Prepared by:	Dillon Alegre, Grant Brink & Rachel Ellison, Environmental Assessment Services, LLC
Report Period:	September 16th to September 30th, 2023
Re:	**CRAMER FISH SCIENCES - WILLAMETTE VALLEY FISH PASSAGE MONITORING VIA ROTARY SCREW TRAPS**

Project Schedule

Table 1. Project Schedule

Site	Task	Start	End	Days
Breitenbush River RST	Trap Install	6/16/2023	6/16/2023	1
Breitenbush River RST	Operation	6/16/2023	11/30/2023	167
Breitenbush River RST	Trapping Efficiency (749 fish)	6/21/2023	6/21/2023	1
Breitenbush River RST	Trapping Efficiency (763 fish)	7/6/2023	7/6/2023	1
Breitenbush River RST	Trapping Efficiency (791 fish)	8/2/2023	8/2/2023	1
Breitenbush River RST	Trapping Efficiency (756 fish)	9/20/2023	9/20/2023	1
Detroit Head of Reservoir- North Santiam River RST	Trap Install	4/19/2023	4/19/2023	1
Detroit Head of Reservoir- North Santiam River RST	Operation	5/4/2023	11/30/2023	210
Detroit Head of Reservoir- North Santiam River RST	Trapping Efficiency (539 fish)	6/6/2023	6/6/2023	1
Detroit Head of Reservoir- North Santiam River RST	Trapping Efficiency (750 fish)	6/20/2023	6/20/2023	1
Detroit Head of Reservoir- North Santiam River RST	Trapping Efficiency (750 fish)	7/6/2023	7/6/2023	1
Detroit Head of Reservoir- North Santiam River RST	Trapping Efficiency (750 fish)	8/2/2023	8/2/2023	1
Detroit Head of Reservoir- North Santiam River RST	Trapping Efficiency (700 fish)	9/6/2023	9/6/2023	1
Green Peter Head of Reservoir- Middle Santiam River RST	Highline Install	4/25/2023	4/25/2023	1
Green Peter Head of Reservoir- Middle Santiam River RST	Trap Install	4/26/2023	4/26/2023	1
Green Peter Head of Reservoir- Middle Santiam River RST	Operation	5/4/2023	11/30/2023	210

Green Peter Head of Reservoir- Middle Santiam River RST	Trapping Efficiency (1000 dead, 750 alive)	6/7/2023	6/7/2023	1
Green Peter Head of Reservoir- Middle Santiam River RST	Trapping Efficiency (750 fish)	7/28/2023	7/28/2023	1
Green Peter Head of Reservoir- Middle Santiam River RST	Trapping Efficiency (749 fish)	8/30/2023	8/30/2023	1
Green Peter Head of Reservoir- Middle Santiam River RST	Trapping Efficiency (741 fish)	9/27/2023	9/27/2023	1
Lookout Dam Tailrace RSTs	Operation	8/01/2023	12/31/2023	152
Lookout Dam Tailrace Spill	Trapping Efficiency (3,634 fish)	9/13/0223	9/13/0223	1
Lookout Dam Tailrace Spill	Trapping Efficiency (3,998 fish)	9/14/2023	9/14/2023	1
Hills Creek Dam Powerhouse	Trapping Efficiency (510 fish)	9/27/2023	9/27/2023	1
Hills Creek Head of Reservoir RST	Trap Install	5/9/2023	5/9/2023	1
Hills Creek Head of Reservoir RST	Operation	5/9/2023	6/30/2023	52
Hills Creek Head of Reservoir RST	Removal	6/30/2023	6/30/2023	1
Hills Creek Head of Reservoir RST	Trapping Efficiency (519 fish)	5/18/2023	5/18/2023	1
Hills Creek Head of Reservoir RST	Trapping Efficiency (760 fish)	6/19/2023	6/19/2023	1

Table 2. Sampling Dates for Reporting Period

Site	Total Sampling Period Start	Current Reporting Period Start	Current Reporting Period End	Days Sampled This Period	Total Days Sampled
Breitenbush River RST	6/16/2023	9/16/2023	9/30/2023	15	107
Detroit Head of Reservoir- North Santiam River RST	5/4/2023	9/16/2023	9/30/2023	15	148
Green Peter Head of Reservoir- Middle Santiam River RST	5/4/2023	9/16/2023	9/30/2023	15	146
Lookout Point Dam PH	8/1/2023	9/16/2023	9/30/2023	15	57
Lookout Point Dam Spill	8/1/2023	9/16/2023	9/30/2023	15	57
Hills Creek Dam PH	9/15/2023	9/16/2023	9/30/2023	15	15
Hills Creek Dam RO	9/15/2023	9/16/2023	9/30/2023	15	15
Hills Creek Head of Reservoir RST	5/9/2023	9/16/2023	9/30/2023	0	52

Table 3. Willamette Valley Rotary Screw Trap Monitoring Catch Summary

Site	Species	Catch (Reporting Period)	Recaptures (Reporting Period)	Total Catch
Breitenbush River RST	CHS	84	17	228
Breitenbush River RST	STW	2	0	332
Detroit Head of Reservoir- North Santiam River RST	CHS	36	0	9510
Detroit Head of Reservoir- North Santiam River RST	STW	4	0	571
Green Peter Head of Reservoir- Middle Santiam River RST	CHS	0	0	21
Green Peter Head of Reservoir- Middle Santiam River RST	STW	0	0	0
Lookout Point Dam	CHS	1	0	1
Hills Creek Dam	CHS	28	10	28
Hills Creek Head of Reservoir RST	CHS	0	0	93

Summary of Rotary Screw Trap Data

For this reporting period, traps were operated at the following 5 locations: Detroit Head of Reservoir – North Santiam River, Breitenbush River, Green Peter Head of Reservoir – Middle Santiam River, Lookout Dam Tailrace and Hills Creek Dam Tailrace.

The Detroit Head of Reservoir – North Santiam RST and Green Peter Head of Reservoir – Middle Santiam RST were installed on April 19th and 26th, respectively. The RSTs at Detroit Head of Reservoir – North Santiam and Green Peter Head of Reservoir – Middle Santiam rivers started sampling on May 4th once permits were received. The Hills Creek Head of Reservoir RST on the upper Middle Fork Willamette River was installed and began sampling on May 9th. Sampling concluded at the Hills Creek Head of Reservoir site on June 30th and was removed for the remainder of the year. The RST for the Breitenbush River was installed on June 16th and began sampling on the same day.

The RSTs in the Lookout Dam Tailrace began sampling under contract W9127N19D0009 on August 1, 2023. Sampling at Lookout Dam Tailrace prior to August 1, 2023 was conducted by EAS for the USACE under contract W9127N19D0007. This report reflects research conducted starting August 1st, 2023 but will include season totals from January 1st, 2023 onward.

The RSTs in the Hills Creek Dam Tailrace began sampling under contract W9127N19D0009 on September 15th, 2023. Sampling at Hills Creek Dam Tailrace prior to September 15th, 2023 was conducted by EAS for the USACE under contract W9127N19D0007. This report reflects research conducted starting September 15th, 2023 but will include season totals from January 1st, 2023 onward.

The RST in the Fall Creek Dam Tailrace began sampling under contract W9127N19D0009 on September 30, 2023. Sampling at Fall Creek Dam Tailrace prior to September 30, 2023 was conducted by EAS for the USACE under contract W9127N19D0007. Sampling results will be on the next report. This report reflects research conducted starting September 30th, 2023 but will include season totals from January 1st, 2023 onward.

Winter Steelhead may be present at the Breitenbush River, Detroit Head of Reservoir – North Santiam River, and Green Peter Head of Reservoir – Middle Santiam River sites. All natural origin juvenile *O. mykiss* captured at these sites will be treated and reported as Winter Steelhead.

Sampling start dates are included in Table 2, and season total collection numbers are displayed in Table 3. The locations of the RSTs are depicted in Figures 1 through 5.

FIGURE 1
Breitenbush River

RST Locations

500 Feet

N

EAS ENVIRONMENTAL ASSESSMENT SERVICES
Wholly Owned Subsidiary of Natives of Kodiak

FIGURE 2
North Santiam Above Detroit

RST Locations

500 Feet

EAS ENVIRONMENTAL ASSESSMENT SERVICES
Wholly Owned Subsidiary of Natives of Kodiak

FIGURE 3
Middle Santiam River

RST Locations

500 Feet

EAS ENVIRONMENTAL ASSESSMENT SERVICES
Wholly Owned Subsidiary of Natives of Kodiak

FIGURE 4
Lookout Dam Tailrace

RST Locations

500 Feet

EAS ENVIRONMENTAL ASSESSMENT SERVICES
Wholly Owned Subsidiary of Natives of Kodiak

FIGURE 5
Hills Creek Dam

RST Locations

500 Feet

EAS ENVIRONMENTAL ASSESSMENT SERVICES
Wholly Owned Subsidiary of Natives of Kodiak

FIGURE 6
Middle Fork Willamette Above Hills Creek

RST Locations

500 Feet

N

EAS ENVIRONMENTAL ASSESSMENT SERVICES
Wholly Owned Subsidiary of Natives of Kodiak

Breitenbush River

The Breitenbush River RST was installed on June 16th, 2023 and began sampling the same day. All natural origin *O. mykiss* captured at this site will be reported as Winter Steelhead.

Target Species

This reporting period began on September 16th and ended on September 30th. There were a total of 84 Chinook Salmon (CHS) and 2 Winter Steelhead (STW) captured during the 15-day sampling period (Figure 7). Sampling duration was 100% of the reporting period for the RST. Figure 8 shows length frequency data to-date. Table 4 provides life stage, length, and weight data for all Chinook Salmon and Winter Steelhead that have been caught at the Breitenbush River site to-date and for the reporting period.

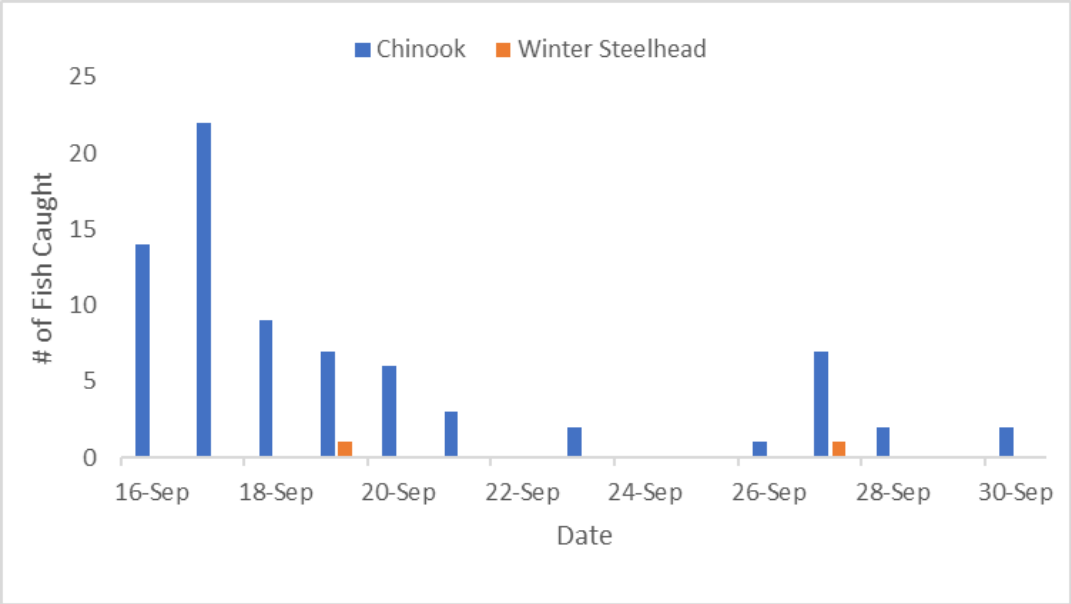


Figure 7. Chinook and Winter Steelhead Captured per day 09/16/2023 to 09/30/2023 (Breitenbush River)

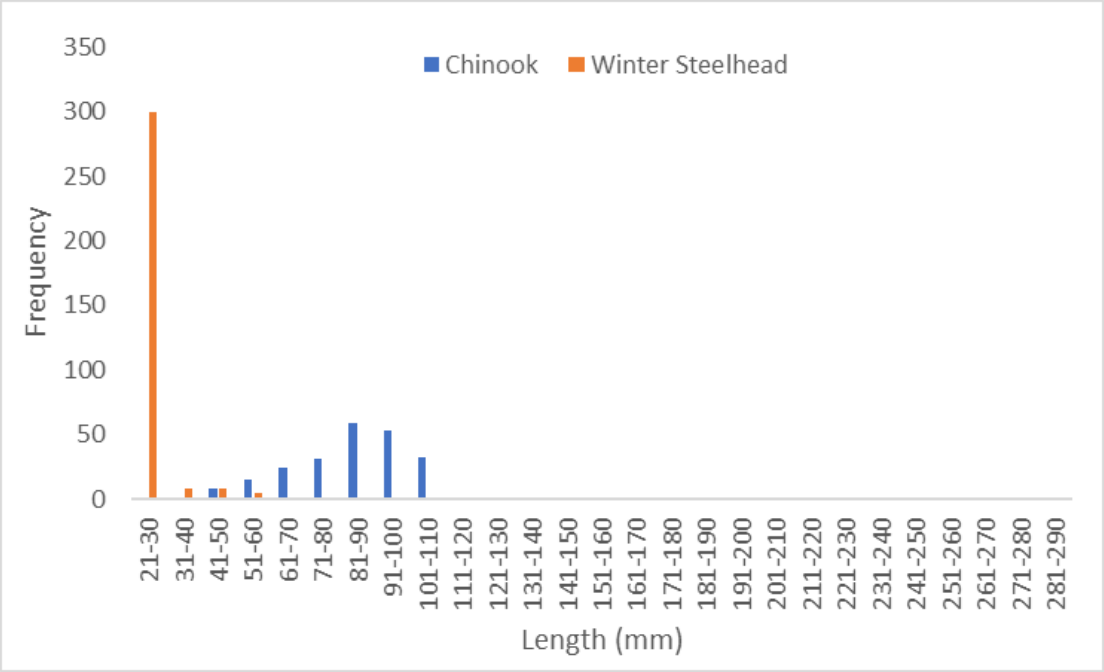


Figure 8. Length Frequency of Juvenile Chinook Sampled Season To-Date (Breitenbush River)

Table 4. Descriptive Statistics of Target Species Captured at the Breitenbush River To-Date

To-Date (Since June 16, 2023)										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Breitenbush River	5ft	CHS	Fry	10	44	57	48.8	1.0	1.9	1.2
		CHS	Parr	145	46	110	79.3	1.4	15.9	6.1
		CHS	Smolt	72	74	112	97.4	4.3	15.5	10.4
		STW	Fry	312	21	47	27.1	N/A	N/A	N/A
		STW	Parr	17	43	120	65.8	1.1	20.0	5.2
		STW	Smolt	3	118	199	152	15.2	92	43.4

*Fish that were missing heads or caudal fins are not included in length and weight calculations.

September 16-30, 2023										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Breitenbush River	5ft	CHS	Fry	0	N/A	N/A	N/A	N/A	N/A	N/A
		CHS	Parr	51	62	105	82.1	3.0	12.8	6.7
		CHS	Smolt	33	74	110	94.1	4.6	13.5	9.5
		STW	Fry	0	N/A	N/A	N/A	N/A	N/A	N/A
		STW	Parr	2	74	95	84.5	3.3	9.6	6.5
		STW	Smolt	0	N/A	N/A	N/A	N/A	N/A	N/A

*Fish that were missing heads or caudal fins are not included in length and weight calculations.

Trapping Efficiency

On 9/20/2023 756 adipose and right ventral fin clipped fish were released above the trap site to evaluate the trapping efficiency of the 5 ft RST. 7 fish were recaptured for an efficiency of 0.9%

Breitenbush River	Release #	Recapture #	Capture Efficiency
5ft Trap	756	7	0.9% (7/756)

Run of River Trapping Efficiency

Run of river fish captured in the RST have been caudal clipped, PIT tagged or VIE tagged, and released upstream to perform run of river trapping efficiency trials. Only fish large enough to be safely caudal clipped have been used for run of river efficiency trials. This year, 136 Spring Chinook and 2 Winter Steelhead have been caudal clipped and released upstream for the purpose of conducting run of river trapping efficiency trials. Release numbers and recaptures for this reporting period are summarized below.

Breitenbush River	Release #	Recapture #
Chinook	84	10
Winter Steelhead	1	1

Injuries and Copepod Infection

Partial descaling <20% was observed in 74 of the 84 Chinook captured (88.1%), 2 displayed descaling >20% (2.4%), 45 displayed body injury (53.6%), 0 had eye injuries (0.0%), 8 had copepods present in the branchial cavity (9.5%) and 15 had copepods on fins (17.9%). 0 Chinook displayed gas bubble disease (0.0%). There were 0 mortalities (0.0%).

Partial descaling <20% was observed on 0 of the 2 Winter Steelhead captured (0.0%) and 1 displayed descaling >20% (50.0%), 1 displayed body injury (50.0%), 0 had eye injury (0.0%), 1 had copepods present in the branchial cavity (50.0%) and 1 had copepods on fins (50.0%). 0 Winter Steelhead displayed gas bubble disease (0.0%). There were 0 mortalities (0.0%). Injury data is summarized in table 5.

Table 5. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead Chinook Salmon and Winter Steelhead for Sampling Period (Breitenbush River).

Site	Species	# Fish Collected	# DSC* <20%	# DSC* >20%	# with Body Injuries	# with Eye Injuries	# with COP* In B.C.	# with COP* on Fins	Mortalities
Breitenbush River	Chinook	84	74	2	45	0	8	15	0
	Winter Steelhead	2	0	1	1	0	1	1	0

*DSC=Descaled, COP=Copepods, B.C.=Branchial Cavity

Collected DNA and Scale Samples

DNA was collected from 84 Spring Chinook and 2 Winter Steelhead. Scale samples were collected from 84 Spring Chinook and 2 Winter Steelhead.

PIT Tags

81 fish were PIT tagged during this reporting period. More information regarding PIT tagged fish can be found in Appendix D.

VIE Marking

Visible Implant Elastomer (VIE) trials commenced on 6/16/2023. VIE tag color is changed every month to distinctly mark groups of fish by capture date. Since then, 34 Spring Chinook and 17 Winter Steelhead have been marked with fluorescent elastomer. No fish have been recaptured at downstream sites to date.

