



Weekly Temperature Report

McNary Dam

June 28, 2021

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Report Period: June 15 through June 24

Report No. 2021 MCN Dam Temperature Weekly Report 0615–0624 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 1200 hours on June 14 and is scheduled to continue through 0700 hours August 31. Wind speed data used in this report is from the National Weather Service station at the Hermiston Municipal Airport in Oregon. The air temperature data was obtained via an Onset temperature logger located on site at the McNary Juvenile Fish Facility (JFF).

Fish Collection

An estimated 186,150 juvenile salmonids were collected and 186,139 were bypassed at the McNary JFF (Table 1). Weekly fish mortalities were 8 in the sample and 3 in the facility.

River Conditions

Average river flow for this reporting period was 199.7 cubic feet per second (kcfs) with an average spill of 116.2 kcfs.

Temperature Logger Operations

Temperature loggers were deployed on June 14. Temperature logger F03 in Forebay 3 was replaced on June 18.

Weather Conditions

The weekly average air temperature from June 14 to June 24 was 73.2°F. Air temperatures ranged from a maximum of 95.6°F on June 16 to a minimum of 54.3°F (Figure 1). Wind speeds averaged 7.1 miles per hour (mph) with gusts to 26 mph (Table 1).

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 64.2°F, forebay (weekly average of 8 positions); 63.3°F, gatewells (weekly average of 14 positions); 63.8°F, collection channel (weekly average of positions at Units 1, 8, and 12); and 63.4°F, JFF (weekly average of the separator and sample tank “B”). Forebay Unit 10 had the highest weekly average temperature, 65.0°F (Figure 3). The maximum temperature, 75.8°F, was recorded in Forebay Unit 7 at 1630 hours on June 18.

The average weekly temperature differentials within dam locations were 2.9°F, forebay; 3.3°F, gatewells; 1.1°F, collection channel; and 0.2°F, JFF (Figure 4). The largest temperature differential, 13.6°F, was recorded in the gatewells at 1630 hours on June 18 (Unit 7 high, Unit 1 low).

The average weekly temperature differential between the forebay and corresponding gatewell was 0.9°F. The forebay was warmer than the corresponding gatewell on average across the powerhouse. The largest temperature differential was 12.1°F at 0730 hours on June 18 at Unit 1 (forebay warmer than gatewell; Figure 5).

The average weekly temperature differential between the gatewell and corresponding collection channel location was 0.6°F. On average, the gatewells were warmer than the collection channels at Units 1 and 12. The largest temperature differential between the gatewell and corresponding collection channel location was 5.6°F at 0030 hours on June 19 at Unit 1 (gatewell was warmer than the collection channel).

Table 1
Bypass, Mortality, and River and Weather Conditions from June 14 to June 24

Date	Fish Collected	Fish Bypassed	Mortality		Avg. River Flow	Avg. Turbine Flow	Avg. Spill	Air Temperature		Wind Speed	
			Sample	Facility				Avg.	Max	Avg.	Max
15-Jun					205	67.9	132.4	70.2	82.3	7.3	26.0
16-Jun	15,500	15,498	2	0	210.8	79.4	126.8	65.0	95.6		
17-Jun					202.6	82.3	115.6	65.5	82.0		
18-Jun	11,150	11,150	0	0	201.3	81.8	115	69.9	90.3	4.0	8.0
19-Jun					201.6	81.9	115	75.0	90.8	7.1	16.0
20-Jun	16,350	16,350	0	0	205.6	83.6	117.3	75.0	94.3	7.3	16.0
21-Jun					192.8	78.1	110	75.3	89.8	5.5	12.0
22-Jun	27,450	27,445	4	1	185.5	74.9	105.8	78.4	92.1	7.5	18.0
23-Jun					189.3	76.5	108.1	80.0	92.1	11.1	16.0
24-Jun	115,700	115,696	2	2	202.8	82.1	116	77.7	90.3	6.9	18.0
Weekly Total	186,150	186,139	8	3	199.7	78.9	116.2	73.2	90.0	7.1	16.3

