# NOTES:

This workbook contains **habitat functions** data downloaded directly from the Taurus database. Functions include those documented during the **Look Back** process covering the **2012-2015** work window for Chinook.

				2012			Original	Updated					
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper	Entiat	ERC1	Lower	2.3: Injury and	5.00%	80	80	80	100	95	100		20
Columbia	River		Entiat	Mortality:									co
Spring				Mechanical Injury									bı
Chinook													th
													m
													sc
Upper	Entiat	EPC1	Lower	2 1: Eood: Altered	5.00%	40	40	40	50	40	50		20
Columbia	River	LINCI	Entiat	Brimany	5.00%	40	40	40	50	40	50		
Columbia	RIVEI		LIILIAL	Prindiy									
Chinook				FIOUUCLIVILY									
Upper	Entiat	ERC1	Lower	4.1: Riparian	15.00%	25	25	25.1	30	25.6	35		20
Columbia	River		Entiat	Condition:									LE
Spring				Riparian									tir
Chinook				Vegetation									im
													ec
													N
													st
													st
													16
													ur
													0.
Upper	Entiat	FRC1	lower	5.1: Peripheral	0.00%	10	10	11.8	15	10	15		20
Columbia	River		Entiat	and Transitional	0.0070			11.0			10		
Spring				Habitats: Side									EF
Chinook				Channel and									ar
				Wetland									A
				Conditions									be
													bu
													20
													20
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													in
													20

012 EP: 2 ARRA, 3 Ecology, 3 Below Keystone/HD-KW onsolidation screens were completed in the 09-12 cycle, at are evaluated here because there was no screen LF in e 09-12 cycle. / 2015 LB EP: No actions, no change. EP oved one action that was not completed, Roaring Creek reen(s), to the LF. 0% uplift. -MAH2.25.16

012 LF EP: Nutrient project scoping underway- potential enefits tbd in 2015 look back./ 2015 LB EP: No Actions, o change. -MAH.2.25.2016

012 LF EP: Planting planned by CCD- benefits tbd. / 2015 B EP: Riparian planting too immature to uplift at this me. 0% improvement anticipated in 2018, but 0.4% approvement expected in 2033. -MAH.2.25.2016 and dited by EWL 3.16.16 Post-Lookback meeting, Yakama ation added one additional project that resulted in 0.014 ream miles effectively treated (by 2018) and 0.105 ream miles effectively treated (by 2033). Relative to the 5.8 steelhead bearing stream miles in the assessment hit, there will be a 0.1% improvement by 2018 and a 6% improvement by 2033. EWW 7.27.16

12 EP: 0% LF weight - therefore, side channels are onsidered under LF 6.2 instream complexity. / 2015 LB P: Determined this Limiting Factor should have weight, nd the 0% is a data-entry error-MAH.2.25.2016. ccording to the Expert Panel, this limiting factor should 15%. Four projects treated 0.37 side channel miles, It were adjusted to represent effectiveness to 2018 and 033, respectively. Thus, the realized improvement to 018 was across 0.32 side channel miles and also 0.32 iles in 2033. Relative to the 16.8 side channel miles in e Assessment Unit (from Tributary Assessment and each Assessment: 2063 ft. of side channel per mile (up to atchery at river mile 7.2, but Assessment Unit goes up to oraine, upstream of hatchery is more confined), the provement is 1.8% (0.32/16.8\*100) in both 2018 and 033. EWL 3.18.16

ESU	Populatio n	Code	Assessme nt Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Es
Upper Columbia Spring Chinook	Entiat River	ERC1	Lower Entiat	5.2: Peripheral and Transitional Habitats: Floodplain Condition	15.00%	80	80	80.2	85	81	85	Not a lot of opportunity but extrememly high benefit and priority as refuge and rearing areas are rare in this portion of the watershed	20 ch bu co Ul - a m 20 ca Re As lin
Upper Columbia Spring Chinook	Entiat River	ERC1	Lower Entiat	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	70	70	70.4	72	71	72	Although there may not be a lot of opportunity for making changes, it is still high priority	20 to pr pr dc laı Es 1. im by As im 2(

D15: The Expert Panel initially discussed counting side nannel improvements in this limiting factor Assessment, ut ultimately decided to only use those parameters in onsideration for limiting factor 5.1 improvements. Itimately, the benefits from one project were considered a levee removal action for floodplain access. The 0.04 iiles treated was adjusted for projected improvement in D18 and 2033, respectively (both were the same in this ase). Thus the realized river miles improved was 0.032. elative to the 16.8 Chinook bearing river miles in the ssessment Unit (from Streamnet), improvement for this miting factor = 0.2% (0.032/16.8\*100). EWL 3.15.16

15: While the Expert Panel recognizes that it's difficult affect bed and channel form in this area, 4 projects ere assessed for limiting factor 6.1. The Expert Panel onsidered measured lengths of treated areas, then orated stream miles treated to reflect how much each oject action addressed this limiting factor, and taking to account whether wood was in active channel. The on't expect to see much pool depth change because of rge substrates, adjustments were made accordingly. timates were projected both to 2018 and to 2033. The 38 stream miles treated were assessed to have realized pact to 0.069 river miles by 2018 and 0.138 river miles 2033. Relative to the 16.8 Chinook river miles in the ssessment Unit (based on Streamnet database), the provement is expected to be 0.4% by 2018 and 0.8% by 033. EWL 3.10.16

				2012			Original	Updated					Γ
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	E
Upper	Entiat	FRC1	Lower	6.2: Channel	25.00%	25	25	31.8	50	35	70	This LE includes side	20
Columbia	River		Entiat	Structure and	23.0070	23	2.5	51.0	50	55	/ 0	channels	5
Spring	inver		Lintiat	Form: Instream								channels	
Chinook				Structural									
CHIHOOK				Comployity									Ľ
				complexity									- '
													-
													A
													R/
													A
													20
													a
													CC
													tr
													20
													С
													W
													lir
													cł
													C
													(f
													20
Upper	Entiat	ERC1	Lower	7.2: Sediment	15.00%	23	23	23	50	23	50		20
Columbia	River		Entiat	Conditions:									se
Spring				Increased									20
Chinook				Sediment									a
				Quantity									fr
Upper	Entiat	ERC1	Lower	9.2: Water	10.00%	50	50	50	55	50	55		20
Columbia	River		Entiat	Quantity:									a
Spring				Decreased Water									fr
Chinook				Quantity									
Upper	Entiat	ERC2	Mad River	1.1: Habitat	20.00%	98	98	98	100	100	100		20
Columbia	River			Quantity:									C
Spring				Anthropogenic									
Chinook				Barriers									
Upper	Entiat	ERC2	Mad River	3.1: Food: Altered	20.00%	40	40	40	50	40	50		20
Columbia	River			Primary									a
Spring				Productivity									fr
Chinook													

012: 7 total projects from Entiat RA. Also include these 3 rojects that were not in the 2012 look forward project st but were brought forward at the May 2012 EP rorkshop:

0.8-2.3 boulder cluster

- Foreman side channel
- Entiat fish hatchery

ll 7 projects include some LWD, ELJs - based on L Entiat A

Il 7 projects represent about 1/2 of opportunities

015:Pool formation was considered in limiting factor 6.1, nd not here for limiting factor 6.2. The Expert Panel onsidered 4 projects and adjusted the stream miles reated to reflect the anticipated improvement realized in 018 and 2033 (respectively). The Expert Panel was onscientious to keep in mind the limits of possibilities within the treated areas given the boulder sizes, which mit how much channel structure and form can be nanged in this Assessment Unit. Relative to the 16.8 hinook bearing stream miles in the Assessment Unit rom Streamnet data layer), the improvement in both 018 and in 2033 is 6.8%. EWL 3.10.16

D12: effects of actions for other LFs can affect change in ediment HF tbd in 2015

015: No actions were undertaken during 2012-2015 to ddress this limiting factor, therefore there is no change rom the low bookend. EWL 3.10.16

D15: No actions were undertaken during 2012-2015 to ddress this limiting factor, therefore there is no change om the low bookend. EWL 3.10.16

015 LB EP: Actions were above the known extent of hinook distribution. Therefore, no uplift. -MAH.2.25.16

D15: No actions were undertaken during 2012-2015 to ddress this limiting factor, therefore there is no change om the low bookend. EWL 3.10.16

				2012			Original	Updated					Γ
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper	Entiat	ERC2	Mad River	4.1: Riparian	20.00%	70	70	70	75	70	80		20
Columbia	River			Condition:									ad
Spring				Riparian									fro
Chinook				Vegetation									
Upper	Entiat	ERC2	Mad River	6.1: Channel	20.00%	90	90	90	92	90	92		20
Columbia	River			Structure and									ad
Spring				Form: Bed and									fro
Chinook				Channel Form									
Upper	Entiat	ERC2	Mad River	6.2: Channel	0.00%	91	91	91	97	91	99		20
Columbia	River			Structure and									ad
Spring				Form: Instream									fro
Chinook				Structural									
				Complexity									
Upper	Entiat	ERC2	Mad River	7.2: Sediment	20.00%	23	23	23	50	23	50	coarser bed material than	20
Columbia	River			Conditions:								lower Ent; road	ad
Spring				Increased								decommissioning could	fro
Chinook				Sediment								have high impact on	
				Quantity								sediment loading	
Upper	Entiat	ERC3A	Middle	1.1: Habitat	5.00%	95	95	95	100	95	100	0	20
Columbia	River		Entiat	Quantity:									
Spring				Anthropogenic									
Chinook				Barriers									
Upper	Entiat	ERC3A	Middle	3.1: Food: Altered	10.00%	40	40	40	50	40	55		20
Columbia	River		Entiat	Primary									
Spring				Productivity									
Chinook				,									
Upper	Entiat	ERC3A	Middle	4.1: Riparian	15.00%	60	60	60.2	65	64	70		20
Columbia	River		Entiat	Condition:									pr
Spring				Riparian									be
Chinook				Vegetation									ve
													re
													(0
													br
													vie
													lre
													m
													lim
													10

015: No actions were undertaken during 2012-2015 to Idress this limiting factor, therefore there is no change om the low bookend. EWL 3.10.16

015: No actions were undertaken during 2012-2015 to Idress this limiting factor, therefore there is no change form the low bookend. EWL 3.10.16

015: No actions were undertaken during 2012-2015 to Idress this limiting factor, therefore there is no change om the low bookend. EWL 3.10.16

015: No actions were undertaken during 2012-2015 to Idress this limiting factor, therefore there is no change om the low bookend. EWL 3.10.16

015 LB EP: No actions, no change. -MAH.2.25.16

015 LB EP: No actions, no change. -MAH.2.25.16

215: Two projects were considered though a third roject (3D construction) was considered and removed ecause in the end it was decided that project removed egetation instead of added it. For the two projects maining, the Expert Panel adjusted the miles treawted .45) based on vegetation growth in period between roject initiation and 2018 and 2033, respectively. This elded improved stream miles of 0.027 and 0.135, spectively. Relative to the 11.6 chinook bearing stream iles in the Assessment Unit (from Streamnet), provements to riparian condition is 0.2% in 2018 .027/11.6\*100) and 1.2% (0.135/11.6\*100), spectively. EWL 3.20.16

				2012			Original	Updated					
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper	Entiat	ERC3A	Middle	5.2: Peripheral	35.00%	60	68	68.2	70	68.2	70		20
Columbia	River		Entiat	and Transitional									pr
Spring				Habitats:									ac
Chinook				Floodplain									pr
				Condition									lir
													pr
													al
													Va
													E>
													ha
													ac
													20
													m
													ad
													(0
													D
													Pa
													in
													to
													ef
													th
													u
													20
	<b>F</b>	50.004			5.000/			00.4		07			
Upper	Entiat	ERC3A	Middle	6.1: Channel	5.00%	90	90	93.4	99	97	99		20
Columbia	River		Entiat	Structure and									10
Spring				Form: Bed and									
Сппоок				Channel Form									
													pi
													0.
													ľ

015: Miles of treated stream was measured using postroject aerial imagery, then those river miles were ljusted based on portion of PFC before and after each roject. Side channel elements were considered in this miting factor because limiting factor 5.1 was not reviously identified for this AU. The 3D channel was ready functional, but the entrance is now locked, so the alue of the project was adjusted lower than the others. tent and duration of inundation for the Dillwater jam as been measured. The 0.76 river miles treated were djusted for projected improvement in 2018 (0.496) and 033 (0.496). Relative to the Chinook bearing stream iles in the Assessment Unit (=11.6; from Streamnet), the ctions have resulted in a 4.3% improvement .496/11.6\*100) in both years. EWL 3.11.16 uring the June, 2016 lookforward meeting, the Expert anel concurred with Yakama Nation's suggestion to crease the proration value of the 3-D project from 15% 100%. This change increased the stream miles ffectively treated by 2018 and 2033 to 0.95. Relative to e 11.6 chinook bearing stream miles in the assessment nit (=11.6), there will be a 8.2% improvement in both 018 and 2033. EWW 7.27.16

D12: includes Dillwater (describred in LF 6.2) wer Tyee levee removal/3C would provide remainder of nange

015:Miles of treated stream was measured using postroject aerial imagery, then those river miles were djusted based on PFC before and after each project. The .79 river miles treated were adjusted for projected nprovement in 2018 (0.395) and 2033 (0.395). Relative to the Chinook bearing stream miles in the Assessment nit (=11.6; from Streamnet), the actions have resulted in 3.4% improvement (0.395/11.6\*100). EWL 3.11.16

