April 10, 2012

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Subject: **Spokane River Hydroelectric Project, FERC Project No. 2545**
Submittal of the 2010 and 2011 Long Lake Hydroelectric Development
Annual Temperature Monitoring Report

Dear Secretary Bose:

In accordance with the Federal Energy Regulatory Commission's (FERC) June 18, 2009 Spokane River Hydroelectric Project (No. 2545) License, Appendix B, Section 5.5.B and FERC's September 17, 2009 Order Modifying and Approving the Water Quality Monitoring and Quality Assurance Project Plan, Avista completed a 2010 and 2011 Long Lake Hydroelectric Development Annual Temperature Monitoring Report (Annual Report). The Annual Report was completed in accordance with the Long Lake Dam Reservoir and Tailrace Temperature Water Quality Attainment Plan. Please note this report covers both 2010 and 2011, though only the results from 2011 were required.

Avista submitted the Annual Report to the Washington Department of Ecology (Ecology) for review and approval and to the Spokane Tribe (Tribe) for review and comment on February 29, 2012. The correspondence record with Ecology and the Tribe is included as Appendix A of the Annual Report.

With this, Avista is filing the Ecology approved 2010 and 2011 Long Lake Hydroelectric Development Annual Temperature Monitoring Report with FERC. Please feel free to call me at (509) 495-4998 or Meghan Lunney, in my absence, at (509) 495-4643 if you have any questions or wish to discuss the report.

Sincerely,

Speed Fitzhugh

Speed "Elvin" Fitzhugh
Spokane River License Manager

Enclosure

cc: Heather Campbell, FERC
Marcie Mangold, Ecology
Brian Crossley, Spokane Tribe
Meghan Lunney, Avista

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AVISTA CORPORATION

2010 AND 2011

LONG LAKE HED

ANNUAL TEMPERATURE MONITORING REPORT

WASHINGTON 401 CERTIFICATION, SECTION 5.5

Spokane River Hydroelectric Project
FERC Project No. 2545

Prepared By:
Golder Associates Inc.
Redmond, WA

April 9, 2012

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List of Acronyms and Abbreviations

°C	degrees Celsius
7-DADM	7-day average daily maximum temperature
Avista	Avista Corporation
DO	dissolved oxygen
DO TMDL	Spokane River and Lake Spokane Dissolved Oxygen Total Maximum Daily Load
Ecology	Washington State Department of Ecology
FERC	Federal Energy Regulatory Commission
Golder	Golder Associates Inc.
HED	hydroelectric development
LLFB	Long Lake Forebay monitoring station
LLTR	Long Lake HED tailwater monitoring station
m	meter(s)
Project	Avista's Spokane River Project
QAPP	Quality Assurance Project Plan
RM	River mile
Spokane Tribe	Spokane Tribe of Indians
TDG	total dissolved gas
Temperature WQAP	Long Lake Dam Reservoir and Tailrace Temperature Water Quality Attainment Plan
Washington 401	Amended section 401 water quality certification
WQM QAPP	Water Quality Monitoring and Quality Assurance Project Plan

1.0 INTRODUCTION

On June 18, 2009, the Federal Energy Regulatory Commission (FERC) issued a new license for the Spokane River Project (Project), FERC Project No. 2545 (FERC 2009a), which incorporated the Washington Department of Ecology (Ecology) Section 401 Water Quality Certification (Washington 401; Ecology 2009). Section 5.5 of the Washington 401 required Avista Corporation (Avista) to prepare a temperature water quality attainment plan, and Section 5.10 required Avista to prepare a water quality monitoring and quality assurance project plan. Avista prepared the Water Quality Monitoring and Quality Assurance Project Plan (WQM QAPP; Avista 2009) and The Long Lake Dam Reservoir and Tailrace Temperature Water Quality Attainment Plan (Temperature WQAP; Avista 2011) in consultation with Ecology and the Spokane Tribe of Indians (Spokane Tribe). Avista filed the Ecology-approved WQM QAPP with FERC on August 13, 2009 and FERC approved it with modification on September 17, 2009 (FERC 2009b). Avista filed the Ecology-approved Temperature WQAP with FERC on January 26, 2011. On May 10, 2011, FERC (2011) issued an order approving and amending the 2009 WQM QAPP, pursuant to Article 401(A)(12).

As part of the Temperature WQAP, Avista is required to provide an annual summary report of the available temperature water quality monitoring results to Ecology by March 1 of the following year, starting in 2012. This report summarizes temperature monitoring conducted for Long Lake Hydroelectric Development (HED) during the 2010 and 2011 calendar years.

2.0 MONITORING ACTIVITIES

2.1 Objectives

The overall objectives of the Temperature WQAP Monitoring Report are to:

- Document monitoring periods
- Summarize temperature monitoring results
- Document compliance with the applicable water quality standards
- Describe any proposed changes to the Temperature WQAP and WQM QAPP

In addition to the above objectives we have included information pertaining to the Spokane Tribe's water quality standards in regard to waters downstream of the Project.

2.2 Monitoring Locations and Periods

Water temperature data that are included in the annual summary report are from a number of water quality monitoring programs as described in the Temperature WQAP (Avista 2011). This report presents temperatures obtained as a component of monitoring programs focused on Spokane River water quality (Ecology 2012a, 2012b, 2012c), Lake Spokane water quality (Ecology 2012d), total dissolved gas (TDG) (Golder 2011a, 2011b), and Long Lake HED tailwater dissolved oxygen (HDR and REMI 2010;

Golder 2012a). Additional temperature data related to studies outside the scope of the Temperature WQAP are available upon request.

2.2.1 Lake Spokane

Temperature monitoring was conducted at two inflow stations to Lake Spokane, six stations within Lake Spokane, and one station in the forebay just above Long Lake Dam (Table 2-1 and Figure 2-1). These monitoring efforts are described in more detail below.

2.2.1.1 Lake Inflows

Ecology monitored temperature along with other water quality parameters in the Spokane River and Little Spokane River a short distance upstream of its confluence with Lake Spokane. This was done under Ecology's River and Stream Water Quality Ambient Monitoring Program which included monthly monitoring October through September, the water year. Ecology's Spokane River at Ninemile Bridge, station, 54A090, is located approximately 0.2 miles downstream of Nine Mile Dam, at river mile (RM) 58. Ecology's Little Spokane River near Mouth station, 55B070, is located on the Little Spokane River at RM 1.1. Ecology's sampling efforts at these two stations was conducted in accordance with the Stream Ambient Monitoring QAPP (Ecology 2003). The 2011 data at these two monitoring locations was not available online as of January 12, 2012.

2.2.1.2 Within Lake

In 2010 and 2011, Ecology and Avista collaboratively implemented a two-year nutrient monitoring program that included temperature monitoring in Lake Spokane in order to provide baseline data. This included one sampling event in May and October, and two sampling events per month, from June through September. All sampling was completed in accordance with the QAPP for Lake Spokane Nutrient Monitoring (Ecology 2010b). Sampling was conducted at the six Lake Spokane monitoring stations described in Table 2-1. From upstream to downstream, the stations are:

- LL5, at approximately RM 54.20
- LL4, at approximately RM 51.47
- LL3, at approximately RM 46.42
- LL2, at approximately RM 42.06
- LL1, at approximately RM 37.62
- LL0, at approximately RM 32.66

2.2.1.3 Long Lake HED Forebay

Avista monitored temperature at the Long Lake Forebay (LLFB) near elevation 1499 feet, which is the centerline for the powerhouse intake, which extends from an elevation of 1491 to 1507 feet. All monitoring was conducted in accordance with Avista's Detailed Dissolved Oxygen Phase II Feasibility and Implementation Plan (Avista 2010) and TDG Monitoring Plan (Golder 2010). These two plans have

separate seasonal monitoring timeframes; however both programs collect water temperature, TDG, and dissolved oxygen (DO) concentrations utilizing identical monitoring equipment. The quality control protocols for these two monitoring programs are described in each of the plans (Avista 2010; Golder 2010).

2.2.2 Long Lake Dam Tailrace

Both Avista and Ecology monitored Spokane River temperatures below Long Lake HED. These monitoring programs are described in more detail below.

2.2.2.1 Avista

Specific to the Long Lake Dam tailrace waters, Avista monitored temperature at a station 0.6 miles downstream of the Long Lake Dam (LLTR) as part of implementing its Detailed DO Phase II Feasibility and Implementation Plan (Avista 2010) and TDG Monitoring Plan (Golder 2010). These two plans have separate seasonal monitoring timeframes; however both programs collect water temperature as well as TDG, and DO concentrations utilizing identical monitoring equipment. The quality control protocols for these two monitoring programs are described in each of the plans (Avista 2010; Golder 2010).

2.2.2.2 Ecology

Ecology conducted monitoring through its River and Stream Water Quality Ambient Monitoring Program at a station 54A070, which is located 0.6 miles downstream of Long Lake Dam, at the Highway 231 Bridge and RM 33.3. The 2011 data at this monitoring location was not available online as of January 12, 2012.

2.3 Temperature Numeric Criteria

The Washington state numeric temperature criterion that applies to Lake Spokane and the Long Lake HED tailrace (WAC 173-201A-602, Notes 1, 2, and 3 to WRIA 54) limits 1-day maximum temperature to no more than 20.0 degrees Celsius (°C) due to human activities.[1]

The numeric temperature criterion for the Spokane Tribe, whose Reservation is located downstream of the Project, is applicable from the upstream Spokane Indian Reservation boundary (approximately RM 32.7) to the mouth of the Spokane River (RM 0) and is based on the 7-day average daily maximum temperature (7-DADM). The 7-DADM is calculated as the arithmetic average of seven consecutive measures of daily maximum temperatures with the 7-DADM for any individual day calculated by averaging that day's daily maximum temperature with the daily maximum temperatures of the three days

[1] In addition, water temperature shall not be increased by greater than 0.3°C when natural conditions exceed 20.0°C.

before and the three days after that date. The maximum allowable limit (7-DADM) for the Spokane River varies throughout the year as described below (Spokane Tribe 2003)[2].

- 18.5°C between June 1 and August 31
- 13.5°C between September 1 and September 30
- 11°C between October 1 and March 31
- 13.5°C between April 1 and May 31

For reference, the upstream boundary of the Spokane Indian Reservation is located approximately 1.2 miles downstream of Long Lake Dam and approximately 0.6 miles downstream of the Avista and Ecology monitoring stations below the dam.

3.0 RESULTS

The results of temperature monitoring in 2010 and 2011 are discussed below by monitoring location along with a comparison to the applicable Washington State water quality criteria.

In addition, the Discussion, Section 4.0, presents a comparison of the temperature results for the two monitoring locations below Long Lake Dam with the corresponding Spokane Tribe water quality criterion.

3.1.1 Lake Spokane

Lake Spokane water temperature was monitored at nine locations: Ecology's Spokane River at Ninemile Bridge station (54A090), Ecology's Little Spokane River station (55B070), LL5, LL4, LL3, LL2, LL1, LL0, and LLFB.

3.1.1.1 Lake Inflows

Ecology's Spokane River at Ninemile Bridge station, 54A090, was monitored with spot measurements once per month, with some exceptions (i.e. data was not reported for January, April, and the months of October through December), in 2010. Water temperatures during the 2010, May through September timeframe ranged from 10.0°C in May to a high of 17.6°C in July (Table 3-1). All measured water temperatures were less than the 20.0°C Washington State criterion. According to Ecology's River and Stream Water Quality Monitoring website, this station is a "basin" station with data collected during Water Year 2010 (October 2009 through September 2010), however monitoring was not conducted during 2011.

Ecology's Little Spokane River station, 55B070, was monitored every 30 minutes from the beginning of July 2010 to the beginning of October 2010. Water temperatures during this timeframe ranged from 10.3°C in early October to 18.2°C in early July (Table 3-2). All monitored water temperatures were less

[2] The United States Environmental Protection Agency is currently reviewing the Spokane Tribe's 2010 water quality standards (Buffo 2012).

than the 20.0°C Washington State criterion. The finalized 2011 data were not available as of January 12, 2012.

3.1.1.2 Within Lake

Vertical profiles or water temperatures were monitored at the six Lake Spokane sampling stations in 2010 and 2011. The frequency of monitoring in 2010 was once in May; twice in June; once in July; twice in August and September, and once in October. The frequency of monitoring in 2011 was once in May and June and twice in July, August and September. Results for each of the six stations are described below in an up-reservoir to down-reservoir order.

LL5

LL5 water temperature measurements were conducted at approximately 1 meter intervals from 1 to 7 and sometimes up to 8 meters (m) below the water surface. Vertical profiles for May, June, July, September, and October of 2010 had temperature change rates of less than 1 degree Celsius per meter (°C/m) of depth (Table 3-3). In July, the maximum temperature change rate was 1.1°C/m between the 0.5 m and 1.0 m values, although the change per full meter was less than 1°C. Therefore, there was no thermocline at that time. Both August profiles had a maximum temperature change rate greater than 1°C/m, indicating the thermocline was at 1.5 m on August 10 and at 3.5 m on August 31 (Table 3-3).[3] Two of the 2010 LL5 temperature measurements were greater than the 20.0°C Washington State criterion; these values occurred at 0.5 m and 1.0 m on August 10 (Table 3-3).

The 2011 LL5 vertical temperature profiles for May, June, July, early August, and late September had temperature change rates of 1°C/m or less (Table 3-4). The maximum temperature change rate was greater than 1°C/m for the two remaining temperature profiles, conducted in late August and early September. The thermocline was at 0.75 m on August 23 and September 13. One of the 2011 LL5 temperature measurements was greater than the 20.0°C Washington State criterion; it was at 0.5 m on August 23 (Table 3-4).

LL4

LL4 temperature measurements were taken at approximately 1 m intervals from 1 m to 9 m below the water surface. Vertical temperature profiles for May and June of 2010 had temperature change rates of less than 1°C/m (Table 3-5). The maximum temperature change rate was greater than 1°C/m for the other temperature profiles. These results indicate the thermocline was between 4.5 m and 5.5 m in July, August, and early September; 3.5 m on September 28, and 2.5 m on October 13. Ten of the 2010 temperature measurements were greater than the 20.0°C Washington State criterion; all of these occurred at depths of 4.0 m or less on July 21 and August 10 (Table 3-5).

[3] Thermocline depths are presented as the mid-point between depths of temperature measurements with the greatest change in temperature per meter.

The 2011 LL4 vertical temperature profiles for May, June and July had temperature change rates of less than 1°C/m (Table 3-6). The maximum temperature change rate was greater than 1°C/m for the other temperature profiles. These results indicate the thermocline was between 3.5 m and 4.5 m in August and September. Thirteen of the 2011 temperatures measurements were greater than the 20.0°C Washington State criterion; these values generally occurred from 0.5 m through 4.0 m in August and early September (Table 3-6).

LL3

LL3 temperature measurements were taken at approximately 1 m intervals from 1 m to 10 m and at 3-m intervals from 12 m to 21 m below the water surface. Vertical temperature profiles for May, June, late August, September, and October of 2010 had temperature change rates of less than 1°C/m (Table 3-7). The maximum temperature change rate was greater than 1°C/m for the other temperature profiles. These results indicate the thermocline was at 2.5 m on July 21 and 7.5 m on August 10. Fifteen of the 2010 temperature measurements were greater than the 20.0°C Washington State criterion; these values occurred from 0.5 m through 6.0 m on July 21 and from 0.5 m through 7.0 m on August 10 (Table 3-7).

The 2011 LL3 vertical temperature profiles for May, June, late July, late August, and September had temperature change rates of 1°C/m or less (Table 3-8). The maximum temperature change rate was greater than 1°C/m for the other temperature profiles. These results indicate the thermocline was at 1.5 m on July 12 and 3.5 m in August. Several temperature measurements were greater than the 20.0°C Washington State criterion. These values occurred from 0.5 m to 1.0 m on July 12; from 0.5 m to 6.0 m in late July through August; and from 0.5 m to 4 m in early September (Table 3-8).

LL2

LL2 temperature measurements were taken at approximately 1 m intervals from 1 m to 10 m and at 3-m intervals from 12 m to 26 m below the water surface. Vertical temperature profiles for early June, late August, and October of 2010 had temperature change rates of less than 1°C/m (Table 3-9). The maximum temperature change rate for September 13 was 1.4°C/m between the 0.5 m and 1.0 m values, although the change per full meter was less than 1°C indicating no thermocline was established. The maximum temperature change rate was greater than 1°C/m for the other temperature profiles. These results indicate the thermocline was at 2.5 m on May 18, 4.5 m on June 29 and July 20, 6.5 m on August 10, and 5.5 m on September 27. Several temperature measurements were greater than the 20.0°C Washington State criterion; these values occurred from 0.5 m to 2.0 m on June 29; 0.5 m to 7.0 m in July and August; and from 0.5 m to 5 m on August 30 (Table 3-9).

The 2011 LL2 vertical temperature profiles for May, June, early July, late August, and late September in 2011 had temperature change rates of 1°C/m or less (Table 3-10). The maximum temperature change rate was greater than 1°C/m for the other temperature profiles. These results indicate the thermocline

was from 3.5 m to 5.5 m in late July, August, and early September. Several temperature measurements were greater than the 20.0°C Washington State criterion; these values occurred from 0.5 m to 1.0 m on July 11; from 0.5 m to 4 m on July 25 and August 22; , and generally from 0.5 m to 6.0 m in early August and early September (Table 3-10).

LL1

LL1 temperature measurements were taken at approximately 1 m intervals from 1 m to 10 m and at 3-m intervals from 12 m to 33 m below the water surface. Vertical temperature profiles for June, early July, late August, September and October of 2010 had temperature change rates of 1°C/m or less (Table 3-11). The maximum temperature change rate was greater than 1°C/m for the other temperature profiles. These results indicate the thermocline was at 3.5 m on May 17 and 5.5 m on August 9. Several temperature measurements were greater than the 20.0°C Washington State criterion; these occurred from 0.5 m to 2.0 m on June 29 and from 0.5 m to 6.0 m on July 20 and August 9 (Table 3-11).

The 2011 LL1 vertical profiles for May, July and September had temperature change rates of 1°C/m or less (Table 3-12). The maximum temperature change rate was greater than 1°C/m for the other temperature profiles. These results indicate the thermocline was at 0.75 m on June 20 and at 6.5 m on August 22. Several temperature measurements were greater than the 20.0°C Washington State criterion; these values occurred from 0.5 m to 3.0 m on July 25 and from 0.5 to 6.0 m on August 22 and September 12 (Table 3-12).

LL0

LL0 temperature measurements were taken at approximately 1 m intervals from 1 m to 12 m and at 3-m intervals from 15 m to near the bottom. Vertical profiles for early June, July, late August, September, and October of 2010 had temperature change rates of less than 1°C/m (Table 3-13). The maximum temperature change rate was greater than 1°C/m for the other temperature profiles. These results indicate the thermocline was at 3.5 m on May 17 and June 29 and at 6.5 m on August 9. Several temperature measurements were greater than the 20.0°C Washington State criterion; these values occurred from 0.5 m to 2.0 m on June 29, from 0.5 m to 5.0 m on July 20, and from 0.5 m to 7.0 m on August 9 (Table 3-13).

The 2011 LL0 vertical profiles for May, June, early July, and September had temperature change rates of less than 1°C/m (Table 3-14). The maximum temperature change rate was greater than 1°C/m for the other temperature profiles. These results indicate the thermocline was at 6.5 m on July 25 and August 22. Several temperature measurements were greater than the 20.0°C Washington State criterion; these values occurred from 0.5 m to 2 m on July 11; from 0.5 m to 4 m on July 25; and generally occurred from 0.5 to 6.0 m on August 22 and September 12 (Table 3-14).

Lake Station Temperature Profile Comparisons

Comparison of the 2010 temperature profiles for the six sampling stations during late June, July, August, and September shows very similar thermal stratification at the three downstream stations (LL2 through LL0) during late June (Figure 3-1). By late July, there is very similar thermal stratification at the four downstream stations (LL3 through LL0) along with substantial warming of the upper layers of the upstream station, LL4 (Figure 3-2). In late August there is substantial cooling of the upper layers of the five stations, LL4 through LL0 (Figure 3-3)., By late September there is substantial cooling throughout the water column (Figure 3-4). The late September profiles for LL4 and LL2 indicate a significant temperature decrease around 4 m to 5 m, which is not seen at the other stations (Figure 3-4).

Comparison of the 2011 temperature profiles for the six sampling stations during late June, July, August, and September shows minimal thermal stratification at the six locations in late June (Figure 3-5). Very similar thermal stratification occurs at the four downstream stations, LL3 through LL0 during late July (Figure 3-6). Substantial warming of the upper layers of the two upstream stations, LL5 and LL4, is observed by late August (Figure 3-7). By late September there is substantial cooling throughout the water column in all the lake stations (Figure 3-8).

LLFB

LLFB, Avista's Long Lake Forebay station, is located between the HED's Unit 3 and 4 intakes. Data were collected in 2010 in 3-minute intervals from August 31 to September 16 as part of the Detailed DO Phase II Feasibility and Implementation Plan (Figure 3-9). Daily maximum water temperatures for the 2010 LLFB data ranged from 18.0 to 20.1°C (Table 3-15). A temperature measurement greater than the 20.0°C Washington State criterion occurred on one day during the monitoring period.

In 2011, LLFB temperature data were collected in 15-minute intervals from March 24 through June 30 as part of the Washington Total Dissolved Gas Monitoring Plan and from July 1 through November 2 as part of the Detailed DO Phase II Feasibility and Implementation Plan (Figure 3-10). Daily maximum water temperatures for the 2011 LLFB data ranged from 5.2 to 23.0°C (Table 3-16). Temperature measurements greater than the 20.0°C Washington State criterion occurred on 51 days during the monitoring period. These exceedances occurred from July 27 through September 16, with the exception of August 27 (Table 3-16).

3.1.2 Long Lake Dam Tailrace

Long Lake Dam tailrace water temperature was monitored at two locations: Avista's Long Lake Dam Tailrace station (LLTR) and at Ecology's Spokane River at Long Lake station (54A070).

