

These are the Biological Notes from the Upper Grande Ronde Expert Panel Look Forward session, conducted in LaGrande, OR from 3/8/2016 to 3/10/2016. Notes are specific to Steelhead. Raw notes were collected during Panel discussions, and later checked for typographical errors and for consistency with supporting tables. This spreadsheet also contains revisions look back uplifts and rationale in response to Panel review comments and revisions during the look forward meeting.

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

Look Back Calculation Table:
UGRCC_EP_2012-15_LookBack_CalcSpreadsheet_3-29-16.xlsx

Look Forward Calculation Table:
UGRCC_EP_2016-18_LookForward_CalcSpreadsheet_3-29-16.xlsx

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

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

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 LF Weight	Adjusted 2016 LF Weight	Adjusted 2016 LF Weight Rationale	2012 Low Bookend	Updated Low Bookend (adjusted 3/2016)	Updated Low Bookend Rationale (adjusted 3/2016)	Updated 2018 Estimate (2012-2015 Look Back)	Look Back % Change	Estimate Comments / Rationale	Updated 2018 Look Back Estimate (adjusted 3/2016)	Look Back 2018 % Change (adjusted 3/2016)	Look Back 2012-2018 Estimate Comments / Rationale (adjusted / 2016)	Updated 2033 Look Back Estimate (adjusted 3/2016)	Look Back 2033 % Change (adjusted 3 /2016)	Look Back 2033 Estimate Comments / Rationale (adjusted 3/2016)	2016 Low Bookend (Incorporating look back uplift and updated low bookends adjusted during Look Forward Process)	LookForward Updated 2018 Estimate	LookForward Updated 2018 Estimate % change	LookForward Updated 2018 Estimate Rationale	LookForward Updated 2033 Estimate	LookForward Updated 2033 Estimate % Change	LookForward Updated 2033 Estimate Rationale	2013-2018	High 2018 Bookend	Original 2013 Estimate	High 2013 Bookend	2012 LF Weight and Bookends Comments	2012 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	0	No actions.	80	0	No actions.	80	80	80	80		
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	0	No actions.	90	0	No actions.	90	90	90	90		
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	0	No actions.	80	0	No actions.	80	80	80	80		
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	0	No actions.	50	0	No actions.	50	50	50	50		
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			50	50	0	No actions.	50	0	No actions.	50	51	50	51		
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			50	50	0	No actions.	50	0	No actions.	50	51	50	51		
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			40	40	0	No actions.	40	0	No actions.	40.1	50	41	60		
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			40	40	0	No actions.	40	0	No actions.	41	45	41	50		
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			30	30	0	No actions.	30	0	No actions.	30.1	32	30.1	35		
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			30	30	0	No actions.	30	0	No actions.	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.
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			50	50	0	No actions.	50	0	No actions.	50	51	50	51		
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			30	30	0	No actions.	30	0	No actions.	30	31	30	32		Estimate based on not knowing if water is protected; improvements would be estimated if water is protected.
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		0 1 barrier project in database (4 miles of habitat are now accessible). Riverside Park Spruce Bridge? Voeltz push-up dam (side channel)? Did not open 4 miles of habitat. EP: No action. No change.	90			90			90	90	0	No actions.	90	0	No actions.	91	95	91	95	Riverside Park/Spruce St Bridge, in/through tunnel @ Perry + barriers in Conley Cr + Wright Slough	Estimate considers benefits from Voeltz project	
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		0 EP: No action. No change.	45			45			45	45	0	No actions.	45	0	No actions.	46	55	50	60		Estimate based on about 4.5 MI riparian planting.	
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		0 EP: No action. No change.	45			45			45	45	0	No actions.	45	0	No actions.	45	45	46	60		2033 estimate based on projects listed in LF 4.1	
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		0 EP: No action. No change.	30			30			30	30	0	No actions.	30	0	No actions.	35	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 UG218, SO THE 19 MILES IN AU SHOULD NOT APPLY??? kplisher, 7/10/12 ADD VOELZ, GOODERHAM, NILSSON/RUOD FROM UG53.18 Estimate considers Greenway, Nelson, & Gooderham projects. Abt 4 miles treatment of 19 miles in AU (NOTE COPIED FROM UG218 LF 6.1)	
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		0 EP: No action. No change.	30			30			30	30	0	No actions.	30	0	No actions.	35	35	35	40			
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			30.9		0.9 Voeltz push-up dam was constructed every year. Removing this provides sediment benefit. Should be 0.2 miles out of 22.4 miles, which is a 0.9% uplift.	30.9		No adjustment to 2018 or 2033.	30.9			30.9	30.9	0	No actions.	30.9	0	No actions.	32	32	35	35			
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		0 EP: No action. No change.	30			30			30	30	0	No actions.	30	0	No actions.	30	31	30	32			
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		0 EP: No action. No change.	80			80			80	80	0	No actions.	80	0	No actions.	80	90	80	90			
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		0 EP: No action. No change.	30			30			30	30	0	No actions.	30	0	No actions.	40	40	40	40		Assume Voeltz provides 0.5 cfs w/ 1863 water right and 3 cfs from FWT project.	
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%	14.00%	Limiting Factor weight adjusted to accommodate changes to other limiting factor weights.	50			50			50				50			50	50	0	Bird Track Springs: See UG2 rationale and UG54 calculations table.	51.6	1.6	Bird Track Springs: See UG2 rationale and UG54 calculations table.	52	60	55	70		NOTE TO AA'S: SHOULD THIS HAVE THE SAME ESTIMATE AS UG2 OR DO PROJECTS LISTED ONLY BENEFIT CHINOOK? NO IMPROVEMENTS ESTIMATED IN 2012 EP WORKSHOP. kplisher - 7/10/12 Workshop notes indicate that EP called for steelhead Hf changes to be same as those for chinook. jms 7/13/12
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%	10.00%	Limiting Factor weight adjusted to accommodate changes to other limiting factor weights.	50			50			50				50			50	50	0	Bird Track Springs: See UG2 rationale and UG54 calculations table.	50.8	0.8	Bird Track Springs: See UG2 rationale and UG54 calculations table.	50.2	60	50.3	70		
Snake River Steelhead	Grande Ronde River upper mainstem	UGS4	Upper Grande Ronde River Mainstem - Upstream End of Grande Ronde Valley to Meadow Creek	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10.00%	10.00%	Added limiting factor on 3/9/2016	50			50			50				50			58.1	8.1	0	Bird Track Springs: See Chinook UG2 rationale.	59.7	9.7	Bird Track Springs: See Chinook UG2 rationale.						

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Snake River Steelhead	Grande Ronde River upper mainstem	UG54	Upper Grande Ronde River Mainstem - Upstream End of Floodplain Grande Ronde Valley to Meadow Creek	5.2: Peripheral and Transitional Habitats: Upstream End of Floodplain Grande Ronde Valley to Meadow Creek		10.00%	Added limiting factor on 3/9/2016		50	Added limiting factor on 3/9/2016								0				50	58.1	8.1	Bird Track Springs: See Chinook UGC2 rationale.	59.7	9.7	Bird Track Springs: See Chinook UGC2 rationale.									
Snake River Steelhead	Grande Ronde River upper mainstem	UG54	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%		Weight Unchanged		50						50			50				50	58.1	8.1	Bird Track Springs: See UGC2 rationale and UG54 calculations table.	59.7	9.7	Bird Track Springs: See UGC2 rationale and UG54 calculations table.	53	60	53	70		Estimate based on total of abt. 6 miles improved channel, floodplain connectivity, morphology			
Snake River Steelhead	Grande Ronde River upper mainstem	UG54	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%		Weight Unchanged		50						50			50				50	58.1	8.1	Bird Track Springs: See UGC2 rationale and UG54 calculations table.	59.7	9.7	Bird Track Springs: See UGC2 rationale and UG54 calculations table.	56	60	56	70		Estimate considers about 20 miles total improved complexity (does not include USFS UGR Project)			
Snake River Steelhead	Grande Ronde River upper mainstem	UG54	Upper Grande Ronde River Mainstem - Upstream End of Grande Ronde Valley to Meadow Creek	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	5.00%	Limiting Factor weight adjusted to accommodate changes to other limiting factor weights.		70						70			70				70	75.4	5.4	Bird Track Springs: See UGC2 rationale and UG54 calculations table.	76.5	6.5	Bird Track Springs: See UGC2 rationale and UG54 calculations table.	72	75	75	80		Rock Ck is main sediment producer.			
Snake River Steelhead	Grande Ronde River upper mainstem	UG54	Upper Grande Ronde River Mainstem - Upstream End of Grande Ronde Valley to Meadow Creek	8.1: Water Quality: Temperature	20.00%	25.00%	Limiting Factor weight adjusted to accommodate changes to other limiting factor weights.		40						40			40				40	40	0	Bird Track Springs: See UGC2 rationale and UG54 calculations table.	41.1	1.1	Bird Track Springs: See UGC2 rationale and UG54 calculations table.	40.1	41	41	45		Estimate considers improvements from projects listed under other UGC2 LFs.			
Snake River Steelhead	Grande Ronde River upper mainstem	UG54	Upper Grande Ronde River Mainstem - Upstream End of Grande Ronde Valley to Meadow Creek	9.2: Water Quantity: Decreased Water Quantity	20.00%	1.00%	Limiting Factor weight adjusted to accommodate changes to other limiting factor weights.		50						50			50				50	50	0	No action.	50	0	No action.	51	51	51	52		Conservative estimate based on 3 cfs permanent acquisition.			
Snake River Steelhead	Grande Ronde River upper mainstem	UG55	Lookingglass Creek and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	20.00%				85						85			85				85	85	0	No actions.	85	0	No actions.	85	90	85	90	50	passes all steelhead, lookingglass weir stress w/handling			
Snake River Steelhead	Grande Ronde River upper mainstem	UG55	Lookingglass Creek and Tributaries	4.1: Riparian Condition: Riparian Vegetation	20.00%				80						80			80				80	80	0	Land acquisition. No benefit expected to 2018. Actions here will be beyond 2018 period.	80	0	Land acquisition. No benefit expected to 2018. Actions here will be beyond 2018 period.	80	85	80	90					
Snake River Steelhead	Grande Ronde River upper mainstem	UG55	Lookingglass Creek and Tributaries	4.2: Riparian Condition: LWD Recruitment	20.00%				80						80			80				80	80	0	Land acquisition. No benefit expected to 2018. Actions here will be beyond 2018 period.	80	0	Land acquisition. No benefit expected to 2018. Actions here will be beyond 2018 period.	80	80	80	85					
Snake River Steelhead	Grande Ronde River upper mainstem	UG55	Lookingglass Creek and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	40.00%				75						75			75				75	75	0	Land acquisition. No benefit expected to 2018. Actions here will be beyond 2018 period.	75	0	Land acquisition. No benefit expected to 2018. Actions here will be beyond 2018 period.	75	80	75	85					
Snake River Steelhead	Grande Ronde River upper mainstem	UG56	Phillips, Clark, Cabin and Gordon Creeks, Duncan and Rysdam Canyons, and tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	10.00%				70						70			70				70	70			70			72	80	72	80	80	Several diversions on Cabin, etc.			
Snake River Steelhead	Grande Ronde River upper mainstem	UG56	Phillips, Clark, Cabin and Gordon Creeks, Duncan and Rysdam Canyons, and tributaries	4.1: Riparian Condition: Riparian Vegetation	10.00%				50						50			50				50	50			50			50.1	55	51	65					
Snake River Steelhead	Grande Ronde River upper mainstem	UG56	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			50			50	50	50	55					
Snake River Steelhead	Grande Ronde River upper mainstem	UG56	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				50	50			50			50	55	50	65					
Snake River Steelhead	Grande Ronde River upper mainstem	UG56	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				50	50			50			50	55	50	65					
Snake River Steelhead	Grande Ronde River upper mainstem	UG56	Phillips, Clark, Cabin and Gordon Creeks, Duncan and Rysdam Canyons, and tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%				40						40			40				40	40			40			40.1	45	40.2	50					
Snake River Steelhead	Grande Ronde River upper mainstem	UG56	Phillips, Clark, Cabin and Gordon Creeks, Duncan and Rysdam Canyons, and tributaries	8.1: Water Quality: Temperature	15.00%				50						50			50				50	50			50			50	55	50	65					
Snake River Steelhead	Grande Ronde River upper mainstem	UG56	Phillips, Clark, Cabin and Gordon Creeks, Duncan and Rysdam Canyons, and tributaries	9.2: Water Quantity: Decreased Water Quantity	15.00%				40						40			40				40	40			40			40	41	40	40	40	Flow big issue on Phillips Cr			
Snake River Steelhead	Grande Ronde River upper mainstem	UG57	Indian Creek and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%				75						75			75				75	75	0.00%	No actions.	75	0.00%	No actions.	78	100	78	100					
Snake River Steelhead	Grande Ronde River upper mainstem	UG57	Indian Creek and Tributaries	4.1: Riparian Condition: Riparian Vegetation	20.00%				65						65		0 NOTE: Joe Platts projects were determined to have an Action Agency nexus (not in Chinook range, so only applies to steelhead). EP revisited percentage of Properly Functioning Condition and revised to 0% for 2018. 20% of Properly Functioning Condition is expected in 2033, resulting in 0.1% uplift in 2033.	65.1		0.1 [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.)]		65	65	0.00%	No actions.	65	0.00%	No actions.	65.1	75	66	85		Estimate based on Little Indian Cr. Project; not enough project info at 2012 EP workshop to estimate improvements from USFS Riparian Mitnce & Thinning project.			
Snake River Steelhead	Grande Ronde River upper mainstem	UG57	Indian Creek and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%				65						65			65				65	65	0.00%	No actions.	65	0.00%	No actions.	66	75	67	85					
Snake River Steelhead	Grande Ronde River upper mainstem	UG57	Indian Creek and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%				55						55.7	0.7 [3-28-16: During revisions, noted missed uplift during December 2015 Look Back meeting. Panel calculated 0.7% uplift based on Little Indian Creek Project with prorating factor of 100%. Revised 2018 uplift of 0.7%]		55.7			55.7	55.7	0.00%	No actions.	55.7	0.00%	No actions.	55	65	55	75						
Snake River Steelhead	Grande Ronde River upper mainstem	UG57	Indian Creek and Tributaries	8.1: Water Quality: Temperature	25.00%				60						60			60				60	60	0.00%	No actions.	60	0.00%	No actions.	60	65	60	70					
Snake River Steelhead	Grande Ronde River upper mainstem	UG57	Indian Creek and Tributaries	9.2: Water Quantity: Decreased Water Quantity	15.00%				50						50			50				50	50	0.00%	No actions.	50	0.00%	No actions.	50	60	50	65					
Snake River Steelhead	Grande Ronde River upper mainstem	UG58	Willow Creek and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%				70						70.7		0.7 Culverts on several tributaries removed. Coon Creek [0.42 mile of new access from drop structure removal] (not in database? Need to add to Willow Creek entry). In database, there is the Laramie Creek Culvert Removal (2013), 1.4 miles). Keep Willow Creek (1.1 miles). Dry Creek Upper Obstruction was not removed. See EP's table of actions, which adds up to 2.4 miles 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 intrinsic potential doesn't always match field observations and that other barriers still exist on Willow Creek and tributaries. Many fish up Dry Creek. Denominator: 64.7 steelhead miles per Streamnet. Without prorate: 2.8% total uplift. With 25% prorate = 0.7% uplift.	70.7			70.7	70.7	0	No action.	70.7	70.7	0	No action.	70.7	0	No action.	75.1	90	75.1	90		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

