

**Calendar Year 2019
Annual Operation Plan
for
Salmon and Steelhead
Production Programs
in the
Salmon and Snake River Basins**

Prepared by

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Table of Contents

0. Preamble	3
1. Summer Steelhead	4
1.1. Timeline and Flowchart for Steelhead Production	5
1.2. Releases in 2019 (Smolt BY 2018, Egg Box BY 2019)	7
1.3. Trap Operations and Production Planning for 2019 (Smolt BY 2019, Egg Box BY 2019)	11
1.4. Marking and Rearing Plan for 2019 (Smolt BY 2109)	17
2. Spring/Summer Chinook	20
2.1. Timeline and Flowchart for Spring/Summer Chinook Production	21
2.2. Releases in 2019 (Smolt BY 2017, Egg Box BY 2019)	23
2.3. Trap Operations and Production Planning for 2019 (Smolt BY 2019)	28
2.4. Early Rearing and Marking Plan for 2019 (Smolt BY 2018)	33
3. Fall Chinook	36
3.1. Releases in 2019 (Sub-Yearling BY 2018)	37
3.2. Trap Operations and Production Planning for 2019 (Sub-Yearling BY 2019)	37
3.3. Marking and Rearing Plan for 2019 (Sub-Yearling BY 2018)	37
4. Sockeye	38
4.1. Timeline and Flowchart for Sockeye Salmon Production	39
4.2. Releases in 2019 (Smolt BY17, Captive Adult BY16, BY15, BY14)	41
4.3. Trap Operations and Production Planning for 2019 (BY 2019 for Smolt and Captive Adult Programs)	43
4.4. Marking and Rearing Plan for 2019 (Smolt BY 2018)	45
5. Appendices	46
5.1. BY2019 Brood Calculator	46

0. Preamble

The Annual Operating Plan (AOP) meeting and AOP/SOP documents are planning, coordination and logistics tools that identify the expected implementation of a number of hatchery operation and research/monitoring activities for the coming year in a transparent, open manner.

It is the responsibility of all AOP parties to participate in AOP meetings, provide follow up information and assistance as requested or needed, and work in good faith to complete the AOP document within the timeframe agreed upon at the AOP coordination meeting. A finalized electronic version of the AOP will be available to all cooperating agencies and serve as the working version of the document.

If a disputed or incomplete item is identified at the AOP meeting and persists to the end of the agreed completion timeframe for finalizing the AOP documents, the AOP will be finalized without the disputed or incomplete section. However, parties to the dispute will add a placeholder in the document, so they can work toward resolution.

After the AOP is finalized, and based on unforeseen or unanticipated circumstances (e.g., lower than expected returns, loss of production, infrastructure issues as examples), changes or deviations from the AOP may be warranted. In those cases, there is an expectation that the lead agency that has identified the issue will communicate with the appropriate AOP parties, through the weekly coordination calls or by email, so they can work collaboratively to address it and/or work towards resolution. Implemented changes should be documented in writing by the lead agency and communicated, to ensure transparency and as documentation of the change. These changes should also be captured in various year-end reports.

1. Summer Steelhead

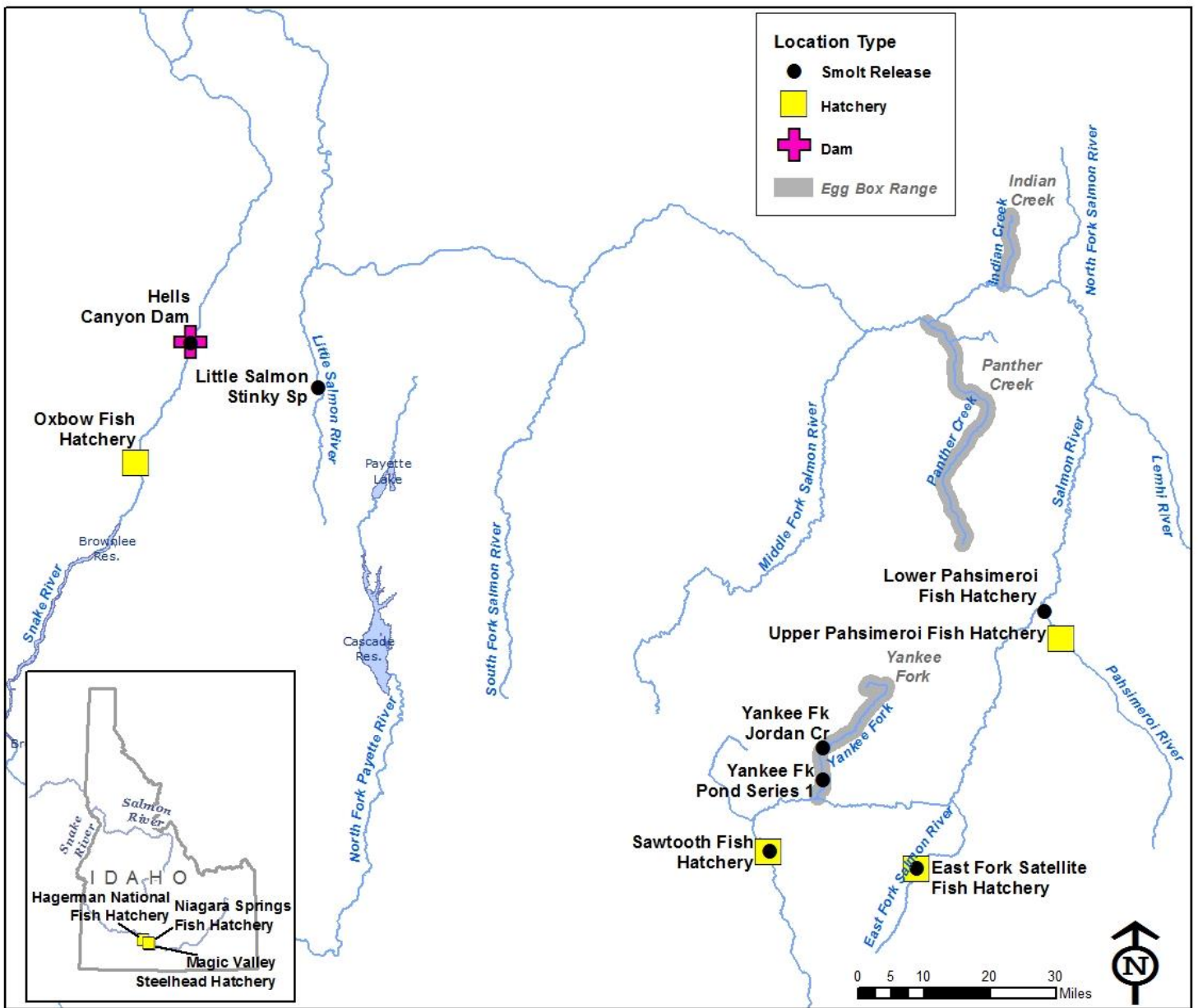


Figure 1.1. Steelhead facilities, smolt releases and egg box locations.

Table 1.1. Steelhead Release Goals.

Smolt Release Program	Rearing Facility	Release Site	Parent Stock	BY 2018 Smolt Release Goal
LSRCP / IDFG	HNFH	Sawtooth Weir	SawA	1,410,000
	HNFH	Sawtooth Weir (PRAS Eval)	SawA	90,000
	HNFH	E. Fork Salmon R. - Upper	EFNat	60,000
	Total			1,560,000
	MVFH	Sawtooth Weir	SawA	279,000
	MVFH	Little Salmon R. - Stinky Sp.	PahA	186,000
	MVFH	Pahsimeroi Weir	USRB	155,000
	MVFH	Pahsimeroi Weir	DworB	93,000
	MVFH	Yankee Fork	USRB/DworB	620,000
	MVFH	Little Salmon - Stinky Sp.	USRB/DworB	217,000
Total			1,550,000	
IPC / IDFG	NSFH	Pahsimeroi Weir	PahA	800,000
	NSFH	Little Salmon R. - Stinky Sp.	PahA	200,000
	NSFH	Little Salmon R. - Stinky Sp.	OxbA	250,000
	NSFH	Snake R. Hells Canyon	OxbA	550,000
Total			1,800,000	
Grand Total				4,910,000

Egg Box Program	Hatchery Egg Source	Egg Box Site	Parent Stock	Egg Box BY2019 Outplant Goals
SBT	PFH	Yankee Fork	USRB/DworB ¹	500,000
		Panther Creek	PahA	400,000
		Indian Creek	PahA	100,000
		Total		1,000,000

¹ If smolt releases for Yankee Fork and Pahsimeroi are met and egg box needs cannot be met with USRB eggs, then DworB eggs will be considered for the SBT egg box program if available

1.1. Timeline and Flowchart for Steelhead Production

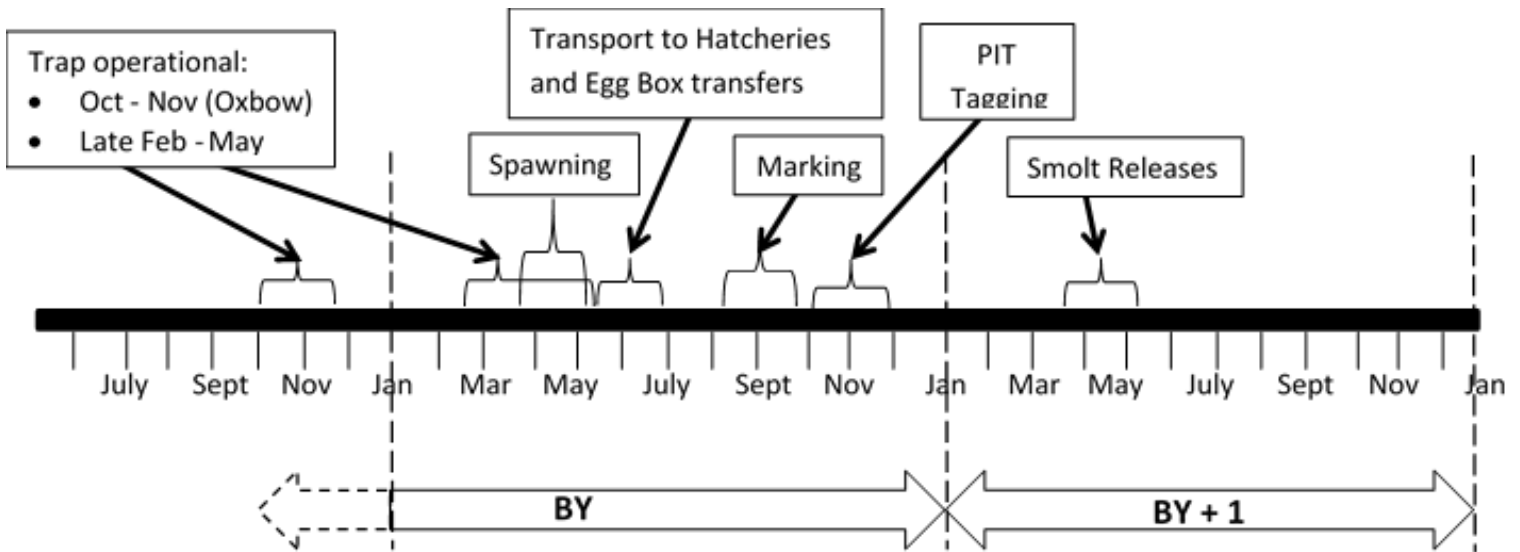


Figure 1.2. Timeline for Steelhead Production. Date ranges are shown to include all facilities' operations

STEELHEAD

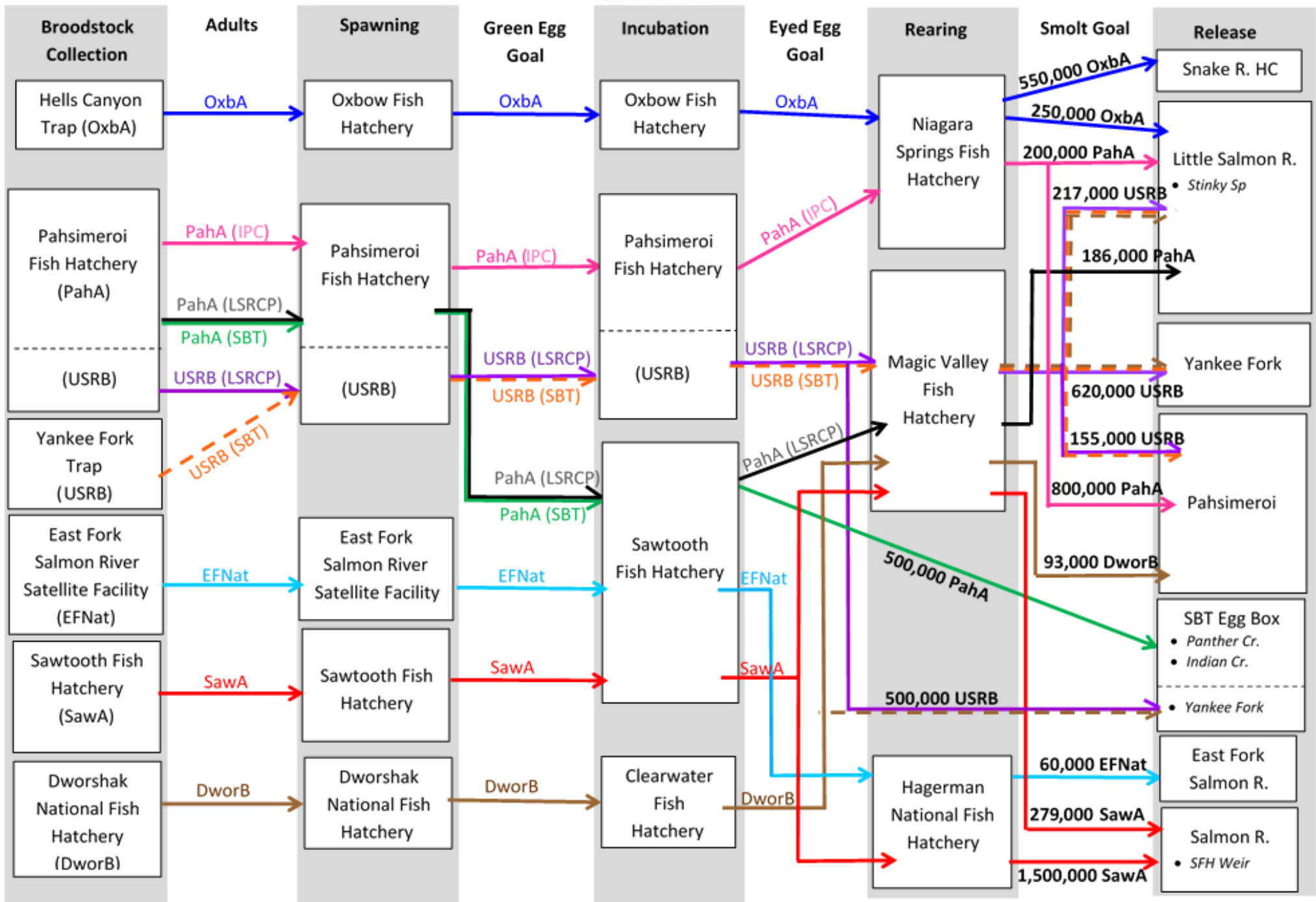


Figure 1.3. Fish and egg movements for Steelhead. Numbers reflect 2019 releases.