Date Tagged	Species	Tag Location	VIE Color	# Tagged	# Recaptured to Date
6/16/2023-6/30/2023	Chinook	Head	Pink	23	0
7/1/2023-7/15/2023	Chinook	Head	Green	2	0
7/16/2023-7/31/2023	Chinook	Head	Green	2	0
7/16/2023-7/31/2023	O. mykiss	Head	Green	7	0
8/1/2023-8/15/2023	Chinook	Head	Yellow (2x)	1	0
8/1/2023-8/15/2023	O. mykiss	Head	Yellow (2x)	3	0
8/16/2023-8/31/2023	Chinook	Head	Yellow (2x)	2	0
8/16/2023-8/31/2023	O. mykiss	Head	Yellow (2x)	5	0
9/1/2023-9/15/2023	O. mykiss	Head	Red (2x)	2	0
9/16/2023-9/30-2023	Chinook	Head	Red (2x)	4	0

Non-Target Species

1 non-target species were captured during this reporting period. A summary of non-target fish capture is provided in table 6.

Table 6. Summary of Non-target Species (Breitenbush River).

Species	5 ft Capture	5 ft Mortality	Season Total	Season Total Mortality
Kokanee	0	0	0	0
Chinook (clipped)	0	0	1	0
Cutthroat Trout	0	0	0	0
O. mykiss (clipped)	1	0	11	5
Sculpin	0	0	10	2
Totals	**1**	**0**	**19**	**7**

Stream Statistics

Basic stream statistics at the Breitenbush River RST site were calculated from data downloaded from the U.S. Geological Survey stream gauge number 14179000. Instantaneous discharge (cfs) and Gauge height (feet) flow metrics are available at this gauge. During the reporting period, daily maximum values for instantaneous discharge ranged from 101.0 cfs to 158.0 (mean: 118.6 cfs). Figure 8 shows instantaneous discharge.

Stream temperatures will be recorded every 2 hours for the length of the reporting period for the RST (Figure 9).

Catch per unit of effort (CPUE) data are summarized in Table 7. Gage height and capture data for the duration of monitoring efforts at this location are provided in Appendix B.

Table 7. Summary of salmonid CPUE, Breitenbush River.

	Chinook	Winter Steelhead
Description	**(5 ft)**	**(5 ft)**
Catch	84	2
Effort (hrs)	359.3	359.3
CPUE (fish/hr)	0.234	0.006

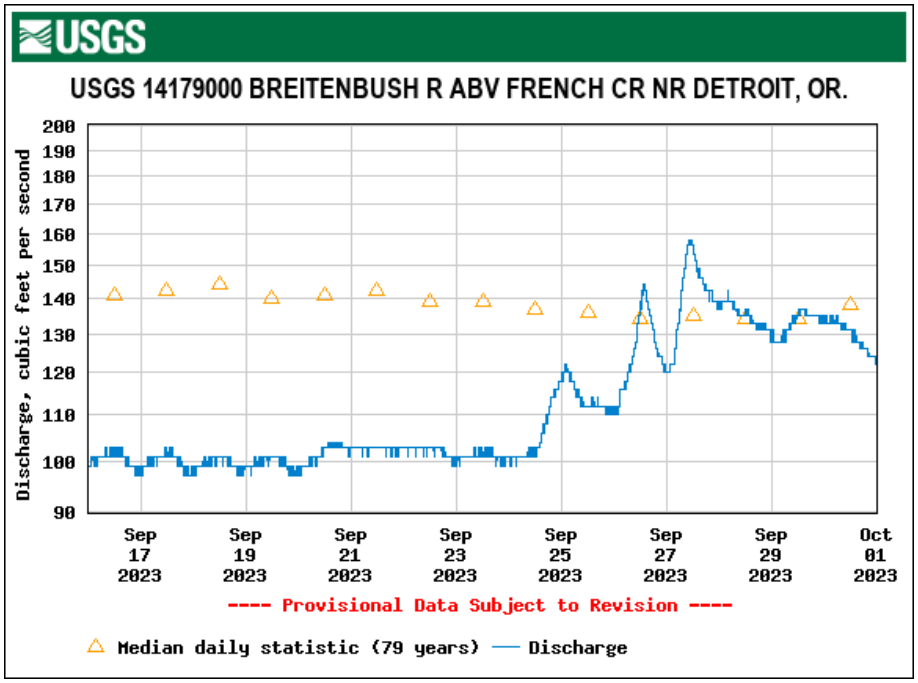


Figure 9. Discharge (cfs); Breitenbush River.

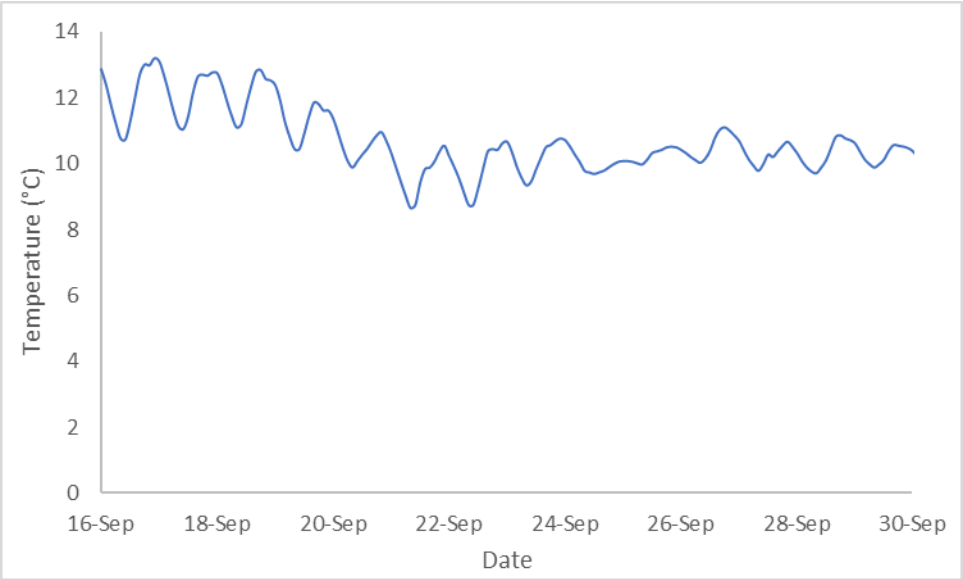


Figure 10. Temperature at RST (Breitenbush River).

North Santiam River – Detroit Head of Reservoir

The Detroit Head of Reservoir- North Santiam River RST was installed on April 19th, 2023. This site started sampling on May 4, 2023. All natural origin *O. mykiss* captured at this site will be reported as Winter Steelhead.

Target Species

This reporting period began on September 16th and ended on September 30th. There were a total of 36 Chinook Salmon (CHS) and 4 Winter Steelhead (STW) captured during the 15-day sampling period (Figure 11). Sampling duration was 100% of the reporting period for the RST. Figure 12 shows length frequency data to-date. Table 8 provides life stage, length, and weight data for all Chinook Salmon and Winter Steelhead that have been caught at the Detroit Head of Reservoir site to-date and for the reporting period.

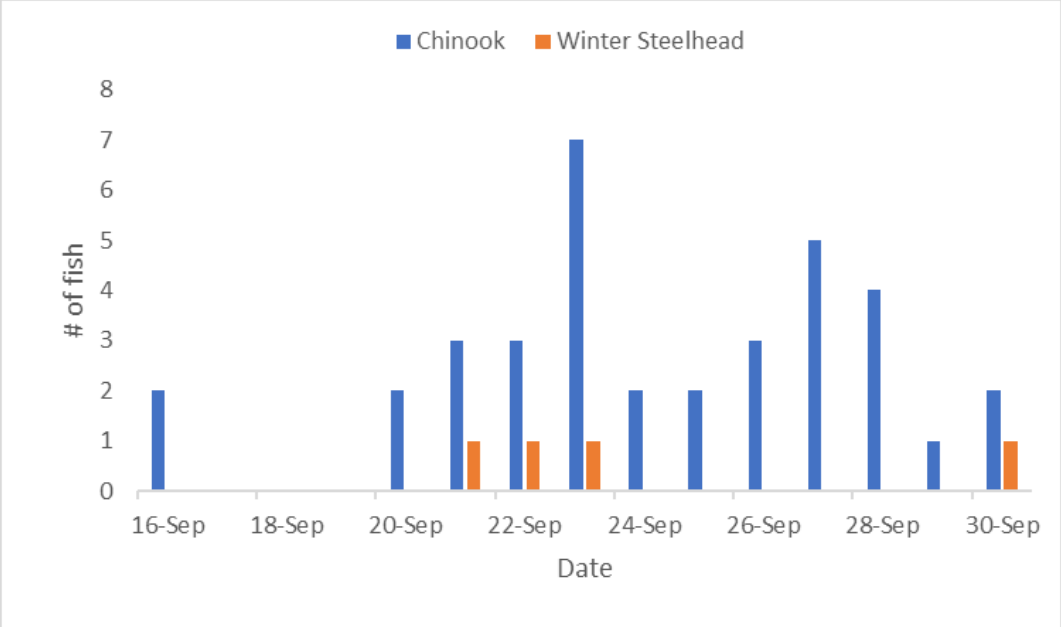


Figure 11. Chinook and Winter Steelhead Captured per day 09/16/2023 to 09/30/2023 (Detroit Head of Reservoir).

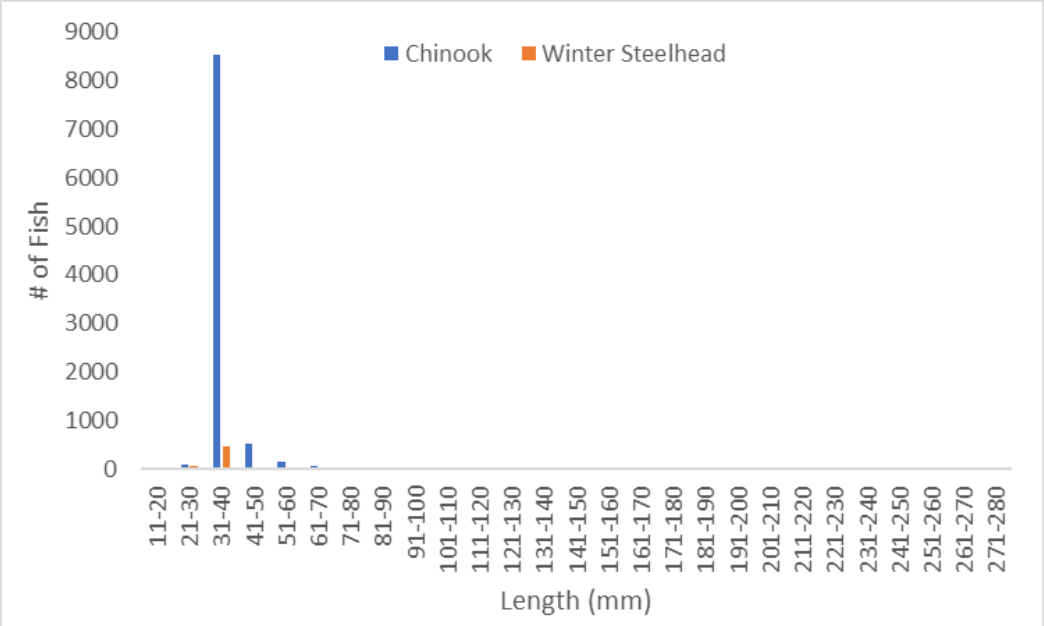


Figure 12. Length Frequency of Juvenile Chinook and Winter Steelhead Sampled Season To-Date (Detroit Head of Reservoir).

Table 8. Descriptive Statistics of Target Species Captured at Detroit Head of Reservoir Season To-Date.

To-Date (Since May 04, 2023)										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Detroit HOR	5ft	CHS	Fry	9118	28	60	35.5	N/A	N/A	N/A
		CHS	Parr	357	41	105	59.3	1.0	12.8	2.8
		CHS	Smolt	35	61	117	87.7	2.4	18.1	7.7
		STW	Fry	548	17	49	34.4	N/A	N/A	N/A
		STW	Parr	20	45	112	67.0	1.0	15.4	4.5
		STW	Smolt	3	169	408	255	53.4	66.5	60.0

*Fish that were missing heads are not included in length and weight calculations.

September 16-30, 2023										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Detroit HOR	5ft	CHS	Fry	0	N/A	N/A	N/A	N/A	N/A	N/A
		CHS	Parr	29	54	96	73.8	1.7	9.5	5.1
		CHS	Smolt	7	70	117	90.7	4.2	18.1	8.8
		STW	Fry	0	47	47	47.0	N/A	N/A	N/A
		STW	Parr	4	55	112	73.5	1.8	15.4	5.7
		STW	Smolt	0	N/A	N/A	N/A	N/A	N/A	N/A

*Fish that were missing heads are not included in length and weight calculations.

Trapping Efficiency

On 9/6/2023 700 adipose and left ventral fin clipped fish were released above the trap site to evaluate the trapping efficiency of the 5 ft RST. 19 fish were recaptured for an efficiency of 2.7%

Detroit Head of Reservoir	Release #	Recapture #	Capture Efficiency
5ft Trap	700	19	2.7% (19/700)

Injuries and Copepod Infection

Partial descaling <20% was observed in 30 of the 36 Chinook captured (83.3%), 1 displayed descaling >20% (2.8%), 13 displayed body injury (36.1%), 0 had eye injuries (0.0%), 1 had copepods present in the branchial cavity (2.8%) and 2 had copepods on fins (5.6%). 0 Chinook displayed gas bubble disease (0.0%). There were 0 mortalities (0.0%).

Partial descaling <20% was observed on 0 of the 4 Winter Steelhead captured (0.0%) and 0 displayed descaling >20% (0.0%), 0 displayed body injury (0.0%), 0 had eye injuries (0.0%), 0 had copepods present in the branchial cavity (0.0%) and 0 had copepods on fins (0.0%). 0 Winter Steelhead displayed gas bubble disease (0.0%). There were 0 mortalities (0.0%). Injury data is summarized in table 9.

Table 9. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead Chinook Salmon and Winter Steelhead for Sampling Period (Detroit Head of Reservoir).

Site	Species	# Fish Collected	# DSC* <20%	# DSC* >20%	# with Body Injuries	# with Eye Injuries	# with COP* In B.C.	# with COP* on Fins	Mortalities
Detroit HOR	Chinook	36	30	1	13	0	1	2	0
	Winter Steelhead	4	0	0	0	0	0	0	0

*DSC=Descaled, COP=Copepods, B.C.=Branchial Cavity

Collected DNA and Scale Samples

For the reporting period, DNA was collected from 36 Spring Chinook and 4 Winter Steelhead. Scale samples were collected from 36 Spring Chinook and 4 Winter Steelhead. The other targets captured did not meet length criteria for DNA sampling or were too descaled/damaged to collect samples.

PIT Tags

32 Spring Chinook and 2 Winter Steelhead were PIT tagged during this reporting period. More information regarding PIT tagged fish can be found in Appendix D.

VIE Marking

Visible Implant Elastomer (VIE) trials commenced at the Detroit Head of Reservoir – North Santiam River site on 5/5/2023. VIE tag color is changed every month to distinctly mark groups of fish by capture date. Since then, 5,430 Chinook and 331 Winter Steelhead have been VIE marked with fluorescent elastomer. No fish with VIE marks have been detected at downstream RST sites to date. Fish still showing an egg sac are not VIE marked.

Date Tagged	Species	Tag Location	VIE Color	# Tagged	# Recaptured to Date
5/01/2023-5/15/2023	Chinook	Right Dorsal	Orange	889	0
5/01/2023-5/15/2023	*O. mykiss*	Right Dorsal	Orange	60	0
5/16/2023- 5/31/2023	Chinook	Right Dorsal	Orange	2,700	0
5/16/2023- 5/31/2023	*O. mykiss*	Right Dorsal	Orange	237	0
6/1/2023-6/15/2023	Chinook	Right Dorsal	Pink	1048	0
6/1/2023-6/15/2023	*O. mykiss*	Right Dorsal	Pink	21	0
6/16/2023-6/30/2023	Chinook	Right Dorsal	Pink	539	0
7/1/2023-7/15/2023	Chinook	Right Dorsal	Green	110	0
7/16/2023-7/31/2023	Chinook	Right Dorsal	Green	74	0
7/16/2023-7/31/2023	*O. mykiss*	Right Dorsal	Green	1	0
8/1/2023-8/15/2023	Chinook	Right Dorsal	Yellow (2x)	25	0
8/1/2023-8/15/2023	*O. mykiss*	Right Dorsal	Yellow (2x)	7	0
8/16/2023-8/31/2023	Chinook	Right Dorsal	Yellow (2x)	21	0
8/16/2023-8/31/2023	*O. mykiss*	Right Dorsal	Yellow (2x)	3	0
9/1/2023-9/15/2023	Chinook	Right Dorsal	Red (2x)	20	0
9/16/2023-9/30/2023	Chinook	Right Dorsal	Red (2x)	4	0
9/16/2023-9/30/2023	*O. mykiss*	Right Dorsal	Red (2x)	2	0

Non-Target Species

3 non-target species fish were captured during the reporting period; the data is summarized below in table 10.

Table 10. Summary of Non-target Species (Detroit Head of Reservoir).

Species	5 ft Capture	5 ft Mortality	Season Total	Season Total Mortality
Kokanee	0	0	81	1
Chinook (clipped)	2	0	7	0
Cutthroat Trout	1	0	2	0
Sculpin	0	0	15	2
Mountain Whitefish	0	0	4	1
O. mykiss (clipped)	0	0	6	0
Dace	0	0	3	0
Unknown	0	0	2	1
Totals	**3**	**0**	**120**	**5**

Stream Statistics

Basic stream statistics at the Detroit Head of Reservoir site were calculated from data downloaded from U.S. Geological Survey stream gauge number 14178000. Gauge height (feet) and Discharge (cfs) metrics are provided at gauge 14178000. During the reporting period, daily maximum values for instantaneous discharge ranged from 379.0 cfs to 491.0 cfs (mean: 418.2 cfs) during the reporting period. Figure 12 shows instantaneous discharge. The gage stopped measuring discharge on September 13th at 1:15am and did not resume measurements until October 3rd at 10:30am.

Stream temperatures were recorded every 2 hours for the length of the reporting period at the Detroit Head of Reservoir RST site. Figure 13 shows temperature during the reporting period.

Catch per unit of effort (CPUE) data are summarized in Table 11. Discharge and capture data for the duration of monitoring efforts at this location are provided in Appendix B**.**

Table 11. Summary of salmonid CPUE, Detroit Head of Reservoir – North Santiam River.

