



*Your Northwest renewables utility*

May 28, 2014

**VIA ELECTRONIC FILING**

Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission (FERC)  
888 First Street NE  
Washington, DC 20426

**Re: Jackson Hydroelectric Project, FERC No. 2157  
Water Quality Monitoring Plan – 2013 Annual Report  
License Article 401(b)**

Dear Secretary Bose:

Enclosed is Public Utility District No. 1 of Snohomish County's Water Quality Monitoring Plan Annual Report for 2013 pursuant to License Article 401(b) for the Jackson Hydroelectric Project. The draft report was provided to the Aquatic Resource Committee for a 30-day review and comment period. Consultation documentation is included in the report's appendices.

If you have any questions on the Water Quality Monitoring Plan Annual Report for 2013, please contact Keith Binkley, Natural Resources Manager, at (425) 783-1769 or [KMBinkley@snopud.com](mailto:KMBinkley@snopud.com).

Sincerely,

A handwritten signature in blue ink, appearing to read "Kim D. Moore".

Kim D. Moore, P.E.  
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(425) 783-8606

Enclosed: Water Quality Monitoring Plan Annual Report for 2013

cc: Monika Kannadaguli, Ecology Northwest Regional Office Water Quality Program  
Keith Binkley, District

# **Henry M. Jackson Hydroelectric Project**

(FERC No. 2157)



## **License Article 401: Water Quality Monitoring Plan – 2013 Annual Report**



Everett, WA

May 2014

**Final** – This document has been prepared for the District. It has been peer-reviewed by the District for accuracy and formatting based on information known at the time of its preparation and with that understanding is considered complete by the District. The document may be cited as:

District. 2014. Water Quality Monitoring Plan 2013 Annual Report (License Article 401) for the Henry M. Jackson Hydroelectric Project, FERC No. 2157. May 2014.

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## List of Acronyms and Abbreviations

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7-DAD Max	seven-day average of the daily maximum
ARC	Aquatic Resource Committee
District	Public Utility District No. 1 of Snohomish County
Ecology	Washington Department of Ecology
FERC	Federal Energy Regulatory Commission
Project	Henry M. Jackson Hydroelectric Project, FERC No 2157
RM	river mile
USGS	U.S. Geological Survey
WQMP	Water Quality Monitoring Plan

## **1. INTRODUCTION**

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Public Utility District No. 1 of Snohomish County (the District) received a license on September 2, 2011 (License), from the Federal Energy Regulatory Commission (FERC) for the Henry M. Jackson Hydroelectric Project (Project). The FERC approved the Water Quality Monitoring Plan (WQMP) on March 30, 2012, pursuant to License Article 401(a). The District is to file a report with the FERC by June 30 of each year detailing the monitoring efforts of the previous calendar year, pursuant to License Article 401(b).

This WQMP Annual Report covers activities conducted in calendar year 2013. Monthly measurements of reservoir water quality are presented in Appendix A. Appendices B, C, and D present the data from continuous monitoring of water temperature in the river and tributary systems. Appendix B shows graphical data, Appendix C shows tabular data, and Appendix D shows seven-day average of the daily maximum water temperature in tabular format. This WQMP Annual Report was provided to the Aquatic Resources Committee (ARC) [consisting of the City of Everett, City of Sultan, Snohomish County, Washington Department of Ecology (Ecology), Washington Department of Fish and Wildlife, Tulalip Tribes, U.S. Forest Service, National Marine Fisheries Service, U.S. Fish and Wildlife Service and American Whitewater] for a 30-day review and comment period. Consultation documentation is included in Appendix E, and responses to comments from the City of Everett regarding the draft report are in Appendix F.

The annual reports fulfill monitoring and reporting requirements as stipulated in Ecology's 401 Water Quality Certification Order (Order No. 7918, October 18, 2010). As described in the 401 Certification Order (section 9.0, Monitoring and Reporting Requirements), the report includes summaries of the water quality data, and includes sample dates, times, locations, and results. Compliance with state water quality standards is discussed, as well. The reports will be submitted to the hydropower certification manager at Ecology's Water Quality Program Northwest Regional Office, and the FERC.

The WQMP requires the District to collect various water quality data in and around Spada Lake Reservoir, Sultan River between river mile (RM) 16.2 and RM 0.2, and Skykomish River at RM 14.1 and RM 13.2 (Table 1-1).

**Table 1-1. Parameters to be monitored, locations and sampling frequency.**

Parameter	South Fork Skykomish River	Spada Lake Reservoir (near log boom)	RM 16.1	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Skyko. RM 14.1	Skyko. RM 13.2	Frequency
Water temperature	•	•	•	•	•	•	•	•	•	•	Year-round (hourly) in stream reaches. Monthly between May 1 and October 31 for lake profile.
Dissolved oxygen	•	•		•			•				May 1 to October 31. Monthly in stream reaches. Monthly for lake profile.
Turbidity	•	•		•			•				May 1 to October 31. Monthly in stream reaches. Monthly for lake profile.
pH	•	•		•			•				May 1 to October 31. Monthly in stream reaches. Monthly for lake profile.
Secchi transparency		•									May 1 to October 31. Monthly.
Flow discharge	•		•	•	•	•	•				Year-round. Daily.
Reservoir elevation		•									Year-round. Daily.

The following sections of this report are organized and structured as water flows, beginning in the upper portion of the Sultan watershed.

## 2. RESERVOIR MONITORING

### 2.1. *Climatic Conditions*

#### 2.1.1. Rainfall Data

During 2013, a total rainfall of 142.52 inches was recorded at the Culmback Dam Weather Station. The rainfall measured during 2013 was less than the historical annual average of 161.07 inches. Monthly rainfall averaged 11.87 inches and ranged between a low of 0 inches in July and 22.95 inches in January (Table 2-1). During 2013, the highest recorded daily rainfall (4.06 inches) occurred on December 24, 2013.

**Table 2-1. Monthly rainfall recorded at the Culmback Dam Weather Station, 2013.**

Month	Rainfall (inches)
January	22.95
February	14.52
March	11.83
April	20.70
May	8.90
June	5.80
July	0.0
August	3.40
September	11.50
October	3.20
November	16.85
December	22.87

### 2.1.3. Snow Survey Measurements

The District conducts surveys of the snowpack annually during late March. During the March 2013 survey, a snow depth of 159.3 inches was recorded at Stickney Ridge at 3,600 feet elevation. This depth was 157% of the historical mean (Figure 2-1). In terms of water content, a depth of 50.4 inches was recorded equating to 117% of the historic mean (Figure 2-1).

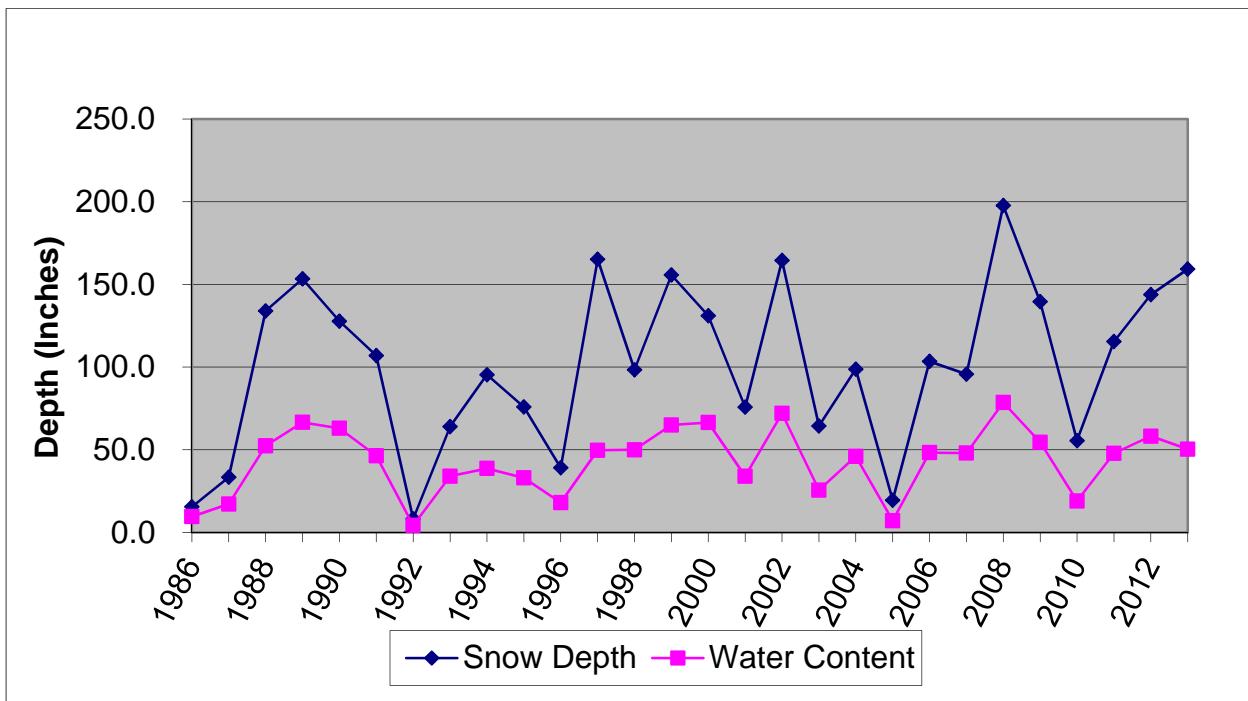
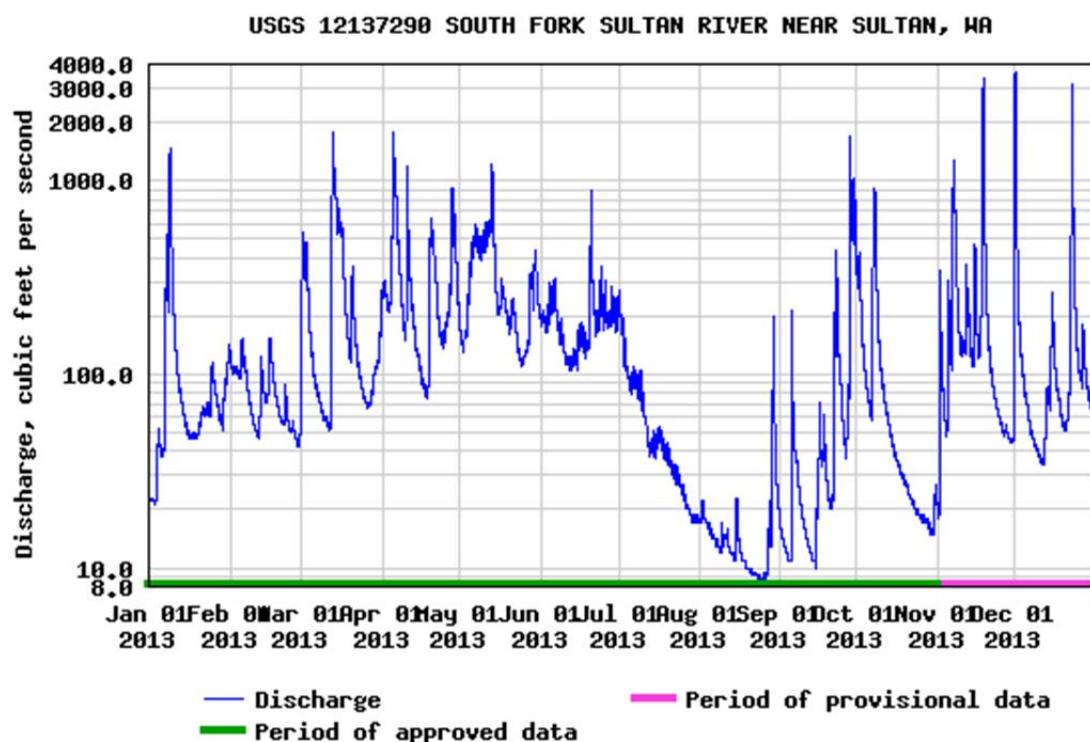


Figure 2-1. Historic snow surveys, Stickney Ridge (elevation 3,600 feet), Sultan Watershed, 1986-2013.

### 2.1.5. Reservoir Inflows

Three tributaries feed into Spada Lake Reservoir; the South Fork Sultan River, Williamson Creek, and the mainstem Sultan River, including Elk Creek. Historically, the U.S. Geological Survey (USGS) has operated gages at several locations within the basin. Currently, the South Fork Sultan River is the only tributary that is actively gaged. At this location, the USGS operates Station No. 12137290, South Fork Sultan River near Sultan, WA, which provides real time information for Project operations. Hydrologic modeling indicates that the South Fork Sultan River accounts for between 14 and 22% of inflow into the reservoir, depending on conditions. The 2013 hydrograph for this station is presented in Figure 2-2. Instantaneous flow during 2013 averaged 163.5 cfs and ranged between a low of 8.4 cfs and a peak flow of 3,650 cfs. The average mean annual flow, based on the USGS Water Year, for this station is 129 cfs (Period of Record 1992-2013).

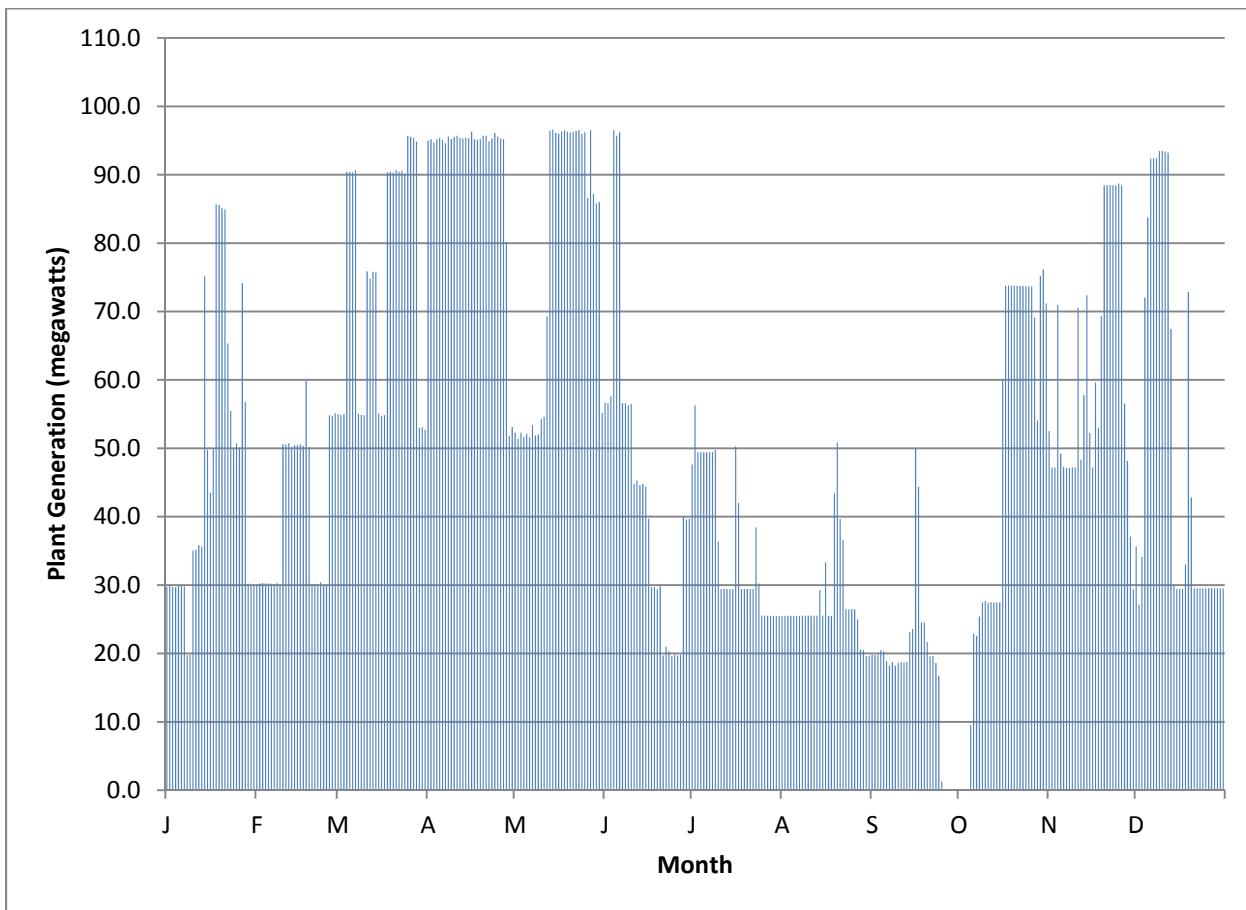


**Figure 2-2. Hydrograph for the South Fork Sultan River, USGS Station No. 12137290, 2013 calendar year.**

## 2.3. Reservoir Operations

### 2.3.1 Project Outflow

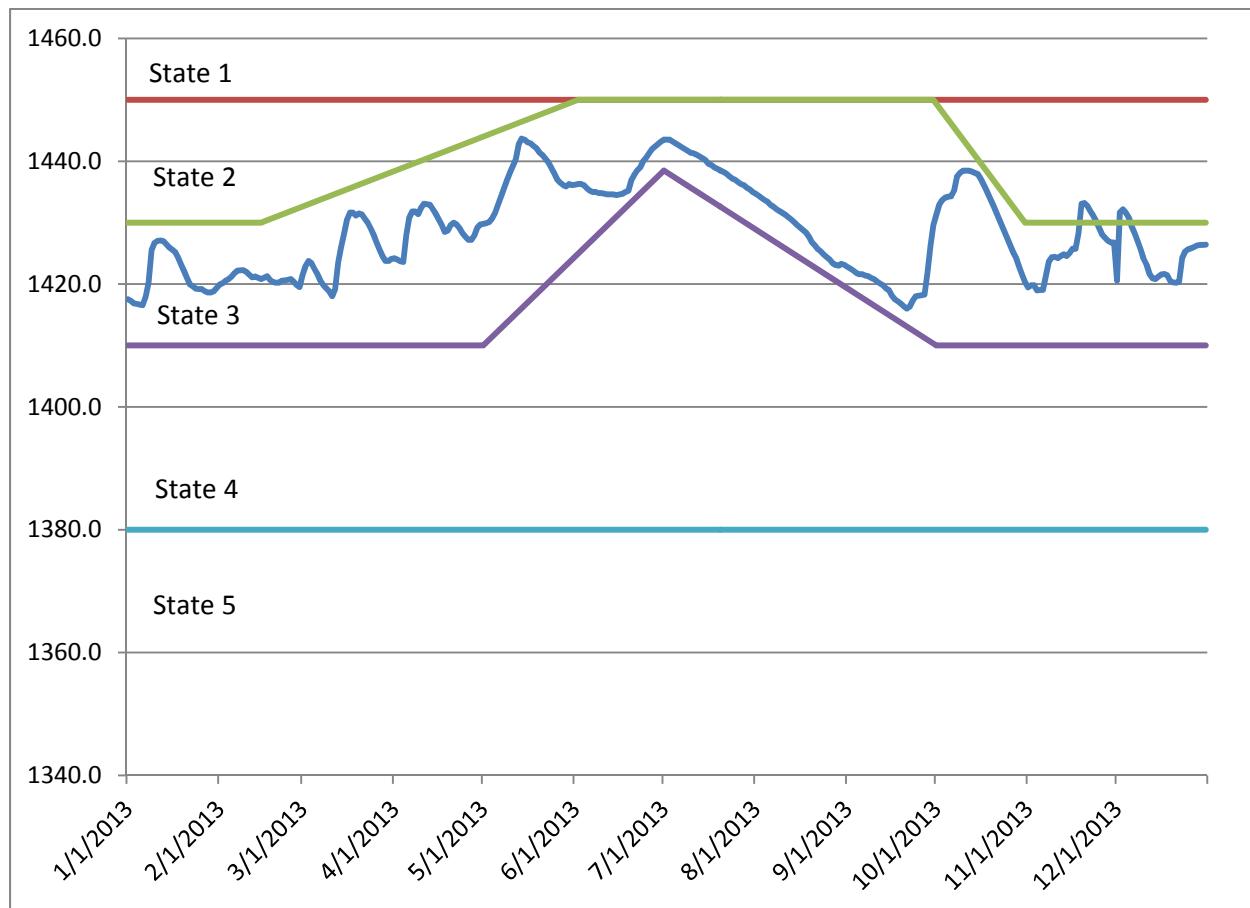
In absence of reservoir spill, the vast majority of project outflow occurs through the power tunnel as indexed by daily plant generation. Daily plant generation during 2013 closely mimicked Project inflows (Figure 2-3). A total of 447,763 megawatts were produced during 2013 equating to 103% of the historic annual average of 434,529 megawatts.



**Figure 2-3. Daily plant generation at the Project, 2013.**

### 2.3.2. Reservoir Elevation

Water surface elevations in Spada Lake Reservoir are partitioned into four states, which define how the project is to be operated. States 1 and 2 require full power operation to withdraw 1,300 cfs for flood control. State 3 is a discretionary zone, which allows the District to operate in a range defined by the maximum of States 1, and 2 or minimum defined by State 4. State 4 requires minimum power operations to maintain the instream flows for fish and habitat protection and water supply for the City of Everett. A fifth state (State 5) lies below reservoir elevation 1,380 feet msl. The Project does not operate in this state. During 2013, Spada Lake Reservoir was drafted and filled in accordance with established Spada Lake Reservoir Rule Curves for the Project (Figure 2-4).



**Figure 2-4. Daily water surface elevation, Spada Lake Reservoir, 2013.**

## 2.4. Water Quality

Monthly sampling of Spada Lake Reservoir water quality occurred on the following dates during 2013: 5/23, 6/19, 7/22, 8/26, 9/18, and 10/16. Sampling included profiles measurements of conventional parameters including temperature, pH, dissolved oxygen, and turbidity. Sampling was conducted cooperatively with the City of Everett during 2013, and included measurements of nutrients, phytoplankton, and zooplankton.

By summary, Spada Lake Reservoir was cold and turbid during May and June, especially at depth. The highest phytoplankton biovolume of the year was recorded during June. By July, a thermocline was set at around 20 feet in depth. Zooplankton, in particular *Holopedium*, had reached their summer maximum in July. By the end of August, the warmest water was documented and the effects of the thermocline dissolved oxygen were apparent. Below saturation oxygen persisted near the bottom of the reservoir during October. During the course of the year, most biological activity took place in the epi- and metalimnion. Additional information is provided below, by parameter.

### 2.4.1. Temperature

Spada Lake Reservoir temperatures ranged from 4.3 to 20.8°C depending on season and depth (Table 2-2, Appendix A). The end of August had the warmest temperatures. The thermocline was strongest in July and August. September also had a high resistance to mixing. The strongest point in the thermocline dropped from 20 to 35 feet over the course of the summer. The thermocline was largely absent in October at the completion of the sampling season.

**Table 2-2. Monthly measurements of water temperature at Intake Tower, Spada Lake Reservoir, June through October 2013.**

Temperature (°C) at Elevation in Reservoir											
Date	Elevation	Temperature	Instrument Elevation								
			1440'	1430'	1420'	1410'	1400'	1390'	1380'	1370'	1360'
5/23	1439.8	10.6		10.4	9.8	9.2	8.4	6.6	5.7	5.3	4.9
6/19	1435.2	15.8		15.3	13.7	11.2	9.6	7.2	6.2	5.8	5.4
7/22	1438.0	20.6		20.6	17.6	13.5	11.3	9.2	8.1	6.3	6.1
8/26	1424.0	20.8			20.7	20.6	20.5	15.2	10.4	7.0	6.5
9/18	1417.2	18.9				18.9	18.9	18.1	15.3	9.9	6.8
10/16	1437.2	11.6		11.6	11.5	11.4	11.1	10.4	10.3	10.0	9.7

### 2.4.2. pH

The highest measured pH was 7.37 in July. The lowest pH of 6.2 was measured in September at a depth of 150 feet, likely due to bacterial decomposition of organic material falling through the thermocline.

### **2.4.3. Dissolved Oxygen**

Dissolved oxygen ranged from 12.2 mg/L in May to 8.4 mg/L in October. By saturation values, the maximum of 112% in July was likely due to primary production, and the minimum of 75.9% of saturation at depth in October due to bacterial degradation.