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Snake River Steelhead	Grande Ronde River upper mainstem	UGS8	Willow Creek and Tributaries	4.1: Riparian Condition: Riparian Vegetation	10.00%			60			60	0	Willow Creek Coot Creek Project: No planning yet completed by action agencies. OAF property. Consider in Look Forward. No change in percentage.	60			60			60	60	0	Willow Creek OAF (2016): 157 acres; 5.52 miles of Willow, Dry, and Fir Creeks. Also Dry Creek 2018 Project would treat 0.21 miles for all limiting factors. Panel determined 1.3% uplift in 2033.	61.3	1.3	Prorated for 2033.	61	65	62	70		
Snake River Steelhead	Grande Ronde River upper mainstem	UGS8	Willow Creek and Tributaries	4.2: Riparian Condition: LWD Recruitment	10.00%			60			60	0	Willow Creek Coot Creek Project: No planning yet completed by action agencies. OAF property. Consider in Look Forward. No change in percentage.	60			60			60	60	0	See limiting factor 4.1.	60.7	0.7	Used half of limiting factor 4.1 proration.	60	60	60.1	65		
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			62.8	2.8	Side channel created: 1 mile of reactivated historical channel plus 4 miles of enhancement (wood additions). Aim of wood enhancement was for both complexity and bank stabilization: multiple benefit types from same action. Helped with depth ratio, sediment sorting, etc. See EP's table. 5 miles treated out of 64.7 miles, resulting in 7.7% uplift. Panel thought this total was too high, and so prorated (25% estimated function for time lag in large wood effects; 80% functional for side channel construction), resulting in 2.8% uplift. Low gradient system which forms some pools without 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 structure changes. This differs from previous estimate because of the additional large wood installations (originally anticipated only 1 mile of channel reactivated).	62.8			62.8	63	0.2	Dry Creek project.	63	0.2		61	65	61	70		Mckenzie Project would reactivate 1 mile historic channel			
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			62.8	2.8	Same project actions as for limiting factor 6.1. See EP's table. 73 structures were installed; 650-700 pieces. Lots of racking and roughness. 73 pools were created by this wood, resulting in 7.3 pieces per 100 meters. Compared to Minum 20 pieces per 100 meters reference? Still in "poor" range, but it is a big improvement. 37% improvement in wood load/function. Note that engineered structures and natural accumulation are different. Total uplift is 2.8%. This differs from previous panel's estimate; new estimate based on empirical wood loading data.	62.8			62.8	63.1	0.3	Dry Creek project: 96 key pieces, compared to Properly functioning Condition of 27 pieces per 100 meters, which is 24 pieces per 100 meters. Panel expects 0.3% uplift.	63.1	0.3	Same as 2018.	61	65	61	70		WEST LEVEE PROJECT NOT CONSIDERED IN THE WORKSHOPS/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			
Snake River Steelhead	Grande Ronde River upper mainstem	UGS8	Willow Creek and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%			50			52.9	2.9	Same project actions as for limiting factors 6.1 and LF 6.2 - side channel creation and wood addition. See EP's table. Project decreased sediment input and increased gravel sorting. Total of 9,000 linear feet of bank that was actively eroding was addressed. This (1 mile of channel reconstruction) took care of "50-90% of erosion problems in this reach, but vegetation still has to grow, so lengths in table are prorated accordingly. Large wood 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 assessment unit. Floodplain reconnection reduces erodible power too. Prorated to 50% and 34%. Denominator was 64.7 miles, resulting in 2.9% uplift. Note: This uplift number is higher than previous panel estimate, but it is more empirically based. May need to adjust bookends in next Look Forward.	52.9			52.9	52.9	0.03	Maturation of project: Already a very silty system, so beyond immediate effect of project, lots of sediment coming from upstream, so not much change expected to be seen beyond future vegetation growth effects (include in Look Forward). Area is considered a "sediment mask." 2033 uplift equals that of 2018.	53.6	0.7		51	55	52	60		WHY IS CHINOOK ESTIMATE 2% AND STEELHEAD ESTIMATE 1%? Mckenzie Project - eliminates 18000 lb of eroding streambank			
Snake River Steelhead	Grande Ronde River upper mainstem	UGS8	Willow Creek and Tributaries	8.1: Water Quality: Temperature	20.00%			40			40	0	EP: Too early for temperature benefits. No change.	40			40			40	40	0	2 projects listed in calculations table.	40.4	0.4	Prorated based on growth to 2033.	40	42	40.1	45		
Snake River Steelhead	Grande Ronde River upper mainstem	UGS8	Willow Creek and Tributaries	9.2: Water Quantity: Decreased Water Quantity	20.00%			45			45	0	EP: No actions in this assessment unit affect this limiting factor. No change in percentage function.	45			45			45	45	0	No flow actions.	45	0	No flow actions.	45	47	45	50		
		UGS13A	Five Points Creek and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%		Railroad ballast material is sloughing into channel in areas. Weight Unchanged	80			84.8	4.8	A new project, the Five Points Creek Barrier Removal, was implemented: removal of a 4-foot high concrete dam (Union Pacific Railroad legacy structure) in 2015, addition of large wood, and removal of an ATV trail in the future. Barrier was partial: steelhead were jumping it (large pool below it), but its removal also helped juvenile upstream and downstream passage. Steelhead use habitat all the way up to RM 12, plus 9 miles of tributaries, so a total of 21-22 miles were opened by dam removal. Total miles per Streamnet are 43.5 miles. Panel adjusted benefit to consider only juvenile passage benefits and prorated to 10% functional benefit. See EP's table for calculations. Total change determined to be 4.8% uplift. Note this project was not considered in the 2012 Look Forward Expert Panel. Project also installed large wood downstream.	84.8			84.8	84.8	0	As per UGCL1, but diversion removal project did benefit steelhead. It was not a full barrier and affected 22 miles of upstream habitat. STOP: already covered in Look Back. No actions in Look Forward. No percentage change predicted.	84.8	0	No actions. No percentage change predicted.	80	100	80	100					
		UGS13A	Five Points Creek and Tributaries	4.1: Riparian Condition: Riparian Vegetation	15.00%		Weight Unchanged	75			75	0	The 1.5-mile Dry Creek Fence Enclosure in 2015 is not mature enough to show functional change. No change in percentage.	75			75			75	75	0	Projects and rationale are identical to UGCL1A, but calculation table uses a different denominator for steelhead.	77.4	2.4	Projects and rationale are identical to UGCL1A, but calculation table uses a different denominator for steelhead.	75	75	75	80		
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	4.2: Riparian Condition: LWD Recruitment	10.00%	15.00%	Limiting Factor weight adjusted to accommodate changes to other limiting factor weights.	75			75	0	No actions completed by action agencies. No change in percentage.	75			75			75	75	0	Projects and rationale are identical to UGCL1A, but calculation table uses a different denominator for steelhead.	76.2	1.2	Projects and rationale are identical to UGCL1A, but calculation table uses a different denominator for steelhead.	75	75	75	80		
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions		5.00%	EP added this limiting factor on 3/9/2016.		50	EP added this limiting factor on 3/9/2016.		0		0			50			50	50	0	Projects and rationale are identical to UGCL1A, but calculation table uses a different denominator for steelhead.	50.8	0.8	Projects and rationale are identical to UGCL1A, but calculation table uses a different denominator for steelhead.						
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	5.2: Peripheral and Transitional Habitats: Floodplain Condition		5.00%	EP added this limiting factor on 3/9/2016.		50	EP added this limiting factor on 3/9/2016.		0		0			50			50	50	0	Projects and rationale are identical to UGCL1A, but calculation table uses a different denominator for steelhead.	50.8	0.8	Projects and rationale are identical to UGCL1A, but calculation table uses a different denominator for steelhead.						
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%		Weight Unchanged	70			70	0	Five Points Creek barrier removal project did not create pools. Thus there is no functional change yet, but benefit is expected for limiting factor 6.1 in the future.	70		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.	70.1	0.1		70	70	0	Projects and rationale are identical to UGCL1A, but calculation table uses a different denominator for steelhead.	71.6	1.6	Projects and rationale are identical to UGCL1A, but calculation table uses a different denominator for steelhead.	70	75	70	85		
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%	20.00%	Limiting Factor weight adjusted to accommodate changes to other limiting factor weights.	70			70.7	0.7	Five Points Creek barrier removal project included large wood installation below the dam. Approximately 15 pieces each at 7 sites, were installed along 0.5 mile of stream in 2015 (project is called "Five Points LWD Planting Phase 1/2" in Paces). Next summer structures are to be built upstream of the dam site. 105 pieces total over 0.5 mile is 13 pieces per 100 meters, which is 65% of the target reference of 20 pieces per 100 meters. This results in an uplift of 0.7%.	70.7			70.7	77.9	7.2	Projects and rationale are identical to UGCL1A, but calculation table uses a different denominator for steelhead.	77.9	7.2	Projects and rationale are identical to UGCL1A, but calculation table uses a different denominator for steelhead.	70	75	70	85					
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	5.00%	Limiting Factor weight adjusted to accommodate changes to other limiting factor weights.	70			70	0	No actions completed; therefore no change in percentage.	70			70			70	70	0	Projects and rationale are identical to UGCL1A, but calculation table uses a different denominator for steelhead.	71.2	1.2	Projects and rationale are identical to UGCL1A, but calculation table uses a different denominator for steelhead.	70	75	70	85		
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	8.1: Water Quality: Temperature	20.00%		Weight Unchanged	80			80	0	The 1.5-mile Dry Creek Fence Enclosure in 2015 is not mature enough to show functional change. No change in percentage.	80			80			80	80	0	Projects and rationale are identical to UGCL1A, but calculation table uses a different denominator for steelhead.	80.8	0.8	Projects and rationale are identical to UGCL1A, but calculation table uses a different denominator for steelhead.	80	80	80	85		
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13A	Five Points Creek and Tributaries	9.2: Water Quantity: Decreased Water Quantity	10.00%	5.00%	Limiting Factor weight adjusted to accommodate changes to other limiting factor weights.	80			80	0	No actions; therefore no change.	80			80			80	80	0	No actions.	80	0	No actions.	80	80	80	85		
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owley Creeks	1.1: Habitat Quantity: Anthropogenic Barriers	2.00%			90			90	0	No actions. No change.	90			90			90	90	0	No actions.	90	0	No actions.	90	95	90	95	95	Riverside Park/Spruce St Bridge, trib through tunnel @ Perry barriers in Conley Cr + Wright Slough
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owley Creeks	4.1: Riparian Condition: Riparian Vegetation	10.00%			45			45	0	No actions. No change.	45			45			45	45	0	No actions.	45	0	No actions.	45	55	45	60		
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owley Creeks	4.2: Riparian Condition: LWD Recruitment	10.00%			45			45	0	No actions. No change.	45			45			45	45	0	No actions.	45	0	No actions.	45	45	45	60		
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owley Creeks	6.1: Channel Structure and Form: Bed and Channel Form	10.00%			30			30	0	No actions. No change.	30			30			30	30	0	No actions.	30	0	No actions.	30	35	30	40		
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owley Creeks	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%			30			30	0	No actions. No change.	30			30			30	30	0	No actions.	30	0	No actions.	30	35	30	40		
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owley Creeks	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%			30			30	0	No actions. No change.	30			30			30	30	0	No actions.	30	0	No actions.	30	32	30	35		
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owley Creeks	8.1: Water Quality: Temperature	28.00%			30			30	0	No actions. No change.	30			30			30	30	0	No actions.	30	0	No actions.	30	31	30	32		
Snake River Steelhead	Grande Ronde River upper mainstem	UGS13B	Conway/Owley Creeks	8.2: Water Quality: Oxygen	5.00%			80			80	0	No actions. No change.	80			80			80	80	0	No actions.	80	0	No actions.	80	90	80	90		