	Chinook	Winter Steelhead
Description	**(5 ft)**	**(5 ft)**
Catch	36	4
Effort (hrs)	357.4	357.4
CPUE (fish/hr)	0.101	0.011

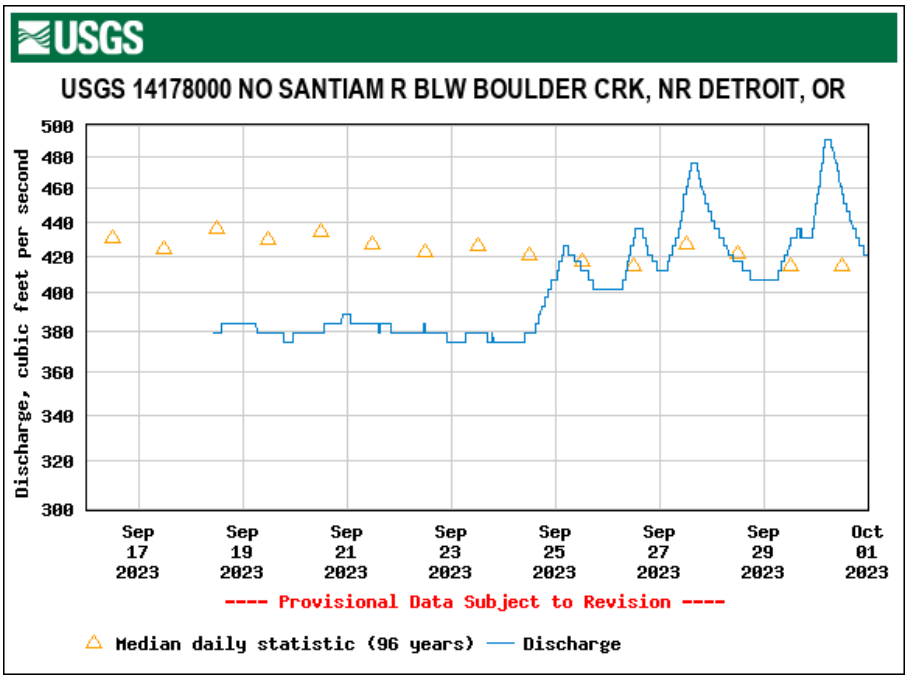


Figure 13. Discharge (cfs); Detroit Head of Reservoir – North Santiam River.

Note: The gage stopped measuring discharge on September 13th at 1:15am and resumed September 18th at 10:30am.

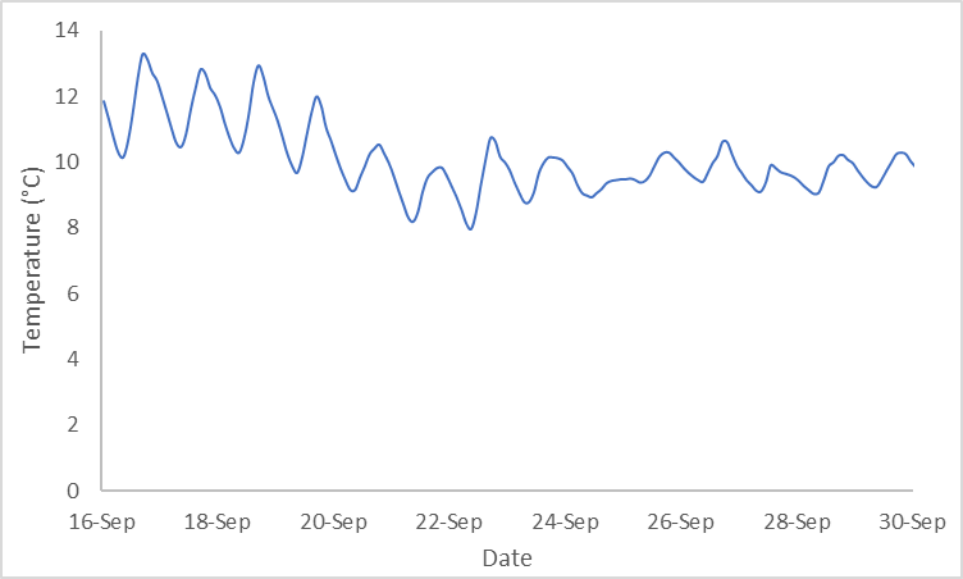


Figure 14. Temperature at RST (Detroit Head of Reservoir – North Santiam River).

Middle Santiam River– Green Peter Head of Reservoir

The Green Peter Head of Reservoir- Middle Santiam River RST was installed on April 26th, 2023. This site started sampling on May 4th, 2023. All natural origin *O. mykiss* captured at this site will be reported as Winter Steelhead.

Target Species

This reporting period began on September 16th and ended on September 30th. There were a total of 0 Chinook Salmon (CHS) and 0 Winter Steelhead (STW) captured during the 15-day sampling period (Figure 15). Sampling duration was 100% of the reporting period for the RST. Figure 16 shows length frequency data to-date. Table 12 provides life stage, length, and weight data for all Chinook Salmon and Winter Steelhead that have been caught at the Middle Santiam River- Green Peter Head of Reservoir site to-date and for the reporting period.

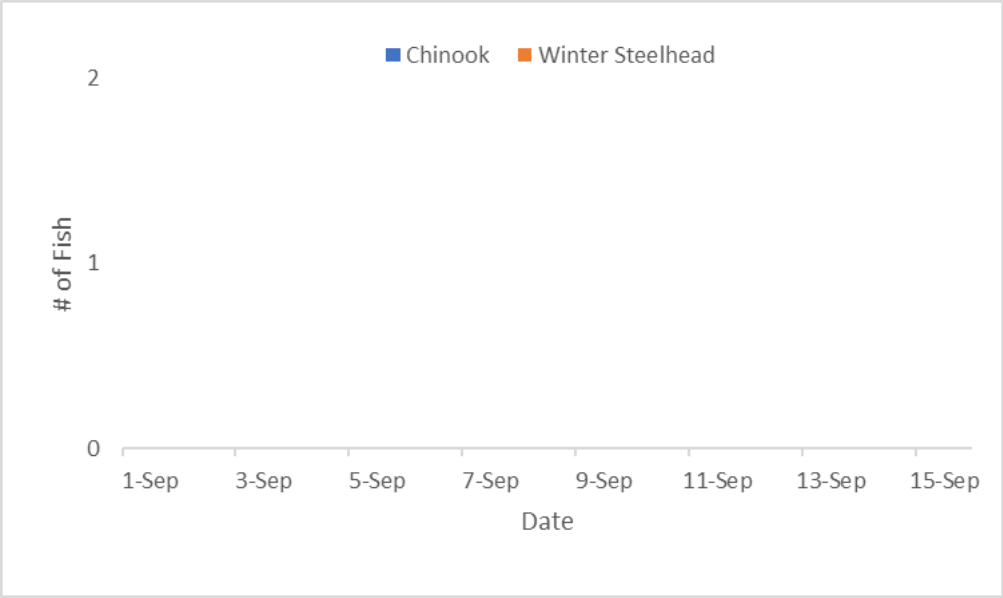


Figure 15. Chinook Captured per day 09/16/2023 to 09/30/2023 (Green Peter Head of Reservoir – Middle Santiam River).

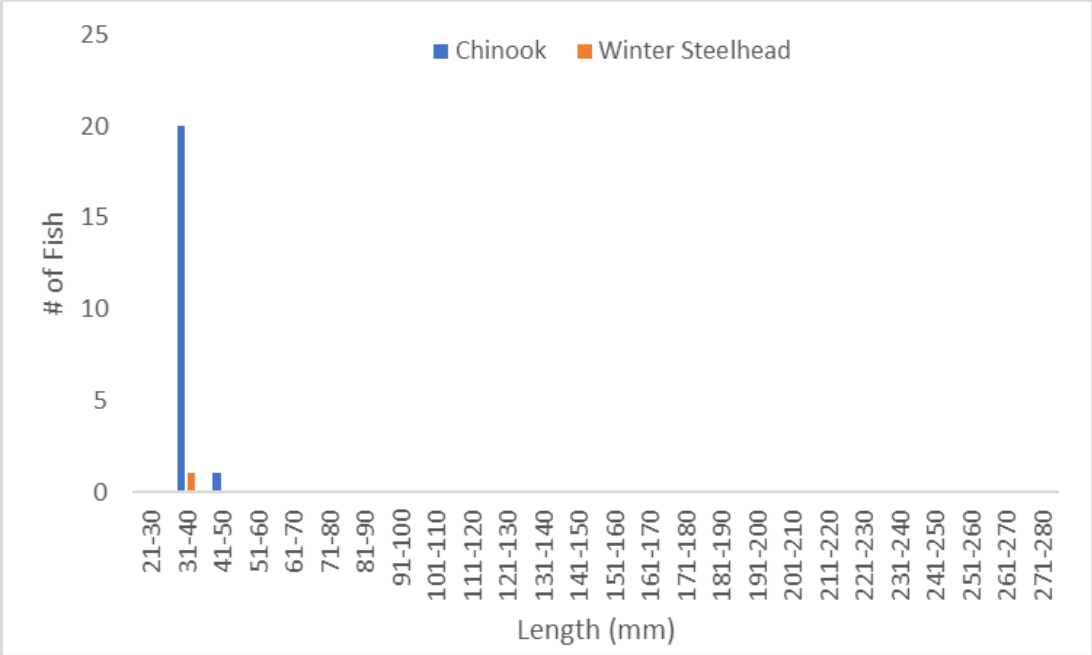


Figure 16. Length Frequency of Juvenile Chinook Sampled Season To-Date (Green Peter Head of Reservoir – Middle Santiam River).

Table 12. Descriptive Statistics of Target Species Captured at Green Peter Head of Reservoir – Middle Santiam River Season To-Date.

To-date (since May 04, 2023)											
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*			
					Min	Max	Mean	Min	Max	Mean	
Green Peter Head of Reservoir -Middle Santiam	5ft	CHS	Fry	21	33	45	36.4	N/A	N/A	N/A	
		CHS	Parr	0	N/A	N/A	N/A	N/A	N/A	N/A	
		CHS	Smolt	0	N/A	N/A	N/A	N/A	N/A	N/A	
		STW	Fry	1	36	36	36	N/A	N/A	N/A	
		STW	Parr	0	N/A	N/A	N/A	N/A	N/A	N/A	
		STW	Smolt	0	N/A	N/A	N/A	N/A	N/A	N/A	

*Fish that were missing heads are not included in length and weight calculations.

September 16-30, 2023											
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*			
					Min	Max	Mean	Min	Max	Mean	
Green Peter Head of Reservoir -Middle Santiam	5ft	CHS	Fry	0	N/A	N/A	N/A	N/A	N/A	N/A	
		CHS	Parr	0	N/A	N/A	N/A	N/A	N/A	N/A	
		CHS	Smolt	0	N/A	N/A	N/A	N/A	N/A	N/A	
		STW	Fry	0	N/A	N/A	N/A	N/A	N/A	N/A	
		STW	Parr	0	N/A	N/A	N/A	N/A	N/A	N/A	
		STW	Smolt	0	N/A	N/A	N/A	N/A	N/A	N/A	

*Fish that were missing heads are not included in length and weight calculations.

Trapping Efficiency

On 9/27/2023 741 adipose and left ventral clipped fish were released above the trap site to evaluate the trapping efficiency of the 5 ft RST. 0 fish was recaptured for an efficiency of 0.0%.

Green Peter Head of Reservoir- Middle Santiam River	Release #	Recapture #	Capture Efficiency
5ft Trap	Alive (741)	0	0.0% (0/749)
	Dead (0)	N/A	N/A

Injuries and Copepod Infection

Partial descaling <20% was observed in 0 of the 0 Chinook captured (0.0%), 0 displayed descaling >20% (0.0%), 0 displayed body injury (0.0%), 0 had eye injuries (0.0%), 0 had copepods present in the branchial cavity (0.0%) and 0 had copepods on fins (0.0%). 0 Chinook displayed gas bubble disease (0.0%). There was 0 mortality (0.0%).

Partial descaling <20% was observed on 0 of the 0 Winter Steelhead captured (0.0%) and 0 displayed descaling >20% (0.0%), 0 displayed body injury (0.0%), 0 had eye injuries (0.0%), 0 had copepods present in the branchial cavity (0.0%) and 0 had copepods on fins (0.0%). 0 Winter Steelhead displayed gas bubble disease (0.0%). There were 0 mortalities (0.0%). Injury data is summarized in Table 13.

Table 13. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead Chinook Salmon and Winter Steelhead for Sampling Period (Green Peter Head of Reservoir-Middle Santiam River).

Site	Species	# Fish Collected	# DSC* <20%	# DSC* >20%	# with Body Injuries	# with Eye Injuries	# with COP* In B.C.	# with COP* on Fins	Mortalities
Green Peter Head of Reservoir-Middle Santiam	Chinook	0	0	0	0	0	0	0	0
	Winter Steelhead	0	0	0	0	0	0	0	0

*DSC=Descaled, COP=Copepods, B.C.=Branchial Cavity

Collected DNA and Scale Samples

For the reporting period, DNA was collected from 0 Spring Chinook and 0 Winter Steelhead. Scale samples were collected from 0 Spring Chinook and 0 Winter Steelhead. The other targets captured did not meet length criteria for DNA sampling or were too descaled/damaged to collect samples.

PIT Tags

0 Spring Chinook and 0 Winter Steelhead were PIT tagged during this reporting period. All fish captured did not meet the size criteria for PIT tagging. More information regarding PIT tagged fish can be found in Appendix D.

VIE Marking

Visible Implant Elastomer (VIE) trials commenced at the Green Peter Head of Reservoir – Middle Santiam River site on 5/5/2023. VIE tag color and locations are changed every month to distinctly mark groups of fish by capture date. Since then, 15 Chinook and 1 Winter Steelhead have been VIE marked with fluorescent elastomer. No fish with VIE marks have been detected at downstream RST sites to date. Fish still showing an egg sac are not VIE marked.

Date Tagged	Species	Tag Location	VIE Color	# Tagged	# Recaptured to Date
5/01/2023-5/15/2023	Chinook	Right Dorsal	Orange	14	0
5/01/2023-5/15/2023	*O. mykiss*	Right Dorsal	Orange	1	0
5/16/2023-5/31/2023	Chinook	Right Dorsal	Orange	1	0

Non-Target Species

0 non-target fish were collected during the reporting period; the data is summarized below in Table 14.

Table 14. Summary of Non-target Species (Green Peter Head of Reservoir – Middle Santiam River).

Species	5 ft Capture	5 ft Mortality	Season Total	Season Total Mortality
Kokanee	0	0	5	0
Cutthroat Trout	0	0	0	0
Dace	0	0	17	0
Sculpin	0	0	9	0
Totals	**0**	**0**	**31**	**0**

Stream Statistics

Basic stream statistics at the Green Peter Head of Reservoir – Middle Santiam River site were calculated from data downloaded from the U.S. Geological Survey stream gauge number 14185800. Gauge height (feet) is the only flow metric available at this gauge. During the reporting period, daily maximum values for gage height ranged from 0.8 ft to 1.3 ft (mean: 0.9 ft). Figure 16 shows gage height.

Stream temperatures were recorded every 2 hours for the length of the report period for the RST (Figure 17). Temperature probes for the trap operated normally throughout this reporting period.

Catch per unit of effort (CPUE) data are summarized in Table 15. Gage height and capture data for the duration of monitoring efforts at this location are provided in Appendix B.

Table 15. Summary of salmonid CPUE, Green Peter Head of Reservoir – Middle Santiam River.

	Chinook	Winter Steelhead
Description	**(5 ft)**	**(5 ft)**
Catch	0	0
Effort (hrs)	360.5	360.5
CPUE (fish/hr)	0	0

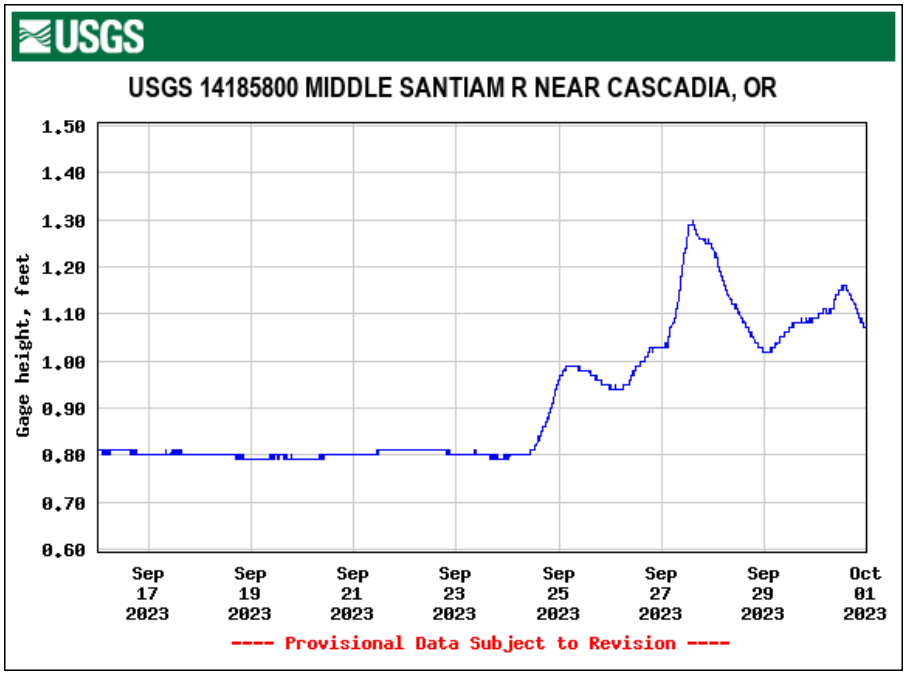


Figure 17. Gage Height (feet); Green Peter Head of Reservoir – Middle Santiam River.

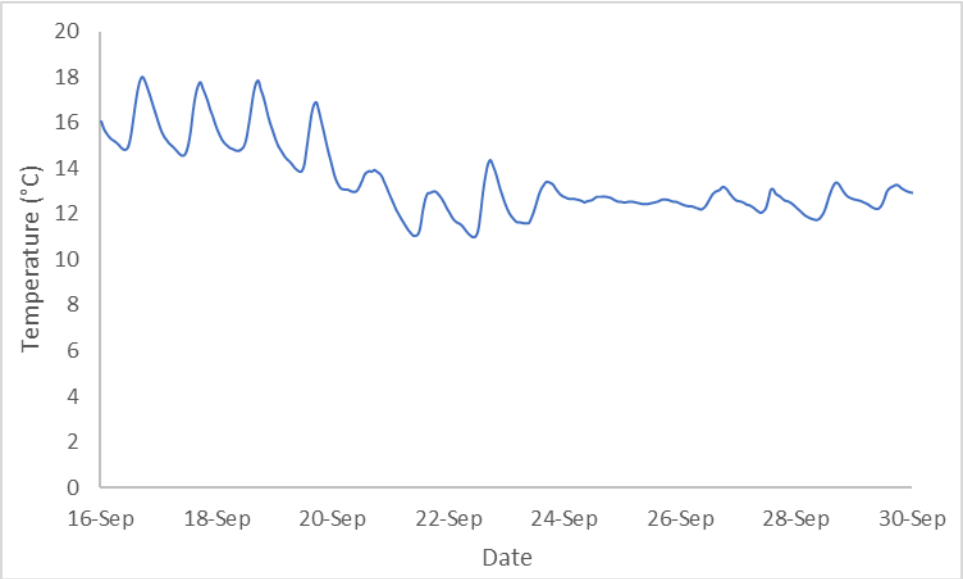


Figure 18. Temperature at RST (Green Peter Head of Reservoir – Middle Santiam River).

