
Prepared by: Dillon Alegre, Grant Brink and Cole Lindsey, Environmental Assessment Services, LLC

Report Period: February 1 to February 15, 2022

Report No.: 2022 Willamette RST Bi-Weekly Report 02/01 – 02/15 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 RO and PWR	Deployment	10/12/21	10/12/21	1
Hills Creek RO	Operation	10/21/21	3/15/22	146
Hills Creek PWR	Operation	10/23/21	3/15/22	144
Big Cliff Dam	Trap Efficiency Release (1,000 Fish)	12/22/2021	12/22/2021	1
Hills Creek	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	Trap Efficiency Release (1,200 fish, 600 per route)	2/16/2022	2/16/2022	1
Hills Creek	Trap Efficiency Release (1,200 fish, 600 per route)	2/23/2022	2/23/2022	1
Cougar Dam RST	Operation	12/01/21	12/31/22	396
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 RST	Operation	01/13/22	05/31/22	139
Fall Creek Dam RST	Operation	03/15/2022	07/15/2022	122
Lookout RSTs	Operation	03/15/2022	07/31/2022	139
Hills Creek RSTs	Trap Removal	*03/01/2022	*03/01/2022	1
Dexter RST	Trap Install	*03/02/2022	*03/02/2022	1
Green Peter RST	Trap Install	*03/03/2022	*03/03/2022	1
Green Peter RST	Operation	*03/04/2022	06/30/2022	119
South Santiam RST	Operation	When trap available	06/30/2022	TBD
South Fork McKenzie above Cougar Dam	Operation	When trap available	06/30/2022	TBD

*Denotes tentative date

Summary of Rotary Screw Trap Data

Rotary screw traps (RSTs) were operated at four locations in the southern Willamette River watershed: on the Middle Fork Willamette River below Hills Creek Dam (Hills Creek), the South Fork McKenzie River below Cougar Dam (Cougar Dam), the North Santiam River below Big Cliff Dam (Big Cliff) and Fall Creek

above Fall Creek reservoir. The locations of the RST's are depicted in Figures 1, 2, 3 and 4 respectively. Sampling sites generally monitor individual routes for fish passage at the dams, including powerhouse (PWR) and regulating outlets (RO) and above reservoir free-flowing streams. Sampling began at the Hills Creek site on October 21, 2021, at the Cougar and Big Cliff sites on December 1, 2021 and Fall Creek on January 13, 2022. Sampling dates and catch summaries are provided in Tables 2 and 3, respectively.



Figure 1. Hills Creek Dam RST Locations



Figure 2. Cougar Dam RST Locations



Figure 3. Big Cliff RST Location

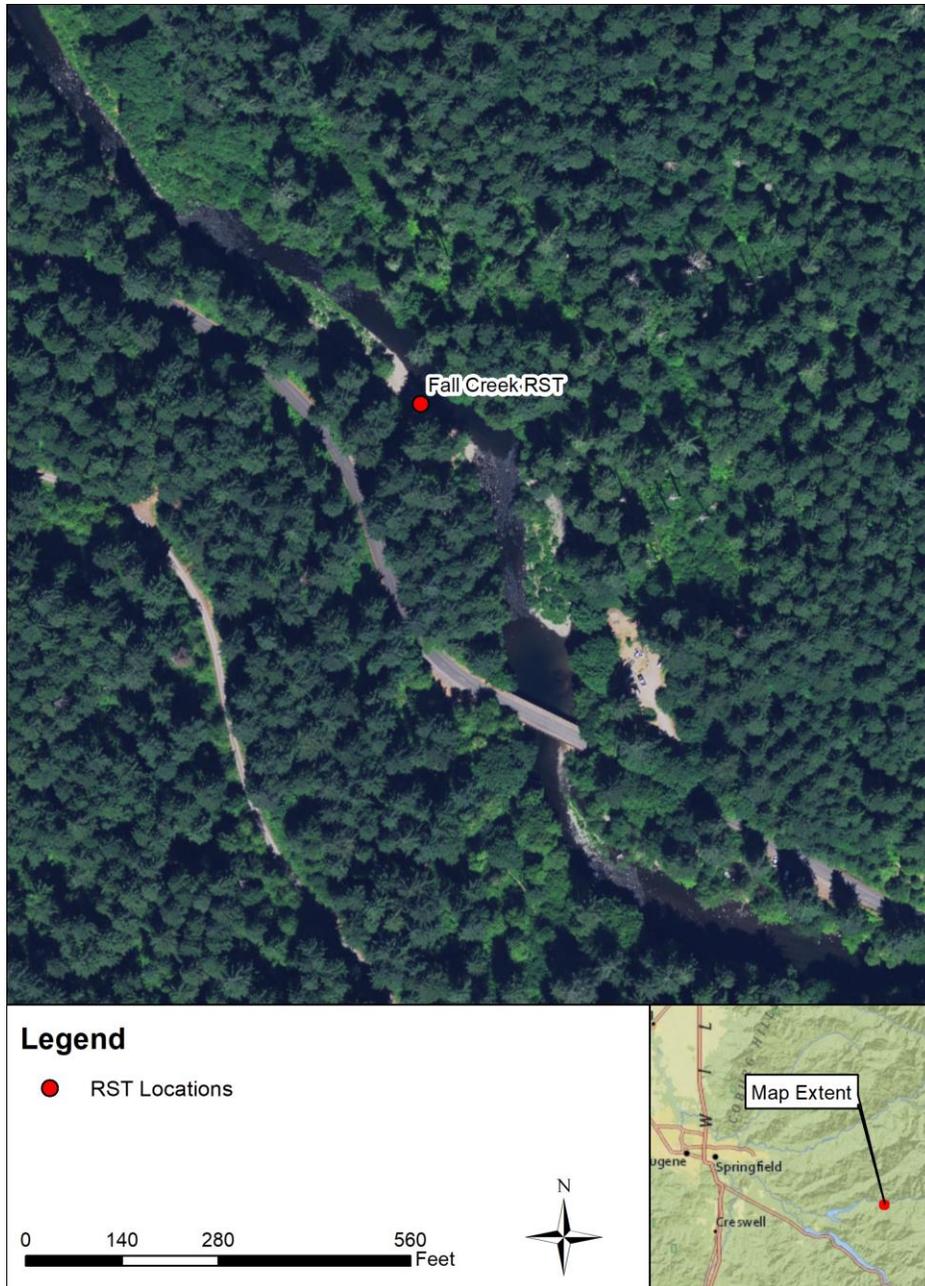


Figure 4. Fall Creek RST Location

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
Hills Creek RO	10/21/2021	2/1/2022	2/15/2022	15	118
Hills Creek PWR	10/21/2021	2/1/2022	2/15/2022	15	118
Cougar RO	12/1/2021	2/1/2022	2/15/2022	15	77
Cougar PWR	12/1/2021	2/1/2022	2/15/2022	15	77
Big Cliff	12/1/2021	2/1/2022	2/15/2022	15	77
Fall Creek	1/13/2022	2/1/2022	2/15/2022	15	34

Table 3. Willamette Valley Rotary Screw Trap Monitoring Catch Summary

Site	Species	Catch (Reporting Period)	Recaptures (Reporting Period)	Total Catch	Total Recaptures
Hills Creek	CHS	0	0	133	38
Cougar	CHS	5	0	169	66
Big Cliff	CHS	3	1	95	40
Fall Creek	CHS	0	0	1	0

Middle Fork Willamette – Hills Creek Dam

Target Species

This reporting period began on February 1 and ended February 15. There were 0 Chinook salmon (CHS) captured during the 15-day sampling period (Figure 5). Sampling durations were 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 Hills Creek site to-date and Figure 5 shows length frequency data to-date.

