



Weekly Temperature Report McNary Dam

June 22, 2020

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Report Period: June 14 through June 18
Report No. 2020 EAS: MCN Dam Temperature Weekly for 0614 to 0618

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 is scheduled to continue through 0700 hours August 31.

Fish Collection

An estimated 50,800 juvenile salmonids were collected and 50,799 bypassed at the McNary Juvenile Fish Facility (JFF; Table 1), comprising mostly subyearling Chinook salmon. Mortality for this reporting period consisted of 1 subyearling Chinook salmon.

River Conditions

Average river flow for this reporting period was 287,700 cubic feet per second (287.7 kcfs) with an average spill of 179.0 kcfs.

Temperature Logger Operations

Temperature sampling began on June 14. Some temperature loggers failed and had to be replaced this week. The extended-length submersible bar screen (ESBS) stored in Unit 6B gatewell slot was moved and a temperature logger was installed in the slot at 0900 hours June 17. Unit 5 is currently out of service with ESBS stored in the B gatewell slot. A temperature logger will be installed in the Unit 5 B gatewell slot as soon as the unit is placed back in service and the screen is deployed.

Weather Conditions

The weekly average daytime temperature for 0700 hours June 14 to 0700 hours June 18, was 67.2°F. The weekly average nighttime temperature was 58.2°F. Temperatures ranged from a maximum of 77.4°F at 1530 hours on June 17 to a minimum of 50.7°F at 0330 hours on June 16 (Figure 1).

Winds averaged 3.2 miles per hour (mph) and were predominately from the east. The highest average wind speed was 29.0 mph at 1100 hours on June 14.

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: 58.8°F, forebay (weekly average of 8 stations); 58.7°F, gatewells (weekly average of 14 stations); 58.7°F, collection channel (weekly average of stations at Units 1, 8,

and 12); and 58.6°F, JFF (weekly average of the separator and sample tank “B”). The gatewells had the highest weekly average temperature, 59.4°F (Figure 3). The maximum temperature, 61.9°F, was recorded in the forebay at 1800 hours on June 17 at Unit 3.

The average weekly temperature differentials within dam locations were: 0.9°F, forebay; 0.8°F, gatewells; 0.2°F, collection channel; and 0.2°F, JFF (Figure 4). The largest temperature differential, 3.9°F, was recorded on June 17 in the forebays at 1930 hours (Unit 7 high, Unit 1 low).

The average weekly temperature differential between the forebay and corresponding gatewell was 0.2°F. The forebay was warmer than the corresponding gatewell on average across the powerhouse. The largest temperature differential was 3.1°F at 1800 hours on June 17 at Unit 1 (forebay greater than gatewell; Figure 5). The average weekly temperature differential between the gatewell and corresponding collection channel location was 0.2°F. On average, the gatewell was warmer than the collection channel at Units 1 and 8. The collection channel was warmer than the gatewell at Unit 12. The largest temperature differential between the gatewell and corresponding collection channel location was 2.1°F at 1930 hours on June 17 at Unit 1 (gatewell greater than collection channel).

Table 1

Bypass, Mortality, and River and Weather Conditions from 0700 Hours June 14 to 0700 Hours June 18

Date	Fish Collected	Fish Bypassed	Mortality		Avg. River Flow	Avg. Turbine Flow	Avg. Spill	Air Temperature		Wind Speed	
			Sample	Facility				Avg.	Max	Avg.	Max
14-Jun	13,800	13,799	1	0	287.2	83.1	199.5	62.6	71.4	4.6	29.0
15-Jun					302.1	73.3	224.1	59.5	67.4	3.7	21.0
16-Jun	14,300	14,300	0	0	286.2	101.3	180.2	62.1	72.5	2.9	17.0
17-Jun					279.6	131.0	143.9	66.8	77.4	2.6	13.0
18-Jun	22,700	22,700	0	0	283.4	131.2	147.5	66.7	69.2	2.0	4.0
Weekly Total	50,800	50,799	1	0	287.7	104.0	179.0	63.6	71.6	3.2	16.8