Fall Creek Dam Tailrace

The RST in the Fall Creek Dam Tailrace began sampling under contract W9127N19D0009 on September 30, 2023. Sampling at Fall Creek Dam Tailrace prior to September 30, 2023 was conducted by EAS for the USACE under contract W9127N19D0007. Sampling results will be included in the next report.

Middle Fork Willamette – Lookout Dam Tailrace

The RSTs in the Lookout Dam Tailrace began sampling under contract W9127N19D0009 on August 1, 2023. Sampling at Lookout Dam Tailrace prior to August 1, 2023 was conducted by EAS for the USACE under contract W9127N19D0007. This report reflects research conducted starting August 1st, 2023 but will include season totals from January 1st, 2023 onward.

Target Species

The reporting period began September 16th and ended on September 30th. There was a total of 1 Chinook salmon was captured during the 15-day sampling period (Figure 19). The traps were operated 100% of the reporting period. Table 16 provides life stage, length, and weight data for all Chinook salmon that have been caught at the Lookout Point Dam Tailrace site to-date and Figure 20 shows length frequency data to-date.

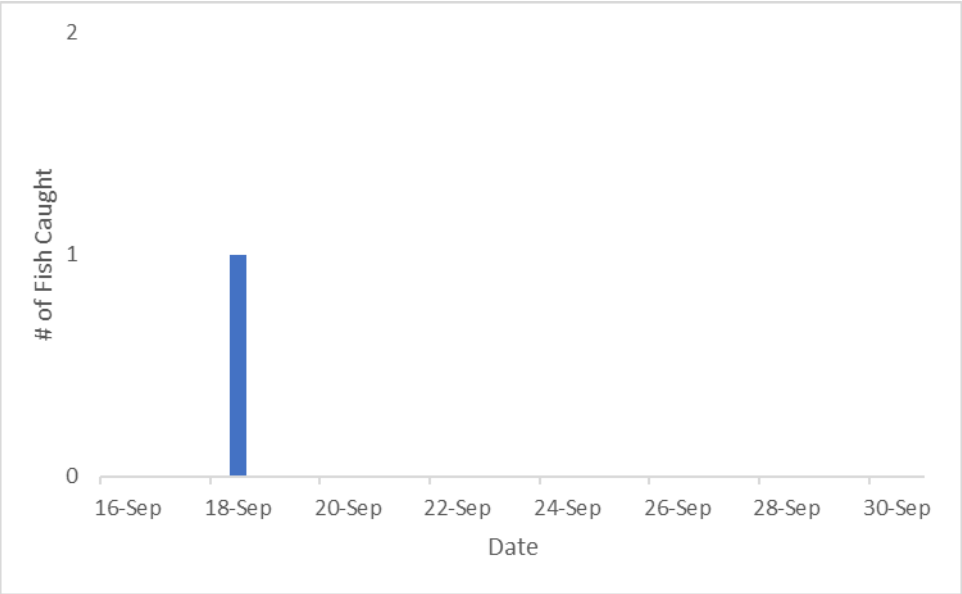


Figure 19. Chinook Captured Per Day 09/16/2023 to 09/30/2023 (Lookout Point Dam Tailrace).

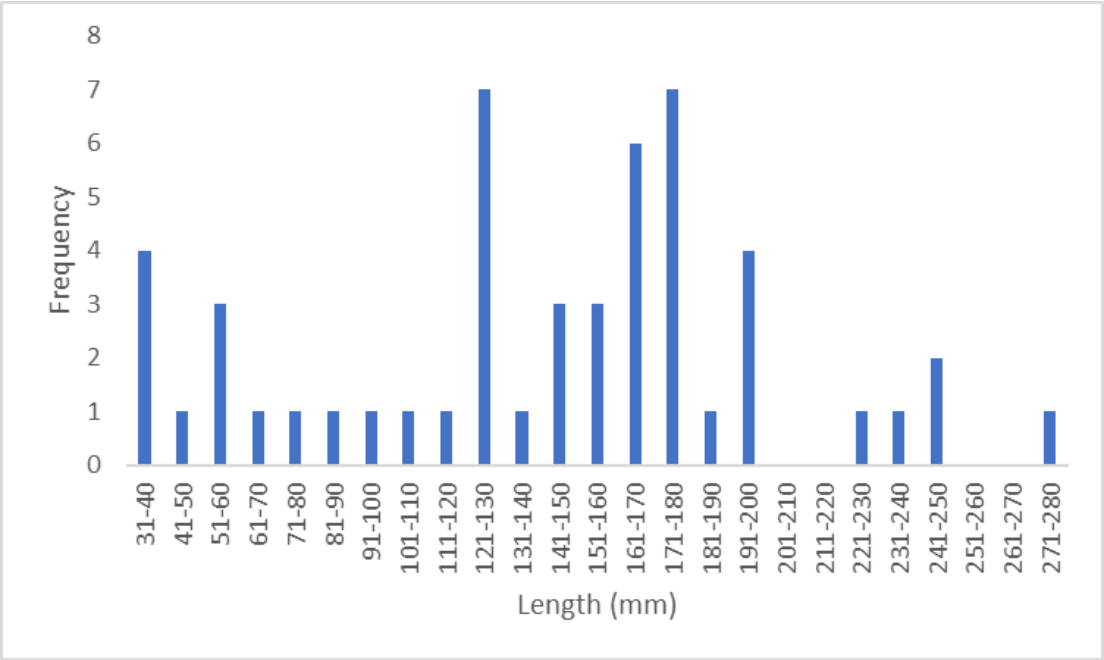


Figure 20. Length Frequency of Juvenile Chinook Sampled in 2023 (Lookout Point Dam Tailrace).

Table 16. Descriptive Statistics of Target Species Captured at Lookout Point Dam Tailrace, Season To-Date and for the Reporting Period.

To-Date (Since Jan. 1, 2023)										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Lookout Point Dam	PH 1	CHS	Smolt	15	100	275	163.3	12.1	269.0	62.9
		CHS	Parr	1	96	96	96	9.4	9.4	9.4
		CHS	Fry	1	52	52	52	3.0	3.0	3.0
	PH 2	CHS	Smolt	4	113	250	160.3	16.5	194.6	69.9
		CHS	Parr	4	57	86	71.0	1.8	7.6	5.3
		CHS	Fry	4	33	37	34.8	N/A	N/A	N/A
	Spill	CHS	Smolt	21	122	247	172.2	19.7	161.4	60.7
		CHS	Parr	1	125	125	125	17.6	17.6	17.6
		CHS	Fry	2	44	55	49.5	1.0	1.6	1.3
September 16-30, 2023										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Lookout Point Dam	PH 1	CHS	Smolt	1	100	100	100	12.1	12.1	12.1
		CHS	Parr	0	N/A	N/A	N/A	N/A	N/A	N/A
		CHS	Fry	0	N/A	N/A	N/A	N/A	N/A	N/A
	PH 2	CHS	Smolt	0	N/A	N/A	N/A	N/A	N/A	N/A
		CHS	Parr	0	N/A	N/A	N/A	N/A	N/A	N/A
		CHS	Fry	0	N/A	N/A	N/A	N/A	N/A	N/A
	Spill	CHS	Smolt	0	N/A	N/A	N/A	N/A	N/A	N/A
		CHS	Parr	0	N/A	N/A	N/A	N/A	N/A	N/A
		CHS	Fry	0	N/A	N/A	N/A	N/A	N/A	N/A

**Some fry are too small to accurately weigh and are omitted from the above tables.*
***Season totals include sampling completed on the RST project in 2023.*

Trapping Efficiency

A total of 7,632 juvenile hatchery Chinook (parr) were adipose clipped and released this reporting period. 3,634 fish were picked up from OSU Smith Farms and were released on 9/13/2023 below Lookout Point

Dam. 3,998 fish were picked up from Dexter hatchery and were released on 9/14/2023 below Lookout Point Dam.

Fish were released in small groups directly into spillway flow. A total of 0 fish were recaptured in the traps for an efficiency of 0.0%. Trap specific efficiencies are as follows: 0 recaptured at the PH 1 RST for an efficiency of 0%, 0 recaptured at PH 2 for an efficiency of 0%, and 0 recaptured at the Spill RST for an efficiency of 0.0%.

Lookout Dam Spillway	Release #	Recapture #	Capture Efficiency
9/13/2023	3,634	0	0.0% (0/3,636)
9/14/2023	3,998	0	0.0% (0/3,998)

24-Hour Post Collection Holding Trial

1 Spring Chinook was captured during the current reporting period and held for 24 hours. 1 fish was held from the PWR RST and 0 fish were held from the Spill RST. 1 hold fish died from the PWR RSTs (0.0%). 0 of the fish from Spill RST died during holding (0.0%).

Injuries and Copepod Infection

There were 0 Chinook captured in the Spill Channel RST. Partial descaling <20% was observed on 0 of 0 Chinook collected at the Spill RST (0.0%), and descaling >20% was observed on 0 of the Chinook collected (0.0%). 0 displayed body injuries (0.0%) and 0 had eye injuries (0.0%). 0 of the Spill RST Chinook had copepods present in the branchial cavity (0.0%) and 0 had copepods present on fins (0.0%). 0 of the fish captured in the Spill RST displayed Gas Bubble Disease (0.0%).

There was 1 Chinook captured in the Powerhouse channel RSTs. Partial descaling <20% was observed on 1 of the 1 Chinook collected at the PWR RSTs (100.0%). Descaling >20% was observed on 0 of the Chinook collected (0.0%). 1 PWR RST fish had bodily injury (100.0%) and 0 had eye injuries (0.0%). 0 of the fish had copepods present in the branchial cavity (0.0%) and 0 had copepods present on fins (0.0%). 0 fish displayed Gas Bubble Disease (0.0%).

There were no chinook mortalities collected in the Spill RST (0.0%) and 0 in the PWR RSTs (0.0%). Injuries are displayed in Table 17. To date injury data can be found in Appendix A.

Table 17. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead Chinook Salmon for Sampling Period (Lookout Point Dam Tailrace).

Site	Route	# CHS Collected	# DSC* <20%	# DSC* >20%	# with Body Injuries	# with Eye Injuries	# with COP* In B.C.	# with COP* on Fins	Mortalities
Lookout Point Dam Tailrace	PWR	1	1	0	1	0	0	0	0
	Spill	0	0	0	0	0	0	0	0

**DSC=Descaled, COP=Copepods, B.C.=Branchial Cavity*

Collected DNA and Scale Samples

DNA was collected from 1 Spring Chinook for the reporting period. Scales were collected from 1 Spring Chinook.

PIT Tags

No Spring Chinook were PIT tagged during this reporting period. The first 60 target fish per week are prioritized for the 24-Hour Post Collection Holding Study. These fish are not tagged to not bias the results of the holding study. More information regarding PIT tagged fish can be found in Appendix D.

VIE Marking

No VIE marked Spring Chinook have been detected at this site to date.

Non-Target Species

51 non-target species were captured during the reporting period; the data is summarized below in Table 18.

Table 18. Summary of Non-target Species (Lookout Point Dam Tailrace).

Species	PWR Capture	PWR Mortality	Spill Capture	Spill Mortality	Season Total*	Season Total Mortality*
Bass Unknown	0	0	7	6	23454	22358
Bluegill	7	4	2	0	68	15
Brown Bullhead	0	0	0	0	4	1
Chinook (clipped)	0	0	0	0	14	2
Crappie	8	0	11	1	155172	109807
Largemouth Bass	0	0	0	0	23	23
Largescale Sucker	0	0	0	0	6	4
Northern Pikeminnow	0	0	2	0	8	5
O. mykiss	0	0	0	0	8	1
O. mykiss (clipped)	0	0	0	0	1	1
Pumpkinseed	0	0	0	0	1	0
Redside Shiner	0	0	0	0	1	0
Sculpin	0	0	3	0	143	10
Smallmouth Bass	0	0	0	0	142	134
Spotted Bass	0	0	0	0	2	0
Unknown	0	0	0	0	7	0
Walleye	4	3	7	6	53	20
Totals	19	7	32	13	179,107	132,381

**Season totals include sampling completed on the RST project in 2023.*

Stream Statistics

Basic stream statistics at Lookout Dam Tailrace site were calculated from data downloaded from the U.S. Geological Survey stream gauge number 14149010. Total dissolved gas saturation or dissolved oxygen concentration measurements are not available at this stream gauge site, or any nearby stream gauges. Gauge height (feet) is the only metric provided at this gauge. During the reporting period, daily maximum values for instantaneous gauge height ranged from 692.4 feet to 692.7 feet (mean: 692.6 feet). Figure 20 shows instantaneous gauge height.

Stream temperatures were recorded every 2 hours using temperature probes at the PWR and Spill Lookout Dam RST's during this reporting period. Temperature probes operated normally, and the data is shown below in (Figure 21 and Figure 22).

Flows through the Powerhouse and Spill during the reporting period averaged 0 to 1,808.6 cubic feet per second (cfs) respectively (Figure 23). Catch per unit of effort (CPUE) data are summarized in Table 19. Discharge and capture data for the duration of monitoring efforts at this location are provided in Appendix B.

Table 19. Summary of Chinook CPUE at Lookout Point Dam Tailrace.

	Chinook		
Description	**PH 1**	**PH 2**	**Spill**
Catch	1	0	0
Effort (hrs)	356.5	356.6	356.4
CPUE (fish/hr)	0.003	0	0

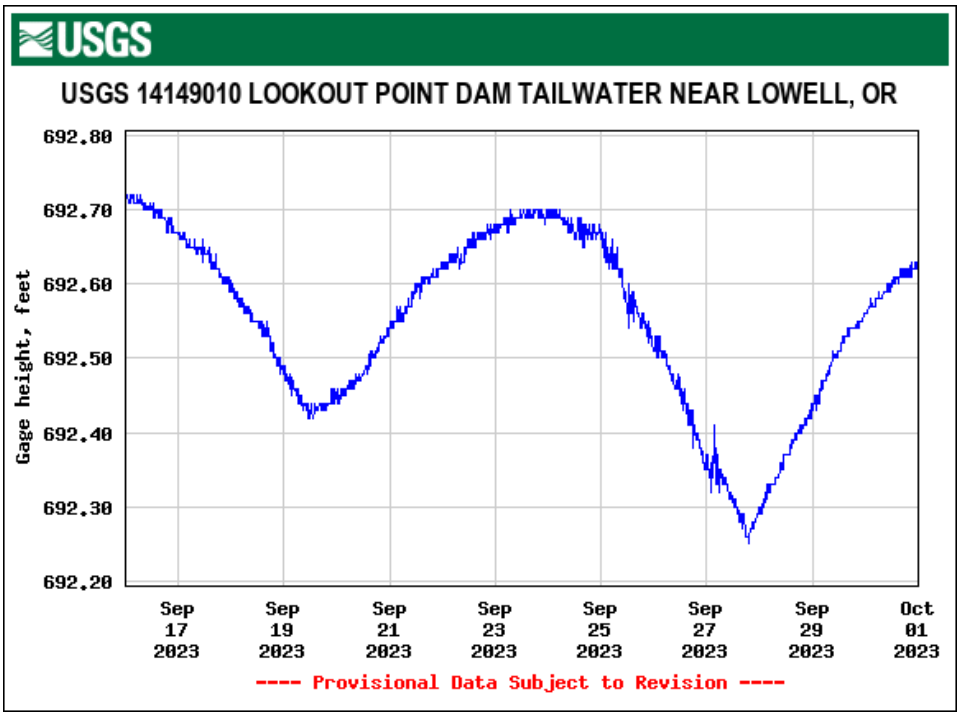


Figure 21. Gauge Height (feet); below Lookout Dam.

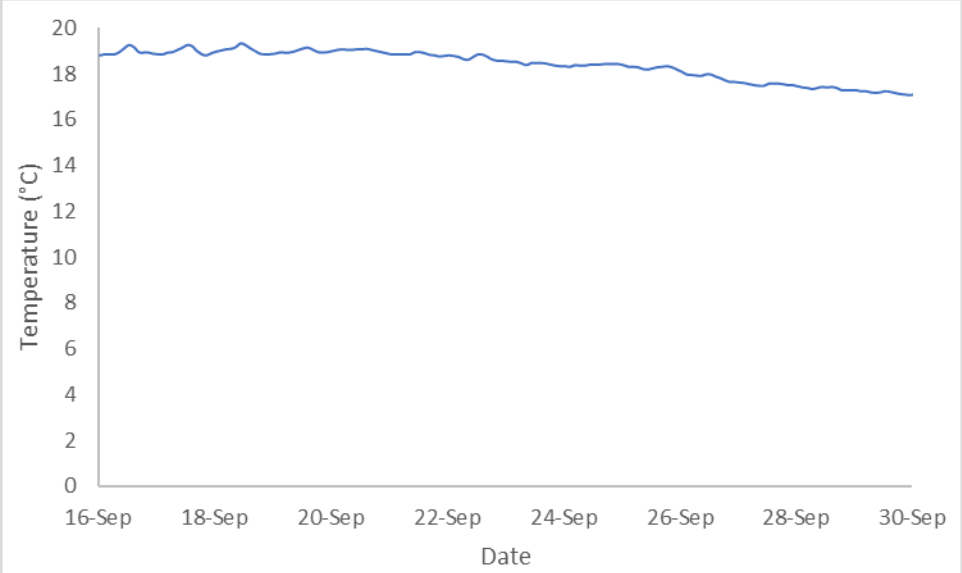


Figure 22. Temperature at RST (Lookout Dam PWR).