ESU	Population	Code	2012 Assessment Unit	2012 Standardized Limiting Factor	2012 LF Weight	Adjusted 2016 LF Weight	Adjusted 2018 LF Weight/Rationale	2012 Low Bookend	Updated Low Bookend (adjusted 3/2016)	Updated Low Rationale (adjusted 3/2016)	Updated 2018 Estimate (2012, 2015 Look Back)	Look Back % Change	Estimate Comments / Rationale	Updated 2018 Look Back Estimate (adjusted 3/2016)	Look Back 2018 % Change (adjusted 3/2016)	Look Back 2012-2018 Estimate Comments / Rationale (adjusted 3/2016)	Updated 2018 Look Back Estimate (adjusted 3/2016)	Look Back 2013 % Change (adjusted 3/2016)	Look Back 2013 Estimate Comments / Rationale (adjusted 3/2016)	2016 Low Bookend (Incorporating look back uplift and updated low bookends adjusted during Look Forward Process)	LookForward Updated 2018 Estimate	LookForward Updated 2018 Estimate % change	LookForward Updated 2018 Estimate Rationale	LookForward Updated 2018 Estimate	LookForward Updated 2018 Estimate % change	LookForward Updated 2018 Estimate Rationale	2013-2018	High 2018 Bookend	Original 2013 Estimate	High 2013 Bookend	2012 LF Weight and Bookends Comments	2012 Estimates Comments							
Snake River Steelhead	Grande Ronde River upper mainstem	UG5138	Conway/Owley Creeks	5.2: Water Quantity: Decreased Water Quantity	20.00%			30				30	0	No actions. No change.				30				30	30	0	No actions.		30	31	30	32									
Snake River Steelhead	Grande Ronde River upper mainstem	UG514	Meadow Creek and Tributaries (Except Dark Canyon and McCoy Creeks)	4.1: Riparian Condition: Riparian Vegetation	10.00%			60				60	0	Two projects in database: Meadow Creek Large Wood and Planting (7.25 miles treated) and Battle Campbell Creek (3 miles treated). Steelhead habitat per Streamnet is 63.7 miles in the assessment unit, and Panel confirmed this. Note that project mapping shows a few projects (passage improvements) upstream of Streamnet steelhead distribution lines. Steelhead spans high in the system. They are limited by water quantity in some of these upper channels in some years. Panel determined no functional percentage change yet, due to the short time elapsed since planting.							60.2	3.2	For 2013, used 20% proration, resulting in 3.2% uplift in 2013.		60	60	0	Conservation acquisitions (cattle will be removed and fencing to be done in Meadow and Dark Canyon). Acquired 2015.		60.2	0.2	Prorated to 2013, resulting in 0.2% uplift.	60	70	60	60	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 & Mitze Project to estimate improvements at 2012 EP workshop
Snake River Steelhead	Grande Ronde River upper mainstem	UG514	Meadow Creek and Tributaries (Except Dark Canyon and McCoy Creeks)	4.2: Riparian Condition: LWD Recruitment	10.00%			60				60	0	Two projects in database: Meadow Creek Large Wood and Planting (7.25 miles treated) and Battle Campbell Creek (3 miles treated). Steelhead habitat per Streamnet is 63.7 miles in the assessment unit, and Panel confirmed this. Note that project mapping shows a few projects (passage improvements) upstream of Streamnet steelhead distribution lines. Steelhead spans high in the system. They are limited by water quantity in some of these upper channels in some years. Panel determined no functional percentage change yet, due to the short time elapsed since planting.							61.6	1.6	For 2013, used 10% proration, resulting in 1.6% uplift in 2013.		60	60	0	See limiting factor 4.1.		60.1	0.1	Used half of limiting factor 4.1 proration.	60	60	60	70			
Snake River Steelhead	Grande Ronde River upper mainstem	UG514	Meadow Creek and Tributaries (Except Dark Canyon and McCoy Creeks)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%			65				68.3	3.3	Database has two projects. The first is Meadow Creek Large Wood and Planting in Starkey Experimental Forest (7.25 miles treated, over 400 pieces, 29 structures, 14-64 pieces, 82 boulders, 15.175 pieces = 239 pieces of large wood, 560 pieces total for both phases; project has not yet seen major flow, but some changes are seen). The Battle/Campbell Creek project resulted in 1.75 miles of 8R grade removed in 2012. (Floodplain benefits of various width, less constrained now in terms of habitat forming processes), wood to mobilize embedded sediments, 10 ChAMP sites showed large sediment movements, scouring and deposition, unembedding of gravels). The Meadow Creek project added 4.8 pieces per 100 meters (which is 25% of the reference). See EP's table of project metrics and prorations for functional condition and channel changes seen since construction (prorated as 25% function of 7.25 miles treated). Wood spacing varies. Panel only counted portion of project within steelhead use, so reduced length to 2.75 miles. Will take time to achieve channel structural benefits. Thus, prorate current function to 10%. Denominator is 63.7 steelhead bearing miles, resulting in 3.3% uplift.							68.3	68.3	68.3	68.3	0	No actions.		68.3	0	No actions.		65	80	65	85				
Snake River Steelhead	Grande Ronde River upper mainstem	UG514	Meadow Creek and Tributaries (Except Dark Canyon and McCoy Creeks)	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%			65				69	4	Two applicable projects - Meadow Creek Large Wood and Battle/Campbell Creek Projects. The Meadow Creek project added 4.8 pieces per 100 meters (which is 25% of the reference). The Battle/Campbell Creek project added 600-700 pieces of large wood in 6 miles (estimated 323 pieces in steelhead habitat, which is 7.3 pieces per 100 meters, compared to the 20 pieces per 100 m, which is 36.5%). Ideal comparison is a Little Missouri 2.7 pieces per 100 meters reference condition. See EP's table of project metrics and prorations for functional condition and channel changes seen since construction. Total change in assessment unit is 4% uplift. Also see rationale for limiting factor 6.1.							69	69	69	69	0	No actions.		69	0	No actions.		70	80	70	85				
Snake River Steelhead	Grande Ronde River upper mainstem	UG514	Meadow Creek and Tributaries (Except Dark Canyon and McCoy Creeks)	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%			60				64.7	4.7	Two applicable projects - Meadow Creek Large Wood and Battle/Campbell Creek Projects. Should include entire 6 miles of Battle Creek project. The panel also considered floodplain connections benefits from Meadow Creek (7.25 miles) project. See EP's table for proration calculations. Meadow Creek saw an 8% decrease in pool habitat lines in 2011 to 2014 according to Champ data, which relates to significant increases in by siltation. Panel determined 25% current functional status. Battle Creek actions are above steelhead distribution, but they have downstream benefits related to sediment inputs (culvert removals, stabilizations, 2 pond/dike removals, ~20% partial cattle exclusions). EP determined 20% current function for Battle Creek project. Total uplift determined to be 4.7%.							66.8	6.8	To 2013, added percent function for maturity of projects, resulting in 6.8% uplift.		64.7	64.7	0	Same actions as for limiting factor 4.1.		64.8	0.1	Prorated for 2013.	60	70	60	80		Not enough project info to estimate improvements at 2012 EP Workshop	
Snake River Steelhead	Grande Ronde River upper mainstem	UG514	Meadow Creek and Tributaries (Except Dark Canyon and McCoy Creeks)	8.1: Water Quality: Temperature	25.00%			40				40	0	EP: No actions. No change.				40				40	40	0	Same actions as for limiting factor 4.1.		40.1	0.1	Prorated for 2013.	40	45	40	50						
Snake River Steelhead	Grande Ronde River upper mainstem	UG514	Meadow Creek and Tributaries (Except Dark Canyon and McCoy Creeks)	9.2: Water Quantity: Decreased Water Quantity	5.00%			60				60	0	EP: No actions. No change.				60				60	60	0	No actions.		60	65	60	75									
Snake River Steelhead	Grande Ronde River upper mainstem	UG515	McCoy Creek, Dark Canyon, and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	1.00%			98				100	2	Dark Canyon Culvert Replacement Project benefited steelhead, but was above Chinook distribution. The barrier was partial; it was not a barrier for adults, only for juveniles. It was a seasonal barrier. No McCoy culvert issues known to Panel. Per Streamnet, there are 39 steelhead miles in this assessment unit. No other culverts remain in the canyon. Panel increased percentage by 2% to 100% for this steelhead assessment unit.							100	100	100	100	0	No actions.		100	0	No actions.		100	100	100	100		one culvert high in system: 1.1 mi access for steelhead		
Snake River Steelhead	Grande Ronde River upper mainstem	UG515	McCoy Creek, Dark Canyon, and Tributaries	4.1: Riparian Condition: Riparian Vegetation	10.00%			60				60	0	No actions. No change.				60				60	60	0	USFS McCoy Wood and Planting project, 2018. Dark Canyon Phase 2, 2018. Both projects are 2 miles. In addition, there is the Dark Canyon fencing project in 2016. No uplift is expected in 2018. (EP revisited afterward) Conservation acquisitions (cattle will be removed and fencing to be done in Meadow - spans USGS 14 and USGS 15). Acquired 2015. Added this to calculations table. New uplift: 3.7% in 2013.		63.7	3.7	Prorated riparian function out to 2013. Panel identified 3.7% uplift.	60	70	60	60	80	more tribs for steelhead; but same LF requirements as chinook. Not enough info available to make site-specific changes between spp				
Snake River Steelhead	Grande Ronde River upper mainstem	UG515	McCoy Creek, Dark Canyon, and Tributaries	4.2: Riparian Condition: LWD Recruitment	10.00%			60				60	0	No actions. No change.				60				60	60	0	As per limiting factor 4.1.		61.8	1.8	Prorated as half of limiting factor 4.1 value, resulting in 1.8	60	60	60	70						
Snake River Steelhead	Grande Ronde River upper mainstem	UG515	McCoy Creek, Dark Canyon, and Tributaries	6.1: Channel Structure and Form: Bed and Channel Form	10.00%			65				65	0	No actions. No change.				65				65	65.6	0.6	USFS Dark Canyon Phase 1, 2018 (3 smaller large wood complexes) [NEED MORE DETAILS FROM USFS]. Riparian projects should narrow channel. No change in 2018, but long-term channel form changes expected in 2013. Prorated in calculations table for 0.6% uplift.		66	1	Prorated to 2013, resulting in 1% uplift.	65	80	65	85						
Snake River Steelhead	Grande Ronde River upper mainstem	UG515	McCoy Creek, Dark Canyon, and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%			65				65	0	No actions. No change.				65				65	67.7	2.7	See limiting factor 6.2 projects, 12 pieces per 100 meters proposed on McCoy Creek. Properly Functioning Condition would be ~27 pieces per 100 m, so prorated accordingly in calculations table, resulting in 2.7% uplift for both 2018 and 2013.		67.7	2.7	Same as 2018.	75	80	75	85						
Snake River Steelhead	Grande Ronde River upper mainstem	UG515	McCoy Creek, Dark Canyon, and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%			60				60	0	The Antler Spring enclosure fence (not on actions list) is above steelhead distribution, but will benefit downstream sediment and water quality limiting factors in the future. No functional uplift yet, though.				60				60	60	0	Same projects as for riparian limiting factors. Fence will have quick benefits, but not immediate. No functional change expected in 2018. Reach is highly embedded. [NEED MORE DETAILS FROM USFS]. Revised to include riparian exclusion. Panel determined 1.8% uplift in 2013.		61.8	1.8	Prorated for growth to 2013, resulting in 1.8% uplift.	60	70	60	80						
Snake River Steelhead	Grande Ronde River upper mainstem	UG515	McCoy Creek, Dark Canyon, and Tributaries	8.1: Water Quality: Temperature	24.00%			40				40	0	No actions. No change.				40				40	40	0	No flow in summer at McCoy Creek currently. Revised to include riparian exclusion. Panel determined 1.8% uplift in 2013.		41	1	Prorated for riparian growth out to 2013; 1% uplift.	40	45	40	50						
Snake River Steelhead	Grande Ronde River upper mainstem	UG515	McCoy Creek, Dark Canyon, and Tributaries	9.2: Water Quantity: Decreased Water Quantity	5.00%			60				60	0	No actions. No change.				60				60	60	0	No actions.		60	65	60	75									
Snake River Steelhead	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	UG516	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	10.00%		Barriers remain. Weight Unchanged.	85				85.1	0.1	See EP's table: 2 projects (Rock Creek Phase 1 and Phase 2). Barrier removal is not yet completed. Panel noted U.S. Forest Service South Fork Spring Creek culvert replacement project is within steelhead distribution zone. The Grande Ronde Model Watershed paid for design (12.5 miles of habitat above, but it was partially passable before - 6-inch drop - it was small juvenile partial barrier, resulting in 5% function improvement from removal). Add this to the database. Per panel, there is 0.1% improvement total from this project.				85.1				85.1	90.3	5.2	Rock Creek Phase 3 (2016): Partial seasonal barrier (undersized culvert) replacement, expected to open 3 miles of habitat, including Graves Creek culvert. Denominator set at 110.7 miles. Panel prorated improvement to 25% for juvenile/seasonal barrier. Also added Highway 244 Whiskey Creek (2018), which is expected to open 10 miles of habitat. Not an adult steelhead block, but does block juveniles, so rated as 50%. Panel predicted 5.2% uplift.		90.3	5.2	Same as 2018	88	100	88	100	greater effect for steelhead than chinook - more use by steelhead					
Snake River Steelhead		UG516	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	4.1: Riparian Condition: Riparian Vegetation	15.00%		Weight Unchanged	45				45	0	See EP's table: 2 projects (Rock Creek Phase 1 and Phase 2). Phase 1 (actually on Graves Creek - correct in database) treated 6 miles, Phase 2 (Rock Creek) treated 5 miles. Steelhead Streamnet miles in assessment unit are 110.7 miles. Plantings have not had many years to mature yet, so no measurable uplift yet. 7,000 plants at first, then additional plantings through CWP program ongoing. No percent function change at this time; reevaluate in 2018.				47	2	For 2013, 20% proration.		45	45	0	Rock Creek Phase 3 2016: No change in 2018.		45.1	0.1	Prorated for riparian growth to 2013, resulting in 0.1% uplift.	47	50	55	60						
Snake River Steelhead	Grande Ronde River upper mainstem	UG516	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	4.2: Riparian Condition: LWD Recruitment	10.00%		Weight Unchanged	50				50	0	See EP's table: 2 projects (Rock Creek Phase 1 and Phase 2). Phase 1 (actually on Graves Creek - correct in database) treated 6 miles, Phase 2 (Rock Creek) treated 5 miles. Steelhead Streamnet miles in assessment unit are 110.7 miles. Plantings have not had many years to mature yet, so no measurable uplift yet. 7,000 plants at first, then additional plantings through CWP program ongoing. No percent function change at this time; reevaluate in 2018.				51	1	For 2013, 10% proration.		50	50	0	Rock Creek Phase 3 2016: No change in 2018.		50.1	0.1	Half of limiting factor 4.1 value, but rounds to same uplift of 0.1	50	60	50.1	70						
Snake River Steelhead	Grande Ronde River upper mainstem	UG516	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions		5.00	Added limiting factor on 3/9/2016. EP chose 50% as low bookend to reflect work to be done.	50				0						0				50	50.7	0.7	Activation of floodplain and side channels from Rock Creek Phase 3.		50.8	0.8	Proration for 2013 results in 0.8% uplift.										
Snake River Steelhead	Grande Ronde River upper mainstem	UG516	Rock, Whiskey, Spring, Jordan, Bear, and Beaver Creeks and Tributaries	5.2: Peripheral and Transitional Habitats: Floodplain Condition		5.00	Added limiting factor on 3/9/2016. EP chose 50% as low bookend to reflect work to be done.	50				0						0				50	50.7	0.7	Activation of floodplain and side channels from Rock Creek Phase 3.		50.8	0.8	Proration for 2013 results in 0.8% uplift.										

