These are the Biological Notes for the Upper Salmon Expert Panel 2015-2016, conducted in Salmon, WA. The spreadsheet contains both Look Back and Look Forward biological notes. Notes are specific to Steelhead. The Look Back and Look Forward meetings respectively occurred from 11/18/2015 to 11/20/2015 and 3/22/2016 to 3/23/2016.Raw notes were collected during Panel discussions, and later checked for typographical errors and for consistency with supporting tables. This spreadsheet also reflects revisions to look back uplifts and rationale in response to the Panel's review comments and revisions during the look forward meeting.

"EP table" or "Calculation Table" references are to spreadsheets developed and compiled during the session. This spreadsheet references both look back and look forward calculation spreadsheets (tables). These two files are named the following:

Look Back Calculation Table (most recent version):
UpSalmon_LookBack_CalcSpreadsheet_LFrevisions_NTL_4-23-16.xlsx

Look Forward Calculation Table (most recent version):
UpperSalmon_LookForward2016-2018_CalcSpreadsheet_042316.xlsx

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

Key:
Bracketing in rationale columns demarks content added during the QA process after the meeting.

File History Notes:
Immediately after the conclusion of the 11/20/2015 session with the AA team, the EP filled out remaining project tables and provided Biological Notes comments for a few remaining steelhead Assessment Units.

For LF 9.2 (Flow), the numerator (in cfs) was calculated as the sum of the average annual flow benefit of leases in 2012 through 2015, plus the sum of permanent or long-term (e.g., 20 year) leases. See the Panel's table of actions for details for each AU and LF.

Reviewed and noted modifications by EWL 2/5/16
5/26/16 Reviewed and updated by Mark Moulton (USFS) and RM (BPA)
Reviewed and updated by EWW 6.30.16

Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 Low Bookend	Updated 2018 Estimate (2012-2015 Look Back)	Nov 2015 % Change	2012-2015 Estimate Comments / Rationale	Revised AU Weight (Look Forward Meeting)	Revised LF Weight (Look Forward Meeting 2016)	2016-2018 LF Weighting Comments/ Rationale	Revised 2016-18 Low Bookend (Look Forward Meeting)	2016-18 Bookend Comments/Rationale	2016 Low Bookend (incorporates revisions or 2012-2015 uplift)	LookForward Updated 2018 Estimate	LookForward Updated 2018 Estimate % change	2016-18 Look Forward Estimate Comments/Rationale	2013-2018	High 2018 Bookend	2012 LF Weight	2012 LF Weight and Bookend Comments	2012 Estimates Comments	AU Weight Comments
East Fork Salmon River	EFS1	Bayhorse Creek	1.1: Habitat Quantity: Anthropogenic Barriers	50	100	58.3	Expert Panel counted 1 project: Bayhorse Creek Culvert to Bridge (7 miles of access). Denominator: 12 mi of habitat (mileage adjusted by panel using local knowledge). Equals 58.3% uplift.						100	100	0	No actions. No predicted percentage change in 2018 time period.		70	20%	low bookend raised from 20, 8/9/12	bayhorse ck 2 and 4 diversion were consolidated in 2011; doesn't include bayhorse 1	
East Fork Salmon River	EFS1	Bayhorse Creek	2.3: Injury and Mortality: Mechanical Injury	20	57.5	37.5	1 action: SBaC-01 screen (3 cfs design flow). Using 8 cfs denominator from Morgan Case (IDWR) summation of diversions; = 37.5% uplift.						57.5	57.5	0	No actions. No predicted percentage change in 2018 time period.		20	20%			
East Fork Salmon River	EFS1	Bayhorse Creek	4.1: Riparian Condition: Riparian Vegetation	90	0		Expert Panel: "not a limiting factor."						90	90	0	No actions. No predicted percentage change in 2018 time period.		90	20%			
East Fork Salmon River	EFS1	Bayhorse Creek	7.2: Sediment Conditions: Increased Sediment Quantity	45	0	0	No actions. No change.						45	45	0	No actions. No predicted percentage change in 2018 time period.		45	20%			
East Fork Salmon River	EFS1	Bayhorse Creek	9.2: Water Quantity: Decreased Water Quantity	20	47.9	27.9	Expert Panel counted 1 action: 20 year lease of 2.23 cfs. The numerator (in cfs) was calculated as the sum of the average annual flow benefit of leases in 2012 through 2015, plus the sum of permanent or long-term (e.g., 20 year) leases. Using 8 cfs denominator from Morgan Case (IDWR) summation of diversions; =27.9% uplift.						47.9	75.8	27.9	No actions. No predicted percentage change in 2018 time period. [4-15-16: Flow projects from the Look Back extending into the 2016-2018 period were carried forward and added to Look Forward uplift calculations. As a result, revised uplift = 27.9%]		20	20%			
East Fork Salmon River	EFS2	Challis Creek	1.1: Habitat Quantity: Anthropogenic Barriers	80	0	0	Expert Panel: No actions. No change.						80	80	0	No actions. No predicted percentage change in 2018 time period.		85	20%		Actions high up in stream benefit steelhead not Chinook	
East Fork Salmon River	EFS2	Challis Creek	4.1: Riparian Condition: Riparian Vegetation	60	0	0	Expert Panel: No actions. No change.						60	60	0	No actions. No predicted percentage change in 2018 time period.		60.5	10%		Some improvement from project addressing Decreased Water Quantity LF	
East Fork Salmon River	EFS2	Challis Creek	7.2: Sediment Conditions: Increased Sediment Quantity	40	0	0	Expert Panel: No actions. No change.						40	40	0	No actions. No predicted percentage change in 2018 time period.		40	20%			
East Fork Salmon River	EFS2	Challis Creek	8.1: Water Quality: Temperature	50	0	0	Expert Panel: No actions. No change.						50	50	0	No actions. No predicted percentage change in 2018 time period.		50.1	10%			
East Fork Salmon River	EFS2	Challis Creek	9.2: Water Quantity: Decreased Water Quantity	32	0	0	Expert Panel: No actions. No change.						32	32	0	No actions. No predicted percentage change in 2018 time period.		33	40%			
East Fork Salmon River	EFS3	EF Salmon River	1.1: Habitat Quantity: Anthropogenic Barriers	93	0	0	Expert Panel: No actions. No change.						93	93	0	No actions. No predicted percentage change in 2018 time period.		94	10%			
East Fork Salmon River	EFS3	EF Salmon River	2.3: Injury and Mortality: Mechanical Injury	70	0	0	Expert Panel: No actions. No change.						70	70	0	No actions. No predicted percentage change in 2018 time period.		70	10%		Not enough info on Weir project to assess improvements at 8/9/12 workshop	
East Fork Salmon River	EFS3	EF Salmon River	4.1: Riparian Condition: Riparian Vegetation	60	60.6	0.6	Expert Panel counted 1 action only. E. Fork Fence Project: 0.8 mi; 3% functional. Denominator = 37.2 mi = 0.06 % change.						60.6	60.6	0	No actions. No predicted percentage change in 2018 time period.		60	25%			
East Fork Salmon River	EFS3	EF Salmon River	6.1: Channel Structure and Form: Bed and Channel Form	50	0	0	No action. No change.						50	50	0	No actions. No predicted percentage change in 2018 time period.		52	25%		need alternative to push up dams in high velocity/bedload environment several other treatments needed	
East Fork Salmon River	EFS3	EF Salmon River	7.2: Sediment Conditions: Increased Sediment Quantity	71	0	0	Expert Panel: No significant actions. No change.						71	71	0	No actions. No predicted percentage change in 2018 time period.		71	15%			
East Fork Salmon River	EFS3	EF Salmon River	9.2: Water Quantity: Decreased Water Quantity	60	0	0	Expert Panel: No actions. No change.						60	60	0	No actions. No predicted percentage change in 2018 time period.		61	15%	low bookend changed from 40, 8/9/12		
East Fork Salmon River	EFS4	EF Salmon Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers		0	0	Expert Panel: No actions. No change.						0	0	0	No actions. No predicted percentage change in 2018 time period.			0%			
East Fork Salmon River	EFS4	EF Salmon Tributaries	2.3: Injury and Mortality: Mechanical Injury	70	0	0	Expert Panel: No actions. No change.						70	70	0	No actions. No predicted percentage change in 2018 time period.		75	20%		3 diversions on Road Ck reamining;	