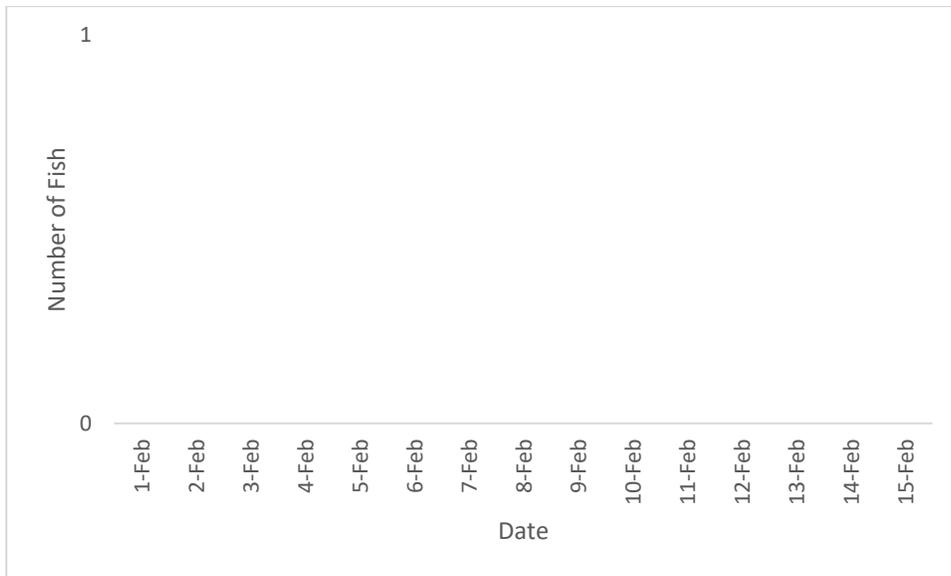
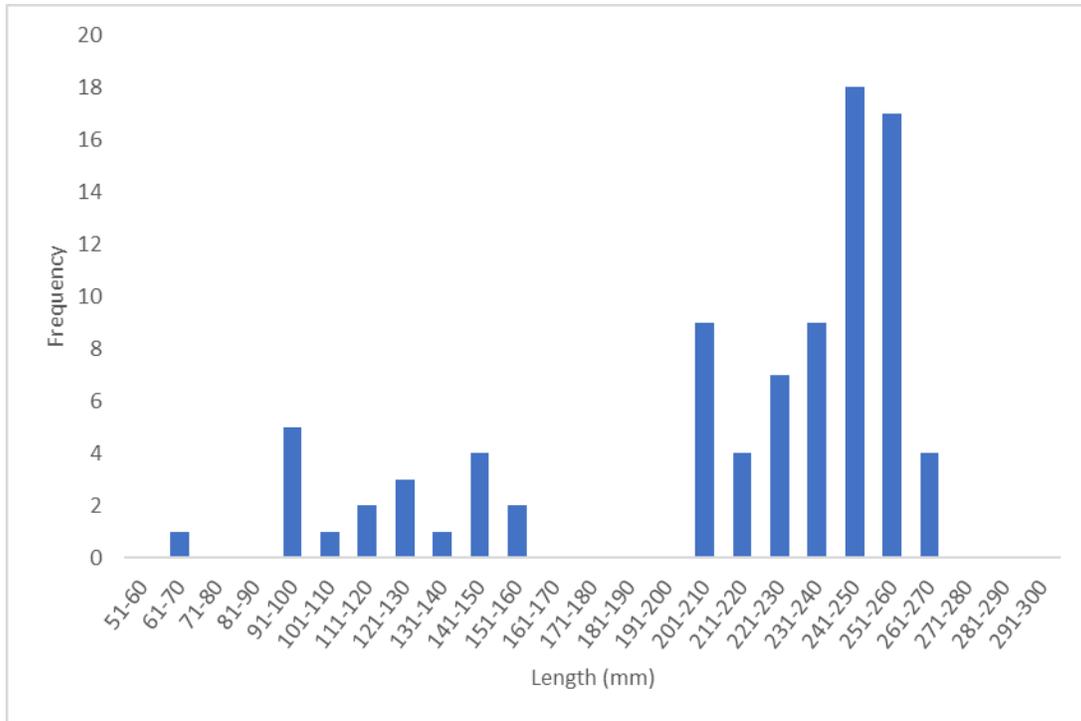


Figure 5. Chinook Captured Per Day 02/01/2022 to 02/15/2022 (Hills Creek)



*Figure does not include fish without heads

Figure 6. Length Frequency of Juvenile Chinook Sampled Season To-Date (Hills Creek)

Trapping Efficiency

A total of 596 juvenile Chinook (parr) were dyed and released on 01/06/2022 below Hills Creek PWR and 605 below the RO to evaluate the efficiency of the screw trap at those locations. A total of 19 fish were recaptured in the 8ft PWR trap and 13 in the 5ft RO trap on 01/07/2022, with 1 more fish captured in the PH trap on 01/08/2022 for a total of 20 recaptures in the PH trap. In addition, 5 PH released fish were recaptured in the RO trap. Route-specific trapping efficiency was 3.36% at the PH trap and 2.15% at the RO. A total of 28% of the recaptures in the RO trap were PH released fish.

Of the fish recaptured, 4 were dead and an additional 33 were injured of the total 38 recaptures. Injuries were primarily descaling (26) and fin damage (34). Mt. Hood Environmental staff noted that fish appeared to be in poor condition upon retrieval from the hatchery.

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.

*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.

Table 4. Descriptive Statistics of Target Species Captured at Hills Creek Dam 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
Hills Creek	RO	CHS	Parr	6	90.0	141.0	110.7	7.4	23.4	13.3
		CHS	Smolt	57	137.0	265.0	233.0	27.35	192.3	145.6
Hills Creek	PWR	CHS	Parr	7	69.0	127.0	98.1	3.7	24.5	11.2
		CHS	Smolt	25	128.0	265.0	224.3	26.2	188.7	130.6

*Fish that were missing heads are not included in length and weight calculations. One fish was a head only and could not be assigned a life stage

February 01-15, 2022										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Hills Creek	RO	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
Hills Creek	PWR	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

Injuries and Copepod Infection

No chinook were captured for the reporting period (Table 5).

Table 5. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead Chinook Salmon for Sampling Period. (Hills Creek)

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	0	0	0	0	0	0	0	0
Hills Creek	PWR	0	0	0	0	0	0	0	0

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

Non-Target Species

A total of 8 non-target fish were captured at Hills Creek during the reporting period; the data is summarized below in Table 6.

Table 6. Summary of Non-target Species (Hills Creek).

Species	RO Capture	RO Mortality	PWR Capture	PWR Mortality	Season Total	Season Total Mortality
Bluegill	0	0	0	0	52	27
Brook Lamprey	0	0	0	0	1	0
Bullhead	0	0	0	0	1	0
Bull Trout	0	0	0	0	1	0
Crappie	0	0	6	0	61	40
Longnose Dace	0	0	0	0	2	0
Red-Sided Shiner	0	0	0	0	18	2
Sculpin	0	0	2	0	41	0
Spotted Bass	0	0	0	0	6	1
Sucker	0	0	0	0	2	1
Whitefish	0	0	0	0	1	1
<i>O. mykiss</i>	0	0	0	0	64	22
Totals	0	0	8	0	250	94

Stream Statistics

Basic stream statistics at the Hills Creek site were calculated from data downloaded from the U.S. Geological Survey stream gage number 14145110. Gage height (feet) is the only metric provided at this gage. During the reporting period, daily maximum values for instantaneous gage height ranged from 1,223.89 feet to 1,224.35 feet (mean: 1,223.95 feet). Figure 7 shows instantaneous gage height.

Stream temperatures were recorded every 2 hours for the both the RO RST and the PWR RST (Figures 8 and 9). Temperature probes operated normally throughout this reporting period.

Flows through the PWR and RO during the reporting period averaged 335.2 and 92.8 cubic feet per second (cfs) respectively (Figure 10). 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 Chinook CPUE, Hills Creek.

Description	Chinook	
	RO (5ft)	PWR(8ft)
Catch	0	0
Effort (hrs)	359.38	359.67
CPUE (fish/hr)	0	0

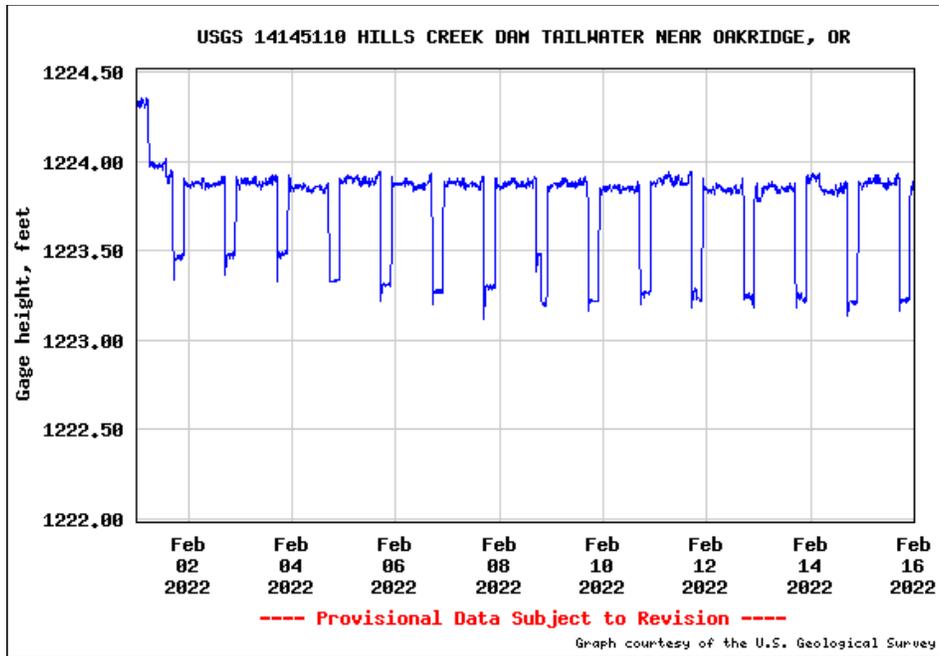


Figure 7. Gage Height (feet); below Hills Creek Dam, Middle Fork Willamette River

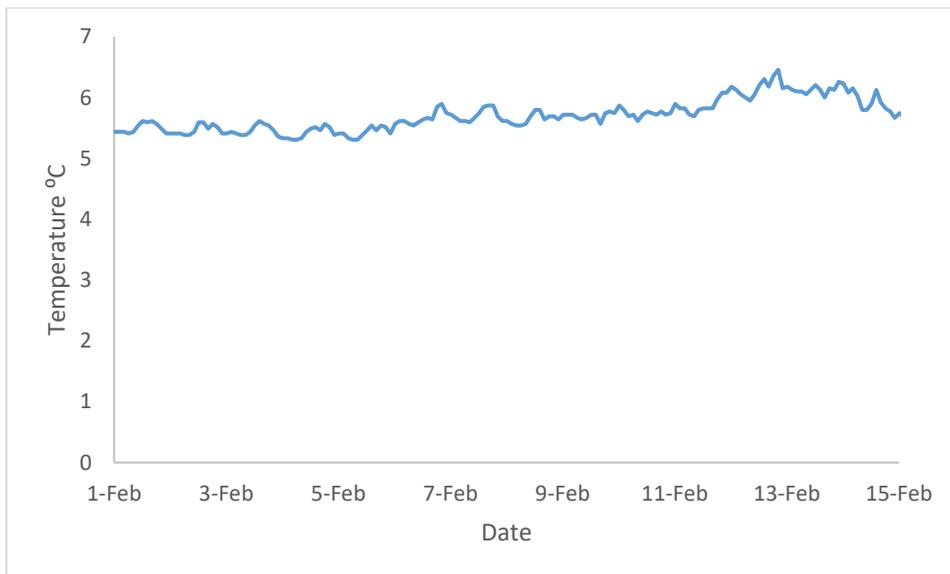


Figure 8. Temperature at RO RST (Hills Creek)

