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 Chinook. 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

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

File History Notes:
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)	Look Forward Updated 2018 Estimate	Look Forward 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
Lemhi River	LRC1	Lemhi tributaries and Carmen Creek	1.1: habitatitat Quantity: Anthropogenic Barriers	20	54.4	34.4	Chinook Streamnet miles= 32, but doesn't show Agency Creek that Chinook use. 2012 estimate used 56.9 mi of access, which might be similar to sum of intrinsic potential in Assessment Unit, but does not include short lengths of lower section of many tributaries. ISEMP sampling shows current distribution of juvenile Chinook, plus newly opened access. Expert Panel assembled xls of barriers in Assessment Unit, organized by tributary. Added SCC-03 project to TAssessment Unitrus. Chinook tributary miles opened in 2012-2015 period = 22 mi. Use 56.9, rounded 60 to as denominator. 13 projects = 22 miles treated out of 60 mi = 37% uplift. But not all tributaries have equal habitat value. Expert Panel confirmed mileage for Little Springs 3.8 mi = 37%. - 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 49% - EWL [4-23-16: During Lookforward process, the Panel revised the fish use denominator from 60 miles to 85.9 and requested it be applied to the Look Back calculation. Revised uplift: 34.4%]				30	[Copied new low bookends from steelhead assessment unit (combined LRS1 with LRS3 on 3/23/2016)]	30	56.2	26.2	Calc table lists all projects that were counted. Panel used same denominator as for Look Back. Project mileage was based on Chinook miles of access planned to open. Prorations (25% intervals) were based on partial vs. full and adult vs. juvenile blockage. Panel took into account whether credit was previously assigned for any upstream or downstream projects to avoid double-counting. Land Trust projects need to be added to the database. Removed several projects that were not in the time period, or not really a barrier project. Canyon Creek miles to be treated measured up to Cruikshank Creek. Big Timber Lee is not much of a barrier: removed. Renamed Big Timber Fish Screen to "Diversion Removal" (measured up to Carey Act). Carey Act predicted to be done by 2018; will open up 10 miles, but rated at 50% to account for seasonality of barrier. Eighteen Mile: will happen after 2018, so removed from list, as was one of the Agency Creek projects. Add C3 Beyeler project to database. Seasonal diversions considered to be partial barriers, and prorated accordingly. Eighteen Mile Beyeler push-up: measured from intercept. LHaC-02: not always a barrier: 25% proration. Middle Eighteenmile Creek Breashear will remove 2 diversion barriers. Big Timber was redundant: remove from database. Removed Tower Creek Replacement from database. Eighteenmile Highway 29 Bridge measured up to Merrill's diversion (1.1 miles). Pratt Creek easement flows will aid access/passage, but not counted here (counted in limiting factor 9.2). Pratt Creek culvert to bridge accounted for in other projects in area, so should be removed from list. Remove Lower Big Eightmile. Delete Whimpy and Big Timber. Panel revisited denominator because the 60-mile number used for Look Back seemed low. Should include Kenney and Pratt. Intrinsic Potential layer should be considered a starting point, but not the full extent. Panel examined maps and counted tributary miles to calculate new denominator. Add to Intrinsic Potential (56.9 miles): 4th of July 2.5 miles, Tower 2 miles, Bohannon to forks 4 miles (project = 3.25), Whimpy 2 miles, Pratt including Sandy 3.5 miles, Kenney 1 mile, Big Eightmile 9 miles, Little Springs 5 miles; this results in 29 additional miles, which is 85.9 total denominator. 19 projects = 26.2% uplift predicted.	30		20%		56.9 mi of access; most of these actions improve access to next upstream barrier; not quite haf way to 50% high bookend; Some projects at lower end (high value), some mid-(slightly less value…). Still much more to be done	
Lemhi River	LRC1	Lemhi tributaries and Carmen Creek	2.3: Injury and Mortality: Mechanical Injury	20	26.8	6.8	Focus on diversion screen projects. Discussion of denominator and metrics: # diversersions, water volume (not all projects have equal benefit). Have # of screens. Use 650 cfs number? Expert Panel: use flow as metric. 2 types of screen projects: rExpert Panellacements vs new installs. New screens have more benefit than rExpert Panellacements. Expert Panel: Old screens probably never got credit, though, so count all the same and use cfs. Screen location also influences biological benefit. Expert Panel assembled xls table of projects from database with flow cfs. Bohanon screen is 11 cfs. Does not include Carmen SCC-03 projects. Ten projects = 75.92 cfs. For all these projects, quantity of flow is based on design flow of each screen. denominator: use Lemhi diverted total, plus mainstem tributaries in Assessment Unit. Donato (1998) rExpert Panelort: 1500 minus 650 = tributaries, add more for other tributaries, incorporate LRC2? Don't have Donato for other tributaries. In that case, use IDWR adjudicated flows, and subtract as needed? Expert Panel: Use 1050 total (includes tributaries like Carmen, Tower, 4th of July - tributaries ds? of mouth of Lemhi) as denominator in this Assessment Unit, estimate Expert Panel to revise later if they desire and find more data. Equals 7.2% uplift. Many diversions still to be addressed. Was previous Lowbookend too low? Expert Panel revision: us 950 cfs denominator instead as per Limiting Factor 9.2= 8% change. Removed Bohannon (not in Assessment Unit). Revised change = 6.8%				25	[Copied new low bookends from SH (combined LRS1 with LRS3 on 3.23/2016)]	25	32.9	7.9	Same metric and denominator as in Look Back. Added an additional Canyon Creek project. Removed Big Timber 2 Fish Screen. Beyeler and Tyler mileages were transposed in database; fixed in calc table. Renamed Big Timber 03 to 05 (Elsworth 4 cfs). Cary Act Screen IDFG is 27.8 cfs. Renamed Pratt Creek 1, 2, and 3 projects in tables, and added one (4, Upper Moulton). Added Sandy Creek Mulkey (0.5 cfs). Removed LBSC-05. Removed Tower, Big Timber Cr 8, 6.L8A moved to other assessment unit. Calc table lists 11 projects. Panel prorated based on present state of diversion. Removed Bohannon (address it in limiting factor 9.2). Total predicted uplift is 7%. [Panel later added 4th of July Creek IDFG Screens 1-4, which resulted in a 7.9% total expected uplift.]	23		15%		need to treat many more unscreened diversion in Hawley, Big Timber, Freeman, Carmen, Fourth of July, Texas 18-mile	
Lemhi River	LRC1	Lemhi tributaries and Carmen Creek	4.1: Riparian Condition: Riparian vegetationetation	80	80.8	0.8	Discussion of whether database contains all actions addressing this Limiting Factor. Some tributary projects areas left water gaps in fence for now, so not effective yet. Kenny Cr. trough projects should not be listed here. Some work element details need to be added or checked. Fence projects expansion at Lower Little Springs projects should be applied to both Limiting Factor 4.1 and 6.1 as work element = install fence (0.4 miles). Pratt Creek Ranch TNC should be put on Lookforward list. Two Lee Cr projects (2013 Big Eight Mile 1.5 mi and SBT 1.5 mi.[remove duplicate in database]) and Upper Little Springs Chan Complexity TU projects should be 1.2 miles of fence install. Expert Panel xls table (4 actions) = 4.6 miles treated out of 60 mi; adjusted each projects for % improvement (10, 20, 20, 5) over pre-projects conditions = 1.2% improvement. [4-23-16: During Lookforward process, the Panel revised the fish use denominator from 60 miles to 85.9 and requested it be applied to the Look Back calculation. Revised uplift: 0.8%]				50	[Copied new low bookends from steelhead assessment unit (combined LRS1 with LRS3 on 3.23/2016)]	50	50.6	0.6	Riparian projects listed in calc table. Remove Eighteenmile Riparian project, and Lower Big Timber. Add Hawley Creek Beaver Analogs. Pratt TU = Pratt Ranch TNC mentioned in Look Back. Add Tyler Eighteenmile and Texas Creek projects (0.5 mile each). Move Little Sawmill Creek project to LRC2. Panel prorated based on percentage of Properly Functioning Condition expected in 2018: 1% per year for passive fencing, and for active planting, expect an initial bump from existing conditions (barren in some areas), then 1% per year after that. This yields a 0.6% expected uplift.	80.5		5%	changed from 40/65% to reflect current function for entire AU, 8/8/12	included value from the water quantity projects in 2018 estimate	
Lemhi River	LRC1	Lemhi tributaries and Carmen Creek	5.2: Peripheral and Transitional habitatitats: Floodplain Condition	75	76.6	1.6	No actions in database for this Limiting Factor & Assessment Unit, but need to add projects from other Limiting Factors: Lower Little Springs IDFG 0.4 mi, Lee Cr Eight Mile 1 mi. Total = 1.4 mi out of 60 mi = 2.3% uplift. [4-23-16: During Lookforward process, the Panel revised the fish use denominator from 60 miles to 85.9 and requested it be applied to the Look Back calculation. Revised uplift: 1.6%]				50	[Copied new low bookends from steelhead assessment unit (combined LRS1 with LRS3 on 3.23/2016)]	50	51.2	1.2	EP discussed adding Little Sawmill Cr TU project (upstream of Chinook use), and decided not to include it. Add Hawley Beaver Analog: 2 miles. Add Tyler Eighteenmile and Texas Creek projects (0.5 mile each). Prorated. Yields 1.2% predicted uplift.	75.2		5%	areas in watershed lower in tributaries are most productive to anadromou s fish	all riparian and flow projects are interrelated to floodplain condition and contribute to this LF	
Lemhi River	LRC1	Lemhi tributaries and Carmen Creek	6.1: Channel Structure and Form: Bed and Channel Form	75	78	3	1 project in database, but add actions from 6.2 = 3 actions. See Expert Panel's xls table. Sum is 2.6 mi/60 mi = 4.3% uplift. Expert Panel agrees. [4-23-16: During Lookforward process, the Panel revised the fish use denominator from 60 miles to 85.9 and requested it be applied to the Look Back calculation. Revised uplift: 3%]				50	[Copied new low bookends from steelhead assessment unit (combined LRS1 with LRS3 on 3.23/2016)]	50	51.5	1.5	Add Hawley, Eighteenmile, and Texas Creek projects. Panel prorated based on amount of project and intensity of treatment that affected bed and channel form. Calc table contains 5 projects. Yields 1.5% predicted uplift.	75.3		5%	areas in watershed lower in tributaries are most productive to anadromou s fish	~2.5 mi improvement in important areas; incorporates delayed benefits from riparian, floodplain projects. Understanding of this LF will evolve w/ greater recognition of dynamics and experience on effects of treatments	
Lemhi River	LRC1	Lemhi tributaries and Carmen Creek	6.2: Channel Structure and Form: Instream Structural Complexity	75	78	3	2 projects in database, but add action1 from 6.1 = 3 actions. See Expert Panel's xls table. Sum is 2.6 mi/60 mi = 4.3% uplift. Expert Panel agrees. [4-23-16: During Lookforward process, the Panel revised the fish use denominator from 60 miles to 85.9 and requested it be applied to the Look Back calculation. Revised uplift: 3%]				40	[Copied new low bookends from steelhead assessment unit	40	40.9	0.9	Add Hawley, Eighteenmile, and Texas Creek projects. Panel prorated based on amount of project and intensity of treatment that affected instream complexity. Calc table contains 5 projects. Yields 0.9% predicted uplift.	75.3		5%	areas in watershed lower in tributaries are most productive	closely related to 6.1	

