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Report Period: March 01 to March 15, 2022

Report No.: 2022 Willamette RST Bi-Weekly Report 03/01 – 03/15 by EAS

Re: WILLAMETTE VALLEY FISH PASSAGE MONITORING VIA ROTARY SCREW TRAPS

Project Schedule

Table 1. Project Schedule

Site	Task	Start	End	Days
Hills Creek Dam RO and PWR	Deployment	10/12/21	10/12/21	1
Hills Creek Dam RO	Operation	10/15/21	3/01/22	138
Hills Creek Dam PWR	Operation	10/15/21	3/01/22	138
Big Cliff Dam Tailrace	Trap Efficiency Release (1,000 Fish)	12/22/2021	12/22/2021	1
Hills Creek Dam	Trap Efficiency Release (1,200 fish, 600 per route)	1/6/2022	1/6/2022	1
Cougar Dam	Trap Efficiency Release (1,200 Fish, 600 per route)	1/19/2022	1/19/2022	1
Hills Creek Dam	Trap Efficiency Release (1,200 fish, 600 per route)	2/16/2022	2/16/2022	1
Hills Creek Dam	Trap Efficiency Release (1,200 fish, 600 per route)	2/23/2022	2/23/2022	1
Cougar Dam RST	Operation	11/30/21	11/30/22	365
Big Cliff Dam RST	Operation	12/01/21	2/15/22	292
Big Cliff Dam RST	Operation	3/15/22	10/15/22	
Fall Creek Head of Reservoir RST	Operation	01/02/22	05/31/22	150
Fall Creek Dam Tailrace RST	Operation	03/15/2022	07/15/2022	123
Lookout Dam Tailrace RSTs	Operation	03/15/2022	07/31/2022	139
Lookout Point Head of Reservoir RST	Operation	03/07/2022	12/16/2022	285
Hills Creek Dam RSTs	Trap Removal	03/01/2022	03/01/2022	1
Dexter Dam Tailrace RST	Highline Install	03/02/2022	03/02/2022	1
Dexter Dam Tailrace RST	Trap Install	03/03/2022	03/03/2022	1
Dexter Dam Tailrace RST	Operation	03/07/2022	12/16/2022	285
Green Peter Tailrace- Middle Santiam River RST	Trap Install	03/02/2022	03/02/2022	1

Green Peter Tailrace- Middle Santiam River RST	Operation	03/03/2022	06/30/2022	120
Foster Dam Head of Reservoir- South Santiam River RST	Operation	3/10/2022	06/30/2022	113
Cougar Dam Head of Reservoir	Highline and Trap Install	3/7/2022	3/7/2022	1
Cougar Dam Head of Reservoir	Operation	3/8/2022	06/30/2022	115

Summary of Rotary Screw Trap Data

Rotary screw traps (RSTs) have been operated at eleven locations in the southern Willamette River watershed. For this reporting period, traps were being operated at the following ten locations: Big Cliff Dam, Green Peter Tailrace- Middle Santiam, Foster Dam Head of Reservoir- South Santiam, Cougar Dam, Cougar Dam Head of Reservoir, Fall Creek Dam Tailrace, Fall Creek Head of Reservoir, Dexter Dam Tailrace, Lookout Dam Tailrace, and Lookout Point Head of Reservoir.

The RST's at Big Cliff Dam and Lookout Dam Tailrace started sampling on March 15th. Catch at these sites was not assessed until the 16th and will be reported as part of the next reporting period. On March 1st the Middle Fork Willamette River below Hills Creek Dam RST's were removed for the sampling season in conjunction with the end of RO spill and to prioritize the limited number of screw traps to other locations.

Below Dam sites that include both RO and PWR to monitor passage routes include South Fork McKenzie River below Cougar Dam and on the Middle Fork of the Willamette River in the Lookout Dam Tailrace. Below dam sites that include one RST to monitor passage include the Green Peter Tailrace- Middle Santiam, the Middle Fork of the Willamette River below Dexter Dam and Fall Creek Dam Tailrace which is a tributary on the Middle Fork of the Willamette. At the Green Peter Dam Tailrace, the single RST is placed to sample fish passing through spillways, regulatory outlets, and powerhouse outlets. The RST at Dexter Dam is placed to monitor fish passage through the spillways and powerhouse outlets. The RST in the Fall Creek Dam Tailrace is placed in a position to sample fish passing through the regulatory outlet.

The RST on the North Santiam River below Big Cliff Dam was not sampled while fish passage measures were not being implemented from 16 February 2022 to 14 March 2022. Sampling resumed on 15 March 2022 in accordance with Task 2.2.

Above reservoir sites include Fall Creek Head of Reservoir, Lookout Point Head of Reservoir on the Middle Fork Willamette River, Foster Dam Head of Reservoir- South Santiam, and Cougar Dam Head of Reservoir on the South Fork McKenzie.

Sampling start dates are included in Table 2, and season total collection numbers are displayed in Table 3. The locations of the RST's are depicted in Figures 1 through 10.



Figure 1. Cougar Dam RST Locations



Figure 2. Big Cliff RST Location

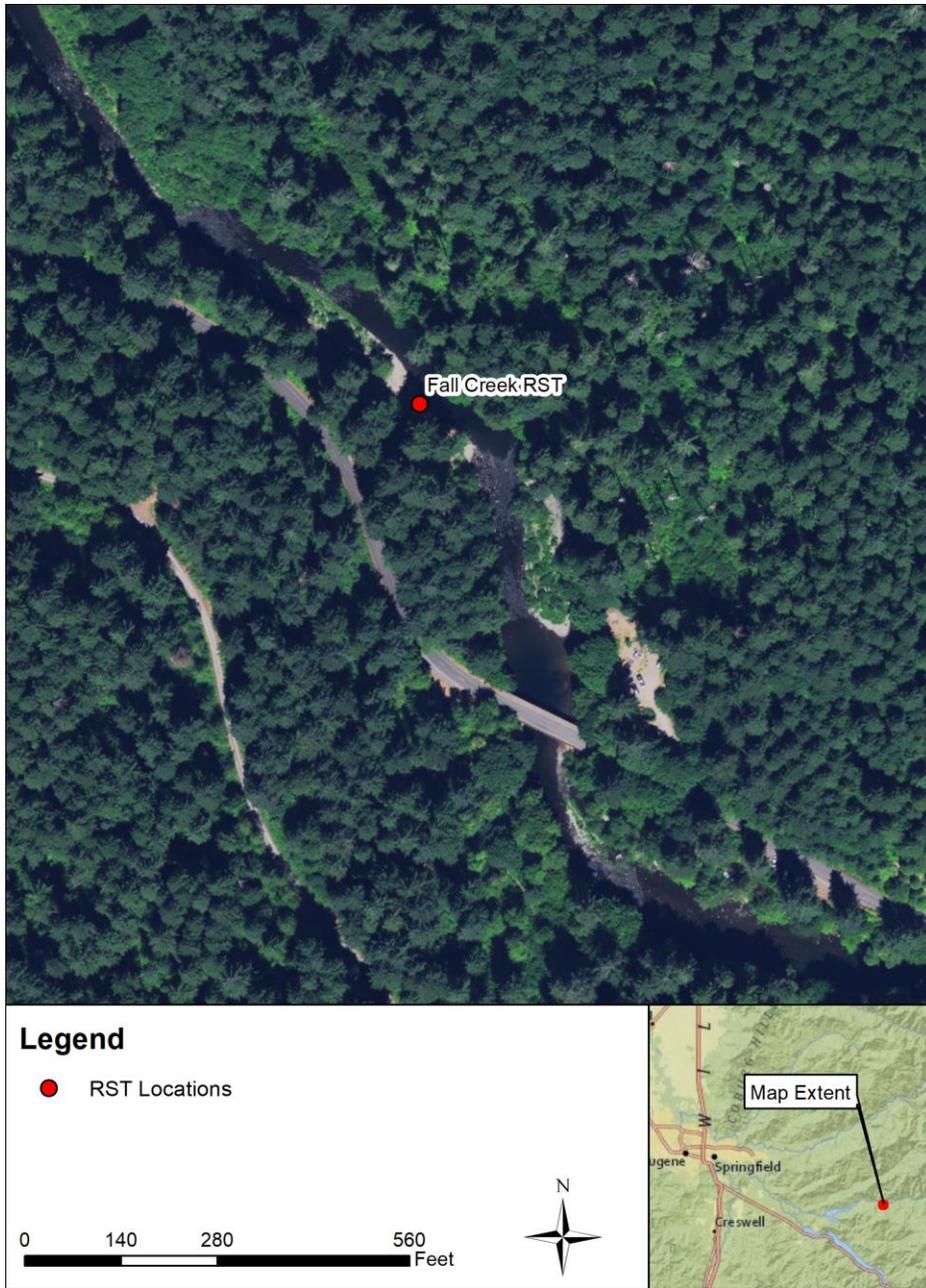


Figure 3. Fall Creek Head of Reservoir RST Location

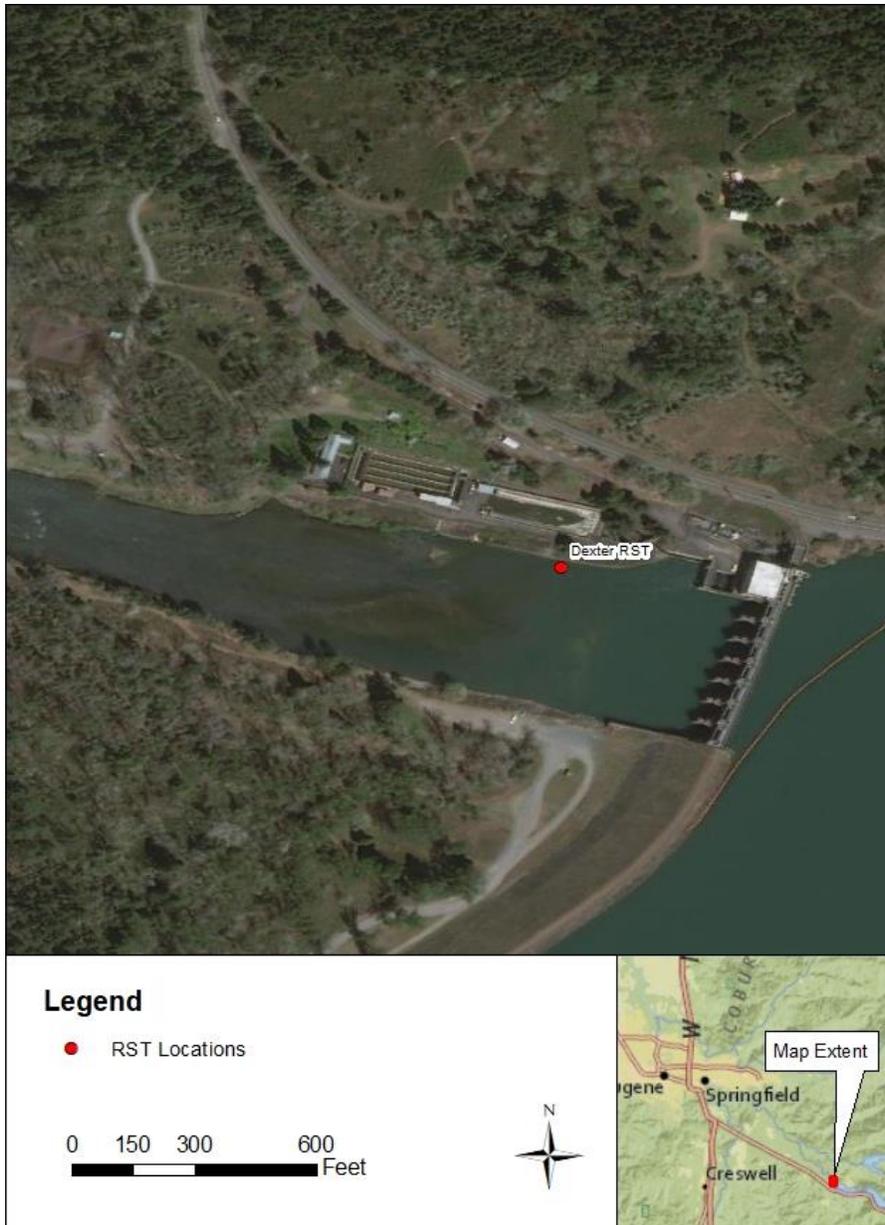


Figure 4. Dexter Dam RST Location



Figure 5. Fall Creek Dam Tailrace RST Location



Figure 6. Green Peter Tailrace- Middle Santiam River RST Location



Figure 7. Lookout Point Dam Tailrace RST Location



Figure 8. Lookout Point Head of Reservoir RST Location



Figure 9. Foster Dam Head of Reservoir- South Santiam RST Location

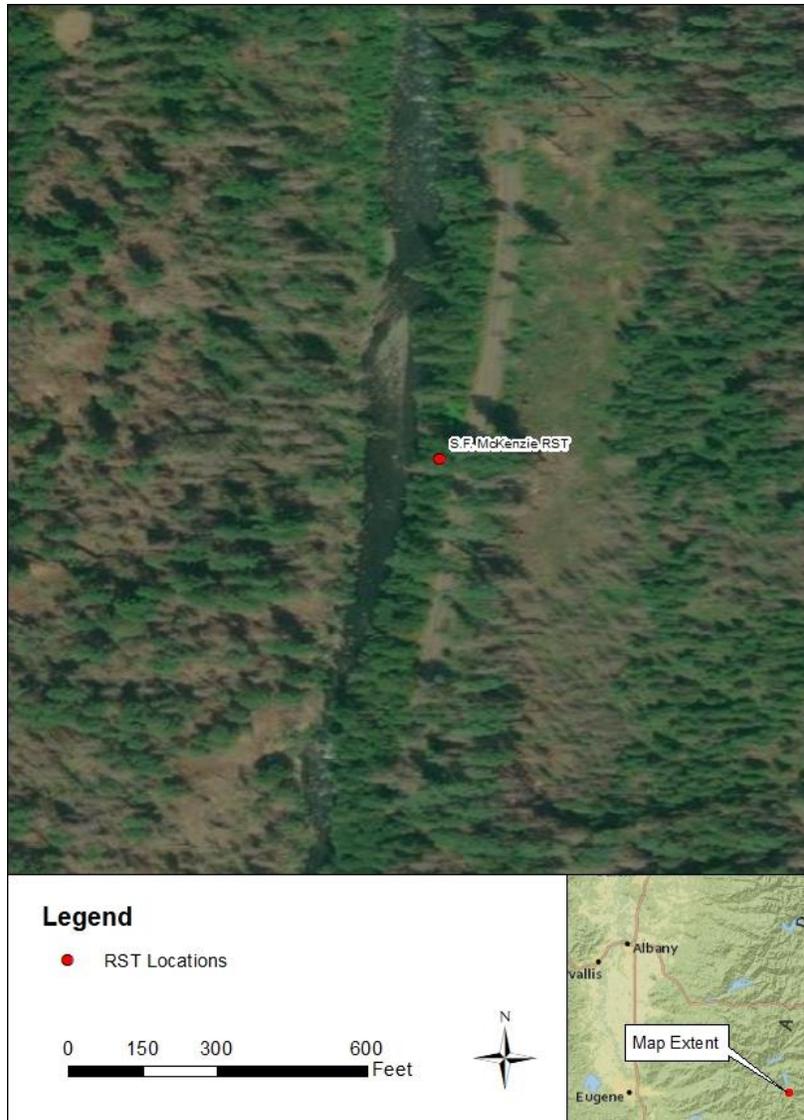


Figure 10. Cougar Dam Head of Reservoir RST Location

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
Cougar Dam RO	12/1/2021	3/1/2022	3/15/2022	15	105
Cougar Dam PWR	12/1/2021	3/1/2022	3/15/2022	15	105
Big Cliff Dam	12/1/2021	3/15/2022	3/15/2022	1	75
Green Peter Tailrace- Middle Santiam River	3/2/2022	3/1/2022	3/15/2022	14	14
Lookout Point Dam	3/15/2022	3/15/2022	3/15/2022	1	1
Dexter Dam Tailrace	3/7/2022	3/1/2022	3/15/2022	9	9
Fall Creek Dam tailrace*	3/15/2022	3/15/2022	3/15/2022	1	1

Lookout Point Head of Reservoir	3/10/2022	3/1/2022	3/15/2022	6	6
Cougar Dam Head of Reservoir	3/7/2022	3/1/2022	3/15/2022	8	8
Foster Dam Head of Reservoir- South Santiam	3/16/2022	Trap not available until 3/16/22	Trap not available until 3/16/22	0	0
Fall Creek Head of Reservoir	1/13/2022	3/1/2022	3/15/2022	15	62

*Fall Creek Dam Tailrace trap was being operated by the Corps until EAS began sampling the site on March 15th per Task 7.1

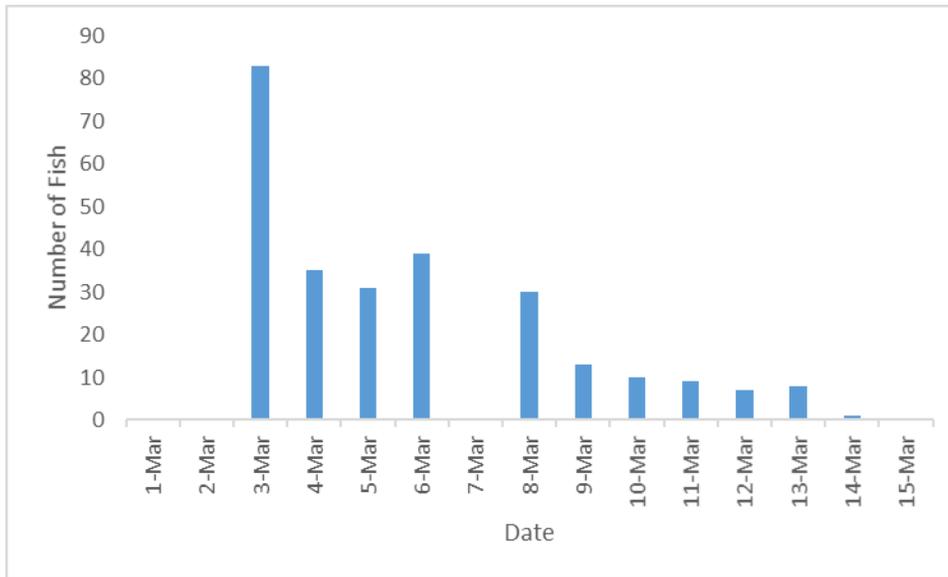
Table 3. Willamette Valley Rotary Screw Trap Monitoring Catch Summary