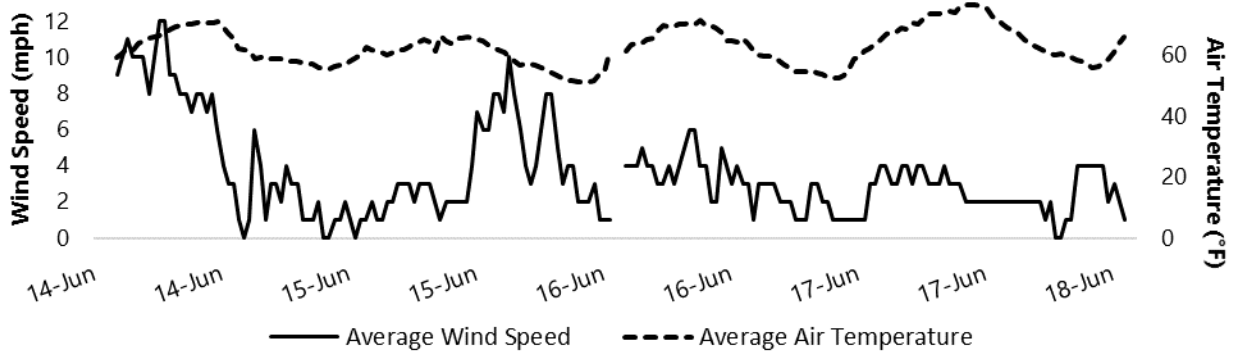


Figure 1

Average Wind Speed and Air Temperature for Each Half-Hour Interval from 0700 Hours June 14 to 0700 Hours June 18

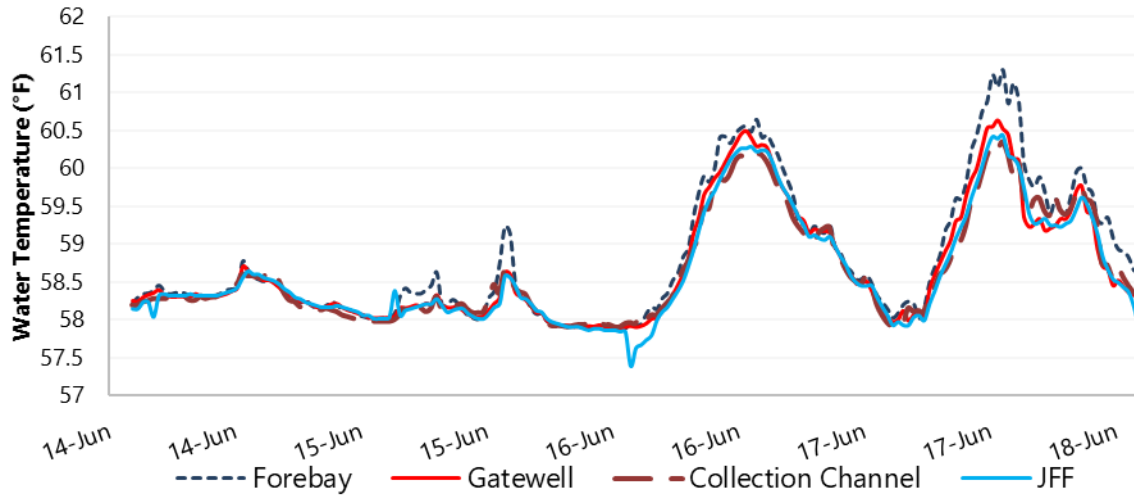


Figure 2
Average Water Temperatures for Each Half-Hour Interval for Four Dam Locations from 0700 Hours June 14 to 0700 Hours June 18

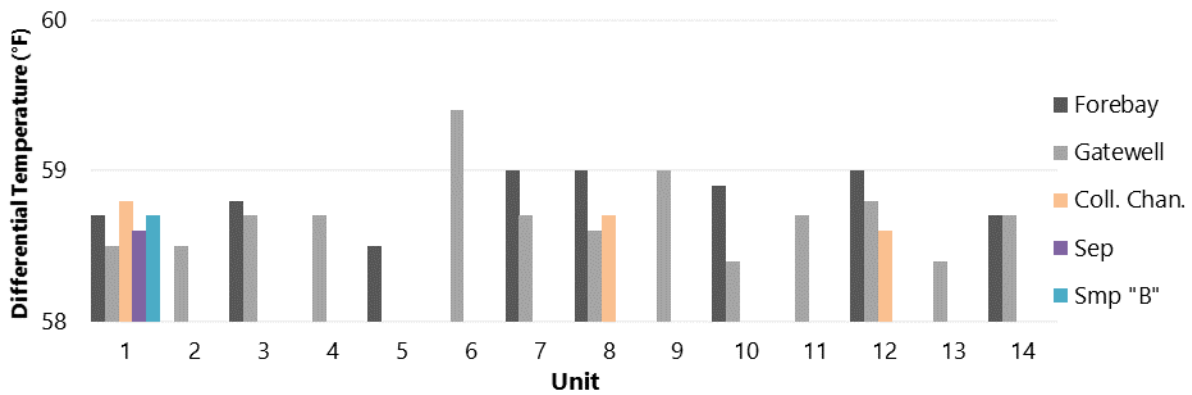


Figure 3
Average Weekly Water Temperatures by Position for Five Dam Locations from 0700 Hours June 14 to 0700 Hours June 18

