

Weekly Temperature Report McNary Dam

June 26, 2017

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Report Period: June 16 to 22, 2017

Report No. MCN TEMP 17-2

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

Fish Collection

An estimated 199,902 juvenile salmonids were collected and 119,893 bypassed the McNary Juvenile Fish Facility (JFF; Table 1), comprising 99.3% subyearling Chinook salmon, 0.3% steelhead, 0.2% yearling Chinook salmon, 0.1% coho salmon, and 0.1% sockeye. There were 9 total facility mortalities, comprising 4 sample mortalities and 5 facility mortalities.

River Conditions

Average river flow for this reporting period was 338,700 cubic feet per second (338.7 kcfs), with an average spill of 191.7 kcfs.

Temperature Logger Operations

The logger at Sample Tank "B" failed to log temperature data from 0900 hours on June 19 to 1300 hours on June 20. The probe was replaced before 1330 on June 20. The failed probe is under warrantee and will be exchanged with the manufacturer.

Weather Conditions

The weekly average daytime temperature for 0700 hours June 15 to 0700 hours June 22, 2017, was 72.1 °F. The weekly average nighttime temperature was 66.6 °F. Temperatures ranged from a maximum of 95.1 °F at 1700 hours on June 19 to a minimum of 52.2 °F at 0600 hours on June 22 (Figure 1).

Winds averaged 1.2 miles per hour (mph) and were predominately from the north. The wind was highest at 2100 hours on June 21, with winds averaging 17 mph and gusts up to 30 mph.

Water Temperatures

Average water temperatures within dam locations varied with air temperatures and wind velocities (Figure 2). The weekly average temperature within dam locations were: 60.3 °F, forebay, (weekly

average of 8 positions); 59.8 °F, gatewells, (weekly average of 14 positions); 59.9 °F, collection channel, (weekly average of positions at Units 1, 8, and 12); and 59.9 °F, JFF, (weekly average of the separator and sample tank "B"). The forebay at Units 8 and 10 had the highest weekly average temperature, 60.6 °F (Figure 3). The maximum temperature, 67.2 °F, was recorded in the forebay at 1600 hours on June 21 at Unit 8.

The average weekly temperature differentials within dam locations were: 1.5 °F, forebay; 1.3 °F, gatewells; 0.3 °F, collection channel; and 0.1 °F, JFF. The largest temperature differential, 7.4 °F was recorded in the forebay at 1730 hours on June 18 (Unit 1 low, Unit 10 high, Figure 4).

The average weekly temperature differential between the forebay and corresponding gatewell was 0.6 °F. The forebay was warmer than the corresponding gatewell on average across the powerhouse. The largest temperature differential was 6.2 °F at Unit 1 at 1700 hours on June 17 (forebay greater than gatewell; Figure 5). The average weekly temperature differential between the gatewell and collection channel was 0.3 °F. The gatewell was warmer than the collection channel at Unit 12 on average. The collection channel was warmer than the gatewell at Units 1 and 8. The largest temperature differential between the gatewell and corresponding collection channel location was 2.9 °F at Unit 1 at 1700 on June 17.

Table 1
Bypass, Mortality, and River and Weather Conditions from 0700 Hours June 15 to 0700 Hours June 22

Date	Fish Collected	Fish Bypassed	Mortality		Avg. River Flow	Avg. Turbine Flow	Avg. Spill	Air Temperature		Wind Speed	
			Sam.	Fac.				Avg.	Max	Avg.	Max
6/15-16	29,400	29,397	3	0	380.0	140.2	235.1	62.6	70.3	0.1	2.0
6/16-17					344.1	141.3	198.1	62.2	70.4	1.9	10.0
6/17-18	24,501	24,500	0	1	333.3	143.1	185.5	67.8	77.0	1.8	10.0
6/18-19					336.7	144.7	187.4	72.5	85.1	0.2	2.0
6/19-20	33,301	33,297	0	4	334.2	141.0	188.5	77.7	95.1	0.8	5.0
6/20-21					319.8	142.2	172.9	72.5	88.2	2.0	11.0
6/21-22	32,700	32,699	1	0	323.0	143.8	174.5	68.5	69.6	1.3	17.0
Weekly Total	119,902	119,893	4	5	338.7	142.3	191.7	69.2		1.2	