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East Fork Salmon River	EFS4	EF Salmon Tributaries	9.2: Water Quantity: Decreased Water Quantity	30	0	0	Expert Panel: No actions. No change.						30	30	0	No actions. No predicted percentage change in 2018 time period.		30	80%			
East Fork Salmon River	EFS5	Garden Creek	1.1: Habitat Quantity: Anthropogenic Barriers	20	34.8	14.8	Garden Creek project: 1.2 mi access. Denominator: 8.1 mi. = 14.8% uplift.						34.8	43.1	8.3	Same Syphon project as for Chinook (LMC6): 2 miles opened to next barrier upstream. Denominator for Garden Creek: Streamnet steelhead miles: 8.1 miles, but panel thought this was too short. Intrinsic Potential shows 12 miles. Panel decided to use 12 miles as denominator. This yields 8.3% expected uplift.		30	20%			
East Fork Salmon River	EFS5	Garden Creek	2.3: Injury and Mortality: Mechanical Injury	20	62	42	Expert Panel counted 1 project: SGC -01 (11.09 cfs). Flow denominator from Morgan Case (IDWR) is 26.4 cfs = 42.0% uplift.						62	62	0	No actions. No predicted percentage change in 2018 time period.		20	10%			
East Fork Salmon River	EFS5	Garden Creek	4.1: Riparian Condition: Riparian Vegetation	35	35	0	No action. No change.						35	35	0	No actions. No predicted percentage change in 2018 time period.		35	20%			
East Fork Salmon River	EFS5	Garden Creek	7.2: Sediment Conditions: Increased Sediment Quantity	60	60	0	No action. No change.						60	60	0	No actions. No predicted percentage change in 2018 time period.		60	10%			
East Fork Salmon River	EFS5	Garden Creek	9.2: Water Quantity: Decreased Water Quantity	20	26.1	6.1	2 actions in database. Expert Panel counted 1 (Garden 1.6 cfs permanent), not screen project. Denominator is 26.4 cfs from Morgan Case (IDWR) summation of diversions. = 6.1% uplift.						26.1	26.1	0	No actions. No predicted percentage change in 2018 time period.		25	40%		Garden Ck. project to add abt 3 cfs	
East Fork Salmon River	EFS6	Herd Creek	1.1: Habitat Quantity: Anthropogenic Barriers	71	71	0	No action. No change.						71	71	0	No actions. No predicted percentage change in 2018 time period.		75	10%	high bookend reflects natural barriers that block access to entire AU		
East Fork Salmon River	EFS6	Herd Creek	4.1: Riparian Condition: Riparian Vegetation	60	60	0	No action. No change.						60	60	0	No actions. No predicted percentage change in 2018 time period.		60	40%			
East Fork Salmon River	EFS6	Herd Creek	7.2: Sediment Conditions: Increased Sediment Quantity	70	70	0	No action. No change.						70	70	0	No actions. No predicted percentage change in 2018 time period.		70	30%			
East Fork Salmon River	EFS6	Herd Creek	9.2: Water Quantity: Decreased Water Quantity	65	65	0	No action. No change.						65	65	0	No actions. No predicted percentage change in 2018 time period.		70	20%		8 cfs potential HC-3 pipeline from Lake Ck	
East Fork Salmon River	EFS7	Mainstem Salmon River	4.1: Riparian Condition: Riparian Vegetation	25	27.02	2.02	No action. No change.						27.02	27.02	0	No actions. No predicted percentage change in 2018 time period.		25	15%		Remember to update 2015 look-back w/any 12-mi reach easements/projects implemented after 2012	
East Fork Salmon River	EFS7	Mainstem Salmon River	5.2: Peripheral and Transitional Habitats: Floodplain Condition	60	60	0	No action. No change.						60	60	0	No actions. No predicted percentage change in 2018 time period.		60	30%		Remember to update 2015 look-back w/any 12-mi reach easements/projects implemented after 2012	
East Fork Salmon River	EFS7	Mainstem Salmon River	6.1: Channel Structure and Form: Bed and Channel Form	60	60	0	No action. No change.						60	60	0	No actions. No predicted percentage change in 2018 time period.		60	30%		Remember to update 2015 look-back w/any 12-mi reach easements/projects implemented after 2012	
East Fork Salmon River	EFS7	Mainstem Salmon River	7.2: Sediment Conditions: Increased Sediment Quantity	50	50	0	No action. No change.						50	50	0	No actions. No predicted percentage change in 2018 time period.		50	10%		Remember to update 2015 look-back w/any 12-mi reach easements/projects implemented after 2012	
East Fork Salmon River	EFS7	Mainstem Salmon River	8.1: Water Quality: Temperature	50	50	0	No action. No change.						50	50	0	No actions. No predicted percentage change in 2018 time period.		50	15%		Remember to update 2015 look-back w/any 12-mi reach easements/projects implemented after 2012	
East Fork Salmon River	EFS8	Morgan Creek	2.3: Injury and Mortality: Mechanical Injury	50	50	0	No action. No change.						50	50	0	No actions. No predicted percentage change in 2018 time period.		50	20%			
East Fork Salmon River	EFS8	Morgan Creek	4.1: Riparian Condition: Riparian Vegetation	60	60	0	No action. No change.						60	60	0	No actions. No predicted percentage change in 2018 time period.		60	20%			
East Fork Salmon River	EFS8	Morgan Creek	7.2: Sediment Conditions: Increased Sediment Quantity	20	20	0	No action. No change.						20	20	0	No actions. No predicted percentage change in 2018 time period.		20	10%			

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East Fork Salmon River	EFS8	Morgan Creek	8.1: Water Quality: Temperature	60	61.8	1.8	Expert Panel applied flow benefit % to Limiting Factor 8.1. = 1.8% uplift.						61.8	64.1	2.3	No actions. No predicted percentage change in 2018 time period. [4-15-16: Given dependance of temperature uplift on flow (limiting factor 9.2) uplift, temperature uplift was revised in response to carry forward of look back flow projects. Revised uplift = 2.3%]		60	10%			
East Fork Salmon River	EFS8	Morgan Creek	9.2: Water Quantity: Decreased Water Quantity	35	36.8	1.8	Expert Panel counted 1 action (Morgan Cr. 2 cfs 2014, 2015 lease). The numerator (in cfs) was calculated as the sum of the average annual flow benefit of leases in 2012 through 2015, plus the sum of permanent or long-term (e.g., 20 year) leases. Denominator: 57 cfs from Morgan Case. = 1.8% uplift.							36.8	39.1	2.3	No actions. No predicted percentage change in 2018 time period. [4-15-16: Flow projects from the Look Back extending into the 2016-2018 period were carried forward and added to Look Forward uplift calculations. As a result, revised uplift = 2.3%]		35	40%			
East Fork Salmon River	EFS9	Salmon River Tributaries	9.2: Water Quantity: Decreased Water Quantity	30	32.2	2.2	Expert Panel counted 1 action Lyon Cr. 2.6 cfs permanent right). Denominator: 118 cfs from Morgan Case. = 2.2% uplift						32.2	32.2	0	No actions. No predicted percentage change in 2018 time period.		30	100%			

Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 Low Bookend	Updated 2018 Estimate (2012-2015 Look Back)	Nov 2015 % Change	2012-2015 Estimate Comments / Rationale	Revised AU Weight (Look Forward Meeting)	Revised LF Weight (Look Forward Meeting 2016)	2016-2018 LF Weighting Comments / Rationale	Revised 2016-18 Low Bookend (Look Forward Meeting)	2016-18 Bookend Comments/Rationale	2016 Low Bookend (incorporates revisions or 2012-	LookForward Updated 2018 Estimate	LookForward Updated 2018 Estimate % change	2016-18 Look Forward Estimate Comments/Rationale	2013-2018	2033	High 2018 Bookend	High 2033 Bookend	2012 LF Weight	2012 LF Weight and Bookend Comments	2012 Estimates Comments	2012 AU Weight Comments
Lemhi River	LRS4	Lemhi tributaries and Carmen Creek	1.1: Habitat Quantity: Anthropogenic Barriers	30	52.1	22.1	Expert Panel's xls table contains 7 projects in this Assessment Unit, but no credit for Kenny. Delete Soiux Lane project from database. No Steelhead benefit from SCC-13. Add SCC-03 (1 mi). Discussion of miles of steelhead benefit for each project. Steelhead benefit is generally longer than for Chinook for any given project. Add Bohanon IDFG Back Rd [already in database] and Upper Culvert [new] projects to database. Total treatment = 8.85 mi out of 40 mi = 22.1% uplift.	Merge LRS1 with LRS3 and call it LRS1 (renamed to Lemhi Tributaries and Salmon River Tributaries from Lemhi to North Fork [inc. Carmen]). It then matches the extent of LRC1. Combined denominator for steelhead is 180 miles. LRS3 is therefore deprecated. New AU weights: 60% LSR1; 40% LRS2, based on relative production.		Started with same limiting factors and weights as for LRC1, and then adjusted weights to account	30	See calc table for new low bookends for combined assessment unit. Increased low bookend to 30%.	30	42.6	12.6	Calc table contains projects from LRC1; panel adjusted projects to include lengths for steelhead distribution and Chinook and steelhead assessment unit non-overlap areas. Three projects--prorations considered seasonality of adult and juvenile migration, as it differs from Chinook. Same denominator as for Look Back. Yields 5.3% expected uplift. Panel then decided to combine LRS1 and LRS3 (see assessment unit weighting notes), and then added LRS3 projects to calc table and used combined denominators (180 miles). New expected uplift is 12.6 %.	45	45		90	10%		5.5 mi total access fixes 7/21 diversions	
Lemhi River	LRS4	Lemhi tributaries and Carmen Creek	2.3: Injury and Mortality: Mechanical Injury	30	61	31	Expert Panel's xls table: took Chinook projects, removed ones out of Assessment Unit, and added Lower Bohannon screen, which was out of range of Chinook. STC -03 does not belong in this Assessment Unit (it's on Tower Cr., LRS-3 Assessment Unit). Metric = Screen design flow in cfs. 6 projects = 49.7 cfs	Merge LRS1 with LRS3 and call it LRS1.			25		25	33.3	8.3	Calc table contains projects from LRC1; panel adjusted projects to include lengths for steelhead distribution and Chinook and steelhead assessment unit non-overlap areas. Added Bohannon Creek 13 Screen. Denominator was 950 cfs, as for Chinook. Yields 8.3% expected uplift.	45	45		90	15%		also includes 7 access projects; close proportion to access projects	
Lemhi River	LRS4	Lemhi tributaries and Carmen Creek	4.1: Riparian Condition: Riparian Vegetation	60	60	0	No riparian actions in database for this steelhead Assessment Unit. Expert Panel confirmed no change.	Merge LRS1 with LRS3 and call it LRS1.			50		50	50.3	0.3	See calc table for combined assessment unit. Same as Chinook, resulting in 0.3% expected yield.	62	64		75	10%	changed from 40/75, 8/8/12	3 mi fence- most of AU in good steelheadape, these are remaining treatment areas	
Lemhi River	LRS4	Lemhi tributaries and Carmen Creek	5.2: Peripheral and Transitional Habitats: Floodplain Condition					Merge LRS1 with LRS3 and call it LRS1.		Added LF when AUs were combined because it	50	Reduced when assessment units were combined.	50	50.6	0.6	See calc table for combined assessment unit. Adjusted from Chinook, resulting in 0.6% expected uplift.								
Lemhi River	LRS4	Lemhi tributaries and Carmen Creek	6.1: Channel Structure and Form: Bed and Channel Form	60	60	0	No riparian actions in database for this steelhead Assessment Unit. Expert Panel confirmed no change.	Merge LRS1 with LRS3 and call it LRS1.			50		50	50.7	0.7	See calc table for combined assessment unit. Adjusted from Chinook, resulting in 0.7% expected uplift.	61	63		75	5%	establisteelh eaded 8/8/12	include riparian LF projects also	
Lemhi River	LRS4	Lemhi tributaries and Carmen Creek	6.2: Channel Structure and Form: Instream Structural Complexity					Merge LRS1 with LRS3 and call it LRS1.		Added LF when AUs were combined because it was an LF for LRS3.	40	Based on wood loading across assessment unit.	40	40.4	0.4	See calc table for combined assessment unit. Adjusted from Chinook, resulting in 0.4% expected uplift.								
Lemhi River	LRS4	Lemhi tributaries and Carmen Creek	7.2: Sediment Conditions: Increased Sediment Quantity	50	50	0	No riparian actions in database for this steelhead Assessment Unit. Expert Panel confirmed no change.	Merge LRS1 with LRS3 and call it LRS1.			35	Panel chose to reduce sediment low bookend. CHaMP GIS layers for pool sediment were queried, but do not exist for these assessment units (priority watersheds only available at this time).	35	35.6	0.6	For Lemhi general in LRS1 and LCR1: CHaMP data show total pool sand + fines = 25.67%. Compare this to average for tributaries of 19%, which can be used as a reference target condition. See calc table for combined assessment unit. Adjusted from Chinook; panel determined 0.6% expected uplift.	51	52		60	5%		considered riparian, and bed/channel form LF projects	
Lemhi River	LRS4	Lemhi tributaries and Carmen Creek	8.1: Water Quality: Temperature	70	74	4	Expert Panel: Use flow change % (4%) + Riparian (0) = 4%..	Merge LRS1 with LRS3 and call it LRS1.			40	Panel considered temperature data: DEQ TMDL 2012 Lemhi River.	40	45	5	See calc table for combined assessment unit. Adjusted from Chinook. Sum of Riparian and Flow uplifts is 2.2% expected uplift. [4-15-16: Given dependance of temperature uplift on flow (limiting factor 9.2) uplift, temperature uplift was revised in response to carry forward of look back flow projects. Revised uplift = 5%]	71	72		80	5%		included riparian, bed/channel form LF projects	
Lemhi River	LRS4	Lemhi tributaries and Carmen Creek	9.2: Water Quantity: Decreased Water Quantity	30		4	See Expert Panel xls table of flow projects by lease/right type and correct database if/as needed. SCC-03 2 s/b 1.2 cfs. Carmen BS s/b 1 cfs permanent. The numerator (in cfs) was calculated as the sum of the average annual flow benefit of leases in 2012 through 2015, plus the sum of permanent or long-term (e.g., 20 year) leases. Fish screen installs should not count as flow benefit project. Denominator = 160 cfs. 6.34 cfs benefit = 4% change.	Merge LRS1 with LRS3 and call it LRS1.			25		25	29.7	4.7	See calc table for combined assessment unit. Same as Chinook; 1.9% expected uplift. [4-15-16: Flow projects from the Look Back extending into the 2016-2018 period were carried forward and added to Look Forward uplift calculations. As a result, revised uplift = 4.7%]	33	33		50	50%		~11 cfs affecting 1.1+ mi	
Lemhi River	LRS2	Mainstem Salmon and Lemhi Rivers and Hayden Creek	1.1: Habitat Quantity: Anthropogenic Barriers	85	85	0	Expert Panel: L-1 partial/seasonal barrier was not a problem for steelhead. No change for steelhead.	New AU weights: 60% LSR1; 40% LRS2, based on relative production. See calc table for AU weights.	1	Added limiting factor 6.2 and reweighted: used same weights as for Chinook.			85	85	0	No actions. No percentage change expected.	85.25	85.25		90	2%	stranding changed from 51/60, 8/8/12	evaluated only on L-1 project PLUS I-63, L-54, and L58a (described under LF 9.2)	
Lemhi River	LRS2	Mainstem Salmon and Lemhi Rivers and Hayden Creek	2.3: Injury and Mortality: Mechanical Injury	90	91.25	1.25	Add L-1 diversion project to this Limiting Factor. As discussed by Expert Panel for LRC2-2.3: LHC-08 screen projects (upgrade to new standard). Metrics: use # of screens, or quantity of water screened? Also include L-1 under this Limiting Factor as elimination of diversion and screen. L-1 benefit in context of # of screens in Assessment Unit (~100 screens as denominator). It was a 2-2.5 cfs diversion out of ~50 cfs. Expert Panel: 1% for L-1; 0.25 for LHC-8 = 1.25% uplift. Therefore, for Steelhead, the improvement similarly = 1.25%. EWL 4.1.16	New AU weights: 60% LSR1; 40% LRS2, based on relative production. See calc table for AU weights.	2	Added limiting factor 6.2 and reweighted: used same weights as for Chinook.			91.25	91.25	0	No creditable actions expected in 2018 time period.	91	91		95	7%		Assumes 10 screen replacements are maintaining current function, not improving. Other screen projects are improving. Remaining screens include Basin Ck., some additional Backdoor issues	
Lemhi River	LRS2	Mainstem Salmon and Lemhi Rivers and Hayden Creek	4.1: Riparian Condition: Riparian Vegetation	35	35.1	0.1	See Chinook discussion and tables - same projects in table; same changes to actions. Demoninator for steelhead is 107.8 miles (Streamnet). Need to add Amonson project for steelhead and for Chinook, but does not result in significant change in %. Relative treatment size = 22%; = 0.1% uplift per Expert Panel spreadsheet calculations.	New AU weights: 60% LSR1; 40% LRS2, based on relative production. See calc table for AU weights.		Unchanged.			35.1	35.3	0.2	Overall assessment unit extent equals LRC2 geography, so same projects, but different fish distribution denominator (107.8 miles). Yields 0.2% expected uplift.	36	38		40	15%			
Lemhi River	LRS2	Mainstem Salmon and Lemhi Rivers and Hayden Creek	5.2: Peripheral and Transitional Habitats: Floodplain Condition	20	20.7	0.7	See Chinook discussion. Only 1 project in database, but added projects as per Chinook. Denominator for steelhead is 107.8 miles (Streamnet). See spreadsheet. Expert Panel: Uplift =0.7 change in %.	New AU weights: 60% LSR1; 40% LRS2, based on relative production. See calc table for AU weights.		Unchanged.			20.7	22.5	1.8	Overall assessment unit extent equals LRC2 geography, so same projects, but different fish distribution denominator (107.8 miles). Yields 1.8% expected uplift.	20.5	21		30	10%		Estimate 3.22 miles side channel enhancement.	

Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 Low Bookend	Updated 2018 Estimate (2012-2015 Look Back)	Nov 2015 % Change	2012-2015 Estimate Comments / Rationale	Revised AU Weight (Look Forward Meeting)	Revised LF Weight (Look Forward Meeting 2016)	2016-2018 LF Weighting Comments / Rationale	Revised 2016-18 Low Bookend (Look Forward Meeting)	2016-18 Bookend Comments/Rationale	2016 Low Bookend (incorporates revisions or 2012-	LookForward Updated 2018 Estimate	LookForward Updated 2018 Estimate % change	2016-18 Look Forward Estimate Comments/Rationale	2013-2018	2033	High 2018 Bookend	High 2033 Bookend	2012 LF Weight	2012 LF Weight and Bookend Comments	2012 Estimates Comments	2012 AU Weight Comments
Lemhi River	LRS2	Mainstem Salmon and Lemhi Rivers and Hayden Creek	6.1: Channel Structure and Form: Bed and Channel Form	40	40.8	0.8	See Chinook discussion. Only 1 project in database, but added projects as per Chinook. Denominator for steelhead is 107.8 miles (Streamnet). See spreadsteelheadeet. Expert Panel: Uplift = 0.8 change in %.	New AU weights: 60% LSR1; 40% LRS2, based on relative production. See calc table for AU weights.	13	Added limiting factor 6.2 and reweighted: used same weights as for Chinook.			40.8	43	2.2	Overall assessment unit extent equals LRC2 geography, so same projects, but different fish distribution denominator (107.8 miles). Yields 2.2% expected uplift.	41	42		60	8%		Riparian & floodplain LF projects also contribute.	
Lemhi River	LRS3	Mainstem Salmon and Lemhi Rivers and Hayden Creek	6.2: Channel Structure and Form: Instream Structural Complexity					New AU weights: 60% LSR1; 40% LRS2, based on relative production. See calc table for AU weights.	16	Added limiting factor 6.2 and reweighted: used same weights as for Chinook.	23	Same low bookend and rationale as for Chinook.	23	25.3	2.3	Overall assessment unit extent equals LRC2 geography, so same projects, but different fish distribution denominator (107.8 miles). Yields 2.3% expected uplift.								
Lemhi River	LRS2	Mainstem Salmon and Lemhi Rivers and Hayden Creek	7.2: Sediment Conditions: Increased Sediment Quantity	30	30.8	0.8	See Chinook discussion. Added, changed, and removed project(s) as per Chinook. Hayden and Tyler are removed. Denominator for steelhead is 107.8 miles (Streamnet). See spreadsteelheadeet. Expert Panel: Uplift = 0.8 change in %.	New AU weights: 60% LSR1; 40% LRS2, based on relative production. See calc table for AU weights.		Unchanged.			30.8	31	0.2	Overall assessment unit extent equals LRC2 geography, so same projects, but different fish distribution denominator (107.8 miles). Yields 0.2% expected uplift.	30.5	31		35	8%		Projects addressing other LF;'s in this AU considered for this estimate.	
Lemhi River	LRS2	Mainstem Salmon and Lemhi Rivers and Hayden Creek	8.1: Water Quality: Temperature	28	35.6	7.6	Taking into account upstream tribs, and adding LH 4.1 riparian flow benefits to LH 9.2 flow uplift = 7.6.	New AU weights: 60% LSR1; 40% LRS2, based on relative production. See calc table for AU weights.		Unchanged.			35.6	47.8	12.2	Overall assessment unit extent equals LRC2 geography, so same projects, but different fish distribution denominator (107.8 miles). Yields 7.1% expected uplift. [4-15-16: Given dependance of temperature uplift on flow (limiting factor 9.2) uplift, temperature uplift was revised in response to carry forward of look back flow projects. Revised uplift = 12.2%]	29	30		45	10%		Projects addressing other LF's in this AU considered for this estimate	
Lemhi River	LRS2	Mainstem Salmon and Lemhi Rivers and Hayden Creek	9.2: Water Quantity: Decreased Water Quantity	23.5	31.1	7.6	11/18/2015: EP discussed 9.2 before 8.1, as per CHK. Same Donato reference, so same denom of 650 cfs. Same Tyler change to 12.7, and others in spreadsheet calc = 6% change. 11/19/2015: EP revisited to account for trib flow projects that benefit this AU. Added these projects from LRS3 to the LRS2 table, removing those that did not apply (e.g. Carmen Cr projects, Holly 18 mile, Upper Holly. The numerator (in cfs) was calculated as the sum of the average annual flow benefit of leases in 2012 through 2015, plus the sum of permanent or long-term (e.g., 20 year) leases. Denominator is 750 cfs; = 7.6% uplift.	New AU weights: 60% LSR1; 40% LRS2, based on relative production. See calc table for AU weights.	25	Added limiting factor 6.2 and reweighted: used same weights as for Chinook.			31.1	43.1	12	Same denominator and uplift rationale as for Chinook. [4-15-16: Flow projects from the Look Back extending into the 2016-2018 period were carried forward and added to Look Forward uplift calculations. As a result, revised uplift = 12.0%]	24.5	24.5		30	40%		Upstream flow projects (LRS1) also considered for this estimate.	
Lemhi River	LRS3	Other Salmon and Lemhi River seasonally and disconnected tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	20	34.5	14.5	Expert Panel assembled xls table of opened steelhead miles from 10 fish passage actions for this Assessment Unit.Pratt project benefits=0;correced in database.Streamnet shows 3.1 miles.Expert Panel: decided to not use Streamnet mileage. Instead, use Chinook 60 mi multiplied by 3 (to reflect larger Steelhead distribution), minus 40 mi (3 tribs not in Assessment Unit)I for 13.4 mainstem miles, plus tributaries.Treatment=20.3 mi=14.5% change.*Uplift modified 1.8.16, to reflect 7 projects not considered during Expert Panel meeting.Based on additional river miles treated, uplift was modified to 19.9%-EWL	Merge LRS1 with LRS3 and call it LRS1. It then matches the extent of LRC1. LCR3 is therefore deprecated, and its actions are now considered in LRS1.								LRS3 is deprecated, and its actions are now considered in LRS1.	25	25		50	20%		steelhead use more tribs than chinook	
Lemhi River	LRS3	Other Salmon and Lemhi River seasonally and disconnected tributaries	2.3: Injury and Mortality: Mechanical Injury	20	21.7	1.7	2 actions in database: Holly Cr. and Tower Cr. Use screen design flows as metric. Denominator discussion: can use LRC1 cfs withdraws, adjusted by Expert Panel for tributaries that are included in this Assessment Unit. Expert Panel consensus: LRS3 (950 cfs diversions from Donato 1998 ms number minus 4 tribs: Carmen 100, Bohanon 20, Wimpy 25, Kenny 15)= 790 cfs; LRS1 = 160 cfs. 13.25 cfs screened = 1.7% change. ***Some details in this narrative are incorrect. See TAssessment Unitrus for corrected version. Change should be 1.9%. EWL *****	Merge LRS1 with LRS3 and call it LRS1. It then matches the extent of LRC1. LRS3 is therefore deprecated, and its actions are now considered in LRS1.								LRS3 is deprecated, and its actions are now considered in LRS1.	21	21		50	15%		whole lot more need to be screened	
Lemhi River	LRS3	Other Salmon and Lemhi River seasonally and disconnected tributaries	4.1: Riparian Condition: Riparian Vegetation	80	80.5	0.5	See Expert Panel xls table of actions: 2 actions in database, plus the additional actions added for Chinook. Total of 4 projects. Pratt goes to next Lookforward. Expert Panel: use with Chinook calculations for this Assessment Unit location. = 4.6 mi/140 mi = 0.5%	Merge LRS1 with LRS3 and call it LRS1. It then matches the extent of LRC1. LRS3 is therefore deprecated, and its actions are now considered in LRS1.								LRS3 is deprecated, and its actions are now considered in LRS1.	80.3	80.5		90	5%	changed from 40/65, 8/8/12	~ 2 mi total	
Lemhi River	LRS3	Other Salmon and Lemhi River seasonally and disconnected tributaries	5.2: Peripheral and Transitional Habitats: Floodplain Condition	75	75.6	0.6	2 projects, as with Chinook for this Assessment Unit area. Lower Little Springs, Lee Creek Fencing (Big 8 Mile) = 1.4 mi treated/140 mi; = 0.6% change.	Merge LRS1 with LRS3 and call it LRS1. It then matches the extent of LRC1. LRS3 is therefore deprecated, and its actions are now considered in LRS1.								LRS3 is deprecated, and its actions are now considered in LRS1.	75.2	75.5		80	5%	changed from 50/65, 8/8/12	included riparian, bed/channel, channel complexity LF projects	
Lemhi River	LRS3	Other Salmon and Lemhi River seasonally and disconnected tributaries	6.1: Channel Structure and Form: Bed and Channel Form	75	76.9	1.9	3 projects: Lower Little Springs, Lee Creek Fencing (Big 8 Mile), Lower Little Springs Channel Complexity = 2.6 mi treated/140 mi; = 1.9% change.	Merge LRS1 with LRS3 and call it LRS1. It then matches the extent of LRC1. LRS3 is therefore deprecated, and its actions are now considered in LRS1.								LRS3 is deprecated, and its actions are now considered in LRS1.	75.3	75.5		80	5%	establisteelheaded 8/8/12	included riparian,floodplain condition, complexity LF projects	
Lemhi River	LRS3	Other Salmon and Lemhi River seasonally and disconnected tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	75	76.9	1.9	3 projects: Lower Little Springs, Lee Creek Fencing (Big 8 Mile), Lower Little Springs Chan Complexity = 2.6 mi treated/140 mi; = 1.9% change.	Merge LRS1 with LRS3 and call it LRS1. It then matches the extent of LRC1. LRS3 is therefore deprecated, and its actions are now considered in LRS1.								LRS3 is deprecated, and its actions are now considered in LRS1.	75.3	75.5		80	5%	establisteelheaded 8/8/12	included riparian, floodplain condition, and bed/channel form LF projects	
Lemhi River	LRS3	Other Salmon and Lemhi River seasonally and disconnected tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	50	50.5	0.5	4 projects (see xls table calcs with % current effective). If weighed as per Limiting Factor 4.1, = 0.5 % uplift.	Merge LRS1 with LRS3 and call it LRS1. It then matches the extent of LRC1. LRS3 is therefore deprecated, and its actions are now considered in LRS1.								LRS3 is deprecated, and its actions are now considered in LRS1.	50.5	51		60	5%	hi changed from 70, 8/8/12	Riparian, bed/channel form, floodplain condition & complexity projects considered in this estimate.	
Lemhi River	LRS3	Other Salmon and Lemhi River seasonally and disconnected tributaries	8.1: Water Quality: Temperature	70	73.2	3.2	Limiting Factor 9.2 2.7% change plus Limiting Factor 4.1 Riparian change 0.5% = 3.2 uplift.	Merge LRS1 with LRS3 and call it LRS1. It then matches the extent of LRC1. LRS3 is therefore deprecated, and its actions are now considered in LRS1.								LRS3 is deprecated, and its actions are now considered in LRS1.	70.5	71		80	5%	changed from 60/70, 8/8/12	Project addressing other LF considered here.	
Lemhi River	LRS3	Other Salmon and Lemhi River seasonally and disconnected tributaries	9.2: Water Quantity: Decreased Water Quantity	22.5	25.2	2.7	Expert Panel's xls table of leases and permanent flow projects, contains 4 projects, all permanent = 21.4 cfs out of 790 cfs (see Chinook rationale = 2.7% uplift.	Merge LRS1 with LRS3 and call it LRS1. It then matches the extent of LRC1. LRS3 is therefore deprecated, and its actions are now considered in LRS1.								LRS3 is deprecated, and its actions are now considered in LRS1.	23.5	23.5		40	35%	lo changed from 20, 8/8/12		

