

These are the Biological Notes (specific to Chinook) from the Upper Columbia Expert Panel, conducted in Wenatchee, WA. These notes encompass the Look Back and Look Forward process conducted over multiple meetings. Specifically, those meetings included the Look Back meeting (Feb 24-25, 2016), a Look Back meeting held with the Yakama Nation (April 27, 2016), and the Look Forward meeting (June 21-23, 2016). Raw notes were collected during Panel discussions, and later checked for typographical errors and for consistency with supporting tables.

Primary biological note taker: Kim Gould, Cardno, Inc.

Column Highlighting Key

Blue: Data collected in original 2016 look back meeting (2/24-2/25/2016, and), a separate Look Back meeting with the Yakama Nation (4/27/2016), and subsequent comments by the Yakama Nation.
Green: Look Back notes and uplifts updated during June 2016 Look Forward meeting. Uplift values and functions scores reflect all look back conversations to date
Pink: Look Forward data gathered in June 2016
Light Yellow: The 2016 Low Bookend used for calculation of the Look Forward function score.

Cell Highlighting Key

Yellow: Cells indicating where follow-up/additional data are needed from the panel.

These are the Biological Notes from the Upper Columbia Expert Panel Look Back session, conducted in Wenatchee, WA from 2/24-2/25/2016 and the Yakama Nation on 4/27/16. Raw notes were collected during Panel discussions, and later checked for typographical errors and for consistency with supporting tables.

EP table references are to spreadsheets developed and compiled during the session. A file containing these tables is named “YN-UColumbia_LookBack2012-2015_CalcSpreadsheet_QAdraft_5-24-16.xlsx”

Primary biological note taker: Kim Gould, Cardno, Inc. and Melissa Klungle, Cardno, Inc.

Sheets are specific to Chinook populations within the Upper Columbia basin.

This version combines notes from the 2/24/16 & 2/25/16 Expert Panel meeting and the follow-up meeting on 4/27/16 with the Yakama Nation. These need to be reviewed with the entire panel and finalized.

Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 Low Bookend	Estimate Comments / Rationale (specific to 2018 Estimate)	Estimate Comments / Rationale (specific to 2033 Estimate)	Yakama Nation Meeting Notes (4/27/2016)	Yakama Nation post-meeting comments	Additional Look Back 2018 & 2033 Estimate Comment s/Rationale (6/21-6/23/2016)	Look Back % Change by 2018 (6/23/16)	Updated 2018 Estimate (2012-2015 Look Back workshop)	2033 Estimate d % Change (6/23/16)	Updated 2033 Estimate (2012-2015 Look Back workshop)	2016 Low Bookend	Updated 2018 Estimate (2016-2018 Look Forward Period)	% Change Updated 2018 Estimate (2016 Look Forward)	2016-2018 Look Forward 2018 Estimate Comments / Rationale	Updated 2033 Estimate (2016-2018 Look Forward Period)	% Change - Updated 2033 Estimate (2016-2018 Look Forward)	2016-2018 Look Forward 2033 Estimate Comments / Rationale	2013-2018	2033	High 2018 Bookend	High 2033 Bookend	2012 limiting factor Weight	Assessment Unit Weight	2012 Limiting Factor Weight and Bookend Comments	2012 Estimates Comments	2012 Assessment Unit Weight Comments
Entiat	ERC1	Lower Entiat	2.3: Injury and Mortality: Mechanical Injury	80	nts/Rationale specific to the 2018	ts/Rationale specific to the 2033	ts/Rationale captured during look	nts provide d by the Yakama Nation	Back Comment s/Rationale captured	uplift percentag e calculated by panel	2018 function score for Look Back process	uplift percentag e calculate d by	2033 function score for Look Back process	80	100	20	Comments/Rationale specific to the 2018 estimate captured during Look Forward meeting (6/21-6/23/2016)	Updated 2033 function score after adding Look Forward uplift.	2033 uplift calculated for the Look Forward (2016-2018) period during the 6/21-6/23/2016 meeting.	Comments/Rationale specific to the 2033 estimate captured during Look Forward meeting (6/21-6/23/2016).	95	95	100	100	5%	41.2%		2 ARRA, 3 Ecology, 3 Below Keystone/HD-KW consolidation screens were completed in the 09-12 cycle, but are evaluated here because there was no screen limiting factor in the 09-12 cycle	
Entiat	ERC1	Lower Entiat	3.1: Food: Altered Primary Productivity	40	No actions. No change	No actions. No change in	No comment	No comment	No actions with Action Agency nexus	0	40	0	40	40	40	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	40	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment	40	40	50	50	5%	41.2%		Nutrient project scoping underway-potential benefits to be determined in 2015 look back	
Entiat	ERC1	Lower Entiat	4.1: Riparian Condition: Riparian Vegetation	25	1 project in calc table, 100 ft of	For 2033, assuming 2% per		Entiat 2.6-3.5	Panel now assigned	0.1	25.1	0.6	25.6	25.1	25.1	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	25.1	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment	25	25	30	35	15%	41.2%		Planting planned by CCD - benefits to be determined	
Entiat	ERC1	Lower Entiat	5.1: Peripheral and Transitional	10	Zero limiting factor weight.			The "Estimate	Panel discussed denominator with	1.8	11.8	1.8	11.8	11.8	11.8	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	11.8	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment	10	10	15	15	0%	41.2%		0% limiting factor weight - therefore, side channels are considered under limiting factor 6.2 instream complexity	
Entiat	ERC1	Lower Entiat	5.2: Peripheral and Transitional	80	Move actions listed under	Same % and rationale as for	No comment	No comment		0.2	80.2	0.2	80.2	80.2	80.2	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	80.2	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment	81	81	85	85	15%	41.2%	Not a lot of opportunity but extremely high benefit and priority as refuge and rearing areas are rare in this portion of the watershed		
Entiat	ERC1	Lower Entiat	6.1: Channel Structure and Form: Bed and Channel	70	NOTE: Address limiting factor due to	Higher proration for 2033 due to	discuss weightin g factors at EP	no comment		0.4	70.4	0.8	70.8	70.4	70.4	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	70.8	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment	71	71	72	72	10%	41.2%	Although there may not be a lot of opportunity for making changes, it is still high priority		
Entiat	ERC1	Lower Entiat	6.2: Channel Structure and Form: Instream	25	NOTE: Address limiting factor as for	Same % and rationale as for	discuss weightin g factors at EP	No comment		6.8	31.8	6.8	31.8	31.8	31.8	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	31.8	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment	33	35	50	70	25%	41.2%	This limiting factor includes side channels	7 total projects from Entiat Reach Assessment. Also include these 3 projects that were not in the 2012 look forward project list but were back forward at the 2016-2018	
Entiat	ERC1	Lower Entiat	7.2: Sediment Conditions: Increased Sediment Quantity	23	No action. No % change	No action. No % change	No comment	No comment		0	23	0	23	23	23	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	23	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment	23	23	50	50	15%	41.2%		Effects of actions for other limiting factors can affect change in sediment HF to be determined in 2015	
Entiat	ERC1	Lower Entiat	9.2: Water Quantity: Decreased Water Quantity	50	No action. No % change.	No action. No % change.	No comment	No comment		0	50	0	50	50	50.5	0.5	Roaring Creek diversion replacement with well: 1 cfs 2017-2018. Denominator: 120 cfs estimated average annual baseflow. Panel thought this was too high. September is consistently the lowest flow: approx 200 cfs. Focus on habitat availability and flow relationship. 130 cfs is lowest	50		Cannot estimate to 2033.	50	50	55	55	10%	41.2%			
Entiat	ERC2	Mad River	1.1: Habitat Quantity: Anthropogenic Barriers	98	2 barrier projects in database. Both were	No action. No % change.	No comment	No comment		0	98	0	98	98	98	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	98	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment	100	100	100	100	20%	12.5%			
Entiat	ERC2	Mad River	3.1: Food: Altered Primary Productivity	40	No action. No % change.	No action. No % change.	No comment	No comment		0	40	0	40	40	40	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	40	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment	40	40	50	50	20%	12.5%			
Entiat	ERC2	Mad River	4.1: Riparian Condition: Riparian Vegetation	70	No action. No % change.	No action. No % change.	No comment	No comment		0	70	0	70	70	70	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	70	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment	70	70	75	80	20%	12.5%			
Entiat	ERC2	Mad River	6.1: Channel Structure and Form: Bed and Channel Form	90	No action. No % change.	No action. No % change.	No comment	No comment		0	90	0	90	90	90	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	90	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment	90	90	92	92	20%	12.5%			
Entiat	ERC2	Mad River	6.2: Channel Structure and Form: Instream Structural Complexity	91	No action. No % change.	No action. No % change.	No comment	No comment		0	91	0	91	91	94.3	3.3	Mad River LWD Meadow Project (2018): 0.3 mile treated. Prorated to 100% of properly functioning condition, yielding 3.3% uplift in 2018 and 2033.	94.3	3.3	Not additive.	91	91	97	99	0%	12.5%			
Entiat	ERC2	Mad River	7.2: Sediment Conditions: Increased Sediment Quantity	23	No action. No % change.	No action. No % change.	No comment	No comment		0	23	0	23	23	23	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	23	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment	23	23	50	50	20%	12.5%		Coarser bed material than lower Entiat road decommissioning could have high impact on sediment loading	
Entiat	ERC3A	Middle Entiat	1.1: Habitat Quantity: Anthropogenic Barriers	95	No actions. No change in %.	No actions. No change in %.	No comment	No comment	3-D project not applied to this LF. EWW 7.29.16	0	95	0	95	95	95	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	95	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment	95	95	100	100	5%	36.7%			

Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 Low Bookend	Estimate Comments / Rationale (specific to 2018 Estimate)	Estimate Comments / Rationale (specific to 2033 Estimate)	Yakama Nation Meeting Notes (4/27/2016)	Yakama Nation post-meeting comments	Additional Look Back 2018 & 2033 Estimate Comment s/Rationale (6/21-6/23/2016)	Look Back % Change by 2018 (6/23/16)	Updated 2018 Estimate (2012-2015 Look Back workshop)	2033 Estimate d % Change (6/23/16)	Updated 2033 Estimate (2012-2015 Look Back workshop)	2016 Low Bookend	Updated 2018 Estimate (2016-2018 Look Forward Period)	% Change Updated 2018 Estimate (2016 Look Forward)	2016-2018 Look Forward 2018 Estimate Comments / Rationale	Updated 2033 Estimate (2016-2018 Look Forward Period)	% Change - Updated 2033 Estimate (2016-2018 Look Forward)	2016-2018 Look Forward 2033 Estimate Comments / Rationale	2013-2018	2033	High 2018 Bookend	High 2033 Bookend	2012 limiting factor Weight	Assessment Unit Weight	2012 Limiting Factor Weight and Bookend Comments	2012 Estimates Comments	2012 Assessment Unit Weight Comments
Entiat	ERC3A	Middle Entiat	3.1: Food: Altered Primary Productivity	40	No actions. No change in %.	No actions. No change in %.	No comment	No comment	3-D project not applied to this LF. EWW 7.29.16	0	40	0	40	40	40	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	40	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	40	40	50	55	10%	36.7%			
Entiat	ERC3A	Middle Entiat	4.1: Riparian Condition: Riparian Vegetation	60	Calc table projects prorated based on vegetation growth in period.	30% prorated based on expected growth to 2033 = 1.2% Not additive.	No comment	No comment	3-D project not applied to this LF. EWW 7.29.16	0.2	60.2	1.2	61.2	60.2	60.2	0	Gray and Stormy projects (treated area does not include Area D, which might not happen in 2018 period). Panel prorated using 1% vegetation growth per year. Yields 0% rounded in 2018.	61.9	0.7	Prorated using 1% vegetation growth per year. Yields 0.7% uplift in 2033.	62	64	65	70	15%	36.7%			
Entiat	ERC3A	Middle Entiat	5.2: Peripheral and Transitional Habitats: Floodplain Condition	60	Tyee 3D, Dillwater, and 3D projects in calc table. Adjust project length in table (measured from post-project condition)	Same % and rationale as for 2018. Not additive.	Entiat 3D improved duration and extent of inundation of the floodplain - functions at a broader range of conditions	The Tyne needs to compare the Dillwater and Tyee floodplain function values and adjust the 3-D project	Panel concurred with proration change for consistency.	8.2	68.2	8.2	68.2	68.2	91.4	23.2	Calc table contains 2 projects. Panel discussed benefit from house removal in floodplain and overall floodplain connectivity benefits from these projects. Also, there would be benefit to redds from reduced scour and sediment deposition due to floodplain connectivity. Panel chose to use length of affected stream miles from floodplain improvement: Length of E and F = 0.84 miles. ABC = 1.85 miles (not counting gaps). Panel prorated at 100% of properly functioning condition expected to be reached, yielding 23.2% expected uplift.	91.4	23.2	As per 2018.	68	68	70	70	35%	36.7%			
Entiat	ERC3A	Middle Entiat	6.1: Channel Structure and Form: Bed and Channel Form	90	limiting factor 5.2 projects on calc table, but adjusted length based on project	Same % and rationale as for 2018. Not additive.	No comment	No comment...How does your comment about 3D pool scour fit in to LF 6.1? Seems resolved	Panel discussed. No modification made.	3.4	93.4	3.4	93.4	93.4	98.7	5.3	Expected to exceed properly functioning condition for wood loading and channel form. 67 structures in ABC and 36 in E and F. Mostly changing pool/riffle ratio. Panel determined that projects will address/get to 100% of properly functioning condition in all but area D (D is 20% of total assessment unit length [1.3% of gap]). Yields 5.3% uplift in 2018 and 2033. Note: Panel discussed low bookend based on percentage of assessment unit that is incised/channelized/lacking wood and decided to leave bookend at 93.4%.	98.7	5.3	As per 2018.	97	97	99	99	5%	36.7%	Includes Dillwater (described in limiting factor 6.2) lower Tyee levee removal/3C would provide remainder of change		
Entiat	ERC3A	Middle Entiat	6.2: Channel Structure and Form: Instream Structural Complexity	25	Same projects as 6.1. Add length of other 3D small projects	Same % and rationale as for 2018. Not additive.	Discuss with entire Panel - how is treatment area	For Dillwater, how are you calculating 0.29mi of	Panel discussed measurement methods, inconsistency of inclusion 3-D project not applied to this LF. EWW 7.29.16	15.4	40.4	15.4	40.4	40.4	64	23.6	Expected to exceed properly functioning condition for wood loading and channel form. 67 structures in ABC and 36 in E and F. Panel did not include side channels. 3-5 jams per mile now. Historically, it would have had 5-10 per mile. Panel later revised to include 3D with 20% of remaining work, resulting in expected uplift of 23.6%	64	23.6	As per 2018.	35	37	50	60	25%	36.7%	Remaining change to high bookends attributed to 3C		
Entiat	ERC3A	Middle Entiat	7.2: Sediment Conditions: Increased Sediment Quantity	75	Panel questioned whether fine sedimen	No actions. No change.	No comment	No comment	3-D project not applied to this LF. EWW 7.29.16	0	75	0	75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	75	75	82	85	5%	36.7%	Possible benefits from riparian projects to be determined US Forest Service road decommissioning affects this limiting factor		
Entiat	ERC3B	Upper Middle Entiat	1.1: Habitat Quantity: Anthropogenic Barriers	93	Should Yakama Nation 3D project be in ERC3B rather than ERC3A?		Agree it should be in ERC3B	We agree to your comment the 3-D project should be in AU "ERC3B."	Panel agreed that the 3D project should be in ERC3A, but only 80% of the value because	0	93		93	93	93	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	93	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.			99	99		9.6%			
Entiat	ERC3B	Upper Middle Entiat	3.1: Food: Altered Primary Productivity	40	Should Yakama Nation 3D project		Agree it should be in ERC3B	We agree to your comment the 3-D project	Panel agreed that the 3D project	0	40		40	40	40	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	40	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	40	40	50	55	45%	9.6%			
Entiat	ERC3B	Upper Middle Entiat	4.1: Riparian Condition: Riparian Vegetation	80	Should Yakama Nation 3D project be in		Agree it should be in ERC3B	We agree to your comment the 3-D project	Panel agreed that the 3D project should be	0	80		80	80	80	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	80	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.			85	90		9.6%			
Entiat	ERC3B	Upper Middle Entiat	6.2: Channel Structure and Form: Instream Structural Complexity	80	Should Yakama Nation 3D project be in		Agree it should be in ERC3B	We agree to your comment the 3-D project	Panel agreed that the 3D project should be	0	80		80	80	89.6	9.6	Removed angle point structures. 3D (same site, but increasing footprint size), Signal Peak, Upper Burns will happen in 2016 and 2017. Panel prorated at 100% of properly functioning condition expected. Panel agreed that the 3D project should be in ERC3A.	89.6	9.6	As per 2018. Not additive.	80	80	90	90	55%	9.6%	Do not expect increased benefit after 2018 from added large woody material		

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Entiat	ERC3B	Upper Middle Entiat	7.2: Sediment Conditions: Increased Sediment Quantity	23	Should Yakama Nation 3D project be in ERC3B rather than ERC3A? Are elements of Tyee within ERC 3B? Ask Yakama Nation.		Agree it should be in ERC3B	We agree to your comment the 3D project should be in AU "ERC3B."	Panel agreed that the 3D project should be in ERC3A, but only 80% of the value because more work will be done in the future at this site.(3D project was not applied to this LF in ERC3A. EWW 7.29.16)	0	23		23	23	23	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	23	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.			30	30		9.6%			

Populati on	Code	Assessme nt Unit	2012 Standard ized Limiting Factor	2012 Low Bookend	Estimate Comments / Rationale	Yakama Nation Look Back Meeting Notes (4/27/2016)	Yakama Nation post-meeting comments	Additional Look Back Estimate Comments/Rationale (6/21- 6/23/2016)	Look Back % Change (6/23/16)	Updated 2018 Estimate (2012- 2015 Look Back workshop)	2016 Low Bookend	Updated 2018 Estimate (2016- 2018 Look Forward Period)	Look Forward % Change	2016-2018 Look Forward Estimate Comments / Rationale	201 3- 201 8	High 2018 Book end	High 2033 Bookend	2012 Limit ing Fact or	Assess ment Unit Weigh t	2012 Limiting Factor Weight and Bookend Comments	2012 Estimates Comments	2012 Assessment Unit Weight Comments	
					Comments/Rationale captured during look back meeting held 2/24-2/25/2016	Comments/Rationale captured during look back meeting with the Yakama Nation held on 4/27/16	Comments provided by the Yakama Nation between the 4/27/2016 meeting and the look forward meeting held 6/21-6/23/2016.	Look Back comments/rationale captured during Look Forward meeting with the entire panel (held 6/21-6/23/2016).	Uplift percentage calculated by panel through discussions and meetings	Updated function score for Look Back process resulting from all discussions	2016 Low Bookend used for Look Forward calculations.	Updated function score after adding Look Forward uplift.	Uplift calculated for the Look Forward (2016-2018) period during the 6/21-6/23/2016 meeting.	Comments/rationale captured during Look Forward meeting (6/21-6/23/2016).									
Methow	MEC1	Beaver / Bear Creek	1.1: Habitat Quantity: Anthropogenic Barriers	77	NOTE: Bear Creek is not in this Assessment Unit. Revise name. Streamnet miles for Chinook are wrong (0 miles). Use steelhead miles (9.2 miles) instead as denominator. Adult Chinook found at Maracci. Two projects listed in database. Upper Beaver was a complete barrier to Chinook at some seasons, partial otherwise, and opened ~2 miles, rated at 50%. Stokes Ranch was not a full barrier, double barrier culvert mostly passable, so rated down to 10% (and revised miles affected to 6.4 miles). Revised distance in calc table to avoid double-counting miles between culverts. Other barriers done in 2014, but upstream of Chinook? No other barriers within Beaver Chinook distribution (there are Chinook in Beaver Creek). NOTE: Check weights - don't match. Yields 22.2% uplift, but some barriers left within Frasier, but Frasier miles not included in denominator, so adjusted denominator (added 0.25 miles = 0.45mi) = 10.6% uplift.	Maracci observation in 2006. Due to the Thurlow Diversion (was included in 2009/11 dataset, not included in current dataset to avoid double credit) Yakama Nation feels it unlikely chinook to make it in late summer to spawn (95.6% function is high). Okay with using the 9.2 miles but realize it is more indicative of historic conditions. Discuss at next Expert Panel. Yakama Nation to look for additional data on distribution and Beaver Creek vs. neighboring tribes baseflow estimates.	This estimate seems to ignore the Thurlow Diversion, which is likely a significant barrier for adult spring Chinook passage in many low flow years. A function rating of ~95% seems very high given the Thurlow impacts downstream from the two projects listed by the Expert Panel in 2012 - 2015.	Panel considered moving Thurlow Diversion to limiting factor 9.2. Decided not to include.	18.6	95.6	95.6	99.1	3.5	Barkley Bear should be in MEC8A. No actions. Frazer Creek barriers (ten barriers affecting about 2.5 miles) are upstream of anadromy, so no credit assigned at this point. WDFW/Maltais Diversion (2 miles affected); also above anadromy. Beaver Creek Stokes Culvert-to-Bridge was a partial (velocity) barrier (6.7 miles affected) and is within Chinook use. Panel determined 3.5% expected uplift.	90	90	90	90	10%	1.6%	Cambell diversion		
Methow	MEC1	Beaver / Bear Creek	2.3: Injury and Mortality : Mechanical Injury	80	Upper Beaver Creek Diversion Screens. Prorated because none work perfectly to avoid all injury compared to removal. There are 4 more to deal with. Metric - number of screens. 2.7% uplift (which is 18% of what needs to be done. (delta between bookends).	No comment	No comment		2.7	82.7	82.7	82.7	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	90	90	95	95	5%	1.6%	Are being addressed	Replace 4 brush screens w/ drum screens + Battie = 5	
Methow	MEC1	Beaver / Bear Creek	4.1: Riparian Condition: Riparian	70	Expert Panel discussed projects to reconcile database projects with what was known to have happened. Some project burned and were replanted. Count these	Carlton Complex fire took out 90% of riparian vegetation, suggest 0% proration.	Suggest no uplift based on effects of fire. Could be revised at 2018 evaluation.	Low survival on plantings, but good post-fire natural response to fire within exclusion fencing areas. Panel decided to keep at 5% proration, resulting in 0.8%	0.8	70.8	70.8	70.8	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	75	80	75	80	20%	1.6%	Good until you get to the WDFW property (if you are considering stream margin and	Estimate based on enhancement of 32.65 riparian acres, 1.7 riparian mi, and 3.2 wetland acres	
Methow	MEC1	Beaver / Bear Creek	6.1: Channel Structure and Form: Bed and Channel Form	60	Same 2 projects as for limiting factor 4.1. Metric was stream length. Schoolhouse: 11 pools, 12 engineered log jams, enhanced seep and a side channel too, and dropped some (unknown number: ask Yakama Nation) big cottonwoods in after fire. Cal table has length treated. Prorated per % of Properly Functioning Condition treatment intensity, and time needed to see form changes. Some scour seen already in this reach. Yields 7.4% change.	Updated stream miles treated - see calc spreadsheet.	Stream mileage treated incorrect. Adjusted calc spreadsheet for YN project to .2 stream mile.	Panel concurred.	7.4	67.4	67.4	67.4	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	70	70	80	80	10%	1.6%		Estimate based on 1.29 mi channel added of enhanced	
Methow	MEC1	Beaver / Bear Creek	6.2: Channel Structure and Form: Instream Structural Complexity	60	Same 2 projects as in limiting factor 6.1. 12 log structures spread out over 1 mile. Fire-killed wood cut and dropped in after fire as sediment traps, which will benefit habitat. Denominator: 9.45 miles. Miles treated in table are from/confirmed by aerial measurement. Prorated at 100%. Calc = 14.8%.	Added cottonwood falling after 2014 Carlton complex fire - adjusted stream miles and proration	Added cottonwood falling after 2014 Carlton complex fire. Adjusted stream miles and proration factors for YN projects	Panel combined all cottonwood/Beaver Creek actions in one line item in calc table and changed old schoolhouse prorations, resulting in 14.3% uplift.	14.3	74.3	74.3	74.3	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	75	75	80	80	10%	1.6%		Estimate based on 6.2 miles improved complexity.	
Methow	MEC1	Beaver / Bear Creek	7.2: Sediment Conditions: Increased Sediment Quantity	55	No project. No % change. Upland roads need to be treated. NOTE: discuss in Look Forward		No comment		0	55	55	55	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	56	56	65	75	15%	1.6%		Not enough project information to include road decommissioning in estimate - can be included in 2015 workshop as "look back" if appropriate	
Methow	MEC1	Beaver / Bear Creek	8.1: Water Quality: Temperature	40	Based on limiting factor 9.2 project, prorated by 25% as conversion from flow to temp effect to fish habitat = 4.5% uplift.	Do not understand 25% proration, would like more discussion on proration with larger group.	See comments for 9.2. We don't understand the 25% proration value. More discussion like needed.	25% was from Steve H. temperature calculation model. Panel decided to leave the 25%, but use the new limiting factor 9.2 value, resulting in 3.5% uplift.	3.5	43.5	43.5	43.5	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	45	45	55	55	5%	1.6%			