1.2. Releases in 2019 (Smolt BY 2018, Egg Box BY 2019)

1.2.1. Releases in 2019 (Smolt BY 2018, Egg Box BY 2019) – Totals

Table 1.2a. Steelhead Rearing Metrics for BY 2018 fish

Hatchery	Release Site	Stock	Eggs/Fry Shipped/Received	Inventory To Date		Release Goals		Excess Fry/ Fingerlings Released		Projected Smolt Releases		
				Date	Number	Number	Size (FPP)	Number	Release Site (Date)	Dates	Number	Size (FPP)
HNFH	Sawtooth Weir ¹	SawA	1,661,480	1/28/2019	1,485,712	1,410,000	4.5			4/1/19	1,450,000	4.5
HNFH	Sawtooth Weir (PRAS Eval)	SawA	99,297	1/28/2019	95,795	90,000	4.5			4/1/19	95,000	4.5
HNFH	E. Fork Salmon R. - Upper	EFNat	33,794	1/28/2019	32,052	60,000	4.5			4/23/19	31,500	4.5
Totals			1,794,571		1,613,559	1,560,000		-			1,576,500	
MVFH	Little Salmon R. - Stinky Sp.	PahA	263,401	2/5/2019	191,103	186,000	4.5	54,620	Salmon Falls /Oakley 9-18	4/15-4/17	189,000	4.5
MVFH	Pahsimeroi Weir	USRB	161,521	2/5/2019	146,786	155,000	4.5			4/11-4/12	143,800	4.5
MVFH	Pahsimeroi Weir	DworB	126,590	2/5/2019	107,614	93,000	4.5			4/12-4/15	106,000	4.5
MVFH	Sawtooth Weir	SawA	327,685	2/5/2019	286,220	279,000	4.5	24,530	Salmon Falls/Oakley 9-18	4/9-4/22	282,900	4.5
MVFH	Yankee Fork	USRB/DworB	730,132	2/5/2019	626,931	620,000	4.5	66,920	Salmon Falls/Oakley 9-18	4/1-4/9	616,000	4.5
MVFH	Little Salmon - Stinky Sp.	USRB/DworB	260,915	2/5/2019	220,777	217,000	4.5			4/17-4/19	217,000	4.5
Totals			1,870,244		1,579,431	1,550,000		146,070			1,554,700	
NSFH	Pahsimeroi Weir	PahA	880,985	1/1/2019	804,690	800,000	4.5			3/29	802,690	4.5
NSFH	Little Salmon R. - Stinky Sp.	PahA	247,176	1/1/2019	177,591	200,000	4.5			4/17	175,591	4.5
NSFH	Little Salmon R. - Stinky Sp.	OxbA	244,260	1/1/2019	256,704	250,000	4.5	4,000	Salmon Falls Reservoir	4/17	254,704	4.5
NSFH	Snake R. Hells Canyon	OxbA	621,322	1/1/2019	559,633	550,000	4.5			3/18	557,633	4.5
Totals			1,993,743		1,798,618	1,800,000		4,000			1,790,618	
Grand Total			5,658,558		4,991,608	4,910,000		150,070			4,921,818	

¹Totals include two 90k groups for PRAS evaluation

Table 1.2b. BY 2018 Steelhead Inventory to Date by Mark Type in 2019

Hatchery	Release Site	Stock	Inventory to Date						PIT Tags				
			Date	Total	Adipose Fin Clip		No Clip		Total # Tags ¹	Funding Source ²			
					No CWT	CWT	CWT	No CWT		CSS	LSRCP	IPC	USFWS
HNFH	Sawtooth Weir ³	SawA	1/28/2019	1,485,712	1,308,531	177,181			8,699	2,600	6,000		
HNFH	Sawtooth Weir (PRAS Eval)	SawA	1/28/2019	95,795		95,795			21,195		21,500		
HNFH	E. Fork Salmon R. - Upper	EFNat	1/28/2019	32,052			32,052		8,591	2,600	6,000		
Totals				1,613,559	1,308,531	272,976	32,052	-	38,485	5,200	33,500	-	-
MV FH	Little Salmon R. - Stinky Sp.	PahA	1/18/2019	192,217	192,217				2,201	2,200			
MV FH	Pahsimeroi Weir	USRB	1/18/2019	147,117			147,117		7,195	2,100	5,100		
MV FH	Pahsimeroi Weir	DworB	1/18/2019	108,443			108,443		4,196	1,300	2,900		
MV FH	Sawtooth Weir	SawA	1/18/2019	287,939	287,939				5,693	5,700			
MV FH	Yankee Fork	USRB/DworB	1/18/2019	637,458	415,443		222,015		13,292	5,300	8,000		
MV FH	Little Salmon - Stinky Sp.	USRB/DworB	1/18/2019	224,407	224,407				2,227	2,200			
Totals				1,597,581	1,120,006	-	477,575	-	34,804	18,800	16,000	-	-
NSFH	Pahsimeroi Weir	PahA	1/1/2019	804,690	804,690				8,998	3,000		6,000	
NSFH	Little Salmon R. - Stinky Sp.	PahA	1/1/2019	177,591	177,591				2,302	1,800		500	
NSFH	Little Salmon R. - Stinky Sp.	OxbA	1/1/2019	256,704	256,704				2,798	2,300		500	
NSFH	Snake R. Hells Canyon	OxbA	1/1/2019	559,633	559,633				8,593	2,600		6,000	
Totals				1,798,618	1,798,618	-	-	-	22,691	9,700	-	13,000	-
Grand Total				5,009,758	4,227,155	272,976	509,627	-	95,980	33,700	49,500	13,000	-

¹ Represents actual number tagged if tags have already been applied at the time of this report

² Represents number of tags paid for by each agency. Sum total may not equal "Total # Tags" for locations where tagging has already occurred

³ Totals include two 90k groups for PRAS evaluation

See **Table 1.1** for BY 2019 Steelhead Egg box transfers in 2019

1.2.2. Releases in 2019 (Smolt BY 2018, Egg Box BY 2019) - Narrative

Here are examples of things managers talk about for each release group, if there are departures from the norm (i.e., SOP). If no departure from the norm, enter NC for “No Change”.

- **Smolt/Egg Release Targets**- e.g. Were you below goal? Was you size at release different than SOP target? Did you depart from the mark plan?
- **Fish/Egg Health**- any epizootic history, anti-biotic treatments, was production culled at any point
- **Transportation/Releases**- e.g. timing, trucking issues, site access etc.

Release Location	Plan for 2019		Changes/Conditions that Occurred 2018-Early 2019		
	Release Target Smolt BY18, Egg BY19	Transport/Release Smolt BY18, Egg BY19	Fish Feeding BY18	Fish/Egg Health BY18	Marking BY18
<i>Niagara Springs Fish Hatchery (SOP Section 1.2)</i>					
Pahsimeroi Weir (PahA)	Met goal	NC	NC	Poor quality eggs from Pahsimeroi. Mostly blanks. 12.63% short from eyed egg to marking.	NC
L. Salmon R. Stinky Springs (PahA/OxbA)	Below goal by 3.5%.	NC	NC	Backfilled with oxbow stock to make up the Pahsimeroi shortage.	Clipped more Oxbow stock to makeup shortage of PAH fish.
Snake R. Hells Canyon (OxbA)	Met goal	NC	NC	Fed Aquaflor to control Coldwater Disease in five raceways.	NC
<i>Pahsimeroi Fish Hatchery - Egg transfers to SBT - BY 2019 (SOP Sections 1.4 and 1.10)</i>					
Yankee Fork (USRB)	NC	NC			
<i>Sawtooth Fish Hatchery - Egg transfers to SBT - BY 2019 (SOP Sections 1.4, 1.7 and 1.10)</i>					
Indian Creek (PahA)	NC	NC			

Release Location	Plan for 2019		Changes/Conditions that Occurred 2018-Early 2019		
	Release Target Smolt BY18, Egg BY19	Transport/Release Smolt BY18, Egg BY19	Fish Feeding BY18	Fish/Egg Health BY18	Marking BY18
Panther Creek (PahA)	NC	NC			
<i>Hagerman National Fish Hatchery (SOP Section 1.5)</i>					
East Fork Weir (EFnat)	Below goal due to extremely low adult returns, received 33,794 eggs.	NC	NC	NC	NC
Sawtooth Weir (SawA)	NC	NC	Fed PRAS groups Slow Sink Skretting Steelhead. Sent back bad quality Skretting PRAS feed.	NC	NC
<i>Magic Valley Fish Hatchery (SOP Section 1.6)</i>					
Sawtooth Weir (SawA)	NC	NC	Fed half Protec	NC	NC
L. Salmon R. Stinky Springs (PahA)	NC	NC	Fed half Protec	NC	NC
Pahsimeroi Weir (USRB)	NC	NC	Fed half Protec	NC	NC
Pahsimeroi Weir (DworB)	NC	NC	NC	NC	NC
Yankee Fork (USRB/DworB)	NC	No BY18 USRB stock available, backfilled with DWOR stock.	Fed half Protec	Fed Aquaflor to control Furunculosis	NC
L. Salmon R. Stinky Springs (USRB/DworB)	NC	NC	Fed half Protec	Fed Aquaflor to control Coldwater	NC

1.3. Trap Operations and Production Planning for 2019 (Smolt BY 2019, Egg Box BY 2019)

1.3.1. Trap Operations and Production Planning for 2019 (Smolt BY 2019, Egg Box BY 2019) – TOTALS

Table 1.3a. Steelhead Projected BY 2019 Smolt Production Goals for Release in 2020

Hatchery	Release Site	Stock	Smolt Release Goals
HNFH	Sawtooth Weir	SawA	1,410,000
	Sawtooth Weir (RAS Eval)	SawA	90,000
	E. Fork Salmon R. - Upper	EFNat	60,000
Total			1,560,000
MVFH	Sawtooth Weir	SawA	279,000
	Little Salmon R. - Stinky Sp.	PahA	186,000
	Pahsimeroi Weir	USRB	155,000
	Pahsimeroi Weir	DworB	93,000
	Yankee Fork	USRB (DworB)	620,000
	Little Salmon - Stinky Sp.	USRB	217,000
Total			1,550,000
NSFH	Pahsimeroi Weir	PahA	800,000
	Little Salmon R. - Stinky Sp.	PahA	200,000
	Little Salmon R. - Stinky Sp.	OxbA	250,000
	Snake R. Hells Canyon	OxbA	550,000
Total			1,800,000
Grand Total			4,910,000

Table 1.3b. Steelhead Spawning for BY 2019 - Based on Brood Calculator

Green Egg Goal					Spawning Goal					Broodstock Trapping Goals							
Spawning Facility	Brood Source	Rearing Hatchery	Release Site	Green Egg Goal	Brood Source	Rearing Hatchery	Fecundity	Spawn Goal		Brood Source	Rearing Hatchery	Projected Return to LGD ⁶	Trapping period		Trapping Goal ¹		
								Females	Males ⁵				Total	Season	Dates	Female	Male
SFH	SawA	HNFH	Sawtooth Weir	1,692,614	SawA	HNFH	5,100	332	332	SawA	HNFH	3,037	2019	3/18 - 5/2	332	332	664
			Sawtooth Weir (RAS Eval)	108,039			5,100	22	22				2019	3/18 - 5/2	22	22	44
		MVFH	Sawtooth Weir	361,635		MVFH	5,100	71	71		MVFH		2019	3/18 - 5/2	71	71	142
EFSR Sat.	EFNat	HNFH	E. Fork Salmon R. - Upper	84,364	EFNat	HNFH	6,252	14	14	EFNat	HNFH	162	2019	3/25 - 5/17	14	14	28
PFH	PahA	MVFH	Little Salmon R. - Stinky Sp.	261,905	PahA	MVFH	4,800	55	55	PahA	MVFH	1,360	2019	2/15 - 5/1	55	55	110
			Pahsimeroi Weir	1,051,374			4,800	220	220				2019	2/15 - 5/1	220	220	440
		NSFH	Little Salmon R. - Stinky Sp.	262,843		NSFH	4,800	55	55		NSFH		2019	2/15 - 5/1	55	55	110
			SBT Egg Box-Panther Creek	479,826			4,800	100	100				2019	2/15 - 5/1	100	100	200
		SFH	SBT Egg Box-Indian Creek	119,956		SFH	4,800	25	25		SFH		2019	2/15 - 5/1	25	25	50
			MVFH	Pahsimeroi Weir			205,026	MVFH	6,200				34	23	MVFH	2019	2/15 - 5/1
	USRB (DworB) ³	Yankee Fork		820,106	USRB (DworB)	6,200	133		89	USRB (DworB)	2019	2/15 - 5/1	140	93		234	
		Little Salmon - Stinky Sp.	292,778	6,200		48	32	2019	2/15 - 5/1		51	34	85				
PFH/CFH ²	SBT Egg Box-Yankee Fork	611,111	PFH/CFH	6,200	99	99	PFH/CFH	2019	2/15 - 5/1	104	104	209					
	OxbA	NSFH	Little Salmon R. - Stinky Sp.	388,151	OxbA	NSFH	5,500	71	71	OxbA	NSFH	2,324	2018	11/5-11/14/18	303	303	606
Snake R. Hells Canyon			853,931	5,500			156	156	2019				tentative 4/2/19				
DNFH	DworB	MVFH	Pahsimeroi Weir	144,983	DworB ⁴	MVFH	6,681	22	11	DworB ⁴	NSFH	6,516	2019		22	11	33

¹ Broodstock trapping need is dictated by number of females needed

² If smolt releases for Yankee Fork and Pahsimeroi are met and egg box needs cannot be met with USRB eggs, then DworB eggs will be considered for the SBT egg box program if available

³ Sequence of priority for USRB eggs: Pahsimeroi Weir, Yankee Fork Salmon River, Yankee Fork Egg Box Program, Little Salmon River releases. DWOR eggs will be used to backfill program needs.

⁴ The minimum number of DWOR females to spawn for the USAL-B program is 23, but returns of USAL-B adults to Pahsimeroi Weir may require additional eggs from DWOR.

⁵ this is actually the # of Males collected while getting the # of Females needed, based on % of F in Brodstock

⁶ Projected Return to LGD includes only BY14 and BY15 for USRB/DWOR.

Table 1.3c. BY2019 Steelhead adult female broodstock acquisition schedules for hatchery programs.