Site	Species	Catch (Reporting Period)	Recaptures (Reporting Period)	Total Catch	Total Recaptures
Cougar Dam	CHS	272	1	381	67
Big Cliff Dam	CHS	0	0	95	40
Green Peter Tailrace- Middle Santiam	CHS	0	0	0	0
Lookout Point Dam	CHS	0	0	0	0
Dexter Dam Tailrace	CHS	0	0	0	0
Fall Creek Dam Tailrace	CHS	0	0	0	0
Lookout Point Head of Reservoir	CHS	6	0	6	0
Cougar Dam Head of Reservoir	CHS	46	0	46	0
Foster Dam Head of Reservoir- South Santiam	CHS	0	0	0	0
Fall Creek Head of Reservoir	CHS	1	0	3	0

South Fork McKenzie – Cougar Dam

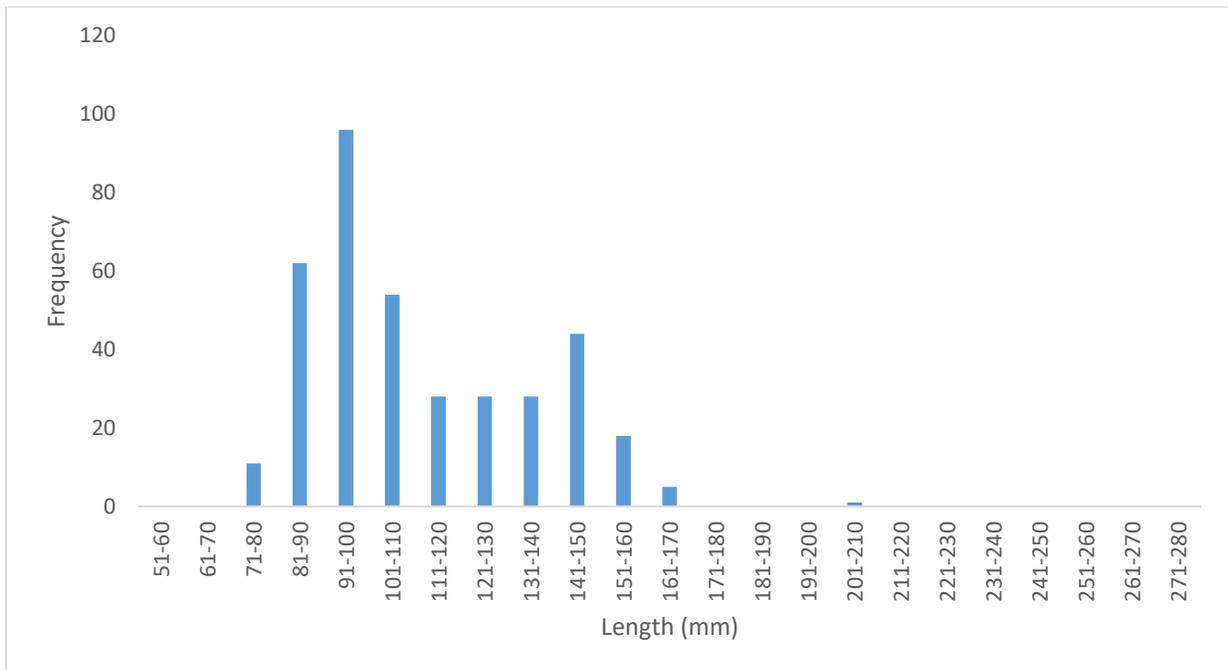
Target Species

This reporting period began on March 1 and ended on March 15. There was a total of 272 Chinook salmon (CHS) – including 2 head only fish – captured during the 15-day sampling period (Figure 11). Sampling duration was 100% for both RO RST and Powerhouse RST. Table 4 provides life stage, length, and weight data for all Chinook salmon that have been caught at the Cougar Dam site to-date and for the reporting period. Figure 11 shows the daily capture numbers for chinook and Figure 12 shows length frequency data to-date.



*Recaptured fish for trapping efficiency trials not included.

Figure 11. Chinook Captured Per Day 03/01/2022 to 03/15/2022 (Cougar Dam)



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

Figure 12. Length Frequency of Juvenile Chinook Sampled Season To-Date (Cougar Dam)

Trapping Efficiency

A total of 815 juvenile hatchery Chinook (parr) were bismark brown dyed, adipose clipped, left and right ventrally clipped and released on 01/19/2022 below Cougar Dam. 405 dyed, adipose, and left ventrally clipped fish were released below the PWR and 410 dyed, adipose, and right ventrally clipped fish were released below the RO to evaluate the efficiency of the screw trap at those locations. A total of 37 fish were recaptured in the 8ft PH traps and 25 in the 5ft RO trap on 01/20/2022, with 3 more fish captured in the PH traps and 1 more fish in the RO trap on 01/21/2022 for a total of 40 recaptures in the PH traps and 26 in the RO trap. Route-specific trapping efficiency was 9.88% at the PH traps and 6.34% at the RO.

Of the 66 fish recaptured, 2 were dead and an additional 50 were injured. Injuries were primarily descaling (25) and fin damage (44). Mt. Hood Environmental staff noted that fish appeared to be in good condition upon retrieval from the hatchery.

Cougar Dam	Release #	Recapture #	Capture Efficiency
PH Route	405	40	9.88% (40/405)
RO Route	410	26	6.34% (26/410)

Table 4. Descriptive Statistics of Target Species Captured at the Cougar Dam Season To-Date

To-Date										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Cougar	RO	CHS	Parr	78	72.0	152.0	101.8	4.2	34.1	11.5
		CHS	Smolt	39	95.0	202.0	141.4	8.8	83.9	30.5
Cougar	PWR	CHS	Parr	191	74.0	155.0	100.5	4.1	36.2	10.8
		CHS	Smolt	67	76.0	169.0	136.9	4.2	44.3	26.3

March 01-15, 2022										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Cougar	RO	CHS	Parr	41	87.0	152.0	104.6	5.0	34.1	12.3
		CHS	Smolt	27	109.0	170.0	142.6	11.7	49.1	30.9
Cougar	PWR	CHS	Parr	140	75.0	155.0	99.3	4.1	36.2	10.2
		CHS	Smolt	62	76.0	169.0	138.2	4.2	44.3	26.9

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

24-Hour Post Collection Holding Trial

A total of 116 Chinook captured in the RSTs, 80 fish from the PWR RST and 36 from the RO RST, were held for ~24 hours in holding tanks and then evaluated for survival rates. In total, 113 of the fish (97.4%) held during this period were released alive. 1 of the 80 PWR RST captured fish (1.3%) died during holding and 2 of the 36 RO RST captured fish (5.6%) died during holding.

Injuries and Copepod Infection

Partial descaling <20% was observed on 40 of 68 Chinook collected at the RO RST (58.9%), and descaling >20% was observed on 8 of 68 Chinook collected at the RO RST (11.8%). Of the 68 Chinook captured in the RO RST 30 displayed body injuries (44.1%) and 18 had eye injuries (26.9%). 4 RO RST Chinook displayed Gas Bubble Disease (5.9%). 3 showed GBD at the level 1 description and 1 at the level 2 description. 32 of the RO RST Chinook had copepods present in the branchial cavity (47.1%) and 23 had copepods present on fins (33.8%). Partial descaling <20% was observed on 127 of the 204 Chinook collected at the PWR RST (62.3%). Partial descaling >20% was observed on 13 of the 204 Chinook collected at the PWR RST (6.4%). 60 PWR RST fish had bodily injury (29.4%) and 9 had eye injuries (4.4%). 75 fish had copepods present in the branchial cavity (36.8%) and 67 had copepods present on fins (32.8%). There were 6 chinook mortalities collected in the RO RST (8.8%) and 19 in the PWR RST (9.3%) – 2 of which were head only (1%). Data is summarized below in table 5. A summary of injuries observed during the reporting period, and for the duration of the season are provided in Appendix A.

Table 5. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead Chinook Salmon for Sampling Period. (Cougar 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
Cougar	RO	68	40	8	30	18	32	23	6
Cougar	PWR	204	127	13	60	9	75	67	19

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

Non-Target Species

A total of 3 non-target species fish were captured during the reporting period; the data is summarized below in Table 6.

Table 6. Summary of Non-target Species (Cougar Dam).

Species	RO Capture	RO Mortality	PWR Capture	PWR Mortality	Season Total Live	Season Total Mortality
Bluegill	0	0	0	0	0	0
Brook Lamprey	0	0	0	0	0	0
Bullhead	0	0	0	0	0	0
Crappie	0	0	0	0	0	0
Longnose Dace	0	0	0	0	0	0
Kokanee	0	0	0	0	0	0
Red-Sided Shiner	0	0	0	0	0	0
Sculpin	0	0	1	0	3	0

Spotted Bass	0	0	0	0	0	0
Sucker	0	0	0	0	0	0
Whitefish	0	0	0	0	1	0
Cutthroat	0	0	0	0	2	0
<i>O. mykiss</i>	0	0	1	0	9	0
Bull Trout	0	0	1	0	1	0
Totals	0	0	3	0	16	0

Stream Statistics

Basic stream statistics at the Cougar Dam site were calculated from data downloaded from the U.S. Geological Survey stream gage number 14159410. Gage height (feet) is the only metric provided at this gage. During the reporting period, daily maximum values for instantaneous gage height ranged from 1253.1 feet to 1,254.19 feet (mean: 1,254.02 feet). Figure 13 shows instantaneous gage height.

Stream temperatures were recorded every 2 hours for the length of the report period for the RO and PWR RST's (Figure 14 and 15 respectively). Temperature probes for the RO and PWR RST operated normally throughout this reporting period.

Flows through the Powerhouse and RO during the reporting period averaged 273.8 and 332.4 cubic feet per second (cfs) respectively (Figure 16). Catch per unit of effort (CPUE) data are summarized in Table 7. Discharge and capture data for the duration of monitoring efforts at this location are provided in Appendix B.

Table 7. Summary of salmonid CPUE, Cougar Dam.

Description	Chinook	
	RO (5ft)	PWR(8ft)
Catch	68	204
Effort (hrs)	358.9	718.7
CPUE (fish/hr)	0.19	0.284

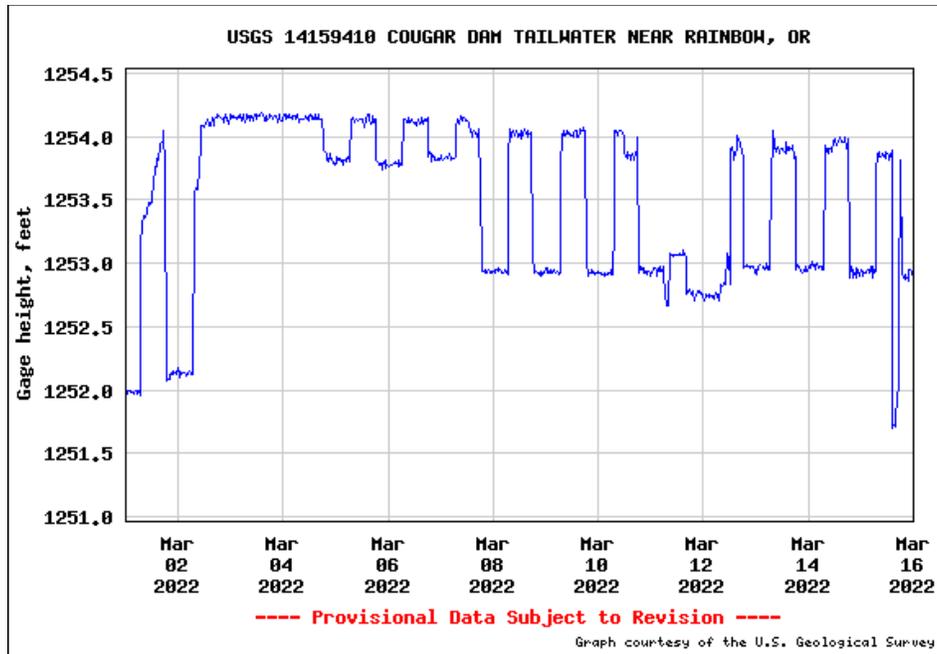


Figure 13. Gage Height (feet); below Cougar Dam, South Fork McKenzie River

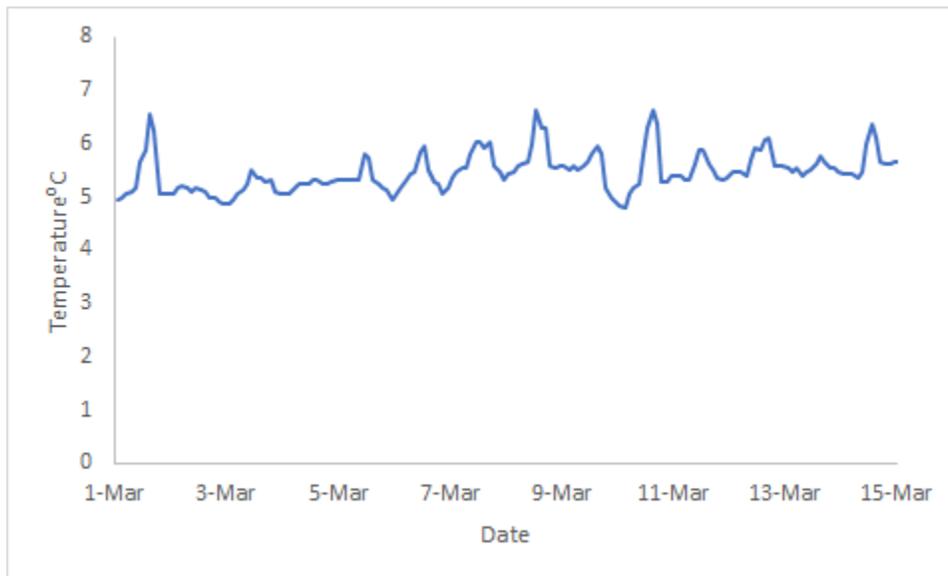


Figure 14. Temperature at RO RST (Cougar Dam)

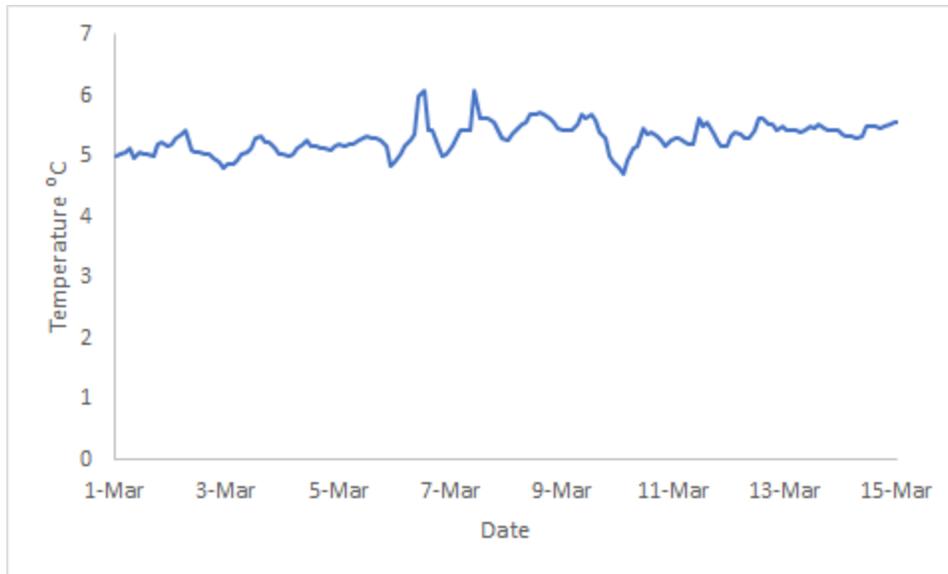


Figure 15. Temperature at PWR RST (Cougar Dam)

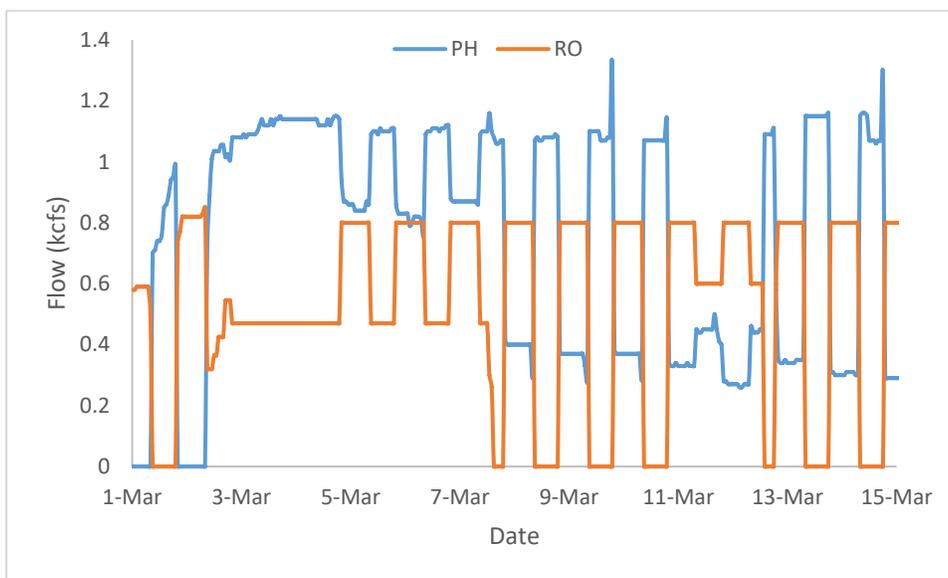


Figure 16. Hourly Flows PWR vs. RO (Cougar Dam)

Middle Fork Santiam– Green Peter Tailrace

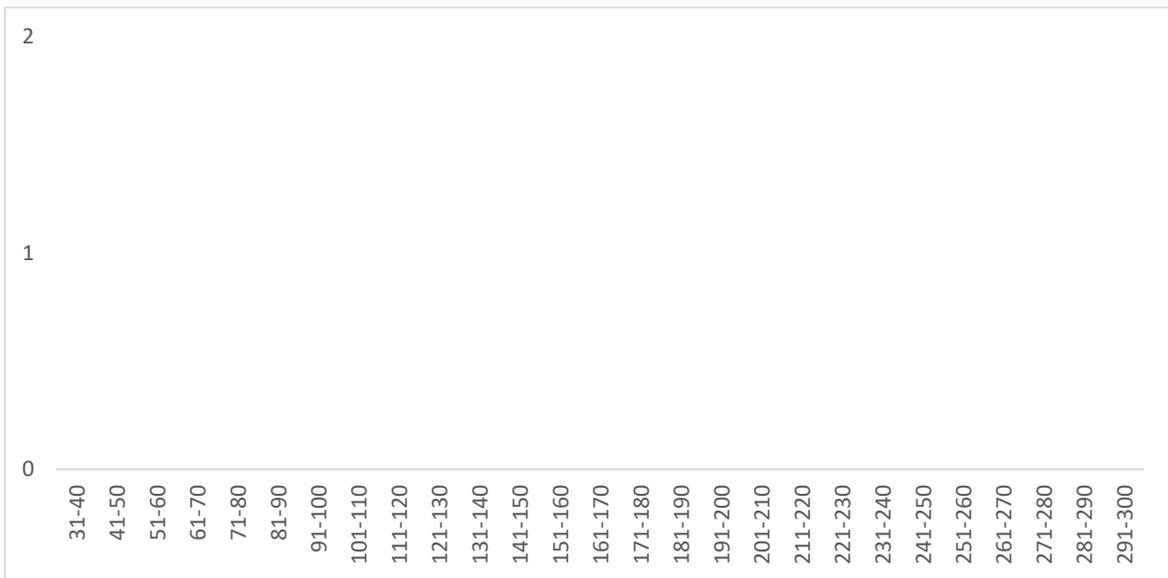
Target Species

This reporting period began on March 1 and ended on March 15. There was a total of 0 Chinook salmon (CHS) captured during the 15-day sampling period (Figure 17). Sampling duration was 93% (14 days) for the RST. Table 8 provides life stage, length, and weight data for all Chinook salmon that have been caught at the Green Peter Dam site to-date and for the reporting period. Figure 17 shows the daily capture numbers for chinook and Figure 18 shows length frequency data to-date.



