

WILLAMETTE VALLEY FISH PASSAGE MONITORING VIA ROTARY SCREW TRAPS – Bi-monthly Report - Revision 0

December 5, 2021

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Report Period: November 16 to November 30, 2021

Report No.: 2021 Willamette RST Bi-Weekly Report 11/16 – 11/30 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
Hills Creek	Trap Efficiency Release (1,200 fish, 600 per route) ^a	12/13/21	12/13/21	1
Cougar Dam RST	Operation	12/01/21	12/31/22	396
Big Cliff Dam RST	Operation	12/01/21	2/15/22	291
Big Cliff Dam RST	Operation	3/15/21	10/15/22	

^a Tentative schedule of first trap release.

Summary of Rotary Screw Trap Data

Rotary screw traps (RSTs) were operated at one location in the southern Willamette river watershed: on the Middle Fork Willamette River below Hills Creek Dam (Hills Creek). The location of the Hills Creek sampling site Regulating Outlet (RO) and Powerhouse RST's are depicted in Figure 1. Sampling began at the Hills Creek site on October 21. Sampling dates and catch summaries are provided in Tables 2 and 3, respectively.



Figure 1. Hills Creek Dam RST Locations

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	10/21/21	11/16/21	11/30/21	15 days	41 days
Hills Creek PWR	10/21/21	11/16/21	11/30/21	15 days	41 days

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	13	0	44	0

Middle Fork Willamette – Hills Creek Dam

Target Species

The most recent reporting period began on November 16 and ended on November 30. There was a total of 13 Chinook salmon (CHS) during the 15-day sampling period (Figure 2). 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 3 shows length frequency data to-date.