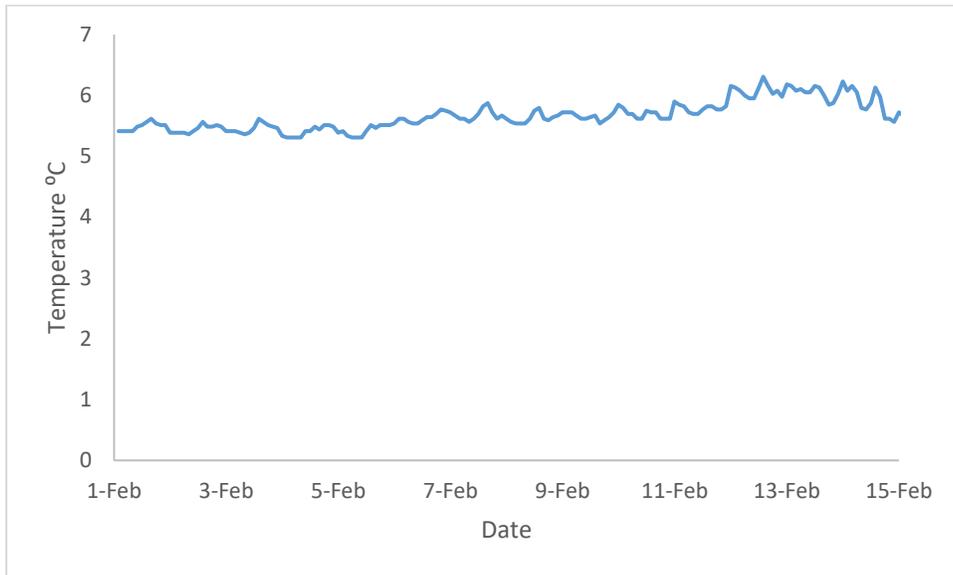


Figure 9. Temperature at Powerhouse RST (Hills Creek)

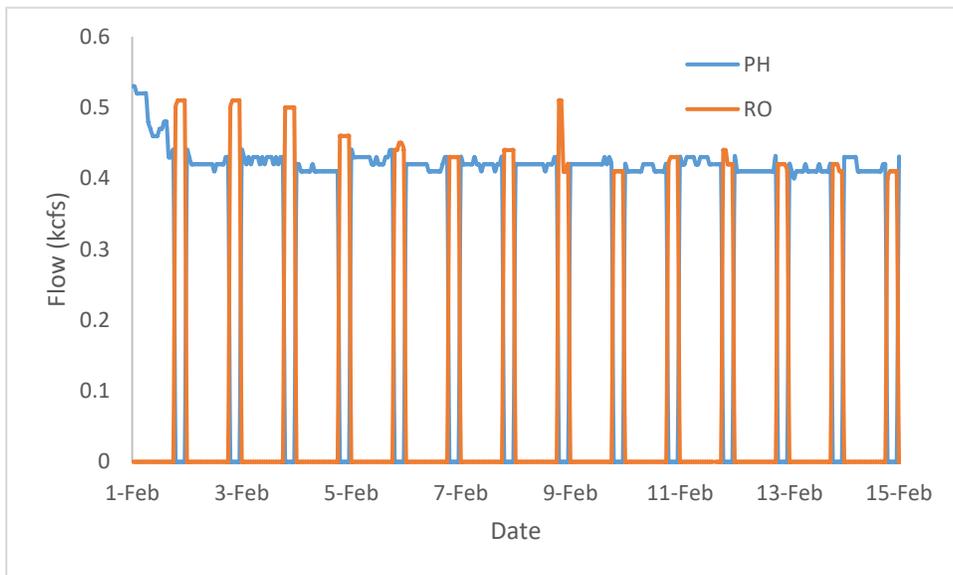


Figure 10. Hourly Flows PWR vs. RO (Hills Creek)

South Fork McKenzie – Cougar Dam

Target Species

This reporting period began on February 1 and ended on February 15. There was a total of 5 Chinook salmon (CHS) captured during the 15-day sampling period (Figure 11). Sampling duration was 100% for both RO RST and Powerhouse RST. Table 8 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.

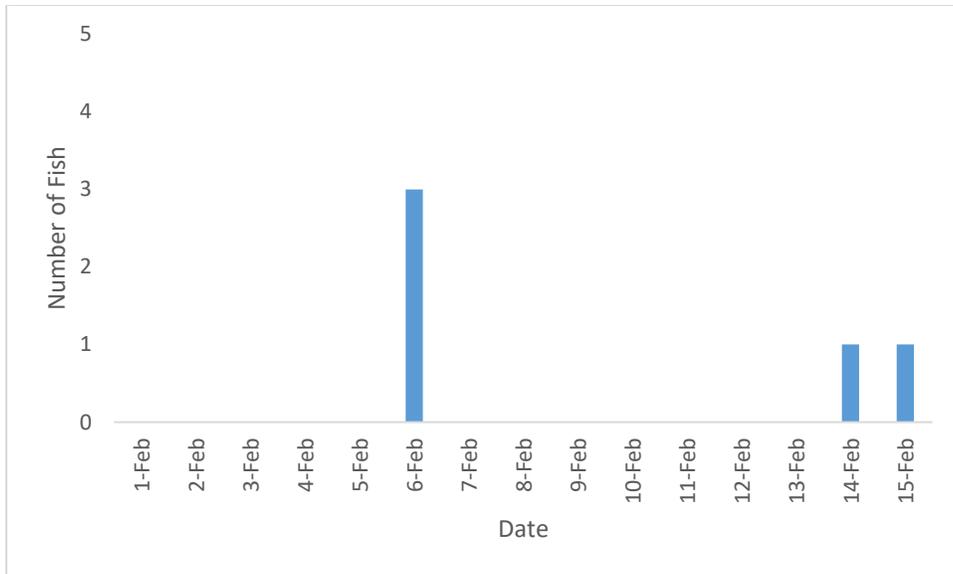
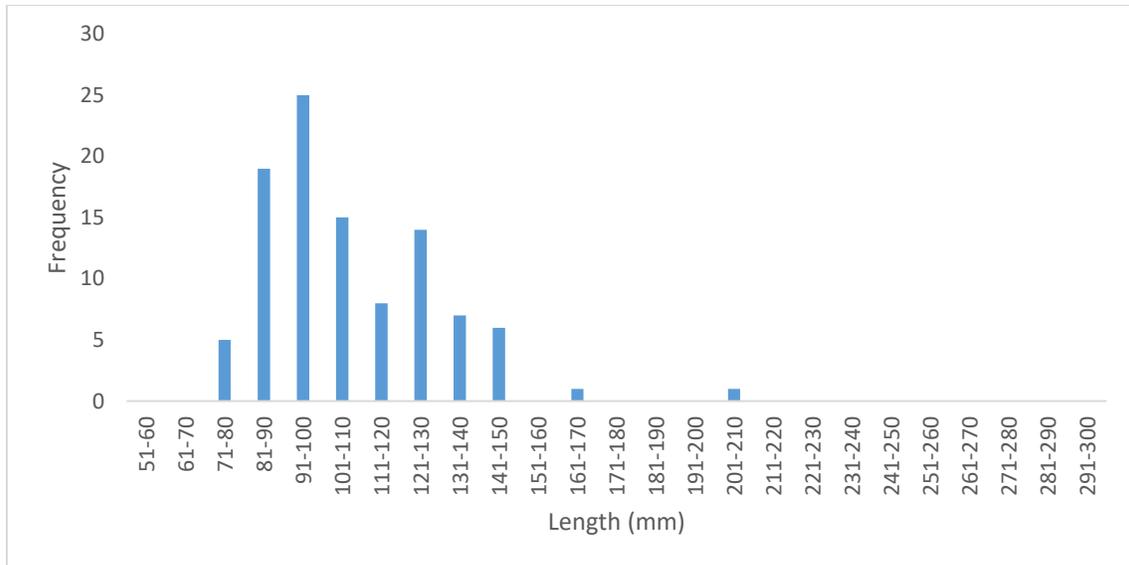


Figure 11. Chinook Captured Per Day 02/01/2022 to 02/15/2022 (Cougar Dam)

*Recaptured fish for trapping efficiency trials not included.



*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, left and right ventrally clipped and released on 01/19/2022 below Cougar Dam. 405 dyed and left ventrally clipped fish were released below the PWR and 410 dyed 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 8. 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	33	72.0	145.0	98.6	4.2	30.7	10.8
		CHS	Smolt	11	95.0	202.0	140.9	8.8	83.9	31.0
Cougar	PWR	CHS	Parr	50	74.0	142.0	104.0	4.1	31.3	12.5
		CHS	Smolt	7	115.0	133.0	125.6	13	28.4	21.3

February 01-15, 2022										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Cougar	RO	CHS	Parr	3	83.0	90	86.67	7.3	8.6	8.0
		CHS	Smolt	1	129.0	129.0	129.0	22.5	22.5	22.5
Cougar	PWR	CHS	Parr	1	79.0	79.0	79.0	5.2	5.2	5.2
		CHS	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.

