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	Grande Ronde River upper mainstem	UGS1	Middle Grande Ronde River Mainstem, Wallowa River to Lookingglass Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%	80	80	80	80	80	80		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS1	Middle Grande Ronde River Mainstem, Wallowa River to Lookingglass Creek	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%	90	90	90	90	90	90		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS1	Middle Grande Ronde River Mainstem, Wallowa River to Lookingglass Creek	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	80	80	80	80	80	80		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS1	Middle Grande Ronde River Mainstem, Wallowa River to Lookingglass Creek	8.1: Water Quality: Temperature	30.00%	50	50	50	50	50	50		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS1	Middle Grande Ronde River Mainstem, Wallowa River to Lookingglass Creek	8.2: Water Quality: Oxygen	10.00%	50	50	50	51	50	51		EP LB 2015: No actions, no change.

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS1	Middle Grande Ronde River Mainstem, Wallowa River to Lookingglass Creek	9.2: Water Quantity: Decreased Water Quantity	30.00%	50	50	50	51	50	51		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS2	Middle Grande Ronde River Mainstem - Lookingglass Creek to Catherine Creek	4.1: Riparian Condition: Riparian Vegetation	25.00%	40	40	40	50	41	60		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS2	Middle Grande Ronde River Mainstem - Lookingglass Creek to Catherine Creek	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	40	40	40	45	41	50		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS2	Middle Grande Ronde River Mainstem - Lookingglass Creek to Catherine Creek	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	30	30	30	32	30.1	35		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS2	Middle Grande Ronde River Mainstem - Lookingglass Creek to Catherine Creek	8.1: Water Quality: Temperature	10.00%	30	30	30	31	30	32		Projects would not provide enough water to provide temperature improvements yet, but would contribute to improvements if more water is secured over time. EP LB 2015: No actions, no change.

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS2	Middle Grande Ronde River Mainstem - Lookingglass Creek to Catherine Creek	8.2: Water Quality: Oxygen	5.00%	50	50	50	51	50	51		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS2	Middle Grande Ronde River Mainstem - Lookingglass Creek to Catherine Creek	9.2: Water Quantity: Decreased Water Quantity	30.00%	30	30	30	31	30	32		Estimate based on not knowing if water is protected; improvements would be estimated if water is protected. EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS3	Middle Grande Ronde River Mainstem - Grande Ronde Valley	1.1: Habitat Quantity: Anthropogenic Barriers	2.00%	90	90	90	95	91	95	Riverside Park/Spruce St Bridge, trib through tunnel @ Perry + barriers in Conley Cr + Wright Slough	Estimate considers benefits from Voelz project. EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS3	Middle Grande Ronde River Mainstem - Grande Ronde Valley	4.1: Riparian Condition: Riparian Vegetation	10.00%	45	45	45	55	50	60		Estimate based on about 4.5 MI riparian planting. EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS3	Middle Grande Ronde River Mainstem - Grande Ronde Valley	4.2: Riparian Condition: LWD Recruitment	10.00%	45	45	45	45	46	60		2033 estimate based on projects listed in LF 4.1. EP LB 2015: No actions, no change.

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS3	Middle Grande Ronde River Mainstem - Grande Ronde Valley	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	30	30	30	35	40	40		NOTE TO AA'S: DOES COPYING THE CHINOOK ESTIMATE HERE ACTUALLY MAKE SENSE? THE STEELHEAD AU IS LARGER THAN THE CHINOOK AU UGC1B, SO THE 19 MILES IN AU SHOULD NOT APPLY?? kpfisher, 7/10/12 ADD VOELZ, GOODERHAM, NILSSON/RUDD FROM UGS13B Estimate considers Greenway, Nilson, & Gooderham projects - Abt 4 miles treatment of 19 miles in AU (NOTE COPIED FROM UGC1B LF 6.1). EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS3	Middle Grande Ronde River Mainstem - Grande Ronde Valley	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%	30	30	30	35	35	40		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS3	Middle Grande Ronde River Mainstem - Grande Ronde Valley	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	30	30	30.9	32	31.8	35		EP LB 2015: Voelz push-up dam was constructed. Removing this provides sediment benefit. Should be 0.2 mi /22.4 miles = 0.9% uplift.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS3	Middle Grande Ronde River Mainstem - Grande Ronde Valley	8.1: Water Quality: Temperature	28.00%	30	30	30	31	30	32		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS3	Middle Grande Ronde River Mainstem - Grande Ronde Valley	8.2: Water Quality: Oxygen	5.00%	80	80	80	90	80	90		EP LB 2015: No actions, no change.

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS3	Middle Grande Ronde River Mainstem - Grande Ronde Valley	9.2: Water Quantity: Decreased Water Quantity	20.00%	30	30	30	40	40	40		Assume Voelz provides 0.5 cfs w/ 1863 water right and 3 cfs from FWT project. EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS4	Upper Grande Ronde River Mainstem - Upstream End of Grande Ronde Valley to Meadow Creek	4.1: Riparian Condition: Riparian Vegetation	13.00%	50	50	50	60	55	70		NOTE TO AA'S: SHOULD THIS HAVE THE SAME ESTIMATE AS UGC2 OR DO PROJECTS LISTED ONLY BENEFIT CHINOOK? NO IMPROVEMENTS ESTIMATED IN 2012 EP WORKSHOP. kpfisher - 7/10/12 Workshop notes indicate that EP called for steelhead HFchanges to be same as those for chinook. jms-7/13/12 EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS4	Upper Grande Ronde River Mainstem - Upstream End of Grande Ronde Valley to Meadow Creek	4.2: Riparian Condition: LWD Recruitment	12.00%	50	50	50	60	50.3	70		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS4	Upper Grande Ronde River Mainstem - Upstream End of Grande Ronde Valley to Meadow Creek	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	50	50	50	60	53	70		Estimate based on total of abt. 6 miles improved channel, floodplain connectivity, morphology. EP LB 2015: No actions, no change.

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	Grande Ronde River upper mainstem	UGS4	Upper Grande Ronde River Mainstem - Upstream End of Grande Ronde Valley to Meadow Creek	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%	50	50	50	60	56	70		Estimate considers about 20 miles total improved complexity (does not include USFS LGR Project). EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS4	Upper Grande Ronde River Mainstem - Upstream End of Grande Ronde Valley to Meadow Creek	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	70	70	70	75	75	80		Rock Ck is main sediment producer. EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS4	Upper Grande Ronde River Mainstem - Upstream End of Grande Ronde Valley to Meadow Creek	8.1: Water Quality: Temperature	20.00%	40	40	40	41	41	45		Estimate considers improvements from projects listed under other UGC2 LFs. EP LB 2015: No actions, no change.

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	Grande Ronde River upper mainstem	UGS4	Upper Grande Ronde River Mainstem - Upstream End of Grande Ronde Valley to Meadow Creek	9.2: Water Quantity: Decreased Water Quantity	20.00%	50	50	50	51	51	52		Conservative estimate based on 3 cfs permanent acquisition. EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS5	Lookingglass Creek and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	20.00%	85	85	85	90	85	90	passes all steelhead; lookingglass weir stress w/handling	EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS5	Lookingglass Creek and Tributaries	4.1: Riparian Condition: Riparian Vegetation	20.00%	80	80	80	85	80	90		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS5	Lookingglass Creek and Tributaries	4.2: Riparian Condition: LWD Recruitment	20.00%	80	80	80	80	80	85		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS5	Lookingglass Creek and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	40.00%	75	75	75	80	75	85		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS6	Phillips, Clark, Cabin and Gordon Creeks, Duncan and Rysdam Canyons, and tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	10.00%	70	70	70	80	72	80	Several diversions on Cabin, etc.	EP LB 2015: No actions, no change.

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS6	Phillips, Clark, Cabin and Gordon Creeks, Duncan and Rysdam Canyons, and tributaries	4.1: Riparian Condition: Riparian Vegetation	10.00%	50	50	50	55	51	65		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS6	Phillips, Clark, Cabin and Gordon Creeks, Duncan and Rysdam Canyons, and tributaries	4.2: Riparian Condition: LWD Recruitment	10.00%	50	50	50	50	50	55		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS6	Phillips, Clark, Cabin and Gordon Creeks, Duncan and Rysdam Canyons, and tributaries	6.1: Channel Structure and Form: Bed and Channel Form	15.00%	50	50	50	55	50	65		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS6	Phillips, Clark, Cabin and Gordon Creeks, Duncan and Rysdam Canyons, and tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%	50	50	50	55	50	65		EP LB 2015: No actions, no change.

