

Nason Creek RM 3.3 to 4.6 Supplemental Alternatives Analysis summary matrix (page 1 of 2)

Alternative ID:	Description  Name Description	Project attributes & characteristics																			
		1.) Design standards and maintenance																2.) Cost			
		a.) Does the project meet AASHTO design safety standards?		b.) Grade changes		c.) Maintenance						d.) Constructability				e.) Geologic hazards		f.) Snow-avalanche hazards		Project Cost	
		YES	NO	Score	Rationale	Score	Rationale	Score	Rationale	Score	Rationale	Score	Rationale	Score	Rationale	Score	Rationale	Score	Rationale	Score	Rationale
1	Chelan County Road Re-alignment	g		y	1.76 percent max grade	y	Road removed from active main stem RM 3.3-4.5 removing CED sites 1-3. Fill placed in portions of N & S floodplains (4.5ac. Ref 3.b). Road occupies about half of existing north side channel	y	See notes for 1-C-i	y	See notes for 1-C-i	o	Lengthy utility relocate	g	Low detour impact	o	Some risk of destabilizing bluff (App B, p 16)	g	No Hazard	o	\$16,760,000
2	Chelan County Road Re-alignment	g		o	3.85 percent max grade	y	Road removed from active main stem RM 3.3-4.5 removing CED sites 1-3. Fill placed in portions of N & S floodplains (1.45ac. Ref 3.b). Road occupies parts of existing north side channel	y	See notes for 1-C-i	y	See notes for 1-C-i	o	Lengthy utility relocate	g	Low detour impact	o	May destabilize slopes along bluff (App B, p 17)	g	No Hazard	o	\$19,280,000
3	Chelan County Road Re-alignment	g		o	4 percent max grade	y	Road removed from active main stem RM 3.3-4.5 removing CED sites 1-3. Fill placed in portions of N floodplain (2.0ac. Ref 3.b). Road occupies parts of existing north side channel	y	See notes for 1-C-i	y	See notes for 1-C-i	o	Lengthy utility relocate	g	Low detour impact	o	May destabilize slopes along bluff (App B, p 17)	g	No Hazard	o	\$18,490,000
4	Chelan County Road Re-alignment	g		o	4 percent max grade	y	Road removed from active main stem RM 3.3-4.5 removing CED sites 1-3. Fill placed in portions of N floodplain (2.3ac. Ref 3.b). Road occupies parts of existing north side channel	y	See notes for 1-C-i	y	See notes for 1-C-i	o	Lengthy utility relocate	g	Low detour impact	o	May destabilize slopes along bluff (App B, p 17)	g	No Hazard	o	\$16,310,000
5	Chelan County Road Re-alignment	g		o	4 percent max grade	g	Road removed from active main stem RM 3.3-4.5 removing CED sites 1-3.	g	See notes for 1-C-i	g	See notes for 1-C-i	o	Lengthy utility relocate	g	Low detour impact	g	Low risk of destabilizing slope (App B, p17)	r	Some Hazard - passes near area E (ref: App B)	o	\$19,140,000
6	Chelan County Road Re-alignment	g		o	4 percent max grade	g	Road removed from active main stem RM 3.3-4.5 removing CED sites 1-3.	g	See notes for 1-C-i	g	See notes for 1-C-i	o	Lengthy utility relocate	g	Low detour impact	g	Avoids area of slope movement (App B, p17)	r	Hazard - passes below area E (ref: App B)	r	\$29,340,000
7	Yakama Nation Road Re-alignment	g		o	4.31 percent max grade	y	Out of meander corridor RM 4.1-4.5. Removes CED sites 1 and 2.	y	See notes for 1-C-i	y	See notes for 1-C-i	y	moderate length utility relocation	g	Low detour impact	g	Avoids geologic hazard areas.	g	No Hazard	y	\$10,810,000
8	Chelan County Raised Road Causeway	g		g	No grade change	o	Piers remain in meander corridor RM 4.1-4.5. CED sites 1-3 remain active	o	See notes for 1-C-i	o	See notes for 1-C-i	y	Moderate utility relocation	o	High detour impact	g	No change to valley wall slopes	g	No Hazard	o	\$20,010,000
9	Chelan County Floodplain Reconnect (Bridges)	g		g	No grade change	o	Remains in meander corridor. CED sites 1-3 remain active	o	See notes for 1-C-i	o	See notes for 1-C-i	g	Minimal utility relocate	y	Moderate to High detour impact	g	No change to valley wall slopes	g	No Hazard	y	\$8,800,000
10	Chelan County Floodplain Reconnect (Culverts)	g		g	No grade change	o	Remains in meander corridor. CED sites 1-3 remain active	o	See notes for 1-C-i	o	See notes for 1-C-i	g	Minimal utility relocate	y	Moderate detour impact	g	No change to valley wall slopes	g	No Hazard	g	\$1,230,000
11	Engineered Large Wood Jams	g		g	No grade change	o	Remains in meander corridor. CED sites 1-3 remain active	o	See notes for 1-C-i	o	See notes for 1-C-i	g	No utility relocate	y	Low to Moderate detour impact	g	No change to valley wall slopes	g	No Hazard	g	\$1,750,000
12	No Action	g		g	No grade change	o	Remains in meander corridor. CED sites 1-3 remain active	o	See notes for 1-C-i	o	See notes for 1-C-i	g	No utility relocate	oo	No detour required	g	No change to valley wall slopes	g	No Hazard	g	\$0