### **2.4.4. Turbidity**

In May, the surface was less turbid than at depth. Turbidities at the surface and at depth decreased through August. In September, there was an increase at depth. In October, turbidity increased throughout the water column. Through most of the season the cut-off points between higher and lower turbidities can be traced back to the thermal structure of the reservoir.

### **2.4.5. Secchi Transparency**

As shown in Table 2-3, Secchi transparency ranged from 16 feet (in August) to 7 feet (in October).

**Table 2-3. Secchi transparency in Spada Lake Reservoir, 2013.**

Date	Result (feet)
5/23/2013	12.5
6/19/2013	15
7/22/2013	14
8/26/2013	16
9/18/2013	14
10/16/2013	7

### **2.4.6. Nutrients**

Total phosphorus concentrations were around 2 to 6 µg/L for most the summer, both at the surface and at depth. An increase in total phosphorous concentration was noted during August sampling. Total nitrogen was also reasonably constant around 50 to 80 µg/L for most of the summer with an increase noted in October. Nitrate showed variability over time and depth, with values between 0.1 and 61.6 µg/L. Silica concentrations were similar throughout the water column (approximately 1500 µg/L).

### **2.4.7. Phytoplankton**

The largest number and biovolume of phytoplankton occurred in the June sample. Over the course of the summer phytoplankton declined in number and increased in size and species diversity concurrent with the rise in zooplankton. Chrysophyta was the predominant taxon by biovolume for the entire summer. Small phytoplankton (unicellular chrysophytes and nanoplanktonic chlorophytes) made up the bulk of the biovolume of phytoplankton for most of the year. In situ chlorophyll and dissolved oxygen readings indicate that primary productivity took place predominantly between 0 and 40 feet.

### **2.4.8. Zooplankton**

*Holopedium* were the dominant zooplankter in all samples but the May sample, when *Epischura* was the most common. In terms of peak density, *Holopedium* was highest in mid-July (3.3/L)

and *Conochilus* was highest (4.3/L) in August. The largest diversity in zooplankton species occurred in the August sample. The total number of zooplankton/L was less than two on all sample dates but mid-July (3.7/L) and mid-August (6.1/L).

## **3. RIVER MONITORING**

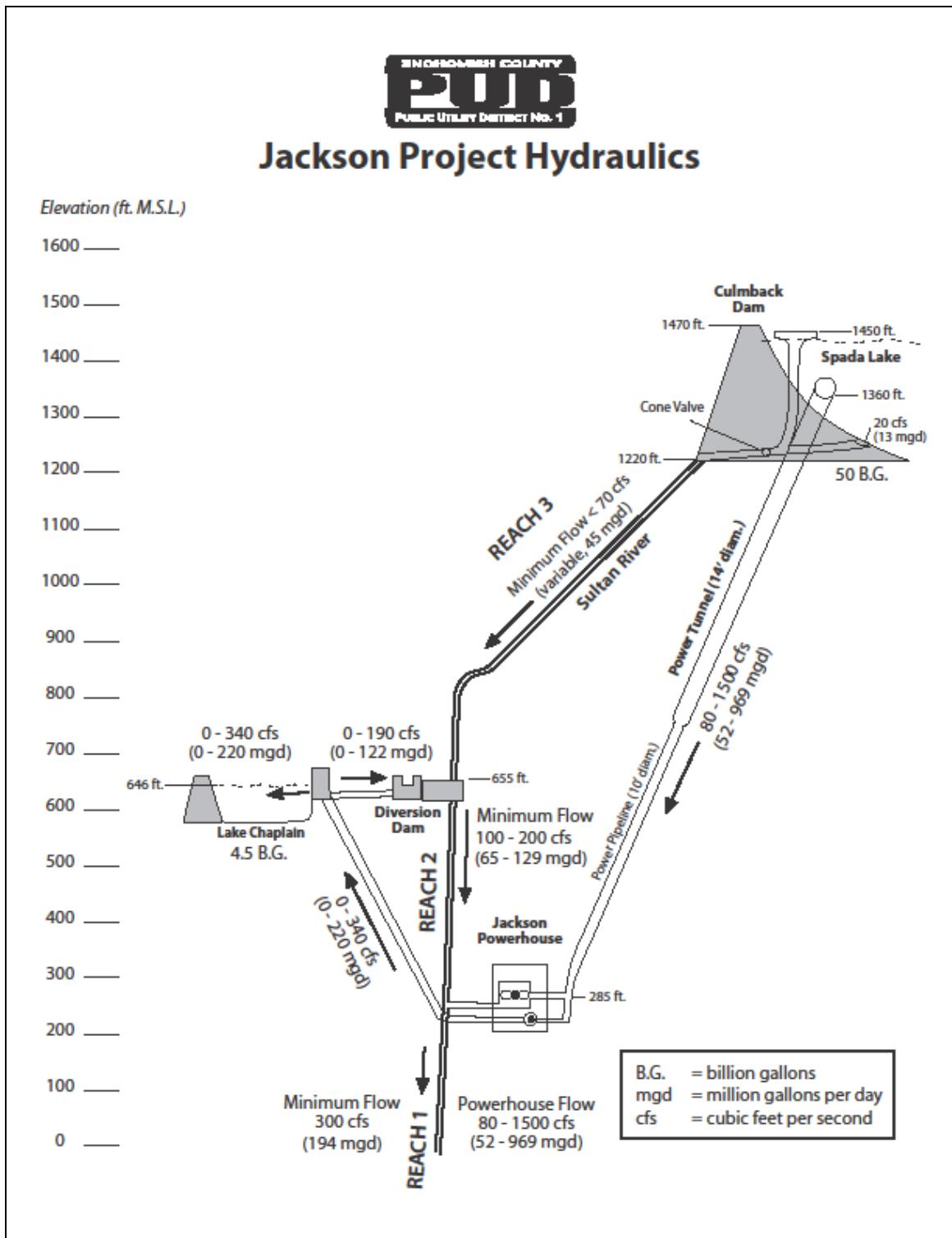
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### **3.1. *Background***

Maintaining suitable water temperatures in the Sultan River is an important aspect of the Project operation. Water temperature influences fish behavior, especially anadromous fish during the freshwater phase of their life cycle. The Sultan River produces chinook, coho, chum and pink salmon, and steelhead trout plus resident fish species.

The Project's water storage and conveyance system is a complex of conduits moving water between two reservoirs with discharge into the Sultan River occurring at three facilities – Culmback Dam, Diversion Dam, and powerhouse (Figure 3-1). Briefly, an annual water budget of 20,362 acre feet is variably released into the river at Culmback Dam through a 10-inch cone valve while water to meet instream flow requirements (at the Diversion Dam) is routed through the Francis turbine units at the powerhouse, then the Lake Chaplain pipeline to a former City Water diversion tunnel connected to another water line discharging into the river at the diversion dam. Except for infrequent spill at Culmback Dam, these releases, plus tributary flows to the river, provide the instream flow for fish species throughout five river miles upstream from the powerhouse. Pelton turbines, which discharge directly to the river at RM 4.5, provide additional water when needed to meet minimum instream flow requirements below the powerhouse.

Water temperatures in Reach 3, immediately downstream of Culmback Dam, are seasonally influenced to a variable extent by releases through an auxiliary line down the face of Culmback Dam. The releases are described in detail in the annual reporting for the Water Temperature Conditioning Plan for Reach 3 (District 2010). Downstream, water temperatures at the Diversion Dam are influenced by the amount and depth of release at Culmback Dam (whether through the intake structure, cone or Howell-Bunger valves, or by spill), by tributary flows, and by meteorological conditions. Moveable panels at the Spada Lake Reservoir intake structure control the level and, hence, the temperature at which water is withdrawn from the reservoir to the powerhouse intake when conditions allow. When isothermal conditions exist in the reservoir, no change in water temperature can be achieved through moving the panels on the intake structure to a different level in the reservoir. The degree of temperature control possible by panel manipulation varies seasonally with the degree of temperature stratification in the reservoir. Panel position during 2013 is presented in Table 3-1.



**Figure 3-1. Schematic of water conveyance system associated with the Jackson Hydroelectric Project.**

**Table 3-1. Settings for selective temperature withdrawal panels, Spada Lake Reservoir, 2013.**

Dates	Panel Setting	Upper Opening (elevation in feet msl)	Lower Opening (elevation in feet msl)
Beginning of year to 3/20/13	E	1385 to 1360	none
3/21/13 to 5/20/13	C	1422.5 to 1395	none
5/21/13 to 7/2/13	D	1407 to 1385	none
7/3/13 to 9/5/13	D-E	1410 to 1397.5	1370 to 1360
9/6/13 to 9/24/13	E	1385 to 1360	none
9/25/13 to 10/5/13	Plant Shutdown	no flow	n/a
10/6/13 to end of year	E	1385 to 1360	none

### **3.2. Continuous Temperature Monitoring**

Water temperature was continuously monitored at 13 locations with the Project area during 2013 (Figure 3-2). Monitoring at 10 of these locations was conducted by the District. The remaining monitoring was conducted by the USGS through a cooperative agreement. These locations, in order from upstream to downstream, include:

- South Fork Sultan River, upstream of Culmback Dam, near RM 18.2 (USGS Gage No. 12137290);
- Sultan River, within the bypass reach immediately downstream of Culmback Dam, at RM 15.8;
- Sultan River, within the bypass reach, near RM 14.3;
- Sultan River, within the bypass reach, near RM 12.8;
- Sultan River, within the bypass reach, near RM 11.3;
- Big Four Creek, tributary to Sultan River, near RM 11.3;
- Sultan River, within the bypass reach immediately upstream of the Diversion Dam, near RM 9.8;
- Sultan River, immediately downstream of the Diversion Dam, near RM 9.6 (USGS Gage No. 12137800);
- Sultan River, upstream of the Powerhouse, near RM 4.9;
- Sultan River, downstream of the Powerhouse, near RM 4.4,
- Sultan River, near the confluence with the Skykomish River, at RM 0.2;
- Skykomish River, upstream of the confluence with the Sultan River, at RM 14.1; and
- Skykomish River, downstream of the confluence with the Sultan River, at RM 13.2.

Water temperature monitoring at Sultan River RM 14.3, 12.8 and 11.3, are part of the Water Temperature Conditioning Plan monitoring sites; the others are requirements under the Fisheries and Habitat Monitoring Plan.

In general, water temperatures observed during 2013 were consistent with those collected during 2008 and 2009 by CH2M Hill and presented in the Water Quality Final Technical Report (CH2M 2009). No exceedances of state water temperature criteria were documented during 2013. Figures depicting water temperatures during 2013 are presented in Appendix B. A tabulation of all mean daily temperature data for 2013 is presented in Appendix C. The seven-

day average of the daily maximum temperature (7-DAD Max) is presented in Appendix D. Data gaps are attributed to malfunctioning equipment or equipment lost due to vandalism.

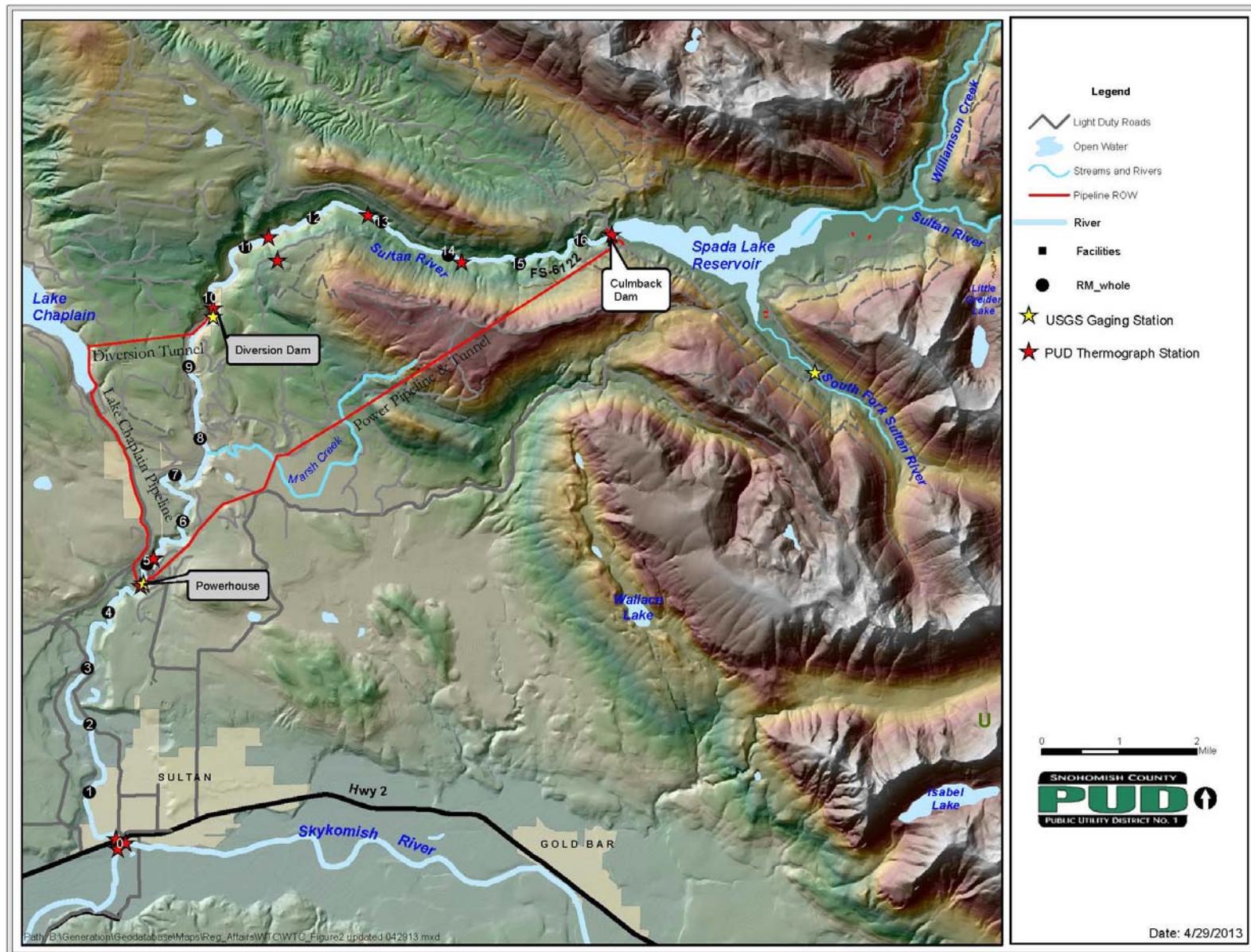


Figure 3-2. Locations of water temperature monitoring.

### **3.3. Synoptic Measurements of Water Quality**

Synoptic measurements of water quality were collected during late spring, summer, and early fall 2013 at the South Fork Sultan River (tributary to Spada Lake Reservoir) and at two locations in the Sultan River downstream of Culmback Dam (Table 3-2).

**Table 3-2. Synoptic monthly measurements of water quality, Sultan River, 2013.**

Location	Date	Temp °C	pH Units	TurbSC NTU	LDO mg/l
South Fork Sultan River (SF)	5/28/13	4.7	6.4	1.1	11.4
	6/26/13	6.5	6.7	0.1	12.7
	7/22/13	13.4	7.1	0	11.1
	8/9/13	14.3	6.9	0	10.5
	9/18/13	10.3	6.9	0.2	10.7
	10/16/13	6.5	6.8	0.3	10.4
Sultan River upstream of Diversion Dam (RM 9.8)	5/28/13	8.5	6.9	12.1	10.5
	6/26/13	11.0	7.3	2.8	12.2
	7/22/13	12.6	7.4	1.3	12.2
	8/9/13	15.3	7.3	1.3	11.1
	9/18/13	12.9	7.3	0.9	10.7
	10/16/13	8.8	7.3	1.1	10.5
Sultan River downstream of Powerhouse (RM 4.4)	5/28/13	7.2	6.7	3.9	11.4
	6/26/13	10.9	7.1	.5	12.4
	7/22/13	11.2	7.0	.9	12.3
	8/9/13	13.3	6.9	1.1	11.3
	9/18/13	12.9	7.1	1.1	10.8
	10/16/13	10.3	7.1	5.6	10.7

## **4. DATA QUALITY AND COMPLIANCE**

Monitoring of water quality during 2013 adhered to the protocols and procedures outlined in the WQMP. All surveys locations and parameters of measurement were consistent with those outlined in the WQMP. All data were reviewed and accepted to accurately represent conditions at the time of sampling. No exceedances of state water quality criteria were observed in the data. Project operations were conducted in accordance with License conditions throughout the sampling period.

## **5. REFERENCES**

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CH2M Hill. 2009. Water Quality Final Technical Report. Henry M. Jackson Hydroelectric Project (FERC No. 2157) Water Quality Parameter Study (RSP 1). Prepared for Public Utility District No. 1 of Snohomish County. August 2009.

District. 2010. Water Temperature Conditioning Plan for Reach 3. Henry M. Jackson Hydroelectric Project (FERC No. 2157). 2010.

## **APPENDIX A**

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### *Monthly Reservoir Water Quality Sampling*

Date Time	Depth	Depth	Temperature	Conductivity	pH	Dissolved Oxygen	Chlorophyll	Turbidity
M/D/Y	meters	feet	degrees C	mS/cm		mg/L	RFU	NTU
5/23/13 9:55	0.5	1.6	10.6	19.0	7.0	11.5	0.1	1.2
5/23/13 9:57	1	3.3	10.6	19.0	7.0	11.5	0.1	1.1
5/23/13 9:58	2	6.6	10.4	19.0	7.0	11.5	0.1	1.2
5/23/13 9:59	3	9.8	10.4	19.0	7.0	11.6	0.3	1.2
5/23/13 10:10	4	13.1	10.3	19.0	7.1	11.6	0.4	1.2
5/23/13 10:11	5	16.4	10.2	19.0	7.0	11.6	0.5	1.2
5/23/13 10:14	7	23.0	9.3	19.0	6.9	11.9	0.7	1.2
5/23/13 10:15	8	26.2	9.2	19.0	6.9	11.9	0.7	1.3
5/23/13 10:17	9	29.5	9.2	19.0	6.9	11.9	0.5	1.2
5/23/13 10:18	10	32.8	8.8	19.0	6.9	11.9	0.5	1.3
5/23/13 10:19	11	36.1	8.6	18.0	6.9	12.0	0.6	1.3
5/23/13 10:22	12	39.4	8.4	19.0	6.9	11.9	0.4	1.3
5/23/13 10:23	13	42.7	8.1	18.0	6.9	12.0	0.5	1.4
5/23/13 10:25	14	45.9	7.1	18.0	6.8	12.0	0.3	1.3
5/23/13 10:26	15	49.2	6.6	19.0	6.8	12.1	0.1	1.5
5/23/13 10:28	17	55.8	6.3	21.0	6.8	12.2	0.1	1.5
5/23/13 10:28	19	62.3	5.7	19.0	6.8	12.1	0.2	1.7
5/23/13 10:29	21	68.9	5.3	21.0	6.8	12.2	0.1	2.0
5/23/13 10:31	23	75.5	5.1	21.0	6.8	12.2	0.1	2.2
5/23/13 10:37	25	82.0	4.9	21.0	6.7	12.1	0.2	2.8
5/23/13 10:46	27	88.6	4.8	21.0	6.9	12.1	0.3	2.7
5/23/13 10:47	29	95.1	4.6	21.0	6.7	12.1	0.1	3.0
5/23/13 10:50	31	101.7	4.6	22.0	6.5	12.1	0.1	3.2
5/23/13 10:51	34	111.6	4.5	22.0	6.5	12.0	0.3	4.0
5/23/13 10:53	37	121.4	4.4	22.0	6.6	11.9	0.2	4.5
5/23/13 10:55	40	131.2	4.3	22.0	6.6	11.9	0.2	4.8
5/23/13 10:57	43	141.1	4.3	22.0	6.6	11.7	0.3	8.0
5/23/13 10:58	46	150.9	4.3	22.0	6.6	11.6	0.3	8.6

Date Time	Depth	Depth	Temperature	Conductivity	pH	Dissolved Oxygen	Chlorophyll	Turbidity
M/D/Y	meters	feet	degrees C	mS/cm		mg/L	RFU	NTU
6/19/13 10:24	0.5	1.6	15.8	19.0	7.3	10.3	0.4	0.7
6/19/13 10:27	1.0	3.3	15.8	19.0	7.3	10.3	0.3	0.7
6/19/13 10:28	2.0	6.6	15.3	20.0	7.3	10.4	0.4	0.8
6/19/13 10:29	3.0	9.8	15.3	20.0	7.3	10.4	0.3	0.7
6/19/13 10:31	4.0	13.1	14.3	20.0	7.3	10.9	0.4	0.8
6/19/13 10:33	5.0	16.4	13.7	20.0	7.3	11.3	0.5	0.7
6/19/13 10:34	6.0	19.7	13.0	19.0	7.3	11.4	0.5	0.6
6/19/13 10:35	7.0	23.0	11.9	19.0	7.3	11.6	0.8	0.9
6/19/13 10:36	7.9	26.2	11.2	18.0	7.3	11.8	0.7	1.0
6/19/13 10:39	8.9	29.5	10.4	18.0	7.2	12.0	0.8	1.0
6/19/13 10:40	9.9	32.8	10.1	18.0	7.2	12.0	0.9	1.0
6/19/13 10:40	10.9	36.1	9.6	18.0	7.2	12.0	0.8	0.9
6/19/13 10:42	11.9	39.4	8.7	19.0	7.1	11.9	0.7	0.9
6/19/13 10:43	12.9	42.7	7.5	19.0	7.0	11.8	0.4	1.0
6/19/13 10:46	13.9	45.9	7.2	19.0	6.9	11.6	0.2	1.1
6/19/13 10:47	14.9	49.2	7.0	19.0	6.9	11.6	0.3	1.2
6/19/13 10:49	16.9	55.8	6.2	20.0	6.8	11.6	0.2	1.7
6/19/13 10:51	18.9	62.3	5.8	20.0	6.7	11.7	0.1	1.9
6/19/13 10:56	20.9	68.9	5.5	20.0	6.7	11.7	0.1	2.2
6/19/13 11:05	22.9	75.5	5.4	20.0	6.7	11.7	0.1	2.5
6/19/13 11:11	24.8	82.0	5.2	21.0	6.7	11.6	0.1	3.3
6/19/13 11:13	26.8	88.6	5.1	21.0	6.7	11.6	0.1	3.1
6/19/13 11:15	28.8	95.1	5.0	21.0	6.7	11.7	0.1	3.1
6/19/13 11:17	30.8	101.7	4.9	21.0	6.7	11.7	0.1	3.5
6/19/13 11:19	33.8	111.6	4.8	21.0	6.6	11.7	0.2	3.3
6/19/13 11:21	36.8	121.4	4.6	21.0	6.6	11.7	0.4	3.9
6/19/13 11:25	39.8	131.2	4.5	22.0	6.6	11.6	0.3	5.2
6/19/13 11:27	42.8	141.1	4.4	22.0	6.6	11.5	0.4	6.1
6/19/13 11:28	45.7	151	4.3	22.0	6.6	11.4	0.3	7.4

