bench	Full	Native blocky	Outsloped	50-70%	25	50-70	Seepage from bank; Raveling large; Raveling fines (Sta 1109-1201; 1250-1339)	Sidecast berm	Oversteepened fill; Sidecast erosion		
Pipeline Trail	4	1480	2053		None	Dispersed; sag points	2	Y	N	<1 ft	2.5	12	7	Partial Bench	None	Native blocky	Insloped	90-100%	25	50-70; >70	Overhanging; Solid Rock. Raveling Large (Sta 1480-1770/rockfall); 1980-2074)		Oversteepened fill; Sidecast erosion (Sta 1619-1647, 1-2 ft shallow failure; Sta 1737/1743)	Sta 1542 potential treefall - undercut cutslope/exposed roots	
Pipeline Trail	5	2053	2218	2133	Direct	Culvert	0	n/a	n/a	n/a	5	12	7	Partial Bench	Full	Native blocky	Outsloped	90-100%	25	>70	Solid Rock, Raveling large		Oversteepened fill		
Pipeline Trail	6	2218	2835		None	Dispersed	0	n/a	n/a	n/a	2.5	8	6	Partial Bench	None	Native blocky	Flat	90-100%	10	45-50	Stable Cut Bank; Raveling large (Sta 2700-2734)	Potholes/puddles			
Pipeline Trail	7	2835	3006	2942	Direct	Culvert	0	n/a	n/a	n/a	4	8	6	Partial Bench	Full	Native blocky	Outsloped	70-90%	25	50-70	Solid Rock, Raveling large (Sta 2835-2899)		Oversteepened fill		
Pipeline Trail	8	3006	3885		None	Dispersed	0	n/a	n/a	n/a	2.5	9	6.5	Partial Bench	None	Native blocky	Outsloped	90-100%	10	45-50	Raveling fines (Sta 3600-3789 patchy ravel)	Potholes/puddles			
Pipeline Trail	9	3885	4449	4131	None	Culvert	2	Y	N	<1 ft	9	11	8	Partial Bench	None	Native blocky	Flat	90-100%	10	45-50		Potholes/puddles	Oversteepened fill; sidecast erosion	Sta 3920 - turnout; Sta 4046 - steep; tends to rut. Stream in ditch in past	
Pipeline Trail	10	4449	4553	4481, 4497	Direct	Culvert	2	Y	N	1-2 ft	2	10	7	Partial Bench	Full	Native blocky	Flat	90-100%	10	45-50	Stable cut bank	Potholes/puddles; Washout (old)		Stream in ditch in past	
Pipeline Trail	11	4553	7501	4553, 4786, 4828, 4902, 5062, 5164, 5227, 5543, 6540, 6865	None	Culvert	0	n/a	n/a	n/a	1	11	6.5	On Grade	None	Native blocky	Flat	n/a	n/a	n/a	n/a	Potholes/puddles; holes (Sta 5673)		Trail splits Sta 7501	
Pipeline Trail - upper	12	7501	9569		None	Dispersed	0	n/a	n/a	n/a	10	9	7	Partial Bench	None	Native blocky	Crowned	90-100%	5	45-50	Stable cut bank	Rutted (on slopes over 15%; Sta 7660)		Up to 10 ft wide in rough places (ATVs go wide) 4x4 lumber across trail for water bars at Sta 7750, 7843, 7932, 8070, 8966, 9139, 9253, 9708	
Pipeline Trail - upper	13	9569	10931	10675	None	Sag Point	0	n/a	n/a	n/a	17.5	8	6	Partial Bench	None	Native blocky	Crowned	90-100%	5-25	45-50; >70	Overhanging/ Raveling large/ Raveling fines (Sta 10733); Solid rock (Sta 10673-10746)			4x4 lumber across trail for water bar Sta 10172; Jet with lower trail at Sta 10931; Over-hanging tree Sta 9887	
Pipeline Trail	14	10931	11605		None	Dispersed	0	n/a	n/a	n/a	1	9	6.5	Partial Bench	None	Native blocky/fines	Flat	n/a	n/a	n/a	Stable Cut Bank	Potholes/puddles	3 ft high crib wall Sta 11244-11274; looks OK	USGS gage Sta 11338; Concrete ramp Sta 11482-11558 22% slope; parking lot 50 feet wide gravel	
Trail Intake to Lake	15	11605	11986		None	Dispersed	0	n/a	n/a	n/a	2.5	9	6.5	On Grade	None	Native fines	Flat	n/a	n/a	n/a	n/a	Potholes/puddles		End of motorized use Sta 11842; Lake Sta 11986	
