

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

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Steelhead	Asotin Creek	ACS1	Alpowa	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	85	85	85	92		100	Ratio of achievement = 92%; No known barriers but assessment funded by SRFB will evaluate barriers in Alpowa in 2012; 2011 level of certainty = 4.	2015: no actions/no uplift. EWL 1.11.16
Snake River Steelhead	Asotin Creek	ACS1	Alpowa	4.1: Riparian Condition: Riparian Vegetation	15.00%	40	40	40	59		89	Ratio of achievement = 68%; Assessment funded by SRFB will evaluate riparian habitat conditions in Alpowa in 2012; 2011 level of certainty = 4.	One action was listed for implementation during 2012 to 2015. The project did not receive action agency funding so it wasn't included in the evaluation. Therefore, no actions and resulting uplift were recorded for 2012-2015. Comments entered 1/11/2016 EWL. Comments edited 1/26/2016 RM.
Snake River Steelhead	Asotin Creek	ACS1	Alpowa	5.2: Peripheral and Transitional Habitats: Floodplain Condition	30.00%	35	35	35	77		85	Ratio of achievement = 45%: Assessment funded by SRFB will evaluate confinement in Alpowa in 2012; 2011 level of certainty = 4.	No actions undertaken during 2012-2015 period, therefore no uplift was recorded for this limiting factor. Comment entered 1/11/16 EWL.
Snake River Steelhead	Asotin Creek	ACS1	Alpowa	6.1: Channel Structure and Form: Bed and Channel Form	0.00%							The panel proposed to combine limiting factors 6.1 and 6.2 based on an agreement that they do not have enough information currently to distinguish the effects of habitat actions and uplift on each. As more information becomes available they will determine whether to separate 6.1 and 6.2 in the future. If a determination is made to separate and value 6.1 and 6.2 that discussion will take place during the 2016 look forward. Until that time this limiting factor has a "0" weight. Comment entered 1/25/2016 RM.	No actions undertaken during 2012-2015 period, therefore there was no uplift for this Limiting Factor. Comment entered 1/11/2016 EWL.
Snake River Steelhead	Asotin Creek	ACS1	Alpowa	6.2: Channel Structure and Form: Instream Structural Complexity	30.00%	35	35	39.95	53		71	In 2015 the panel proposed to combine limiting factors 6.1 and 6.2 based on an agreement that they do not have enough information currently to distinguish the effects of habitat actions and uplift on each. As more information becomes available they will determine whether to separate 6.1 and 6.2 in the future. If a determination is made to separate and value 6.1 and 6.2 that discussion will take place during the 2016 look forward. Comment entered 1/25/2016 RM.	The panel requested that the new calculation developed and calibrated for the look forward be adapted and used for the look back. This refined estimate better takes into account the improvement in riparian function realized by 2018. Comment entered 7/20/2016. Additionally the new calculator reflects a standardized denominator for Chinook domain. In 2015 one action was included in the look back. The project funded staff time that led to much discussion about whether to include the action. The panel also discussed "root matrix strength" and how that influenced support of new structures and overall effect. The system is spring fed, so although the channel may migrate it was not anticipated to happen in the near term. Based on the length treated the panel assigned a 7% uplift. The panel questioned whether the low bookend (35) was too high and based on that adjusted the 7% uplift to 5%. Taking into account the improvement in habitat function and realizing 100% function is not immediate the new calculator was used to estimate the uplift at 4.95% in 7-20-16. Comments entered 1/11/2016 EWL, edited 1/28/2016 RM, and reworded per expert panel 7/20/2016.

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Snake River Steelhead	Asotin Creek	ACS1	Alpowa	7.2: Sediment Conditions: Increased Sediment Quantity	3.00%	60	60	60	75		80	Ratio of achievement = 80%; 2011 level of certainty = 4.	In 2015 the expert panel did not evaluate specific actions to benefit this limiting factor. The panel discussed potential benefits from the Alpowa PALS project in 2014 and 2015 based on similar projects in other systems, that were expected to cause gravel sorting and deposition of fines behind wood. The panel questioned whether the action was appropriate for consideration under limiting factor 7.2 because although it did not reduce sediment "inputs" is was expected to improve embededness. Ultimately the panel decided there was no change in percent function or uplift. Comment entered 1/11/2016 EWL.
Snake River Steelhead	Asotin Creek	ACS1	Alpowa	8.1: Water Quality: Temperature	10.00%	23	23	23	64		88	Ratio of achievement = 36%; 28 of 122 days (23% of the days) during summer rearing (june thru Sept) were below 16C, which is the PFC standard; instantaneous temperature from DOE gauge provides high degree of certainty; 2011 level of certainty = 1.	No actions reported in 2012-2015 period for this limiting factor, therefore, there was not uplift. Comment entered 1/11/16 EWL.
Snake River Steelhead	Asotin Creek	ACS1	Alpowa	8.4: Water Quality: Turbidity	2.00%	60	60	60	75		80	Ratio of achievement = 80%; No known data exists; 2011 level of certainty =4.	No actions reported in 2012-2015 period for this limiting factor, therefore, there was not uplift. Comment entered 1/11/16 EWL.
Snake River Steelhead	Asotin Creek	ACS1	Alpowa	9.2: Water Quantity: Decreased Water Quantity	5.00%	90	90	90	92		95	Ratio of achievement = 98%; stream flow data at the mouth since 2002 is available at https://fortress.wa.gov/ecy/wrx/wrx/flows/station.asp?sta=35K050#block4 ; however no WUA calculation exist to compare current flow against; 2011 level of certainty = 2.	In 2015 no actions were reported for this limiting factor, therefore, there was no uplift. Comment entered 1/11/16 EWL.
Snake River Steelhead	Asotin Creek	ACS2	Asotin Creek	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	95	95	95	97		100	Ratio of aachievement = 98%; Only known barrier is curently Headgate Dam; WWCC barrier assessment revealed no other barriers; 2011 levelof cerainty = 1.	In 2015 no actions were reported for this limiting factor, therefore, there was no uplift.
Snake River Steelhead	Asotin Creek	ACS2	Asotin Creek	4.1: Riparian Condition: Riparian Vegetation	15.00%	65	65	65.03	74		93	The completion of the Asotin Creek Assessment will produce the information needed to make this bench mark more refined. Comment entered 7/20/2016.	The panel has asked that the new calculation developed and calibrated for the look forward be adapted and used for the look back. This refined estimate belter takes into account the improvement in riparian function realized by 2018. Additionally the new calculator reflects a standardized denominator for steelhead domain. Comment entered 7/20/2016. Charley Creek fence project 10,700 ft fencing along 1 mile of stream (both banks); 27.7 ac riparian planting. Denominator 61.1 miles includes recovery plan fish bearing length (this denominator extends beyond StreamNet miles). Consensus on the use of total length because of availability for treatment. 1/61 miles = 1% improvement. The riparian uplift was reduced realizing that the slow recovery of riparian function and the time need to reach fully functional. Comment entered 10/29/2015, edited 12/10/2015, and updated 7/20/2016 RM.