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 LF Weight	Adjusted 2016 LF Weight	Adjusted 2016 LF Weight Rationale	2012 Low Bookend	Updated Low Bookend (adjusted 3/2016)	Updated Low Bookend Rationale (adjusted 3/2016)	Updated 2018 Estimate (2012-2015 Look Back)	Look Back % Change	Estimate Comments / Rationale	Updated 2018 Look Back Estimate (adjusted 3/2016)	Look Back 2018 % Change (adjusted 3/2016)	Look Back 2012-2018 Estimate Comments / Rationale (adjusted /2016)	Updated 2033 Look Back Estimate (adjusted 3/2016)	Look Back 2033 % Change (adjusted 3 /2016)	Look Back 2033 Estimate Comments / Rationale (adjusted 3/2016)	2016 Low Bookend (Incorporating look back uplift and updated low bookends adjusted during Look Forward Process)	LookForward Updated 2018 Estimate	LookForward Updated 2018 Estimate % change	LookForward Updated 2018 Estimate Rationale	LookForward Updated 2033 Estimate	LookForward Updated 2033 Estimate % Change	LookForward Updated 2033 Estimate Rationale	2013-2018	High 2018 Bookend	Original 2013 Estimate	High 2013 Bookend	2012 LF Weight and Bookends Comments	2012 Estimates Comments		
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%		Weight Unchanged	50			52.7	2.7	See EP's table: 2 projects (Rock Creek Phase 1 and Phase 2) with per project element breakdown and functional proration. Phase 1 installed: 128 wood complexes, 1,480 pieces (750 large pieces, rest were slash/racking); 25 riffle and wood complexes installed; channel aggraded and reconnected to floodplain. Phase 1 also included reactivating 1 mile of pre-1937 channel (now at 90% function). Phase 1 wood with riffles resulted in 60% function. Phase 1 large wood resulted in 20% function. Phase 2 (Rock) installed 167 complexes, each with 5 key members/root wads = 1,650 large pieces total (25% current functional value). Pre-project intensity was 1.09 to 1.3. Will monitor changes. Total calculated uplift was 3.7%. However, that seems high, given size and fish use of Graves Creek compared to other tributaries in AU. Graves Creek (40 cfs at bankfull flow) is half the width of Rock Creek (210 cfs at bankfull flow). Adjust values to account for this? Not needed if metric is not area-based. Consider Intrinsic Potential (IP)ayer to weigh value of habitat? Better for this application to qualitatively consider IP layer as panel considers prorations. Should the panel adjust Graves Creek project functional percentage in table to account for relative size? But EU itself also has weighting for HQ calculations. This assessment unit is particularly variable in terms of steelhead habitat differences between creeks. Beaver Creek is closer to Properly Functioning Condition than Rock Creek, so is there more potential for restoration there? Rock Creek still has much work to be done, as do Whiskey and Jordan Creeks. But also consider process and functions of Graves Creek in relation to downstream contributions. Note Graves Creek's historical potential re: previous condition and potential if flows were restored. Panel consensus was a 2.7% uplift.	52.7					52.7			52.7	0.7	Rock Creek Phase 3 RM 0.5-1.5 (2016): meandering a straight section, which should change channel form significantly, 1 mile treated. Designed for 1.5-year recurrence interval. For 2018: 75% function proration, resulting in 0.7% uplift. For 2033, 90% proration, resulting in 0.8% uplift.	53.3	0.8			51	60	51	70		
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%		Weight Unchanged	45			48.4	3.4	See EP's table and UF 6.1 (same projects). Percent improvement is 58% (Graves Creek, only 3 miles treated with wood) and 76% (Rock Creek, 5 miles only treated with wood); post-project large wood loading percentages, based on 27 pieces per 100 meters reference from Micam. Total functional uplift determined to be 3.4%.	48.4						48.4	49.3	0.9	Wood loading will exceed Properly Functioning Condition densities. Prorated at 100% function for both time periods, resulting in 0.9% uplift for 2018 and 2033.	49.3	0.9		50	70	50	70	CHANGED HIGH BOOKENDS AT 2012 WORKSHOP TO REFLECT NEW OPPORTUNITIES			
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%	10.00	Limiting Factor weight adjusted to accommodate changes to other limiting factor weights.	40			40	0	See EP's table and UF 6.1 (same projects). Panel included conservation easements, exclusion fencing, seine or connected, but non-fish-bearing tributaries. Total miles treated: 11. Panel considered time elapsed since fencing to determine current functional value. Literature shows 2-20 year response time for fine sediment reduction projects. Current uplift: 0%.	41	1	For 2018, adjusted prorations in calculations table, yielding 1% uplift.	43	3	For 2033 increased proration to 20% for maturing project, resulting in 3% uplift.	41	41.5	0.5	Rock Creek Phase 3.	41.5	0.5		42	55	45	70				
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%		Weight Unchanged	45			45	0	No functional change from exclusion fencing yet, as described for limiting factor 7.2. Panel also evaluated effects from 3.5 cfs seasonal Beaver Creek water releases from dam. See UGCS discussion, but steelhead range farther upstream. Benefit of mostly local, near release point (not measurable all the way down to mainstem Grande Ronde). Not much instream data from downstream, but little water temperature difference is seen from the background. Heatsource model shows still within steelhead optimal rearing conditions, regardless of water additions. Panel determined no percentage change.	45		No adjustment.	45	45	0	Rock Creek 3: changing width to depth ratio. Beaver Creek reservoir: temperatures are already within preferred range. No benefit from dam releases expected, so prorated as 0%. No change from riparian in 2018, but some in 2033.	45.1	0.1	Prorated riparian benefit out to 2033, resulting in 0.1% uplift.	45.1	0.1		45.1	46	45.1	50				
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%	5.00	Limiting Factor weight adjusted to accommodate changes to other limiting factor weights.	70			70	0	See UGCS discussion and UGCS16 limiting factor 8.1. Steelhead range farther upstream. Panel evaluated effect from 3.5 cfs seasonal Beaver Creek water releases from dam. Given season and life history changes during releases, and duration of flow addition, there were no measurable functional changes (just enough to move fish around for a few weeks). Would expect more benefit from spreading the same flow addition over a longer period. No change to percentage function.	70					70	70	0	As in Look Back, no percentage change from Beaver Creek releases.	70	0	As in Look Back, no percentage change from Beaver Creek releases.	70	72	70	75					
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	0	No actions. No change.	95			95	95	0	No actions expected. No percentage change predicted.	95	0	No actions expected. No percentage change predicted.	95	0	No actions expected. No percentage change predicted.	95	100	95	100	CTUR weir installed Mar 1 not much of a factor for steelhead			
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	0	Database has 2 projects: UGR Fence Installation (2012) and Warm Springs Fence. Denominator is 17.8 steelhead miles per Streamnet. See EP's table with mileage and functional percentage prorations. See UGCS notes for information on 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 seen yet, but expected in the future. No % change for steelhead either.	65.1	0.1	For 2018 1% proration yields 0.1% uplift in 2018.	66.7	1.7	For 2033: Using 20% proration yields 1.7% uplift.	65.1	65.1	0	No actions expected. No percentage change predicted.	65.1	0	No actions expected. No percentage change predicted.	66	70	67	80		Estimate based only on Starkey Meadows project.		
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	0	As with limiting factor 4.1, no change at this time.	65			65	65	0	No actions expected. No percentage change predicted.	65	0	No actions expected. No percentage change predicted.	65	0	No actions expected. No percentage change predicted.	65	65	66	70		Estimate considers Starkey Project for 2033 improvement.		
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			70.3	0.3	UGR Small Wood and Pod Fencing Installation project: small-diameter slash racking wood additions only in this period. Large wood was installed before 2012. Panel determined that slash/brushy material had negligible effect on channel complexity. See Chinook discussion (UGCS): small effect (1% functional change for treated area). Add this project in database to this limiting factor. See EP's table of mileage and functional percentages. Adjusted project length to fit assessment unit boundaries. Other project, Warm Springs Fence, should be removed from this limiting factor. Different denominator for steelhead, due to distribution difference – 17.8 miles per Streamnet. Total uplift determined to be 0.3%.	70.3					70.3	81.5	11.2	USFS Grande Ronde River Large Restoration Complex: just a wood project. Will treat 8 miles with 400-800 pieces total, plus racking material, at approximately 1 jam per mile. Will add 5 pieces per 100 meters to what is there already. Prorated at 25%, resulting in 11.2% uplift for 2018 and 2033.	81.5	11.2	Same as 2018	72	75	72	80					
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	0	See limiting factor 4.1 action and UGCS rationale: Pod fencing only, not full riparian fencing. No benefit yet from Warm Springs fencing either. No change in %.	65		Same as UGCS. No adjustment.	65	65	0	No actions expected. No percentage change predicted.	65	0	No actions expected. No percentage change predicted.	66	70	67	80							
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	0	See limiting factor 4.1 action, and UGCS 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 assessment unit is upstream of Beaver Creek, so remove that project from this assessment unit in database. No change in %.	50					50	50	0	No actions expected. No percentage change predicted.	50	0	No actions expected. No percentage change predicted.	50	52	50.1	55					
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	0	EP: No actions. No change.	70		Same as UGCS. No adjustment.	70.3	0.3	Same as UGCS. 5% proration results in 0.3% change.	70	70	0	No actions expected. No percentage change predicted.	70	0	No actions expected. No percentage change predicted.	70	75	70	75		NOTE TO AAS: AQUIFER STORAGE PROJECT NOT INCLUDED IN ESTIMATE FOR UGCS 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		
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			50	50	0	No actions. No percentage change expected.	50	0	No actions. No percentage change expected.	50	0	No actions. No percentage change expected.	50	55	50	60				
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			60	60	0	No actions. No percentage change expected.	60	0	No actions. No percentage change expected.	60	0	No actions. No percentage change expected.	60	75	60	80	Per Paul B. - significant LWD recruitment opportunities.			
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			60	60	0	No actions. No percentage change expected.	60	0	No actions. No percentage change expected.	60	0	No actions. No percentage change expected.	60	65	60	70				
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			55	55	0	No actions. No percentage change expected.	55	0	No actions. No percentage change expected.	55	0	No actions. No percentage change expected.	55	65	55	70	Fine sediments primarily from road system. No USFS grazing allotments in UGCS18. Increase to 2033 High Bookend reflects potential from recently approved USFS Travel Management Plan.			
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			75	75	0	No actions. No percentage change expected.	75	0	No actions. No percentage change expected.	75	0	No actions. No percentage change expected.	75	80	75	85				
Snake River Steelhead		UGS19	Upper Grande Ronde River Mainstem and Tributaries, Clear Creek to Headwaters	1.1: Habitat Quantity: Anthropogenic Barriers		10.00	Added limiting factor on 3/9/2016 (just for steelhead, not Chinook). Not many barriers left.		90	Added limiting factor on 3/9/2016 (just for steelhead, not Chinook). Not many barriers left.	0			0			0	90	96.9	6.9	Muir Creek culvert replacement: "1 mile of juvenile rearing habitat will be opened. This is a partial barrier, so prorated as 25%, resulting in 6.9% uplift.	96.9	6.9											