Pipeline Trail Lower (stationing starts at split in main trail; Station 7500)	16	7501	7998		None	Dispersed	0	n/a	n/a	n/a	2.5	11	6.5	On Grade	None	Native fines	Flat	n/a	n/a	n/a	n/a	Potholes/puddles		Meadow Sta 7773-7933; ATVs doing donuts	
Pipeline Trail Lower	17	7998	8058	7998	Direct	Sag Point	0	n/a	n/a	n/a	5	9	5.5	Thru Fill	Full	Native blocky	Crowned	n/a	n/a	n/a	n/a				
Pipeline Trail Lower	18	8058	8709		None	Dispersed	0	n/a	n/a	n/a	5	10	5	On Grade/ Thru cut	None	Gravel	Flat	90-100%	2.5	45-50	Stable Cut Bank	Potholes/puddles			
Pipeline Trail Lower	19	8709	11733		None	Dispersed	0	n/a	n/a	n/a	1	9	5	Partial Bench	None	Native fines	Outsloped	90-100%	2.5	45-50	Raveling fines (Sta 11063-11113)		Oversteepened fill	Buried half pipe at Sta 11173; Timber crib walls at Sta 9933, 10263, 10353, 10698, 10823)	
Latch Road	1	0	784	100,784	None	Culvert	4	Y	N	1-2 ft	1	25	18	Partial Bench	None	Gravel	Flat	90-100%	5	45-50	Stable Cut Bank	Potholes/puddles		Parking lot (ATV use Sta 233-435). Parking lot (Sta 550-668)	
Latch Road	2	784	941	941	Direct	Culvert	3	Y	N	1-2 ft	2.5	20	15	Partial Bench	Full	Gravel	Outsloped	90-100%	5	45-50	Stable Cut Bank				
Latch Road	3	941	1419	1034	1-100 ft	Culvert	4	Y	N	1-2 ft	1	25	13	Partial Bench	Half	Gravel	Outsloped	90-100%	10	45-50	Stable Cut Bank	Potholes/puddles			
Latch Road	4	1419	2047	1816	None	Culvert	5	Y	N	<1 ft	3.5	20	11	Partial Bench	None	Gravel	Outsloped	90-100%	5	45-50	Stable Cut Bank				
Latch Road	5	2047	4137	2047	Direct	Culvert	5	Y	N	1-2 ft	6	20	12	Partial Bench	Full	Gravel	Outsloped	90-100%	2.5	<45	Stable Cut Bank			Road junction Sta 3566; also culverts at 2260, 3067, 3682	
Latch Road	6	4137	4500	4232	None	Culvert	4	Y	N	1-2 ft	1	20	15	Partial Bench	None	Gravel	Outsloped	90-100%	2.5	<45	Stable Cut Bank	Potholes/puddles			
Latch Road	7	4500	5379	4549	1-100 ft	Culvert	5	Y	N	1-2 ft	7.5	25	12	Partial Bench	Full	Gravel	Outsloped	90-100%	5	45-50	Stable Cut Bank			Jet 019 road at Sta 4626 (blocked); also culvert at Sta 5044	
Latch Road	8	5379	7269		None	Dispersed	2	Y	N	<1 ft	2	26	12	Partial Bench	None	Gravel	Outsloped	90-100%	5	45-50	Stable Cut Bank	Potholes/puddles Sta 5379-6000		Jet old road Sta 6592; Road/campsite Sta 7005, 7071	
Latch Road	9	7269	7895	7295	None	Waterbar/ driveable dip	5	Y	N	1-2 ft	7.5	20	12	Partial Bench	None	Gravel	Crowned	90-100%	2.5	<45	Stable Cut Bank				
Latch Road	10	7895	8115	7902	Direct	Waterbar/ driveable dip	0	n/a	n/a	n/a	10	15	10	Partial Bench	Half	Gravel	Outsloped	90-100%	2.5	<45	Stable Cut Bank			Jet old road Sta 7990	

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Latch Road	11	8115	8630	8211	None	Culvert/sag points/driveable dips	0	n/a	n/a	n/a	12	15	10	Partial Bench	None	Gravel	Outsloped	90-100%	2.5	<45	Stable Cut Bank				
Latch Road	12	8630	9022	8656	Direct	Culvert	3	Y	N	<1 ft	10	20	10	Partial Bench	Half	Gravel	Crowned	90-100%	2.5	45-50	Stable Cut Bank				