Date Time	Depth	Depth	Temperature	Conductivity	pH	Dissolved Oxygen	Chlorophyll	Turbidity
M/D/Y	meters	feet	degrees C	mS/cm		mg/L	RFU	NTU
7/22/13 10:26	0.5	1.6	20.6	20.0	7.4	9.3	0.0	1.0
7/22/13 10:27	1.0	3.3	20.6	20.0	7.4	9.3	0.1	0.9
7/22/13 10:28	2.0	6.6	20.6	20.0	7.4	9.3	-0.1	0.9
7/22/13 10:29	3.0	9.8	20.6	20.0	7.4	9.3	0.1	0.9
7/22/13 10:31	4.0	13.1	20.4	21.0	7.4	9.3	0.0	0.9
7/22/13 10:34	5.0	16.4	18.6	20.0	7.4	10.4	0.1	0.8
7/22/13 10:35	6.0	19.7	17.6	20.0	7.4	10.7	0.1	0.8
7/22/13 10:37	7.0	23.0	15.4	19.0	7.4	11.2	0.6	0.3
7/22/13 10:39	7.9	26.2	14.3	18.0	6.9	11.3	0.1	0.8
7/22/13 10:42	8.9	29.5	13.5	18.0	6.8	11.3	0.3	0.8
7/22/13 10:46	9.9	32.8	12.6	18.0	6.8	11.3	0.3	0.9
7/22/13 10:48	10.9	36.1	11.9	18.0	6.8	11.3	0.3	0.8
7/22/13 10:49	11.9	39.4	11.3	18.0	6.8	11.2	0.3	0.8
7/22/13 10:53	12.9	42.7	10.6	18.0	6.7	11.0	0.2	0.8
7/22/13 10:55	13.9	45.9	10.2	18.0	6.6	11.1	0.1	0.9
7/22/13 10:56	14.9	49.2	9.2	19.0	6.7	11.1	0.1	0.7
7/22/13 11:04	16.9	55.8	8.1	20.0	6.6	11.1	0.0	1.0
7/22/13 11:10	18.9	62.3	6.5	20.0	6.5	11.1	0.0	1.5
7/22/13 11:15	20.9	68.9	6.3	21.0	6.5	11.1	0.0	1.8
7/22/13 11:16	22.9	75.5	6.1	21.0	6.5	11.1	0.0	1.8
7/22/13 11:22	24.8	82.0	5.9	21.0	6.6	11.2	-0.1	1.9
7/22/13 11:23	26.8	88.6	5.7	21.0	6.6	11.2	-0.2	2.0
7/22/13 11:26	28.8	95.1	5.6	21.0	6.5	11.3	0.0	1.9
7/22/13 11:27	30.8	101.7	5.5	21.0	6.5	11.4	0.0	2.0
7/22/13 11:29	33.8	111.6	5.4	21.0	6.5	11.3	0.0	2.0
7/22/13 11:33	36.8	121.4	5.2	21.0	6.5	11.3	0.0	2.1
7/22/13 11:35	39.8	131.2	5.1	21.0	6.5	11.3	0.0	2.2
7/22/13 11:37	42.8	141.1	4.8	21.0	6.5	11.4	0.2	2.5
7/22/13 11:38	45.7	150.9	4.7	21.0	6.5	11.4	-0.1	2.6

Date Time	Depth	Depth	Temperature	Conductivity	pH	Dissolved Oxygen	Chlorophyll	Turbidity
M/D/Y	meters	feet	degrees C	mS/cm		mg/L	RFU	NTU
8/26/13 10:54	0.5	1.6	20.8	22.0	7.2	8.9	0.3	1.1
8/26/13 10:55	1.0	3.3	20.7	22.0	7.2	8.9	0.2	1.1
8/26/13 10:57	2.0	6.6	20.6	22.0	7.2	8.9	0.2	1.1
8/26/13 10:58	3.0	9.8	20.6	22.0	7.2	8.9	0.3	1.1
8/26/13 10:59	4.0	13.1	20.6	22.0	7.2	8.9	0.4	1.1
8/26/13 11:00	5.0	16.4	20.6	23.0	7.2	8.9	0.3	1.2
8/26/13 11:01	6.0	19.7	20.5	23.0	7.2	8.9	0.4	1.1
8/26/13 11:01	7.0	23.0	20.5	23.0	7.2	8.9	0.4	1.2
8/26/13 11:02	7.9	26.2	19.2	23.0	7.2	9.2	0.4	1.3
8/26/13 11:04	8.9	29.5	16.8	21.0	7.1	9.9	0.3	1.1
8/26/13 11:06	9.9	32.8	15.2	20.0	7.0	10.3	0.4	1.0
8/26/13 11:07	10.9	36.1	13.8	19.0	6.9	10.3	0.5	1.0
8/26/13 11:10	12.9	42.7	10.4	19.0	6.7	10.3	0.2	1.3
8/26/13 11:11	13.9	45.9	9.1	20.0	6.6	10.4	0.1	1.3
8/26/13 11:13	14.9	49.2	8.2	20.0	6.6	10.5	0.2	1.4
8/26/13 11:14	16.9	55.8	7.0	21.0	6.6	10.5	0.0	1.5
8/26/13 11:15	18.9	62.3	6.5	21.0	6.5	10.6	0.2	1.6
8/26/13 11:17	20.9	68.9	6.2	21.0	6.5	10.7	0.1	1.6
8/26/13 11:19	22.9	75.5	6.1	21.0	6.5	10.7	0.6	1.4
8/26/13 11:20	24.8	82.0	6.0	21.0	6.4	10.7	0.1	1.6
8/26/13 11:22	26.8	88.6	5.9	21.0	6.4	10.8	0.2	1.5
8/26/13 11:23	28.8	95.1	5.7	21.0	6.4	10.9	0.2	1.6
8/26/13 11:24	30.8	101.7	5.7	21.0	6.4	10.9	0.1	1.6
8/26/13 11:26	33.8	111.6	5.4	21.0	6.4	11.0	0.2	1.7
8/26/13 11:27	36.8	121.4	5.2	21.0	6.4	11.1	0.2	1.8
8/26/13 11:28	39.8	131.2	5.1	21.0	6.4	11.0	0.1	2.0
8/26/13 11:29	42.8	141.1	4.9	21.0	6.4	11.0	0.1	2.1
8/26/13 11:32	45.7	150.9	4.7	22.0	6.4	10.9	0.1	1.9
8/26/13 11:33	48.7	160.8	4.7	22.0	6.4	10.6	0.2	2.5

Date Time	Depth	Depth	Temperature	Conductivity	pH	Dissolved Oxygen	Chlorophyll	Turbidity
M/D/Y	meters	feet	degrees C	mS/cm		mg/L	RFU	NTU
9/18/13 9:42	0.5	1.6	16.9	24.0	7.1	9.0	0.2	1.0
9/18/13 9:43	1.0	3.3	16.9	24.0	7.1	9.0	0.2	0.9
9/18/13 9:45	2.0	6.6	16.9	24.0	7.1	9.0	0.2	1.0
9/18/13 9:46	3.0	9.8	16.9	24.0	7.1	8.9	0.3	0.8
9/18/13 9:47	4.0	13.1	16.9	24.0	7.1	8.9	0.1	0.9
9/18/13 9:49	5.0	16.4	16.9	24.0	7.1	8.9	0.3	1.0
9/18/13 9:49	6.0	19.7	16.9	24.0	7.1	8.9	0.2	0.9
9/18/13 9:50	7.0	23.0	16.9	24.0	7.1	8.9	0.2	0.8
9/18/13 9:51	7.9	26.2	16.1	25.0	7.0	8.7	0.2	1.1
9/18/13 9:52	8.9	29.5	15.4	24.0	7.0	8.6	0.2	1.0
9/18/13 9:53	9.9	32.8	14.6	23.0	6.9	8.7	0.2	1.0
9/18/13 9:54	10.9	36.1	13.3	22.0	6.9	8.6	0.1	1.1
9/18/13 9:56	11.9	39.4	11.6	21.0	6.8	8.9	0.2	1.1
9/18/13 9:57	12.9	42.7	10.0	20.0	6.7	9.0	0.1	1.4
9/18/13 9:58	13.9	45.9	7.9	20.0	6.7	9.4	0.1	1.4
9/18/13 9:59	14.9	49.2	6.6	21.0	6.7	9.6	0.1	1.7
9/18/13 10:00	16.9	55.8	5.3	21.0	6.6	9.9	0.0	1.6
9/18/13 10:01	18.9	62.3	4.8	21.0	6.6	10.1	-0.1	1.6
9/18/13 10:02	20.9	68.9	4.6	21.0	6.6	10.4	0.0	1.3
9/18/13 10:04	22.9	75.5	4.5	21.0	6.5	10.5	0.0	1.2
9/18/13 10:05	24.8	82.0	4.4	21.0	6.5	10.6	0.0	1.2
9/18/13 10:06	26.8	88.6	4.3	21.0	6.5	10.6	0.0	1.4
9/18/13 10:07	28.8	95.1	4.1	22.0	6.5	10.7	0.1	1.3
9/18/13 10:08	30.8	101.7	4.0	22.0	6.5	10.7	0.1	1.4
9/18/13 10:09	33.8	111.6	3.8	22.0	6.4	10.8	0.0	1.6
9/18/13 10:11	36.8	121.4	3.6	23.0	6.3	10.7	0.1	2.1
9/18/13 10:13	39.8	131.2	3.5	23.0	6.2	10.7	-0.1	2.3
9/18/13 10:14	42.8	141.1	3.4	24.0	6.2	10.3	0.1	4.0
9/18/13 10:19	45.7	150.9	3.4	24.0	6.2	10.1	0.2	4.9

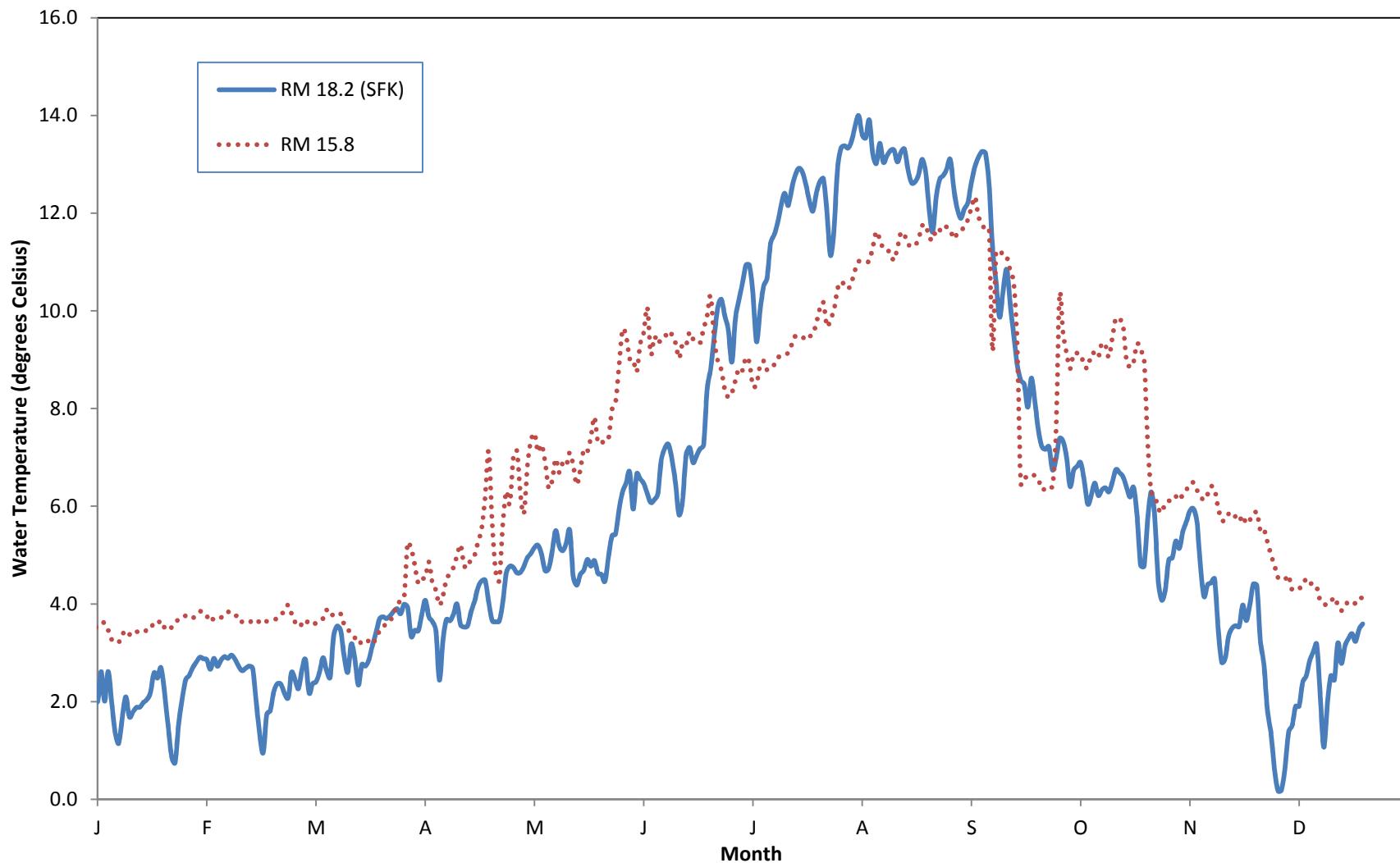
Date Time	Depth	Depth	Temperature	Conductivity	pH	Dissolved Oxygen	Chlorophyll	Turbidity
M/D/Y	meters	feet	degrees C	mS/cm		mg/L	RFU	NTU
10/16/13 10:43	0.5	1.6	11.6	23.0	7.2	9.9	0.2	2.6
10/16/13 10:44	1.0	3.3	11.6	23.0	7.2	9.9	0.1	2.6
10/16/13 10:45	2.0	6.6	11.6	23.0	7.2	9.8	0.0	2.8
10/16/13 10:46	3.0	9.8	11.5	23.0	7.2	9.8	0.2	2.8
10/16/13 10:47	4.0	13.1	11.5	23.0	7.2	9.8	0.1	2.8
10/16/13 10:48	5.0	16.4	11.5	23.0	7.2	9.8	0.2	2.8
10/16/13 10:50	6.0	19.7	11.5	23.0	7.2	9.8	0.0	2.8
10/16/13 10:52	7.9	26.2	11.4	23.0	7.2	9.7	0.2	2.7
10/16/13 10:52	8.9	29.5	11.4	23.0	7.1	9.7	0.3	3.0
10/16/13 10:53	9.9	32.8	11.4	23.0	7.1	9.7	0.2	2.8
10/16/13 10:54	10.9	36.1	11.1	23.0	7.1	9.7	0.2	2.9
10/16/13 10:55	11.9	39.4	10.8	22.0	7.1	9.6	0.1	3.4
10/16/13 10:56	12.9	42.7	10.6	23.0	7.1	9.7	0.1	3.0
10/16/13 10:56	13.9	45.9	10.5	22.0	7.1	9.7	0.2	2.8
10/16/13 10:57	14.9	49.2	10.4	23.0	7.1	9.8	0.1	3.1
10/16/13 10:59	16.9	55.8	10.3	22.0	7.0	9.8	0.1	3.1
10/16/13 11:00	18.9	62.3	10.1	23.0	7.0	9.8	0.2	2.9
10/16/13 11:01	20.9	68.9	10	23	7	10	0	2.9
10/16/13 11:02	22.9	75.5	9.7	22.0	7.0	9.7	0	3.3
10/16/13 11:03	24.8	82.0	9.4	22.0	6.9	9.2	0	3.2
10/16/13 11:03	26.8	88.6	7.9	22.0	6.9	9.5	0.0	2.8
10/16/13 11:04	28.8	95.1	7.1	22.0	6.9	9.3	0.1	2.0
10/16/13 11:05	30.8	101.7	6.8	22.0	6.8	9.4	0.1	2.0
10/16/13 11:07	33.8	111.6	6.6	22.0	6.8	9.6	0	2.0
10/16/13 11:07	36.8	121.4	6.4	22.0	6.8	9.5	-0.1	1.9
10/16/13 11:08	39.8	131.2	6.3	22.0	6.7	9.7	0.1	2.0
10/16/13 11:09	42.8	141.1	6.2	23.0	6.7	9.6	0.1	3.5
10/16/13 11:11	45.7	150.9	6.0	23.0	6.7	9.3	-	3.8
10/16/13 11:13	48.7	160.8	5.9	23.0	6.7	9.0		5.2
10/16/13 11:19	53.7	177.2	5.8	24.0	6.5	8.4		

## **APPENDIX B**

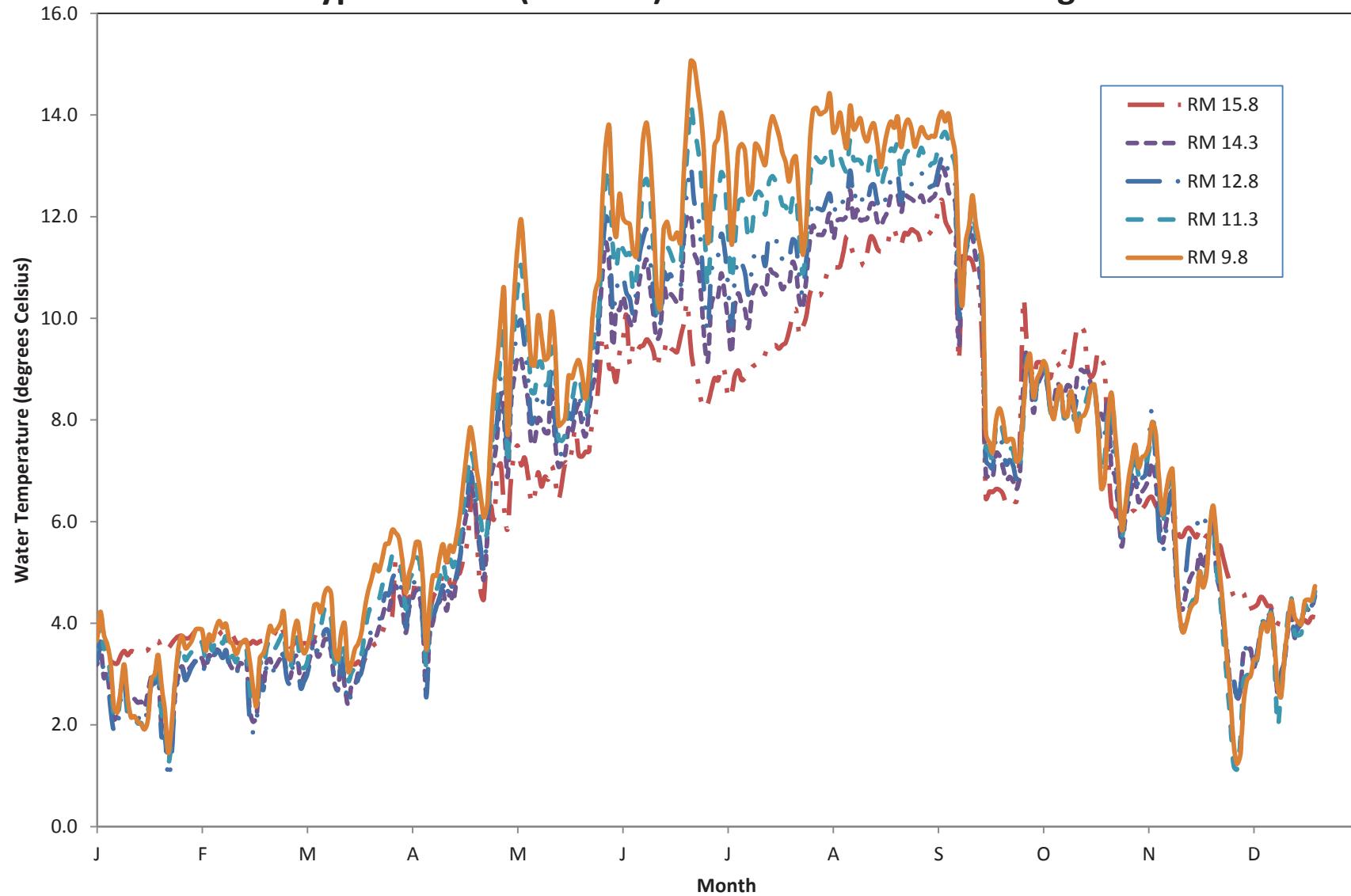
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### *Continuous Water Temperature Monitoring - Figures*

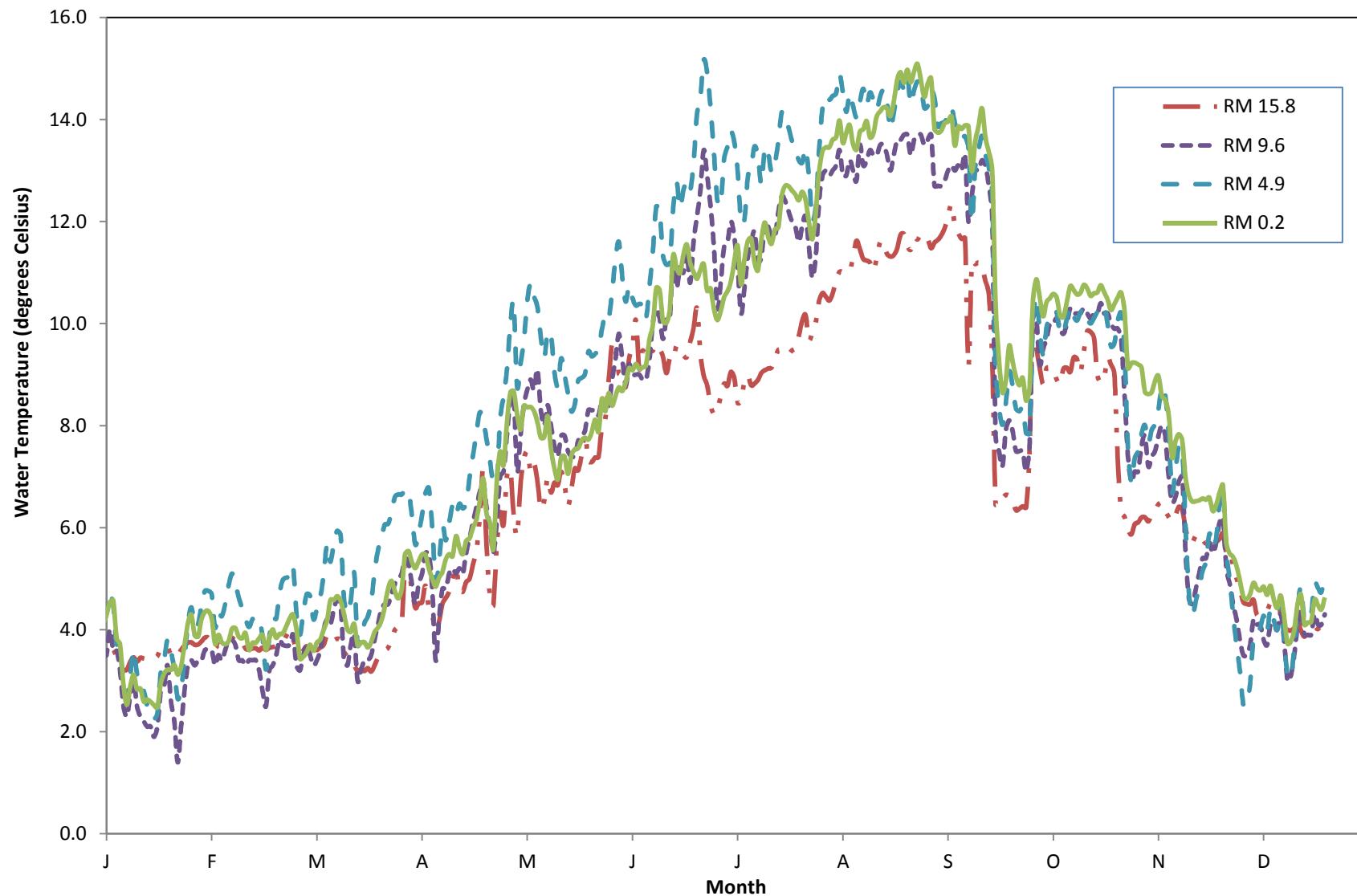
**Figure B-1. Mean Daily Water Temperature in the South Fork Sultan River, upstream of Culmback Dam (RM 18.2), and in the mainstem Sultan River immediately downstream of Culmback Dam (RM 15.8) during 2013**