Season	Date	Hells Canyon Trap		Pahsimeroi Fish Hatchery				Sawtooth Fish Hatchery		East Fork Salmon River Satellite		Dworshak National Fish Hatchery	
		OxbA ¹		PahA		USRB		SawA		EFNat		DworB ²	
		Wkly	Cum	Wkly	Cum	Wkly	Cum	Wkly	Cum	Wkly	Cum	Wkly	Cum
Fall 2018	Oct	0	0	0	0	0	0	0	0	0	0	0	0
	Nov	303	303	0	0	0	0	0	0	0	0	0	0
	Dec	0	303	0	0	0	0	0	0	0	0	0	0
Spring 2019	16-Feb	0	303	0	0	0	0	0	0	0	0	0	0
	23-Feb	0	303	0	0	0	0	0	0	0	0	0	0
	1-Mar	0	303	0	0	0	0	0	0	0	0	0	0
	8-Mar	0	303	0	0	0	0	0	0	0	0	0	0
	15-Mar	0	303	0	0	0	0	0	0	0	0	0	0
	22-Mar	0	303	0	0	0	0	0	0	0	0	22	22
	29-Mar	0	303	101	101	26	26	33	33	0	0	0	22
	5-Apr	76	378	46	147	78	104	140	172	0	0	0	22
	12-Apr	0	378	88	235	130	234	126	299	0	0	0	22
	19-Apr	0	378	88	323	78	312	56	354	3	3	0	22
	26-Apr	0	378	87	410	19	331	71	425	7	10	0	22
	3-May	0	378	45	455	0	331	0	425	4	14	0	22
10-May													
17-May													

	Proportion of brood acquisition over season					
	OxbA	PahA	USRB	SawA	EFNat	DworB
Oct	0	0	0	0	0	0
Nov	1	0	0	0	0	0
Dec	0	0	0	0	0	0
16-Feb	0	0	0	0	0	0
23-Feb	0	0	0	0	0	0
1-Mar	0	0	0	0	0	0
8-Mar	0	0	0	0	0	0
15-Mar	0	0	0	0	0	0
22-Mar	0	0	0	0	0	1
29-Mar	0	0.2227	0.0786	0.0766	0	0
5-Apr	0.25	0.1002	0.2358	0.3288	0	0
12-Apr	0	0.1938	0.3931	0.2973	0	0
19-Apr	0	0.1938	0.2358	0.1306	0.2308	0
26-Apr	0	0.1915	0.0566	0.1667	0.4615	0
3-May	0	0.098	0	0	0.3077	0

	OxbA	PahA	USRB	SawA	EFNat	DworB
Total Females to Trap (from Brood Calculator)	303	455	331	425	14	22

¹ The sum of OxbA adult female broodstock acquisition values exceeds the Total Females to Trap in the Brood Calculator to account for additional fish trapped during the spring trapping season.

² The minimum number of DWOR females to spawn for the USAL-B program is 22, but anticipated returns of USAL-B females to Pahsimeroi Weir in 2019 may require up to 233 DWOR females spawned.

Table 1.3d. Steelhead Spawning for BY 2020 - Based on Brood Calculator

Green Egg Goal					Spawning Goal					Broodstock Trapping Goals							
Spawning Facility	Brood Source	Rearing Hatchery	Release Site	Green Egg Goal	Brood Source	Rearing Hatchery	Fecundity	Spawn Goal		Brood Source	Rearing Hatchery	Projected Return to LGD	Trapping period		Trapping Goal ¹		
								Females	Males ²				Total	Season	Dates	Female	Male
OFH	OxbA	NSFH	Little Salmon R. - Stinky Sp.	388,151	OxbA	NSFH	5,500	71	71	OxbA	NSFH	TBD	2019	11/1 - 11/30	303	303	606
			Snake R. Hells Canyon	853,931			5,500	156	156				2020	11/1 - 11/30			

¹ Broodstock trapping need is dictated by number of females needed

² this is acutally the # of Males collected while getting the # of Females needed, based on % of F in Brodstock

1.3.2. Trap Operations and Production Planning for 2019 (Smolt BY 2019, Egg Box BY 2019) – NARRATIVE

Here are examples of things managers were instructed to discuss for each release group, if there are departures from the norm (i.e., SOP). If no departure from the norm, enter NC for “No Change”.

Rearing Location	Plan for 2019 (BY 2019)				
	Adult Fish Health	Trap Ops	Production target changes	Spawning protocol changes	Disposition of adults
<i>Hells Canyon Trap/Oxbow Hatchery (Fall 2018-Spring 2019) (SOP Section 1.3)</i>					
Niagara Springs (OxbA)	NC	tentative trap April 2 to collect 150 for BY19 ST	NC	NC	No fall releases into Hells Canyon Reservoir; 200 into Boise; 153 to NPT
<i>Pahsimeroi Weir (SOP Section 1.4)</i>					
Niagara Springs (PahA)	NC	NC	NC	NC	Refrigerated trailer not needed/used this year. (low adult forecast.)
Magic Valley (PahA)	NC	NC	NC	NC	Refrigerated trailer not needed/used this year.
SBT Egg Box (PahA)	NC	NC	NC	NC	Refrigerated trailer not needed/used this year.
SBT Egg Box (USRB)	NC	NC	NC	NC	Refrigerated trailer not needed/used this year.
Magic Valley (USRB)	NC	NC	NC	NC	Refrigerated trailer not needed/used this year.
<i>Sawtooth and East Fork Weirs (SOP Sections 1.7 and 1.8)</i>					
Hagerman National (EFNat)	NC	NC	NC	NC	NC
Hagerman National (SawA)	NC	Continue collecting all CWT from returning adults for PRAS evaluation.	NC	NC	NC

Rearing Location	Plan for 2019 (BY 2019)				
	Adult Fish Health	Trap Ops	Production target changes	Spawning protocol changes	Disposition of adults
Magic Valley (Saw)	NC	Continue collecting all CWT from returning adults for PRAS evaluation.	NC	NC	NC
<i>Dworshak National Fish Hatchery Ladder (Fall 2018-Spring 2019) (SOP Section 1.9)</i>					
Magic Valley (DworB)					

1.4. Marking and Rearing Plan for 2019 (Smolt BY 2109)

1.4.1. Marking and Rearing Plan for 2019 (Smolt BY 2019) – TOTALS

Table 1.4a. Steelhead Projected marking of BY 2019 Production for release in 2020

Hatchery	Release Site	Stock	Smolt Release Goals	Projected Marking				PIT Tags				
				Adipose Fin Clip		No Clip		Total # Tags	Funding Source			
				No CWT	CWT	CWT	No CWT		CSS	LSRCP	IPC	USFWS
HNFH	Sawtooth Weir	SawA	1,410,000	1,230,000	180,000			8,600	2,600	6,000		
	Sawtooth Weir (RAS Eval)	SawA	90,000		90,000			21,500		21,500		
	E. Fork Salmon R. - Upper	EFNat	60,000			60,000		8,600	2,600	6,000		
Totals			1,560,000	1,230,000	270,000	60,000	-	38,700	5,200	33,500	-	-
MVFH	Sawtooth Weir	SawA	279,000	279,000				5,700	5,700			
	Little Salmon R. - Stinky Sp.	PahA	186,000	186,000				2,200	2,200			
	Pahsimeroi Weir	USRB	155,000			155,000		7,200	2,100	5,100		
	Pahsimeroi Weir	DworB	93,000			93,000		4,200	1,300	2,900		
	Yankee Fork	USRB (DworB)	620,000	403,000		217,000		13,300	5,300	8,000		
Little Salmon - Stinky Sp.	USRB	217,000	217,000				2,200	2,200				
Totals			1,550,000	1,085,000	-	465,000	-	34,800	18,800	16,000	-	-
NSFH	Pahsimeroi Weir	PahA	800,000	800,000				9,000	3,000		6,000	
	Little Salmon R. - Stinky Sp.	PahA	200,000	200,000				2,300	1,800		500	
	Little Salmon R. - Stinky Sp.	OxbA	250,000	250,000				2,800	2,300		500	
	Snake R. Hells Canyon	OxbA	550,000	550,000				8,600	2,600		6,000	
Totals			1,800,000	1,800,000	-	-	-	22,700	9,700	-	13,000	-
Grand Totals			4,910,000	4,115,000	270,000	525,000	-	96,200	33,700	49,500	13,000	-

1.4.2. Marking and Rearing Plan for 2019 (Smolt BY 2019) – NARRATIVE

Here are examples of things managers were instructed to discuss for each release group, if there are departures from the norm (i.e., SOP). If no departure from the norm, enter NC for “No Change”.

- **Fish Health** - anticipated changes to normal fish health sampling or treatments
- **Fish feeding** - changes of diets of feed manufacturer, growth regimes etc.
- **Rearing conditions** - incubation, water temp, flow, rearing density changes
- **Marking** - e.g. changes to schedules, fish handling or movement, raceway loading for PBT, %PBT etc.

Release Location	Plan for 2019 (BY 2019)			
	Juvenile Fish Health	Fish Feeding	Rearing Conditions	Marking
<i>Niagara Springs Fish Hatchery (SOP Section 1.2)</i>				
L. Salmon R. Stinky Springs (OxbA)	NC	NC	Will implement baffles	NC
Snake R. Hells Canyon (OxbA)	NC	NC	Will implement baffles	NC
L. Salmon R. Stinky Springs (PahA)	NC	NC	Will implement baffles	NC
Pahsimeroi Weir (PahA)	NC	NC	Will implement baffles	NC
<i>Hagerman National Fish Hatchery (SOP Section 1.5)</i>				
East Fork Weir (EFnat)	NC	Switch from Skretting starter feed to Rangen Starter Feed.	NC	NC
Sawtooth Weir (SawA)	NC	Switch from Skretting starter feed to Rangen Starter Feed.	Will look at increasing rearing densities in SawA (non-study) raceways to reduce the overall number of raceways in use and to better utilize the current water available in the 3 raceway banks.	NC

Release Location	Plan for 2019 (BY 2019)			
	Juvenile Fish Health	Fish Feeding	Rearing Conditions	Marking
<i>Magic Valley Fish Hatchery (SOP Section 1.6)</i>				
Sawtooth Weir (SawA)	NC	NC	NC	NC
L. Salmon R. Stinky Springs (PahA)	NC	NC	NC	NC
Pahsimeroi Weir (USRB)	NC	NC	NC	NC
Pahsimeroi Weir (DworB)	NC	NC	NC	NC
Yankee Fork Salmon R., Lower (USRB/DworB)	NC	NC	NC	NC
L. Salmon R. Stinky Springs (USRB)	NC	NC	NC	NC

2. Spring/Summer Chinook

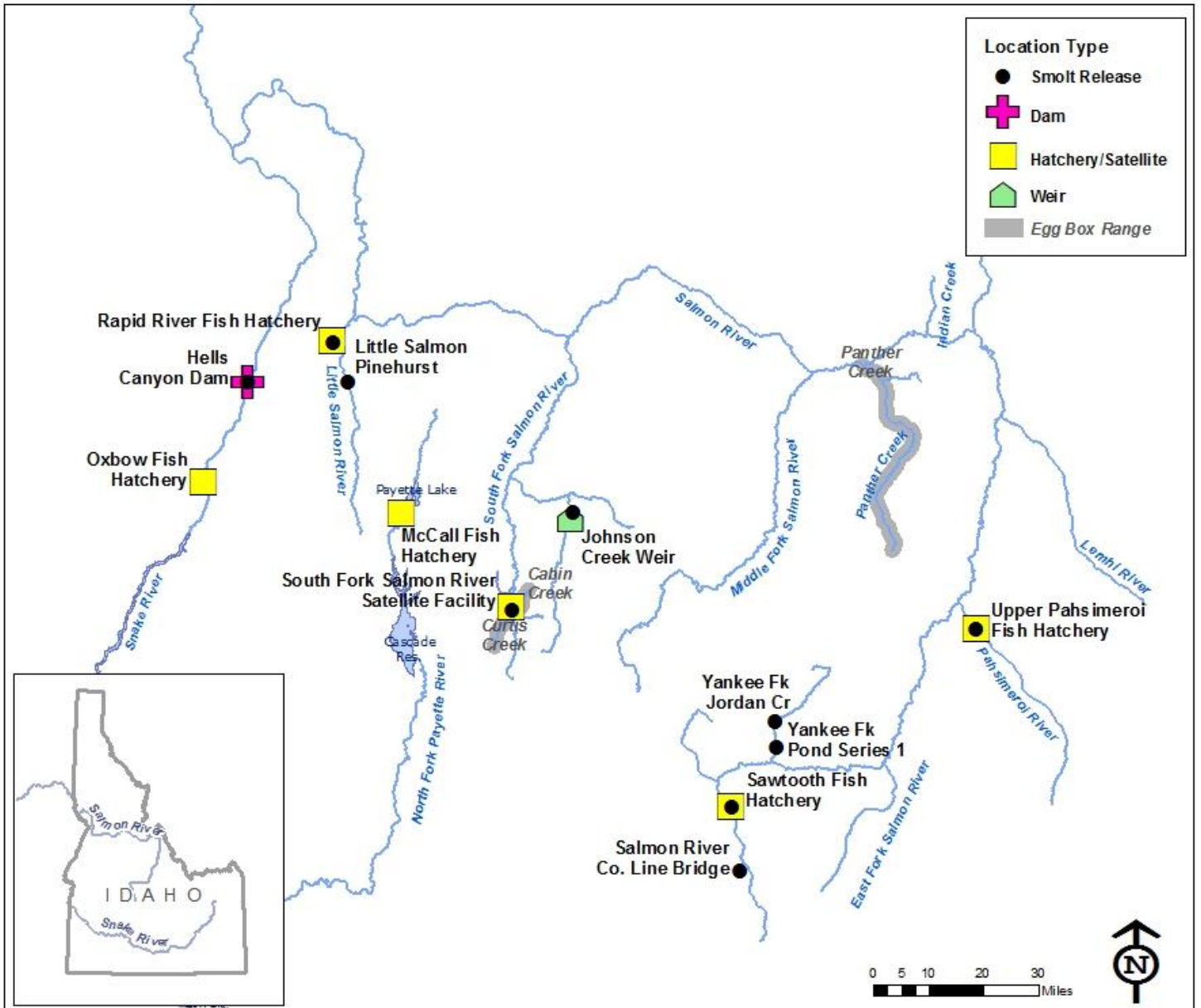


Figure 2.1. Spring/Summer Chinook salmon hatchery facilities and smolt release and egg box locations.

Table 2.1. Sp/Su Chinook Release Goals.

Smolts				
Release Program	Release Site	Rearing Facility	Stock	BY2017 Smolt Release Goal
IPC / IDFG	Rapid River Hatchery	RRFH	RapidR	2,500,000
	Little Salmon (at Pinehurst)		RapidR	150,000
	Hells Canyon		RapidR	350,000
Total				3,000,000
LSRCP / IDFG	Salmon R. - Co. Line Br. - Integrated	SFH	USRInt	150,000
	Sawtooth Weir - Segregated		USRSeg	1,550,000
	Yankee Fork		USRSeg	300,000
	Yankee Fork	Springfield	USRSeg	NA
Total				2,000,000
IPC / IDFG	Pahsimeroi Weir - Integrated	PFH	PahInt	65,000
	Pahsimeroi Weir - Segregated		PahSeg	935,000
Total				1,000,000
LSRCP / IDFG	SFSR Knox Br. - Integrated	McFH	SFSRInt	150,000
	SFSR Knox Br. - Segregated		SFSRSeg	850,000
NPT	Johnson Creek		Johnson Cr.	150,000
Total				1,150,000
Grand Total				7,150,000

Eggs

Program	Release Location	Hatchery Egg Source	Stock	Green Egg Target	Eyed Egg BY2019 Goal	Smolt BY2019 Release Goal
Egg Box Release						
SBT Eggbox	Curtis/Cabin Creek	McFH	SFSRSeg	344,372	300,000	NA
SBT Eggbox ¹	Panther Creek	PFH	PahSeg	918,326	800,000	NA
Egg Transfer						
Clearwater Su Chinook ¹	Powell Ponds	McFH/CFH	SFSRSeg	770,891	666,667	640,000

¹ Brood for these eggs are not included in stated brood goals and will come from fish trapped in excess of brood needs for onsite smolt and egg box programs. Prioritization of excess fish between recycling to fisheries, Tribal C&S, foodbank, outplants and the Clearwater Hatchery Summer Run Program will occur in-season between State and Tribal managers.

