

NOTES:
This workbook contains **habitat functions** data downloaded directly from the Taurus database. Functions include those documented during the **Look Forward** process covering the **2016-2018** 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	95.2	92		100	In 2016 the expert panel discussed need to connect springs. Comment entered RM 7/14/2016.	In 2016 the expert panel evaluated one passage project will reconnect 15 of 22 miles of habitat. The action will remove a "concrete slab" that does not meet NOAA passage criteria. Panel prorated the benefit at 15% as this was a partial juvenile seasonal barrier. This was noted as the only known barrier except for spring reconnections that may be needed. The expected uplift from the action was 10.2%. Comments entered RM 7/14/2016 and edited 9/14/2016..
Snake River Steelhead	Asotin Creek	ACS1	Alpowa	4.1: Riparian Condition: Riparian Vegetation	10.00%	40	40	40	59		89	In 2016 the expert panel added limiting factor 4.2 and reweighted limiting factors to accommodate for this. Comments entered RM 7/14/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS1	Alpowa	4.2: Riparian Condition: LWD Recruitment	2.00%	35	35	35				In 2016 the expert panel added limiting factor 4.2 and reweighted the other limiting factors. Comment entered RM 7/14/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS1	Alpowa	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10.00%	45	45	45				In 2016 the expert panel added limiting factor 5.1 that takes springs into consideration which are important in Alpowa that is a spring-fed system. Comment entered RM 7/14/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS1	Alpowa	5.2: Peripheral and Transitional Habitats: Floodplain Condition	21.00%	35	35	35	77		85	In 2016 the panel added limiting factor 4.2 and reweighted other limiting factors to accommodate the additions. Comment entered RM 7/14/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comment entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS1	Alpowa	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	25	25	25				This limiting factor was previously weighted at 0%. In 2016 the panel added limiting factor 4.2 and reweighted other limiting factors including 6.1 to accommodate the changes. At the time the panel also adjusted the low bookend. Comment entered RM 7/14/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comment entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS1	Alpowa	6.2: Channel Structure and Form: Instream Structural Complexity	21.00%	40	40	40	53		71	In 2016 the expert panel added limiting factor 4.2 and reweighted other limiting factors to accommodate for this. Comment entered RM 7/14/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS1	Alpowa	7.2: Sediment Conditions: Increased Sediment Quantity	3.00%	60	60	60	75		80		No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS1	Alpowa	8.1: Water Quality: Temperature	11.00%	40	40	40	64		88	In 2016 the expert panel added limiting factor 4.2 and reweighted the other limiting factors to accommodate for this. The expert panel also adjusted the low bookend. Comments entered RM 7/14/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS1	Alpowa	8.4: Water Quality: Turbidity	2.00%	60	60	60	75		80		No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS1	Alpowa	9.2: Water Quantity: Decreased Water Quantity	5.00%	75	75	75	92		95	Previously the low booked for this limiting factor was 90. In 2016 the expert panel revised the low bookend, based on known irrigation withdrawals that result in a significant loss of instream flows during the irrigation season. Comments entered RM 7/14/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016.

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Snake River Steelhead	Asotin Creek	ACS2	Asotin Creek	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	95	95	99.3	97		100	In 2016 the expert panel determined that after the Headgate Project there we no additional know barriers in this assessment unit and they did not adjust the low bookend. Comments entered RM 7/14/2016.	In 2016 the expert panel evaluated the Headgate Project that BPA funded for the cultural resource and revegetation work. The project benefits were prorated at 5%. Using a denominator of 61.1 miles of steelhead use (this denominator does not include George Creek) a 4.3% uplift is expected. Comments entered 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS2	Asotin Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%	66	66	66.2	74		93	In 2016 the expert panel added limiting factor 4.2 and reweighted the other limiting factors to accommodate for this. Comment entered RM 7/14/2016.	In 2016 the expert panel evaluated the Asotin Creek Riparian Project that treated 80 acres over 3 miles and the Intensively Monitored Watershed Riparian Project that treated 8.9 acres. These actions are included in the calculation spreadsheet as well as the EP spreadsheet. The panel prorated the expected benefits based on survival and growth factors in same manner as for Chinook riparian projects. The panel discussed other projects that are under consideration but were unsure whether those would be implemented with the 2018 timeframe. Based on a denominator of 1,333 acres the expected uplift is 0.2%. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS2	Asotin Creek	4.2: Riparian Condition: LWD Recruitment	10.00%	40	40	40				In 2016 the expert panel added limiting factor 4.2 and reweighted the other limiting factors to accommodate for this. Comment entered RM 7/14/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS2	Asotin Creek	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	5.00%	25	25	25				In 2016 the expert panel added limiting factor 5.1 and reweighted the other limiting factors to accommodate for this. The expert panel discussed a geomorphic assessment that will be used to inform and potentially revised the low bookend once it is completed. Comment entered RM 7/14/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS2	Asotin Creek	5.2: Peripheral and Transitional Habitats: Floodplain Condition	20.00%	56	56	56	66		77	In 2016 the expert panel added limiting factors 4.2 and 5.1 and reweighted other limiting factors to accommodate for this. The expert panel discussed a geomorphic assessment that will be used to inform and potentially revised the low bookend once it is completed. Comments entered RM 7/14/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comment entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS2	Asotin Creek	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	25	25	25				In 2016 the expert panel added limiting factors 4/2 and 5.1 and reweighted this limiting factor that was previously rated "0". Other limiting factors were reweighted to accommodate these changes. Comments entered RM 7/14/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS2	Asotin Creek	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	40	40	40	55		70	In 2016 the expert panel added limiting factors 4.2 and 5.1 and reweighted other limiting factors to accommodate for this. Comments entered RM 7/14/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS2	Asotin Creek	7.2: Sediment Conditions: Increased Sediment Quantity	3.00%	61	61	61	75		80		In 2016 the expert panel evaluated BPA-funded upland projects that are expected to reduce sediment loads (e.g., residue management/no-till farming projects). The total acres were not determined and the Asotin County Conservation District was going to provide this estimate that would become the basis for calculating uplift based on the improvement relative to total designated crop acres in this assessment unit. As of this date the number have not been provided. Comments entered RM 7/14/2016.

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Snake River Steelhead	Asotin Creek	ACS2	Asotin Creek	8.1: Water Quality: Temperature	10.00%	34	34	34	50		60		No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS2	Asotin Creek	8.4: Water Quality: Turbidity	2.00%	61	61	61	75		80		No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS2	Asotin Creek	9.2: Water Quantity: Decreased Water Quantity	5.00%	70	70	70	80		85	In 2016 the expert panel revised the low bookend (70) for this limiting factor that previously was "50". The panel discussed the IFIM study that was determined to be "faulty" and noted that the USGS removed the stream gage from this reach. The panel also discussed the point that "not much flow" is available to be put back instream. Comments entered RM 7/14/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS3	George Creek	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	70	70	84.2	97		100	In 2016 the expert panel revised the low bookend (70) that previously was "95." The panel reduced the bookend based on updated information for the Pintler blockage. Comments entered RM 7/14/2016.	In 2016 the expert panel evaluated the Pintler Project near the mouth of Pintler Creek that fixed an ephemeral barrier and opened passage to 9.4 of 33.3 miles of habitat in the assessment unit. Panel prorated the benefits at 50% based on life stages affected (adults and juveniles) and seasonality of flow barrier to yield a 14.2% expected uplift. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS3	George Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%	49	49	49.01	54		88		In 2016 the expert panel evaluated the Pintler Project that will add 60 pieces of large wood, consolidate the channel, and plant over 3,500 feet of channel back. The project is planned for construction in 2017 and will treat up to 13 acres. Based on a denominator of 605 acres of riparian zone in this assessment unit (100 feet on each side of the stream channel due to the narrow valley bottom), including major tributaries per the Recovery Plan, and prorating the estimate of benefits based on a 20 to 30% plant survival the estimated uplift was 0.01%. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS3	George Creek	4.2: Riparian Condition: LWD Recruitment	2.00%	40	40	40.01				In 2016 the expert panel added limiting factor 4.2 based on the concern that wood loading and recruitment was below proper functioning. The low bookend was based on an estimate of the current percent of properly functioning condition of large wood recruitment potential of riparian zones. Comments entered RM 7/14/2016.	In 2016 the expert panel evaluated the Pintler Project that will add 60 pieces of large wood, consolidate the channel, and plant over 3,500 feet of channel back. The project is planned for construction in 2017 and will treat up to 13 acres. Based on a denominator of 605 acres of riparian zone in this assessment unit (100 feet on each side of the stream channel due to the narrow valley bottom), including major tributaries per the Recovery Plan, and prorating the estimate of benefits based on a 20 to 30% plant survival the estimated uplift was 0.01%. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS3	George Creek	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	2.00%	25	25	25.6				In 2015 the expert panel added limiting factor 5.1 noting that side channels are limited. The bookend estimate for this limiting factor was based on estimate of current percentage of properly functioning condition of side channels. Comments entered RM 7/14/2016.	In 2016 the expert panel evaluated the Pintler Project treated 0.7 miles. Using the proration applied in other assessment units to limiting factor 5.1 and a denominator of 33.33 miles for steelhead the panel estimated a 0.6% uplift. Comments entered RM 7/14/2016.