Latch Road	13	9022	12061	9040, 9580	None	Driveable dip/Ditchout	0	n/a	n/a	n/a	12.5	18	10	Partial Bench	None	Gravel	Crowned	90-100%	2.5	<45	Stable Cut Bank	Ruts (Sta 10054-11001)		Jct old road Sta 9498; Jct 029 road Sta 9991; Gate Sta 12035	
Latch Road	14	12061	12365	12061	1-100 ft	Culvert	3	Y	N	<1 ft	5	20	10	Partial Bench	None	Gravel	Outsloped	90-100%	2.5	<45	Stable Cut Bank				
Latch Road	15	12365	13259	12365, 12950, 13090	None	Culvert/Dispersed	0.5	Y	N	<1 ft	5	20	10	Partial Bench	None	Gravel	Outsloped	90-100%	5	<45	Stable Cut Bank; Seepage from bank Sta 12950				
Latch Road	16	13259	13667	13259	Direct	Culvert	0	n/a	n/a	n/a	3.5	20	10	Partial Bench	Half	Gravel	Outsloped	90-100%	10	<45	Stable Cut Bank				
Latch Road	17	13667	16640		None	Dispersed	0	n/a	n/a	n/a	2	20	10	Partial Bench	None	Gravel	Outsloped	90-100%	10	45-50	Stable Cut Bank			Rough/Ruts Sta 13915-14050, 14500	
Latch Road	18	16640	16788	16640	Direct	Culvert	4	Y	N	1-2 ft	5	20	10	Partial Bench	None	Gravel	Outsloped	90-100%	5	<45	Stable Cut Bank				
Latch Road	19	16788	23991	16788	None	Culvert/Dispersed	0	n/a	n/a	n/a	3.5	20	10	Partial Bench	None	Gravel/Grass	Outsloped	90-100%	10	45-50	Seepage from bank (Sta 21252-21460; 21904); Raveling large/Slumping (Sta 17110-17165)			Old mass wasting/slump from pipe leak. Clean road/regrade this spot; Rough road Sta 17500-19000 (down to subgrade); Holding tank at Sta 21163; Parking Lot at Sta 23991 - trail to lake	
Trail Latch Road to Pipeline Trail	1	0	400		None	Dispersed	0	n/a	n/a	n/a	20	10	5	Partial Bench	None	Native blocky	Flat	n/a	n/a	n/a	n/a	Rutted/eroding - very steep			
Trail Latch Road to Pipeline Trail	2	400	546		None	Dispersed	0	n/a	n/a	n/a	7.5	10	5	Partial Bench	None	Native blocky	Flat	n/a	n/a	n/a	n/a				

Appendix B. Packwood Hydroelectric Project Road/Trail Culvert Inventory

Road	Culvert #	Station	Length (ft)	Diameter (in)	Purpose	Inlet	Outfall Drop	Type	Inlet Features	Outlet Features	Future Plug Potential	Inlet Blockage	Outlet Blockage	Prescription Urgency	Culvert Condition Issues	Culvert Function Issues	Prescription	Comments
Synder Road	1	509	40	24	Stream Crossing	OK	>5 ft	CMP			Medium	None	None	None	No Problems	None	None	
Synder Road	2	726	40	18	Relief	OK	<1 ft	CMP			Low	0-25%	None	None	No Problems	None	None	
Synder Road	3	994	40	18	Relief	OK	<1 ft	CMP			Low	0-25%	None	None	No Problems	None	None	Gully at downstream end - runs water
Synder Road	4	1439	40	24	Relief	OK	<1 ft	CMP			Low	0-25%	None	None	No Problems	None	None	
Synder Road	5	1680	40	18	Stream Crossing	OK	<1 ft	CMP			Medium	None	None	None	Corrosive rust	None	None	Rust on bottom half of pipe; still OK but keep track of it
Synder Road	6	1844	40	24	Stream Crossing	OK	>5 ft	CMP			Low	None	None	None	No Problems	None	None	
Synder Road	7	2255	30	18	Relief	OK	<1 ft	CMP			Low	0-25%	None	None	No Problems	None	None	
Synder Road	8	5409	70	18	Relief	OK	Down-spout	CMP		Down-spout	Low	None	None	None	No Problems	None	None	
Synder Road	9	2896	30	18	Relief	OK	<1 ft	CMP			Low	None	None	None	Minor rust	None	None	
