

USACE WALLA WALLA DISTRICT BIOLOGICAL SERVICES: TEMPERATURE MONITORING PROGRAM AT MCNARY DAM

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		Report Period:	June 1 to 2, 2016
Report No.	MCN 16-1-T		

Fish Collection

For this reporting period, there were an estimated 8,450 juvenile salmonids. The major species collected were sockeye salmon and Chinook salmon subyearlings. The remainder of the collection comprised steelhead, coho salmon, yearling Chinook salmon, and Chinook salmon fry. There were two juvenile mortalities.

River Conditions

Data for this week's report were collected in one 24-hour period, from 0700 June 1 to 0630 June 2. Average river flow for this reporting period was 202,000 cubic feet per second (202.0 kcfs), with an average spill of 81.0 kcfs. Average river temperature was 60.0 °F. River flow amounts across the dam are based on daily reporting from 0700 the day before the temperature monitoring to 0700 the day of the temperature monitoring. This timeframe corresponds to the sample to present an accurate picture of temperature effects on the smolts.

Weather Conditions

Temperatures for June 1 reached a maximum of 87.6 °F at 1700. At 1730, temperatures were above 80 °F, where winds averaged 1.6 mph from the north with gusts up to 23 mph.

Probe Operations

Prior to June 1, there were 35 temperature probes deployed throughout the project site and the Juvenile Fish Facility (JFF). There were 14 probes hung off of slot C pier noses in the forebay corresponding with all 14 turbines. These probes sit approximately 5 feet below the water surface. Fourteen probes were also deployed in the gatewells in B slots positioned

approximately 2 to 3 feet deep. In the collection channel, two probes were set at units 8 and 12, and one probe was deployed in the tailwater at unit 14. The probe in the tailwater at unit 14 was positioned about 5 feet below the surface. At JFF, four probes were placed in key locations: the separator, sample tank B, 9W recovery raceway, and the barge dock. The data in this report are comprised from these probe readings.

On the afternoon of June 2, six additional probes were deployed. Five probes were placed in front of spillbays 22, 17, 12, 7, and 1 on the tailrace side. Another probe was added in the collection channel at unit 1, and the probe from the barge dock at JFF was moved to the tailrace wing wall.

Two more probes will be deployed once additional supplies arrive. One probe will be set in the tailwater at unit 1 providing additional coverage with the probe at unit 14. The last probe will replace the probe taken from the barge dock. After the last probes are in place, there will be a total of 43 probes deployed through the site, including JFF.

Water Temperatures

The average forebay temperature during the reporting period was 61.3 °F across the entire forebay (Table 1). The highest forebay temperature was 66.8 °F at 1500 in front of unit 14. The average gatewell temperature across all gatewells was 62.0 °F. The highest gatewell temperature was 65.9 °F in unit 1 at 1530 (Table 2).

The collection channel temperature averaged 61.3 °F between units 8 and 12. The highest temperature was 63.2 °F at 1530 at unit 8 (Table 3). The water temperature in JFF averaged 60.3 °F across the separator, sample holding tank, and recovery raceway No. 9W. The maximum temperature was 61.7 °F in raceway No. 9W at 1600 to 1700 (Table 4).

Table 1
Forebay Water Temperature

Date	Daily Average														Daily Max
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	
1-Jun	63.9	59.8	61.9	59.9	60.1	61.7	63.0	62.0	60.3	61.6	58.9	61.6	62.1	63.3	69.1

Table 2
Gatewell Water Temperature

Date		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1-Jun	Avg.	62.5	62.8	60.8	61.8	62.4	61.2	62.4	59.9	61.6	64.5	61.1	62.6	63.6	60.1
	Min.	60.3	61.4	60.5	61.2	60.8	59.8	60.8	58.7	60.5	63.2	59.9	61.6	62.8	59.4
	Max.	65.9	64.8	62.1	63.2	65.0	65.5	65.5	61.6	63.5	66.8	62.5	64.6	65.7	61.9

Table 3
Collection Channel Average and Maximum Water Temperatures

Date	Daily Average		Daily Minimum		Daily Maximum	
	8	12	8	12	8	12
1-Jun	61.5	61.1	60.7	60.5	63.2	63.0