Snake River Steelhead	Asotin Creek	ACS2	Asotin Creek	5.2: Peripheral and Transitional Habitats: Floodplain Condition	30.00%	56	56	56	66		77	Ratio of achievement = 85%; Limited LiDAR/geomorphic assessment from the IMW on upper reaches is all we currently have data for; 2011 level of certainty = 3.	No actions. No change. Comment entered 1/20/2016 RM.

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Snake River Steelhead	Asotin Creek	ACS2	Asotin Creek	6.1: Channel Structure and Form: Bed and Channel Form	0.00%							This LF/AU was not valued during 2012 and will be updated prior to the look forward. Comment entered by RM 12/10/2015. The panel proposed to combine limiting factors 6.1 and 6.2 based on an agreement that they do not have enough information currently to distinguish the effects of habitat actions and uplift on each. As more information becomes available they will determine whether to separate 6.1 and 6.2 in the future. If a determination is made to separate and value 6.1 and 6.2 that discussion will take place during the 2016 look forward. Until that time this limiting factor has a "0" weight. Comment entered 1/25/2016 RM.	No actions undertaken during 2012-2015 period, therefore there was no uplift for this Limiting Factor. Comment entered 1/28/2016 RM.
Snake River Steelhead	Asotin Creek	ACS2	Asotin Creek	6.2: Channel Structure and Form: Instream Structural Complexity	30.00%	40	40	40	55		70	Ratio of achievement = 73%; Limited LiDAR/geomorphic assessment from the IMW on upper reaches is all we currently have data for; 2011 level of certainty = 3. In 2015 the panel proposed to combine limiting factors 6.1 and 6.2 based on an agreement that they do not have enough information currently to distinguish the effects of habitat actions and uplift on each. As more information becomes available they will determine whether to separate 6.1 and 6.2 in the future. If a determination is made to separate and value 6.1 and 6.2 that discussion will take place during the 2016 look forward. Comment entered 1/25/2016 RM.	IMW watershed treated with a significant amount of large wood that was non-Action Agency funded. Suggestion to account for any uplift resultant of these treatments in the 2016 Look Forward. Comment entered by RM 12/10/2015.
Snake River Steelhead	Asotin Creek	ACS2	Asotin Creek	7.2: Sediment Conditions: Increased Sediment Quantity	3.00%	60	60	61	75		80	Ratio of achievement = 80%; 2011 level of certainty = 4.	The same rationale applied to the Charley Creek Project for limiting factor 4.1 was applied here. The expert panel estimated a 1.2 to 1.6% uplift based on 22 acres treated. There was consensus on a 1% improvement. Comment entered by RM 12/10/2015.
Snake River Steelhead	Asotin Creek	ACS2	Asotin Creek	8.1: Water Quality: Temperature	10.00%	34	34	34	50		60	Ratio of achievmeent = 68%; 16C is the summer standard for PFC; 42 out of 122 days (34% of the days) were less than 16c (122 day summer rearing period June-Sept) just above George Creek; 2011 level of certainty = 1.	No action. No change. Comment entered by RM 12/10/2015.
Snake River Steelhead	Asotin Creek	ACS2	Asotin Creek	8.4: Water Quality: Turbidity	2.00%	60	60	61	75		80	Ratio of achievement = 80%; 2011 level of certainty = 4.	The same rationale applied to the Charley Creek Project for limiting factor 4.1 was applied to this limiting factor. Given 22 ac treated for a 1.2 to 1.6% improvement the expert panel agreed on a 1% uplift. Comment entered by RM 12/10/2015.
Snake River Steelhead	Asotin Creek	ACS2	Asotin Creek	9.2: Water Quantity: Decreased Water Quantity	5.00%	50	50	50	80		85	Ratio of achievement = 63%; 90% of WAU at Mouth is available at 55 cfs in August; minimum instantaneous flow in Aug 2011 was 27 CFS (above George Creek) or 50% of 55 CFS; uncertainty about IFIM accuracy and few cfs currently diverted means unlikely to reach bookend; 2011 level of certainty = 1.	No action. No change. Comment entered by RM 12/10/2015.

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Snake River Steelhead	Asotin Creek	ACS3	George Creek	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	95	95	95	97		100	Ratio of achievement = 98%: there are very few if any roads/culverts or other strucutres that would be barriers in George Creek; 2011 level of certainty = 1.	No actions reported in 2012-2015 period, therefore, there was no uplift. 1.11.16 EWL
Snake River Steelhead	Asotin Creek	ACS3	George Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%	45	45	49	54		88	Ratio of achievement = 83%; Lower George meander reconstruction in 2005 moved the baseline but other than the WDFW project in 2012 or 2013, there is nothing planned; 2011 level of certainty = 3.	The panel has asked that the new calculation developed and calibrated for the look forward be adapted and used for the look back. This refined estimate belter takes into account the improvement in riparian function realized by 2018. Additionally the new calculator reflects a standardized denominator for steelhead domain. Comment entered 7/20/2016. In 2015 action in Upper and Lower George Creek were evaluated for uplift to limiting factor function. The Lower George Creek fencing and planting project treated 2 of 33.3 (fish bearing) riparian mi. Based on a 300 ft buffer width, 813 ac were estimated to be treated and yielded 2 to 5% uplift in function. A second action In Upper George Creek treated 0.7 mi included fencing and planting 760 ac along 1500'; weed treatment on 10 ac; fencing 0.1 mi along the left bank; and increasing habitat complexity. Based on the two actions and whether benefits should be evaluated based on acres or miles, the panel considered a 5% improvement and then adjusted the estimate to 4% to account for the estimated percent improvement to 23.8 mi (fish bearing reach digitized 2014 stream miles) less 1% of habitat not available due to flow and natural barriers. Comments entered 1/11/2016 EWL,edited 1/26/2016 RM, revised by expert panel 7/20/2016. I am not sure how to treat this as uplift not knowing if the treatments were on George Creek or tributaries to George Creek and not part of the new base line or priority areas. The riparian acres estimated for the priority 33.3 miles would 908 aces total and the treatment exceeds that. My guess is the treatment is upland and should be included in the sediment LF and is not riparian. Comments entered 1/11/2016 EWL, edited 1/26/2016 RM, and revised by expert panel 7/20/2016.