*Recaptured fish for trapping efficiency trials not included.

Figure 17. Chinook Captured Per Day 03/01/2022 to 003/15/2022(Green Peter Tailrace-Middle Santiam)



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

Figure 18. Length Frequency of Juvenile Chinook Sampled Season To-Date (Green Peter Tailrace- Middle Santiam River)

Trapping Efficiency

There has been no trapping efficiency conducted to date at Green Peter Dam.

Table 8. Descriptive Statistics of Target Species Captured at the Green Peter Tailrace- Middle Santiam River Season To-Date

To-Date										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Green Peter	RO	CHS	Parr	0	0	0	0	0	0	0
		CHS	Smolt	0	0	0	0	0	0	0

March 01-15,2022										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Green Peter	RO	CHS	Parr	0	0	0	0	0	0	0
		CHS	Smolt	0	0	0	0	0	0	0

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

24-Hour Post Collection Holding Trial

No fish were captured during the current reporting period, therefore, no fish were in holding.

Injuries and Copepod Infection

No fish were captured at Green Peter Dam, therefore, no injuries are reported. A summary of injuries observed during the reporting period, and for the duration of the season are provided in Appendix A.

Table 9. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead Chinook Salmon for Sampling Period. (Green Peter Tailrace- Middle Santiam River).

Site	Route	# CHS Collected	# DSC* <20%	# DSC* >20%	# with Body Injuries	# with Eye Injuries	# with COP* In B.C.	# with COP* on Fins	Mortalities
Green Peter	PWR	0	0	0	0	0	0	0	0

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

Collected DNA and Scale Samples

No fish were captured for the reporting period and thus, no scale or DNA samples were collected.

Non-Target Species

A total of 0 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 (Green Peter Tailrace- Middle Santiam River).

Species	RO Capture	RO Mortality	PWR Capture	PWR Mortality	Season Total Live	Season Total Mortality
Bluegill	0	0	0	0	0	0
Brook Lamprey	0	0	0	0	0	0
Bullhead	0	0	0	0	0	0
Crappie	0	0	0	0	0	0
Longnose Dace	0	0	0	0	0	0
Kokanee	0	0	0	0	0	0
Red-Sided Shiner	0	0	0	0	0	0
Sculpin	0	0	0	0	0	0
Spotted Bass	0	0	0	0	0	0
Sucker	0	0	0	0	0	0
Whitefish	0	0	0	0	0	0
Cutthroat	0	0	0	0	0	0
<i>O. mykiss</i>	0	0	0	0	0	0
Totals	0	0	0	0	0	0

Stream Statistics

Basic stream statistics at the Green Peter Dam site were calculated from data downloaded from the U.S. Geological Survey stream gage number 14186110. Gage height (feet) is the only metric provided at this gage. During the reporting period, daily maximum values for instantaneous gage height ranged from 692.21 feet to 698.62 feet (mean: 693.9 feet). Figure 19 shows instantaneous gage height.

Stream temperatures were recorded every 2 hours for the length of the report period for the RO and PWR RST's (Figure 20). Temperature probes for the RST were deployed on 5 March and operated normally throughout this reporting period.

Flows through the Powerhouse and RO during the reporting period averaged 273.8 and 332.4 cubic feet per second (cfs) respectively (Figure 21). 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, Green Peter Tailrace- Middle Santiam River.

	Chinook
Description	8ft
Catch	0
Effort (hrs)	260
CPUE (fish/hr)	0

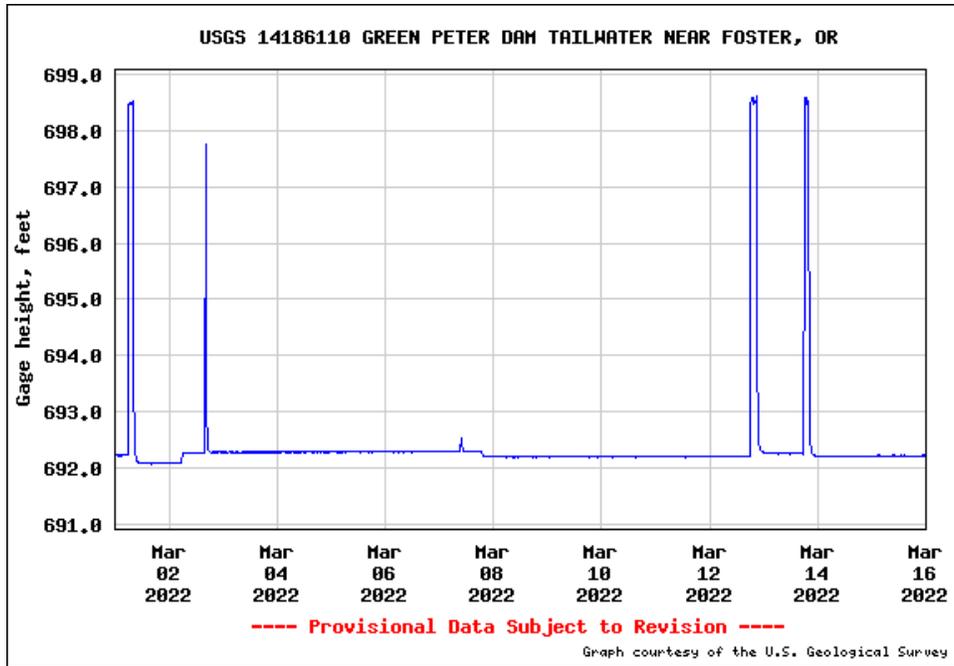


Figure 19. Gage Height (feet); below Green Peter Dam

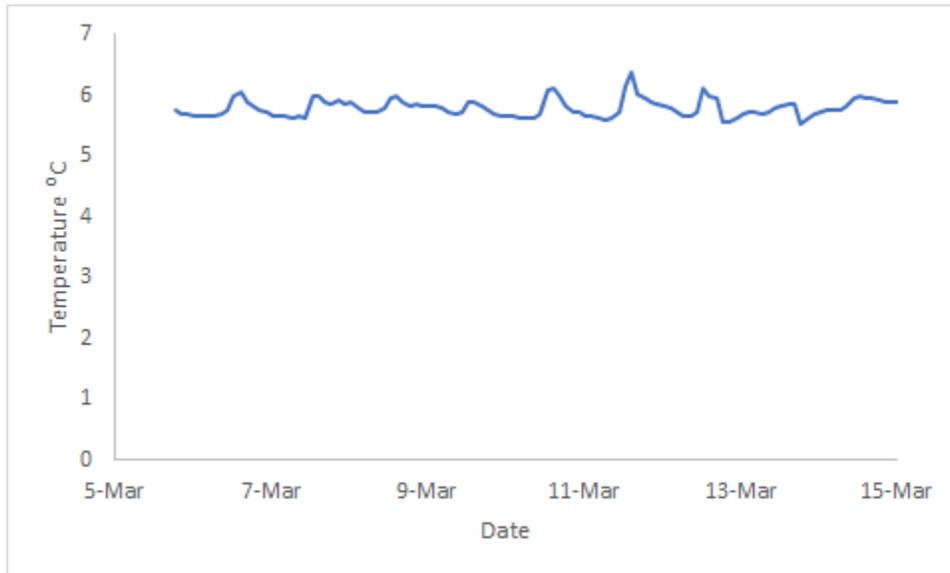


Figure 20. Temperature at RST (Green Peter Tailrace- Middle Santiam River)

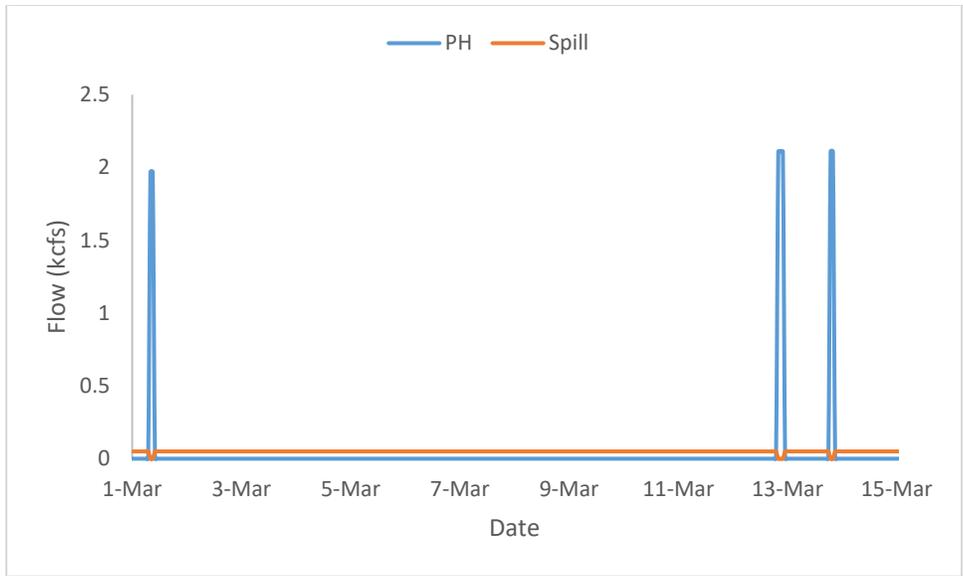


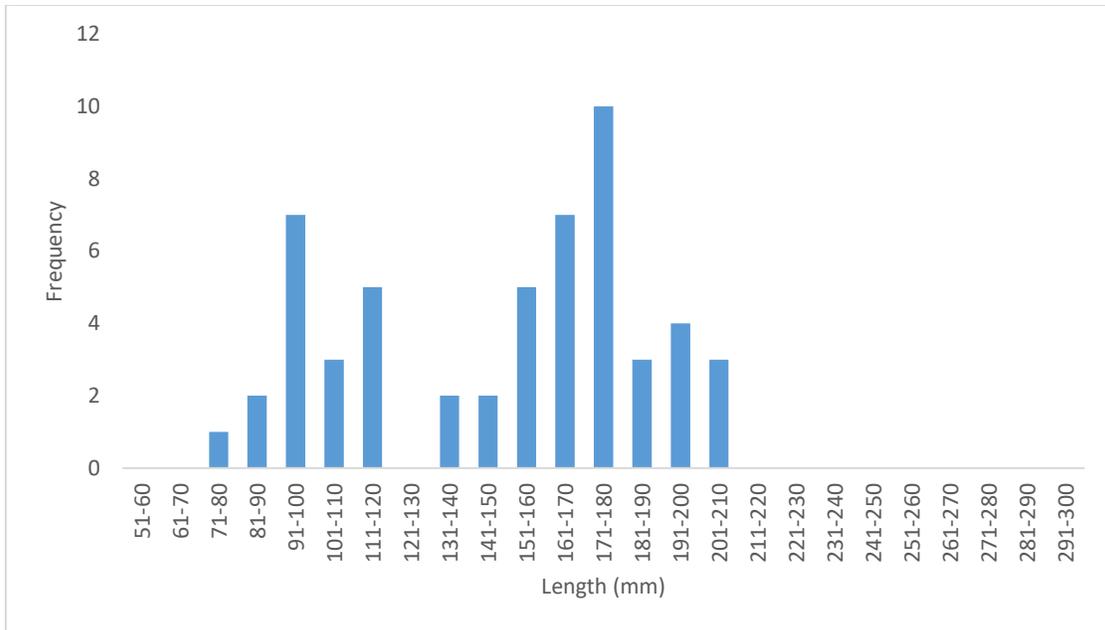
Figure 21. Hourly Flows PWR vs. RO (Green Peter Dam)

North Santiam – Big Cliff Dam

The RST on the North Santiam River below Big Cliff Dam was not sampled while fish passage measures were not being implemented from 16 February 2022 to 14 March 2022. Sampling resumed on 15 March 2022 in accordance with Task 2.2.

Target Species

Figure 22 shows length frequency data to-date, and descriptive statistics of target species captured at Big Cliff dam season to date are displayed in Table 12.



*Figure does not include fish without heads

Figure 22. Length Frequency of Juvenile Chinook Sampled Season To-Date (Big Cliff)

Trapping Efficiency

A total of 996 juvenile hatchery Chinook (parr) were bismark brown dyed, adipose clipped and released on 12/22/2021 below Big Cliff Dam. A total of 39 fish were recaptured in the 8ft trap 12/23/2021, with 1 more fish captured in the 8ft trap 02/15/2022 for a total of 40 recaptures. Trapping efficiency was 4.01%.

Of the 40 fish recaptured, only the 1 fish that was captured on 2/15/2022 had injuries present. The 39 fish recaptured on 12/23/2021 had no injuries present. The injured fish had copepods on its fins and in the branchial cavity. Mt. Hood Environmental staff noted that fish appeared to be in good condition upon retrieval from the hatchery.

Big Cliff Dam	Release #	Recapture #	Capture Efficiency
8ft Trap	996	40	4.01% (40/996)

Table 12. Descriptive Statistics of Target Species Captured at Big Cliff Dam Season To-Date

To-Date										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Big Cliff	PWR	CHS	Parr	15	78.0	115.0	99.1	6.1	20.1	11.4
		CHS	Smolt	40	113.0	210.0	168.7	14.2	103.8	50.4

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

Non-Target Species

Summary of to-date non-target species catch and mortality numbers are listed in Table 13.

Table 13. Summary of Non-target Species (Big Cliff Dam)

Species	PWR Capture	PWR Mortality	Season Total	Season Total Mortality
Bluegill	0	0	6	2
Brook Lamprey	0	0	0	0
Bullhead	0	0	1	0
Crappie	0	0	0	0
Longnose Dace	0	0	0	0
Kokanee	0	0	91	36
Red-Sided Shiner	0	0	0	0
Sculpin	0	0	0	0
Spotted Bass	0	0	0	0
Sucker	0	0	0	0
Whitefish	0	0	4	0
Cutthroat	0	0	2	0
<i>O. mykiss</i>	0	0	1	0
Unknown	0	0	1	0
Totals	0	0	106	38

Middle Fork Willamette – Lookout Point Head of Reservoir

Target Species

The reporting period began March 1 and ended March 15. 6 chinook salmon were captured during the 15-day sampling period (Figure 23). The trap was operated 33.3% (5 days) of the reporting period. Initiation of sampling was delayed until a new trap was available to be installed. Table 14 provides life stage, length, and weight data for all Chinook salmon that have been caught at the Middle Fork Willamette Above Lookout Point site to-date and Figure 24 shows length frequency data to-date.