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Lemhi River	LRC1	Lemhi tributaries and Carmen Creek	7.2: Sediment Conditions: Increased Sediment Quantity	50	50.8	0.8	Remove Kenny Trough. Expert Panel agrees to use the four riparian fencing actions from Limiting Factor 4.1, as they benefited sediment variables. See Expert Panel's xls. Sum = 4.6 mi/ 60 = 7.7% uplift. Adjust for functional status? Expert Panel: Use same % function as for Limiting Factor 4.1 Riparian; = 1.2% uplift. Expert Panel raised concerns that Limiting Factor weight of 5% is too low. To be discussed further at lookforward. [4-23-16: During Lookforward process, the Panel revised the fish use denominator from 60 miles to 85.9 and requested it be applied to the Look Back calculation. Revised uplift: 0.8%]			Sediment TMDL for basin, so 5% is too low. Sediment is a bigger problem for mainstem Lemhi than for tributaries, but the tributaries contribute to the problem. Should temperature and riparian be higher weights? Panel decided not to change weights in this assessment unit.	35	[Copied new low bookends from steelhead assessment unit (combined LRS1 with LRS3 on 3.23/2016)]	35	36.3	1.3	For Lemhi general in LRS1 and LRC1: 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. Note effects to downstream mainstem assessment units. Calc table: started with riparian projects (fencing projects were dropped for 2018 period). Prorated based on anticipated effect on sediment. Yields 1.3% expected uplift.	50.5		5%		riparian and bed & channel form projects contribute to estimate	
Lemhi River	LRC1	Lemhi tributaries and Carmen Creek	8.1: Water Quality: temperatureerature	70	73.7	3.7	1 projects in database: Lee Cr fence (acres). Copy flow improvement actions from 9.2 to 8.1, but difficult to quantify direct linkage between flow and temperature variables here. Use riparian % change as a guide, too. Note empairment levels and improvements in tributaries. E.g. Little Springs Cr. improvement to date vs. expected due to further riparian vegetation growth. Expert Panel: Use weighted riparian change from Limiting Factor 4.1 (1.2%), and adding Limiting Factor 9.2 (3) = 4.2%. **** NOTE FROM EWL on 2/2/16*** this math is incorrect. Should be 4.1% ****** [4-23-16: During Lookforward process, the Panel revised the fish use denominator from 60 miles to 85.9 and requested it be applied to the Look Back calculation. Revised uplift: 3.7%]				40	[Copied new low bookends from steelhead assessment unit (combined LRS1 with LRS3 on 3.23/2016)]	40	43.8	3.8	Both flow (1.5%) and riparian (0.6%) projects will affect this limiting factor. Their sum yields 2.1% expected uplift. [Revised in afternoon for Bohannon paper water right of 8.3 cfs = 2.5% total uplift 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 = 3.8%]	70.5		5%		Estimate considers riparian, bed/channel form and flow projects	
Lemhi River	LRC1	Lemhi tributaries and Carmen Creek	9.2: Water Quantity: Decreased Water Quantity	22.5	25.4	2.9	See Expert Panel's xls of flow projects, which sExpert Panelarate projects by lease year and permanent cfs. Expert Panel ran through each row to confirm cfs and lease/permanent type. Carmen Cr. SSC-03, 2014 should be 1.2 cfs. Kenney 2013 is permanent. Move Pratt out to lookforward. Remove 2 duplicate Kenny 0.14 cfs lease entries in database (now converted to permanent; diversion no longer exists). SCC-12 Fish Screen and other screen projects listed under this Limiting Factor should not be counted (work element #69); flow benefits were counted in other entries. Carmen 20 yr Source Switch DS and BS should be 1 cfs each. Expert Panel xls has 11 projects =27.74 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. Can use 1050 cfs denominator (based on Donato (1998), adjusted for mainstem salmon and tributaries in Assessment Unit) or "Morgan's numbers". Revised Donato adjustment number: 1500-750+200 = 950 denominator [apply this change to Limiting Factor 2.3 too] = 2.9% uplift, rounded to 3%.				25	[Copied new low bookends from steelhead assessment unit (combined LRS1 with LRS3 on 3.23/2016)]	25	28.2	3.2	Calc table lists flow projects, with cfs values per lease year and permanent cfs to estimate instream benefits. Assumed paper water right values. Added 5 projects that were not listed in database, but some were redundant. For projects in database, adjusted flow numbers through 2018. Yields 1.5% predicted uplift, using same denominator as for Look Back. [Revised in afternoon for Bohannon paper water right of 8.3 cfs = 1.9% 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 = 3.2%]	23.5		35%		about 15.3 cfs & 2.1 mi (not counting the shaping projects which temperatureers high flows)- acquisition highly influcenced by water year, runoff, and similar factors... Flow projects affect lower reaches where needed most. [also considers Hawley/upper Kauer (6 cfs), Lee Ck (2 cfs), another big 8-mile (2 cfs)- these projects are described and considered in other limiting factors. be sure to "true up" look back projects list in 2015) Over total of 25.3cfs	
Lemhi River	LRC2	Lemhi, Hayden Creek, Big Springs Creek	1.1: habitatitat Quantity: Anthropogenic Barriers	85	85.25	0.25	L-1 barrier projects: sometimes, but not always anthropogenic barrier = partial/seasonal barrier (some years only) to upstream migration when irrigators had it in use. Other projects in the Assessment Unit than are not on list? E.g. projects after Beeler around L-50? (received BPA funding within 2012-2015 period). This in the database under Assessment Unit LRC1 or under flow (Little Springs)? But did not affect mainstem passage? Action is accurate in database. In general, watch for actions that might be coded as other locations, but affect an Assessment Unit. Use Streamnet miles as denominator? BecAssessment Unitse of partial barrier, miles is not best metric, so use # barriers instead. Using GIS map of barriers in basin: none shown. Expert Panel agrees. projects: Basin Cr. culvert. L-63 is still in place. L-1 improvement: improves passage only at certain (low) flows, but barriers of this type can delay migration, espec when it was configured for lower flows. This surface water withdrawal has now been removed. Simple passage benefit =~0.25% uplift. But benefits re: migration delays/effect to the Limiting Factor should count too (also see Limiting Factor 2.3 re: entrainment and flow Limiting Factor for other benefits from this action). Expert Panel: uplift = 0.25%.		1	Added limiting factor 6.2. See calc table for revised and redistributed weights.			85.25	85.25	0	No actions. No change in percentage expected in 2018 time period.	85.25		2%	stranding changed from 51/60, 8/8/12	evaluated only on L-1 projects PLUS I-63, L-54, and L58a (described under LF 9.2)	
Lemhi River	LRC2	Lemhi, Hayden Creek, Big Springs Creek	1.3: habitatitat Quantity: HQ-Competition	50	50	0	No actions in database for this Limiting Factor & Assessment Unit. Limiting Factor 1.3 connected to other Limiting Factors, and understanding of this Limiting Factor has/is evolving. Several projects that had other Limiting Factors as primary goals might affect it. E.g.: Multi-landowner projects, others. Don't know the extent of hatchery effects to natives in the Lemhi. No effect to Chinook? Brook trout in mainstem - is it an issue or not? Discussion of side channels improvement projects re: benefit to previously limited physical space. LiDAR study at low flow. Do side channel projects reduce competition? Not necessarily, due to habitat use segregation by spp. Expert Panel: no measurable improvement to this Limiting Factor.		0	Added limiting factor 6.2. See calc table for revised and redistributed weights. Delete this limiting factor (1.3).			50	50	0	No actions. No change in percentage expected in 2018 time period.	50		2%			
Lemhi River	LRC2	Lemhi, Hayden Creek, Big Springs Creek	2.3: Injury and Mortality: Mechanical Injury	90	91.25	1.25	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.		2	Added limiting factor 6.2. See calc table for revised and redistributed weights.			91.25	91.25	0	Screen replacement projects in 2018 period: 70 screens exist (about 85 cfs of screened water), which prevent harm, but they need to be maintained according to schedule in order to keep baseline steady and avoid having the bookend slip down. So if credit is assigned for replacements, it would lead to double counting credit, so those are prorated to 0%. New screen installations should be credited. Removed several new screen installation projects because they won't be done by 2018. 4th of July Creek belongs in LRC1. Yields 0% uplift.	91		5%	lowbookend changed from 90, 8/8/12	10 replacements assumed to maintain current functionality- no additional LF change remaining screens for Basin Ck	