At Avista's Long Lake Dam tailrace station, LLTR, temperature data were collected in 2010 in 15-minute intervals from April 18 to July 2 as part of the Washington Total Dissolved Gas Monitoring Plan and from

August 20 to September 16 as part of the Detailed DO Phase II Feasibility and Implementation Plan (Figure 3-11). Daily maximum water temperatures ranged from 8.3 to 19.3°C (Table 3-17), and thus remained less than the 20.0°C Washington State criterion during the monitoring period.

The 2011 LLTR temperature data were collected in 15-minute intervals from March 24 through June 30 as part of the Washington Total Dissolved Gas Monitoring Plan and from July 1 through November 2 as part of the Detailed DO Phase II Feasibility and Implementation Plan (Figure 3-12). Daily maximum temperatures ranged from 5.2 to 19.6°C (Table 3-18), and thus remained less than the 20.0°C Washington State criterion during the monitoring period.

At Ecology's Spokane River at Long Lake station (54A070), which is located approximately 0.6 miles downstream of the Long Lake powerhouse, temperature was monitored once per month (with some exceptions) from February 2010 to August 2010. These values ranged from 5.6°C in February to a high of 19.3°C in August (Table 3-19). All of these temperature measurements were less than the 20.0°C Washington State criterion. According to Ecology's River and Stream Water Quality Monitoring website, station 54A070 is a "basin" station with data collected during October 2009 through September 2010 (Water Year 2010), however monitoring was not conducted during 2011.

4.0 DISCUSSION

4.1 Lake Spokane

Temperature profile monitoring conducted during 2010 indicated that the 20.0°C Washington State criterion was exceeded at all six lake stations in the top 1 m to 7 m primarily during July and August. The criterion was also exceeded during September at the Long Lake forebay station. Temperature measurements for Ecology's two inflow monitoring stations did not exceed the criterion.

The temperature profile monitoring conducted during 2011 indicated that the 20.0°C Washington State criterion was exceeded at all six lake stations ranging in the top 0.5 m to 6 m primarily between July and early September. The criterion was also exceeded from July through mid-September at the Long Lake forebay station. Ecology did not monitor temperature at its two inflow stations during 2011, therefore no data is available.

The exceedances reported for the lake during 2010 and 2011 are indicative of the natural stratification process typical of eastern Washington and north Idaho lakes during the summer season. As stated in the Ecology-approved Temperature WQAP, Avista will continue to pursue reasonable and feasible mitigation measures, which include:

- Wetland restoration/enhancement
- Reduction of size and conversion of lakeshore lawns to native vegetation

- Hangman Creek Basin shoreline stabilization and agricultural practices
- Native tree plantings on Avista Shoreline Property
- Carp reduction in Lake Spokane

With the exception of the native tree plantings on Avista's shoreline property, goals for these potential reasonable and feasible measures also include improving DO in the lake. Hence their implementation will be coordinated with that of the Lake Spokane Dissolved Oxygen Water Quality Attainment Plan, providing both temperature and DO improvements to the resource.

4.2 Long Lake Dam Tailrace

During both 2010 and 2011, temperature measurements at the monitoring stations located downstream of the Long Lake Dam did not exceed the 20.0°C Washington State criterion.

Monitoring results indicate the Spokane Tribe's 7-DADM criteria established for tribal waters were exceeded in late August and early September during 2010[4] and from late July through late October during 2011 (Tables 4-1 and 4-2 and Figures 4-1 and 4-2). It is important to note the monitoring stations from which this data is collected are located approximately 0.6 miles upstream from the reservation boundary, where the Tribe's criteria is applicable.

As part of a Memorandum of Agreement, Avista is providing the Spokane Tribe with funds to complete water quality improvements to help address temperature exceedances among other resource needs in waters downstream of the HED. To date, the Spokane Tribe has planted trees and completed stream stabilization efforts in the Chamokane Creek watershed to reduce surface water temperatures. Avista will continue to work with the Spokane Tribe in the future.

5.0 PROPOSED CHANGES TO THE TEMPERATURE WQAP AND WQM QAPP

There are no proposed changes to the Temperature WQAP or amended WQM QAPP.

6.0 REFERENCES

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[4] The 7-DADM could not be calculated for some dates in 2010, see Table 4-1.

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TABLES

Table 2-1: Long Lake HED Temperature Monitoring Stations and Periods

Monitoring Station	Location	NAD83 Decimal Degrees		2010 Monitoring Year		2011 Monitoring Year	
		Latitude	Longitude	Start	End	Start	End
54A090	Spokane River at Ninemile Bridge approximately 0.2 miles downstream of Nine Mile Dam, at river mile (RM) 58	47.7767	117.5448	2/8/2010	9/20/2010	Not Available	
55B070	On the Little Spokane River approximately 1.5 miles upstream from its confluence with Lake Spokane, at RM 1.1	47.7829	117.5305	7/6/2010	10/6/2010	Not Available	
LL5	Long Lake sampling site 5, at RM 54.20	47.7985	117.5692	5/18/2010	10/13/2010	5/24/2011	9/27/2011
LL4	Long Lake sampling site 4, at RM 51.47	47.8137	117.6106	5/18/2010	10/13/2010	5/24/2011	9/27/2011
LL3	Long Lake sampling site 3, at RM 46.42	47.8641	117.6668	5/17/2010	10/13/2010	5/24/2011	9/26/2011
LL2	Long Lake sampling site 2, at RM 42.06	47.8636	117.7014	5/18/2010	10/12/2010	5/23/2011	9/26/2011
LL1	Long Lake sampling site 1, at RM 37.62	47.8305	117.7612	5/17/2010	10/12/2010	5/23/2011	9/26/2011
LL0	Long Lake sampling site 0, at RM 32.66	47.8339	117.8349	5/17/2010	10/12/2010	5/23/2011	9/26/2011
LLFB	Long Lake Forebay between Unit 3 and 4 intakes.	47.8367	117.8397	8/31/2010	9/16/2010	3/24/2011	11/2/2011
LLTR	On left downstream bank, at water pumphouse approximately 0.6 mile downstream from Long Lake Dam.	47.8375	117.8503	4/18/2010	9/16/2010	3/24/2011	11/2/2011
54A070	Approximately 0.6 mile downstream of Long Lake Dam, at the Highway 231 Bridge and RM 33.3.	47.8391	117.8525	2/8/2010	8/16/2010	Not Available	

Table 3-1: Spokane River at Ninemile Bridge (54A090) Temperature Monitored in 2010

Date Time	Time Zone	Water Temperature (°C)
2/8/2010 16:20	PST	5.6
3/8/2010 14:00	PST	8.3
5/10/2010 13:30	PDT	10.0
6/14/2010 14:20	PDT	15.0
7/13/2010 14:15	PDT	17.6
8/16/2010 15:30	PDT	17.5
9/20/2010 15:40	PDT	13.5

Notes:

Data downloaded from Ecology's website on 1/12/2012:
http://www.ecy.wa.gov/apps/watersheds/riv/station.asp?theyear=&tab=final_data&scrolly=323&wria=54&sta=54A090
No 2011 data were available online as of 1/12/2012.

Table 3-2: Little Spokane River Upstream of Lake Spokane (55B070)Temperature Monitored in 2010

Time (PDT)	Water Temperature (°C)																								
	7/6/2010	7/7/2010	7/8/2010	7/9/2010	7/10/2010	7/11/2010	7/12/2010	7/13/2010	7/14/2010	7/15/2010	7/16/2010	7/17/2010	7/18/2010	7/19/2010	7/20/2010	7/21/2010	7/22/2010	7/23/2010	7/24/2010	7/25/2010	7/26/2010	7/27/2010	7/28/2010	7/29/2010	7/30/2010
0:00		15.69	16.48	16.96	17.44	16.64	17.12	16.32	14.90	15.85	16.48	16.48	16.64	16.48	16.32	16.32	16.48	15.85	16.32	16.64	16.96	16.96	14.90	16.48	17.12
0:30		15.53	16.32	16.80	17.28	16.48	16.96	16.17	14.74	15.53	16.17	16.32	16.32	16.32	16.17	16.17	16.32	15.69	16.17	16.48	16.80	16.80	14.74	16.32	16.96
1:00		15.37	16.17	16.64	16.96	16.48	16.80	15.85	14.58	15.37	16.01	16.01	16.17	16.17	16.01	16.01	16.17	15.53	16.01	16.32	16.64	16.64	14.74	16.17	16.80
1:30		15.37	16.01	16.48	16.80	16.32	16.64	15.69	14.43	15.22	15.85	15.85	16.01	15.85	15.85	15.85	15.85	15.37	15.69	16.01	16.32	16.48	14.58	16.01	16.64
2:00		15.06	15.85	16.32	16.64	16.17	16.48	15.53	14.27	15.06	15.69	15.69	15.85	15.69	15.69	15.69	15.69	15.22	15.53	15.85	16.17	16.17	14.58	15.85	16.48
2:30		14.90	15.69	16.17	16.48	16.01	16.32	15.37	14.12	14.90	15.53	15.53	15.53	15.53	15.53	15.37	15.53	15.06	15.37	15.69	15.85	16.01	14.43	15.69	16.17
3:00		14.74	15.53	16.01	16.32	16.01	16.17	15.22	14.12	14.74	15.37	15.37	15.37	15.37	15.37	15.22	15.37	14.90	15.22	15.53	15.69	15.85	14.27	15.53	16.01
3:30		14.58	15.37	15.85	16.17	15.85	16.01	14.90	13.96	14.58	15.22	15.22	15.22	15.22	15.06	15.06	15.22	14.74	15.06	15.37	15.53	15.69	14.27	15.53	15.85
4:00		14.43	15.22	15.69	16.17	15.69	15.85	14.74	13.81	14.43	15.06	15.06	15.06	14.90	14.90	14.90	15.06	14.58	14.74	15.22	15.37	15.37	14.12	15.37	15.69
4:30		14.27	15.06	15.53	16.01	15.69	15.85	14.58	13.66	14.27	14.90	14.90	14.90	14.74	14.74	14.74	14.90	14.43	14.58	14.90	15.22	15.37	14.12	15.22	15.53
5:00		14.27	14.90	15.37	15.85	15.53	15.69	14.43	13.50	14.12	14.74	14.74	14.74	14.58	14.58	14.58	14.74	14.43	14.43	14.90	15.06	15.22	13.96	15.06	15.37
5:30		14.12	14.90	15.37	15.69	15.37	15.53	14.27	13.50	14.12	14.58	14.58	14.58	14.43	14.43	14.43	14.58	14.27	14.27	14.74	14.90	15.06	13.96	15.06	15.22
6:00		14.12	14.74	15.22	15.69	15.37	15.37	14.27	13.34	13.96	14.43	14.43	14.43	14.43	14.27	14.27	14.43	14.12	14.12	14.58	14.74	14.90	13.81	14.90	15.06
6:30		13.96	14.58	15.06	15.53	15.22	15.37	14.12	13.34	13.81	14.27	14.27	14.27	14.27	14.12	14.12	14.27	13.96	14.12	14.43	14.58	14.74	13.81	14.74	14.90
7:00		13.96	14.58	15.06	15.53	15.22	15.37	13.96	13.19	13.81	14.27	14.27	14.27	14.12	14.12	13.96	14.12	13.96	13.96	14.27	14.43	14.58	13.66	14.74	14.90
7:30		13.81	14.58	14.90	15.53	15.06	15.22	13.96	13.19	13.66	14.27	14.12	14.12	14.12	13.96	13.96	14.12	13.81	13.81	14.27	14.27	14.58	13.66	14.58	14.74
8:00		13.81	14.58	14.90	15.53	15.06	15.22	13.96	13.19	13.66	14.12	14.12	14.12	14.12	13.96	13.96	13.96	13.81	13.81	14.12	14.27	14.58	13.66	14.58	14.58
8:30		13.81	14.58	15.06	15.53	15.22	15.22	13.96	13.19	13.81	14.12	14.12	14.12	14.12	13.96	13.96	13.96	13.81	13.81	14.27	14.27	14.58	13.66	14.58	14.58
9:00		13.96	14.58	15.06	15.53	15.22	15.37	13.96	13.19	13.81	14.27	14.12	14.12	14.12	13.96	13.96	13.96	13.81	13.81	14.27	14.27	14.58	13.81	14.58	14.58
9:30		14.12	14.74	15.22	15.69	15.37	15.37	13.96	13.34	13.96	14.27	14.27	14.27	14.12	14.12	13.96	14.12	13.96	13.96	14.27	14.43	14.58	13.81	14.74	14.43
10:00		14.12	14.74	15.22	15.69	15.37	15.53	14.12	13.50	13.96	14.43	14.43	14.27	14.27	14.12	14.12	14.12	13.96	14.12	14.43	14.43	14.74	13.96	14.90	14.43
10:30		14.27	14.90	15.37	15.85	15.53	15.53	14.27	13.66	14.12	14.58	14.58	14.43	14.43	14.27	14.27	14.27	14.12	14.27	14.58	14.58	14.74	14.12	15.06	14.43
11:00		14.43	15.06	15.53	16.01	15.69	15.69	14.43	13.81	14.27	14.74	14.74	14.58	14.58	14.43	14.43	14.43	14.27	14.43	14.74	14.74	14.74	14.27	15.22	14.58
11:30		14.58	15.22	15.69	16.32	15.85	15.85	14.58	13.96	14.58	14.90	14.90	14.90	14.74	14.58	14.58	14.58	14.58	14.58	14.90	15.06	14.74	14.43	15.37	14.58
12:00	14.27	14.74	15.53	15.85	16.32	16.01	16.01	14.58	14.12	14.74	15.22	15.06	15.06	14.90	14.74	14.90	14.74	14.74	14.74	15.22	15.22	14.90	14.74	15.53	14.74
12:30	14.43	15.06	15.69	16.01	16.64	16.17	16.17	14.90	14.27	14.90	15.37	15.37	15.22	15.22	15.06	15.06	15.06	14.90	15.06	15.37	15.53	14.90	14.90	15.85	15.06
13:00	14.58	15.22	15.85	16.32	16.64	16.48	16.32	15.06	14.58	15.22	15.53	15.53	15.53	15.37	15.22	15.37	15.22	15.22	15.22	15.69	15.69	15.06	15.22	16.01	15.22
13:30	14.90	15.53	16.17	16.48	16.80	16.64	16.48	15.22	14.74	15.53	15.85	15.85	15.85	15.69	15.53	15.53	15.37	15.37	15.53	15.85	16.01	15.06	15.53	16.32	15.53
14:00	15.06	15.69	16.32	16.80	16.80	16.80	16.64	15.22	15.06	15.69	16.17	16.17	16.01	15.85	15.69	15.85	15.53	15.53	15.85	16.17	16.32	15.06	15.85	16.48	15.69
14:30	15.37	15.85	16.64	16.96	16.96	17.12	16.80	15.37	15.22	16.01	16.32	16.32	16.32	16.17	16.01	16.17	15.69	15.85	16.17	16.48	16.64	15.22	16.01	16.80	16.01
15:00	15.53	16.17	16.80	17.28	16.96	17.28	16.96	15.53	15.53	16.17	16.64	16.64	16.48	16.48	16.32	16.32	15.85	16.17	16.32	16.80	16.80	15.22	16.32	17.12	16.17
15:30	15.85	16.32	17.12	17.44	17.12	17.44	17.12	15.53	15.85	16.48	16.80	16.80	16.80	16.64	16.48	16.64	16.17	16.32	16.64	16.96	17.12	15.37	16.64	17.28	16.48
16:00	16.01	16.64	17.28	17.59	17.12	17.59	17.28	15.53	16.01	16.64	16.96	17.12	16.96	16.80	16.80	16.80	16.32	16.64	16.80	17.28	17.28	15.37	16.80	17.44	16.64
16:30	16.17	16.80	17.44	17.76	17.28	17.76	17.28	15.69	16.17	16.80	17.12	17.28	17.12	16.96	16.96	17.12	16.48	16.80	17.12	17.44	17.59	15.37	16.96	17.76	16.80
17:00	16.32	16.96	17.59	17.92	17.28	17.92	17.44	15.85	16.32	16.96	17.28	17.44	17.28	17.12	17.12	17.28	16.64	17.12	17.28	17.59	17.76	15.37	17.12	17.76	16.96
17:30	16.48	16.96	17.76	18.08	17.44	18.08	17.44	15.85	16.48	17.12	17.44	17.44	17.44	17.28	17.28	17.28	16.64	17.12	17.44	17.76	17.76	15.37	17.12	17.92	17.12
18:00	16.48	17.12	17.76	18.08	17.44	18.08	17.44	15.85	16.48	17.28	17.44	17.59	17.44	17.28	17.28	17.44	16.64	17.28	17.44	17.92	17.92	15.37	17.12	18.08	17.28
18:30	16.64	17.28	17.92	18.24	17.44	18.08	17.44	15.85	16.64	17.28	17.44	17.59	17.59	17.44	17.44	17.44	16.80	17.28	17.59	17.92	17.92	15.37	17.28	18.08	17.28
19:00	16.64	17.28	17.92	18.24	17.44	18.24	17.44	15.85	16.64	17.28	17.59	17.59	17.59	17.44	17.44	17.59	16.80	17.28	17.59	17.92	18.08	15.37	17.28	18.08	17.44
19:30	16.64	17.28	17.92	18.24	17.44	18.24	17.44	15.85	16.64	17.28	17.44	17.59	17.59	17.44	17.44	17.59	16.80	17.28	17.59	17.92	18.08	15.37	17.28	18.08	17.44
20:00	16.64	17.28	17.92	18.24	17.44	18.08	17.28	15.69	16.64	17.28	17.44	17.59	17.59	17.44	17.28	17.44	16.80	17.28	17.59	17.92	17.92	15.37	17.28	18.08	17.44
20:30	16.48	17.28	17.76	18.08	17.28	18.08	17.28	15.69	16.64	17.28	17.44	17.59	17.44	17.44	17.28	17.44	16.64	17.12	17.59	17.92	17.92	15.37	17.28	18.08	17.44
21:00	16.48	17.12	17.76	18.08	17.28	18.08	17.12	15.53	16.48	17.28	17.28	17.44	17.44	17.28	17.28	17.44	16.48	17.12	17.44	17.76	17.92	15.37	17.12	17.92	17.44
21:30	16.32	17.12	17.59	17.92	17.12	17.92	17.12	15.37	16.48	17.12	17.28	17.28	17.28	17.28	17.12	17.28	16.48	16.96	17.44	17.76	17.76	15.22	17.12	17.92	17.28
22:00	16.32	16.96	17.59	17.92	17.12	17.76	16.96	15.37	16.32	16.96	17.12	17.28	17.12	17.12	16.96	17.12	16.32	16.96	17.28	17.59	17.59	15.22	16.96	17.76	17.28
22:30	16.17	16.80	17.44	17.76	16.96	17.59	16.80	15.22	16.17	16.80	16.96	17.12	16.96	16.96	16.80	16.96	16.17	16.80	17.12	17.44	17.44	15.06	16.96	17.59	17.12
23:00	16.01	16.80	17.28	17.59	16.80	17.44	16.64	15.06	16.01	16.80	16.80	16.96	16.80	16.80	16.80	16.96	16.17	16.64	16.96	17.28	17.44	15.06	16.80	17.59	16.96
23:30	15.85	16.64	17.12	17.44	16.80	17.28	16.48	14.90	15.85	16.64	16.64	16.80	16.64	16.64	16.64	16.64	16.01	16.48	16.80	17.12	17.12	14.90	16.64	17.44	16.80

Notes:
Data downloaded from Ecology's website on 1/12/2012: http://www.ecy.wa.gov/apps/watersheds/riv/station.asp?theyear=&tab=final_data&scrolly=0&wria=55&sta=55B070
No 2011 data were available online as of 1/12/2012.