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS6	Phillips, Clark, Cabin and Gordon Creeks, Duncan and Rysdam Canyons, and tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	40	40	40	45	40.2	50		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS6	Phillips, Clark, Cabin and Gordon Creeks, Duncan and Rysdam Canyons, and tributaries	8.1: Water Quality: Temperature	15.00%	50	50	50	55	50	65		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS6	Phillips, Clark, Cabin and Gordon Creeks, Duncan and Rysdam Canyons, and tributaries	9.2: Water Quantity: Decreased Water Quantity	15.00%	40	40	40	41	40	42	flow big issue on Phillips Cr	EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS7	Indian Creek and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	75	75	75	100	78	100		EP LB 2015: No action, no change
Snake River Steelhead	Grande Ronde River upper mainstem	UGS7	Indian Creek and Tributaries	4.1: Riparian Condition: Riparian Vegetation	20.00%	65	65	65	75	65.1	85		Estimate based on Little Indian Ck. Project; not enough project info at 2012 EP workshop to estimate improvements from USFS Riparian Mtnce & Thinning project. // EP LB 2015: No known actions, no change. In 2033, 3-28-16 (post-meeting): Based on calculation spreadsheet, noted 0.1% uplift based on 20% prorating factor applied to the Little Indian Creek fence project (0.25 miles). -MAH6.1.16

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS7	Indian Creek and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	65	65	65	75	67	85		EP LB 2015: No action, no change. EP discussed spatial and temporal variability for SH habitat and suggested GIS methods to map habitat.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS7	Indian Creek and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	55	55	55.7	65	55.7	75		EP LB 2015: Panel calculated 0.7% uplift based on Little Indian Creek Project with prorating factor of 100%. Revised 2018 uplift of 0.7%. Added data after Look Forward panel. -MAH5.26.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS7	Indian Creek and Tributaries	8.1: Water Quality: Temperature	25.00%	60	60	60	65	60	70		EP LB 2015: No action, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS7	Indian Creek and Tributaries	9.2: Water Quantity: Decreased Water Quantity	15.00%	50	50	50	60	50	65		EP LB 2015: No action, no change.

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS8	Willow Creek and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	70	70.7	70.7	90	70.7	90		2012- Dry Cr upper obstruction, Willow Cr. Huber Diversion lower obstruction. Basin managers need to address up to 8 additional partial obstructions b/w upper & lower obstructions addressed by projects. McKenzie project - addressed 4 trib partial barriers. / 2015 EP LB: Culverts on several tribs removed. Coon Cr (0.42 mi of new access from drop structure removal [not in database? Need to add to Willow Cr entry]). In database: Lanman Cr Culvert Removal (2013), 1.4 mi]. Keep Willow Cr, (1.1 mi). Dry Cr Upper Obstruction was not removed. See EP's table of actions = 2.4 mi of new access, prorated by usable habitat, as informed by intrinsic potential model, and modified using field observations of conditions and other barriers. Note that IP doesn't always match field obs and that other barriers still exist on Willow Creek and tribs. Many fish up Dry Creek. Denominator: 64.7 SH mi (from Streamnet). Without prorate: 2.8% total uplift. WIth 25% prorate = 0.7% uplift.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS8	Willow Creek and Tributaries	4.1: Riparian Condition: Riparian Vegetation	10.00%	60	60	60	65	62	70		Per EP LB 2015: Willow C- Coon Cr. Project: No planting yet completed by action agencies. OAF property. Consider in Look FWD. No change in percentage.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS8	Willow Creek and Tributaries	4.2: Riparian Condition: LWD Recruitment	10.00%	60	60	60	60	60.1	65		Per EP LB 2015: Willow C- Coon Cr. Project: No planting yet completed by action agencies. OAF property. Consider in Look FWD. No change in percentage.

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS8	Willow Creek and Tributaries	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	60	61	62.8	65	61	70		2012 -McKenzie Project would reactivate 1 mile historic channel. / Per 2015 EP LB: Side channel created: 1 mi of reactivated historic channel + 4 miles of enhancement (wood additions). Wood added both complexity and bank stabilization: multiple benefit types from same action. Helped w/d ratio, sediment sorting, etc. 5 mi treated out of 64.7 mi = 7.7% uplift. EP thought this total was too high, and so prorated (25% estimated function for time lag in LWD effects; 80% function for side construction) = 2.8% uplift. Low gradient system which forms some pools w/o wood, but wood helps maintain them. Reach has a range of sediment conditions. Now seeing more sediment sorting post construction. Takes time to achieve all channel structural changes. This differs from previous estimate because of the additional LWD installations (originally anticipated only 1 mile of chan reactivate).

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS8	Willow Creek and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%	60	61	62.8	65	61	70		2012 - WEST LEVEE PROJECT NOT CONSIDERED IN THE WORKSHOP(ADDING LWD TO 1.2 STREAM MILES OF APPROX 20 MI REACH) - IS THIS WHY CHINOOK ESTIMATE IS 5% IMPROVEMENT AND STEELHEAD IS 1%? McKenzie - 118 wood additions to 4 miles stream. / EP LB 2015: Per 2015 EP LB: Same project actions as for LF 6.1. See EP's table. 73 structures installed; 650-700 pieces. Lots of racking and roughness. 73 pools created by this wood = 7.3 pc/100m large pcs. Compare to Minam 20 pc/100m reference? Still in "poor" range, but a big improvement. 37% improvement in wood load/function. Note that engineered structs vs natural accumulation: different. Total = 2.8% uplift. This differs from previous EP's estimate because now based on empirical wood loading data.

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS8	Willow Creek and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	50	51	52.9	55	55.8	60		2012-WHY IS CHINOOK ESTIMATE 2% AND STEELHEAD ESTIMATE 1%?McKenzie Project - eliminates 18000 ft of eroding streambank. / Per 2015 EP LB: Same project actions as for LF 6.1 and LF 6.2. See EP's table. Project decreased sediment input and increased gravel sorting. Total of 9000 linear ft of bank that was actively eroding that was addressed. This (1 mile of chan reconstruction) took care of ~50-90% of erosion problems in this reach, but veg still has to grow, so lengths in table are prorated accordingly. LWD project element accounted for 34% of length in project area, but targeted the most active erosion areas in both the project reach and the entire AU. Floodplain recconnection reduces erosive power too. Prorated to 50% and 34%. Denom: 64.7 miles; = 2.9% uplift.This uplift number is higher than previous EP's estimate, but it is more empirically based. May need to adjust bookends in next LookFwd.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS8	Willow Creek and Tributaries	8.1: Water Quality: Temperature	20.00%	40	40	40	42	40.1	45		EP LB 2015: To early for temperature benefits. No change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS8	Willow Creek and Tributaries	9.2: Water Quantity: Decreased Water Quantity	20.00%	45	45	45	47	45	50		EP LB 2015: No actions in this AU that affected this LF. No change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	90	90	90	100	95	100	Elmer	2012 EP: MORE PASSAGE ISSUES ON MILL CK AND LITTLE CK. / 2015 EP LB: No actions, no change.

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	2.1: Injury and Mortality: Predation	0.00%							small mouth bass; invasive spp noted, but impacts unknown	
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	3.3: Food: Altered Prey Species Composition and Diversity	0.00%							altered food web- carp, panfish impacts unknown	
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	4.1: Riparian Condition: Riparian Vegetation	10.00%	45	45	45	50	45.1	60		2015 EP LB: Panel estimated a 0% improvement prorate factor for 0.25 miles treated for 1 project, as the vegetation has not matured enough to uplift LF 4.1 or 4.2. 0% uplift. 2033 update: Same as CCC2C, 0.1% uplift by 2033. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	4.2: Riparian Condition: LWD Recruitment	10.00%	45	45	45	45	45	50		2015 EP LB: Panel estimated a 0% improvement prorate factor for 0.25 miles treated for 1 project, as the vegetation has not matured enough to uplift LF 4.1 or 4.2. 0% uplift.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10.00%	20	20	20.3	35	22	40	<25 percentage levies; many oxbows have been truncated	2015 EP LB: Panel estimated a 50% improvement prorate factor for 0.25 miles treated for 1 project, resulting in a 0.3% uplift over the 36 mile steelhead presence reach.

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%	40	40	40.3	50	42	55	many oxbows have been truncated	2015 EP LB: Panel estimated a 50% improvement prorate factor for 0.25 miles treated for 1 project, resulting in a 0.3% uplift over the 36 mile steelhead presence reach.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	40	40	40.03	50	41	55	many oxbows have been truncated	2015 EP LB: Panel estimated a 5% improvement prorate factor for 0.25 miles treated for 1 project, resulting in a 0.03% uplift over the 36 mile steelhead presence reach.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%	25	25	25.03	35	27	40		2015 EP LB: Panel estimated a 5% improvement prorate factor LF6.1 for 0.25 miles treated for 1 project, resulting in a 0.03% uplift over the 36 mile steelhead presence reach.Same for LF6.2? -MAH 2/3/16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	50	50	50	55	50.1	55	more of a non-point issue, many uncontrolled contributions, but bank erosion issue also contributes	2015 EP LB: No action, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	8.1: Water Quality: Temperature	10.00%	40	40	40	40	40	45	thermal barrier for adult passage; combination of other LFs over time will be needed to affect a chance in temp	2015 EP LB: No measurable benefits from actions listed in LF 9.2 because not enough water and solar radiation too high. Temperature readings show above lethal for rearing. Not enough flow to significantly affect this LF. 20-22 deg C. A few cfs is not enough to decrease temps measurably, especially given backwater from Davis Dam. No % change.