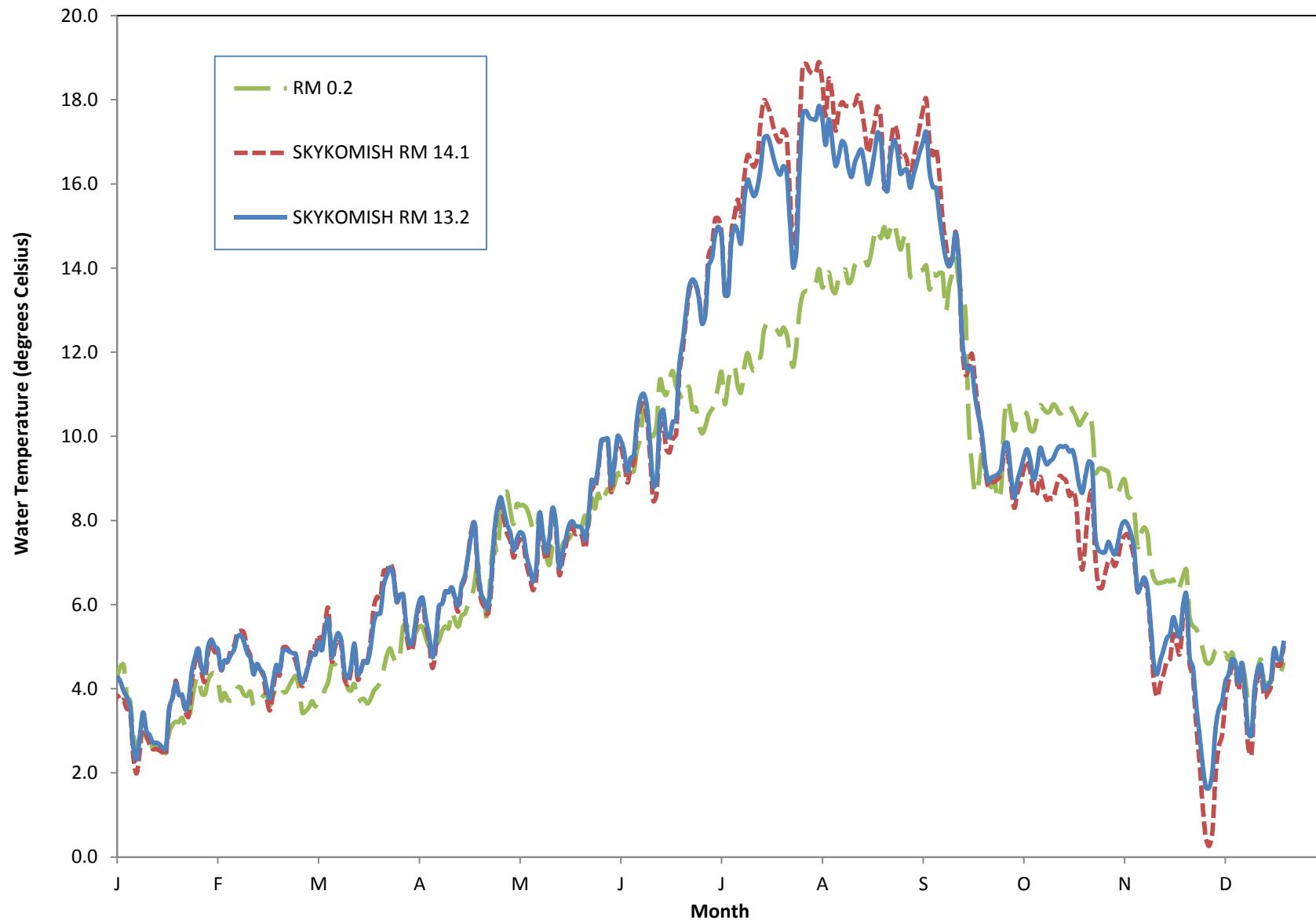
**Figure B-2. Longitudinal Depiction of Mean Daily Water Temperature in the Bypass Reach (Reach 3) of the Sultan River during 2013**



**Figure B-3. Longitudinal Depiction of Mean Daily Water Temperature,  
Sultan River downstream of Culmback Dam, 2013**



**Figure B-4. Mean Daily Water Temperature  
near confluence of Sultan and Skykomish rivers, 2013**



## **APPENDIX C**

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*Continuous Daily Water Temperature Data in Tabular Format*

DATE	RM 18.2 (SFK)	Sultan River									Skykomish River		
		RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four Creek	RM 14.1	RM 13.2
1/1	1.7	3.7	2.9	2.7	2.9	3.1	3.1	3.6	3.5	3.4	3.0	2.7	3.1
1/2	1.6	3.3	2.8	2.6	2.6	2.7	2.8	3.3	3.3	3.2	3.0	2.2	2.7
1/3	1.6	3.2	2.4	2.2	2.1	2.3	2.6	3.0	3.2	3.2	2.6	1.5	2.2
1/4	1.9	3.6	3.0	2.9	2.9	3.0	3.0	3.7	3.6	3.7	3.2	1.8	2.7
1/5	2.2	3.5	3.3	3.2	3.3	3.4	3.3	4.0	3.7	3.9	3.5	2.8	3.5
1/6	2.5	3.5	3.3	3.2	3.4	3.6	3.5	4.4	4.0	4.1	3.6	3.5	4.0
1/7	2.0	3.6	3.2	3.3	3.5	3.7	3.5	4.3	4.2	4.3	3.8	3.8	4.3
1/8	2.6	3.6	3.5	3.6	4.0	4.2	4.0	4.7	4.5	4.5	4.1	3.7	4.2
1/9	2.0	3.6	2.9	3.0	3.5	3.8	3.6	4.5	4.4	4.6	3.7	3.7	3.9
1/10	2.6	3.5	3.0	3.0	3.5	3.6	3.6	3.7	3.6	3.8	3.4	3.5	3.8
1/11	2.0	3.3	2.4	2.3	2.9	3.2	3.2	3.7	3.6	3.7	2.8	3.5	3.6
1/12	1.4	3.2	2.1	1.9	2.2	2.3	2.5	2.9	2.9	2.9	2.3	2.4	2.6
1/13	1.1	3.2	2.2	2.0	2.1	2.2	2.3	2.7	2.5	2.5	2.0	2.0	2.3
1/14	1.7	3.4	2.7	2.5	2.6	2.7	2.7	3.1	2.8	2.9	2.3	2.5	2.9
1/15	2.1	3.5	3.0	2.9	3.0	3.2	3.0	3.6	3.0	3.1	2.5	3.3	3.4
1/16	1.7	3.4	2.4	2.2	2.3	2.5	2.5	3.1	2.8	2.8	2.2	2.9	3.0
1/17	1.8	3.4	2.5	2.2	2.1	2.2	2.3	2.9	2.7	2.8	2.4	2.7	2.9
1/18	1.9	3.4	2.5	2.2	2.1	2.2	2.2	2.8	2.6	2.6	2.6	2.6	2.7
1/19	1.9	3.4	2.4	2.1	2.0	2.1	2.1	2.5	2.5	2.6	2.5	2.6	2.7
1/20	2.0	3.5	2.5	2.1	2.0	2.0	2.1	2.4	2.5	2.6	2.8	2.5	2.7
1/21	2.0	3.4	2.4	2.0	1.9	1.9	1.9	2.2	2.5	2.5	2.8	2.5	2.6
1/22	2.2	3.5	2.6	2.4	2.3	2.1	2.1	2.4	2.4	2.5	3.1	2.4	2.6
1/23	2.6	3.6	3.0	2.8	2.9	2.9	2.8	3.2	2.9	2.9	3.4	3.5	3.5
1/24	2.5	3.6	2.9	2.8	2.9	3.0	2.9	3.4	2.9	3.1	3.4	3.8	3.8
1/25	2.7	3.7	3.1	3.1	3.3	3.4	3.3	3.8	2.9	3.2	3.8	4.2	4.1
1/26	2.2	3.5	2.0	1.8	2.2	2.8	2.6	3.6	3.0	3.2	3.2	3.9	3.9
1/27	1.5	3.6	2.0	1.8	2.1	2.3	2.2	3.2	3.1	3.3	3.1	3.8	3.9
1/28	0.9	3.5	1.3	1.0	1.3	1.5	1.4	2.6	2.8	3.1	2.2	3.4	3.5
1/29	0.8	3.6	1.7	1.4	1.9	2.0	2.1	2.8	2.9	3.3	2.1	3.3	3.7
1/30	1.5	3.7	2.6	2.5	2.9	2.9	2.8	3.4	3.4	3.7	2.9	4.2	4.4
1/31	2.1	3.7	3.0	2.9	3.3	3.5	3.3	4.1	4.0	4.1	3.3	4.6	4.8

DATE	RM 18.2 (SFK)	Sultan River										Skykomish River	
		RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four Creek	RM 14.1	RM 13.2
2/1	2.4	3.8	3.2	3.1	3.6	3.8	3.4	4.4	4.3	4.3	3.4	4.8	5.0
2/2	2.5	3.7	3.0	2.9	3.3	3.5	3.3	4.1	3.8	3.9	3.5	4.4	4.5
2/3	2.7	3.7	3.1	3.0	3.4	3.6	3.4	4.1	3.8	3.9	3.5	4.2	4.4
2/4	2.8	3.8	3.2	3.2	3.5	3.7	3.4	4.5	4.2	4.2	3.5	4.9	5.0
2/5	2.9	3.8	3.3	3.2	3.6	3.9	3.6	4.8	4.3	4.3	3.7	5.1	5.2
2/6	2.9	3.8	3.3	3.3	3.7	3.9	3.6	4.8	4.3	4.4	3.7	4.9	5.0
2/7	2.9	3.8	3.3	3.2	3.6	3.9	3.6	4.7	4.2	4.2	3.6	4.9	4.9
2/8	2.7	3.6	3.1	3.0	3.3	3.5	3.3	4.0	3.6	3.7	3.2	4.4	4.5
2/9	2.9	3.7	3.4	3.3	3.6	3.8	3.5	4.3	3.7	3.9	3.4	4.6	4.7
2/10	2.7	3.7	3.3	3.2	3.5	3.7	3.4	4.3	3.5	3.8	3.3	4.6	4.7
2/11	2.8	3.7	3.5	3.4	3.7	3.9	3.6	4.5	3.4	3.7	3.4	4.9	4.8
2/12	2.9	3.8	3.4	3.4	3.7	4.0	3.8	4.9	3.5	3.8	3.7	5.0	4.9
2/13	2.9	3.8	3.3	3.3	3.6	3.9	3.8	5.1	3.7	4.0	3.8	5.3	5.2
2/14	3.0	3.8	3.5	3.5	3.7	4.0	3.7	4.9	3.7	4.0	3.8	5.4	5.3
2/15	2.9	3.8	3.2	3.1	3.3	3.7	3.4	4.6	3.6	3.9	3.8	5.3	5.1
2/16	2.7	3.8	3.1	3.1	3.4	3.6	3.4	4.4	3.6	3.8	3.9	5.0	4.9
2/17	2.6	3.6	3.0	3.0	3.2	3.4	3.3	4.2	3.7	3.9	3.4	4.8	4.7
2/18	2.7	3.6	3.2	3.2	3.4	3.5	3.4	4.1	3.5	3.6	3.4	4.4	4.3
2/19	2.7	3.6	3.2	3.2	3.4	3.6	3.4	4.2	3.8	3.7	3.4	4.6	4.6
2/20	2.7	3.6	3.3	3.2	3.5	3.7	3.4	4.2	3.7	3.7	3.4	4.5	4.5
2/21	2.0	3.6	2.3	2.1	2.7	3.3	3.2	4.2	3.6	3.8	3.0	4.3	4.4
2/22	1.3	3.6	2.1	1.9	2.3	2.7	2.8	3.9	3.6	3.9	3.1	3.8	4.0
2/23	1.0	3.6	2.2	2.1	2.4	2.4	2.5	3.2	3.2	3.6	2.7	3.5	3.8
2/24	1.7	3.6	3.0	2.9	3.2	3.3	3.2	3.9	3.6	3.8	3.1	3.9	4.2
2/25	1.8	3.7	2.7	2.7	3.1	3.4	3.3	4.2	3.9	4.0	3.2	4.5	4.6
2/26	2.2	3.7	3.2	3.2	3.5	3.6	3.5	4.2	3.8	3.8	3.2	4.3	4.4
2/27	2.4	3.7	3.3	3.2	3.7	3.9	3.8	4.7	4.0	3.9	3.4	5.0	4.9
2/28	2.4	3.8	3.1	3.1	3.5	3.8	3.7	5.0	4.1	3.9	3.6	5.0	4.9

DATE	RM 18.2 (SFK)	Sultan River									Skykomish River		
		RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four Creek	RM 14.1	RM 13.2
3/1	2.1	4.0	3.3	3.3	3.7	4.0	3.7	5.1	4.4	4.2	4.0	4.8	4.8
3/2	2.6	3.8	3.4	3.4	3.8	4.2	3.9	5.2	4.5	4.3	4.1	4.6	4.8
3/3	2.5	3.6	3.0	2.9	3.2	3.4	3.3	4.3	4.0	4.0	3.3	4.3	4.3
3/4	2.3	3.5	2.9	2.8	3.1	3.3	3.2	3.9	3.3	3.4	3.1	4.1	4.1
3/5	2.7	3.6	3.3	3.3	3.7	3.8	3.5	4.3	3.3	3.5	3.5	4.3	4.3
3/6	2.9	3.7	3.3	3.3	3.7	4.0	3.7	4.7	3.4	3.6	3.7	4.7	4.6
3/7	2.2	3.6	2.9	2.7	3.2	3.6	3.5	4.7	3.5	3.7	3.3	5.0	4.8
3/8	2.4	3.6	3.0	2.9	3.1	3.4	3.3	4.2	3.5	3.6	3.4	5.0	4.8
3/9	2.4	3.6	3.2	3.0	3.2	3.5	3.4	4.4	3.8	3.7	3.5	5.3	5.1
3/10	2.6	3.6	3.4	3.4	3.7	3.9	3.6	4.6	3.9	3.8	3.8	5.1	4.9
3/11	2.9	3.7	3.7	3.7	4.0	4.3	4.0	5.1	3.8	4.0	3.9	5.6	5.4
3/12	2.6	3.9	3.4	3.5	3.9	4.4	4.2	5.7	4.1	4.2	4.4	5.9	5.6
3/13	2.5	3.8	3.4	3.6	4.0	4.2	4.1	5.3	4.7	4.6	4.5	4.7	4.8
3/14	3.4	3.8	3.7	3.8	4.3	4.6	4.4	5.7	4.6	4.6	4.8	5.0	5.1
3/15	3.5	3.8	3.7	3.9	4.3	4.7	4.6	5.9	4.8	4.7	4.9	5.2	5.3
3/16	3.5	3.8	3.4	3.6	4.1	4.6	4.5	5.9	4.9	4.6	4.7	5.0	5.1
3/17	2.9	3.6	2.8	2.8	3.2	3.5	3.4	4.6	4.2	4.3	3.6	4.2	4.4
3/18	2.6	3.5	2.7	2.7	3.1	3.3	3.3	4.3	3.8	4.0	3.2	4.1	4.3
3/19	3.2	3.4	3.3	3.3	3.7	3.8	3.7	4.6	3.7	4.0	3.6	4.5	4.5
3/20	2.9	3.3	2.8	2.8	3.4	4.0	3.9	5.1	3.9	4.1	3.7	5.0	5.1
3/21	2.3	3.2	2.4	2.4	2.9	3.1	3.0	3.7	3.4	3.7	3.1	4.2	4.3
3/22	2.8	3.2	2.8	2.6	3.0	3.2	3.2	3.8	3.5	3.7	2.9	4.4	4.5
3/23	2.7	3.2	2.8	2.7	3.1	3.5	3.4	4.1	3.5	3.8	2.8	4.7	4.7
3/24	2.9	3.2	3.0	2.9	3.3	3.6	3.4	4.3	3.4	3.7	2.9	4.7	4.6
3/25	3.2	3.2	3.2	3.1	3.4	3.8	3.5	4.5	3.5	3.8	3.3	5.2	5.0
3/26	3.4	3.3	3.4	3.4	3.9	4.3	3.8	5.1	3.7	4.0	3.7	5.9	5.6
3/27	3.7	3.4	3.5	3.7	4.2	4.7	4.1	5.6	3.8	4.0	4.1	6.2	5.8
3/28	3.7	3.5	3.7	3.9	4.4	4.9	4.4	5.8	3.9	4.2	4.3	6.2	5.8
3/29	3.7	3.6	3.7	3.9	4.5	5.2	4.5	6.1	4.4	4.5	4.6	6.8	6.5
3/30	3.8	3.6	3.9	4.0	4.5	5.0	4.5	6.1	5.0	4.8	4.9	6.8	6.7
3/31	3.8	3.8	4.1	4.3	4.7	5.3	4.7	6.3	5.2	5.0	5.4	7.0	6.9

DATE	RM 18.2 (SFK)	Sultan River										Skykomish River	
		RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four Creek	RM 14.1	RM 13.2
4/1	3.9	4.0	4.3	4.6	5.0	5.6	4.9	6.6	4.6	4.7	5.7	6.8	6.7
4/2	3.8	4.1	4.3	4.6	5.0	5.6	5.0	6.7	4.4	4.6	5.8	6.1	6.1
4/3	4.0	4.1	4.6	4.9	5.3	5.8	5.1	6.6	4.5	4.8	5.9	6.2	6.2
4/4	3.9	5.3	4.7	5.0	5.3	5.8	5.4	6.7	5.3	5.5	6.3	6.2	6.2
4/5	3.3	5.1	4.6	4.9	5.3	5.7	5.3	6.7	5.4	5.5	6.2	5.3	5.5
4/6	3.5	4.8	4.3	4.5	4.9	5.2	4.9	6.2	5.2	5.3	5.6	4.9	5.1
4/7	3.5	4.4	3.8	3.9	4.3	4.6	4.5	5.7	5.0	5.2	4.8	5.0	5.2
4/8	3.8	4.5	4.3	4.5	4.8	5.0	4.9	5.9	5.1	5.3	4.8	5.6	5.7
4/9	4.1	4.5	4.5	4.7	5.0	5.2	5.1	6.3	5.2	5.5	5.1	6.0	6.1
4/10	3.7	4.9	4.7	4.9	5.3	5.6	5.5	6.7	5.3	5.5	5.4	6.0	6.2
4/11	3.6	4.4	4.6	4.8	5.2	5.6	5.5	6.8	5.0	5.2	5.2	5.5	5.6
4/12	3.5	4.3	4.0	4.0	4.6	4.9	4.8	6.0	4.8	5.0	4.7	5.1	5.3
4/13	2.4	4.0	2.6	2.5	3.2	3.5	3.4	5.0	4.6	4.8	3.8	4.5	4.7
4/14	3.2	4.2	3.7	3.7	4.1	4.4	4.2	5.3	4.7	5.0	4.2	4.9	5.2
4/15	3.7	4.5	4.0	4.1	4.6	4.9	4.8	6.0	4.9	5.1	4.4	5.9	6.0
4/16	3.7	4.6	4.3	4.3	4.6	4.9	4.8	5.8	5.1	5.4	4.3	6.0	6.0
4/17	3.8	4.7	4.4	4.5	4.9	5.3	5.1	6.1	5.1	5.5	4.5	6.3	6.3
4/18	4.0	5.0	4.6	4.7	5.2	5.6	5.2	6.4	5.2	5.4	4.8	6.3	6.3
4/19	3.6	5.2	4.3	4.5	4.9	5.2	5.1	6.2	5.6	5.8	5.0	6.4	6.4
4/20	3.5	4.8	4.6	4.9	5.2	5.5	5.2	6.5	5.4	5.6	5.2	6.1	6.2
4/21	3.6	4.7	4.4	4.6	5.1	5.4	5.1	6.4	5.3	5.5	5.0	5.8	6.0
4/22	3.8	4.9	4.9	5.0	5.4	5.7	5.5	6.5	5.4	5.7	5.0	6.4	6.5
4/23	4.1	5.0	5.3	5.3	5.7	6.2	5.8	7.0	5.5	5.8	5.2	6.6	6.7
4/24	4.4	5.3	5.8	5.9	6.3	6.8	6.1	7.4	5.7	6.0	5.6	7.2	7.2
4/25	4.5	5.5	6.2	6.4	6.8	7.4	6.4	7.8	5.8	6.2	6.0	7.8	7.7
4/26	4.5	6.2	6.7	7.0	7.4	7.9	6.7	8.3	6.2	6.5	6.6	8.0	7.9
4/27	4.0	7.1	6.5	6.6	7.2	7.5	6.9	8.1	6.8	7.0	6.7	6.7	6.9
4/28	3.7	5.6	5.9	6.1	6.6	7.0	6.4	7.7	6.0	6.3	6.3	6.1	6.2
4/29	3.6	4.7	5.3	5.5	6.1	6.6	6.0	7.3	5.6	6.1	5.7	5.9	6.1
4/30	3.7	4.5	4.9	5.1	5.6	6.1	5.5	6.8	5.1	5.6	5.1	5.8	5.9

DATE	RM 18.2 (SFK)	Sultan River										Skykomish River	
		RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four Creek	RM 14.1	RM 13.2
5/1	4.0	5.6	5.7	5.8	5.8	6.3	6.1	6.9	6.4	6.9	5.1	6.3	6.5
5/2	4.6	6.3	6.8	7.0	7.2	7.6	7.0	8.1	6.9	7.5	6.1	7.5	7.7
5/3	4.8	6.1	7.2	7.5	7.9	8.6	7.1	8.6	6.5	7.2	6.5	8.2	8.3
5/4	4.7	7.0	7.7	8.0	8.5	9.2	7.8	9.1	7.5	8.1	7.2	8.4	8.6
5/5	4.6	7.1	8.5	8.8	9.3	10.0	8.5	10.0	7.9	8.6	8.0	8.0	8.3
5/6	4.6	6.3	8.0	8.4	9.7	10.5	8.6	10.4	7.8	8.7	8.7	7.7	7.9
5/7	4.8	5.9	6.9	7.3	7.1	7.7	7.1	8.8	7.5	8.2	9.0	7.5	7.7
5/8	4.9	6.8	8.3	8.7	9.0	9.2	7.8	9.2	7.4	7.9	8.9	7.1	7.3
5/9	5.0	7.3	8.9	9.3	9.8	10.5	8.4	9.7	7.7	8.4	8.7	7.4	7.6
5/10	5.2	7.5	9.2	9.9	10.6	11.4	8.7	10.4	8.0	8.4	9.2	7.6	7.7
5/11	5.2	7.1	9.2	10.0	11.0	11.9	8.9	10.8	8.4	8.4	9.9	7.5	7.6
5/12	5.0	7.3	8.8	9.5	10.3	11.1	8.7	10.5	8.3	8.3	10.2	6.9	7.1
5/13	4.7	6.9	8.4	8.8	9.6	10.1	9.1	10.3	8.1	8.1	9.9	6.7	6.9
5/14	4.7	6.4	7.5	7.9	8.6	9.1	8.3	9.7	7.6	7.8	8.4	6.3	6.5
5/15	5.1	6.5	7.6	8.1	8.5	9.1	8.0	9.3	7.5	7.8	8.2	6.7	6.9
5/16	5.5	7.0	8.0	8.5	9.1	10.0	8.4	9.8	7.8	8.2	8.7	8.0	8.2
5/17	5.2	6.7	8.0	8.5	9.1	9.6	8.0	9.8	7.3	7.5	8.9	7.5	7.7
5/18	5.1	6.9	7.8	8.2	8.7	9.2	7.6	9.0	6.9	7.2	8.6	7.1	7.2
5/19	5.2	6.8	7.7	8.2	8.8	9.3	7.4	8.8	6.7	6.9	8.6	7.5	7.6
5/20	5.5	7.1	8.6	9.1	9.4	10.1	7.8	9.3	7.0	7.4	8.5	8.3	8.3
5/21	4.5	6.8	7.6	8.0	9.0	9.5	7.8	9.0	7.3	7.4	8.3	7.8	7.9
5/22	4.4	6.4	7.1	7.3	7.6	7.9	7.5	8.6	6.9	7.1	7.5	6.7	6.9
5/23	4.6	6.8	7.2	7.4	7.6	7.9	7.4	8.3	7.2	7.4	7.3	7.0	7.2
5/24	4.7	7.2	7.3	7.5	7.7	8.1	7.4	8.4	7.3	7.5	7.4	7.4	7.6
5/25	4.9	7.1	7.8	8.1	8.5	8.9	7.7	8.9	7.3	7.6	7.8	7.7	7.9
5/26	4.8	7.4	7.8	8.0	8.4	8.8	7.8	8.9	7.5	7.7	8.0	7.8	8.0
5/27	4.9	7.8	8.1	8.4	8.7	9.1	7.9	9.0	7.6	7.8	8.2	7.7	7.9
5/28	4.6	7.3	8.3	8.5	8.9	9.2	8.3	9.4	7.5	7.7	8.3	7.7	7.9
5/29	4.6	7.3	7.9	8.1	8.5	8.9	8.3	9.4	7.7	7.9	8.1	7.6	7.8
5/30	4.5	7.4	7.7	7.9	8.1	8.4	8.3	9.4	8.1	8.1	7.9	7.3	7.5
5/31	5.0	7.4	8.2	8.4	8.6	9.0	8.2	9.5	7.7	7.9	8.1	8.0	8.1