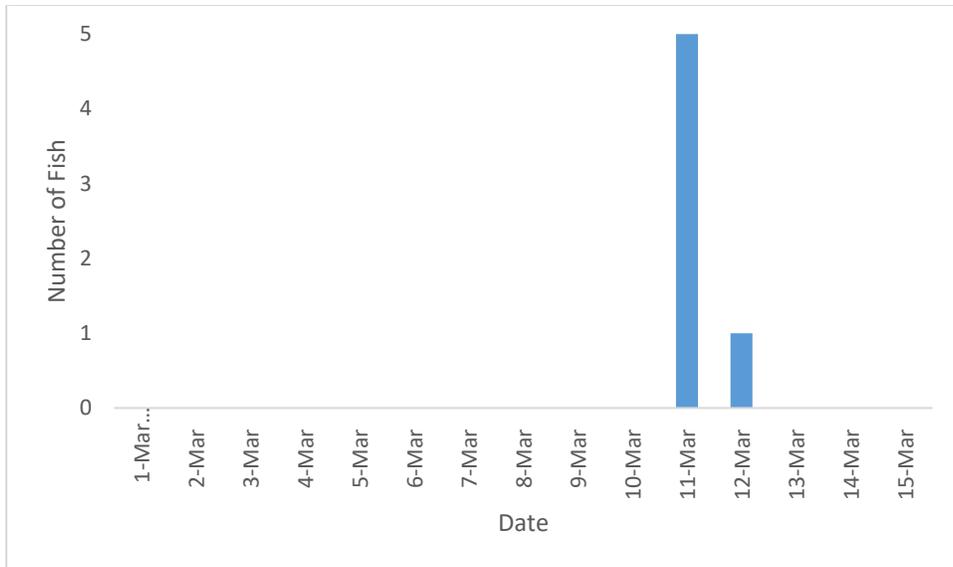


Figure 23. Chinook Captured Per Day 03/01/2022 to 03/15/2022 (Lookout Point Head of Reservoir)

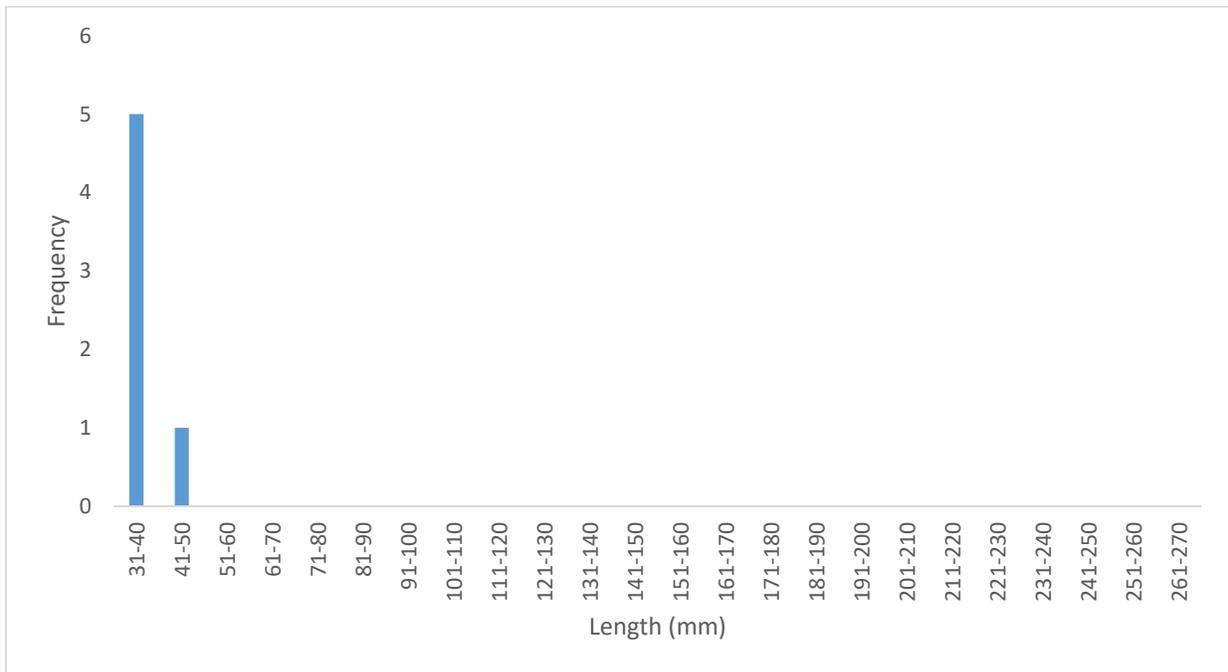


Figure 24. Length Frequency of Juvenile Chinook Sampled Season To-Date (Lookout Point Head of Reservoir)

Table 14. Descriptive Statistics of Target Species Captured at Lookout Point Head of Reservoir, Season To-Date and for the Reporting Period

To-Date										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Lookout Point Head of Reservoir	5 ft	CHS	Smolt	0	0	0	0	0	0	0
		CHS	Parr	0	0	0	0	0	0	0
		CHS	Fry	6	32	42	35	0.3	0.8	0.5

March 01-15, 2022										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Lookout Point Head of Reservoir	5 ft	CHS	Smolt	0	0	0	0	0	0	0
		CHS	Parr	0	0	0	0	0	0	0
		CHS	Fry	6	32	42	35	0.3	0.8	0.5

*Some fry are too small to accurately weigh and are omitted from the above tables.

Injuries and Copepod Infection

6 chinook were captured for the reporting period. They were in good condition and displayed no injuries. (Table 15).

Table 15. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead Chinook Salmon for Sampling Period (Lookout Point Head of Reservoir).

Site	# CHS Collected	# DSC* <20%	# DSC* >20%	# with Body Injuries	# with Eye Injuries	# with COP* In B.C.	# with COP* on Fins	Mortalities
Lookout Point Head of Reservoir	6	0	0	0	0	0	0	0

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

Collected DNA and Scale Samples

Scales and DNA were not collected for any of the 6 Chinook captured for the reporting period as they were all under the minimum fork length thresholds for collecting samples.

Non-Target Species

No non-target species were captured during the reporting period; the data is summarized below in Table 16.

Table 16. Summary of Non-target Species (Lookout Point Head of Reservoir).

Species	8ft Capture	8ft Mortality	Season Total	Season Total Mortality
Bluegill	0	0	0	0
Lamprey	0	0	0	0
Bullhead	0	0	0	0
Bull Trout	0	0	0	0
Crappie	0	0	0	0
Cutthroat Trout	0	0	0	0
Longnose Dace	0	0	0	0
Red-Sided Shiner	0	0	0	0
Sculpin	0	0	0	0
Spotted Bass	0	0	0	0
Sucker	0	0	0	0
Whitefish	0	0	0	0
<i>O. mykiss</i>	0	0	0	0
Totals	0	0	0	0

Stream Statistics

Basic stream statistics for the Lookout Point Head of Reservoir RST site were calculated from data downloaded from the U.S. Geological Survey stream gage number 14148000. During the reporting period, daily maximum values for instantaneous discharge ranged from 1,730 cfs to 3,510 cfs (mean: 2,491.3 cfs). Figure 25 shows instantaneous discharge.

Stream temperatures were not recorded using temperature probes for the Lookout Point Head of Reservoir RST site during this reporting period. Until we receive more temperature probes, temperature from the USGS gage 14148000 upstream of our site will be used and can be found below (Figure 26)

Catch per unit of effort (CPUE) data are summarized in Table 17. Discharge and capture data for the duration of monitoring efforts at this location are provided in Appendix B.

Table 17. Summary of Chinook CPUE at Lookout Point Head of Reservoir.

	Chinook
Description	5 ft
Catch	6
Effort (hrs)	114.65
CPUE (fish/hr)	0.052

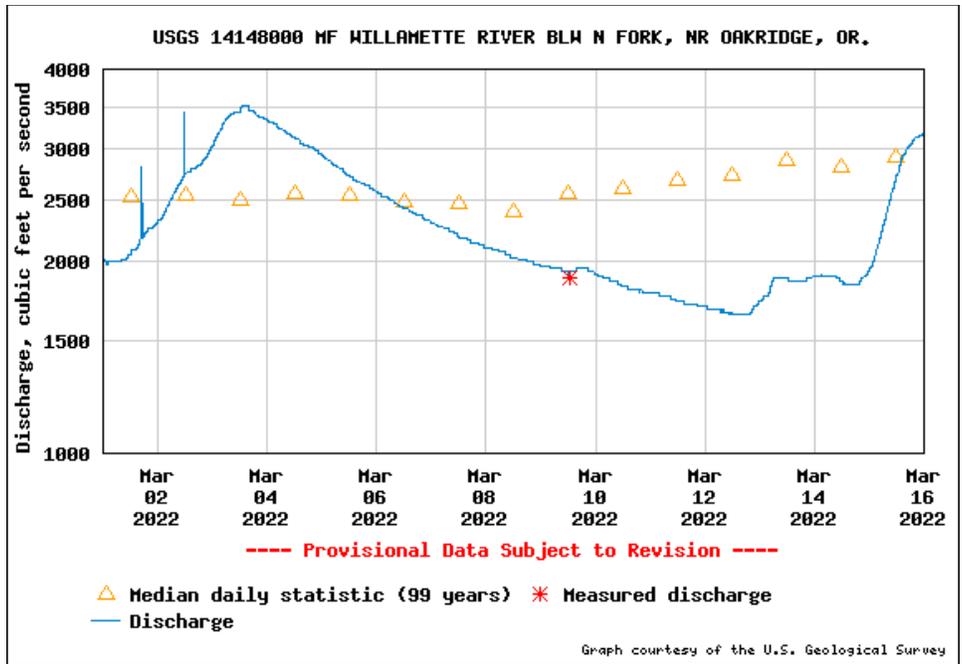


Figure 25. Discharge (cfs); above Lookout Point Reservoir, Below Oakridge, OR

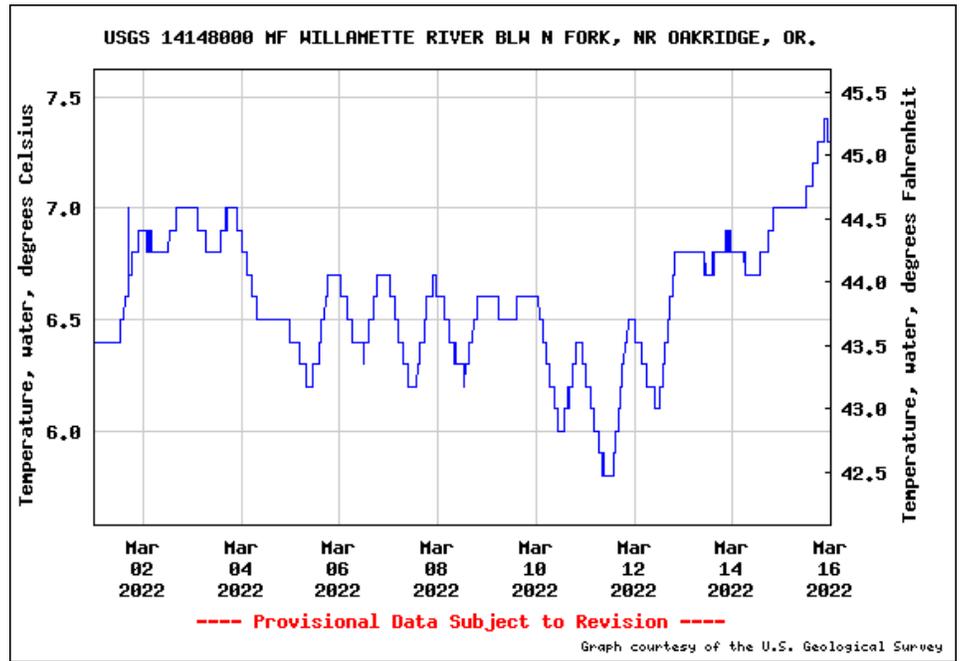


Figure 26. Temperature at RST (Lookout Point Head of Reservoir)

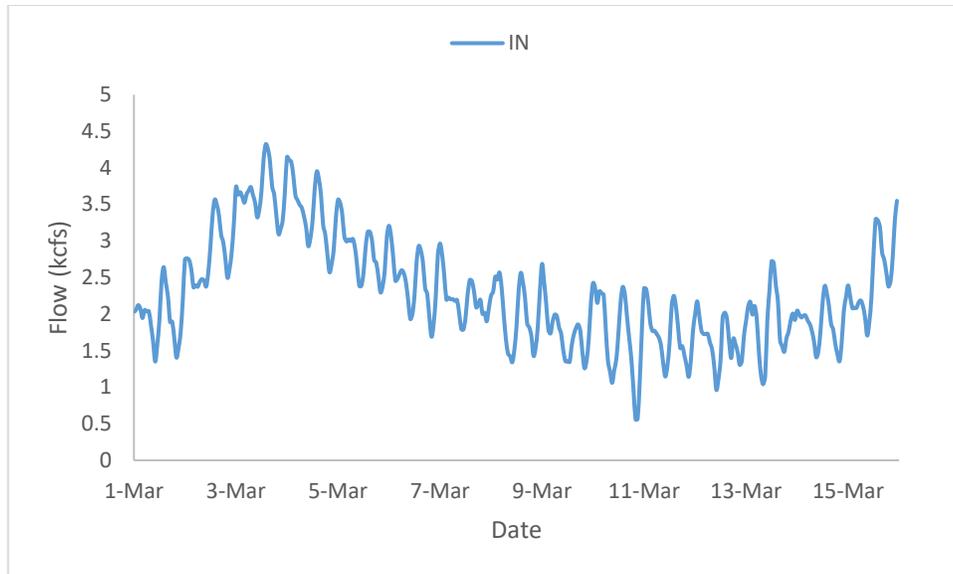


Figure 27. Hourly Flows (Lookout Point Head of Reservoir site)

Middle Fork Willamette– Dexter Dam

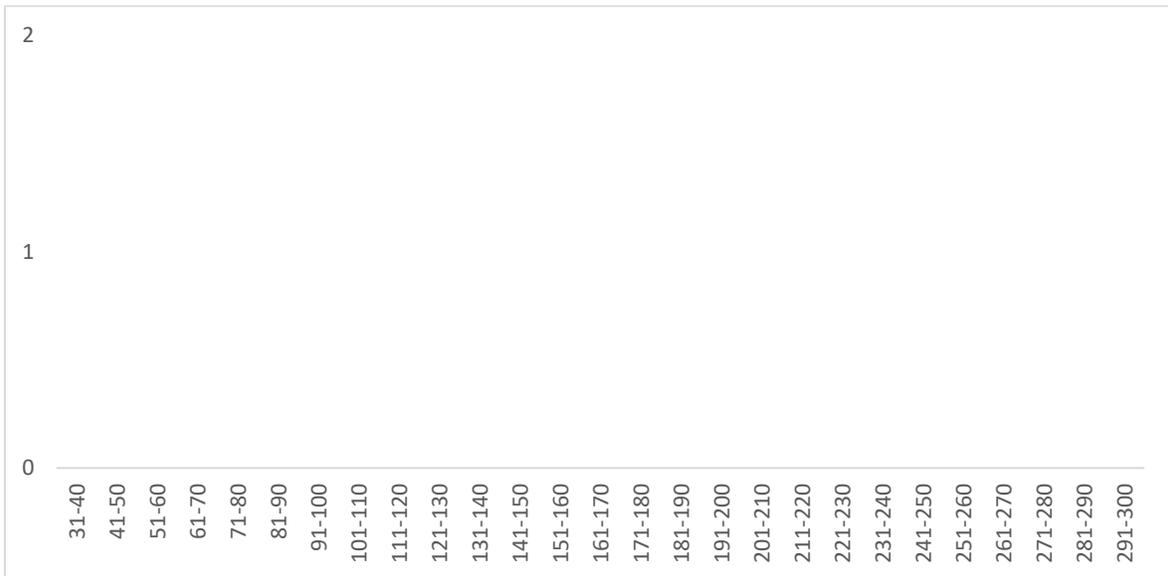
Target Species

This reporting period began on March 1 and ended on March 15. There were no Chinook salmon (CHS) captured during the 15-day sampling period (Figure 28). Sampling duration was 60% (9 days) for the 5 ft RST. Table 18 provides life stage, length, and weight data for all Chinook salmon that have been caught at the Dexter Dam site to-date and for the reporting period. Figure 28 shows the daily capture numbers for chinook and Figure 29 shows length frequency data to-date.



*Recaptured fish for trapping efficiency trials not included.

Figure 28. Chinook Captured Per Day 03/01/2022 to 03/15/2022 (Dexter Dam)



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

Figure 29. Length Frequency of Juvenile Chinook Sampled Season To-Date (Dexter Dam)

Table 18. Descriptive Statistics of Target Species Captured at the Dexter Dam Season To-Date

To-Date										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Dexter Dam	RO	CHS	Parr	0	0	0	0	0	0	0
		CHS	Smolt	0	0	0	0	0	0	0

March 01-15,2022										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Dexter Dam	RO	CHS	Parr	0	0	0	0	0	0	0
		CHS	Smolt	0	0	0	0	0	0	0

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

24-Hour Post Collection Holding Trial

No Chinook were captured in the RST, therefore, no fish were held for ~24 hours.

Injuries and Copepod Infection

No Chinook were captured during this reporting period, therefore, no injuries are reported.

Table 19. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead Chinook Salmon for Sampling Period. (Dexter 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
Dexter Dam	PWR	0	0	0	0	0	0	0	0

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

Non-Target Species

A total of 2 non-target species fish were captured during the reporting period; the data is summarized below in Table 20.

Table 20. Summary of Non-target Species (Dexter Dam).

Species	Capture	Mortality	Season Total Live	Season Total Mortality
Bluegill	0	0	0	0
Brook Lamprey	0	0	0	0

Bullhead	0	0	0	0
Crappie	1	0	1	0
Longnose Dace	0	0	0	0
Kokanee	0	0	0	0
Red-Sided Shiner	0	0	0	0
Sculpin	1	0	1	0
Spotted Bass	0	0	0	0
Sucker	0	0	0	0
Whitefish	0	0	0	0
Cutthroat	0	0	0	0
<i>O. mykiss</i>	0	0	0	0
Totals	2	0	2	0

Stream Statistics

Basic stream statistics at the Dexter Dam site were calculated from data downloaded from the U.S. Geological Survey stream gage number 14149510. Gage height (feet) is the only metric provided at this gage. During the reporting period, daily maximum values for instantaneous gage height ranged from 637.07 feet to 637.56 feet (mean: 637.35 feet). Figure 30 shows instantaneous gage height.

Stream temperatures were not recorded using temperature probes for the Dexter Dam RST site during this reporting period. Until we receive more temperature probes, temperature from the USGS gage 14150000 downstream will be used and can be found below (Figure 31).

Flows through the Powerhouse and RO during the reporting period averaged 273.8 and 332.4 cubic feet per second (cfs) respectively (Figure 32). Catch per unit of effort (CPUE) data are summarized in Table 21. Discharge and capture data for the duration of monitoring efforts at this location are provided in Appendix B.

Table 21. Summary of salmonid CPUE, Dexter Dam.

