Weekly Temperature Report
McNary Dam

July 5, 2022

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Report Period: June 24 through June 30
Report No. 2022 MCN Temperature Report 0624–0630 by EAS

Re: USACE Walla Walla District Biological Services: Temperature Monitoring Program at McNary Dam

Temperature monitoring at the McNary juvenile collection system began at 0700 hours on June 14 and will continue through 0700 hours August 31. Wind speed data used in this report are from the National Weather Service station at the Hermiston Municipal Airport in Oregon. The air temperature data was obtained via Hobo probe at the JFF.

Fish Collection

An estimated 83,703 juvenile salmonids were collected and 83,695 were bypassed at the McNary JFF (Table 1). There were 8 fish mortalities in the sample on for the reporting period.

River Conditions

Average river flow for this reporting period was 386.9 kilo cubic feet per second (kcfs) with an average spill of 247.8 kcfs (Table 1).

Temperature Logger Operations

Temperature loggers were deployed on June 14. All temperature loggers performed normally.

Weather Conditions

The weekly average air temperature from June 24 to 30 was 74.0°F. Air temperatures ranged from a maximum of 109.0°F on June 27 to a minimum of 54.7°F on June 25 (Figure 1). Wind speeds averaged 9.5 mph with gusts of 20.7 mph (Table 1). Wind direction was predominantly from the North.

Water Temperatures

Average water temperatures within dam locations varied with air temperatures and wind velocities (Figure 2). The weekly average temperatures within dam locations were: 60.3°F, forebay (weekly average of eight positions); 59.9°F, gatewell (weekly average of 14 positions); 59.9°F, collection channel (weekly average of positions at Units 1, 8, and 12); and 60.0°F, JFF (weekly average of the separator and sample tank “B”). Forebay Unit 12 had the highest weekly average temperature, 60.4°F (Figure 3). The maximum temperature, 64.8°F, was recorded in forebay Unit10 at 1800 hours on June 29.

The average weekly temperature differentials within dam locations were: 0.9°F, forebay; 0.8°F, gatewells; 0.2°F, collection channel; and 0.04°F, JFF (Figure 4). The largest temperature differential, 5.1°F, was recorded in the forebay at 1500 hours on June 24 (Unit 3 high, Unit 1 low).

The average weekly temperature differential between the forebay and corresponding gatewell was 0.4°F. The forebay was warmer than the corresponding gatewell on average across the powerhouse. The largest temperature differential was 4.2°F at 1830 hours on June 29 at Unit 7 (forebay warmer than gatewell; Figure 5). The average weekly temperature differential between the gatewell and corresponding collection channel location was 0.1°F. On average, the gatewells were warmer than the collection channels at Units 1, 8, and 12. The largest temperature differential between the gatewell and corresponding collection channel location was 1.33°F at 1930 hours on June 24 at Unit 1 (gatewell was warmer than the collection channel).

Date	Fish Collected	Fish Bypassed	Mortality		Avg. River Flow	Avg. Turbine Flow	Avg. Spill	Air Temperature		Wind Speed	
			Sample	Facility				Avg.	Max	Avg.	Max
24-Jun	21,101	21,096	2	3	386.6	137.3	244.7	70.2	98.4	5.8	11.5
25-Jun					394.9	137.5	252.7	71.3	95.6	6.0	12.7
26-Jun	33,400	33,399	1		396.9	138.8	253.5	73.1	98.3	6.7	16.1
27-Jun					398.8	139.1	255	77.1	109.0	6.1	11.5
28-Jun	13,101	13,100		1	391.6	128.2	258.8	79.5	102.7	8.7	19.6
29-Jun					372.6	126.8	241	74.6	94.8	14.9	25.3
30-Jun	16,101	16,100		1	366.9	133.1	229.1	72.4	103.8	9.3	15.0
Weekly Total	**83,703**	**83,695**	**3**	**5**	**386.9**	**134.4**	**247.83**	**74.0**	**100.4**	**8.2**	**16.0**

Table 1
Bypass, Mortality, and River and Weather Conditions from June 24 to June 30