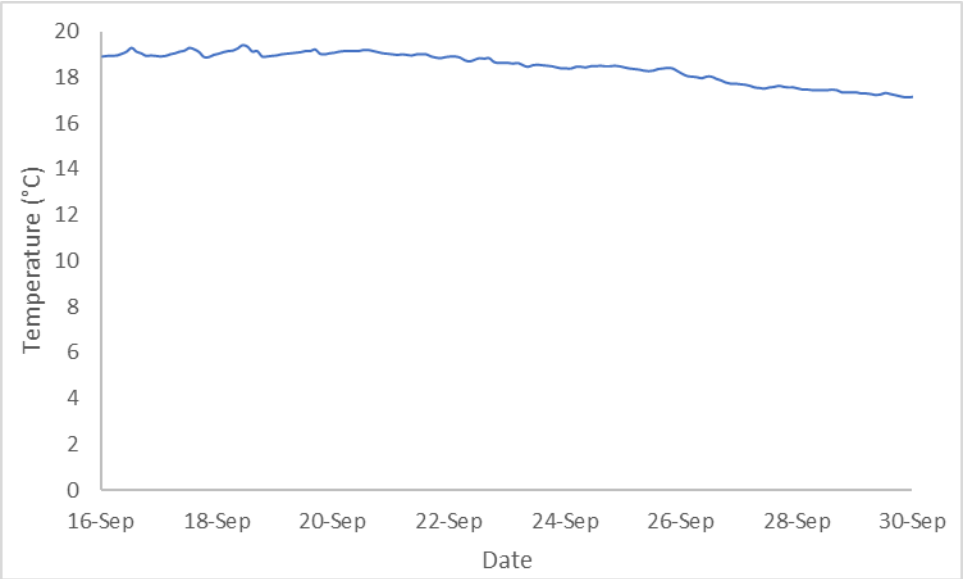


Figure 23. Temperature at RST (Lookout Dam Spill).

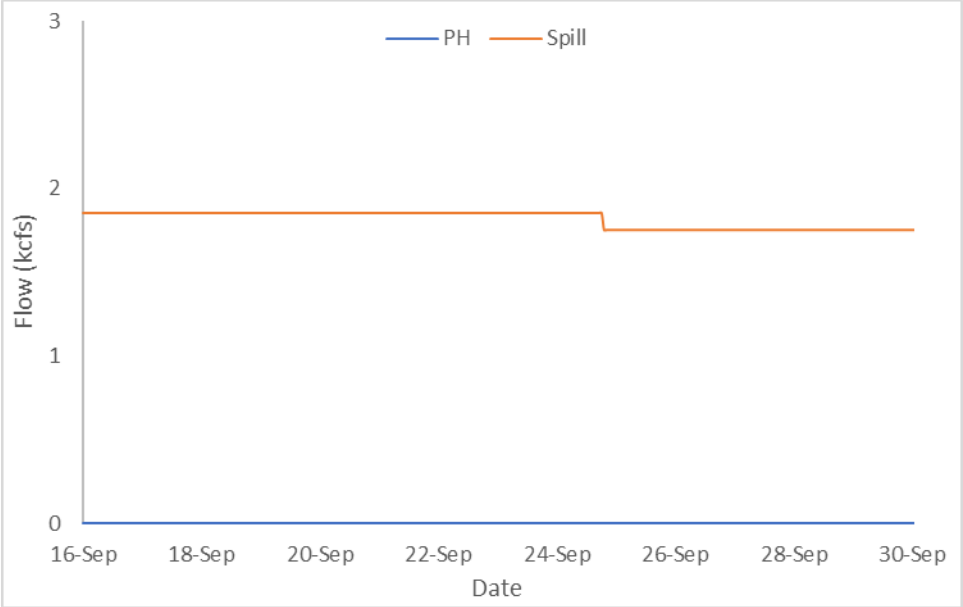


Figure 24. Hourly Flows PWR vs. Spill (Lookout Dam Tailrace).

Middle Fork Willamette – Hills Creek Dam

The RSTs in the Hills Creek Dam Tailrace began sampling under contract W9127N19D0009 on September 15, 2023. Sampling at Hills Creek Dam Tailrace prior to September 15, 2023 was conducted by EAS for the USACE under contract W9127N19D0007. This report reflects research conducted starting September 15th, 2023 but will include season totals from January 1st, 2023 onward.

Target Species

The reporting period began September 16th and ended on September 30th. There were a total of 28 Chinook salmon captured during the 15-day sampling period (Figure 25). Sampling duration was 100% of the reporting period for the RSTs. Table 20 provides life stage, length, and weight data for all Chinook salmon that have been caught at the Hills Creek Dam site to-date and Figure 26 shows length frequency data to-date.

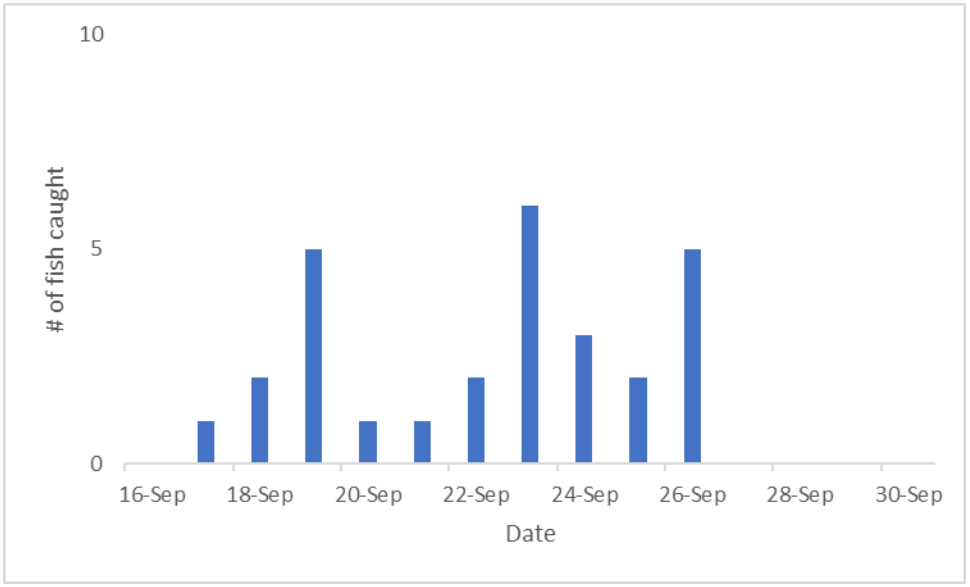


Figure 25. Chinook Captured Per Day 09/16/2023 to 09/30/2023 (Hills Creek Dam Tailrace).

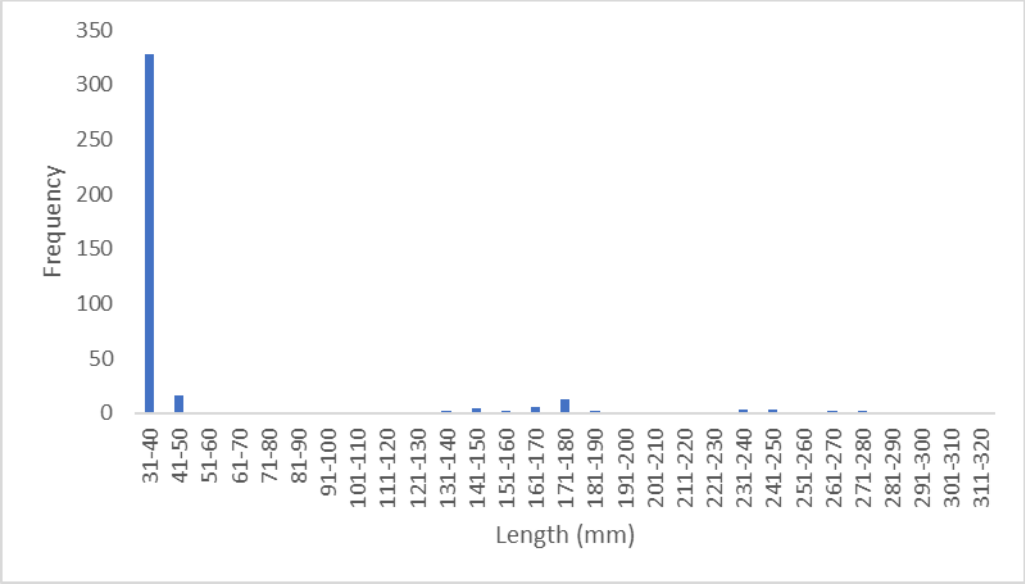


*Figure does not include fish without heads or fish used for trapping efficiency

Figure 26. Length Frequency of Juvenile Chinook Sampled in 2023 (Hills Creek Dam).

Table 20. Descriptive Statistics of Target Species Captured at Hills Creek Dam Season To-Date and for the Reporting Period.

To-Date (Since Jan. 1, 2023)										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Hills Creek	RO	CHS	Fry	126	31	55	35.6	N/A	N/A	N/A
		CHS	Parr	1	61	61	61	2.5	2.5	2.5
		CHS	Smolt	9	142	273	240.9	34.5	196.3	154.9
Hills Creek	PWR	CHS	Fry	220	31	48	36.1	N/A	N/A	N/A
		CHS	Parr	0	N/A	N/A	N/A	N/A	N/A	N/A
		CHS	Smolt	36	122	314	182.3	19.6	290.2	77.9
September 16-30, 2023										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Hills Creek	RO	CHS	Fry	0	N/A	N/A	N/A	N/A	N/A	N/A
		CHS	Parr	0	N/A	N/A	N/A	N/A	N/A	N/A
		CHS	Smolt	1	142	142	142	34.5	34.5	34.5
Hills Creek	PWR	CHS	Fry	0	N/A	N/A	N/A	N/A	N/A	N/A
		CHS	Parr	0	N/A	N/A	N/A	N/A	N/A	N/A
		CHS	Smolt	27	139	190	166.1	27.6	78.9	54.9

*Fish that were missing heads are not included in length and weight calculations.

Trapping Efficiency

A total of 510 juvenile Chinook were adipose clipped, left vent clipped and upper caudal clipped and released on 9/27/23 below Hills Creek PWR to evaluate the efficiency of the screw trap. A total of 10 fish were recaptured in the traps for an efficiency of 1.9%. 10 fish were recaptured at the 8 ft PWR trap for a trapping efficiency of 1.9% and 0 were captured in the RO trap for an efficiency of 0.0%.

Hills Creek Dam	Release #	Recapture #	Capture Efficiency
PWR Trap	510	10	1.9% (10/510)
RO Trap	510 (PWR Release)	0	0.0% (0/510)

24-Hour Post Collection Holding Trial

5 Chinook captured in the RSTs were held during this reporting period. 5 fish were held from the PWR RST and 0 fish were held from the RO RST. 1 hold fish died from the PWR RST (20.0%). 0 of the fish from RO RST died during holding (0.0%).

Injuries and Copepod Infection

There was 1 Chinook captured in the RO RST. Partial descaling <20% was observed on 0 of 1 Chinook collected at the RO RST (0.0%), and descaling >20% was observed on 1 of 1 Chinook collected (100.0%). 1 displayed body injuries (100.0%) and 0 had eye injuries (0.0%). 1 of the RO RST Chinook had copepods present in the branchial cavity (100.0%) and 0 had copepods present on fins (0.0%). There were 1 mortalities (100.0%). 0 of the fish captured in the RO RST displayed Gas Bubble Disease (0.0%).

There were 27 Chinook captured in the Powerhouse channel RST. Partial descaling <20% was observed on 9 of the 27 Chinook collected at the PWR RSTs (33.3%). Descaling >20% was observed on 17 of the Chinook collected (63.0%). 24 PWR RST fish had bodily injury (89.0%) and 5 had eye injuries (18.5%). 23 of the fish had copepods present in the branchial cavity (85.1%) and 6 had copepods present on fins (22.2%). 6 fish displayed Gas Bubble Disease (22.2%). There were 22 chinook mortalities collected in the PWR RST (81.5%).
Injuries are displayed in Table 21. To date injury data can be found in Appendix A.

Table 21. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead Chinook Salmon for Sampling Period. (Hills Creek Dam).

Site	Route	# CHS Collected	# DSC* <20%	# DSC* >20%	# with Body Injuries	# with Eye Injuries	# with COP* In B.C.	# with COP* on Fins	Mortalities
Hills Creek	RO	1	0	1	1	0	1	0	1
Hills Creek	PWR	27	9	17	24	5	23	6	22

*DSC=Descaled, COP=Copepods, B.C.=Branchial Cavity

Collected DNA and Scale Samples

For the reporting period, scales and DNA were collected from 28 Spring Chinook. The other targets captured did not meet length criteria for DNA sampling or did not have a body.

PIT Tags

0 Spring Chinook were PIT tagged during this reporting period. The first 60 target fish per week are prioritized for the 24-Hour Post Collection Holding Study. These fish are not tagged to not bias the results of the holding study. More information regarding PIT tagged fish can be found in Appendix D.

VIE Marking

VIE tag color and locations are changed every month to distinctly mark groups of fish by capture date. The first 60 target fish per week are prioritized for the 24-Hour Post Collection Holding Study. These fish are not tagged to not bias the results of the holding study. 39 Chinook have been VIE marked with fluorescent elastomer. More information regarding VIE marked fish can be found in Appendix D.

Fish still showing an egg sac are not VIE marked.

Date Tagged	Tag Location	VIE Color	# Tagged	# Recaptured to Date
3/16/2023-3/31/2023	Head	Red	39	0

Non-Target Species

251 non-target fish were captured at Hills Creek during the reporting period; the data is summarized below in Table 22. The adipose clipped chinook from ODFW's bulk hatchery release in Hills Creek Reservoir are reported as non-targets below.

Table 22. Summary of Non-target Species (Hills Creek Dam).

Species	RO Capture	RO Mortality	PWR Capture	PWR Mortality	Season Total	Season Total Mortality
Bass Unknown	0	0	1	1	6	2
Bluegill	3	1	5	1	150	60
Brook Lamprey	0	0	0	0	0	0
Brown Bullhead	0	0	0	0	6	0
Crappie	3	2	23	15	397	230
Dace	0	0	0	0	36	2
Redside Shiner	0	0	0	0	1	1
Sculpin	0	0	8	0	240	0
Largemouth Bass	0	0	0	0	7	23
Northern Pikeminnow	0	0	0	0	1	0
Pumpkinseed	0	0	2	2	2	2
Spotted Bass	0	0	1	0	93	46
Smallmouth Bass	0	0	4	4	6	4
Largescale Sucker	0	0	0	0	35	4
O. mykiss	1	0	2	0	60	20
O. mykiss (clipped)	0	0	0	0	12	45
Chinook (clipped)	13	10	185	124	198	134
Unknown	0	0	0	0	1	1
Totals	**20**	**13**	**231**	**147**	**1251**	**574**

Stream Statistics

Basic stream statistics at the Hills Creek site were calculated from data downloaded from the U.S. Geological Survey stream gauge numbers 14145110 and 14145500. Gauge height (feet) is the only metric provided at this gauge. Total dissolved gas saturation data was received from gauge 14145500, 1.4 rkms downstream of the trap. During the reporting period, daily maximum values for instantaneous gauge height ranged from 1,223.9 feet to 1,224.6 feet (mean: 1,224.2 feet). Figure 27 shows instantaneous gauge height.

Total dissolved gas saturation ranged from 69 to 103% (mean: 98.7%) during the reporting period. Figure 28 shows total dissolved gas saturation.

Stream temperatures were recorded every two hours using temperature probes at the Hills Creek Dam RST's during this reporting period (Figure 29 and 30).

Flows through the PWR and RO during the reporting period averaged 404.3 and 43.9 cfs respectively (Figure 31). Catch per unit of effort (CPUE) data are summarized in Table 23. Discharge and capture data for the duration of monitoring efforts at this location are provided in Appendix B.

Table 23. Summary of Chinook CPUE, Hills Creek Dam.

	Chinook	
Description	**RO (5ft)**	**PWR (8ft)**
Catch	27	1
Effort (hrs)	360.8	361.0
CPUE (fish/hr)	0.075	0.003

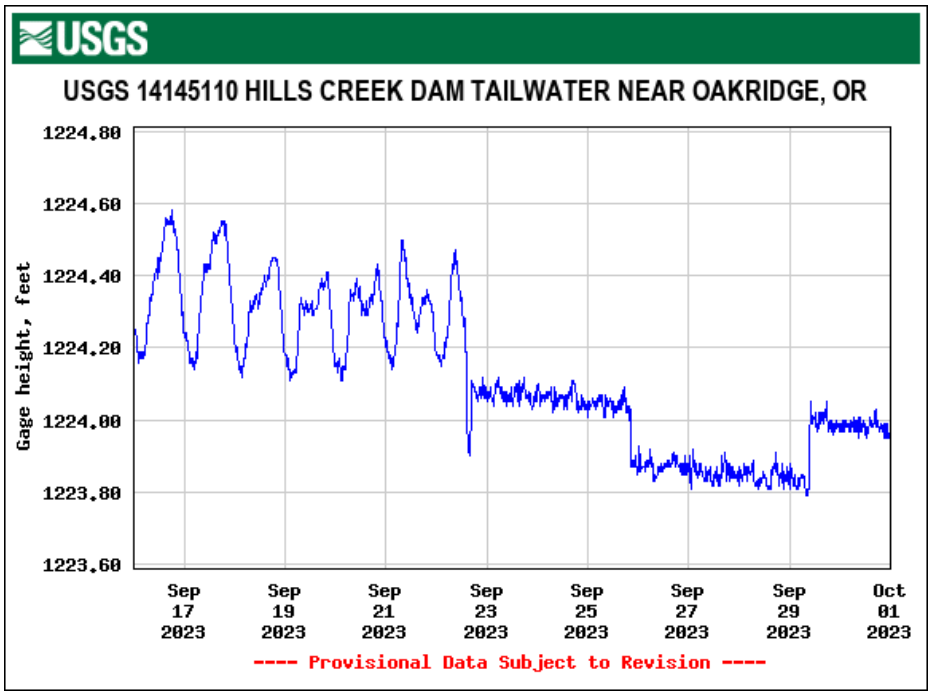


Figure 27. Gauge Height (feet); below Hills Creek Dam PWR - Middle Fork Willamette River.