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Snake River Steelhead	Asotin Creek	ACS3	George Creek	5.2: Peripheral and Transitional Habitats: Floodplain Condition	25.00%	35	35	35.9	92		95	In 2016 the expert panel added limiting factor 5.1 and reweighted the other limiting factors to accommodate for this. Overall is was determined that there is limited floodplain potential in George Creek. The caculation spreadsheet includes some of the discussion regarding this point and the weighting. The panel also revised the low bookend based on their understanding of current floodplain connectivity. A geomorphic assessment that is currently being prepared will further inform bookend estimates and limiting factor weighting. Comments entered RM 7/14/2016.	The expert panel evaluated the Pintler Project that treated 0.7 miles. The panel prorated the estimate of benefits as they have for other assessment units where limiting factor 5.2 was evaluated. The panel adjusted the estimate of uplift on the basis of immediate versus longer term improvements, current function, and project goals. Based on a denominator of 33.33 miles for steelhead the expected uplift was 0.9%. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS3	George Creek	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	25	25	26.1				In 2016 the expert panel reweighted limiting factor 6.1 (10) that was previously weighted at "0" to reflect understanding about degraded channel condition in the assessment unit. The panel also established a low bookend (that had not been assigned previously) based on the percent proper functioning condition. Comments entered RM 7/14/2016.	In 2016 the panel evaluated the Pintler Project that based on estimate of immediate benefits and given a denominator of 33.3 miles would yield an uplift of 1.1% expected improvement. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS3	George Creek	6.2: Channel Structure and Form: Instream Structural Complexity	25.00%	30	30	31.06	43		62	In 2016 the expert panel reweighted this limiting factor and revised the low bookend based on the low wood loading in the assessment unit, as compared to properly functioning condition. Comments entered RM 7/14/2016.	In 2016 the panel evaluated the Pintler Project that based on estimate of immediate benefits from the addition of 60 to 70 pieces of large wood and given a denominator of 33.3 miles would yield an uplift of 1.06% expected improvement. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS3	George Creek	7.2: Sediment Conditions: Increased Sediment Quantity	3.00%	56	56	56	57		80		In 2016 BPA-funded upland projects that are anticipated to reduce sediment loads (e.g., residue management/no-till farming). The expert panel will base uplift on a total of 605 acres relative to the total acreage designated for crop production. To date this information has not been provided. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS3	George Creek	8.1: Water Quality: Temperature	11.00%	60	60	60	64		88	In 2016 the expert panel reweighted this limiting factor. Comment entered RM 7/14/2016.	The expert panel discussed the Pintler Project location in the downstream reach of the assessment unit and determined that at best the project will help maintain water temperatures in that reach, but will not be of much benefit to the rest of the assessment unit. Based on this the expert panel did not assign any uplift to the action. Comment entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS3	George Creek	8.4: Water Quality: Turbidity	5.00%	56	56	56	57		80		No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016.
Snake River Steelhead	Asotin Creek	ACS3	George Creek	9.2: Water Quantity: Decreased Water Quantity	2.00%	95	95	95	96		97	In 2016 the expert panel discussed known irrigation rights in the George Creek Basin. Based on the understanding that there are few diversions in George Creek the panel did not change the bookend. Comments entered RM 7/14/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016

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Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	76	76	79.6	95	96	96	In the 2016 look forward the expert panel confirmed a revised low bookend of 76% (that included a 1% uplift estimated during the look back). Comments entered RM 7/14/2016	For steelhead the estimate of uplift was based on the same projects in the assessment unit, but used a different denominator than used for Chinook due to known differences in fish distribution. Using a denominator of 89.68 miles (based on the EP spreadsheet and the calculation spreadsheet that includes Cummins Creek in addition to the Chinook creeks) the miles treated were 32.11. Based on this the panel estimated a 3.6% uplift. Comments entered RM 7/14/2016.