Description	Chinook
	RO (5ft)
	PWR(8ft)
Catch	0
Effort (hrs)	95.82
CPUE (fish/hr)	0

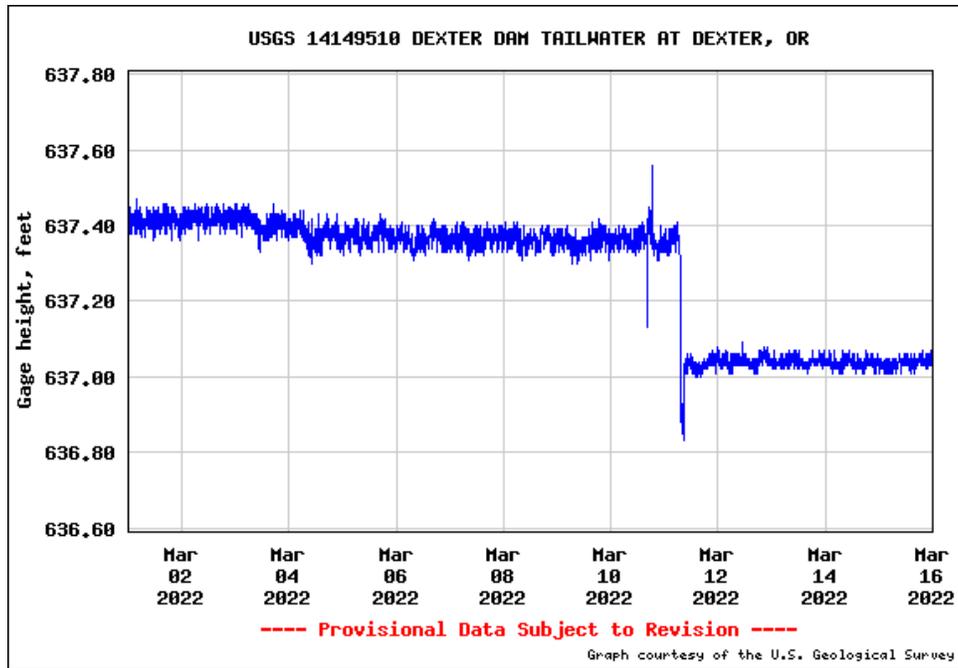


Figure 30. Gage Height (feet); below Dexter Dam, Middle Fork Willamette

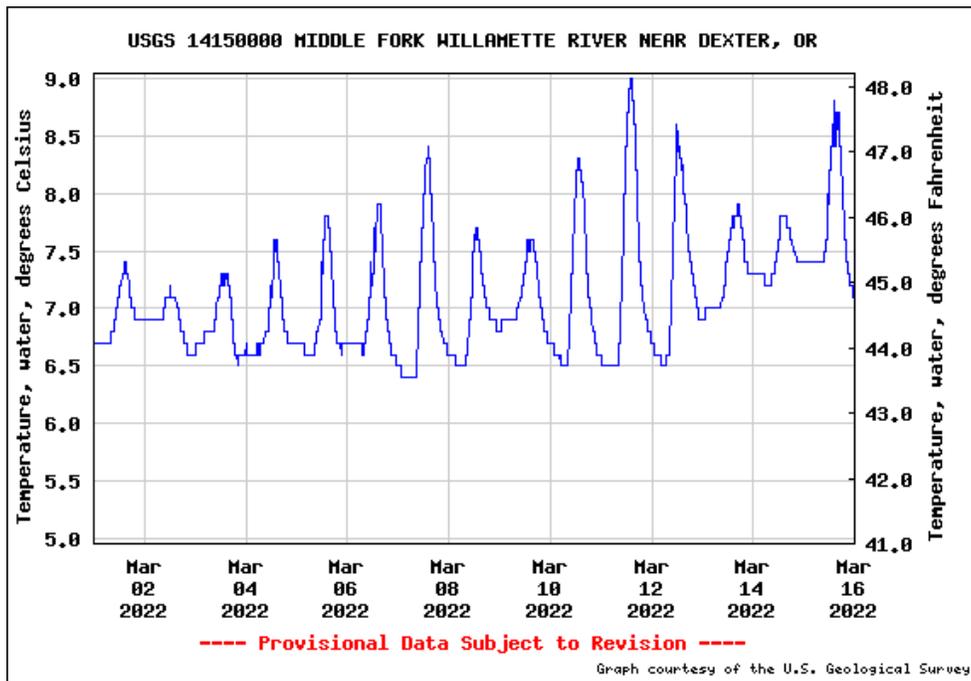


Figure 31. Temperature at RST (Dexter Dam)

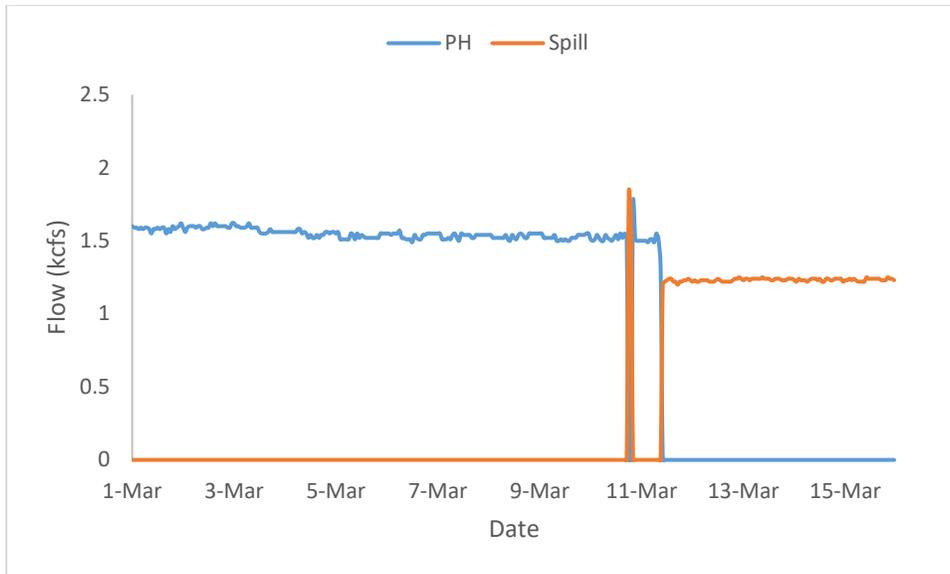


Figure 32. Hourly Flows PWR vs. RO (Dexter Dam)

South Fork of the McKenzie–Cougar Dam Head of Reservoir

Target Species

The reporting period began March 1 and ended March 15. 46 chinook salmon were captured during the 15-day sampling period (Figure 33). The trap was operated 53% (8 days) of the reporting period. Table 22 provides life stage, length, and weight data for all Chinook salmon that have been caught at the site to-date and Figure 34 shows length frequency data to-date.

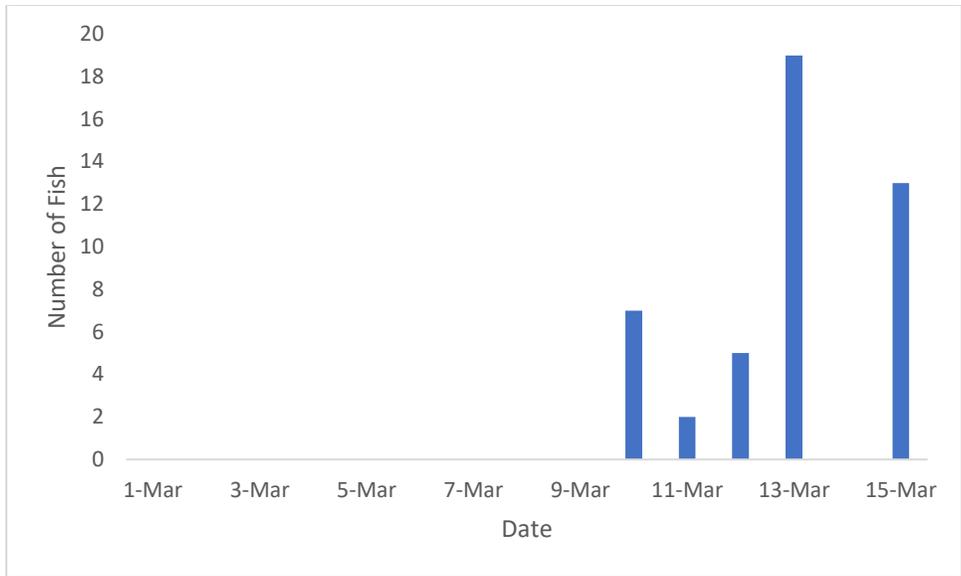


Figure 33. Chinook Captured Per Day 03/01/2022 to 03/15/2022 (Cougar Dam Head of Reservoir)

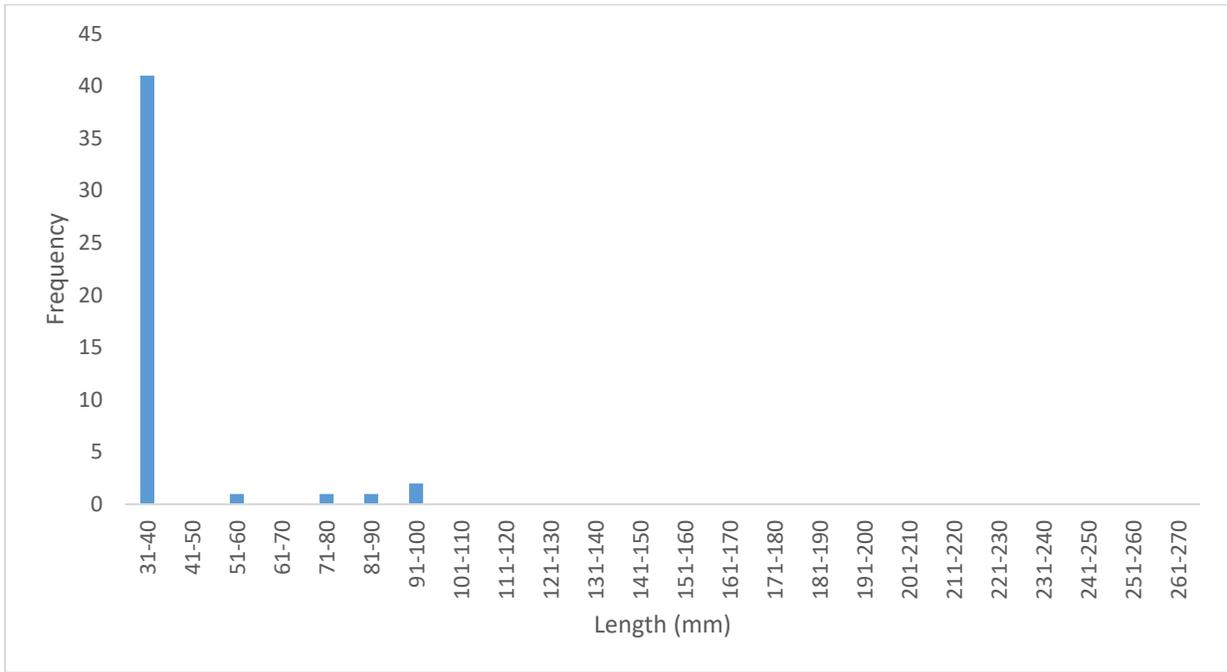


Figure 34. Length Frequency of Juvenile Chinook Sampled Season To-Date (Cougar Dam Head of Reservoir)

Table 22. Descriptive Statistics of Target Species Captured at Cougar Dam Head of Reservoir, Season To-Date and for the Reporting Period

To-Date										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Cougar Dam Head of Reservoir	5 ft	CHS	Smolt	0	0	0	0	0	0	0
		CHS	Parr	5	58	98	81.6	2.3	10.4	6.1
		CHS	Fry	41	31	38	34.9	-	-	-

March 01-15, 2022										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Cougar Dam Head of Reservoir	5 ft	CHS	Smolt	0	0	0	0	0	0	0
		CHS	Parr	5	58	98	81.6	2.3	10.4	6.1
		CHS	Fry	41	31	38	34.9	-	-	-

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

Injuries and Copepod Infection

46 Chinook were captured for the reporting period. Of the fish captured, partial descaling <20% was observed on 3 fish (6.5%) which can be found in Table 23).

Table 23. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead Chinook Salmon for Sampling Period. (Cougar Dam Head of Reservoir)

Site	# CHS Collected	# DSC* <20%	# DSC* >20%	# with Body Injuries	# with Eye Injuries	# with COP* In B.C.	# with COP* on Fins	Mortalities
Above Cougar	46	3	0	0	0	0	0	0

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

Collected DNA and Scale Samples

Scales and DNA were collected from 5 of the 46 Chinook captured (11%). The rest of the captured fish were under the minimum fork length threshold and samples were not collected.

Non-Target Species

A total of 3 non-target fish were captured at the Cougar Dam Head of Reservoir RST during the reporting period; the data is summarized below in Table 24.

Table 24. Summary of Non-target Species (Cougar Dam Head of Reservoir)

Species	5ft Capture	5ft Mortality	Season Total	Season Total Mortality
Bluegill	0	0	0	0
Lamprey	0	0	0	0
Bullhead	0	0	0	0
Bull Trout	0	0	0	0
Crappie	0	0	0	0
Cutthroat Trout	2	0	2	0
Longnose Dace	0	0	0	0
Red-Sided Shiner	0	0	0	0
Sculpin	1	0	1	0
Spotted Bass	0	0	0	0
Sucker	0	0	0	0
Whitefish	0	0	0	0
<i>O. mykiss</i>	0	0	0	0
Totals	3	0	3	0

Stream Statistics

Basic stream statistics at the site were calculated from data downloaded from the U.S. Geological Survey stream gage number 14159200. During the reporting period, daily maximum values for instantaneous discharge ranged from 548 cfs to 1300 cfs (mean: 853.9 cfs). Figure 35 shows instantaneous discharge.

Stream temperatures were not recorded using temperature probes for the Cougar Dam Head of Reservoir RST site during this reporting period. Until we receive more temperature probes, temperature from the USGS gage 14159200 downstream will be used and can be found below (Figure 36).

Catch per unit of effort (CPUE) data are summarized in Table 25. Discharge and capture data for the duration of monitoring efforts at this location are provided in Appendix B.

Table 25. Summary of Chinook CPUE, Cougar Dam Head of Reservoir

	Chinook
Description	5 ft
Catch	46
Effort (hrs)	167.92
CPUE (fish/hr)	0.274

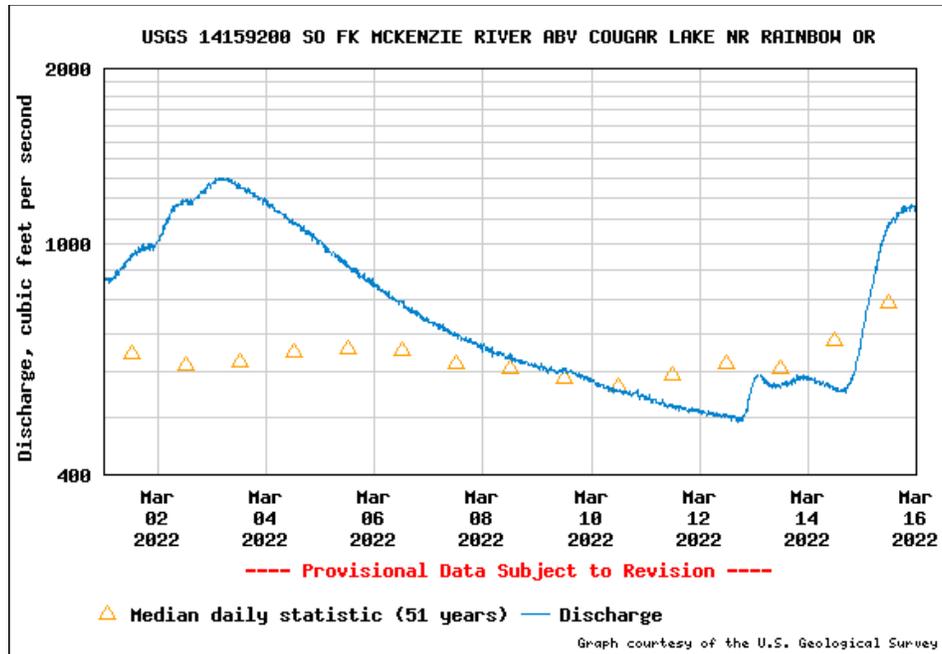


Figure 35. Gage Height (feet); South Fork McKenzie above Cougar Dam

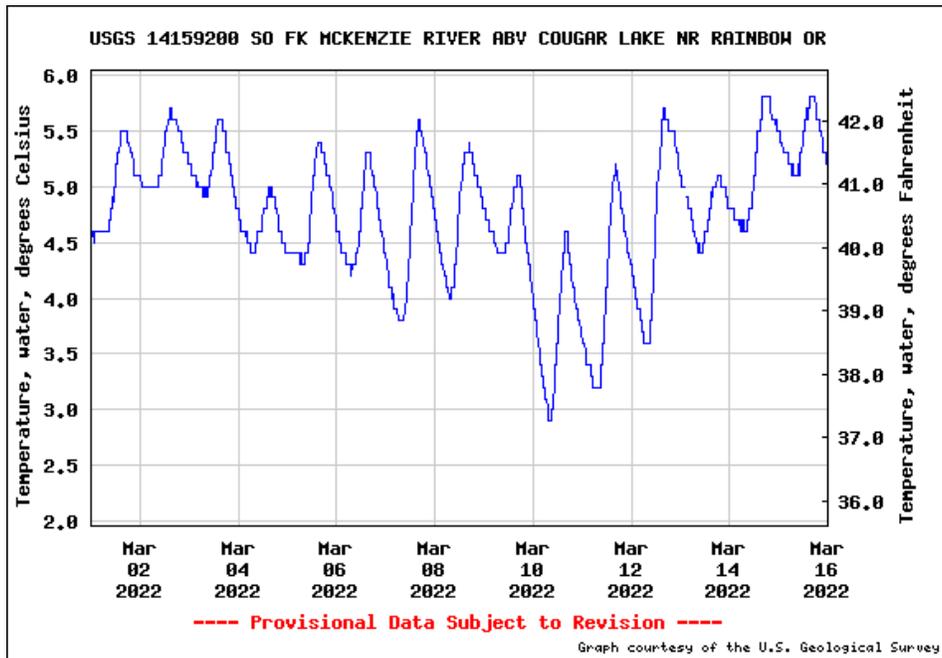


Figure 36. Temperature at RST (Cougar Dam Head of Reservoir)

Middle Fork Willamette – Fall Creek Head of Reservoir

Target Species

The reporting period began March 1 and ended March 15. 1 chinook salmon was captured during the 15-day sampling period (Figure 37). The trap was operated 93% of the reporting period. Table 26 provides life stage, length, and weight data for all Chinook salmon that have been caught at the Fall Creek Head of Reservoir site to-date and Figure 38 shows length frequency data to-date.