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	8.2: Water Quality: Oxygen	5.00%	40	40	40	45	40	45	Links to flow & temp	2015 EP LB: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	9.2: Water Quantity: Decreased Water Quantity	10.00%	30	30	32.2	35	35	35	m/s migration corridor; refugia @ mouths of tribs	2015 EP LB: 14 leases total between 2012-2015. Average of leases was 2.8025 cfs annually, but that volume was weighted based on locations of leases and an overall steelhead presence of 36 miles. Discussion: But is that water usable (due to temperature and LH timing re: migration seasons)? Davis Dam consultation considered other ecological benefits of flow, even when temps are high. Used to have leakage, but no longer, so basline has changed. Discussion of thresholds: at what point does flow augmentation benefit fish? At what point is it inhabitable by fish? Not a 1:1 linear relationship. Depends on channel cross-section and temperature regime. Also considered location in reach of flow addition. Flow additions are during critical summer months. Check basin flow data for denominator. The weighted average of 0.76 cfs annually, based on release location and timing, was divided by the determined baseline of an estimated 30 cfs baseflow to get 2.2% uplift. -(MAH 2/3/2016)

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	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	60	60	61.6	60	60	70	Little; Ladd; Mill; Warm Crs.	2015 EP LB: Little Creek diversion Removal in 2012, was a partial juvenile barrier 2-3 ft tall. Upstream the next (partial) barrier is LC2 (a few inches), LC3 (1-2 ft) LC4 (tall barrier). These barriers are 1.5 miles upstream, so 1.5 mi of improved access. Ladd Highway 203 Bridge replaced undersized culvert (partial barrier?) in 2013, associated with primary aim of channel reconnect at Ladd (had been ditched to run along RR, so new channels built and then reconnected; crossing location was changed by ~1.1 miles). Steelhead in Ladd Cr now have 1 more mile of new channel, but this was determined not applicable to LF 1.1, only under LF 6.1. Uplift was calculated as 1.5 miles improved access 50% of the year, divided by a total streamnet fish presence length of 47 miles = 1.6% uplift.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	2.1: Injury and Mortality: Predation	0.00%							small mouth bass; invasive spp noted, but impacts unknown	2015 EP LB: No actions. No weight for this LF at this time. No change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	3.3: Food: Altered Prey Species Composition and Diversity	0.00%							altered food web-carp, panfish impacts unknown	2015 EP LB: No actions. No weight for this LF at this time. No change.

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	4.1: Riparian Condition: Riparian Vegetation	10.00%	60	60	60	60.1	60.2	80		2015 EP LB: No actions that contributed to LF 4.1, although some vegetation management was completed on exposed banks in a small area near reconnected channel. No uplift.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	4.2: Riparian Condition: LWD Recruitment	10.00%	60	60	60	60.1	60.2	70		2012 EP: ESTIMATES COPIED FROM CCC2B / 2015 EP LB: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10.00%	65	65	65	75	66	80		2012 EP: COPIED ESTIMATE FROM CCC2B - kpfisher, 7/10/12 / 2015 EP LB: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%	65	66	66.9	75	66	80		2012 EP: COPIED ESTIMATE USED FOR CCC2B - kpfisher, 7/10/12 / 2015 EP LB: Hwy 203 Bridge Replacement channel reconnection at Ladd Creek. Total 1.1 mile project length, and a total of 47 miles steelhead miles in this AU per Streamnet. Percent current function status was determined to be 80% of the 1.1 miles, divided by 47 miles total fish use = 1.9% uplift.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	65	65.1	67.1	75	65.1	80		2015 EP LB: Hwy 203 Bridge Replacement channel reconnection at Ladd Creek. Total 1.1 mile project length, and a total of 47 miles steelhead miles in this AU per Streamnet. Percent current function status for LF6.1 was determined to be 90% of the 1.1 miles, divided by 47 miles total fish use = 2.1% uplift.

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%	65	65	65.1	75	68	80		2012 EP: ESTIMATE COPIED FROM CCC2B. / 2015 EP LB: Hwy 203 Bridge Replacement channel reconnection at Ladd Creek. Total 1.1 mile project length, and a total of 47 miles steelhead miles in this AU per Streamnet. Percent current function status for LF6.2 was determined to be only 5% of the 1.1 miles, divided by 47 miles total fish use = 0.1% uplift.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	50	50	50	55	50.2	55	bank erosion - more Little Cr than Ladd	2015 EP LB: No actions, no change. 2033 update: 0.2% uplift by 2033. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	8.1: Water Quality: Temperature	10.00%	40	40	40	40.1	40.1	45		2012 EP: ESTIMATE COPIED FROM CCC2C (Lower Catherine Ck). / 2015 EP LB: Existing temperatures exceed 20 deg between 81% and 100% of days (20-22 deg C) so flow increases are insufficient to help fish and cause uplift. No uplift at this time.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	8.2: Water Quality: Oxygen	0.00%							need to quantify; not issue in upper reaches- some issue d/s	2015 EP LB: No actions. No weight for this LF at this time. No change.

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	Grande Ronde River upper mainstem	UGS9B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	9.2: Water Quantity: Decreased Water Quantity	15.00%	30	30	30.6	35	35	35	several diversions on Little, Mill, and Ladd Crs	2012 EP: Conservative estimate - assumes 3 cfs from water transactions. / 2015 EP LB: The EP reviewed upstream AU flow action benefits and weighted for effect to this AU using Little Cr mileage affected portion relative to total AU miles. 4 total leases were identified to impact this AU: Boyd Little Creek SSL (4 entries) 0.21 cfs lease 2012-2015. 0.15 cfs, 0.15 cfs, 0.38 cfs, 0.38 cfs. Freshwater Trust 2014 0.15 cfs. Umatilla Tribe (CTUIR) Water Transaction 0.38 cfs. Total average of leases from 2012-15 was calculated to be 0.6875 cfs. However, the AU includes several tributaries and Little Cr. is only a small part of the whole AU (22-29% of Catherine Cr total flows [avg 25%]), so these leases were prorated to a weight of 6% of the entire AU. The base flow in this stretch was estimated to be 7.5 cfs. Total calculated % uplift was therefore ((.6875cfs x 6%) / 7.5cfs) = 0.6% uplift. -MH 2/3/2016
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	1.1: Habitat Quantity: Anthropogenic Barriers	2.00%	95	95	95	100	97	100	increased from 80 partial juvenile barrier at mouth of Pyles Ck	2015 EP LB: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	4.1: Riparian Condition: Riparian Vegetation	6.50%	45	45	45	47	48	60		2015 EP LB: 16 acres, 0.75 miles treated. Total steelhead/chinook stream use (aka denominator for calculations) is 3.7 miles. Using Beechie cite re: 5+ years growth needed for effectiveness. = 0% prorated improvement factor, so no change at this time. 2033 update: Using 15% proration, an estimated 3% uplift by 2033. -MAH6.1.16

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	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	4.2: Riparian Condition: LWD Recruitment	6.50%	45	45	45	45.1	46.5	60		2012 EP: Estimate considers improvements from LF 4.1 projects/ 2015 EP LB: 16 acres, 0.75 miles treated. Total steelhead/chinook stream use (aka denominator for calculations) is 3.7 miles. Using Beechie cite re: 5+ years growth needed for effectiveness. = 0% prorated improvement factor, so no change at this time. 2033 update: Using 7.5% proration, an estimated 1.5% uplift by 2033. - MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10.00%	20	20	22.2	30	30	35	Potential u/s of Union (confined and semi-confined reaches); less below Union (unconfined)	2012 EP: CC-37, 38 & 39 PROJECTS PROVIDE CHANNEL ADDITION AND WETLAND CONNECTION. / 2015 EP LB: 0.75 miles treated over an estimated steelhead/chinook use of 3.7 miles. EP used an 11% peripheral habitat ratio as the 11% function improvement prorating value. Snorkel survey of the mainstem looked good, but 442 ft side channel has been blocked off by sediments recently at base flows, so no summer rearing, Project was designed for high flow refuge, not perennial availability, per se. Needs more water to get full benefit. EP discussed that ideal for this channel type may have had more side channel than what was built; perhaps 1:1 mainstem to peripheral. 442 ft of new peripheral/3960 ft existing. So within treatment area: now at approx 11% of PFC. Some geomorphic change expected to continue. Total uplift based on 0.75miles treated, 11% prorate factor, and 3.7 mile Streamnet denominator= 2.2%.