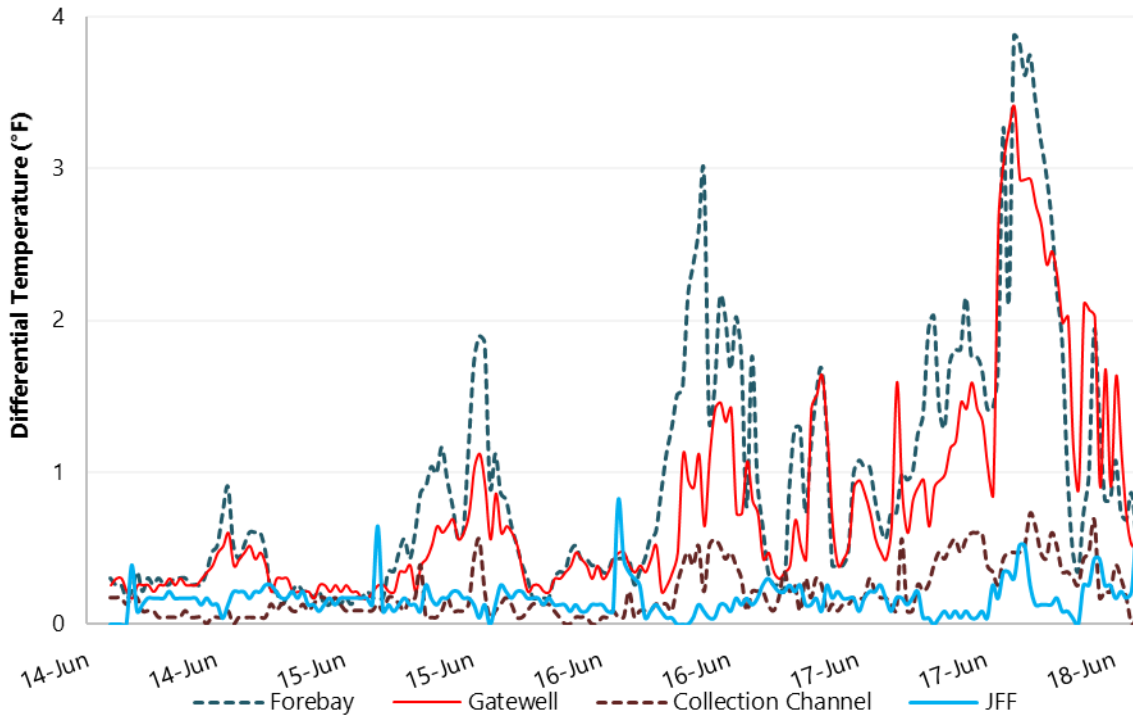


Figure 4
Average Differential Temperatures Within Four Dam Locations from 0700 Hours June 14 to 0700 Hours June 18

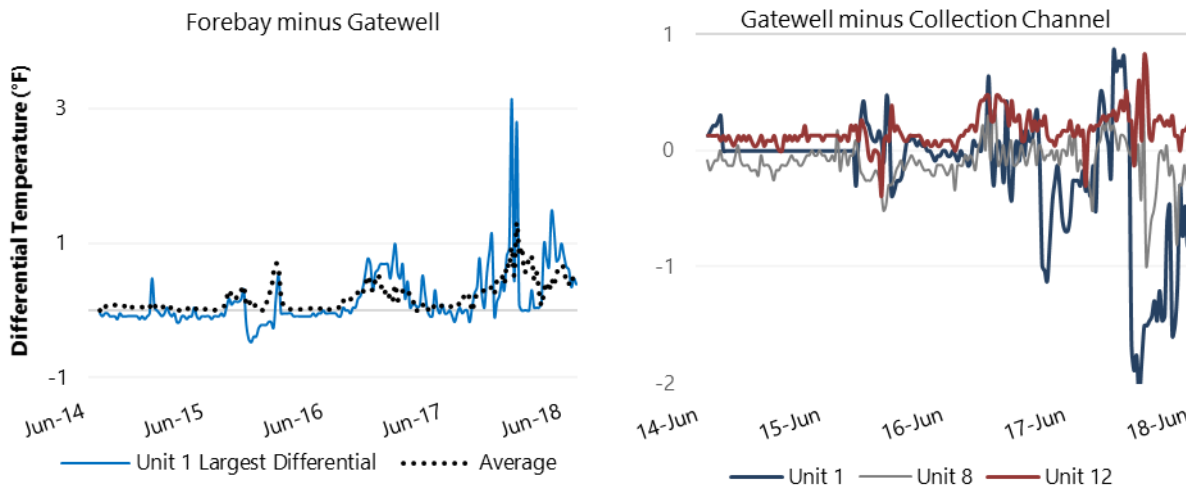


Figure 5
Average Differential Temperatures across Three Dam Locations from 0700 Hours June 14 to 0700 Hours June 18