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		No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016.
Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	2.3: Injury and Mortality: Mechanical Injury	0.00%	96	96	96	97	97	98	In 2016 the expert panel reweighted this limiting factor to "0". Comment entered RM 7/14/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016.
Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	3.1: Food: Altered Primary Productivity	0.00%	20	20	20				In 2016 the expert panel added limiting factor 3.1 due to concerns that primary productivity is limiting. However, limited data and more of a focus on the lack of carcasses and the contribution of ocean-derived nutrients from the carcasses was the rationale for including this limiting factor. Based on limiting understanding of primary productivity they panel weighted the limiting factor "0". Comments entered RM 7/14/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016.
Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	4.1: Riparian Condition: Riparian Vegetation	20.00%	42	42	42.02	68	92	92	In 2016 the expert panel had an extensive discussion about limiting factor weights, the state of the watershed, and how the limiting factors are used. Of the 14 limiting factors discussed, 5 to 6 are key with the main ones including complexity (e.g., riparian large woody debris/ recruitment) and channel confinement. Limiting factors selected in part based on what is measurable and feasible to affect within 2018 period. Based on this and the understanding of the importance of riparian condition the expert panel reweighted this limiting factor to 20%. Comments entered RM 7/14/2016.	The expert panel evaluated the same projects and weightings for Chinook (the details that follow herein) for a 0.02% expected uplift. The panel considered area planted, time to maturity (vegetation growth rates), mortality, and functional benefit within 2018 period (see calculation and EP spreadsheets). Panel used acres as metric, with 300-foot buffer (150 feet on each side for the length of stream miles in the assessment unit: 57 miles minus wilderness area, and then application of riparian restoration goal of 75%) (note that this calculation method was used in all assessment units, but that restoration percentage goal differed based on recovery plan). Using a denominator of 1,157 acres and based on treatment of 39 acres (sum of 7 projects) and prorations for vegetation survival and growth within the 2018 period a 0.02% uplift is expected. Comments entered RM 7/14/2016.
Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	4.2: Riparian Condition: LWD Recruitment	2.00%	20	20	20.04				In 2016 the expert panel added limiting factor 4.2 and reweighted others. Panel discussed adding limiting factor 4.2 because other limiting factors were not reflecting their concern about long-term large woody debris recruitment, but this is a difficult limiting factor to use and assess, given the time scale of tree growth. Panel noted that these factors are not independent and therefore the benefits can be captured by limiting factors 4.1 and 6.2. The panel weighted the limiting factor at 2%. Comments entered RM 7/14/2016.	The expert panel considered the same projects and weightings as Chinook the details that follow herein to yield a 0.04% uplift. The estimate was based on a denominator of 2,061 acres for steelhead. Comments entered RM 7/14/2016 and updated 9/14/2016..

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Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	20.00%	25	25	26.7				Panel added limiting factor 5.1 (and weighted it at 20%) because other limiting factors were not reflecting their concerns regarding side channels. The expert panel also revised the low bookend based in the rationale that a lot of side channel work remains in the extensive network of disconnected side channels. Comments entered RM 7/14/2016.	Same projects and weightings as for Chinook yielding a 1.7% uplift, based on a denominator of 75.58 miles (that does not include wilderness area) and the same prorations. Comments entered RM 7/14/2016.
Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	5.2: Peripheral and Transitional Habitats: Floodplain Condition	20.00%	47	47	49.3	75	83	83	In 2016 the expert panel adjusted the limiting factor weights to accommodate new limiting factors and current understanding of all factors. The panel also revised the low bookend. Comments entered RM 7/14/2016.	Same projects and weightings as for Chinook yielding a 2.3% uplift, based on a denominator of 75.58 miles (that does not include wilderness area) and the same prorations. Comments entered RM 7/14/2016.
Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	30	30	31	75		85	NOTE: Expert Panel weighted LFs 6.1 & 6.2 @ 30% but did not weight them separately. For the purposes of this process, the AAs assigned entire 30% weight to LF 6.2 & used the EP estimates for LF 6.2, Habitat Units metric. This provides a conservative estimate of AA potential progress. In the look forward the expert panel adjusted the limiting factor weight to accommodate new limiting factors and current understanding of factors. The expert panel also adjusted the low bookend. Comments entered RM 7/14/2016.	Same projects and weightings as for Chinook yielding a 1.0% uplift, based on a denominator is 75.58 miles (does not include wilderness area) and the same prorations. The panel discussed the immediate changes in bed form from channel reconstruction projects. More short-term (within 2018 period) value seen in limiting factor 6.2 rather than 6.1. Bed form is not always the main goal and may be secondary to instream complexity and floodplain connectivity. Bed and channel form can remain static until channel-forming high flows change them suddenly and quickly in response to habitat actions. Comments entered RM 7/14/2016.
Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	44	44	46.1	80	85	85	Prior to 2016 the expert panel weighted limiting factors 6.1 and 6.2 at 30% but did weight them separately but instead assigned the entire 30% weight to limiting factor 6.2. This provided the most conservative overall estimate. In 2016 the panel adjusted the weights to accommodate the addition of limiting factor 6.1 among others. Based on current understanding of the status of each factor the panels also recalculated the low bookend. Comments entered RM 7/14/2016.	The expert panel evaluated the same projects and weightings for Chinook. Based on a denominator of 75.58 miles (does not include wilderness area) and a proration that considered the time lag for effect of large wood projects a 2.1% uplift was estimated. Comments entered RM 7/14/2016.
Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	7.2: Sediment Conditions: Increased Sediment Quantity	1.00%	80	80	80	85	90	90	In 2016 the expert panel reweighted this limiting factor, considering benefits to this limiting factor as secondary resulting from other treatments. Comment entered RM 7/14/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016.
Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	8.1: Water Quality: Temperature	1.00%	50	50	50	50	60	60	Although temperature is recognized as a limiting factor in the watershed, in 2016 the expert panel reweighted this limiting factor based on the rationale that benefits to this limiting factor are secondary and related to other treatments and more driven by watershed-scale functions and not highly influenced by site-scale projects. the panel also reestablished the low bookend based on the downstream distribution of steelhead that are less sensitive to temperature. Comments entered RM 7/14/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/14/2016.
Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	8.4: Water Quality: Turbidity	0.00%	97	97	97	97		98	No projects listed for this limiting factor, but recognition by EP that riparian and upland projects can improve conditions. Comment entered RM 7/14/2016.	

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Snake River Steelhead	Tucannon River	TUS1A	Upper Tucannon - Pataha up to Panjab	9.2: Water Quantity: Decreased Water Quantity	1.00%	90	90	90	95	96	96	In 2016 the expert panel reweighted this limiting factor based on the understanding the efficiencies realized in the past were already credited and that flow seems to be improving, despite lower than average precipitation. Comment entered RM 7/14/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comment entered RM 7/14/2016.
Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	1.1: Habitat Quantity: Anthropogenic Barriers	4.00%	95	95	95	96	98	98	In 2016 the expert panel reweighted this limiting factor. Comment entered RM 7/14/2016.	No actions are expected in this assessment unit within the time frame. The denominator 13.88 miles, including mainstem (11.3 miles) and 2.58 miles in Kellogg and Smith Creeks up to barriers that won't be fixed in 2018 period. The EP spreadsheet developed by the expert panel and presented during the workshop on 5/24/2016 indicates that the mileage in Kellogg and Smith Creeks is non-priority habitat but is accessible per the 2011 Recovery Plan. Comments entered RM 7/15/2016 and edited 9/14/2016.
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		No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/15/2016.
Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	2.3: Injury and Mortality: Mechanical Injury	0.00%	96	96	96	97	96	98		No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/15/2016.
Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	4.1: Riparian Condition: Riparian Vegetation	11.00%	33.4	33.4	33.5	68	92	92	In 2016 the expert panel reweighted the limiting factor. Comment entered RM 7/15/2016.	Using a denominator of 379 acres and considering actions and the same rationale considered for Chinook yielded a 0.1% expected uplift. Comment entered RM 7/15/2016.
Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	4.2: Riparian Condition: LWD Recruitment	2.00%	20	20	20.1				In 2016 the expert panel added limiting factor 4.2 and reweighted this and the other limiting factors. The expert panel also revised the low bookend for this limiting factor. Comment entered RM 7/15/2016.	Using a denominator of 379 acres and considering actions and the same rationale considered for Chinook yielded a 0.1% expected uplift. Comment entered RM 7/15/2016.
Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	19.00%	25	25	25				In 2016 the expert panel added and weighted limiting factor 5.1. The panel also revised the low bookend. Comments entered RM 7/15/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/15/2016.
Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	5.2: Peripheral and Transitional Habitats: Floodplain Condition	19.00%	32.6	32.6	32.6	75	83	83	In 2016 the expert panel reweighted this limiting factor. Comment entered RM 7/15/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/15/2016.
Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	6.1: Channel Structure and Form: Bed and Channel Form	9.00%	30	30	30	75	85	85	During the previous expert panel work shop the panel weighted limiting factors 6.1 and 6.2 at 30% but did not weight them separately. The panel then revised the weighting to assign 10% weight to limiting factor 6.1 and 20% weight to 6.2. During the look forward the panel reweighted the limiting factor (9) and revised the low bookend. Comments entered RM 7/15/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/15/2016.
Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	6.2: Channel Structure and Form: Instream Structural Complexity	19.00%	21	39	39	62	75	75	During the previous expert panel work shop the panel weighted limiting factors 6.1 and 6.2 at 30% but did not weight them separately. The panel then revised the weighting to assign 10% weight to limiting factor 6.1 and 20% weight to 6.2. During the look forward the panel reweighted the limiting factor (19). Comments entered RM 7/15/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/15/2016.

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	7.2: Sediment Conditions: Increased Sediment Quantity	11.00%	80	80	80	85	90	90	In previous expert panel workshops the expert panel limiting factor 7.2 and 8.4 together and split limiting factor 7.2 into fine sediment and embeddedness. At that time the Action Agencies assigned a weight of 8% and 0% to limiting factors 7.2 and 8.4. The Action Agencies used the estimates associated with limiting factor 7.2 because it provided the most conservative estimate of progress. In 2016 during the look forward the panel reweighted this limiting factor (11). Comments entered RM 7/15/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/15/2016.
Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	8.1: Water Quality: Temperature	5.00%	34	34	34	50	60	60	In 2016 the expert panel reweighted this limiting factor. Comment entered RM 7/15/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/15/2016.
Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	8.4: Water Quality: Turbidity	1.00%	80	80	80	85		90	In previous expert panels the panel weighted limiting factors 7.2 and 8.4 together. For purposes of this process, the Action Agencies a weight of 8% to limiting factor 7.2 and 0% weight to limiting factor 8.4. In 2016 the expert panel reweighted the limiting to 1%. Comments entered RM 7/15/2016. Progress towards 2018 bookend = 94%; no data; use upstream data as relative index for this lower AU.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/15/2016.
Snake River Steelhead	Tucannon River	TUS1B	Lower Tucannon - Mouth to Pataha	9.2: Water Quantity: Decreased Water Quantity	0.00%	95	95	95	95	96	96	In 2106 the expert panel reweighted this limiting factor to "0". Comment entered RM 7/15/2016.	No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comment entered RM 7/15/2016.
Snake River Steelhead	Tucannon River	TUS1C	Pataha	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	75	90	90					No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/15/2016.
Snake River Steelhead	Tucannon River	TUS1C	Pataha	10.4: Population Level Effects: Life History Changes	0.00%								No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/15/2016.
Snake River Steelhead	Tucannon River	TUS1C	Pataha	2.3: Injury and Mortality: Mechanical Injury	2.00%				97		98		No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/15/2016
Snake River Steelhead	Tucannon River	TUS1C	Pataha	4.1: Riparian Condition: Riparian Vegetation	10.00%	40	40	40	68		92		No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered 7/15/2016.
Snake River Steelhead	Tucannon River	TUS1C	Pataha	5.2: Peripheral and Transitional Habitats: Floodplain Condition	30.00%								No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/15/2016.
Snake River Steelhead	Tucannon River	TUS1C	Pataha	6.1: Channel Structure and Form: Bed and Channel Form	10.00%				75		85		No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/15/2016
Snake River Steelhead	Tucannon River	TUS1C	Pataha	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%								No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/15/2016.
Snake River Steelhead	Tucannon River	TUS1C	Pataha	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%								No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/15/2016.
Snake River Steelhead	Tucannon River	TUS1C	Pataha	8.1: Water Quality: Temperature	10.00%	30	30	30	35		45		No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/15/2016.

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%								No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/15/2016.
Snake River Steelhead	Tucannon River	TUS1C	Pataha	9.2: Water Quantity: Decreased Water Quantity	5.00%				95		96		No actions applicable to this limiting factor are expected within 2016-2018 period in this assessment unit. No change in function percentage expected. Comments entered RM 7/15/2016.