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%	20	25	25.1	30	30	35		2012 EP: Implementation planned for CC 37 in 2012, CC 36 in 2014, 38 & 39 in 2015/16. / 2015 EP LB: See LF 5.1 rationale as well. Included entire 0.75 mi of bank slope treatment, changes in entrenchment ratios (have CHaMP W/D ratio data, but it's more focused on area within active channel). Designed with main channel oversized due to flood concerns, which reduced floodplain connection. That is the rational for a smaller 25% Improvement factor. Should have been a B Channel, but built as a C (more entrenched). Remote sensing showed "moderate" flooding potential. Historic would have had extensive floodplain connection with many beaver dams. EP decided to use a 25% of prorating factor; = 5.1% change over AU.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	40	45	48.1	45	50	50	33% of channel within Union ; 67%: d/s of Union; channelized throughout reach	2015 EP LB: See also LF 5.1 rationale. Included entire 0.75 mi of bank slope treatment, changes in entrenchment ratios (have CHaMP W/D ratio data, but it's more focused on area within active channel). Designed to be slightly oversized due to flooding concerns, so not as close to Principal Functioning Condition (PFC) as it might have been. Could have been a B Channel, but built as a C (more entrenched). Remote sensing showed "moderate" flooding potential. Historic would have had extensive floodplain connection with many beaver dams. Sinuosity and W/D ratio from Champ, design criteria, and historic reference to arrive at 40% prorate factor. Design sinuosity = 1.1-1.45. historic baseline was 2.2-2.4. W/D reduced from 22.6 to 18.6 at bankfull. Used 40% of PFC in 0.75 miles from a total streamnet steelhead/chinook use of 3.7 stream miles = 8.1% change over AU.

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%	45	45	50.1	65	60	80		2015 EP LB:13 wood complexes, 81 key members. Champ data says LWD piece frequency went from 13.4 (pre-project) to 14 (post) pieces per 100 meters in bankfull channel. Compared 14 logs (50 % were buried and were not providing complexity) per 100 meters to target value of 18 pieces per 100 m for Minam River. Many of the structures do not mimic natural wood accumulations. Discussion of purpose and function of structures (bank stabilization vs. fish habitat: not the same function if buried in bank, and do not mimic natural wood accumulation that would provide interstitial volume and velocity refuge). 64.7 included embedded logs/cribs. Fish research shows less fish response to embedded structures. About half were instream, but CHaMP sites were in higher density part of project. Based on Minam reference of 18 pcs/100m. If use 14pcs/100m for entire reach, adjusted to 25% of Principal functioning condition (PFC). 25% of PFC in 0.75 miles from a total streamnet steelhead/chinook use of 3.7 stream miles = 5.1% uplift.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	40	42.5	45.7	45	53.4	50		2015 EP LB: Bank stabilization/ layback work: 1125 linear ft treated (28% of 0.75 mile project length). Also added gravel. CHaMP data D50 and pool tail change indicates more fine sediment now, and more boulders. Using 28% of 0.75 mile project length divided by 3.7 total steelhead/chinook use = 5.7% uplift. 2033 update: Using 10% proration, an estimated 7.7% total uplift by 2033. -MAH6.1.16

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	8.1: Water Quality: Temperature	15.00%	20	20	20	41	23	42	lower third temp limited;	2012 EP: Estimate considers benefits from CC-44 & other upstream projects plus conservative assumption of 3 cfs for upstream water transactions. / 2015 EP LB: Percent summer days (July 20-Aug31st) are 100% exceedence of 20 deg C (precludes spawning). Background temps are too hot for flow increases to have measurable effect. 0% uplift at this time.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	8.2: Water Quality: Oxygen	0.00%							Associated w/flow/temp; non-point sources need more info to quantify	
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	8.4: Water Quality: Turbidity	0.00%							Point discharge between RM 38-39; need more info to quantify impact	

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer	9.2: Water Quantity: Decreased Water Quantity	20.00%	20	20	25	50	40	55	Many Diversions in this reach	2012 EP: Conservative estimate based on 3 cfs./ 2015 EP LB: Several projects were moved from UGS10A to 9b. For 10A: Malberg lease 0.26 cfs (Prescott ditch: 100% of AU reach); Sheehy (DS from town: 80% of AU reach) lease 0.53 cfs; Malberg Split lease 0.19; D. Ricker 0.34 (100% of AU), DRLT lease 0.31 (RM 44-12: 100% of AU); LC lease 0.38 (at Godley Ditch at Union: 80% of AU); DS .012 (at Godley Ditch at Union: 80% of AU); Southern Cross Forbearance 1.08 (100% of AU); Glenn Smith Full 0.22 (100% of AU). Considered flow locations (river miles from Reach Assessment) in relation to reach length and dam (e.g., between Piles and Swackhammer), and weighted accordingly. Flow measured at 10th Street. Calculated total: 1.5 cfs avg annual flow benefit. Baseflow of 25 cfs at 95% exceedance based on flow record, but ODFW (Oregon Method IFIM) in-stream net benefit analysis used 30 cfs baseflow. EP determined to use 30 cfs as baseflow denominator. The average net total of annual leases was 1.64 cfs, which resulted in 1.5 cfs weighted to the location of lease compared to the total AU reach. Total uplift was calculated using weighted 1.5

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS10B	Middle Catherine Creek and Tributaries - Swackhammer to North and South Forks	1.1: Habitat Quantity: Anthropogenic Barriers	2.00%	95	97	100	100	97	100	one diversion structure ~ rm 41 impedes juvenile movement	2012 Estimate based on CC 44 project; may be more steelhead barriers not yet known/identified./ EP LB 2015: C44 Project: only Phase 2 2014 and Phase 3 2015 had fish passage actions. Phase2: 4 water rights were combined into 1 POD. Phase 2: 2 barriers removed. Smith push-up dam removed and irrig intake removal on Smith/Southern Cross, constructed roughened chan for new point of diversion and pipe deilvery system, on-farm water conservation conversion on Smith (but no official instream water, so difficult to track fish benefit from water left in stream). These were seasonal juvenile barriers. 18 miles opened out of 23 Streamnet SH miles in AU. See EP's table with benefit weightings (25%). Phase 3: 2015. on Smith's and Kinsley (1 additional mile, rest is counted now) (still underway, include in Look Fwd). Total prorated uplift: 19.6%. Increased to 100%.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10B	Middle Catherine Creek and Tributaries - Swackhammer to North and South Forks	4.1: Riparian Condition: Riparian Vegetation	6.50%	60	60	60	65	60.9	75		2012 - Estimate does not consider USFS Catherine Ck Riparian Mtnce & Thinning Project - not enough project information known to estimate improvements at 2012 EP Workshop. / EP LB 2015: CC44 Project Phase 1 (666 plants at wood sites: 1400 lineal ft). Phase 2: 11,119 plants and fencing along 1.13 mi. Current functional benefit: No woody veg yet in exclusion fencing areas. ALso Little Catherine RM 28/Milk Cr/Pinship Fencing and Planting 18.63 ac of rip fencing, planting, acquisition (assume 1.8 mi, if 35 ft on each side). Plantings are too young. Note: Count Phase 3 in Look Fwd. No uplift in 2018. 2033 update: Using 15% proration, an estimated 0.9% uplift by 2033. -MAH6.1.16

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS10B	Middle Catherine Creek and Tributaries - Swackhammer to North and South Forks	4.2: Riparian Condition: LWD Recruitment	6.50%	60	60	60	60	60.5	70		2015 EP LB: See LF 4.2. No uplift change by 2018. 2033 update: Using 7.5% proration, an estimated 0.5% uplift by 2033. - MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10B	Middle Catherine Creek and Tributaries - Swackhammer to North and South Forks	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	15.00%	65	66	68.9	70	66	75	lower 4 miles channel anthropogenically altered; naturally constrained upstream	2012: Estimate based on CC44 project - 5.5 miles restoration potential. Little benefit from water transactions until channels are formed./ EP LB 2015: Rated value based on current % of PFC rather than using portion of total length treated. CC44 project phases (See LF 6.2 project descriptions). Side channel work was constrained by landowner. Fish use of Side Chan #3 seen immediately. Phase 1: 862 ft treated, currently at 5% of PFC. Phase 2: 5961 (1.13 mi) treated. Phase 3 rated at 50% current function (0.66 mi treated: 60% of channel length). This a more forested reach. Historic imagery indicated many beaver and side channels. Total prorated functional change: 3.9% uplift.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10B	Middle Catherine Creek and Tributaries - Swackhammer to North and South Forks	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%	65	65	65.3	70	67	75	lower 4 miles channel anthropogenically altered; naturally constrained upstream	2012 - Conservative estimate due to uncertain project designs, etc. at time of 2012 EP workshop./ EP LB 2015: Rated value based on current % of PFC rather than using portion of total length treated. Phase 1 (0%), Phase 2 enhanced already low spots in floodplain (0%), Phase 3: oversized for landowner concern, so only activated at higher flows, which reduces biological value, but side channels increase floodplain complexity (10%). Total calculated uplift: 0.3%.