Populati on	Code	Assesse nt Unit	2012 Standard ized Limiting Factor	2012 Low Bookend	Estimate Comments / Rationale	Yakama Nation Look Back Meeting Notes (4/27/2016)	Yakama Nation post-meeting comments	Additional Look Back Estimate Comments/Rationale (6/21- 6/23/2016)	Look Back % Change (6/23/16)	Updated 2018 Estimate (2012- 2015 Look Back workshop)	2016 Low Bookend	Updated 2018 Estimate (2016- 2018 Look Forward Period)	Look Forward % Change	2016-2018 Look Forward Estimate Comments / Rationale	2013- 2018 ###	High 2018 Book end	High 2033 Bookend	2012 Limit ing Fact or	Assess ment Unit Weigh t	2012 Limiting Factor Weight and Bookend Comments	2012 Estimates Comments	2012 Assessment Unit Weight Comments	
Methow	MEC1	Beaver / Bear Creek	9.2: Water Quantity: Decrease d Water Quantity	60	Diversion fix was not a water quantity measure- should be in fish passage instead, but no new credit because it was a repair of a previous fix that was credited earlier. Marracri was counted in	Discuss with larger group.	We would like to discuss this. Why is 2.08 cfs the final value? Is this all consumptive use water? How was 10 cfs denominator derived?	2.08 cfs of water stays in stream for specified dates, but then pulled out at Thurlow. But some would have been return water anyway? Panel decided to use the 2.08 cfs number as	13.9	73.9	73.9	73.9	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	75	75	80	80	25%	1.6%	Cambell diversion; maybe others (?)	Estimate based on 550 acre/feet (2 cubic feet of water per second); 16.5 miles stream reach About 25% of total diversions	
Methow	MEC2	Early Winters Creek	3.1: Food: Altered Primary Productiv ity	75	No action. No % change.	No comment	No comment	Note: Yakama Nation thinks this limiting factor weight is too high, but panel noted that the limiting factor weights came from the recovery Biological Strategy.	0	75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	75	75	85	85	16%	1.6%	Early Winters and Lost River Combined in 09 Expert Panel		
Methow	MEC2	Early Winters Creek	4.1: Riparian Conditio n: Riparian Vegetati on	90	No action. No % change.	No comment	No comment		0	90	90	90	0	Early Winters project prorated to 0%, taking into account the fact that the land use remains to interfere with habitat forming processes; thus panel expects 0% uplift.	90	90	92	95	17%	1.6%	Place with the riparian condition problem is the campground		
Methow	MEC2	Early Winters Creek	6.1: Channel Structure and Form: Bed and Channel Form	90	No action. No % change.	No comment	No comment		0	90	90	91.1	1.1	Early Winters project prorated, taking into account the fact that the bridge remains to interfere with habitat forming processes; thus panel expects 1.1% uplift.	90	90	95	95	17%	1.6%	From campground down has been incised.		
Methow	MEC2	Early Winters Creek	6.2: Channel Structure and Form: Instream Structura l Complexi ty	75	No action. No % change.	No comment	No comment		0	75	75	75	0	Early Winters project will address bridge-caused erosion and add complexity. Provides benefits to limiting factors 6.1 and 6.2, but with 0% weight to limiting factor 6.2, all credit is assigned under limiting factor 6.1.			93	93		1.6%			
Methow	MEC2	Early Winters Creek	7.2: Sediment Conditio ns: Increase d Sediment Quantity	75	No action. No % change.	No comment	No comment		0	75	75	76.1	1.1	Early Winters project prorated at 50%, yielding 1.1% uplift.	75	75	80	80	25%	1.6%			
Methow	MEC2	Early Winters Creek	9.2: Water Quantity: Decrease d Water Quantity	75	No action. No % change.	No comment	No comment		0	75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	75	75	85	85	25%	1.6%	Early Winters and Lost River Combined in 09 Expert Panel ; Early Winters Irrigation (16 cubic feet of water per second) right across from the campground		
Methow	MEC4 A	Gold Creek	1.1: Habitat Quantity: Anthropo genic Barriers	95	No action. No % change.	No comment	No comment		0	95	95	95	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	95	95	100	100	10%	1.7%	May be a partial barrier but don't know for sure. No barriers on US Forest Service		
Methow	MEC4 A	Gold Creek	4.1: Riparian Conditio n: Riparian Vegetati on	75	No action. No % change.	No comment	No comment		0	75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	75	75	80	85	10%	1.7%	Riparian mostly functioning (for being in a canyon) - biggest problems in flats and road footprint		
Methow	MEC4 A	Gold Creek	5.2: Peripher al and Transitio nal Habitats: Floodplai	45	No action. No % change.	No comment	No comment		0	45	45	45	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	45	45	50	50	20%	1.7%	Not much floodplain naturally - not much could do.		
Methow	MEC4 A	Gold Creek	6.1: Channel Structure and Form: Bed and Channel Form	70	No action. No % change.	No comment	No comment		0	70	70	70	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	70	70	75	80	30%	1.7%			

Populati on	Code	Assesse nt Unit	2012 Standard ized Limiting Factor	2012 Low Bookend	Estimate Comments / Rationale	Yakama Nation Look Back Meeting Notes (4/27/2016)	Yakama Nation post-meeting comments	Additional Look Back Estimate Comments/Rationale (6/21- 6/23/2016)	Look Back % Change (6/23/16)	Updated 2018 Estimate (2012- 2015 Look Back workshop)	2016 Low Bookend	Updated 2018 Estimate (2016- 2018 Look Forward Period)	Look Forward % Change	2016-2018 Look Forward Estimate Comments / Rationale	201 3- 201 8	High 2018 Book end	High 2033 Bookend	2012 Limit ing Fact or	Assess ment Unit Weigh t	2012 Limiting Factor Weight and Bookend Comments	2012 Estimates Comments	2012 Assessment Unit Weight Comments	
Methow	MEC4 A	Gold Creek	6.2: Channel Structure and Form: Instream Structura l Complexi ty	45	No action. No % change.	No comment	No comment		0	45	45	45	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	45	45	60	75	25%	1.7%			
Methow	MEC4 A	Gold Creek	9.2: Water Quantity: Decrease d Water Quantity	90	No action. No % change.	No comment	No comment		0	90	90	90	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	91	91	90.5	90.5	5%	1.7%	May be a partial barrier but don't know for sure. No barriers on U.S. Forest Service		
Methow	MEC4 B	Libby Creek	1.1: Habitat Quantity: Anthropo genic Barriers	95	No known actions here, but need to confirm or get more project information from Yakama Nation.	No action - no comment	No Actions - no change		0	95	95	95	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	95	95	100	100	5%	0.8%			
Methow	MEC4 B	Libby Creek	4.1: Riparian Conditio n: Riparian Vegetati on	75	Need to get more project information re: plantings from Yakama Nation.	No action - no comment	No Actions - no change			75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	75	75	77	80	35%	0.8%	Confluence to border of WDFW property (approximately river mile 1.5?) opportunities for fencing and revegetation. Evaluated for the entire watershed.		
Methow	MEC4 B	Libby Creek	6.1: Channel Structure and Form:	60	No known actions here, but need to confirm or get more project information from Yakama Nation.	No action - no comment	No Actions - no change		0	60	60	60	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	60	60	75	75	25%	0.8%	Mouth to approximately river mile 4 focus of this EC		
Methow	MEC4 B	Libby Creek	6.2: Channel Structure and Form: Instream	45	No known actions here, but need to confirm or get more project information from Yakama Nation.	No action - no comment	No Actions - no change		0	45	45	45	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	45	45	60	75	25%	0.8%			
Methow	MEC4 B	Libby Creek	9.2: Water Quantity: Decrease d Water Quantity	75	No known actions here, but need to confirm or get more project information from Yakama Nation.	No action - no comment	No Actions - no change		0	75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	75	75	80	80	10%	0.8%	Diversions probably not migration barriers		
Methow	MEC5	Lower Chewuch	1.1: Habitat Quantity: Anthropo genic Barriers	85	No actions. No % change.	No action - no comment	No Actions - no change		0	85	85	85	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	85	85	98	98	5%	20.8%			
Methow	MEC5	Lower Chewuch	3.1: Food: Altered Primary Productiv ity	75	No actions. No % change.	No action - no comment	No Actions - no change		0	75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	75	75	85	85	5%	20.8%			
Methow	MEC5	Lower Chewuch	4.1: Riparian Conditio n: Riparian Vegetati on	55	For MEC5, need Yakama Nation input on project details and applicable functions. Expert Panel started a calc table with known projects, but did not determine an overall % uplift. Assumed 1 % per year growth. Denominator 22.4 miles per Streamnet.	Projects were added/removed based on Limiting Factor. Prorating updated to match 1% per year. Chewuch 8 Mile Ranch received an extra 1% prorating/year due to movement of cattle fence. Three projects are prorated at 0% for actions that didn't/haven't happened. Prorated benefit is out to 2018. Suggested uplift 0.5%	We added some Yakama Nation project work and adjusted stream miles treated for Yakama Nation project work. Prorated benefit projected to 2018. New uplift should be 0.5%	Removed Buck project. Uplift = 0.5%.	0.5	55.5	55.5	55.5	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	58	58	65	75	15%	20.8%	Riparian and floodplain combined in 09 Expert Panel, used lower Chewuch values	Estimate assumes approximately 35 acres riparian improvement. Remaining effects from grazing, roads, recreation	