2.1. Timeline and Flowchart for Spring/Summer Chinook Production

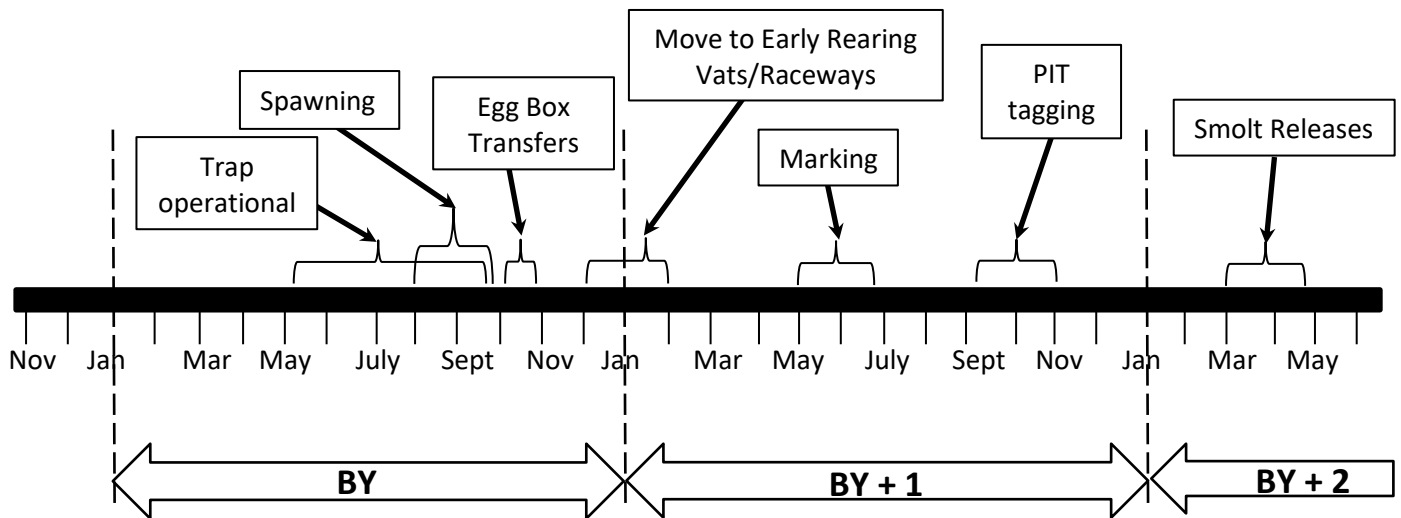
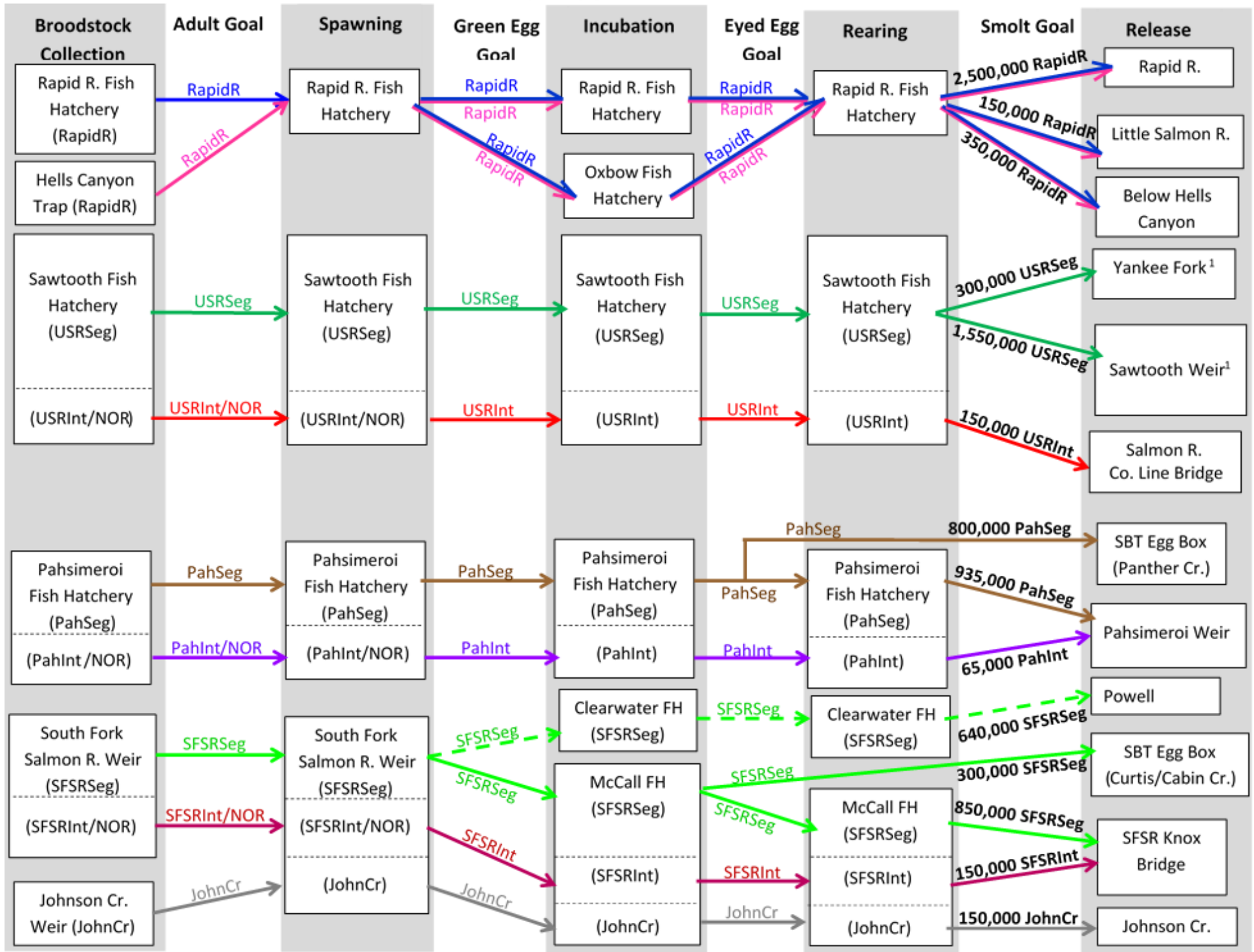


Figure 2.2. Timeline for Spring/Summer Chinook Production. Date ranges are shown to include all facilities' operations.

CHINOOK



¹Sawtooth releases starting with BY2018 will change: Int Sawtooth Weir – 250k; Seg Sawtooth Weir – 1.45M; Yankee Fork – 300k

Figure 2.3. Fish and Egg movements for Sp and Su Chinook. Numbers reflect 2019 releases. See footnote for future changes to release goals.

2.2. Releases in 2019 (Smolt BY 2017, Egg Box BY 2019)

2.2.1. Releases in 2019 (Smolt BY 2017, Egg Box BY 2019) – Totals

Table 2.2a. BY2017 SMOLTS - Sp/Su Chinook Salmon inventories by life stage , smolts release goals and projected releases in 2019.

Hatchery	Release Site	Stock	Eyed Eggs to Rear ¹	Inventory To Date		Release Goals		Projected Smolt Release		
				Date	Number	Number	Size (FPP)	Dates	Number	Size (FPP)
RRFH ²	Rapid River Hatchery	RapidR	3,217,646	2/11/2019	3,122,125	2,500,000	20.0	3/11-4/26	2,500,000	20.0
	Little Salmon (at Pinehurst)	RapidR				150,000	20.0	03/15/2019	200,000	20.0
	Hells Canyon	RapidR				350,000	20.0	3/11-3/14	422,125	20.0
Total			3,217,646		3,122,125	3,000,000			3,122,125	
SFH	Salmon R. - Co. Line Br. - Integrated	USRInt	89,079	2/5/2019	86,918	150,000	18.0	4/2/19	86,800	20.0
	Sawtooth Weir - Segregated	USRSeg	945,583	2/5/2019	919,502	1,550,000	18.0	4/3/19	919,000	18.0
	Yankee Fork	USRSeg	101,563	2/5/2019	94,802	300,000	18.0	4/23, 25, 26	94,100	18.0
Springfield	Yankee Fork	USRSeg	104,260	2/5/2019	103,181	NA	NA	4/23, 25, 26	102,900	18.0
Total			1,240,485		1,204,403	2,000,000			1,202,800	
PFH	Pahsimeroi Weir - Integrated	PahInt	67,446	2/1/2019	63,441	65,000	15.0	4/21 - 4/28	60,000	13.5
	Pahsimeroi Weir - Segregated	PahSeg	829,526	2/1/2019	785,766	935,000	15.0	4/21 - 4/28	770,000	13.5
Total			896,972		849,207	1,000,000			830,000	
McFH	SFSR Knox Br. - Integrated	SFSRInt	173,337	2/1/2019	161,111	150,000	20.0	4/1-4/5	160,956	20.0
	SFSR Knox Br. - Segregated	SFSRSeg	1,079,399	2/1/2019	947,036	850,000	20.0	4/1-4/5	946,124	20.0
	Johnson Creek	Johnson Cr.	130,508	2/1/2019	127,887	150,000	25.0	3/27 - 3/30	127,763	21.0
Total			1,383,244		1,236,034	1,150,000			1,234,843	
Grand Total			6,738,347		6,411,769	7,150,000			6,389,768	

¹ Eyed Eggs to Rear = (Total Green Eggs) - (Eggs culled for disease) - (Dead eggs picked) - (Eggs culled for hatchery capacity) - (Eggs transferred out)

² Rapid River eyed eggs and inventory are not partitioned by release site prior to release

Table 2.2b. BY2017 SMOLTS for release in 2019 - Sp/Su Chinook Salmon Inventory to Date by Mark Type in 2019

Hatchery	Release Site	Stock	Inventory to Date						PIT Tags					
			Date	Total	Adipose Fin Clip		No Clip		Total # Tags	Funding Source				
					No CWT	CWT	CWT	No CWT		CSS	LSRCP	IPC	BPA	OTHER
RRFH	Rapid River Hatchery	RapidR	2/11/2019	3,122,125	3,002,125	120,000	-	-	52,000	32,000	0	20,000	0	0
	Little Salmon (at Pinehurst)	RapidR							-	-	-	-	-	-
	Hells Canyon	RapidR							-	-	-	-	-	-
Totals				3,122,125	3,002,125	120,000	-	-	52,000	32,000	-	20,000	-	-
SFH	Salmon R. - Co. Line Br. - Integrated	USRIInt	2/5/2019	86,918	-	-	86,918	-	1,000	0	1,000	0	0	0
	Sawtooth Weir -Segregated	USRSeg	2/5/2019	919,502	799,502	120,000	-	-	18,900	5,700	13,200	0	0	0
	Yankee Fork	USRSeg	2/5/2019	94,802	-	94,802	-	-	4,600	700	1,800	0	2,100	0
Springfield	Yankee Fork	USRSeg	2/5/2019	103,181	-	103,181	-	-	4,200	0	0	0	4,200	0
Totals				1,204,403	799,502	317,983	86,918	-	28,700	6,400	16,000	-	6,300	-
Pah	Pahsimeroi Weir - Integrated	PahInt	2/1/2019	63,441	-	-	63,441	-	985	0	0	0	0	985
	Pahsimeroi Weir - Segregated	PahSeg	2/1/2019	785,766	666,991	118,775	-	-	21,280	6,400	0	14,880	0	0
Totals				849,207	666,991	118,775	63,441	-	22,265	6,400	-	14,880	-	985
McFH	SFSR Knox Br. - Integrated	SFSRIInt	2/1/2019	161,111	-	-	161,111	-	26,000	26,000	0	0	0	0
	SFSR Knox Br. - Segregated	SFSRSeg	2/1/2019	947,036	824,754	122,282	-	-	26,000	6,000	20,000	0	0	0
	Johnson Creek	Johnson Cr.	2/1/2019	127,887	-	-	127,887	-	2,011	0	0	0	2,011	0
Totals				1,236,034	824,754	122,282	288,998	-	54,011	32,000	20,000	-	2,011	-
Grand Total				6,411,769	5,293,372	679,040	439,357	-	156,976	76,800	36,000	34,880	8,311	985

See **Table 2.1** for BY 2019 Sp/Su Chinook salmon egg transfers to streamside egg boxes in 2019.

2.2.2. Releases in 2019 (Smolt BY 2017, Egg Box BY 2019) – Total

Here are examples of things managers were instructed to discuss for each release group, if there are departures from the norm (i.e., SOP). If no departure from the norm, enter NC for “No Change”.

- **Smolt/Egg Release Targets-** e.g. were you below goal, was your size at release different than SOP target etc.
- **Fish/Egg Health-** any epizootic history, anti-biotic treatments, was production culled at any point
- **Transportation/Releases-** e.g. timing, trucking issues, site access etc.