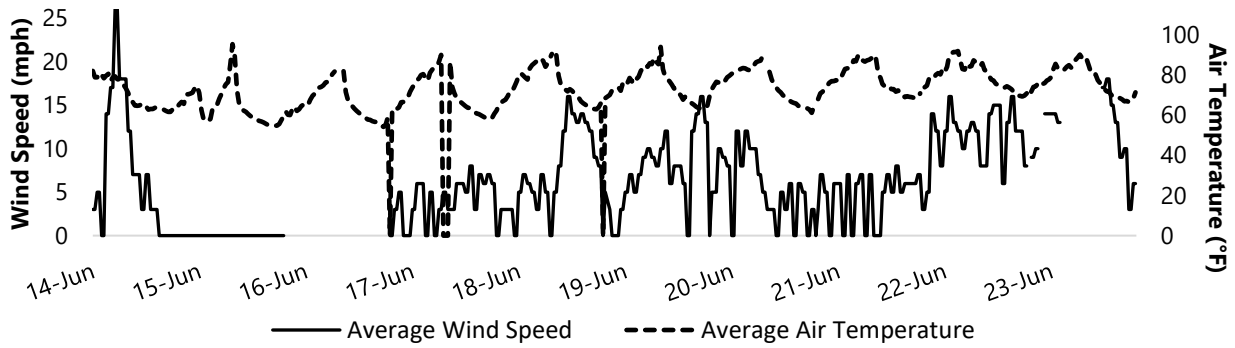


Figure 1
Average Wind Speed and Air Temperature for Each Half-Hour Interval from June 14 to June 24

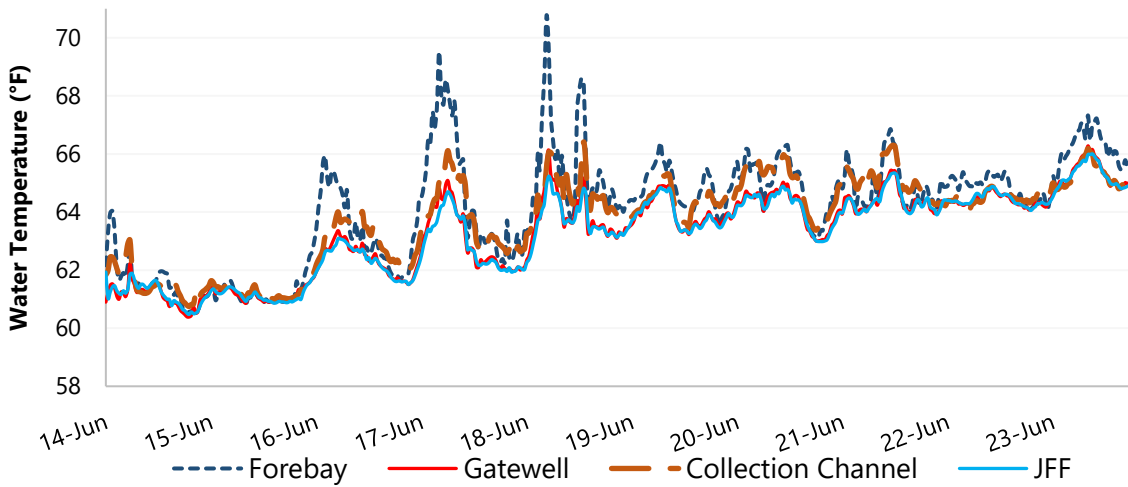


Figure 2
Average Water Temperatures for Each Half-Hour Interval for Four Dam Locations from June 14 to June 24

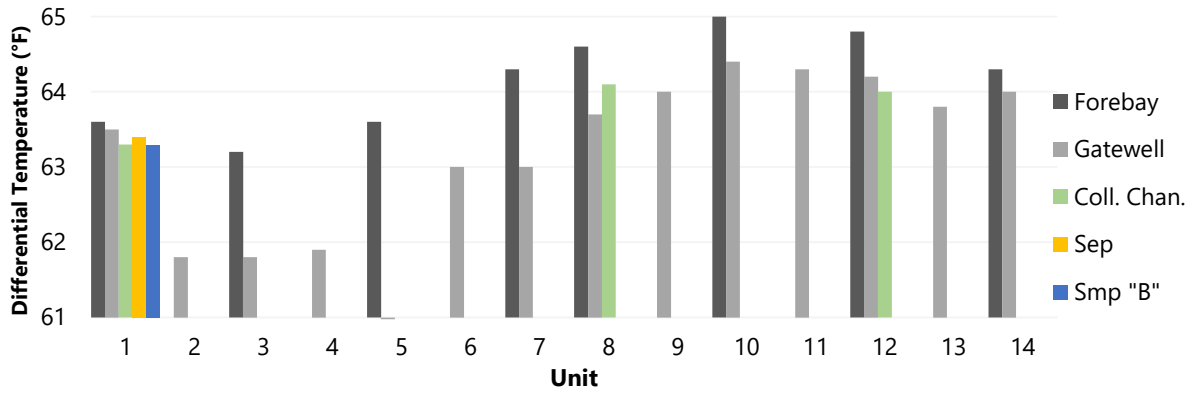


Figure 3
 Average Weekly Water Temperatures by Position for Five Dam Locations from June 14 to June 24