				2012			Original	Updated					Г
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n .	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper	Entiat	ERC3A	Middle	6.2: Channel	25.00%	25	35	40.4	50	40.4	60		20
Columbia	River		Entiat	Structure and									20
Spring	_			Form: Instream									
Chinook				Structural									a
				Complexity									w
													d
													w
													a
													m
													11
													h
													lin
													h
													h
													F
													[
Upper	Fntiat	FRC3A	Middle	7.2: Sediment	5.00%	75	75	75	82	75	85		2
Columbia	River		Entiat	Conditions:									U
Spring				Increased									2
Chinook				Sediment									20
				Quantity									th
													Fi
													a
Upper	Entiat	ERC3B	Upper	1.1: Habitat	0.00%	93	93	93	99		99		20
Columbia	River		Middle	Quantity:									
Spring			Entiat	Anthropogenic									
Chinook				Barriers									
Upper	Entiat	ERC3B	Upper	3.1: Food: Altered	45.00%	40	40	40	50	40	55		20
Columbia	River		Middle	Primary									
Spring			Entiat	Productivity									
Chinook				,									
Upper	Entiat	ERC3B	Upper	4.1: Riparian	0.00%	80	80	80	85		90		20
Columbia	River		Middle	Condition:									
Spring			Entiat	Riparian									
Chinook				Vegetation									

012: remaining change to high bookends attributed to 3C 015:Miles of treated stream was measured using postroject aerial imagery, then those river miles were djusted based on PFC before and after each project. All ere high intensity treatments regarding wood loading ensity, so rated at 100%. Thus 1.55 river miles treated ere adjusted for projected improvement in 2018 (1.55) nd 2033 (1.55). Relative to the Chinook bearing stream iles in the Assessment Unit (=11.6; from Streamnet), the ctions have resulted in a 13.4% improvement .55/11.6\*100) in both years. Expert Panel recognized nat some large woody debris recruitment is expected, ut some will move out too. EWL 3.20.16 During the June, 2016 lookforward meeting, the Expert anel concurred with Yakama Nation's suggestion to crease the proration value of the 3-D project to 80%. is change increased the stream miles effectively treated 2018 and 2033 to 1.79. Relative to the 11.6 chinook earing stream miles in the assessment unit (=11.6), there ill be a 15.4% improvement in both 2018 and 2033. WW 7.27.16

012: possible benefits from riparian projects tbd SFS road decommissioning affects this LF 015: There were no action undertaken during the 2012-015 time period to address this limiting factor, therefore here was no change from the low bookend.

urthermore, the Expert Panel wondered if fine sediments re even a problem in this Assessment Unit. EWS 3.11.16

016: No actions, therefore no change to low bookend.

016: No actions, therefore no change to low bookend.

016: No actions, therefore no change to low bookend.

				2012			Original	Updated					
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper	Entiat	ERC3B	Upper	6.2: Channel	55.00%	80	80	80	90	80	90	Do not expect increased	20
Columbia	River		Middle	Structure and								benefit after 2018 from	
Spring			Entiat	Form: Instream								added LWM	
Chinook				Structural									
				Complexity									
Upper	Entiat	ERC3B	Upper	7.2: Sediment	0.00%	23	23	23	30		30		20
Columbia	River		Middle	Conditions:									
Spring			Entiat	Increased									
Chinook				Sediment									
				Quantity									
Upper	Methow	MEC1	Beaver /	1.1: Habitat	10.00%	77	90	95.6	90	90	90	Cambell diversion	20
Columbia	River		Bear	Quantity:									the
Spring			Creek	Anthropogenic									sh
Chinook				Barriers									im
													1.7
Upper	Methow	MEC1	Beaver /	2.3: Injury and	5.00%	80	80	82.7	95	90	95	Are being addressed	20
Columbia	River		Bear	Mortality:									Ba
Spring			Creek	Mechanical Injury									ne
Chinook													all
													bo
													1/
													ins
Upper	Methow	MEC1	Beaver /	4.1: Riparian	20.00%	70	70	70.8	75	80	80	Good until you get to the	20
Columbia	River		Bear	Condition:								WDFW property (if you are	ac
Spring			Creek	Riparian								considering stream margin	20
Chinook				Vegetation								and not floodplain	da
												vegetation).	ha
													the
													1.5
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016: No actions, therefore no change to low bookend.

016: No actions, therefore no change to low bookend.

015 LB EP: 2 actions, both partial barriers. Panel believes ere are still barriers in the AU (Frazier?), and the uplift oould not go to 100%. There were 6.4 miles total proved access (2.8 miles\*50% + 3.6miles\*10%) = 76mi / 9.45 total miles = 18.6% uplift. -MAH2.25.16 012 EP: Replace 4 brush screens w/ drum screens + attie = 5 screens. / 2015 LB EP: There are 5 screens that eed to be replaced. The panel considered that replacing I 5 screens would result in a 15% uplift to the 95% high pokend. Since only one screen was replaced, that equals 25th of 15%, with 90% proration due to replacement stead of removal = 2.7% uplift. -MAH2.25.2016

012: Estimate based on enhancement of 32.65 riparian cres, 1.7 riparian mi, and 3.2 wetland acres 015: Expert Panel discussed projects to reconcile atabase projects with what was known to have appened. Some project burned and were replanted, so ese should only be counted once. Two projects treated 5 stream miles,but were adjusted by 5% to account for egetative growth rates. Relative to the 9.45 Chinook earing stream miles in the Assessment Unit (Panel used eelhead Streamnet miles since Chinook Streamnet dicated 0 miles plus 0.25 miles in Fraser Creek), nprovement to riparian condition = 0.8% .075/9.45\*100). EWL 3.20.16

				2012			Original	Updated					Γ
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	E
Upper	Methow	MEC1	Beaver /	6.1: Channel	10.00%	60	60	67.4	80	70	80		20
Columbia	River		Bear	Structure and									e
Spring			Creek	Form: Bed and									2
Chinook				Channel Form									2
													e
													a
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Upper	Methow	MEC1	Beaver /	6.2: Channel	10.00%	60	60	74.3	80	75	80		2
Columbia	River		Bear	Structure and									20
Spring			Creek	Form: Instream									20
Chinook				Structural									Fi
				Complexity									to
													ri
													lin
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Upper	Methow	MEC1	Beaver /	7.2: Sediment	15.00%	55	55	55	65	56	75		20
Columbia	River		Bear	Conditions:									d
Spring			Creek	Increased									w
Chinook				Sediment									2
				Quantity									a
													cł

012: Estimate based on 1.29 mi channel added of enhanced

2015: Two projects were accomplished between 2012 and 2015. One of them:Schoolhouse: created 11 pools, 12 angineered log jams, enhanced seep and a side channel, and dropped big cottonwoods in after fire. Treated length of stream was adjusted by % of PFC, treatment intensity, and time needed to see form changes (some scour seen lready in Schoolhouse) to estimate the realized change in 2018 (0.7 stream miles for both projects). Considered over all Chinook bearing stream miles in the Assessment Unit (9.45 miles; Expert Panel used steelhead miles from streamnet because 0 miles were indicated for Chinook. Also they added 0.25 miles from Fraser Creek), the elative improvement for this limiting factor = 7.4% 0.7/9.45\*100). EWL 3.11.16

2012: Estimate based on 6.2 miles improved complexity. 2015: Two projects were accomplished between 2012 and 2015. 12 log structures were spread out over 1 river mile. 2015 in the set of the stream after fire 2015 in the set of the stream after fire 2016 in the set of the stream after fire 2017 in the set of the stream after fire 2018 in the set of the stream after fire 2019 in the set of the stream after fire 2019 in the

mprovement through 2018 (100% in both projects). Considered over all Chinook bearing stream miles in the Assessment Unit (9.45 miles; Expert Panel used steelhead niles from Streamnet because 0 miles were indicated for Chinook. Also they added 0.25 miles from Fraser Creek), he relative improvement for this limiting factor = 14.8% 1.4/9.45\*100). EWL 3.11.16. Based on Yakama Nation orrection of total steelhead bearing stream miles in the assessment unit, the uplift was modified from 14.8 to 3.8%. EWW 6.23.16

5.23.16: Cottonwood falling included in Old schoolhouse. Rorated to 90%. Benefits changed to 14.3%. EWW 7.29.16

012: Not enough project information to include Rd lecommissioning in estimate - can be included in 2015 vorkshop as "look back" if appropriate

015: No projects were undertaken during 2012-2015 to ddress this limiting factor, therefore there was no hange from the low bookend. EWL 3.11.16

ESU	Populatio n	Code	Assessme nt Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Es
Upper Columbia Spring Chinook	Methow River	MEC1	Beaver / Bear Creek	8.1: Water Quality: Temperature	5.00%	40	40	43.5	55	45	55		20 Be flo
													Be be 14
Upper Columbia Spring	Methow River	MEC1	Beaver / Bear Creek	9.2: Water Quantity: Decreased Water	25.00%	60	60	73.9	80	75	80	Cambell diversion; maybe others (?)	20 st
Chinook	Methow	MEC2	Early	Quantity 3.1: Food: Altered	16.00%	75	75	75	85	75	85	Early Winters and Lost	ab 20 ac pe Tc Re 27 6. at er be (n er b w th (5 7. 20
Columbia Spring Chinook	River		Winters Creek	Primary Productivity	10.0070							River Combined in 09 EP 2016: Yakama Nation thinks this limiting factor weight is too high, but panel noted that the limiting factor weights came from the recovery Biological Strategy. EWW 7.29.16	

015: The benefit from flow increase provided by Upper eaver Creek lease (18%) was adjusted to convert from ow to temperature effects for fish (25%) = 4.5% nprovement (18\*25). EWL 3.11.16 enefits modified 6.23.16 as per EP. 14 instead of 18% enefit from flow, therefore improvement for LF 8.1 = 4\*25=3.5%. EWW

012: Estimate based on 550 ac-ft (2 cfs); 16.5 miles cream reach

bout 25% of total diversions

D15: Beaver Creek #123 late season instream flow was dded (2.08 cfs) during Expert Panel meeting. Some is ermanent trust (2013 to past 2018), some is leased. otal leased cfs, averaged over time provides 1.8 cfs. elative to base flow (10 cfs; value provided by Expert anel) the water input improves this limiting factor by 7.8% (1.8/10\*100). EWL 3.11.16

.23.16: Yakama Nation brought to the table a discussion bout the Thurlow diversion and because of lack of nforcement of the water right, the purchase of Upper eaver Creek lease is not always fully realized. Recognize enefits upstream from flow, but then water is pulled out more is being withdrawn than is allowed - WA Ecology nforcement problem), so benefit should be prorated ased on miles actually affected, considering illegal withdrawal (mostly a problem for 1-2 critical months of ne year). Counted benefit from Beatty RM 6.5 to Thurlow 5 miles of benefit) yielding 13.9% improvement. EWW .29.16

015 LB EP: No actions, no change. -MAH.2.25.2016

				2012			Original	Updated					
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper	Methow	MEC2	Early	4.1: Riparian	17.00%	90	90	90	92	90	95	Place with the riparian	20
Columbia	River		Winters	Condition:								condition problem is the	
Spring			Creek	Riparian								campground	
Chinook				Vegetation									
Upper	Methow	MEC2	Early	6.1: Channel	17.00%	90	90	90	95	90	95	From campground down	20
Columbia	River		Winters	Structure and								has been incised.	
Spring			Creek	Form: Bed and									
Chinook				Channel Form									
Upper	Methow	MEC2	Early	6.2: Channel	0.00%	75	75	75	93	93	93		20
Columbia	River		Winters	Structure and									
Spring			Creek	Form: Instream									
Chinook				Structural									
				Complexity									
Upper	Methow	MEC2	Early	7.2: Sediment	25.00%	75	75	75	80	75	80		20
Columbia	River		Winters	Conditions:									
Spring			Creek	Increased									
Chinook				Sediment									
				Quantity									
Upper	Methow	MEC2	Early	9.2: Water	25.00%	75	75	75	85	75.2	85	Early Winters and Lost	20
Columbia	River		Winters	Quantity:								River Combined in 09 EP ;	
Spring			Creek	Decreased Water								Early Winters Irrigation	
Chinook				Quantity								(16cfs?) right across from	
												the campground	
Upper	Methow	MEC4A	Gold	1.1: Habitat	10.00%	95	95	95	100	95	100	May be a partial barrier	20
Columbia	River		Creek	Quantity:								but don't know for sure.	
Spring				Anthropogenic								No barriers on USFS	
Chinook				Barriers									
Upper	Methow	MEC4A	Gold	4.1: Riparian	10.00%	75	75	75	80	75.1	85	Riparian mostly	20
Columbia	River		Creek	Condition:								functioning (for being in a	
Spring				Riparian								canyon) - biggest problems	
Chinook				Vegetation								in flats and road footprint	
Upper	Methow	MEC4A	Gold	5.2: Peripheral	20.00%	45	45	45	50	45	50	Not much floodplain	2(
Columbia	River		Creek	and Transitional								naturally - not much could	
Spring				Habitats:								do.	
Chinook				Floodplain									
				Condition									
Upper	Methow	MEC4A	Gold	6.1: Channel	30.00%	70	70	70	75	70	80		20
Columbia	River		Creek	Structure and									
Spring				Form: Bed and									
Chinook				Channel Form									