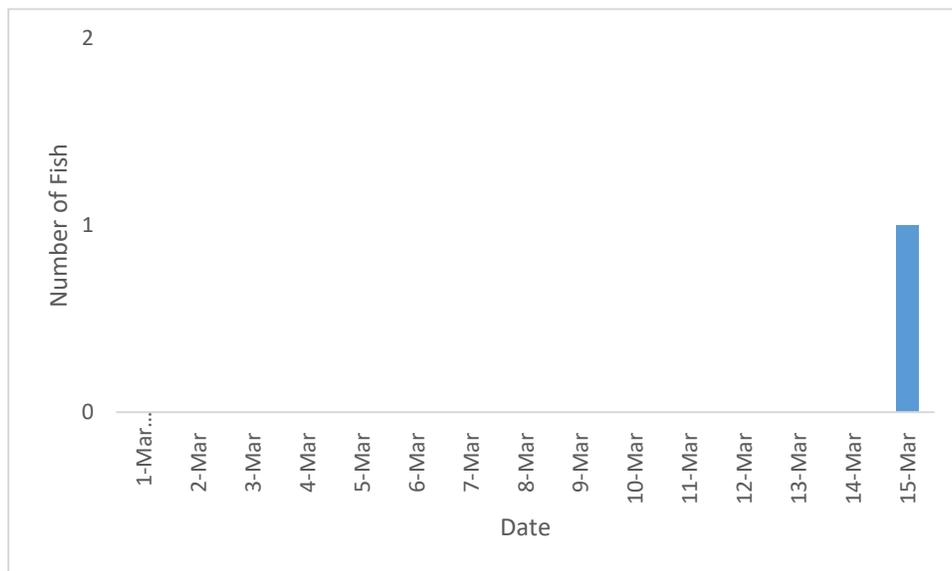


Figure 37. Chinook Captured Per Day 03/01/2022 to 03/15/2022 (Fall Creek Head of Reservoir)

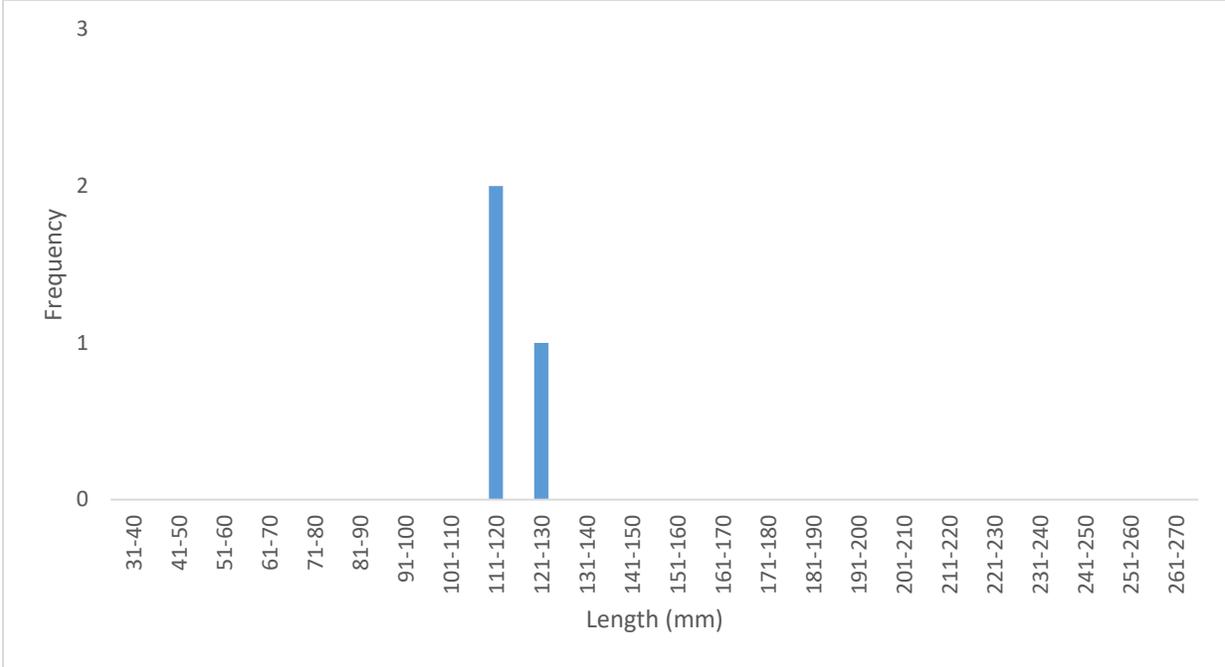


Figure 38. Length Frequency of Juvenile Chinook Sampled Season To-Date (Fall Creek Head of Reservoir)

Table 26. Descriptive Statistics of Target Species Captured at Fall Creek Head of Reservoir, Season To-Date and for the Reporting Period

To-Date										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Fall Creek Head of Reservoir	8 ft	CHS	Smolt	1	130	130	130	21.5	21.5	21.5
		CHS	Parr	2	119	120	119.5	16.1	19.8	18.0

March 01-15,2022										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Fall Creek Head of Reservoir	8 ft	CHS	Smolt	0	0	0	0	0	0	0
		CHS	Parr	1	12	120	120	19.8	19.8	19.8

Injuries and Copepod Infection

1 chinook was captured for the reporting period. It had partial descaling <20% (100%) and copepods on the fins (100%). (Table 27).

Table 27. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead Chinook Salmon for Sampling Period. (Fall Creek)

Site	# CHS Collected	# DSC* <20%	# DSC* >20%	# with Body Injuries	# with Eye Injuries	# with COP* In B.C.	# with COP* on Fins	Mortalities
Fall Creek Head of Reservoir	1	1	0	0	0	0	1	0

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

Collected DNA and Scale Samples

Scales and DNA were collected from the 1 Chinook captured (100%) for the reporting period.

Non-Target Species

A total of 51 non-target fish were captured at the Fall Creek Head of Reservoir site during the reporting period; the data is summarized below in Table 28.

Table 28. Summary of Non-target Species (Fall Creek Head of Reservoir)

Species	8ft Capture	8ft Mortality	Season Total	Season Total Mortality
Bluegill	0	0	0	0
Lamprey	34	0	79	0
Bullhead	0	0	0	0
Bull Trout	0	0	0	0
Crappie	0	0	0	0
Cutthroat Trout	12	0	29	0
Longnose Dace	1	0	3	0
Red-Sided Shiner	0	0	0	0
Sculpin	0	0	0	0
Spotted Bass	0	0	0	0
Sucker	0	0	0	0
Whitefish	0	0	0	0
<i>O. mykiss</i>	4	0	10	0
Totals	51	0	121	0

Stream Statistics

Basic stream statistics at the Fall Creek site were calculated from data downloaded from the U.S. Geological Survey stream gage number 14150290. During the reporting period, daily maximum values for

instantaneous gage height ranged from 3.51 feet to 5.56 feet (mean: 4.2 feet). Figure 39 shows instantaneous gage height.

Stream temperatures were recorded every 2 hours for the Fall Creek RST (Figure 40). Temperature probes for the Fall Creek RST operated normally throughout this reporting period.

Flows In and Out of reservoir during the reporting period averaged 277.9 and 265.6 cubic feet per second (cfs) respectively (Figure 41).

Catch per unit of effort (CPUE) data are summarized in Table 29. Discharge and capture data for the duration of monitoring efforts at this location are provided in Appendix B.

Table 29. Summary of Chinook CPUE, Fall Creek Head of Reservoir

	Chinook
Description	8 ft
Catch	1
Effort (hrs)	312.92
CPUE (fish/hr)	0.0032

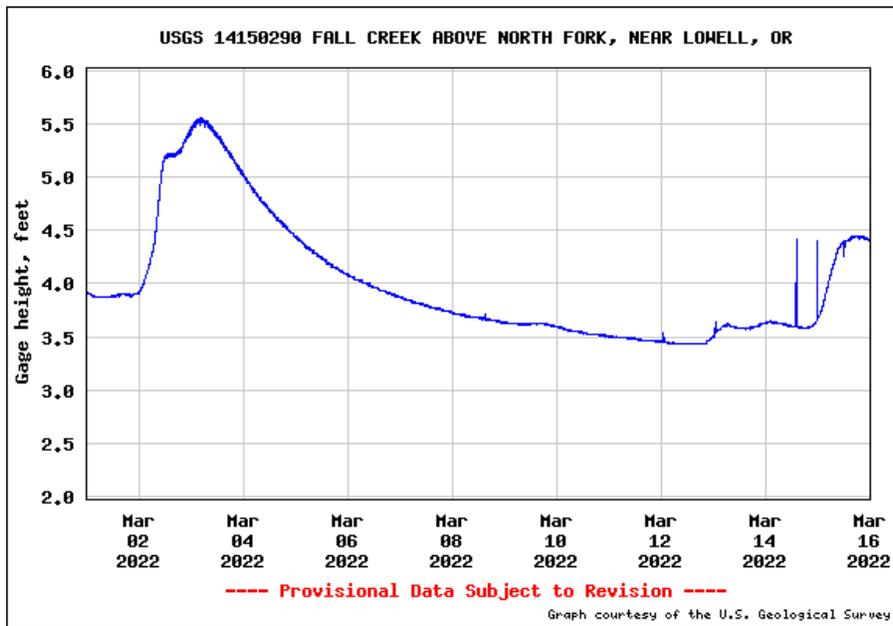


Figure 39. Gage Height (feet); Fall Creek Above North Fork, Near Lowell OR

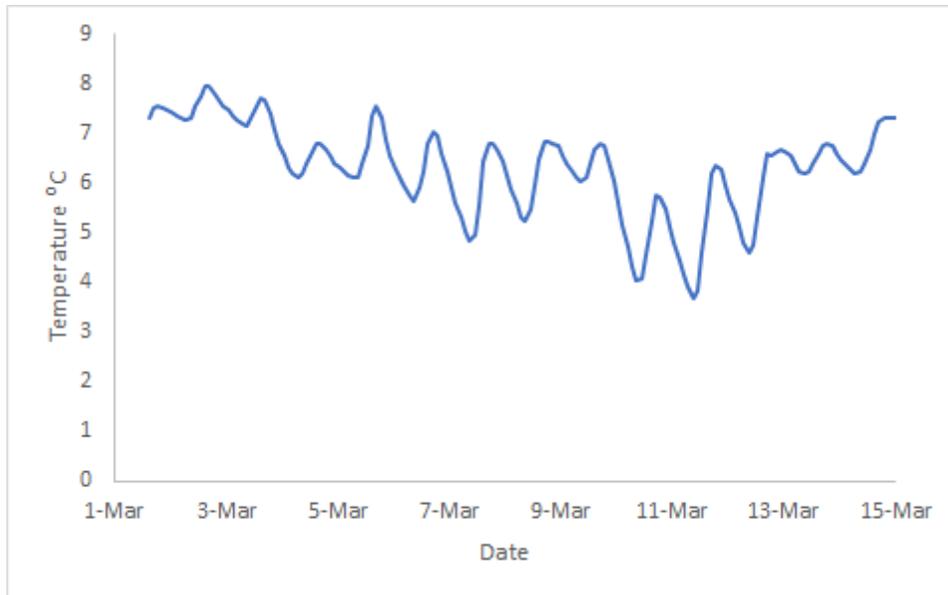


Figure 40. Temperature at RST (Fall Creek Head of Reservoir)

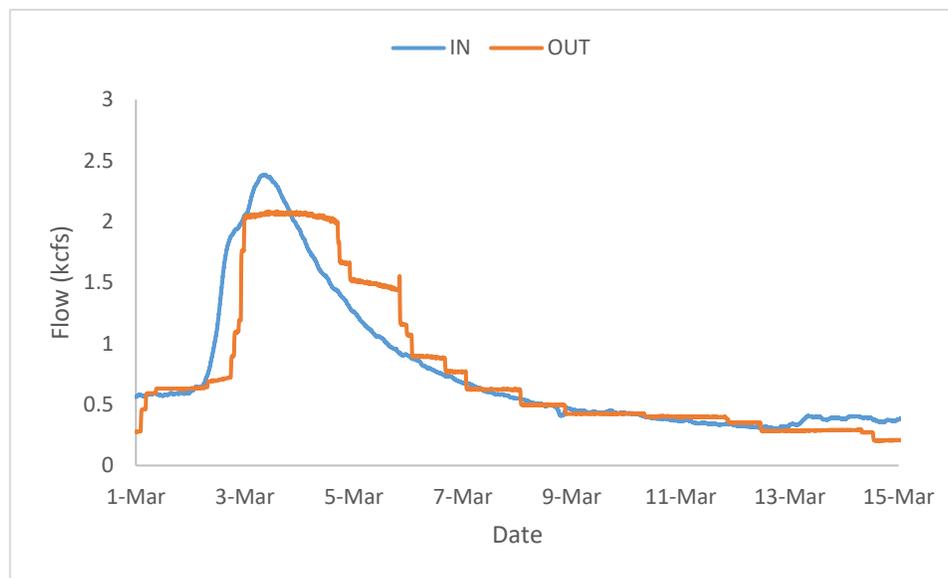


Figure 41. Hourly Flows IN vs OUT (Fall Creek Dam)

Issues Encountered

Trap availability delayed monitoring starts at some sites. Additionally, large woody debris resulted in a sampling stoppage at the above Fall Creek Dam site while the trap was being returned to working order.

Upcoming USACE Support Services

None

Appendix A

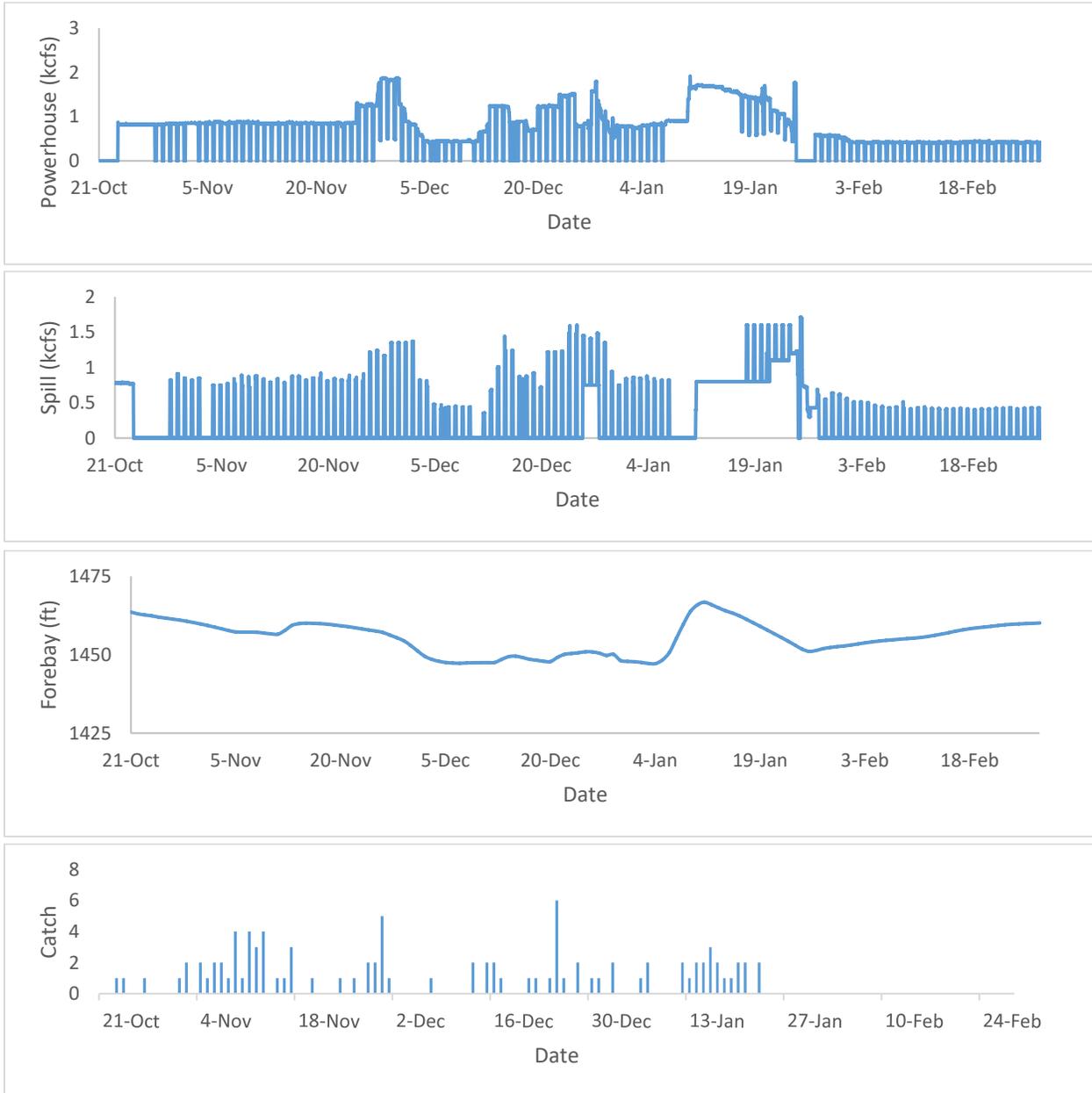
Injuries to-date																							
Site/Trap/Life Stage	Total Fish	MUNK	DS-2	BLO	EYB	FUN	BKD	COP	DS-2	PRD	FID	HBO	BO	HO	BVT	HBP	BRU	TEA	OPD	HIN	FVB	POP	GBD
Hills Creek Dam	95		53		10			70	32		20		8	1	24	8	3	3	5	3	4		
RO	63		35		4			49	21		13		6		18	6	2	2	4	1	1		
Parr	6		1					1									1						
Smolt	57		34		4			48	21		13		6		18	6	1	2	4	1	1		
PH	32		18		6			21	11		7		2	1	6	2	1	1	1	1	2	3	
Parr	7		4					1	1							1					1		
Smolt	25		14		6			20	10		7		2	1	6	1	1	1	1	1	1	3	
Big Cliff Dam	55		22		5	1		48	7	1	12	1			5	2	2	2	8	1			
PH	55		22		5	1		48	7	1	12	1			5	2	2	2	8	1			
Parr	15		4			1		10	1		2					1				1			
Smolt	40		18		5			38	6	1	10	1			5	1	2	2	7	1			
Fall Creek Head of Reservoir	3		2					1			1												
8 ft	3		2					1			1												
Parr	2		2					1			1												
Smolt	1																						
Cougar Dam	381		211		38	1		206	39		95		4	2	8	1	5	4	15	14	10		5
RO	117		66		25			74	16		37				1	1	2	2	7	9	5		5
Parr	78		42		18			41	8		19				1		2	1	3	5			4
Smolt	39		24		7			33	8		18					1		1	4	4	5		1
PH	264		145		13	1		132	23		58		4	2	7		3	2	8	5	5		
Parr	192		103		10	1		80	12		40		1		4		2	2	5	2	4		
Smolt	70		42		3			52	11		18		3		3		1		3	3	1		
Unk	2														2								
Cougar Dam Head of Reservoir	46		3					1															
5 ft	46		3					1															
Parr	5		3					1															
Fry	41																						
Lookout Point Head of Reservoir	6																						
5 ft	6																						
Fry	6																						
Smolt																							