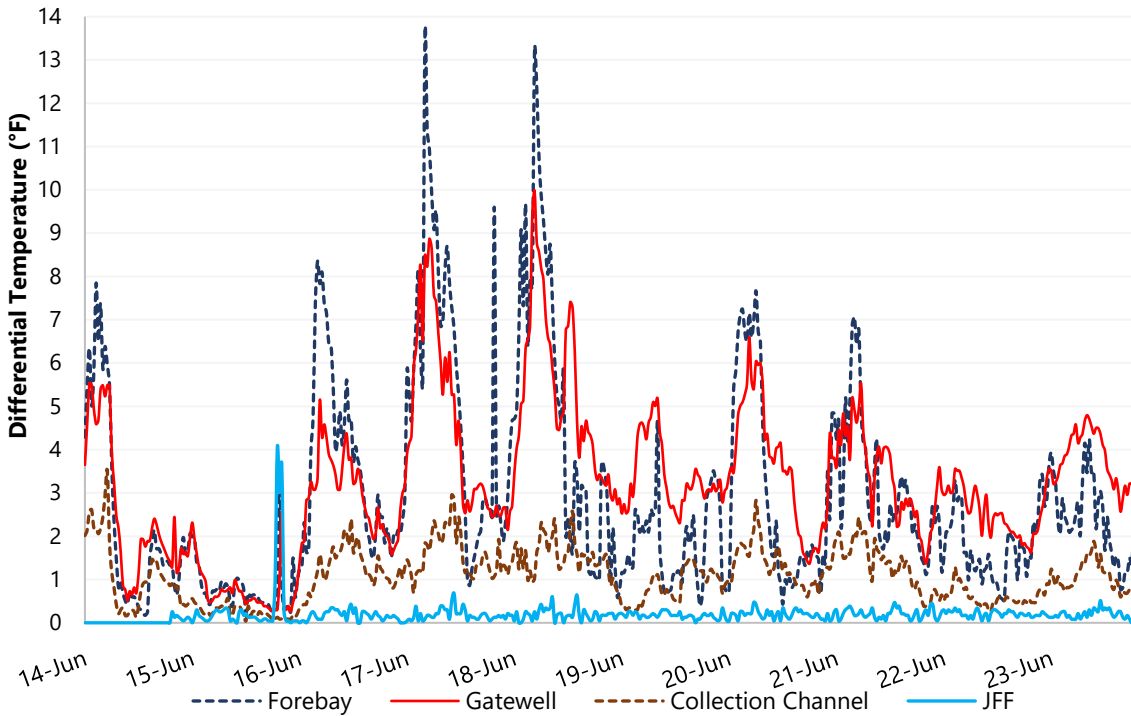


Figure 4
 Average Differential Temperatures within Four Dam Locations from June 14 to June 24

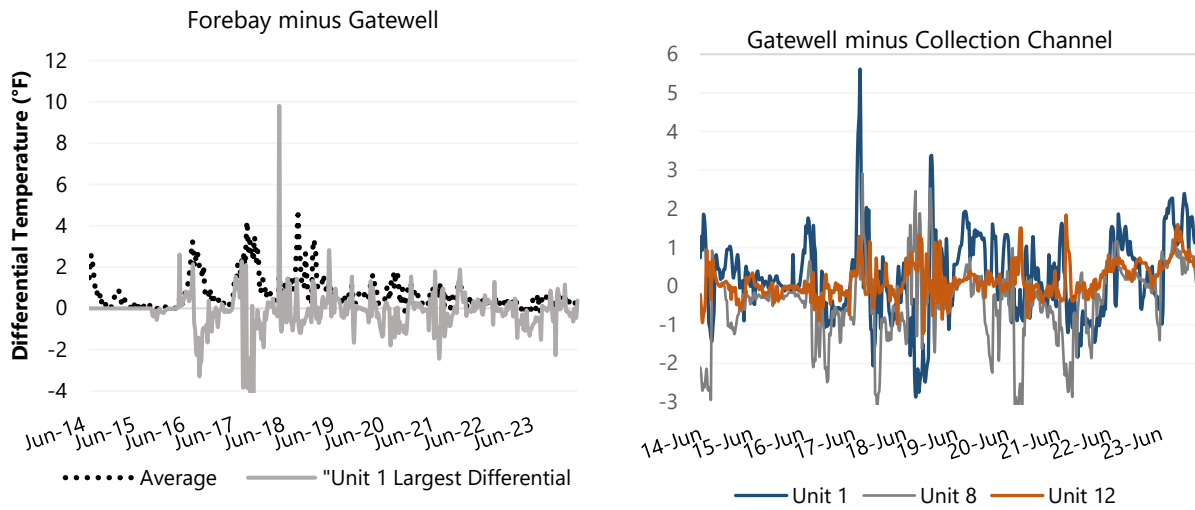


Figure 5
Average Differential Temperatures across Three Dam Locations from June 14 to June 24