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS10B	Middle Catherine Creek and Tributaries - Swackhammer to North and South Forks	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	60	62	62.3	70	63	75		2012- Conservative estimate due to uncertain project designs, etc. at time of 2012 EP workshop./ EP LB 2015: Rated value based on current % of PFC or portion of total length treated. Phase 1: bank stability and gravel sorting 850 ft spread over almost 2 miles (8%). Phase 2, including roughened channel (10%). Phase 3: 1.1 sinuosity vs 1.4 (small improvement), 65 ft down to 50 ft wide (PFC woudl be 42 ft), improvement in w:d ratio, pool improvements (50%). Total calculated uplift: 2.3%.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10B	Middle Catherine Creek and Tributaries - Swackhammer to North and South Forks	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%	60	60	64.3	70	65	75		2012 - 7 of 9 miles treated; conservative estimate due to uncertainty of design at time of 2012 EP workshop. / EP LB 2015: CC44 projects: Phase 1 (2013) wood placement and side chan only: on Kerbie, Fite, Smith properties (6+5=11) LWD complexes, 862 main chan ft, 546 side chan including alcoves); 802 pcs added to 1408 ft (262 m) inc side chans = 300 pieces/100m; even if calced using entire reach length= above PFC wood density (27pcs/100m reference consition). Phase 2: 970 pcs over 1870 Kirby and Fite; 29 LWD complexes, 1 side chan built (421 ft long), 2 alcoves built, roughened chan at new intake. Phase 3: 2015. on Smith's (still underway): 56 wood structures, 0.66 mi, 2113 ft of side channel, 5 alcoves. But overlapping phases, so recalculated for all wood phases lumped: 2 miles (3200 meters) total treated, (1772 [P1 and P2] + Phase 3 = over 100pcs/100m, which is well over 27/100m PFC Little Minam River reference criterion. Total calc uplift = 6.5%, prorated for PFC = 4.3% uplift

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS10B	Middle Catherine Creek and Tributaries - Swackhammer to North and South Forks	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	60	61	65.4	65	71.3	75		2012 - Conservative estimate due to uncertain project designs, etc. at time of 2012 EP workshop. / EP LB 2015: Rated values based on current % of PFC. CC44 projects: Phase 1 bank stability work (100% of length stabilized). Phase 2: 80% of project length stabilized. Phase 3: 80% of project length stabilized. Calculated uplift= 6.9%. EP: 6.9% overall seemed high, given the fact that some straight and entrenched areas in reach are still eroding banks. Sediment problems are roughly equally distributed throughout reach. Adjusted Phase 2 and 3 to 60%; revised total = 5.4% uplift
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10B	Middle Catherine Creek and Tributaries - Swackhammer to North and South Forks	8.1: Water Quality: Temperature	10.00%	60	60	60	65	61	75	upper 2/3 in good conditions	EP LB 2015: 57% of days are in exceedance July 20 - Aug 31 are in exceedance of 20 deg C (CHaMP data). Cooler US of this AU, but much solar radiation warming as water flows downstream to this AU. Not lethal for SH, but a concern. No uplift.

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS10B	Middle Catherine Creek and Tributaries - Swackhammer to North and South Forks	9.2: Water Quantity: Decreased Water Quantity	20.00%	40	40	42.8	50	50	50	30 cfs baseflow Aug-Sep; 10 cfs of this diverted	2012 CC-44 Project indirectly addresses this LF but not considered in estimate. Assume 3 cfs permanent lease/acquired for estimate. (10% imp based on 3 of 30 cfs). / EP LB 2015: Cross-checked Freshwater Trust list of flow projects (used "final order rate at POD" cfs, which accounted for loss rate vs. 10th Street measurements). Four projects in table. Two Ricker leases (0.39, 0.33 cfs, one is TLT), Southern Cross Forbearance 1.075 cfs, Glen Smith Full 0.22 cfs. Schubert 0.22 cfs (is same as "DS" project) was not included. DIscussed merits of adjusting proration/weightings for each project using percentage of total AU stream mileage benefiting from these flows (location of point of diversion re: SH usable area and portion of AU), water right seniority, and "instream dates" . But EP decided to weigh at 100% due to POD location in re AU. Full diversion data set is not ready to use- not yet QA/QC'd. Total avg: 0.84 cfs. Used 30cfs as base flow denominator. Revised uplift = 2.8%
Snake River Steelhead	Grande Ronde River upper mainstem	UGS11	South Fork Catherine Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%	80	80	80	90	88.1	95		2012 EP: Not enough info about USFS projects to estimate benefits at 2012 EP Workshop. / 2015 EP LB: Two projects; Corral Cr. Project: LWD, rip plantings (1 mile in 2014-2015), and South Fork riparian project. Both too recent to function. Currently at 0% function. 2033 update: Panel used a 20% proration to calculate an estimated 8.1% uplift by 2033. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS11	South Fork Catherine Creek	4.2: Riparian Condition: LWD Recruitment	15.00%	80	80	80	90	84.1	95		2015 EP LB: Two projects reviewed; Corral Cr. Project: LWD, rip plantings (1 mile in 2014-2015) and South Fork riparian project. Both too recent to function. Currently at 0% function by 2018. 2033 update: Panel used a 10% proration to calculate an estimated 4.1% uplift by 2033. -MAH6.1.16

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	Grande Ronde River upper mainstem	UGS11	South Fork Catherine Creek	6.2: Channel Structure and Form: Instream Structural Complexity	30.00%	80	80	92	90	80	95		2015 EP LB: Two projects reviewed; Corral Cr. Project: LWD, riparian plantings (1 mile in 2014-2015). 115 large pieces over 1 mile= 7.2pcs/100m. Compared to Little Minam 27 pcs/100m reference condition, and ultimately decided on a 27% prorate factor. Added South Fork Catherine project (BPA funded staff labor - instream wood structures: 19 structures over 4.5 miles). Project added 8pcs/100m, CHaMP has 6 sites in area, shows 34 pcs/100m naturaly in area, but not perfect site overlap. But structures were added where there were not enough. Prorate as 30% as % of reference wood density. Overall 13.5 mi steelhead miles in AU per Streamnet (although that did seem potentially low to EP). Total uplift was calculated per (1 mile x 27%)+(4.5 miles x 30%) = 1.62 weighted miles / 13.5 total AU miles = 12.0% uplift

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	Grande Ronde River upper mainstem	UGS11	South Fork Catherine Creek	7.2: Sediment Conditions: Increased Sediment Quantity	25.00%	70	70	97.6	85	100	95		2012 EP: Not enough info about USFS projects to estimate benefits at 2012 EP Workshop. / 2015 EP LB: 2 projects were reviewed, Corral Cr. 1-mile Project and South Fork Catherine 4.5 mile project (included road obliteration and plantings). South Fork project removed 2 undersized culverts that were scouring, providing an immediate benefit. AAs funded cross-drain culvert work, too. Corral: Prorated based on sediment reduction expected from number of cross-drain culverts (10+): 35% improvement. South Fork: Removed all cross-drain culverts, included side channel and floodplain enhancements: 75% improvement in sediment retention from vegetation establishment in former road prism, will near 100% in 4-5 years. This was the fine primary sediment source in this reach. Only 1 large project left to do in this reach. In Look Fwd, note that Upper Collins Creek needs to be improved. Calculated uplift: ((1 mile x 35%)+(4.5 miles x 75%)) = 3.725 miles / 13.5 total AU Miles = 27.6% uplift by 2018. 2033 update: Panel used Prorated for Corall Creek at 45% for 2033, which is 10% more than for 2018. For SF Catherine Creek, panel determined 85%
Snake River Steelhead	Grande Ronde River upper mainstem	UGS11	South Fork Catherine Creek	8.1: Water Quality: Temperature	10.00%	80	80	80	90	80	95		2015 EP LB: Temp is not a problem in this reach. Note in Look Forward. No action. No change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS11	South Fork Catherine Creek	9.2: Water Quantity: Decreased Water Quantity	10.00%	85	85	85	90	85	90		2015 EP LB: No actions. No uplift.

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	Grande Ronde River upper mainstem	UGS12	North Fork Catherine Creek	1.1: Habitat Quantity: Anthropogenic Barriers	0.00%			12					2012 EP: PASSAGE IMPROVEMENT PROJECT IDENTIFIED BUT PASSAGE LF has 0% weight so no benefit from project. If barrier exists consider adding weight. / 2015 EP LB: Ford Removal: 6 mile access improvement. It was a flow-dependent barrier, not 100% blocked. Juvenile migration barrier at low flow; 3 months of improved passage. Prorated to 25% of the year. = 12% uplift. LookFwd note: Add weight to LF?
Snake River Steelhead	Grande Ronde River upper mainstem	UGS12	North Fork Catherine Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%	80	80	80	90	80	95		2015 EP LB: No actions. No uplift.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS12	North Fork Catherine Creek	4.2: Riparian Condition: LWD Recruitment	15.00%	80	80	80	90	80	95		2015 EP LB: No actions. No uplift.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS12	North Fork Catherine Creek	6.2: Channel Structure and Form: Instream Structural Complexity	30.00%	80	80	80	90	80	95		2015 EP LB: No actions. No uplift.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS12	North Fork Catherine Creek	7.2: Sediment Conditions: Increased Sediment Quantity	25.00%	70	70	70	85	70	95		2012 EP: Not enough info about USFS project to estimate benefits at 2012 EP Workshop. / 2015 EP LB: No actions. No uplift.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS12	North Fork Catherine Creek	8.1: Water Quality: Temperature	10.00%	80	80	80	90	80	95		2015 EP LB: No actions. No uplift.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS12	North Fork Catherine Creek	9.2: Water Quantity: Decreased Water Quantity	10.00%	85	85	85	90	85	90		2015 EP LB: No actions. No uplift.