015 LB EP: No actions, no change. -MAH.2.25.2016

	Populatio		Assessme	2012 Standardized		Low	Original 2018	Updated 2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper Columbia	Methow River	MEC4A	Gold Creek	6.2: Channel Structure and	25.00%	45	45	45	60	45.1	75		20
Spring Chinook				Form: Instream Structural Complexity									
Upper Columbia Spring Chinook	Methow River	MEC4A	Gold Creek	9.2: Water Quantity: Decreased Water Quantity	5.00%	90	90	90	90.5	90.5	90.5	May be a partial barrier but don't know for sure. No barriers on USFS	20
Upper Columbia Spring Chinook	Methow River	MEC4B	Libby Creek	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	95	95	95	100	95	100		20
Upper Columbia Spring Chinook	Methow River	MEC4B	Libby Creek	4.1: Riparian Condition: Riparian Vegetation	35.00%	75	75	75	77	75.3	80	Confluence to border of WDFW property (~RM 1.5?) opportunities for fencing and revegetation. Evaluated for the entire watershed.	No pe
Upper Columbia Spring Chinook	Methow River	MEC4B	Libby Creek	6.1: Channel Structure and Form: Bed and Channel Form	25.00%	60	60	60	75	60.1	75	Mouth to ~RM4 focus of this EC	20
Upper Columbia Spring Chinook	Methow River	MEC4B	Libby Creek	6.2: Channel Structure and Form: Instream Structural Complexity	25.00%	45	45	45	60	45.1	75		20
Upper Columbia Spring Chinook	Methow River	MEC4B	Libby Creek	9.2: Water Quantity: Decreased Water Quantity	10.00%	75	75	75	80	75.2	80	Diversions probably not migration barriers.	20
Upper Columbia Spring Chinook	Methow River	MEC5	Lower Chewuch	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	85	85	85	98	85	98		20 tir wa
Upper Columbia Spring Chinook	Methow River	MEC5	Lower Chewuch	3.1: Food: Altered Primary Productivity	5.00%	75	75	75	85	75	85		20 tir wa

015 LB EP: No actions, no change. -MAH.2.25.2016

015 LB EP: No actions, no change. -MAH.2.25.2016

015 LB EP: No actions, no change. -MAH.2.25.2016

o actions. No change. Comment entered RM 5/25/2016 er input from Yakama Nation 5/3/2016.

015 LB EP: No actions, no change. -MAH.2.25.2016

015 LB EP: No actions, no change. -MAH.2.25.2016

015 LB EP: No actions, no change. -MAH.2.25.2016

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there vas no change from the low bookend. EWL 3.11.16

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there vas no change from the low bookend. EWL 3.11.16

				2012			Original	Updated					Γ
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper	Methow	MEC5	Lower	4.1: Riparian	15.00%	55	55	55.5	65	58	75	Riparian and floodplain	Es
Columbia	River		Chewuch	Condition:								combined in 09 EP, used	Re
Spring				Riparian								lower chewuch values	th
Chinook				Vegetation									u
													pr
													5/
													w
													st
													or
													pr
													er
													6.
													dı
													cł
Upper	Methow	MEC5	Lower	5.1: Peripheral	25.00%	55	57	66.5	70	57	70	Most sidechannels in the	U
Columbia	River		Chewuch	and Transitional								lower have been cutoff,	ac
Spring				Habitats: Side								filled, and developed	Pa
Chinook				Channel and									fr
				Wetland									ha
				Conditions									9.
													AS
													in
													O
													les b
													tr
													10
													SF
													ha

stimate assumes approx. 35 acres riparian improvement. emaining effects from grazing, roads, recreation. In 2016 ne Expert Panel was unable to provide an estimate of plift without additional input from the Yakama Nation on roject details and applicable habitat functions. On /3/2016 the Yakama Nation included additional project ork in the calculation spreadsheet and adjusted the rream miles treated based on their project work. Based in this the Yakama Nation prorated the benefits rojected to 2018 and assigned a 0.5% uplift. Comments intered and verified RM 5/24/2016.

23.16 buck forest fuels project removed from project list ue to no action agency involvement, but there was no nange to the uplift

nlisted future opportunities would provide majority of ctions needed to reach high bookend. In 2016 the Expert anel was unable to assign uplift without additional input om the Yakama Nation on project details and applicable abitat functions. The Expert Panel used a denominator of 8 miles per the Bureau of Reclamation Tributary/Reach ssessment GIS layer. The Yakama Nation wanted more formation regarding the 9.8 mile denominator. Based n input from the Yakama Nation on 5/3/2016 the stimate of benefit was modified to include the Chewuch etween RM 13 - 15.5. That altered the stream miles eated. Based on this the estimated uplift was 11.5. comments entered RM 5/24/2016.

D/4/12: I disagree with this comment: Some side nannels may have been filled by deposition of fine ediment mainly as a natural process; not many, if any, ave been developed or filled in by people

	Populatio		٨٠٢٩٢٢٩٩	2012 Standardized		Low	Original	Updated	High 2018	Original 2033	High 2033	LE Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper	Methow	MEC5	Lower	6.1: Channel	2.50%	75	77	77.1	90	77	90		Re
Columbia	River		Chewuch	Structure and									(n
Spring				Form: Bed and									Pa
Chinook				Channel Form									th
													ha
													pr
													th
													sh
													ca
													10
													fro
													of
													ac
													be
													ad
													en
													6.
													C0
													lin
													Inc
													Ina
													pr
													<b> </b>

elocations in 8-mile or 20-mile would provide benefits not Cub or Boulder - above barriers). In 2016 the Expert anel was unable to estimate uplift without input from e Yakama Nation on project details and applicable abitat functions. On 5/3/2016 the Yakama Nation rovided input on improvements to the tributaries and ne mainstem that were determined to be "in good nape." Most habitat actions addressed LF 6.2. Based on alculation that included the Chewuch River between RM and 13-15.5 that were included because of affects om apex structures on channel geometry the estimate benefits was prorated at 100%. No Yakama Nation tions in side channels were included in the estimate of enefits for LF 6.1. The Yakama Nation would like this Idressed during the look forward in June. Commented ntered RM 5/24/2016.

23.16: Discussed at Lookforward meeting and reached oncurrence, but the Yakama Nation used miles of 100% eatment rather than overall project length, which results the same total if total project length were used with a ower proration. This differs from the calculation method sed by the panel for non-Yakama Nation projects. espite some concerns that this might create a erception of 100% treatment over the whole reach, the anel agreed to use this method for the Yakama Nation rojects. EWW 7.29.16

				2012			Original	Updated					Γ
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper	Methow	MEC5	Lower	6.2: Channel	15.00%	60	65	79.4	80	70	80		Es
Columbia	River		Chewuch	Structure and									st
Spring				Form: Instream									Pa
Chinook				Structural									w
				Complexity									ar
													Ya
													be
													Ri
													1.
													A
													in
													fo
													5/
													6.
													Si
													pr
													ef
													tr
													m
													im
Upper	Methow	MEC5	Lower	7.2: Sediment	20.00%	50	50	50	52	50.3	55	High bookend assumes	Be
Columbia	River		Chewuch	Conditions:								some riparian	20
Spring				Increased								improvement	5/
Chinook				Sediment									
				Quantity									
Upper	Methow	MEC5	Lower	8.1: Water	2.50%	40	40	40	60	44	60		Es
Columbia	River		Chewuch	Quality:									6.
Spring				Temperature									ra
Chinook													ch
Upper	Methow	MEC5	Lower	9.2: Water	10.00%	80	80	80	90	85	90	Used 09 EP Lower	Es
Columbia	River		Chewuch	Quantity:								Chewuch value	in
Spring				Decreased Water									Cł
Chinook				Quantity									in
													Se
													20
													5/
Upper	Methow	MEC6A	Lower	4.1: Riparian	25.00%	80	80	80	82	81	85		10
Columbia	River		Methow	Condition:									nc
Spring				Riparian									/:
Chinook				Vegetation									1

stimate based on 5 treatment areas w/ total of abt. 8 cream miles improved complexity. In 2016 the Expert anel determined that they could not estimate uplift without input from the Yakama Nation on project details and applicable habitat functions. Based on input from the akama Nation 5/3/2016 that included the Chewuch River etween RM 11.75 and 13 (River Left, 2013 and River ight 2015) the proration on the uplift was split for the .25 miles of stream between the 2013 and 2015 actions. s per Yakama Nation, no side channels were considered a consideration. This needs to be addressed at the look prward meeting in June. Comments entered RM /24/2016.

.23.16: discussed by full panel during EP lookforward. ide channels are not included in consideration. Seven rojects treated 7.15 stream miles, but after prorating for ffective treatment by 2018, 4.335 stream miles were reated. Relative to the 22.4 Chinook bearing stream hiles in the assessment unit, there was a 19.4% nprovement. EWW 7.29.16

eaver Project would slightly decrease road sediments. 015 No actions. No change. Comment entered RM /24/2016.

stimate also considers projects under LF 4.1 Riparian and .2 Instream Complexity - Pete's Ck, 10-mile & 8-mile anches (11.75-13+ and 13-15.5). 2015 No actions. No hange. Comment entered RM 5/24/2016.

stimate doesn't consider the Fulton pipe project included Actions list.

nanges from fall to spring diversion to refill Perrygin Lake nproves conditions fo chinook/steelhead.

cure 10 of 40 cfs diverted

015 No actions. No change. Comments entered RM /24/2016.

0/4/12: Riparian Conditions in the Lower methow have ot been formally assessed so this is actually an unknown. 2015 LB EP: No actions, no change. -MAH.2.25.2016

				2012			Original	Updated					Γ
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper	Methow	MEC6A	Lower	5.1: Peripheral	20.00%	80	80	80	81	80	81	Riparian and floodplain	1(
Columbia	River		Methow	and Transitional								combined in 09 EP; Casey -	u
Spring				Habitats: Side								I don't think there are	m
Chinook				Channel and								any sidechannels that are	N
				Wetland								cut off due to human	
				Conditions								features, but maybe????	
Upper	Methow	MEC6A	Lower	6.1: Channel	25.00%	80	80	80	81	81	81		20
Columbia	River		Methow	Structure and									zc
Spring				Form: Bed and									ac
Chinook				Channel Form									
Upper	Methow	MEC6A	Lower	6.2: Channel	25.00%	75	75	75	80	76	80	lower methow likely has	20
Columbia	River		Methow	Structure and								less wood than it did	lur
Spring				Form: Instream								historically and we know	ar
Chinook				Structural								, that a lot of iuvenile	20
				Complexity								salmonids rear in canyon	tii
												habitat in other areas	w
												(Tumwater)	
Upper	Methow	MEC6A	Lower	9.2: Water	5.00%	93	93	93	93	93	93		1(
Columbia	River		Methow	Quantity:									to
Spring				Decreased Water									Di
Chinook				Quantity									14
													- t
													20
													ltii
													w
Upper	Methow	MEC6B	Black	1.1: Habitat	20.00%	90	90	90	100	90	100	1 culvert remaining (higher	20
Columbia	River		Canyon	Quantity:								up)	5/
Spring				Anthropogenic									
Chinook				Barriers									
Upper	Methow	MEC6B	Black	4.1: Riparian	0.00%	80	80	80	81	80	81		20
Columbia	River		Canyon	Condition:									5/
Spring				Riparian									
Chinook				Vegetation									
Upper	Methow	MEC6B	Black	6.2: Channel	0.00%	93	93	93	93	93	93		20
Columbia	River		Canyon	Structure and									5/
Spring				Form: Instream									
Chinook				Structural									
				Complexity									
Upper	Methow	MEC6B	Black	7.2: Sediment	45.00%	65	65	65	70	65.1	75	Managed for timber	20
Columbia	River		Canyon	Conditions:								harvest and grazing. Roads	3/
Spring				Increased								and recreation.	Ĺ
Chinook				Sediment									
				Quantity									

D/4/12: This has not been assessed so is actually an nknown - there appear to be a few off channel areas that hay have been lost to small push up levees. / 2015 LB EP: o actions, no change. -MAH.2.25.2016

D12 LF: Beaver actions are outside the anadromous one; estimate based on Judd project. / 2015 LB EP: No ctions, no change. -MAH.2.25.2016

012: 10/4/12: Has not been assessed and so is an nknown - large wood sources from uspream and riparian reas is likley lower than historic conditions 015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there as no change from the low bookend. EWL 3.11.16

D/4/12: Needs further assessment. Low bookend is way o high. The lower Methow is likely flow impaired. iversion rate from all tribs upstream is over 40cfs…Base flow condition at Pateros is around 480 cfs this is nearly a 30% diversion rate…..