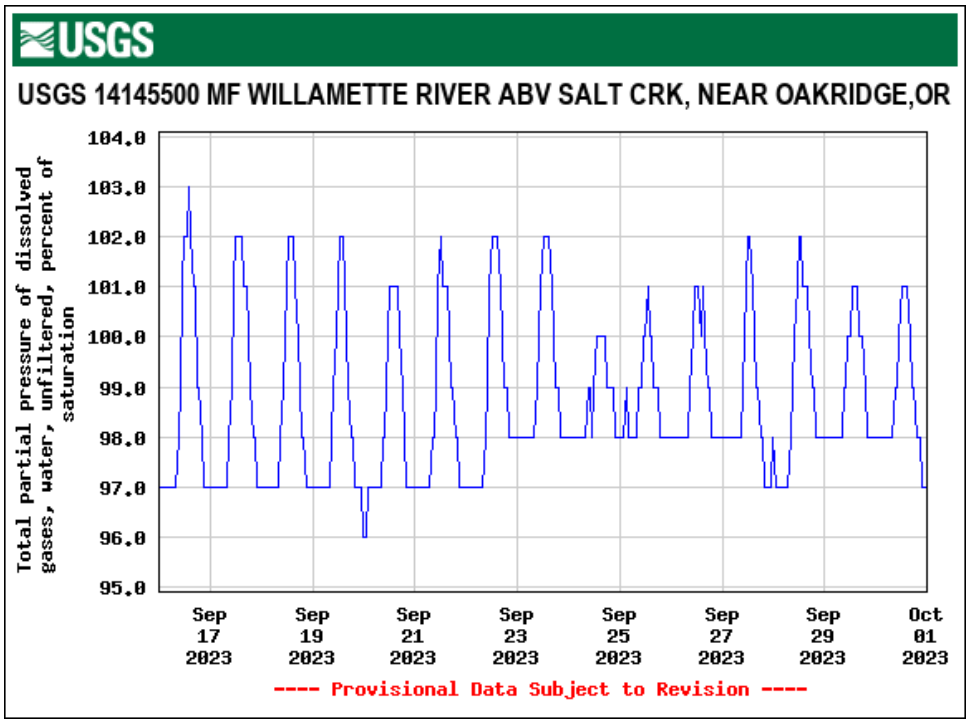


Figure 28. Total Dissolved Gas Saturation (%); below Hills Creek Dam – Middle Fork Willamette River.

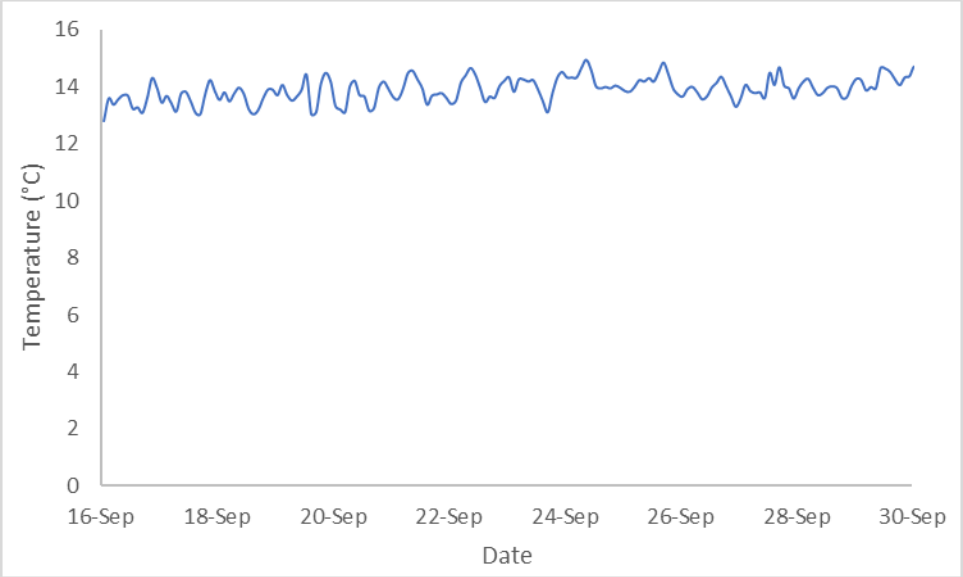


Figure 29. Temperature at Hills Creek RST PWR (Hills Creek Dam).

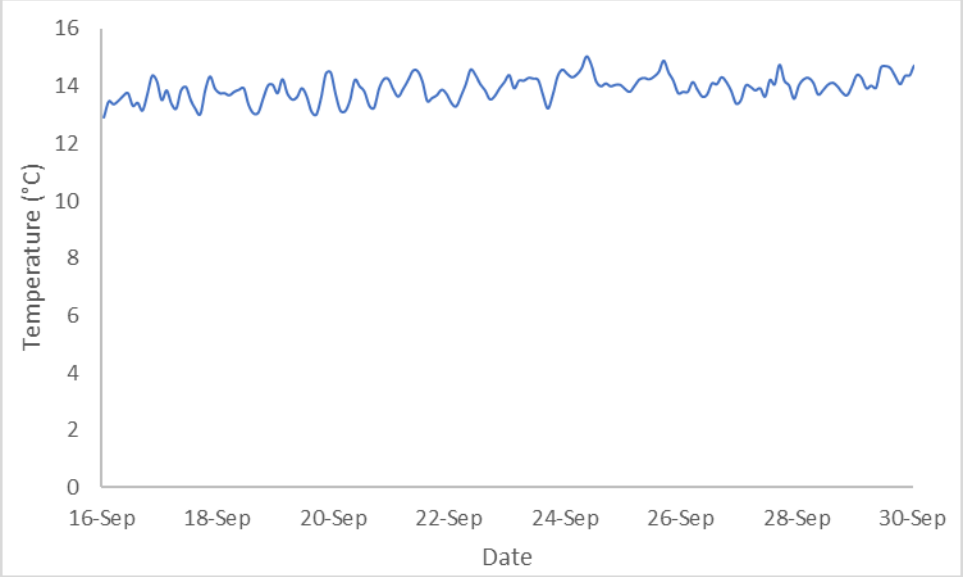


Figure 30. Temperature at Hills Creek RO RST (Hills Creek Dam).

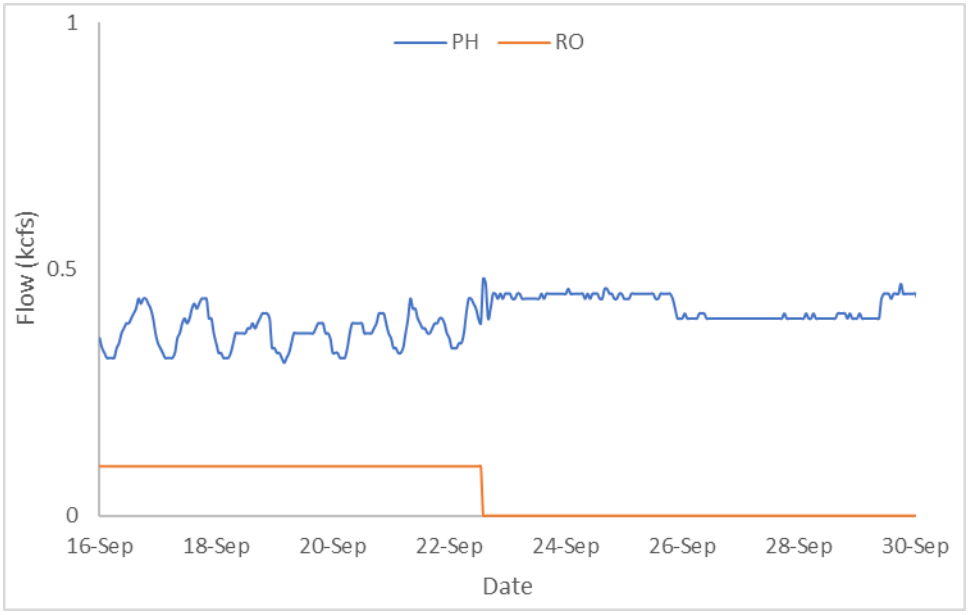


Figure 31. Hourly Flows PWR vs. RO (Hills Creek Dam).

Middle Fork Willamette River– Hills Creek Head of Reservoir

The Hills Creek Head of Reservoir RST was installed and began sampling on May 9th, 2023. Sampling concluded at this site on June 30, 2023 and the RST was removed.

Target Species

A total of 93 Spring Chinook were captured during sampling in 2023. Figure 32 shows length frequency data of captured Chinook for sampling in 2023. Table 24 provides life stage, length, and weight data for all Chinook Salmon that have been caught at the Middle Fork Willamette River- Hills Creek Head of Reservoir site to-date and for the reporting period.

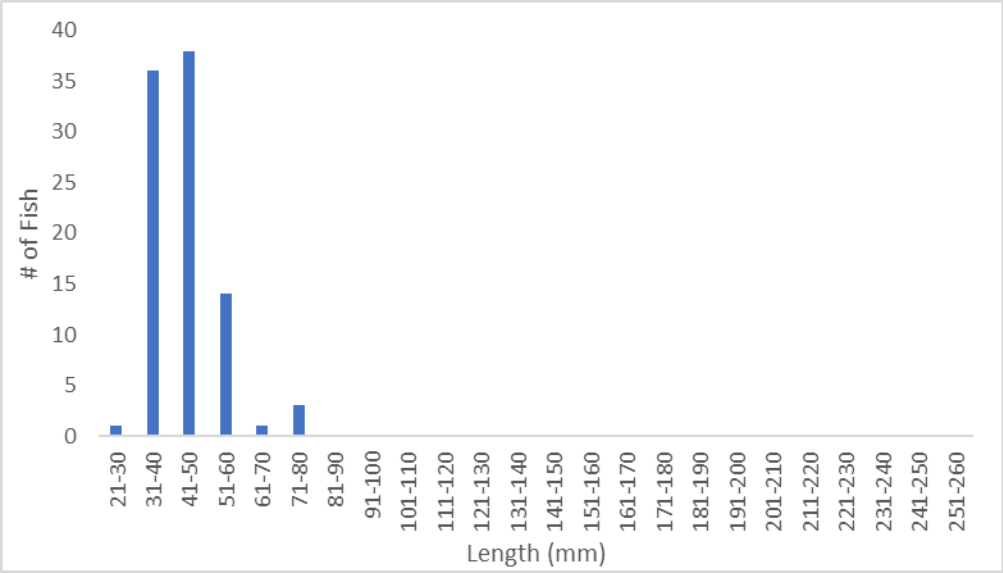


Figure 32. Length Frequency of Juvenile Chinook Sampled Season To-Date (Hills Creek Head of Reservoir).

Table 25. Descriptive Statistics of Target Species Captured at Hills Creek Head of Reservoir Season To-Date.

To-Date (Since May 09, 2023)										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Hills Creek Head of Reservoir	5 ft	CHS	Fry	60	30	50	38.9	<1	2.5	1.4
		CHS	Parr	33	38	76	52.6	1.0	6.0	2.1
		CHS	Smolt	0	N/A	N/A	N/A	N/A	N/A	N/A

***Most fry are too small to collect accurate weights and thus some metrics are not available for them.**

Trapping Efficiency

On May 18th, 519 adipose clipped and PIT Tagged fish were released for a trapping efficiency trial at the Hills Creek Head of Reservoir site. 44 fish were recaptured in the RST for a trapping efficiency of 8.5%

Hills Creek Head of Reservoir	Release #	Recapture #	Capture Efficiency
5ft Trap	519	44	8.5% (44/519)

On June 19th, 760 adipose clipped and PIT Tagged fish were released for a trapping efficiency trial at the Hills Creek Head of Reservoir site. 6 fish were recaptured in the RST for a trapping efficiency of 0.79%.

Hills Creek Head of Reservoir	Release #	Recapture #	Capture Efficiency
5ft Trap	760	6	0.8% (6/760)

PIT Tags and VIE Marking

A total of 3 fish were PIT tagged and 71 fish were VIE marked at the Hills Creek Head of Reservoir- Middle Fork Willamette site in 2023. No tagged or VIE marked fish were redetected downstream. Table 25 provides a summary of VIE marked fish at the Hills Creek Head of Reservoir- Middle Fork Willamette River site.

Table 26. Summary of VIE marked Chinook at the Hills Creek Head of Reservoir- Middle Fork Willamette site in 2023.

Date Tagged	Species	Tag Location	VIE Color	# Tagged	# Recaptured to Date
5/1/2023-5/30/2023	Chinook	Left Dorsal	Orange	19	0
5/1/2023-5/30/2023	Chinook	Right Dorsal	Orange	11	0
6/1/2023-6/30/2023	Chinook	Left Dorsal	Pink	37	0
6/1/2023-6/30/2023	Chinook	Right Dorsal	Pink	4	0

Non-Target Species

A total of 232 non-target species fish were captured during sampling in 2023; the data is summarized below in Table 26.

Table 27. Summary of Non-target Species (Hills Creek Head of Reservoir).

Species	Season Total	Season Total Mortality
Dace	87	1
Cutthroat Trout	2	0
O. mykiss	26	0
Bull Trout	1	0
Brook Lamprey	18	2
Sculpin	20	1
Largescale Sucker	64	1
Mountain Whitefish	2	0
Redside Shiner	12	0
Totals	**232**	**5**

Issues Encountered

None.

Upcoming USACE Support Services

None at this time.

Appendix A

Chinook (CHS) To-Date

Chinook Injuries to-date																							
Site/Trap/Life Stage	Total Fish	MUNK	DS<2	BLO	EYB	FUN	BKD	COP	DS>2	PRD	FID	HBO	BO	HO	BVT	HBP	BRU	TEA	OPD	HIN	FVB	POP	GBD
Breitenbush River	227		164		1	5		38	3	2	100						5	8		1	1		
5 ft	227		164		1	5		38	3	2	100						5	8		1	1		
Parr	145		102			4		23	2	2	56						4	7					
Smolt	72		62		1	1		15	1		41						1	1		1	1		
Fry	10										3												
Detroit HOR	9511	1	176		11	1		9	10	10	145			1	17		60	32	38	25	44	9	
5 ft	9511	1	176		11	1		9	10	10	145			1	17		60	32	38	25	44	9	
Parr	357		117			1		7	1	1	80						4	5			1		
Smolt	35		32					2	1		16						1						
Fry	9119	1	27		11				8	9	49			1	17		55	27	38	25	43	9	
Green Peter HOR	21										1									1			
5 ft	21										1									1			
Fry	21										1									1			
Lookout Dam Tail.	132		63	1	21	2	5	33	51		87				7	2	14	9	22	19	23	3	16
PH 1	45		19	1	8	1	1	15	20		33				5	2	9	4	9	7	5		5
Parr	4		1		1				2		2					1	1		1				
Smolt	40		18	1	7	1	1	15	18		31				5	1	8	4	8	7	5		5
Fry	1																						
PH 2	25		14		6		1	3	7		16				1		2	3	2	5	3		
Parr	8		6		4				2		6						1	1	1	3			
Smolt	13		8		2		1	3	4		10				1		1		1	1	2		
Fry	4								1									2		1	1		
Spill	62		30		7	1	3	15	24		38				1		3	2	11	7	15	3	11
Parr	7		2						3		2												
Smolt	53		27		6	1	3	15	21		35				1		3	2	11	7	15	3	11
Fry	2		1		1						1												
Hills Creek Dam	504	2	81	1	26			130	70		83	1	12	3	55	8	28	11	30	16	16	7	20
RO	219	2	49		9			77	37		43		7		29	6	12	2	18	9	7	4	8
Parr	7		2					1									1						
Smolt	86	1	45		8			76	37		41		7		29	6	8	2	16	6	6	2	8
Fry	126	1	2		1						2						3		2	3	1	2	
PH	285		32	1	17			53	33		40	1	5	3	26	2	16	9	12	7	9	3	12
Parr	7		4					1	1							1				1			
Smolt	58		23	1	13			52	32		35	1	5	3	21	1	10	4	8	4	9		12
Fry	220		5		4						5				5		6	5	4	2		3	
Hills Creek HOR	93		6							1	2												
5 ft	93		6							1	2												
Parr	33		4							1	2												
Fry	60		2																				

Chinook (CHS) During Reporting Period

Chinook Injuries During Reporting Period 9-16-2023 to 9-30-2023																							
Site/Trap/Life Stage	Total Fish	MUNK	DS<2	BLO	EYB	FUN	BKD	COP	DS>2	PRD	FID	HBO	BO	HO	BVT	HBP	BRU	TEA	OPD	HIN	FVB	POP	GBD
Breitenbush River	84		74			3		21	2		41						1	7					
5 ft	84		74			3		21	2		41						1	7					
Parr	51		44			2		13	2		21						1	7					
Smolt	33		30			1		8			20												
Detroit HOR	36		30					3	1		12						2						
5 ft	36		30					3	1		12						2						
Parr	29		24					1			8						1						
Smolt	7		6					2	1		4						1						
Lookout Dam Tail.	1		1								1												
PH 1	1		1								1												
Smolt	1		1								1												
Hills Creek Dam	28		9		5			26	18		26	1			6		8		11	6	12		6
PH	27		9		5			25	17		25	1			6		8		11	5	11		6
Smolt	27		9		5			25	17		25	1			6		8		11	5	11		6
RO	1							1	1		1									1	1		
Smolt	1							1	1		1									1	1		

Steelhead (*O. mykiss*) To Date

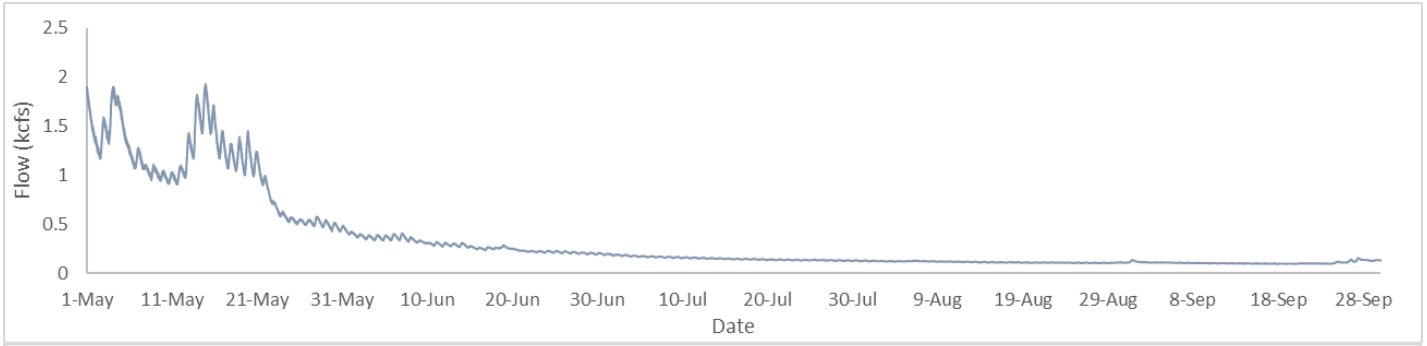
O. mykiss Injuries to-date																							
Site/Trap/Life Stage	Total Fish	MUNK	DS<2	BLO	EYB	FUN	BKD	COP	DS>2	PRD	FID	HBO	BO	HO	BVT	HBP	BRU	TEA	OPD	HIN	FVB	POP	GBD
Breitenbush River	337	1	3					1	2		8				1		1		2	1	1		
5 ft	337	1	3					1	2		8				1		1		2	1	1		
Parr	18		2					1	1		5						1				1		
Smolt	3		1						1		2				1				1				
Fry	316	1									1								1	1			
Detroit HOR	573	2	8	1	5	1		1	5	2	14				1		6	3	4	6	2	2	1
5 ft	573	2	8	1	5	1		1	5	2	14				1		6	3	4	6	2	2	1
Parr	20		4	1					1		6						1	1		1			
Smolt	3		2			1		1	1	1	2							1		1	1	1	
Fry	550	2	2		5				3	1	6				1		5	1	4	4	1	1	1
Green Peter HOR	1																						
5 ft	1																						
Fry	1																						