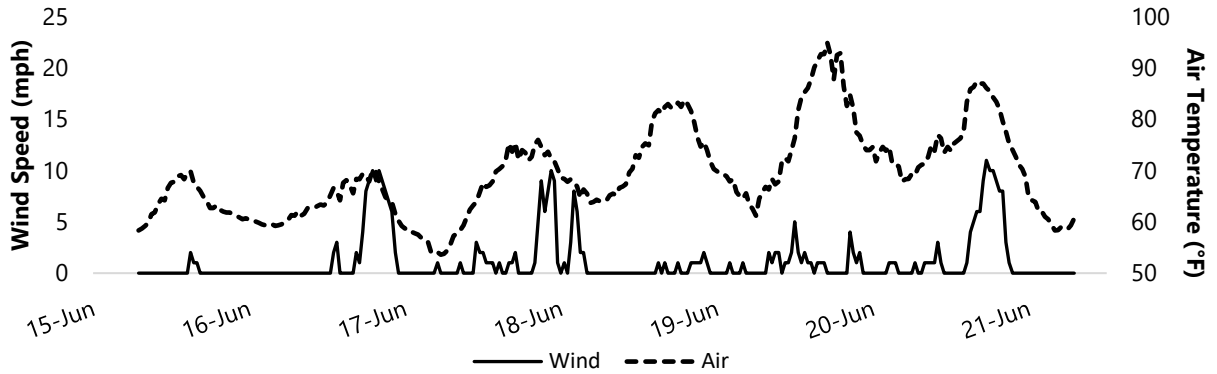


Figure 1
Average Wind Speed and Air Temperature for Each Half-Hour Interval from 0700 Hours June 15 to 0700 Hours June 22

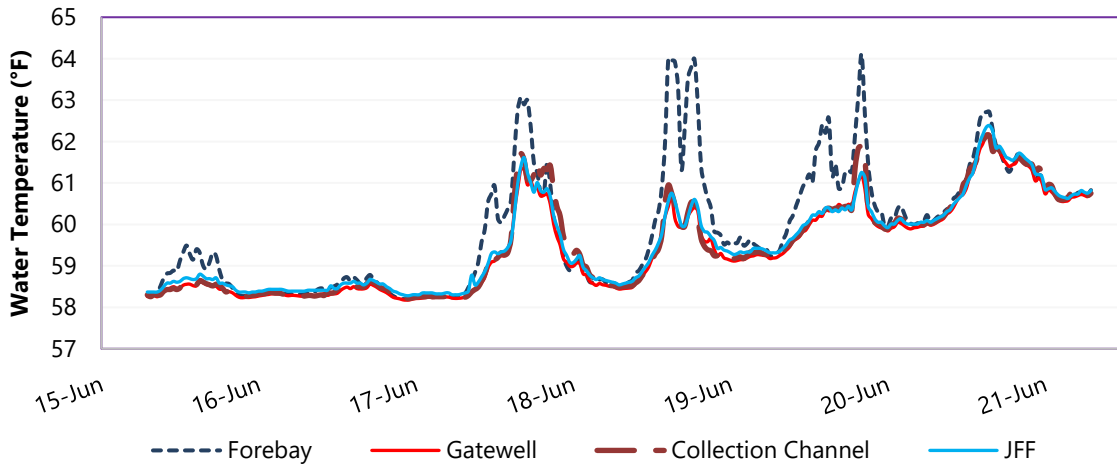


Figure 2
Average Water Temperatures for Each Half-Hour Interval for Four Dam Locations from 0700 Hours June 15 to 0700 Hours June 22

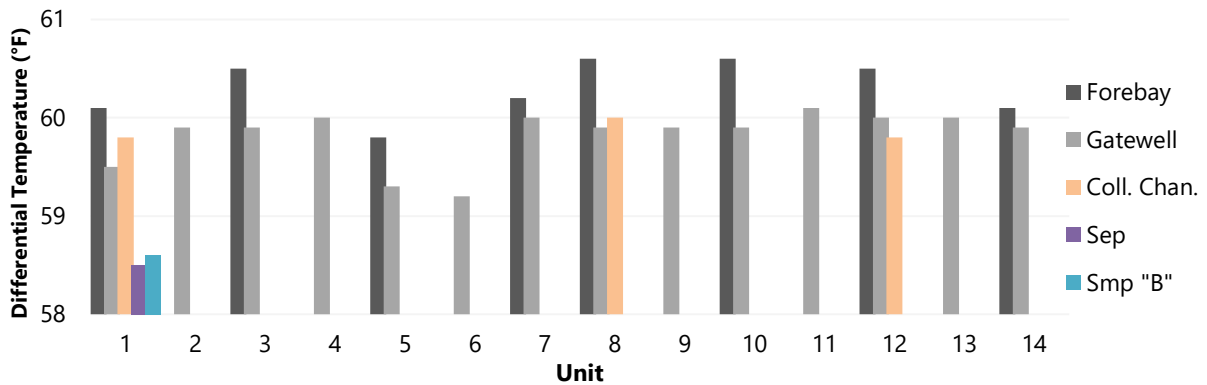


Figure 3
Average Weekly Water Temperatures by Position for Five Dam Locations from 0700 Hours June 15 to 0700 Hours June 22