DATE	RM 18.2 (SFK)	Sultan River										Skykomish River	
		RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four Creek	RM 14.1	RM 13.2
6/1	5.4	8.0	8.6	9.1	9.4	10.0	8.5	9.9	8.5	8.5	8.5	8.8	9.0
6/2	5.4	8.1	8.9	9.2	9.8	10.6	8.4	10.2	8.5	8.3	8.8	8.7	8.9
6/3	5.9	8.9	9.9	10.2	10.2	10.8	8.4	10.1	8.5	8.6	8.9	9.2	9.3
6/4	6.3	9.6	10.9	11.3	11.8	12.4	8.9	10.6	8.2	8.4	9.4	9.9	9.9
6/5	6.5	9.5	11.5	12.0	12.7	13.5	9.3	11.3	8.2	8.6	10.1	9.9	9.9
6/6	6.7	9.0	11.0	11.8	12.9	13.8	9.8	11.6	8.4	8.7	10.3	9.9	9.9
6/7	5.9	9.0	9.5	10.1	11.4	12.1	9.3	10.9	8.7	8.7	10.2	8.7	8.9
6/8	6.7	8.8	10.2	10.6	11.0	11.6	8.8	10.4	8.7	8.9	9.9	9.3	9.4
6/9	6.6	9.3	10.2	10.7	11.5	12.4	9.2	10.7	9.1	9.1	9.7	9.9	10.0
6/10	6.5	9.6	10.4	10.8	11.4	12.0	9.0	10.5	8.9	9.1	9.2	9.8	9.9
6/11	6.3	10.1	10.2	10.5	11.2	11.9	9.0	10.4	8.9	9.2	9.2	9.4	9.6
6/12	6.1	9.1	9.9	10.4	11.3	11.8	9.0	10.4	8.5	9.1	9.1	8.9	9.2
6/13	6.1	9.5	9.8	10.1	10.5	11.3	8.9	10.4	8.7	9.1	9.2	9.3	9.5
6/14	6.3	9.3	10.3	10.6	10.8	11.2	8.9	10.1	8.6	9.2	9.3	9.4	9.6
6/15	7.0	9.4	10.8	11.3	11.8	12.5	9.3	10.7	8.9	9.7	9.4	10.3	10.4
6/16	7.2	9.5	11.0	11.6	12.6	13.6	10.0	11.4	9.2	10.0	10.1	10.7	10.9
6/17	7.3	9.6	11.1	11.7	12.7	13.8	10.3	12.3	9.9	10.7	10.4	10.8	11.0
6/18	7.0	9.5	10.6	11.2	12.4	13.2	10.1	12.2	10.0	10.7	10.5	10.4	10.7
6/19	6.5	9.3	10.1	10.5	11.4	12.1	9.7	11.3	9.7	10.0	10.3	9.5	9.8
6/20	5.8	9.0	9.6	9.8	10.2	10.5	10.1	11.2	10.1	10.0	9.8	8.5	8.8
6/21	6.1	9.3	9.7	9.9	10.0	10.2	10.1	11.2	10.0	10.3	9.5	8.6	8.9
6/22	7.0	9.3	10.6	10.9	11.3	11.7	11.3	12.3	10.8	11.3	9.9	10.2	10.5
6/23	7.2	9.6	10.4	10.8	11.4	11.9	10.7	12.8	11.0	11.1	10.6	10.3	10.6
6/24	6.9	9.4	10.5	10.9	11.3	11.6	11.1	12.3	10.8	11.0	10.6	9.7	10.0
6/25	7.0	9.4	10.4	10.7	11.1	11.6	11.0	12.6	10.8	11.3	10.4	9.6	10.0
6/26	7.2	9.3	10.3	10.7	11.2	11.7	11.4	12.8	11.1	11.5	10.6	10.0	10.3
6/27	7.3	9.6	10.3	10.6	11.1	11.5	10.8	12.6	10.8	11.2	10.8	10.1	10.4
6/28	8.4	9.9	11.6	11.9	12.3	12.9	11.6	13.2	9.9	11.0	11.6	11.5	11.7
6/29	8.8	10.3	12.0	12.5	13.3	14.1	12.1	14.1	9.9	10.9	12.4	12.0	12.3
6/30	9.5	9.4	12.0	13.0	14.2	15.1	12.6	14.4	10.0	11.0	13.0	12.8	12.9

DATE	RM 18.2 (SFK)	Sultan River									Skykomish River		
		RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four Creek	RM 14.1	RM 13.2
7/1	10.1	9.0	11.3	12.3	13.7	15.0	13.4	15.2	10.3	11.2	13.6	13.4	13.6
7/2	10.2	8.8	11.1	12.1	13.4	14.5	12.9	14.9	10.8	10.6	13.6	13.7	13.7
7/3	9.9	8.4	10.5	11.5	12.8	14.0	12.3	14.2	10.9	10.7	12.7	13.6	13.6
7/4	9.6	8.2	9.6	10.4	11.8	13.1	11.5	13.4	10.5	10.3	12.0	13.3	13.3
7/5	8.9	8.3	9.2	9.8	10.6	11.5	10.3	12.4	10.1	10.1	11.7	12.7	12.7
7/6	9.8	8.6	10.2	10.9	11.6	12.4	10.8	12.3	10.0	10.2	11.8	13.0	12.9
7/7	10.2	8.8	10.5	11.2	12.4	13.4	11.5	13.2	10.5	10.5	12.1	14.3	14.0
7/8	10.6	8.8	10.4	11.2	12.4	13.5	11.6	13.5	10.6	10.6	12.3	14.5	14.2
7/9	10.9	9.1	10.9	11.7	12.9	14.0	12.0	13.8	10.7	10.8	12.5	15.2	14.8
7/10	10.9	8.9	10.5	11.3	12.7	13.8	11.7	13.6	11.1	11.2	12.4	15.2	15.0
7/11	10.3	8.4	9.9	10.7	11.7	13.0	11.1	13.0	10.5	11.5	11.8	14.8	14.7
7/12	9.4	8.5	9.3	9.9	10.7	11.5	10.2	12.0	10.2	10.8	11.1	13.4	13.4
7/13	10.0	8.9	10.2	10.8	11.5	12.3	10.7	12.0	10.2	11.3	10.9	13.4	13.4
7/14	10.5	9.0	10.5	11.2	12.3	13.3	11.3	12.9	10.6	11.6	11.1	14.8	14.6
7/15	10.7	8.8	10.3	11.1	12.3	13.4	11.6	13.1	10.6	11.7	11.1	15.3	15.0
7/16	11.4	8.8	10.2	10.9	12.2	13.3	11.8	13.5	10.5	11.2	11.6	15.6	14.8
7/17	11.6	8.9	9.8	10.5	11.5	12.4	11.2	13.3	10.7	11.0	12.0	15.2	14.6
7/18	11.8	9.0	10.4	11.0	11.7	12.5	11.3	12.7	10.6	11.7	12.0	16.2	15.6
7/19	12.2	9.1	10.6	11.3	12.4	13.4	12.0	13.4	10.9	12.0	12.1	16.7	16.1
7/20	12.4	9.1	10.6	11.3	12.5	13.4	11.9	13.3	11.0	11.7	12.2	16.5	15.9
7/21	12.2	9.1	10.6	11.3	12.4	13.2	11.7	13.0	10.9	11.6	12.1	16.4	15.7
7/22	12.5	9.3	10.5	11.0	12.0	13.0	11.7	13.2	11.1	11.8	12.2	16.6	15.9
7/23	12.8	9.5	11.0	11.6	12.7	13.6	12.2	13.6	10.9	11.9	12.4	17.5	16.4
7/24	12.9	9.5	10.9	11.6	12.8	14.0	12.5	14.1	11.5	12.5	12.5	18.0	17.1
7/25	12.8	9.5	10.9	11.5	12.7	13.8	12.4	14.0	11.9	12.7	12.3	17.9	17.1
7/26	12.6	9.4	10.8	11.4	12.5	13.6	12.2	13.8	11.9	12.7	12.1	17.7	16.9
7/27	12.3	9.5	10.6	11.2	12.2	13.3	12.0	13.6	11.8	12.6	11.7	17.3	16.6
7/28	12.0	9.5	10.7	11.2	12.2	13.1	11.9	13.4	11.7	12.5	11.5	17.1	16.4
7/29	12.4	9.8	10.7	11.2	12.0	12.7	11.6	13.2	11.6	12.4	11.6	17.0	16.2
7/30	12.6	10.1	11.1	11.6	12.4	13.1	11.9	13.2	11.7	12.6	11.7	17.3	16.4
7/31	12.7	10.2	10.9	11.5	12.4	13.2	12.1	13.4	11.8	12.4	11.9	17.1	16.3

DATE	RM 18.2 (SFK)	Sultan River										Skykomish River	
		RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four Creek	RM 14.1	RM 13.2
8/1	12.0	9.7	10.4	10.8	11.6	12.3	11.5	12.9	11.6	12.0	11.8	15.8	15.1
8/2	11.1	9.8	10.2	10.5	10.9	11.3	10.9	12.0	11.3	11.7	11.7	14.5	14.0
8/3	11.7	10.0	10.7	11.1	11.5	11.8	11.3	12.3	11.4	12.2	11.8	14.9	14.4
8/4	12.9	10.4	11.5	11.9	12.6	13.3	12.4	13.4	12.0	13.0	12.2	17.4	16.4
8/5	13.3	10.6	11.8	12.3	13.2	14.1	12.9	14.2	12.5	13.4	12.5	18.8	17.7
8/6	13.4	10.5	11.7	12.2	13.2	14.1	13.0	14.5	12.6	13.5	12.5	18.9	17.7
8/7	13.3	10.5	11.6	12.2	13.1	14.0	12.9	14.4	12.6	13.5	12.5	18.7	17.6
8/8	13.5	10.6	11.7	12.1	13.1	14.1	13.0	14.5	12.7	13.6	12.6	18.6	17.5
8/9	13.8	10.8	11.8	12.3	13.2	14.1	13.1	14.5	12.8	13.7	12.6	18.7	17.5
8/10	14.0	11.0	12.1	12.4	13.4	14.4	13.4	14.9	13.1	14.0	12.9	18.9	17.9
8/11	13.6	11.0	11.6	12.1	13.0	13.7	12.9	14.5	12.9	13.5	12.8	18.4	17.6
8/12	13.5	11.0	11.9	12.3	13.0	13.8	12.9	14.2	12.8	13.7	12.7	17.6	16.9
8/13	13.9	11.0	11.9	12.4	13.2	14.0	13.2	14.5	13.0	13.9	12.7	18.5	17.5
8/14	13.2	11.3	11.9	12.3	13.0	13.6	13.0	14.3	13.0	13.5	12.8	18.1	17.0
8/15	13.0	11.6	12.0	12.3	12.9	13.4	12.8	14.0	13.0	13.4	12.9	17.3	16.4
8/16	13.4	11.5	12.5	12.9	13.5	14.2	13.5	14.3	13.1	13.8	13.1	17.7	16.6
8/17	13.0	11.3	11.9	12.3	13.1	13.7	13.1	14.6	13.2	13.8	13.1	17.9	17.0
8/18	13.2	11.2	12.1	12.5	13.1	13.8	13.2	14.3	13.1	14.0	13.0	17.9	16.9
8/19	13.3	11.2	11.9	12.3	13.1	13.9	13.4	14.5	13.2	13.6	12.9	17.8	16.4
8/20	13.3	11.0	11.9	12.3	12.9	13.6	13.3	14.4	13.3	13.7	12.5	17.8	16.2
8/21	13.0	11.3	12.0	12.2	12.8	13.5	13.3	14.2	13.4	14.1	12.2	17.9	16.5
8/22	13.2	11.6	12.2	12.6	13.2	13.7	13.5	14.5	13.6	14.2	12.6	18.1	16.7
8/23	13.3	11.6	12.2	12.6	13.3	13.8	13.5	14.6	13.7	14.2	12.8	17.8	16.8
8/24	12.9	11.4	11.9	12.3	12.9	13.4	13.3	14.3	13.7	14.2	12.5	17.3	16.5
8/25	12.6	11.3	11.8	12.1	12.6	13.0	13.0	13.8	13.5	14.1	12.2	16.7	16.0
8/26	12.6	11.3	12.0	12.3	12.8	13.4	13.3	14.1	13.7	14.3	12.2	17.1	16.3
8/27	12.8	11.5	12.1	12.4	13.0	13.7	13.6	14.5	14.1	14.8	12.4	17.4	16.7
8/28	13.1	11.7	12.4	12.7	13.3	13.9	13.6	14.7	14.2	14.9	12.8	17.8	17.2
8/29	12.9	11.8	12.4	12.7	13.3	13.8	13.7	14.6	14.2	14.7	13.2	17.5	17.0
8/30	12.1	11.5	12.4	12.8	13.4	14.0	13.7	14.8	14.3	15.0	13.7	15.9	16.0
8/31	11.6	11.4	12.1	12.3	12.8	13.4	13.3	14.3	14.0	14.7	13.1	15.9	15.8

DATE	RM 18.2 (SFK)	Sultan River										Skykomish River	
		RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four Creek	RM 14.1	RM 13.2
9/1	12.3	11.7	12.4	12.7	13.2	13.8	13.6	14.6	14.2	14.9	13.2	16.9	16.6
9/2	12.7	11.6	12.4	12.7	13.3	13.9	13.7	14.7	14.3	15.1	13.3	17.4	17.0
9/3	12.8	11.7	12.3	12.6	13.2	13.8	13.7	14.6	14.2	14.8	13.4	17.2	16.8
9/4	12.9	11.7	12.3	12.6	13.1	13.4	13.5	14.2	14.0	14.4	13.3	16.7	16.2
9/5	13.1	11.7	12.3	12.7	13.2	13.6	13.6	14.3	14.1	14.7	13.3	16.7	16.3
9/6	12.5	11.5	12.4	12.9	13.4	13.8	13.7	14.6	14.0	14.8	13.6	16.6	16.3
9/7	12.1	11.6	12.2	12.6	13.2	13.6	12.7	14.4	13.3	13.8	13.5	16.1	15.9
9/8	11.9	11.6	12.3	12.6	13.0	13.5	12.7	13.9	13.0	13.7	13.4	16.6	16.2
9/9	12.1	11.7	12.4	12.6	13.0	13.6	12.7	13.9	13.0	13.8	13.5	17.0	16.5
9/10	12.2	11.9	12.4	12.6	13.1	13.6	12.8	14.0	13.2	13.9	13.5	17.4	16.8
9/11	12.6	12.1	12.7	12.9	13.4	13.9	13.0	14.1	13.3	14.0	14.0	17.8	17.0
9/12	13.0	12.3	13.0	13.2	13.6	14.1	13.1	14.2	13.4	14.1	14.2	18.0	17.2
9/13	13.1	11.9	12.9	13.2	13.7	13.9	13.0	13.9	13.3	13.5	14.1	17.0	16.3
9/14	13.3	11.8	12.5	12.8	13.5	14.0	13.1	13.7	13.4	13.9	14.0	16.7	15.9
9/15	13.2	11.7	12.4	12.7	13.2	13.6	13.0	13.6	13.4	13.8	13.9	16.8	15.9
9/16	12.6	11.7	12.3	12.6	13.0	13.2	13.3	13.7	13.6	13.9	13.7	16.2	15.3
9/17	11.3	9.2	9.5	10.1	10.8	11.3	12.0	13.4	13.5	13.9	12.7	15.2	14.7
9/18	10.6	11.2	11.0	10.8	10.4	10.2	12.5	12.0	12.3	13.0	12.2	14.6	14.2
9/19	9.9	11.2	11.3	11.3	11.3	11.5	13.0	13.1	13.2	13.6	11.6	14.1	14.0
9/20	10.4	11.2	11.5	11.6	11.7	11.8	13.0	13.4	13.4	13.9	11.8	14.2	14.2
9/21	10.8	11.1	11.6	11.8	12.2	12.4	13.2	13.7	13.6	14.2	12.1	14.9	14.8
9/22	10.1	10.8	11.2	11.4	11.7	11.9	13.1	13.3	13.3	13.7	11.8	14.2	14.1
9/23	9.5	10.6	11.0	11.2	11.4	11.5	12.7	13.1	13.1	13.4	11.4	12.1	12.3
9/24	8.9	9.3	9.9	10.3	10.7	11.1	12.1	12.6	12.6	13.0	11.0	11.5	11.7
9/25	8.6	6.5	6.9	7.2	7.5	7.7	7.8	9.2	9.3	10.4	10.7	11.6	11.6
9/26	8.5	6.6	6.9	7.1	7.4	7.6	7.5	8.4	8.4	9.3	10.4	12.0	11.6
9/27	8.0	6.6	6.9	7.1	7.2	7.4	7.2	8.0	8.0	8.6	10.2	11.3	10.9
9/28	8.6	6.6	7.3	7.7	7.9	8.0	7.9	8.4	8.4	8.9	10.6	10.6	10.5
9/29	8.1	6.6	7.3	7.7	8.0	8.2	8.1	9.1	9.0	9.6	10.4	10.0	10.1
9/30	7.6	6.5	7.1	7.5	7.8	8.0	7.9	8.8	8.8	9.3	10.1	9.3	9.4

DATE	RM 18.2 (SFK)	Sultan River										Skykomish River	
		RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four Creek	RM 14.1	RM 13.2
10/1	7.2	6.3	6.8	7.1	7.4	7.6	7.5	8.3	8.3	9.0	9.6	8.8	8.9
10/2	7.2	6.4	6.9	7.2	7.5	7.6	7.5	8.3	8.3	8.8	9.6	8.9	9.0
10/3	7.2	6.4	6.8	7.1	7.4	7.6	7.5	8.3	8.3	8.9	9.5	8.9	9.1
10/4	6.7	6.4	6.6	6.8	7.0	7.2	7.1	7.9	7.9	8.5	9.1	9.0	9.1
10/5	7.0	7.5	6.9	7.0	7.1	7.3	7.6	7.8	8.1	8.7	9.4	9.1	9.2
10/6	7.4	10.3	8.7	8.2	8.0	8.2	10.2	10.0	10.1	10.4	9.8	9.6	9.8
10/7	7.3	9.5	9.4	9.3	9.2	9.1	10.1	10.5	10.6	10.9	9.8	9.6	9.8
10/8	7.0	9.1	9.0	9.1	9.2	9.3	9.2	9.9	10.0	10.5	9.5	8.9	9.1
10/9	6.4	8.8	8.1	8.3	8.3	8.5	9.5	9.4	9.7	10.1	8.7	8.3	8.5
10/10	6.7	9.1	8.6	8.6	8.7	8.8	9.7	9.9	10.0	10.4	9.0	8.6	8.9
10/11	6.8	9.1	8.8	8.8	8.9	8.9	10.0	10.2	10.2	10.5	8.9	8.9	9.2
10/12	6.9	9.1	8.9	8.9	9.0	9.2	10.0	10.3	10.3	10.6	8.9	9.2	9.5
10/13	6.5	8.9	8.7	8.8	8.8	9.0	10.1	10.2	10.2	10.5	8.5	9.4	9.7
10/14	6.0	8.8	8.3	8.2	8.2	8.3	9.9	9.8	9.9	10.2	8.0	9.2	9.4
10/15	6.2	9.1	8.3	8.2	8.0	8.0	9.8	9.8	9.9	10.1	8.1	8.6	9.0
10/16	6.5	9.1	8.7	8.5	8.4	8.5	10.0	10.1	10.3	10.4	8.3	8.7	9.2
10/17	6.2	9.1	8.6	8.6	8.5	8.7	10.3	10.3	10.5	10.7	8.1	9.0	9.7
10/18	6.3	9.3	8.5	8.3	8.0	8.1	10.2	10.1	10.5	10.7	8.1	8.8	9.5
10/19	6.4	9.3	8.7	8.4	8.1	8.1	10.2	10.1	10.4	10.6	8.2	8.5	9.3
10/20	6.3	9.1	8.6	8.5	8.5	8.6	10.2	10.2	10.4	10.6	7.7	8.5	9.4
10/21	6.5	9.5	8.4	8.2	8.0	8.3	10.3	10.3	10.6	10.8	7.7	8.5	9.5
10/22	6.7	9.9	8.9	8.5	8.0	7.8	10.2	10.1	10.4	10.7	8.2	8.8	9.7
10/23	6.7	9.8	9.0	8.7	8.3	8.0	10.1	10.0	10.3	10.5	8.5	9.1	9.8
10/24	6.6	9.7	8.9	8.6	8.3	8.1	10.2	10.1	10.4	10.6	8.5	9.0	9.7
10/25	6.4	9.0	9.0	8.8	8.5	8.3	10.2	10.2	10.4	10.6	8.1	8.9	9.8
10/26	6.2	8.8	8.7	8.7	8.8	8.7	10.4	10.3	10.6	10.8	7.8	8.6	9.6
10/27	6.4	8.9	8.6	8.6	8.6	8.7	10.2	10.4	10.5	10.6	7.7	8.7	9.7
10/28	5.8	9.3	8.1	8.0	8.0	8.0	10.2	10.0	10.3	10.5	7.4	8.5	9.3
10/29	4.8	9.2	8.1	7.5	7.0	6.7	10.0	9.6	10.2	10.3	6.5	7.4	8.8
10/30	4.8	9.0	8.0	7.7	7.2	6.8	9.9	9.6	10.2	10.4	6.3	6.8	8.7
10/31	5.7	7.3	8.4	8.4	8.3	8.0	9.9	10.1	10.3	10.5	6.9	7.6	9.1

DATE	RM 18.2 (SFK)	Sultan River										Skykomish River	
		RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four Creek	RM 14.1	RM 13.2
11/1	6.3	6.3	7.0	7.5	8.1	8.5	9.7	10.2	10.3	10.6	7.5	8.4	9.4
11/2	5.8	6.2	6.9	7.2	7.6	7.8	8.6	9.5	9.9	10.2	7.8	8.7	9.3
11/3	4.5	6.0	6.3	6.6	6.9	7.0	7.4	7.6	8.3	9.1	7.4	7.1	7.6
11/4	4.1	5.9	5.5	5.6	5.7	5.8	6.9	6.9	8.9	9.2	6.5	6.4	7.3
11/5	4.3	6.1	6.0	6.1	6.2	6.2	7.1	7.4	8.6	9.2	6.9	6.4	7.2
11/6	4.9	6.1	6.4	6.6	6.7	6.8	7.1	7.5	8.7	9.2	7.2	6.7	7.3
11/7	4.9	6.2	6.7	6.9	7.1	7.2	7.6	7.8	8.6	9.1	7.6	7.0	7.5
11/8	5.3	6.2	6.9	7.2	7.4	7.5	7.8	8.0	8.1	8.7	7.7	7.1	7.3
11/9	5.1	6.1	6.4	6.6	6.9	7.1	7.2	7.7	8.1	8.6	7.4	6.9	7.2
11/10	5.5	6.2	6.6	6.9	7.1	7.3	7.4	7.9	8.2	8.7	7.6	7.1	7.5
11/11	5.7	6.3	6.7	6.9	7.2	7.3	7.5	8.0	8.7	8.9	7.8	7.5	7.9
11/12	5.9	6.5	6.9	7.5	7.4	7.5	7.8	8.3	8.6	9.0	8.1	7.6	8.0
11/13	5.9	6.5	7.2	8.2	7.8	8.0	8.0	8.8	8.3	8.6	8.3	7.7	7.9
11/14	5.7	6.3	6.8	7.2	7.5	7.8	7.8	8.6	8.4	8.5	7.8	7.4	7.7
11/15	4.8	6.2	6.1	5.8	6.6	6.9	7.0	7.9	8.0	8.2	7.0	7.0	7.3
11/16	4.2	6.1	5.6	5.4	6.0	6.1	6.5	6.7	6.8	7.4	6.8	6.3	6.3
11/17	4.4	6.2	5.9	5.7	6.4	6.5	6.6	7.1	7.3	7.7	6.9	6.5	6.5
11/18	4.4	6.4	6.3	6.4	6.7	6.9	6.9	7.6	7.6	7.8	7.2	6.5	6.6
11/19	4.5	6.4	6.4	6.6	6.9	7.0	7.0	7.5	7.5	7.7	7.1	6.3	6.4
11/20	3.5	6.0	5.0	5.1	5.2	5.4	5.5	6.0	6.8	7.0	5.6	5.3	5.6
11/21	2.8	5.7	4.3	4.4	4.1	4.2	4.6	4.7	6.5	6.6	4.7	4.2	4.6
11/22	2.9	5.7	4.3	4.4	3.8	3.8	4.5	4.3	6.4	6.5	4.4	3.8	4.3
11/23	3.3	5.8	4.6	5.0	4.0	4.0	4.8	4.6	6.4	6.5	4.6	4.1	4.7
11/24	3.5	5.9	4.8	5.7	4.3	4.2	5.1	4.8	6.4	6.5	4.9	4.4	4.9
11/25	3.6	5.8	5.0	5.8	4.4	4.4	5.4	5.2	6.5	6.6	5.1	4.6	5.2
11/26	3.5	5.7	5.0	5.9	4.5	4.4	5.4	5.3	6.4	6.5	5.1	4.7	5.3
11/27	4.0	5.8	5.4	6.1	5.0	5.0	5.7	5.9	6.4	6.6	5.7	5.3	5.7
11/28	3.7	5.6	5.1	6.0	4.7	4.7	5.5	5.6	6.2	6.3	5.4	5.0	5.4
11/29	4.0	5.7	5.4	6.0	5.0	4.9	5.7	5.8	6.2	6.4	5.6	4.8	5.3
11/30	4.4	5.8	5.8	6.2	5.8	5.9	6.1	6.5	6.4	6.7	6.0	5.7	6.0