Population	Code	Assessment Unit	2012 Standardized Limiting Factor	Low Bookend	Updated 2018 Estimate (2012-2015 Look Back)	Nov 2015 % Change	2012-2015 Estimate Comments / Rationale	Revised AU Weight (Look Forward Meeting)	Revised LF Weight (Look Forward Meeting 2016)	2016-2018 LF Weighting Comments/ Rationale	Revised 2016-18 Low Bookend (Look Forward	2016-18 Bookend Comments/Rationale	2016 Low Bookend (incorporates revisions or 2012-2015	LookForward Updated 2018 Estimate	LookForward Updated 2018 Estimate	2016-18 Look Forward Estimate Comments/Rationale	2013-2018	2033	High 2018 Bookend	2012 LF Weight	2012 LF Weight and Bookend Comments	2012 Estimates Comments	2012 AU Weight Comments
Pahsimeroi River	PRS4	Pahsimeroi River	1.1: Habitat Quantity: Anthropogenic Barriers	40	54.2	14.20	Expert Panel:steelhead numerators and denominators will be the same as for Chinook, so use PRC1 numbers for all Limiting Factors and actions in PRS1.PRS1 stream miles rationale includes estimate of stream miles in Pahsimeroi River and major connected tributaries from the mouth to the mouth of Big Creek, and including all known spring channels in currently occupied, seasonally occupied, or potentially accessible habitat for steelhead.Straightline distance was calculated using the measure tool in Google Earth and a sinuosity factor was added using professional judgement.*During QA realized P-16 headgate project was not included in Expert Panel lookback consideration. 1.8.16, added P-16 headgate project to calculation spreadsheet. Changed uplift value by 0.2%.-EWL	EP combined PRS1 and PRS3, as with Chinook. PRS3 is therefore deprecated. Use Chinook limiting factors. New assessment weight: higher than the 60% sum of the two AUs; set at 70%.	10	Increased weight for steelhead passage than for Chinook.			54.2	60.6	6.4	Same actions as in Chinook list. Different denominator: combined steelhead distribution from PSR1 and PRS3 is 151 miles. Yields 6.4% expected uplift.	45	45	60	20%	Steelhead habitat - lack of connectivity to tribs.	17.2 mi total - 30 mi from hatchery ladder project already included in other completed projects; hatchery project affects different life history stages. Most barriers in Sulphur & Fury Lane. Fall Ck/Little Morgan projects not considered in this 5% estimate.	
Pahsimeroi River	PRS4	Pahsimeroi River	2.3: Injury and Mortality: Mechanical Injury	65	73	8	Expert Panel: steelhead numerators and denominators will be the same as for Chinook, so use PRC1 numbers for all Limiting Factors and actions in PRS1.	EP combined PRS1 and PRS3, as with Chinook. PRS3 is therefore deprecated. Use Chinook limiting factors. New assessment weight: higher than the 60% sum of the two AUs; set at 70%.	10	Reweighted limiting factors due to combination of assessment units.			73	76.8	3.8	Same actions as in Chinook list. Different denominator: combined diversion flows from PSR1 and PRS3 = 610 cfs (same as for Chinook). Yields 3.8% expected uplift.	75	75		15%			
Pahsimeroi River	PRS4	Pahsimeroi River	4.1: Riparian Condition: Riparian Vegetation	50	52.1	2.1	Expert Panel: steelheadnumerators and denominators will be the same as for Chinook, so use PRC1 numbers for all Limiting Factors and actions in PRS1.	EP combined PRS1 and PRS3, as with Chinook. PRS3 is therefore deprecated. Use CHK LFs. New AU weight: higher than the 60% sum of the two AUs:70%.	10	Riparian is a significant factor in this assessment unit.			52.1	53	0.9	Same actions as in Chinook list. Different denominator: combined steelhead distribution from PSR1 and PRS3 is 151 miles. Yields 0.9% expected uplift.	52.5	55		10%	Steelhead habitat - lack of connectivity to tribs.	14.5 mi riparian enhancement. Estimate does not consider P-13 - include in 2015 look back if it is implemented.	
Pahsimeroi River	PRS4	Pahsimeroi River	6.1: Channel Structure and Form: Bed and Channel Form	50	52.9	2.9	Expert Panel: steelhead numerators and denominators will be the same as for Chinook, so use PRC1 numbers for all Limiting Factors and actions in PRS1.	EP combined PRS1 and PRS3, as with Chinook. PRS3 is therefore deprecated. Use CHK LFs. New AU weight: higher than the 60% sum of the two AUs:70%.	10	Reweighted limiting factors due to combination of assessment units.			52.9	55.8	2.9	Same actions as in Chinook list. Different denominator: combined steelhead distribution from PSR1 and PRS3 is 151 miles. Yields 2.9% expected uplift.	50.5	55		5%	Steelhead habitat - lack of connectivity to tribs.	Sulphur Ck. Project & other projects from Fury Lane to P12 considered in this estimate - natural process changes.	
	PRS4	Pahsimeroi River	6.2: Channel Structure and Form: Instream Structural Complexity					EP combined PRS1 and PRS3, as with Chinook. PRS3 is therefore deprecated. Use Chinook limiting factors. New assessment weight: higher than the 60% sum of the two AUs; set at 70%.	15	Added limiting factor 6.2.	20	Assessment unit needs much more instream complexity.	20	22.8	2.8	Same actions as in Chinook list. Different denominator: combined steelhead distribution from PSR1 and PRS3 is 151 miles. Yields 2.8% expected uplift.							
Pahsimeroi River	PRS4	Pahsimeroi River	7.1: Sediment Conditions: Decreased Sediment Quantity	20	21.5	1.5	Expert Panel: steelhead numerators and denominators will be the same as for Chinook, so use PRC1 numbers for all Limiting Factors and actions in PRS1. Also add sediment benefit from upstream PRS3 projects (see Chinook tables): New total: 1.5%.	EP combined PRS1 and PRS3, as with Chinook. PRS3 is therefore deprecated. Use CHK LFs. New AU weight: higher than the 60% sum of the two AUs:70%.	0	Zero weight. Remove limiting factor.			21.5	21.5	0	Zero weight. Remove limiting factor.	20			0%	Make sure spreadsheet breaks is Big Creek (NOT Big Springs Ck)		
Pahsimeroi River	PRS4	Pahsimeroi River	7.2: Sediment Conditions: Increased Sediment Quantity	20	21.5	1.5	Expert Panel: steelhead numerators and denominators will be the same as for Chinook, so use PRC1 numbers for all Limiting Factors and actions in PRS1.	EP combined PRS1 and PRS3, as with Chinook. PRS3 is therefore deprecated. Use CHK LFs. New AU weight: higher than the 60% sum of the two AUs:70%.	15	Reweighted limiting factor due to combination of assessment units.			21.5	22.8	1.3	Same actions as in Chinook list. Different denominator: combined steelhead distribution from PSR1 and PRS3 is 151 miles. Yields 1.3% expected uplift.	20.5	21		5%		Estimate considers projects listed under Riparian LF; PRS3 contributes sediment loads to this AU.	
Pahsimeroi River	PRS4	Pahsimeroi River	8.1: Water Quality: Temperature	40	55.3	15.3	Expert Panel: steelhead numerators and denominators will be the same as for Chinook, so use PRC1 numbers for all Limiting Factors and actions in PRS1.	EP combined PRS1 and PRS3, as with Chinook. PRS3 is therefore deprecated. Use Chinook limiting factors. New assessment weight: higher than the 60% sum of the two AUs; set at 70%.	10	Reweighted limiting factor due to combination of assessment units.			55.3	67.9	12.6	Same actions as in Chinook list. Uplift is the sum of limiting factors 4.1 and 9.2. Yields 3.6% expected uplift. [4-15-16: Given dependance of temperature uplift on flow (limiting factor 9.2) uplift, temperature uplift was revised in response to carry forward of look back flow projects. Revised uplift = 12.6%]	40.5	41		5%		Estimate considers projects listed under Riparian & Decreased Water Quantity LF. Most of benefit from Sulphur Cr.to main Pahsimeroi.	
Pahsimeroi River	PRS4	Pahsimeroi River	9.2: Water Quantity: Decreased Water Quantity	30	43.2	13.2	Expert Panel: steelhead numerators and denominators will be the same as for Chinook, so use PRC1 numbers for all Limiting Factors and actions in PRS1.	EP combined PRS1 and PRS3, as with Chinook. PRS3 is therefore deprecated. Use Chinook limiting factors. New assessment weight: higher than the 60% sum of the two AUs; set at 70%.	20	Reweighted limiting factor due to combination of assessment units.			43.2	54.9	11.7	Same actions as in Chinook list. Different denominator: combined diversion flows from PSR1 and PRS3 = 610 cfs (same as for Chinook). Yields 2.7% expected uplift. [4-15-16: Flow projects from the Look Back extending into the 2016-2018 period were carried forward and added to Look Forward uplift calculations. As a result, revised uplift = 11.7%]	32	32		40%	Consider timing of spawning and juveniles between ST and CK. Steelhead habitat - lack of connectivity to tribs.	Sulphur & P13 are only projects that actually gain water; conservative estimate.	