Table 3-2: Little Spokane River Upstream of Lake Spokane (55B070)Temperature Monitored in 2010

Time (PDT)	Water Temperature (°C)																								
	7/31/2010	8/1/2010	8/2/2010	8/3/2010	8/4/2010	8/5/2010	8/6/2010	8/7/2010	8/8/2010	8/9/2010	8/10/2010	8/11/2010	8/12/2010	8/13/2010	8/14/2010	8/15/2010	8/16/2010	8/17/2010	8/18/2010	8/19/2010	8/20/2010	8/21/2010	8/22/2010	8/23/2010	8/24/2010
0:00	16.64	15.37	15.53	15.22	16.17	16.48	16.64	16.48	16.17	15.53	16.01	15.37	15.22	15.06	15.53	15.69	15.85	15.85	15.85	15.06	15.22	14.74	13.96	14.12	14.12
0:30	16.64	15.22	15.37	15.06	16.01	16.32	16.48	16.32	16.01	15.53	15.85	15.22	15.06	15.06	15.37	15.53	15.53	15.53	15.69	14.90	15.06	14.58	13.96	13.96	13.96
1:00	16.48	15.06	15.37	14.90	15.85	16.17	16.32	16.01	15.85	15.37	15.69	15.06	14.90	14.90	15.22	15.37	15.37	15.37	15.37	14.74	14.90	14.43	13.81	13.81	13.81
1:30	16.17	15.06	15.06	14.74	15.69	16.01	16.17	15.85	15.69	15.22	15.53	14.90	14.74	14.74	15.06	15.06	15.22	15.22	15.22	14.58	14.74	14.12	13.66	13.66	13.66
2:00	16.01	14.90	14.90	14.58	15.53	15.85	16.01	15.69	15.53	15.06	15.37	14.74	14.58	14.58	14.90	14.90	15.06	15.06	15.06	14.43	14.43	13.96	13.66	13.50	13.50
2:30	15.85	14.74	14.74	14.43	15.37	15.69	15.85	15.53	15.37	14.90	15.06	14.58	14.43	14.43	14.74	14.74	14.74	14.90	14.90	14.27	14.27	13.81	13.50	13.34	13.34
3:00	15.69	14.58	14.58	14.27	15.22	15.37	15.69	15.37	15.22	14.74	14.90	14.43	14.27	14.27	14.43	14.58	14.58	14.58	14.74	14.12	14.12	13.66	13.34	13.19	13.04
3:30	15.53	14.43	14.43	14.27	15.06	15.22	15.53	15.06	15.06	14.58	14.74	14.27	14.27	14.12	14.27	14.27	14.43	14.43	14.58	13.96	13.96	13.50	13.19	13.04	12.88
4:00	15.37	14.27	14.27	14.12	14.90	15.06	15.37	14.90	14.90	14.43	14.58	14.27	14.12	14.12	14.12	14.12	14.27	14.27	14.43	13.81	13.66	13.34	13.19	12.88	12.73
4:30	15.22	14.27	14.27	13.96	14.74	14.90	15.06	14.74	14.74	14.27	14.43	14.12	13.96	13.96	13.96	13.96	14.12	14.12	14.27	13.66	13.50	13.19	13.04	12.73	12.57
5:00	15.06	14.12	14.12	13.81	14.58	14.74	15.06	14.58	14.58	14.12	14.27	13.96	13.81	13.81	13.81	13.81	13.96	13.96	14.12	13.50	13.34	13.04	13.04	12.57	12.42
5:30	15.06	13.96	13.96	13.81	14.58	14.58	14.90	14.43	14.58	14.12	14.12	13.96	13.66	13.81	13.66	13.66	13.81	13.81	13.96	13.34	13.19	12.88	12.88	12.42	12.26
6:00	14.90	13.81	13.81	13.66	14.43	14.43	14.74	14.27	14.43	13.96	14.12	13.81	13.66	13.66	13.50	13.50	13.66	13.66	13.81	13.34	13.04	12.88	12.73	12.26	12.26
6:30	14.74	13.81	13.66	13.50	14.27	14.43	14.58	14.27	14.27	13.81	13.96	13.81	13.50	13.66	13.34	13.34	13.50	13.50	13.66	13.19	12.88	12.73	12.73	12.26	12.11
7:00	14.74	13.66	13.66	13.50	14.12	14.27	14.43	14.12	14.27	13.66	13.81	13.66	13.50	13.50	13.34	13.34	13.34	13.50	13.50	13.04	12.88	12.57	12.73	12.11	11.96
7:30	14.58	13.66	13.50	13.34	14.12	14.12	14.43	14.12	14.12	13.66	13.81	13.66	13.34	13.34	13.19	13.19	13.19	13.34	13.50	13.04	12.73	12.57	12.57	12.11	11.80
8:00	14.58	13.50	13.50	13.34	14.12	14.12	14.27	13.96	14.12	13.50	13.81	13.50	13.34	13.34	13.04	13.04	13.19	13.34	13.34	12.88	12.57	12.42	12.57	11.96	11.80
8:30	14.58	13.50	13.34	13.34	14.12	14.12	14.27	13.96	14.12	13.50	13.81	13.50	13.34	13.34	13.04	13.04	13.19	13.19	13.34	12.88	12.57	12.42	12.57	11.96	11.80
9:00	14.58	13.50	13.50	13.34	14.12	14.12	14.27	13.96	14.12	13.66	13.81	13.50	13.34	13.34	13.04	13.04	13.19	13.34	13.34	12.88	12.57	12.42	12.57	11.96	11.80
9:30	14.58	13.50	13.50	13.34	14.12	14.27	14.43	13.96	14.12	13.66	13.81	13.50	13.34	13.50	13.19	13.19	13.19	13.34	13.34	12.88	12.57	12.42	12.57	11.96	11.80
10:00	14.58	13.66	13.50	13.50	14.27	14.27	14.43	14.12	14.27	13.81	13.96	13.50	13.34	13.50	13.34	13.19	13.34	13.34	13.34	13.04	12.73	12.57	12.57	12.11	11.96
10:30	14.58	13.81	13.66	13.66	14.43	14.43	14.58	14.27	14.27	13.81	13.96	13.66	13.50	13.66	13.34	13.34	13.34	13.50	13.50	13.19	12.88	12.57	12.73	12.26	12.11
11:00	14.58	13.96	13.66	13.81	14.58	14.58	14.74	14.27	14.43	13.96	14.12	13.66	13.66	13.81	13.50	13.50	13.66	13.66	13.50	13.34	13.04	12.73	12.88	12.42	12.26
11:30	14.58	14.12	13.81	13.96	14.74	14.74	14.90	14.58	14.58	13.96	14.27	13.81	13.81	13.96	13.81	13.66	13.81	13.81	13.50	13.50	13.19	12.73	13.04	12.57	12.42
12:00	14.74	14.27	13.96	14.12	14.90	15.06	15.06	14.74	14.90	14.12	14.43	13.96	13.96	14.12	13.96	13.96	13.96	13.96	13.66	13.66	13.34	12.88	13.19	12.73	12.57
12:30	14.90	14.27	14.12	14.43	15.06	15.22	15.37	14.90	14.90	14.27	14.58	14.12	14.12	14.43	14.12	14.12	14.12	14.27	13.96	13.81	13.50	13.04	13.34	12.88	12.73
13:00	14.90	14.43	14.27	14.58	15.37	15.53	15.53	15.06	15.06	14.58	14.90	14.27	14.27	14.58	14.43	14.43	14.43	14.43	13.96	14.12	13.81	13.19	13.50	13.19	13.04
13:30	15.06	14.58	14.43	14.90	15.53	15.69	15.85	15.37	15.22	14.90	15.06	14.43	14.27	14.90	14.74	14.74	14.74	14.74	14.12	14.27	13.96	13.34	13.66	13.34	13.19
14:00	15.06	14.74	14.58	15.22	15.85	16.01	16.01	15.69	15.37	15.22	15.22	14.74	14.58	15.06	14.90	14.90	14.90	14.90	14.43	14.58	14.27	13.50	13.96	13.66	13.50
14:30	15.06	14.90	14.74	15.37	16.01	16.32	16.32	15.85	15.53	15.37	15.37	14.90	14.90	15.22	15.22	15.22	15.22	15.22	14.58	14.90	14.43	13.81	14.12	13.96	13.81
15:00	15.37	15.22	14.90	15.69	16.32	16.48	16.48	16.01	15.69	15.69	15.53	15.22	15.06	15.53	15.53	15.53	15.53	15.53	14.74	15.06	14.74	13.81	14.27	14.12	13.96
15:30	15.53	15.37	15.06	15.85	16.64	16.80	16.64	16.32	15.85	15.85	15.69	15.53	15.22	15.69	15.69	15.85	15.69	15.69	14.90	15.37	14.90	13.96	14.43	14.43	14.27
16:00	15.69	15.53	15.22	16.17	16.80	16.96	16.96	16.48	16.01	16.17	15.85	15.69	15.22	16.01	16.01	16.01	16.01	16.01	15.06	15.53	15.22	14.12	14.58	14.58	14.58
16:30	15.85	15.53	15.37	16.32	16.96	17.12	17.12	16.64	16.17	16.32	15.85	15.85	15.37	16.17	16.17	16.17	16.17	16.17	15.22	15.69	15.37	14.27	14.74	14.74	14.74
17:00	15.85	15.69	15.37	16.48	17.12	17.28	17.28	16.80	16.32	16.48	16.17	16.01	15.37	16.32	16.32	16.32	16.32	16.32	15.37	15.85	15.53	14.27	14.90	14.90	14.90
17:30	16.01	15.85	15.53	16.64	17.28	17.44	17.28	16.80	16.32	16.64	16.17	16.17	15.53	16.32	16.32	16.48	16.48	16.48	15.53	16.01	15.69	14.43	14.90	15.06	15.06
18:00	16.01	15.85	15.53	16.80	17.28	17.44	17.44	16.96	16.32	16.80	16.32	16.01	15.53	16.48	16.48	16.64	16.64	16.48	15.69	16.01	15.69	14.58	14.90	15.06	15.06
18:30	16.01	16.01	15.69	16.80	17.44	17.59	17.44	16.96	16.32	16.96	16.32	16.01	15.53	16.48	16.48	16.64	16.64	16.64	15.69	16.17	15.85	14.58	14.90	15.06	15.22
19:00	16.01	16.01	15.69	16.80	17.44	17.59	17.44	16.96	16.48	16.96	16.17	16.01	15.69	16.48	16.48	16.64	16.64	16.64	15.69	16.17	15.85	14.58	14.90	15.06	15.22
19:30	16.01	16.01	15.69	16.80	17.44	17.59	17.44	16.96	16.32	16.96	16.17	16.01	15.69	16.48	16.48	16.64	16.64	16.64	15.69	16.17	15.85	14.58	14.90	15.06	15.22
20:00	16.01	16.01	15.69	16.80	17.44	17.59	17.28	16.96	16.32	16.96	16.17	16.01	15.69	16.48	16.48	16.64	16.64	16.64	15.69	16.17	15.69	14.58	14.90	15.06	15.22
20:30	16.01	16.01	15.69	16.80	17.28	17.44	17.28	16.80	16.32	16.96	16.01	15.85	15.69	16.48	16.48	16.64	16.64	16.64	15.69	16.01	15.69	14.58	14.74	15.06	15.22
21:00	16.01	16.01	15.69	16.80	17.28	17.44	17.28	16.80	16.17	16.80	16.01	15.85	15.69	16.32	16.48	16.64	16.48	16.48	15.69	16.01	15.53	14.58	14.74	14.90	15.06
21:30	15.85	16.01	15.53	16.80	17.12	17.44	17.12	16.80	16.17	16.80	15.85	15.69	15.69	16.17	16.32	16.48	16.48	16.48	15.69	15.85	15.53	14.43	14.58	14.90	15.06
22:00	15.85	15.85	15.53	16.64	17.12	17.28	16.96	16.64	16.17	16.64	15.85	15.53	15.53	16.17	16.32	16.32	16.32	16.32	15.53	15.85	15.37	14.43	14.58	14.74	14.90
22:30	15.69	15.85	15.53	16.64	16.96	17.12	16.80	16.64	16.01	16.48	15.69	15.53	15.53	16.01	16.17	16.32	16.17	16.17	15.37	15.69	15.22	14.27	14.43	14.58	14.74
23:00	15.53	15.85	15.37	16.48	16.80	17.12	16.80	16.48	15.85	16.32	15.69	15.37	15.37	15.85	16.01	16.17	16.17	16.17	15.37	15.53	15.06	14.27	14.27	14.43	14.58
23:30	15.53	15.69	15.22	16.32	16.64	16.80	16.64	16.32	15.69	16.17	15.53	15.22	15.22	15.69	15.85	16.01	16.01	16.01	15.22	15.37	14.90	14.12	14.27	14.27	14.58

Notes:
Data downloaded from Ecology's website on 1/12/2012: http://www.ecy.wa.gov/apps/watersheds/riv/station.asp?theyear=&tab=final_data&scrolly=0&wria=55&sta=55B070
No 2011 data were available online as of 1/12/2012.

Table 3-2: Little Spokane River Upstream of Lake Spokane (55B070)Temperature Monitored in 2010

Time (PDT)		Water Temperature (°C)																						
	8/25/2010	8/26/2010	8/27/2010	8/28/2010	8/29/2010	8/30/2010	8/31/2010	9/1/2010	9/2/2010	9/3/2010	9/4/2010	9/5/2010	9/6/2010	9/7/2010	9/8/2010	9/9/2010	9/10/2010	9/11/2010	9/12/2010	9/13/2010	9/14/2010	9/15/2010	9/16/2010	9/17/2010
0:00	14.43	14.74	14.27	13.66	12.88	13.19	12.73	11.96	13.04	13.50	13.96	13.81	12.73	12.42	12.11	12.73	13.04	12.26	12.57	12.88	13.04	13.19	13.19	12.88
0:30	14.27	14.58	14.12	13.50	12.73	13.04	12.57	11.96	12.88	13.34	13.81	13.66	12.57	12.26	11.96	12.57	13.04	12.11	12.42	12.73	12.88	13.04	13.04	12.88
1:00	14.12	14.27	13.96	13.34	12.57	12.88	12.42	11.80	12.73	13.19	13.66	13.34	12.26	12.26	11.96	12.42	12.88	12.11	12.26	12.57	12.73	12.88	13.04	12.73
1:30	13.81	14.12	13.81	13.19	12.42	12.73	12.26	11.80	12.73	13.04	13.50	13.19	12.11	12.11	11.96	12.42	12.88	11.96	12.11	12.42	12.73	12.73	12.88	12.73
2:00	13.66	13.96	13.66	13.04	12.26	12.57	12.11	11.80	12.57	12.88	13.34	13.04	11.96	12.11	11.80	12.26	12.73	11.80	11.96	12.42	12.57	12.57	12.88	12.73
2:30	13.50	13.81	13.50	12.88	12.26	12.42	12.11	11.80	12.42	12.73	13.19	12.88	11.80	11.96	11.80	12.26	12.57	11.64	11.80	12.26	12.42	12.42	12.73	12.73
3:00	13.34	13.66	13.34	12.73	12.11	12.26	11.96	11.64	12.26	12.57	13.04	12.73	11.64	11.96	11.80	12.11	12.57	11.49	11.80	12.11	12.26	12.26	12.73	12.57
3:30	13.19	13.50	13.04	12.57	11.96	12.11	11.80	11.64	12.11	12.42	12.88	12.57	11.49	11.80	11.64	11.96	12.42	11.49	11.64	11.96	12.11	12.26	12.57	12.57
4:00	13.04	13.34	12.88	12.42	11.80	11.96	11.64	11.64	11.96	12.26	12.73	12.42	11.49	11.80	11.64	11.96	12.42	11.33	11.49	11.80	11.96	12.11	12.57	12.57
4:30	12.88	13.19	12.73	12.26	11.80	11.80	11.49	11.64	11.80	12.11	12.73	12.26	11.33	11.64	11.64	11.80	12.26	11.33	11.33	11.64	11.80	11.96	12.42	12.42
5:00	12.73	13.04	12.73	12.11	11.64	11.64	11.49	11.49	11.64	11.96	12.57	12.11	11.18	11.64	11.49	11.80	12.26	11.18	11.18	11.64	11.80	11.80	12.42	12.42
5:30	12.57	12.88	12.57	12.11	11.49	11.49	11.33	11.49	11.64	11.80	12.42	11.96	11.03	11.49	11.49	11.80	12.11	11.03	11.03	11.49	11.64	11.64	12.42	12.42
6:00	12.42	12.73	12.42	11.96	11.49	11.49	11.18	11.49	11.49	11.80	12.26	11.80	11.03	11.49	11.49	11.64	12.11	11.03	11.03	11.33	11.49	11.64	12.42	12.42
6:30	12.42	12.73	12.26	11.80	11.33	11.33	11.03	11.49	11.49	11.64	12.26	11.80	10.87	11.33	11.49	11.64	11.96	10.87	10.87	11.33	11.49	11.49	12.26	12.26
7:00	12.26	12.57	12.11	11.80	11.18	11.33	11.03	11.49	11.33	11.49	12.11	11.64	10.87	11.33	11.33	11.64	11.96	10.87	10.72	11.18	11.33	11.33	12.26	12.26
7:30	12.11	12.42	12.11	11.64	11.18	11.18	10.87	11.49	11.18	11.49	12.11	11.49	10.72	11.33	11.33	11.49	11.80	10.72	10.72	11.18	11.33	11.33	12.26	12.26
8:00	12.11	12.42	11.96	11.64	11.03	11.18	10.87	11.49	11.18	11.33	11.96	11.49	10.72	11.33	11.33	11.49	11.80	10.72	10.56	11.03	11.18	11.18	12.26	12.26
8:30	12.11	12.42	11.96	11.64	11.03	11.18	10.87	11.49	11.18	11.33	11.96	11.49	10.72	11.18	11.33	11.49	11.80	10.72	10.56	11.03	11.18	11.18	12.26	12.26
9:00	12.11	12.26	11.80	11.64	11.03	11.18	10.87	11.49	11.18	11.33	11.96	11.49	10.72	11.18	11.33	11.49	11.80	10.72	10.56	11.03	11.18	11.18	12.26	12.26
9:30	12.11	12.42	11.96	11.64	11.03	11.18	10.87	11.49	11.18	11.49	11.96	11.49	10.72	11.18	11.33	11.49	11.80	10.72	10.72	11.03	11.18	11.33	12.26	12.26
10:00	12.26	12.42	11.96	11.64	11.18	11.18	11.03	11.64	11.33	11.49	12.11	11.49	10.72	11.18	11.49	11.49	11.80	10.87	10.72	11.18	11.33	11.33	12.26	12.26
10:30	12.26	12.57	12.11	11.64	11.33	11.18	11.03	11.64	11.49	11.64	12.11	11.64	10.87	11.33	11.49	11.64	11.80	10.87	10.87	11.18	11.33	11.49	12.26	12.26
11:00	12.42	12.73	12.26	11.80	11.49	11.33	11.18	11.80	11.49	11.80	12.26	11.80	10.87	11.33	11.49	11.64	11.80	11.03	10.87	11.33	11.49	11.49	12.42	12.42
11:30	12.57	12.88	12.42	11.96	11.64	11.33	11.18	11.96	11.80	11.96	12.42	11.80	11.03	11.33	11.80	11.80	11.96	11.18	11.03	11.49	11.64	11.64	12.42	12.42
12:00	12.88	13.04	12.57	12.11	11.80	11.49	11.33	12.11	11.96	12.11	12.57	11.96	11.18	11.33	11.80	11.80	11.96	11.33	11.33	11.64	11.80	11.80	12.57	12.57
12:30	13.04	13.19	12.73	12.26	11.96	11.49	11.33	12.11	12.11	12.26	12.88	12.11	11.49	11.33	11.96	11.96	12.11	11.49	11.49	11.80	12.11	11.96	12.57	12.57
13:00	13.34	13.34	12.73	12.42	12.26	11.64	11.49	12.26	12.42	12.57	13.04	12.26	11.64	11.49	12.11	11.96	12.11	11.64	11.64	12.11	12.26	12.11	12.73	12.73
13:30	13.50	13.50	13.04	12.42	12.42	11.80	11.49	12.57	12.57	12.73	13.34	12.42	11.80	11.49	12.26	12.26	12.26	11.80	11.96	12.26	12.42	12.42	12.73	12.73
14:00	13.81	13.66	13.19	12.73	12.57	11.96	11.64	12.73	12.88	12.88	13.50	12.57	11.96	11.64	12.26	12.42	12.26	11.96	12.11	12.57	12.73	12.57	12.88	12.73
14:30	14.12	13.96	13.34	12.88	12.88	12.11	11.64	12.88	13.04	13.19	13.66	12.73	12.11	11.64	12.42	12.42	12.26	12.11	12.42	12.73	12.88	12.73	12.88	12.88
15:00	14.27	14.12	13.66	12.88	13.04	12.26	11.80	13.04	13.34	13.50	13.96	12.88	12.26	11.80	12.42	12.73	12.42	12.26	12.57	12.88	12.88	12.88	12.88	12.88
15:30	14.58	14.27	13.81	13.04	13.34	12.42	11.80	13.34	13.50	13.66	14.12	13.04	12.26	11.80	12.57	12.73	12.42	12.42	12.88	13.19	13.04	13.04	12.88	13.04
16:00	14.90	14.58	13.96	13.19	13.50	12.57	11.96	13.34	13.66	13.96	14.27	13.34	12.42	11.96	12.73	12.88	12.57	12.73	13.04	13.34	13.34	13.19	13.04	13.04
16:30	15.06	14.74	14.12	13.19	13.66	12.73	11.96	13.34	13.81	14.12	14.43	13.34	12.57	11.96	12.73	13.04	12.73	12.88	13.19	13.50	13.50	13.34	13.04	13.19
17:00	15.22	14.74	14.27	13.34	13.81	12.88	12.11	13.50	13.96	14.27	14.58	13.50	12.57	12.11	12.88	13.34	12.88	13.04	13.34	13.66	13.66	13.34	13.19	13.19
17:30	15.37	14.90	14.27	13.34	13.96	12.88	12.11	13.66	14.12	14.27	14.58	13.66	12.73	12.11	12.88	13.34	12.88	13.19	13.34	13.66	13.66	13.50	13.19	13.19
18:00	15.37	14.90	14.27	13.50	14.12	13.04	12.11	13.81	14.12	14.43	14.74	13.66	12.73	12.11	12.88	13.34	12.88	13.19	13.50	13.81	13.66	13.50	13.19	13.19
18:30	15.53	15.06	14.43	13.50	14.12	13.04	12.26	13.81	14.27	14.58	14.74	13.81	12.73	12.11	13.04	13.34	12.88	13.19	13.50	13.81	13.81	13.50	13.19	13.19
19:00	15.53	15.06	14.43	13.50	14.12	13.04	12.26	13.81	14.27	14.58	14.74	13.81	12.73	12.11	13.04	13.34	12.88	13.19	13.50	13.81	13.81	13.66	13.19	13.19
19:30	15.53	15.06	14.43	13.50	13.96	13.04	12.26	13.81	14.27	14.58	14.74	13.66	12.73	12.26	13.04	13.34	12.88	13.19	13.50	13.81	13.81	13.66	13.19	13.19
20:00	15.53	15.06	14.43	13.50	13.96	13.04	12.26	13.81	14.27	14.58	14.58	13.66	12.73	12.26	13.04	13.34	12.88	13.19	13.50	13.81	13.81	13.66	13.19	13.19
20:30	15.53	14.90	14.27	13.50	13.81	13.19	12.11	13.81	14.12	14.58	14.58	13.66	12.73	12.26	13.04	13.34	12.73	13.19	13.50	13.81	13.81	13.66	13.19	13.19
21:00	15.37	14.90	14.27	13.34	13.81	13.04	12.11	13.66	14.12	14.58	14.43	13.50	12.73	12.11	13.04	13.34	12.73	13.04	13.50	13.66	13.81	13.50	13.04	13.04
21:30	15.37	14.74	14.12	13.34	13.66	13.04	12.11	13.66	14.12	14.43	14.43	13.34	12.73	12.11	12.88	13.34	12.73	13.04	13.34	13.66	13.66	13.50	13.04	13.04
22:00	15.22	14.74	14.12	13.19	13.66	13.04	12.11	13.50	13.96	14.27	14.27	13.19	12.73	12.11	12.88	13.34	12.57	13.04	13.34	13.50	13.66	13.50	13.04	13.04
22:30	15.06	14.58	13.96	13.19	13.50	13.04	12.11	13.34	13.81	14.27	14.12	13.04	12.57	12.11	12.88	13.34	12.57	12.88	13.19	13.34	13.50	13.34	13.04	13.04
23:00	15.06	14.43	13.96	13.04	13.50	12.88	12.11	13.34	13.66	14.12	13.96	12.88	12.57	12.11	12.88	13.19	12.42	12.73	13.04	13.34	13.34	13.34	13.04	12.88
23:30	14.90	14.43	13.81	12.88	13.34	12.73	11.96	13.19	13.66	14.12	13.96	12.88	12.42	12.11	12.73	13.19	12.26	12.73	13.04	13.19	13.34	13.34	12.88	12.88

Notes:
Data downloaded from Ecology's website on 1/12/2012: http://www.ecy.wa.gov/apps/watersheds/riv/station.asp?theyear=&tab=final_data&scrolly=0&wria=55&sta=55B070
No 2011 data were available online as of 1/12/2012.