Synder Road	10	3147	30	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Synder Road	11	4187	30	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Synder Road	12	6698	30	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Synder Road	13	7185	50	36	Stream Crossing	OK	>5 ft	CMP		Down-spout	Low	None	None	None	No Problems	None	None	
Synder Road	14	7912	40	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Synder Road	15	8278	40	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Synder Road	16	8508	40	24	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Synder Road	17	9115	40	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Synder Road	18	9478	40	18	Stream Crossing	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Synder Road	19	10330	60	24	Stream Crossing	OK	1-2 ft	CMP			Medium	None	None	None	No Problems	None	None	
Synder Road	20	10085	30	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Synder Road	21	10454	50	18	Stream Crossing	OK	<1 ft	CMP			Medium	None	None	Low	No Problems	None	Add Flume	Outfall is at location where fill is oversteepened; road bed sags
Synder Road	22	10739	30	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Synder Road	23	10844	30	18	Relief	OK	<1 ft	CMP			Low	0-25%	None	None	No Problems	None	None	
Synder Road	24	11210	30	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Synder Road	25	11502	60	18	Stream Crossing	OK	<1 ft	CMP			Medium	0-25%	0-25%	Low	No Problems	None	Remove blockage	
Synder Road	26	11896	60	48	Stream Crossing	OK	2-5 ft	Arched pipe			High	0-25%	None	Low	No Problems	None	Remove blockage	
Synder Road	27	12102	40	24	Relief	OK	<1 ft	CMP			None	None	None	None	No Problems	None	None	
Synder Road	28	12450	40	18	Relief	OK	<1 ft	CMP			None	None	None	None	No Problems	None	None	
Synder Road	29	12576	40	18	Relief	OK	<1 ft	CMP			None	None	None	None	No Problems	None	None	
Synder Road	30	12757	40	18	Relief	OK	<1 ft	CMP			None	None	None	None	No Problems	None	None	
Synder Road	31	13348	40	18	Relief	OK	<1 ft	CMP			None	None	None	None	No Problems	None	None	
Synder Road	32	13704	40	18	Relief	OK	<1 ft	CMP			None	None	None	None	No Problems	None	None	
Synder Road	33	13887	40	18	Relief	OK	<1 ft	CMP			None	None	None	None	No Problems	None	None	
Synder Road	34	15552	30	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Synder Road	35	15886	30	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Synder Road	36	16835	30	24	Relief	OK	<1 ft	CMP			Medium	0-25%	None	None	No Problems	None	None	
Synder Road	37	17087	?	24	Relief	OK	?	CMP	Trash rack; Drop inlet	? Can't find	High	24-50%	None	Medium	No Problems	CB full of Sediment	Remove blockage	Monitor - keep clean
Synder Road	38	17609	35	18	Relief	OK	<1 ft	CMP			None	None	None	None	No Problems	None	None	
Synder Road	39	18125	35	18	Relief	OK	<1 ft	CMP			None	None	None	None	No Problems	None	None	
Synder Road	40	18761	35	18	Relief	OK	<1 ft	CMP			None	50-75%	None	Medium	No Problems	None	Remove blockage	
Synder Road	41	19706	35	18	Relief	OK	<1 ft	CMP			None	None	None	None	No Problems	None	None	

Appendix B. Packwood Hydroelectric Project Road/Trail Culvert Inventory