Population	Code	Assessment Unit	2012 Standardized Limiting Factor	Low Bookend	Updated 2018 Estimate (2012-2015 Look Back)	Nov 2015 % Change	2012-2015 Estimate Comments / Rationale	Revised AU Weight (Look Forward Meeting)	Revised LF Weight (Look Forward Meeting 2016)	2016-2018 LF Weighting Comments/ Rationale	Revised 2016-18 Low Bookend (Look Forward	2016-18 Bookend Comments/Rationale	2016 Low Bookend (incorporates revisions or 2012-2015	LookForward Updated 2018 Estimate	LookForward Updated 2018 Estimate	2016-18 Look Forward Estimate Comments/Rationale	2013-2018	2033	High 2018 Bookend	2012 LF Weight	2012 LF Weight and Bookend Comments	2012 Estimates Comments	2012 AU Weight Comments
Pahsimeroi River	PRS2	Salmon River and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	65	80.5	15.5	Discussion of denominator mileage: mileage includes mainstem as well as tributaries: 61.8 mi from Streamnet. This might be a bit low. See Expert Panel xls table of access actions. Verified projects and benefit lengths. Remove duplicates from database. On table: Iron Cr: 4.5 mi; Poison Cr: 1.6 mi; Cow Cr: 3.5. Sum: 9.6 benefit/62 = 15.5% uplift.	EP reweighed assessment unit to 30% due to wanting weight of combined PRS1 and PRS3 assessment unit to be 70%.					80.5	80.5	0	All projects listed in database are outside of the 2018 BiOp period. No change expected.	70	70		20%		Includes McKim Warm Springs, and Poison Ck barriers Upwards of 12 more barriers remaining	
Pahsimeroi River	PRS2	Salmon River and Tributaries	2.3: Injury and Mortality: Mechanical Injury	45	46.1	1.1	2 projects: Poison Cr, Cow Cr screens. Use design flows as metric: 2.1 and 3.6 cfs. Sum: 5.7 cfs. Denominator: Morgan calculation of diversions: 497 cfs. = 1.1% uplift. Expert Panel: Note that 497 cfs includes Salmon River withdrawals. Should limit to the tributaries in the future.	EP reweighed assessment unit to 30% due to wanting weight of combined PRS1 and PRS3 assessment unit to be 70%.					46.1	46.1	0	All projects listed in database are outside of the 2018 BiOp period. No change expected.	55	55		20%		2 McKim fisteelheadscreens about 12 more to be screened	
Pahsimeroi River	PRS2	Salmon River and Tributaries	4.1: Riparian Condition: Riparian Vegetation	70	70.6	0.6	See Expert Panel's xls, listing actions and % current function benefits improvements per project. Cole Ranch projects: Riparian fencing 1.96 mi and 0.09 mi planting actions (protection and active treatment) = 2.05 miles. Good cottonwood growth. 20% for fencing; 3% for planting Adjusted for % current function improvement: 0.6% uplift.	EP reweighed assessment unit to 30% due to wanting weight of combined PRS1 and PRS3 assessment unit to be 70%.					70.6	70.6	0	All projects listed in database are outside of the 2018 BiOp period. No change expected.	70	70		20%			
Pahsimeroi River	PRS2	Salmon River and Tributaries	8.1: Water Quality: Temperature	33	35.6	2.6	Expert Panel: Add uplifts from Limiting Factor 4.1 and 9.2 = 2.6 % total change.	EP reweighed assessment unit to 30% due to wanting weight of combined PRS1 and PRS3 assessment unit to be 70%.					35.6	37.5	1.9	All projects listed in database are outside of the 2018 BiOp period. No change expected. [4-15-16: Given dependance of temperature uplift on flow (limiting factor 9.2) uplift, temperature uplift was revised in response to carry forward of look back flow projects. Revised uplift = 1.9%]	33	33		10%			
Pahsimeroi River	PRS2	Salmon River and Tributaries	9.2: Water Quantity: Decreased Water Quantity	65	67	2	See Expert Panel's xls table of flow actions and lease/permanent right type. Expert Panel: Checked & corrected flow amounts and both flow and benefit locations for projects. Delete duplicates in database. Poison Cr 6 cfs, Cow Cr. 2 cfs. Add Big Hat and Hat cr project 2.13 cfs. The numerator (in cfs) was calculated as the sum of the average annual flow benefit of leases in 2012 through 2015, plus the sum of permanent or long-term (e.g., 20 year) leases. Denominator: Use 497 cfs per Morgan as with Limiting Factor 2.3. = 2% uplift	EP reweighed assessment unit to 30% due to wanting weight of combined PRS1 and PRS3 assessment unit to be 70%.					67	68.9	1.9	All projects listed in database are outside of the 2018 BiOp period. No change expected. [4-15-16: Flow projects from the Look Back extending into the 2016-2018 period were carried forward and added to Look Forward uplift calculations. As a result, revised uplift = 1.9%]	65	65		30%			
Pahsimeroi River	PRS3	Pahsimeroi Upstream Of Big Ck	1.1: Habitat Quantity: Anthropogenic Barriers	20	34.8	14.8	Expert Panel: Use PRC2 projects benefit info for PRS3 (see Expert Panel's xls table), but with a different denominator. Steelhead intrinsic potential mapping: similar overall extent, but more "green" channel line segments (89 miles). Big Creek up high has good habitat. Added 2015 McCoy Lane access project (culvert rExpert Panellaced with bridge) 0.5 mi opened and Lone Pine 2015 1.5 mi opened (but dExpert Panelendent on Joe passage), and Mill Cr Reconnect 2015 1.5 mi. Note that some Assessment Unit maps confuse PRS2 and PRS3. Checking Big Cr/O'Neal (different actions, in this case) miles. O'Neal is same as Hamilton Ditch project. Big Cr barriers (n=2) lumped into one "Big Creek Culvert to Bridge" 9.7 mi entry in table. Also add Mill Creek Reconnect. Sum: 13.2 = 14.8% uplift.	0%. EP combined PRS1 and PRS3. PRS3 is deprecated.								EP combined PRS1 and PRS3. PRS3 is deprecated.	25	25		20%	Different weights and bookends for steelhead due to steelhead use of tribs that chinook don't use	Steelhead benefits only - not for Chinook. Sink system - natural runoff/flow regime influences available water and access any given year. ADD: Estimate considers California Ditch project listed in PRC2 LF 1.1.	
Pahsimeroi River	PRS3	Pahsimeroi Upstream Of Big Ck	2.3: Injury and Mortality: Mechanical Injury	20	20	0		0%. EP combined PRS1 and PRS3. PRS3 is deprecated.								EP combined PRS1 and PRS3. PRS3 is deprecated.	22.5	22.5		10%	Different weights and bookends for steelhead due to steelhead use of tribs that chinook don't use	ADD PROJECT The Pines Screen Diversion listed under PRC2 LF 2.3. This Pines is only 1 diversion out of many.	
Pahsimeroi River	PRS3	Pahsimeroi Upstream Of Big Ck	4.1: Riparian Condition: Riparian Vegetation	20	20.1	0.1	Expert Panel: Use PRC2 projects benefit info for PRS3 (see Expert Panel's xls table), but with a different denominator. Steelhead intrinsic potential mapping: similar overall extent, but more "green" channel line segments (89 miles). Add Bill Creek. Does not include O'Neal, which was moved to PRS1. 3.1 mi treated/89 = 0.1% uplift.	0%. EP combined PRS1 and PRS3. PRS3 is deprecated.								EP combined PRS1 and PRS3. PRS3 is deprecated.	23	28		10%	Different wts and bookends for steelhead due to steelhead use of tribs that chinook don't use	Estimate considers benefits from projects listed under Decreased Water Quantity LF.	
Pahsimeroi River	PRS3	Pahsimeroi Upstream Of Big Ck	7.2: Sediment Conditions: Increased Sediment Quantity	20	20.1	0.1	Expert Panel: Use Riparian LH 4.1 projects, denominator, and rationale.	0%. EP combined PRS1 and PRS3. PRS3 is deprecated.								EP combined PRS1 and PRS3. PRS3 is deprecated.	20.5	21		10%	Different wts and bookends for steelhead due to steelhead use of tribs that chinook don't use	Estimate considers projects under Decreased Water Quantity LF.	
Pahsimeroi River	PRS3	Pahsimeroi Upstream Of Big Ck	9.2: Water Quantity: Decreased Water Quantity	20	25.3	5.3	See Expert Panel's xls table of leases and permanent flow projects: 2 projects: O'Neal/Big Cr Ranch and Page/Mill Cr. The numerator (in cfs) was calculated as the sum of the average annual flow benefit of leases in 2012 through 2015, plus the sum of permanent or long-term (e.g., 20 year) leases. Flow benefit sum: 17 cfs. Denominator is 319 cfs; = 5.3% uplift.	0%. EP combined PRS1 and PRS3. PRS3 is deprecated.								EP combined PRS1 and PRS3. PRS3 is deprecated.	27.5	32.5		50%	Different weights and bookends for steelhead due to steelhead use of tribs that chinook don't use consider timing of spawning and juveniles between STeelhead and ChinooK	Estimate considers total of 23 cfs - 12 cfs from Blg Ck. Hamilton ditch closure adds another 11 cfs to Big Ck. - part of Fury Lane/P16 suite of projects. Benefits better for steelhead than Chinook. Long term benefits to water quantity as system begins to seal water.	

Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 Low Bookend	Updated 2018 Estimate (2012-	Nov 2015 % Change	2012-2015 Estimate Comments / Rationale	Revised AU Weight (Look Forward Meeting)	Revised LF Weight (Look Forward Meeting 2016)	2016-2018 LF Weighting Comments/ Rationale	Revised 2016-18 Low Bookend (Look Forward Meeting)	2016-18 Bookend Comments/Rationale	2016 Low Bookend (incorporates revisions or 2012-2015 uplift)	LookForward Updated 2018 Estimate	LookForward Updated 2018 Estimate %	2016-18 Look Forward Estimate Comments/Rationale	2013-2018	2033	High 2018 Bookend	2012 LF Weight	2012 LF Weight and Bookend Comments	2012 Estimates Comments	2012 AU Weight Comments
Salmon River upper mainstem	UMS2	Mainstem Upper Salmon River	4.1: Riparian Condition: Riparian Vegetation	40	40.5	0.5	Salmon River Headwaters USFS project: 2 mi; 20% function. Remove the 2.5 mi duplicate action. Denominator from Streamnet: 73.3 mi. = 0.5% uplift.						40.5	40.5	0	No actions. No percentage change expected.	40.05	40.1		25%			Lightning Ck combined with rest of West Fork
Salmon River upper mainstem	UMS2	Mainstem Upper Salmon River	7.2: Sediment Conditions: Increased Sediment Quantity	51	51.5	0.5	Expert Panel used Limiting Factor 4.1 projects and rationale. Salmon River Headwaters USFS project: 2 mi; 20% function. Remove the 2.5 mi duplicate action. Denominator from Streamnet: 73.3 mi. = 0.5% uplift.						51.5	51.5	0	No actions. No percentage change expected.	51	51		25%			
Salmon River upper mainstem	UMS2	Mainstem Upper Salmon River	8.1: Water Quality: Temperature	51	62	11	Expert Panel summed riparian and flow uplift percentages = ~11% EWL 4.1.16						62	70.5	8.5	No actions. No percentage change expected. [4-15-16: Given dependance of temperature uplift on flow (limiting factor 9.2) uplift, temperature uplift was revised in response to carry forward of look back flow projects. Revised uplift = 8.5%]	51	51		25%			
Salmon River upper mainstem	UMS2	Mainstem Upper Salmon River	9.2: Water Quantity: Decreased Water Quantity	80	90.5	10.5	Expert Panel included UMS3 tributary flow projects: Pole Cr 12 cfs permanent, Pole Cr 2012-2014 5-6 cfs lease, Beaver Cr. 5.9 cfs 20 year lease. These need to be added to database as benefit to mainstem (also for Limiting Factor 8.1). Expert Panel's xls table also includes Beaver Creek 20 year lease. Do not include SPC fish screen project. The numerator (in cfs) was calculated as the sum of the average annual flow benefit of leases in 2012 through 2015, plus the sum of permanent or long-term (e.g., 20 year) leases. denominatrinator: 210 cfs (from Morgan Case, IDWR diversions) Total uplift = 10.5%.						90.5	99	8.5	No actions. No percentage change expected.[4-15-16: Flow projects from the Look Back extending into the 2016-2018 period were carried forward and added to Look Forward uplift calculations. As a result, revised uplift = 8.5%]	80	80		25%			
Salmon River upper mainstem	UMS3	Upper Salmon River Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	55	60.4	5.4	Expert Panel counted Pole Creek Diversions (7 mi) and Hensley Culvert Pole Creek (3 mi). Correct these in database. denominatrinator from Streamnet: 184.5 mi. = 5.4% uplift.						60.4	61.8	1.4	Copied projects and prorations from equivalent Chinook units (3 overlapping Chinook units: VCCC1, UMC1, UMC2) into calc table. Used steelhead denominators from Look Back. Yields 1.8% expected uplift. 5/26/2016: Copied actions from UMC1, UMC2 and VCC1. Changed denominator, added 5 miles for intrinsic value on Iron Creek, same as Chinook. New denominator is 189.5 miles. See Chinook comments	60	60		10%		Would treat all Pole Ck access issues	Lightning Ck combined with rest of West Fork
Salmon River upper mainstem	UMS3	Upper Salmon River Tributaries	2.3: Injury and Mortality: Mechanical Injury	75	79	4	Pole Creek Screens: design flow sum is 15.3 cfs. denominatorinator: Morgan Case (IDFG) summation including Salmon River irrigation withdrawl. In the future, limit to tributaries. (remove mainstem Salmon river) = 386 cfs. 15.3/386= 4% uplift.						79	80.6	1.6	Copied projects and prorations from equivalent Chinook units (3 overlapping Chinook units: VCCC1, UMC1, UMC2) into calc table. Used steelhead denominators from Look Back. Yields 1.6% expected uplift. 5/26/16: no changes	75	75		10%		Pick up Goat/Meadow screens in 2015 look back	
Salmon River upper mainstem	UMS3	Upper Salmon River Tributaries	4.1: Riparian Condition: Riparian Vegetation	40	40.1	0.1	Corrected Pole Creek Fence - SBT Phases 1 & 2 mileage (should be 1.25 mi and 1.0 mi), 5% and 10% functional now. denominator from Streamnet: 184.5 mi. = 0.1% uplift.						40.1	40.8	0.7	Copied projects and prorations from equivalent Chinook units (3 overlapping Chinook units: VCCC1, UMC1, UMC2) into calc table. Used steelhead denominators from Look Back. Yields 0.4% expected uplift. 5/26/2016: Copied actions from UMC1, UMC2 and VCC1. Changed denominator, added 5 miles for intrinsic value on Iron Creek, same as Chinook. New denominator is 189.5 miles. See Chinook comments	40.5	41		20%			
Salmon River upper mainstem	UMS3	Upper Salmon River Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	50	50.1	0.1	Expert Panel used Limiting Factor 4.1 projects and rationale. denominator from Streamnet: 184.5 mi. = 0.1% uplift.						50.1	50.5	0.4	Copied projects and prorations from equivalent Chinook units (3 overlapping Chinook units: VCCC1, UMC1, UMC2) into calc table. Used steelhead denominators from Look Back. Yields 0.4% expected uplift. 5/26/2016: Copied actions from UMC1, UMC2 and VCC1. Changed denominator, added 5 miles for intrinsic value on Iron Creek, same as Chinook. New denominator is 189.5 miles. See Chinook comments	50.1	50.2		15%		Influenced by riparian LF actions	
Salmon River upper mainstem	UMS3	Upper Salmon River Tributaries	8.1: Water Quality: Temperature	31	36.8	5.8	Expert Panel summed riparian (Pole Creek Fence - SBT Phases 1 & 2) and flow uplift percentages = 5.8% change to Limiting Factor 8.1.						36.8	44.5	7.7	Copied projects and prorations from equivalent Chinook units (3 overlapping Chinook units: VCCC1, UMC1, UMC2) into calc table. Used steelhead denominators from Look Back. Sum of Riparian and Flow uplifts yields 8.6% expected uplift. [4-15-16: Given dependance of temperature uplift on flow (limiting factor 9.2) uplift, temperature uplift was revised in response to carry forward of look back flow projects. Revised uplift = 13.3%] 5/26/2016: Copied actions from UMC1, UMC2 and VCC1. Includes typical calculation methods for temperature, in addition to the temperature calculation that was formulated on VCC1 for LF 8.1.	31.5	32		10%		Influenced by riparian and flow LF actions in Pole Ck	
Salmon River upper mainstem	UMS3	Upper Salmon River Tributaries	9.2: Water Quantity: Decreased Water Quantity	23	28.7	5.7	Pole Cr 12 cfs permanent, Pole Cr 2012-2014 5-6 cfs lease, Beaver Cr. 5.9 cfs 20 year lease. The numerator (in cfs) was calculated as the sum of the average annual flow benefit of leases in 2012 through 2015, plus the sum of permanent or long-term (e.g., 20 year) leases. Denominator: 386 cfs (from Morgan Case, IDWR diversions). Do not include fish screen project. Delete other actions in database. Total uplift = 5.7%.						28.7	35.7	7	Copied projects and prorations from equivalent Chinook units (3 overlapping Chinook units: VCCC1, UMC1, UMC2) into calc table. Add Peach Creek 2 cfs back in. Used steelhead denominators from Look Back. Yields 8.2% expected uplift. [4-15-16: Flow projects from the Look Back extending into the 2016-2018 period were carried forward and added to Look Forward uplift calculations. As a result, revised uplift = 12.9%] 5/26/2016: Copied actions from UMC1, UMC2 and VCC1. See Chinook comments	30	30		35%		Pole Ck large part of AU improvement	