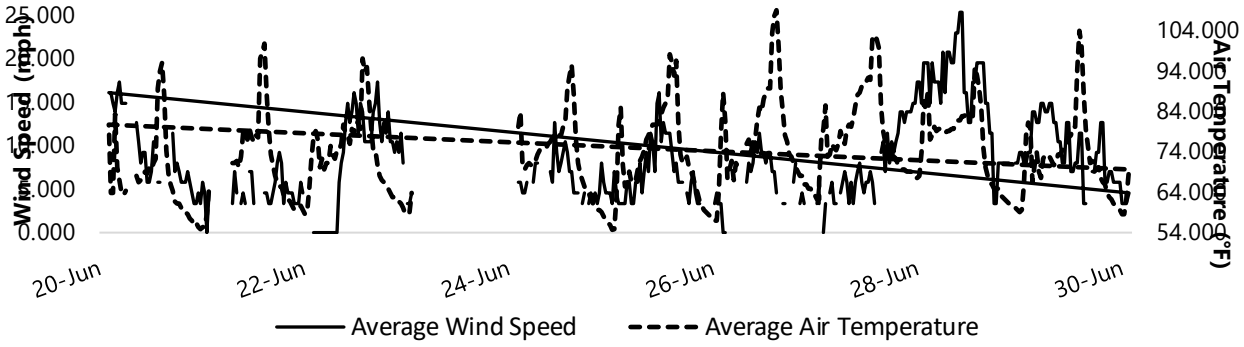

Figure 1
Average Wind Speed and Air Temperature for Each Half-Hour Interval from June 24 to June 30

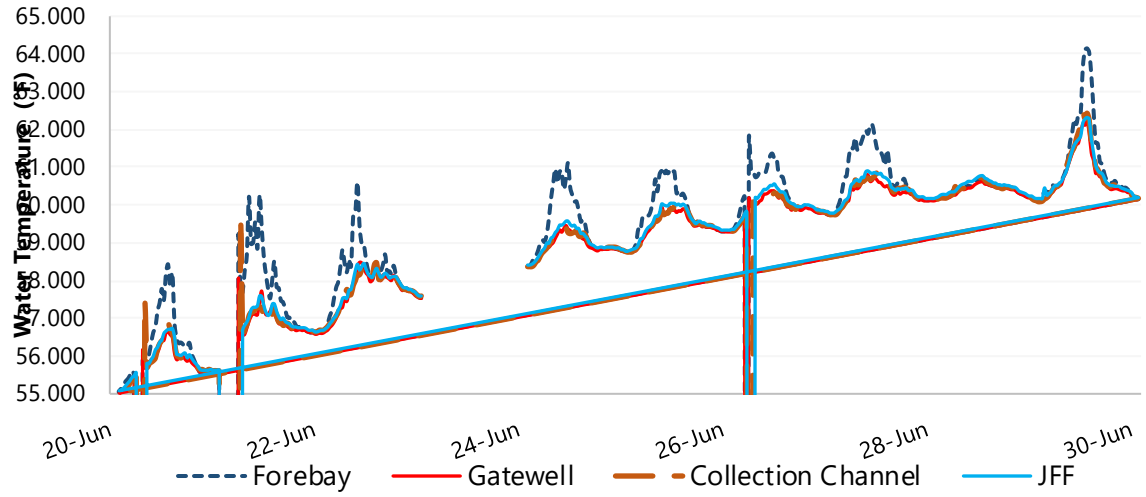

Figure 2
Average Water Temperatures for Each Half-Hour Interval for Four Dam Locations from June 24 to June 30

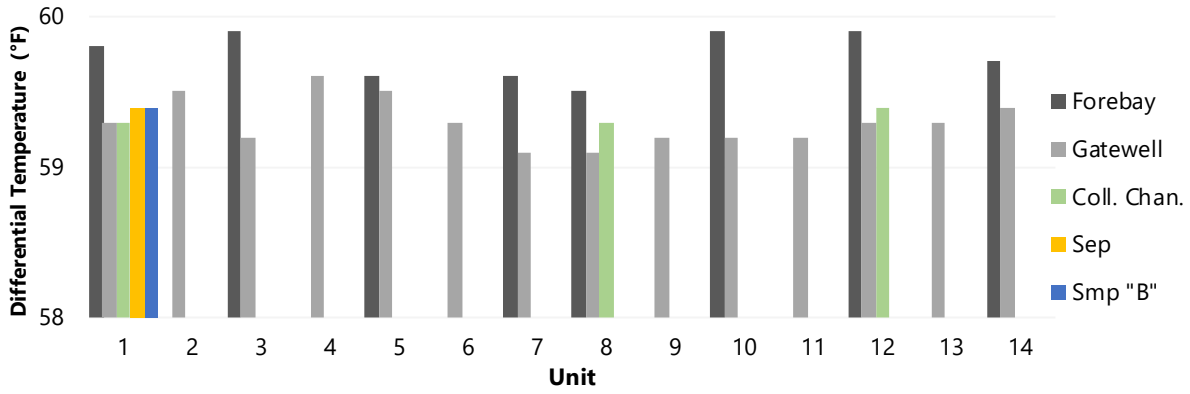

Figure 3
Average Weekly Water Temperatures by Position for Five Dam Locations from June 24 to June 30