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there as no change from the low bookend. EWL 3.11.16

015 No actions. No change. Comments entered RM /24/2016.

015 No actions. No change. Comments entered RM /24/2016.

015 No actions. No change. Comments entered RM /24/2016.

015 No actions. No change. Comments entered RM /24/2016.

				2012			Original	Updated					Т
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Est
Upper	Methow	MEC6B	Black	9.2: Water	35.00%	70	70	70	75	70.2	75		20
Columbia	River		Canyon	Quantity:									3/
Spring				Decreased Water									
Chinook				Quantity									
Upper	Methow	MEC7	Lower	1.1: Habitat	5.00%	60	60	60	95	95	95		20
Columbia	River		Twisp	Quantity:									
Spring				Anthropogenic									
Chinook				Barriers									
Upper	Methow	MEC7	Lower	2.3: Injury and	0.00%								10
Columbia	River		Twisp	Mortality:									str
Spring				Mechanical Injury									thi
Chinook													20
													ad
													bo
Upper	Methow	MEC7	Lower	3.1: Food: Altered	8.00%	75	75	75	85	75	85		20
Columbia	River		Twisp	Primary									tin
Spring				Productivity									Wa
Chinook													
Upper	Methow	MEC7	Lower	4.1: Riparian	10.00%	60	64	64.3	64	75	75	Used lower twisp values,	20
Columbia	River		Twisp	Condition:								riparian and floodplain	im
Spring				Riparian								combined in 09 EP	20
Chinook				Vegetation									ad
													are
													are
													we
													Th
													20
													mi
													im
													6.2
													ca
													ste
													be

015 No actions. No change. Comments entered RM /24/2016.

15 LB EP: No actions, no change. -MAH.2.25.2016

0/4/12:MVID West push up dam, dewatereing and randing of redds and individuals. EP to consider adding is LF to 2016 Look Forward.

015: No actions were undertaken during 2012-2015 to Idress this limiting factor, therefore if there were a low bokend, there would be no change. EWL 3.14.16

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there as no change from the low bookend. EWL 3.11.16

012: Estimate based on 43 acres planned riparian provements.

115: Two projects treated 0.85 stream miles and were djusted based on planting maturity. Twisp Ponds plants e growing fast- a very successful project. Some plants e 20 ft. tall now. Twisp River Riparian protection 2014 eighted as 0% for now, pending tribal information. nus, the total stream miles of realized treatment by 018= 0.005. Relative to the 13.5 Chinook bearing stream iles in the Assessment Unit, there was a 0.04% provement (0.005/13.5\*100). EWL 3.20.16 23.16: Based on discussions with full Expert Panel, ilculations changed. 0.796 stream miles treated/18.6 eelhead (not Chinook; to account for off-site benefits) earing stream miles = 4.3% benefit. EWW 7.29.16

	Populatio		Assessme	2012 Standardized		Low	Original 2018	Updated 2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n .	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper Columbia Spring Chinook	Methow River	MEC7	Lower Twisp	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	15.00%	50	50	51.7	60	60	60	(below Buttermilk Creek)	2( sid & 2( E> 2( 0. sid St
Upper Columbia Spring Chinook	Methow River	MEC7	Lower Twisp	6.1: Channel Structure and Form: Bed and Channel Form	15.00%	50	50	50	60	51	60		lir 2( in pr 2(
Upper Columbia Spring Chinook	Methow River	MEC7	Lower Twisp	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%	50	50	52.1	60	55	60	(below Buttermilk Creek)	20 im 20 wr im Re As (0 6. m pr 7.
Upper Columbia Spring Chinook	Methow River	MEC7	Lower Twisp	8.1: Water Quality: Temperature	7.00%	25	25	25.5	40	30	40		20 fro 20 te 2. in in te Ju Li in

012: 10% improvement estimate based on 0.97 miles de channel & wetland enhancement per Actions list plus VID-West RM 4.6 project & Elbow Coulee Side Channel Elbow Coulee Right projects.

015: One project treated 0.3 miles of side channel. The spert Panel anticipates the project to be 75% realized by 018, therefore the treatment length was reduced to 225 side channel miles treated. Considered over all the de channel miles in the Assessment Unit (13.5; reamnet), this project improved conditions for this niting factor 1.7% (=0.225/13.5\*100). EWL 3.14.16

012: Bridge Ck beaver relocation estimate of 0.1%; 1% approvement estimate includes MVID-West RM 4.6 roject

016: No actions, therefore no change to low bookend. 012: Estimate based on 3 stream miles & 20 acres approved complexity

015: Three projects treated 0.32 miles of stream, which as then adjusted to reflect the anticipated realized aprovement to instream complexity by 2018 (=0.16). elative to all Chinook bearing stream miles in the ssessment Unit, there was a 1.2% improvement .16/13.5\*100). EWL 3.14.16

23.16: benefits modified by Yakama nation= 0.8 stream iles treated, then prorated to =0.29/13.5=2.1%. Full anel concurrence during look forward meeting. EWW 29.16

012: Estimate also includes major flow improvements om projects in 9.2 & 5.1 LF actions.

D15: Recognizing that increased flow increases mperature resiliency, the Expert Panel adjusted the 3% improvement to flow to represent the improvement temperature by subjectively imposing a 5% mprovement factor. Therefore, improvement to mperature resulted in 0.1% (2.3\*5). EWL 3.20.16 ne, 2016: The full panel tentatively settled on using miting Factor 9.2 uplift value, prorated 5% for a new mprovement estimate = 0.5%. EWW 7.29.16

				2012			Original	Updated					
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper Columbia Spring Chinook	Methow River	MEC7	Lower Twisp	9.2: Water Quantity: Decreased Water Quantity	30.00%	40	40	42.3	75	67	75	EP CHANGED BOOKENDS FROM 60 TO 75 AT 6/28/12 WORKSHOP BASED ON NEW POTENTIAL	20 div W Pc
													20 1 ( ba th
Upper Columbia Spring Chinook	Methow River	MEC8A	Middle Methow	1.1: Habitat Quantity: Anthropogenic Barriers	2.00%	85	85	85	98	90	98		20 Pr EP sig div th co M
Upper Columbia Spring Chinook	Methow River	MEC8A	Middle Methow	2.3: Injury and Mortality: Mechanical Injury	8.00%	80	80	81.5	95	95	95	LF added during 6/28/2012 workshop	20 op Ba all 10 pr ch bc pr th bc pr th Fc

012: Estimate based on 3400 ac-ft/yr (15 cfs of 33 cfs verted almost 50% from 40 to 100 = 65%) 'ater transaction obtained thru TU for CBWTP.

oorman + Devaney also include screens.

D15: One permanent acquisition resulted in a savings of cfs. Relative to the 43 cfs base flow (lowest mean daily ase flow average 1974-2010; Twisp River USGS gauge), here is a 2.3% improvement in flow. EWL 3.20.16

012 LF EP: Total improved access from Bear Cr. & Barkley rojects = 1 mile. Remaining barriers on Bear Ck. would ben access to habitat w/ low intrinsic potential. 2015 LB P: The temporary Barkley project did not alleviate any gnificant passage barrier. The final removal of the version may have more impact. No uplift to LF1.1, but ere is a benefit for injury/mortality from push up dam onstruction (LF2.3), based on current action. 0% uplift. -AH2.25.2016

)12 EP: No project listed, but estimate based on portunity to eliminate heavy equipment maintenance push-up dams & eliminate fish accessibility to intake at arkley diversion. Collaboration among WDFW screen op/TU/ Reclamation & YN. Projects listed would address l known issues. Other projects would improve from 95-00%. / 2015 LB EP: The temporary pump station Barkley oject did not alleviate all injury/mortality from the annel, but the permanent change should alleviate all ortality and injury from stranding. Panel determined hat, based on the 15% difference between the low ookend and high bookend (80-95%), the temporary oject helped alleviate 10% of the remaining issues in is AU. Elimination of the Barkley Project should result in e remaining 13.5% uplift to reach 95% during the Look orward. 1.5% uplift. -MAH2.25.2016

				2012			Original	Updated					Γ
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper Columbia Spring Chinook	Methow River	MEC8A	Methow	4.1: Riparian Condition: Riparian Vegetation	15.00%	48	48	48.9	50	55	55	Riparian and floodplain combined in 09 EP, 09 EP LB 45 increased to 48 in 2012 EP	2( im 2( m gr at sc ef st im Ju by st ef be a
Upper Columbia Spring Chinook	Methow River	MEC8A	Middle Methow	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	25.00%	55	55	63	70	68	70		200 im Es 3F W 200 de ch tro ch As im 6. re Sc tro all th be

012: Estimates based on planned 75 acres riparian aproved.

015: Eight vegetation projects treated 3.03 stream hiles, and recognizeing that vegetation takes time to row, the Expert Panel adjusted those stream miles by tributing 1%/year benefit. Except for 1890s which had egative (net loss) effect on existing riparian vegetation, o no credit was given. Thus 0.0924 stream miles were ffectively treated. Relative to the 25.2 Chinook bearing ream miles in the Assessment Unit, there was a 0.4% hprovement (0.0924/25.2\*100). EWL 3.20.16 ine 2016: stream miles treated and prorations modified y full Expert Panel during Lookforward meeting. 3.7 ream miles treated. With prorations, 0.217 miles ffectively treated by 2018. Relative to the 25.2 Chinook earing stream miles in the assessment unit, there will be 0.9% improvement. EWW 7.29.16

012: Estimate considers total of approx. 5 miles channel approvement

timate includes projects shown under 4.1 Riparian LF -R, Barkley, WDFW Floodplain, Whitefish, (Sugar Levee, 'itte Risley?) + projects listed under this 5.1 LF )15: Four projects were evaluated and the Expert Panel etermined that each would reach 100% of the realized ange b 2018, therefore, the side channel stream miles eated were totaled = 1.46. Relative to the 20 side annel miles in the Assessment Unit (from Tributary sessment Geodatabase), the projects resulted in a 7.3% provement (1.46/20\*100). EWL 3.14.16 23.16. During the lookfoward meeting, the full panel viewed mileages and progrations for this limiting factor. ome treatment lengths were revised for a total eatment length of 1.59 stream miles (100% proration for l projects). Relative to the 20 miles of side channels in e assessment unit (BOR tributary assessment) there will an 8% improvement. EWW 7.29.16

				2012			Original	Updated					
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper	Methow	MEC8A	Middle	6.1: Channel	10.00%	50	50	51.8	70	55	70	Focus of much of M2 work	20
Columbia	River		Methow	Structure and									ex
Spring				Form: Bed and									lo
Chinook				Channel Form									20
													tre
													by
													Ch
													th
													(0.
													6.2
													Ro
													ler
													tre
													mi Ch
													UI th
Upper	Methow	MEC8A	Middle	6.2: Channel	25.00%	50	50	54.2	70	60	70		20
Columbia	River		Methow	Structure and									im
Spring				Form: Instream									fo
Chinook				Structural									20
				Complexity									th
													im
													to
													Ch
													th
													3.:
													50
													re
													be
													6.
													ad
													1.0 +r/
													h

D12: Estimate considers actions listed under LF4.1 & 5.1 kcept Silver. Silver can be added in 2015 workshop as bok back actions if occur.

015:Five projects treated 0.83 river miles, and those eated miles were adjusted to reflect action effectiveness v 2018 (=0.415 miles). Relative to the 25.2 miles of hinook bearing stream miles in the Assessment Unit, ere was a 1.6% improvement for this limiting factor .415/25.2\*100). EWL 3.14.16

23.16 - Modified by yakama nation comments. Eagle ocks project removed from consideration and treatment ngths and proration values modified. 1.2 stream miles eated, but after proration for PFC to 2018, 0.445 stream illes were effectively treated. Relative to the 25.2 hinook bearing stream miles across the assessment unit, here will be a 1.8% improvement. EWW 7.29.16

012: Estimate considers about 4.05 stream miles aproved complexity, install of 118 structures (8 structres r Lewisia & 12 for Silver Reach).

015: Seven projects treated 2.41 miles of stream and nose miles were adjusted based on anticipated nprovement by 2018. Most were 100%. Therefore, the otal stream miles treated was 2.13. Relative to the 25.2 hinook bearing stream miles in the Assessment Unit, here was a 8.6% improvement (2.16/25.2\*100). EWL 14.16

0-60% treats 1/2 of reach covered by existing RA; maining 60-70% to be treated by actions from the RA to e completed.

6.23.16: Several treatment lengths and prorations were adjusted by full panel for a total stream miles treated = 1.8 and with prorations, the stream miles effectively treated by 2018=1.055. Relative to the 25.2 Chinook bearing stream miles in the assessment unit, there will be a 4.2% improvement. EWW 7.29.16

				2012			Original	Undated					Г
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	I F Weight and Bookends	
FSU	n	Code	nt Unit	Limiting Factor	I F Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	F
Lipper	Methow	MECRA	Middle	8 1: Water	5 00%	75	77	77.2	25	77	25		20
Columbia	Divor	WILCOA	Mothow	Ouplity:	5.00%	/5	//	//.2	0.5	//	65		
Columbia	River		Wethow	Quality.									d
Spring				remperature									pa
Спіпоок													lin I.
													In
													CC
													20
													ag
													pr
													18
													w
													st
													es
													ar
													Tł
													to
													th
													(0
													6.
													Dr
													st
													to
													h
													2
													a
Unner	Methow	MECQA	Middle	0.2.Water	10.00%	75	75	75	Q5	75.2	Q5	This is look at the	20
Columbia	Divor	WILCOA	Mothow	Oupptity:	10.00%	/5	/5	/5	0.5	75.2	65	sumulative offect to this	
Columbia	River		Wethow	Quantity.									
Spring				Decreased water								reach of water savings	ar
Спіпоок				Quantity								upstream.	20
													tii
													w
					/								
Upper	Methow	MEC8B	Upper-	1.1: Habitat	5.00%	85	85	85	85	85	85	Foghorn	20
Columbia	River		Middle	Quantity:									
Spring			Methow	Anthropogenic									
Chinook				Barriers									$\bot$
Upper	Methow	MEC8B	Upper-	3.1: Food: Altered	5.00%	75	75	75	85	76	85		20
Columbia	River		Middle	Primary									pl
Spring			Methow	Productivity									
Chinook													

012 LF EP: Estimate also includes 4.1, 5.1, & 9.2 LF ctions except Silver. Silver actions can be considered as art 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 overed by next RA.