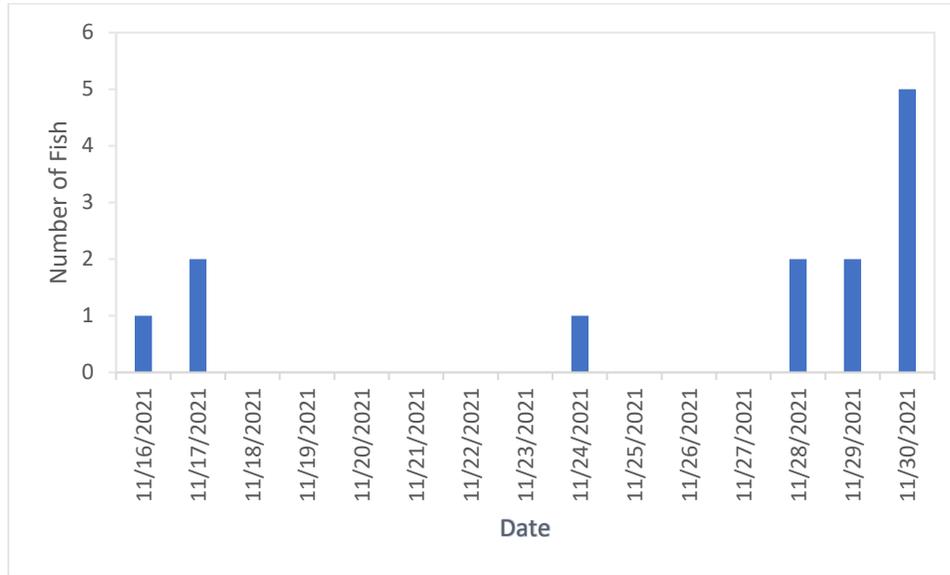


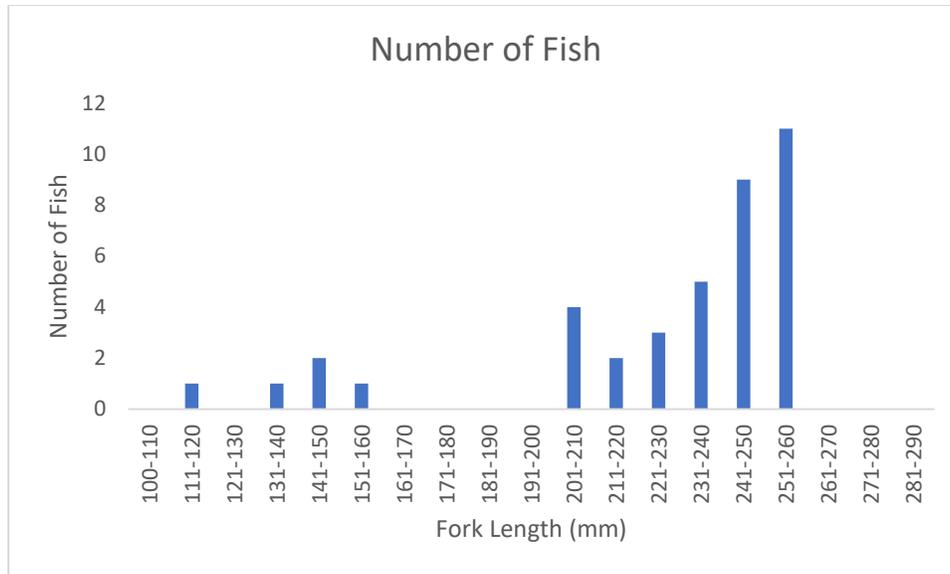
Figure 2. Chinook Captured Per Day 11/16/2021 to 11/30/2021

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

Site	Species	Life stage	Collected	Length (mm)			Weight (g)		
				Min	Max	Mean	Min	Max	Mean
Hills Creek	CHS	Yearling	8 ^a	137	249	187.7	27.4	173.6	102.8
Hills Creek	CHS	Smolt	35 ^b	206	260	239.6	77.8	191.5	154.1
Hills Creek	CHS	Parr	1	111	111	111	11.9	11.9	11.9

^a One Yearling Chinook missing head was not included for the length and weight calculations in this table.

^b Four Smolt Chinook missing head, were not included for the length and weight calculations in this table.



*Figure does not include fish without heads

Figure 3. Length Frequency of Juvenile Chinook Sampled Season To-Date

Injuries and Copepod Infection

Partial descaling <20% was observed on 5 of 8 target species collected at the RO RST (63%), and 2 of 5 target species collected at the PWR RST (40%). Descaling >20% was observed on 3 of 8 target species collected at the RO RST (38%), and 3 of 5 target species collected at the PWR RST (60%). All target species fish collected during this reporting period had copepods present. Of the 13 Chinook captured, 0 displayed body injuries and 1 had eye injuries present. There were 7 Chinook mortalities collected in the RO RST, and 3 collected in the PWR RST (Table 5).

Table 5. Number of Descaled and Partially Descaled Chinook Salmon.

Site	# 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	8	5	3	0	0	8	1	7
Hills Creek PWR	5	2	3	0	1	5	1	3

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

Non-Target Species

A total of 48 non-target species were captured 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	Total live	Total Mortality
Bluegill	3	0	5	0	8	0
Crappie	1	1	15	14	1	15
Red-Sided Shiner	1	1	0	0	0	1
Sculpin	1	0	2	0	3	0
Spotted Bass	0	0	5	1	4	1
<i>O. mykiss</i>	9	4	6	0	11	4
Totals	15	6	33	15	27	21

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 1,225.18 feet to 1,227.50 feet (mean: 1,225.82 feet). Figure 4 shows instantaneous gage height.

Stream temperatures were recorded every 2 hours for the both the RO RST and the Powerhouse RST (Figures 5 and 6). Temperature probes operated normally throughout this reporting period.

Flows through the Powerhouse and RO during the reporting period averaged 877 and 210 cubic feet per second (cfs) respectively (Figure 7). The average flow of the Powerhouse during operation was 1,052cfs and the RO was 1010cfs. Catch per unit of effort (CPUE) data are summarized in Table 7.

Table 7. Summary of salmonid CPUE, Hills Creek.