Table 3-2: Little Spokane River Upstream of Lake Spokane (55B070)Temperature Monitored in 2010

Time (PDT)			Water Temperature (°C)																
	9/18/2010	9/19/2010	9/20/2010	9/21/2010	9/22/2010	9/23/2010	9/24/2010	9/25/2010	9/26/2010	9/27/2010	9/28/2010	9/29/2010	9/30/2010	10/1/2010	10/2/2010	10/3/2010	10/4/2010	10/5/2010	10/6/2010
0:00	12.88	12.57	12.11	12.42	12.26	11.96	11.49	12.11	12.42	12.42	13.04	13.34	12.88	12.73	12.73	12.57	12.11	11.80	11.80
0:30	12.73	12.57	12.11	12.26	12.11	11.80	11.33	12.11	12.26	12.42	12.88	13.19	12.73	12.57	12.57	12.42	11.96	11.80	11.64
1:00	12.73	12.57	12.11	12.26	11.96	11.64	11.33	11.96	12.11	12.26	12.73	13.04	12.57	12.57	12.42	12.42	11.96	11.80	11.49
1:30	12.57	12.42	11.96	12.26	11.80	11.64	11.33	11.80	12.11	12.11	12.73	12.88	12.42	12.42	12.42	12.26	11.96	11.64	11.49
2:00	12.57	12.42	11.96	12.11	11.80	11.49	11.33	11.80	11.96	12.11	12.57	12.73	12.42	12.26	12.26	12.11	11.96	11.64	11.33
2:30	12.42	12.42	11.96	12.11	11.64	11.33	11.18	11.64	11.80	11.96	12.42	12.73	12.26	12.11	12.11	12.11	11.96	11.49	11.18
3:00	12.42	12.26	11.96	11.96	11.49	11.18	11.18	11.49	11.64	11.96	12.26	12.57	12.11	12.11	12.11	11.96	11.80	11.49	11.18
3:30	12.42	12.26	11.80	11.96	11.33	11.03	11.18	11.49	11.49	11.80	12.26	12.42	11.96	11.96	11.96	11.80	11.80	11.49	11.03
4:00	12.26	12.26	11.80	11.80	11.18	11.03	11.18	11.33	11.49	11.64	12.11	12.26	11.96	11.80	11.80	11.80	11.80	11.33	10.87
4:30	12.26	12.11	11.80	11.80	11.03	10.87	11.03	11.18	11.33	11.64	11.96	12.26	11.80	11.64	11.64	11.64	11.80	11.33	10.87
5:00	12.11	12.11	11.80	11.64	11.03	10.87	11.03	11.18	11.18	11.49	11.96	12.11	11.64	11.64	11.64	11.64	11.64	11.18	10.72
5:30	12.11	12.11	11.64	11.64	10.87	10.72	11.03	11.03	11.18	11.49	11.80	11.96	11.49	11.49	11.49	11.49	11.64	11.18	10.56
6:00	12.11	11.96	11.64	11.49	10.72	10.56	11.03	11.03	11.03	11.33	11.64	11.96	11.49	11.49	11.49	11.49	11.64	11.03	10.56
6:30	12.11	11.96	11.64	11.49	10.72	10.56	11.03	10.87	11.03	11.33	11.64	11.80	11.33	11.33	11.33	11.49	11.64	11.03	10.56
7:00	11.96	11.96	11.64	11.49	10.56	10.56	11.03	10.87	10.87	11.33	11.64	11.80	11.33	11.33	11.33	11.33	11.64	11.03	10.41
7:30	11.96	11.96	11.64	11.33	10.56	10.41	11.03	10.72	10.87	11.18	11.49	11.64	11.18	11.18	11.18	11.33	11.64	10.87	10.41
8:00	11.96	11.80	11.64	11.33	10.41	10.41	11.03	10.72	10.87	11.18	11.49	11.64	11.18	11.18	11.18	11.33	11.64	10.87	10.25
8:30	11.96	11.80	11.64	11.33	10.41	10.41	11.03	10.72	10.87	11.18	11.49	11.49	11.18	11.18	11.18	11.33	11.64	10.87	10.25
9:00	11.96	11.80	11.64	11.33	10.41	10.41	11.03	10.56	10.87	11.18	11.49	11.49	11.03	11.18	11.18	11.33	11.64	10.87	10.25
9:30	11.96	11.80	11.64	11.49	10.41	10.41	11.03	10.72	10.87	11.18	11.49	11.49	11.18	11.18	11.18	11.33	11.64	10.87	10.25
10:00	11.96	11.80	11.64	11.49	10.56	10.56	11.18	10.72	10.87	11.18	11.49	11.64	11.18	11.18	11.18	11.33	11.64	10.87	10.41
10:30	11.96	11.80	11.64	11.49	10.56	10.56	11.18	10.87	10.87	11.33	11.64	11.64	11.18	11.18	11.18	11.33	11.64	10.87	10.41
11:00	11.96	11.80	11.80	11.64	10.72	10.56	11.18	10.87	10.87	11.49	11.80	11.80	11.33	11.33	11.33	11.49	11.64	11.03	10.56
11:30	12.11	11.80	11.80	11.64	10.87	10.72	11.33	11.03	10.87	11.64	11.96	11.80	11.49	11.49	11.49	11.49	11.80	11.18	10.72
12:00	12.11	11.96	11.96	11.64	11.03	10.72	11.49	11.18	11.03	11.80	12.11	11.96	11.64	11.64	11.64	11.49	11.80	11.18	10.72
12:30	12.26	11.96	11.96	11.96	11.18	10.87	11.49	11.49	11.18	11.96	12.26	12.11	11.80	11.80	11.80	11.64	11.96	11.33	10.87
13:00	12.26	11.96	12.11	12.11	11.49	10.87	11.64	11.64	11.33	12.11	12.42	12.42	11.96	11.96	11.96	11.80	11.96	11.49	11.18
13:30	12.26	11.96	12.11	12.26	11.64	11.03	11.80	11.80	11.49	12.26	12.73	12.57	12.11	12.11	12.11	11.80	11.96	11.64	11.33
14:00	12.42	11.96	12.26	12.42	11.80	11.18	11.96	11.96	11.64	12.57	12.88	12.73	12.26	12.26	12.26	11.96	12.11	11.80	11.33
14:30	12.42	12.11	12.26	12.57	11.96	11.18	12.11	12.26	11.80	12.73	13.04	12.88	12.42	12.57	12.42	11.96	12.11	11.96	11.49
15:00	12.42	12.11	12.42	12.73	12.11	11.33	12.26	12.42	11.96	12.88	13.19	13.04	12.73	12.73	12.73	12.11	12.11	12.11	11.64
15:30	12.57	12.11	12.57	12.73	12.42	11.33	12.26	12.57	12.11	13.04	13.34	13.34	12.88	12.88	12.88	12.11	12.11	12.26	
16:00	12.73	12.11	12.73	12.88	12.42	11.49	12.42	12.73	12.26	13.19	13.66	13.34	13.04	13.04	13.04	12.11	12.26	12.42	
16:30	12.73	12.11	12.73	13.04	12.57	11.49	12.42	12.88	12.26	13.34	13.81	13.50	13.19	13.04	13.04	12.26	12.26	12.42	
17:00	12.73	12.26	12.88	13.04	12.73	11.49	12.57	12.88	12.42	13.50	13.81	13.66	13.19	13.19	13.19	12.26	12.26	12.42	
17:30	12.88	12.26	12.88	13.04	12.73	11.64	12.73	13.04	12.57	13.50	13.96	13.66	13.34	13.19	13.19	12.26	12.26	12.57	
18:00	12.88	12.26	12.88	13.04	12.73	11.64	12.73	13.04	12.57	13.50	13.96	13.66	13.34	13.34	13.34	12.26	12.26	12.57	
18:30	12.88	12.26	12.88	12.88	12.73	11.64	12.73	13.04	12.73	13.50	13.96	13.66	13.34	13.34	13.34	12.26	12.26	12.57	
19:00	12.88	12.26	12.88	12.88	12.73	11.64	12.88	13.04	12.73	13.50	13.96	13.66	13.34	13.34	13.34	12.26	12.26	12.57	
19:30	12.88	12.26	12.88	12.88	12.73	11.64	12.88	13.04	12.73	13.50	13.96	13.66	13.34	13.34	13.34	12.26	12.26	12.57	
20:00	12.88	12.26	12.88	12.88	12.73	11.64	12.73	13.04	12.73	13.50	13.96	13.66	13.34	13.34	13.19	12.26	12.26	12.42	
20:30	12.88	12.26	12.88	12.88	12.73	11.64	12.73	13.04	12.73	13.50	13.96	13.50	13.34	13.34	13.19	12.26	12.11	12.42	
21:00	12.88	12.26	12.73	12.88	12.57	11.64	12.73	12.88	12.73	13.50	13.81	13.50	13.34	13.19	13.19	12.26	12.11	12.42	
21:30	12.88	12.11	12.73	12.88	12.57	11.64	12.57	12.88	12.73	13.34	13.81	13.34	13.19	13.19	13.04	12.26	12.11	12.26	
22:00	12.88	12.11	12.73	12.73	12.42	11.49	12.57	12.73	12.73	13.34	13.66	13.34	13.19	13.04	13.04	12.26	12.11	12.26	
22:30	12.73	12.11	12.57	12.57	12.42	11.49	12.42	12.73	12.57	13.34	13.66	13.19	13.04	13.04	12.88	12.11	11.96	12.11	
23:00	12.73	12.11	12.57	12.42	12.26	11.49	12.42	12.57	12.57	13.19	13.50	13.04	13.04	12.88	12.88	12.11	11.96	11.96	
23:30	12.73	12.11	12.42	12.42	12.11	11.49	12.26	12.57	12.57	13.19	13.34	13.04	12.88	12.88	12.73	12.11	11.96	11.96	

Notes:
Data downloaded from Ecology's website on 1/12/2012: http://www.ecy.wa.gov/apps/watersheds/riv/station.asp?theyear=&tab=final_data&scrolly=0&wria=55&sta=55B070
No 2011 data were available online as of 1/12/2012.

Table 3-3: LL5 Temperature Vertical Profiles in 2010

Depth (meters)	Water Temperature (°C)								
	5/18/2010	6/2/2010	6/30/2010	7/21/2010	8/10/2010	8/31/2010	9/14/2010	9/28/2010	10/13/2010
0.5	13.99	12.82	17.66	18.18	**22.51**	17.76	14.32	14.78	12.04
1.0	13.43	12.83	17.60	17.64	**21.82**	17.61	14.27	14.77	12.00
2.0	13.56	12.84	17.56	17.48	18.05	16.13	14.23	14.81	11.96
3.0	13.43	12.84	17.56	17.43	17.29	15.03	14.23	14.62	11.94
4.0	13.45	12.84	17.57	17.35	17.06	13.18	14.04	14.42	11.91
5.0	13.46	12.82	17.57	17.29	16.97	13.04	13.95	14.34	11.91
6.0	13.47	12.83	17.59		16.91		13.95	14.32	11.90
7.0	13.50	12.83			16.87			14.31	11.89
8.0								13.45	11.89
Max Change Rate (°C/m)[1]	1.12	0.02	0.12	1.08	3.77	1.85	0.19	0.86	0.08
Depth of Max Change Rate (m)[2]	0.75	0.75 and 4.5	0.75	0.75	1.50	3.50	3.50	7.50	0.75

Notes:

Data downloaded from Ecology's EIM database on 1/12/2012: http://www.ecy.wa.gov/eim/
Does not include results from field duplicates.
Shaded and bold values indicate an exceedance of the 20.0°C criterion.
1. The change rate in °C per meter of depth was calculated for each pair of adjacent measurement intervals in the table. This value represents the maximum calculated change rate for each pair of adjacent measurement intervals, which does not incorporate the overall change per meter for adjacent measurements that are within 1 meter of each other.
2. Calculated as the midpoint depth between adjacent measurements for the Max Change Rate.

Table 3-4: LL5 Temperature Vertical Profiles in 2011

Depth (meters)	Water Temperature (°C)							
	5/24/2011	6/21/2011	7/12/2011	7/26/2011	8/9/2011	8/23/2011	9/13/2011	9/27/2011
0.5	11.84	13.35	17.32	16.96	18.20	**20.03**	19.48	13.61
1.0	11.85	13.33	17.37	16.95	17.69	17.76	17.22	13.61
2.0	11.84	13.34	17.37	16.87	17.36	16.61	15.33	13.55
3.0	11.84	13.33	17.37	16.88	17.22	16.10	15.17	13.56
4.0		13.33	17.34	16.83	17.20	15.89	15.15	13.56
5.0		13.33	17.38	16.79	17.14	15.88	15.09	13.55
5.5	11.84							
6.0			17.37	16.77	17.08	15.86	15.07	13.55
6.8				16.76				
7.0			17.35		17.06		15.06	13.55
Max Change (°C/m)[1]	0.02	0.04	0.10	0.08	1.02	4.54	4.52	0.06
Depth of Max Change Rate (m)[2]	0.75	0.75	0.75	1.50	0.75	0.75	0.75	1.50

Notes:

Data downloaded from Ecology's EIM database on 1/12/2012: http://www.ecy.wa.gov/eim/
Does not include results from field duplicates.
Shaded and bold values indicate an exceedance of the 20.0°C criterion.
1. The change rate in °C per meter of depth was calculated for each pair of adjacent measurement intervals in the table. This value represents the maximum change rate for each pair of adjacent measurement intervals, which does not incorporate the overall change per meter for adjacent measurements that are wit of each other.
2. Calculated as the midpoint depth between adjacent measurements for the Max Change Rate.

Table 3-5: LL4 Temperature Vertical Profiles in 2010

Depth (meters)	Water Temperature (°C)								
	5/18/2010	6/2/2010	6/30/2010	7/21/2010	8/10/2010	8/31/2010	9/14/2010	9/28/2010	10/13/2010
0.5	13.72	13.13	18.06	**22.95**	**23.77**	19.66	18.23	17.30	14.50
1.0	13.71	13.12	17.92	**22.73**	**23.70**	19.66	18.20	17.30	14.37
2.0	13.71	13.11	17.80	**22.57**	**23.43**	19.60	18.04	17.20	14.14
3.0	13.70	13.10	17.78	**22.30**	**22.67**	19.58	17.80	16.28	12.72
4.0	13.65	13.10	17.58	**21.47**	**21.47**	19.41	17.01	10.99	12.31
5.0	13.63	13.09	17.54	17.96	19.92	18.42	14.20	10.75	12.21
6.0	13.62	13.08	17.53	17.93	17.53	13.92	14.13	14.26	12.18
7.0	13.61	13.08	17.52	17.90	17.30	13.81	14.12	14.17	12.17
8.0	13.61	13.07	17.52	17.87	17.19	13.80	14.07	13.68	12.17
9.0	13.62	13.08	17.52	17.88	17.16	13.81	14.08	13.86	12.18
Max Change (°C/m)[1]	0.05	0.02	0.28	3.51	2.39	4.50	2.81	5.29	1.42
Depth of Max Change Rate (m)[2]	3.50	0.75	0.75	4.50	5.50	5.50	4.50	3.50	2.50

Notes:

Data downloaded from Ecology's EIM database on 1/12/2012: http://www.ecy.wa.gov/eim/
Does not include results from field duplicates.
Shaded and bold values indicate an exceedance of the 20.0°C criterion.
1. The change rate in °C per meter of depth was calculated for each pair of adjacent measurement intervals in the table. This value represents the maximum calculated change rate for each pair of adjacent measurement intervals, which does not incorporate the overall change per meter for adjacent measurements that are within 1 meter of each other.
2. Calculated as the midpoint depth between adjacent measurements for the Max Change Rate.

Table 3-6: LL4 Temperature Vertical Profiles in 2011

Depth (meters)	Water Temperature (°C)							
	5/24/2011	6/21/2011	7/12/2011	7/26/2011	8/9/2011	8/23/2011	9/13/2011	9/27/2011
0.5	11.78	13.40	17.85	19.46	**23.86**	**22.37**	**20.90**	17.69
1.0	11.78	13.35	17.50	19.19	**23.77**	**22.34**	**20.88**	17.76
2.0	11.77	13.34	17.20	18.29	**23.60**	**22.32**	**20.85**	17.77
3.0	11.77	13.31	17.10	17.75	**22.73**	**22.11**	**20.83**	17.16
4.0	11.77	13.32	17.04	17.56	18.54	**21.05**	19.78	14.80
5.0	11.77	13.29	16.94	17.53	17.84	18.03	16.15	13.70
6.0	11.77	13.29	16.94	17.49	17.74	16.37	15.40	13.65
7.0	11.77	13.29	16.94	17.43	17.72	16.34	15.36	13.65
8.0	11.77	13.29	16.93	17.41	17.71	16.34	15.35	13.62
9.0	11.77	13.28	16.93	17.40	17.71	16.34	15.35	13.61
Max Change (°C/m)[1]	0.01	0.10	0.70	0.90	4.19	3.02	3.63	2.36
Depth of Max Change Rate (m)[2]	1.50	0.75	0.75	1.50	3.50	4.50	4.50	3.50

Notes:

Data downloaded from Ecology's EIM database on 1/12/2012: http://www.ecy.wa.gov/eim/
Does not include results from field duplicates.
Shaded and bold values indicate an exceedance of the 20.0°C criterion.
1. The change rate in °C per meter of depth was calculated for each pair of adjacent measurement intervals in the table. This value represents the maximum change rate for each pair of adjacent measurement intervals, which does not incorporate the overall change per meter for adjacent measurements that are wit of each other.
2. Calculated as the midpoint depth between adjacent measurements for the Max Change Rate.

Table 3-7: LL3 Temperature Vertical Profiles in 2010

Depth (meters)	Water Temperature (°C)								
	5/17/2010	6/1/2010	6/30/2010	7/21/2010	8/10/2010	8/31/2010	9/14/2010	9/28/2010	10/13/2010
0.5	15.43	14.42	19.49	**22.99**	**23.44**	19.93	18.36	17.44	15.62
1.0	15.18	14.41	19.48	**22.97**	**23.44**	19.90	18.36	17.28	15.64
2.0	14.57	14.32	18.77	**22.92**	**23.39**	19.94	18.34	17.29	15.63
3.0	14.09	13.97	18.25	**21.84**	**23.36**	19.92	18.29	17.26	15.62
4.0	13.35	13.79	18.11	**21.06**	**23.30**	19.94	18.15	16.79	15.62
5.0	13.24	13.61	18.08	**20.34**	**23.27**	19.94	18.06	16.77	15.60
6.0	13.13	13.57	18.04	**20.18**	**21.97**	19.90	17.91	16.67	15.59
7.0	13.07	13.41	18.01	19.55	**20.64**	19.87	17.67	16.96	15.55
8.0	12.39	13.33	18.00	19.20	18.78	19.52	17.49	16.14	15.50
9.0	12.42	13.30	17.99	18.77	18.48	19.35	17.32	15.81	15.49
10.0	11.93	13.28	17.97	18.46	18.34	19.13	17.05	15.62	15.26
12.0	11.76	13.22	17.95	18.18	18.18	17.81	15.82	14.87	14.23
15.0	10.56	13.16	17.89	18.07	17.94	14.99	14.35	14.48	13.46
18.0	9.77	13.09	17.47	17.98	17.74	14.84	14.31	14.15	13.35
20.0				17.29		14.85	14.27		
21.0	9.55	13.04	16.82	17.02	17.61	14.90	14.26		13.31
21.6	9.52								
Max Change (°C/m)[1]	0.74	0.35	0.71	1.08	1.86	0.94	0.62	0.82	0.52
Depth of Max Change Rate (m)[2]	3.50	2.50	1.50	2.50	7.50	13.50	11.00	7.50	11.00

Notes:

Data downloaded from Ecology's EIM database on 1/12/2012: http://www.ecy.wa.gov/eim/
Does not include results from field duplicates.
Shaded and bold values indicate an exceedance of the 20.0°C criterion.
1. The change rate in °C per meter of depth was calculated for each pair of adjacent measurement intervals in the table. This value represents the maximum calculated change rate for each pair of adjacent measurement intervals, which does not incorporate the overall change per meter for adjacent measurements that are within 1 meter of each other.
2. Calculated as the midpoint depth between adjacent measurements for the Max Change Rate.