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	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	80	80	84.8	100	80	100		EP LB 2015: Five Points Cr Barrier Removal: 4-ft high concrete dam (UPRR legacy stucture) removal in 2015, added LWD, will remove ATV trail in future. Barrier was partial: SH were jumping it (large pool below it), but also helped juv US and DS passage. Benefits: SH use hab all the way up to RM 12, plus 9 miles of tribs = 21-22 miles total opened. Streamnet total miles: 43.5. Adjusted benefit to consider only juvenile passage benefits: prorated to 10% functional benefit. See EP's table for calculations. Total change = 4.8% uplift. Note this project was not considered in the 2012 Lookfwd Expert Panel. Project also installed LWD dowstream.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	4.1: Riparian Condition: Riparian Vegetation	15.00%	75	75	75	75	75	80		EP LB 2015: 1.5 mi Dry Creek Fence Enclosure 2015. Not mature enough to show functional change. No change in percentage.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	4.2: Riparian Condition: LWD Recruitment	10.00%	75	75	75	75	75	80		EP LB 2015: No actions, no change. - MAH.4.5.2016
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	6.1: Channel Structure and Form: Bed and Channel Form	5.00%	70	70	70	75	70.1	85		EP LB 2015: Five Points Cr Barrier Removal did not create pools. No functional change yet, but expected to benefit LF 6.1 in future. Updated 2033 estimate on 6.1.16: Channel changes were immediate at dam removal site. No change in width:depth ratio, but made a riffle. Pool at bottom of structure is intact, just have a longer rapid leading to pool. Change expected over time: pool at bottom to fill in, gradient to adjust, more local scour and aggradation in 2033 period. But these are minor changes that are difficult to quantify. Prorating at 10% results in 0.1% uplift in 2033. - MAH6.1.16

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	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	25.00%	70	70	70.7	75	70	85		EP LB 2015: Five Points Cr Barrier Removal included LWD installation below dam. Approx 7 sites, 15 LWD pieces per site along 0.5 mile of stream in 2015 (project called "Five Points LWD Planting Phase 1/2" in Pisces.) Next summer: structures to be built upstream of dam site. 105 pcs total/0.5 mi = 13pcs/100m = 65% (of 20pcs/100m reference). = 0.7% uplift.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	70	70	70	75	70	85		EP LB 2015: No actions, no change. - MAH.4.5.2016
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	8.1: Water Quality: Temperature	20.00%	80	80	80	80	80	85		EP LB 2015: 1.5 mi Dry Creek Fence Enclosure 2015. Not mature enough to show functional change. No change in percentage.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	9.2: Water Quantity: Decreased Water Quantity	10.00%	80	80	80	80	80	85		EP LB 2015: No actions, no change. - MAH.4.5.2016
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owsley Creeks	1.1: Habitat Quantity: Anthropogenic Barriers	2.00%	90	90	90	95	90	95	Riverside Park/Spruce St Bridge, trib through tunnel @ Perry + barriers in Conley Cr + Wright Slough	EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owsley Creeks	4.1: Riparian Condition: Riparian Vegetation	10.00%	45	45	45	55	45	60		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owsley Creeks	4.2: Riparian Condition: LWD Recruitment	10.00%	45	45	45	45	45	60		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owsley Creeks	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	30	30	30	35	30	40		EP LB 2015: No actions, no change.

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	Grande Ronde River upper mainstem	UGS13B	Conway/Owsley Creeks	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%	30	30	30	35	30	40		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owsley Creeks	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	30	30	30	32	30	35		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owsley Creeks	8.1: Water Quality: Temperature	28.00%	30	30	30	31	30	32		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owsley Creeks	8.2: Water Quality: Oxygen	5.00%	80	80	80	90	80	90		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owsley Creeks	9.2: Water Quantity: Decreased Water Quantity	20.00%	30	30	30	31	30	32		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS14	Meadow Creek and Tributaries (Except Dark Canyon and McCoy Creeks)	4.1: Riparian Condition: Riparian Vegetation	10.00%	60	60	60	70	63.2	80	more tribs for steelhead; but same LF requirements as chinook; Not enough info available to make site-specific changes between spp	Not enough information about USFS Riparian Thinning & Mtnce Project to estimate improvements at 2012 EP workshop. Per EP LB 2015: Two projects in database: Meadow Cr LWD and Planting (7.25 miles treated) and Battle Campbell Cr. (3 miles treated). SH habitat in Streamnet: 63.7 mi in AU. EP confirmed. Note that project mapping shows a few projects (passage improvements) upstream of Streamnet SH distribution lines. SH spawn high in system. Limited by water quant in some of these upper channels in some years.No functional % change yet, due to short time elapsed since planting. Updated 2033 estimate: For 2033, used 20% proration, resulting in 3.2% uplift in 2033. -MAH6.1.16

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	Grande Ronde River upper mainstem	UGS14	Meadow Creek and Tributaries (Except Dark Canyon and McCoy Creeks)	4.2: Riparian Condition: LWD Recruitment	10.00%	60	60	60	60	61.6	70		EP LB 2015: Same projects as LF 4.1. EP: No functional % change yet, due to short time elapsed since planting. Updated 2033 estimate: For 2033, used 10% proration, resulting in 1.6% uplift in 2033. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS14	Meadow Creek and Tributaries (Except Dark Canyon and McCoy Creeks)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	65	65	68.3	80	65	85		EP LB 2015: 2 projects, Meadow Cr LWD and Planting in Starkey Exp Forest(7.25 miles treated, >400 pcs, 29 structs, 14: 64 pcs, 82 holders, 15:175 pcs = 239 pcs of LWD; 560 pcs total for both phases; have not yet had major flows, but some changes seen) and Battle Campbell Cr. 2012 (1.75 miles of RR grade removed in 2012 (floodplain benefits of various width, less constrained now in terms of habitat forming processes), wood to mobilize embeded seds, 10 CHaMP sites showed large sed movements, scouring and deposition, unembeding of gravels). Meadow: added 4.8 pcs/100m (=25% of reference). See EP's table of project metrics and prorations re: functional condition and channel changes seen since construction (prorated: 25% function of 7.25 mi treated). Wood spacing varies. Only count portion of project within SH use, so reduced length to 2.75 miles. Will take time to achieve channel structural benefits. Prorate current function to 10%. Denominator: 63.7 SH bearing miles =3.3% uplift.

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	Grande Ronde River upper mainstem	UGS14	Meadow Creek and Tributaries (Except Dark Canyon and McCoy Creeks)	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	65	65	69	80	70	85		EP LB 2015: Meadow: added 4.8 pcs/100m (=25% of reference). Battle: 600-700 pcs of LWD in 6 miles (estimated 323 pcs in SH habitat = 7.3pcs/100m compared to 20/100m 36.5% function). Compare to LIttle Minam 27pcs/100m reference condition. See EP's table of project metrics and prorations re: functional condition and channel changes seen since construction. Total in AU= 4% uplift. Also see LH 6.1 rationale.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS14	Meadow Creek and Tributaries (Except Dark Canyon and McCoy Creeks)	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	60	60	64.7	70	71.5	80		Not enough project info to estimate improvements at 2012 EP Workshop. EP LB 2015: See LF 6.2 projects, but included entire 6 miles of Battle Cr. project. Also considered floodplain connections benefits from Meadow Cr (7.25 mi) project. See EP's table for proration calculations. Meadow: Saw 8% decrease in pool tailout fines in 2011 to 2014, which relates to significant increases in fry survival. 25% current functional status. Battle Cr.: Actions above SH distrib, but they have DS benefits re: sediment imputs (culvert removals, stabilizations, 2 pond/dike removals, ~20% partial cattle exclusions. EP: 20% current function for Battle project. Total = 4.7% uplift. To 2033, added percent function for maturity of projects, resulting in 6.8% uplift. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS14	Meadow Creek and Tributaries (Except Dark Canyon and McCoy Creeks)	8.1: Water Quality: Temperature	25.00%	40	40	40	45	40	50		EP LB 2015: No actions. No change.

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	Grande Ronde River upper mainstem	UGS14	Meadow Creek and Tributaries (Except Dark Canyon and McCoy Creeks)	9.2: Water Quantity: Decreased Water Quantity	5.00%	60	60	60	65	60	75		EP LB 2015: No actions. No change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS15	McCoy Creek, Dark Canyon, and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	1.00%	98	100	100	100	100	100	one culvert high in system- 1.5 mi access for steelhead	EP LB 2015: Dark Canyon Culvert Replacement Project. Benefitted SH, but above CHK distrib. Was a partial barrier: not an adult barrier, only for juveniles. Seasonal barrier. McCoy culvert issues? EP: None known. SH miles in this AU: 39mi from Streamnet. No other culverts remain in the canyon. EP: Increase by 2% to 100% for this SH AU.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS15	McCoy Creek, Dark Canyon, and Tributaries	4.1: Riparian Condition: Riparian Vegetation	10.00%	60	60	60	70	60	80	more tribs for steelhead; but same LF requirements as chinook; Not enough info available to make site-specific changes between spp	EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS15	McCoy Creek, Dark Canyon, and Tributaries	4.2: Riparian Condition: LWD Recruitment	10.00%	60	60	60	60	60	70		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS15	McCoy Creek, Dark Canyon, and Tributaries	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	65	65	65	80	65	85		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS15	McCoy Creek, Dark Canyon, and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	65	65	65	80	75	85		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS15	McCoy Creek, Dark Canyon, and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	60	60	60	70	60	80		EP LB 2015: Antler Spring enclosure fence (not on Actions list): above SH distrib, but will benefit downstream sediment and WQ LFs in the future. No functional uplift yet, though.