Populati on	Code	Assessme nt Unit	2012	2012	Estimate Comments / Rationale	Yakama Nation Look	Yakama Nation post-meeting comments	Additional Look Back Estimate	Look Back %	Updated 2018	2016 Low	Updated 2018	Look Forward %	2016-2018 Look Forward Estimate Comments /	201	High	High	2012	Assess	2012 Limiting	2012 Limiting	2012 Assessment	
			Standard ized Limiting Factor	Low Bookend		Back Meeting Notes (4/27/2016)		Comments/Rationale (6/21- 6/23/2016)	Change (6/23/16)	Estimate (2012- 2015 Look Back workshop)		Estimate (2016- 2018 Look Forward Period)			Forward % Change	2016-2018 Look Forward Estimate Comments / Rationale	3- 201 8	2018 Book end	2033 Bookend				Limit ing Fact or
Methow	MEC5	Lower Chewuch	5.1: Peripher al and Transitio nal Habitats: Side Channel and Wetland Conditio ns	55	For MEC5, need Yakama Nation input on project details and applicable functions. Expert Panel started a calc table with known projects, but did not determine an overall % uplift. Denominator: 9.8 miles per Bureau of Reclamation Assessment GIS layer.	9.8 mile denominator includes length of side channel habitat (clarify method used to do calculation - vectors in Google Earth were used, was the BOR Trib Geodatabase also used? - verify what the correct citation should be in calc spreadsheet). Chewuch RM 12-15.5 added, 0.2 miles treated.	We need to better understand the 9.8 mile denominator. We added Chewuch RM 13 - 15.5. We changed stream miles treated.	Panel concurred. Yakama Nation corrected their comments.	11.5	66.5	66.5	72.6	6.1	Denominator corrected to include side channel miles = 9.8 miles. Chewuch RM 15.5-17, 17-20 2017: activating 0.7 mile of side channel (near Leroy Pit). Apex jam and side channel complexity and connection. Project listed as two separate rows in calc table. Panel prorated based on wetted frequency and properly functioning condition expected to be achieved. Side channel opening is a pilot channel to a perennial channel. Yields 6.1% expected uplift.	57	57	70	70	25%	20.8%	Most side channels in the lower have been cutoff, filled, and developed	Unlisted future opportunities would provide majority of actions needed to reach high bookend; 10/4/12: I disagree with this comment: Some side channels may have been filled by deposition of fine sediment mainly as a natural process; not many, if any, have been developed or filled in by people	
Methow	MEC5	Lower Chewuch	6.1: Channel Structure and Form: Bed and Channel Form	75	For MEC5, need Yakama Nation input on project details and applicable functions. Expert Panel started a calc table with known projects, but did not determine an overall % uplift.	Yakama Nation reviewed projects and deleted rows/projects in the calc sheet that they felt does not affect this Limiting Factor - rational based on biological strategy. Leave these on spreadsheet, highlight and review with the whole panel in June to get agreement. Use calc sheet Yakama Nation provides to rectify final spreadsheet - add highlights. No Yakama Nation side channel projects included - discuss in June with entire group.	Most projects addressed 6.2. We based calculation on Chewuch RM 10 and 13-15.5 due to effects of apex structures on channel geometry. Changed proration to 100% No YN side channel projects included in 6.1 or 6.2. This needs to be addressed at the look forward meeting in June.	The panel discussed effect of these limiting factor 6.1 projects on channel form with respect to prorations per percentage of properly functioning condition and how to calculate uplift per project. Yakama Nation used miles of 100% treatment rather than overall project length, which results in the same total if total project length were used with a lower proration. This differs from the calculation method used by the panel for non-Yakama Nation projects. Despite some concerns that this might create a perception of 100% treatment over the whole reach, the panel agreed to use this method for the Yakama Nation projects.	2.1	77.1	77.1	83.1	6	Same projects as for limiting factor 5.1, prorated by percentage of properly functioning condition expected to be achieved. Bookend may need to be adjusted down. Prorated down due to the project reach being in better shape than the rest of the assessment unit. Panel determined 6% expected uplift.	77	77	90	90	2.5%	20.8%		Relocations in 8-mile or 20-mile would provide benefits (not Cub or Boulder - above barriers). Improvements apply to tributaries, mainstem in good shape	
Methow	MEC5	Lower Chewuch	6.2: Channel Structure and Form: Instream Structura l Complexi ty	60	For MEC5, need Yakama Nation input on project details and applicable functions. Expert Panel started a calc table with known projects, but did not determine an overall % uplift.	Projects added (see Yakama Nation calc sheet), no Yakama Nation side channel projects included - discuss in June with entire group. Proration calculation assigned based on value of work.	Chewuch RM 11.75-13 (River Left, 2013) and Chewuch River Right (2015) cover the same 1.25 miles of stream (thus proration is split between both projects).	Ignore side channel note for limiting factor 6.2. Side channels not included. Denominator discussion: okay to use Streamnet. Yakama Nation corrected their comments.	19.4	79.4	79.4	82.7	3.3	Same projects as for limiting factor 5.1, prorated by percentage of properly functioning condition expected to be achieved. Prorated down due to the project reach being in better shape than the rest of the assessment unit. Panel determined 3.3% expected uplift.	65	70	80	80	15%	20.8%		Estimate based on 5 treatment areas with total of about 8 stream miles improved complexity.	
Methow	MEC5	Lower Chewuch	7.2: Sediment Conditio ns: Increase d Sediment Quantity	50	For MEC5, need Yakama Nation input on project details and applicable functions. Expert Panel started a calc table with known projects, but did not determine an overall % uplift.	No comment	No comment		0	50	50	50	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	50	50	52	55	20%	20.8%	High bookend assumes some riparian improvement	Beaver Project would slightly decrease road sediments.	
Methow	MEC5	Lower Chewuch	8.1: Water Quality: Tempera ture	40	For MEC5, need Yakama Nation input on project details and applicable functions. Expert Panel started a calc table with known projects, but did not determine an overall % uplift.	No comment	No comment		0	40	40	40	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	42	44	60	60	2.5%	20.8%		Estimate also considers projects under limiting factor 4.1 Riparian and 6.2 Instream Complexity - Pete's Creek, 10-mile & 8-mile ranches (11.75-13+ and 13-15.5)	
Methow	MEC5	Lower Chewuch	9.2: Water Quantity: Decrease d Water Quantity	80	For MEC5, need Yakama Nation input on project details and applicable functions. Expert Panel started a calc table with known projects, but did not determine an overall % uplift.	No comment	No comment		0	80	80	80	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	85	85	90	90	10%	20.8%	Used 09 Expert Panel Lower Chewuch value	Estimate doesn't consider the Fulton pipe project included in Actions list. Changes from fall to spring diversion to refill Perrygin Lake improves conditions of chinook/steelhead. Secure 10 of 40 cubic feet of water per second diverted	
Methow	MEC6 A	Lower Methow	4.1: Riparian Conditio n: Riparian Vegetati on	80	No actions. No % change.	No comment	No comment		0	80	80	80	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	81	81	82	85	25%	9.0%		10/4/12: Riparian Conditions in the Lower Methow have not been formally assessed so this is actually an unknown.	
Methow	MEC6 A	Lower Methow	5.1: Peripher al and Transitio nal Habitats: Side Channel and Wetland Conditio ns	80	No actions. No % change.	No comment	No comment		0	80	80	80	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	80	80	81	81	20%	9.0%	Riparian and floodplain combined in 09 Expert Panel; Casey - I don't think it's a good idea	10/4/12: This has not been assessed so is actually an unknown - there appear to be a few off channel areas that may have been lost to small push up levees.	
Methow	MEC6 A	Lower Methow	6.1: Channel Structure and Form:	80	No actions. No % change.	No comment	No comment		0	80	80	80	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	81	81	81	81	25%	9.0%		Beaver actions are outside the anadromous zone; estimate based on Judd project.	

Populati on	Code	Assessme nt Unit	2012 Standard ized Limiting Factor	2012 Low Bookend	Estimate Comments / Rationale	Yakama Nation Look Back Meeting Notes (4/27/2016)	Yakama Nation post-meeting comments	Additional Look Back Estimate Comments/Rationale (6/21- 6/23/2016)	Look Back % Change (6/23/16)	Updated 2018 Estimate (2012- 2015 Look Back workshop)	2016 Low Bookend	Updated 2018 Estimate (2016- 2018 Look Forward Period)	Look Forward % Change	2016-2018 Look Forward Estimate Comments / Rationale	201 3- 201 8	High 2018 Book end	High 2033 Bookend	2012 Limit ing Fact or	Assess ment Unit Weigh t	2012 Limiting Factor Weight and Bookend Comments	2012 Estimates Comments	2012 Assessment Unit Weight Comments	
Methow	MEC6 A	Lower Methow	6.2: Channel Structure and Form:	75	Action in database for this Assessment Unit and limiting factors does not apply- should be in Lower Twisp Assessment Unit.	No comment	No comment		0	75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	76	76	80	80	25%	9.0%	Lower Methow likely has less wood than it did historically and we know that a lot of	10/4/12: Has not been assessed and so is an unknown - large wood sources from upstream and riparian areas is likely lower than historic conditions	
Methow	MEC6 A	Lower Methow	9.2: Water Quantity: Decrease d Water Quantity	93	No actions. No % change.	No comment	No comment		0	93	93	93	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	93	93	93	93	5%	9.0%		10/4/12: Needs further assessment. Low bookend is way to high. The lower Methow is likely flow impaired. Diversion rate from all tributaries upstream is over 140 cubic feet of water per second. Base flow condition at Pateros is around 480 cubic feet of water per second - this is nearly a 30% diversion rate.	
Methow	MEC6 B	Black Canyon	1.1: Habitat Quantity: Anthropo genic Barriers	90	No actions. No % change.	No comment	No comment		0	90	90	90	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	90	90	100	100	20%	0.1%	1 culvert remaining (higher up)		
Methow	MEC6 B	Black Canyon	4.1: Riparian Conditio n: Riparian Vegetati on	80	No actions. No % change.	No comment	No comment		0	80	80	80	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	80	80	81	81		0.1%			
Methow	MEC6 B	Black Canyon	6.2: Channel Structure and Form: Instream Structura	93	No actions. No % change.	No comment	No comment		0	93	93	93	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	93	93	93	93		0.1%			
Methow	MEC6 B	Black Canyon	7.2: Sediment Conditio ns: Increase d Sediment	65	No actions. No % change.	No comment	No comment		0	65	65	65	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	65	65	70	75	45%	0.1%	Managed for timber harvest and grazing. Roads and recreation.		
Methow	MEC6 B	Black Canyon	9.2: Water Quantity: Decrease d Water Quantity	70	No actions. No % change.	No comment	No comment		0	70	70	70	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	70	70	75	75	35%	0.1%			
Methow	MEC7	Lower Twisp	1.1: Habitat Quantity: Anthropo genic Barriers	60	No actions. No % change.	No comment	No comment		0	60	60	76.9	16.9	Methow Valley Irrigation District West Project is eliminating push-up dam during Chinook migration. This is a partial barrier (assigned 25% proration), resulting in 16.9% uplift.	95	95	95	95	5%	8.5%			
Methow	MEC7	Lower Twisp	2.3: Injury and Mortality : Mechan		No actions. No % change.	No comment	No comment		0	0	0	0	0	MVID West Project is eliminating push-up dam and screen risk to individuals. But with 0% weight, no uplift assigned.						8.5%		10/4/12:MVID West push up dam, dewatering and stranding of redds and individuals. Expert Panel to consider adding this limiting factor to 2016 Look Forward	
Methow	MEC7	Lower Twisp	3.1: Food: Altered Primary Productiv ity	75	No actions. No % change.	No comment	No comment		0	75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	75	75	85	85	8%	8.5%			
Methow	MEC7	Lower Twisp	4.1: Riparian Conditio n: Riparian Vegetati on	60	Metric: stream length treated. Two projects in calc table, prorated based on planting maturity. Twisp Ponds plants are growing fast- a very successful project. Some plants are 20 ft. tall now. Twisp River Riparian protection 2014 weighted as 0% for now, pending tribal information. = 0.3% uplift. Expert Panel then revised based	Not a YN project, keep 0 uplift, confirm at look forward that it doesn't belong to anyone and remove. Changed denominator to 21.3 - may be high due to the inclusion of tributary fencing outside of where the fish occur	We don't know what Twisp River Riparian Protection is. We added cattle exclusion fencing project on Little Bridge Creek and Buttermilk Creek (Twisp River Fencing Project - Little Bridge Creek and Buttermilk Creek - 2012). Adjusted stream mile denominator to incorporate parts of Buttermilk and Little Bridge Creeks. Question about Chinook use of Twisp River tribs	Removed Twisp River Riparian Protection. Panel discussed denominator with respect to tributaries and Chinook distribution. Chose to use the steelhead denominator (18.6 miles) for Chinook in this case (different than method used elsewhere) to account for off-site benefits. resulting in 4.3%	4.3	64.3	64.3	64.8	0.5	Twisp River Floodplain, Twisp Ponds Left Bank Side Channel 2016, Horseshoe Side Channel 2017. Twisp River Floodplain Phase II is not included due to schedule uncertainty. Panel prorated based on 1% per year vegetation growth in remaining 2018 period. Add Colville Riparian Exclusion Devaney Fencing (1 mile of stream; 75 ft of buffer). Yields 0.5% expected uplift.	64	75	64	75	10%	8.5%	Used lower twisp values, riparian and floodplain combined in 09 Expert Panel	Estimate based on 43 acres planned riparian improvements.	
Methow	MEC7	Lower Twisp	5.1: Periph eral and Transitio nal	50	Cal table contains X side channel and floodplain projects. Didn't count acquisition projects (NOTE: address in limiting factors). Poorman Creek Road project in on	The denominator appears to deviate from the above rational of including small amount of CHK habitat	No comment		1.7	51.7	51.7	60.2	8.5	Twisp River Floodplain, Twisp Ponds Left Bank Side Channel 2016, Horseshoe Side Channel 2017, Newby Narrows 2016. Twisp River Floodplain Phase II is not included due to schedule uncertainty. Prorated based on properly functioning condition (reconnection,	60	60	60	60	15%	8.5%	(below Buttermilk Creek)	10% improvement estimate based on 0.97 miles side channel & wetland enhancement per Actions list plus MVID-West RM 4.6 project & Elbow Coulee Side Channel & Elbow Coulee Right projects.	
Methow	MEC7	Lower Twisp	6.1: Channel Structure and Form: Bed and Channel Form	50	Considered effect of project on bed. No effect on channel form. Metric is miles treated. Added Twisp river mile 3 FEP large woody debris project from limiting factor 6.2 in database to calc table. Denominator:13.5 from Streamnet. Prorated based on		We don't see any affect on 6.1. Removed all projects from this calculation	Panel concurred with Yakama Nation changes.	0	50	50	58	8	Same projects as for limiting factor 5.1, plus Lower Twisp Large Wood 2017. Panel prorated to 50% because it is a series of individual log structures, which is less total wood than would have been there historically. Other prorations based on effect on properly functioning condition status. Yields 8.0% uplift.	51	51	60	60	15%	8.5%		Bridge Creek beaver relocation estimate of 0.1%; 1% improvement estimate includes MVID-West river mile 4.6 project	

Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 Low Bookend	Estimate Comments / Rationale	Yakama Nation Look Back Meeting Notes (4/27/2016)	Yakama Nation post-meeting comments	Additional Look Back Estimate Comments/Rationale (6/21-6/23/2016)	Look Back % Change (6/23/16)	Updated 2018 Estimate (2012-2015 Look Back workshop)	2016 Low Bookend	Updated 2018 Estimate (2016-2018 Look Forward Period)	Look Forward % Change	2016-2018 Look Forward Estimate Comments / Rationale	2013-2018 ###	High 2018 Bookend	High 2033 Bookend	2012 Limiting Factor	Assessment Unit Weight	2012 Limiting Factor Weight and Bookend Comments	2012 Estimates Comments	2012 Assessment Unit Weight Comments	
Methow	MEC7	Lower Twisp	6.2: Channel Structure	50	Same projects as for limiting factor 6.2, plus 1 more. Prorated differently to account for effect on restroom complexity = 1.3%	Three projects added. Uplift 2.1%	Adjusted stream miles affected and proration	As before, Yakama Nation calculated using only the length that addressed the limiting factor rather than a standard	2.1	52.1	52.1	61.7	9.6	Same projects as for limiting factor 6.1, except for Horseshoe. Prorations were adjusted for effect to structural complexity and intensity of treatment. Yields 6.6% uplift.	55	55	60	60	10%	8.5%	(below Buttermilk Creek)	Estimate based on 3 stream miles & 20 acres improved complexity	
Methow	MEC7	Lower Twisp	8.1: Water Quality:	25	See limiting factor 9.2 project. Prorated for temperature = 0.5% uplift.	Approach described and Yakama Nation satisfied with what was needed.	We don't understand the 5% proration value. More discussion like needed.	Revise using new limiting factor 9.2 number. Panel discussed the 5% proration. Panel wants	0.5	25.5	25.5	26	0.5	Uplift from limiting factor 9.2 (25.6%) prorated at 5% per previous method, yielding expected uplift of 0.5%.	30	30	40	40	7%	8.5%		Estimate also includes major flow improvements from projects in 9.2 & 5.1 limiting factor actions.	
Methow	MEC7	Lower Twisp	9.2: Water Quantity: Decreased Water Quantity	40	How benefit from MEC project was only in MEC7 (remove from other Assessment Unit, and it's not done yet). NOTE: Consider in Look forward. Two Trout Unlimited completed projects in time period. Calc table list projects and permanently released water rights	Water right under consumptive use was not thoroughly discussed. RM 6 purchase of water rights, bypass for 4cfs is short. If based on consumptive use, this is	We think baseflow of 32.5 cfs is more accurate.	Panel discussed 32.5 vs. 43 cfs denominator numbers: average low flow vs. lowest in period of record. 43 cfs is based on Twisp River USGS gage as the lowest mean daily baseflow for 1974-2016 period of record. But this includes the Methow Valley.	2.3	42.3	42.3	52.8	10.5	Remove Barkley Methow Valley Irrigation District. Add Methow Valley Irrigation District West 11 cfs permanent acquisition. Add Aspen Meadows and Poorman Creek projects. Denominator is 43 cfs with additional proration for affected length as portion of total length in assessment unit. Yields 10.5% uplift. Note that flow increase during critical low flow times has outside benefit to low flow years	67	67	75	75	30%	8.5%	EXPERT PANEL CHANGED BOOKENDS FROM 60 TO 75 AT 6/28/12 WORKSHOP BASED ON NEW POTENTIAL	Estimate based on 3400 acre-feet/yr. (15 cubic feet of water per second of 33 cubic feet of water per second diverted almost 50% from 40 to 100 = 65%) Water transaction obtained thru TU for CBWTP. Poorman + Devaney also include screens.	
Methow	MEC8A	Middle Methow	1.1: Habitat Quantity: Anthropogenic	85	Barkley Temporary Pump station was only a partial barrier (push up adam on mainstem), was always passable to adults. Impeded juvenile migration Temporarily	No comment	No comment		0	85	85	85.8	0.8	Barkley Bear should be in MEC8A. No more push-up dam. Will open 0.19 mile of habitat. Was a 100% barrier. Panel expects 0.8% uplift.	90	90	98	98	2%	15.9%		Total improved access from Bear Creek & Barkley Projects = 1 mile. Remaining barriers on Bear Creek would open access to habitat with low intrinsic potential	
Methow	MEC8A	Middle Methow	2.3: Injury and Mortality	80	Barkley Temporary Pump station temporarily moved diversion to downstream pump, so no need for push-up dam. Push-up actions and	No comment	No comment		1.5	81.5	81.5	95	13.5	Barkley TU Irrigation project 2016: 1 screen out of 1. Look Back action dealt with instream dam. This is the last screen, so brings it up to high bookend. Yields 13.5% uplift.	95	95	95	95	8%	15.9%	Limiting factor added during 6/28/2012 workshop	No project listed, but estimate based on opportunity to eliminate heavy equipment maintenance of push-up dams & eliminate fish accessibility to intake at Barkley diversion. Collaboration among WDFW screen shop/Trout Unlimited/ Reclamation/Yakama Nation.	
Methow	MEC8A	Middle Methow	4.1: Riparian Condition: Riparian Vegetation	48	Add Birch/Willow Island if it wasn't counted in previous Expert Panel Look Back (thought to be done in 2011, and was not counted in 2010-2012, so added and included here). O'Banyon was	General note: Yakama Nation to increase all their prorating factors to go out to 2018 (currently to 2015) - will do prior to sending	We changed some stream mile values for YN project, but no effective change in calculation output	Changes result in 0.7% uplift. O'Banyon mileage checked = 0.7 mile, Whitefish = 0.71 mile, M2 3R length revised to 0.2 mile. New uplift is 0.9%.	0.9	48.9	48.9	49.1	0.2	Barkley Bear Habitat Enhancement: 0.75 mile, prorated at 3% for 1% per year through 2018. Lawson Fencing project: 1,200 ft of fence 2016, 0.25 mile of stream. Silver Side Channel 2016 project. Yields 0.2% uplift.	50	55	50	55	15%	15.9%	Riparian and floodplain combined in 09 Expert Panel, 09 Expert Panel look back 45 increased to 48 in 2012	Estimates based on planned 75 acres riparian improved.	
Methow	MEC8A	Middle Methow	5.1: Peripheral and Transitional Habitats:	55	Calc table has 3 projects (add M2 3R 2014 project). Miles of side channel treated were prorated by % of Property Functioning Condition. Denominator: 8.222 from Reach Assessment for reach	Explained extrapolation of RA to reach 20 miles side channel, Yakama Nation thinks this may be high. Discuss at next EP meeting. Corrected	We don't understand the 20 mile denominator. We agree with the other components of the calculation	M2 3R and Whitefish length revised.	8	63	63	67	4	Barkley Bear and Silver Side Channel projects. Both in 2016. Prorated based on percentage of properly functioning condition expected to be achieved, yielding 4% expected uplift.	65	68	70	70	25%	15.9%		Estimate considers total of approximately 5 miles channel improvement Estimate includes projects shown under 4.1 Riparian limiting factor - 3R, Barkley, WDFW Floodplain, Whitefish, (Sugar Levee, Witte Risley?) + projects listed under this 5.1 limiting factor	
Methow	MEC8A	Middle Methow	6.1: Channel Structure and Form: Bed and Channel	50	Barkley Temporary Pump station temporarily moved diversion to downstream pump, so no need for push-up dam now, nor dredging channel out or removing wood. NOTE: Discuss bookends in look forward. Calc table was based on	Altered calc sheet (see Yakama Nation notes) - Ellen to updated Taurus. Two Channels LW Enhancement (2014) added, 1890s removed	We removed Eagle Rocks LWD from the calculation	M2 3R length and prorations revised (prorated for project intent and effect with regard to bed and channel form).	1.8	51.8	51.8	53.1	1.3	Barkley Bear 2016. Miles of mainstem treated is same as for side channels, plus portion of Whitefish. Panel prorated based on percentage of properly functioning condition expected to be achieved, yielding 1.3% expected uplift.	55	55	70	70	10%	15.9%	Focus of much of M2 work	Estimate considers actions listed under limiting factor 4.1 & 5.1 except Silver. Silver can be added in 2015 workshop as look back actions if occur.	
Methow	MEC8A	Middle Methow	6.2: Channel Structure and Form:	50	Calc table lists 7 projects, miles treated, and proration (ranging from 50% to 100%) based on intensity an density of treatment % improvement towards Prorated	Altered calc sheet (see Yakama Nation notes) - Ellen to updated Taurus. Two Channels LW Enhancement	Removed 1890s, added 2 channels project. Adjusted mileage and proration for YN projects	Adjusted Sugar Dike proration. Panel concurred with Yakama Nation changes, but adjusted several project lengths in calc table, resulting in 4.2% uplift.	4.2	54.2	54.2	55.5	1.3	Barkley Bear 2016. Miles of mainstem treated is same as for side channels, plus portion of Whitefish. Panel prorated based on percentage of properly functioning condition expected to be achieved (more wood?), yielding 1.3% expected uplift.	60	60	70	70	25%	15.9%		Estimate considers about 4.05 stream miles improved complexity, install of 118 structures (8 structures for Lewisia & 12 for Silver Reach). 50.60% treats 1/2 of reach covered by existing Reach Assessment.	
Methow	MEC8A	Middle Methow	8.1: Water Quality: Temperature	75	Probably has hyporheic benefits at a site scale, but may not be measurable at the Assessment Unit scale. Difficult to quantify aggregate effects, but several of the projects in this Assessment Unit (3R, Whitefish, and 1890s)	Updated of 1890s proration to 100% - discuss with entire expert panel	1890s channel data suggests proration should be increased to 100% for that project. We suggest the miles driven and proration values for the other 2 projects be based on site specific data. We are not providing % change suggestion until this calculation is further discussed.	Panel corrected project lengths. Discussed whether this limiting factor definition accounts for cool side channel refuge benefit vs. measurable benefit to mainstem. A hyporheic effect is seen at springs that emerge	2.2	77.2	77.2	77.3	0.1	[Support team applied 5% proration to limiting factor 9.2 uplift for temperature benefit, consistent with other assessment units, yielding 0.1% uplift.]	77	77	85	85	5%	15.9%		Estimate also includes 4.1, 5.1, & 9.2 limiting factor actions except Silver. Silver actions can be considered as part of 2015 workshop "look back". estimates. Does not include Barkley or MVID - considers those actions identified in RA as achieving 1/2 of potential - other 1/2 covered by next RA.	
Methow	MEC8A	Middle Methow	9.2: Water Quantity: Decreased Water Quantity	75	No actions. No % change.	No comment	No comment		0	75	75	76.6	1.6	Barkley TU Irrigation Project 2016: Water savings of 19 cfs for first 2.5 miles, then hits pump station, which can take 19, but will take less than 10. Remaining flow will affect 8 miles and is protected instream. Whole 26 cfs water right will be instream. After 3 years, total acre-feet will be negotiated. Minimum benefit is 7 cfs, plus potential for 9 additional cfs. See calc table. Denominator: Winthrop gage mean flow: 360 cfs. Lowest mean daily flow is 350 cfs. WDFW says	75	75	85	85	10%	15.9%	This is look at the cumulative effect to this reach of water savings upstream.	Estimate only includes consideration from Bear Creek project 100 acre-feet/year metrics. Beavers in upstream areas have no effect on flow downstream.	
Methow	MEC8B	Upper-Middle Methow	1.1: Habitat Quantity: Anthropogenic	85	No actions. No % change.	No comment	No comment		0	85	85	85	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	85	85	85	85	5%	4.9%	Foghorn		
Methow	MEC8B	Upper-Middle Methow	3.1: Food: Altered Primary Productivity	75	No actions. No % change.	No comment	No comment		0	75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	76	76	85	85	5%	4.9%		Estimate based on Hancock nutrient treatment plan	
Methow	MEC8B	Upper-Middle Methow	4.1: Riparian Condition: Riparian Vegetation	60	Don't count Fender Mill under limiting factor 4.1. No actions. No % change.	No comment	No comment		0	60	60	60	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	60	60	62	65	10%	4.9%		Estimate based on WDW Fender Mill & Big Valley project described in limiting factor 5.1	
Methow	MEC8B	Upper-Middle Methow	5.1: Peripheral and Transitional Habitats: Side Channel	65	Yakama Nation Fender Mill project: groundwater gallery and partially excavated an existing side channel. Denominator for side channels : GIS calculation from Project Channel feature class layer from Bureau of Reclamation Assessment: 8.0 miles of side	Check with expert panel on Side channel denominator. Fender Mill project outlets into Stansbury and doubles flow at baseflow (secondary effect), added to calc sheet.	We don't understand the 15.1 mile denominator. We agree with the other components of the calculation for the Fender side channel. We think some change needs to be valued for the increased flow in the Stansbury Side Channel as well. We have added this to the calculation, but until we better understand the 15.1 mile	Panel concurred with Yakama Nation changes.	3.4	68.4	68.4	69.1	0.7	Big Valley South 2017 project: 0.2 mile treated. Denominator set at 15.1 miles of side channel per Look Back. Panel prorated at 15%, resulting in 0.7% expected uplift.	80	80	80	80	15%	4.9%	Progress from 80% bookend to 100% would be based on actions around hatchery & Winthrop	Estimate based on planned Fender Mill , Big Valley & Heath/Big Valley RIGHT projects (US Fish and Wildlife Service with BPA cost share)	