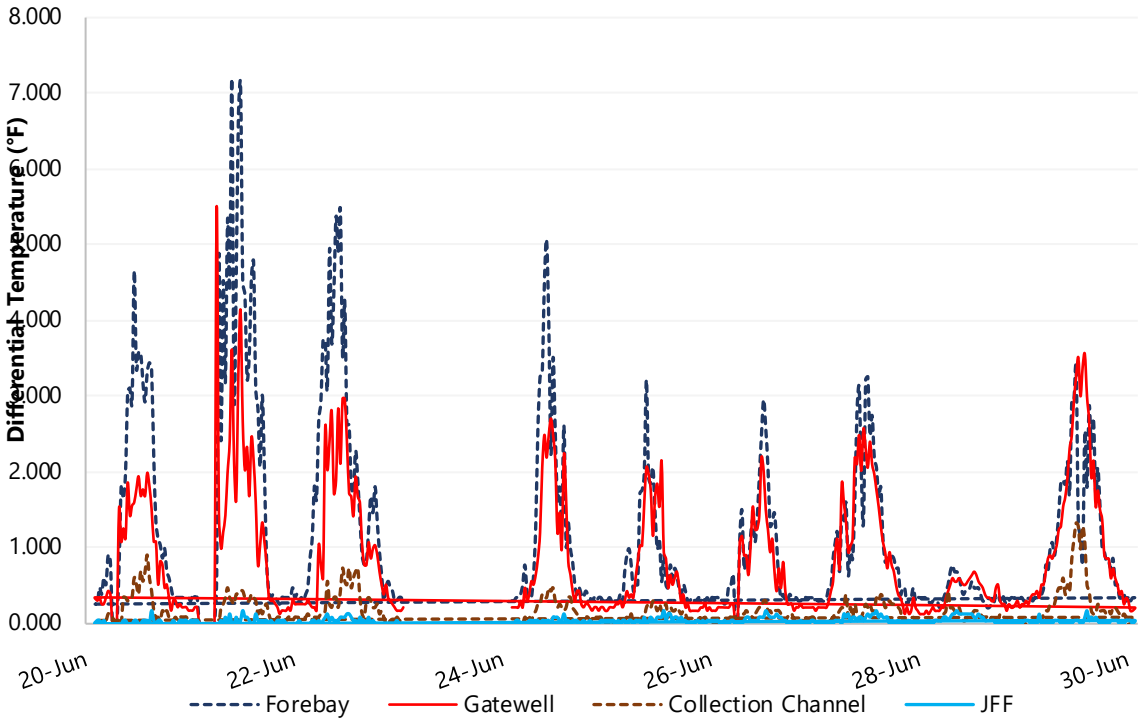

Figure 4
Average Differential Temperatures within Four Dam Locations from June 24 to June 30

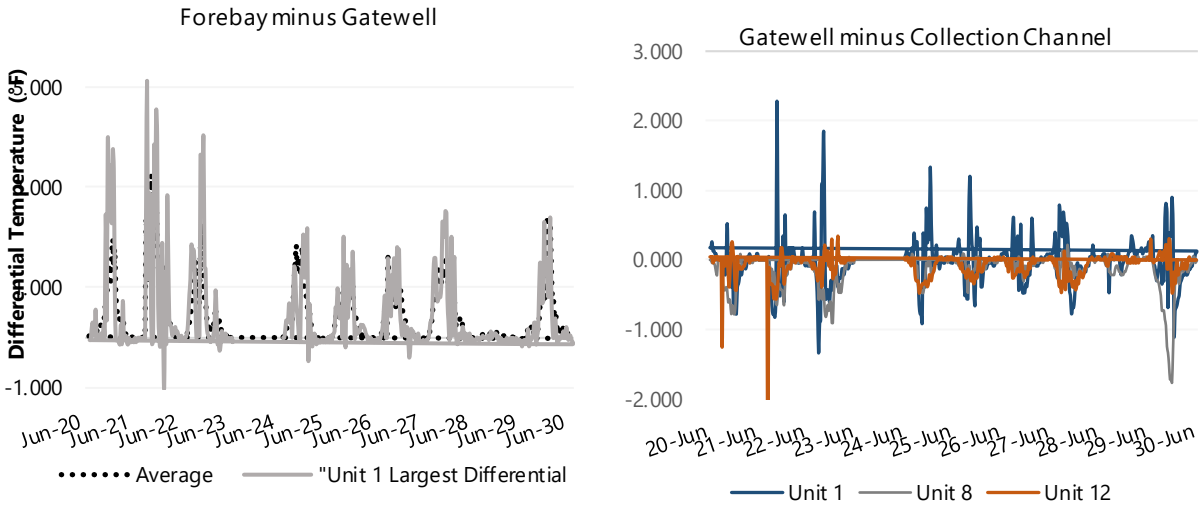

Figure 5
Average Differential Temperatures across Three Dam Locations from June 24 to June 30