Table 3-8: LL3 Temperature Vertical Profiles in 2011

Depth (meters)	Water Temperature (°C)							
	5/24/2011	6/21/2011	7/12/2011	7/26/2011	8/9/2011	8/23/2011	9/13/2011	9/26/2011
0.5	11.78	13.71	**20.99**	**20.90**	**24.81**	**22.02**	**20.79**	18.51
1.0	11.75	13.69	**20.70**	**20.91**	**24.44**	**22.01**	**20.80**	18.51
2.0	11.74	13.68	19.11	**20.91**	**24.05**	**21.97**	**20.80**	18.48
3.0	11.74	13.65	18.66	**20.85**	**23.41**	**21.96**	**20.80**	18.36
4.0	11.76	13.65	18.24	**20.53**	**21.56**	**21.94**	**20.33**	18.32
5.0	11.75	13.65	17.91	**20.27**	**21.16**	**21.85**	19.77	18.31
6.0	11.75	13.64	17.38	19.36	**20.31**	**20.97**	19.29	18.30
7.0	11.74	13.63	17.31	18.93	18.75	20.00	18.31	18.24
8.0	11.75	13.63	17.24	18.72	18.48	19.71	17.95	18.21
9.0	11.74	13.64	17.20	18.37	18.18	19.30	17.57	17.92
10.0	11.74	13.64	17.19	18.21		18.96	17.39	17.68
12.0	11.75	13.63	16.98	17.99		18.47	16.61	16.63
15.0	11.74	13.63	16.91	17.73		16.57	15.92	15.04
18.0	11.74	13.62	16.90	17.49		16.38	15.98	14.95
20.0				17.42		16.34	15.82	
21.0	11.74		16.85					14.81
Max Change (°C/m)[1]	0.06	0.04	1.59	0.91	1.85	0.97	0.98	0.53
Depth of Max Change Rate (m)[2]	0.75	0.75	1.50	5.50	3.50	6.50	6.50	11.00

Notes:

Data downloaded from Ecology's EIM database on 1/12/2012: http://www.ecy.wa.gov/eim/
Does not include results from field duplicates.
Shaded and bold values indicate an exceedance of the 20.0°C criterion.
1. The change rate in °C per meter of depth was calculated for each pair of adjacent measurement intervals in the table. This value represents the maximum change rate for each pair of adjacent measurement intervals, which does not incorporate the overall change per meter for adjacent measurements that are wi meter of each other.
2. Calculated as the midpoint depth between adjacent measurements for the Max Change Rate.

Table 3-9: LL2 Temperature Vertical Profiles in 2010

Depth (meters)	Water Temperature (°C)								
	5/18/2010	6/1/2010	6/29/2010	7/20/2010	8/10/2010	8/30/2010	9/13/2010	9/27/2010	10/12/2010
0.5	16.28	15.09	**20.60**	**23.17**	**23.33**	**20.05**	19.27	17.58	16.15
1.0	15.61	15.01	**20.59**	**23.18**	**23.32**	**20.05**	18.57	17.51	16.09
2.0	14.50	14.92	**20.46**	**23.08**	**23.28**	**20.04**	18.37	17.13	15.95
3.0	13.11	14.80	19.98	**23.00**	**23.26**	**20.04**	18.24	17.12	15.85
4.0	12.64	14.56	19.51	**22.30**	**23.24**	**20.02**	18.17	17.04	15.82
5.0	12.52	14.11	18.41	**20.73**	**23.23**	**20.01**	18.08	17.02	15.79
6.0	12.49	13.76	17.94	**20.15**	**23.19**	19.95	17.98	14.00	15.79
7.0	12.44	13.56	17.36	19.87	**21.09**	19.92	17.95	16.87	15.75
8.0	12.23	13.53	17.10	19.11	19.19	19.77	17.89	16.69	15.73
9.0	12.11	13.41	17.02	19.04	18.99	19.40	17.62	16.52	15.72
10.0	11.88	13.34	16.99	18.80	18.80	18.77	17.23	16.14	15.71
12.0	11.73	13.25	16.72	18.40	18.47	17.85	16.85	15.72	15.67
15.0	11.20	13.02	16.64	17.93	18.13	17.30	16.25	15.14	14.74
18.0	10.27	12.98	15.93	17.61	17.90	16.44	15.06	14.22	13.81
21.0	9.54	12.96	15.31	16.88	17.70	16.24	14.32	13.92	13.76
23.0	9.17		15.09						
24.0	9.18	12.95		16.58	17.31	16.06	14.25	13.87	13.66
25.0			14.69		17.22	16.01	14.25		
26.0				16.38					
Max Change (°C/m)[1]	1.39	0.45	1.10	1.57	2.10	0.63	1.40	3.02	0.31
Depth of Max Change Rate (m)[2]	2.50	4.50	4.50	4.50	6.50	9.50	0.75	5.50	13.5 and.16.5

Notes:

Data downloaded from Ecology's EIM database on 1/12/2012: http://www.ecy.wa.gov/eim/
Does not include results from field duplicates.
Shaded and bold values indicate an exceedance of the 20.0°C criterion.
1. The change rate in °C per meter of depth was calculated for each pair of adjacent measurement intervals in the table. This value represents the maximum calculated change rate for each pair of adjacent measurement intervals, which does not incorporate the overall change per meter for adjacent measurements that are within 1 meter of each other.
2. Calculated as the midpoint depth between adjacent measurements for the Max Change Rate.

Table 3-10: LL2 Temperature Vertical Profiles in 2011

Depth (meters)	Water Temperature (°C)							
	5/23/2011	6/20/2011	7/11/2011	7/25/2011	8/9/2011	8/22/2011	9/12/2011	9/26/2011
0.5	11.87	14.58	**21.85**	**21.26**	**23.48**	**22.09**	**21.06**	18.12
1.0	11.79	14.57	**20.88**	**21.25**	**23.29**	**22.07**	**20.98**	18.07
2.0	11.74	14.13	19.89	**20.98**	**23.19**	**21.95**	**20.72**	17.97
3.0	11.92	13.89	19.06	**20.91**	**23.08**	**21.77**	**20.70**	17.95
4.0	11.87	13.73	18.55	**20.19**	**21.82**	**20.97**	**20.68**	17.94
5.0	11.83	13.74	18.20	18.89	**20.71**	19.97	**20.45**	17.89
6.0	11.89	13.66	18.11	18.74	**20.23**	19.06	19.36	17.87
7.0	11.84	13.66	18.00	18.58	19.64	18.83	18.74	17.79
8.0	11.76	13.66	17.90	18.39	19.20	18.44	18.27	17.79
9.0	11.73	13.64	17.66	18.17	18.91	18.29	17.61	17.78
10.0	11.69	13.63	17.64	18.03		18.17	17.37	17.76
11.0	11.66							
12.0	11.65	13.64	17.56	17.74		17.90	17.12	17.38
15.0	11.66	13.55	17.44	17.24		17.48	16.69	16.44
18.0	11.66	13.51	17.04	17.15		16.57	16.18	15.36
21.0	11.64	13.50	16.24	17.15		16.24	15.58	14.53
24.0	11.62	13.48	15.57	17.13		16.12	15.44	14.50
25.0							15.43	
26.0		13.48				16.09		
Max Change (°C/m)[1]	0.18	0.44	1.94	1.30	1.26	1.00	1.09	0.36
Depth of Max Change Rate (m)[2]	2.50	1.50	0.75	4.50	3.50	5.50	5.50	16.50

Notes:

Data downloaded from Ecology's EIM database on 1/12/2012: http://www.ecy.wa.gov/eim/
Does not include results from field duplicates.
Shaded and bold values indicate an exceedance of the 20.0°C criterion.
1. The change rate in °C per meter of depth was calculated for each pair of adjacent measurement intervals in the table. This value represents the maximum change rate for each pair of adjacent measurement intervals, which does not incorporate the overall change per meter for adjacent measurements that are wi of each other.
2. Calculated as the midpoint depth between adjacent measurements for the Max Change Rate.

Table 3-11: LL1 Temperature Vertical Profiles in 2010

Depth (meters)	Water Temperature (°C)								
	5/17/2010	6/1/2010	6/29/2010	7/20/2010	8/9/2010	8/30/2010	9/13/2010	9/27/2010	10/12/2010
0.5	16.41	15.22	**20.75**	**22.62**	**24.04**	19.86	18.55	17.60	15.98
1.0	16.20	15.16	**20.61**	**22.62**	**24.05**	19.78	18.42	17.47	15.98
2.0	16.03	15.15	**20.27**	**22.47**	**23.93**	19.71	18.18	17.22	15.96
3.0	15.79	14.68	19.75	**22.30**	**23.63**	19.65	18.01	17.13	15.98
4.0	14.29	14.60	18.72	**21.91**	**23.60**	19.60	17.93	17.06	15.94
5.0	12.87	14.53	18.00	**21.12**	**23.21**	19.58	17.91	17.01	15.80
6.0	12.58	14.28	17.94	**20.23**	**21.04**	19.57	17.83	16.99	15.77
7.0	12.09	14.14	17.58	19.58	19.87	19.56	17.79	16.95	15.74
8.0	12.10	13.81	17.30	19.31	19.24	19.54	17.80	16.95	15.71
9.0	11.88	13.50	17.28	18.87	18.95	19.40	17.71	16.93	15.69
10.0	11.77	13.43	17.26	18.65	18.70	18.38	17.61	16.83	15.67
12.0	11.61	13.22	16.91	18.28	18.43	17.82	17.11	15.80	15.10
15.0	10.95	13.04	16.65	17.84	18.12	17.43	16.54	15.21	14.69
18.0	10.43	13.00	15.82	17.39	17.88	17.21	16.07	14.84	14.48
21.0	9.97	12.83	15.37	16.90	17.60	16.98	15.40	14.56	14.22
24.0	9.65	12.68	15.18	16.60	17.46	16.75	14.55	14.34	13.99
27.0	9.40	12.56	14.91	16.43	17.05	16.43	14.44	14.25	13.89
30.0	9.05	12.35	14.77	16.15	16.62	16.30	14.33	14.16	13.86
32.0			14.25				14.32		
33.0	8.96	11.37		15.20		16.28		14.13	
33.8	8.92								
Max Change (°C/m)[1]	1.50	0.47	1.03	0.89	2.17	1.02	0.28	0.51	0.29
Depth of Max Change Rate (m)[2]	3.50	2.50	3.50	5.50	5.50	9.50	0.75	11.00	11.00

Notes:

Data downloaded from Ecology's EIM database on 1/12/2012: http://www.ecy.wa.gov/eim/
Does not include results from field duplicates.
Shaded and bold values indicate an exceedance of the 20.0°C criterion.
1. The change rate in °C per meter of depth was calculated for each pair of adjacent measurement intervals in the table. This value represents the maximum calculated change rate for each pair of adjacent measurement intervals, which does not incorporate the overall change per meter for adjacent measurements that are within 1 meter of each other.
2. Calculated as the midpoint depth between adjacent measurements for the Max Change Rate.

Table 3-12: LL1 Temperature Vertical Profiles in 2011

Depth (meters)	Water Temperature (°C)						
	5/23/2011	6/20/2011	7/11/2011	7/25/2011	8/22/2011	9/12/2011	9/26/2011
0.5	12.84	15.92	19.86	**21.28**	**21.70**	**20.97**	17.89
1.0	12.08	14.84	19.80	**21.11**	**21.65**	**20.92**	17.89
2.0	11.82	14.76	19.70	**20.80**	**21.58**	**20.89**	17.88
3.0	11.82	14.71	19.42	**20.20**	**21.53**	**20.83**	17.86
4.0	11.72	14.35	18.98	19.54	**21.45**	**20.62**	17.85
5.0	11.70	13.99	18.68	19.11	**21.40**	**20.59**	17.84
6.0	11.69	13.78	18.64	18.74	**21.31**	**20.18**	17.75
7.0	11.67	13.71	18.58	18.44	19.59	19.18	17.67
8.0	11.68	13.52	18.23	18.21	18.65	18.33	17.18
9.0	11.66	13.47	18.07	18.06	18.40	17.96	17.05
10.0	11.62	13.46	17.90	18.02	18.09	17.66	16.26
11.0	11.64						
12.0	11.63	13.32	17.68	17.92	17.83	17.24	16.08
15.0	11.61	13.30	17.59	17.56	17.59	16.84	15.81
18.0	11.59	13.30	17.49	17.43	17.40	16.60	15.46
21.0	11.58	13.26	16.50	17.36	17.14	16.29	15.19
24.0	11.53	13.25	16.17	17.31	16.61	15.83	15.00
27.0	11.07	13.21	15.86	17.24	16.42	15.49	14.77
30.0	10.56	13.20	15.25	17.01	16.34	15.41	
32.0		13.20		16.61	16.35	15.40	
33.0	10.23		15.13			15.39	
Max Change (°C/m)[1]	1.52	2.16	0.44	0.66	1.72	1.00	0.79
Depth of Max Change Rate (m)[2]	0.75	0.75	3.50	3.50	6.50	6.50	9.50

Notes:

Data downloaded from Ecology's EIM database on 1/12/2012: http://www.ecy.wa.gov/eim/
Does not include results from field duplicates.
Shaded and bold values indicate an exceedance of the 20.0°C criterion.
1. The change rate in °C per meter of depth was calculated for each pair of adjacent measurement intervals in the table. This value repres
calculated change rate for each pair of adjacent measurement intervals, which does not incorporate the overall change per meter for adjace
are within 1 meter of each other.
2. Calculated as the midpoint depth between adjacent measurements for the Max Change Rate.

Table 3-13: LL0 Temperature Vertical Profiles in 2010

Depth (meters)	Water Temperature (°C)								
	5/17/2010	6/1/2010	6/29/2010	7/20/2010	8/9/2010	8/30/2010	9/13/2010	9/27/2010	10/12/2010
0.5	17.42	14.97	**21.16**	**22.03**	**23.51**	19.52	18.26	17.71	15.97
1.0	17.33	14.72	**21.13**	**21.86**	**23.44**	19.43	18.21	17.62	15.95
2.0	17.03	14.40	**21.02**	**21.76**	**23.24**	19.41	18.11	17.53	15.91
3.0	16.64	14.21	19.98	**21.58**	**23.06**	19.38	17.98	17.45	15.88
4.0	14.40	14.17	18.23	**21.22**	**23.02**	19.37	17.82	17.39	15.83
5.0	12.88	14.13	17.96	**20.79**	**22.94**	19.35	17.74	17.26	15.80
6.0	12.15	14.13	17.48	19.88	**21.80**	19.35	17.74	17.14	15.24
7.0	11.98	14.12	17.41	19.44	**20.22**	19.32	17.70	17.02	15.07
8.0	11.95	14.10	16.93	18.91	19.60	19.04	17.68	16.83	15.06
9.0	11.75	14.04	16.78	18.73	19.10	18.48	17.64	16.59	15.00
10.0	11.70	13.94	16.79	18.58	18.84	17.90	17.53	16.28	14.88
11.0					18.52				
12.0	11.44	13.31	16.64	18.11	18.35	17.50	16.89	15.76	14.70
15.0	10.79	13.16	16.49	17.70	17.97	17.26	16.12	15.19	14.64
18.0	10.58	12.90	16.00	17.33	17.76	17.13	15.73	14.96	14.55
21.0	10.07	12.80	15.63	16.95	17.48	16.90	15.39	14.79	14.49
24.0	9.89	12.75	15.33	16.67	17.28	16.71	15.16	14.72	14.50
27.0	9.76	12.66	15.08	16.36	17.00	16.58	15.05	14.64	14.47
30.0	9.65	12.48	14.93	15.91	16.47	16.28	14.89	14.61	14.38
33.0	9.22	12.26	14.76	15.28	15.71	15.78	14.63	14.59	14.23
36.0	9.19	11.39	14.56	14.55	14.96	14.84	14.63	14.57	14.21
39.0	9.13	10.56	14.31	14.25	14.38	14.30	14.66	14.53	14.17
42.0	9.07		14.07	14.05	14.09	13.90	14.43	14.45	14.12
43.7	9.07								
45.0			14.04	13.98	14.00	13.75	13.86	14.42	14.12
46.5					13.89				
48.0				13.89					14.10
51.0									14.10
Max Change (°C/m)[1]	2.24	0.50	1.75	0.91	1.58	0.58	0.32	0.31	0.56
Depth of Max Change Rate (m)[2]	3.50	0.75	3.50	5.50	6.50	9.50	11.00	9.50	5.50

Notes:

Data downloaded from Ecology's EIM database on 1/12/2012: http://www.ecy.wa.gov/eim/
Does not include results from field duplicates.
Shaded and bold values indicate an exceedance of the 20.0°C criterion.
1. The change rate in °C per meter of depth was calculated for each pair of adjacent measurement intervals in the table. This value represents the maximum calculated change rate for each pair of adjacent measurement intervals, which does not incorporate the overall change per meter for adjacent measurements that are within 1 meter of each other.
2. Calculated as the midpoint depth between adjacent measurements for the Max Change Rate.

Table 3-14: LL0 Temperature Vertical Profiles in 2011

Depth (meters)	Water Temperature (°C)							
	5/23/2011	6/6/2011	6/20/2011	7/11/2011	7/25/2011	8/22/2011	9/12/2011	9/26/2011
0.5	12.06	12.81	14.93	**21.34**	**21.15**	**21.85**	**20.56**	17.91
1.0	12.60	12.55	14.77	**21.12**	**21.10**	**21.84**	**20.54**	17.91
2.0	11.92	12.38	14.52	**20.68**	**21.01**	**21.75**	**20.52**	17.91
3.0	11.38	12.22	14.39	19.89	**20.56**	**21.65**	**20.47**	17.91
4.0	11.36	11.93	14.30	19.10	**20.03**	**21.47**	**20.46**	17.90
5.0	11.36	11.74	13.69	18.91	19.53	**21.16**	**20.06**	17.58
6.0	11.27	11.71	13.63	18.71	19.37	**20.18**	19.22	16.78
7.0	11.22	11.69	13.60	18.47	18.26	19.08	18.52	16.62
8.0	11.17	11.70	13.58	18.37	18.05	18.58	18.00	16.52
9.0	11.19	11.67	13.66	18.19	17.95	18.30	17.70	16.40
10.0	11.20	11.68	13.53	18.02	17.90	18.10	17.33	16.28
12.0	11.07	11.64	13.50	17.80	17.85	17.73	17.11	16.01
13.0	11.03							
15.0	10.97	11.51	13.15	17.65	17.67	17.47	16.76	15.78
18.0	10.93	11.50	13.14	17.05	17.54	17.24	16.38	15.66
21.0	10.89	11.48	13.14	16.53	17.41	17.12	16.01	15.51
24.0	10.84	11.40	13.15	16.14	17.25	16.91	15.78	15.30
27.0	10.90	11.33	13.10	15.88	17.11	16.73	15.60	15.11
30.0	10.77	11.32	13.09	15.68	16.93	16.50	15.52	15.00
33.0	10.73	11.32	13.08	15.48	16.46	16.48	15.48	14.93
36.0	10.52	11.32	13.05	15.24	15.78	16.42	15.45	14.93
39.0	10.41	11.32	13.03	15.09	15.25	15.42	15.44	14.89
42.0	10.21	11.32	13.04	14.95	14.95	14.84	15.36	14.88
44.0			13.04		14.87	14.70	15.34	
45.0	10.19	11.31		14.90			15.29	14.87
48.0	10.19	11.30		14.86				
51.0	10.18	11.30		14.86				
54.0	10.14			14.84				
Max Change (°C/m)[1]	1.08	0.52	0.61	0.79	1.11	1.10	0.84	0.80
Depth of Max Change Rate (m)[2]	0.75	0.75	4.50	2.5 and 3.5	6.50	6.50	5.50	5.50

Notes:

Data downloaded from Ecology's EIM database on 1/12/2012: http://www.ecy.wa.gov/eim/
Does not include results from field duplicates.
Shaded and bold values indicate an exceedance of the 20.0°C criterion.
1. The change rate in °C per meter of depth was calculated for each pair of adjacent measurement intervals in the table. This value represents the maximu calculated change rate for each pair of adjacent measurement intervals, which does not incorporate the overall change per meter for adjacent measuremer within 1 meter of each other.
2. Calculated as the midpoint depth between adjacent measurements for the Max Change Rate.

Table 3-15: LLFB Daily Maximum Temperature in 2010

Date	Maximum Daily Water Temperature (°C)
8/31/2010	19.26
9/1/2010	19.27
9/2/2010	19.71
9/3/2010	**20.13**
9/4/2010	19.88
9/5/2010	18.28
9/6/2010	18.78
9/7/2010	18.66
9/8/2010	18.38
9/9/2010	18.53
9/10/2010	18.12
9/11/2010	18.03
9/12/2010	18.81
9/13/2010	18.61
9/14/2010	18.55
9/15/2010	18.36
9/16/2010	17.98

Notes:

Shaded and bold values indicate an exceedance of the 20.0°C criterion.
Data collected as part of Avista's Detailed DO Phase II Feasibility and Implementation Plan.

Table 3-16: LLFB Daily Maximum Temperature in 2011

Day	Maximum Daily Water Temperature (°C)								
	March	April	May	June	July	August	September	October	November
1	Not monitored	6.06	7.90	12.35	15.61	**20.75**	**21.65**	17.50	11.95
2		6.01	7.62	12.42	15.98	**21.08**	**20.81**	17.68	11.65
3		6.11	7.67	12.42	16.03	**21.24**	**20.65**	17.49	Not monitored
4		6.18	7.97	12.56	No data reported[1]	**21.18**	**21.44**	17.05	
5		6.23	8.22	11.95		**20.52**	**21.23**	16.79	
6		6.08	8.44	12.45		**21.10**	**21.44**	16.63	
7		5.81	8.33	13.59		**21.31**	**21.69**	16.53	
8		5.78	8.67	13.32		**22.97**	**21.84**	16.31	
9		5.60	8.65	13.23		**22.44**	**21.98**	16.08	
10		5.58	9.08	13.10		**21.93**	**22.10**	15.79	
11		5.63	9.17	13.14		**21.69**	**21.93**	15.69	
12		5.87	9.54	13.39		**21.05**	**21.50**	15.17	
13		5.97	10.37	13.70		**21.79**	**21.35**	15.16	
14		5.97	11.33	14.33	17.98	**20.90**	**21.55**	14.82	
15		6.04	10.83	14.29	17.85	**20.95**	**20.89**	14.92	
16		6.09	10.39	14.40	17.95	**20.28**	**20.08**	14.72	
17		6.08	10.84	14.56	17.88	**20.48**	19.32	14.42	
18		6.35	10.92	14.45	17.71	**20.21**	18.98	14.39	
19		6.43	10.74	14.00	17.58	**20.26**	19.07	14.20	
20		6.60	10.97	13.90	17.87	**20.58**	19.20	14.14	
21		6.86	11.00	13.70	18.22	**21.00**	19.13	13.90	
22		7.20	11.26	14.01	18.50	**21.40**	19.01	13.78	
23		7.02	11.70	14.03	18.52	**20.60**	19.34	13.74	
24	5.18	6.87	12.25	14.41	18.60	**21.65**	19.43	13.50	
25	5.34	7.51	12.26	15.15	18.76	**20.94**	18.53	13.34	
26	5.30	6.93	11.96	15.22	19.04	**20.98**	18.30	13.11	
27	5.40	7.47	11.98	15.31	**20.15**	19.45	18.08	12.83	
28	5.46	7.36	11.99	14.96	**20.42**	**20.82**	17.91	12.62	
29	5.59	7.61	12.01	14.69	**20.60**	**20.69**	17.76	12.43	
30	5.75	7.84	12.05	14.98	**21.34**	**22.14**	17.98	12.26	
31	5.79	--	12.39	--	**21.74**	**21.41**	--	12.10	

Notes:

-- = not applicable

Shaded and bold values indicate an exceedance of the 20.0°C criterion.