24-Hour Post Collection Holding Trial

A total of 5 Chinook captured in the RSTs were held for ~24 hours in holding tanks and then evaluated for survival rates. All fish (100%) held during this period were released alive.

Injuries and Copepod Infection

Partial descaling <20% was observed on 1 of 4 Chinook collected at the RO RST (25%), and descaling >20% was observed on 3 of 4 Chinook collected at the RO RST (75%). Of the 4 chinook captured in the RO RST 3 displayed body injuries (75%) and 0 had eye injuries (0%). 1 of the RO RST chinook had copepods present in the branchial cavity (25%) and 2 had copepods present on fins (50%). No partial descaling was observed on the 1 Chinook collected at the PWR RST (0%). No PWR RST fish had bodily injury or eye injuries (0%). The one PWR RST fish had no copepods present in the branchial cavity (0%) but did have copepods present on fins (100%). There were 0 chinook mortalities collected in the RO RST (0%) or in the PWR RST (0%). 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. (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	4	1	3	3	0	1	2	0
Cougar	PWR	1	0	0	0	0	0	1	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 10.

Table 10. 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	0	0	2	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	1	0
<i>O. mykiss</i>	0	0	2	0	7	0
Totals	0	0	2	0	11	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 1,253.41 feet to 1,253.57 feet (mean: 1,253.46 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 278.9 and 425 cubic feet per second (cfs) respectively (Figure 16). 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, Cougar Dam.

Description	Chinook	
	RO (5ft)	PWR(8ft)
Catch	4	1
Effort (hrs)	359.42	720.43
CPUE (fish/hr)	0.011	0.001

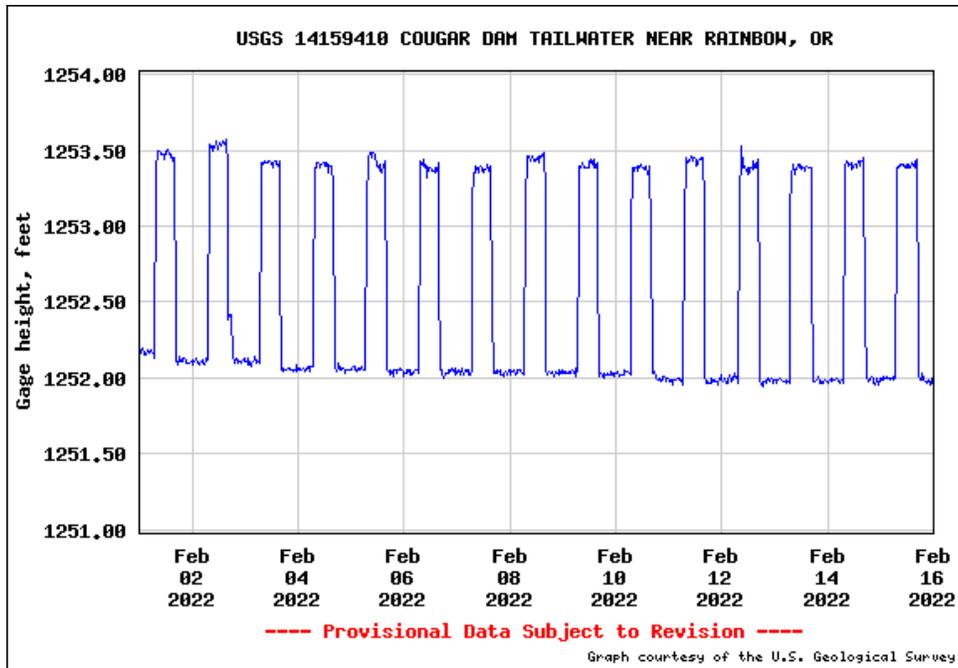


Figure 13. Gage Height (feet); below Cougar Dam, South Fork McKenzie River

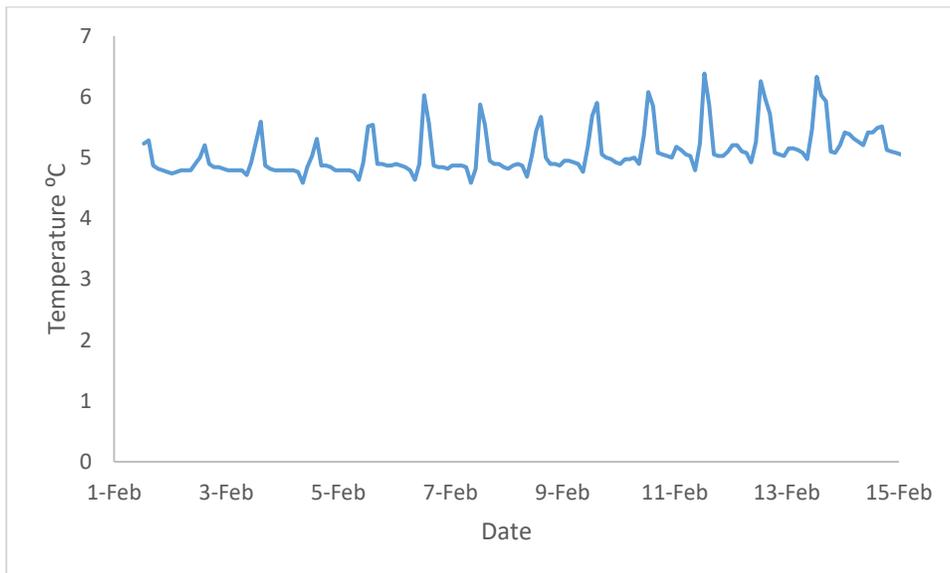


Figure 14. Temperature at RO RST (Cougar Dam)

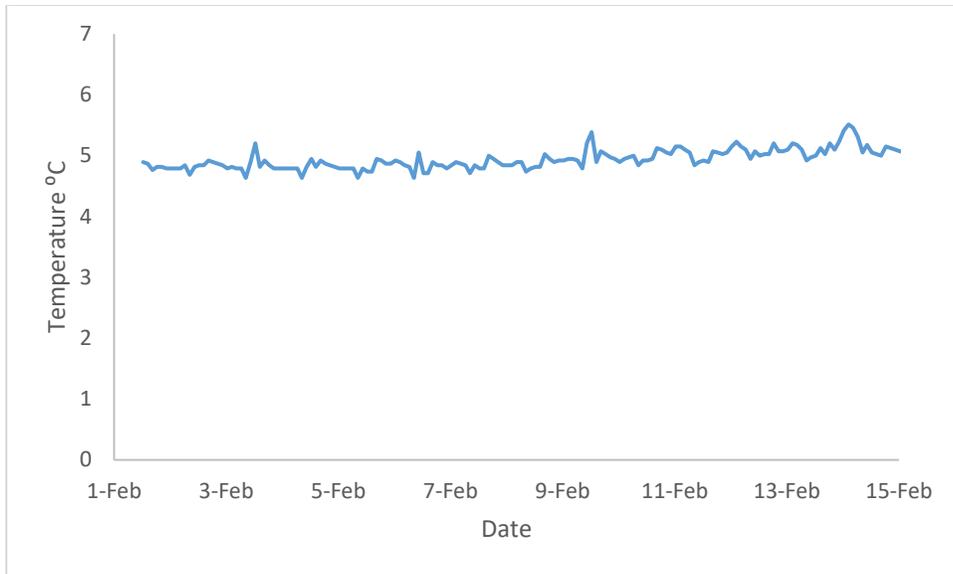


Figure 15. Temperature at PWR RST (Cougar Dam)

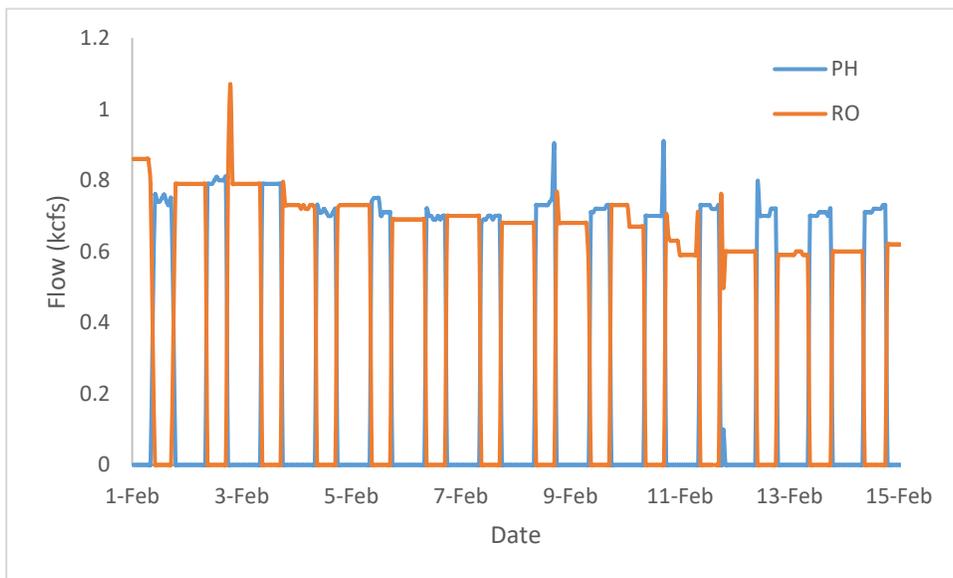


Figure 16. Hourly Flows PWR vs. RO (Cougar Dam)

North Santiam – Big Cliff Dam

Target Species

The reporting period began on February 01, 2022 and ended on February 15, 2022. 2 Chinook salmon (CHS) were collected during the 15-day sampling period (Figure 17). The trap was operated 100% of the reporting period. Table 12 provides life stage, length, and weight data for all Chinook salmon that have been caught at the Big Cliff site to-date and Figure 18 shows length frequency data to-date.