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 LF Weight	Adjusted 2016 LF Weight	Adjusted 2016 LF Weight Rationale	2012 Low Bookend	Updated Low Bookend (adjusted 3/2016)	Updated Low Bookend Rationale (adjusted 3/2016)	Updated 2018 Estimate (2012-2015 Low Book)	Look Back % Change	Estimate Comments / Rationale	Updated 2018 Look Back Estimate (adjusted 3/2016)	Look Back 2018 % Change (adjusted 3/2016)	Look Back 2012-2018 Estimate Comments / Rationale (adjusted 2016)	Updated 2018 Look Back Estimate (adjusted 3/2016)	Look Back 2018 % Change (adjusted 3/2016)	Look Back 2018 % Change (adjusted 3/2016)	Look Back 2018 % Change (adjusted 3/2016)	2016 Low Bookend (Incorporating look back uplift and updated low bookends adjusted during Look Forward Process)	LookForward Updated 2018 Estimate	LookForward Updated 2018 Estimate % change	LookForward Updated 2018 Estimate Rationale	LookForward Updated 2018 Estimate % change	LookForward Updated 2018 Estimate Rationale	2013-2018	High 2018 Bookend	Original 2003 Estimate	High 2003 Bookend	2012 LF Weight and Bookends Comments	2012 Estimates Comments			
Snake River Steelhead	Grande Ronde mainstem	UG519	Upper Grande Ronde River- Mainstem and Tributaries, Clear Creek to Headwaters	4.1: Riparian Condition- Riparian Vegetation	30.00%	25.00	Limiting factor weight adjusted to accommodate changes to other limiting factor weights.	75			75	0	See UGC7 Chinook actions (pods and slash). USFS - Small Wood and Pod Fencing Installation (2014), with mileage changed to 3 miles. See EP's table. Denominator mileage from Streamnet is 5.4 miles. No % change seen yet.	75	No adjustment.		80.6	5.6	As with UGC7, riparian vegetation growth function proration based on mining tailing soils was 10%, resulting in 5.6% uplift.	75	75	0	Skydri project: 2.5 miles. No change in 2018, but prorated as 15% for 2033 resulting in 6.0% uplift expected in 2033.	81.9	6.9		75	85	75	95					
Snake River Steelhead	Grande Ronde River upper mainstem	UG519	Upper Grande Ronde River- Mainstem and Tributaries, Clear Creek to Headwaters	4.2: Riparian Condition- LWD Recruitment	30.00%	20.00	Limiting factor weight adjusted to accommodate changes to other limiting factor weights.	75			75	0	See UGC7 Chinook actions (pods and slash). USFS - Small Wood and Pod Fencing Installation (2014), with mileage changed to 3 miles. See EP's table. Denominator mileage from Streamnet is 5.4 mi. No % change yet.	75	No adjustment.		77.8	2.8	[3-28-16 (post-meeting): Based on calculation spreadsheet, noted 2.8% uplift based on 5% prorating of the Upper Grande Ronde Small Wood and Pods project]	75	75	0	Skydri project: 2.5 miles. No change in 2018, but prorated as 15% for 2033 resulting in 3.5% uplift expected in 2033.	78.5	3.5	Half of limiting factor 4.1 value, resulting in 3.5% uplift.	75	85	75	95					
Snake River Steelhead	Grande Ronde River upper mainstem	UG519	Upper Grande Ronde River- Mainstem and Tributaries, Clear Creek to Headwaters	6.2: Channel Structure and Form- Instream Structural Complexity	20.00%	25.00	Limiting Factor weight adjusted to accommodate changes to other limiting factor weights.	85			85.6	0.6	Add pods and slash project to limiting factor 6.2. See EP's table calculations. Upper Grande Ronde Small Wood and Pods project (fencing to protect plantings), with 3 miles treated, resulted in 0.6% uplift.	85.6			85.6	85.6	85.6	85.6	85.6	0	No actions. No percentage change expected.	85.6	0	No actions. No percentage change expected.	85	90	85	95					
Snake River Steelhead	Grande Ronde River upper mainstem	UG519	Upper Grande Ronde River- Mainstem and Tributaries, Clear Creek to Headwaters	7.2: Sediment Conditions- Increased Sediment Quantity	20.00%	20.00	Limiting Factor weight adjusted to accommodate changes to other limiting factor weights.	60			60	0	See UGC7 Chinook actions (pods and slash - Upper Grande Ronde Small Wood and Pods) with treated mileage changed to 3 miles. See EP's table. Denominator mileage from Streamnet is 5.4 miles. No % change yet, as per Chinook notes.	60			65.6	5.6	[3-28-16 (post-meeting): Noted 5.6% uplift based on 10% prorating of the Upper Grande Ronde Small Wood and Pods project]	60	60	0	No actions. No percentage change expected.	60	0	No actions. No percentage change expected.	60	80	60	90					
Snake River Steelhead		UG520		1.1: Habitat Quantity- Anthropogenic Barriers		10.00	Added limiting factor on 3/9/2016	80			80	0		0			0			80	88.2	8.2	Limber Jim Creek 2017 culverts (2) by USFS will open 1.5 and 1.25 miles on N and S Forks. Panel prorated improvements in calculations table based on the fact that they are seasonal partial juvenile barriers: 25% proration, resulting in 8.2% uplift.	88.2	8.2	Same as 2018									
Snake River Steelhead	Grande Ronde River upper mainstem	UG520	Limber Jim Creek and Tributaries	4.1: Riparian Condition- Riparian Vegetation	20.00%		Weight Unchanged	75			75			75			75			75	75		0	Same actions and proration as for Chinook.	78.6	3.6	Same actions and proration as for Chinook.	76	85	80	90				
Snake River Steelhead	Grande Ronde River upper mainstem	UG520	Limber Jim Creek and Tributaries	4.2: Riparian Condition- LWD Recruitment	20.00%		Weight Unchanged	75			75			75			75			75	75		0	Same actions and proration as for Chinook.	76.8	1.8	Same actions and proration as for Chinook.	76	80	80	85				
Snake River Steelhead	Grande Ronde River upper mainstem	UG520	Limber Jim Creek and Tributaries	6.2: Channel Structure and Form- Instream Structural Complexity	10.00%	30.00	Limiting factor weight adjusted to accommodate changes to other limiting factor weights.	75			75			75			75			75	85.7	10.7	Same actions and proration as for Chinook.	85.7	10.7	Same actions and proration as for Chinook.	80	80	85	85					
Snake River Steelhead	Grande Ronde River upper mainstem	UG520	Limber Jim Creek and Tributaries	7.2: Sediment Conditions- Increased Sediment Quantity	20.00%		Weight Unchanged	75			75			75			75			75	75		0	Same actions and proration as for Chinook.	77.2	2.2	Same actions and proration as for Chinook.	76	85	78	90				
Snake River Steelhead	Grande Ronde River upper mainstem	UG520	Limber Jim Creek and Tributaries	8.2: Water Quality- Decreased Water Temperature	30.00%	0.00	No temperature problems in ALI. ChaMP data show no water temperature exceedances.	70			70			70			70			70	70		0	No actions. No expected percentage change.	70	0	No actions. No expected percentage change.	70.1	75	71	85				
Snake River Steelhead	Grande Ronde River upper mainstem	UG521	Fly Creek and Tributaries	1.1: Habitat Quantity- Anthropogenic Barriers	5.00%			95			95			95			95			95	95		Not discussed.	95		Not discussed.	98	100	98	100	Complete barrier on S160 road				
Snake River Steelhead	Grande Ronde River upper mainstem	UG521	Fly Creek and Tributaries	4.1: Riparian Condition- Riparian Vegetation	20.00%			65			65			65			65			65	65		0	Fly Creek Smith (called 2015, but 2016 completion) fence project: 1.5 miles. A few trees across stream, and willow pods for elk browse control. All passive, no planting. 25 year assessment. No uplift expected in 2018, but 0.7% expected in 2033.	65.7	0.7		65	70	65	75				
Snake River Steelhead	Grande Ronde River upper mainstem	UG521	Fly Creek and Tributaries	4.2: Riparian Condition- LWD Recruitment	15.00%			65			65			65			65			65	65		0		65.4	0.4	Prorated as half of limiting factor 4.1, resulting in 0.4% uplift.	65	65	65	70				
Snake River Steelhead	Grande Ronde River upper mainstem	UG521	Fly Creek and Tributaries	6.2: Channel Structure and Form- Instream Structural Complexity	20.00%			75			75			75			75			75	75		0	No actions.	75	0	No actions.	75	80	75	85				
Snake River Steelhead	Grande Ronde River upper mainstem	UG521	Fly Creek and Tributaries	7.2: Sediment Conditions- Increased Sediment Quantity	15.00%			40			40			40			40			40	40		0	Some immediate effect from fencing, but minimal. 0% uplift expected for 2018 and 0.1% for 2033.	40.1	0.1	Prorated for 2033.	42	55	42	70				
Snake River Steelhead	Grande Ronde River upper mainstem	UG521	Fly Creek and Tributaries	8.1: Water Quality- Temperature	25.00%			45			45			45			45			45	45		0	Using ChaMP temperature model output, 0% change expected in 2018 and 0.2% in 2033.	45.2	0.2		45	46	45	50				
Snake River Steelhead		UG522	Sheep Creek and Tributaries	1.1: Habitat Quantity- Anthropogenic Barriers	10.00		Added limiting factor 1.1 on 3/9/2016. A couple of barriers still need to be addressed.	80			80	Added limiting factor 1.1 on 3/9/2016. A couple of barriers still need to be addressed, but most are done or planned.		0			0			80	82.3	2.3	2 projects on calculations table (Sheep and Chicken Creeks, 2 culverts each). Panel prorated per life history use and partial barriers. Undersized culverts, even though some were retrofitted in the past. West Chicken has 6-12 inch drop. Yields 2.3% uplift.	82.3	2.3	Same as 2018.									
Snake River Steelhead	Grande Ronde River upper mainstem	UG522	Sheep Creek and Tributaries	4.1: Riparian Condition- Riparian Vegetation	10.00%	15.00	Limiting factor weight adjusted to accommodate changes to other limiting factor weights.	50			50			50			51.6	1.6	Per UGC8, but different denominator.	50	50		0	[Revised based on new Sheep Creek mileage from USFS, resulting in 0% uplift in 2018 and 3.7% uplift in 2033.]	53.7	3.7		50	60	50	80	NOTE TO AAS: CHICKEN CR NOT CHINOOK HABITAT SO NO ESTIMATE WAS MADE FOR CHINOOK TO COPY TO STELLHEAD- Appliner, 7/10/12 Chicken Cr. project not considered in estimate.			
Snake River Steelhead	Grande Ronde River upper mainstem	UG522	Sheep Creek and Tributaries	4.2: Riparian Condition- LWD Recruitment	10.00%	15.00	Limiting factor weight adjusted to accommodate changes to other limiting factor weights.	60			60			60			60.8	0.8	Per UGC8, but different denominator.	60	60		0	See limiting factor 4.1.	61.9	1.9	Used half of limiting factor 4.1 proration. [Revised based on new Sheep Creek mileage from USFS, resulting in 0% uplift in 2018 and 1.9% uplift in 2033.]	60	75	60	80	Per Paul B. - significant LWD recruitment opportunities.			
Snake River Steelhead	Grande Ronde River upper mainstem	UG522	Sheep Creek and Tributaries	6.2: Channel Structure and Form- Instream Structural Complexity	20.00%		Weight Unchanged	50			52.4	2.4	See Chinook actions from Sheep and Chicken creeks (UGC8). See EP's table with calculations. Sheep Creek Large Wood and Planting resulted in 192 pieces, which is 76.8 pieces per mile and 19 percent improvement (120 target pieces per mile). Chickens Creek large wood and planting resulted in 117 pieces, which is 58.5 pieces per mile and 15 percent improvement. Total stream miles denominator is 32.1 miles. Panel determined 2.4 percent uplift.	52.4			52.4	52.4	52.4	52.4	52.4	0	No actions expected.	52.4	0	No actions expected.	60	60	60	80		Estimate based on Sheep Cr project only.			
Snake River Steelhead	Grande Ronde River upper mainstem	UG522	Sheep Creek and Tributaries	7.2: Sediment Conditions- Increased Sediment Quantity	30.00%	20.00	Limiting factor weight adjusted to accommodate changes to other limiting factor weights.	30			30	0	See Chinook actions from Sheep and Chicken creeks (UGC8). See EP's table with calcs.	30			31.4	1.4	Per UGC8, but different denominator. 10 % proration.	30	30		0	Riparian projects benefit, but most sediments are coming from fire areas (Lanner or Tower fire), and heavy grazing on private land. See calculations table. Panel determined 0% change for 2018 and 1.2% uplift in 2033. [Nos. revised based on new Sheep Creek mileage from USFS, resulting in 0% uplift in 2018 and 1.9% uplift in 2033.]	31.9	1.9	Prorated for 2033.	30	50	30	80	Significant private land grazing.	Not enough known about USFS Sheep Cr rd decommissioning project for estimate to be made at 2012 EP workshop.		
Snake River Steelhead	Grande Ronde River upper mainstem	UG522	Sheep Creek and Tributaries	8.1: Water Quality- Temperature	30.00%	20.00	Lower Sheep is warm, but cooler upstream.	70			70	0	No temperature benefit from Chicken and Sheep projects yet. No % change.	70			70			70	70		0	No change in 2018.	71.2	1.2	Prorated fence and pods to 2033, resulting in 0.2% uplift. [Revised cell formula error in calculations table and revised based on new Sheep Creek mileage from USFS, resulting in 0% uplift in 2018 and 1.2% uplift in 2033.]	70	70	70	75				
Snake River Steelhead	Grande Ronde River upper mainstem	UG523	Clear Creek and Tributaries	1.1: Habitat Quantity- Anthropogenic Barriers	0.00%						0			0			0			0	0		0	0	0	No actions.	0	0	No actions.					Passage improvement projects identified but Passage LF given 0% weight. If barriers exist, consider reweighting this LF at next EP workshop.	
Snake River Steelhead	Grande Ronde River upper mainstem	UG523	Clear Creek and Tributaries	4.1: Riparian Condition- Riparian Vegetation	30.00%			75			75			75			75			75	75		0	No actions.	75	0	No actions.	75	85	75	95				
Snake River Steelhead	Grande Ronde River upper mainstem	UG523	Clear Creek and Tributaries	4.2: Riparian Condition- LWD Recruitment	30.00%			60			60			60			60			60	60		0	No actions.	60	0	No actions.	60	60	60	70				
Snake River Steelhead	Grande Ronde River upper mainstem	UG523	Clear Creek and Tributaries	6.2: Channel Structure and Form- Instream Structural Complexity	20.00%			70			70			70			70			70	70		0	No actions.	70	0	No actions.	70	75	70	85				
Snake River Steelhead	Grande Ronde River upper mainstem	UG523	Clear Creek and Tributaries	7.2: Sediment Conditions- Increased Sediment Quantity	20.00%			60			60			60			60			60	60		0	No actions.	60	0	No actions.	60.1	80	60.1	90				