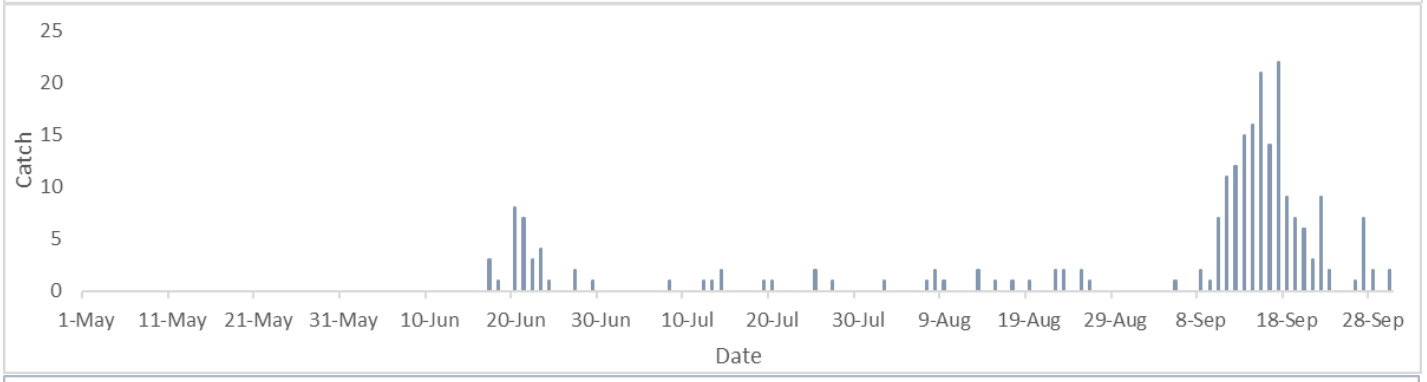
Steelhead (*O. mykiss*) During Reporting Period

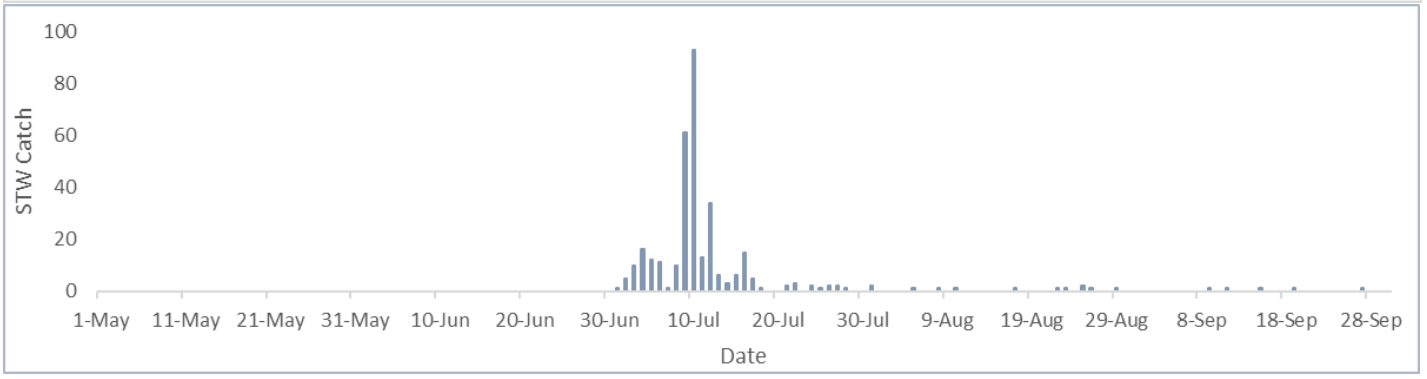
O. mykiss Injuries During Reporting Period 9-16-2023 to 9-30-2023																							
p/Life Stage	Total Fish	MUNK	DS<2	BLO	EYB	FUN	BKD	COP	DS>2	PRD	FID	HBO	BO	HO	BVT	HBP	BRU	TEA	OPD	HIN	FVB	POP	GBD
Breitenbush River	2							1	1		1										1		
5 ft	2							1	1		1										1		
Parr	2							1	1		1										1		
Detroit HOR	4																						
5 ft	4																						
Parr	4																						

Appendix B

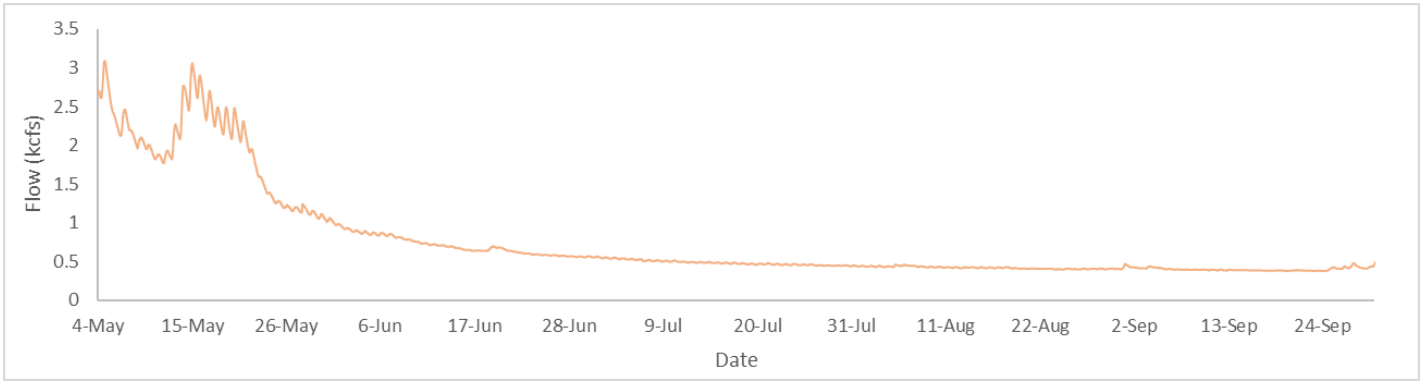
Breitenbush River Operational and Capture Data Since Start of Monitoring

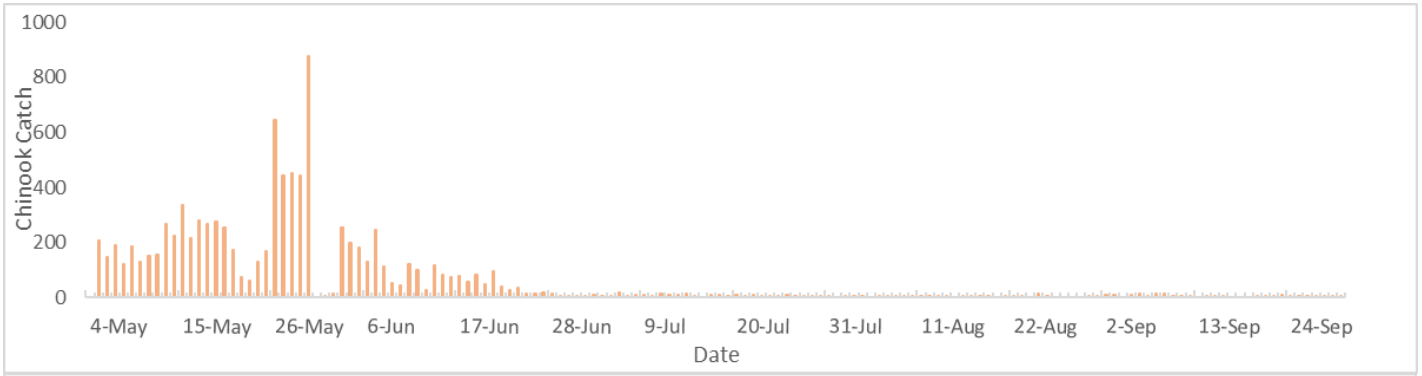


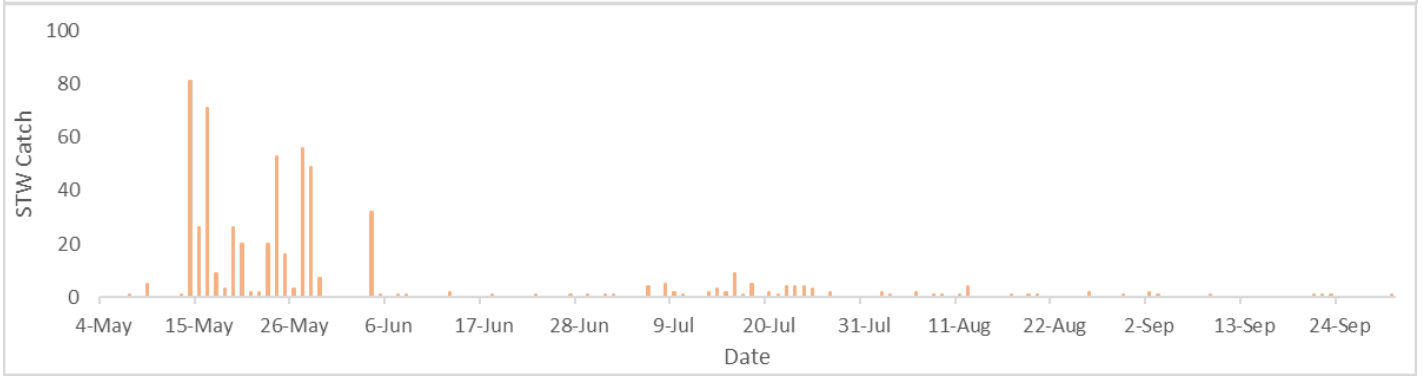




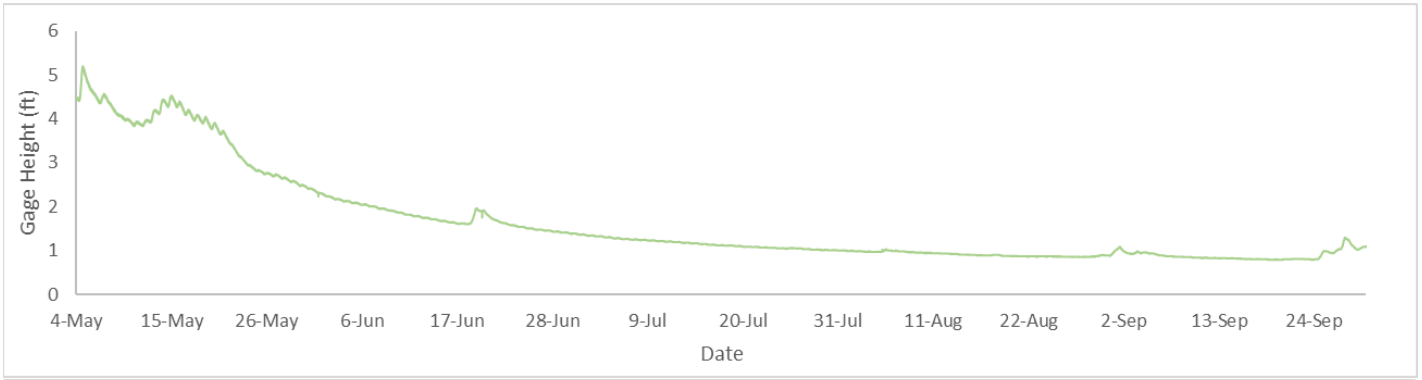
Detroit Head of Reservoir-North Santiam River Operational and Capture Data Since Start of Monitoring



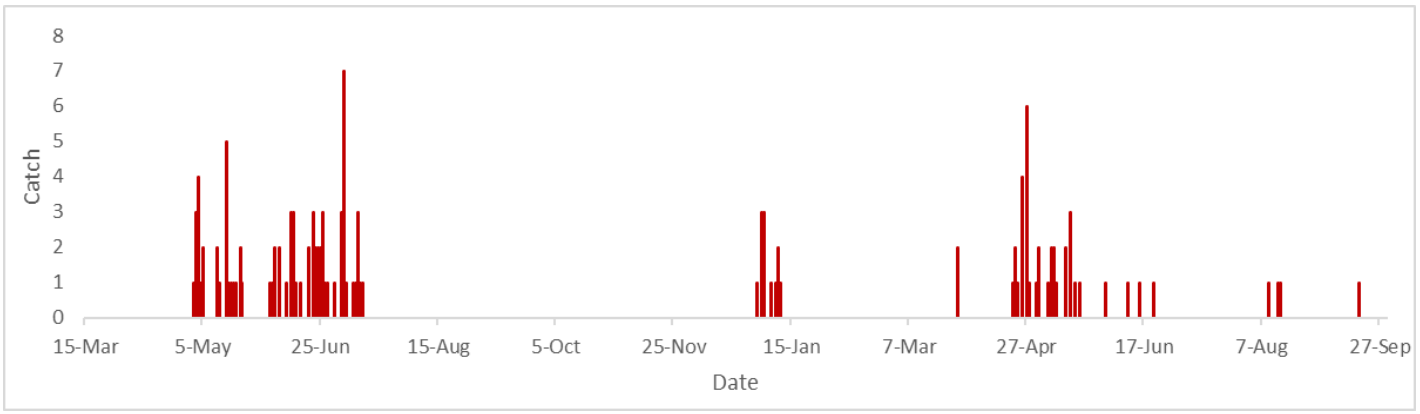




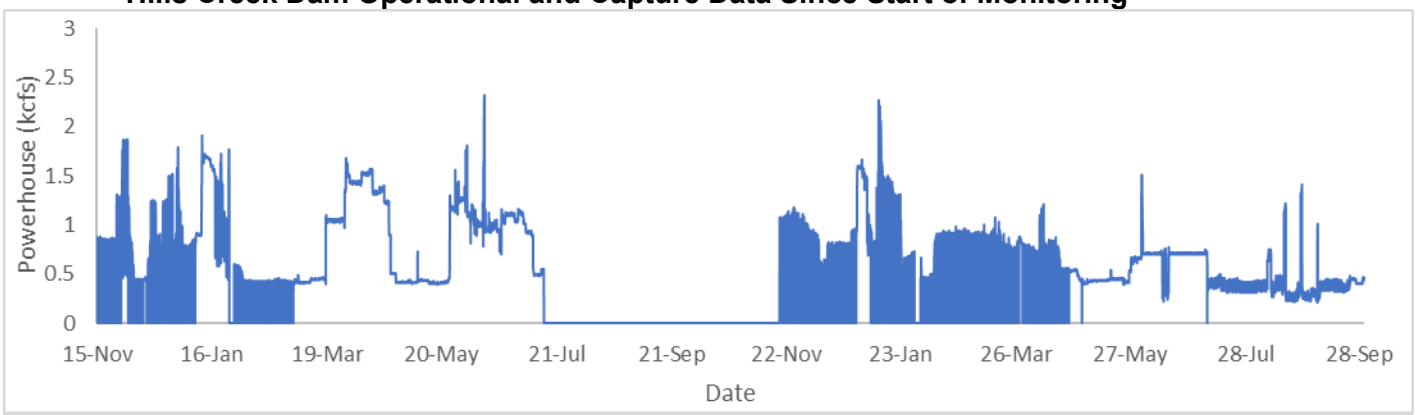
Green Peter Head of Reservoir-Middle Santiam River Operational and Capture Data Since Start of Monitoring

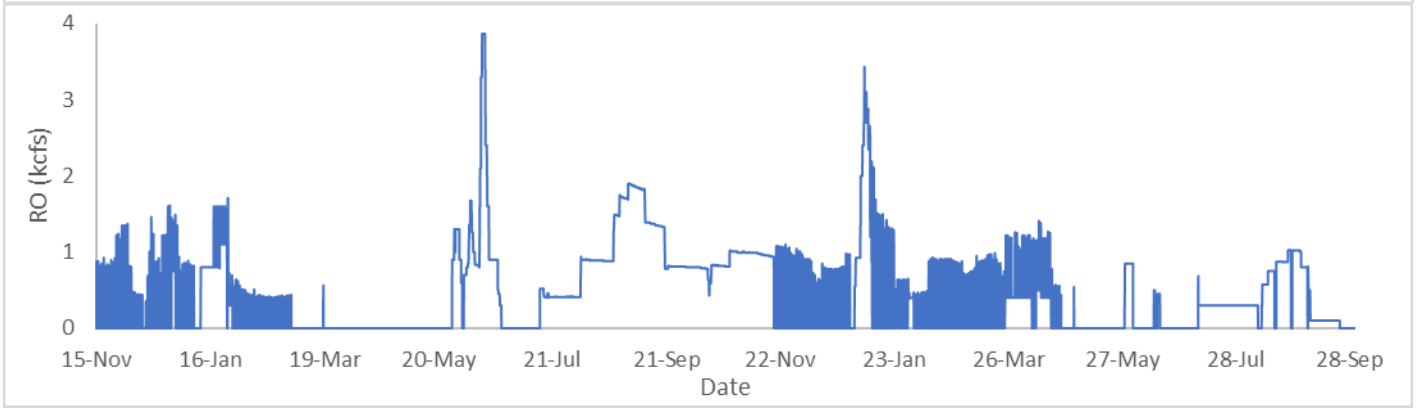


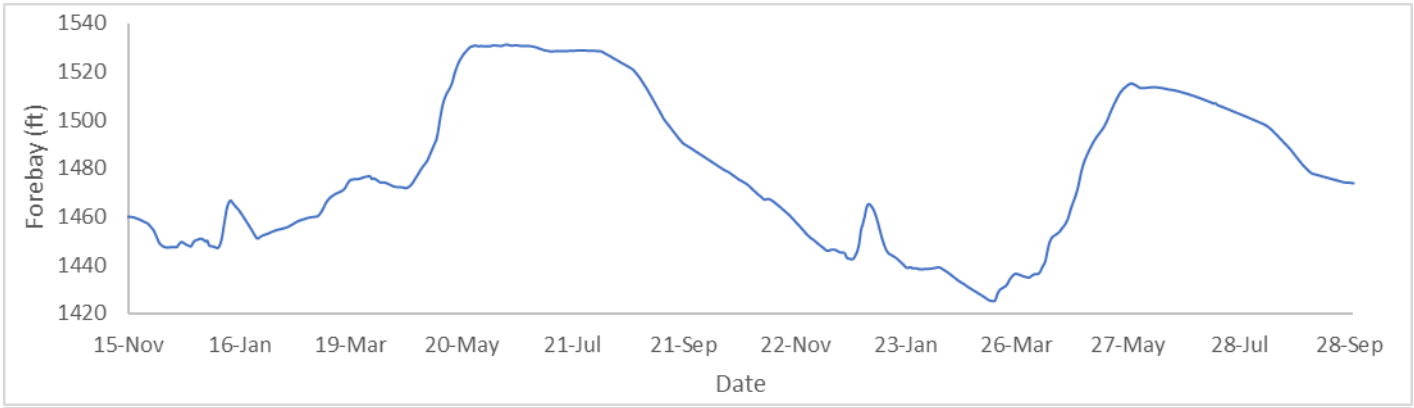
Lookout Dam Operational and Capture Data Since Start of Monitoring