DATE	RM 18.2 (SFK)	Sultan River										Skykomish River	
		RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four Creek	RM 14.1	RM 13.2
12/1	4.4	5.9	6.0	6.2	6.2	6.3	6.2	6.7	6.6	6.8	6.7	6.1	6.2
12/2	3.2	5.5	4.9	5.0	5.1	5.6	5.2	5.5	5.8	5.7	5.5	4.6	4.7
12/3	2.8	5.5	4.6	4.7	4.6	4.9	4.9	5.0	5.3	5.5	4.6	4.3	4.5
12/4	1.8	5.3	4.0	4.0	3.7	4.2	4.5	4.3	5.4	5.4	3.5	3.2	3.6
12/5	1.4	5.0	3.5	3.5	2.9	3.4	4.2	3.7	5.3	5.2	2.6	2.3	2.9
12/6	0.6	4.8	2.8	2.9	2.1	2.6	3.8	3.2	5.1	5.0	1.5	1.2	2.2
12/7	0.2	4.5	2.9	2.9	1.2	1.6	3.5	2.5	4.8	4.6	0.7	0.4	1.7
12/8	0.2	4.5	2.5	2.5	1.1	1.2	3.5	2.5	4.7	4.6	0.5	0.3	1.6
12/9	0.6	4.5	2.7	2.7	1.7	1.4	3.7	2.9	4.7	4.7	0.8	0.6	2.0
12/10	1.4	4.6	3.5	3.5	2.9	2.5	4.2	3.9	4.9	4.9	1.6	1.9	3.1
12/11	1.5	4.3	3.5	3.5	3.0	2.9	4.1	4.0	4.8	4.8	2.0	2.6	3.5
12/12	1.9	4.3	3.5	3.5	3.1	3.0	4.1	4.0	4.7	4.8	2.4	2.9	3.7
12/13	1.9	4.3	3.1	3.2	3.1	3.3	3.8	4.3	4.7	4.8	2.8	3.7	4.2
12/14	2.4	4.4	3.4	3.4	3.3	3.3	3.7	4.0	4.4	4.7	3.5	4.2	4.3
12/15	2.5	4.5	3.8	3.9	3.9	3.8	4.1	4.4	4.6	4.9	3.9	4.5	4.7
12/16	2.8	4.5	4.0	4.1	4.0	4.0	4.1	4.2	4.4	4.6	4.0	4.5	4.6
12/17	3.0	4.3	4.0	4.0	3.8	3.8	4.0	4.0	4.3	4.4	3.9	4.0	4.1
12/18	3.2	4.3	4.3	4.3	4.2	4.2	4.3	4.6	4.5	4.7	4.0	4.5	4.6
12/19	2.1	4.1	3.6	3.6	3.3	3.7	3.8	3.8	4.3	4.3	2.9	3.8	4.0
12/20	1.1	4.0	2.6	2.6	2.0	2.7	3.0	3.1	3.8	3.7	2.1	2.6	3.0
12/21	1.9	4.0	3.0	3.0	2.7	2.5	3.1	3.1	3.5	3.8	3.2	2.4	2.9
12/22	2.5	4.0	3.2	3.3	3.4	3.3	3.5	3.6	3.8	4.0	3.9	3.8	4.0
12/23	2.4	4.1	3.9	3.9	4.1	3.9	4.1	4.4	4.4	4.5	4.6	4.2	4.5
12/24	3.2	4.0	4.2	4.2	4.5	4.4	4.4	4.8	4.7	4.7	4.5	4.4	4.6
12/25	2.8	3.9	3.7	3.8	3.8	4.1	3.9	4.2	4.2	4.1	4.0	3.8	4.0
12/26	3.1	4.0	3.9	4.0	3.8	4.0	3.9	4.2	4.2	4.1	4.3	3.9	4.1
12/27	3.3	4.0	4.0	4.0	3.8	4.0	3.9	4.3	4.2	4.2	4.6	4.0	4.2
12/28	3.4	4.1	4.3	4.3	4.4	4.4	4.3	4.9	4.5	4.6	4.7	4.8	5.0
12/29	3.2	4.0	4.3	4.3	4.2	4.5	4.1	4.8	4.5	4.5	4.4	4.6	4.7
12/30	3.5	4.1	4.3	4.3	4.3	4.5	4.1	4.7	4.4	4.4	4.7	4.6	4.7
12/31	3.6	4.1	4.5	4.6	4.6	4.7	4.3	5.1	4.6	4.6	4.9	5.0	5.1

## **APPENDIX D**

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*Seven-Day Average of the Daily Maximum (7-DAD Max) Water Temperature in Tabular Format*

DATE	RM 18.2	RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four	Skykomish	Skykomish
	(SFK) 7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	Above	Below
	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	7 Day Avg Max	7 Day Avg Max	7 Day Avg Max
1/1	2.0	3.8	3.3	3.2	3.3	3.5	3.4	4.0	3.8	4.0	3.4	3.1	3.7
1/2	2.0	3.7	3.3	3.1	3.2	3.4	3.3	4.0	3.8	3.9	3.4	3.0	3.6
1/3	2.1	3.7	3.2	3.1	3.2	3.3	3.3	3.9	3.7	3.9	3.3	2.9	3.5
1/4	2.2	3.7	3.2	3.1	3.2	3.4	3.3	4.0	3.8	3.9	3.4	3.0	3.5
1/5	2.4	3.7	3.3	3.2	3.3	3.5	3.5	4.1	4.0	4.1	3.6	3.1	3.7
1/6	2.5	3.7	3.4	3.4	3.6	3.7	3.7	4.4	4.2	4.3	3.7	3.4	3.9
1/7	2.6	3.7	3.5	3.5	3.7	3.9	3.8	4.5	4.3	4.4	3.8	3.7	4.1
1/8	2.4	3.7	3.4	3.4	3.8	4.0	3.9	4.5	4.3	4.4	3.8	3.9	4.2
1/9	2.3	3.6	3.3	3.3	3.6	3.8	3.8	4.3	4.2	4.3	3.6	3.8	4.1
1/10	2.2	3.6	3.1	3.1	3.4	3.7	3.6	4.1	4.0	4.1	3.4	3.6	3.8
1/11	2.1	3.5	3.0	3.0	3.3	3.5	3.5	4.0	3.8	3.8	3.2	3.4	3.7
1/12	2.1	3.5	3.0	2.9	3.2	3.4	3.3	3.8	3.6	3.7	3.0	3.4	3.6
1/13	1.9	3.4	2.8	2.7	3.0	3.2	3.1	3.6	3.3	3.4	2.7	3.2	3.4
1/14	1.9	3.4	2.7	2.5	2.8	3.0	2.9	3.5	3.1	3.2	2.6	3.1	3.3
1/15	1.9	3.4	2.7	2.5	2.6	2.8	2.7	3.3	2.9	3.1	2.5	3.0	3.1
1/16	2.0	3.5	2.7	2.5	2.6	2.7	2.7	3.2	2.8	3.0	2.5	3.0	3.1
1/17	2.1	3.5	2.7	2.5	2.5	2.7	2.7	3.2	2.8	3.0	2.6	3.0	3.2
1/18	2.1	3.5	2.7	2.4	2.4	2.6	2.6	3.1	2.8	2.9	2.7	3.0	3.1
1/19	2.2	3.5	2.6	2.4	2.3	2.4	2.4	2.9	2.7	2.8	2.8	2.9	3.0
1/20	2.3	3.6	2.7	2.4	2.4	2.4	2.5	2.9	2.7	2.9	2.9	3.0	3.1
1/21	2.4	3.6	2.8	2.5	2.5	2.6	2.6	3.0	2.8	2.9	3.1	3.1	3.2
1/22	2.5	3.6	2.9	2.7	2.7	2.7	2.7	3.2	2.8	3.0	3.3	3.4	3.4
1/23	2.5	3.6	3.0	2.8	2.8	2.9	2.8	3.3	2.9	3.1	3.4	3.5	3.6
1/24	2.3	3.6	2.9	2.8	2.9	3.0	2.9	3.4	3.0	3.2	3.5	3.7	3.8
1/25	2.2	3.6	2.9	2.7	2.9	3.0	2.9	3.5	3.1	3.3	3.5	3.9	3.9
1/26	2.0	3.7	2.7	2.6	2.8	3.0	2.9	3.6	3.2	3.4	3.4	4.0	4.1
1/27	2.0	3.7	2.7	2.5	2.9	3.0	2.9	3.7	3.3	3.5	3.3	4.1	4.2
1/28	1.9	3.7	2.7	2.5	2.9	3.1	3.0	3.8	3.4	3.6	3.3	4.2	4.3
1/29	1.9	3.7	2.7	2.5	2.9	3.2	3.0	3.9	3.6	3.8	3.2	4.3	4.4
1/30	2.1	3.7	2.7	2.5	3.0	3.2	3.0	3.9	3.8	3.9	3.2	4.5	4.5
1/31	2.3	3.8	2.8	2.7	3.1	3.4	3.2	4.1	3.9	4.0	3.2	4.5	4.6

DATE	RM 18.2	RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four	Skykomish	Skykomish
	(SFK) 7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	Above	Below
	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	7 Day Avg Max	7 Day Avg Max	7 Day Avg Max
2/1	2.6	3.8	3.0	2.9	3.3	3.6	3.4	4.3	4.1	4.2	3.3	4.7	4.8
2/2	2.8	3.8	3.2	3.2	3.6	3.8	3.6	4.5	4.3	4.3	3.5	4.9	5.0
2/3	2.9	3.9	3.3	3.3	3.6	3.9	3.7	4.7	4.3	4.4	3.6	5.0	5.1
2/4	2.9	3.9	3.4	3.3	3.7	4.0	3.7	4.7	4.4	4.5	3.7	5.1	5.2
2/5	3.0	3.8	3.4	3.3	3.7	3.9	3.7	4.7	4.3	4.4	3.7	5.0	5.1
2/6	3.0	3.8	3.5	3.4	3.7	4.0	3.7	4.7	4.2	4.4	3.6	5.0	5.1
2/7	3.0	3.8	3.5	3.4	3.7	4.0	3.7	4.7	4.2	4.3	3.6	5.1	5.1
2/8	3.0	3.8	3.5	3.5	3.8	4.0	3.7	4.7	4.1	4.3	3.6	5.1	5.1
2/9	3.0	3.8	3.6	3.5	3.8	4.1	3.7	4.7	3.9	4.2	3.6	5.0	5.0
2/10	3.0	3.8	3.6	3.5	3.8	4.1	3.8	4.8	3.9	4.1	3.7	5.1	5.1
2/11	3.0	3.8	3.6	3.6	3.8	4.1	3.8	4.8	3.8	4.1	3.7	5.2	5.1
2/12	3.0	3.9	3.6	3.6	3.8	4.2	3.8	4.9	3.8	4.1	3.8	5.4	5.3
2/13	3.0	3.9	3.6	3.5	3.8	4.1	3.8	5.0	3.8	4.1	3.9	5.4	5.3
2/14	3.0	3.9	3.5	3.5	3.8	4.1	3.8	4.9	3.8	4.1	3.9	5.4	5.3
2/15	3.0	3.9	3.5	3.5	3.8	4.1	3.8	4.9	3.8	4.1	3.9	5.4	5.3
2/16	3.0	3.8	3.5	3.5	3.7	4.0	3.8	4.8	3.9	4.2	3.9	5.4	5.3
2/17	2.9	3.8	3.5	3.5	3.7	4.0	3.8	4.7	3.9	4.1	3.8	5.3	5.2
2/18	2.7	3.8	3.4	3.4	3.6	3.9	3.7	4.5	3.8	4.1	3.7	5.1	5.0
2/19	2.4	3.8	3.3	3.3	3.5	3.7	3.5	4.4	3.8	4.1	3.6	4.8	4.8
2/20	2.3	3.7	3.2	3.2	3.4	3.6	3.4	4.2	3.8	4.0	3.5	4.6	4.6
2/21	2.2	3.7	3.2	3.1	3.4	3.6	3.4	4.2	3.8	4.0	3.4	4.5	4.6
2/22	2.1	3.7	3.1	3.0	3.3	3.5	3.4	4.2	3.8	4.1	3.4	4.5	4.6
2/23	2.1	3.7	3.1	3.0	3.3	3.5	3.4	4.2	3.8	4.0	3.3	4.4	4.5
2/24	2.1	3.7	3.1	3.0	3.4	3.6	3.5	4.3	3.9	4.1	3.3	4.5	4.6
2/25	2.2	3.8	3.1	3.0	3.4	3.7	3.5	4.5	3.9	4.1	3.4	4.6	4.7
2/26	2.4	3.8	3.3	3.2	3.6	3.8	3.7	4.6	4.1	4.1	3.5	4.7	4.8
2/27	2.5	3.8	3.4	3.4	3.8	4.1	3.9	4.9	4.2	4.3	3.7	4.9	4.9
2/28	2.6	3.8	3.4	3.4	3.8	4.1	3.9	5.0	4.3	4.3	3.8	5.0	5.0

DATE	RM 18.2	RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four	Skykomish	Skykomish
	(SFK) 7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	Above	Below
	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	7 Day Avg Max	7 Day Avg Max	7 Day Avg Max
3/1	2.7	3.8	3.5	3.4	3.8	4.1	3.9	5.0	4.3	4.2	3.8	5.0	5.0
3/2	2.7	3.8	3.5	3.5	3.8	4.2	3.9	5.0	4.2	4.2	3.8	5.0	5.0
3/3	2.8	3.8	3.5	3.5	3.8	4.2	3.9	5.0	4.1	4.1	3.9	4.9	4.9
3/4	2.8	3.8	3.5	3.5	3.8	4.2	3.9	5.0	4.0	4.1	3.9	5.0	4.9
3/5	2.8	3.8	3.5	3.5	3.8	4.2	3.9	4.9	3.9	4.0	3.9	5.1	5.0
3/6	2.8	3.8	3.5	3.5	3.7	4.2	3.8	4.8	3.9	4.0	3.8	5.3	5.2
3/7	2.9	3.8	3.6	3.5	3.8	4.2	3.9	4.8	3.8	4.0	3.8	5.4	5.2
3/8	2.9	3.8	3.7	3.7	3.9	4.4	4.0	5.0	3.8	4.1	3.9	5.6	5.4
3/9	2.9	3.8	3.7	3.6	4.0	4.4	4.1	5.1	4.0	4.2	4.1	5.8	5.6
3/10	3.0	3.8	3.7	3.7	4.0	4.5	4.2	5.2	4.2	4.3	4.1	5.9	5.6
3/11	3.2	3.9	3.8	3.8	4.1	4.6	4.3	5.4	4.4	4.4	4.3	5.9	5.7
3/12	3.3	3.9	3.8	3.9	4.3	4.7	4.5	5.6	4.5	4.6	4.5	5.8	5.6
3/13	3.3	3.9	3.8	4.0	4.4	4.8	4.6	5.8	4.7	4.6	4.6	5.6	5.6
3/14	3.3	3.9	3.8	3.9	4.3	4.7	4.6	5.8	4.7	4.8	4.6	5.6	5.5
3/15	3.4	3.8	3.6	3.8	4.2	4.6	4.5	5.7	4.7	4.7	4.5	5.3	5.3
3/16	3.4	3.8	3.7	3.8	4.2	4.5	4.4	5.6	4.6	4.8	4.4	5.2	5.3
3/17	3.3	3.7	3.6	3.8	4.2	4.5	4.4	5.6	4.5	4.7	4.3	5.2	5.3
3/18	3.2	3.6	3.5	3.6	4.0	4.3	4.2	5.3	4.3	4.7	4.1	5.1	5.2
3/19	3.2	3.6	3.4	3.5	3.9	4.2	4.1	5.1	4.1	4.6	3.8	5.1	5.2
3/20	3.2	3.5	3.4	3.4	3.8	4.1	4.0	4.9	3.9	4.5	3.5	5.1	5.2
3/21	3.3	3.5	3.5	3.4	3.8	4.2	4.0	4.8	3.8	4.4	3.4	5.2	5.3
3/22	3.3	3.4	3.6	3.5	3.9	4.4	4.0	4.9	3.8	4.4	3.4	5.5	5.4
3/23	3.4	3.4	3.7	3.5	4.0	4.6	4.1	5.0	3.8	4.4	3.5	5.8	5.7
3/24	3.6	3.5	3.8	3.6	4.1	4.7	4.2	5.0	3.7	4.3	3.5	5.9	5.7
3/25	3.8	3.5	4.0	3.9	4.4	5.0	4.4	5.3	3.8	4.4	3.7	6.3	6.0
3/26	3.9	3.6	4.2	4.1	4.6	5.4	4.6	5.7	4.0	4.5	4.1	6.7	6.3
3/27	4.1	3.7	4.4	4.4	4.9	5.6	4.8	6.0	4.2	4.8	4.4	7.0	6.7
3/28	4.2	3.8	4.6	4.6	5.1	5.9	5.0	6.3	4.5	5.0	4.8	7.3	7.0
3/29	4.2	4.0	4.7	4.9	5.3	6.1	5.2	6.5	4.8	5.2	5.2	7.5	7.2
3/30	4.3	4.1	4.8	5.0	5.4	6.1	5.3	6.7	4.9	5.2	5.4	7.5	7.3
3/31	4.3	4.2	5.0	5.2	5.6	6.4	5.4	6.9	5.0	5.4	5.7	7.6	7.4

DATE	RM 18.2	RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four	Skykomish	Skykomish
	(SFK) 7 Day Avg Max	Above 7 Day Avg Max	Below 7 Day Avg Max										
4/1	4.3	4.4	5.0	5.3	5.7	6.4	5.5	7.0	5.2	5.5	5.9	7.6	7.5
4/2	4.2	4.6	5.1	5.3	5.7	6.3	5.6	7.0	5.2	5.6	6.1	7.3	7.2
4/3	4.0	4.8	5.0	5.3	5.6	6.2	5.5	7.0	5.2	5.6	6.2	6.9	6.9
4/4	4.0	4.8	4.8	5.1	5.5	6.0	5.4	6.9	5.2	5.5	6.1	6.5	6.5
4/5	4.1	4.8	4.8	5.1	5.4	5.9	5.4	6.8	5.1	5.5	5.9	6.4	6.4
4/6	4.0	4.9	4.8	5.1	5.4	5.8	5.4	6.7	5.3	5.7	5.9	6.3	6.3
4/7	4.0	5.0	4.7	5.0	5.3	5.7	5.5	6.7	5.4	5.7	5.8	6.1	6.2
4/8	4.1	4.9	4.7	5.0	5.3	5.7	5.5	6.7	5.3	5.7	5.6	6.0	6.1
4/9	4.0	4.8	4.7	4.9	5.3	5.6	5.5	6.7	5.2	5.6	5.4	6.0	6.1
4/10	4.0	4.7	4.5	4.7	5.1	5.5	5.4	6.6	5.2	5.5	5.2	5.9	6.1
4/11	4.0	4.7	4.6	4.7	5.2	5.6	5.5	6.6	5.2	5.6	5.1	6.1	6.2
4/12	3.9	4.7	4.6	4.7	5.2	5.6	5.5	6.6	5.1	5.5	5.0	6.1	6.2
4/13	3.9	4.7	4.7	4.8	5.3	5.7	5.5	6.6	5.1	5.6	5.0	6.2	6.3
4/14	4.0	4.7	4.8	4.8	5.3	5.8	5.5	6.6	5.1	5.6	4.9	6.3	6.4
4/15	4.0	4.8	4.8	4.8	5.2	5.7	5.4	6.5	5.1	5.6	4.8	6.3	6.4
4/16	4.1	4.9	4.8	4.8	5.3	5.7	5.4	6.4	5.2	5.8	4.8	6.5	6.5
4/17	4.1	5.0	5.0	5.0	5.5	5.9	5.6	6.6	5.4	5.9	4.9	6.7	6.7
4/18	4.2	5.1	5.0	5.1	5.6	6.0	5.6	6.6	5.4	5.9	5.0	6.6	6.6
4/19	4.3	5.2	5.2	5.3	5.7	6.2	5.7	6.8	5.5	6.0	5.2	6.8	6.9
4/20	4.4	5.3	5.4	5.5	5.9	6.4	5.9	7.0	5.6	6.1	5.3	6.9	6.9
4/21	4.6	5.4	5.8	5.8	6.2	6.7	6.1	7.2	5.7	6.2	5.4	7.1	7.1
4/22	4.8	5.5	6.2	6.2	6.7	7.2	6.4	7.5	5.8	6.4	5.7	7.5	7.4
4/23	4.9	5.7	6.7	6.7	7.1	7.7	6.7	7.9	6.0	6.6	5.9	7.8	7.7
4/24	4.9	6.1	6.9	6.9	7.5	8.0	7.0	8.2	6.2	6.9	6.2	8.0	8.0
4/25	4.8	6.4	7.1	7.1	7.7	8.3	7.2	8.4	6.4	7.0	6.4	8.1	8.0
4/26	4.7	6.4	7.1	7.1	7.7	8.3	7.2	8.4	6.5	7.1	6.5	7.9	7.9
4/27	4.6	6.3	7.0	7.0	7.7	8.2	7.1	8.3	6.5	7.1	6.4	7.8	7.8
4/28	4.7	6.4	7.0	7.0	7.7	8.2	7.1	8.3	6.7	7.3	6.4	7.7	7.7
4/29	4.7	6.5	7.0	7.1	7.7	8.2	7.2	8.3	6.8	7.5	6.4	7.6	7.7
4/30	5.0	6.4	7.2	7.3	7.9	8.4	7.2	8.4	6.8	7.7	6.4	7.7	7.8