Location	Plan for 2019		Changes/Conditions that Occurred 2018-Early 2019		
	Release Target Smolt BY17, Egg BY19	Transport/Release Smolt BY17, Egg BY19	Fish Feeding BY17	Fish/Egg Health BY17	Marking BY17
<i>Rapid River Fish Hatchery (SOP Section 2.2)</i>					
Rapid River Hatchery (RapidR)	NC	NC	NC	NOAAF to sample 300 smolts for precocity evaluation.	NC
Little Salmon R. (RapidR)	NC	NC	NC	NC	NC
Hells Canyon (RapidR)	NC	NC	NC	NC	NC
<i>McCall Fish Hatchery (SOP Sections 2.3, 2.4 and 2.9)</i>					
SFSR Knox Bridge (SFSRInt)	NC	NC	NC	NOAAF to sample 300 smolts pre-liberation for precocity evaluation	NC
SFSR Knox Bridge (SFSRSeg)	NC	NC	NC	NOAAF to sample 300 smolts pre-liberation for precocity evaluation	NC
Johnson Cr. (JohnCr)	NC	NC	NC	NC	NC
Curtis/Cabin Cr. Egg Box (SFSRSeg)	NC	NC			

Location	Plan for 2019		Changes/Conditions that Occurred 2018-Early 2019		
	Release Target Smolt BY17, Egg BY19	Transport/Release Smolt BY17, Egg BY19	Fish Feeding BY17	Fish/Egg Health BY17	Marking BY17
<i>Pahsimeroi Fish Hatchery (SOP Section 2.5)</i>					
Pahsimeroi Weir Integrated (PahInt)	60K projected. This is a 5K projected shortfall due to BKD epizootic.	60K projected. This is a 5K projected shortfall due to BKD epizootic.	AQM Medicated Feed	BKD epizootic resulted in reduced smolt numbers.	NC
Pahsimeroi Weir Segregated (PahSeg)	770K projected. This is a 165K shortfall due to initial broodstock shortage and BKD epizootic.	770K projected. This is a 165K shortfall due to initial broodstock shortage and BKD epizootic.	AQM Medicated Feed	BKD Epizootic resulted in reduced smolt numbers.	NC
Panther Cr. Egg Box (PahSeg)	BY17 No eggs available due to shortage of broodstock.	BY17 No eggs available due to shortage of broodstock.			
<i>Sawtooth Fish Hatchery (SOP Sections 2.6 and 2.8)</i>					
Sawtooth Weir Integrated (USRInt)	Projected release of 86,800 is 58% of the release goal. This shortage is due to very low adult natural returns.	Smolts will be transported to the County Line bridge, ~12 miles upstream of the hatchery for release.	NC	NOAAF will not sample for precocity evaluation due to production shortage. No pre-liberation sampling for this stock either.	Marking was late due to small fish size and availability of marking crew for later marking.
Sawtooth Weir Segregated (USRSeg)	Projected release of 919,000 is 59% of the release goal. This shortage is due to very low adult returns.	Plan to release half PIT tagged smolts at night and half during normal daylight hours to determine if survival increases. Fish will be flushed out per normal release operations.	NC	NOAAF will not sample for precocity evaluation due to production shortage.	Marking was late due to small fish size and availability of marking crew for later marking.

Location	Plan for 2019		Changes/Conditions that Occurred 2018-Early 2019		
	Release Target Smolt BY17, Egg BY19	Transport/Release Smolt BY17, Egg BY19	Fish Feeding BY17	Fish/Egg Health BY17	Marking BY17
Yankee Fork (USRSeg)	Due to low adult returns, the release goal was adjusted to 200,000 during the trapping season. Projected release (including released pre-smolts) is 207,000 (69% of 300k goal). 100,000 fish were raised at Springfield Fish Hatchery to evaluate survival at release of fish potentially reared at the proposed Crystal Springs Hatchery (based on water chemistry issues experienced by sockeye salmon reared at Springfield, released at RFL Creek).	4,995 PIT tagged fish from Sawtooth and 4,997 PIT tagged fish from Springfield were released into the Yankee Fork in October as pre-smolts. Smolt release: 1,000 fish from each facility will be transported and released into live boxes in YFK for monitoring. Two days later, half of the remaining fish from each facility will be released, with the remaining fish released the following day. The Sawtooth transport will drive all fish to Willow Creek Summit to try to mimic the transit experience of the fish transported from Springfield.	NC	NOAAF to sample 300 Yankee Fork smolts for precocity evaluation reared at Springfield Hatchery and 300 reared at Sawtooth Hatchery. EFHL will coordinate their pre-liberation sampling with the NOAA precocity sampling. This will place the pre-lib sampling outside of the the 30-45 day pre-release window outlined in the SOP, but will maximize the usage of lethally sampled fish. NOAA will also take lethal pre-release and post-release physiological samples from fish from both facilities for stress level evaluations (100 sampled from each group).	Marking was late due to small fish size and availability of marking crew for later marking. 5,000 fish from each facility were PIT tagged for fall pre-smolt release 4600 fish PIT tagged at Sawtooth, 4200 PIT tagged at Springfield for spring release

2.3. Trap Operations and Production Planning for 2019 (Smolt BY 2019)

2.3.1. Trap Operations and Production Planning for 2019 (Smolt BY 2019) – TOTALS

Table 2.3a. BY 2019 Sp/Su Chinook Smolt Production Goals for Release in 2021.

Hatchery	Release Site	Stock	2021 Smolt Release Goals
RRFH	Rapid River Hatchery	RapidR	2,500,000
	Little Salmon	RapidR	150,000
	Hells Canyon	RapidR	350,000
	Total		3,000,000
SFH	Salmon R. - Co. Line Br. - Integrate	USRInt	250,000
	Sawtooth Weir -Segregated	USRSeg	1,450,000
	Yankee Fork	USRSeg	300,000
	Total		2,000,000
PFH	Pahsimeroi Weir - Integrated	PahInt	65,000
	Pahsimeroi Weir - Segregated	PahSeg	935,000
	Total		1,000,000
McFH	SFSR Knox Br. - Integrated	SFSRInt	150,000
	SFSR Knox Br. - Segregated	SFSRSeg	850,000
	Johnson Creek	JohnCr	150,000
	Total		1,150,000
Grand Total			7,150,000

Table 2.3b. Sp/Su Chinook Egg Releases in 2019 and Egg Transfers used for BY 2019 Smolt Production (Release in 2021).

Program	Release Location	Hatchery Egg Source	Stock	Green Egg Target	Eyed Egg BY2019 Goal	Smolt BY2019 Release Goal
Egg Box Release						
SBT Eggbox	Curtis/Cabin Creek	McFH	SFSRSeg	344,372	300,000	NA
SBT Eggbox ¹	Panther Creek	PFH	PahSeg	918,326	800,000	NA
Egg Transfer						
Clearwater Su Chinook ²	Powell Ponds	McFH/CFH	SFSRSeg/CFH	770,891	666,667	640,000

¹ Brood for these eggs are not included in stated brood goals and will come from fish trapped in excess of brood needs for onsite smolt production

² Brood for these eggs are not included in stated brood goals and will come from fish trapped in excess of brood needs for onsite smolt and egg box programs.

Prioritization of excess fish between recycling to fisheries, Tribal C&S, foodbank outplants and green egg needs for the Clearwater Hatchery Summer Run Program will occur in-season between State and Tribal managers.

Table 2.3c. BY2019 SMOLTS -Chinook Spawning for BY 2019 - Based on Brood Calculator.

Green Egg Goal					Spawning Goal						Broodstock Trapping Goals by Brood Source														
Spawning Facility	Stock	Rearing Hatchery	Release Site	Green Egg Goal	Fecundity	Spawn Goal						Projected Returns					Trapping Goal ³					Total			
						HORSeg ⁴		HORInt ⁵		NOR ⁶		LGD			Trap ¹		HORSeg ⁴		HORInt ⁵		NOR ⁶				
						Female	Male	Female	Male	Female	Male	HORseg ⁴	HORint ⁵	NOR ⁶	HORint ⁵	NOR ⁶	Female	Male	Female	Male	Female		Male		
RRFH	RapidR	RRFH	Rapid River Trap	3,961,216	3,731	1063	1063					8,139				979	979					1,958			
			Little Salmon															60	60					120	
			Hells Canyon Trap																	137	137				
SFH	USRInt	SFH	Salmon R. - Co. Line Br. - Integrated	302,653	4,700			5	5	60	60		65	423	48	314			5	5	63	62	135		
	USRSeg	SFH	Sawtooth Weir - Seg	1,769,164	4,700	377	377					893						389	389					778	
			Yankee Fork	366,034	4,700	78	78												80	80					161
PFH	PahInt	PFH	Pahsimeroi - Int	80,033	4,500			8	8	10	10		112	112	78	78			9	9	12	11	41		
	PahSeg	PFH	Pahsimeroi - Seg	1,266,376	4,500	282	282					363						332	332					664	
			SBT Eggbox - Panther Cr. ²																TBD	TBD					0
SFSR	SFSRInt	McFH	SFSR - Int ⁷	202,572	4,250			12	13	33	34		476	295	304	188			14	14	38	37	103		
	SFSRSeg	McFH	SFSR - Seg ⁷	1,262,699	4,250	298	298					1,756						331	331					663	
			SBT Eggbox - Curtis/Cabin Cr. ⁷	344,372	4,500	77	77												86	86					172
			Clearwater Su Chinook ²	770,891	4,250	182	182												192	192					384
			JohnCr	McFH	Johnson Creek	212,523	4,500					48	48			91							57	57	115

¹ These trap projections are only for natural origin returns (NORs) and integrated hatchery origin fish (HORint)

² Brood for these eggs are not included in stated brood goals and will come from fish trapped in excess of brood needs for onsite smolt and egg box programs. Prioritization of excess fish between recycling to fisheries, Tribal C&S, foodbank, outplants and green egg needs for the Clearwater Hatchery Summer Run Program will occur in-season between State and Tribal managers.

³ Broodstock trapping need is dictated by number of females needed

⁴ HORSeg: Adult Hatchery Origin fish that are progeny of a Segregated program

⁵ HORInt: Adult Hatchery Origin fish that are progeny of an Integrated program

⁶ NOR: Adult Natural Origin fish

⁷ After fulfilling brood stock needs for integrated smolt production, prescribed sliding scale releases above weir to spawn, and segregated brood stock (up to 30%), eggs from integrated adults could be used to supply eggs for the egg box program.

Table 2.3d. BY2019 - Sp/Su Chinook Adult broodstock acquisition schedules for hatchery programs.

Date	Rapid River Fish Hatchery	Sawtooth Fish Hatchery			Pahsimeroi Fish Hatchery			South Fork Salmon River Weir			Johnson Creek Weir
	RapidR	USR			Pah			SFSR			JohnCr
		HORSeg	HORInt	NOR	HORSeg	HORInt	NOR	HORSeg	HORInt	NOR	NOR
2-May	16	0	0	0	0	0	0	0	0	0	0
9-May	23	0	0	0	0	0	0	0	0	0	0
16-May	43	0	0	0	0	0	0	0	0	0	0
23-May	97	0	0	0	0	0	0	0	0	0	0
30-May	185	0	0	0	0	0	0	0	0	0	0
6-Jun	325	0	0	0	0	0	0	0	0	0	0
13-Jun	532	37	1	9	2	0	3	6	0	0	3
20-Jun	904	112	3	31	51	0	7	56	0	0	6
27-Jun	1,364	282	4	57	200	0	12	140	3	10	14
4-Jul	1,818	506	5	76	336	0	15	280	8	31	31
11-Jul	2,070	638	6	87	430	0	16	419	13	51	46
18-Jul	2,180	721	8	95	490	0	18	608	18	60	53
25-Jul	2,249	778	8	104	501	0	18	672	20	66	59
1-Aug	2,313	798	8	115	533	0	18	784	23	72	61
8-Aug	2,329	806	8	120	560	0	20	895	23	73	73
15-Aug	2,341	844	8	125	574	0	20	1007	25	73	90
22-Aug	2,348	900	9	125	592	0	21	1094	28	75	104
29-Aug	2,352	929	10	125	599	0	21	1120	28	75	111
5-Sep	2,352	938	10	125	615	0	23	1216	28	75	114
12-Sep	2,352	938	10	125	638	0	23	1216	28	75	114
19-Sep	2,352	938	10	125	655	0	23	1216	28	75	114
26-Sep	2,352	938	10	125	664	0	23	1216	28	75	114
Total	2,352	938	10	125	664	18	23	1216	28	75	114
Forecast	7,522	893	65	423	363	112	112	1,756	476	295	91

Proportion of brood acquisition over season											
Date	Rapid River Fish Hatchery	Sawtooth Fish Hatchery			Pahsimeroi Fish Hatchery			South Fork Salmon River Weir			Johnson Creek Weir
	RapidR	USR			Pah			SFSR			JohnCr
		HORSeg	HORInt	NOR	HORSeg	HORInt	NOR	HORSeg	HORInt	NOR	NOR
2-May	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9-May	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
16-May	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
23-May	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30-May	0.079	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6-Jun	0.138	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
13-Jun	0.226	0.039	0.125	0.069	0.003	0.000	0.122	0.005	0.000	0.000	0.025
20-Jun	0.385	0.119	0.250	0.250	0.077	0.000	0.317	0.046	0.000	0.000	0.050
27-Jun	0.580	0.300	0.375	0.458	0.301	0.000	0.537	0.115	0.091	0.129	0.125
4-Jul	0.773	0.539	0.500	0.611	0.507	0.000	0.634	0.230	0.273	0.419	0.275
11-Jul	0.880	0.680	0.625	0.694	0.648	0.000	0.707	0.345	0.455	0.677	0.400
18-Jul	0.927	0.768	0.750	0.764	0.738	0.000	0.780	0.500	0.636	0.806	0.463
25-Jul	0.956	0.829	0.750	0.833	0.755	0.000	0.780	0.552	0.727	0.882	0.513
1-Aug	0.983	0.850	0.750	0.917	0.803	0.000	0.780	0.645	0.818	0.957	0.538
8-Aug	0.990	0.859	0.750	0.958	0.844	0.000	0.854	0.736	0.818	0.978	0.638
15-Aug	0.995	0.900	0.750	1.000	0.865	0.000	0.878	0.828	0.909	0.978	0.788
22-Aug	0.998	0.959	0.875	1.000	0.893	0.000	0.902	0.899	1.000	1.000	0.913
29-Aug	1.000	0.990	1.000	1.000	0.903	0.000	0.927	0.921	1.000	1.000	0.975
5-Sep	1.000	1.000	1.000	1.000	0.927	0.000	1.000	1.000	1.000	1.000	1.000
12-Sep	1.000	1.000	1.000	1.000	0.962	0.000	1.000	1.000	1.000	1.000	1.000
19-Sep	1.000	1.000	1.000	1.000	0.988	0.000	1.000	1.000	1.000	1.000	1.000
26-Sep	1.000	1.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000

2.3.2. Trap Operations and Production Planning for 2019 (Smolts BY 2019) – NARRATIVE

Here are examples of things managers were instructed to discuss for each release group, if there are departures from the norm (i.e., SOP). If no departure from the norm, enter NC for “No Change”.