Road	Culvert #	Station	Length (ft)	Diameter (in)	Purpose	Inlet	Outfall Drop	Type	Inlet Features	Outlet Features	Future Plug Potential	Inlet Blockage	Outlet Blockage	Prescription Urgency	Culvert Condition Issues	Culvert Function Issues	Prescription	Comments
Synder Road	42	20602	35	18	Relief	OK	<1 ft	CMP			None	None	None	None	No Problems	None	None	
Synder Road	43	21021	35	18	Relief	OK	<1 ft	CMP			None	0-25%	None	Low	No Problems	None	None	
Synder Road	44	21369	35	18	Relief	OK	<1 ft	CMP			None	0-25%	None	Low	No Problems	None	None	
Synder Road	45	21560	35	18	Relief	OK	<1 ft	CMP			None	None	None	None	No Problems	None	None	
Synder Road	46	22693	35	18	Relief	OK	<1 ft	CMP			None	None	None	None	No Problems	None	None	
Synder Road	47	23274	30	18	Relief	OK	<1 ft	CMP			Low	50-75%	None	Medium	No Problems	None	Remove blockage	
Synder Road	48	24112	35	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Synder Road	49	24332	35	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Synder Road	50	24951	35	18	Relief	OK	<1 ft	CMP			Low	0-25%	None	None	No Problems	None	None	
Synder Road	51	25373	35	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Synder Road	52	25873	35	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Synder Road	53	26254	300	24	Stream Crossing	OK	1-2 ft	CMP			High	None	None	None	No Problems	None	None	Culvert goes under Snyder and Pipeline Road - very long
Pipeline Trail	1	1389	40	36	Relief/cutbank seepage	OK	>5 ft	CMP			Low	None	None	None	No Problems	Outfall Eroded	None	
Pipeline Trail	2	2133	10	18	Stream Crossing	OK	<1 ft	Top of half pipe			Medium	24-50%	24-50%	Medium	Exposed culvert	None	Remove blockage; lower or cover pipe	
Pipeline Trail	3	2942	30	18	Relief/cutbank seepage	OK	<1 ft	CMP			Medium	0-25%	0-25%	Medium	Corrosive rust; Intake damage; Partially crushed	Flow under/around	Replace culvert	Rocky fill - seems to be taking most drainage OK
Pipeline Trail	4	4131	10	18	Relief	OK	<1 ft	CMP			Medium	75-100%	75-100%	Medium	No Problems	None	Remove blockage	
Pipeline Trail	5	4481	10	18	Stream Crossing	OK	1-2 ft	CMP			High	24-50%	None	High	No Problems	None	Remove blockage	Double 18" pipes
Pipeline Trail	6	4481	10	18	Stream Crossing	OK	1-2 ft	CMP			High	24-50%	None	High	No Problems	None	Remove blockage	Double 18" pipes
Pipeline Trail	7	4497	60	24	Stream Crossing	OK	1-2 ft	CMP		Concrete wall	High	50-75%	None	High	Intake damaged	Shotgunned	Remove blockage	High plug potential - steep creek, caught well back from trail - rockfall blocks culverts, diverts stream to ditch. **** KEEP CLEAN ****
Pipeline Trail	8	4497	60	18	Stream Crossing	OK	1-2 ft	CMP		Concrete wall	High	50-75%	None	High	Intake damaged	Shotgunned	Remove blockage	High plug potential - steep creek, caught well back from trail - rockfall blocks culverts, diverts stream to ditch. **** KEEP CLEAN ****
Pipeline Trail	9	4553	10	18	Relief	OK	<1 ft	Bottomless half pipe			High	0-25%	None	Low	Exposed culvert	None	Remove blockage	
Pipeline Trail	10	4786	5	18	Relief	OK	<1 ft	Bottomless half pipe			High	75-100%	None	Low	Exposed culvert	None	Remove blockage	
Pipeline Trail	11	4828	5	18	Relief	OK	<1 ft	Bottomless half pipe			High	75-100%	None	Low	Exposed culvert	None	Remove blockage	