D15 Expert Panel discussed the difficulty quantifying ggregate effects on temperature, but several of the rojects in this Assessment Unit (3R, Whitefish, and 890s) have created thermal herogeneity and refuge, hich increases fish survival. Three projects treated 1.16 ream miles and those miles were adjusted based on stimated thermal benefits, previous functional condition, nd location in relation to where fish are known to be. hus, 0.49 stream miles realized improvements. Relative to the 25.2 Chinook stream miles in the Assessment Unit, here was a 1.9% improvement to temperature 0.49/25.2\*100). EWL 3.20.16

.23.16: Modified by full EP; Treatment lengths and rorations adjusted for total treatment length = 1.4 tream miles, then prorated to represent improvements o 2018 = 0.55 stream miles. Relative to the 25.2 Chinook earing stream miles in the assessment unit, there will be 2.2% improvement. EWW 7.29.16

012: Estimate only includes consideration from Bear reek project 100 af/yr metrics. Beavers in upstream reas have no effect on flow downstream .

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there vas no change from the low bookend. EWL 3.11.16

015 LB EP: No actions, no change. -MAH2.25.16

012 LF: estimate based on Hancock nutrient treatment lan. / 2015 LB EP: No actions, no change. -MAH2.25.16

				2012			Original	Updated					Τ
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper	Methow	MEC8B	Upper-	4.1: Riparian	10.00%	60	60	60	62	60.2	65		20
Columbia	River		Middle	Condition:									Va
Spring			Methow	Riparian									ac
Chinook				Vegetation									
Upper	Methow	MEC8B	Upper-	5.1: Peripheral	15.00%	65	65	68.4	80	80	80	progress from 80%	20
Columbia	River		Middle	and Transitional								bookend to 100% would	&
Spring			Methow	Habitats: Side								be based on actions	sh
Chinook				Channel and								around hatchery &	20
				Wetland								Winthrop	w
				Conditions									in
													m
													as
													(0
Upper	Methow	MEC8B	Upper-	6.1: Channel	23.00%	65	65	65	75	70	75		20
Columbia	River		Middle	Structure and									&
Spring			Methow	Form: Bed and									ac
Chinook				Channel Form									
Upper	Methow	MEC8B	Upper-	6.2: Channel	22.00%	65	65	65	75	70	75		20
Columbia	River		Middle	Structure and									RI
Spring			Methow	Form: Instream									20
Chinook				Structural									co
				Complexity									in
													be
													th
													(0
													6.
													Tł
													w
Upper	Methow	MEC8B	Upper-	9.2: Water	20.00%	80	80	80	85	80	85	Foghorn	20
Columbia	River		Middle	Quantity:									Ha
Spring			Methow	Decreased Water									м
Chinook				Quantity									
Upper	Methow	MEC9	Upper	4.1: Riparian	10.00%	90	90	90	92	90	95	Early recovery from	20
Columbia	River		Chewuch	Condition:								burning	tir
Spring				Riparian								-	w
Chinook				Vegetation									
Upper	Methow	MEC9	Upper	6.1: Channel	5.00%	90	90	90	93	90	95		20
Columbia	River		Chewuch	Structure and									tir
Spring				Form: Bed and									w
Chinook				Channel Form									

012 LF: Estimate based on WDW Fender Mill & Big alley project described in LF 5.1. / 2015 LB EP: No tions, no change. -MAH2.25.16

D12: estimate based on planned Fender Mill, Big Valley Heath/Big Valley RIGHT projects (FWS w/ BPA cost nare).

015: One project restored 0.5 side channel miles, which ill be fully realized by 2018 (100% adjustment for provement factor). Relative to the 15.1 side channel siles in the Assessment Unit (from BOR tributary essessment project), the benefit of this project is 3.4% 0.5/15.1\*100). EWL 3.15.16

012 LF: Estimate based on WDFW Fender Mill, Blg Valley, Heath/Big Valley RIGHT projects. / 2015 LB EP: No tions, no change. -MAH2.25.16

012 LF: Estimate based on Big Valley, Heath/BIg Valley GHT & WDFW Fender Mill projects.

015: One project that treated 0.5 stream miles was onsidered fully effective by 2018 (100% adjustment for approvement factor). Relative to the 10.8 Chinook earing stream miles in the Assessment Unit (Streamnet), he improvement for this limiting factor is 4.6% 0.5/10.8\*100). EWL 3.15.16

23.16: No actions, therefore no change to low bookend. his was a change from the 2015 lookback meeting that as agreed upon by full expert panel. EWW 7.29.16

D12 LF: No effect unless beaver reintro occurs in ancock. / 2015 LB EP: No actions, no change. -IAH2.25.16

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there as no change from the low bookend. EWL 3.11.16

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there as no change from the low bookend. EWL 3.11.16

Populatio ESUAssessme nAssessme ht UnitStandardized Limiting FactorLow LF Weight2018 Bookend2018 EstimateHigh 2018 BookendOriginal 2033 EstimateHigh 2033 BookendLF WeightConv CommUpper Columbia Spring ChinookMEC9 NetworkUpper Chewuch6.2: Channel Structure and Form: Instream Structural Complexity70.00%8080808580909090Upper ChinookMethow MEC9Upper Verwuch6.2: Channel Structure and Form: Instream Structural Complexity70.00%8080808085809090909090909090909090909090909095Sedime mosthyUpper Columbia Columbia ColumbiaMethow BiverMEC9Upper Chewuch7.2: Sediment Conditions:15.00%909090929095Sedime mosthy	eight and Bookends ments E 2 ti w nent condition is 2 ly natural ti
ESUnCodent UnitLimiting FactorLF WeightBookendEstimateBookendEstimateBookendEstimateBookendCommUpper ColumbiaMethow RiverMEC9 RiverUpper Chewuch6.2: Channel Structure and Form: Instream Structural Complexity70.00%8080808085809	ments E 2 ti w nent condition is 2 ly natural ti w
Upper Columbia Spring ChinookMethow RiverMEC9 ChewuchUpper Structure and Form: Instream Structural Complexity70.00% No80808085809090Upper Opper ColumbiaMethow RiverMEC9 MethowUpper Complexity6.2: Channel Structure and Form: Instream Complexity70.00% 	2 ti w nent condition is 2 ly natural ti w
Columbia       River       Chewuch       Structure and       Form: Instream         Spring       Chinook       Structural       Complexity       Form: Instream         Upper       Methow       MEC9       Upper       7.2: Sediment       15.00%       90       90       90       92       90       95       Sediment         Mothow       River       Chewuch       Conditions:       Instructural	ti ment condition is 2 ly natural w
Spring Chinook       Image: Spring Chinook       Form: Instream Structural Complexity       Image: Spring Structural Complexity       Image: Spring Structural Complexity       Image: Spring Structural Structural Complexity       Image: Spring Structural Structural Complexity       Image: Spring Structural Structural Complexity       Image: Spring Structural Structural Spring Structural Complexity       Image: Spring Structural Structural Structural Complexity       Image: Spring Structural Structural Spring Structural Spring Structural Spring Structural 	nent condition is 2 ly natural w
Chinook       Structural Complexity       Structural Complexity       Structural       Structural	nent condition is 2 ly natural ti w
Image: ComplexityImage: ComplexityImage: ComplexityImage: ComplexityUpperMethowMEC9Upper7.2: Sediment15.00%909090929095SedimentColumbiaRiverChewuchConditions:Image: ComplexityImage: ComplexityImage: ComplexityImage: ComplexityImage: ComplexityImage: Complexity	nent condition is 2 ly natural ti w
Upper Methow MEC9 Upper 7.2: Sediment 15.00% 90 90 90 92 90 95 Sedim Columbia River Chewuch Conditions:	nent condition is 2 ly natural ti w
Columbia River Chewuch Conditions:	ly natural ti w
	M
Spring Increased Increased	
Chinook Sediment	
Quantity	
Upper Methow MEC10A Upper 1.1: Habitat 5.00% 75 75 75 90 75 90	2
Columbia River Methow Quantity:	
Spring	
Chinook Barriers	
Upper Methow MEC10A Upper 3.1: Food: Altered 5.00% 75 75 75 85 75 85 Water	er quality in 09 EP no 2
Columbia River Methow Primary values	2S
Spring Productivity	
Chinook	
Upper Methow MEC10A Upper 4.1: Riparian 10.00% 70 70 70 70 72 70.5 75 From 1	Weeman up to 2
Columbia River Methow Condition:	ama (associated with t
Spring	lopment): includes
Chinook Vegetation Goat C	Creek
Upper Methow MEC10A Upper 5.1: Peripheral 10.00% 60 60 60 75 65 75 Heath	h Ranch. Some 2
Columbia River Methow and Transitional Oppor	rtunity between Goat ti
Spring Habitats: Side Creek	k and Lost River.:
Chinook Channel and Include	des Goat Creek
Wetland	
Conditions	
Upper Methow MEC10A Upper 6.1: Channel 15.00% 75 75 75 85 77 85 Localiz	ized evere incisions, 2
Columbia River Methow Structure and channel	nel straightening. 2
Spring Form: Bed and Most a	actions would occur ti
Chinook Channel Form	Lost River down to
Weem	man Bridge: includes
Goat C	Creek.
Upper Methow MEC10A Upper 6.2: Channel 10.00% 75 75 75 85 77 85 Most a	actions would occur 2
Columbia River Methow Structure and from L	Lost River down to ti
Spring Form: Instream Weem	man Bridge.: includes
Chinook Structural Goat.C	,Creek
Complexity	
Upper Methow MEC10A Upper 7.2: Sediment 5.00% 85 85 85 85 85 85 85 65 65 65	creek off of White 2
Columbia River Methow Conditions:	Mountain. Not an 2
Spring Increased lissue i	in the main channel.
Chinook Sediment	W
Quantity	1

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there vas no change from the low bookend. EWL 3.11.16

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there vas no change from the low bookend. EWL 3.11.16

015 LB EP: No actions, no change. -MAH.2.25.2016

015 LB EP: No actions, no change. -MAH.2.25.2016

015: No actions were undertaken during 2012-2015 for his limiting factor, therefore there was no change from he low bookend. EWL 3.11.16

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there vas no change from the low bookend. EWL 3.11.16

012: Same benefit for Chinook & steelhead 015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there vas no change from the low bookend. EWL 3.11.16

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there vas no change from the low bookend. EWL 3.11.16

012: minimal impact from beaver reintroduction 015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there vas no change from the low bookend. EWL 3.11.16

	Populatio		Assessme	2012 Standardized		Low	Original 2018	Updated 2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper	Methow	MEC10A	Upper	9.1: Water	0.00%								20
Columbia	River		Methow	Quantity:									tir
Spring				Increased Water									w
Chinook				Quantity									
Upper	Methow	MEC10A	Upper	9.2: Water	40.00%	30	30	30	40	30.5	40	Dry in most years from	20
Columbia	River		Methow	Quantity:								Early Winters down to	20
Spring				Decreased Water								Weeman. In dry years	tir
Chinook				Quantity								from just below Lost River.	w
												Not entirely anthropogenic	
												- is a losing reach and	
												would go dry in some years	
												anyway. Not lethal at the	
												AU scale - fish get above,	
												live, and leave in spite of	
												sections that go dry.;	
												includes Wolf Creek	
Upper	Methow	MEC10B	Lost River	1.1: Habitat	0.00%	75	75	75	98		98		20
Columbia	River			Quantity:									tir
Spring				Anthropogenic									w
Chinook				Barriers									L
Upper	Methow	MEC10B	Lost River	3.1: Food: Altered	20.00%	75	75	75	85	75	85	Used same values as Early	20
Columbia	River			Primary								Winters	tir
Spring				Productivity									w
Chinook													
Upper	Methow	MEC10B	Lost River	4.1: Riparian	25.00%	85	85	85	87	85	90	Lost river combined with	20
Columbia	River			Condition:								early winters in 09 EP	tir
Spring				Riparian									W
Chinook				Vegetation	0.0.000/	0.7	0.7						
Upper	Methow	MEC10B	Lost River	5.2: Peripheral	30.00%	85	85	85	85	85	85	Evaluated for watershed	20
Columbia	River			and Iransitional									tir
Spring				Habitats:									W
Chinook				Floodplain									
Uppor	Mathow	MEC10D	Loct Divor	Condition	25.00%	OF	05	0	05	OF	OF	Sugar Dika ~PM1 E(2)	20
Opper	Divor	IVIECTOR	LOST RIVER	0.1. Channel	25.00%	65	65	65	65	65	65	Sugar Dike Rivi1.5(?);	20
Columbia	River			Structure and								Evaluated from watershed	
Spring				Channel Form								perspective (LBE would be	ľ
Спіпоок				Channel Form								IOWEI II IOOK at %	
Linner	Methow	MEC10P	Lost River	6 2. Channel	0.00%	60	60	60	90		90		20
Columbia	River	IVILCIUD	LUST RIVER	Structure and	0.00%	00	00		50		50		2U
Spring	NIVEI			Form: Instroom									<b>1</b>
Chinock				Structural									<b>1</b> **
CHIHOUK				Comployity									
1	1	1	1	COMPLEXILY	1	1	1	1	1	1	1	1	1