Injuries During Reporting Period																							
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
Fall Creek Head of Res	1		1					1			1												
8 ft	1		1					1			1												
Parr	1		1					1			1												
Cougar Dam	272		169		27			139	23		78		2	2	5		3	2	6	10	8		4
RO	68		41		18			46	8		28						1	1	3	5	4		4
Parr	41		22		12			24	4		13						1		1	3			3
Smolt	27		19		6			22	4		15							1	2	2	4		1
PH	204		128		9			93	15		50		2	2	5		2	1	3	5	4		
Parr	140		88		7			48	8		33				3		1	1		2	3		
Smolt	62		40		2			45	7		17		2		2		1		3	3	1		
Unk	2													2									
Cougar Dam Head of F	46		3						1														
5 ft	46		3						1														
Parr	5		3					1															
Fry	41																						
Lookout Point Head of	6																						
5 ft	6																						
Fry	6																						

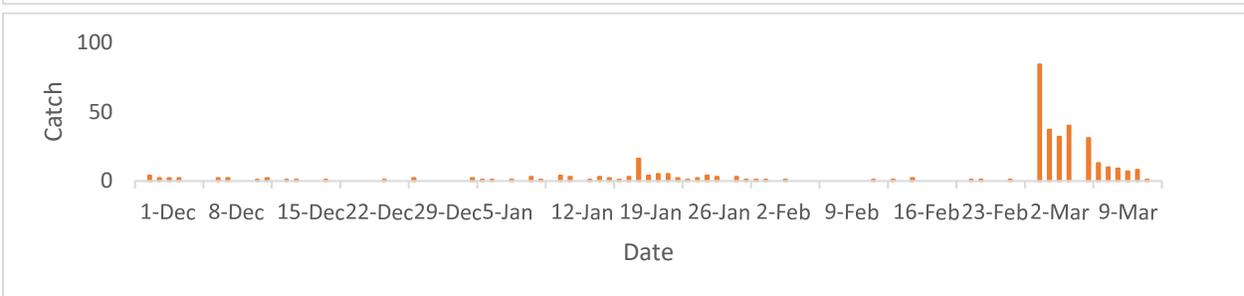
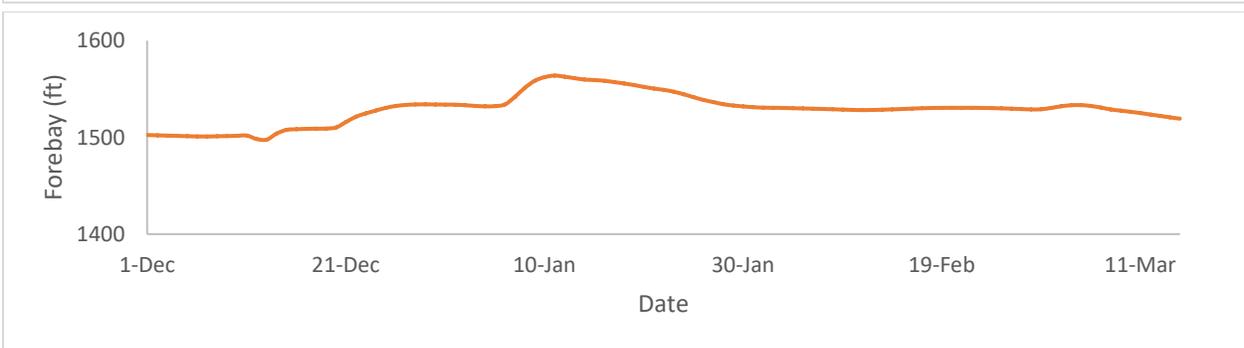
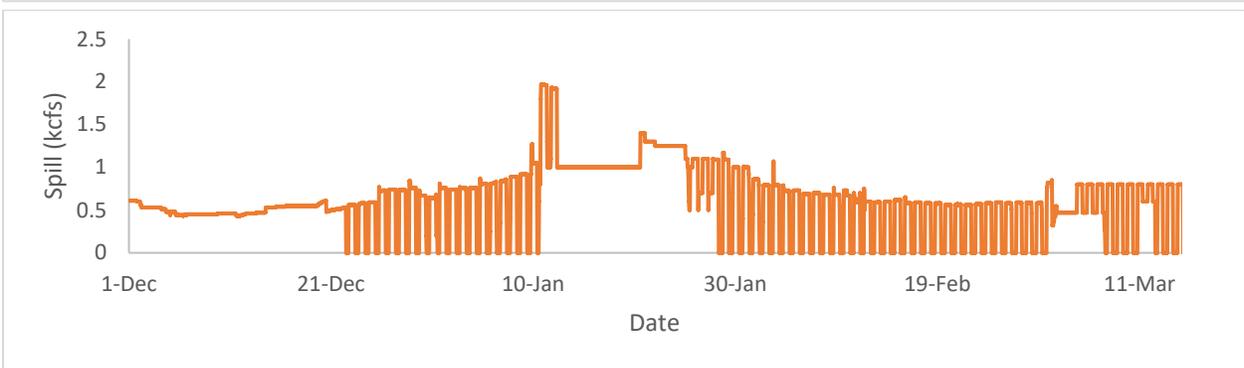
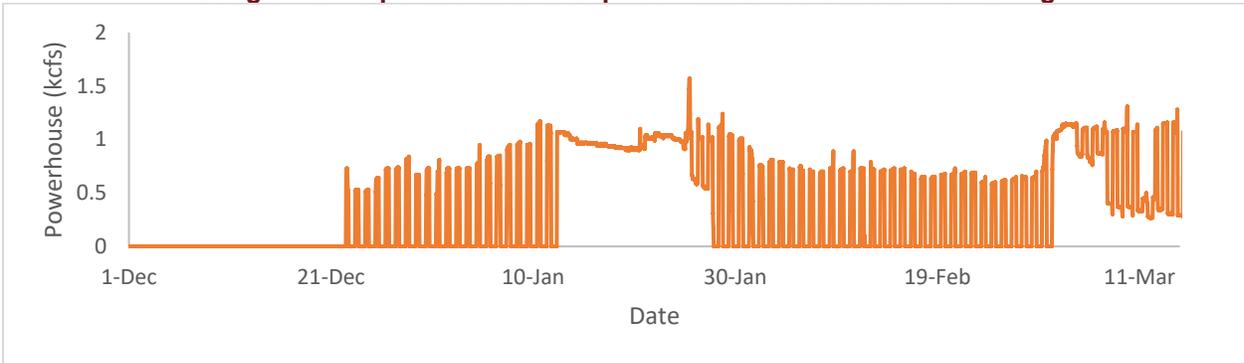
Injury Code	Description of Injury/Condition
NXI	Live fish with no external injuries
MUNK	Mortality with no external injuries
DS<2	Descaling <20%
BLO	Bloated
EYB	Bloody Eye (hemorrhage)
BVT	Bleeding from Vent
FVB	Fin Blood Vessels Broken
GBD	Gas Bubble Disease (fin ray/eye inclusions)
POP	Pop Eye (eye popping out of head)
HIN	Head Injury
OPD	Opercle Damage
TEA	Body Injury (tears, scrapes, mechanical damage)
BRU	Bruising (any part of the body)
HBP	Hole Behind Pectoral Fin
DS>2	Descaling > 20%
HO	Head Only
BO	Body Only
HBO	Head Barely Connected
FID	Fin Damage
PRD	Predation Marks (vert. claw or teeth marks)
COP	Copepods (on gills or fins)
BKD	BKD (distended abdomen)
FUN	Fungus

Appendix B

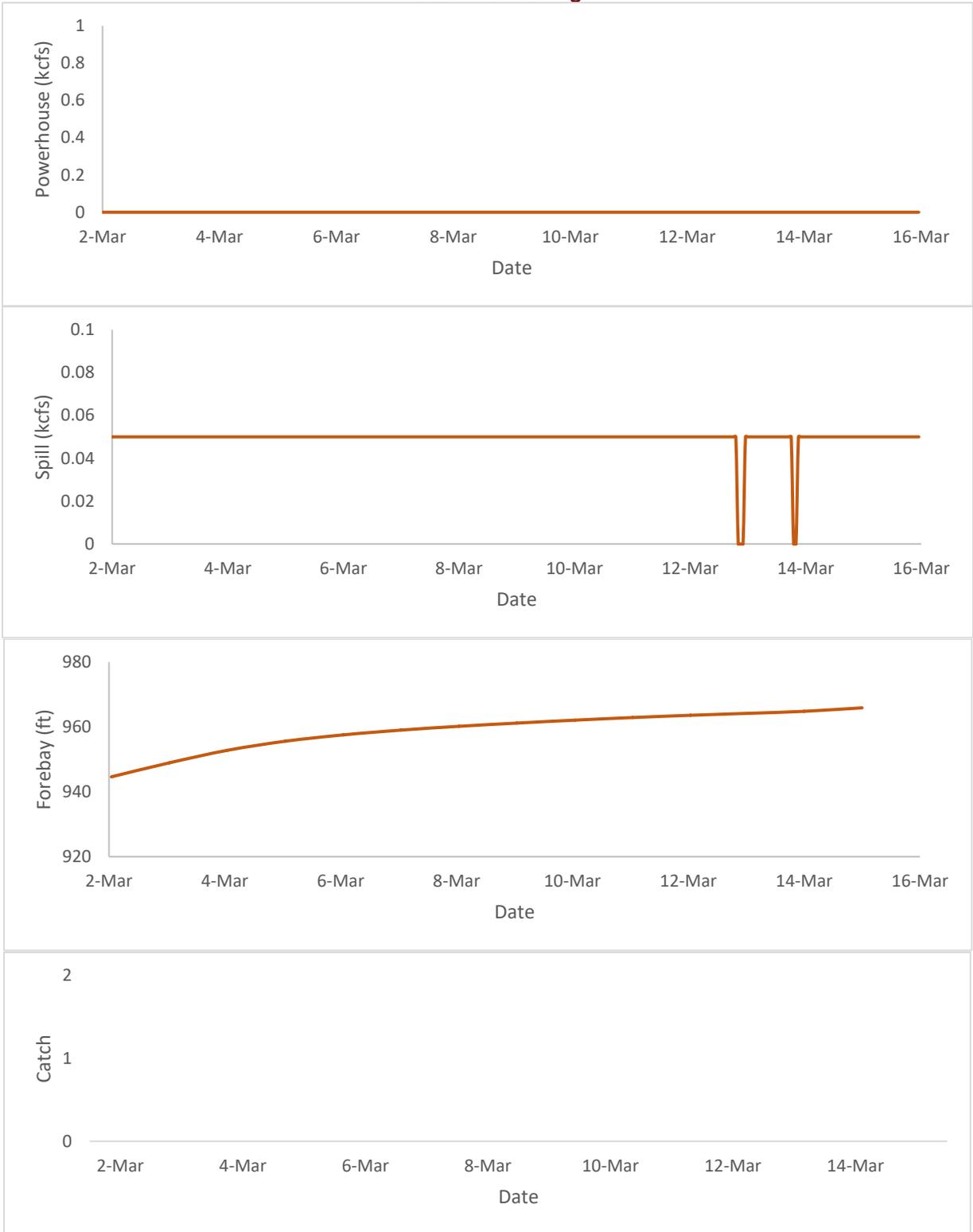
Hills Creek Dam Operational and Capture Data Since Start of Monitoring



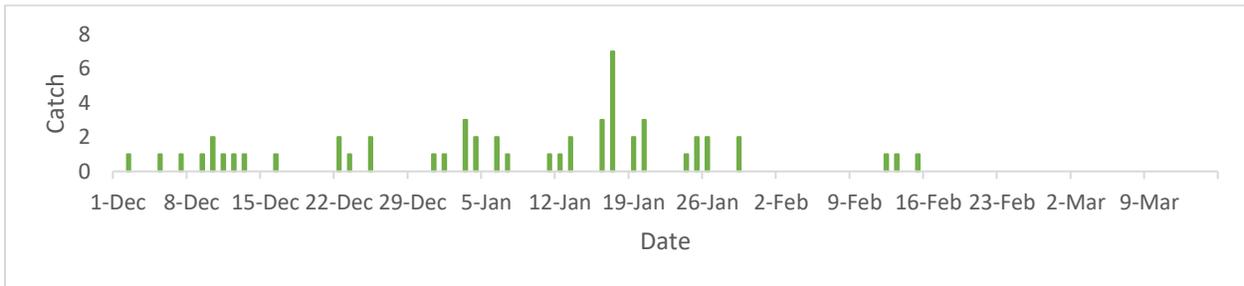
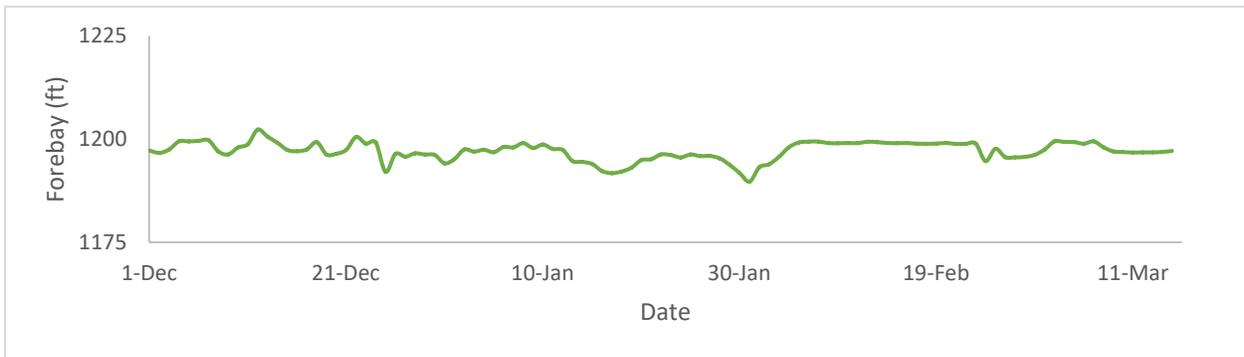
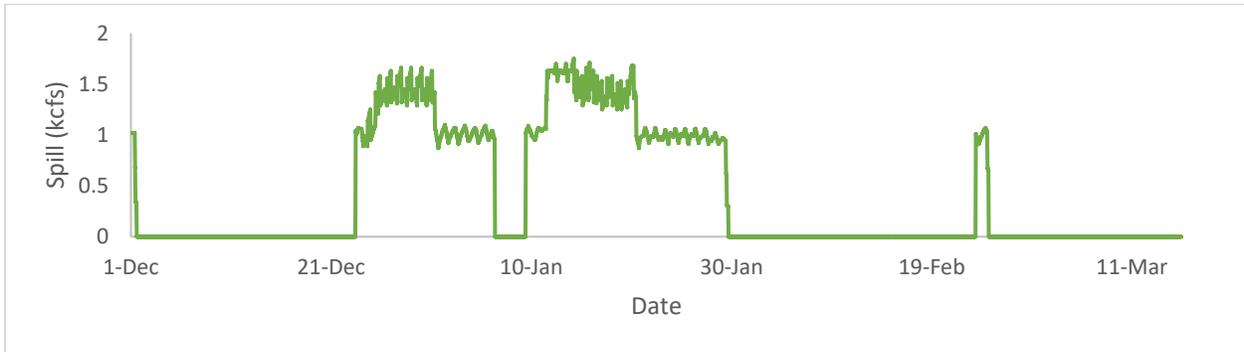
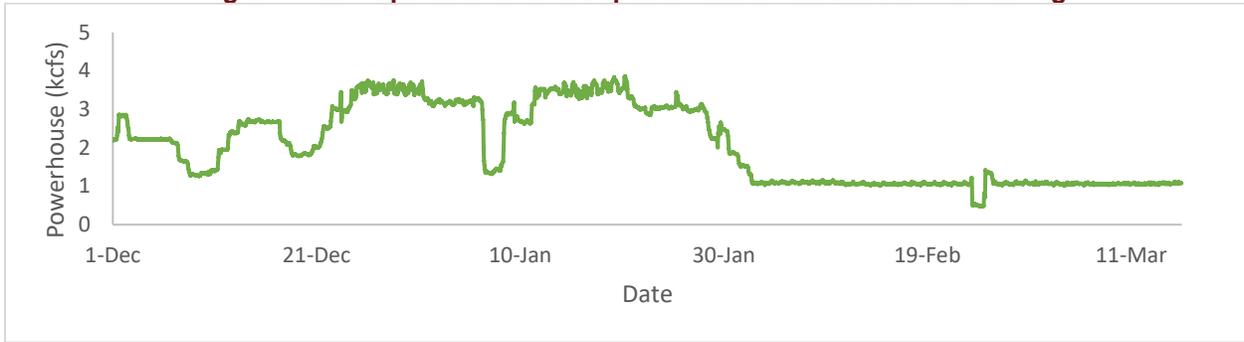
Cougar Dam Operational and Capture Data Since Start of Monitoring



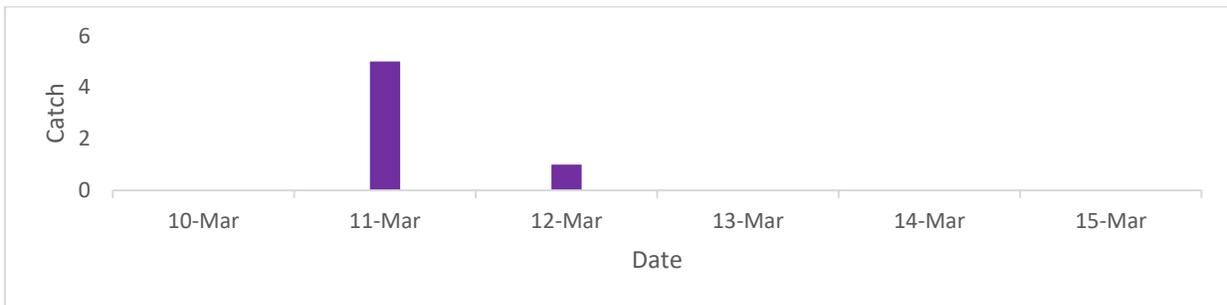
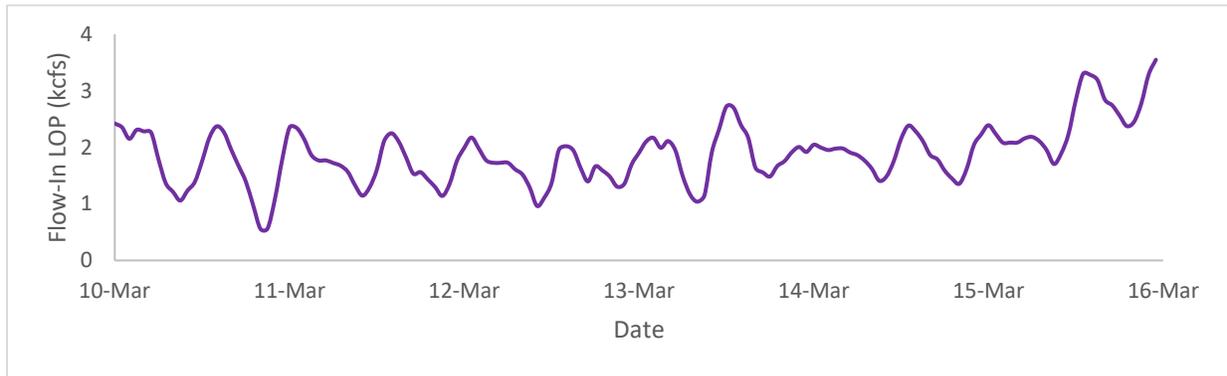
Green Peter Dam Operational and Green Peter Tailrace- Middle Santiam River Capture Data Since Start of Monitoring