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 LF Weight	Adjusted 2018 LF Weight	Adjusted 2018 LF Weight Rationale	2012 Low Bookend	2016 (Updated) Low Bookend (adjusted 3/2016)	2016 Updated Low Bookend Rationale (adjusted 3/2016)	Updated 2018 Estimate (2012-2015 Look Back workshop)	Look Back % Change	Estimate Comments / Rationale	Updated 2018 Look Back Estimate (adjusted 3/2016)	Look Back 2018 % Change (adjusted 3/2016)	Look Back 2012-2018 Estimate Comments / Rationale (adjusted 3/2016)	Updated 2033 Look Back Estimate (adjusted 3/2016)	Look Back 2033 % Change (adjusted 3/2016)	Look Back 2033 Estimate Comments / Rationale (adjusted 3/2016)	2016 Low Bookend (incorporating look back uplift and updated low bookends during Look Forward Process)	Updated 2018 Estimate (2016 Look Forward)	Look Forward Updated 2018 Estimate % Change	2016-2018 Look Forward Estimate Comments/Rationale	Updated 2033 Estimate (2016 Look Forward)	Look Forward Updated 2033 Estimate % Change	Look Forward Updated 2033 Estimate Comments/Rationale	2013-2018	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	2012 LF Weight and Bookends Comments	2012 Estimates Comments	
Snake River Steelhead	Grande Ronde River upper mainstem	UG59A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%			90						90			90			90	90	0	No actions, as per CCC2C.	90	0	No actions, as per CCC2C.	95	100	95	100	Elmer	MORE PASSAGE ISSUES ON MILL CK AND LITTLE CK	
Snake River Steelhead	Grande Ronde River upper mainstem	UG59A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	2.1: Injury and Mortality: Predation	0.00%									0			0			0	0	0	No actions, as per CCC2C.	0	0	No actions, as per CCC2C.					small mouth bass; invasive spp noted, but impacts unknown		
Snake River Steelhead	Grande Ronde River upper mainstem	UG59A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	3.3: Food: Altered Prey Species Composition and Diversity	0.00%									0			0			0	0	0	No actions, as per CCC2C.	0	0	No actions, as per CCC2C.					altered food web-carp, panfish impacts unknown		
Snake River Steelhead	Grande Ronde River upper mainstem	UG59A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	4.1: Riparian Condition: Riparian Vegetation	10.00%			45			45	0	Panel considered CC Baum Restoration Project. 0.25 miles treated; however, no improvement seen yet. Thus no uplift identified.	45		No adjustment.	45.1	0.1	Same projects as CCC2C. Added 10% proration, resulting in 0.1% uplift in 2033	45	45	0	No actions, as per CCC2C.	45	0	No actions, as per CCC2C.	45.1	50	46	60			
Snake River Steelhead	Grande Ronde River upper mainstem	UG59A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	4.2: Riparian Condition: LWD Recruitment	10.00%			45			45	0	Panel considered CC Baum Restoration Project. 0.25 miles treated; however, no improvement seen yet. Thus no uplift identified.	45		No adjustment.	45	0	Same projects as CCC2C. Added 5% proration, resulting in 0.0% (rounded) uplift in 2033	45	45	0	No actions, as per CCC2C.	45	0	No actions, as per CCC2C.	45	45	45.1	50			
Snake River Steelhead	Grande Ronde River upper mainstem	UG59A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10.00%			20			20.3	0.3	Panel considered CC Baum Restoration Project. 0.25 miles were treated; panel identified a 50 percent prorate improvement and denominator was 36 miles. Thus uplift was determined to be 0.3%.	20.3			20.3			20.3	20.3	0	No actions, as per CCC2C.	20.3	0	No actions, as per CCC2C.	22	35	22	40	<25 percentage levees; many oxbows have been truncated		
Snake River Steelhead	Grande Ronde River upper mainstem	UG59A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%			40			40.3	0.3	Panel considered CC Baum Restoration Project. 0.25 miles were treated; panel identified a 50 percent prorate improvement and denominator was 36 miles. Thus uplift was determined to be 0.3%.	40.3			40.3			40.3	40.3	0	No actions, as per CCC2C.	40.3	0	No actions, as per CCC2C.	42	50	42	55	many oxbows have been truncated		
Snake River Steelhead	Grande Ronde River upper mainstem	UG59A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%			40			40			40			40			40	40	0	No actions, as per CCC2C.	40	0	No actions, as per CCC2C.	41	50	41	55	many oxbows have been truncated		
Snake River Steelhead	Grande Ronde River upper mainstem	UG59A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%			25			25.03	0.03	Panel considered CC Baum Restoration Project. 0.25 miles were treated; panel identified a 5 percent prorate improvement and denominator was 36 miles. Thus uplift was determined to be 0.03%.	25.03			25.03			25.03	25.03	0	No actions, as per CCC2C.	25.03	0	No actions, as per CCC2C.	27	35	27	40			
Snake River Steelhead	Grande Ronde River upper mainstem	UG59A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%			50			50			50			50			50	50	0	No actions, as per CCC2C.	50	0	No actions, as per CCC2C.	50.1	55	50.1	55	more of a non-point issue, many uncontrolled contributions, but bank erosion issue also contributes		
Snake River Steelhead	Grande Ronde River upper mainstem	UG59A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	8.1: Water Quality: Temperature	10.00%			40			40	0	Non-native predators are present due to warm water. Panel considered upstream actions that may have contributed to limiting factor 8.1 (Shepard down to Davis Dam only (partial) partial assessment unit)? 2.5 cfs lease down to Davis (not in database). Not measurable from Davis Dam to mouth, so no temperature change seen from leases discussed in limiting factor 9.2. Per panel, heat source shows above lethal for rearing. There is not enough flow to significantly affect this limiting factor, at 20-22 degrees C. A few cfs is not enough to decrease temperatures measurably, especially given backwater from Davis Dam. No % change.	40			40			40	40	0	No actions, as per CCC2C.	40	0	No actions, as per CCC2C.	40	40	40	45	thermal barrier for adult passage; combination of other LFs over time will be needed to affect a chance in temp		
Snake River Steelhead	Grande Ronde River upper mainstem	UG59A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	8.2: Water Quality: Oxygen	5.00%			40			40			40			40			40	40	0	No actions, as per CCC2C.	40	0	No actions, as per CCC2C.	40	45	40	45	Links to flow & temp		
Snake River Steelhead	Grande Ronde River upper mainstem	UG59A	Lower Catherine Creek and Tributaries (mainstem migration corridor only)	9.2: Water Quantity: Decreased Water Quantity	10.00%			30			32.2	2.2	See EP's table of instream flow leases. There are three years of annual leases: 2013 to 2015: 0.76 cfs per year, plus applicable upstream flow actions. Panel adjusted weightings for each project using the percentage of total assessment unit stream mileage benefiting from these flows. All split season: July to September, typically. Baseflow is often zero, and additional water results only in "puddles." Davis to mouth. Panel discussed Cooney 10 cfs (additional) experiment flows, which should persist all the way down to Elmer (not yet implemented - note for Look Forward). Denominator discussion considered whether to use this 10 cfs as baseline. This would result in a 6% uplift. However, panel decided against this, because the 10 cfs doesn't exist yet. Panel also considered using downstream instream water right as denominator. ODFW instream flow target (30 cfs). Natural 95% exceedance is ~25 cfs (baseline above Union) based on Bureau modeling. Using that as denominator, uplift is 2%. But is that water usable (due to temperature and LH timing for migration seasons)? Davis Dam consultation considered other ecological benefits of flow, even when temperatures are high. It used to have leakage, but no longer does, so the baseline has changed. Discussion of thresholds: at what point does flow augmentation benefit fish? At what point is it inhabitable by fish? This is not a 1:1 linear relationship, and depends on channel cross-section and temperature regime. Also considered location in reach of flow addition. Per panel, since flow is during critical summer months, 2% uplift is acceptable value. Calculation from table using 30 cfs baseflow as denominator resulted in 2.2% improvement. Check FWT's basin flow data for denominator.	32.2		No adjustment	32.2	35.8	3.6	As per CCC2C (same denominator).	32.2			32.2	35.8	3.6	Some permanent leases in table, but renewal of others is unknown at this time, as per CCC2C. [3-27-16: 2033 Uplift not calculated due to uncertainty in leases out to 2033.]	35	35	35	35	m/s migration corridor; refugia @ mouths of tribs	
Snake River Steelhead	Grande Ronde River upper mainstem	UG59B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%			60			61.6	1.6	See EP's table. Add Little Creek Diversion Removal from 2012 (not in database). This was a partial (juvenile) barrier of 2-3 feet. Next (partial) barrier is LC2 (a few inches), LC3 (1-2 feet), and LC4 (tall barrier), 1.5 miles upstream; thus there was 1.5 miles of passage improvement. The Ladd Highway 203 Bridge replaced undersized culvert (partial barrier?) in 2013, associated with primary aim of channel reconnection at Ladd (had been ditched to run along railroad so new channels built and then reconnected; crossing location was changed by ~1.1 miles). Steelhead in Ladd Creek now have 1 more mile of new channel. Panel did not consider this applicable to limiting factor 1.1, but counted it under limiting factor 6.1. Proration (weight for partial barriers) is 50 percent, and total steelhead stream miles is 47 miles. Panel determined 1.6% improvement total.	61.6			61.6			61.6	61.6	0	No actions.	61.6	0	No actions.	60	60	60	70	Little; Ladd; Mill; Warm Crs.		
Snake River Steelhead	Grande Ronde River upper mainstem	UG59B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	2.1: Injury and Mortality: Predation	0.00%						0	0	No actions in database. Panel noted that screens were added, so limiting factor 2.3 should be added in the next Look Forward.	0			0			0	0	0	No actions.	0	0	No actions.					small mouth bass; invasive spp noted, but impacts unknown		
Snake River Steelhead	Grande Ronde River upper mainstem	UG59B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	3.3: Food: Altered Prey Species Composition and Diversity	0.00%						0	0	No actions in database.	0			0			0	0	0	No actions.	0	0	No actions.					altered food web-carp, panfish impacts unknown		
Snake River Steelhead	Grande Ronde River upper mainstem	UG59B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	4.1: Riparian Condition: Riparian Vegetation	10.00%			60			60	0	No actions in database. Vegetation management on exposed banks (small area near reconnected channel).	60		No adjustment.	60		No adjustment.	60	60	0	No actions.	60	0	No actions.	60.1	60.1	60.2	80			
Snake River Steelhead	Grande Ronde River upper mainstem	UG59B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	4.2: Riparian Condition: LWD Recruitment	10.00%			60			60	0	No actions in database.	60		No adjustment.	60		No adjustment.	60	60	0	No actions.	60	0	No actions.	60.1	60.1	60.2	70		ESTIMATES COPIED FROM CCC2B	
Snake River Steelhead	Grande Ronde River upper mainstem	UG59B	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	0	No actions in database.	65			65			65	65	0	No actions.	65	0	No actions.	66	75	66	80		COPIED ESTIMATE FROM CCC2B - kpfisher, 7/10/12	
Snake River Steelhead	Grande Ronde River upper mainstem	UG59B	Lower Catherine Creek and Tributaries (contributing area and tributaries only)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%			65			66.9	1.9	No actions in database. Highway 203 Bridge Replacement channel reconnection at Ladd Creek is an applicable project, with 1.1 miles treated. See EP's table. Denominator is 47 steelhead miles per Streamnet. Percent current function status for this limiting factor is 80%, resulting in a 1.9% uplift.	66.9			66.9			66.9	66.9	0	No actions.	66.9	0	No actions.	66	75	66	80		COPIED ESTIMATE USED FOR CCC2B - kpfisher, 7/10/12	