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there as no change from the low bookend. EWL 3.11.16

012: most beaver reintro in Goat Ck (bull trout stream) 015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there as no change from the low bookend. EWL 3.11.16

D15: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there as no change from the low bookend. EWL 3.11.16

D15: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there as no change from the low bookend. EWL 3.11.16

D15: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there as no change from the low bookend. EWL 3.11.16

D15: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there as no change from the low bookend. EWL 3.11.16

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there as no change from the low bookend. EWL 3.11.16

D15: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there as no change from the low bookend. EWL 3.11.16

				2012			Original	Updated					
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper	Methow	MEC10B	Lost River	9.1: Water	0.00%								20
Columbia	River			Quantity:									tir
Spring				Increased Water									wa
Chinook				Quantity									
Upper	Methow	MEC11	Upper	1.1: Habitat	0.00%	93	93	93	94	93	96		20
Columbia	River		Twisp	Quantity:									tir
Spring				Anthropogenic									wa
Chinook				Barriers									
Upper	Methow	MEC11	Upper	3.1: Food: Altered	20.00%	75	75	75	85	77	85		20
Columbia	River		Twisp	Primary									Lo
Spring				Productivity									20
Chinook													tir
													wa
					45.000/	05	05	05	00	05	0.2		
Upper	Nethow	MECII	Upper	4.1: Riparian	15.00%	85	85	85	88	85	92		20
Columbia	River		Iwisp	Condition:									20
Spring				Riparian									tir
Спіпоок				vegetation									Wa
Upper	Methow	MEC11	Upper	5.1: Peripheral	15.00%	85	85	85	88	85	92		20
Columbia	River		Twisp	and Transitional									tir
Spring				Habitats: Side									wa
Chinook				Channel and									
				Wetland									
				Conditions									
Upper	Methow	MEC11	Upper	6.1: Channel	20.00%	90	90	90	93	90	95		20
Columbia	River		Twisp	Structure and									tir
Spring				Form: Bed and									wa
Chinook				Channel Form									
Upper	Methow	MEC11	Upper	6.2: Channel	20.00%	92	92	92.5	95	93	95		20
Columbia	River		Twisp	Structure and									tir
Spring				Form: Instream									wa
Chinook				Structural									Af
				Complexity									tre
													im
													sti
													im

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there as no change from the low bookend. EWL 3.11.16

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there as no change from the low bookend. EWL 3.11.16

212: YN - implement nutrient enhancement assessment.
aw initial estimate - uncertain of potential benefits.
actions were undertaken during the 2012-2015
ame frame to address this limiting factor, therefore there as no change from the low bookend. EWL 3.11.16

012: release upstream from disturbed area 015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there as no change from the low bookend. EWL 3.11.16

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there as no change from the low bookend. EWL 3.11.16

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there as no change from the low bookend. EWL 3.11.16

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there as no change from the low bookend. EWL 3.11.16 Ter Yakama Nation input, added one project that eated 0.1 stream miles and was fully effective upon plementation. Relative to the 18.6 Chinook bearing ream miles in the assessment unit, there will be a 0.5% provement. EWW 7.29.16

				2012			Original	Updated					Γ
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper	Methow	MEC11	Upper	7.2: Sediment	10.00%	90	90	90	95	90.5	95		20
Columbia	River		Twisp	Conditions:									tr
Spring				Increased									20
Chinook				Sediment									ltii
				Quantity									w
Upper	Methow	MEC11	Upper	9.1: Water	0.00%								20
Columbia	River		Twisp	Quantity:									tiı
Spring				Increased Water									w
Chinook				Quantity									
Upper	Methow	MEC12	Wolf	2.3: Injury and	10.00%	75	75	75	90	90	90	ADDED LF DURING 6/28/12	2(
Columbia	River		Creek	Mortality:								WORKSHOP	20
Spring				Mechanical Injury								need to evaluate status of	tiı
Chinook												screens in Wolf Ck	w
												Chinook utilize	
												downstream habitat - need	
												screen survey for lower	
												reach	
Upper	Methow	MEC12	Wolf	4.1: Riparian	15.00%	80	80	80	82	80	85	Lower 2 miles; RM 0-2.5	20
Columbia	River		Creek	Condition:									tir
Spring				Riparian									w
Chinook				Vegetation									
Upper	Methow	MEC12	Wolf	5.1: Peripheral	10.00%	75	75	75	80	75	80	Lower 2 miles; RM 0-2.5	20
Columbia	River		Creek	and Transitional									tiı
Spring				Habitats: Side									w
Chinook				Channel and									
				Wetland									
				Conditions									
Upper	Methow	MEC12	Wolf	6.2: Channel	35.00%	75	75	75	80	75	80	Focus on low 3-4 miles	20
Columbia	River		Creek	Structure and									tir
Spring				Form: Instream									w
Chinook				Structural									
				Complexity									
Upper	Methow	MEC12	Wolf	9.2: Water	30.00%	65	65	65	70	70	70	Wolf Creek Irrigation	20
Columbia	River		Creek	Quantity:								Diversion; Biddle Ponds(?)	tiı
Spring				Decreased Water									w
Chinook				Quantity									
Upper	Wenatche	WEC1	Chiwawa	1.1: Habitat	10.00%	98	98	98	99	98	99		20
Columbia	e River			Quantity:									irı
Spring				Anthropogenic									w
Chinook				Barriers									

D12: Beaver release more likely in tribs (Buttermilk Ck) ibs are sediment source; small % of issue

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there vas no change from the low bookend. EWL 3.11.16

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there vas no change from the low bookend. EWL 3.11.16

012: fix Wolf Ck ID screen (in wilderness) 015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there vas no change from the low bookend. EWL 3.11.16

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there vas no change from the low bookend. EWL 3.11.16

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there vas no change from the low bookend. EWL 3.11.16

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there vas no change from the low bookend. EWL 3.11.16

015: No actions were undertaken during the 2012-2015 me frame to address this limiting factor, therefore there vas no change from the low bookend. EWL 3.11.16

D15 EP LB: No actions, no uplift. (Note: EP deleted an rigation ditch/diversion project, which they determined as not completed in 2014-2015) -MAH 2.24.16

				2012			Original	Updated					
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper	Wenatche	WEC1	Chiwawa	3.1: Food: Altered	60.00%	50	50	50	75	50	80	Not a lot of data. The gap	20
Columbia	e River			Primary								between the low and high	
Spring				Productivity								bookends reflects an	
Chinook												assumed improvement(?)	
Upper	Wenatche	WEC1	Chiwawa	4.1: Riparian	15.00%	90	90	90	92	90	95		20
Columbia	e River			Condition:									
Spring				Riparian									
Chinook				Vegetation									
Upper	Wenatche	WEC1	Chiwawa	5.2: Peripheral	15.00%	95	95	95	97	95	97		20
Columbia	e River			and Transitional									
Spring				Habitats:									
Chinook				Floodplain									
				Condition									
Upper	Wenatche	WEC1	Chiwawa	6.2: Channel	0.00%	93	93	93	94	93	95		20
Columbia	e River			Structure and									
Spring				Form: Instream									
Chinook				Structural									
				Complexity									
Upper	Wenatche	WEC1	Chiwawa	7.2: Sediment	0.00%	29	29	29	29	29	29		20
Columbia	e River			Conditions:									
Spring				Increased									
Chinook				Sediment									
				Quantity									
Upper	Wenatche	WEC2	Chumstick	1.1: Habitat	8.00%	80	80	80	95	85	95	Mainstem Chumstick is	20
Columbia	e River			Quantity:								close, but barriers on	di
Spring				Anthropogenic								tributaries and Merry	ap
Chinook				Barriers								Canvon	ch
													wi
													ur
Upper	Wenatche	WFC2	Chumstick	4.1: Riparian	14.00%	60	60	60	65	60	80		20
Columbia	e River			Condition:									Cr
Spring				Riparian									<b>–</b>
Chinook				Vegetation									
Unner	Wenatche	WFC2	Chumstick	5 1. Perinheral	5 00%	55	55	55	60	55	60		20
Columbia	e River	11202	Chamberen	and Transitional	510070								<b> </b> -`
Spring	e niver			Habitats: Side									
Chinook				Channel and									
Chinook				Wetland									
				Conditions									
Upper	Wonatcho		Chumstick	6 2: Channel	5 00%	55	55	55	60	55	60		20
Columbia			Chumstick	Structure and	5.0070		55				00		20
Spring	e nivel			Form: Instroom									
Chinool				Structural									
CHIHOOK				Comploy									
1		1		Complexity	1	1	1	1	1	1	1	1	1

015 EP LB: No actions, no uplift. -MAH 2.24.16

015 EP LB: No actions, no uplift. -MAH 2.24.16

015 EP LB: No actions, no uplift. -MAH 2.24.16

015 EP LB: No actions, no uplift. -MAH 2.24.16

015 EP LB: No actions, no uplift. -MAH 2.24.16

012 LF EP: distributions similar for juveniles, steelhead istribution greater for spawning / 2015 LB EP: Action was pproximately RM9, which is upstream of extent of ninook use. Chinook use only documented to confluence with Eagle creek, approximately first 2 river miles. No plift. -MAH 2.24.16

015 LB EP: Action is significantly upstream of known hinook use. No uplift.-MAH 2.24.16

015 LB EP: No actions, no uplift. -MAH 2.24.16

015 LB EP: No actions, no uplift. -MAH 2.24.16

FSU	Populatio	Code	Assessme	2012 Standardized	I F Weight	Low	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033	High 2033	LF Weight and Bookends	Fs
Upper Columbia Spring Chinook	Wenatche e River	WEC2	Chumstick	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	60	60	60	75	60	75		20 20 Th ha
Upper Columbia Spring Chinook	Wenatche e River	WEC2	Chumstick	8.1: Water Quality: Temperature	20.00%	75	75	75.1	77	75	85	Reflects growth of Populus species, but not reconnection of floodplain, etc.	20 in , sig clo or 20 le
Upper Columbia Spring Chinook	Wenatche e River	WEC2	Chumstick	9.2: Water Quantity: Decreased Water Quantity	28.00%	50	50	52	90	50	90		ur 20 EF so ec Cr Tr ag is be av m ba
Upper Columbia Spring Chinook	Wenatche e River	WEC3	Icicle	1.1: Habitat Quantity: Anthropogenic Barriers	35.00%	70	70	70	90	70	90	Look at relative AU weight for Icicle - evidence no historic passage above boulder field	2. 20 bo fo M
Upper Columbia Spring Chinook	Wenatche e River	WEC3	Icicle	2.3: Injury and Mortality: Mechanical Injury	5.00%	50	50	50	90	50	90	Reflects screening of 2 out of four diversions. Would still be some mechanical injury associated with irrigation.	20
Upper Columbia Spring Chinook	Wenatche e River	WEC3	lcicle	4.1: Riparian Condition: Riparian Vegetation	10.00%	75	75	75	77	75	80	Averages conditions across Icicle (Lower is much worse than Upper)	20 ac

012 LF EP: Bookends remnant of last cycle- not a LF form 013 + / 2015 EP LB: No actions, no uplift. -MAH 2.24.16. ne one project listed was 6 miles upstream of Chinook abitat. EWL 3.15.16

015 LB EP: No data for the temperature of the water put from the acquistion, so unclear if there is any gnificant effect on water temperature. Therefore, not ear whether there is a temperature benefit from the nly action. Lease is 5-years only at this time, from 2014-019. Panel determined some uplift was probable from aving water in-stream, and decided to give the minimum olift possible of 0.1% uplift. -MAH2.24.16

012 LF EP: Water quantity project metrics tbd. / 2015 LB P: Point of diversion was near the mouth of Eagle Creek o may benefit Chinook. Panel considered 18 ac-ft is quivalent to .05-CFS for 180 days, or 0.1-CFS for 90 days. humstick flow is approximately 3CFS during lowest flows. his action was only during irrigation season, it is a 5-year greement with a landowner to not use that water. There at least 1 gauge in Chumstick, maybe 2. Benefit would e seasonal. Panel determined the benefit is 0.06 CFS verage over 5-months (the length of the agreement), and ain benefit is over 90 days (low flow summer). The aseflow is 3 CFS. Uplift is 0.06 CFS/3 CFS = 2.0%. -MAH 24.16

012 LF EP: 45% change applied to steelhead only- low ookend changed from 55 to represent existing condition r chinook. / 2015 LB EP: No actions, no uplift. - AH2.24.16