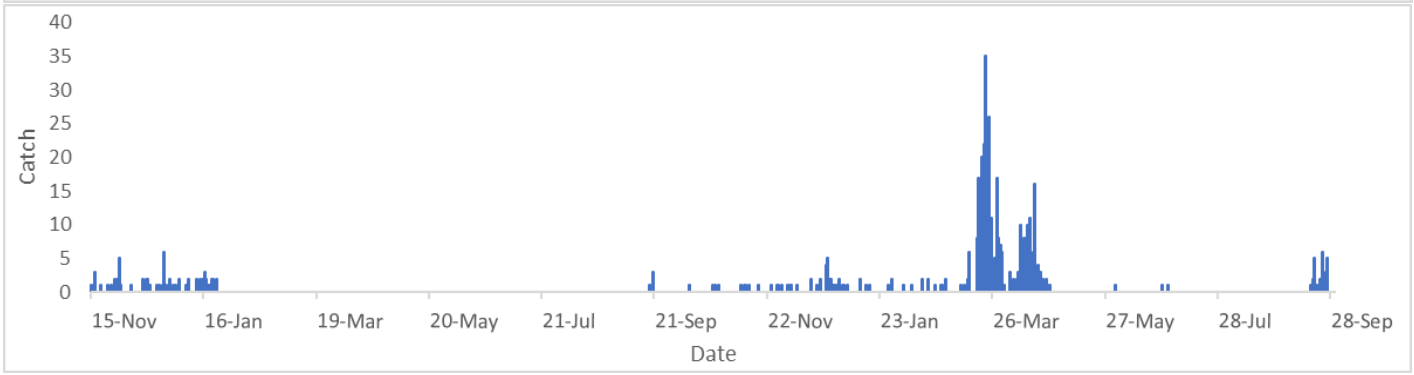


Hills Creek Dam Operational and Capture Data Since Start of Monitoring

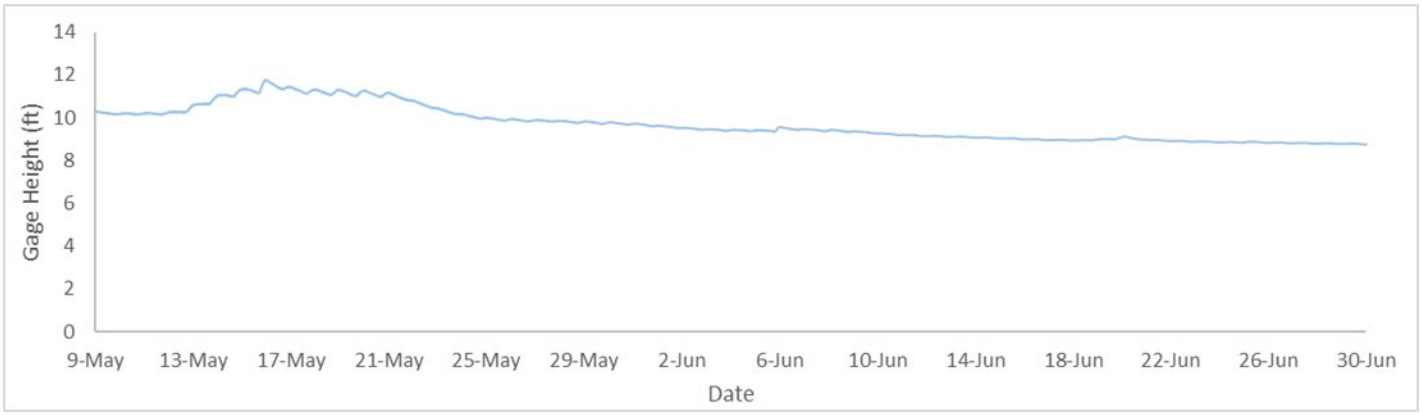


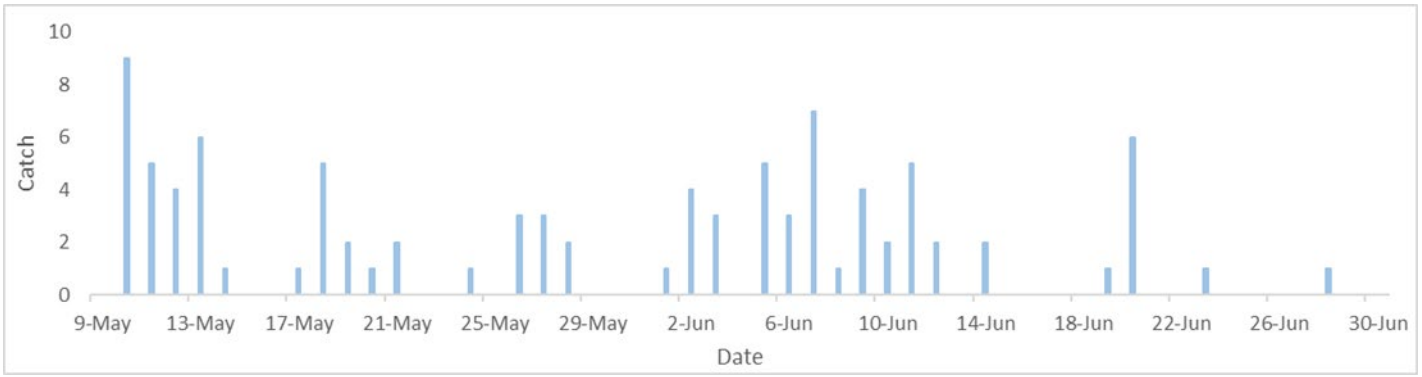






Hills Creek Head of Reservoir-Middle Fork Willamette River Operational and Capture Data Since Start of Monitoring





Appendix C

Release Location	Date of Release	# of Fish Released	# of Fish Recaptured	% Efficiency
Breitenbush River	6/21/2023	749	53	7.1%
Breitenbush River	7/6/2023	763	25	3.3%
Breitenbush River	8/2/2023	791	12	1.5%
Breitenbush River	9/20/2023	756	7	0.9%
Detroit Head of Reservoir- North Santiam River	6/6/2023	540	28	5.0%
Detroit Head of Reservoir- North Santiam River	6/20/2023	750	61	4.6%
Detroit Head of Reservoir- North Santiam River	7/6/2023	750	13	1.7%
Detroit Head of Reservoir- North Santiam River	8/2/2023	750	19	2.5%
Detroit Head of Reservoir- North Santiam River	9/6/20203	700	19	2.7%
Green Peter Head of Reservoir- Middle Santiam	6/7/2023	1,000 (dead fish)	0	0%
Green Peter Head of Reservoir- Middle Santiam	6/7/2023	750	1	0.1%
Green Peter Head of Reservoir- Middle Santiam	7/28/2023	750	0	0%
Green Peter Head of Reservoir- Middle Santiam	8/30/2023	749	0	0%
Green Peter Head of Reservoir- Middle Santiam	9/27/2023	741	0	0%
Lookout Dam Powerhouse*	4/13/2022	998	0	0%
Lookout Dam Powerhouse*	5/23/2023	3,999	32	0.8%
Lookout Dam Powerhouse*	6/1/2023	4,011	6	0.1%
Lookout Dam Powerhouse*	6/14/2023	4,010	4	0.1%
Lookout Dam Powerhouse*	6/28/2023	4,010	3	0.1%
Lookout Dam Powerhouse*	7/18/2023	4,012	1	0.02%
Lookout Dam Spillway	9/13/2023	3,636	0	0.0%
Lookout Dam Spillway	9/14/2003	3,998	0	0.0%
Hills Creek Dam Powerhouse*	1/6/2022	596	20	3.4%
Hills Creek Dam Regulating Outlet*	1/6/2022	605	13	2.1%
Hills Creek Dam Powerhouse*	2/16/2022	600	12	2.0%
Hills Creek Dam Regulating Outlet*	2/16/2022	593	19	3.2%
Hills Creek Dam Powerhouse*	2/25/2022	604	6	1.0%
Hills Creek Dam Regulating Outlet*	2/25/2022	625	6	1.0%
Hills Creek Dam Powerhouse*	12/7/2022	514	29	5.6%
Hills Creek Dam Regulating Outlet*	12/13/2022	516	1	0.2%
Hills Creek Dam Powerhouse- RO Trial*	1/6/2022	596	5	0.8%
Hills Creek Dam Powerhouse- RO Trial*	2/16/2022	600	0	0%
Hills Creek Dam Powerhouse- RO Trial*	2/25/2022	604	1	0.2%
Hills Creek Dam Powerhouse- RO Trial*	12/7/2022	514	3	0.6%
Hills Creek Dam Powerhouse*	2/25/2023	519	15	2.9%
Hills Creek Dam Powerhouse- RO Trial*	2/25/2023	519	0	0%
Hills Creek Dam Regulating Outlet*	2/25/2023	478	0	0%
Hills Creek Dam Powerhouse*	4/26/2023	506	62	12.3%
Hills Creek Dam Powerhouse- RO Trial*	4/26/2023	506	12	2.4%
Hills Creek Dam Powerhouse*	5/17/2023	505	57	11.3%
Hills Creek Dam Powerhouse- RO Trial*	5/17/2023	505	2	0.4%
Hills Creek Dam Powerhouse*	6/3/2023	508	36	7.1%
Hills Creek Dam Powerhouse- RO*	6/3/2023	508	2	0.4%
Hills Creek Dam Regulating Outlet*	6/13/2023	760	0	0%
Hills Creek Dam Powerhouse*	6/27/2023	507	22	4.3%
Hills Creek Dam Powerhouse- RO Trial*	6/27/2023	507	0	0%
Hills Creek Dam Powerhouse	9/27/2023	510	10	2.0%
Hills Creek Head of Reservoir- MF Willamette	5/18/2023	519	44	8.5%
Hills Creek Head of Reservoir- MF Willamette	6/19/2023	760	7	0.9%

**Releases performed under the USACE RST contract*

Appendix D

Summary of PIT Tagged Fish for Reporting Period

Site	Trap	Species	# of PIT Tagged Fish
Breitenbush River	5 ft	Chinook	80
Breitenbush River	5 ft	*O. mykiss*	1
Detroit Head of Reservoir – North Santiam River	5 ft	Chinook	32
Detroit Head of Reservoir – North Santiam River	5 ft	*O. mykiss*	2
Green Peter Head of Reservoir – Middle Santiam River	5 ft	Chinook	0
Green Peter Head of Reservoir – Middle Santiam River	5 ft	*O. mykiss*	0
Lookout Dam Tailrace	Spill	Chinook	0
Lookout Dam Tailrace	PWR	Chinook	0
Hills Creek Dam	RO	Chinook	0
Hills Creek Dam	PWR	Chinook	0
Hills Creek Head of Reservoir	5 ft	Chinook	0

Summary of EAS VIE Marked Fish for Reporting Period

Site	Trap	VIE Mark Code	Species	# VIE
Breitenbush River	5 ft	HRR	Chinook	4
Breitenbush River	5 ft	HRR	*O. mykiss*	0
Detroit Head of Reservoir – North Santiam River	5 ft	RDRR	Chinook	4
Detroit Head of Reservoir – North Santiam River	5 ft	RDRR	*O. mykiss*	2
Green Peter Head of Reservoir – Middle Santiam River	5 ft	RDRR	Chinook	0
Green Peter Head of Reservoir – Middle Santiam River	5 ft	RDRR	*O. mykiss*	0
Lookout Dam Tailrace	Spill	PRR	Chinook	0
Lookout Dam Tailrace	PWR	PRR	Chinook	0
Hills Creek Dam	RO	HRR	Chinook	0
Hills Creek Dam	PWR	HRR	Chinook	0
Hills Creek Head of Reservoir	5 ft	LDRR	Chinook	0

RDRR denotes location and color (Right Dorsal Red (two stripes))

List of Captured Fish Containing PIT Tags This Season

Site	Trap	PIT Tag	Date	Species
Detroit Head of Reservoir- North Santiam River	5 ft	3D6.15348426D4	7/1/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003E55AB07	7/19/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BF1	9/15/2023	Chinook
Breitenbush River	5 ft	3DD.003BEE1A9E	9/15/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BF3	9/15/2023	Chinook

Hills Creek Dam	PH	3D6.1534831A94	9/16/2023	Chinook
Hills Creek Dam	PH	3D6.153484353B	9/20/2023	Chinook
Hills Creek Dam	RO	3D6.1534803019	9/21/2023	Chinook
Hills Creek Dam	PH	3D6.1534831FE7	9/23/2023	Chinook
Hills Creek Dam	PH	3D6.1534843B57	9/25/2023	Chinook
Hills Creek Dam	PH	3D6.15347FF81F	9/25/2023	Chinook
Hills Creek Dam	PH	3D6.15347FE8E5	9/25/2023	Chinook
Hills Creek Dam	PH	3D6.15347FEC09	9/25/2023	Chinook
Hills Creek Dam	PH	3D6.15347FEDD1	9/25/2023	Chinook
Hills Creek Dam	PH	3D6.1534802DEB	9/25/2023	Chinook
Hills Creek Dam	PH	3D6.15347FEAD8	9/26/2023	Chinook
Hills Creek Dam	PH	3D6.1534801912	9/26/2023	Chinook

List of EAS PIT Tagged Fish for Reporting Period

Site	Trap	PIT Tag	Date	Species
Breitenbush River	5 ft	3DD.003BD22BA9	9/16/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BA0	9/16/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BFA	9/16/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BAF	9/16/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BA3	9/16/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BFB	9/16/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BAD	9/16/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BFD	9/16/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BB3	9/16/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BCB	9/16/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BF4	9/16/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BF7	9/16/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BA7	9/16/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BE2	9/16/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BA8	9/17/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BC9	9/17/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BE7	9/17/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BE0	9/17/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BF2	9/17/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BE1	9/17/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BB6	9/17/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BEA	9/17/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BEB	9/17/2023	Chinook

Breitenbush River	5 ft	3DD.003BD22BC3	9/17/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BBD	9/17/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BD5	9/17/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BCF	9/17/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22B9D	9/17/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BFF	9/17/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BD1	9/17/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BDF	9/17/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BDD	9/17/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BE9	9/17/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BE8	9/18/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BDB	9/18/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BDA	9/18/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BAA	9/18/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22B9F	9/18/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BA4	9/18/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BC8	9/18/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BDC	9/18/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BD6	9/18/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BB5	9/19/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BEC	9/19/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BF6	9/19/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BA5	9/19/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BE3	9/19/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BCA	9/19/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BBF	9/19/2023	Chinook
Breitenbush River	5 ft	3DD.003BD2272A	9/20/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22710	9/20/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22706	9/20/2023	Chinook
Breitenbush River	5 ft	3DD.003BD226EF	9/20/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22729	9/20/2023	Chinook
Breitenbush River	5 ft	3DD.003BD226FA	9/20/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BEF	9/21/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22BD8	9/21/2023	Chinook
Breitenbush River	5 ft	3DD.003BD22B9E	9/21/2023	Chinook
Breitenbush River	5 ft	3DD.003BD3981E	9/22/2023	Chinook
Breitenbush River	5 ft	3DD.003BD397F1	9/22/2023	Chinook
Breitenbush River	5 ft	3DD.003BD397EC	9/22/2023	Chinook
Breitenbush River	5 ft	3DD.003BD397BD	9/22/2023	Chinook
Breitenbush River	5 ft	3DD.003BD3981B	9/22/2023	Chinook
Breitenbush River	5 ft	3DD.003BD397EA	9/22/2023	Chinook
Breitenbush River	5 ft	3DD.003BD397D5	9/22/2023	Chinook
Breitenbush River	5 ft	3DD.003BD3981C	9/22/2023	Chinook
Breitenbush River	5 ft	3DD.003BD397D7	9/23/2023	Chinook

Breitenbush River	5 ft	3DD.003BD397E6	9/23/2023	Chinook
Breitenbush River	5 ft	3DD.00BD397E2	9/26/2023	Chinook
Breitenbush River	5 ft	3DD.003BD39815	9/27/2023	Chinook
Breitenbush River	5 ft	3DD.003BD397F9	9/27/2023	Chinook
Breitenbush River	5 ft	3DD.003BD39825	9/27/2023	Chinook
Breitenbush River	5 ft	3DD.003BD3980C	9/27/2023	Chinook
Breitenbush River	5 ft	3DD.003BD397F0	9/27/2023	Chinook
Breitenbush River	5 ft	3DD.003BD39816	9/27/2023	Chinook
Breitenbush River	5 ft	3DD.003BD39823	9/27/2023	Chinook
Breitenbush River	5 ft	3DD.003BD397D4	9/27/2023	O. mykiss
Breitenbush River	5 ft	3DD.003BD397F8	9/28/2023	Chinook
Breitenbush River	5 ft	3DD.003BD397D3	9/28/2023	Chinook
Breitenbush River	5 ft	3DD.003BD397EF	9/30/2023	Chinook
Breitenbush River	5 ft	3DD.003BD39812	9/30/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD22BD9	9/16/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD22BCE	9/16/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD2271A	9/20/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD2273D	9/20/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD22BBB	9/21/2023	O. mykiss
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD22BC6	9/21/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD22BEE	9/21/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD22BD7	9/22/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD22BDE	9/22/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD22BD4	9/22/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD397E0	9/23/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD39808	9/23/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD39803	9/23/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD39811	9/23/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD39813	9/23/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD3981F	9/23/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD39827	9/23/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD39831	9/24/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD397ED	9/24/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD39826	9/25/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD397CF	9/25/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD397D0	9/26/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD39828	9/26/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD39810	9/26/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD39829	9/27/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD397FE	9/27/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD397EE	9/27/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD3981D	9/28/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD39818	9/28/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD39819	9/28/2023	Chinook

Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD397E3	9/29/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD39830	9/30/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD397FD	9/30/2023	Chinook
Detroit Head of Reservoir- North Santiam River	5 ft	3DD.003BD39800	9/30/2023	O. mykiss