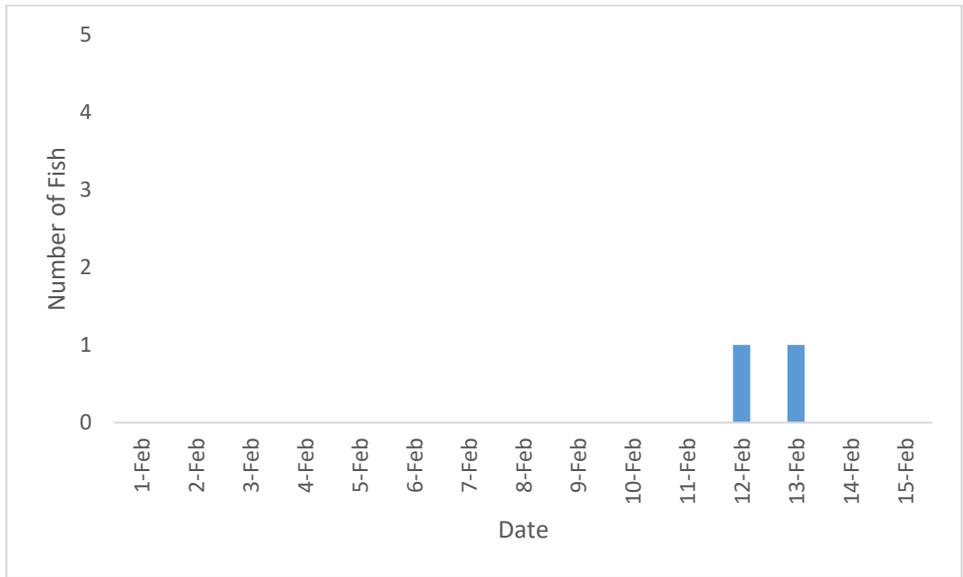
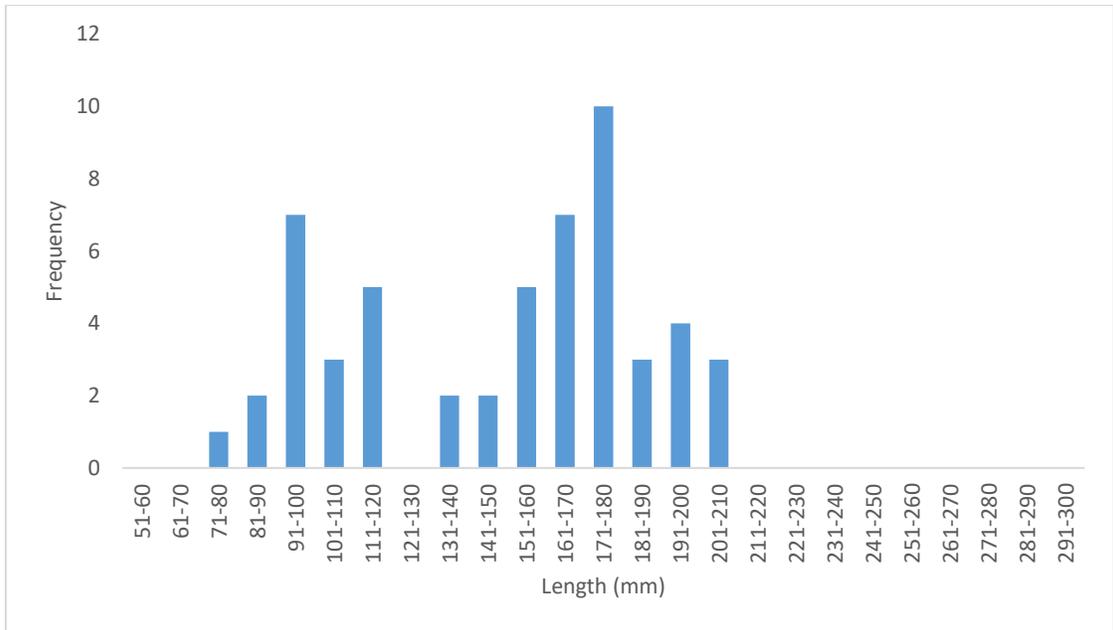


Figure 17. Chinook Captured Per Day 02/01/2022 to 02/15/2022 (Big Cliff)



*Figure does not include fish without heads

Figure 18. 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 initial 39 fish recaptured, no injuries were observed. The fish recaptured on 2/15/2022 was injured. 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	50.5

February 01 - 15, 2022										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Big Cliff	PWR	CHS	Parr	2	94.0	100.0	97.0	7.8	10.3	9.1
		CHS	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.

Injuries and Copepod Infection

Partial descaling <20% was observed on 1 of 2 target Chinook collected (50%), and descaling >20% was observed on 1 of 2 Chinook collected (50%). 2 of 2 Chinook collected during this reporting period had copepods present in the branchial cavity (100%) and 2 had copepods present on fins (100%). Of the 2 Chinook captured, 1 displayed body injuries (50%) and 0 had eye injuries present (0%). There was 1 Chinook mortality (50%) shown 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 13. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead Chinook Salmon for Sampling Period. (Big Cliff Dam)

Site	# CHS Collected	# DSC* <20%	# DSC* >20%	# with Body Injuries	# with Eye Injuries	# with COP* In B.C.	# with COP* on Fins	Mortalities
Big Cliff	2	1	1	1	0	2	2	1

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

Non-Target Species

A total of 15 non-target fish were captured at Big Cliff during the reporting period; the data is summarized below in Table 14. 1 small fish (less than 15 mm) was captured that could not be identified safely. It is listed as unknown in Table 14.

Table 14. 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	9	2	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	4	0	4	0
Cutthroat	1	0	2	0
<i>O. mykiss</i>	0	0	1	0
Unknown	1	0	1	0
Totals	15	2	106	38

Stream Statistics

Basic stream statistics at the Big Cliff site were calculated from data downloaded from the U.S. Geological Survey stream gage number 14181410. Gage height (feet) is the only metric provided at this gage. During the reporting period, daily maximum values for instantaneous gage height ranged from 1,108.92 feet to 1,109.64 feet (mean: 1,109.03 feet). Figure 19 shows instantaneous gage height.

Stream temperatures were recorded every 2 hours for the Big Cliff RST (Figure 20). Temperature probes for the RO and PWR RST operated normally throughout this reporting period.

Flows through the Powerhouse and spill during the reporting period averaged 1,099.1 and 0 cubic feet per second (cfs) respectively (Figure 21). The spillway did not have any recorded flow for the reporting period.

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

Table 15. Summary of salmonid CPUE, Big Cliff Dam.