15 LB EP: No actions, no uplift. -MAH.2.24.16

015 LB EP: No actions, no uplift. (Note: EP deleted two tions in RM3 that had no AA nexus) -MAH.2.24.16

ESUPopulatio nCodeAssessme nt UnitStandardized Limiting FactorLow2018 LF Weight BookendHigh 2018 EstimateOriginal 2033 BookendHigh 2038 EstimateLF Weight and EstimateUpperWenatche columbia pringWEC3Icicle6.2: Channel Structure and Complexity15.00%2121212121212121Upper Columbia PringWenatche e RiverWEC3Icicle T.2: Sediment Conditions: Increased Sediment Quantity10.00%707070757076Conditions he naturally over Increased Sediment Quantity: Decreased Water Quantity: Decreased Water Quantity: Perceased Water Quantity: Productivity555555555590Action is to all improvement improvement improvement Quantity:Upper Columbia Columbia Pring ChinookWenatche Pring Pring Pring Pring Pring Pring Pring Pring Pring Pring Pring Pring Pring Pring Pring Pring Pring Pri	Bookends E: 2(
ESUnCodent UnitLimiting FactorLF WeightBookendEstimateBookendEstimateBookendEstimateBookendEstimateBookendCommentsUpper Columbia Spring Chinooke River eWE3lcicle6.2: Channel Structure and Form: Instream 	<mark>E</mark> : 2(
Upper Columbia Spring ChinookWEC3lcicle 	21
Columbia Spring Chinooke River RuleStructure and Form: Instream Structural ComplexityStructural Complexitylist and Form: Instream Structural ComplexityPart of the second seco	
Spring ChinookWenatche e RiverWEC3 ComplexityIcicle Conditions: Increased Sediment Quantity10.00% r70707070757076Conditions he naturally over naturally over naturally over for increased sediment Quantity7070757076Conditions he naturally over naturally over naturally over for increased sediment Quantity7070757076Conditions he naturally over naturally over naturally over for increased sediment Quantity: Decreased Water Quantity7070757076Conditions he naturally over naturally over naturally over for increased sediment Quantity: Decreased Water Quantity7070757076Conditions he naturally over naturally over increased for increased sediment Quantity: Decreased Water Quantity707075707676Conditions he naturally over increased for increased sediment quantity: Decreased Water Quantity: Decreased Water Quantity7070757076	
ChinookWenatche e RiverWEC3 e RiverIcicle Icicle7.2: Sediment Conditions: Increased Sediment Quantity10.00% r707070757076Conditions he naturally over NetworkUpper ChinookWenatche e RiverWEC3 e RiverIcicle9.2: Water Quantity25.00%55555565556565Upper Columbia Spring ChinookWenatche e RiverWEC3 QuantityIcicle9.2: Water Quantity25.00%55555565556565Upper QuantityQuantityQuantityDecreased Water Quantity25.00%555555855590Action is to all improvement improvement improvementUpper Columbia Spring ChinookWenatche e eWEC4Little Wenatche e3.1: Food: Altered Primary Productivity20.00%858585858590Action is to all improvement improvement improvement improvement Vegetation10.00%10.00%10.00%10.00%10.00%10.00%10.00%	
Image: ComplexityImage: ComplexityIm	
Upper Columbia Spring ChinookWEC3Icicle7.2: Sediment Conditions: Increased Sediment Quantity10.00%707070757076Conditions he naturally over naturally over naturally overUpper Columbia Spring ChinookWenatcheWEC3Icicle9.2: Water Quantity25.00%5555556555655565Spring ChinookNearcheWEC4Little3.1: Food: Altered Quantity25.00%55555555855590Upper Columbia Spring ChinookWenatche Primary eWEC4Little3.1: Food: Altered Primary Productivity20.00%8585858590Action is to all improvement improvement improvement columbiaUpper Columbia Spring ChinookWenatche WEC4Little Wenatche Wenatche Condition: e Riparian Vegetation20.00%8585858590Action is to all improvementSpring ChinookWenatche Wenatche VegetationWenatche Condition: e Riparian Vegetation20.00%8585858590Action is to all improvement	
Columbia Spring Chinooke RiverE RiverConditions: Increased Sediment QuantityIncreased Sediment QuantityIncreased Sediment QuantityIncreased Sediment QuantityIncreased Sediment QuantityIncreased Sediment QuantityIncreased Sediment QuantityIncreased Sediment QuantityIncreased Sediment QuantityIncreased Sediment QuantityIncreased Sediment QuantityIncreased Sediment QuantityIncreased Sediment QuantityIncreased Sediment QuantityIncreased Sediment Perceased Water QuantityIncreased Sediment Perceased Water QuantityIncreased Sediment Sediment Perceased Water QuantityIncreased Sediment Perceased Water QuantityIncreased Sediment Perceased Water QuantityIncreased Sediment Sediment Sediment Sediment QuantityIncreased Sediment Sediment Sediment Sediment Primary ProductivityIncreased Sediment Sediment Sediment Sediment Sediment ProductivityIncreased Sediment Sediment Sediment Sediment Sediment ProductivityIncreased Sediment Sediment Sediment Sediment ProductivityIncreased Sediment Sediment Sediment Sediment ProductivityIncreased Sediment Sediment Sediment ProductivityIncreased Sediment Sediment Sediment ProductivityIncreased Sediment Sediment Sediment ProductivityIncreased Sediment Sediment Sediment ProductivityIncreased Sediment Sediment Sediment ProductivityIncreased Sediment Sediment Sediment Sediment S	re improving 20
Spring ChinookWenatche QuantityWEC3Icicle 9.2: Water Quantity: Decreased Water Quantity: Decreased Water Quantity25.00% 555555655565Spring ChinookWenatche WenatcheWEC4Little Wenatche9.2: Water Quantity: Decreased Water Quantity25.00% Peresed Water Quantity555565556565Upper Columbia Pring Columbia Pring ChinookWenatche Primary ProductivityLittle Primary Productivity25.00% Productivity55558555904ction is to all improvement improvementUpper Columbia Per Spring ChinookWenatche Primary ProductivityLittle Primary Productivity20.00% Productivity8585858590Action is to all improvement improvementUpper Spring ChinookWenatche Primary ProductivityCondition: Productivity20.00% Productivity8585858590Action is to all improvementUpper Spring ChinookWenatche Primary ProductivityVegetationVegetationVegetationVegetationVegetationVegetation	time.
ChinookSediment QuantitySediment QuantitySediment QuantitySediment QuantitySediment PrimeSedi	
Upper Columbia Spring ChinookWenatche e RiverWEC3 LicleIcicle 9.2: Water Quantity: Decreased Water Quantity25.00% Spring Columbia Primary e555555655565Upper Columbia e RiverWenatche Wenatche eWEC4 Primary eLittle Primary Productivity3.1: Food: Altered Primary Productivity25.00% Spring Columbia e555555555590Upper Columbia e RiverWenatche eWEC4 Primary eLittle Primary Productivity25.00% Primary Productivity555555855590Upper Columbia e RiverWenatche eLittle Riparian Vegetation20.00% Primary8585858590Action is to all improvement improvementUpper Columbia pring ChinookWenatche eLittle Riparian Vegetation20.00%8585858590Action is to all improvement	
Upper Columbia Spring ChinookWEC3Icicle9.2: Water Quantity: Decreased Water Quantity25.00%5555556565Spring ChinookWenatche eWEC4Little Wenatche e3.1: Food: Altered Primary e25.00%555555855590Upper Spring ChinookWenatche eWEC4Little Wenatche e3.1: Food: Altered Primary Productivity25.00%555555855590Upper Columbia Spring Columbia Columbia Spring ChinookWEC4Little Wenatche e4.1: Riparian Condition: Riparian Vegetation20.00%8585858590Action is to all improvement	
Columbia Spring Chinooke RiverQuantity: Decreased Water QuantityQuantity: Decreased Water Quantityll<	20
Spring ChinookDecreased Water QuantityDecreased Water QuantityImage: ChinookImage: ChinookImage: ChinookDecreased Water QuantityImage: ChinookImage:	
ChinookQuantityImage: ChinookQuantityImage: ChinookQuantityImage: ChinookQuantityImage: ChinookQuantityImage: ChinookSolution <td></td>	
Upper Columbia Spring ChinookWenatche eWEC4 Wenatche eLittle Primary Productivity3.1: Food: Altered Primary Productivity555555855590Upper Columbia Primary ChinookWenatche eWEC4 Wenatche eLittle He4.1: Riparian Condition: e20.00%858585858590Action is to all improvement improvementUpper Columbia Spring ChinookWenatche eWenatche Riparian Vegetation20.00%858585858590Action is to all improvement	
Columbia Spring Chinooke RiverWenatche ePrimary Productivityless of the second se	2(
Spring ChinookeProductivitylittleProductivitylittleA.1: Riparian20.00%858585858590Action is to all improvementUpper Columbia Spring ChinookWenatche eWenatche Riparian Vegetation20.00%858585858590Action is to all improvement	
ChinookWenatcheWEC4Little4.1: Riparian Condition: e20.00%858585858590Action is to al improvementColumbia Spring Chinooke RiverWenatche eCondition: Riparian Vegetation20.00%858585858590Action is to al improvement	
Upper Columbia Spring ChinookWEC4Little Wenatche e4.1: Riparian Condition: Riparian Vegetation20.00% 858585858590Action is to al improvement	
Columbia e River Wenatche Condition: Spring Chinook Vegetation Vegetation e Note of the second seco	ow natural 20
Spring Chinook e Riparian Vegetation luite a construction of the local sector of the l	s l
Chinook Vegetation Vegetation	
Upper  Wenatche WEC4  Little  5.2: Peripheral  30.00%  90  90  90  95  90  95  95  Berm at the g	avel pits 20
Columbia e River Wenatche and Transitional Wenatche and Transitional	
Spring e Habitats:	
Chinook	
Condition	
Upper Wenatche WEC4 Little 6.2: Channel 0.00% 97 97 97 98 97 99 99	2(
Columbia e River Wenatche Structure and	
Spring e Form: Instream	
Chinook Structural Structural	
Complexity	
Upper Wenatche WEC4 Little 7.2: Sediment 25.00% 75 75 75 85 75 90	2(
Columbia e River Wenatche Conditions:	
Spring e Increased	
Chinook Sediment	
Quantity	
Upper Wenatche WEC5 Lower 1.1: Habitat 0.00% 98 98 98 99 98 99 98	20
Columbia e River Wenatche Quantity:	
Spring e Anthropogenic e	
Chinook Barriers	

2015 LB EP: No actions, no uplift. -MAH.2.24.16

2015 LB EP: No actions, no uplift. MAH.2.24.2016

				2012			Original	Updated					Γ
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper	Wenatche	WEC5	Lower	4.1: Riparian	10.00%	45	45	45	45	45	50		20
Columbia	e River		Wenatche	Condition:									
Spring			e	Riparian									
Chinook				Vegetation									
Upper	Wenatche	WEC5	Lower	5.1: Peripheral	25.00%	65	65	65.5	80	66	80		20
Columbia	e River		Wenatche	and Transitional									pr
Spring			e	Habitats: Side									20
Chinook				Channel and									20
				Wetland									(re
				Conditions									m
													re
													Ex
													fu
													ch
													di
													im
													3.
Upper	Wenatche	WEC5	Lower	6.1: Channel	20.00%	60	60	60	65	60	65		20
Columbia	e River		Wenatche	Structure and									
Spring			e	Form: Bed and									
Chinook				Channel Form									
Upper	Wenatche	WEC5	Lower	6.2: Channel	10.00%	60	60	60	65	60.1	70		20
Columbia	e River		Wenatche	Structure and									in
Spring			e	Form: Instream									Cu
Chinook				Structural									
				Complexity									
Upper	Wenatche	WEC5	Lower	8.1: Water	15.00%	65	65	65.1	70	65	70		20
Columbia	e River		Wenatche	Quality:									su
Spring			e	Temperature									th
Chinook													w
													pr
													te
													m
													in
													qı
													(1
													Ex
Upper	Wenatche	WEC5	Lower	9.2: Water	20.00%	50	51	55.2	65	51	65		20
Columbia	e River		Wenatche	Quantity:									20
Spring			e	Decreased Water									pe
Chinook				Quantity									(lo
													re
													3.

15 LB EP: No actions, no uplift. -MAH.2.24.16

012 LF EP: Includes lower Wenatchee instream flow roject (under LF 6.2).

015:A diversion dam was removed from a side channel in 014; a flow enhancement and spill benefit project ewatered part of channel), that treated 0.65 stream iles. By 2018, it is anticipated that the project will be alized to about 10% of it's potential. Therefore the spert Panel assessed the benefit as 0.065 stream miles lly treated. Relative to the 12 miles of Chinook side nannels in the Assessment Unit (connected and sconnected from CMZ report), there was a 0.5% provement for this limiting factor (0.065/12\*100). EWL 15.16.