**Green**=exceeds objective/criteria.  
**Yellow**=adequately meets objective/criteria.  
**Orange**=only partially meets objective/criteria.  
**Red**=does not meet objective/criteria, potential fatal flaws.

Cost source:  
 Chelan County 2011 cost updated by Perteet with current unit costs; no changes to quantities  
 Perteet (2021) cost estimate  
 Chelan County 2011 cost inflated at 4% to 2022 dollars  
 Inter-Fluve OPCC

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Alternative ID:	Description  Name Description	Project attributes & characteristics																			
		3.) Natural Environment						4.) Meets project objectives						5.) Landowner willingness							
		a.) Biological benefit to fish habitat		b.) Wetland / floodplain impacts		c. Floodplain connectivity - unimpeded by roadway (Note: existing culverts and side channel connect 54.4 acres of floodplain behind roadway for Alts 1-6.)		a.) Travel safety		b.) Reduce current and future road maintenance impacts to fish habitat		c.) Restoration of natural stream channel processes (floodplain connectivity)		a. Public: USFS & WSDOT support		b. Impacts 1 or more private parcels		Occurrences			
		Score	Rationale	Score	Rationale	Score	Rationale	Score	Rationale	Score	Rationale	Score	Rationale	Score	Rationale	Score	Rationale				
1	Chelan County Road Re-alignment	g	See notes for 1-C-i. Fill in about half of existing north side channel impacts existing quality habitats	r	4.5 acres wetland fill + 4.0 acres indirect wetland impact. Challenging permitting and cost implications	g	Reconnect 68.4 acres of floodplain unimpeded by roadway; 14.0 ac incremental increase. (YN est: 58.9acres reconnection, 11.8ac incremental increase.)	g	Meets AASHTO criteria	y	See notes for 1-C-i. Maintenance of road fill will be required	y	Approx. 58.9 acres of north and south floodplain reactivated. Roadway fill in about half of existing north side channel impacts existing process and habitats	o	USFS Concerns	o	Impacts 1 private parcel	6	6	5	1
2	Chelan County Road Re-alignment	g	See notes for 1-C-i. Fill in existing north side channel impacts existing quality habitats	o	1.45 acres wetland impact fill + small area of indirect wetland impact	g	Reconnect 75.6 acres of floodplain unimpeded by roadway; 21.2 ac incremental increase. (YN est: 66.1acres reconnection, 19.0ac incremental increase.)	g	Meets AASHTO criteria	y	See notes for 1-C-i. Maintenance of road fill will be required	y	Approx 66.1 acres of north and south floodplain reactivated. Roadway fill in portion of north side channel.	o	USFS Concerns	o	Impacts 1 private parcel	6	5	7	0
3	Chelan County Road Re-alignment	g	See notes for 1-C-i. Fill in existing north side channel impacts existing quality habitats	o	2 acres of wetland fill + 3.5 acres indirect wetland impact	g	Reconnect 71.5 acres of floodplain unimpeded by roadway; 17.1 ac incremental increase. (YN est: 62.0acres reconnection, 14.9ac incremental increase.)	g	Meets AASHTO criteria	y	See notes for 1-C-i. Maintenance of road fill will be required	y	Approx 62 acres of north and south floodplain reactivated. Roadway fill in portion of north side channel.	o	USFS Concerns	o	Impacts 1 private parcel	6	5	7	0