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Lemhi River	LRC2	Lemhi, Hayden Creek, Big Springs Creek	4.1: Riparian Condition: Riparian vegetationetation	35	35.1	0.1	5 projects in database target this Limiting Factor. Discussion of riparian metric choices: acres, length, conversions based on X width/side. Note several rExpert Panelorted metrics per projects in database. Total miles treated= 24/80.3 (using Streamnet length in Assessment Unit as denominator). Discussion of protected (fenced) vs planted; time till function from growth. No credit for protection, but get credit now for planting? E.g. Tyler projects, Pine Cr easement protection (fencing vs. planting). Work from projects notes, and account for areas not actively treated? Did more in this period than last one. Focus on active riparian (e.g., planting)? Or give functional credit for benefits of passive easement protection (fencing) becAssessment Unitse of natural riparian vegetation recruitment? Tie to egg to smolt survival benefits in this time period, weigh accordingly for now, and account for this in lookforward too. Not on database action list: benefits from passive riparian projects from past periods. Tyler easement projects just completed in late 2015: Don't count now? Future projects/treatments will get their own database entries. Several miles of stream, some will be planted, others passive. Monitoring will provide data on functional benefits in future. Expert Panel developed spreadsheet to show/calculate status and benefits, to be used today and going forward. For 5 actions, it shows: action, miles treated, relative treatment size %, current effectiveness % (% improvement), and % change. PIne and Tyler are now at 0% effectiveness, but will change in future. Today's version results in totals of 23.79/80.3, 30%, n/a, and =0.41%, respectfully. Note that projects like Snyder will need to be considered in the next lookforward, becAssessment Unitse they have yet to reach full effectiveness (or give full credit now, and don't account for it later? - would this overstate benefits in this period?). Discussion of whether older projects were claimed in full in the past, or, if not, are their benefits not accounted for? Expert Panel consensus: Use table of current benefits, but make sure to use it in the future too. Correction to table: Snyder should be 0.5 miles, not 0.12. becAssessment Unitse riparian protection was expanded. New total: 24.17 mi. Also revised effectivemess percentages based on projects attributes (e.g. plant sizes, extent of active vs. passive treatment, pre-projects baseline state). New total = 0.08% change, so increase of 0.10%		15	Added limiting factor 6.2. See calc table for revised and redistributed weights.			35.1	35.4	0.3	Calc table lists 8 expected projects, prorated for treatment type and vegetation growth to 2018. Three phases of the Lower Lemhi project are broken out in calc table because they had different extents and treatments. Add: Lemhi Tyler 0.8 mile, Big Springs Restoration 1 mile, Little Sawmill Planting 0.2 mile. Yields 0.3% expected uplift to 2018.	36		15%	changed from 20/35, 8/8/12	18.65 mi	
Lemhi River	LRC2	Lemhi, Hayden Creek, Big Springs Creek	5.2: Peripheral and Transitional habitatitats: Floodplain Condition	20	21	1	1 action in database for this Limiting Factor, but also consider projects that are listed under side channel, bedform Limiting Factor (6.1 & 6.2). Include any reconstructed channels in this Limiting Factor. No actions in database under 6.2. 6.1 has Upper Lemhi channel Snyder (use length of channel portion of projects), Amonson, Mabey Lane, Pine Cr., that should also be included under 5.2. Need to change/rExpert Panellace Pine Creek Ranch entry to show that it also benefited 5.2 and 6.1; rename to Pine Creek Ranch River Restoration, change work elements and metrics to reflect installed structures. New length 0.33 mi. 1 of 4 phases. All 4 projects total 0.77 mi of 80.3mi =1% uplift.		10	Added limiting factor 6.2. See calc table for revised and redistributed weights.			21	23.4	2.4	Calc table has 5 projects. Includes three phases of Eagle Valley projects. Panel prorated based on percentage of function expected by 2018 (20-75%). Some projects expected to raise stage at some flows. Yields 2.4% expected uplift.	20.5		10%		3.22 mi- Riparian projects also contribute to this LF	
Lemhi River	LRC2	Lemhi, Hayden Creek, Big Springs Creek	6.1: Channel Structure and Form: Bed and Channel Form	40	41	1	Same actions as for 5.2, plus Sager Bank and Lower Lemhi. Expert Panel: all these apply to 6.1, incorporating modification to Pike Cr projects. These 6 projects total 0.91 mi of 80.3 mi = 91%, Expert Panel: Round up to 1% uplift. **** these calculations are incorrect. .91/80.3 = 0.011 **** EWL 2/2/16		13	Added limiting factor 6.2. See calc table for revised and redistributed weights.			41	44	3	Add Little Sawmill Creek projects. Include L3AO (correct length 0.5 mile), Stokes. Moved Thor to limiting factor 6.2, which was newly added as a limiting factor. Calc table contains 9 projects, prorated as compared to Properly Functioning Condition and present condition. Yields 3.0% change predicted.	41		8%		riparian and floodplain condition LF actions contribute also	
									16	Added limiting factor 6.2. See calc table for revised and redistributed weights. Flow is still important, but need to increase emphasis on 5.2 and 6.1 based on panel's opinion of what is needed now. Should be a multithread island channel. Habitat (combined LFs) is more limiting than flow in this AU, but the two are dependent on each other.	23	Added LF 6.2, which is far from Properly Functioning Condition state at present. Referenced 1994 Lemhi Habitat Inventory pool habitat by length = 23%	23	26.1	3.1	Newly added limiting factor. Include Upper Lemhi Thor channel and wood, which can affect bed and channel form (irrigation diversion ditch that has been closed, but captures much of river flow from historical flow). Calc table includes 9 projects. Yields 3.1% uplift.						
Lemhi River	LRC2	Lemhi, Hayden Creek, Big Springs Creek	7.2: Sediment Conditions: Increased Sediment Quantity	30	30.1	0.1	Discussion of possible linkage with riparian Limiting Factor. Two actions in database, including Tyler easement. Remove Tyler and include other projects that addressed bank erosion (see 6.1 projects). Discussion of how to quantify these benefits. Do not unclude Hayden Creek exclosure. Total of 0.91 mi/80.3 = 1% uplift. Discussion of how LRC1 tributary projects affect LRC2 7.2 and 8.1. 11/19/2015: Expert Panel revisited LRC2 after LRC1 was assessed. Revised xls table, adding % improvements per projects, = 0.1% improvement in sediment conditions.		8	Added limiting factor 6.2. See calc table for revised and redistributed weights.			30.1	30.4	0.3	Calc table based on limiting factor 4.1 projects, with adjusted prorations for sediment function changes. Yields 0.3% predicted uplift.	30.5		8%		riparian, floodplain condition, and bed and channel formcontribute	
Lemhi River	LRC2	Lemhi, Hayden Creek, Big Springs Creek	8.1: Water Quality: temperatureerature	28	35.5	7.5	11/18/2015: Only 1 projects in database (Hayden). Were there other actions that affected temperatureerature (e.g. rip plantings)? Discussion of how LRC1 tributary projects affect LRC2 7.2 and 8.1, also connection to 9.2. 11/19/2015: Expert Panel revisited after 9.2 tributaries accounted for, and used LRC1 Limiting Factor 8.1 calc method; = 7.5% uplift.		10	Added limiting factor 6.2. See calc table for revised and redistributed weights.			35.5	47.8	12.3	Added riparian limiting factor 4.1 and flow limiting factor 9.2 uplift percentages, resulting in 6.9% expected uplift. [Per revised limiting factor 9.2 uplift, new uplift is 7.2%.] [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 = 12.3%]	29		10%		riaprian, floodplain condition, flow, and bed&channel form LF projects contribute	

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)	Look Forward Updated 2018 Estimate	Look Forward 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
Lemhi River	LRC2	Lemhi, Hayden Creek, Big Springs Creek	9.2: Water Quantity: Decreased Water Quantity	23.5	30.9	7.4	Note: IDWR projects resulted in entries in multiple years. Tyler ranch should be included here due to to water savings (change to 12.7). Big Springs minimum flow (add). Ran through database actions, including leases, to verify/modify flow amounts. See table developed in Expert Panel and action table markups for new amounts. Note permanent vs. temperary leases. Is credit for flow tied to how/when it's paid for? How to account for temperary flow benefit that doesn't persist? Does lowbookend get adjusted down if the water goes away? Also make sure that same flow benefit is not added again and again in future years. Incorporate these considerations into next lookforward. And in lookback, adjust for right anticipated, but not secured. Prorate benefit to account for portion of time period with benefit? Discussion re: spatial aspect of water flow- how far downstream is the effect? E.g., water added to L1 is less beneficial than elsewhere. This can/has been modelled. Limiting Factor is important. denominator discussion: Use total adjudicated water rights?, base flow? diverted CFS vs. non diverted CFS? 750 cfs (haLimiting Factor of 1500). Donato rExpert Panelort: 650 cfs in rights diverted from mainstem Lemhi. Expert Panel: Use Donato (1998) rExpert Panelort (Lemmhi Surface Water/Groundwater Relations in the Lemhi Basin) number as denominator. 18/650 = ? Use sum or average? Spreadsheet uses average of leases, permanent leases added once, average of temperary leases per year = 6 s%. Expert Panel Added applicable tributary flow numbers from LRC1 projects table to Expert Panel xls for LRC2 based on which flows affect this Assessment Unit. Expert Panel revised denominator = 750cfs; revised uplift = 7.4%.		25	Added limiting factor 6.2. See calc table for revised and redistributed weights.			30.9	42.9	12	Calc table contains flow projects and years active through 2018. L63 is sometimes curtailed and then shut off, but when it is running, it runs higher than paper amount. For this assessment unit, panel considered upstream tributary assessment unit contributions, and added them as applicable (some flows do not make it all the way down to LRC2). Yields 6.5% uplift. Later in the afternoon, Morgan contacted the panel with an update on Lower Lemhi IDWR project flow: 18.25 cfs; therefore, new expected uplift was determined to be 6.9%. [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		40%		LRC1 flow actions(23.6 cfs) affect flow in mainstem	

Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 Low Bookend	Updated 2018 Estimate (2012-15 Look Back)	Nov 2015 % Change	2012-15 Estimate Comments/Rationale	2016 Low Bookend (incorporates revisions or 2012-2015 uplift)	LookForward Updated 2018 Estimate	Look Forward 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
Salmon River lower mainstem below Redfish Lake	LMC1	Challis Creek	1.1: Habitat Quantity: Anthropogenic Barriers	90	90	0	No actions. No change.	90	90	0	No actions. No change expected.	90		15%		high in drainage- no effect on chinook; effect on steelhead	
Salmon River lower mainstem below Redfish Lake	LMC1	Challis Creek	2.3: Injury and Mortality: Mechanical Injury	50	50	0	No actions. No change.	50	50	0	No actions. No change expected.	50		15%	stranding		
Salmon River lower mainstem below Redfish Lake	LMC1	Challis Creek	4.1: Riparian Condition: Riparian Vegetation	60	60	0	No actions. No change.	60	60	0	No actions. No change expected.	60.5		10%		influenced by flow LF action	
Salmon River lower mainstem below Redfish Lake	LMC1	Challis Creek	7.2: Sediment Conditions: Increased Sediment Quantity	60	60	0	No actions. No change.	60	60	0	No actions. No change expected.	60		15%			
Salmon River lower mainstem below Redfish Lake	LMC1	Challis Creek	8.1: Water Quality: Temperature	60	60	0	No actions. No change.	60	60	0	No actions. No change expected.	60.1		10%		influenced by flow LF action	
Salmon River lower mainstem below Redfish Lake	LMC1	Challis Creek	9.2: Water Quantity: Decreased Water Quantity	22	22	0	No actions. No change.	22	22	0	No actions. No change expected.	23		35%		lower challis chinook rearing	
Salmon River lower mainstem below Redfish Lake	LMC2	Iron Creek	4.1: Riparian Condition: Riparian Vegetation	80	80	0	No actions. No change.	80	80	0	No actions. No change expected.	80		50%			
Salmon River lower mainstem below Redfish Lake	LMC2	Iron Creek	9.2: Water Quantity: Decreased Water Quantity	70	70	0	No actions. No change.	70	70	0	No actions. No change expected.	70		50%			
Salmon River lower mainstem below Redfish Lake	LMC3	Mainstem Salmon River (including Basin Creek)	4.1: Riparian Condition: Riparian Vegetation	50	50.3	0.3	Riparian actions same as for PRS2. denominator = 145 mi. Miles treated= 2.05, adjusted for % function (same as previous) = 0.3% improvement.	50.3	50.3	0	No actions. No change expected.	50		30%		Remember to update 2015 look-back w/any 12-mi reach easements/projects implemented after 2012	
Salmon River lower mainstem below Redfish Lake	LMC3	Mainstem Salmon River (including Basin Creek)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	50	50	0	Expert Panel: No relevant actions. No change.	50	50	0	No actions. No change expected.	50		40%		Remember to update 2015 look-back w/any 12-mi reach easements/projects implemented after 2012	
Salmon River lower mainstem below Redfish Lake	LMC3	Mainstem Salmon River (including Basin Creek)	7.2: Sediment Conditions: Increased Sediment Quantity	40	40.3	0.3	Expert Panel: use Limiting Factor 4.1 calculations = 0.3% change.	40.3	40.3	0	No actions. No change expected.	40		15%		Remember to update 2015 look-back w/any 12-mi reach easements/projects implemented after 2012	

Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 Low Bookend	Updated 2018 Estimate (2012-15 Look Back)	Nov 2015 % Change	2012-15 Estimate Comments/Rationale	2016 Low Bookend (incorporates revisions or 2012-2015 uplift)	LookForward Updated 2018 Estimate	Look Forward 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
Salmon River lower mainstem below Redfish Lake	LMC3	Mainstem Salmon River (including Basin Creek)	8.1: Water Quality: Temperature	50	50	0	Expert Panel: No relevant actions. No change.	50	50	0	No actions. No change expected.	50		15%		Remember to update 2015 look-back w/any 12-mi reach easements/projects implemented after 2012	
Salmon River lower mainstem below Redfish Lake	LMC4	Morgan Creek	1.1: Habitat Quantity: Anthropogenic Barriers	60	60	0	No actions. No change.	60	60	0	No actions. No change expected.	60		15%		assess improvement in 2015	
Salmon River lower mainstem below Redfish Lake	LMC4	Morgan Creek	2.3: Injury and Mortality: Mechanical Injury	50	50	0	No actions. No change.	50	50	0	No actions. No change expected.	50		10%			
Salmon River lower mainstem below Redfish Lake	LMC4	Morgan Creek	4.1: Riparian Condition: Riparian Vegetation	58	58	0	No actions. No change.	58	58	0	No actions. No change expected.	58		15%			
Salmon River lower mainstem below Redfish Lake	LMC4	Morgan Creek	7.2: Sediment Conditions: Increased Sediment Quantity	60	60	0	No actions. No change.	60	60	0	No actions. No change expected.	60		15%			
Salmon River lower mainstem below Redfish Lake	LMC4	Morgan Creek	8.1: Water Quality: Temperature	60	62.2	2.2	Expert Panel: Use Limiting Factor 9.2 uplift percentage.	62.2	65.2	3	[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 = 3.0%]	60		15%			
Salmon River lower mainstem below Redfish Lake	LMC4	Morgan Creek	9.2: Water Quantity: Decreased Water Quantity	65	67.2	2.2	See Expert Panel's xls table of flow actions (n=2, both leases) and lease/permanent right type. Checked flow amounts and both flow and benefit locations for projects, to take into account downstream benefits. 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. 4 cfs instream benefit in this period. denominator : 44.8 cfs (from IDWR Morgan). = 2.2% uplift.	67.2	70.2	3	[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 = 3.0%]	65		30%			
Salmon River lower mainstem below Redfish Lake	LMC5	Squaw Creek	4.1: Riparian Condition: Riparian Vegetation	30	30	0	No actions. No change.	30	30	0	No actions. No change expected.	30		20%			
Salmon River lower mainstem below Redfish Lake	LMC5	Squaw Creek	7.2: Sediment Conditions: Increased Sediment Quantity	60	60	0	No actions. No change.	60	60	0	No actions. No change expected.	60		10%			
Salmon River lower mainstem below Redfish Lake	LMC5	Squaw Creek	8.1: Water Quality: Temperature	20	20	0	No actions. No change.	20	20	0	No actions. No change expected.	20		20%			
Salmon River lower mainstem below Redfish Lake	LMC5	Squaw Creek	9.2: Water Quantity: Decreased Water Quantity	20	20	0	No actions. No change.	20	20	0	No actions. No change expected.	20		50%			
Salmon River lower mainstem below Redfish Lake	LMC6	Remaining Lower Salmon Tributaries Bayhorse, Mill, Hat, Thompson, Slate, Gordon, Warm Springs Creek	1.1: Habitat Quantity: Anthropogenic Barriers	25	36.8	11.8	See Expert Panel's xls table of projects and access benefits in miles. Total Chinook miles in Streamnet = 53.3, which Expert Panel confirmed denominator. Expert Panel discussed each project, and assigned or confirmed distances based on miles made accessible. Poison Cr. 1.6 mi, Bayhorse 1 mi (steExpert Panel, so use 1 mi Chinook extent only, prev # was 7 mi), Garden 1.2m Lyon 1.5 mi, Cow Cr 2/3 Diversion 1 mi (for Chinook). Total opened access= 6.3mi = 11.8 % uplift.	36.8	38.7	1.9	Add Garden Creek Syphon project and Peach Creek project. Remove Poison Creek, Knick Knick, Stark, Casino. Projects prorated as 50% based on partial/full blockage, life stage affected, and seasonality of blockage. 2 projects in calc table. Same denominator as that used in Look Back (53.3 miles). Panel expects 3.8% change. 5/26/2016: Removed Peach Creek project. Uplift changed to 1.9%.	30		20%			
Salmon River lower mainstem below Redfish Lake	LMC6	Remaining Lower Salmon Tributaries Bayhorse, Mill, Hat, Thompson, Slate, Gordon, Warm Springs Creek	2.3: Injury and Mortality: Mechanical Injury	25	31.8	6.8	Expert Panel: Use cfs design flow of screens as metric. denominator is 291 cfs (IDWR Morgan Chase) total diverted. Total screened = 19.79. = 6.8% uplift.	31.8	31.8	0	Remove Slate Creek Diversion. No actions. No change expected.	27.5		20%	stranding	rate cow ck in 2015 (completed in 7/12)	

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Salmon River lower mainstem below Redfish Lake	LMC6	Remaining Lower Salmon Tributaries Bayhorse, Mill, Hat, Thompson, Slate, Gordon, Warm Springs Creek	4.1: Riparian Condition: Riparian Vegetation	40	40.03	0.03	See Expert Panel's xls table of riparian projects, and % current function in relation to Proper Functioning Condition. Metric unit is miles. Expert Panel assumes that both sides on Lyon were covered = 0.75 mi. 0.04% uplift. 3.23.16 - 2018 updated modified by EWL based on input from Karma - EP. Changed from 40.04 to 40.03	40.03	40.03	0	No actions. No change expected.	40.5		10%			
Salmon River lower mainstem below Redfish Lake	LMC6	Remaining Lower Salmon Tributaries Bayhorse, Mill, Hat, Thompson, Slate, Gordon, Warm Springs Creek	7.2: Sediment Conditions: Increased Sediment Quantity	50	50.04	0.04	Add Lyon to Limiting Factor 7.2. Same uplift as Limiting Factor 4.1	50.04	50.04	0	No actions. No change expected.	50.1		10%		Influenced by riparian LF actions	
Salmon River lower mainstem below Redfish Lake	LMC6	Remaining Lower Salmon Tributaries Bayhorse, Mill, Hat, Thompson, Slate, Gordon, Warm Springs Creek	9.2: Water Quantity: Decreased Water Quantity	20	25.1	5.1	See Expert Panel's xls table of flow actions and lease/permanent right type. Checked flow amounts and both flow and benefit locations for projects, to take into account downstream benefits. Remove duplicates in database. Don't count fish screen cfs entries. Cow Cr should be 2 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. Total instream flow benefit in this period: 14.43 cfs. denominator: 291 cfs; = 5.1% uplift.	25.1	30.5	5.4	Calc table has only Peach Creek Reconnect permanent acquisition (2 cfs), which yields 0.7% uplift. Denominator = 291 cfs. [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 = 6.1%] 5/26/2016: Removed Peach Creek project	20.5		40%		influenced by cow ck consolidation (screen LF)	