015 LB EP: No actions, no uplift. MAH.2.24.2016

015 LB EP: The Sunnyslope action is not currently stream or near the water, it is in a floodplain area. urrently, there is no uplift for this LF. -MAH.2.24.2016

)15: Temperature in lower river is often lethal in mmer. Temperature in the lower river is controlled by e lake, so even if lower section was fully shaded, there ould be no effect on overall function. Flow projects ovide more volume (so possibly affecting daily range of mps), but return water is warm, so very limited easurable change. The Expert Panel used the provement percentage from limiting factor 9.2 (water antity) and adjusted it to reflect very limited change %). Therefore 1% of 5.2% is less than 0.1% and the pert Panel rounded up to 0.1%. EWL 3.15.16 012 EP: More benefit for steelhead juveniles (2%) 115: Conservative estimate of 38.27 cfs savings from this ermanent acquisition of water. Relative to 733 cfs owest mean daily baseflow during a 55-year period of cord), flow improvement is 5.2% (38.27/733\*100). EWL 15.16

				2012			Original	Updated					Γ
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper	Wenatche	WEC6	Mission	1.1: Habitat	10.00%	82	82	82	85	82	85		20
Columbia	e River			Quantity:									
Spring				Anthropogenic									
Chinook				Barriers									
Upper	Wenatche	WEC6	Mission	4.1: Riparian	10.00%	60	60	60	65	60	70	Most projects should be	20
Columbia	e River			Condition:								delayed until flow and	
Spring				Riparian								water quality are	
Chinook				Vegetation								addressed: Japanese	
												knotweek removal:	
												Restoration	
												opportunistically between	
												Cashmere and the USES	
												boundary	
Upper	Wenatche	WFC6	Mission	5.1: Peripheral	15.00%	25	25	25	25	25	25	Assess and reduce road	2(
Columbia	e River			and Transitional								impactsâ€!.	<b> </b>
Spring				Habitats: Side									
Chinook				Channel and									
Chinoch				Wetland									
				Conditions									
Upper	Wenatche	WEC6	Mission	6.1: Channel	10.00%	40	40	40	45	40	45	Lower 6 miles + FS Road	20
Columbia	e River			Structure and									
Spring				Form: Bed and									
Chinook				Channel Form									
Upper	Wenatche	WEC6	Mission	6.2: Channel	15.00%	50	50	50	55	50	55	Worth adding complexity	20
Columbia	e River			Structure and								at the price of riparian?.	
Spring				Form: Instream									
Chinook				Structural									
				Complexity									
Upper	Wenatche	WEC6	Mission	7.2: Sediment	10.00%	40	40	40	45	40	50	Assess and reduce road	20
Columbia	e River			Conditions:								impacts….	
Spring				Increased									
Chinook				Sediment									
				Quantity									
Upper	Wenatche	WEC6	Mission	8.1: Water	10.00%	35	35	35	45	35	45	Mostly a product of flow	20
Columbia	e River			Quality:								Esp. the lower 4 miles	
Spring				Temperature									
Chinook													
Upper	Wenatche	WEC6	Mission	9.2: Water	20.00%	30	30	30	60	30	60		20
Columbia	e River			Quantity:									
Spring				Decreased Water									
Chinook				Quantity									1

stimates Comments 2015 LB EP: No actions, no uplift. -MAH.2.24.16 2015 LB EP: No actions, no uplift. -MAH.2.24.16

2015 LB EP: No actions, no uplift. -MAH.2.24.16

				2012			Original	Updated					Γ
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper	Wenatche	WEC7	Nason	1.1: Habitat	0.00%	93	93	93	98	93	98		20
Columbia	e River			Quantity:									be
Spring				Anthropogenic									ju
Chinook				Barriers									LF
													M
Upper	Wenatche	WEC7	Nason	3.1: Food: Altered	10.00%	60	60	60	80	60	85		20
Columbia	e River			Primary									
Spring				Productivity									
Chinook													
Upper	Wenatche	WEC7	Nason	4.1: Riparian	10.00%	50	50	50.04	55	52	60	Includes recruitment of	20
Columbia	e River			Condition:								LWM	ad
Spring				Riparian									Fu
Chinook				Vegetation									wi
													rip
													mi
													pr
													(.0
Upper	Wenatche	WEC7	Nason	5.1: Peripheral	25.00%	60	60	73	80	80	80	Increase LWD complexes;	20
Columbia	e River			and Transitional								reconnect side channel	ac
Spring				Habitats: Side								habitat; 1.1, 1.2, and 1.3	(C
Chinook				Channel and								scored together	20
				Wetland									an
				Conditions									an
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015 LB EP: LF is not weighted. Panel discussed the enefit from the Lower White Pine reconnect project for veniles, however, determined no uplift calculation since 1.1 is not considered a limiting factor in this AU. -AH2.24.16

015 LB EP: No actions, no uplift. -MAH.2.24.16

015: One project that treated 0.13 stream miles was ljusted based on 1% plant growth/year toward Properly inctioning Condition up to 2018. Thus, by 2018, there ill be realized improvement on 0.0065 stream miles of parian habitat. Relative to the 15.8 Chinook stream iles in the Assessment Unit (from Streamnet), this roject improved riparian condition by 0.04% 0065/15.8\*100). EWL 3.20.16

012 LF EP: Includes completion of 4 Nason planned tions (LWP, N1, 2 UWP projects) + 2 access actions oulter/RR)

015: Four projects that among other things redid high and low flow channels through old parking lot, flew in logs and enhanced 207 oxbow, side channels created in arshy areas, removed old bridge abutment, treated 1.57 iles. The project lengths were adjusted to account for alized improvement by 2018 (0-85%) resulting in 1.07 iles treated. Relative to the 10.7 potential Chinook earing side channel miles in the Assessment Unit onnected and disconnected from CMZ study report), the rojects yielded a 10% improvement (1.07/10.7\*100). NL 3.15.16

uring the separate meeting with Yakama Nation (YN) on 7 April, 2016 and again the Lookforward meeting (June, 016) the full panel discussed Lookback calculations and odified the calculation for this limiting factor. Based on put from YN, the White Pine project was prorated 100% ecause it now provides year round flow (=0.38 side nannel miles treated with realized improvement to 018). Therefore the new value for side channel miles eated with realized improvement to 2018=1.39 miles, lative to the 10.7 side channel miles in the assessment hit = 13.0%. EWW 7.27.16

	Populatio		Assessme	2012 Standardized		Low	Original 2018	Updated 2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper Columbia Spring Chinook	Wenatche e River	WEC7	Nason	6.1: Channel Structure and Form: Bed and Channel Form	20.00%	60	60	61.8	65	63	65		2( riv im 15 (fi Ba m or
Upper	Wenatche	WEC7	Nason	6.2: Channel	20.00%	50	50	53.2	55	58	60		st st 20
Columbia Spring Chinook	e River			Structure and Form: Instream Structural Complexity									ind int wo ac (=
													1( m cc (0
Upper Columbia Spring Chinook	Wenatche e River	WEC7	Nason	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	65	65	65	70	65	75	May be short-term increases in sediment from opening up side channels. Increased sediment in Lower Nason	20
Upper Columbia Spring Chinook	Wenatche e River	WEC7	Nason	8.1: Water Quality: Temperature	0.00%	80	80	80	80	80	80		20
Upper Columbia Spring Chinook	Wenatche e River	WEC8	Peshastin	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	70	70	70.2	85	70	85		20 st fo Cł St
Upper Columbia Spring Chinook	Wenatche e River	WEC8	Peshastin	4.1: Riparian Condition: Riparian Vegetation	10.00%	60	60	60	65	60	70		2( M

2015: Two projects treated 0.19 river miles, and those iver miles were adjusted to account for anticipated mprovement success by 2018 (=0.107). Relative to the 5.8 Chinook bearing river miles in the Assessment Unit from Streamnet), the improvement for this limiting factor 5.0.7% (0.107/15.8\*100). EWL 3.15.16.

ased on input from Yakama Nation during April 2016 neeting and June 2016 Lookforward meeting discussions, ne project was added for a realized change of 0.278 ream miles treated. Relative to 15.8 Chinook bearing ream miles = 1.8% improvement. EWW 7.27.16

015:. YN 2014 Lower Nason Instream project was not included in consideration because the Expert Panel had no information about it. Two projects that treated 0.86 miles were considered The project lengths were adjusted to ccount for anticipated improvement by 2018 =0.51).Improvements were evaluated based on indicators such as # of wood pieces and pools per mile or 00 meter. Relative to the 15.8 Chinook bearing stream hiles in the Assessment Unit (from Streamnet), the conditions for this limiting factor improved 3.2% 0.51/15.8\*100). EWL 3.15.16

015 LB EP: No actions, no uplift. -MAH.2.24.16

015 LB EP: No actions, no uplift. -MAH.2.24.16

015: Fishway repairs were conducted that opened 0.06 cream miles, but those were adjusted (50%) to account or the fact that they were partial. Relative to the 14.9 hinook stream miles in the Assessment Unit (from treamnet), the barrier removal project resulted in a 0.2% nprovement (0.03/14.9\*100). EWL 3.2.16

015 LB EP: No actions benefited Chinook, no uplift. -1AH.2.24.16

ESU	Populatio n	Code	Assessme nt Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Es
Upper Columbia Spring Chinook	Wenatche e River	WEC8	Peshastin	5.1: Peripheral and Transitional Habitats: Side Channel and	20.00%	25	26	26.2	30	26	30		20 20 ch m
				Wetland Conditions									1.
Upper Columbia Spring Chinook	Wenatche e River	WEC8	Peshastin	6.1: Channel Structure and Form: Bed and Channel Form	15.00%	35	35	35	50	35	50	Bank hardening and incision all along the orchards	20
Upper Columbia Spring Chinook	Wenatche e River	WEC8	Peshastin	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%	55	55	55.5	75	56	75		20 ar 0.
Upper Columbia Spring Chinook	Wenatche e River	WEC8	Peshastin	8.1: Water Quality: Temperature	0.00%	98	98	98	99	98	99		20
Upper Columbia Spring Chinook	Wenatche e River	WEC8	Peshastin	9.2: Water Quantity: Decreased Water Quantity	35.00%	20	20	20	80	20	80		20
Upper Columbia Spring Chinook	Wenatche e River	WEC9A	Middle Wenatche e	1.1: Habitat Quantity: Anthropogenic Barriers	50.00%	95	95	95	95	95	95		20
Upper Columbia Spring Chinook	Wenatche e River	WEC9A	Middle Wenatche e	6.1: Channel Structure and Form: Bed and Channel Form	50.00%	85	85	85	85	85	85		20
Upper Columbia Spring Chinook	Wenatche e River	WEC9A	Middle Wenatche e	6.2: Channel Structure and Form: Instream Structural Complexity	0.00%								20
Upper Columbia Spring Chinook	Wenatche e River	WEC9B	Upper Wenatche e	<ol> <li>1.1: Habitat</li> <li>Quantity:</li> <li>Anthropogenic</li> <li>Barriers</li> </ol>	0.00%	95	95	95	98	95	98		20 up

012 LF EP: include 6.2 LF action here 015 LB EP: Panel considered there was 0.2 miles of side nannel treated x 50% seasonal prorate and divided by 8.4 niles of side channel/wetland potential in the reach = .2% uplift.-MAH.2.24.16

015 LB EP: No actions, no uplift. -MAH.2.24.16

015 LB EP: Panel determined that the Project channel nd use is seasonal, so 0.15 miles x 50% / 14.9 miles = .5% uplift-MAH.2.24.16

015 LB EP: No actions, no uplift. -MAH.2.24.16

015 LB EP: LF is not-weighted, and EP determined no plift. Uplift=0%-MAH.2.24.16

				2012			Original	Updated					Γ
	Populatio		Assessme	Standardized		Low	2018	2018	High 2018	Original 2033	High 2033	LF Weight and Bookends	
ESU	n	Code	nt Unit	Limiting Factor	LF Weight	Bookend	Estimate	Estimate	Bookend	Estimate	Bookend	Comments	Es
Upper	Wenatche	WEC9B	Upper	4.1: Riparian	33.00%	80	80	80.02	82	81	85		20
Columbia	e River		Wenatche	Condition:									ad
Spring			е	Riparian									in
Chinook				Vegetation									in
													C
													p
													(0
Upper	Wenatche	WEC9B	Upper	5.1: Peripheral	34.00%	70	70	70	90	85	90		20
Columbia	e River		Wenatche	and Transitional									D
Spring			е	Habitats: Side									M
Chinook				Channel and									
				Wetland									
				Conditions									
Upper	Wenatche	WEC9B	Upper	6.2: Channel	33.00%	60	60	60.7	80	70	85		20
Columbia	e River		Wenatche	Structure and									cc
Spring			е	Form: Instream									20
Chinook				Structural									
				Complexity									ľM
Upper	Wenatche	WEC10	White	3.1: Food: Altered	20.00%	70	70	70	75	70	75		20
Columbia	e River			Primary									
Spring				Productivity									
Chinook				, ,									
Upper	Wenatche	WEC10	White	4.1: Riparian	25.00%	85	85	85	90	85	95		20
Columbia	e River			Condition:									
Spring				Riparian									
Chinook				Vegetation									
Upper	Wenatche	WEC10	White	5.1: Peripheral	25.00%	90	90	90	95	90	95		20
Columbia	e River			and Transitional									
Spring				Habitats: Side									
Chinook				Channel and									
				Wetland									
				Conditions									
Upper	Wenatche	WEC10	White	6.2: Channel	30.00%	85	87	94.2	90	87	95		20
Columbia	e River			Structure and									20
Spring				Form: Instream									as
Chinook				Structural									C
				Complexity									pr
													IF1

015: One project treated 0.1 stream miles, which was djusted by the Expert Panel to reflect realized nprovement to 2018 based on a 1%/year estimate of nprovement (=0.004 stream miles). Relative to the 23.5 hinook bearing stream miles in the Assessment Unit, the roject resulted in a 0.02% improvement

0.004/23.58100). EWL 3.20.16

012 LF: low bookend changed from 90. / 2015 LB EP: etermined no actions in AU impact this LF, no uplift.-IAH.2.24.16

012 LF EP: Refer to LF 5.1 action descriptions. 2033 value onstrained by social consideraitons/recreational uses. / 015 LB EP: Determined that 0.17 mile action x 100% rorate divided by 23.5 total stream miles = 0.7% uplift.-1AH.2.24.16

015 LB EP: No action, no change. -MAH2.24.16

015 LB EP: No action, no change. -MAH.2.24.16

015 LB EP: No action, no change. -MAH.2.24.16

012 EP: addresses majority of impacted area. 015:One LWD project treated 1.7 river miles, and was ssessed at 100% effective by 2018. Relative to the 18.5 hinook bearing river miles in the Assessment Unit, the roject resulted in a 9.2% improvement (1.7/18.5\*100). WL 3.15.16