Data collected as part of Avista's Washington Total Dissolved Gas Monitoring Plan and Detailed DO Phase II Feasibility and Implementation Plan.

1. Qualifier of 996 indicating that the monitoring instrument did not report any data during this time.

Table 3-17: LLTR Daily Maximum Temperature in 2010

Day	Maximum Daily Water Temperature (°C)					
	April	May	June	July	August	September
1	Not monitored	10.38	13.85	17.59	Not monitored	17.96
2		10.63	13.80	17.53		18.30
3		9.97	13.63	Not monitored		18.48
4		9.99	13.99			No data reported[1]
5		10.93	14.18			
6		11.12	13.91			17.95
7		10.97	13.97			17.66
8		10.88	14.49			17.55
9		10.50	14.15			17.40
10		10.25	14.24			17.11
11		No data reported[1]	14.49			17.00
12			14.69			17.34
13			14.74			17.21
14			14.58			17.02
15			15.12			16.83
16			14.96			16.87
17			15.13			Not monitored
18	8.32		15.48			
19	8.86		15.55			
20	9.02		15.39		19.21	
21	8.79		15.23		19.24	
22	No data reported[1]		15.70		19.11	
23			15.66		19.27	
24			15.71		19.07	
25	9.99		15.81		19.23	
26	9.98		16.62		18.96	
27	10.56		17.15		18.62	
28	9.97		17.54		18.81	
29	9.99		17.31		18.57	
30	10.45	13.28	17.19		18.32	
31	--	13.46	--		18.29	

Notes:

-- = not applicable

Shaded and bold values indicate an exceedance of the 20.0°C criterion.

Data collected as part of Avista's Washington Total Dissolved Gas Monitoring Plan and Detailed DO Phase II Feasibility and Implementation Plan.

1. Qualifier of 996 indicating that the monitoring instrument did not report any data during this time.

Table 3-18: LLTR Daily Maximum Temperature in 2011

Day	Maximum Daily Water Temperature (°C)								
	March	April	May	June	July	August	September	October	November
1	Not monitored	5.83	7.72	12.11	15.75	18.63	18.79	16.27	11.79
2		5.84	7.58	12.29	16.00	18.65	18.34	16.03	11.56
3		5.97	7.53	12.25	15.88	18.68	18.50	16.03	Not monitored
4		6.11	8.10	12.28	16.17	18.77	18.42	15.95	
5		6.13	8.08	12.15	16.24	18.95	18.40	15.81	
6		6.04	8.30	12.47	16.64	18.95	18.29	15.75	
7		5.76	8.44	13.20	17.22	19.28	18.13	15.68	
8		5.48	8.65	13.09	16.63	19.35	18.10	15.58	
9		5.47	8.86	13.06	17.76	19.27	18.28	15.49	
10		5.47	9.18	13.10	17.88	19.24	18.27	15.19	
11		5.49	9.88	13.15	17.94	19.19	18.00	15.21	
12		5.69	9.61	13.71	17.93	19.56	17.89	14.64	
13		5.76	9.99	13.64	18.41	19.10	18.06	14.58	
14		5.82	10.67	14.26	18.38	19.19	18.28	14.45	
15		5.91	10.59	14.12	18.10	18.82	18.15	14.38	
16		5.99	10.34	14.28	17.94	19.13	17.67	14.21	
17		5.94	10.55	14.54	18.04	18.84	17.37	13.99	
18		6.15	10.79	14.37	18.54	18.60	17.24	13.87	
19		6.25	10.69	14.00	18.04	18.69	17.12	13.71	
20		6.38	11.04	14.07	18.11	18.83	17.19	13.56	
21		6.47	10.86	14.49	18.16	18.91	17.10	13.39	
22		6.82	11.07	14.30	18.17	18.97	17.08	13.38	
23		6.82	11.51	14.80	18.25	18.53	17.01	13.20	
24	5.21	7.10	11.95	14.64	18.37	19.00	16.96	12.95	
25	5.17	7.12	11.92	15.00	18.29	19.01	16.91	12.77	
26	5.18	6.71	11.88	15.29	18.18	18.88	16.68	12.58	
27	5.25	7.20	11.89	15.30	18.45	18.69	16.78	12.50	
28	5.26	7.21	11.91	15.29	18.37	18.65	16.51	12.25	
29	5.44	7.48	11.89	15.22	18.45	18.89	16.36	12.12	
30	5.55	7.54	11.79	15.28	18.48	18.76	16.22	12.06	
31	5.62	--	12.05	--	18.80	18.63	--	12.00	

Notes:

-- = not applicable

Shaded and bold values indicate an exceedance of the 20.0°C criterion.

Data collected as part of Avista's Washington Total Dissolved Gas Monitoring Plan and Detailed DO Phase II Feasibility and Implementation Plan.

Table 3-19: Spokane River at Long Lake (54A070) Temperature Monitored in 2010

Date Time	Time Zone	Water Temperature (°C)
2/8/2010 18:00	PST	5.6
3/8/2010 15:25	PST	8.2
5/10/2010 15:45	PDT	10.2
6/14/2010 16:00	PDT	14.7
7/13/2010 15:50	PDT	17.9
8/16/2010 17:30	PDT	19.3

Notes:

Data downloaded from Ecology's website on 1/12/2012:
http://www.ecy.wa.gov/apps/watersheds/riv/station.asp?theyear=&tab=final_data&scrolly=238&wria=54&sta=54A070
No 2011 data were available online as of 1/12/2012.
Shaded and bold values indicate an exceedance of the 20.0°C criterion.

Table 4-1: Comparison of LLTR 2010 Values to Tribe WQ Standards

Day	7-DADM (°C)					
	April	May	June	July	August	September
1	Not monitored	10.54	#N/A	17.94	#N/A	#N/A
2		10.62	13.74	18.17	#N/A	#N/A
3		10.73	13.83	#N/A	#N/A	#N/A
4		10.80	13.90	#N/A	#N/A	#N/A
5		10.87	14.00	#N/A	#N/A	#N/A
6		10.85	14.05	#N/A	#N/A	#N/A
7		10.78	14.13	#N/A	#N/A	#N/A
8		#N/A	14.20	#N/A	#N/A	#N/A
9		#N/A	14.28	#N/A	#N/A	**17.43**
10		#N/A	14.40	#N/A	#N/A	**17.32**
11		#N/A	14.48	#N/A	#N/A	**17.23**
12		#N/A	14.57	#N/A	#N/A	**17.13**
13		#N/A	14.69	#N/A	#N/A	**17.05**
14		#N/A	14.82	#N/A	#N/A	#N/A
15		#N/A	14.96	#N/A	#N/A	#N/A
16		#N/A	15.08	#N/A	#N/A	#N/A
17		#N/A	15.17	#N/A	#N/A	Not monitored
18	#N/A	#N/A	15.27	#N/A	#N/A	
19	#N/A	#N/A	15.35	#N/A	#N/A	
20	#N/A	#N/A	15.45	#N/A	18.45	
21	#N/A	#N/A	15.53	#N/A	**18.72**	
22	#N/A	#N/A	15.58	#N/A	**18.95**	
23	#N/A	#N/A	15.73	#N/A	**19.16**	
24	#N/A	#N/A	15.98	#N/A	**19.07**	
25	#N/A	#N/A	16.31	#N/A	**19.01**	
26	#N/A	#N/A	16.54	#N/A	**18.93**	
27	#N/A	#N/A	16.76	#N/A	**18.80**	
28	10.42	#N/A	17.03	#N/A	**18.69**	
29	10.47	#N/A	17.28	#N/A	18.50	
30	10.51	#N/A	17.65	#N/A	18.41	
31	--	#N/A	--	#N/A	18.39	

Notes:

-- = not applicable; #N/A - not enough days to calculate the 7-DADM
Shaded and bold values indicate an exceedance of the Tribe's 7-DADM Criteria.
Data collected as part of Avista's Washington Total Dissolved Gas Monitoring Plan and Detailed DO Phase II Feasibility and Implementation Plan.

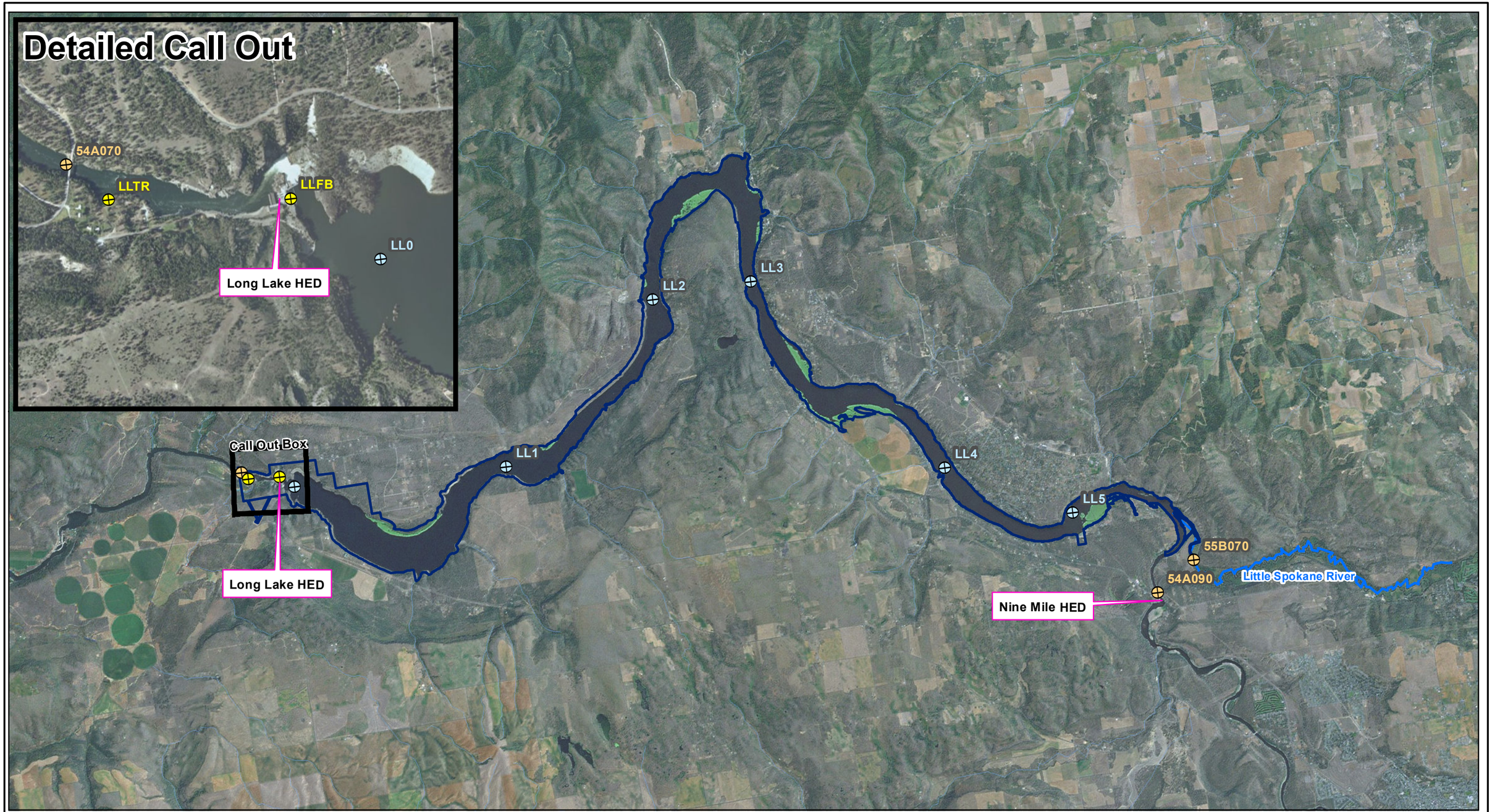
Table 4-2: Comparison of LLTR 2011 Values to Tribe WQ Standards

Day	7-DADM (°C)								
	March	April	May	June	July	August	September	October	November
1	Not monitored	5.77	7.59	12.09	15.66	**18.64**	**18.62**	**16.20**	#N/A
2		5.86	7.72	12.13	15.79	**18.71**	**18.55**	**16.10**	#N/A
3		5.93	7.84	12.23	15.99	**18.78**	**18.48**	**16.01**	Not monitored
4		5.95	7.96	12.39	16.27	**18.84**	**18.41**	**15.93**	
5		5.90	8.10	12.53	16.40	**18.95**	**18.31**	**15.83**	
6		5.85	8.28	12.64	16.65	**19.04**	**18.30**	**15.76**	
7		5.78	8.52	12.76	16.93	**19.12**	**18.27**	**15.64**	
8		5.69	8.77	12.89	17.19	**19.18**	**18.21**	**15.53**	
9		5.63	8.99	13.11	17.43	**19.26**	**18.14**	**15.36**	
10		5.59	9.29	13.28	17.68	**19.28**	**18.10**	**15.20**	
11		5.60	9.61	13.43	17.85	**19.27**	**18.13**	**15.02**	
12		5.66	9.89	13.58	18.06	**19.20**	**18.13**	**14.85**	
13		5.73	10.10	13.75	18.08	**19.18**	**18.05**	**14.67**	
14		5.80	10.29	13.96	18.11	**19.12**	**17.92**	**14.49**	
15		5.89	10.42	14.13	18.19	**19.03**	**17.81**	**14.30**	
16		5.97	10.58	14.17	18.21	**18.91**	**17.70**	**14.17**	
17		6.06	10.67	14.23	18.16	**18.87**	**17.57**	**14.02**	
18		6.16	10.69	14.27	18.13	**18.83**	**17.41**	**13.87**	
19		6.29	10.76	14.29	18.14	**18.85**	**17.25**	**13.73**	
20		6.40	10.93	14.37	18.19	**18.77**	**17.16**	**13.59**	
21		6.57	11.13	14.38	18.23	**18.79**	**17.10**	**13.44**	
22		6.71	11.29	14.47	18.20	**18.85**	**17.05**	**13.28**	
23		6.77	11.46	14.66	18.22	**18.88**	**16.99**	**13.12**	
24	#N/A	6.89	11.58	14.83	18.27	**18.86**	**16.93**	**12.97**	
25	#N/A	7.00	11.73	14.95	18.30	**18.82**	**16.85**	**12.80**	
26	#N/A	7.09	11.85	15.08	18.34	**18.81**	**16.74**	**12.62**	
27	5.29	7.19	11.89	15.15	18.37	**18.84**	**16.63**	**12.46**	
28	5.35	7.28	11.90	15.30	18.43	**18.79**	**16.53**	**12.33**	
29	5.45	7.35	11.93	15.45	18.48	**18.76**	**16.41**	**12.19**	
30	5.54	7.47	11.99	15.53	**18.55**	**18.68**	**16.31**	**12.04**	
31	5.64	--	12.04	--	**18.58**	**18.65**	--	#N/A	

Notes:

-- = not applicable; #N/A - not enough days to calculate the 7-DADM
Shaded and bold values indicate an exceedance of the Tribe's 7-DADM Criteria.
Data collected as part of Avista's Washington Total Dissolved Gas Monitoring Plan and Detailed DO Phase II Feasibility and Implementation Plan.

FIGURES



LEGEND

- Long Lake HED Boundary
- Little Spokane River

Temperature Monitoring Stations

Sampling Entity

- Avista
- Ecology
- Ecology and Avista

0 1 2
Miles

Map Projection:
NAD 1983 StatePlane Washington
North FIPS 4601 Feet

Source:
ESRI (Aerial Imagery, Little Spokane River),
Avista (Avista HED), Golder Associates (Long Lake Boundary,
Tempurature Monitoring Locations)

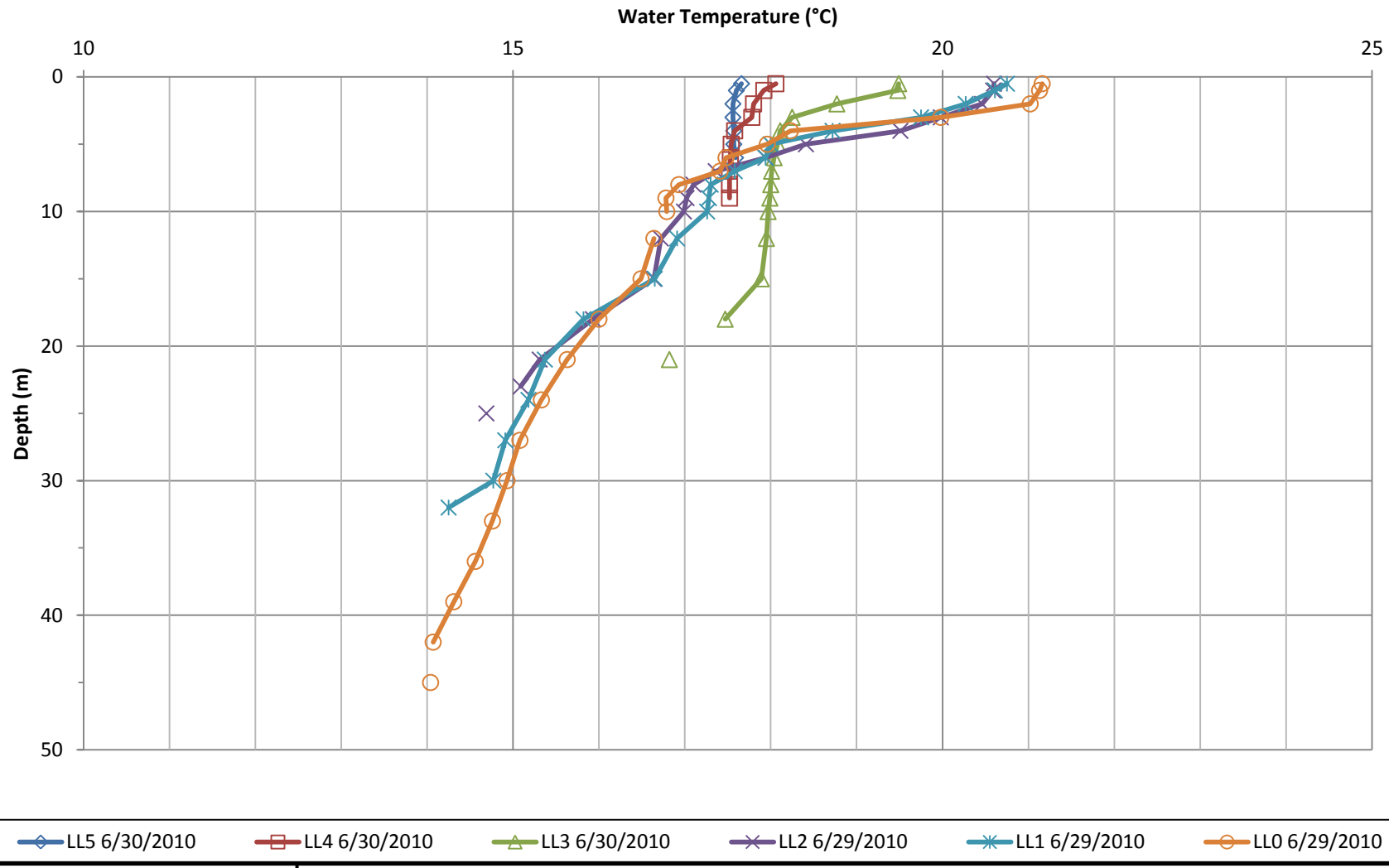
N

This figure was originally produced in color. Reproduction in black and white may result in a loss of information.