Pipeline Trail	12	4902	5	18	Relief	OK	<1 ft	Bottomless half pipe			High	75-100%	None	Low	Exposed culvert	None	Remove blockage	
Pipeline Trail	13	5062	10	18	Relief	OK	<1 ft	Bottomless half pipe			High	25-50%	None	Low	Exposed culvert	None	Remove blockage	
Pipeline Trail	14	5164	10	18	Relief	OK	<1 ft	Bottomless half pipe			High	75-100%	None	Low	Exposed culvert	None	Remove blockage	
Pipeline Trail	15	5227	10	18	Relief	OK	<1 ft	Bottomless half pipe			High	25-50%	None	Low	Exposed culvert	None	Remove blockage	
Pipeline Trail	16	5543	10	18	Relief	OK	<1 ft	Bottomless half pipe			High	75-100%	None	Low	Exposed culvert	None	Remove blockage	

Appendix B. Packwood Hydroelectric Project Road/Trail Culvert Inventory

Road	Culvert #	Station	Length (ft)	Diameter (in)	Purpose	Inlet	Outfall Drop	Type	Inlet Features	Outlet Features	Future Plug Potential	Inlet Blockage	Outlet Blockage	Prescription Urgency	Culvert Condition Issues	Culvert Function Issues	Prescription	Comments
Pipeline Trail	17	6540	10	18	Relief	OK	<1 ft	Bottomless half pipe			High	25-50%	None	Medium	Exposed culvert	None	Remove blockage	This culvert runs water
Pipeline Trail	18	6865	10	18	Relief	OK	<1 ft	Bottomless half pipe			High	0-25%	None	Low	Exposed culvert	None	Remove blockage	
Pipeline Trail	19	8007	5	12	Relief	OK	<1 ft	CMP			High	75-100%	75-100%	High	No Problems	Flow under/ around; Too short	Remove blockage	
Pipeline Trail - lower	20	7998	??	12	Stream Crossing	OK	<1 ft	Concrete			??	??	None	None	No Problems	None	None	Culvert appears from under trail - no intake seen, flowing several cfs
Pipeline Trail - lower	21	11173	10	12	Relief	OK	<1 ft	CMP bottom half			High	100%	100%	Low	No Problems	Plugged complete	Remove blockage	Full of sediment - half pipe
Latch Road	1	100	30	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Latch Road	2	784	30	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Latch Road	3	941	30	24	Stream Crossing	OK	<1 ft	CMP			Medium	0-25%	None	Low	No Problems	None	Remove blockage	
Latch Road	4	1034	55	48	Stream Crossing	OK	1-2 ft	CMP			Medium	0-25%	None	Low	No Problems	None	Remove blockage	
Latch Road	5	1816	30	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Latch Road	6	2047	50	36	Stream Crossing	OK	1-2 ft	CMP			Medium	24-50%	None	Medium	No Problems	None	Remove blockage	
Latch Road	7	2238	30	18	Relief	OK	<1 ft	CMP			Low	25-50%	None	Low	No Problems	None	Remove blockage	
Latch Road	8	2260	30	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Latch Road	9	3067	30	18	Relief	OK	<1 ft	CMP			Low	0-25%	None	Low	No Problems	None	Remove blockage	
Latch Road	10	3682	30	18	Relief	OK	<1 ft	CMP			Low	25-50%	None	Low	No Problems	None	Remove blockage	
Latch Road	11	4232	30	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Latch Road	12	4549	50	48	Stream Crossing	OK	<1 ft	CMP			High	0-25%	None	Low	No Problems	None	Remove blockage	
Latch Road	13	5044	30	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Latch Road	14	8211	30	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	