Table 4
Juvenile Fish Facility Daily Average and Maximum Water Temperatures

Date	Daily Average			Daily Maximum		
	Separator	Raceway No. 9W	Sample Tank	Separator	Raceway No. 9W	Sample Tank
1-Jun	60.6	60.5	59.9	61.9	61.7	61.4

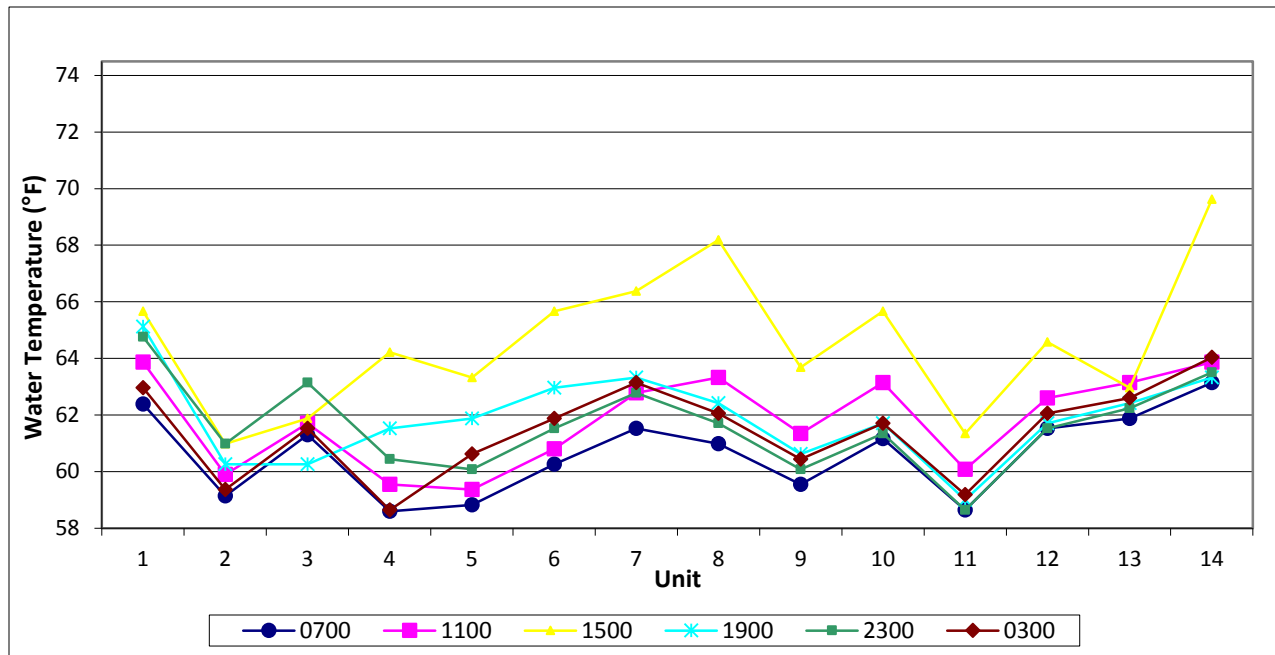


Figure 1
McNary Forebay Profile by Unit

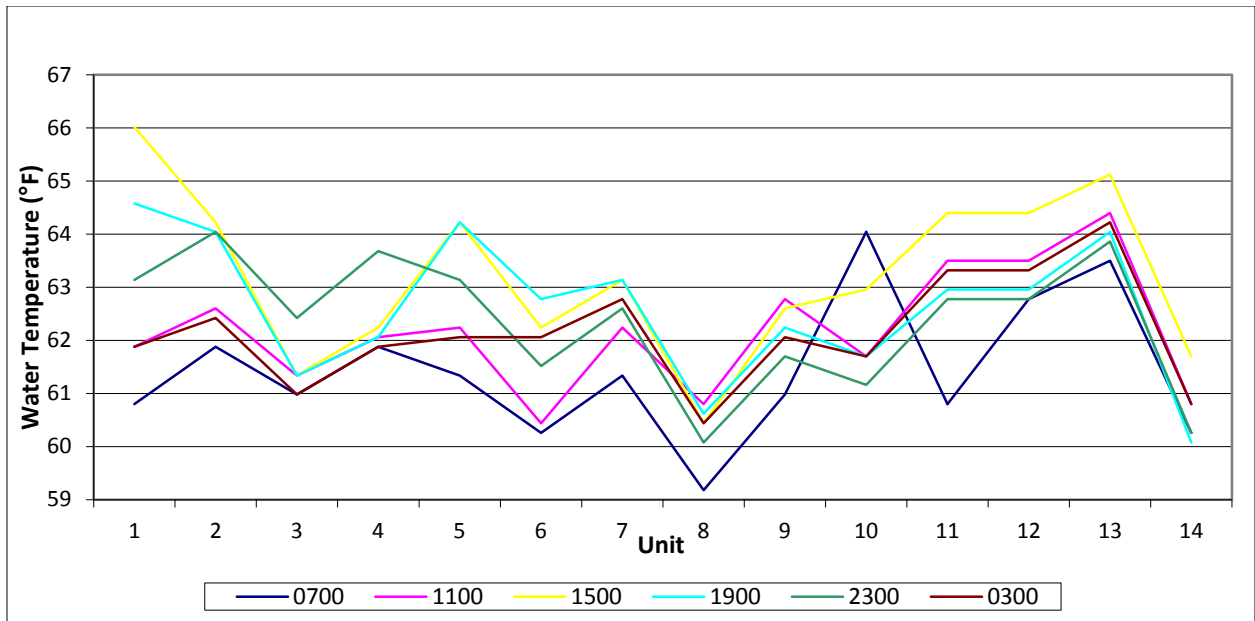


Figure 2
McNary Gatewell Profile by Unit

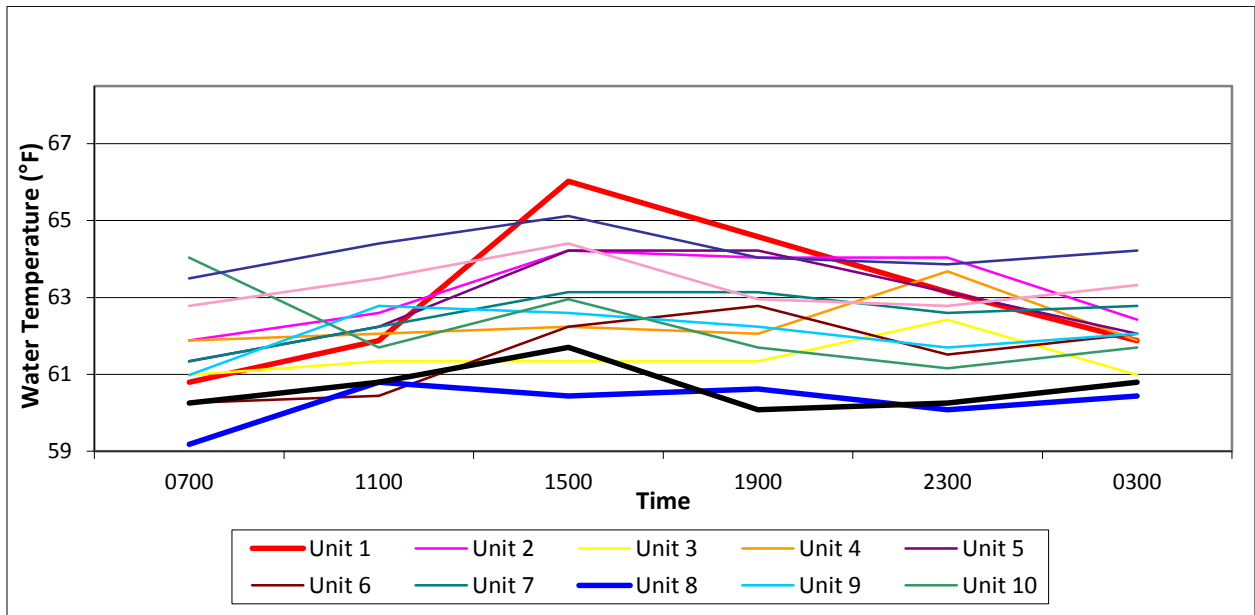


Figure 3
McNary Gatewell Profile by Time