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Snake River Steelhead	Asotin Creek	ACS3	George Creek	5.2: Peripheral and Transitional Habitats: Floodplain Condition	30.00%	91	91	92.53	92		95	The completion of the Asotin Geomorphic Assessment in 2016 will better inform this estimate of confinement in George Creek going forward. Comment entered 7/20/2016.	The panel has asked that the new calculation developed and calibrated for the look forward be adapted and used for the look back. This refined estimate belter takes into account the improvement in riparian function realized by 2018. Additionally the new calculator reflects a standardized denominator for steelhead domain. Comment entered 7/20/2016. The WDFW project completed with the Steelheaders was 0.75 miles and using the new calculator would produce a 1.53% uplift. the ACCD is completing the Assessment.The expert panel evaluated benefits of the D. Karl's floodplain enhancement action (0.75 mi) and Casey's action relative to 14 mi available for improvement. The actions remeandered the channel, enhanced floodplain connectivity, and improved riparian vegetation. The expert panel discussed the low bookend, recognizing that floodplain condition is not same as floodplain confinement. The process of defining the low bookend in 2012 led to the 91% estimate that the group agreed was probably "right" in terms of confinement but not condition. Based on a geomorphic assessment the CCD is completing, the value will be reconsidered (suggested 30-35%) during the look forward. That point aside, based on the two actions treatment of 5% the expert panel agreed on a 5% uplift. Considering a 23.8 mi denominator (fish bearing length from digitized 2014 stream mi and accounting for dry channels and natural barriers) the uplift was 3%. The book end will be reevaluated during the look forward. Comment entered 1/11/2016 EWL.
Snake River Steelhead	Asotin Creek	ACS3	George Creek	6.1: Channel Structure and Form: Bed and Channel Form	0.00%							The panel proposed to combine limiting factors 6.1 and 6.2 based on an agreement that they do not have enough information currently to distinguish the effects of habitat actions and uplift on each. As more information becomes available they will determine whether to separate 6.1 and 6.2 in the future. If a determination is made to separate and value 6.1 and 6.2 that discussion will take place during the 2016 look forward. Until that time this limiting factor has a "0" weight. Comment entered 1/25/2016 RM.	In 2015 the panel used 27% from 6.2 as low bookend. The expert panel based the estimate of benefits on the length of the steelhead domain (23.8 mi) that includes 9.2 (protection) and 14.6 (restoration) miles. It was agreed that this was more accurate. The value will also be used to estimate benefits for limiting factors 4.1, and 5.2 and is based on digitized 2014 stream miles that considers habitat availability and impacts of flow and barriers. Based on this rationale, an uplift of 3% (based on improvements to limiting factor 6.2) was estimated. Comment entered 1/11/16 EWL. In the absence of book ends, the expert panel discussed fish distribution in North and South Fork Asotin Creek and habitat condition at the time recent redd surveys were done. Further discussion on this is planned for the 2016 look forward. In the interim the group is relying on improvements to limiting factor 6.2 to account for benefits to limiting factor 6.1. Comments entered 1/25/2016 RM.

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Snake River Steelhead	Asotin Creek	ACS3	George Creek	6.2: Channel Structure and Form: Instream Structural Complexity	30.00%	27	27	28.69	43		62	The completion of the Asotin Geomorphic Assessment in 2016 will better inform this estimate of confinement in George Creek going forward. Comment entered 7/20/2016. In 2015 the panel proposed to combine limiting factors 6.1 and 6.2 based on an agreement that they do not have enough information currently to distinguish the effects of habitat actions and uplift on each. As more information becomes available they will determine whether to separate 6.1 and 6.2 in the future. If a determination is made to separate and value 6.1 and 6.2 that discussion will take place during the 2016 look forward. Comment entered 1/25/2016 RM.	The panel has asked that the new calculation developed and calibrated for the look forward be adapted and used for the look back. This refined estimate belter takes into account the improvement in riparian function realized by 2018. Additionally the new calculator reflects a standardized denominator for steelhead domain. Comment entered 7/20/2016. Given 33.3 miles the up lift would be 1.7%.
Snake River Steelhead	Asotin Creek	ACS3	George Creek	7.2: Sediment Conditions: Increased Sediment Quantity	3.00%	55	55	56	57		80	Ratio of achievement = 96%; 2011 level of certainty = 3.	In 2015 no actions with direct benefits to this limiting factor were evaluated. Some benefits resultant of fencing/shade projects were difficult to quantify therefore the initial expert panel decision was there was no change in benefit. As the panel discussed the limiting factor further, because water temperature trends for the Tucannon have shifted and average annual flows have increased there could be indirect treatment effects from other actions. In the past the panel has not counted "reach length" treatments associated with a single action. The panel also discussed long term benefits to limiting factors 7.2. 8.1, 8.4, and 9.2. So for fencing projects for example, benefits should be considered. Based on 9 of 865 ac treated a 1% uplift was concluded. The panel was careful to point out that a riparian treatment does not assume a site devoid of vegetation when treated and settled on the 1% uplift. This logic would also apply to limiting factor 8.4. Comment entered 1/11/2016 RM.
Snake River Steelhead	Asotin Creek	ACS3	George Creek	8.1: Water Quality: Temperature	15.00%	60	60	60	64		88	Ratio of achievement = 94%; Limited data; meander reconstruction is starting to affect flow and temperature moving from baseline but little increase from 2011 to 2018 anticipated; 2011 level of certainty = 3.	In 2015 the panel discussed temperature and water quantity as issues but because not actions to benefit this limiting factor were implemented during 2012 to 2015 there was no uplift recorded. Comment edited 1/28/2016 RM.
Snake River Steelhead	Asotin Creek	ACS3	George Creek	8.4: Water Quality: Turbidity	5.00%	55	55	56	57		80	Ratio of achievement = 96%; Continued sediment improvements from ag practices; 2011 level of certainty = 3.	In 2015 no actions that specifically addressed this limiting factor were evaluated. Benefits from fencing projects were discussed but it was agreed that they would be difficult to quantify without data. Therefore the panels initial decision was "no change." After further discussion of trends in water temperature for the Tucannon and of average annual flow increases the panel wanted to give some consideration to improvements in this limiting factor. When assessing benefits, the panel was careful not to account for an entire reach when a site was treated, considered maturation time, and considered the fact that a site was not devoid of vegetation when treated. The logic was also applied to 7.2. 8.1, 9.2. After discussion a benefit deriving from 9 of 865 ac treated or 1% uplift was agreed. Comment edited 1/28/2016 RM.

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Snake River Steelhead	Asotin Creek	ACS3	George Creek	9.2: Water Quantity: Decreased Water Quantity	2.00%	95	95	95	96		97	Ratio of achievement = 99%; Brad knows but I don't think there are more than 1 or 2 CFS currently diverted - flow is "naturally" and little chance of increasing without restoring floodplains/vegetation; 2011 level of certainty = 4.	In 2015 no actions to benefit this limiting factor were reported; therefore, there was no uplift. Comment entered 1/11/2016 EWL.
Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	75	75	76	95	96	96	In 2015, the LCSRB clarified the status of limiting factor 2.3 on the basis that in 2009 in a report to the action agencies, the LCSRB acknowledged that "fish passage barriers and screens identified as limiting factors in the BiOp have been almost entirely addressed since the BiOp was completed. As a result, the Tucannon habitat programmatic did not specifically include actions to address those two limiting factors but included a provision for occasions when improperly screened diversions or passage barriers were identified. In those circumstances the habitat programmatic could be considered for funding. Comments entered 1/25/2016 RM.	The panel has asked that the new calculation developed and calibrated for the look forward be adapted and used for the look back. This refined estimate better takes into account the improvement in riparian function realized by 2018. Additionally the new calculator reflects a standardized denominator for steelhead domain. Comments entered 7/20/2016. In 2015 the expert Panel consensus was to apply same rationale to Chinook and steelhead for estimate of a 1% uplift. The only action (at Panjab Bridge) addressed a partial barrier and only benefitted juveniles; so it was considered "minor" insofar as total barriers to fish are concerned. Thus, the 1% uplift. The low bookend assigned for both Chinook and steelhead during the 2012 Expert Panel was questioned and will be redefined during the look forward. The group agreed the bookends needed to consider conditions for juveniles and adults. It was unclear what life stages were considered when the low bookend was established. The panel also discussed what can be achieved from here forward as progress toward the high bookend. The panel will revisit these questions during the look forward. Comments entered 12/18/2015 RM.
Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	10.4: Population Level Effects: Life History Changes	0.00%	25	25	25	70		90	PLACEHOLDER: 25-50% of the natural origin SPC are by-passing the Tucannon River and ascending the Snake River; 2011 level of certainty = 5.	2015:No projects listed for this limiting factor, but recognition by EP that riparian projects can improve conditions.In 2012, in S. Fork Salmon, EP used primary intent for each action, but secondary listed too. In 90s, temperature and sediment embededness were the limiting factors. More complex now. In 2015 there were record air temps and low water, but not the worst water temperatures, so progress has been made. Used to have 30 days of water temp exceedances, in 2015 only 5, despite extreme summer conditions. Have more data re: air and water temp correlations. Beyond shade, can we help baseflows via groundwater/floodplain connectivity/hyporehic flows to benefit temps. Because temperature is a secondary benefit, EP will discount. Change to 0 weight? Same for 8.4 and 9.2. 1.11.16 EWL

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Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	2.3: Injury and Mortality: Mechanical Injury	2.00%	96	96	96	97	97	98	progress towards 2018 bookend = 99%; 2011 level of certainty = 2. In 2015, the LCSRB clarified the status of limiting factor 2.3 on the basis that in 2009 in a report to the action agencies, the LCSRB acknowledged that "fish passage barriers and screens identified as limiting factors in the BiOp have been almost entirely addressed since the BiOp was completed. As a result, the Tucannon habitat programmatic did not specifically include actions to address those two limiting factors but included a provision for occasions when improperly screened diversions or passage barriers were is identified. In those circumstances the habitat programmatic could be considered for funding. Comments entered 1/25/2016 RM.	No projects identified at 2012 EP workshop. 2015: no projects/no change. 1.11.16 EWL
Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	4.1: Riparian Condition: Riparian Vegetation	10.00%	39	39	39.2	68	92	92	My read on table D-3b (Anchor 2011 April) is for reach 10 is 55.4%, Reach 9 is 22% and Reach 8 is 40%, Reach 7 42%, Reach 6 is 37% and Reach 5 is 25% coverage >5' which averages ~38% over all not 57%. In 2010 when the data was collected. I am not sure where the comment to the left originated. This only includes proportion for RM 14-50 and not the entire Steelhead domain. Comment entered expert panel 7/20/2016.	The panel has asked that the new calculation developed and calibrated for the look forward be adapted and used for the look back. This refined estimate belter takes into account the improvement in riparian function realized by 2018. Additionally the new calculator reflects a standardized denominator for steelhead domain. The new calculator would include the project completed since 2012 and allow for maturation of each of those projects. The uplift from those project would be 0.17% for 73 acres of planting. Uplift is calculated from the estimated improvement in function. Comment entered 7/20/2016. In the initial look back prior to updating the calculator, the expert panel evaluated 4 planting & fencing projects. The panel discussed buffer width and landform versus length of area treated as the basis for calculating uplift. Width can affect time to full function (seed bank, etc.), but landform can limit that. For the actions evaluated of 3500 ac total riparian habitat, 2600 were considered recoverable. Length was determined a reasonable metric for evaluating uplift. However, because length was not recorded for all projects, acres was considered as an alternative. Also considered were CREP vegetation standards that necessitate additional plantings when treatments fail and which are not addressing "new riparian" (e.g., existing). For purposes of evaluation the "baseline" totaled 2623 ac/63.4 mi. Based on 76 ac treated from the 4 actions, 300 ft buffer width converted to acres the uplift was 2.9%. 300 ft buffer width was not the entire valley bottom. 76/2600 = 2.9 %, Uplift was rounded to 3% (this was subsequently modified by the new calculator). Comment edited 1/26/2016 RM.