DATE	RM 18.2	RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four	Skykomish	Skykomish
	(SFK) 7 Day Avg Max	Above 7 Day Avg Max	Below 7 Day Avg Max										
5/1	5.3	6.5	7.7	7.7	8.2	8.8	7.5	8.6	7.0	8.0	6.5	7.9	8.0
5/2	5.5	6.6	8.3	8.2	8.9	9.5	7.9	9.1	7.2	8.4	6.8	8.2	8.4
5/3	5.8	6.9	8.9	8.9	9.6	10.2	8.2	9.6	7.4	8.9	7.3	8.6	8.8
5/4	5.9	7.2	9.3	9.4	10.0	10.7	8.6	10.1	7.8	9.4	7.8	8.9	9.1
5/5	6.0	7.4	9.7	9.7	10.3	10.9	8.8	10.3	8.0	9.5	8.3	9.0	9.2
5/6	6.1	7.7	10.1	10.1	10.8	11.4	9.1	10.6	8.3	9.8	8.6	9.0	9.2
5/7	6.1	8.1	10.4	10.4	11.1	11.9	9.4	10.9	8.7	10.1	9.0	9.0	9.1
5/8	6.0	8.1	10.5	10.6	11.4	12.2	9.5	11.1	8.7	10.1	9.4	8.8	9.0
5/9	5.9	8.0	10.3	10.5	11.3	12.1	9.5	11.1	8.8	9.9	9.6	8.7	8.8
5/10	5.8	8.1	10.1	10.4	11.1	11.8	9.6	11.0	8.9	9.7	9.7	8.4	8.6
5/11	5.8	8.0	10.0	10.3	11.1	11.8	9.7	10.9	8.9	9.7	9.7	8.2	8.3
5/12	5.8	7.9	9.8	10.2	11.1	11.9	9.7	10.9	8.8	9.6	9.6	8.0	8.2
5/13	5.7	7.8	9.5	9.9	10.8	11.8	9.6	10.9	8.8	9.5	9.6	8.1	8.3
5/14	5.6	7.4	9.0	9.6	10.4	11.3	9.4	10.8	8.6	9.1	9.5	8.1	8.3
5/15	5.6	7.3	8.7	9.2	10.0	10.7	9.1	10.4	8.4	8.8	9.3	8.0	8.1
5/16	5.9	7.2	8.6	9.1	9.7	10.5	8.8	10.2	8.1	8.6	9.0	8.0	8.2
5/17	5.8	7.3	8.8	9.3	9.9	10.8	8.6	10.2	7.9	8.5	8.8	8.4	8.5
5/18	5.7	7.4	8.8	9.3	10.0	10.8	8.5	10.1	7.7	8.3	8.9	8.7	8.8
5/19	5.6	7.3	8.6	9.0	9.8	10.5	8.4	9.9	7.7	8.2	8.8	8.7	8.7
5/20	5.6	7.3	8.5	8.9	9.5	10.1	8.1	9.7	7.5	7.9	8.6	8.5	8.5
5/21	5.6	7.4	8.5	8.8	9.3	9.9	8.1	9.4	7.6	8.0	8.4	8.3	8.3
5/22	5.6	7.4	8.5	8.8	9.3	9.9	8.2	9.4	7.6	8.1	8.3	8.4	8.4
5/23	5.3	7.5	8.5	8.7	9.2	9.8	8.2	9.5	7.7	8.2	8.2	8.4	8.4
5/24	5.4	7.7	8.2	8.4	8.9	9.4	8.2	9.2	7.8	8.2	8.1	8.1	8.2
5/25	5.4	7.9	8.2	8.4	8.7	9.3	8.2	9.3	7.8	8.2	8.0	8.0	8.0
5/26	5.3	8.0	8.4	8.6	8.8	9.4	8.4	9.4	7.9	8.3	8.1	8.1	8.1
5/27	5.4	8.1	8.4	8.6	8.9	9.4	8.5	9.5	8.0	8.3	8.2	8.1	8.2
5/28	5.5	8.0	8.5	8.8	9.1	9.5	8.6	9.6	8.0	8.3	8.3	8.3	8.3
5/29	5.6	8.2	8.7	9.0	9.3	9.8	8.7	9.8	8.2	8.5	8.4	8.4	8.5
5/30	5.9	8.3	8.9	9.2	9.6	10.3	8.9	10.0	8.3	8.7	8.5	8.6	8.7
5/31	6.4	8.5	9.4	9.7	10.0	10.8	9.0	10.3	8.5	9.0	8.7	9.1	9.1

DATE	RM 18.2	RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four	Skykomish	Skykomish
	(SFK) 7 Day Avg Max	Above 7 Day Avg Max	Below 7 Day Avg Max										
6/1	6.8	8.8	10.1	10.3	10.8	11.6	9.2	10.6	8.6	9.3	8.9	9.5	9.5
6/2	7.3	9.3	10.8	11.0	11.6	12.6	9.4	11.1	8.7	9.4	9.3	9.9	9.9
6/3	7.4	9.7	11.6	11.8	12.5	13.6	9.6	11.6	8.9	9.6	9.6	10.4	10.4
6/4	7.7	10.2	11.8	12.0	13.0	14.1	9.8	11.9	9.1	9.8	9.9	10.6	10.6
6/5	7.9	10.3	12.1	12.3	13.2	14.2	9.8	11.9	9.2	9.8	10.1	10.8	10.7
6/6	7.9	10.5	12.4	12.7	13.5	14.5	9.9	12.2	9.3	9.9	10.2	11.0	10.9
6/7	7.7	10.6	12.4	12.7	13.6	14.6	9.9	12.2	9.3	10.0	10.2	11.0	11.0
6/8	7.5	10.6	12.1	12.5	13.2	14.3	9.8	12.1	9.4	10.0	10.1	10.9	10.9
6/9	7.2	10.6	11.8	12.2	12.9	14.0	9.9	12.0	9.4	10.1	9.9	10.7	10.8
6/10	7.4	10.6	11.3	11.7	12.4	13.3	9.7	11.6	9.3	10.1	9.7	10.5	10.6
6/11	7.5	10.5	11.4	11.8	12.3	13.2	9.5	11.5	9.2	10.1	9.6	10.5	10.7
6/12	7.7	10.6	11.6	12.0	12.5	13.5	9.6	11.7	9.2	10.3	9.6	10.6	10.8
6/13	7.8	10.6	11.7	12.1	12.6	13.7	9.8	11.7	9.2	10.5	9.6	10.7	10.9
6/14	7.9	10.5	11.9	12.3	12.9	14.0	10.1	12.1	9.3	10.9	9.8	10.8	11.0
6/15	7.9	10.4	11.9	12.3	13.1	14.2	10.2	12.3	9.5	11.2	10.0	10.9	11.2
6/16	7.8	10.2	11.8	12.2	13.0	14.1	10.2	12.4	9.7	11.3	10.1	11.0	11.3
6/17	7.8	10.1	11.8	12.2	12.9	14.0	10.4	12.5	9.9	11.4	10.3	10.9	11.2
6/18	7.7	10.0	11.7	12.0	12.8	13.8	10.7	12.6	10.1	11.5	10.3	10.8	11.1
6/19	7.6	9.9	11.7	12.0	12.7	13.6	11.2	12.7	10.4	11.8	10.4	10.9	11.1
6/20	7.3	9.9	11.4	11.7	12.5	13.2	11.1	12.8	10.7	11.9	10.5	10.9	11.2
6/21	7.4	9.8	11.1	11.4	12.1	12.6	11.3	12.6	10.8	11.8	10.5	10.6	10.9
6/22	7.6	9.7	11.1	11.4	12.0	12.4	11.5	12.7	11.0	11.8	10.5	10.5	10.8
6/23	7.8	9.7	11.2	11.5	12.0	12.4	11.8	12.9	11.2	12.1	10.6	10.5	10.9
6/24	8.2	9.8	11.3	11.6	12.1	12.5	11.9	13.1	11.2	12.3	10.7	10.7	11.1
6/25	8.4	9.8	11.7	12.0	12.6	13.1	12.3	13.5	11.2	12.5	11.0	11.3	11.6
6/26	8.9	10.0	11.8	12.2	12.8	13.3	12.3	13.6	11.1	12.2	11.4	11.4	11.7
6/27	9.6	10.0	12.3	12.7	13.4	14.1	12.8	14.0	11.0	12.3	11.8	11.8	12.1
6/28	10.1	10.0	12.6	13.2	14.0	14.7	13.3	14.6	11.0	12.4	12.3	12.5	12.8
6/29	10.6	10.0	12.8	13.5	14.4	15.2	13.6	15.0	11.1	12.2	12.7	13.1	13.3
6/30	11.1	9.9	13.0	13.8	14.9	15.7	13.8	15.3	11.2	12.0	13.0	13.7	13.8

DATE	RM 18.2	RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four	Skykomish Above	Skykomish Below
	(SFK) 7 Day Avg Max	7 Day Avg Max	7 Day Avg Max										
7/1	11.0	9.7	13.0	13.9	15.2	16.1	14.0	15.5	11.2	11.9	13.3	14.3	14.3
7/2	11.3	9.5	12.4	13.3	14.7	15.6	13.6	15.3	11.3	11.7	13.2	14.3	14.3
7/3	11.3	9.3	12.3	13.2	14.6	15.5	13.5	15.1	11.3	11.6	13.1	14.6	14.5
7/4	11.4	9.1	11.9	12.9	14.3	15.1	13.1	14.9	11.4	11.5	12.9	14.8	14.6
7/5	11.5	9.1	11.8	12.7	14.1	15.0	12.8	14.6	11.3	11.4	12.7	14.9	14.7
7/6	11.7	9.1	11.9	12.7	14.1	15.0	12.8	14.5	11.3	11.5	12.5	15.1	14.8
7/7	11.8	9.1	11.8	12.6	14.0	14.8	12.6	14.3	11.3	11.7	12.4	15.3	15.0
7/8	11.9	9.2	11.9	12.6	13.9	14.8	12.5	14.3	11.3	12.0	12.4	15.5	15.3
7/9	12.0	9.2	12.0	12.7	13.9	14.8	12.4	14.3	11.3	12.2	12.3	15.6	15.4
7/10	12.1	9.2	12.1	12.8	13.9	14.8	12.4	14.3	11.3	12.4	12.2	15.7	15.4
7/11	12.1	9.2	12.2	12.8	14.0	14.8	12.4	14.3	11.3	12.7	12.0	15.9	15.7
7/12	12.2	9.2	12.2	12.8	14.0	14.8	12.4	14.3	11.3	13.0	11.9	16.0	15.9
7/13	12.3	9.2	12.1	12.6	13.8	14.6	12.3	14.2	11.2	13.2	11.8	16.1	15.9
7/14	12.6	9.2	11.9	12.4	13.6	14.5	12.3	14.1	11.1	13.0	11.7	16.1	15.7
7/15	13.1	9.2	12.0	12.6	13.8	14.5	12.4	14.1	11.1	13.0	11.7	16.4	16.0
7/16	13.4	9.2	12.3	12.9	14.2	15.0	12.8	14.4	11.1	13.3	11.8	16.9	16.5
7/17	13.7	9.3	12.3	12.9	14.3	15.0	13.0	14.5	11.3	13.2	12.0	17.2	16.7
7/18	13.9	9.4	12.3	12.9	14.3	15.0	13.0	14.4	11.3	13.1	12.1	17.3	16.7
7/19	14.1	9.4	12.2	12.9	14.2	14.8	12.9	14.3	11.4	13.0	12.3	17.5	16.8
7/20	14.4	9.6	12.4	13.0	14.4	14.9	13.0	14.4	11.5	13.0	12.4	17.8	17.0
7/21	14.5	9.6	12.8	13.3	14.7	15.3	13.2	14.7	11.6	13.5	12.5	18.4	17.6
7/22	14.6	9.7	12.9	13.4	14.8	15.5	13.4	14.9	11.8	13.8	12.5	18.6	17.8
7/23	14.5	9.7	12.9	13.4	14.9	15.4	13.3	15.0	12.0	13.9	12.5	18.8	18.0
7/24	14.5	9.8	12.9	13.4	14.8	15.4	13.4	15.1	12.0	14.2	12.5	19.0	18.2
7/25	14.5	9.8	12.9	13.4	14.7	15.4	13.4	15.2	12.1	14.5	12.4	19.2	18.4
7/26	14.4	9.9	12.9	13.3	14.6	15.2	13.3	15.1	12.2	14.6	12.3	19.3	18.4
7/27	14.2	10.0	12.8	13.3	14.5	15.1	13.2	15.0	12.3	14.7	12.2	19.2	18.5
7/28	13.9	10.2	12.7	13.2	14.2	14.8	13.0	14.8	12.3	14.6	12.1	19.0	18.2
7/29	13.5	10.4	12.4	12.8	13.9	14.4	12.8	14.4	12.3	14.3	12.0	18.6	17.8
7/30	13.4	10.4	12.1	12.4	13.4	13.9	12.5	14.0	12.2	13.8	11.9	17.9	17.2
7/31	13.5	10.5	11.9	12.3	13.1	13.5	12.3	13.7	12.1	13.5	11.9	17.5	16.8

DATE	RM 18.2	RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four	Skykomish	Skykomish
	(SFK) 7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	Above	Below
	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	7 Day Avg Max	7 Day Avg Max	7 Day Avg Max
8/1	13.7	10.6	12.0	12.4	13.1	13.6	12.4	13.7	12.2	13.6	12.0	17.7	16.9
8/2	13.8	10.7	12.3	12.6	13.4	14.0	12.8	13.9	12.3	13.8	12.2	18.0	17.2
8/3	13.9	10.8	12.4	12.7	13.5	14.2	12.9	14.1	12.4	14.0	12.3	18.2	17.4
8/4	14.3	10.8	12.6	12.8	13.8	14.4	13.1	14.3	12.5	14.3	12.4	18.6	17.7
8/5	14.8	10.8	13.0	13.2	14.1	14.8	13.4	14.7	12.6	14.7	12.5	19.1	18.2
8/6	15.1	11.0	13.5	13.7	14.6	15.3	13.9	15.2	12.8	15.3	12.7	19.9	18.9
8/7	15.1	11.1	13.7	13.9	14.9	15.8	14.2	15.7	13.1	15.7	12.8	20.5	19.4
8/8	15.0	11.2	13.5	13.8	14.8	15.6	14.2	15.7	13.2	15.6	12.9	20.4	19.4
8/9	15.1	11.2	13.4	13.7	14.7	15.6	14.1	15.7	13.2	15.5	12.9	20.2	19.2
8/10	14.9	11.3	13.4	13.6	14.7	15.5	14.1	15.7	13.3	15.6	12.9	20.2	19.2
8/11	14.7	11.4	13.3	13.5	14.5	15.4	14.1	15.6	13.4	15.4	13.0	20.0	19.0
8/12	14.6	11.5	13.1	13.4	14.3	15.1	13.9	15.4	13.4	15.1	13.0	19.7	18.6
8/13	14.4	11.5	13.1	13.4	14.4	15.2	14.0	15.4	13.5	15.1	13.1	19.6	18.5
8/14	14.3	11.6	13.0	13.3	14.3	14.9	13.9	15.2	13.5	14.9	13.1	19.4	18.3
8/15	14.3	11.6	13.1	13.4	14.4	15.1	14.0	15.2	13.5	15.0	13.1	19.4	18.3
8/16	14.1	11.6	13.1	13.4	14.3	15.0	14.0	15.2	13.6	14.9	13.1	19.3	18.1
8/17	14.2	11.6	13.1	13.3	14.2	14.9	14.0	15.1	13.6	14.7	13.1	19.2	17.8
8/18	14.3	11.6	13.2	13.4	14.3	15.0	14.1	15.2	13.7	14.9	13.1	19.3	17.8
8/19	14.2	11.7	13.3	13.5	14.4	15.2	14.2	15.4	13.8	15.1	13.0	19.5	17.9
8/20	14.2	11.7	13.2	13.4	14.2	15.0	14.1	15.3	13.8	15.1	13.0	19.3	17.8
8/21	14.1	11.7	13.1	13.4	14.2	15.0	14.1	15.3	13.9	15.2	12.9	19.3	17.8
8/22	14.0	11.7	13.1	13.3	14.0	14.8	14.0	15.2	13.9	15.1	12.8	19.0	17.6
8/23	13.9	11.7	13.0	13.2	14.0	14.7	13.9	15.1	14.0	15.3	12.7	18.9	17.6
8/24	13.8	11.7	12.9	13.2	14.0	14.7	14.0	15.1	14.1	15.5	12.7	18.7	17.7
8/25	13.6	11.7	12.9	13.2	14.0	14.6	13.9	15.1	14.2	15.5	12.7	18.6	17.7
8/26	13.4	11.7	12.8	13.1	13.9	14.5	13.9	15.1	14.2	15.5	12.9	18.5	17.7
8/27	13.3	11.7	12.9	13.2	13.9	14.6	14.1	15.1	14.3	15.8	13.0	18.2	17.6
8/28	13.3	11.8	13.0	13.2	13.9	14.7	14.2	15.2	14.4	16.0	13.1	18.1	17.6
8/29	13.4	11.9	13.2	13.4	14.1	14.9	14.3	15.3	14.5	16.2	13.2	18.3	17.8
8/30	13.4	11.9	13.3	13.5	14.2	15.0	14.3	15.4	14.6	16.4	13.4	18.4	18.0
8/31	13.4	12.0	13.3	13.5	14.2	15.0	14.3	15.4	14.6	16.4	13.5	18.3	18.0

DATE	RM 18.2	RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four	Skykomish Above	Skykomish Below
	(SFK) 7 Day Avg Max	7 Day Avg Max	7 Day Avg Max										
9/1	13.5	11.9	13.3	13.4	14.0	14.8	14.2	15.2	14.6	16.2	13.5	18.0	17.7
9/2	13.6	11.9	13.3	13.5	14.0	14.8	14.2	15.2	14.6	16.3	13.5	18.0	17.7
9/3	13.6	11.9	13.3	13.5	14.0	14.7	14.2	15.2	14.5	16.2	13.5	18.0	17.7
9/4	13.5	11.9	13.2	13.4	13.9	14.7	14.0	15.1	14.4	16.0	13.5	17.9	17.6
9/5	13.4	11.9	13.1	13.4	13.8	14.6	13.9	15.0	14.2	15.7	13.5	17.9	17.5
9/6	13.4	11.9	13.1	13.4	13.8	14.6	13.8	14.9	14.0	15.5	13.5	17.8	17.5
9/7	13.4	12.0	13.2	13.4	13.8	14.6	13.7	14.8	13.9	15.5	13.6	17.9	17.5
9/8	13.3	12.1	13.3	13.5	13.9	14.8	13.7	14.9	13.8	15.6	13.7	18.3	17.8
9/9	13.4	12.2	13.5	13.6	14.1	15.0	13.6	15.0	13.8	15.6	13.9	18.5	18.0
9/10	13.6	12.3	13.6	13.7	14.1	14.9	13.4	14.8	13.6	15.2	14.0	18.6	18.0
9/11	13.8	12.3	13.7	13.7	14.2	14.9	13.5	14.7	13.7	15.2	14.0	18.6	18.0
9/12	13.8	12.3	13.6	13.7	14.2	14.8	13.6	14.6	13.7	15.0	14.1	18.5	17.7
9/13	13.6	12.2	13.4	13.6	14.0	14.5	13.6	14.5	13.8	14.8	14.1	18.2	17.4
9/14	13.2	12.1	13.3	13.4	13.9	14.2	13.7	14.4	13.8	14.7	14.0	17.7	16.9
9/15	12.7	12.0	13.0	13.2	13.5	13.8	13.7	14.1	13.7	14.5	13.7	17.2	16.4
9/16	12.3	11.8	12.7	12.9	13.2	13.4	13.7	13.9	13.7	14.3	13.4	16.6	15.9
9/17	11.9	11.7	12.5	12.6	12.9	13.2	13.7	13.9	13.8	14.5	13.1	16.2	15.7
9/18	11.4	11.6	12.3	12.4	12.7	13.0	13.6	13.9	13.8	14.6	12.8	16.1	15.6
9/19	10.9	11.4	12.1	12.2	12.4	12.8	13.6	13.8	13.8	14.6	12.5	15.8	15.4
9/20	10.6	11.3	11.9	12.0	12.2	12.5	13.4	13.8	13.7	14.5	12.2	15.3	15.1
9/21	10.3	11.2	11.7	11.8	12.0	12.4	13.3	13.6	13.6	14.5	11.9	14.7	14.7
9/22	10.1	10.5	11.0	11.2	11.4	11.8	12.7	13.5	13.5	14.3	11.7	14.2	14.2
9/23	9.6	9.8	10.3	10.5	10.8	11.1	11.9	12.8	12.7	13.6	11.5	13.9	13.8
9/24	9.3	9.1	9.6	9.8	10.1	10.4	11.0	12.0	12.0	12.8	11.3	13.3	13.3
9/25	9.0	8.5	9.0	9.2	9.5	9.8	10.4	11.3	11.3	11.9	11.1	12.6	12.5
9/26	8.7	7.8	8.4	8.7	9.0	9.3	9.7	10.7	10.7	11.3	10.9	11.9	11.9
9/27	8.5	7.3	7.9	8.2	8.5	8.8	9.0	10.0	10.1	10.7	10.8	11.4	11.4
9/28	8.3	6.7	7.3	7.7	8.0	8.3	8.3	9.4	9.4	10.1	10.6	11.1	11.0
9/29	8.0	6.7	7.3	7.6	7.9	8.2	8.1	8.9	8.9	9.5	10.4	10.6	10.6
9/30	7.9	6.6	7.2	7.6	7.9	8.2	8.1	8.8	8.8	9.4	10.2	10.1	10.1

DATE	RM 18.2	RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four	Skykomish	Skykomish
	(SFK) 7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	Above	Below
	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	7 Day Avg Max	7 Day Avg Max	7 Day Avg Max
10/1	7.7	6.6	7.2	7.6	7.9	8.2	8.1	8.8	8.8	9.5	10.1	9.8	9.9
10/2	7.6	7.1	7.2	7.5	7.8	8.0	8.2	8.7	8.7	9.5	9.9	9.6	9.7
10/3	7.6	7.7	7.5	7.7	7.8	8.1	8.5	8.9	8.9	9.8	9.8	9.6	9.8
10/4	7.5	8.2	7.8	7.9	8.0	8.2	8.8	9.1	9.2	10.0	9.8	9.7	9.8
10/5	7.5	8.6	8.1	8.2	8.3	8.5	9.1	9.3	9.4	10.2	9.8	9.7	9.8
10/6	7.4	9.1	8.4	8.4	8.5	8.6	9.3	9.5	9.6	10.5	9.7	9.6	9.8
10/7	7.4	9.5	8.7	8.7	8.9	9.7	9.8	9.9	10.7	9.6	9.6	9.6	9.8
10/8	7.4	9.9	9.0	9.0	8.9	9.1	10.1	10.1	10.2	10.9	9.6	9.5	9.8
10/9	7.2	9.8	9.3	9.2	9.2	9.5	10.1	10.4	10.4	11.1	9.5	9.6	9.8
10/10	7.1	9.6	9.2	9.2	9.3	9.5	10.1	10.4	10.4	11.1	9.3	9.5	9.7
10/11	7.0	9.6	9.0	9.1	9.1	9.4	10.1	10.3	10.3	11.1	9.0	9.5	9.7
10/12	7.0	9.6	8.9	9.0	9.0	9.3	10.1	10.3	10.3	11.0	8.9	9.5	9.8
10/13	6.9	9.6	9.0	9.0	8.9	9.3	10.2	10.4	10.4	11.0	8.8	9.5	9.8
10/14	6.9	9.6	9.0	8.9	8.9	9.3	10.2	10.5	10.4	11.0	8.7	9.5	10.0
10/15	6.8	9.7	8.9	8.8	8.7	9.2	10.3	10.5	10.5	11.1	8.5	9.6	10.0
10/16	6.8	9.8	8.9	8.8	8.6	9.0	10.3	10.4	10.4	11.0	8.4	9.4	9.9
10/17	6.8	9.8	8.8	8.7	8.5	9.0	10.3	10.4	10.5	10.9	8.3	9.2	9.8
10/18	6.9	9.9	8.9	8.7	8.5	9.0	10.4	10.5	10.5	10.9	8.3	9.1	9.8
10/19	6.9	9.9	8.9	8.7	8.5	8.9	10.4	10.5	10.6	10.9	8.3	9.0	9.8
10/20	7.0	10.1	9.0	8.7	8.5	8.9	10.4	10.5	10.6	11.0	8.3	9.2	9.9
10/21	6.9	10.1	9.0	8.7	8.4	8.8	10.4	10.5	10.6	10.9	8.4	9.1	9.9
10/22	6.9	10.1	9.1	8.8	8.5	8.8	10.4	10.4	10.6	10.9	8.4	9.1	9.9
10/23	6.9	9.9	9.1	8.8	8.6	8.8	10.4	10.5	10.6	10.9	8.3	9.1	9.9
10/24	6.7	9.9	9.1	8.8	8.6	8.8	10.4	10.5	10.6	10.9	8.3	9.2	10.0
10/25	6.5	10.0	9.0	8.8	8.6	8.7	10.4	10.4	10.6	10.9	8.3	9.2	10.0
10/26	6.2	9.8	8.9	8.7	8.5	8.5	10.4	10.4	10.6	10.9	8.1	9.1	10.0
10/27	6.1	9.8	8.8	8.6	8.4	8.4	10.3	10.3	10.5	10.9	7.7	8.8	9.8
10/28	6.1	9.7	8.7	8.6	8.4	8.4	10.3	10.3	10.5	10.8	7.5	8.5	9.7
10/29	6.2	9.2	8.4	8.4	8.4	8.4	10.2	10.3	10.5	10.9	7.4	8.5	9.7
10/30	5.9	8.8	8.2	8.2	8.2	8.3	10.1	10.3	10.5	10.8	7.5	8.6	9.7
10/31	5.6	8.4	7.9	7.9	8.0	8.1	9.7	9.9	10.2	10.6	7.4	8.4	9.4