Populati on	Code	Assesse ment Unit	2012 Standard ized Limiting Factor	2012 Low Bookend	Estimate Comments / Rationale	Yakama Nation Look Back Meeting Notes (4/27/2016)	Yakama Nation post-meeting comments	Additional Look Back Estimate Comments/Rationale (6/21- 6/23/2016)	Look Back % Change (6/23/16)	Updated 2018 Estimate (2012- 2015 Look Back workshop)	2016 Low Bookend	Updated 2018 Estimate (2016- 2018 Look Forward Period)	Look Forward % Change	2016-2018 Look Forward Estimate Comments / Rationale	201 3- 201 8	###	High 2018 Book end	High 2033 Bookend	2012 Limit ing Fact or	Assess ment Unit Weigh t	2012 Limiting Factor Weight and Bookend Comments	2012 Estimates Comments	2012 Assessment Unit Weight Comments
Methow	MEC8 B	Upper- Middle Methow	6.1: Channel Structure and Form: Bed and Channel Form	65	Fender Mill side channel does not apply. No % change.		See comment for 6.2	Panel concurred with Yakama Nation changes - no actions, resulting in no uplift.	0	65	65	73.3	8.3	Big Valley South 2017 project: 0.9 mile treated. Denominator set at 10.8 miles (from StreamNet). Panel prorated at 100%, resulting in 8.3% expected uplift.	67	70	75	75	23%	4.9%		Estimate based on WDFW Fender Mill, Big Valley, & Heath/Big Valley RIGHT projects	
Methow	MEC8 B	Upper- Middle Methow	6.2: Channel Structure and Form: Instream Structura l Complexi ty	65	Fender Mill project. Denominator is 10.8 Streamnet miles.		We need to better understand whether this EC applies to side channels or not. If side channel complexity is considered in this EC, then this EC needs to be re-evaluated in all Assessment Units, not just MEC8B. Also, the denominator might need to included side channel miles as well.	Panel concurred with Yakama Nation changes - no actions, resulting in no uplift.	0	65	65	73.3	8.3	Big Valley South 2017 project 0.9 miles treated. Denominator: 10.8 miles (from StreamNet). Panel prorated at 100%, resulting in 8.3% uplift.	67	70	75	75	22%	4.9%		Estimate based on Big Valley, Heath/Big Valley RIGHT & WDFW Fender Mill projects	
Methow	MEC8 B	Upper- Middle Methow	9.2: Water Quantity; Decrease	80	No actions. No % change.	No comment	No comment		0	80	80	80	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	80	80	85	85	20%	4.9%	Foghorn	No effect unless beaver reintroduction occurs in Hancock	
Methow	MEC9	Upper Chewuch	4.1: Riparian Conditio n:	90	No actions. No % change.	No comment	No comment		0	90	90	90	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	90	90	92	95	10%	7.9%	Early recovery from burning		
Methow	MEC9	Upper Chewuch	6.1: Channel Structure and Form: Complexity	90	No actions. No % change.	No comment	No comment		0	90	90	90	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	90	90	93	95	5%	7.9%			
Methow	MEC9	Upper Chewuch	6.2: Channel Structure and Form: Complexity	80	No actions. No % change.	No comment	No comment		0	80	80	80	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	80	80	85	90	70%	7.9%			
Methow	MEC9	Upper Chewuch	7.2: Sediment Conditio ns:	90	No actions. No % change.	No comment	No comment		0	90	90	90	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	90	90	92	95	15%	7.9%	Sediment condition is mostly natural		
Methow	MEC10 A	Upper Methow	1.1: Habitat Quantity; Anthropo genic	75	No nexus actions. No change in percentage.	No comment	No comment		0	75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	75	75	90	90	5%	15.5%			
Methow	MEC10 A	Upper Methow	3.1: Food: Altered	75	No nexus actions. No change in percentage.	No comment	No comment		0	75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	75	75	85	85	5%	15.5%	Water quality in 09 Expert Panel no values		
Methow	MEC10 A	Upper Methow	4.1: Riparian Conditio n:	70	No nexus actions. No change in percentage.	No comment	No comment		0	70	70	70	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	70	71	72	75	10%	15.5%	From Weeman up to Mazama (associated with development);		
Methow	MEC10 A	Upper Methow	5.1: Peripher al and Transitio n:	60	No nexus actions. No change in percentage.	No comment	No comment		0	60	60	60	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	65	65	75	75	10%	15.5%	Heath Ranch. Some opportunity between Goat Creek and Lost River		
Methow	MEC10 A	Upper Methow	6.1: Channel Structure and Form: Complexity	75	No nexus actions. No change in percentage.	No comment	No comment		0	75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	77	77	85	85	15%	15.5%	Localized levee incisions, channel straightening. Most actions would occur from Lost River down to Weeman Bridge;	Same benefit for Chinook & steelhead	
Methow	MEC10 A	Upper Methow	6.2: Channel Structure and Form: Instream Structura l Complexi ty	75	No nexus actions. No change in percentage.	No comment	No comment		0	75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	77	77	85	85	10%	15.5%	Most actions would occur from Lost River down to Weeman Bridge; includes Goat Creek		
Methow	MEC10 A	Upper Methow	7.2: Sediment Conditio ns: Increase	85	No nexus actions. No change in percentage.	No comment	No comment		0	85	85	85	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	85	85	85	85	5%	15.5%	Goat creek off of White Face Mountain. Not an issue in the main channel	Minimal impact from beaver reintroduction	
Methow	MEC10 A	Upper Methow	Water Quantity; Increase		No nexus actions. No change in percentage.	No comment	No comment		0	0	0	0	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.						15.5%			

Populati on	Code	Assesse nt Unit	2012 Standard ized Limiting Factor	2012 Low Bookend	Estimate Comments / Rationale	Yakama Nation Look Back Meeting Notes (4/27/2016)	Yakama Nation post-meeting comments	Additional Look Back Estimate Comments/Rationale (6/21- 6/23/2016)	Look Back % Change (6/23/16)	Updated 2018 Estimate (2012- 2015 Look Back workshop)	2016 Low Bookend	Updated 2018 Estimate (2016- 2018 Look Forward Period)	Look Forward % Change	2016-2018 Look Forward Estimate Comments / Rationale	201 3- 201 8	###	High 2018 Book end	High 2033 Bookend	2012 Limit ing Fact or	Assess ment Unit Weigh t	2012 Limiting Factor Weight and Bookend Comments	2012 Estimates Comments	2012 Assessment Unit Weight Comments
Methow	MEC10 A	Upper Methow	9.2: Water Quantity: Decrease d Water Quantity	30	No nexus actions. No change in percentage.	No comment	No comment		0	30	30	30	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	31	31	40	40	40%	15.5%	Dry in most years from Early Winters down to Weeman. In dry years from just below Lost River. Not entirely anthropogenic - is a losing reach and would go dry in some years anyway. Not lethal at the Assessment Unit scale - fish get above, live, and leave in spite of sections that go dry; includes Wolf Creek	Most beaver reintroduced in Goat Creek (bull trout stream)	
Methow	MEC10 B	Lost River	1.1: Habitat Quantity: Anthropo genic	75	No actions. No % change.	No comment	No comment		0	75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.			98	98		3.2%			
Methow	MEC10 B	Lost River	3.1: Food: Altered Primary	75	No actions. No % change.	No comment	No comment		0	75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	75	75	85	85	20%	3.2%	Used same values as Early Winters		
Methow	MEC10 B	Lost River	4.1: Riparian Conditio n:	85	No actions. No % change.	No comment	No comment		0	85	85	85	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	85	85	87	90	25%	3.2%	Lost river combined with early winters in 09 Expert Panel		
Methow	MEC10 B	Lost River	5.2: Peripher al and	85	No actions. No % change.	No comment	No comment		0	85	85	85	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	85	85	85	85	30%	3.2%	Evaluated for watershed		
Methow	MEC10 B	Lost River	6.1: Channel Structure and	85	No actions. No % change.	No comment	No comment		0	85	85	85	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	85	85	85	85	25%	3.2%	Sugar Dike approximately river mile 1.5(?); Evaluated from		
Methow	MEC10 B	Lost River	6.2: Channel Structure and	60	No actions. No % change.	No comment	No comment		0	60	60	60	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.			90	90		3.2%			
Methow	MEC10 B	Lost River	9.1: Water Quantity: Instream		No actions. No % change.	No comment	No comment		0	0	0	0	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.						3.2%			
Methow	MEC11	Upper Twisp	1.1: Habitat Quantity: Anthropo genic	93	No actions. No % change.	No comment	No comment		0	93	93	93	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	93	93	94	96		7.3%			
Methow	MEC11	Upper Twisp	3.1: Food: Altered Primary	75	No actions. No % change.	No comment	No comment		0	75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	77	77	85	85	20%	7.3%	Yakama Nation - implement nutrient enhancement assessment. Low initial estimate - uncertain of potential benefits		
Methow	MEC11	Upper Twisp	4.1: Riparian Conditio	85	No actions. No % change.	No comment	No comment		0	85	85	85	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	85	85	88	92	15%	7.3%	Release upstream from disturbed area		
Methow	MEC11	Upper Twisp	5.1: Peripher al and Transitio	85	No actions. No % change.	No comment	No comment		0	85	85	85	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	85	85	88	92	15%	7.3%			
Methow	MEC11	Upper Twisp	6.1: Channel Structure and Form:	90	No actions. No % change.	No comment	No comment		0	90	90	90	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	90	90	93	95	20%	7.3%			
Methow	MEC11	Upper Twisp	6.2: Channel Structure and Form: Instream Structura	92	No actions. No % change.	2014 Scaffold Camp Giant Spruce Protection added to Taurus - Yakama Nation created tab, need to review the limiting factors they included as it was	Added 2014 Scaffold Camp Giant Spruce Protection - need to add in background data in subtab (MEC11). It didn't exist in the spreadsheet provided.	Panel concurred.	0.5	92.5	92.5	92.5	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	93	93	95	95	20%	7.3%			
Methow	MEC11	Upper Twisp	7.2: Sediment Conditio n:	90	No actions. No % change.	No comment	No comment		0	90	90	90	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	91	91	95	95	10%	7.3%	Beaver release more likely in tributaries (Buttermilk Creek) - tributaries are sediment source; small percent of issue		
Methow	MEC11	Upper Twisp	9.1: Water Quantity:		No actions. No % change.	No comment	No comment		0	0	0	0	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.						7.3%			
Methow	MEC12	Wolf Creek	2.3: Injury and Mortality	75	No actions. No % change.	No comment	No comment		0	75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	90	90	90	90	10%	1.2%	ADDED LIMITING FACTOR DURING 6/28/12 WORKSHOP	Fix Wolf Creek Irrigation Diversion screen (in wilderness)	
Methow	MEC12	Wolf Creek	4.1: Riparian Conditio n:	80	No actions. No % change.	No comment	No comment		0	80	80	80	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	80	80	82	85	15%	1.2%	Lower 2 miles; river mile 0-2.5		

Populati on	Code	Assesse nt Unit	2012 Standard ized Limiting Factor	2012 Low Bookend	Estimate Comments / Rationale	Yakama Nation Look Back Meeting Notes (4/27/2016)	Yakama Nation post-meeting comments	Additional Look Back Estimate Comments/Rationale (6/21- 6/23/2016)	Look Back % Change (6/23/16)	Updated 2018 Estimate (2012- 2015 Look Back workshop)	2016 Low Bookend	Updated 2018 Estimate (2016- 2018 Look Forward Period)	Look Forward % Change	2016-2018 Look Forward Estimate Comments / Rationale	2013- 2018 ###	High 2018 Book end	High 2033 Bookend	2012 Limit ing Fact or	Assess ment Unit Weigh t	2012 Limiting Factor Weight and Bookend Comments	2012 Estimates Comments	2012 Assessment Unit Weight Comments	
Methow	MEC12	Wolf Creek	5.1: Peripher al and Transitio nal Habitats	75	No actions. No % change.	No comment	No comment		0	75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	75	75	80	80	10%	1.2%	Lower 2 miles; river mile 0-2.5		
Methow	MEC12	Wolf Creek	6.2: Channel Structure and Form: Instream Structura l Complexi ty	75	No actions. No % change.	No comment	No comment		0	75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	75	75	80	80	35%	1.2%	Focus on low 3-4 miles		
Methow	MEC12	Wolf Creek	9.2: Water Quantity: Decrease d Water Quantity	65	No actions. No % change.	No comment	No comment		0	65	65	65	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	70	70	65	70	30%	1.2%	Wolf Creek Irrigation Diversion; Biddle Ponds(?)		

Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 Low Bookend	Estimate Comments / Rationale	Yakama Nation Look Back Meeting Notes (4/27/2016)	Yakama Nation post-meeting comments	Additional Look Back Estimate Comments/Rationale (6/21-6/23/2016)	Look Back % Change (6/23/16)	Updated 2018 Estimate (2012-2015 Look Back Process)	2016 Low Bookend	Updated 2018 Estimate (2016-2018 Look Forward Period)	Look Forward % Change	2016-2018 Look Forward Estimate Comments / Rationale	2013-2018	2033	High 2018 Bookend	High 2033 Bookend	2012 Limiting Factor Weight	Assessment Unit Weight	2012 Limiting Factor Weight and Bookend Comments	2012 Estimates Comments	2012 Assessment Unit Weight Comments
					Comments/Rationale captured during look back	Comments/Rationale captured during look back meeting with the Yakama Nation held on	Comments provided by the Yakama Nation between the 4/27/2016 meeting	Look Back Comments/Rationale captured	Uplift percentage	Updated function score resulting from	2016 Low Bookend used for	Updated function score after adding Look Forward	Uplift calculated for the Look Forward (2016-2018) period	Comments/Rationale captured during Look Forward meeting (6/21-6/23/2016).									
Wenatchee	WEC1	Chiwawa	1.1: Habitat Quantity: Anthropogenic Barriers	98	1 project in database (Chiwawa irrigation diversion: 0.25 miles). Was an	No comment	No comment		0	98	98	98	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	98	98	99	99	10%	27.3%			
Wenatchee	WEC1	Chiwawa	3.1: Food: Altered Primary Productivity	50	No actions. No change in %.	No comment	No comment		0	50	50	50	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	50	50	75	80	60%	27.3%	Not a lot of data. The gap between the low and high bookend downstream reflects an assumed improvement(?)		
Wenatchee	WEC1	Chiwawa	4.1: Riparian Condition: Riparian Vegetation	90	No actions. No change in %.	No comment	No comment		0	90	90	90	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	90	90	92	95	15%	27.3%			
Wenatchee	WEC1	Chiwawa	5.2: Peripheral and Transitional Habitats: Floodplain Condition	95	No actions. No change in %.	No comment	No comment		0	95	95	95	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	95	95	97	97	15%	27.3%			
Wenatchee	WEC1	Chiwawa	6.2: Channel Structure and Form: Instream Structural Complexity	93	No actions. No change in %.	No comment	No comment		0	93	93	93	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	93	93	94	95	0%	27.3%			
Wenatchee	WEC1	Chiwawa	7.2: Sediment Conditions	29	No actions. No change in %.	No comment	No comment		0	29	29	29	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	29	29	29	29	0%	27.3%			
Wenatchee	WEC2	Chumstick	1: Increased Habitat Quantity:	80	Streamnet shows no Chinook miles mapped.	No comment	No comment		0	80	80	80	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	85	85	95	95	8%	4%	Mainstem Chumstick is close, but barriers on tributaries and Merry Canyon	Distributions similar for juveniles, steelhead distribution	
Wenatchee	WEC2	Chumstick	4.1: Riparian Condition: Riparian Vegetation	60	1 project at river mile 8.5, but, like limiting factor 1.1, project was upstream of	No comment	No comment		0	60	60	60	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	60	60	65	80	14%	4%			
Wenatchee	WEC2	Chumstick	5.2: Peripheral and Transitional	55	No actions. No change in %.	No comment	No comment		0	55	55	55	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	55	55	60	60	5%	4%			
Wenatchee	WEC2	Chumstick	6.2: Channel Structure and Form: Instream Structural	55	No actions. No change in %.	No comment	No comment		0	55	55	55	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	55	55	60	60	5%	4%			
Wenatchee	WEC2	Chumstick	7.2: Sediment Conditions : Increased Sediment Quantity	60	Projects 6 miles upstream of Chinook habitat. No measurable change in %.	No comment	No comment		0	60	60	60	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	60	60	75	75	20%	4%	Bookend downstream remnant of last cycle - not a limiting factor for river mile 2013 +		
Wenatchee	WEC2	Chumstick	8.1: Water Quality: Temperature	75	Expert Panel counted flow benefit as helping with Limiting Factor 8.1. benefit dependent.	Juv. Chinook rearing at lower end of Chumstick - hence the uplift. Discuss with larger group for confirmation.	In an earlier field, you claim that there are NO Chinook habitat based on Streamnet, so how are you getting an uplift?	Panel discussed - see limiting factor 1.1 Bio Notes regarding Chinook denominator. Panel	0.1	75.1	75.1	75.1	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	75	75	77	85	20%	4%	Reflects growth of Populus species, but not reconnection of floodplain, etc.		
Wenatchee	WEC2	Chumstick	9.2: Water Quantity: Decreased Water Quantity	50	Expert Panel discussed Trout Unlimited flow enhancement project in Chumstick (18	Juv. Chinook rearing at lower end of Chumstick - hence the uplift. Discuss with larger group for confirmation.	In an earlier field, you claim that there are NO Chinook habitat based on Streamnet, so how are you getting an uplift?	Panel discussed - see limiting factor 1.1 Bio Notes regarding Chinook denominator.	2	52	52	52	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	50	50	90	90	28%	4%	Water quantity project metrics to be determined		
Wenatchee	WEC3	Icicle	1.1: Habitat Quantity: Anthropogenic Barriers	70	Expert Panel: No Action Agency nexus actions, because they assumed that	No comment	No comment		0	70	70	70	0	No actions with Action Agency nexus applicable to this Limiting Factor were expected within the 2018 period in this Assessment Unit. No change in function percentage.	70	70	90	90	35%	2.4%	Look at relative Assessment Unit weight for Icicle - evidence no historic passage above boulder field	45% change applied to steelhead only- low bookend changed from 55 to represent existing condition for Chinook	
Wenatchee	WEC3	Icicle	2.3: Injury and Mortality: Mechanical Injury	50	Expert Panel: No Action Agency nexus actions, because they assumed that	No comment	No comment		0	50	50	50	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	50	50	90	90	5%	2.4%	Reflects screening of two out of four diversions. Would still be some mechanical injury associated with irrigation.		
Wenatchee	WEC3	Icicle	4.1: Riparian Condition: Riparian Vegetation	75	Expert Panel: No Action Agency nexus actions, because they	No comment	No comment		0	75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	75	75	77	80	10%	2.4%	Averages conditions across Icicle (Lower is much worse than Upper).		
Wenatchee	WEC3	Icicle	6.2: Channel Structure and Form:	21	Expert Panel: No Action Agency nexus actions, because they	No comment	No comment		0	21	21	21	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	21	21	21	21	15%	2.4%			
Wenatchee	WEC3	Icicle	7.2: Sediment Conditions - Increased	70	Expert Panel: No Action Agency nexus actions, because they	No comment	No comment		0	70	70	70	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	70	70	75	76	10%	2.4%	Conditions here improving naturally over time.		

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Wenatchee	WEC3	Ice	9.2: Water Quantity: Decreased Water Quantity	55	Expert Panel: No Action Agency nexus actions, because they assumed that	No comment	No comment		0	55	55	55	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	55	55	65	65	25%	2.4%			
Wenatchee	WEC4	Little Wena tchee	3.1: Food: Altered Primary Productivity	55	No actions. No change in %.	No comment	No comment		0	55	55	55	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	55	55	85	90	25%	6.5%			
Wenatchee	WEC4	Little Wena tchee	4.1: Riparian Condition: Riparian Vegetation	85	No actions. No change in %.	No comment	No comment		0	85	85	85	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	85	85	85	90	20%	6.5%	Action is to allow natural improvements		
Wenatchee	WEC4	Little Wena tchee	5.2: Peripheral and Transition	90	No actions. No change in %.	No comment	No comment		0	90	90	90	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	90	90	95	95	30%	6.5%	Berm at the gravel pits		
Wenatchee	WEC4	Little Wena tchee	6.2: Channel Structure	97	No actions. No change in %.	No comment	No comment		0	97	97	97	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	97	97	98	99		6.5%			
Wenatchee	WEC4	Little Wena tchee	7.2: Sediment Conditions : Increased	75	No actions. No change in %.	No comment	No comment		0	75	75	75	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	75	75	85	90	25%	6.5%			
Wenatchee	WEC5	Lower Wena tchee	1.1: Habitat Quantity: Anthropogenic	98	Pioneer Trout Unlimited project removed a dam from a side channel in 2014	No comment	No comment		0	98	98	98	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	98	98	99	99		5.9%			
Wenatchee	WEC5	Lower Wena tchee	4.1: Riparian Condition: Riparian Vegetation	45	Temperature in lower river are often lethal in summer, but temperature control is the	No comment	No comment		0	45	45	45	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	45	45	45	50	10%	5.9%			
Wenatchee	WEC5	Lower Wena tchee	5.1: Peripheral and Transition al Habitats:	65	Pioneer Trout Unlimited project (AKA Lower Wen Enhancement) removed a diversion dam	Sunnyslope Project to be moved to LF 6.2	YN Sunnyslope Project should be listed in your calculation spreadsheet under LF 6.2 and used in your calculations for this LF. Your statement of	Panel concurred regarding removal of "house protection" description.	0.5	65.5	65.5	65.5	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	66	66	80	80	25%	5.9%	Includes lower Wenatchee instream flow project (under limiting factor 6.2)		
Wenatchee	WEC5	Lower Wena tchee	6.1: Channel Structure and Form: Bed and Channel Form	60	Sunnyslope project logs were buried in bank; not wetted. No instream benefit now. But potential future	No comment	No comment		0	60	60	60	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	60	60	65	65	20%	5.9%			
Wenatchee	WEC5	Lower Wena tchee	6.2: Channel Structure and Form: Substrate	60	Sunnyslope project logs were buried in bank; not wetted. No instream benefit	No comment	No comment	Panel confirmed original notes.	0	60	60	60	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	60.1	60.1	65	70	10%	5.9%			
Wenatchee	WEC5	Lower Wena tchee	8.1: Water Quality: Temperature	65	Temperature in lower river are often lethal in summer, but temperature control is the lake, so even if lower section was	No comment	No comment		0.1	65.1	65.1	65.1	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	65	65	70	70	15%	5.9%			
Wenatchee	WEC5	Lower Wena tchee	9.2: Water Quantity: Decreased Water Quantity	50	38.7 cubic feet of water per second total previously diverted spill backs savings. 15 cubic feet of water per second consumptive use	No comment	No comment		5.2	55.2	55.2	55.2	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	51	51	65	65	20%	5.9%	More benefit for steelhead juveniles (2%)		
Wenatchee	WEC6	Missi on	1.1: Habitat Quantity: Anthropogenic Barriers	82	No actions. No change in %.	No comment	No comment		0	82	82	82	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	82	82	85	85	10%	2.6%			
Wenatchee	WEC6	Missi on	4.1: Riparian Condition: Riparian Vegetation	60	No actions. No change in %.	No comment	No comment		0	60	60	60	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	60	60	65	70	10%	2.6%	Most projects should be delayed until flow and water quality are addressed; Japanese knotweed removal; Restoration opportunistically between Cashmere and the U.S. Forest Service boundary.		
Wenatchee	WEC6	Missi on	5.1: Peripheral and Transition	25	No actions. No change in %.	No comment	No comment		0	25	25	25	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	25	25	25	25	15%	2.6%	Assess and reduce road impacts		
Wenatchee	WEC6	Missi on	6.1: Channel Structure and Form: Road	40	No actions. No change in %.	No comment	No comment		0	40	40	40	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	40	40	45	45	10%	2.6%	Lower 6 miles + Forest Service Road		
Wenatchee	WEC6	Missi on	6.2: Channel Structure and Form: Instream	50	No actions. No change in %.	No comment	No comment		0	50	50	50	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	50	50	55	55	15%	2.6%	Worth adding complexity at the price of riparian?		
Wenatchee	WEC6	Missi on	7.2: Sediment Conditions : Increased	40	No actions. No change in %.	No comment	No comment		0	40	40	40	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	40	40	45	50	10%	2.6%	Assess and reduce road impacts		