FIGURE **2-1**
Long Lake HED 2010 and 2011 Temperature Monitoring Stations

Path: S:\GIS\Projects\10393119_AvistaAquaticWeeds\MXD\LakeSpokane_Temp_Monitoring_Sites Fig_2_1.mxdGLEHMAN

Golder Associates



Golder Associates

Title	Lake Spokane Temperature Vertical Profiles, late June 2010		
Project Name	LL HED Temp Monitoring Report	Project No.	073-93081-03.100
Client Name	Avista	Date	February 29, 2012

FIGURE 3-1

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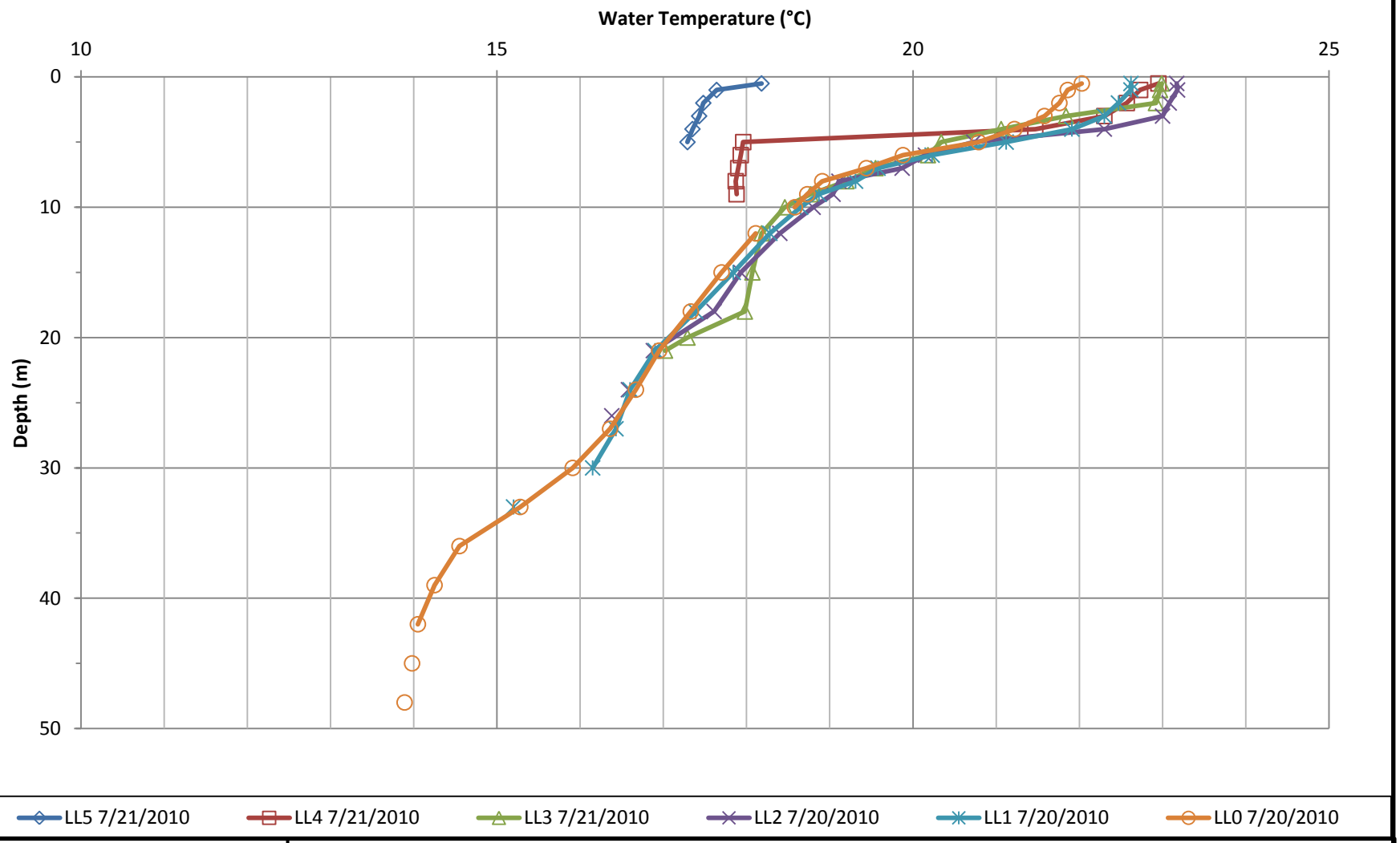

Golder Associates

Title	Lake Spokane Temperature Vertical Profiles, late July 2010		
Project Name	LL HED Temp Monitoring Report	Project No.	073-93081-03.100
Client Name	Avista	Date	February 29, 2012

FIGURE 3-2

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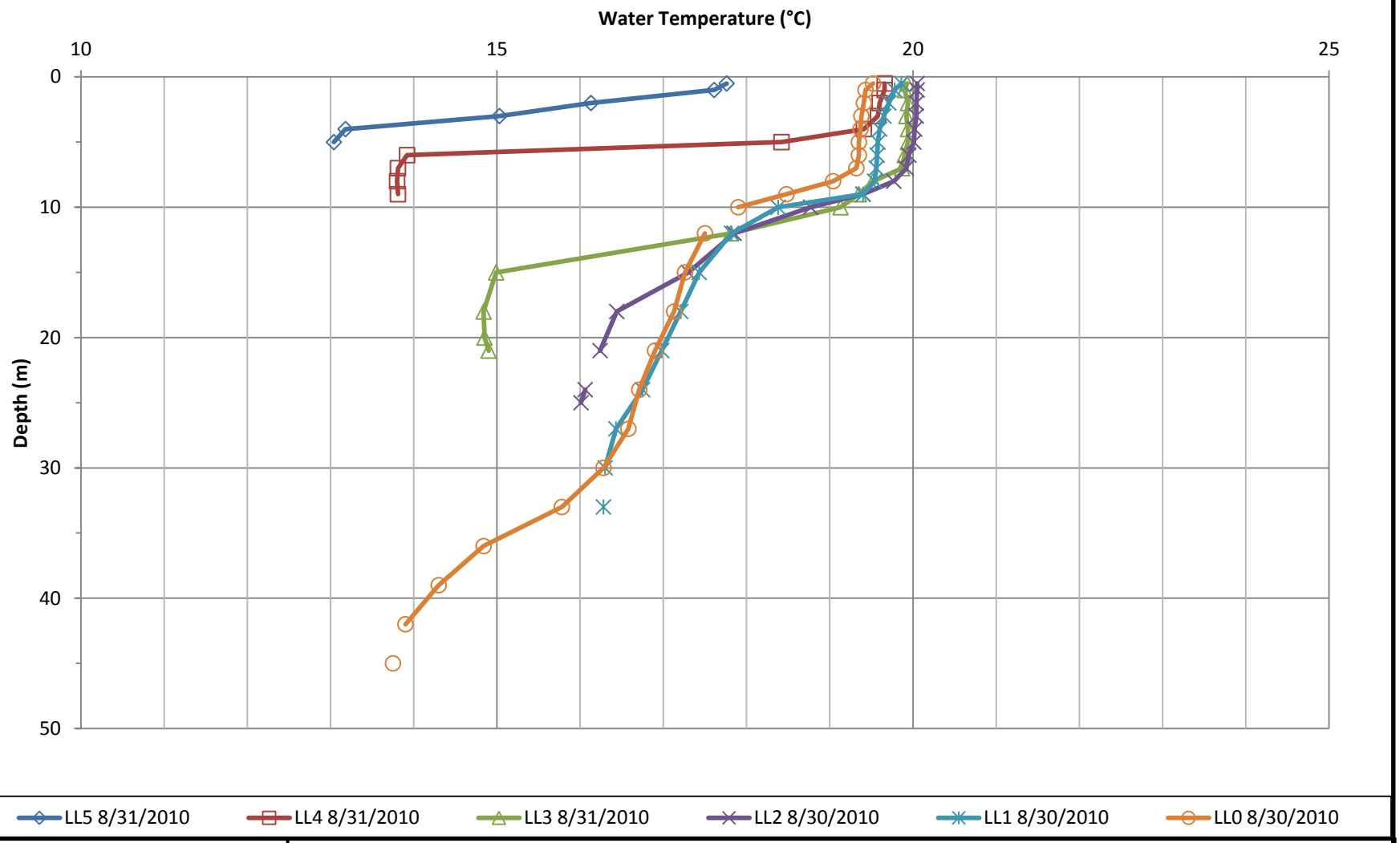

Golder Associates	Title: Lake Spokane Temperature Vertical Profiles, late August 2010		
	Project Name: LL HED Temp Monitoring Report	Project No.: 073-93081-03.100	FIGURE 3-3
	Client Name: Avista	Date: February 29, 2012	

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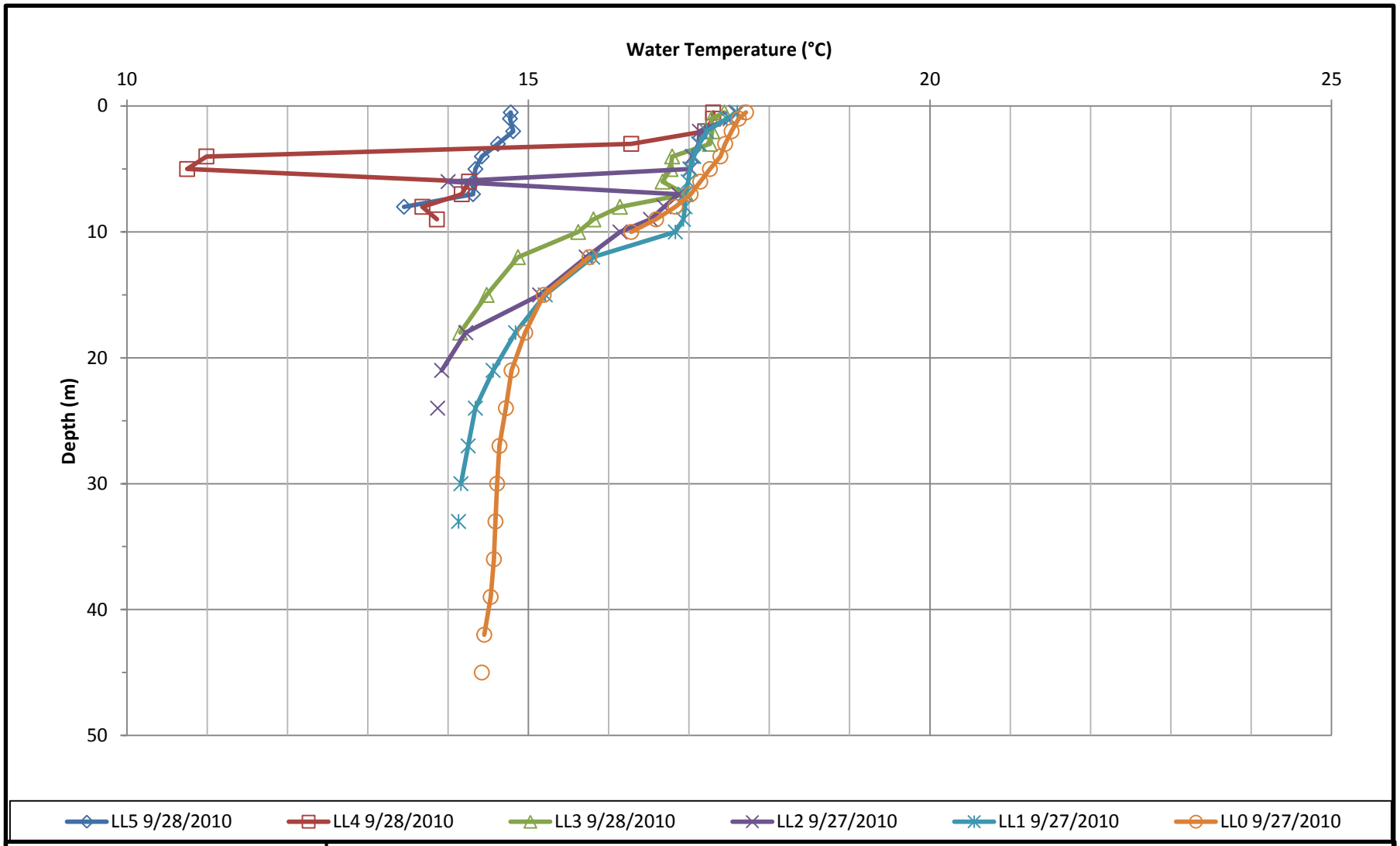

Golder Associates

Title	Lake Spokane Temperature Vertical Profiles, late September 2010		
Project Name	LL HED Temp Monitoring Report	Project No.	073-93081-03.100
Client Name	Avista	Date	February 29, 2012

FIGURE 3-4

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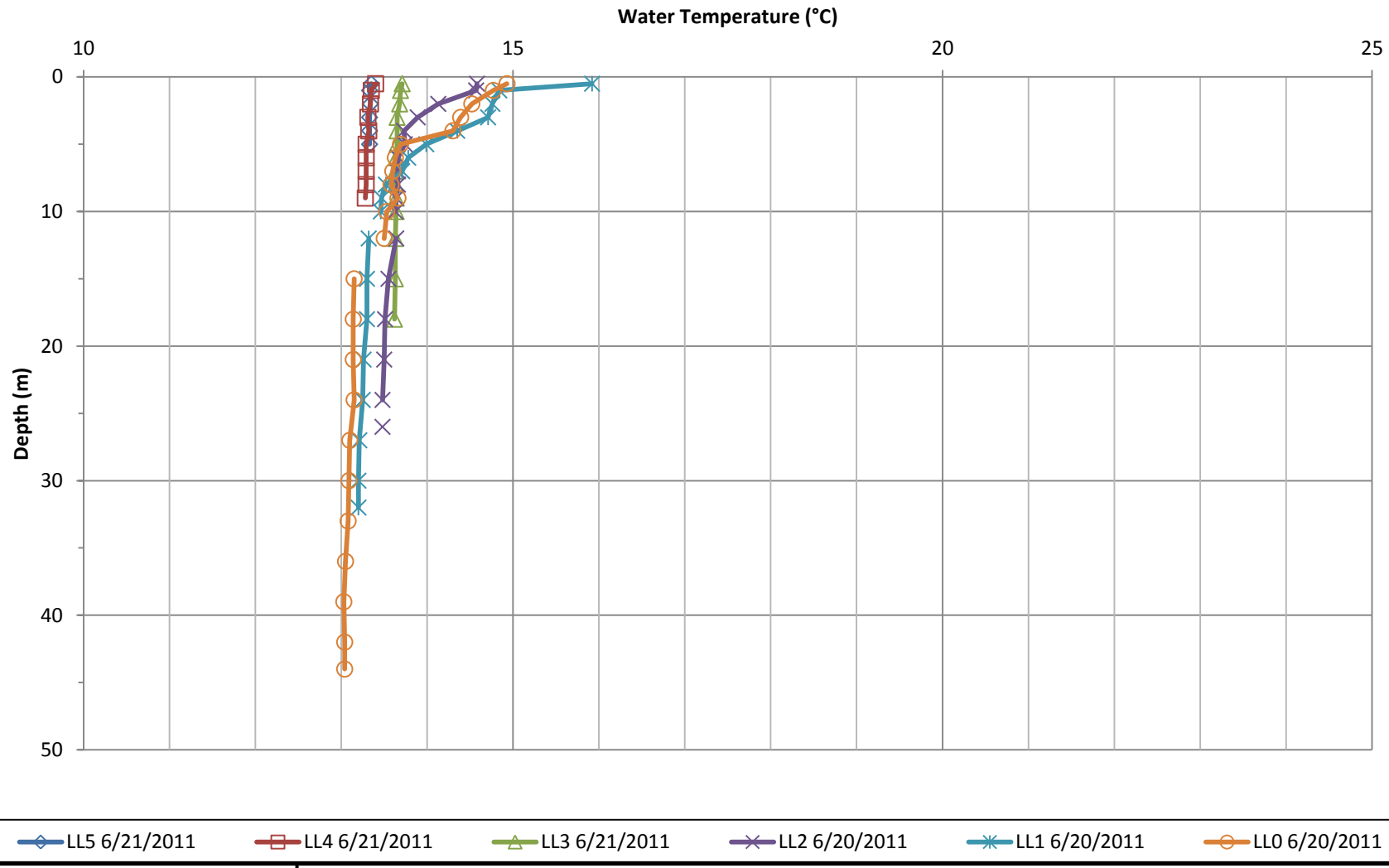

Golder Associates

Title	Lake Spokane Temperature Vertical Profiles, late June 2011		
Project Name	LL HED Temp Monitoring Report	Project No.	073-93081-03.100
Client Name	Avista	Date	February 29, 2012

FIGURE 3-5

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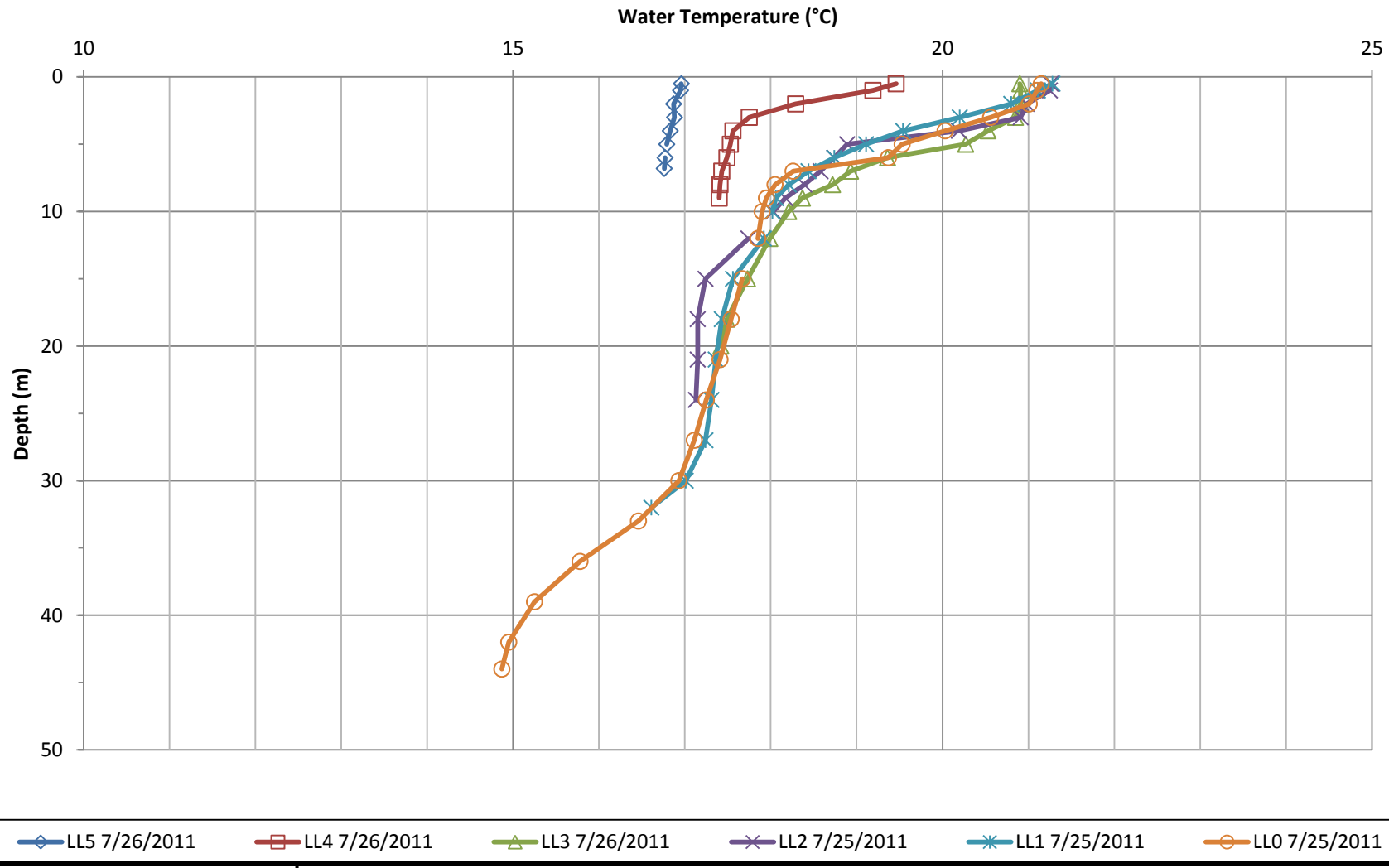

Golder Associates	Title: Lake Spokane Temperature Vertical Profiles, late July 2011		
	Project Name: LL HED Temp Monitoring Report	Project No.: 073-93081-03.100	FIGURE 3-6
	Client Name: Avista	Date: February 29, 2012	

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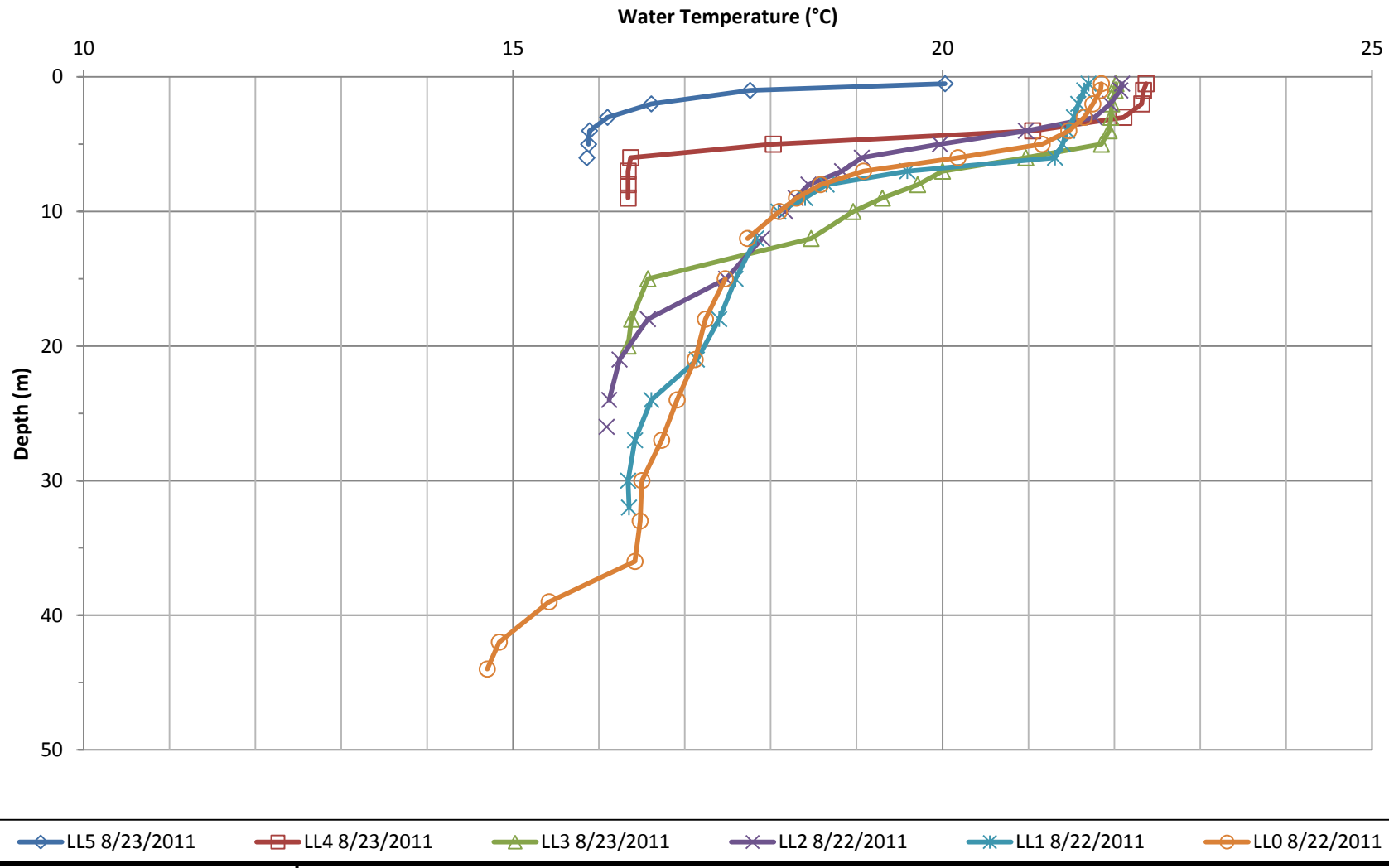