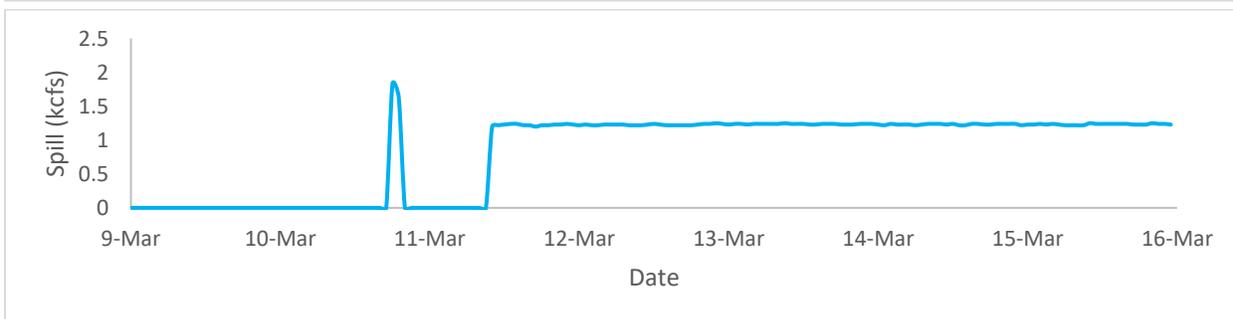
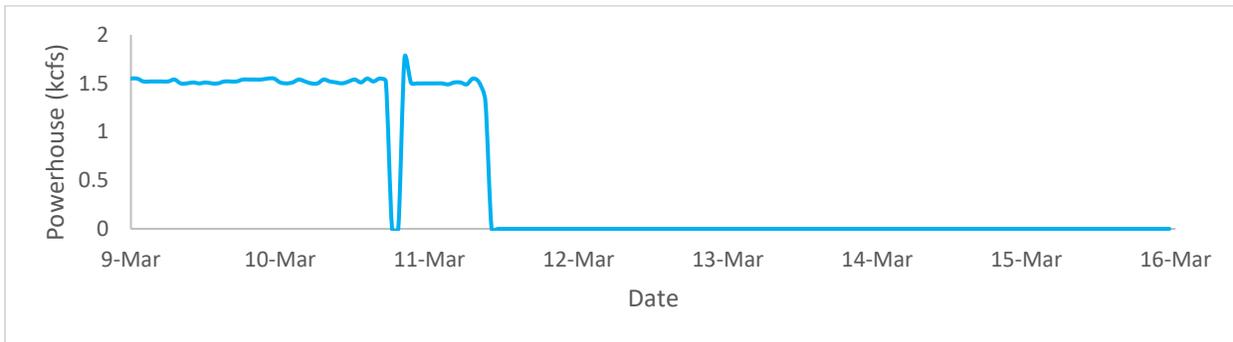
Big Cliff Dam Operational and Capture Data Since Start of Monitoring

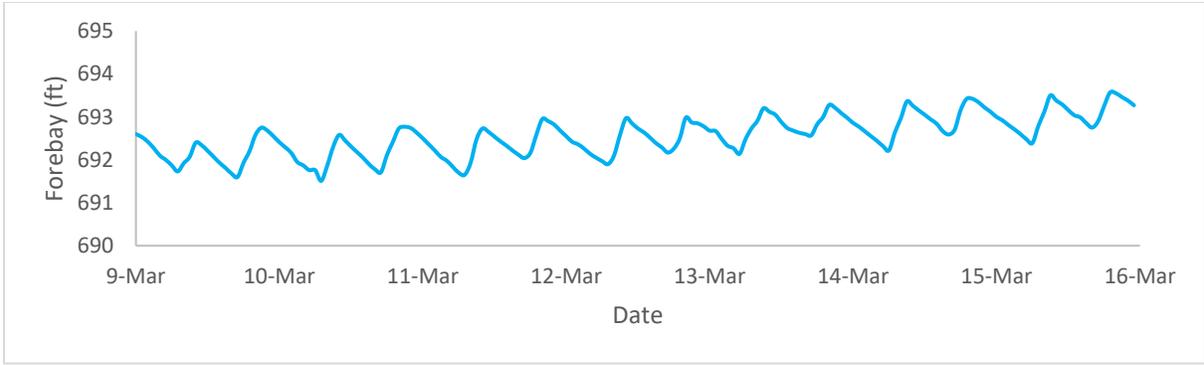


Middle Fork Willamette River above Lookout Point Dam Operational and Lookout Point Head of Reservoir Capture Data Since Start of Monitoring

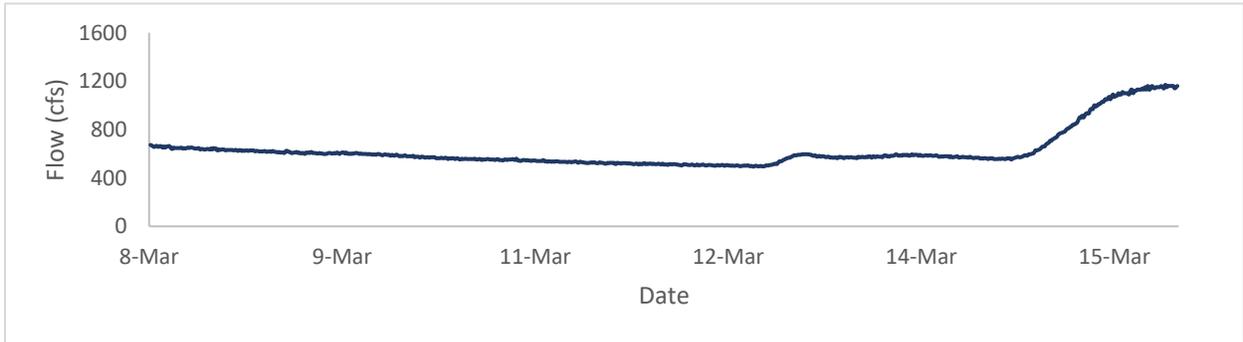


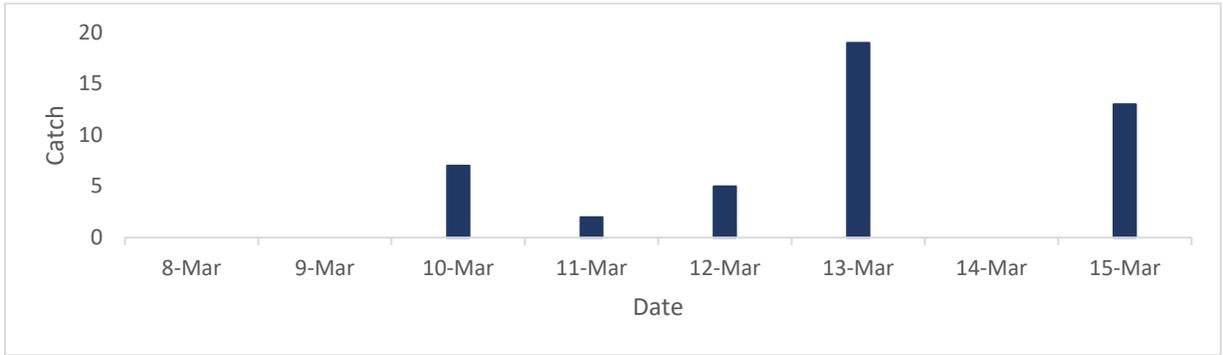
Dexter Dam Operational and Capture Data Since Start of Monitoring



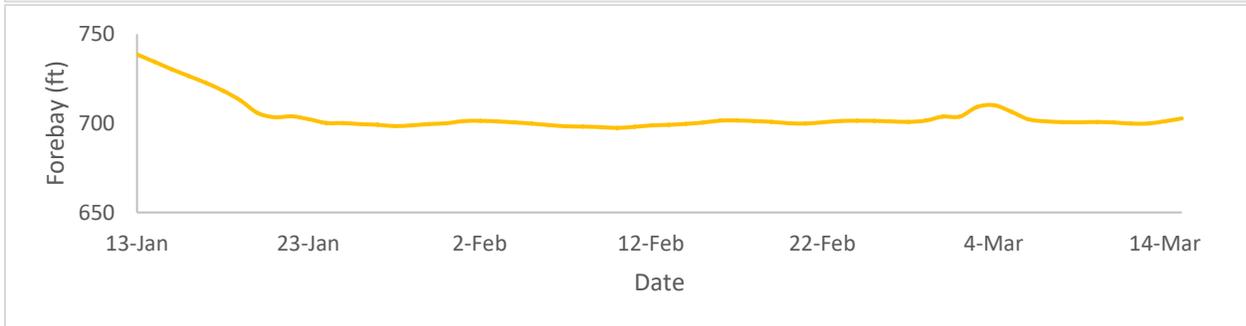
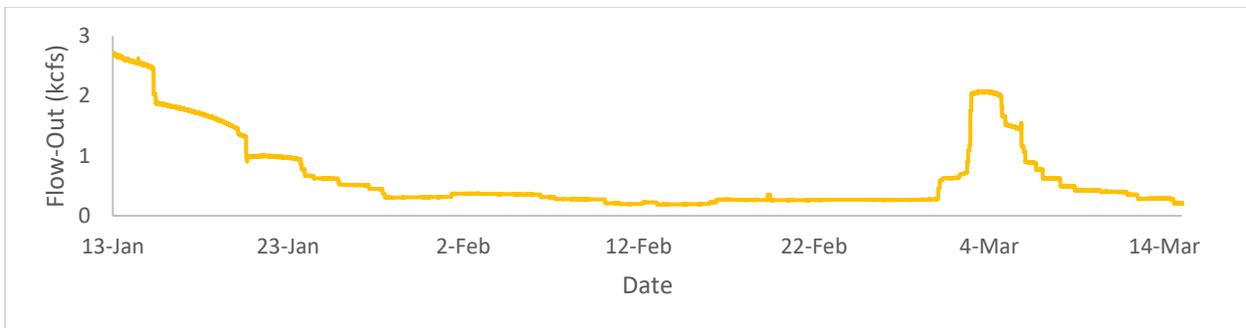
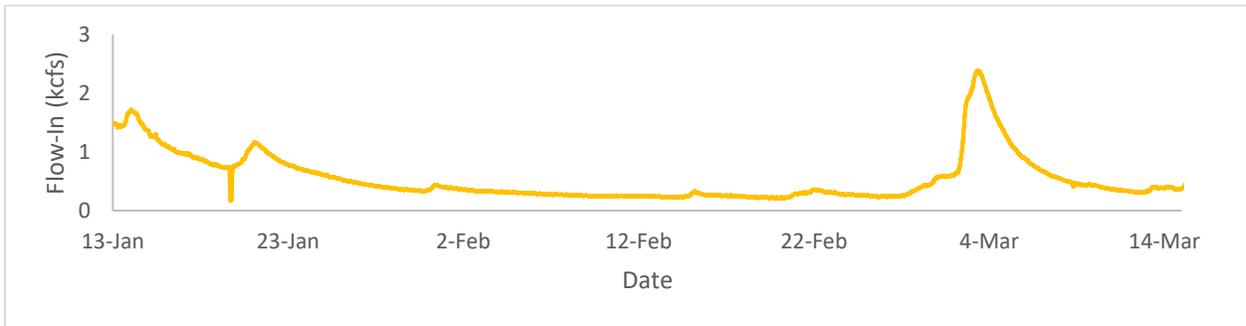


South Fork McKenzie above Cougar Dam Operational and Cougar Dam Head of Reservoir Capture Data Since Start of Monitoring





Fall Creek Dam Operational and Fall Creek Head of Reservoir Capture Data Since Start of Monitoring





Appendix C

Hills Creek Trapping Efficiency 1/6/2022

Hills Creek Dam	Release #	Recapture #	Capture Efficiency
PH Route	596	20	3.36% (20/596)
RO Trap	RO Route- 605	13	2.15% (13/605)
	PH Route- 592	5	0.84% (5/592)

*Live fish captured at the PH trap are released just downstream of the PH trap, upstream of the RO trap and therefore retained in the capture efficiency estimates for the RO Trap if they arrive in the lower trap.

*Any dead fish captured at the PH trap are excluded from the RO trap capture efficiency estimate as they are not alive at time of re-release.

Appendix D

Summary of Project PIT Tagged Fish for Reporting Period

Site	Trap	# of PIT Tagged Fish
Cougar Dam	PH	146
Cougar Dam	RO	57
Cougar Dam Head of Reservoir	5 ft	4
Fall Creek Head of Reservoir	8 ft	1

Summary of ODFW PIT Tagged fish Encountered To Date

Site	Date	Trap	Species	PIT Tag #
Cougar Dam	3/3/22	PH	Chinook	3DD.003DA4DC74
Cougar Dam	3/4/22	PH	Chinook	3DD.003E14CA70
Cougar Dam	3/4/22	PH	Chinook	384.36.F2B2C5D2
Cougar Dam	3/5/22	PH	Chinook	3DD.003E14CC20
Cougar Dam	3/8/22	PH	Chinook	3DD.003E14CD8D
Cougar Dam	3/6/22	RO	Chinook	3DD.003E14C9D6
Cougar Dam	1/8/2022	RO	Chinook	3DD.0077780789
Cougar Dam	1/14/22	RO	Chinook	384.36F2B2C55F

List of Project PIT Tagged Fish for Reporting Period with site, tagging date, trap, species, and PIT Tag #

Site	Date	Trap	Species	PIT Tag #
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD218D4
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD218CF
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD218C9
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD2189B
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD218AC
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD218D1
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD218D7
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD218BD
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD2189D
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD218B7
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD21893
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD21885

Cougar Dam	3/3/22	PH	Chinook	3DD.003BD21879
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD2187D
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD21898
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD218AF
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD2189E
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD94B4E
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD2189A
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD218D0
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD218CD
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD94B49
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD2188D
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD94B69
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD2187F
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD94B4B
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD94B5B
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD94B50
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD94BA8
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD94B32
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD94B88
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD94B93
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Cougar Dam	3/3/22	PH	Chinook	3DD.003BD94BBC
Cougar Dam	3/3/22	PH	Chinook	3DD.003BD21890
Cougar Dam	3/4/22	PH	Chinook	3DD.003BD94B48
Cougar Dam	3/4/22	PH	Chinook	3DD.003BD94B31
Cougar Dam	3/4/22	PH	Chinook	3DD.003BD94B13
Cougar Dam	3/4/22	PH	Chinook	3DD.003BD94B60
Cougar Dam	3/4/22	PH	Chinook	3DD.003BD94B19
Cougar Dam	3/4/22	PH	Chinook	3DD.003BD94B0C
Cougar Dam	3/4/22	PH	Chinook	3DD.003BD94B3F
Cougar Dam	3/4/22	PH	Chinook	3DD.003BD94B5F
Cougar Dam	3/4/22	PH	Chinook	3DD.003BD94B4F
Cougar Dam	3/4/22	PH	Chinook	3DD.003BD218DA
Cougar Dam	3/4/22	PH	Chinook	3DD.003BD218D8
Cougar Dam	3/4/22	PH	Chinook	3DD.003BD218BO
Cougar Dam	3/4/22	PH	Chinook	3DD.003BD218B6
Cougar Dam	3/4/22	PH	Chinook	3DD.003BD218BS
Cougar Dam	3/4/22	PH	Chinook	3DD.003BD218C8
Cougar Dam	3/4/22	PH	Chinook	3DD.003BD218DS
Cougar Dam	3/4/22	PH	Chinook	3DD.003BD218CE
Cougar Dam	3/4/22	PH	Chinook	3DD.003BD218B3
Cougar Dam	3/4/22	PH	Chinook	3DD.003BD218C6

Cougar Dam	3/4/22	PH	Chinook	3DD.003BD218CC
Cougar Dam	3/4/22	PH	Chinook	3DD.003BD218B8
Cougar Dam	3/4/22	PH	Chinook	3DD.003BD218C3
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Cougar Dam	3/12/22	RO	Chinook	3DD.003BD94B01
Cougar Dam	3/12/22	RO	Chinook	3DD.003BD94AFA
Cougar Dam	3/12/22	RO	Chinook	3DD.003BD94B0A
Cougar Dam	3/12/22	RO	Chinook	3DD.003BD94AFF
Cougar Dam	3/12/22	RO	Chinook	3DD.003BD94AF8
Cougar Dam	3/13/22	RO	Chinook	3DD.003BD94B08
Cougar Dam	3/13/22	RO	Chinook	3DD.003BD94AF2
Cougar Dam	3/13/22	RO	Chinook	3DD.003BD94AE3
Cougar Dam	3/13/22	RO	Chinook	3DD.003BD94AFO
Cougar Dam	3/14/22	RO	Chinook	3DD.003BD94AF1
Cougar Dam Head of Reservoir	3/10/22	5 ft	Chinook	3DD.003BD94B53
Cougar Dam Head of Reservoir	3/12/22	5 ft	Chinook	3DD.003BD21801
Cougar Dam Head of Reservoir	3/13/22	5 ft	Chinook	3DD.00.3BD94AEB
Cougar Dam Head of Reservoir	3/15/22	5 ft	Chinook	3DD.003BD94B03
Fall Creek Head of Reservoir	3/15/22	8 ft	Chinook	3DD.003BD94AE8