Juvenile/Egg Release Location	Plan for 2019 (BY 2019)				
	Adult Fish Health	Trap Ops	Production target changes	Spawning protocol changes	Disposition of adults
<i>Rapid River Fish Hatchery and Hells Canyon Traps (SOP Section 2.2)</i>					
Rapid River Hatchery (RapidR)	NC	NC	NC	NC	NC
Little Salmon R. (RapidR)	NC	NC	NC	NC	NC
Hells Canyon (RapidR)	NC	NC	NC	NC	NC
<i>South Fork Salmon River and Johnson Creek Weirs (SOP Sections 2.3 and 2.4)</i>					
Johnson Cr. (JohnCr)	NC	NC	NC	Biosecurity Audit	NC
SFSR Knox Bridge Integrated (SFSRInt)	NC	NC	We would like to monitor length frequency in-season this year to adjust # of females retained for spawning to avoid program shortfalls.	Biosecurity Audit	NC
SFSR Knox Bridge Segregated (SFSRSeg)	NC	NC	We would like to monitor length frequency in-season this year to adjust # of females retained for spawning to avoid program shortfalls.	Biosecurity Audit	NC

Juvenile/Egg Release Location	Plan for 2019 (BY 2019)				
	Adult Fish Health	Trap Ops	Production target changes	Spawning protocol changes	Disposition of adults
SBT Egg Box – Curtis/Cabin Cr. (SFSRSeg)	NC	NC	NC	NC	NC
Clearwater Fish Hatchery Egg Transfer Segregated-SUM (SFSRSeg-CFH)	NC	NC	NC	NC	NC
<i>Pahsimeroi Fish Hatchery Trap (SOP Section 2.5)</i>					
Pahsimeroi Weir Integrated (PahInt)	NC	NC	NC	NC	NC
Pahsimeroi Weir Segregated (PahSeg)	NC	NC	NC	NC	NC
SBT Egg Box - Panther Creek (PahSeg)	NC	NC	NC	NC	NC
<i>Sawtooth Fish Hatchery (SOP Sections 2.6, 2.7 and 2.8)</i>					
East Fork Salmon River Weir (EFNat)	NC	NC	NC	NC	NC
Sawtooth Weir Integrated (USRInt)	NC	NC	NC	NC	NC
Sawtooth Weir Segregated (USRSeg)	NC	NC	NC	NC	NC
Yankee Fork (USRSeg)	NC	NC	NC	NC	NC

2.4. Early Rearing and Marking Plan for 2019 (Smolt BY 2018)

2.4.1. Early Rearing and Marking Plan for 2019 (Smolt BY 2018) – TOTALS

Table 2.4a. Sp/Su Chinook Projected Marking of BY 2018 juveniles to be marked in 2019 (released in 2020).

Hatchery	Release Site	Stock	Likely Marking Date(s)	Release Goals for 2020	Inventory to Date		Projected Release Number	Projected Marking				PIT Tags ¹				
					Date	Number		Adipose Fin Clip		No Clip		Total # Tags	Funding Source			
								No CWT	CWT	CWT	No CWT		CSS	LSRCP	IPC	BPA
RRFH	Rapid River Hatchery	RapidR	6/12-6/29	2,500,000	2/11/2019	2,675,334	2,500,000	2,555,334	120,000	-	-	52,000	32,000	-	20,000	-
	Little Salmon	RapidR		150,000			50,000		-	-	-		-	-	-	
	Hells Canyon	RapidR		350,000			125,334		-	-	-		-	-	-	
Totals				3,000,000		2,675,334	2,675,334	2,555,334	120,000	-	-	52,000	32,000	-	20,000	-
SFH	Salmon R. - Co. Line Br. - Integrated	USRInt	5/9-5/16	250,000	2/5/2019	103,642	99,082	-	-	99,082	-	1,000	-	1,000	-	-
	Sawtooth Weir - Segregated	USRSeg	5/9-5/16	1,450,000	2/5/2019	1,157,655	1,106,718	986,718	120,000	-	-	18,900	5,700	13,200	-	-
	Yankee Fork	USRSeg	5/9-5/16	300,000	2/5/2019	327,841	313,416	193,416	120,000	-	-	2,500	700	1,800	-	-
Totals				2,000,000		1,589,138	1,519,216	1,180,134	240,000	99,082	-	22,400	6,400	16,000	-	-
PFH	Pahsimeroi Weir - Integrated	PahInt	5/21-5/27	65,000	2/1/2019	68,670	65,000	-	-	66,610	-	1,000	1,000	-	-	-
	Pahsimeroi Weir - Segregated	PahSeg	5/21-5/27	935,000	2/1/2019	1,037,504	1,011,158	886,378	120,000	-	-	21,400	6,400	-	15,000	-
Totals				1,000,000		1,106,174	1,076,158	886,378	120,000	66,610	-	22,400	7,400	-	15,000	-
McFH	SFSR Knox Br. - Integrated	SFSRInt	July 2019	150,000	2/1/2019	135,595	132,883	-	-	134,239	-	26,000	26,000	-	-	-
	SFSR Knox Br. - Segregated	SFSRSeg	June/July 2019	850,000	2/1/2019	939,132	920,349	808,874	120,866	-	-	26,000	6,000	20,000	-	-
	Johnson Creek	JohnCr	July 2019	150,000	2/1/2019	127,742	125,187	-	-	126,465	-	2,100	-	-	-	2,100
Totals				1,150,000		1,202,469	1,178,419	808,874	120,866	260,704	-	54,100	32,000	20,000	-	2,100
Grand Totals				7,150,000		6,573,115	6,449,127	5,430,720	600,866	426,396	-	150,900	77,800	36,000	35,000	2,100

¹ PIT Tagging occurs in fall 2019

2.4.2. Early Rearing and Marking Plan for 2019 (Smolt BY 2018) – NARRATIVE

Here are examples of things managers were instructed to discuss for each release group, if there are departures from the norm (i.e., SOP). If no departure from the norm, enter NC for “No Change”.

- **Juvenile Fish Health** - observed fish health issues, what action was taken and how was the treatment implemented, anticipated changes to normal fish health sampling or treatments
- **Fish feeding** - changes of diets of feed manufacturer, growth regimes etc.
- **Rearing conditions** - incubation, water temp, flow, rearing density changes
- **Marking** - e.g. schedule changes, planned changes to fish handling or movement, marking schedule, raceway loading for PBT etc.
- **Meets Release Target** - . If projected marking lines up with the current inventory, then no comment is needed at this bullet (enter NC). If current inventory is 10% above or below the projected numbers, provide the projected release, % above/below then explain why.

Release Location	Plan for 2019 (BY 2018)				
	Juvenile Fish Health	Fish Feeding	Rearing Conditions	Marking	Meets Release Target
<i>Rapid River Fish Hatchery (SOP Section 2.2)</i>					
Rapid River Hatchery (RapidR)	NC	NC	NC	NC	Below release target due to low adult return to facility
Little Salmon R. (RapidR)	NC	NC	NC	NC	Below release target due to low adult return to facility
Hells Canyon (RapidR)	NC	NC	NC	NC	Below release target due to adult return to facility
<i>McCall Fish Hatchery (SOP Section 2.3 and 2.4)</i>					
Johnson Cr. (JohnCr)	NC	NC	NC	NC	Below release target due to low fecundity and eyeup
Knox Bridge Integrated (SFSRInt)	NC	NC	NC	NC	Below release target due to low fecundity
Knox Bridge Segregated (SFSRSeg)	NC	NC	NC	NC	NC

Release Location	Plan for 2019 (BY 2018)				
	Juvenile Fish Health	Fish Feeding	Rearing Conditions	Marking	Meets Release Target
<i>Pahsimeroi Fish Hatchery (SOP Section 2.5)</i>					
Pahsimeroi Ponds Integrated (PahInt)	NC	NC	NC	NC	NC
Pahsimeroi Ponds Segregated (PahSeg)	NC	NC	NC	NC	NC
<i>Sawtooth Fish Hatchery (SOP Sections 2.6 and 2.8)</i>					
Sawtooth Weir Integrated (USRInt)	NC	NC	NC	NC	Below release target (~40% of target) due to low adult returns.
Sawtooth Weir Segregated (USRSeg)	NC	NC	NC	NC	Below release target (~76% of target) due to low adult returns.
Yankee Fork (USRSeg)	NC	NC	NC	NC	NC

3. Fall Chinook

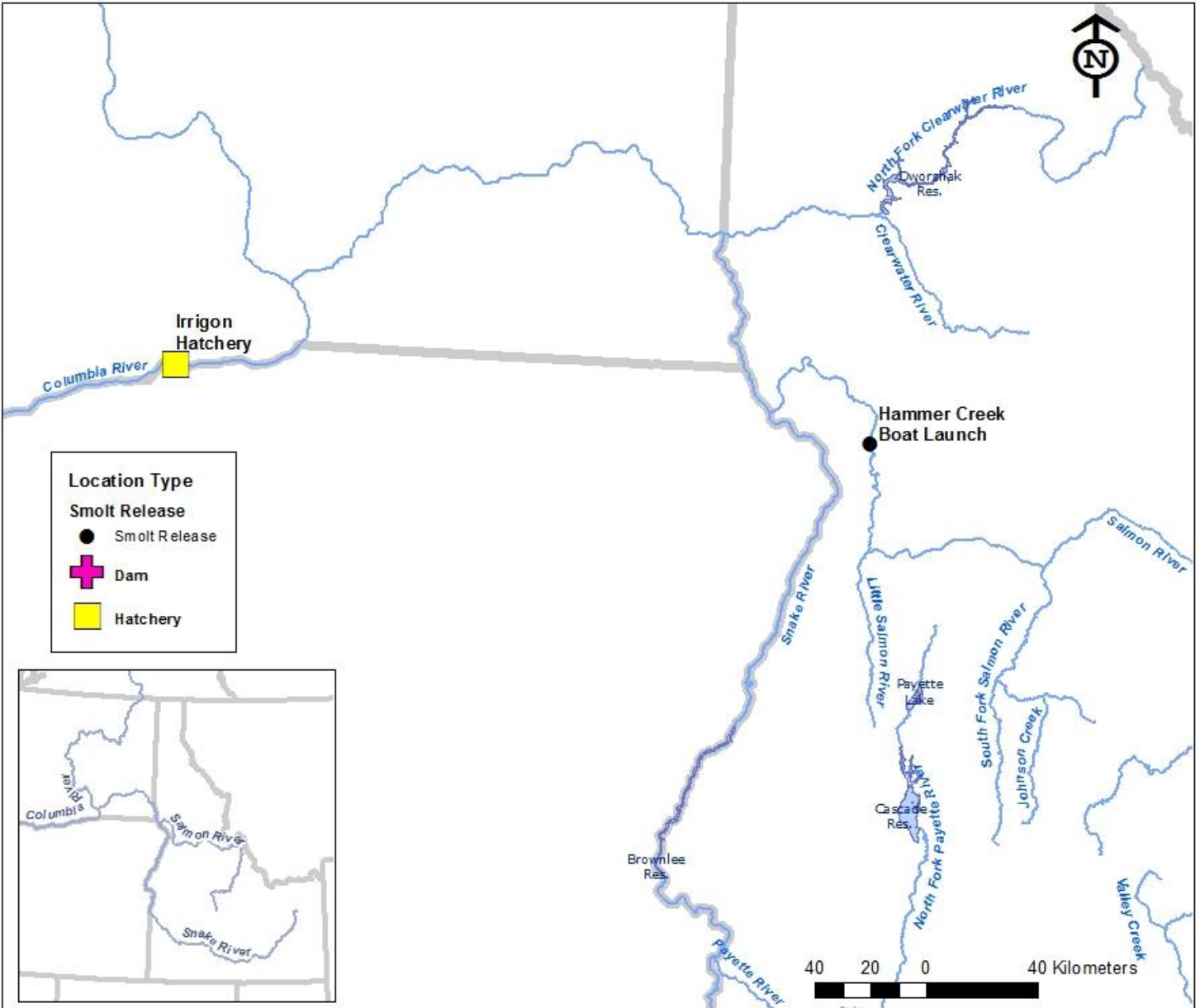


Figure 3.1. Fall Chinook Salmon facilities and smolt release locations.

Table 3.1. Fall Chinook Release Goals.

Hatchery	Release Site	Release Goals
IFH	Salmon R.-Hammer Cr	1,000,000

3.1. Releases in 2019 (Sub-Yearling BY 2018)

3.1.1. Releases in 2019 (Sub-Yearling BY 2018) – Totals

Table 3.1a. BY2018 Fall Chinook Sub-yearling Marking and Releases in 2019.

Hatchery	Release Site	Likely Release Date	Release Goals	Projected Actual Releases					
				Total	Adipose Fin Clip		No Clip		PIT Tag
					No CWT	CWT	CWT	No CWT	
IFH	Salmon R.-Hammer Cr	5/14, 5/16	1,000,000	1,000,000	-	200,000	-	800,000	4,500

3.1.2. Releases in 2019 (Sub-Yearling BY 2018) - Narrative

Here are examples of things managers talk about for each release group, if there are departures from the norm (i.e., SOP). If no departure from the norm, enter NC for “No Change”.

- **Smolt Release Targets-** e.g. Were you below goal? Was you size at release different than SOP target? Did you depart from the mark plan?
- **Fish Health-** any epizootic history, anti-biotic treatments, was production culled at any point
- **Transportation/Releases-** e.g. timing, trucking issues, site access etc.

Location	Smolt Release Target	Fish Health	Transportation/Releases
<i>Irrigon Fish Hatchery (IDFG) (SOP Section 3.1)</i>			
Salmon R. - Hammer Cr.			

3.2. Trap Operations and Production Planning for 2019 (Sub-Yearling BY 2019)

Refer to Lyons Ferry AOP

3.3. Marking and Rearing Plan for 2019 (Sub-Yearling BY 2018)

Refer to Lyons Ferry AOP

4. Sockeye

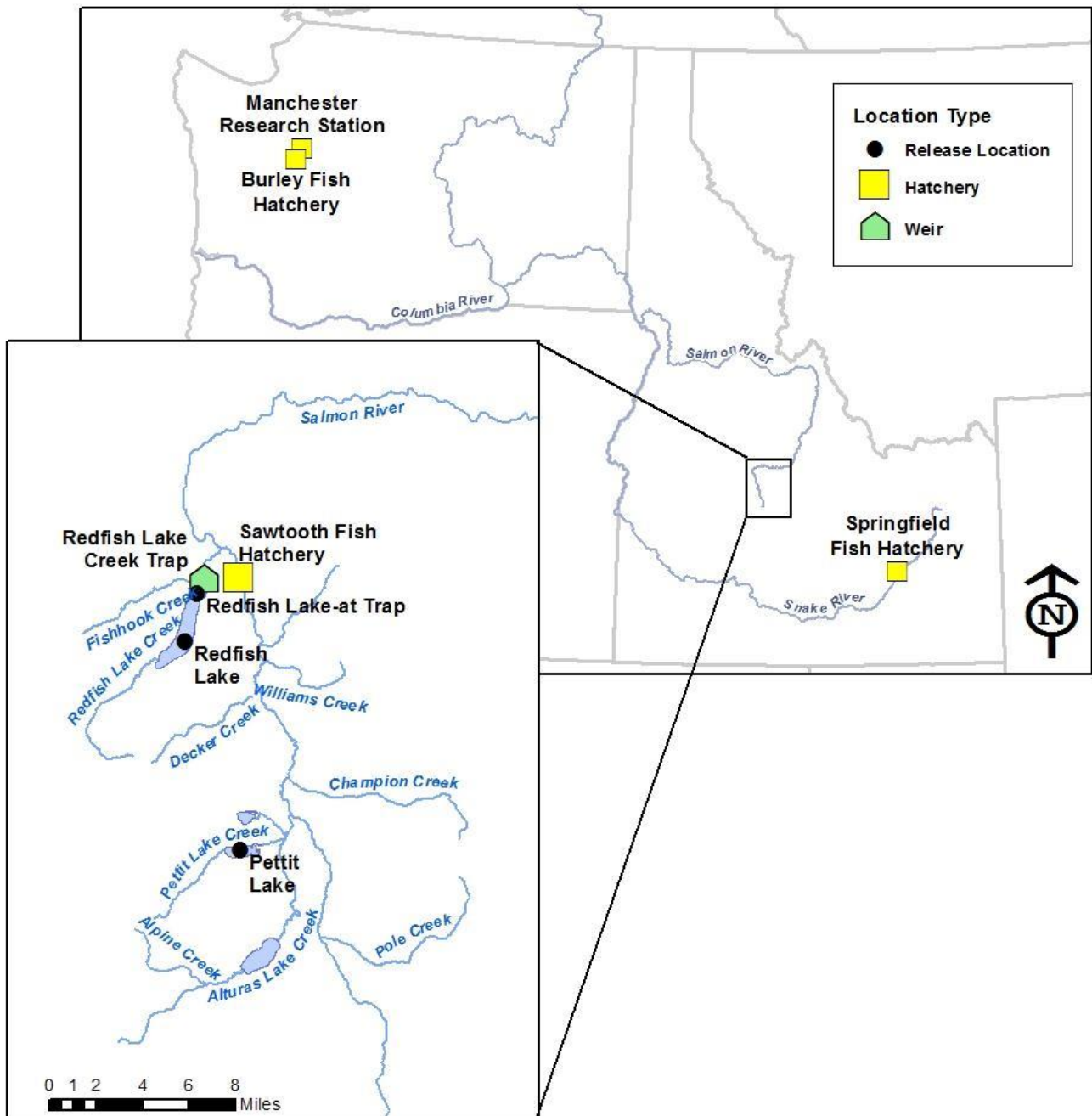


Figure 4.1. Sockeye salmon traps, hatchery facilities, and smolt and adult release locations.