	Chinook
Description	PWR(8ft)
Catch	2
Effort (hrs)	359.5
CPUE (fish/hr)	0.006

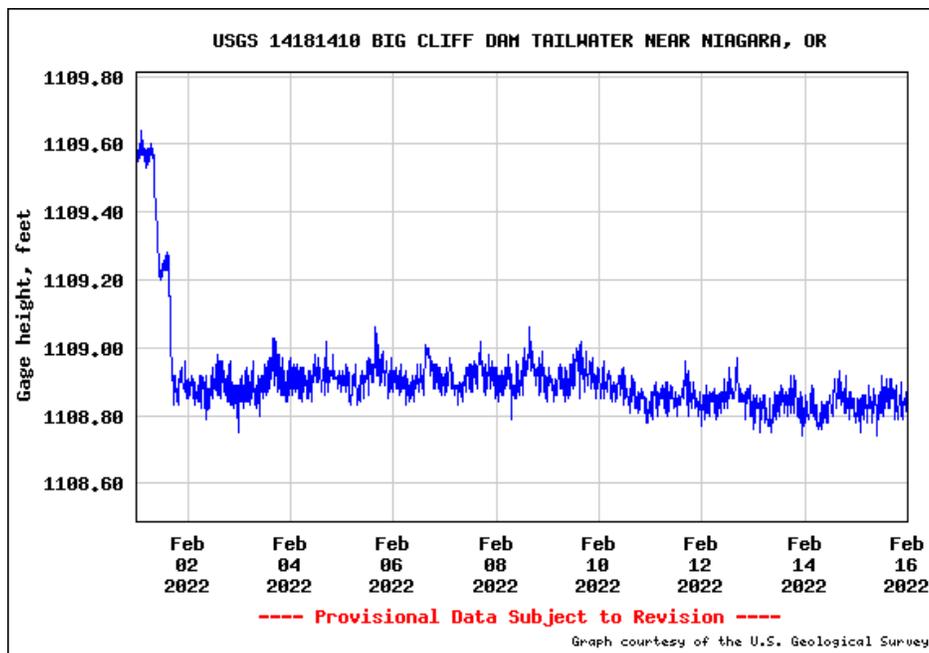


Figure 19. Gage Height (feet); below Big Cliff Dam, North Santiam River

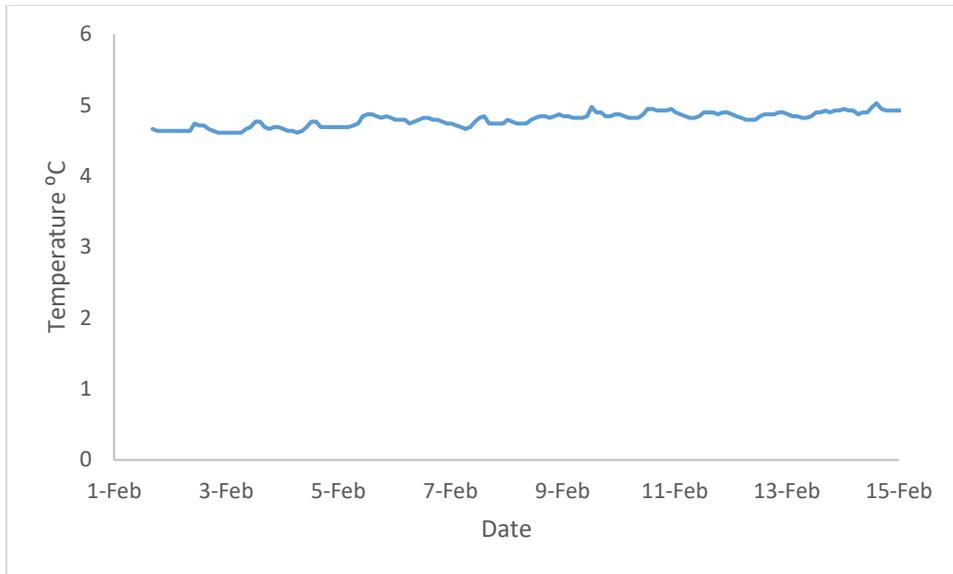


Figure 20. Temperature at RST (Big Cliff)

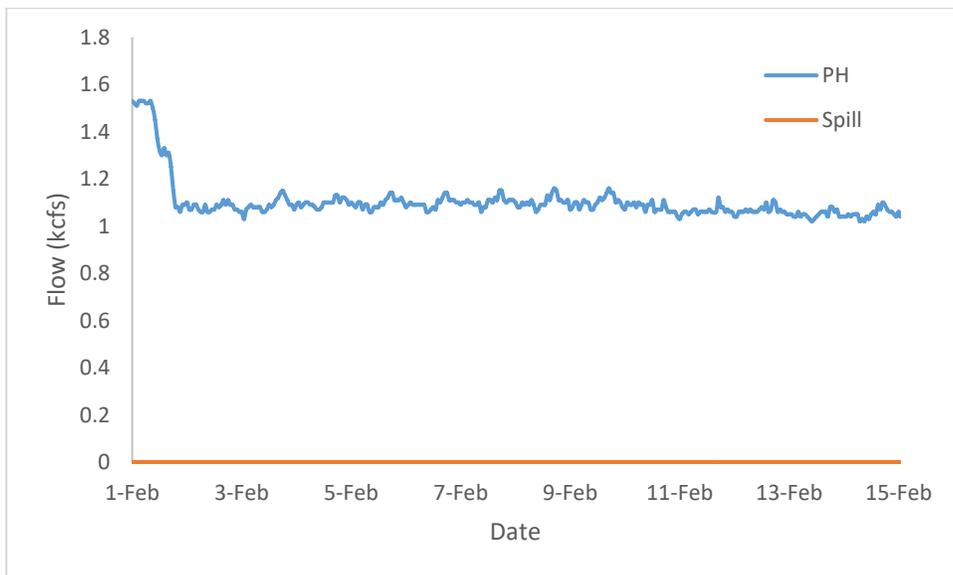


Figure 21. Hourly Flows PWR vs. Spill (Big Cliff)

Middle Fork Willamette – Fall Creek Above Reservoir

Target Species

The reporting period began February 01 and ended February 15. No chinook salmon were captured during the 15-day sampling period (Figure 22). The trap was 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 Fall Creek site to-date and Figure 18 shows length frequency data to-date.

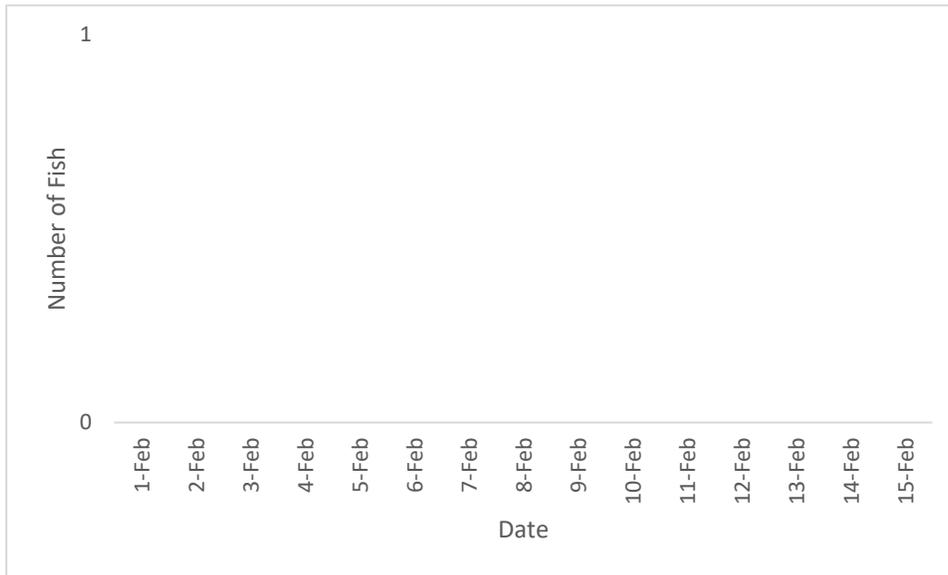


Figure 22. Chinook Captured Per Day 02/01/2022 to 2/15/2022 (Fall Creek)

Table 16. Descriptive Statistics of Target Species Captured at Fall Creek Above 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	n/a	CHS	Smolt	0	n/a	n/a	n/a	n/a	n/a	n/a
		CHS	Parr	1	119	119	119	16.1	16.1	16.1

February 01-15, 2022										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Fall Creek	n/a	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

Injuries and Copepod Infection

No chinook were captured for the reporting period. (Table 17).

Table 17. 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	0	0	0	0	0	0	0	0

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

Non-Target Species

A total of 18 non-target fish were captured at Fall Creek during the reporting period; the data is summarized below in Table 18.

Table 18. Summary of Non-target Species (Fall Creek).

Species	8ft Capture	8ft Mortality	Season Total	Season Total Mortality
Bluegill	0	0	0	0
Lamprey	7	0	28	0
Bullhead	0	0	0	0
Bull Trout	0	0	0	0
Crappie	0	0	0	0
Cutthroat Trout	7	0	12	0
Longnose Dace	2	0	2	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>	2	0	3	0
Totals	18	0	45	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 3.36 feet to 3.68 feet (mean: 3.48 feet). Figure 22 shows instantaneous gage height.

Stream temperatures were recorded every 2 hours for the Fall Creek RST (Figure 23). Temperature probes for the Fall Creek RST operated normally throughout this reporting period.

Flows In and Out of reservoir during the reporting period averaged 281 and 278 cubic feet per second (cfs) respectively (Figure 24).

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, Fall Creek.