DATE	RM 18.2	RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four	Skykomish	Skykomish
	(SFK) 7 Day Avg Max	Above 7 Day Avg Max	Below 7 Day Avg Max										
11/1	5.5	7.7	7.5	7.6	7.7	7.8	9.3	9.5	10.0	10.4	7.3	8.1	9.1
11/2	5.5	7.2	7.2	7.4	7.6	7.7	9.0	9.2	9.8	10.3	7.4	7.8	8.8
11/3	5.4	6.6	6.9	7.2	7.5	7.6	8.6	8.8	9.6	10.1	7.5	7.8	8.6
11/4	5.2	6.2	6.7	7.0	7.3	7.5	8.3	8.5	9.4	9.9	7.5	7.7	8.3
11/5	5.0	6.2	6.6	6.9	7.1	7.3	8.0	8.2	9.1	9.6	7.5	7.4	8.0
11/6	5.1	6.2	6.6	6.8	7.0	7.1	7.7	7.9	8.8	9.3	7.5	7.2	7.7
11/7	5.4	6.2	6.6	6.8	7.0	7.2	7.7	7.9	8.8	9.2	7.5	7.1	7.6
11/8	5.6	6.3	6.7	7.0	7.2	7.3	7.7	8.0	8.7	9.2	7.7	7.3	7.7
11/9	5.7	6.3	6.9	7.3	7.3	7.5	7.8	8.1	8.7	9.1	7.8	7.4	7.8
11/10	5.8	6.4	7.0	7.6	7.5	7.6	7.9	8.3	8.6	9.1	8.0	7.6	7.9
11/11	5.8	6.4	7.0	7.8	7.5	7.7	7.9	8.4	8.5	9.0	8.0	7.6	7.9
11/12	5.6	6.4	6.9	7.6	7.5	7.7	7.8	8.4	8.5	8.9	7.9	7.6	7.9
11/13	5.5	6.4	6.8	7.5	7.4	7.5	7.7	8.3	8.3	8.8	7.9	7.5	7.8
11/14	5.3	6.4	6.7	7.4	7.3	7.4	7.6	8.2	8.2	8.6	7.8	7.4	7.7
11/15	5.1	6.4	6.7	7.4	7.2	7.4	7.5	8.1	8.0	8.4	7.7	7.3	7.5
11/16	4.9	6.4	6.6	7.1	7.2	7.3	7.4	8.0	7.9	8.2	7.6	7.1	7.2
11/17	4.4	6.4	6.4	6.7	6.9	7.1	7.1	7.7	7.7	8.0	7.3	6.8	7.0
11/18	4.1	6.3	6.0	6.3	6.5	6.6	6.7	7.2	7.5	7.7	6.9	6.4	6.6
11/19	4.0	6.2	5.8	6.1	6.0	6.1	6.3	6.7	7.2	7.5	6.5	6.0	6.2
11/20	3.9	6.2	5.6	6.0	5.7	5.8	6.1	6.4	7.1	7.3	6.2	5.6	5.9
11/21	3.8	6.1	5.4	5.9	5.4	5.5	5.8	6.0	7.0	7.2	5.9	5.4	5.7
11/22	3.6	6.1	5.2	5.8	5.1	5.1	5.6	5.7	6.8	7.0	5.6	5.1	5.5
11/23	3.6	5.9	5.0	5.7	4.7	4.8	5.4	5.4	6.6	6.9	5.2	4.9	5.4
11/24	3.7	5.9	5.0	5.7	4.6	4.6	5.3	5.3	6.5	6.8	5.2	4.9	5.4
11/25	3.9	5.9	5.1	5.8	4.6	4.7	5.4	5.4	6.5	6.8	5.3	5.0	5.5
11/26	4.0	5.9	5.2	6.0	4.9	4.9	5.6	5.6	6.4	6.8	5.5	5.1	5.6
11/27	4.2	5.9	5.4	6.1	5.1	5.1	5.8	5.9	6.5	6.8	5.6	5.3	5.8
11/28	4.2	5.9	5.6	6.2	5.4	5.4	5.9	6.2	6.5	6.8	5.9	5.6	5.9
11/29	4.1	5.8	5.7	6.2	5.6	5.7	6.0	6.3	6.5	6.8	6.0	5.7	6.0
11/30	3.8	5.8	5.7	6.0	5.6	5.7	5.9	6.2	6.4	6.6	6.0	5.6	5.8

DATE	RM 18.2	RM 15.8	RM 14.3	RM 12.8	RM 11.3	RM 9.8	RM 9.6	RM 4.9	RM 4.4	RM 0.2	Big Four	Skykomish	Skykomish
	(SFK) 7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	7 Day	Above	Below
	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	Avg Max	7 Day Avg Max	7 Day Avg Max	7 Day Avg Max
12/1	3.5	5.8	5.5	5.8	5.5	5.6	5.8	6.1	6.3	6.4	5.7	5.3	5.6
12/2	3.0	5.7	5.3	5.4	5.2	5.5	5.6	5.8	6.1	6.3	5.3	4.9	5.2
12/3	2.4	5.5	5.0	5.1	4.8	5.1	5.3	5.4	6.0	6.1	4.8	4.4	4.8
12/4	1.8	5.4	4.6	4.6	4.2	4.6	5.0	4.8	5.8	5.8	4.1	3.7	4.2
12/5	1.4	5.2	4.1	4.1	3.4	3.8	4.5	4.3	5.5	5.5	3.2	2.9	3.5
12/6	1.2	5.0	3.7	3.7	2.9	3.2	4.3	3.8	5.2	5.2	2.5	2.2	3.0
12/7	1.1	4.9	3.5	3.6	2.7	2.8	4.1	3.7	5.1	5.1	2.0	1.9	2.9
12/8	1.2	4.7	3.4	3.4	2.5	2.6	4.1	3.6	5.0	5.0	1.8	1.8	2.8
12/9	1.3	4.6	3.4	3.4	2.6	2.5	4.0	3.6	4.9	4.9	1.7	1.9	2.9
12/10	1.6	4.5	3.4	3.4	2.7	2.5	4.0	3.7	4.8	4.9	1.8	2.2	3.2
12/11	2.0	4.5	3.5	3.5	3.0	2.7	4.1	3.9	4.8	4.9	2.2	2.7	3.5
12/12	2.3	4.5	3.7	3.7	3.4	3.1	4.2	4.2	4.8	4.9	2.7	3.3	3.9
12/13	2.5	4.5	3.8	3.8	3.6	3.4	4.2	4.3	4.7	4.9	3.1	3.8	4.3
12/14	2.7	4.5	3.9	3.9	3.7	3.6	4.2	4.3	4.6	4.9	3.4	4.0	4.4
12/15	2.8	4.5	4.0	4.0	3.9	3.8	4.2	4.4	4.6	4.9	3.7	4.3	4.6
12/16	2.8	4.4	4.0	4.1	4.0	3.9	4.2	4.4	4.6	4.8	3.8	4.4	4.6
12/17	2.7	4.4	4.0	4.0	3.9	3.9	4.1	4.3	4.5	4.7	3.8	4.3	4.5
12/18	2.7	4.4	3.9	4.0	3.8	3.8	4.0	4.2	4.3	4.6	3.7	4.1	4.4
12/19	2.7	4.3	3.8	3.9	3.8	3.8	4.0	4.1	4.3	4.5	3.8	4.1	4.3
12/20	2.8	4.2	3.9	3.9	3.9	3.8	4.0	4.2	4.3	4.5	3.9	4.0	4.3
12/21	2.7	4.2	3.9	3.9	3.9	3.9	4.0	4.3	4.3	4.5	3.9	4.1	4.3
12/22	2.8	4.1	3.8	3.9	3.9	3.9	4.0	4.3	4.3	4.4	3.9	4.0	4.3
12/23	3.1	4.1	3.8	3.9	3.9	3.9	4.0	4.3	4.3	4.4	4.1	4.0	4.3
12/24	3.2	4.1	4.0	4.0	4.0	4.1	4.1	4.4	4.3	4.4	4.4	4.2	4.4
12/25	3.3	4.1	4.1	4.2	4.2	4.3	4.2	4.7	4.5	4.6	4.6	4.5	4.7
12/26	3.4	4.1	4.3	4.3	4.3	4.4	4.3	4.8	4.6	4.6	4.6	4.6	4.8
12/27	3.5	4.1	4.3	4.3	4.3	4.4	4.3	4.8	4.5	4.6	4.6	4.6	4.8
12/28	3.5	4.1	4.3	4.4	4.3	4.5	4.2	4.9	4.5	4.6	4.7	4.7	4.9
12/29	3.6	4.2	4.4	4.5	4.4	4.6	4.3	4.9	4.5	4.6	4.8	4.9	5.0
12/30	3.5	4.2	4.5	4.6	4.5	4.7	4.3	5.1	4.6	4.7	4.9	5.0	5.1
12/31	3.5	4.2	4.5	4.6	4.6	4.8	4.4	5.2	4.7	4.7	4.9	5.1	5.2

## **APPENDIX E**

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### *Consultation Documentation Regarding Draft Report*

## **Presler, Dawn**

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**From:** Presler, Dawn  
**Sent:** Wednesday, April 23, 2014 3:48 PM  
**To:** 'Steven Fransen' (steven.m.fransen@noaa.gov); 'Tim\_Romanski@fws.gov'  
(Tim\_Romanski@fws.gov); Anne Savery; 'brock.applegate@dfw.wa.gov'  
(brock.applegate@dfw.wa.gov); 'Maynard, Chris (ECY)' (cmay461@ecy.wa.gov); Mick  
Matheson; 'Jim Miller' (JMiller@ci.everett.wa.us); 'Leonetti, Frank'  
(frank.leonetti@snoco.org); Tom O'Keefe; 'Loren Everest - USFS' (leverest@fs.fed.us)  
**Cc:** Binkley, Keith  
**Subject:** Jackson Project (FERC No. 2157) - draft WQMP for your 30-day review and comment  
**Attachments:** DRAFT 2013 WQMP Annual Report.pdf

Dear ARC Members:

Attached is the draft Water Quality Monitoring Plan 2013 Annual Report for your 30-day review and comment period. Please provide your comments back to me (with cc: to Keith) by May 23. Contact Keith if you have any questions regarding the report. Thanks!

Sincerely,  
*Dawn Presler*  
*Sr. Environmental Coordinator*  
Generation Resources  
(425) 783-1709

\*\*\*\*\*

Public Utility District No. 1 of Snohomish County  
PO Box 1107  
Everett, WA 98206-1107

## **Presler, Dawn**

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**From:** Steven Fransen - NOAA Federal <steven.m.fransen@noaa.gov>  
**Sent:** Thursday, May 08, 2014 11:51 AM  
**To:** Presler, Dawn; Binkley, Keith  
**Subject:** Re: Jackson Project (FERC No. 2157) - draft WQMP for your 30-day review and comment

Hi Dawn,

I have no comments on the draft WQMP.

SF

On Wed, Apr 23, 2014 at 3:48 PM, Presler, Dawn <[DJPresler@sno-pud.com](mailto:DJPresler@sno-pud.com)> wrote:

Dear ARC Members:

Attached is the draft Water Quality Monitoring Plan 2013 Annual Report for your 30-day review and comment period. Please provide your comments back to me (with cc: to Keith) by May 23. Contact Keith if you have any questions regarding the report. Thanks!

Sincerely,

*Dawn Presler*

*Sr. Environmental Coordinator*

Generation Resources

[\(425\) 783-1709](tel:(425)783-1709)

\*\*\*\*\*

Public Utility District No. 1 of Snohomish County

PO Box 1107

Everett, WA 98206-1107

## **Presler, Dawn**

---

**From:** Julie Sklare <JSklare@everettwa.gov>  
**Sent:** Friday, May 23, 2014 3:11 PM  
**To:** Presler, Dawn  
**Cc:** Binkley, Keith; Anna Thelen  
**Subject:** COE comments on 2013 WQMP Annual Report  
**Attachments:** COE COMMENTS on DRAFT 2013 WQMP Annual Report.pdf

Dawn,

Attached are the City's comments on the 2013 WQMP annual report. The comments/edits are in the attached document in Sections 2.4.6, 2.4.7, and 2.4.8, as well as on Page A-6.

If you have any problems viewing the comments or have questions, please give me a call.

Thank you for the opportunity to comment.

Julie

Julie Sklare | Senior Environmental Specialist | City of Everett | 425-257-7208 | [jsklare@ci.everett.wa.us](mailto:jsklare@ci.everett.wa.us)

#### 2.4.3. Dissolved Oxygen

Dissolved oxygen ranged from 12.2 mg/L in May to 8.4 mg/L in October. By saturation values, the maximum of 112% in July was likely due to primary production, and the minimum of 75.9% of saturation at depth in October due to bacterial degradation.

#### 2.4.4. Turbidity

In May, the surface was less turbid than at depth. Turbidity at the surface and at depth decreased through August. In September, there was an increase at depth. In October, turbidity increased throughout the water column. Through most of the season the cut-off points between higher and lower turbidities can be traced back to the thermal structure of the reservoir.

#### 2.4.5. Secchi Transparency

As shown in Table 2-3, Secchi transparency ranged from 16 feet (in August) to 7 feet (in October).

**Table 2-3. Secchi transparency in Spada Lake Reservoir, 2013.**

Date	Result (feet)
5/23/2013	12.5
6/19/2013	15
7/22/2013	14
8/26/2013	16
9/18/2013	14
10/16/2013	7

#### 2.4.6. Nutrients

Total phosphorus concentrations were around 2 to 6 µg/L for most the summer, both at the surface and at depth. An increase in total phosphorous concentration was noted during August sampling. Total nitrogen was also reasonably constant around 50 to 80 µg/L for most of the summer with an increase noted in October. Nitrate showed variability over time and depth, with values between 0.1 and 61.6 µg/L. ~~Phosphorous and nitrogen parameters increased dramatically in October (10 fold for total phosphorus, 8 fold for total nitrogen). Silica concentrations were similar at the surface and below the thermocline (approximately 1300 µg/L).~~

#### 2.4.7. Phytoplankton

The largest number and biovolume of phytoplankton occurred in the June sample. Over the course of the summer phytoplankton declined in number and increased in size and species diversity concurrent with the rise in zooplankton. Chrysophyta was the predominant taxon by biovolume for the entire summer. Small phytoplankton (unicellular chrysophytes and nanoplanktonic chlorophytes) made up the bulk of the biovolume of phytoplankton for most of the year. In situ chlorophyll and dissolved oxygen readings indicate that primary productivity took place predominantly between ~~5~~ and ~~35~~ feet.

## Summary of Comments on Microsoft Word - 2013 WQMP Annual Report

### Page: 13

<del>T</del>	Author: ATHELEN	Subject: Cross-Out	Date: 5/23/2014 2:22:53 PM
<del>T</del>	Author: ATHELEN	Subject: Cross-Out	Date: 5/23/2014 2:44:31 PM
<del>+0</del>	Author: ATHELEN	Subject: Inserted Text throughout the water column	Date: 5/23/2014 2:45:28 PM
<del>+0</del>	Author: ATHELEN	Subject: Inserted Text	Date: 5/23/2014 2:45:50 PM
<del>+0</del>	Author: ATHELEN	Subject: Inserted Text	Date: 5/23/2014 2:45:55 PM

#### 2.4.8. Zooplankton

*Holopedium* were the dominant zooplankter in all samples but the May sample, where *Epischura* was the most common. In terms of peak density, *Holopedium* was highest in mid-July (3.3/L) and *Conochilus* (a colonial rotifer) was highest (4.3/L) in August. The largest diversity in zooplankton species occurred in the mid-August sample. *Daphnia* first appeared in May and was a significant portion of the total zooplankton for the rest of the summer. The total number of zooplankton/L was less than two on all sample dates but mid-July (3.7/L) and mid-August (6.1/L). *Daphnia* were clearly producing resting eggs in October.

[T] Author: ATHELEN Subject: Cross-Out Date: 5/23/2014 2:48:28 PM

[T] Author: ATHELEN Subject: Cross-Out Date: 5/23/2014 2:50:51 PM

[T] Author: ATHELEN Subject: Cross-Out Date: 5/23/2014 2:48:52 PM

[T] Author: ATHELEN Subject: Cross-Out Date: 5/23/2014 2:51:01 PM

### 3. RIVER MONITORING

#### 3.1. Background

Maintaining suitable water temperatures in the Sultan River is an important aspect of the Project operation. Water temperature influences fish behavior, especially anadromous fish during the freshwater phase of their life cycle. The Sultan River produces chinook, coho, chum and pink salmon, and steelhead trout plus resident fish species.

The Project's water storage and conveyance system is a complex of conduits moving water between two reservoirs with discharge into the Sultan River occurring at three facilities – Culmback Dam, Diversion Dam, and powerhouse (Figure 3-1). Briefly, an annual water budget of 20,362 acre feet is variably released into the river at Culmback Dam through a 10-inch cone valve while water to meet instream flow requirements (at the Diversion Dam) is routed through the Francis turbine units at the powerhouse, then the Lake Chaplain pipeline to a former City Water diversion tunnel connected to another water line discharging into the river at the diversion dam. Except for infrequent spill at Culmback Dam, these releases, plus tributary flows to the river, provide the instream flow for fish species throughout five river miles upstream from the powerhouse. Pelton turbines, which discharge directly to the river at RM 4.5, provide additional water when needed to meet minimum instream flow requirements below the powerhouse.

Water temperatures in Reach 3, immediately downstream of Culmback Dam, are seasonally influenced to a variable extent by releases through an auxiliary line down the face of Culmback Dam. The releases are described in detail in the annual reporting for the Water Temperature Conditioning Plan for Reach 3 (District 2010). Downstream, water temperatures at the Diversion Dam are influenced by the amount and depth of release at Culmback Dam (whether through the intake structure, cone or Howell-Bunger valves, or by spill), by tributary flows, and by meteorological conditions. Moveable panels at the Spada Lake Reservoir intake structure control the level and, hence, the temperature at which water is withdrawn from the reservoir to the powerhouse intake when conditions allow. When isothermal conditions exist in the reservoir, no change in water temperature can be achieved through moving the panels on the intake structure to a different level in the reservoir. The degree of temperature control possible by panel manipulation varies seasonally with the degree of temperature stratification in the reservoir. Panel position during 2013 is presented in Table 3-1.

Date Time M/D/Y	Depth meters	Depth feet	Temperature degrees C	Conductivity mS/cm	pH	Dissolved Oxygen mg/L	Chlorophyll RFU	Turbidity NTU
10/16/13 10:43	0.5	1.6	11.6	23.0	7.2	9.9	0.2	2.6
10/16/13 10:44	1.0	3.3	11.6	23.0	7.2	9.9	0.1	2.6
10/16/13 10:45	2.0	6.6	11.6	23.0	7.2	9.8	0.0	2.8
10/16/13 10:46	3.0	9.8	11.5	23.0	7.2	9.8	0.2	2.8
10/16/13 10:47	4.0	13.1	11.5	23.0	7.2	9.8	0.1	2.8
10/16/13 10:48	5.0	16.4	11.5	23.0	7.2	9.8	0.2	2.8
10/16/13 10:50	6.0	19.7	11.5	23.0	7.2	9.8	0.0	2.8
10/16/13 10:52	7.9	26.2	11.4	23.0	7.2	9.7	0.2	2.7
10/16/13 10:52	8.9	29.5	11.4	23.0	7.1	9.7	0.3	3.0
10/16/13 10:53	9.9	32.8	11.4	23.0	7.1	9.7	0.2	2.8
10/16/13 10:54	10.9	36.1	11.1	23.0	7.1	9.7	0.2	2.9
10/16/13 10:55	11.9	39.4	10.8	22.0	7.1	9.6	0.1	3.4
10/16/13 10:56	12.9	42.7	10.6	23.0	7.1	9.7	0.1	3.0
10/16/13 10:56	13.9	45.9	10.5	22.0	7.1	9.7	0.2	2.8
10/16/13 10:57	14.9	49.2	10.4	23.0	7.1	9.8	0.1	3.1
10/16/13 10:59	16.9	55.8	10.3	22.0	7.0	9.8	0.1	3.1
10/16/13 11:00	18.9	62.3	10.1	23.0	7.0	9.8	0.2	2.9
10/16/13 11:01	20.9	68.9	10	23	7	10		
10/16/13 11:02	22.9	75.5	9.7	22.0	7.0	9.7		
10/16/13 11:03	24.8	82.0	9.4	22.0	6.9	9.2		
10/16/13 11:03	26.8	88.6	7.9	22.0	6.9	9.5		
10/16/13 11:04	28.8	95.1	7.1	22.0	6.9	9.3		
10/16/13 11:05	30.8	101.7	6.8	22.0	6.8	9.4		
10/16/13 11:07	33.8	111.6	6.6	22.0	6.8	9.6		
10/16/13 11:07	36.8	121.4	6.4	22.0	6.8	9.5		
10/16/13 11:08	39.8	131.2	6.3	22.0	6.7	9.7		
10/16/13 11:09	42.8	141.1	6.2	23.0	6.7	9.6		
10/16/13 11:11	45.7	150.9	6.0	23.0	6.7	9.3		
10/16/13 11:13	48.7	160.8	5.9	23.0	6.7	9.0		

Where is the data for Chla (RFU) and Turbidity at depth?

## Presler, Dawn

---

**From:** Anna Thelen <AThelen@everettwa.gov>  
**Sent:** Tuesday, May 27, 2014 2:32 PM  
**To:** Binkley, Keith; Julie Sklare; Presler, Dawn  
**Subject:** RE: COE comments on 2013 WQMP Annual Report  
**Attachments:** SpadaDataSummary2013.xlsx

Hello Keith,

No, I can't, because the data seems to be in the file I thought I sent you previously, which is attached here.  
Anna

---

**From:** Binkley, Keith [<mailto:KMBinkley@SNOPUD.com>]  
**Sent:** Tuesday, May 27, 2014 10:07 AM  
**To:** Julie Sklare; Presler, Dawn  
**Cc:** Anna Thelen  
**Subject:** RE: COE comments on 2013 WQMP Annual Report

Anna – In looking at the October data, can you give us a quick explanation as to why chlorophyll and turbidity values are absent at depth?

Thanks

Keith

---

**From:** Julie Sklare [<mailto:JSklare@everettwa.gov>]  
**Sent:** Friday, May 23, 2014 3:11 PM  
**To:** Presler, Dawn  
**Cc:** Binkley, Keith; Anna Thelen  
**Subject:** COE comments on 2013 WQMP Annual Report

Dawn,

Attached are the City's comments on the 2013 WQMP annual report. The comments/edits are in the attached document in Sections 2.4.6, 2.4.7, and 2.4.8, as well as on Page A-6.

If you have any problems viewing the comments or have questions, please give me a call.

Thank you for the opportunity to comment.

Julie

## **APPENDIX F**

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### *Response to Comments Regarding Draft Report*

No.	Requested Changes	District Response
<b>City of Everett, Email from Julia Sklare dated 5/23/2014</b>		
1	Section 2.4.6. Delete sentence, and modify sentence	Updated as requested.
2	Section 2.4.7. Update depth	Updated as requested.
3	Appendix A. Where is the data for Chla (RFU) and Turbidity at depth?	Updated based on new table provided by City of Everett.