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	Look Forward 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	AU Weight Comments
Salmon River upper mainstem above Redfish Lake	UMC1	Mainstem Upper Salmon River, Alturas Lake Creek, and Tributaries upstream from Alturas Lake Creek	1.1: Habitat Quantity: Anthropogenic Barriers	55	65.9	10.9	See Expert Panel's xls table of projects and access benefits in miles. Total Chinook miles in Streamnet = 91.6. Expert Panel discussed each project, and assigned distances based on miles made accessible. Pole Creek Diversion, 7 mi of critial habitat above culvert, Henslee Culvert 3 miles. 10/91.6 = 10.9% uplift.						65.9	67	1.1	1 project (Cabin Creek). NOTE: Creek has Chinook, but not shown in Streamnet. Need to add this mileage (2 miles) to denominator (new denominator is 93.6 miles). Expected uplift determined to be 1.1%. 5/26/2016: adjusted mileage to 1 mile for Cabin Creek project based on Mark Moultons knowledge of Chinook. Denominator was also reduced to 92.6 miles based on Cabin Creek site specific information. This is a juvenile rearing stream only so was pro-rated for 100% because it opens rearing to them; did not account for adult passage in	63	63		95	10%		Pole Ck large part of barrier issue	
Salmon River upper mainstem above Redfish Lake	UMC1	Mainstem Upper Salmon River, Alturas Lake Creek, and Tributaries upstream from Alturas Lake Creek	1.3: Habitat Quantity: HQ-Competition	50	50	0	Removed road 2.5 miles where it was in/on channel, which reduced sediment loads downstream. Brook trout are dominant in system. Note that upper reaches are intermittent. Expert Panel: Should not have any actions for this Limiting Factor. No change. Fix in database.						50	50	0	No relevant actions.	50	50		50	5%			
Salmon River upper mainstem above Redfish Lake	UMC1	Mainstem Upper Salmon River, Alturas Lake Creek, and Tributaries upstream from Alturas Lake Creek	4.1: Riparian Condition: Riparian Vegetation	40	40.6	0.6	See Expert Panel's xls table of riparian projects, and % current function in relation to Proper Functioning Condition. Metric unit is miles. Expert Panel noted duplicate miles in database, and ensured consistent counting of fencing re: miles per bank, so some database miles were divided by 2 for consistency. Remove Pole Cr diversion from this Limiting Factor, but address under flow. Total treated: 4.25 miles. Percent function ranged from 5-20%. Denominator is 91.7 mi. = 0.6% uplift.						40.6	41.8	1.2	Pole Creek Meadows: 0.8 mile channel realignment to historical channel with mature vegetation; Redfish Northshore (removed due to lack of Chinook or steelhead benefit), Cabin Creek Reconnect (Sawtooth National Recreation Area will realign 1 mile of road to a better location with bridge; former route had 2 crossings. 0.4 mile will be rehabilitated. Reclamation did LiDAR). Stockwater was included in Look Back fencing. Improvement was prorated based on current maturity and growth in 2018 period, resulting in 0.8% uplift expected. 5/26/2016: Cabin Creek will be put back into historic channel-prorating was not estimated accurately in March; project is similar to Pole meadows, has close to PFC vegetation, pro-rating should be 90%, realized change is 0.36 miles.	45	50		70	20%			
Salmon River upper mainstem above Redfish Lake	UMC1	Mainstem Upper Salmon River, Alturas Lake Creek, and Tributaries upstream from Alturas Lake Creek	7.2: Sediment Conditions: Increased Sediment Quantity	51	51.6	0.6	See Expert Panel's xls table of riparian projects, and % current function in relation to Proper Functioning Condition. Expert Panel: Apply to Limiting Factor 7.2.						51.6	52.3	0.7	Same projects as for limiting factor 4.1. Panel prorated improvement for sediment percentage of Properly Functioning Condition expected after project construction. Pole Creek: expect initial pulse of sediments, then almost fully functional due to maturity of riparian zone, which has been wet due to springs. Panel expects 0.7% uplift. 5/26/2016: Cabin Creek channel will have little difference for sediment from current channel to historic channel because current channel is well vegetated.	51	51		75	15%			
Salmon River upper mainstem above Redfish Lake	UMC1	Mainstem Upper Salmon River, Alturas Lake Creek, and Tributaries upstream from Alturas Lake Creek	8.1: Water Quality: Temperature	51	63.2	12.2	Expert Panel added Limiting Factor 4.1=0.61 and Limiting Factor 9.2=11.54 = 12.2% uplift. EWL 4.1.16						63.2	76.8	13.6	Sum of riparian and flow uplifts = 13.2 % uplift 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 = 19.5%] 5/26/2016: Uplift from 4.1 was changed to 1.2% (See above). Uplift from 9.2 was changed to 12.4 (see below). 8.1 uplift is revised to 13.6.	60	60		80	15%			
Salmon River upper mainstem above Redfish Lake	UMC1	Mainstem Upper Salmon River, Alturas Lake Creek, and Tributaries upstream from Alturas Lake Creek	9.2: Water Quantity: Decreased Water Quantity	70.5	82	11.5	See Expert Panel's xls table of flow actions and lease/permanent right type. Expert Panel checked flow amounts and years, and both flow and benefit locations for projects, to take into account downstream benefits. Pole Creek 2012 needs to be added to database. 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. Total 22.15 cfs/192; = 11.5						82	94.4	12.4	Pole Creek 18 cfs source switch: high value water, as it is the headwaters of the Salmon River. High priority for Recovery Plan. Calc table also includes 20-yr Beaver Cr. water lease from Look Back (which was calculated only through 2015), resulting in 12.4% uplift 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 = 18.7%] 5/26/16: Pole Creek **Diversion** was deleted, added from look back on 4/15/16 because it is counting the same water as the Pole Creek Source Switch. 18cfs is expected to be realized based on 13 years of data.	75	75		90	35%			
Salmon River upper mainstem above Redfish Lake	UMC2	Upper Salmon Tributaries with Significant water withdrawals(Fourth of July, Champion, Cleveland, Fisher, Warm, and Williams Creek	1.1: Habitat Quantity: Anthropogenic Barriers	20									20	28.8	8.8	Fourth of July Creek (3 diversion barriers to be removed per USFS). Road crossings are already bridges. Same denominator as for Look Back; panel expects 4.1% uplift. 5/26/16: Mileage changed to 6.5 miles from lowest barrier to extent of juvenile chinook rearing. Pro-rating changed to 33%; adults not in there now but has the potential for spawning and rearing habitat. Therefore, uplift changed to 8.8%	20	20		100	10%			
Salmon River upper mainstem above Redfish Lake	UMC2	Upper Salmon Tributaries with Significant water withdrawals(Fourth of July, Champion, Cleveland, Fisher, Warm, and Williams Creek	1.3: Habitat Quantity: HQ-Competition	50									50	50	0	No relevant actions predicted. No change in %.	50	50		50	5%			
Salmon River upper mainstem above Redfish Lake	UMC2	Upper Salmon Tributaries with Significant water withdrawals(Fourth of July, Champion, Cleveland, Fisher, Warm, and Williams Creek	2.3: Injury and Mortality: Mechanical Injury	80									80	80	0	No relevant actions predicted. No change in %.	80	80		100	10%	stranding		
Salmon River upper mainstem above Redfish Lake	UMC2	Upper Salmon Tributaries with Significant water withdrawals(Fourth of July, Champion, Cleveland, Fisher, Warm, and Williams Creek	4.1: Riparian Condition: Riparian Vegetation	40									40	40.8	0.8	No relevant actions predicted. No change in %. 5/26/16: Added action Fourth of July Creek Flow enhancements for 2 miles.	40	40		70	20%			
Salmon River upper mainstem above Redfish Lake	UMC2	Upper Salmon Tributaries with Significant water withdrawals(Fourth of July, Champion, Cleveland, Fisher, Warm, and Williams Creek	7.2: Sediment Conditions: Increased Sediment Quantity	50									50	50	0	No relevant actions predicted. No change in %.	50.1	50.1		75	15%			

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	Look Forward 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	AU Weight Comments
Salmon River upper mainstem above Redfish Lake	UMC2	Upper Salmon Tributaries with Significant water withdrawals(Fourth of July, Champion, Cleveland, Fisher, Warm, and Williams Creek	9.2: Water Quantity: Decreased Water Quantity	25									25	26.5	1.5	Calc table contains flow projects per year. Need more project information. Denominator: 194 cfs from Morgan Case. Yields 3% uplift. 5/26/16: 9 cfs is the objective for minimum flow; 4th of July has sufficient water rights to de-water it. Working on negotiations with landowners. Combined 4th of July 2 and 3 into "4th of July Creek flow enhancements"- show benefit in 2018 for 9 cfs. Uplift changed to 1.5%.	25	25		80	40%		improvements captured in earlier workshop	