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Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	5.2: Peripheral and Transitional Habitats: Floodplain Condition	30.00%	26	26	32.9	75	83	83	The bookend and estimates of uplift were revisited based on a standardized denominator that was developed during the look forward and used to revise the look back on 7/20/2016. Comment entered RM 8/30/2016.	In 2015 the expert panel identified this limiting factor as one that should have been considered. The benefits combine estimates of uplift for 8 floodplain actions treating 11.2 miles. Considering the Upper Tucannon mainstem and artificial confinement, the expert panel used 31 miles as the denominator. Using this and Anchor's geomorphic assessment the panel agreed on a 36% treatment area and recommended 36% uplift. Comments entered 1/11/2016 EWL and edited 1/28/2016 RM. Per Kris Buelow on 3/29/2016, the same projects Kris submitted on 3/25/2016 were used to revise estimates of uplift. On 3/25/2016, Kris wrote: "Between 2012 and 2015, 9.09 miles of habitat were treated for floodplain confinement within 8 project reaches. Projects objectives include levees, rip rap removal, placed wood structure to reduce the bank full frequency, and reconnecting side channels. The projects include work done in PA-1,3,10,11,14,15,23 and 24. Projects not included is PA-22 because confinement actions were not completed there and PA-26 was included in the 2012 update. Data used is based on rapid habitat surveys completed following project completion and reflect restoration actions not project effectiveness which would be captured over time by CHaMP and AEM. The % improvement refers to the % treated in this case not effectiveness." Kris also modified the miles of steelhead bearing stream in the AU from 31 to 37 stream miles. Based on this information the calculation spreadsheet was updated so 9.09 stream miles of treatment was made relative to the 37 Steelhead stream miles in the AU and the uplift changed from 36% to 24.6% (9.09/37*100). EWL 3.31.16. Later on 7/20/2016 the panel requested that the calculation developed and calibrated for the look forward be used for the look back to better estimate benefits by 2018. The new calculation
Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	6.1: Channel Structure and Form: Bed and Channel Form	0.00%	51	51	58.22	75		85	Based on the rationale above the expert panel weighted limiting factors 6.1 and 6.2 as "0" and "30" respectively. For the purposes of this process, the AAs assigned entire 30% weight to limiting factor 6.2 and used the expert panel estimates for 6.2. Habitat units and LWD per BF were the agreed upon metrics for 6.2. The panel agreed this would yield a more conservative estimate. Progress toward 2018 bookend = 68%; 2011 level of certainty = 2. Goal not in recovery plan but reference stream (Wenaha) is 17. If goal is 17 and we are currently at 39 then we are 51% of goal. Per the expert panel, based on LWD per BF current condition was estimated at 15; 2018 bookend was estimated at 62, 2033 bookend at 75. Based on habitat units current condition was estimated at 70, 2018 bookend at 80 and 2033 bookend at 85. For 6.1 the width to depth (WD) ratio was used to estimate current condition at 51; 2018 bookend at 75; and the 2033 bookend at 85.	For this limiting factor the panel agreed to evaluate actions that change bedform, aggradation. and wood loading. Based on 13.39 miles treated by ten actions and dividing by a denominator of 89.68 the panel revised the uplift to 7.22%. The panel also questioned whether the low bookend that was based on 2011 CHaMP bedform data was too high. With a goal for a WD ratio of 17 averaged over the entire reach the low bookend would be 39%. Now with a 28.75 WD ratio based on 2011-2014 CHaMP data the low bookend was questioned. If WD ratio is the metric for this limiting factor the panel estimated a 75% goal. Goal setting based on Wenaha data (WD ratio of 10:1) would have set the bar to low (17%). Comment edited 1/28/2016 RM and revised based on changes submitted by the expert panel on 8/31/2016 after the panel QA'd the original estimate of benefits.Kris Buelow (SRSRB) commented on 3/25/2016 that the analysis for Limiting Factor 5.2 in this Assessment Unit should be duplicated for this limiting factor. The uplift for this limiting factor was changed based on a modification of the denominator.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	6.2: Channel Structure and Form: Instream Structural Complexity	30.00%	70	70	78.32	80	85	85	In 2012 the expert panel weighted limiting factors 6.1 and 6.2 at 30%. For purposes of this process, the panel assigned the entire weight to 6.2 and used estimates for 6.2, habitat units metric. This provided a conservative estimate. Based on the LWD per BF metric progress towards the 2018 bookend was 24%; 2011 level of certainty =2. Based on 20 CHaMP sites an average of 0.3 pieces LWD (>30 cm d and > 6 m long) per bankfull width (including tribbs) set a goal of 2/bankfull width. Current condition is 0.3/2 towards goal. Habitat units metric progress towards 2018 bookend was 88%; 2011 level of certainty = 2. CHaMP sites had 4.55 channel units per 100 m for Tuc and Tribbs. RTT needs to establish a goal and define current condition as a percent of goal. Recommend goal=40% increase in channel units, or a goal of 6.4/100m. CHaMP data showed changes over time but reports "status" not statistical "trend". The panel suggested revising this limiting factor weight to 29% and discussed revising the book ends based on Chinook data during the look forward to support conclusions regarding limiting factor 5.1.	In 2015 the expert panel based uplift on key pieces and units of treatment/100 m. Between 2012 and 2015 3,409 key pieces (and 405 natural pieces) were accounted for. Given the movement of wood, the panel discussed whether it would be more appropriate to consider total pieces added to the watershed to account for the signal across the watershed. There is an order of magnitude more wood in treated areas (e.g. 460% increase). The panel also discussed an approach based on the Anchor report, to estimated 25 or 30 miles of "deficient river length" to look at treatment effect. Using this approach, based on the miles treated and the addition of 3,409 pieces, the panel would divide that number by 3409+405 to estimate uplift. Comments edited 1/28/2016 RM. Per Kris Buelow on 3/29/2016, the same projects submitted for Chinook should be included in the estimate here for steelhead. On 3/25/2016, Kris commented: "Between 2012 and 2015 projects with a complexity action were completed at 10 sites. Based on rapid habitat surveys 10.86 miles of the main channel were treated with LWD. Not all actions meet or exceed the >2 key pieces/bank full width requirement identified in the restoration plan. So to correct for unequal treatment the panel applied a correction factor to yield a revised treatment area of 9.42 miles of channel complexity". Steelhead stream miles across the AU = 37 (per Kris). Based on this the uplift was modified from 100 to 95.5%. EWL 3/31/2016. Later on 7/20/2016 the panel requested a new calculation be developed and calibrated for the look forward be adapted for the look back to belter account for the improvement in riparian function realized by 2018. The new calculator reflects a standardized denominator for steelhead domain. Based on a revised denominator of 688.68 miles the uplift was revised to 95.5%.
Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	7.2: Sediment Conditions: Increased Sediment Quantity	8.00%	80	80	80	85	90	90	The expert panel evaluated limiting factor 7.2 relative to limiting factor 8.4 and combined weighted them at 8%. The panel also separated limiting factor 7.2 into fine sediment and embeddedness For purposes of the process, the panel assigned an 8% weight to 7.2 and a 0% weight to 8.4. The panel used the more conservative estimate associated with 7.2. Fine Sediment: progress towards 2018 goal = 94%, current condition = 80, 2018 bookend = 85, 2033 bookend = 90. Based on CHaMP in 2011; averge was 4.4% but only 1 year data; PFC is 12% ; current (2011) condition is a conservative value. Embeddedness: progress towards 2018 goal = 95%, current condition = 90, 2018 bookedn = 95, 2033 bookend = 96. Based on CHaMP data in 2011; averge was 13%. PFC is less than 20%; current (2011) condition is a conservative estimate.	In 2015 the expert panel discussed how floodplain projects affect sediment quality and whether the limiting factor definition was getting at sediment input or spawning habitat improvement. For other assessment units the panel did not consider "sorting" relative to this limiting factor. Tons of sediment inputs reduce the length/area of substrate improved. Because there haven't been the high flows that would change bottom sediments up to 2015 (last channel forming flow was 2009) "sorting" in the system has not occurred. Fines are not a significant issue in the Tucannon and in some cases, erosion is encouraged to help form gravel bars and augment gravels. The focus of 7.2 is fine sediment inputs that are influenced by riparian treatments and large wood placement. Based on this rationale, the panel determined that no projects were undertaken during 2012-2015 to improve conditions for this limiting factor. Comments edited 1/28/2016 RM.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	8.1: Water Quality: Temperature	10.00%	34	34	34	50	60	60	Progress towards 2018 bookend = 68%; 16C is the summer standard for PFC; 42 out of 122 days (34% of the days) were less than 16c (122 day summer rearing period June-Sept) at Marengo; 2011 level of certainty = 1.	In 2015 the expert panel noted that riparian treatments. large wood, and floodplain reconnection can benefit this limiting factor. Because habitat actions have become more complex with a variety of elements and benefits, quantifying benefits to limiting factor function has become more difficult, especially for temperature, where benefits are small/ project and not always robustly measured. Record high air temperatures in the Tucannon in 2015 and low water should have seen high water temperatures, which was not the case, so progress has been made. Previously there were 30 days of water temperature exceedances. In 2015 that number was down to 5, despite extreme summer conditions highs. Beyond shade, riparian treatments can improve baseflows that lower water temperature. Based on this the panel decided that temperature is a secondary objective of projects and that there would be no benefit attributed to this limiting factor. Comment edited 1/28/2016 RM.
Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	8.4: Water Quality: Turbidity	0.00%	97	97	97	97		98	The expert panel weighted limiting factors 7.2 and 8.4 together at 8%. For purposes of the process, the panel assigned an 8% weight to 7.2 and a 0% weight to 8.4. Progress towards 2018 bookend = 100%; 2011 level of certainty = 1. Based on USFS/Col Cons Dist ISCO data collected at 4 sites above Pataha in which there were more than 50 NTU 3% of the water year between 2007-2011.	In 2015 the expert panel noted that riparian, large wood, and floodplain connectivity actions can benefit this limiting factor. However, because projects have become more complex including numerous elements and delivering multiple benefits, quantifying benefits where the benefits are small or occur over a long time is difficult. The expert panel decided that since improved turbidity is a secondary benefit of some treatment types there would be no benefit attributed to this limiting factor. Comments edited 1/28/2016 RM.
Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	9.2: Water Quantity: Decreased Water Quantity	5.00%	90	90	90	95	96	96	Progress towards 2018 bookend = 95%; 2011 level of certainty = 1. 90% of the WUA at Marengo is available at 77 CFS in August; minimum instantaneous flow in Aug, 2011 was 69 CFS, or 90 % of 77 CFS; range has been 65% to 90% between 2005 and 2011.	In 2015 the expert panel noted that riparian treatments. large wood, and floodplain reconnection can benefit this limiting factor. Because habitat actions have become more complex with a variety of elements and benefits, quantifying benefits to limiting factor function has become more difficult, especially for turbidity, where benefits are small and may occur over a longer period of time. Based on this the panel decided that turbidity was a secondary objective of actions and that there would be no benefit attributed to this limiting factor. Comment entered 1/28/2016 RM.
Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	95	95	95	96	98	98	In 2015, the LCSRB clarified the status of limiting factor 2.3 on the basis that in 2009 in a report to the action agencies, the LCSRB acknowledged that "fish passage barriers and screens identified as limiting factors in the BiOp have been almost entirely addressed since the BiOp was completed. As a result, the Tucannon habitat programmatic did not specifically include actions to address those two limiting factors but included a provision for occasions when improperly screened diversions or passage barriers were is identified. In those circumstances the habitat programmatic could be considered for funding. Comments entered 1/25/2016 RM.	2015: no projects during the 2012-2015 period, no discussion, no uplift. 1/11/2016 EWL. The panel has asked that the new calculation developed and calibrated for the look forward be adapted and used for the look back. This refined estimate belter takes into account the improvement in riparian function realized by 2018. Additionally the new calculator reflects a standardized denominator for steelhead domain. The barrier listed are all in the upper assessment unit. Comment entered 7/20/2016.

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Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	10.4: Population Level Effects: Life History Changes	0.00%	25	25	25	70		90	PLACEHOLDER; Straying/by-passing Tucannon River due to unknown but presumed reservoir affects or water quality/quantity in the Tucannon. 25-50% of the natural origin SPC are by-passing the Tucannon River and ascending the Snake River. 2011 level of certainty = 5.	2015: no projects during the 2012-2015 period, no discussion, no uplift. 1.11.16 EWL.
Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	2.3: Injury and Mortality: Mechanical Injury	2.00%	96	96	96	97	96	98	Progress towards 2018 bookend = 99%; 2011 level of certainty = 2. In 2015, the LCSRB clarified the status of limiting factor 2.3 on the basis that in 2009 in a report to the action agencies, the LCSRB acknowledged that "fish passage barriers and screens identified as limiting factors in the BiOp have been almost entirely addressed since the BiOp was completed. As a result, the Tucannon habitat programmatic did not specifically include actions to address those two limiting factors but included a provision for occasions when improperly screened diversions or passage barriers were is identified. In those circumstances the habitat programmatic could be considered for funding. Comments entered 1/25/2016 RM.	2015: no projects during the 2012-2015 period, no discussion, no uplift. 1.11.16 EWL. No projects identified at 2012 EP workshop
Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	4.1: Riparian Condition: Riparian Vegetation	10.00%	32	32	32.2	68	92	92		The expert panel requested that the new calculation developed and calibrated for the look forward be adapted and used for the look back to better account for improvements in riparian function realized by 2018. The new calculator reflects a standardized denominator for steelhead domain. Comments entered 7/20/2016. Based on this a revised denominator is 393 acres for a 300" buffer over the 13.9 mile reach for steehed. The expert panel evaluated one action (#35) that treated 5.54 ac (planted over 0.24 mi). Assuming a 300 ft buffer = 36 ac of riparian area per mile along the mainstem were treated. Based on the revised reach length (7/20/2016) that does not include the tributaries or the slackwater below the Pataha the panel agreed on a 0.2% uplift. Although the slackwater is "eligible" low productivity and low habitat suitability due to high summer rearing temps likely limits use. Comment entered RM 1/26/2016 and revised based on panel input 7/20/2016..
Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	5.2: Peripheral and Transitional Habitats: Floodplain Condition	30.00%	27	27	30.12	75	83	83		The expert panel requested that the new calculation developed and calibrated for the look forward be adapted and used for the look back to belter account for the improvement in riparian function realized by 2018. The new calculator reflects a standardized denominator for steelhead domain. Comments entered 7/20/2016. Based on this a revised denominator of 13.88 miles would yield a 3.12% uplift. The same rationale used for limiting factor 4.1 for treatment area was used for this limiting factor. The Anchor study identified total stream length and confinement that leads to a smaller number of miles of habitat "available." Based on this the panel did not use the Anchor number to estimate uplift. The panel didn't use CHaMP data either because there were so few sites in the lower Tucannon. Comments entered 1/28/2016 RM.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	54	54	55.43	75	85	85	Based on the rationale above the expert panel weighted limiting factors 6.1 and 6.2 at "10" and "20" percent respectively. The panel agreed to use WD ratio as the metric. Based on this progress towards 2018 goals was estimated at 72%. A goal was not established but this note included as a place holder that the panel can evaluate during the look forward. S. Martin suggested "25" for the lower river assessment unit. Based on CHaMP data "46" was the estimate in 2012.	The panel requested that the calculation developed and calibrated for the look forward be adapted and used for the look back to better account for improvements realized by 2018. The new calculator reflects a standardized denominator for steelhead domain. Benefits were estimated based on large wood placement and levee removal. Comments entered RM 12/11/2015 and edited 7/20/2016.
Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	36	36	37.43	62	75	75	In 2012 the expert panel weighted limiting factors 6.1 and 6.2 at 30%. For purposes of this process, the panel assigned as weight of 10 and 20% to limiting factors 6.1 and 6.2 respectively. The expert panel used the LWD per BF metric that it was agreed would provide a more conservative estimate.	The expert panel requested that the calculation developed and calibrated for the look forward be adapted and used for the look back to better account for improvements in realized by 2018. The new calculator reflects a standardized denominator for steelhead domain. Wood treatment occurred on ~50% of the 0.64-mile treatment area. Using the new calculator for steelhead the uplift was estimated at 1.4%. Comments entered by RM 12/11/2015 and edited 7/20/2015.
Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	7.2: Sediment Conditions: Increased Sediment Quantity	8.00%	80	80	80	85	90	90	The expert panel weighted limiting factors 7.2 and 8.4 together at 8%. The panel also separated 7.2 into fine sediment and embeddedness. For purposes of the process, the expert panel assigned an 8% weight to 7.2 and a 0% weight to 8.4. The panel used the estimates associated with 7.2 as a more conservative estimate for crediting. For fine sediment progress towards the 2018 goal was 94%, 2011 level of certainty - 1. Current condition was 80%, the 2018 bookend was 85%, and the 2033 bookend was 90%. Based on one year of CHaMP data for three sites PFC was estimated at 12%. For embeddedness progress towards 2018 goal was estimated at 91%, 2011 level of certainty = 1. Current condition at 80%, 2018 at 85%, and 2033 at 90%. Based on one year of CHaMP data for three sites PFC was estimated at 20.25.	No actions. No change. Comment entered by RM 12/11/2015.
Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	8.1: Water Quality: Temperature	10.00%	34	34	34	50	60	60	Progress towards 2018 bookend = 68%; 2011 level of certainty = 3. No temperature data since 2003 in this AU; goal should be based on adult emigration in this AU.	No action. No change. Comment entered by RM 12/11/2015.
Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	8.4: Water Quality: Turbidity	0.00%	80	80	80	85		90	The expert panel weighted limiting factors 7.2 and 8.4 together at 8%. For purposes of the process, the panel assigned an 8% weight to 7.2 and a 0% weight to 8.4. Progress towards 2018 bookend = 94%; no data; use upstream data as relative index for this lower AU.	No action. No change. Comment entered by RM 12/11/2015.
Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	9.2: Water Quantity: Decreased Water Quantity	5.00%	90	90	90	95	96	96	Progress towards 2018 bookend = 95%; 2011 level of certainty = 1. 90% of the WUA at the mouth is 75 CFS; minimum instantaneous flow in Aug, 2011 was 71 CFS, or 95% of 65 CFS.	In 2015 the panel did not evaluate actions to benefit this limiting factor; therefore there was no estimate of uplift. Comment entered 1/28/2016 RM. The panel will re-examine potential downstream benefits of efficiency projects in the Tucannon if they determine an estimate of benefit is appropriate.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Steelhead	Tucannon River	TUS1C	Pataha	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	75	75	79	75			No data; 2011 level of certainty = 2. In 2015, the LCSRB clarified the status of limiting factor 2.3 on the basis that in 2009 in a report to the action agencies, the LCSRB acknowledged that "fish passage barriers and screens identified as limiting factors in the BiOp have been almost entirely addressed since the BiOp was completed. As a result, the Tucannon habitat programmatic did not specifically include actions to address those two limiting factors but included a provision for occasions when improperly screened diversions or passage barriers were is identified. In those circumstances the habitat programmatic could be considered for funding. Comments entered 1/25/2016 RM. The panel agreed to revisit the baseline for this limiting factor during the look forward. Comment entered RM 7/20/2016.	The expert panel requested that the calculation developed and calibrated for the look forward be adapted and used for the look back to better account for improvements realized by 2018. The new calculator reflects a standardized denominator for steelhead domain. Comments entered based on panel input 7/20/2016. Russell, Hartsock, Tumalum and Hixon are outside the assessment unit. Two barriers remain in the City of Pomeroy may be minor but are in the middle of the watershed. Two barriers were removed by NPT and USFS opening access to 3.9 miles. Based on the calculator an ~4% uplift in function would be realized. Comments entered 1/11/2016 EWL, edited 1/25/2016 RM, and revised based on panel input 7/20/2016.
Snake River Steelhead	Tucannon River	TUS1C	Pataha	10.4: Population Level Effects: Life History Changes	0.00%							PLACEHOLDER: 25-50% of the natural origin SPC are by-passing the Tucannon River and ascending the Snake River; 2011 level of certainty = 5.	2015: no projects during 2012-2015 period, no discussion, no uplift. 1.11.16 EWL
Snake River Steelhead	Tucannon River	TUS1C	Pataha	2.3: Injury and Mortality: Mechanical Injury	2.00%	97	97	97	97		98	The LCSRB confirmed the status of limiting factor 2.3 on the basis that in 2009 in a report to the action agencies, the LCSRB acknowledged that "fish passage barriers and screens identified as limiting factors in the BiOp have been almost entirely addressed since the BiOp was completed. As a result, the Tucannon habitat programmatic did not specifically include actions to address those two limiting factors but included a provision for occasions when improperly screened diversions or passage barriers were is identified. In those circumstances the habitat programmatic could be considered for funding. Comments entered 1/25/2016 RM.	No projects identified at 2012 EP workshop. In 2015, no projects were reviewed so no uplift was calculated. Comments entered 1/11/2016 EWL. Because there is irrigation in Pataha it was speculated that there may be a need to address this limiting factor. Based on the notes of the LCSRB, most barrier issues were presumed to be addressed prior to 2009. Comments entered 1/20/2016 EWL. Comments edited 1/25/2016 RM. The expert panel did not have notes on the history and rationale of no low bookend. Comments entered 1/20/2016 EWL.