	Chinook
Description	FC(8ft)
Catch	0
Effort (hrs)	361.1
CPUE (fish/hr)	0

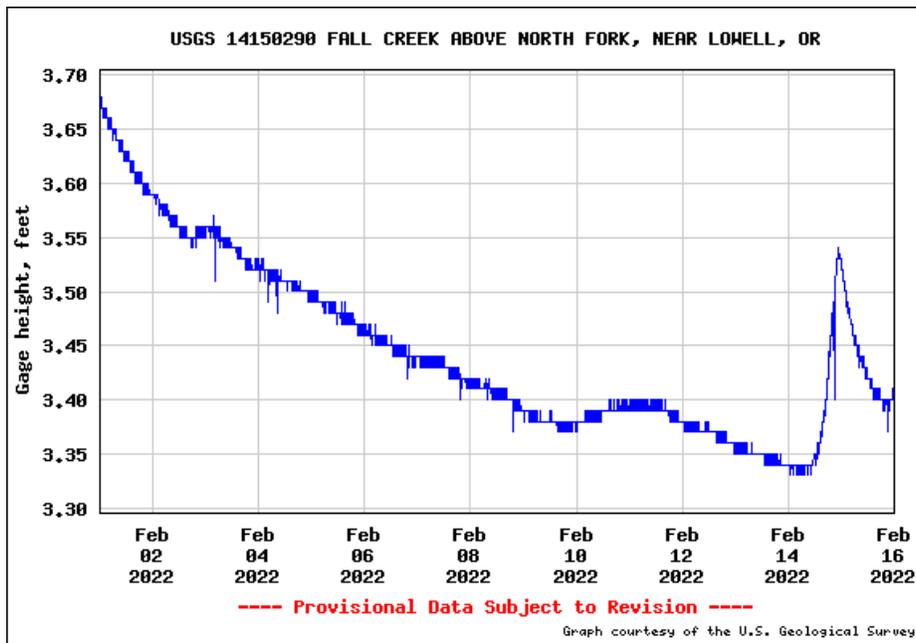


Figure 22. Gage Height (feet); Fall Creek Above North Fork, Near Lowell OR

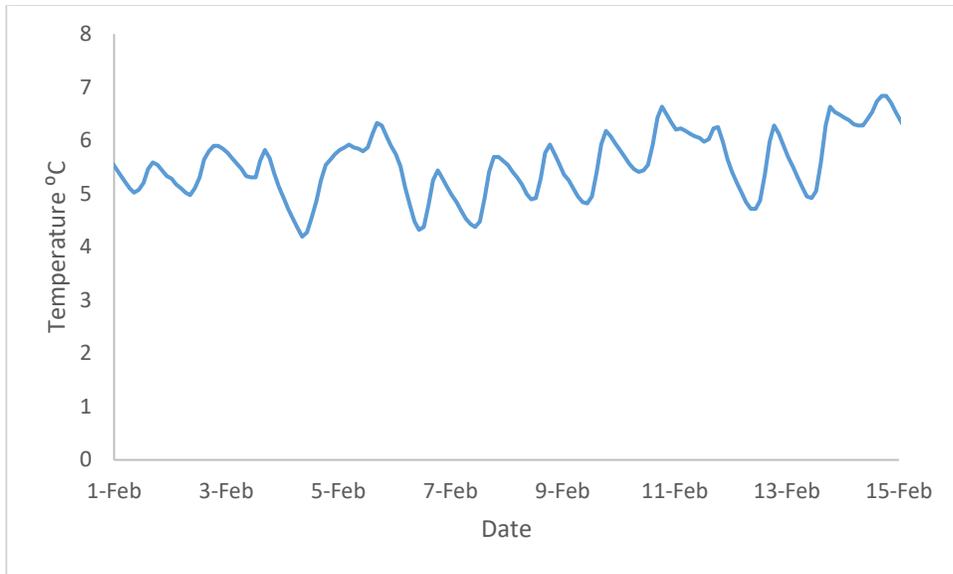


Figure 23. Temperature at RST (Fall Creek)

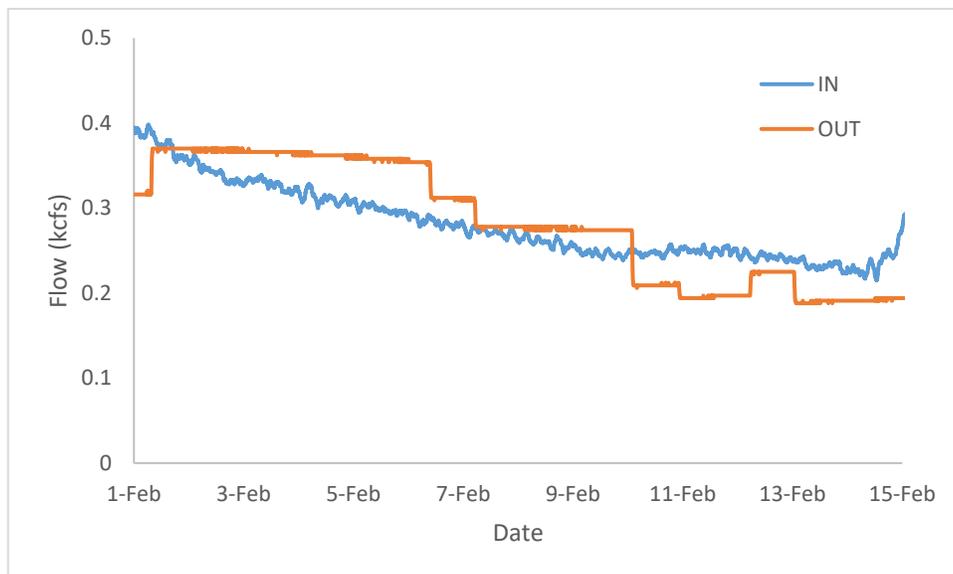


Figure 24. Hourly Flows IN vs OUT (Fall Creek Dam)

Issues Encountered

None.

Upcoming USACE Support Services

USACE Crane support has been requested for trap removals at Hills Creek Dam on March 1, 2022. It has also been requested for trap installs at Dexter Dam and Green Peter Dam on March 2 and 3, respectively.

Appendix A

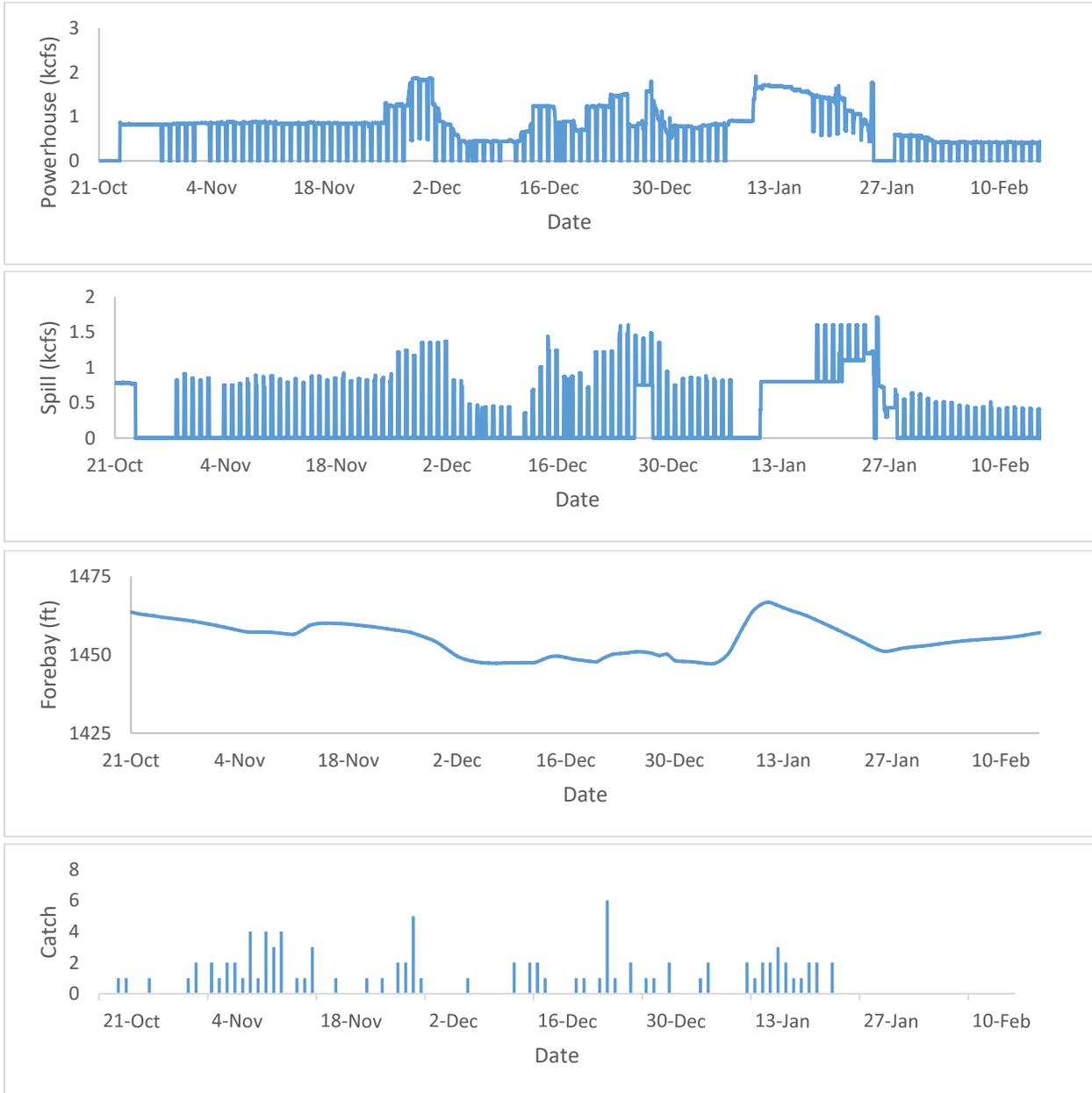
Injuries to-date																								
Site/Trap/Life Stage	Total Fish	MUNK	DS<2	BLO	EYB	FUN	BKD	COP	DS>2	PRD	FID	HBO	BO	HO	BVT	HBP	BRU	TEA	OPD	HIN	FVB	POP	GBD	
Big Cliff	55		22		5	1		48	7	1	12	1			5	2	2	2	8	1				
8 ft (PH)	55		22		5	1		48	7	1	12	1			5	2	2	2	8	1				
Parr	15		5			1		10			2					1			1					
Smolt	40		18		5			38	6	1	10	1			5	1	2	2	7	1				
Cougar	103		37		9	1		64	16		16		2		3	1	1	2	8	4	2			1
5 ft (RO)	44		21		5			26	8		8				1	1		1	3	4	1			1
Parr	33		17		5			16	4		6				1			1	1	2				1
Smolt	11		4					10	4		2					1			2	2	1			
8 ft (PH)	59		16		4	1		38	8		8		2		2		1	1	5		1			
Parr	51		14		3	1		31	4		7		1		1		1	1	5		1			
Smolt	8		2		1			7	4		1		1		1									
Hills Creek	95		53		10			70	32		20		8	1	24	8	3	3	5	3	4			
5 ft (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			
8 ft (PH)	32		18		6			21	11		7		2	1	6	2	1	1	1	2	3			
Parr	7		4					1	1											1				
Smolt	25		14		6			20	10		7		2	1	6	1	1	1	1	1	3			
Fall Creek	1		1																					
8 ft (RO)	1		1																					
Parr	1		1																					
Smolt																								

Injuries During Reporting Period (2-1-22 to 2-15-22)																								
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	
Big Cliff	2		1					2	1		1					1								
8 ft (PH)	2		1					2	1		1					1								
Parr	2		1					2	1		1					1								
Smolt																								
Cougar	5		2					3	3		1								1	1				
5 ft (RO)	4		1					2	3		1								1	1				
Parr	3		1					1	2		1										1			
Smolt	1							1	1										1					
8 ft (PH)	1							1																
Parr	1							1																
Smolt																								
Hills Creek																								
5 ft (RO)																								
Parr																								
Smolt																								
8 ft (PH)																								
Parr																								
Smolt																								
Fall Creek																								
8 ft (RO)																								
Parr																								
Smolt																								