4	Chelan County Road Re-alignment	g	See notes for 1-C-i. Fill in existing north side channel impacts existing quality habitats	o	2.3 acres of wetland fill + small area of indirect wetland impact	g	Reconnect 74.7 acres of floodplain unimpeded by roadway; 20.3 ac incremental increase. (YN est: 65.2acres reconnection, 18.1 incremental increase.)	g	Meets AASHTO criteria	y	See notes for 1-C-i. Maintenance of road fill will be required	y	Approx 65.2 acres of north and south floodplain reactivated. Roadway fill in portion of north side channel.	o	USFS Concerns	o	Impacts 1 private parcel	6	5	7	0
5	Chelan County Road Re-alignment	g	See notes for 1-C-i	g	No wetland impact	g	Reconnect 77 acres of floodplain unimpeded by roadway (YN est: 67.5acres)	y	Meets AASHTO criteria Some avalanche risk	g	See notes for 1-C-i. Maintenance for Geologic hazards may be required	g	Approx. 67.5 acres of north and south floodplain reactivated.	o	WSDOT concerns	o	Impacts 1 private parcel	11	1	5	1
6	Chelan County Road Re-alignment	g	See notes for 1-C-i	g	No wetland impact	g	Reconnect 77 acres of floodplain unimpeded by roadway (YN est: 67.5acres)	y	Meets AASHTO criteria Some avalanche risk	g	See notes for 1-C-i. Maintenance for Geologic hazards may be required	g	Approx. 67.5 acres of north and south floodplain reactivated.	o	WSDOT concerns	r	Impacts multiple private parcels	11	1	3	3
7	Yakama Nation Road Re-alignment	g	See notes for 1-C-i	y	Wetland fill: 0.1 acre for 45 MPH option and 0.95 acre for 55 MPH option	y	Reconnect 12.9 acre connection of floodplain unimpeded by roadway	g	Meets AASHTO criteria	y	Road removed from floodplain - low maintenance impact RM 4.1-4.5 Maintenance still required RM 3.3-4.1	y	Approx. 12.9 acres of south floodplain reactivated.	g	Supported	g	No private land impact	8	9	1	0
8	Chelan County Raised Road Causeway	o	See notes for 1-C-i	g	No wetland impact	y	Reconnect 12.9 acres of floodplain impeded somewhat by causeway	g	Meets AASHTO criteria	o	Causeway through req's some maintenance impact RM 4.1-4.5. Maintenance still required RM 3.3-4.1	y	Approx. 12.9 acres of south floodplain reactivated partially impeded by causeway piles.	o	WSDOT and USFS concerns	g	No private land impact	7	3	8	0
9	Chelan County Floodplain Reconnect (Bridges)	o	See notes for 1-C-i	y	Some wetland impact from side channel excavation	o	Flow connectivity to 12.9 acres of floodplain with process impeded by roadway	g	Meets AASHTO criteria	o	Maintenance still required RM 3.3-4.5 plus add'l maintenance of bridges	o	Partial flow connectivity to 12.9 floodplain behind roadway RM 4.1-4.5	o	WSDOT and USFS concerns	g	No private land impact	7	3	8	0
10	Chelan County Floodplain Reconnect (Culverts)	o	See notes for 1-C-i	y	Some wetland impact from side channel excavation	o	Flow connectivity to 12.9 acres of floodplain with process impeded by roadway	g	Meets AASHTO criteria	o	Maintenance still required RM 3.3-4.5 plus add'l maintenance of culverts	o	Partial flow connectivity to 12.9 floodplain behind roadway RM 4.1-4.5	o	WSDOT and USFS concerns	g	No private land impact	8	2	8	0
11	Engineered Large Wood Jams	y	Localized habitat enhancement	g	No wetland impact	r	None	g	Meets AASHTO criteria	o	Maintenance still required RM 3.3-4.5	r	No increase in floodplain connectivity	y	WSDOT and USFS support if no road relocation	g	No private land impact	9	3	4	2
12	No Action	r	No change to benefit habitats	g	No wetland impact	r	None	g	Meets AASHTO criteria	r	Maintenance still required RM 3.3-4.5	r	No increase in floodplain connectivity	o	WSDOT and USFS don't support no action	g	No private land impact	10	0	4	4