Snake River Steelhead	Tucannon River	TUS1C	Pataha	4.1: Riparian Condition: Riparian Vegetation	10.00%	40	40	40	68		92	In 2011 the status of this limiting factor was corroborated based on windshield survey, CREP footprint, and local knowledge. The group anticipated using CHaMP data in 2012. The panel also considered using LiDAR to estimate size/area, not condition.	No projects were reviewed for the 2012 to 2015 implementation period, therefore no uplift was assigned this limiting factor. Comments entered 1/11/2016 EWL.
Snake River Steelhead	Tucannon River	TUS1C	Pataha	5.2: Peripheral and Transitional Habitats: Floodplain Condition	30.00%							In 2012 the expert panel determined that confinement would be the metric for determining benefits to this limiting factor. However there was no data reviewed to establish this. Thus, during the 2016 look forward the panel discussed considering any new data and establishing book ends for the limiting factor. Comments entered 1/20/2016 RM. *Important* during 2016 lookforward, need to establish a low bookend	No projects were reviewed during the 2015 workshop because no actions were implemented between 2012 and 2015. Therefore, no estimate of uplift was discussed. Comments entered 1/112016 EWL. New information regarding fish use of the assessment unit will be reviewed during the 2016 look forward and may provide the basis for establishing book ends for this limiting factor. In 2012 there was not a restoration reach in this assessment unit. With additional fish data, the status of the reach will be reconsidered. Comments entered 1/20/2016 EWL. Comments edited 1/25/2016 RM.

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Snake River Steelhead	Tucannon River	TUS1C	Pataha	6.1: Channel Structure and Form: Bed and Channel Form	10.00%				75		85	Based on the logic in the Limiting Factor Description above, the expert panel weighted limiting factor 6.1 as "10" and 6.2 as "20" for a total of "30" weight that represents the combined uplift. This is consistent with what the panel did during the 2012 workshop. Comment edited RM 1/25/2016. WD ratio metric: 2011 level of certainty = 2, 2018 bookend = 62, 2033 bookend = 75; No data. The accuracy of the book ends for 6.1 will be evaluated during the 2016 look forward. Commented entered 1/25/2016 RM.	No projects were implemented during 2012-2015. Therefore no uplift was assigned 6.1. Comment entered 1/11/2016 EWL, Comment edited 1/2/52016 RM. In 2012, this AU did not include a restoration reach and was not a focus for treatment. Based on fish data that has come on line, the reach will be considered for treatment in the future. Comment entered 1/20/2016. Comment edited 1/25/2016 RM.
Snake River Steelhead	Tucannon River	TUS1C	Pataha	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%							Based on the logic in the Limiting Factor Description above, the expert panel weighted limiting factor 6.1 as "10" and 6.2 as "20" for a total of "30" weight to represent the combined uplift. This is consistent with what the panel did during the 2012 workshop. Comment entered RM 1/25/2016. The expert panel used a metric for LWD that's provides a more conservative estimate of benefits to 6.2. Based on the LWD metric (2011 level of certainty =2) the panel estimated a 2018 bookend of 62 and a 2033 bookend of 75. The expert panel also included Habitat Units (2011 level of certainty =2) in their estimate of book ends that resulted a 2018 bookend of 80 and a 2033 bookend of 85. These estimates were based on limited data and will be reexamined during the 2016 look forward. The panel believes the current estimates may be too high. The panel will also consider the "perceived value" of the Pataha that has changed over time. Comments entered 1/11/2016 EWL. Comments edited 1/25/2016 RM.	No projects were implemented during the 2012-2015, therefore not uplift was recorded. Comments entered 1/11/2016 EWL. Comments edited 1/25/2016 RM.
Snake River Steelhead	Tucannon River	TUS1C	Pataha	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%							The expert panel weighted LF 7.2 Increased Sediment Quantity & 8.4 Waler Quality: Turbidity together = 8%. The panel also split LF 7.2 into 2 subtypes of Fine Sediment & Embeddedness For purposes of the expert panel, the panel assigned 8% weight to LF 7.2 & 0% weight to LF 8.4. Although the values were not based on data the panel estimated Fine Sediment: 2011 level of certainty =1. Embeddedness: 2011 level of certainty = 1.	No actions to benefit this limiting factor were implemented between 2012 and 2015. Therefore, at the 2015 workshop there was no uplift estimated. Fine sediment is a concern but in the short term any benefits will be assumed to accrue as a function of another limiting factor. When the RTT develops the spreadsheet for evaluating uplift improved sediment conditions will be accounted for with another limiting factor. Comment entered 1/11/2016 and 1/20/2016 EWL. Comment edited 1/25/2016 RM. Bank erosion is an an issue in this assessment unit. However, any benefits are determined to be secondary and associated with other projects that may be realized in the future, but may be very small. Comments entered 1/20/2016 EWL. Comments edited 1/25/2016 RM.
Snake River Steelhead	Tucannon River	TUS1C	Pataha	8.1: Water Quality: Temperature	10.00%	30	30	30	35		45	Progress towards 2018 bookend = 86%; 2011 level of certainty = 1. 86 out of 122 days (Jun-Sep) exceeded 16C so 30% of the time PFC of 16C was met.	No actions to specifically benefit temperature were implemented during 2012-2015. Therefore, there was no estimate of up lift for this period. Comment entered 1/11/2016 EWL.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Snake River Steelhead	Tucannon River	TUS1C	Pataha	8.4: Water Quality: Turbidity	3.00%							The expert panel weighted limiting factors 7.2 and 8.4 together at 8%. For purposes of the process, the panel assigned an 8% weight to 7.2 and a 0% weight to 8.4. It was noted that there were no data informing these estimates.	No projects to benefit turbidity specifically were implemented during 2012 to 2015. Therefore, no uplift was recorded for this limiting factor. Comments entered 1/11/2016 EWL.
Snake River Steelhead	Tucannon River	TUS1C	Pataha	9.2: Water Quantity: Decreased Water Quantity	5.00%				95		96	The expert panel discussed flow increases through leases and at this point was not prepared to approximate any estimated benefits from increased instream flows because of issues of over appropriation. The stream gauge in the Pataha is the best estimate of flow conditions and is used at the basis for evaluating condition and uplift. This will be considered during the 2016 look forward when the panel establishes book ends for this limiting factor. Comment entered 1/20/2016. Comment edited 1/25/2016 RM.	No actions to improve flow were implemented during 2012-2015. Therefore, there is no estimate of uplift. Comment entered 1/11/2016 EWL.