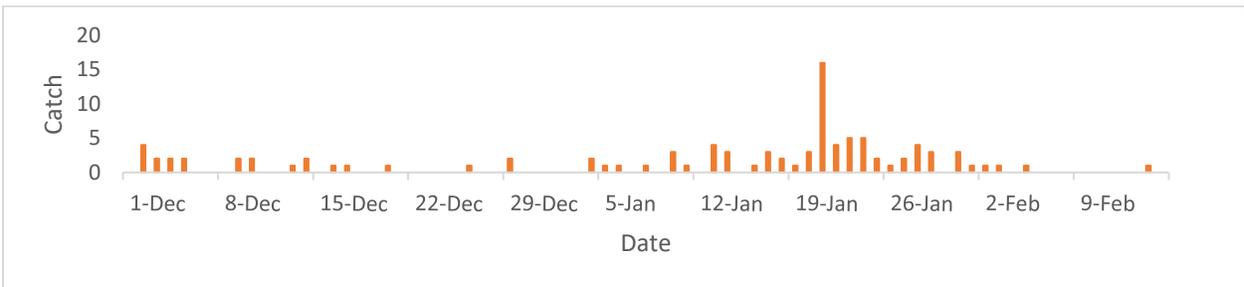
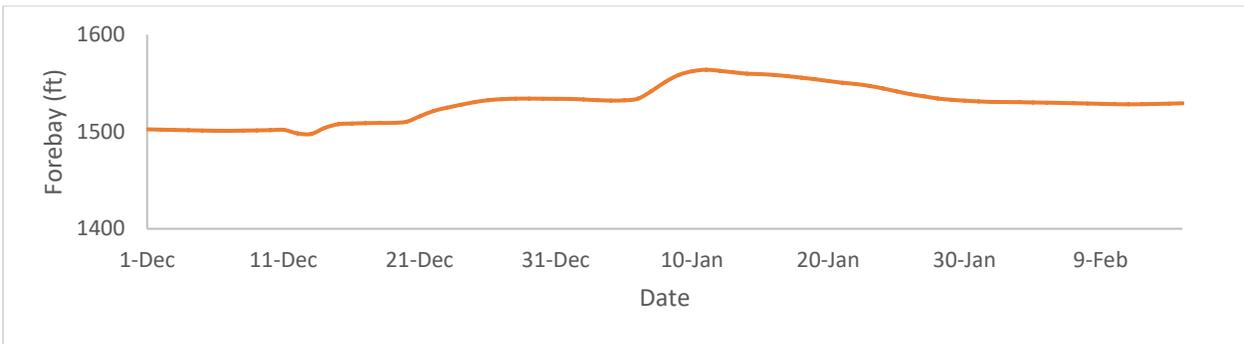
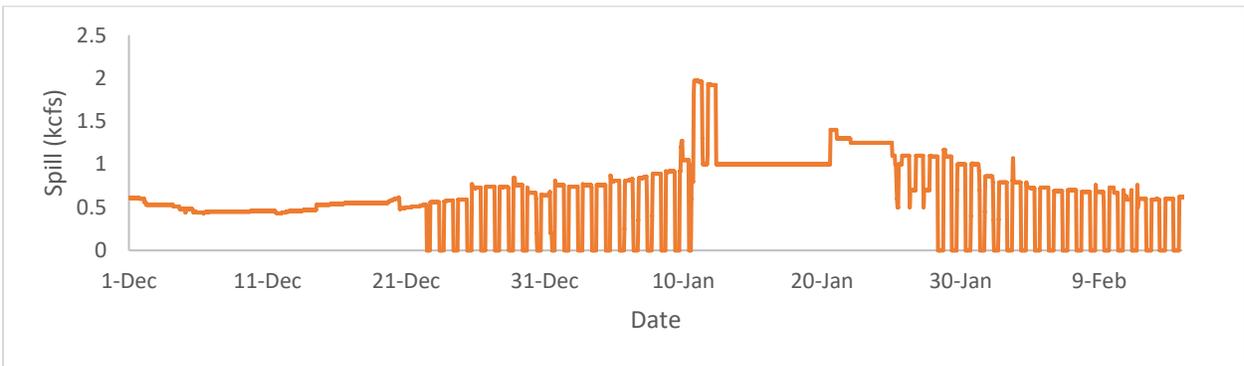
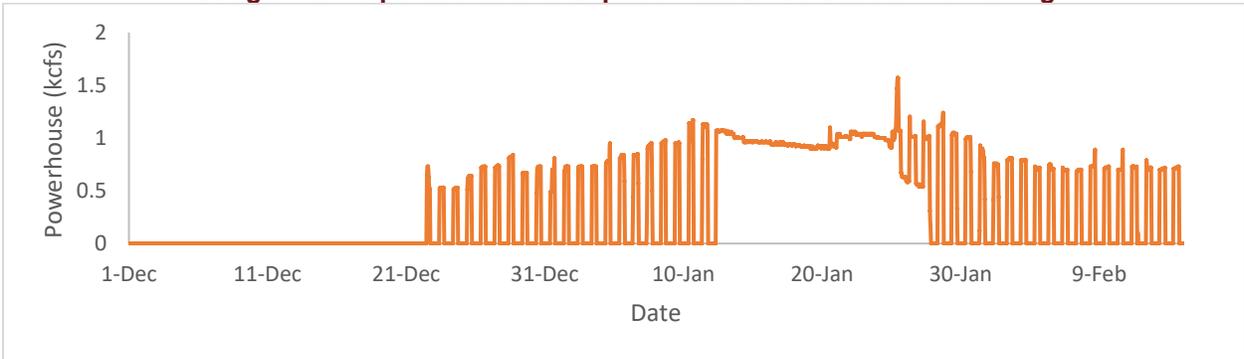
Injury Code	Description of Injury/Condition
NXI	Live fish with no external injuries
MUNK	Mortality with no external injuries
DS<2	Descaling <20%
BLO	Bloated
EYB	Bloody Eye (hemorrhage)
BVT	Bleeding from Vent
FVB	Fin Blood Vessels Broken
GBD	Gas Bubble Disease (fin ray/eye inclusions)
POP	Pop Eye (eye 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

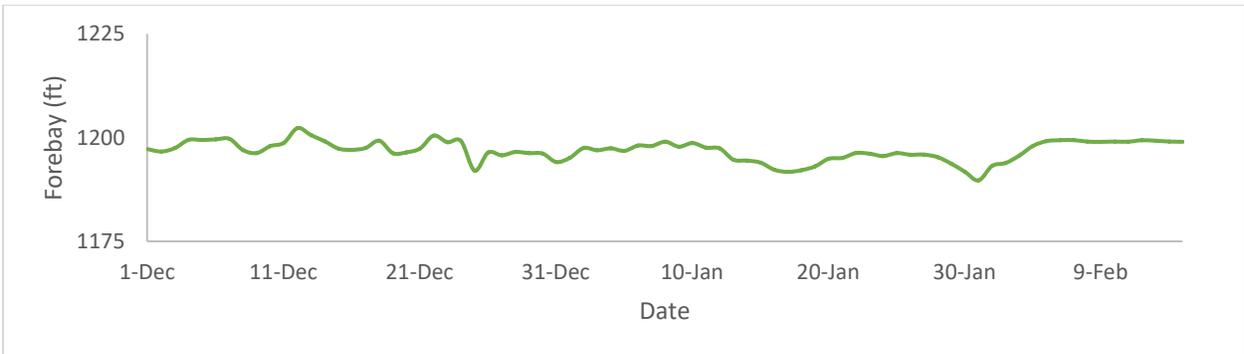
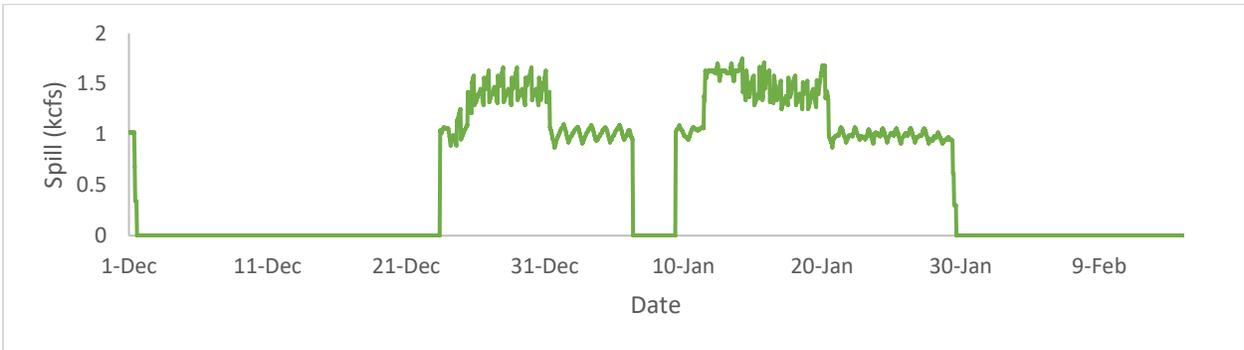
Hills Creek Operational and Capture Data Since Start of Monitoring



Cougar Dam Operational and Capture Data Since Start of Monitoring



Big Cliff Dam Operational and Capture Data Since Start of Monitoring



Fall Creek Operational and Capture Data Since Start of Monitoring