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Pahsimeroi River	PRC1	Pahsimeroi River and tributaries downstream from the mouth of Big Creek	1.1: Habitat Quantity: Anthropogenic Barriers	40	54	14	Streamnet Chinook mileage 26.8 mi is too short - may not include some major tributaries. Metric is miles of access. See Expert Panel's xls table of passage actions and miles affected. SuLimiting Factorur 1.2 mi 2 illegal barrier removal project: Credit barriers removed, but not miles, becAssessment Unitse mileage is counted as part of BOR Lower SuLimiting Factorur Bridge project. Delete 2014 TNC SuLimiting Factorur action to avoid double counting miles with Lower SuLimiting Factorur Cr project. TU Mill Cr project is in wrong Assessment Unit, should be be in PRC2 instead. 2014 P13 irrigation diversion SWCD was not really a barrier project, so- remove from this Limiting Factor. 2015 P13 removal BOR project: add 4.5 miles as metric score. Partial barrier (PBSC04): add 1 mile. Denominator: Google Earth measurement inc tributaries in Assessment Unit for Chinook (mainstem, Big Spings Cr, SuLimiting Factorur, and similar tributaries; does not include disconnected tributaries)= 62 miles. "PRC1 stream miles rationale includes and estimate of the stream miles in the Pahsimeroi River and major connected tributaries from the mouth up to the mouth of Big Creek. It includes all known spring channels in the currently occupied or accessible habitat for chinook. The straightline distance was calculated using the measure tool in Google Earth and the sinuosity factor was added using professional judgement." 8.7 miles opened/62 = 14% uplift.	PRC1 and PRC2 (aka PRS1 and PRS3) are no longer as separate as they once were, due to water diversion structure fish passage improvements. There is more connectivity than there used to be, due to improved flows, especially for steelhead. But there is still not a lot of Chinook use in PRC2. Panel decided to combine PRC1 and PRC2 into PRC1, and use PRC1 limiting factors as the base (reweighted). PRC2 is therefore deprecated.	5	Reweighted because PRC1 and PRC2 were combined. Panel discussed present importance of water diversion fish passage blockages in terms of what is left (2 of 25 left to fix). 40 diversions exist in tributaries, but some of them are upstream of Chinook habitat (but within steelhead domain).			54	64.2	10.2	Calc table combines PRC1 and PRC2 actions (6 projects). Several actions in database were removed because they will not happen within the 2018 period. Improvement prorated based on full vs. partial, seasonality, life stages affected in 25% increments (10% for minor seasonal structures). Patterson Big Springs Creek 10 Restoration, Upper Muddy, and Flying Joseph were a total blockage. Denominator set at 95 Chinook miles for the newly combined assessment unit, which yields 10.2% uplift.	45		10%		17.2 mi total- (30 mi from hatchery ladder projct already included in in other completed projects; hatchery project affects juvenile and other different life history stages) Falls Ck/Little Morgan not considered in this estimate	
Pahsimeroi River	PRC1	Pahsimeroi River and tributaries downstream from the mouth of Big Creek	1.3: Habitat Quantity: HQ-Competition	50	50	0	No actions in database. Expert Panel: No change.	Panel decided to combine PRC1 and PRC2 into PRC1. PRC2 is therefore deprecated.	0	Combined into limiting factor 6.2.						EP removed this limiting factor, and replaced it with limiting factor 6.2.	50		5%			
Pahsimeroi River	PRC1	Pahsimeroi River and tributaries downstream from the mouth of Big Creek	2.3: Injury and Mortality: Mechanical Injury	65	73	8	638 cfs total diverted. Expert Panel: All diversions are screened, use screened agreement # of 291 cfs cummulative screened flow of Assessment Unit mainstem portion+ Assessment Unit tributaries as denominator. 4 actions = 23.24/291 = 8% uplift.	Panel decided to combine PRC1 and PRC2 into PRC1. PRC2 is therefore deprecated.	5				73		3.8	Calc table combines PRC1 and PRC2 actions. Several actions in database were removed because they won't happen within the 2018 period. Denominator for newly combined assessment unit was determined by adding the two Morgan flow numbers = 610 cfs. Four projects were all prorated at 100%. This yields 3.8% predicted uplift.	75		10%			
Pahsimeroi River	PRC1	Pahsimeroi River and tributaries downstream from the mouth of Big Creek	4.1: Riparian Condition: Riparian Vegetation	50	52.1	2.1	Trout Creek Ranch Conservation Easement: discussion of exclusion fencing value. Expert Panel: KeExpert Panel that project in (2.5 mi). Use miles as metric. See Expert Panel's xls list of riparian actions and % function improvement per project. Project title edits suggested by Expert Panel for clarity. Pahsimeroi BureAssessment Unit Reconnect: Channel was dry, water was in sExpert Panelarate channel; project reconnected this water with natural channel. 2013 SuLimiting Factorur 1.28 mi number was for both side, so use haLimiting Factor of that number. Note that Expert Panel is using stream miles rather than riparian fence length. Counting fencing as benefit unless too recent to realize benefits now. Make sure that database numbers are consistenly using the same metric. Remove Hoffman: redundant with Stockwater SWCD/TNC (.64 mi). Add riparian benefit of project near edge of Assessment Unit (O' Neal Easement: 0.25 mi), and remove it from PRC2 Assessment Unit. Total length =16.03 ****not consistent with calculation spreadsheet**** EWL . Adjusted for current function to date based on vegetative growth. Nice growth at Trout Creek Ranch. SuLimiting Factorur Cr East Easement TNC, 4 riparian miles is located on mainstem Pahsimeroi River upstream of Hooper, so change to 2.25 miles and delete acreage. Removal/reconnect project is 85% effective, becAssessment Unitse rewatered channel that had good veg. Other project 1 to 10% functional= 2.1% uplift.	Panel decided to combine PRC1 and PRC2 into PRC1. PRC2 is therefore deprecated.	15				52.1		1.5	Calc table combines PRC1 and PRC2 riparian actions. Several actions in database were removed because they won't happen within the 2018 period. Treated miles are stream miles, assuming both sides were treated, and prorated at 50% if only one side was treated. Flying Joseph will have planting. Denominator for newly combined assessment unit: same as for limiting factor 1.1 (i.e., 95 miles). Seven projects, prorated based on vegetation growth rates (1% per year, with an initial bump if actively planted rather than just grazing exclusion) yielded 1.5% predicted uplift.	52.5		15%		14.5 mi riparian enhancement be sure to include P-13 in 2015 look back	
Pahsimeroi River	PRC1	Pahsimeroi River and tributaries downstream from the mouth of Big Creek	6.1: Channel Structure and Form: Bed and Channel Form	50	52.9	2.9	BOR Pahsimeroi Reconnect, SuLimiting Factor Cr Riparian Restoration = 1.8 miles = 2.9% change.	Panel decided to combine PRC1 and PRC2 into PRC1. PRC2 is therefore deprecated.	15				52.9		4.6	Calc table combines PRC1 and PRC2 actions. Several actions in database were removed because they won't happen within the 2018 period. Flying Joseph project will remove a dam. Denominator for newly combined assessment unit is same as for limiting factor 1.1 (95 miles). Improvement prorated based on percentage of Properly Functioning Condition expected to be achieved within 2018 period. This yields 4.6% predicted uplift.	50.5	55	10%	established 8/9/12- most gain from Fury Ln to P-12 + Sulfer Ck to be done thru 2018; much to do in tributaries	Influenced by flow and riparian LF projects by natural processes - projects from Fury Lane to P-12	
Pahsimeroi River	PRC1	Pahsimeroi River and tributaries downstream from the mouth of Big Creek	6.2: Channel Structure and Form: Instream Structural Complexity						15	Added limiting factor 6.2 (replaced limiting factor 1.3).	20	Added LF 6.2 (replaced LF 1.3).	20		4.4	Calc table based on limiting factor 6.1 table, but prorated based on expected effects to complexity and structure. Panel determined 4.4% predicted uplift.						
Pahsimeroi River	PRC1	Pahsimeroi River and tributaries downstream from the mouth of Big Creek	7.2: Sediment Conditions: Increased Sediment Quantity	20	21.5	1.5	See Expert Panel XLS table. Based calculation on riparian project miles, adjusted for % vegetative coverage per project resulting in sediment production reduction benefits. Examples: Trout Ranch is 0% becAssessment Unitse it was already in good shape, but good improvement seen at TNC Uresti, so 20% function there. See table for complete lengths and scores that result in = 1.4% uplift. Added Big Creek Conservation Easement-TN and Page Mill Creek projects; new uplift = 1.5%. ***** Comment copied from Limiting Factor 9.2 by EWL****11/20/2015: Add PRC2 flows? E.g. Holly Creek, Big, Page Cr? Expert Panel: No flow or temperature benefit to these US projects, but sediment benefit (Limiting Factor 7.2). **** Page and Big Creek were added to 7.2, but Holly?	Panel decided to combine PRC1 and PRC2 into PRC1. PRC2 is therefore deprecated.	15	Sediment is a major problem in the assessment unit. Silting in of redds observed during spawning surveys.			21.5		2.1	Calc table contains riparian and other projects for the combined assessment unit. Panel prorated stream miles treated based on vegetation growth in the 2018 time period and on predicted effects on sediment input to stream. Added Big Creek and Page projects because Look Back only included to 2015 rather than to 2018. Denominator for newly combined assessment unit is same as for limiting factor 1.1 (95 miles). This yields 2.1% predicted uplift.	20.5		15%		influenced by all riparian LF actions Upstream effects from PRC2 influence sediment loading into PRC1 (flow projects planned for PRC2 won't affect sediment much...)	
Pahsimeroi River	PRC1	Pahsimeroi River and tributaries downstream from the mouth of Big Creek	8.1: Water Quality: Temperature	40	55.3	15.3	Expert Panel added 2.1% riparian uplift to 13.2% as suggogate to gage water temp benefits = 15.3% uplift to Limiting Factor 8.1	Panel decided to combine PRC1 and PRC2 into PRC1. PRC2 is therefore deprecated.	10				55.3		13.2	Sum of riparian and flow uplift percentages resulted in 4.1% predicted 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 = 13.2%]	40.5		10%		Influenced by flow and riparian LF actions- most benefit from Sulphur Ck influencing main Pahsimeroi. Conservative estimate- response from Big Spgs/cross ditch configuration tbd	
Pahsimeroi River	PRC1	Pahsimeroi River and tributaries downstream from the mouth of Big Creek	9.2: Water Quantity: Decreased Water Quantity	30	43.2	13.2	11/19/2015: See Expert Panel XLS table of flow projects showing cfs and lease/permanent status. Discussion of Uresti Conservation Easement/SuLimiting Factorur Cr Donation project title in database. Removed redundancies to avoid double counting. Included only: 6+1.07+4.5+8.8+15+3 = 38.37cfs. Remove all the screen projects; no flw benefit to those. 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: 291 cfs = 13.2%. | 11/20/2015: Add PRC2 flows? E.g. Holly Creek, Big, Page Cr? Expert Panel: No flow or temperature benefit to these US projects, but sediment benefit (Limiting Factor 7.2). **** Page and Big Creek were added to 7.2, but Holly? EWL	Panel decided to combine PRC1 and PRC2 into PRC1. PRC2 is therefore deprecated.	20	Flow is one of the main issues in the assessment unit. Reversed hydrograph; not enough channel forming flows. Two-thirds of basin is significantly dewatered, especially in upper portion of assessment unit (not as much of a problem in lower portion of the basin). Weight is an average of the two portions of the AU.			43.2		11.7	Calc table combines PRC1 and PRC2 flow actions by year of instream flow lease benefit within 2018 period. Denominator based on sum of PRC1 291 and PRC2 319 Morgan flows = 610 cfs. Assumes that P-16 headgate 4 cfs was captured in Look Back. Panel did not expect Bachman to happen within 2018 period. Removed California Ditch. 3 projects in calc table = 16.2 cfs; yields a 2.7% predicted 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		25%	MAKE SURE SPREADSHEET BREAKS IS BIG CREEK (NOT Big Springs Ck)	5-20 cfs that affects 6 mi; net gains in flow from P-13 and Sulfer; saving water from Furey Lanes; moving water at cross ditch; location of available flow more important than net flow change	