Description	Chinook	
	RO (5ft)	PWR(8ft)
Catch	8	5
Effort (hrs)	358.3	358.7
CPUE (fish/hr)	0.022	0.014

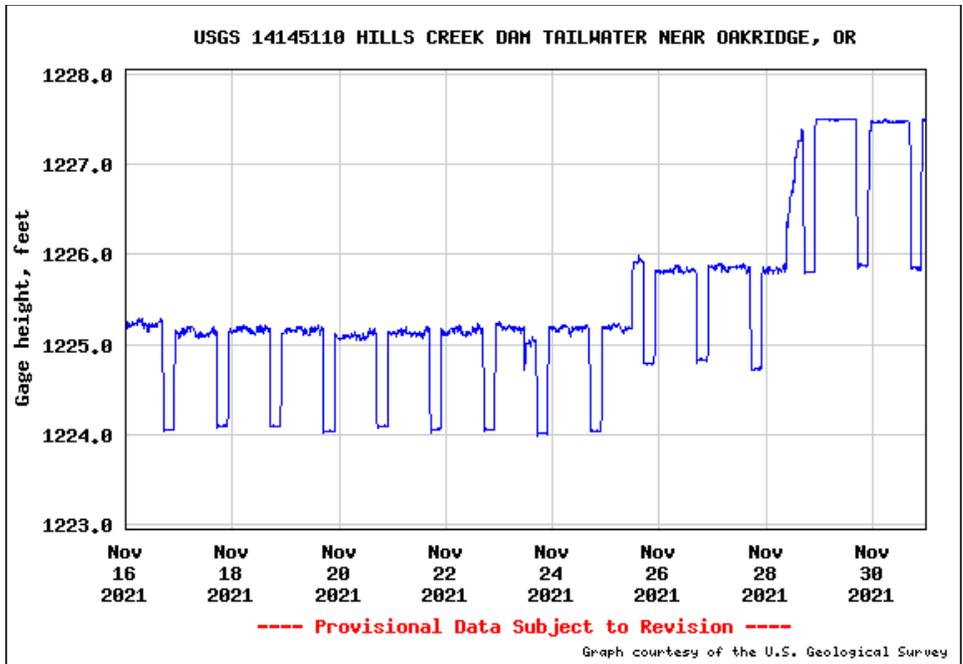


Figure 4. Gage Height (feet); below Hills Creek Dam, Middle Fork Willamette River