Latch Road	15	8656	30	18	Stream Crossing	OK	<1 ft	CMP			High	0-25%	None	Low	No Problems	None	Remove blockage	
Latch Road	16	12061	50	36	Relief	OK	1-2 ft	CMP			Medium	None	None	None	No Problems	None	None	
Latch Road	17	12300	30	18	Stream Crossing	OK	2-5 ft	CMP			High	24-50%	None	Medium	No Problems	None	Remove blockage; replace with larger pipe	
Latch Road	18	12950	30	18	Stream Crossing	OK	<1 ft	CMP			Medium	None	None	None	No Problems	None	None	
Latch Road	19	13090	30	18	Relief	OK	<1 ft	CMP			Medium	0-25%	None	Low	No Problems	None	Remove blockage	
Latch Road	20	13259	30	36	Stream Crossing	OK	<1 ft	CMP			Medium	0-25%	None	Low	No Problems	None	Remove blockage	
Latch Road	21	16640	35	36	Stream Crossing	OK	1-2 ft	CMP			Medium	0-25%	None	Low	No Problems	None	Remove blockage	
Latch Road	22	16788	30	18	Relief	OK	<1 ft	CMP			Low	0-25%	None	None	No Problems	None	None	
Latch Road	23	21252	30	18	Stream Crossing	OK	<1 ft	CMP			High	25-50%	None	Low	No Problems	None	Remove blockage	
Latch Road	24	21904	30	18	Seep	OK	<1 ft	CMP			Medium	0-25%	None	Low	No Problems	None	Remove blockage	
Latch Road	25	22158	35	24	Stream Crossing	OK	2-5 ft	CMP			High	25-50%	None	Medium	No Problems	None	Remove blockage	
Latch Road	26	23654	30	18	Relief	OK	<1 ft	CMP			Low	None	None	None	No Problems	None	None	

Appendix B. Packwood Hydroelectric Project Road/Trail Mass Movement Sites

Road	Station	Width (ft)	Length (ft)	Scarp Height (ft)	Estimated Past Failure Volume (cu ft)	Delivery to Stream (%)	Estimated Future Failure Volume (cu ft)	Type	Activity	Features	Future Failure Potential	Comment	Potential Treatment	Treatment Urgency
Pipeline Road	3937-4006	10	40		20000	0	15000	Shallow Debris Slide	Potential; Inactive	Cracks; Sagging	Medium	'80% fillslope gradient	Fix drainage; Pull back fill (top)	Low
Pipeline Trail	919	30	100		9000	0	Stable	Shallow Debris Slide	Inactive		Low	Has timber crib wall; minor erosion at S end of top timber (Sta 925); '100, 110% fillslope gradient	Do not pile grading berm on shoulder here; check timbers for rot every 5-10 years	Low
Pipeline Trail	957	20	50		2000	0	Stable	Shallow Debris Slide	Inactive		Low			Low
Pipeline Trail	1048	10	20		400	0	Stable	Shallow Debris Slide	Inactive		Low			Low
Pipeline Trail	1109	10	20		400	0	Stable	Shallow Debris Slide	Inactive		Low			Low
Pipeline Trail	1144	12	40		1440	0	Ravel	Shallow Debris Slide	Active Raveling/Potential	Holes	Medium		Fix crib wall, pull berm	Medium
Pipeline Trail	1157	20	50		4000	0	Ravel	Shallow Debris Slide	Active Raveling/Potential	Holes	Medium		Fix crib wall, pull berm	Medium
Pipeline Trail	4360	10	10		400	100	0	Stream Washout	Inactive		Medium	Stream was in ditch		Low
Pipeline Trail - upper	10733	15	40		6000	0	6000	Shallow Debris Slide	Active/Potential	Leaning Trees	High	Overhanging vegetation/tree - will fail - big tree will block trail	Retaininwall/buttress; cut tree (for safety)	High
Pipeline Trail - lower	10838	20	10		0	100	1000	Shallow Debris Slide	Potential	Sagging	High		Retaining wall/buttress (Timber crib wall 5 ft high x 15-20 ft long)	Medium