Table 4.1. Sockeye 2019 Release Goals.

Rearing Facility	Release Site	Parent Stock	2019 Smolt Release Goal (BY 2017)
Sawtooth	Redfish Lake Cr.	Snake R.	300,000
Springfield	Redfish Lake Cr. ¹	Snake R.	450,000
Grand Total			750,000

Rearing Facility	Release Site	Parent Stock	Brood Year	2019 Captive-Reared Minimum Adult Release Goal ²
NOAA - Burley Creek	Redfish Lake	Snake R.	2014	-
	Redfish Lake	Snake R.	2015	50
	Redfish Lake	Snake R.	2016	100
	Pettit Lake	Snake R.	2016	100
Total				250
Eagle Fish Hatchery	Redfish Lake	Snake R.	2015	-
	Redfish Lake	Snake R.	2016	100
Total				100
Grand Total				350

¹Smolts are acclimated at Sawtooth Fish Hatchery for ~2 weeks prior to release.

²The minimum release target for the Sockeye captive broodstock program is 250 adults to Redfish Lake and 100 adults to Pettit Lake. This can be made up of anadromous returns, captive broodstock from Eagle FH, and captive broodstock from Burley Creek

4.1. Timeline and Flowchart for Sockeye Salmon Production

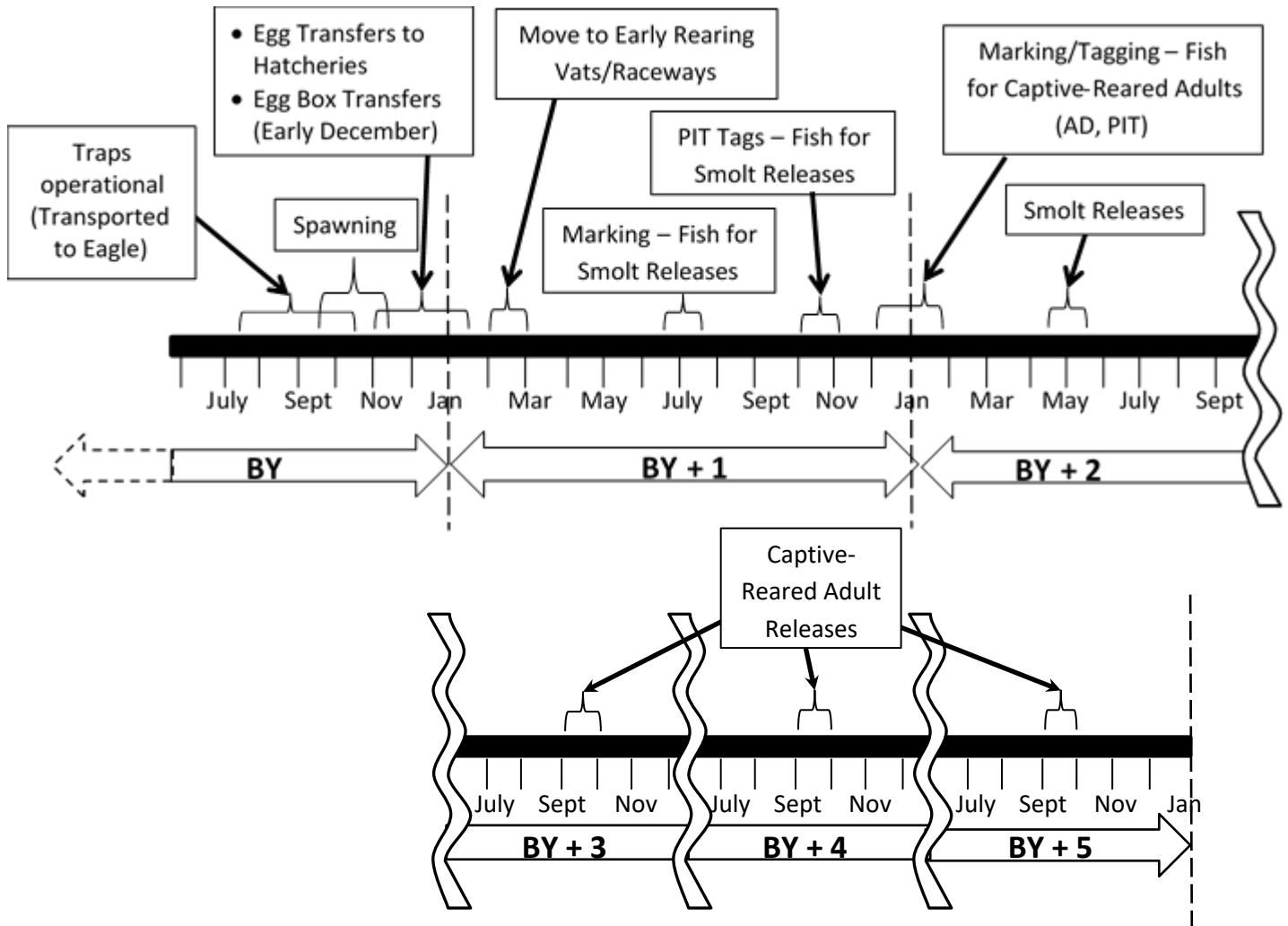


Figure 4.2. Timeline for Sockeye Salmon production. Date ranges are shown to include all facilities' operations.

Sockeye

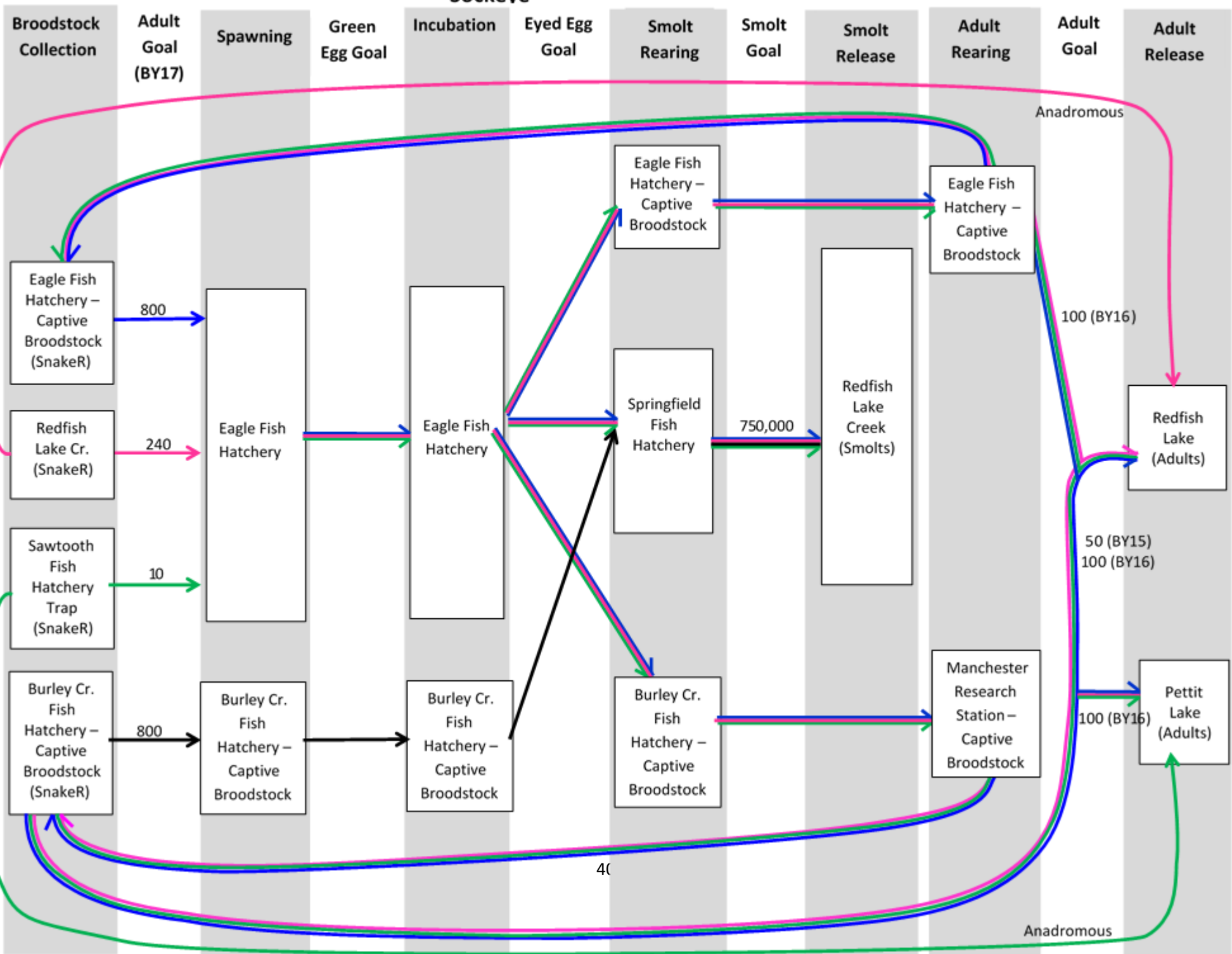


Figure 4.3. Fish and Egg movements for Sockeye. Numbers reflect 2019 releases.

4.2. Releases in 2019 (Smolt BY17, Captive Adult BY16, BY15, BY14)

4.2.1. Releases in 2019 (Smolt BY17, Captive Adult BY16, BY15, BY14) – Totals

Table 4.2a. Sockeye Captive-Reared Adult Releases in 2019.

Hatchery	Brood year	Release Site	Stock	Likely Release Date	Adult Release Goals ¹
NOAA - Burley Creek	2014	Redfish Lake	Snake R.		-
	2015	Redfish Lake	Snake R.		50
	2016	Redfish Lake	Snake R.		100
	2016	Pettit Lake	Snake R.		100
Total					250
Eagle	2015	Redfish Lake	Snake R.		-
	2016	Redfish Lake	Snake R.		100
Total					100
Grand Total					350

¹ All adults will receive a PIT tag prior to release

Table 4.2b. BY 2017 Sockeye Smolt Releases in 2019.

Hatchery	Release Site	Stock	Likely Release Date	Release Goals	Projected Actual Releases					PIT Tags		
					Total	Adipose Fin Clip		No Clip		Total # Tags	Funding Source	
						No CWT	CWT	CWT	No CWT		CSS	BPA
Sawtooth	Redfish Lake Cr.	Snake R.	5/6/19	300,000	333,500	333,500	0	0	0	6,900	5,000	1,900
Springfield	Redfish Lake Cr. ¹	Snake R.	5/6/19	450,000	565,777	565,777	0	0	0	52,987	39,787	13,200
Grand Total				750,000	899,277	899,277	0	0	0	59,887	44,787	15,100

¹ Smolts are acclimated at Sawtooth Fish Hatchery for ~2 weeks prior to release.

4.2.2. Releases in 2019 (Smolt BY17, Captive Adult BY16, BY15, BY14) – Narrative

Here are examples of things managers talk about for each release group, if there are departures from the norm (i.e., SOP). If no departure from the norm, enter NC for “No Change”.

- **Smolt/Egg Release Targets**- e.g. Were you below goal? Was you size at release different than SOP target? Did you depart from the mark plan?
- **Fish/Egg Health**- any epizootic history, anti-biotic treatments, was production culled at any point
- **Transportation/Releases**- e.g. timing, trucking issues, site access etc

Location	Plan for 2019		Changes/Conditions that Occurred 2018-Early 2019
	Release Target Smolt BY17, Adult BY16, BY15, BY14	Transport/Release Smolt BY17, Adult BY16, BY15, BY14	Fish/Egg Health BY17, BY16, BY15, BY14
<i>Eagle Fish Hatchery (SOP Section 4.3)</i>			
Redfish Lake – Adult Releases (SnakeR)	NC	NC	NC
Alturas Lake – Egg Releases (SnakeR)	NC	NC	NC
<i>Burley Creek Fish Hatchery (NOAA) (SOP Section 4.3)</i>			
Redfish Lake – Adult Releases (SnakeR)	NC	NC	NC
<i>Springfield Fish Hatchery (SOP Section 4.4)</i>			
Redfish Lake Creek– Smolt Releases (SnakeR)	NC	Smolts from SpFH will be transferred to Sawtooth Fish Hatchery for a 2-3 week acclimation period prior to release into RFLC. A control group of 3,000 PIT tagged smolts will be direct released from SpFH.	Eighty smolts will be sampled during the acclimation release at Sawtooth Fish Hatchery, and 160 smolts will be sampled during release into Redfish Lake Creek to monitor stress.
Sawtooth - Smolt Releases (SnakeR)	Due to poor smolt survival post release, Sawtooth FH is rearing approximately 300,000 BY17 smolts.	Sawtooth reared smolts will be released along with Springfield reared (Sawtooth acclimated) smolts to Redfish Lake Creek.	Eighty smolts will be sampled during release into Redfish Lake Creek to monitor stress.

4.3. Trap Operations and Production Planning for 2019 (BY 2019 for Smolt and Captive Adult Programs)

4.3.1. Trap Operations and Production Planning for 2019 (BY 2019 for Smolt and Captive Adult Programs) – TOTALS

Table 4.3a. Sockeye Spawning for BY 2019.

Site	Stock	Forecast return	Trapping period	Broodstock Need			
				M:F Ratio	Female	Male	Total
Redfish Lake Creek	Snake R.	70	7/15 - 10/15	1:1	13	13	26
Sawtooth	Snake R.	2	7/15 - 9/20	1:1			0
Eagle FH	Snake R.	1,100	NA	1:1	477	477	954
Burley Creek	Snake R.	1,100	NA	1:1	442	442	884
Grand Total		2272			932	932	1864

Note: Broodstock needs are estimates based on anadromous run forecast. Proportion of anadromous and captive broodstocks may be adjusted realtime based on actual number of anadromous Sockeye trapped.