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 LF Weight	Adjusted 2018 LF Weight	Adjusted 2018 LF Weight Rationale	2012 Low Bookend	2016 (Updated) Low Bookend (adjusted 3/2016)	2016 Updated Low Bookend Rationale (adjusted 3/2016)	Updated 2018 Estimate (2012-2015 Look Back workshop)	Look Back % Change	Estimate Comments / Rationale	Updated 2018 Look Back Estimate (adjusted 3/2016)	Look Back 2018 % Change (adjusted 3/2016)	Look Back 2012-2018 Estimate Comments / Rationale (adjusted 3/2016)	Updated 2033 Look Back Estimate (adjusted 3/2016)	Look Back 2033 % Change (adjusted 3/2016)	Look Back 2033 Estimate Comments / Rationale (adjusted 3/2016)	2016 Low Bookend (incorporating look back uplift and updated low bookends during Look Forward Process)	Updated 2018 Estimate (2016 Look Forward)	Look Forward Updated 2018 Estimate % Change	2016-2018 Look Forward Estimate Comments/Rationale	Updated 2033 Estimate (2016 Look Forward)	Look Forward Updated 2033 Estimate % Change	Look Forward Updated 2033 Estimate Comments/Rationale	2013-2018	High 2013 Bookend	Original 2033 Estimate	High 2033 Bookend	2012 LF Weight and Bookends Comments	2012 Estimates Comments
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			67.1	2.1	No actions in database. Highway 203 Bridge Replacement channel reconnection at Ladd Creek is an applicable project, with 1.1 miles treated. See EP's table. Denominator is 47 steelhead miles per Streamnet. Panel determined percent current function status for this limiting factor as 90%, resulting in 2.1% uplift.	67.1			67.1			67.1	67.1	0	No actions.	67.1	0	No actions.	65.1	75	65.1	80		
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			65.1	0.1	No actions in database. Highway 203 Bridge Replacement channel reconnection at Ladd Creek added a couple of wood structures. See EP's table. Denominator is 47 steelhead miles per Streamnet. Panel determined percent current function status for this limiting factor as 5%, resulting in 0.1% uplift.	65.1			65.1			65.1	65.1	0	No actions.	65.1	0	No actions.	68	75	68	80		ESTIMATE COPIED FROM CCC2B
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	0	No actions in database. The Ladd Creek reconnection project has not yet matured enough to show benefit. No change in %.	50		No adjustment.	50.2	0.2	10% proration addition results in 0.2% uplift.	50	50	0	No actions.	50	0	No actions.	50.1	55	50.1	55	bank erosion - more Little Cr than Ladd	
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	0	Little Creek leases. Existing Creek baseline conditions are 18-22 degrees C, even upstream of lease locations. Existing temperatures exceed 20 degrees C between 80% to 100% of days so flow increases are insufficient to cause uplift. No temperature benefit seen from projects.	40			40			40	40	0	No change from flow projects: not enough flow.	40	0	No change from flow projects: not enough flow.	40.1	40.1	40.1	45		ESTIMATE COPIED FROM CCC2C (Lower Catherine Ck)
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%						0		No actions in database.	0			0			0	0	0	No actions.	0	0	No actions.					need to quantify; not issue in upper reaches - some issue d/s	
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			30.6	0.6	No actions in database. But 0.21 cfs lease/protected (projects are listed in UGS 10a instead?) – e.g.: Malmurg Lease 0.34 cfs, Sheehee Lease 0.53 cfs, Malmburg split season 0.19 cfs, DR Rickert leases and permanent leases through Freshwater Trust. See EP's table of leases per year (4 projects) and note database changes to assign these to proper assessment unit. Panel considered upstream assessment unit flow action benefits and weighted for effect to assessment unit using Little Creek mileage (affected portion relative to assessment unit miles). 1. Boyd Little Creek SSL (4 entries) 0.21 cfs lease 2012-2015, 0.15 cfs, 0.15 cfs, 0.38 cfs, 0.38 cfs. 2. Freshwater Trust (2014) 0.15 cfs. 3. Umatilla Tribe (CTUIR) Water Transaction 0.38 cfs. Total average = 0.043 cfs. Denominator is 7.5 cfs, used mileage in assessment unit to adjust (based on NHD's method). There are 47 steelhead miles within the assessment unit. Note that the assessment unit includes several tributaries; Little Creek is only a small part of the whole assessment unit (approximately 22-29% of Catherine Creek total flow [average 25%]). Little Creek 0.38 is entered as annual, but committed long-term. Other entry (contract #58604) is entered as 1 cfs, and was actually 1 cfs. Also consulted Freshwater Trust data. Total calculated uplift was 0.6%	30.6			30.6	31	0.4	2 flow projects in calculations table, resulting in 0.4 % uplift. Denominator: Base flow of Little Creek, which is 7.5 cfs.	30.6	Cannot predict to 2033.	35	35	35	35	several diversions on Little, Mill, and Ladd Crs	Conservative estimate - assumes 3 cfs from water transactions.				
Snake River Steelhead	Grande Ronde River upper mainstem	UGS10A	Middle Catherine Creek and Tributaries - Pyles Creek to Swackhammer Barriers	1.1: Habitat Quantity: Anthropogenic Barriers	2.00%			95						95			95			95	95	0	Identical to CCC3A: same actions and denominator.	95	0	Identical to CCC3A: same actions and denominator.	97	100	97	100	increased from 80 partial juvenile barrier at mouth of Pyles Ck	
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	0	Add CC RM 37 Project to steelhead assessment unit UGS10A, as per assessment unit CCC3A, to limiting factors 4.1, 4.2, 5.1, 5.2, 6.1, 6.2, and 7.2. See EP's table for percent function improvement prorating calculations. Project treated 0.75 miles. Denominator was determined to be 3.7 miles. Based on Beechie citation regarding needing 5+ years growth for effectiveness, panel determined 0% change.	45		No adjustment.	48	3	Using 15% proration for 2033 results in 3.0% uplift.	45	45	0	Identical to CCC3A: same actions and denominator.	46.3	1.3	Identical to CCC3A: same actions and denominator.	46	47	55	60		
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	0	Add CC RM 37 Project to steelhead assessment unit UGS10A, as per assessment unit CCC3A, to limiting factors 4.1, 4.2, 5.1, 5.2, 6.1, 6.2, and 7.2. See EP's table for percent function improvement prorating calculations. Project treated 0.75 miles. Denominator was determined to be 3.7 miles. Based on Beechie citation regarding needing 5+ years growth for effectiveness, panel determined 0% change.	45		No adjustment.	46.5	1.5	Using 7.5% proration for 2033 results in 1.5% uplift.	45	45	0	Identical to CCC3A: same actions and denominator.	45.7	0.7	Identical to CCC3A: same actions and denominator.	45.1	45.1	46	60		Estimate considers improvements from LF 4.1 projects
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			22.2	2.2	Add CC RM 37 Project to steelhead assessment unit UGS10A, as per AU CCC3A, to limiting factors 4.1, 4.2, 5.1, 5.2, 6.1, 6.2, and 7.2. Project treated 0.75 miles. Denominator was determined to be 3.7 miles. Panel determined 11 percent function improvement prorating calculation. Snorkel survey of mainstem looked good, but 442-foot side channel has been blocked off by sediments recently at baseflows, so no summer rearing occurs. However, it was designed for high flow refuge, not perennial availability. Project needs more water to get full benefit. There are landowner constraints regarding what could be done. This channel type would ideally have had more side channel than what was built, perhaps 1:1 mainstem to peripheral. 442 feet of new peripheral per 3,960 feet existing. So within treatment area, it is now at approximately 11% of properly functioning condition (not counting vegetation development in this limiting factor). Some geomorphic changes are expected to continue. Panel determined total uplift of 2.2%.	22.2			22.2	23	0.8	Identical to CCC3A: same actions and denominator.	23.1	0.9	Identical to CCC3A: same actions and denominator.	25	30	30	35	Potential u/s of Union (confined and semi-confined reaches); less below Union (unconfined)	CC-37, 38 & 39 PROJECTS PROVIDE CHANNEL ADDITION AND WETLAND CONNECTION.			
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			25.1	5.1	Add CC RM 37 Project to steelhead assessment unit UGS10A, as per AU CCC3A, to limiting factors 4.1, 4.2, 5.1, 5.2, 6.1, 6.2, and 7.2. Project treated 0.75 miles. Panel determined 25% function improvement prorating calculation. See LF 5.1 rationale. Panel considered entire 0.75 mile of bank slope treatment and changes in entrenchment ratios (have ChaMP width to depth ratio data, but it is more focused on area within active channel). Main channel was designed to be slightly oversized due to flooding concerns, which reduced floodplain connection. Hence it is not as close to properly functioning condition as it might have been (rationale for the smaller improvement factor). Should have been a B Channel, but was built as a C (more entrenched). Remote sensing showed "moderate" flooding potential. Historically, it would have had extensive floodplain connection with many beaver dams. Panel used 25% of properly functioning condition to arrive at 5% change over the assessment unit.	25.1			25.1	25.2	0.1	Identical to CCC3A: same actions and denominator.	25.9	0.2	Identical to CCC3A: same actions and denominator.	25	30	30	35		Implementation planned for CC 37 in 2012, CC 36 in 2014, 38 & 39 in 2015/16.			
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			48.1	8.1	Add CC RM 37 Project to steelhead assessment unit UGS10A, as per AU CCC3A, to limiting factors 4.1, 4.2, 5.1, 5.2, 6.1, 6.2, and 7.2. Project treated 0.75 miles. Panel determined 40% function improvement prorating calculation. Sinuosity went from 1.1 to 1.45 (from ChaMP data, design criteria for project, and historical information). Historical baseline was 2.2-2.4 from old scroll patterns, so it is now at 40% of properly functioning condition. Width to depth change yields similar percentage change (12 historical, 22.6 pre-project, to 18.6 post-project at bankfull). 40 percent of properly functioning condition results in 8% change.	48.1			48.1	49	0.9	Identical to CCC3A: same actions and denominator.	49	0.9	Identical to CCC3A: same actions and denominator.	45	45	50	50	33% of channel within Union ; 67%: d/s of Union; channelized throughout reach				
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			50.1	5.1	Add CC RM 37 Project to steelhead assessment unit UGS10A, as per AU CCC3A, to limiting factors 4.1, 4.2, 5.1, 5.2, 6.1, 6.2, and 7.2. Project treated 0.75 miles. Panel determined 25% function improvement prorating calculation. Project placed 13 wood complexes. ChaMP data indicates pieces per 100 meters went from 13.4 to 64.7 within bankfull channel. 74 structures, including 81 logs with root wads, plus others resulting in 186 logs. Panel discussed 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 pieces per 100 meters included embedded logs/crbs. Fish research shows less fish response to embedded structures. About half were instream. But ChaMP sites were in a higher density part of project. Compared to Minam reference of 18 pieces per 100 meters. Using 14 pieces per 100 meters for entire reach, panel weighted improvement at 25% of properly functioning condition. Denominator is 3.7 miles; thus total benefit is 5% uplift.	50.1			50.1	56.9	6.8	Identical to CCC3A: same actions and denominator.	56.9	6.8	Identical to CCC3A: same actions and denominator.	60	65	60	80					
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			45.7	5.7	Add CC RM 37 Project to steelhead assessment unit UGS10A, as per AU CCC3A, to limiting factors 4.1, 4.2, 5.1, 5.2, 6.1, 6.2, and 7.2. Project treated 0.75 miles. Project included bank stabilization, so some immediate benefit. Reduction in bank height as well. Panel determined 28% function improvement prorating calculation. Bank stabilization/layback work: 1,125 linear feet treated (28% of project length). Also added gravel. ChaMP data D50 and pool tail change shows more fine sediment now, and more boulders. Using length as metric, panel determined 5.7% uplift.	45.7			47.7	7.7	Added 10% to proration for 2033, i.e., 38% proration, resulting in 7.7% uplift in 2033.	45.7	48.1	2.4	Identical to CCC3A: same actions and denominator.	48.8	3.1	Identical to CCC3A: same actions and denominator.	42.5	45	46	50		
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	0	100% of days are in exceedance from July 20 to Aug 31 of 20 degrees C (ChaMP data). Background temperatures are too hot for flow increases to have measurable effect.	20			20			20	20	0	Identical to CCC3A: same actions and denominator.	20	0	Identical to CCC3A: same actions and denominator.	21	41	23	42	lower third temp limited;	Estimate considers benefits from CC-44 & other upstream projects plus conservative assumption of 3 cfs for upstream water transactions.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 LF Weight	Adjusted 2018 LF Weight	Adjusted 2018 LF Weight Rationale	2012 Low Bookend	2016 (Updated) Low Bookend (adjusted 3/2016)	2016 Updated Low Bookend Rationale (adjusted 3/2016)	Updated 2018 Estimate (2012-2015 Look Back workshop)	Look Back % Change	Estimate Comments / Rationale	Updated 2018 Look Back Estimate (adjusted 3/2016)	Look Back 2018 % Change (adjusted 3/2016)	Look Back 2012-2018 Estimate Comments / Rationale (adjusted 3/2016)	Updated 2033 Look Back Estimate (adjusted 3/2016)	Look Back 2033 % Change (adjusted 3/2016)	Look Back 2033 Estimate Comments / Rationale (adjusted 3/2016)	2016 Low Bookend (Incorporating look back uplift and updated low bookends during Look Forward Process)	Updated 2018 Estimate (2016 Look Forward)	Look Forward Updated 2018 Estimate % Change	2016-2018 Look Forward Estimate Comments/Rationale	Updated 2033 Estimate (2016 Look Forward)	Look Forward Updated 2033 Estimate % Change	Look Forward Updated 2033 Estimate Comments/Rationale	2013-2018	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	2012 LF Weight and Bookends Comments	2012 Estimates Comments		
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%									0			0		0		0	0	0	Identical to CCC3A: same actions and denominator.	0	0	0	Identical to CCC3A: same actions and denominator.					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%									0			0		0		0	0	0	Identical to CCC3A: same actions and denominator.	0	0	0	Identical to CCC3A: same actions and denominator.					Point discharge between RM 38-39; need more info to quantify impact	
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				25	5 See EP's table of instream flow leases per year and note database changes to assign these to the proper assessment unit. Several projects moved from UGS10A to UGS98. For UGS10A, Malmburg lease is 0.26 cfs (Prescott ditch: 100% of assessment unit reach); Sheehy (downstream from town: 80% of assessment unit reach) lease is 0.53 cfs; Malmburg Split lease is 0.19 cfs; D. Ricker lease is 0.34 cfs (100% of assessment unit), DRLT lease is 0.31 cfs (RM 44-12: 100% of assessment unit), LC lease is 0.38 cfs (at Godley Ditch at Union: 80% of assessment unit), DS lease is .012 cfs (at Godley Ditch at Union: 80% of assessment unit); Southern Cross Forbearance is 1.08 cfs (100% of assessment unit); Glenn Smith Full is 0.22 cfs (100% of assessment unit). Panel considered flow locations (river miles from reach assessment) in relation to reach length and dam (e.g., between Piles and Swackhammer), and weighed accordingly (see table). Flow was measured at 10th Street. Panel calculated total 1.5 cfs average annual flow benefit. Baseflow denominator was determined as 25 cfs baseflow (95% exceedance based on flow record), but ODFW (Oregon Method IFIM) instream net benefit analysis used 30 cfs baseflow. Panel chose 30 cfs as baseflow denominator, resulting in total uplift of 5%. Note: Reexamine bookends at next Look Forward.	25			25	34.3	9.3	Identical to CCC3A: same actions and denominator.	25			40	50	40	55	Many Diversions in this reach	Conservative estimate based on 3 cfs.					
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			114.6	19.6	CC44 Project: only Phase 2 (2014) and Phase 3 (2015) had fish passage actions. In Phase 2, 4 water rights were combined into 1 Point of Diversion. Also in Phase 2, 2 barriers were removed -- Smith push-up dam was removed and irrigation intake removed on Smith/Southern Cross; roughened channel was constructed for new point of diversion and pipe delivery 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 were opened out of 23 Streamnet steelhead miles in the assessment unit. See EP's table with benefit weightings (25% improvement). In Phase 3 (2015), on Smith's and Kinsley (1 additional mile, rest is counted now) (still underway, include in Look Forward). Total prorated uplift calculated as 19.6%.	114.6			114.6	141.6	27	Same actions and rationale as CCC3B, but different denominator used in calculation tables.	141.6	27	Same actions and rationale as CCC3B, but different denominator used in calculation tables.		97	100	97	100	one diversion structure ~ rm 41 impedes juvenile movement	Estimate based on CC 44 project; may be more steelhead barriers not yet known/identified.				
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	0	CC44 Project Phase 1 included 666 plants at wood sites (1,400 lineal feet). Phase 2 included 11,119 plants and fencing along 1.13 miles. There is no woody vegetation yet in exclusion fencing areas. 2 CRP projects (included due to action agency nexus, BPA contract to Asotin County in PISCES. Link to Model Watershed? Was it completed? Either way, no functional effect yet). Little Catherine RM 28/Milk Creek/Pinship Fencing and Planting project included 18.63 acres of riparian fencing, planting, and acquisition (assume 1.8 mile, if 35 feet on each side). See EP's table of projects and current function percentage. Plantings are too young; hence no uplift. Note: Count Phase 3 in Look Forward (see EP's table).	60	60.9	0.9	3/18/16: In QA process, realized this assessment unit was not revisited by panel to calculate 2033 uplift. Weighting factor of 15% applied to projects in line with typical panel approach (to account for plant growth). Resulting 2033 uplift is 0.9%.	60	60	0	Same actions and rationale as CCC3B, but different denominator used in calculation tables.	62	2	Same actions and rationale as CCC3B, but different denominator used in calculation tables.	61	65	67	75	Estimate does not consider USFS Catherine Cr Riparian Mtnce & Thinning Project - not enough project information known to estimate improvements at 2012 EP Workshop.					
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	0	See notes for limiting factor 4.2 -- no uplift change yet.	60	60.5	0.5	3/18/16: In QA process, realized this assessment unit was not revisited by panel to calculate 2033 uplift. Weighting factor of 7.5% applied to projects in line with typical panel approach (to account for plant growth). Resulting 2033 uplift is 0.5%.	60	60	0	Same actions and rationale as CCC3B, but different denominator used in calculation tables.	61	1	Same actions and rationale as CCC3B, but different denominator used in calculation tables.	60	60	61	70	Estimate considers improvement from 4.1 LF projects.					
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			68.9	3.9	See EP's table. Panel rated value based on current percentage of properly functioning condition rather than using portion of total length treated. CC44 project phases (See limiting factor 6.2 project descriptions). Side channel work was constrained by landowner. Fish use of Side Channel #3 was seen immediately. Under Phase 1, 862 feet were treated and are currently at 5% of properly functioning condition. Under Phase 2, 5,361 feet (1.13 miles) were treated. Phase 3 was rated at 50% current function (0.66 miles treated, which is 60% of channel length). This is a more forested reach. Historical imagery indicated many beaver and side channels. Total prorated functional change was determined to be a 3.9% uplift.	68.9			68.9	79.5	10.6	Same actions and rationale as CCC3B, but different denominator used in calculation tables.	79.5	10.6	Same actions and rationale as CCC3B, but different denominator used in calculation tables.	66	70	66	75	lower 4 miles channel anthropogenically altered; naturally constrained upstream	Estimate based on CC44 project - 5.5 miles restoration potential. Little benefit from water transactions until channels are formed.					
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			65.3	0.3	See EP's table. Panel rated value based on current percentage of properly functioning condition rather than using portion of total length treated. Phase 1 (rated at 0%), Phase 2 enhanced already low spots in floodplain (rated at 0%), and Phase 3 designed oversized channels due to landowner concern, so was only activated at higher flows, which reduced biological value -- but side channels increased floodplain complexity (10%). Thus total calculated uplift was 0.3%.	65.3			65.3	71.1	5.8	Same actions and rationale as CCC3B, but different denominator used in calculation tables.	71.1	5.8	Same actions and rationale as CCC3B, but different denominator used in calculation tables.	66	70	67	75	lower 4 miles channel anthropogenically altered; naturally constrained upstream	Conservative estimate due to uncertain project designs, etc. at time of 2012 EP workshop					
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			62.3	2.3	See EP's table and other limiting factor discussion notes. Panel rated value based on current percentage of properly functioning condition rather than using portion of total length treated. Phase 1 included bank stability and gravel sorting over 850 feet spread over almost 2 miles (8% improvement prorated factor). Phase 2, including roughened channel was assigned an improvement prorated factor of 10%. Phase 3: 1:1 sinuosity vs. 1:4 (small improvement), 65 feet down to 50 feet wide properly functioning condition would be 42 feet; improvement in width to depth ratio, pool and improvements (50% improvement prorated factor). Total calculated uplift was 2.3%.	62.3			62.3	68.3	6	Same actions and rationale as CCC3B, but different denominator used in calculation tables.	68.3	6	Same actions and rationale as CCC3B, but different denominator used in calculation tables.	62	70	63	75	Conservative estimate due to uncertain project designs, etc. at time of 2012 EP workshop						
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			64.3	4.3	See EP's table and other limiting factor discussion notes. Panel rated value based on current percentage of properly functioning condition. CC44 projects: Phase 1 (2013) was wood placement and side channels only, on Kerbie, Fite, and Smith properties (6+5 = 11) large wood complexes, 862 main channel feet, 546 feet side channel (including alcoves); 802 pieces were added to 1,408 feet (262 meters) including side channels, resulting in 300 pieces per 100 meters; even if calculations used entire reach length = above properly functioning condition wood density (27 pieces per 100 meters reference condition). Phase 2 placed 970 pieces over 1,870 feet of Kirby and Fite; 29 large wood complexes, 1 side channel built (421 feet long), 2 alcoves built, and roughened channel at new intake. Phase 3, implemented in 2015 on Smith property (still underway): 56 wood structures (1, 0.66 mile, 2,113 feet of side channel, and 5 alcoves. But phases are overlapping, so when recalculated with all wood phases lumped: 2 miles (3,200 meters) total treated, (1772 [Phase 1 and Phase 2] + Phase 3 resulting in over 100 pieces per 100 meters, which is well above the 27 pieces per 100 meters properly functioning condition from Little Minam River reference criterion. However, panel noted that up to 40 pieces per 100 meters is seen in reaches upstream, and configurations may differ from natural (e.g., channel-spanning jams, key vs. other smaller wood). Thus panel prorated % function to 75% based on how many pieces were in channel vs. embedded. Note that some (e.g.) Phase 2 large wood were for bank stabilization rather than instream habitat structures. Phases 1 (apex jams) and 3 have more of a fish habitat aim/focus. Side channel wood additions benefit winter rearing more than summer rearing; however, this does not change value because population life history phase bottleneck has not been identified. This reach is in transition with regard to water temperatures. Temperatures get high, but it is still used. Snorkel surveys have seen fish use associated with even single wood pieces. Denominator was set at 23 miles. Thus total calculated uplift was 6.5%. This covered both the record on their official assessment for 2012 and the 2012 EP workshop.	64.3			64.3	77	12.7	Same actions and rationale as CCC3B, but different denominator used in calculation tables.	77	12.7	Same actions and rationale as CCC3B, but different denominator used in calculation tables.	65	70	65	75	7 of 9 miles treated; conservative estimate due to uncertainty of design at time of 2012 EP workshop						