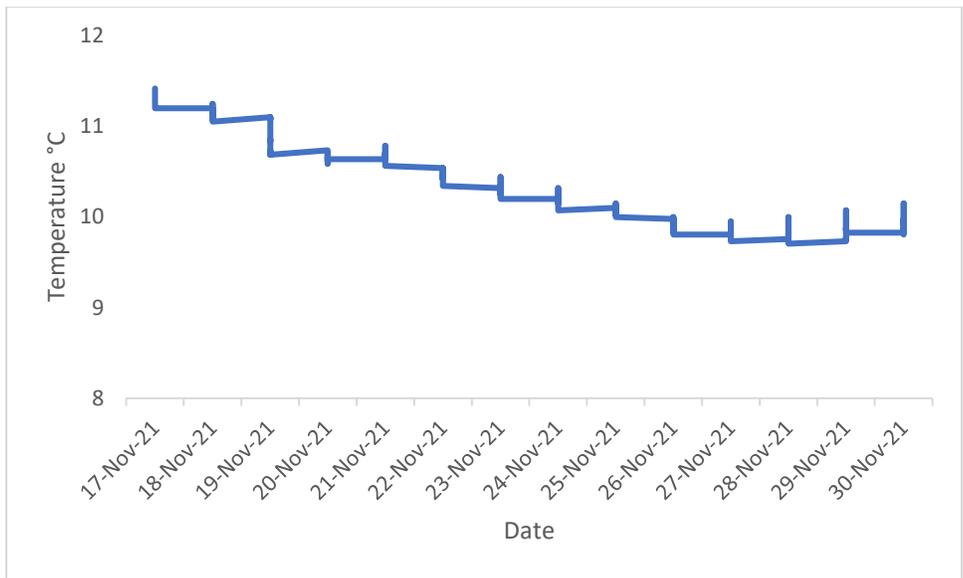


Figure 5. Temperature at RO RST

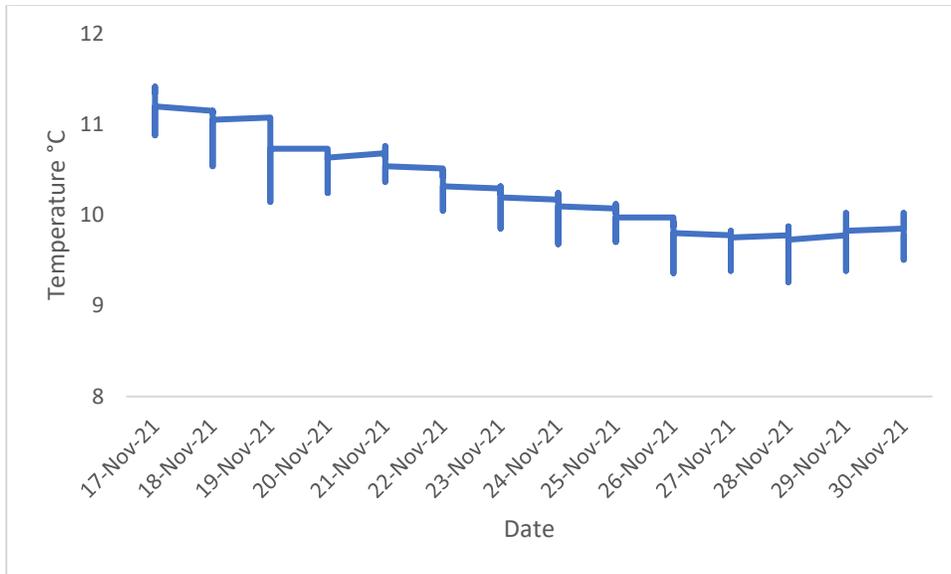


Figure 6. Temperature at Powerhouse RST

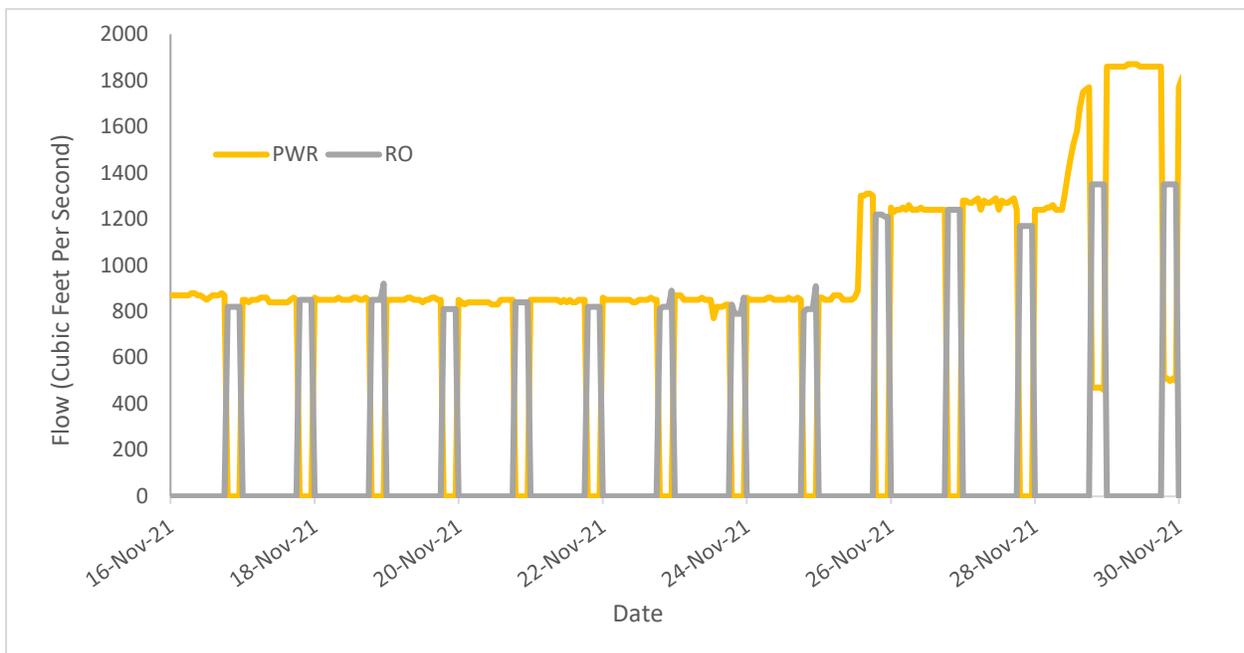


Figure 7. Hourly Flows PWR vs. RO

Issues Encountered

None during this reporting period.

Upcoming USACE Support Services

None.