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	Grande Ronde River upper mainstem	UGS15	McCoy Creek, Dark Canyon, and Tributaries	8.1: Water Quality: Temperature	24.00%	40	40	40	45	40	50		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS15	McCoy Creek, Dark Canyon, and Tributaries	9.2: Water Quantity: Decreased Water Quantity	5.00%	60	60	60	65	60	75		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS16	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	10.00%	85	85	85.1	100	88	100	greater effect for steelhead than chinook- more use by steelhead	EP LB 2015: EP determined that Rock Cr Phase 1 and 2 barrier removal for projects is not yet completed, which were originally listed under LF 1.1. EP noted USFS South Fork Spring Creek culvert project during EP within SH distrib zone; GRModelWS paid for design (12.5 mi of habitat above, but was partially passable before - 6" drop- small juvenile partial barrier= 5% funct). Added to Spring Creek to database, and removed Rock Creek Phase 1&2, which will need to be added in 2015-18 assuming the barrier/culvert work is completed. EP: 0.1% improvement total.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS16	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	4.1: Riparian Condition: Riparian Vegetation	15.00%	45	45	45	50	47	60		EP LB 2015: 2 projects (Rock Cr Phase 1 and Phase 2). Phase (actually on Graves Cr - correct in database) 1: 6 mi, Phase 2 (Rock Cr): 5 mi. SH Streamnet miles in AU: 110.7. Plantings have not had many years to mature yet, so no measurable uplift yet. 7000 plants at first, then additional plantings through CRP program ongoing. No % function change at this time; reevaluate in 2018. For 2033, 20% proration. -MAH6.1.16

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	Grande Ronde River upper mainstem	UGS16	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	4.2: Riparian Condition: LWD Recruitment	10.00%	50	50	50	60	51	70		EP LB 2015: 2 projects (Rock Cr Phase 1 and Phase 2). Phase (actually on Graves Cr - correct in database) 1: 6 mi, Phase 2 (Rock Cr): 5 mi. SH Streamnet miles in AU: 110.7. Plantings have not had many years to mature yet, so no measurable uplift yet. 7000 plants at first, then additional plantings through CRP program ongoing. No % function change at this time; reevaluate in 2018. For 2033, 10% proration. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS16	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	50	51	52.7	60	51	70		Per EP LB 2015: 2 projects (Rock Cr Phase 1 and Phase 2): Phase 1 installed: 128 wood complexes; 1480 pieces (750 large pcs, rest was slash/racking). 25 riffle andn wood complexes installed, channel aggraded and reconnected to floodplain. Also reactivating 1 mile of pre-1937 channel (now at 90% function). Ph 1 wood with riffles: 60% function. Ph 1 LWD: 25% function. Phase 2 (Rock): 167 complexes, each with 5 key members/root wads = 1650 large pieces total (25% current functional value). 1.09 to 1.3 pre-project sinuosity.Total calc uplift: 3.7%. This AU is particularly variable in terms of SH habitat differences btwn creeks. Beaver is closer to PFC than Rock Cr.; more potential for restoration there? Rock Cr. still has much work to be done, as do Whiskey and Jordan. But also consider process & functions of Graves re: DS contributions too. And note Graves historic potential re: previous and potential if flows were restored. EP consensus: Use 2.7% uplift.

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	Grande Ronde River upper mainstem	UGS16	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%	45	45	48.4	70	50	70	CHANGED HIGH BOOKENDS AT 2012 WORKSHOP TO REFLECT NEW OPPORTUNITIES	Per EP LB 2015: Same projects as LF6.1. 58% (Graves: 3 miles only treated with wood) 76% (Rock: 5 miles only treated with wood) post-project LWD loading percentages, based on 27 pcs/100m Minnam reference. Total functional uplift: 3.4%.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS16	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	40	40	41	55	44	70		Per EP LB 2015: LF 6.1 (same projects). Included conservation easements, exclusion fencing, some on connected, but non-fish-bearing tribs. Total miles treated: 11 mi. EP considered time elapsed since fenced re: current functional value. Literature shows 2-20 year response time for fine sediment reduction projects. Current uplift: 1%. For 2033, increased to 20% proration for maturing project resulting in a 3% uplift. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS16	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	8.1: Water Quality: Temperature	15.00%	45	45	45	46	45.1	50		Per EP LB 2015: No functional change from exclusion fencing yet, as per LF 7.2. Also evaluated effect from 3.5 cfs seasonal Beaver water releases from dam. See UGC3 discussion, but SH range further US. Benefit of mostly local, near release point (not measureable all the way down to MS Grande Gronde). Not much instream data from DS, but little water temp difference seen from background. Heatsource model shows still within SH optimal rearing conditions, regardless of water additions. EP: No % change.

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS16	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	9.2: Water Quantity: Decreased Water Quantity	10.00%	70	70	70	72	70	75		Per EP LB 2015: See UGC3 discussion and UGS16 LH 8.1, but SH range further US. Evaluated effect from 3.5 cfs seasonal Beaver water releases from dam. Given season and life history changes during releases, and durration of flow addition, no measurable functional changes (just enough to move fish around for a few weeks). Would expect more benefit to spreading the same flow addition over a longer period. No change to % function.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS17	Upper Grande Ronde River Mainstem, Meadow Creek to Limber Jim Creek	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	95	95	95	100	95	100	CTUIR weir installed Mar 1 not much of a factor for steelhead	2015 EP LB: No actions. No change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS17	Upper Grande Ronde River Mainstem, Meadow Creek to Limber Jim Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%	65	65	65.1	70	66.8	80		2012 Estimate based only on Starkey Mdws project. / Per EP LB 2015: 2 projects: UGR Fence Installation 2012 and Warm Springs Fence. 17.8 SH miles in Streamnet. See EP's table with mileage and functional percentage prorations. See UGC5 re pod fencing. Note: Warm Springs 2014 was included as part of Pod project. Spring development, fencing, 0.5 stream mile (1 mile of fence) of cattle exclusion. No functional benefit yet, but expected in future. A 0.1% uplift for steelhead. For 2033, 20% proration yields a 1.7% uplift. - MAH6.1.16

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	Grande Ronde River upper mainstem	UGS17	Upper Grande Ronde River Mainstem, Meadow Creek to Limber Jim Creek	4.2: Riparian Condition: LWD Recruitment	10.00%	65	65	65	65	65.8	70		2012 Estimate considers Starkey Project for 2033 improvement./ Per EP LB 2015: 2 projects: UGR Fence Installation 2012 and Warm Springs Fence. 17.8 SH miles in Streamnet. See EP's table with mileage and functional percentage prorations. See UGC5 re pod fencing. Note: In PISCES: Warm Springs 2014 was included as part of Pod project. Spring development, fencing, 0.5 stream mile (1 mile of fence) of cattle exclusion. No functional benefit yet, but expected in future. No % change. For 2033, 10% proration results in 0.8% estimate uplift. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS17	Upper Grande Ronde River Mainstem, Meadow Creek to Limber Jim Creek	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	70	70	70.3	75	72	80		Per 2015 EP LB: UGR Pod project:small diameter slash racking wood additions only in this period. LWD was pre- 2012. See also CHK discussion (UGC5): small effect (1% functional change for treated area). Add this project in database to this LF. See EP's table of mileage and functional percentages. Adjusted project length to fit AU boundaries. Other project: Warm Springs Fence: Remove project from this LF. Different denominator for SH, due to distribution difference: 17.8mi from Streamnet. Total uplift = 0.3%.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS17	Upper Grande Ronde River Mainstem, Meadow Creek to Limber Jim Creek	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	65	65	65	70	65	80		Per 2015 EP LB: Pod fencing only, not full riparian fencing. Minimal benefit yet from Warm Springs fencing yet either. No change in %.