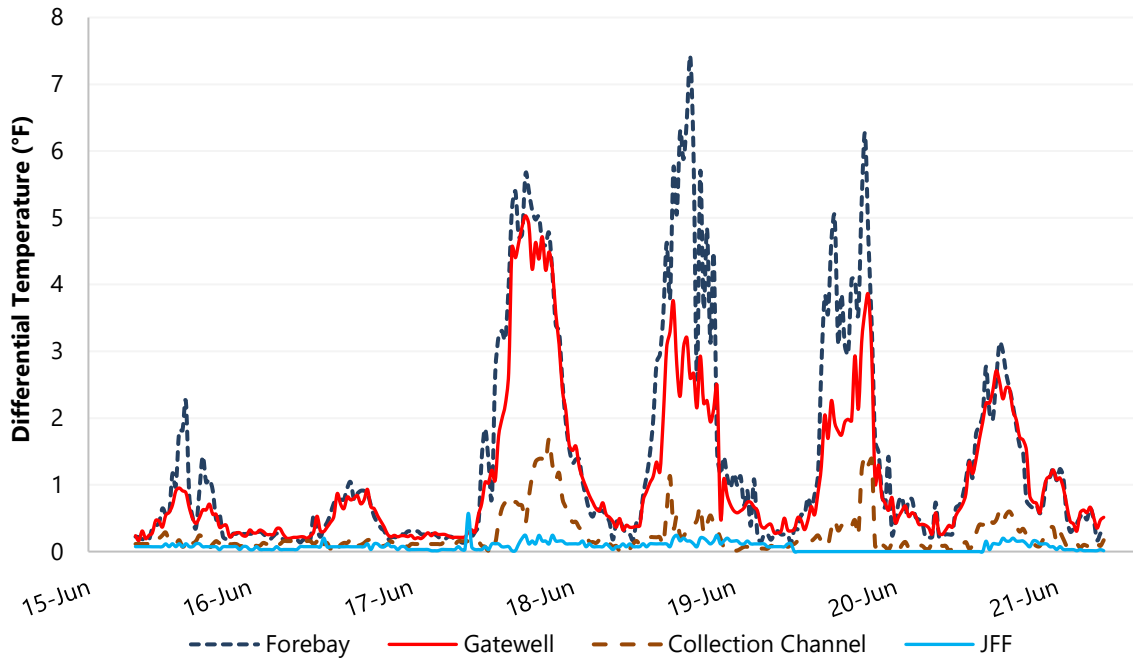


Figure 4
Average Differential Temperatures Within Four Dam Locations from 0700 Hours June 15 to 0700 Hours June 22

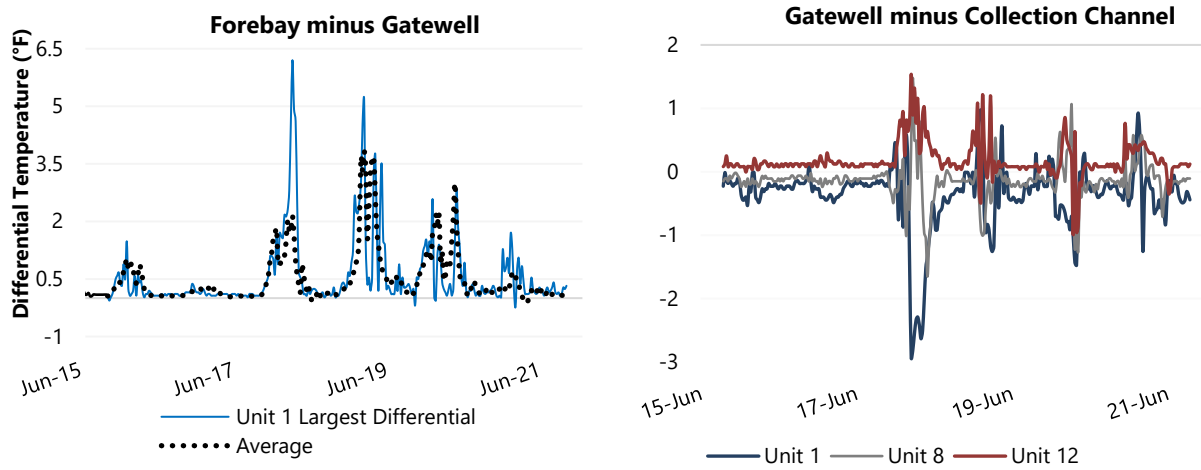


Figure 5
Average Differential Temperatures Across Three Dam Locations from 0700 Hours June 15 to 0700 Hours June 22