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Wenatchee	WEC6	Misson	8.1: Water Quality: Temperature	35	No actions. No change in %.	No comment	No comment		0	35	35	35	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	35	35	45	45	10%	2.6%	Mostly a product of flow Especially the lower 4 miles		
Wenatchee	WEC6	Misson	9.2: Water Quantity: Decreased Water Quantity	30	No actions. No change in %.	No comment	No comment		0	30	30	30	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	30	30	60	60	20%	2.6%			
Wenatchee	WEC7	Nason	1.1: Habitat Quantity: Anthropogenic Barriers	93	Railroad Crossing culverts allowed access to Coulter and Roaring creeks. Number of miles opened: 4.04 miles (see table)	No comment	No comment		0	93	93	93	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	93	93	98	98		14%			
Wenatchee	WEC7	Nason	3.1: Food: Altered Primary Productivity	60	No actions. No change in %.	No comment	No comment		0	60	60	60	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	60	60	80	85	10%	14%			
Wenatchee	WEC7	Nason	4.1: Riparian Condition: Riparian Vegetation	50	No change due to protection of existing good habitat projects, because no change from	No comment	No comment		0.04	50.04	50.04	50.08	0.04	Upper White Pine: will replant powerline right-of-way: 0.59 mile of stream will be affected. Moving lines in summer 2016, replanting in 2018. Not much vegetation growth in 2018 period, so prorated at 1%, yielding 0.04% expected uplift. Yakama Nation Lower White Pine will have a bit of planting, but not counted here yet.	51	52	55	60	10%	14%	Includes recruitment of large woody material		
Wenatchee	WEC7	Nason	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	60	Calculation table has 4 projects, including Yakama Nation First Bend 2013, Nason Creek river mile 4.6 (redd high and low flow channels through old parking lot, flew in logs and enhanced 207 oxbow, side channel created in marshy area)	50% rating is for seasonal flow. Yakama Nation said project is year round, so it should be updated to 100%	If YN side channel didn't exist before, exists now, how does it rate an improvement factor of 50%, not 100%? It appears the rating was based upon seasonal flow at 50% and 100% for year round flow.	Panel agreed to correct for White Pine being perennial flow side channel, resulting in 100% proration.	13	73	73	74.6	1.6	Yakama Nation Lower White Pine: oxbow connection, side channel, and small area of plantings (prorated at 100% of properly functioning condition goal). Upper White Pine 2018 alcove and side channels prorated at 100% of properly functioning condition. Yields 1.6% expected uplift. Change reference to CMZ Study to Reach Assessment.	80	80	80	80	25%	14%	Increase large wood debris complexes; reconnect side channel habitat; 1.1, 1.2, and 1.3 scored together	Includes completion of 4 Nason planned actions (LWP, N1, 2 UWP projects) + 2 access actions (Coulter/RR)	
Wenatchee	WEC7	Nason	6.1: Channel Structure and Form: Bed and Channel	60	Calculation table has 2 projects, including Yakama Nation First Bend, Nason river mile 4.6 (do not know side channel)	Agree with not including Lower White Pine, add Upper White Pine (0.38 mile).	Why are you not including LWP when it is the same as First Bend? (therefore it is included)...UWP, why not included? How are we getting credit (80%)	Panel concurred with Yakama Nation changes to calc table.	1.8	61.8	61.8	64.6	2.8	Same projects as for limiting factor 5.1. For Upper White Pine Reconnect project, panel used new channel length (now 0.25 mile; will be 0.45 mile) because current channel conditions are poor, and habitat quality will be improved along entire length. Panel considered adding the 0.25 and 0.45 miles, but chose to use 0.45 mile. Prorated at 100% of properly functioning condition, resulting in 2.8% uplift.	63	63	65	65	20%	14%			
Wenatchee	WEC7	Nason	6.2: Channel Structure and Form: Instream	50	Calculation table has 2 projects. Remove river mile 4.6 and Lower White Pine	Review treatment lengths - Yakama Nation to update numbers in scoring sheet to discuss at next expert panel meeting. Distance was based	You are not consistent with treatment length (YN First Bend, 0.13mi in other LF, vs 0.16 in LF 6.2).	Panel concurred with Yakama Nation changes to calc table.	3.2	53.2	53.2	58.1	4.9	Same projects as for limiting factors 5.1 and 6.1. Lengths do not include side channel improvement. Panel used 0.53 miles as length. Prorated at 100% of properly functioning condition. Yields 4.9% uplift. Does not include U.S. Forest Service projects because of timing of National Environmental Policy Act.	54	58	55	60	20%	14%			
Wenatchee	WEC7	Nason	7.2: Sediment Conditions	65	Limiting factor has 0% weighting. No limiting factor	No comment	No comment		0	65	65	65	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	65	65	70	75	15%	14%	May be shorter river mile increases in sediment from opening up side channels. Increased sediment in Lower Nason		
Wenatchee	WEC7	Nason	8.1: Water Quality: Temperature	80	Limiting factor has 0% weighting. No actions identified in database	No comment	No comment		0	80	80	80	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	80	80	80	80		14%			
Wenatchee	WEC8	Peshastin	1.1: Habitat Quantity: Anthropogenic Barriers	70	Yakama Nation Peshastin Fishway Repair (2012): improved passage at 2 irrigation	May not be a benefit for passage, discuss with larger group.	YN agrees.	Panel concurred regarding partial barrier.	0.2	70.2	70.2	70.2	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	70	70	85	85	5%	5.6%			
Wenatchee	WEC8	Peshastin	4.1: Riparian Condition: Riparian Vegetation	60	Database had one project, but it's far above spring Chinook use area. No change.	No comment	No comment		0	60	60	60	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	60	60	65	70	10%	5.6%			
Wenatchee	WEC8	Peshastin	5.1: Peripheral and Transitional Habitats:	25	One project (river mile 0.8) in calculation table, prorated to 50% based on seasonal wetted	Highlighted comment is incorrect, RA lists several side-channel projects. Yakama Nation to provide updated information.	No comment Please double check reach assessment for LF 5.1 projects. Additional projects have been identified in the RA. YN		1.2	26.2	26.2	26.2	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	26	26	30	30	20%	5.6%	Include 6.2 limiting factor action here		
Wenatchee	WEC8	Peshastin	6.1: Channel Structure and Form:	35	No actions. No change in %.	No comment	No comment		0	35	35	35	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	35	35	50	50	15%	5.6%	Bank hardening and incision all along the orchards		
Wenatchee	WEC8	Peshastin	6.2: Channel Structure and Form: Instream Structural Complexity	55	Prorated project to 50% based on side channel function. Results in 0.5% uplift.	No comment	No comment		0.5	55.5	55.5	55.5	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	56	56	75	75	15%	5.6%			
Wenatchee	WEC8	Peshastin	8.1: Water Quality: Temperature	98	Limiting factor has 0% weighting. No actions identified in db. Expert	No comment	No comment		0	98	98	98	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	98	98	99	99		5.6%			
Wenatchee	WEC8	Peshastin	9.2: Water Quantity: Decreased Water Quantity	20	No actions. No change in %.	No comment	No comment		0	20	20	20	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	20	20	80	80	35%	5.6%			

Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 Low Bookend	Estimate Comments / Rationale	Yakama Nation Look Back Meeting Notes (4/27/2016)	Yakama Nation post-meeting comments	Additional Look Back Estimate Comments/Rationale (6/21-6/23/2016)	Look Back % Change (6/23/16)	Updated 2018 Estimate (2012-2015 Look Back Process)	2016 Low Bookend	Updated 2018 Estimate (2016-2018 Look Forward Period)	Look Forward % Change	2016-2018 Look Forward Estimate Comments / Rationale	2013-2018	2033	High 2018 Bookend	High 2033 Bookend	2012 Limiting Factor Weight	Assessment Unit Weight	2012 Limiting Factor Weight and Bookend Comments	2012 Estimates Comments	2012 Assessment Unit Weight Comments
Wenatchee	WEC9A	Middle Wenatchee	1.1: Habitat Quantity: Anthropogenic Barriers	95	No actions. No change in %.	No comment	No comment		0	95	95	95	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	95	95	95	95	50%	1.5%			
Wenatchee	WEC9A	Middle Wenatchee	6.1: Channel Structure and Form: Bed and Channel	85	No actions. No change in %.	No comment	No comment		0	85	85	85	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	85	85	85	85	50%	1.5%			
Wenatchee	WEC9A	Middle Wenatchee	6.2: Channel Structure and Form: Instream		No actions. No change in %.	No comment	No comment		0	0	0	0	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.						1.5%			
Wenatchee	WEC9B	Upper Wenatchee	4.1: Habitat Quantity: Anthropogenic	95	Limiting factor is weighted as 0%. No change. Beaver Creek diversion project.	No comment	No comment		0	95	95	95	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	95	95	98	98		16.1%			
Wenatchee	WEC9B	Upper Wenatchee	4.1: Riparian Condition: Riparian Vegetation	80	No measurable functional change in period to 2018. 3/11/16: As per panel	No comment	No comment		0.02	80.02	80.02	80.02	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	80.5	81	82	85	33%	16.1%			
Wenatchee	WEC9B	Upper Wenatchee	5.1: Peripheral and Transition	70	Beaver Creek Well Conversion listed under this limiting factor in River mile 51.7	No comment	No comment		0	70	70	75.6	5.6	Meacham Flats side channel project: 8 structures in side channel and floodplain roughness wood to be built in 2017. Project will improve connectivity and habitat conditions for 0.2 mile of side channel. No main channel in-channel work expected. Panel prorated at 100% of properly functioning condition, considering access benefit as well as complexity	85	85	90	90	34%	16.1%	Low bookend changed from 90		
Wenatchee	WEC9B	Upper Wenatchee	6.2: Channel Structure and Form: Instream	60	Natapoc project: 1 larger cover jam and 6 smaller complexity jams.	Highlighted text in column H was updated to correct jam types	YN Natapoc project included 1 large cover jam and 6 smaller complexity jams (mileage is correct).	Panel concurred with Yakama Nation changes to project description in	0.7	60.7	60.7	60.7	0	Same project as for limiting factor 5.1. Panel discussed denominator with respect to side channel vs. mainstem length. Panel chose to include side channel benefits only in limiting factor 5.1 rather than counting them in limiting factor 6.2.	70	70	80	85	33%	16.1%	Refer to limiting factor 5.1 action descriptions 2033 value constrained by social considerations/recreation		
Wenatchee	WEC10	White	3.1: Food: Altered Primary Productivity	70	No actions. No change in %.	No comment	No comment		0	70	70	70	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	70	70	75	75	20%	14.1%			
Wenatchee	WEC10	White	4.1: Riparian Condition: Riparian Vegetation	85	No actions. No change in %.	No comment	No comment		0	85	85	85	0	No actions with Action Agency nexus applicable to this Limiting Factor were expected within the 2018 period in this Assessment Unit. No change in function percentage.	85	85	90	95	25%	14.1%			
Wenatchee	WEC10	White	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	90	No actions. No change in %.	No comment	No comment		0	90	90	90	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	90	90	95	95	25%	14.1%			
Wenatchee	WEC10	White	6.2: Channel Structure and Form: Instream Structural Complexity	85	White River large woody debris project: treated 1.7 miles. Denominator: 18.5 mi. Results in 9.2% uplift.	No comment	No comment		9.2	94.2	94.2	94.2	0	No actions with Action Agency nexus applicable to this limiting factor were expected within the 2018 period in this assessment unit. No change in function percentage.	87	87	90	95	30%	14.1%	Addresses majority of impacted area		