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Pahsimeroi River	PRC2	Pahsimeroi River and tributaries upstream from the mouth of Big Ck. Including the Big Ck. Drainage	1.1: Habitat Quantity: Anthropogenic Barriers	20			Expert Panel: No actions in PRC1 benefit CHK becAssessment Unitse they are not in this Assessment Unit. Water from up here does not reach CHK, either. But becAssessment Unitse benefits to intrinsic potential need to be documented, habitat (but not passage) benefits are considered.	Panel decided to combine PRC1 and PRC2 into PRC1. PRC2 is therefore deprecated.								Panel decided to combine PRC1 and PRC2 into PRC1. PRC2 is therefore deprecated.	20		20%	Different wts and bookends for steelhead due to steelhead use of tribs that chinook don't use	26.2-30.2 mi access Pahsimeroi sinks area- Natural runoff/flow regime significantly influences available water and access in any given year; need these projects to improve conditions when there is available seasonal flow; more value for other native spp. Mainstem Pahsimeroi up to Goldberg confluence Influenced by flow actions THESE PROJECT ARE IN UPPER REACHES AFFECTING STEELHEAD, NOT CHINOOK	
Pahsimeroi River	PRC2	Pahsimeroi River and tributaries upstream from the mouth of Big Ck. Including the Big Ck. Drainage	2.3: Injury and Mortality: Mechanical Injury	20				Panel decided to combine PRC1 and PRC2 into PRC1. PRC2 is therefore deprecated.								Panel decided to combine PRC1 and PRC2 into PRC1. PRC2 is therefore deprecated.	20		10%	Different wts and bookends for steelhead due to steelhead use of tribs that chinook don't use	THIS PROJECT DOES NOT AFFECT CHINOOK COPY FROM PRC2 TO PRS3	
Pahsimeroi River	PRC2	Pahsimeroi River and tributaries upstream from the mouth of Big Ck. Including the Big Ck. Drainage	4.1: Riparian Condition: Riparian Vegetation	20	20.2	0.2	11/18/2015: See Expert Panel's xls, listing actions and % current function benefits improvements per project. O'Neal was moved to PCR1. Two projects on xls (Big Creek Easemnet (TNC) 2.5 mi 2% and Page, Mill Cr 0.6 mi 5%. Total 3.1 mi. Denominator discussion: Intrinsic potential maps, which tribs to include?: Big Cr, Pahsimeroi above LaCroix = approx 25 mi. | 11/20/2015: Considering areas with no CHK, but benefits to DS occupied hab, as well as to areas that may have CHK in the future. See previous Expert Panel approach. Look at change since last panel. Also, in the future, should Pahsim be only 1 Assessment Unit? Denominator discussion: intrinsic potential maps - this is a precationary apporach, but IP mapping in this system is known to be off (includes some upper sections of tribs that go further up than they should). But IP is useful as denom in the abscence of other data (have better mapping for SH distrib). Use IP "green line" mileage. Rough tally using GIS measuring tool: 33 mi. 3.1/33 , adjusted per % function = 0.2% uplift.	Panel decided to combine PRC1 and PRC2 into PRC1. PRC2 is therefore deprecated.								Panel decided to combine PRC1 and PRC2 into PRC1. PRC2 is therefore deprecated.	21		10%	Different wts and bookends for steelhead due to steelhead use of tribs that chinook don't use	influenced by flow LF actions in Big Ck	
Pahsimeroi River	PRC2	Pahsimeroi River and tributaries upstream from the mouth of Big Ck. Including the Big Ck. Drainage	7.2: Sediment Conditions: Increased Sediment Quantity	20	20.2	0.2	No projects in db. Expert Panel: Use same projects and rationale as for Limiting Factor 4.1. But give more funct % for projects than for Limiting Factor 4.1 becAssessment Unitse it's better than what was there before? No: Recent projects that haven't had the time for vegetation to grow much. Expert Panel: use same % funct; = 0.2% uplift.	Panel decided to combine PRC1 and PRC2 into PRC1. PRC2 is therefore deprecated.								Panel decided to combine PRC1 and PRC2 into PRC1. PRC2 is therefore deprecated.	20.5		10%	Different wts and bookends for steelhead due to steelhead use of tribs that chinook don't use	Affected by flow LF actions in Big Ck	
Pahsimeroi River	PRC2	Pahsimeroi River and tributaries upstream from the mouth of Big Ck. Including the Big Ck. Drainage	9.2: Water Quantity: Decreased Water Quantity	20	25.3	5.3	See Expert Panel's xls table of flow actions and lease/permanent right type. Checked flow amounts and both flow and benefit locations for projects, to take into account downstream effects. Discussed diverted amount vs. cfs delivered to water user; water losses in transit, so are we understating benefits (amount of benefit to stream can be more than permitted cfs)? O'Neal and Big Springs project are the same project (15 cfs). Page Cr. proj (2 cfs) moved in from PRC1. 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: 319 cfs (Morgan Case, IDWR) best number Expert Panel has (Expert Panel will provide citation). 17/319 = 5.3% uplift.	Panel decided to combine PRC1 and PRC2 into PRC1. PRC2 is therefore deprecated.								Panel decided to combine PRC1 and PRC2 into PRC1. PRC2 is therefore deprecated.	25		50%	Different wts and bookends for steelhead due to steelhead use of tribs that chinook don't use	12 cfs from Big Ck; Hamilton ditch closure adds another 11 cfs to Big Ck-23 cfs total (part of Fury Ln/P16 suite of projcts) Flow increase in 2033 anticipated from rewatering/sealing of streambed	

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East Fork Salmon River	EFC1	EF Salmon River	1.1: Habitat Quantity: Anthropogenic Barriers	90	90	0	East Fork Fence, 0.8 mi 3% function. 92.7 streamnet Chinook miles as denominator. =0.03% uplift. Project also applies to EFS3 steelhead. (THIS IS NOT THE CORRECT LIMITING FACTOR ESTIMATE AND COMMENT. SHOULD BE 4.1!!) ewl 2/1/16						90	90	0	No actions in 2018 time period. No predicted functional change.	94		95	10%			WORKBOOK LOADED @ 36%, BUT SINCE ONLY 1 AU FOR POPULATION CHANGED TO 100% - KPF, 5/24/12
East Fork Salmon River	EFC1	EF Salmon River	2.3: Injury and Mortality: Mechanical Injury	70	70	0	Expert Panel: No actions addressing Limiting Factor. No change.						70	70	0	No actions in 2018 time period. No predicted functional change.	85		90	10%			See above comment
East Fork Salmon River	EFC1	EF Salmon River	4.1: Riparian Condition: Riparian Vegetation	60	60.03	0.03	Expert Panel: No actions addressing Limiting Factor. No change. Ewl - MOVED FROM 1.1: East Fork Fence, 0.8 mi 3% function. 92.7 streamnet Chinook miles as denominator. =0.03% uplift.						60.03	60.03	0	No actions in 2018 time period. No predicted functional change. NOTE: 2012 East Fork Fence was included in Look back.	60		90	25%			See above comment
East Fork Salmon River	EFC1	EF Salmon River	6.1: Channel Structure and Form: Bed and Channel Form	50	50	0	Expert Panel: No actions addressing Limiting Factor. No change.						50	50	0	No actions in 2018 time period. No predicted functional change.	53		65	25%			See above comment
East Fork Salmon River	EFC1	EF Salmon River	7.2: Sediment Conditions: Increased Sediment Quantity	71	71	0	Expert Panel: No actions addressing Limiting Factor. No change.						71	71	0	No actions in 2018 time period. No predicted functional change.	71		80	15%	No known nutrient problem.		See above comment
East Fork Salmon River	EFC1	EF Salmon River	9.2: Water Quantity: Decreased Water Quantity	70	70	0	Expert Panel: No actions addressing Limiting Factor. No change.						70	70	0	No actions in 2018 time period. No predicted functional change. Baker is under dispute.	71		80	15%	cold water, 50 cfs diversions 1/3 of base flow		See above comment

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Valley Creek	VCC1	Valley Creek	1.1: Habitat Quantity: Anthropogenic Barriers	75									75	77	2	Denominator: Streamnet has 67.6 Chinook miles. Iron Creek Reconnect project, but Iron Creek has no Intrinsic Potential shown. Juveniles seen on bottom end of Iron Creek during surveys. EP: use Streamnet for now, and check with others if needed. Yields 1.8% uplift. 5/26/16: Iron Creek Reconnect - comes out of the mouth and split into two channels (one channel historically) that feed into valley creek; one on private land (old irrigation ditch is a gully). Concept to put back into single channel to get more flow. 8 diversions on both channels currently (all barriers). Changed mileage to 4.5 miles - habitat that exists above first barrier a fish would currently encounter. pro-rating- 33% with some uncertainty about whether adults could/would use that habitat. Changed denominator to 72.6 miles to add 5 miles of intrinsic value on Iron Creek. 2% uplift	75		15%	low bookend raised owing to Goat & Iron Ck and federal Hwy 21 projects		
Valley Creek	VCC1	Valley Creek	1.3: Habitat Quantity: HQ Competition	20									20	20	0	No actions.	20		10%	Brook trout		
Valley Creek	VCC1	Valley Creek	2.3: Injury and Mortality: Mechanical Injury	60									60	63.9	3.9	Calc table includes Elk Creek 1, Goat Creek 1 and 2 (new screens) with diverted cfs and prorations. Remove Goat 3 and 4. Denominator: 152.14 cfs from Morgan, yielding 3.9% expected uplift. 5/26/16: no changes	80		15%	stranding		
Valley Creek	VCC1	Valley Creek	4.1: Riparian Condition: Riparian Vegetation	22.5									22.5	22.6	0.1	Calc table lists 1 riparian project from database: Stanley Lake (below lake, at the barrier) USFS, prorated at 10% (bull trout project), which yields expected uplift of 0.1%. 5/26/16: Stanley Lake Inlet Restoration- 10% pro-rating good, starting with fairly impacted and coming back from there.	22.5		10%			
Valley Creek	VCC1	Valley Creek	6.2: Channel Structure and Form: Instream Structural Complexity	80									80	80.6	0.6	Iron Creek Channel Reconnect: culvert migration barrier replacement with bridge at FR 692, will provide 5 miles of new access. 5/26/16: Iron Creek Reconnect - Iron Creek comes out of the mouth and split into two channels (one channel historically) that feed into valley creek; one on private land (old irrigation ditch is a gully). Concept to put back into single channel to get more flow and adds complexity to channel. 2 miles treated, but prorated to 20% = 0.6% uplift	80		5%	loss of habitat		
Valley Creek	VCC1	Valley Creek	7.2: Sediment Conditions: Increased Sediment Quantity	77.5									77.5	77.6	0.1	Stanley Lake project: refer to limiting factor 4.1.	77.5		20%			
Valley Creek	VCC1	Valley Creek	8.1: Water Quality: Temperature	75									75	76.4	1.4	5/26/16: Iron Creek Reconnect will benefit temperature, added 2 miles with 50% pro-rating. Added riparian uplift from above for additional 0.1%. Total uplift 1.4%.	75		5%			
Valley Creek	VCC1	Valley Creek	9.2: Water Quantity: Decreased Water Quantity	30									30	30	0	5/26/16: No actions	32		20%			