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS17	Upper Grande Ronde River Mainstem, Meadow Creek to Limber Jim Creek	8.1: Water Quality: Temperature	25.00%	50	50	50	52	50.3	55		Per EP LB 2015: See LF 4.1 action, and UGS 5 rationale: Pod fencing only, not full riparian fencing. Note: In PISCES: Warm Springs 2014 was included as part of Pod project. Spring development, fencing, 0.5 stream mile (1 mile of fence) of cattle exclusion. This AU is US of Beaver Cr, so remove that project from this AU sin database. No change in %.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS17	Upper Grande Ronde River Mainstem, Meadow Creek to Limber Jim Creek	9.2: Water Quantity: Decreased Water Quantity	15.00%	70	70	70	75	70.3	75		2012 NOTE TO AA'S: AQUIFER STORAGE PROJECT NOT INCLUDED IN ESTIMATE FOR UGC5 SO NO BENEFITS ESTIMATED FOR CHINOOK. HOWEVER, BENEFITS WERE ESTIMATED FOR STEELHEAD. IS THIS CORRECT? Note: benefits for chinook and steelhead are TBD- jms 7-13-12 / Per 2015 EP LB: No actions, no change. For 2033, 5% proration, same as UGC5 = 0.3% uplift. - MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS18	Upper Grande Ronde River Mainstem, Limber Jim Creek to Clear Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%	50	50	50	55	50	60		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS18	Upper Grande Ronde River Mainstem, Limber Jim Creek to Clear Creek	4.2: Riparian Condition: LWD Recruitment	10.00%	60	60	60	75	60	80	Per Paul B. - significant LWD recruitment opportunities.	EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS18	Upper Grande Ronde River Mainstem, Limber Jim Creek to Clear Creek	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	60	60	60	65	60	70		EP LB 2015: No actions, no change.

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	Grande Ronde River upper mainstem	UGS18	Upper Grande Ronde River Mainstem, Limber Jim Creek to Clear Creek	7.2: Sediment Conditions: Increased Sediment Quantity	30.00%	55	55	55	65	55	70	Fine sediments primarily from road system. No USFS grazing allotments in UGS18. Increase to 2033 High Bookend reflects potential from recently approved USFS Travel Management Plan.	EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS18	Upper Grande Ronde River Mainstem, Limber Jim Creek to Clear Creek	8.1: Water Quality: Temperature	30.00%	75	75	75	80	75	85		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS19	Upper Grande Ronde River Mainstem and Tributaries, Clear Creek to Headwaters	4.1: Riparian Condition: Riparian Vegetation	30.00%	75	75	75	85	80.6	95		Per EP LB 2015: See UGC7 CHK actions (pods and slash). But change mileage to 3 mi. See EP's table. Denominator mileage from Streamnet: 5.4 mi. No % change yet. 2033 update: As with UGC7, riparian vegetation growth function proration based on mining tailing soils was 10%, resulting in 5.6% uplift. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS19	Upper Grande Ronde River Mainstem and Tributaries, Clear Creek to Headwaters	4.2: Riparian Condition: LWD Recruitment	30.00%	75	75	75	85	77.8	95		Per EP LB 2015: See UGC7 CHK actions (pods and slash). But change mileage to 3 mi. See EP's table. Denominator mileage from Streamnet: 5.4 mi. No % change yet. 2033 update: As with UGC7, 2.8% uplift based on 5% prorating of the Upper Grande Ronde Small Wood and Pods project. -MAH6.1.16

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	Grande Ronde River upper mainstem	UGS19	Upper Grande Ronde River Mainstem and Tributaries, Clear Creek to Headwaters	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	85	85	85.6	90	85	95		Per EP LB 2015: Added pods and slash project to LF 6.2. See EP's table calcs = 0.6% uplift.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS19	Upper Grande Ronde River Mainstem and Tributaries, Clear Creek to Headwaters	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	60	60	60	80	65.6	90		Per 2015 EP LB: See UGC7 CHK actions (pods and slash). But change mileage to 3 mi. See EP's table. Denominator mileage from Streamnet: 5.4 mi. No % change yet, as per CHK. 2033 update: As with UGC7, 5.6% uplift based on 10% prorating of the Upper Grande Ronde Small Wood and Pods project. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS20	Limber Jim Creek and Tributaries	4.1: Riparian Condition: Riparian Vegetation	20.00%	75	75	75	85	80	90		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS20	Limber Jim Creek and Tributaries	4.2: Riparian Condition: LWD Recruitment	20.00%	75	75	75	80	80	85		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS20	Limber Jim Creek and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%	75	75	75	80	85	85		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS20	Limber Jim Creek and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	75	75	75	85	78	90		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS20	Limber Jim Creek and Tributaries	9.2: Water Quantity: Decreased Water Quantity	30.00%	70	70	70	75	71	85		EP LB 2015: No actions, no change.

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	Grande Ronde River upper mainstem	UGS21	Fly Creek and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	95	95	95	100	98	100	Complete barrier on 5160 road	EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS21	Fly Creek and Tributaries	4.1: Riparian Condition: Riparian Vegetation	20.00%	65	65	65	70	65	75		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS21	Fly Creek and Tributaries	4.2: Riparian Condition: LWD Recruitment	15.00%	65	65	65	65	65	70		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS21	Fly Creek and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	75	75	75	80	75	85		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS21	Fly Creek and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	40	40	40	55	42	70		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS21	Fly Creek and Tributaries	8.1: Water Quality: Temperature	25.00%	45	45	45	46	45	50		EP LB 2015: No actions, no change.

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	Grande Ronde River upper mainstem	UGS22	Sheep Creek and Tributaries	4.1: Riparian Condition: Riparian Vegetation	10.00%	50	50	50	60	51.6	80		NOTE TO AA'S: CHICKEN CR. NOT CHINOOK HABITAT SO NO ESTIMATE WAS MADE FOR CHINOOK TO COPY TO STEELHEAD - kpfisher, 7/10/12. Per 2015 EP LB: See EP's table with calcs. Added Chicken Cr. Culvert Replacement (USFS). More relevant to LF 1.1, but 1.1 is not an LF for this AU. [Revisit this in the next LookFWD, because there are many culverts in this area that need work]. Was a partial velocity barrier. Note: Wider watershed restoration actions and long-term veg projects will have many benefits that may not show up in EP calculations yet. 0% uplift. 2033 update: Same as UGC8, but different denominator. Estimated 1.6% uplift by 2033. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS22	Sheep Creek and Tributaries	4.2: Riparian Condition: LWD Recruitment	10.00%	60	60	60	75	60.8	80	Per Paul B. - significant LWD recruitment opportunities.	PER EP LB 2015: Sheep Creek LWD and Planting Project were added to this LF and AU (3 miles treated in 2014/2015, was "pretty bare to start with"). Plantings are young, so no credit in this time period yet. No functional uplift yet. 2033 update: Same as UGC8, but different denominator. Estimated 0.8% uplift by 2033. -MAH6.1.16

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	Grande Ronde River upper mainstem	UGS22	Sheep Creek and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	50	50	52.4	60	60	80		2012 Estimate based on Sheep Ck project only. Per 2015 EP LB: Sheep Creek LWD and Planting Project were added to this LF and AUwood projects: Sheep Cr. (2.5 mi, 27 structures, avg of 7 pieces 192 pieces from completion report = 68 pc per mile=5pc/100m) and Chicken Cr. (2 mi, 13 struct, avg. 9 pc LWD each and 15 small, 117 pcs total= 4pc/100m) treated. Note that project length does not provide treatment intensity. Similar to USFS Meadow Cr. project, which showed pools scoured within 1 year. Sheep and Chicken come off of north-facing slopes. HabRate target for summer parr rearing: 20 pc/100m. This reference condition is similar to 20.17 pc/100m counted in Chinook Domain in Minam (inc. Little Minam). See EP's table, functional % of each project prorated as compared to target (25% [5/20] and 20% [4pc/100m = 20%] of PFC). Using only Little Minam (size is more appropriate for comparison) number of 27 pc/ 100m= 19% and 15%. 2.4% uplift based on STL miles in streamnet.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS22	Sheep Creek and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	30.00%	30	30	30	50	31.4	80	Significant private land grazing.	Not enough known about USFS Sheep Cr rd decommissioning project for estimate to be made at 2012 EP workshop. / EP LB 2015: EP: These projects did not benefit this LF within this period. CHaMP surveys showed no reduction in sedimentation here. No USFS road decommisionings in period. No change in %. 2033 update: Same as UGC8, but different denominator. Estimated 1.4% uplift from a 10% proration by 2033. -MAH6.1.16
Snake River Steelhead	Grande Ronde River upper mainstem	UGS22	Sheep Creek and Tributaries	8.1: Water Quality: Temperature	30.00%	70	70	70	70	70	75		Per EP LB 2015: No temperature benefit from Chicken and Sheep projects yet. No % change.

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	Grande Ronde River upper mainstem	UGS23	Clear Creek and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	0.00%			0					Passage improvement projects identified but Passage LF given 0% weight. If barriers exist, consider reweighting this LF at next EP workshop.EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS23	Clear Creek and Tributaries	4.1: Riparian Condition: Riparian Vegetation	30.00%	75	75	75	85	75	95		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS23	Clear Creek and Tributaries	4.2: Riparian Condition: LWD Recruitment	30.00%	60	60	60	60	60	70		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS23	Clear Creek and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	70	70	70	75	70	85		EP LB 2015: No actions, no change.
Snake River Steelhead	Grande Ronde River upper mainstem	UGS23	Clear Creek and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	60	60	60	80	60.1	90		EP LB 2015: No actions, no change.