4.3.2. Trap Operations and Production Planning for 2019 (BY 2019 for Smolt and Captive Adult Programs) – NARRATIVE

Here are examples of things managers were instructed to discuss for each release group, if there are departures from the norm (i.e., SOP). If no departure from the norm, enter NC for “No Change”.

Plan for 2019 (BY 2019)						
Location	Adult Fish Health	Trap Ops	Forecast Returns	Broodstock Needs	Spawning protocol changes	Disposition of adults
<i>Eagle Fish Hatchery (SOP Section 4.3)</i>						
Eagle FH Captive Broodstock (SnakeR)	NC	NA	NA	Additional Captive broodstock spawned due to forecasted low anadromous returns.	NC	NC
<i>Burley Creek Fish Hatchery (SOP Section 4.3)</i>						
Burley Cr. FH Captive Broodstock (SnakeR)	NC	NA	NA	NC	NC	NC
<i>Sawtooth Fish Hatchery (SOP Sections 4.2 and 4.5)</i>						
Redfish Lake Creek (SnakeR)	NC	NC	Expected low returns.	All anadromous broodstock will be incorporated into Eagle spawning design unless assigned to Alturas or Pettit lakes.	NC	NC
Sawtooth Trap (SnakeR)	NC	NC	Expected low returns.	NC	NC	NC

4.4. Marking and Rearing Plan for 2019 (Smolt BY 2018)

4.4.1. Marking and Rearing Plan for 2019 (Smolt BY 2018)– TOTALS

Table 4.4a. BY 2018 Sockeye Marking in 2019.

Hatchery	Release Site	Stock	Likely Release Date	Release Goals for 2020	Projected Actual Releases					PIT Tags		
					Total	Adipose Fin Clip		No Clip		Total # Tags	Funding Source	
						No CWT	CWT	CWT	No CWT		CSS	BPA
Springfield	Redfish Lake Cr.	Snake R.	May 2020	1,000,000	942,500	942,500	0	0	0	50,000	39,800	10,200
Grand Total				1,000,000	942,500	942,500	0	0	0	50,000	39,800	10,200

Note: PIT tag distribution between release groups is currently being discussed.

4.4.2. Marking and Rearing Plan for 2019 (Smolt BY 2018) – NARRATIVE

Here are examples of things managers were instructed to discuss for each release group, if there are departures from the norm (i.e., SOP). If no departure from the norm, enter NC for “No Change”.

- **Fish Health** - anticipated changes to normal fish health sampling or treatments
- **Fish feeding** - changes of diets of feed manufacturer, growth regimes etc.
- **Rearing conditions** - incubation, water temp, flow, rearing density changes
- **Marking** - e.g. schedule changes, planned changes to fish handling or movement, marking schedule, raceway loading for PBT etc.

Location	Fish Health	Fish Feeding	Rearing Conditions	Marking
<i>Oxbow Fish Hatchery – OR (SOP Section 4.4)</i>				
Oxbow (SnakeR)	NA	NA	NA	NA
<i>Springfield Fish Hatchery (SOP Section 4.4)</i>				
Springfield (SnakeR)	NC	NC	NC	NC
<i>Sawtooth Fish Hatchery</i>				
Sawtooth (SnakeR)	NA	NA	NA	NA

5. Appendices

5.1. BY2019 Brood Calculator

5.1.1. BY2019 Brood Calculator – SMOLT RELEASES

PROGRAM INPUTS							HISTORICAL HATCHERY PERFORMANCE METRICS (5-YR AVG)						FORM CALCULATED VALUES										
SPECIES	HATCHERY	RELEASE SITE	STOCK	PREFERRED TRAPPING SITE	FORMAL SMOLT RELEASE GOAL (G)	COMANAGER APPROVED (H)	% FEMALES IN BROODSTOCK (I)	% MORTALITY DURING HOLDING (J)	GREEN EGG FECUNDITY (K)	% REMAINING AFTER DISEASE CULLING ² (L)	% SURVIVAL GREEN TO EYED EGG (M)	% SURVIVAL EYED EGG TO RELEASE (N)	RELEASE GOAL WITH CUSHION (O)	EYED EGGS (P)	GREEN EGGS (Q)	GREEN EGGS BEFORE DISEASE CULL (R)	FEMALES SPAWNED (S)	MALES SPAWNED (T)	TOTAL ADULTS SPAWNED (U)	TRAPPED ADULTS NEEDED (V)	ADULTS TRAPPED TO MEET 1:1 RATIO (W)	SMOLTS PER TRAPPED ADULTS NEEDED (X)	
STLHD	HNFH	Sawtooth Weir	SawA	SFH	1,410,000	3.00%	50%	0.00%	5,100	100.00%	94.60%	90.70%	1,452,300	1,601,213	1,692,614	1,692,614	332	332	664	664	664	2,187	
		Sawtooth Weir (RAS Eval)	SawA	SFH	90,000	3.00%	50%	0.00%	5,100	100.00%	94.60%	90.70%	92,700	102,205	108,039	108,039	22	22	44	44	44	2,107	
		Salmon R. - McNabb Pt.			0	0.00%	0%	0.00%	0	0.00%	0.00%	0.00%	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
	MVFH	E. Fork Salmon R. - Upper	EFNat	EFRSF	60,000	10.00%	50%	0.00%	6,252	100.00%	88.00%	88.90%	66,000	74,241	84,364	84,364	14	14	28	28	28	2,357	
		Sawtooth Weir	SawA	SFH	279,000	3.00%	50%	0.00%	5,100	100.00%	94.60%	84.00%	287,370	342,107	361,635	361,635	71	71	142	142	142	2,024	
		Little Salmon R. - Stinky Sp.	PahA	PFH	186,000	10.00%	50%	0.00%	4,800	100.00%	93.00%	84.00%	204,600	243,571	261,905	261,905	55	55	110	110	110	1,860	
		Pahsimeroi Weir	USRB	PFH	155,000	0.00%	60%	5.00%	6,200	100.00%	90.00%	84.00%	155,000	184,524	205,026	205,026	34	23	57	60	90	2,583	
		Pahsimeroi Weir	DworB	DNFH	93,000	67%	67%	0.00%	6,681	100.00%	84.00%	84.00%	102,300	121,786	144,983	144,983	22	11	33	33	67	3,100	
		Yankee Fork	USRB (DworB)	YFT	620,000	0.00%	60%	5.00%	6,200	100.00%	90.00%	84.00%	620,000	738,095	820,106	820,106	133	89	222	234	350	2,650	
	NSFH	Little Salmon - Stinky Sp.	USRB	YFT	217,000	2.00%	60%	5.00%	6,200	100.00%	90.00%	84.00%	221,340	263,500	292,778	292,778	48	32	80	85	127	2,604	
		Pahsimeroi Weir	PahA	PFH	800,000	10.00%	50%	0.00%	4,800	100.00%	93.00%	90.00%	880,000	977,778	1,051,374	1,051,374	220	220	440	440	440	2,000	
		Little Salmon R. - Stinky Sp.	PahA	PFH	200,000	10.00%	50%	0.00%	4,800	100.00%	93.00%	90.00%	220,000	244,444	262,843	262,843	55	55	110	110	110	2,000	
Little Salmon R. - Stinky Sp.		OxbA	HCT	250,000	20.00%	50%	25.00%	5,500	96.00%	83.00%	97.00%	300,000	309,278	372,625	388,151	71	71	142	190	190	1,579		
Snake R. Hells Canyon		OxbA	HCT	550,000	20.00%	50%	25.00%	5,500	96.00%	83.00%	97.00%	660,000	680,412	819,774	853,931	156	156	312	416	416	1,587		
SP/SU CHIN	RRFH	Rapid River Hatchery	RapidR	RRFH	2,500,000	10.00%	50%	9.60%	3,731	93.20%	93.50%	95.60%	2,750,000	2,876,569	3,076,544	3,301,013	885	885	1770	1958	1958	1,404	
		Little Salmon	RapidR	RRFH	150,000	10.00%	50%	9.60%	3,731	93.20%	93.50%	95.60%	165,000	172,594	184,593	198,061	54	54	108	120	120	1,375	
		Hells Canyon	RapidR	RRFH	350,000	10.00%	50%	9.60%	3,731	93.20%	93.50%	95.60%	385,000	402,720	430,716	462,142	124	124	248	275	275	1,400	
	SFH	Salmon R. - Co. Line Br. - Integrated	USRInt	SFH	250,000	0.00%	50%	3.00%	4,700	97.50%	93.10%	91.00%	250,000	274,725	295,086	302,653	65	65	130	135	135	1,852	
		Sawtooth Weir - Segregated	USRSeg	SFH	1,450,000	3.00%	50%	3.00%	4,700	97.50%	93.10%	93.00%	1,493,500	1,605,914	1,724,934	1,769,164	377	377	754	778	778	1,920	
		Yankee Fork	USRSeg	SFH	300,000	3.00%	50%	3.00%	4,700	97.50%	93.10%	93.00%	309,000	332,258	356,883	366,034	78	78	156	161	161	1,919	
	PFH	Pahsimeroi Weir - Integrated	PahInt	PFH	65,000	0.00%	50%	14.00%	4,500	94.00%	90.00%	96.00%	65,000	67,708	75,231	80,033	18	18	36	42	42	1,548	
		Pahsimeroi Weir - Segregated	PahSeg	PFH	935,000	10.00%	50%	15.00%	4,500	94.00%	90.00%	96.00%	1,028,500	1,071,354	1,190,394	1,266,376	282	282	564	664	664	1,549	
		SFSR Knox Br. - Integrated	SFSRInt	SFSRW	150,000	0.00%	50%	10.00%	4,250	95.00%	91.70%	85.00%	150,000	176,471	192,443	202,572	48	48	96	107	107	1,402	
	McFH	SFSR Knox Br. - Segregated	SFSRSeg	SFSRW	850,000	10.00%	50%	10.00%	4,250	95.00%	91.70%	85.00%	935,000	1,100,000	1,199,564	1,262,699	298	298	596	663	663	1,410	
		Johnson Creek	JohnCr	JCW	150,000	10.00%	50%	16.00%	4,500	97.00%	87.00%	92.00%	165,000	179,348	206,147	212,523	48	48	96	115	115	1,435	
		CW Sum Chinook - Powell Ponds	SFSRSeg	SFSRW	640,000	0.00%	50%	5.00%	4,250	92.00%	94.00%	96.00%	640,000	666,667	709,220	770,891	182	182	364	384	384	1,667	
FALL CHIN	JFH	Salmon R.-Hammer Cr			1,000,000								1,000,000	#DIV/0!	#DIV/0!	#DIV/0!	#VALUE!	#VALUE!	#DIV/0!	#VALUE!	#VALUE!	#DIV/0!	
		NPTH	Snake R.	LGD,NPTH	500,000																		
	NPTH	Cedar Flats	Snake R.	LGD,NPTH	200,000	10.00%	50.00%	18.00%	4,028	98.00%	89.00%	96.00%	1,540,000	1,604,167	1,802,434	1,839,219	457	457	914	1,115	1,115	1,381	
		Lukes Gulch	Snake R.	LGD,NPTH	200,000																		
		North Lapwai Valley	Snake R.	LGD,NPTH	500,000																		
SOCKEYE	SpFH	Redfish Lake Creek	Redfish Lake	RFLC	20,000	0.00%	50.00%	2.00%	2,400	99.00%	80.64%	84.66%	20,000	23,624	29,296	29,591	13	13	26	27	27	741	
		Redfish Lake Creek	Redfish Lake	EFH CB	540,000	0.00%	50.00%	4.00%	1,685	100.00%	79.52%	84.66%	540,000	637,845	802,120	802,120	477	477	954	994	994	543	
		Redfish Lake Creek	Redfish Lake	NOAA CB	440,000	0.00%	50.00%	5.00%	1,570	100.00%	74.93%	84.66%	440,000	519,726	693,615	693,615	442	442	884	931	931	473	

¹ In the 2013 AOP process, the co-managers approved a 10% cushion to meet release targets

² Culling of eggs for BKD, IHN, etc.

CELL FORMULAS	G*(1+H)	O/(N)	P/(M)	Q/(L)	ROUNDUP(R/K,O)	S/(I)-S	T+S	ROUNDUP(U/(1-J),0)	ROUNDUP(S/(1-I)/(1-J),0)	O/V
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5.1.2. BY2019 Brood Calculator – EGG RELEASES

PROGRAM INPUTS							HISTORICAL HATCHERY PERFORMANCE METRICS (5-YR AVG)						FORM CALCULATED VALUES									
SPECIES	HATCHERY	RELEASE SITE	STOCK	PREFERED TRAPPING SITE	FORMAL EGG RELEASE GOAL (G)	COMANAGER APPROVED CUSHION % ¹ (H)	% FEMALES IN BROODSTOCK (I)	% MORTALITY DURING HOLDING (J)	GREEN EGG FECUNDITY (K)	% SURVIVAL AFTER DISEASE CULLING ² (L)	% SURVIVAL GREEN TO EYED EGG (M)	% SURVIVAL EYED EGG TO RELEASE (N)	EGG RELEASE GOAL WITH CUSHION (O)	EYED EGGS (P)	GREEN EGGS (Q)	GREEN EGGS BEFORE DISEASE CULL (R)	FEMALES SPAWNED (S)	MALES SPAWNED (T)	TOTAL ADULTS SPAWNED (U)	TRAPPED ADULTS NEEDED (V)	ADULTS TRAPPED TO MEET 1:1 RATIO (W)	SMOLTS PER TRAPPED ADULTS NEEDED (X)
STHD	PFH	SBT Egg Box-Yankee Fork	USRB (DworB)	PFH	500,000	10%	50%	5.00%	6,200	100.00%	90.00%	NA	550,000	550,000	611,111	611,111	99	99	198	209	209	2,632
	SFH	SBT Egg Box-Panther Creek	PahA	PFH	400,000	10%	50%	0.00%	4,800	100.00%	91.70%	NA	440,000	440,000	479,826	479,826	100	100	200	200	200	2,200
		SBT Egg Box-Indian Creek	PahA	PFH	100,000	10%	50%	0.00%	4,800	100.00%	91.70%	NA	110,000	110,000	119,956	119,956	25	25	50	50	50	2,200
SP/SU CHIN	PFH	Panther Creek - EGG BOX	PahSeg	PFH	800,000	0%	50%	15.00%	4,500	95%	91.70%	NA	800,000	800,000	872,410	918,326	205	205	410	483	483	1,656
	McFH	Curtis/Cabin Creek - EGG BOX	SFSRSeg	McFH	300,000	0%	50%	10.00%	4,500	95%	91.70%	NA	300,000	300,000	327,154	344,372	77	77	154	172	172	1,744

¹ In the 2013 AOP process, the co-managers approved a 10% cushion to meet release targets

² Culling of eggs for BKD, IHN, etc.