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	Look Forward 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	AU Weight Comments
Yankee Fork	YFC2	West Fork Yankee Fork	5.2: Peripheral and Transitional Habitats: Floodplain Condition	95			No actions in database. Expert Panel: No actions.						95	95.9	0.9	Yankee Fork West Fork Phase II: 0.1 mile in this assessment unit (project spans assessment units). Prorated to 90% based on percentage of floodplain function potential predicted to be achieved within 2018 period. Panel determined 0.2% uplift expected. [Denominator revised to 10 miles on second day of March 2016 panel meeting. New uplift is 0.9%.]	96	96		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
Yankee Fork	YFC2	West Fork Yankee Fork	6.1: Channel Structure and Form: Bed and Channel Form	95			No actions in database. Expert Panel: No actions.						95	95.9	0.9	Same uplift/rationale as for limiting factor 5.2. [Denominator revised to 10 miles on second day of March 2016 panel meeting. New uplift is 0.9.]	96	96		98	40%	problem is with altered channel in lowermost section 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
Yankee Fork	YFC2	West Fork Yankee Fork	6.2: Channel Structure and Form: Instream Structural Complexity	95			No actions in database. Expert Panel: No actions.						95	96	1	Similar rationale as for limiting factor 5.2, but prorated higher based on wood loading (95%) = 0.2%. [Denominator revised to 10 miles on second day of March 2016 panel meeting. New uplift is 1.0%.]	96	96		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. 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
Yankee Fork	YFC3	Yankee Fork	4.2: Riparian Condition: LWD Recruitment	35	35.1	0.1	Streamnet Chinook miles in Assessment Unit: 57.2 mi. See Expert Panel's xls table of projects with function change percentages. WestFork Phase 1: Mostly not wet yet, so move to LookForward. Some of it did happen in other Assessment Unit, though. EastFork YankeeFork LWD Enhancement Phase 1 and 2: 7.4 mi. Denominator: Expert Panel discussed use of 57.2 Chinook usage miles in Streamnet vs NOAA Intrisic Potential "green line" segment mapping: approx 10 miles using measuring tool. Expert Panel: include yellow and green segments, 19.5 miles (round up), plus add 5 mi for tributaries; so use 25 mi as denominator. 4.1 is not an Limiting Factor in this Assessment Unit. Discussion of Limiting Factor definition and reference and baseline conditions re: riparian large wood. Question is where are we at now, compared to Proper Functioning Condition. Does is count LWD placed in water? Focus on ability of riparian zone to produce large wood in the future. Willows and alder will not benefit this Limiting Factor directly, but riparian plantings and other project actions create a place where streamside trees can eventualy be grown. Past Expert Panel counted projects that increased LWD retention. Expert Panel: PS-3 Side Channel: 3% function for benenefit is only riparian growth/natural recruitment to stream channel based on current level of vegetation development. Apply this same approach to all 4 actions re: this Limiting Factor. 8.9 miles treated. Adjusted for functional percentages; = 0.1% uplift.						35.1	36.6	1.5	Yankee Fork West Fork Phases I and II: 0.5 mile in this assessment unit (project spans assessment units). Panel considered prorating based on vegetation growth through 2018. This project moved the channel back to where the trees are, so engaged the existing mature riparian habitat; therefore, panel prorated it to 75%, considering legacy issues. Calc table also includes Bonanza City (planned for 2018): creating floodplain and planting riparian (prorated to 1% function) and Pond Series I project: 0.25 mile, side channel and riparian plantings. This yields 1.7% expected uplift. [Denominator revised to 25 miles on second day of March 2016 panel meeting. New uplift is 1.5%.]	50	55		65	20%		Treat 5.3 of roughly 18 miles with large wood. The site is anticipated to change more as a function of wood retention over time. Projects proposed in the most highly impacted area (approx. 1/3 of the area). Improving 80% of dredge reach by 50%. The 2033 value estimates an increase as the channel evolves to retain more wood (e.g., LWD recruitment and quantity expected to increase).	Lightning Ck combined with rest of West Fork
Yankee Fork	YFC3	Yankee Fork	5.2: Peripheral and Transitional Habitats: Floodplain Condition	45	71.5	26.5	See Expert Panel's xls table of projects. Chosen metric is miles (acres rExpert Panelorted in database). 4 projects, adjusted for current functional % improvement status (ranged from 5% to 90%). Structural changes are realized now, vegetative growth will continue. 8.9 mi treated. Adjusted by function = 26.5% uplift.						71.5	76.3	4.8	Same 3 projects as for limiting factor 4.2. Panel prorated based on floodplain function expected. Yields 5.2% uplift in 2018 period. [Denominator revised to 25 miles on second day of March 2016 panel meeting. New uplift is 4.8%.]	60	65		80	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 45 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	Anticipate improved floodplain condition as a function of LWD recruitment and retention. However, because extensive dredge spoils overlie the floodplain the benefit of large wood needs to be rightfully considered relative to other treatments (e.g., how much of the floodplain will become activated as a function of large wood recruitment). Within context of conditions in the Yankee Fork floodplain condition will be restored by virtue of other related actions (e.g., road improvements).	Lightning Ck combined with rest of West Fork
Yankee Fork	YFC3	Yankee Fork	6.1: Channel Structure and Form: Bed and Channel Form	45	76.4	31.4	Use same 4 projects at for Limiting Factor 5.2. 8.9 miles treated, same denominator. See Expert Panel's xls table that pro-rates based on current realized functional benefits. Wood structures function soon after construction, but stream channel form continues to change. Percentages range from 70% to 90% function; = 31.4% uplift.						76.4	81.5	5.1	Calc table includes Preacher's Plus, as well as other YFC3 projects. Bonanza City considered to be one project. Panel prorated based on percentage of Properly Functioning Condition likely to be achieved in period (10 to 80 percent range). Yields 5.6% change expected. [Denominator revised to 25 miles on second day of March 2016 panel meeting. New uplift = 5.1%.]	60	65		80	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 45 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	Treat 5.3 of roughly 18 miles with large wood. The site is anticipated to change as a function of wood retention over time that affects flow, scour, and sediment deposition. Projects proposed in the most highly impacted area (approx. 1/3 of the area). The 2033 value estimates an increase as the channel evolves to retain more wood and recruit gravels, contributing to channel migration.	Lightning Ck combined with rest of West Fork
Yankee Fork	YFC3	Yankee Fork	6.2: Channel Structure and Form: Instream Structural Complexity	45	78	33	See Expert Panel's xls table of projects (n=4) that pro-rates based on current realized functional benefits. Structural modifications function soon after construction, but stream complexity will continue to change. Denominator = 25 mi. Percentages range from 80% to 95% function; =33% uplift.						78	85.2	7.2	Calc table uses same projects as limiting factor 6.1, but different prorations for instream complexity based on percentage of natural conditions (Properly Functioning Condition) estimated to be achieved in time period. Much wood loading expected. Yields 7.8% change expected. [Denominator revised to 25 miles on second day of March 2016 panel meeting. New uplift is 7.2%.]	65	70		85	30%	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 45 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	Treat 5.3 of roughly 18 miles with large wood. The site is anticipated to change more as a function of wood retention over time. Projects proposed in the most highly impacted area (approx. 1/3 of the area). The 2033 value estimates an increase as the channel evolves to retain more wood (e.g., LWD recruitment and quantity expected to increase).	Lightning Ck combined with rest of West Fork
Yankee Fork	YFC3	Yankee Fork	7.1: Sediment Conditions: Decreased Sediment Quantity	45	71.7	26.7	See Expert Panel's xls table of projects, adjusted for current functional benefits Discussed dredge mining effects on Limiting Factor. database only has PS-3. Expert Panel: Put all 4 projects to this Limiting Factor. Instream LWD and rock projects improve reach's ability to capture and retain (recruit) spawning gravel, as well as direct improvement of substrate by adding gravels. Project functional % range from 20% to 80%. 8.9 mi treated. Denominator:25. Uplift = 26.7 %.						71.7	77.8	6.1	Focus is need for smaller spawning-sized gravels and retention. Calc table uses same projects as limiting factor 6.1, but different prorations for sediment suitability based on percentage of natural conditions (Properly Functioning Condition) estimated to be achieved in time period. Pond Series 1 will benefit steelhead spawning (not Chinook spawning), but will benefit Chinook rearing in the winter, and is prorated accordingly. Yields 6.7% change expected. [Denominator revised to 25 miles on second day of March 2016 panel meeting. New uplift is 6.1%.]	55	60		70	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 45 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.	Treat 5.3 of roughly 18 miles with large wood. Sediment quantity is anticipated to as a function of wood retention over time that affects flow, scour, and sediment recruitment in the main and side channels. Projects proposed in the most highly impacted area (approx. 1/3 of the area).	Lightning Ck combined with rest of West Fork