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	2012 Weight	Adjusted 2018 LF Weight	Adjusted 2018 LF Weight Rationale	2012 Low Bookend	2016 (Updated) Low Bookend (adjusted 3/2016)	2016 Updated Low Bookend Rationale (adjusted 3/2016)	Updated 2018 Estimate (2012-2015 Look Back workshop)	Look Back % Change	Estimate Comments / Rationale	Updated 2018 Look Back Estimate (adjusted 3/2016)	Look Back 2018 % Change (adjusted 3/2016)	Look Back 2012-2018 Estimate Comments / Rationale (adjusted 3/2016)	Updated 2033 Look Back Estimate (adjusted 3/2016)	Look Back 2033 % Change (adjusted 3/2016)	Look Back 2033 Estimate Comments / Rationale (adjusted 3/2016)	2016 Low Bookend (Incorporating look back uplift and updated low bookends during Look Forward Process)	Updated 2018 Estimate (2016 Look Forward)	Look Forward Updated 2018 Estimate % Change	2016-2018 Look Forward Estimate Comments/Rationale	Updated 2033 Estimate (2016 Look Forward)	Look Forward Updated 2033 Estimate % Change	Look Forward Updated 2033 Estimate Comments/Rationale	2013-2018	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	2012 LF Weight and Bookends Comments	2012 Estimates Comments	
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			65.4	5.4	See EP's table and other limiting factor discussion notes. Panel rated value based on current percentage of properly functioning condition. 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. Thus panel calculated uplift as 6.9%. However, 6.9% overall seemed high to the panel, given that some straight and entrenched areas in the reach are still eroding banks. Sediment problems are roughly equally distributed throughout reach. Thus panel adjusted Phase 2 and 3 improvement proration to 60% and revised total uplift to 5.4%.	65.4			65.9	5.9	3/18/16: In QA process, realized this assessment unit was not revisited by panel to calculate 2033 uplift. 2018 weighting factors were adjusted upward by 7.5% in line with typical panel approach (to account for plant growth). Resulting 2033 uplift is 5.9%.	65.4	68	2.6	Same actions and rationale as CCC3B, but different denominator used in calculation tables.	69.4	4	Same actions and rationale as CCC3B, but different denominator used in calculation tables.		61	65	63	75		Conservative estimate due to uncertain project designs, etc. at time of 2012 EP workshop
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	0	57% of days are in exceedance from July 20 to Aug 31 of 20 degrees C (ChAMP data). It is cooler upstream of this assessment unit, but much solar radiation warming occurs as water flows downstream to this assessment unit. It is not lethal for steelhead, but a concern. Thus, panel determined zero uplift.	60			60		60	60	0	Same actions and rationale as CCC3B, but different denominator used in calculation tables.	60.5	0.5	Same actions and rationale as CCC3B, but different denominator used in calculation tables.	60.1	65	61	75	upper 2/3 in good conditions			
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			42.8	2.8	See EP's table of instream flow leases and term dates. Include upstream projects if relevant. Cross-checked Freshwater Trust list of flow projects (used "final order rate at point of diversion" cfs, which accounted for loss rate vs. 10th Street measurements). Four projects in table. Two Ricker leases (0.39 and 0.33 cfs, one is TLT). Southern Cross Forbearance is 1.075 cfs, and Glen Smith Full is 0.22 cfs. Schubert, 0.22 cfs (is same as "DS" project), was not included. Panel discussed merits of adjusting proration/weightings for each project using percentage of total assessment unit stream mileage benefiting from these flows (location of point of diversion in related to steelhead usable area and portion of assessment unit), water right seniority, and "instream dates." Panel decided to weigh at 100% due to point of diversion location in re AU. Full diversion data set is not ready to use as it is not yet QA/QC'd. Total average is 0.84 cfs. Panel used 30 cfs as the baseflow denominator. Total uplift after weighting was 2.8%. Note: CC44 project flow benefits will need to be included in Look Forward, but on-farm water conservation conversion on Smith property does not result in official instream water right benefit, so it is difficult to track fish benefit from water left in stream).	42.8			42.8		44.4	1.6	Same actions and rationale as CCC3B, but different denominator used in calculation tables.	42.8			50	50	50	50	30 cfs baseflow Aug-Sep; 10 cfs of this diverted	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)			
Snake River Steelhead	Grande Ronde River upper mainstem	UGS11	South Fork Catherine Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%			80			80	0	Two projects considered: Corral Creek Project: large wood, riparian plantings (1 mile in 2014-2015) and South Fork riparian project. Both are too recent to function. Currently at 0% function.	80		No adjustment.	88.1	8.1	For 2033, panel prorated improvement to 20%, resulting in 8.1% uplift.	80	80		Not adding limiting factor 1.1, due to limited habitat.	80			80	90	80	95		Not enough info about USFS projects to estimate benefits at 2012 EP Workshop	
Snake River Steelhead	Grande Ronde River upper mainstem	UGS11	South Fork Catherine Creek	4.2: Riparian Condition: LWD Recruitment	15.00%			80			80	0	Two projects considered: Corral Creek Project: large wood, riparian plantings (1 mile in 2014-2015) and South Fork riparian project. Both are too recent to function. Currently at 0% function. [Need to check re: USFS project nexus]	80			84.1	4.1	For 2033, panel prorated improvement to 10%, resulting in 4.1% uplift.	80	80			80			80	90	80	95			
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			92	12	See EP's table for project details and calculations. Corral Creek Project installed large wood and riparian plantings (1 mile in 2014-2015). Project installed 115 large pieces (U.S. Forest Service to corroborate) over 1 mile, resulting in 7.2 pieces per 100 meters. This was compared to Little Mixam reference condition of 27 pieces per 100 meters, and prorated as 27%. Add South Fork Catherine Creek riparian planting project (BPA funded staff labor - installed instream wood structures -- 19 structures over 4 miles). Project added 8 pieces per 100 meters. ChAMP has 6 sites in area, and shows 34 pieces per 100 meters naturally in the area, but site overlap is not perfect. But structures were added where there were not enough. This panel prorated as 30% of reference wood density. Denominator was determined as 13.5 steelhead miles in assessment unit per Streamnet (seemed low to EP). Total uplift set at 12%. [Need to check re: USFS project nexus]	92			92		92	92			80	90	80	95							
Snake River Steelhead	Grande Ronde River upper mainstem	UGS11	South Fork Catherine Creek	7.2: Sediment Conditions: Increased Sediment Quantity	25.00%			70			97.6	27.6	See EP's table for project details and calculations. Corral Creek Project included and South Fork Catherine Creek project (4.5 mile project) added to database (included road obliteration and plantings). South Fork project removed 2 undersized culverts that were scouring (having immediate benefit). BPA funded cross-drain culvert work too. Corral Creek project benefit was prorated based on sediment reduction expected from number of cross-drain culverts (10+) at 35%. South Fork project removed all cross-drain culverts, included side channel and floodplain enhancements, and was prorated at 75% improvement in sediment retention from vegetation establishment in former road prism; this 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 Forward, note that Upper Collins Creek needs to be dealt with. Panel calculated 27.6% uplift. [Need to check re: USFS/AA project nexus]	97.6			101.7	31.7	Prorated for Corral Creek at 45% for 2033, which is 10% more than for 2018. For SF Catherine Creek, panel determined 85% proration for 2033, which is 10% more than for 2018. Yields 31.7% uplift for 2033.	97.6	97.6		Collins will not happen in 2018 period.	97.6			70	85	70	95		Not enough info about USFS projects to estimate benefits at 2012 EP Workshop	
Snake River Steelhead	Grande Ronde River upper mainstem	UGS11	South Fork Catherine Creek	8.1: Water Quality: Temperature	10.00%			80			80	0	Temperature is not a problem in this reach. Note in Look Forward. No action. No change.	80			80		80	80				80			80	90	80	95			
Snake River Steelhead	Grande Ronde River upper mainstem	UGS11	South Fork Catherine Creek	9.2: Water Quantity: Decreased Water Quantity	10.00%			85			85	0	No action. No change.	85			85		85	85				85			85	90	85	90			
Snake River Steelhead	Grande Ronde River upper mainstem	UGS12	North Fork Catherine Creek	1.1: Habitat Quantity: Anthropogenic Barriers	0.00%						12	12	Ford Removal project: 6 mile access improvement. This was a flow-dependent barrier, but not 100% blocked. It was a juvenile upstream migration barrier at low flow (baseflow conditions overlaid on LH timing: 3 months of impact). Prorated improvement to 25%, resulting in 12% uplift. Note for Look Forward note: Add weight to limiting factor?	12			12		12	12		No benefit from adult weir project due to limited habitat value.	12								PASSAGE IMPROVEMENT PROJECT IDENTIFIED BUT PASSAGE LF has 0% weight so no benefit from project. If barrier exists consider adding weight.		
Snake River Steelhead	Grande Ronde River upper mainstem	UGS12	North Fork Catherine Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%			80			80		No actions in database. Panel had no actions to add.	80			80		80	80				80			80	90	80	95			
Snake River Steelhead	Grande Ronde River upper mainstem	UGS12	North Fork Catherine Creek	4.2: Riparian Condition: LWD Recruitment	15.00%			80			80		No actions in database. Panel had no actions to add.	80			80		80	80				80			80	90	80	95			
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		No actions in database. Panel had no actions to add.	80			80		80	80				80			80	90	80	95			
Snake River Steelhead	Grande Ronde River upper mainstem	UGS12	North Fork Catherine Creek	7.2: Sediment Conditions: Increased Sediment Quantity	25.00%			70			70		No actions in database. Panel had no actions to add.	70			70		70	70				70			70	85	70	95		Not enough info about USFS project to estimate benefits at 2012 EP Workshop	
Snake River Steelhead	Grande Ronde River upper mainstem	UGS12	North Fork Catherine Creek	8.1: Water Quality: Temperature	10.00%			80			80		No actions in database. Panel had no actions to add.	80			80		80	80				80			80	90	80	95			
Snake River Steelhead	Grande Ronde River upper mainstem	UGS12	North Fork Catherine Creek	9.2: Water Quantity: Decreased Water Quantity	10.00%			85			85		No actions in database. Panel had no actions to add.	85			85		85	85				85			85	90	85	90			