Salmon River upper mainstem	UMS4	West Fork Yankee Fork	5.2: Peripheral and Transitional Habitats: Floodplain Condition	97	97	0	Expert Panel: No actions. No change. 1 project (West Fork Yankee Fork Habitat Enhancement Project) designated for Look Forward.						97	97.5	0.5	Denominator: Steelhead Intrinsic Potential mileage: 20 miles. Same projects as for Chinook assessment unit, but different denominator, different prorations. Yields 0.5% expected uplift.	98	98		40%	Expanded Expert Panel including the YF ID Team made up this round as compared to a small subset in Fall 2011 (conversion to standardized Limiting Factors) and Sp/Summer 2012 ExPanel meetings. Changed low bookend; Most of Ass Unit is "wilderness" with very little area disturbed that can be restored		Lightning Ck combined with rest of West Fork
Salmon River upper mainstem	UMS4	West Fork Yankee Fork	6.1: Channel Structure and Form: Bed and Channel Form	97	97	0	Expert Panel: No actions. No change. 1 project (West Fork Yankee Fork Habitat Enhancement Project) designated for Look Forward.						97	97.5	0.5	Denominator: Steelhead Intrinsic Potential mileage: 20 miles. Same projects as for Chinook assessment unit, but different denominator, different prorations. Yields 0.5% expected uplift.	98	98		40%	Expanded Expert Panel including the YF ID Team made up this round as compared to a small subset in Fall 2011 (conversion to standardized Limiting Factors) and Sp/Summer 2012 ExPanel meetings. Changed low bookend; Most of Ass Unit is "wilderness" with very little area disturbed that can be restored		
Salmon River upper mainstem	UMS4	West Fork Yankee Fork	6.2: Channel Structure and Form: Instream Structural Complexity	97	97	0	Expert Panel: No actions. No change. 1 project (West Fork Yankee Fork Habitat Enhancement Project) designated for Look Forward.						97	97.5	0.5	Denominator: Steelhead Intrinsic Potential mileage: 20 miles. Same projects as for Chinook assessment units, but different denominator, different prorations. Yields 0.5% expected uplift.	98	98		20%	Expanded Expert Panel including the YF ID Team made up this round as compared to a small subset in Fall 2011 (conversion to standardized Limiting Factors) and Sp/Summer 2012 ExPanel meetings. Changed low bookend; Most of Ass Unit is "wilderness" with very little area disturbed that can be restored		
Salmon River upper mainstem	UMS5	Yankee Fork	1.1: Habitat Quantity: Anthropogenic Barriers	85	85	0	Expert Panel: No actions. No change.						85	85	0	[Not discussed by EP; presume no actions]	95	95		5%	Currently, tribs w/ barriers include Cearley, Jordan and Ramey, Silver and Jerrys Creeks. Improving these get to 95%.		Lightning Ck combined with rest of West Fork
Salmon River upper mainstem	UMS5	Yankee Fork	4.2: Riparian Condition: LWD Recruitment	40	40.1	0.1	Expert Panel: See projects and functional % values used for YFC3. Use 30 mi denominator for steelhead (longer than the 25 for Chinook). See Expert Panel's xls table.						40.1	41.4	1.3	Same projects as for Chinook, but different denominator and prorations based on different use (e.g., regarding Pond Series project). Yields 1.3% expected uplift.	50	55		20%	Expanded Expert Panel including the YF ID Team made up this round as compared to a small subset in Fall 2011 (conversion to standardized Limiting Factors) and Sp/Summer 2012 ExPanel meetings. Switched Riparian condition for LWD Recruitment; Historical info suggest that riparian habitat was was not extensive in the mainstem Yankee Fork. Adjusted low bookend down to 35		Lightning Ck combined with rest of West Fork
Salmon River upper mainstem	UMS5	Yankee Fork	5.2: Peripheral and Transitional Habitats: Floodplain Condition	50	72.1	22.1	Expert Panel: See projects and functional % values used for YFC3. Use 30 mi denominator for Steelhead (longer than the 25 for Chinook). See Expert Panel's xls table.						72.1	76.1	4	Same projects as for Chinook, but different denominator and prorations based on different use (e.g., regarding Pond Series project). Yields 4.0% expected uplift.	60	65		25%	Expanded Expert Panel including the YF ID Team made up this round as compared to a small subset in Fall 2011 (conversion to standardized Limiting Factors) and Sp/Summer 2012 ExPanel meetings. Changed low bookend from 20 to 50 percent because 2/3 of historic Chinook production comes from areas outside of dredge reach and there are still some impacts that occur in non dredged areas. Recognizing Jordan Ck. Impacts		
Salmon River upper mainstem	UMS5	Yankee Fork	6.1: Channel Structure and Form: Bed and Channel Form	50	76.2	26.2	Expert Panel: See projects and functional % values used for YFC3. Use 30 mi denominator for Steelhead (longer than the 25 for Chinook). See Expert Panel's xls table.						76.2	80.5	4.3	Same projects as for Chinook, but different denominator and prorations based on different use (e.g., regarding Pond Series project). Yields 4.3% expected uplift.	60	65		20%	Expanded Expert Panel including the YF ID Team made up this round as compared to a small subset in Fall 2011 (conversion to standardized Limiting Factors) and Sp/Summer 2012 ExPanel meetings. Changed low bookend from 20 to 50 percent because 2/3 of historic Chinook production comes from areas outside of dredge reach and there are still some impacts that occur in non dredged areas. Recognizing Jordan Ck. Impacts		
Salmon River upper mainstem	UMS5	Yankee Fork	6.2: Channel Structure and Form: Instream Structural Complexity	50	77.5	27.5	Expert Panel: See projects and functional % values used for YFC3. Use 30 mi denominator for Steelhead (longer than the 25 for Chinook). See Expert Panel's xls table.						77.5	83.5	6	Same projects as for Chinook, but different denominator and prorations based on different use (e.g., regarding Pond Series project). Yields 6.0% expected uplift.	65	70		25%	Expanded Expert Panel including the YF ID Team made up this round as compared to a small subset in Fall 2011 (conversion to standardized Limiting Factors) and Sp/Summer 2012 ExPanel meetings. Changed low bookend from 20 to 50 percent because 2/3 of historic Chinook production comes from areas outside of dredge reach and there are still some impacts that occur in non dredged areas. Recognizing Jordan Ck. Impacts		
Salmon River upper mainstem	UMS5	Yankee Fork	7.1: Sediment Conditions: Decreased Sediment Quantity	50	72.2	22.2	Expert Panel: See projects and functional % values used for YFC3. Use 30 mi denominator for Steelhead (longer than the 25 for Chinook). See Expert Panel's xls table.						72.2	77.4	5.2	Same projects as for Chinook, but different denominator and prorations based on different use (e.g., regarding Pond Series project). Yields 5.2% expected uplift.	55	60		5%	Expanded Expert Panel including the YF ID Team made up this round as compared to a small subset in Fall 2011 (conversion to standardized Limiting Factors) and Sp/Summer 2012 ExPanel meetings. Changed low bookend from 20 to 50 percent because 2/3 of historic Chinook production comes from areas outside of dredge reach and there are still some impacts that occur in non dredged areas. Recognizing Jordan Ck. Impacts; Changed LF 7.2 to 7.1 due to much better description of conditions and how LF applies - lack of sediment that provides good spawning habitat rather than high fines in gravels.		