Golder Associates	Title: Lake Spokane Temperature Vertical Profiles, late August 2011		
	Project Name: LL HED Temp Monitoring Report	Project No.: 073-93081-03.100	FIGURE 3-7
	Client Name: Avista	Date: February 29, 2012	

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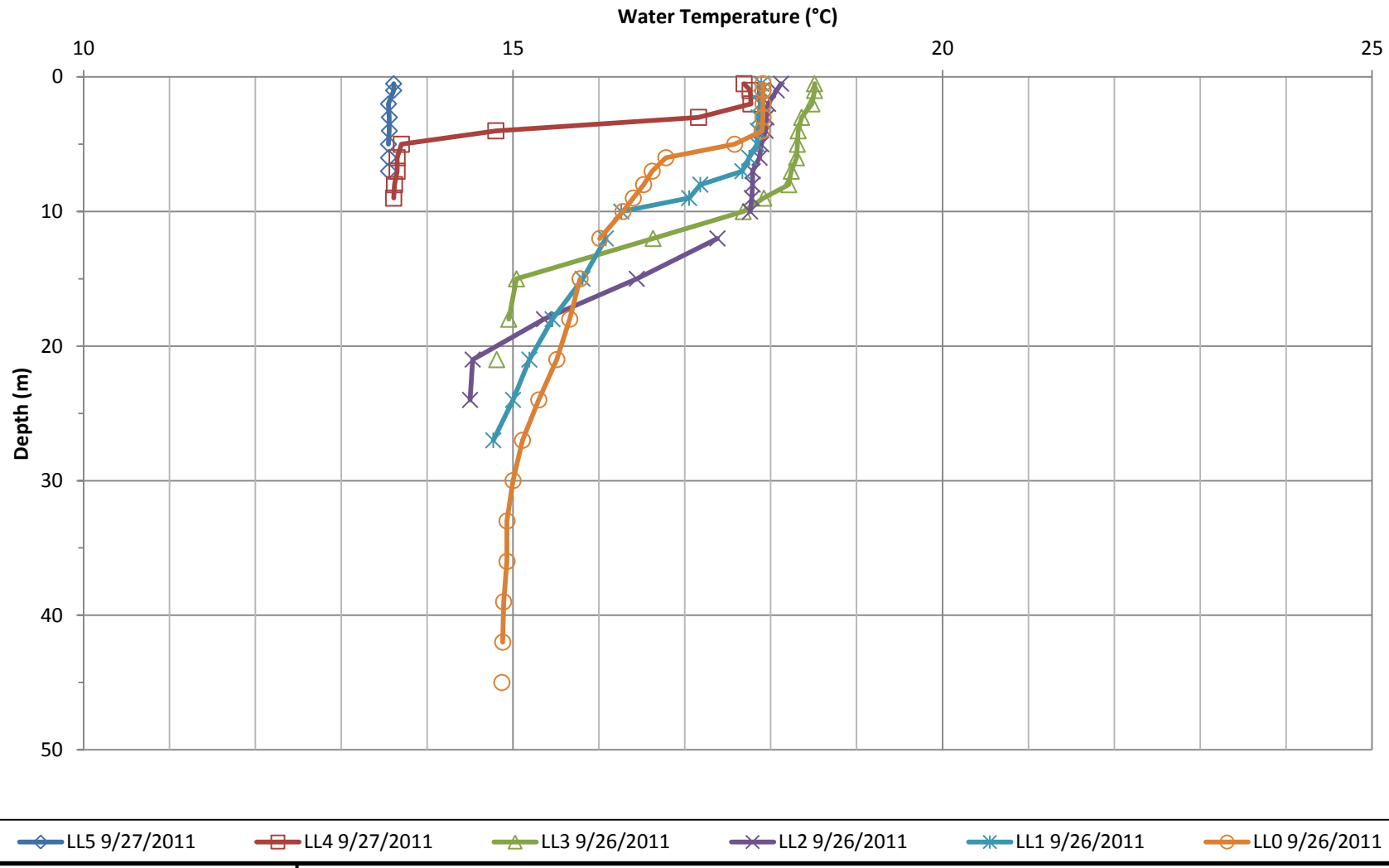
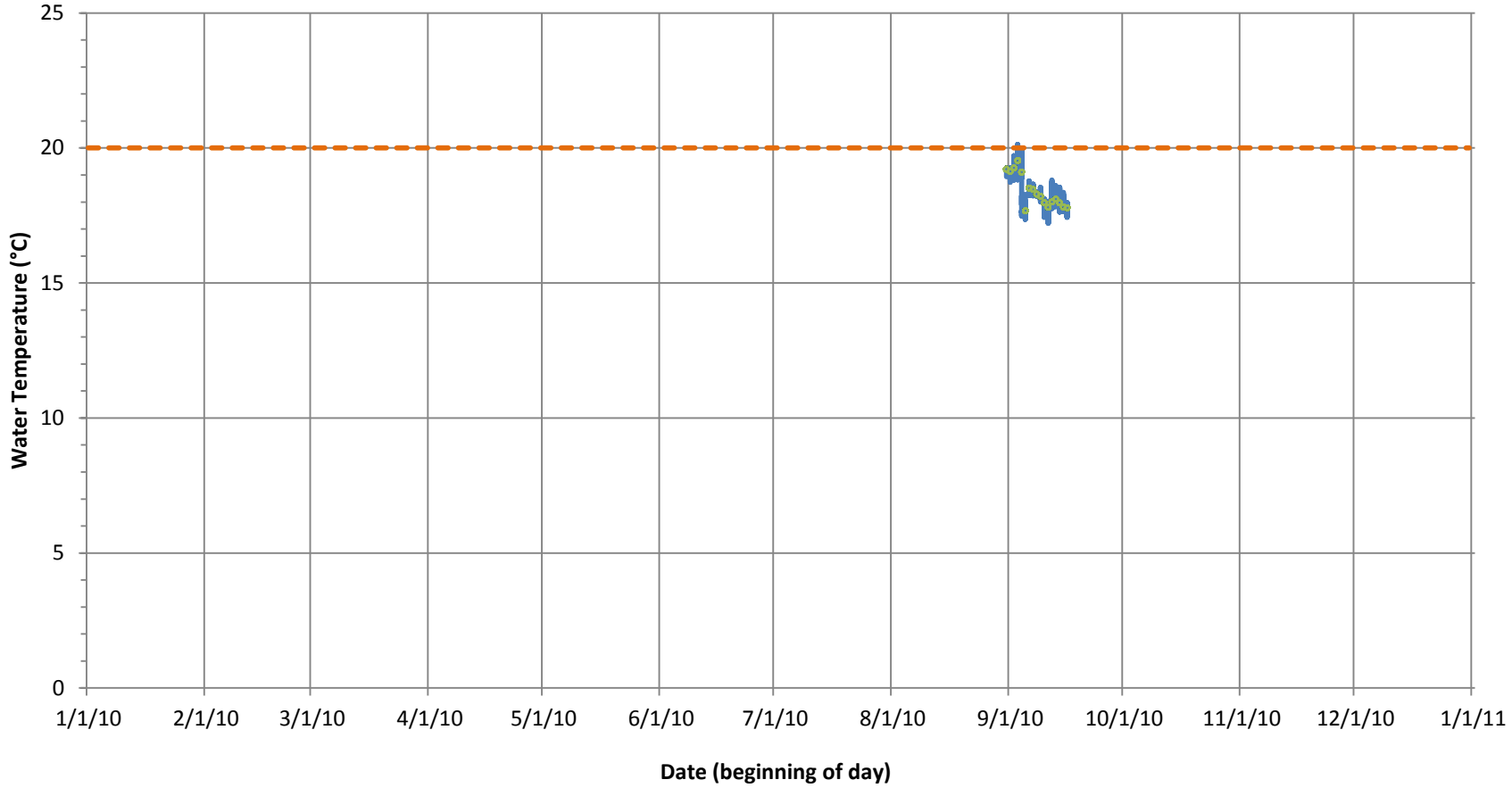


Golder Associates

Title	Lake Spokane Temperature Vertical Profiles, late September 2011		
Project Name	LL HED Temp Monitoring Report	Project No.	073-93081-03.100
Client Name	Avista	Date	February 29, 2012

FIGURE 3-8

J:\Doc-Dev\2007\073-93081 Avista_Mattax\x03\100\February 2012\022812blm1_Temp_WQAP_Tables_Figures_.xlsx

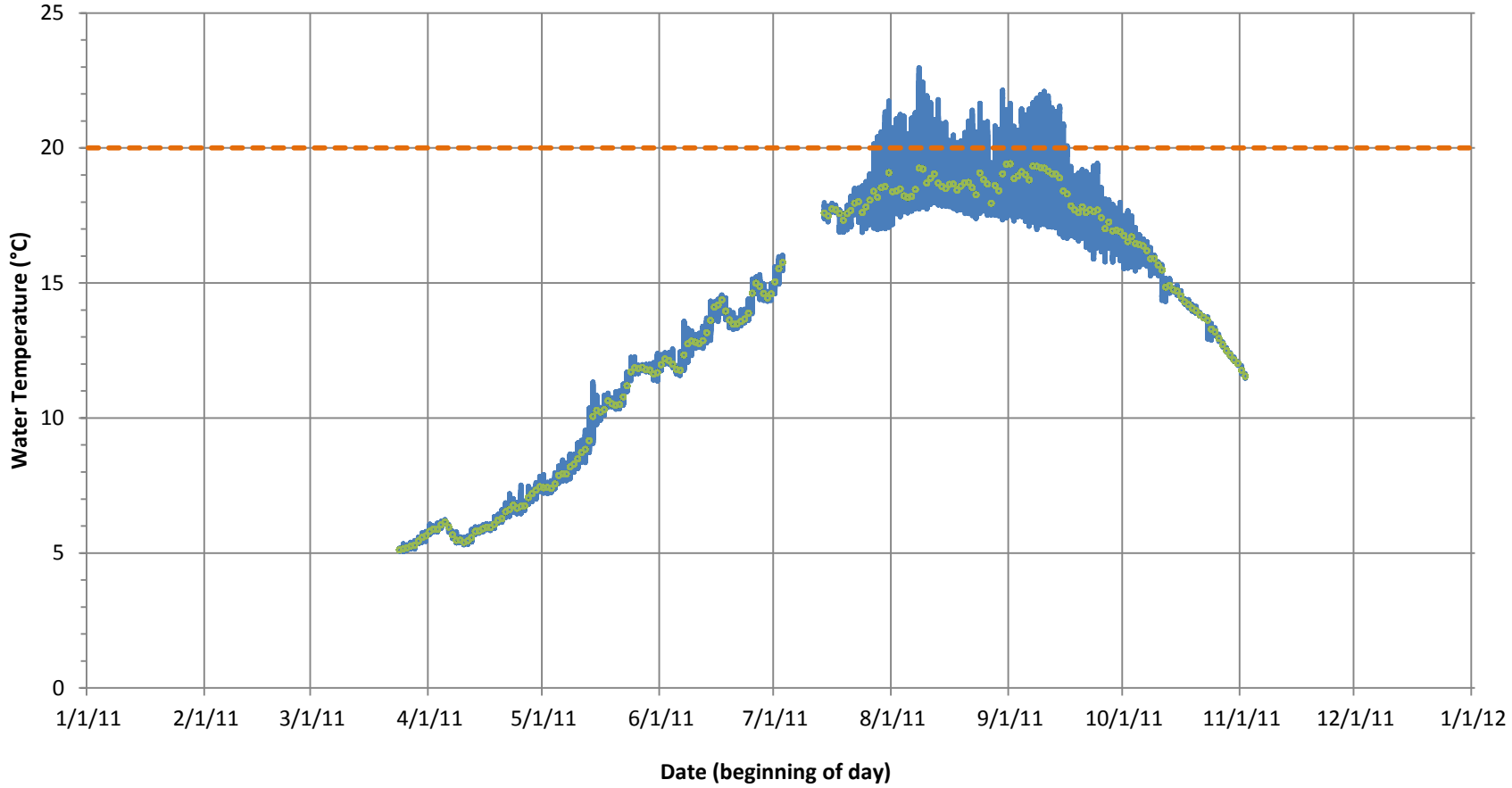


Golder Associates

Title	LLFB Temperature Time Series, 2010		
Project Name	LL HED Temp Monitoring Report	Project No.	073-93081-03.100
Client Name	Avista	Date	February 29, 2012

FIGURE 3-9

J:\Doc-Dev\2007\073-93081 Avista_Mattax\x03\100\February 2012\022812blm1_Temp_WQAP_Tables_Figures_.xlsx

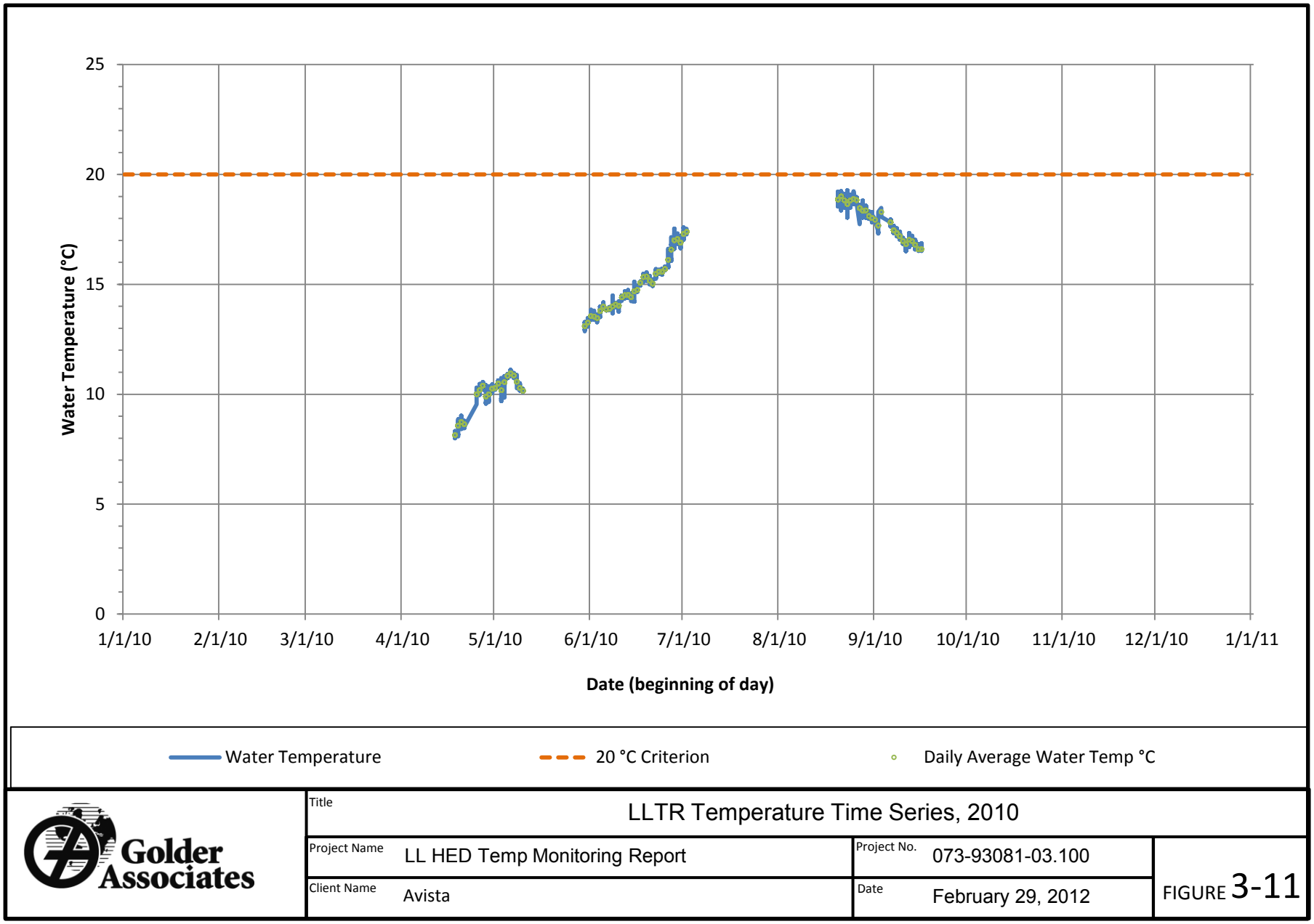


Golder Associates

Title	LLFB Temperature Time Series, 2011		
Project Name	LL HED Temp Monitoring Report	Project No.	073-93081-03.100
Client Name	Avista	Date	February 29, 2012

FIGURE 3-10

J:\Doc-Dev\2007\073-93081 Avista_Mattax\x03\100\February 2012\022812blm1_Temp_WQAP_Tables_Figures_.xlsx

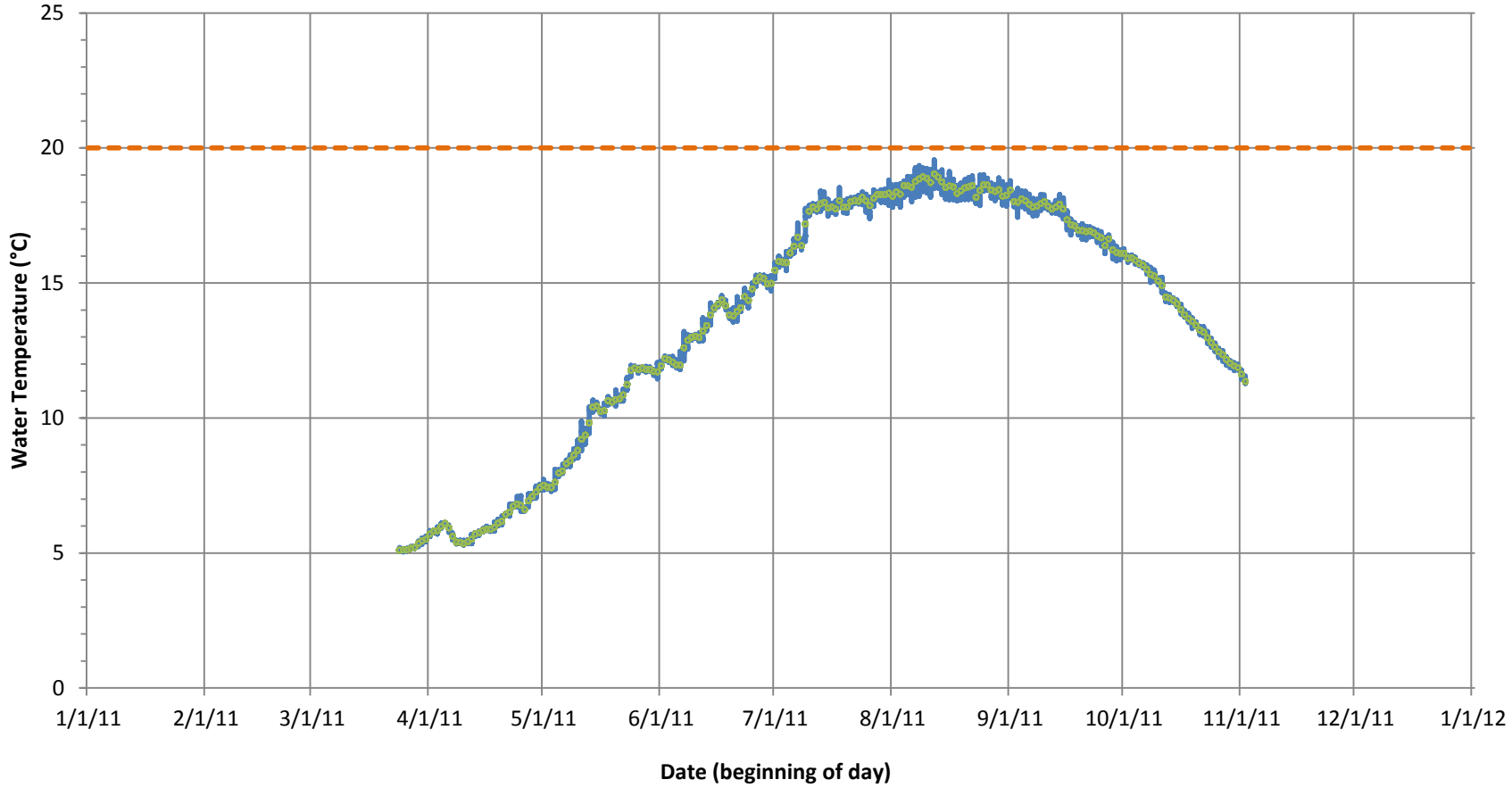


Golder Associates

Title	LLTR Temperature Time Series, 2010		
Project Name	LL HED Temp Monitoring Report	Project No.	073-93081-03.100
Client Name	Avista	Date	February 29, 2012

FIGURE 3-11

J:\Doc-Dev\2007\073-93081 Avista_Mattax\x03\100\February 2012\022812blm1_Temp_WQAP_Tables_Figures_.xlsx

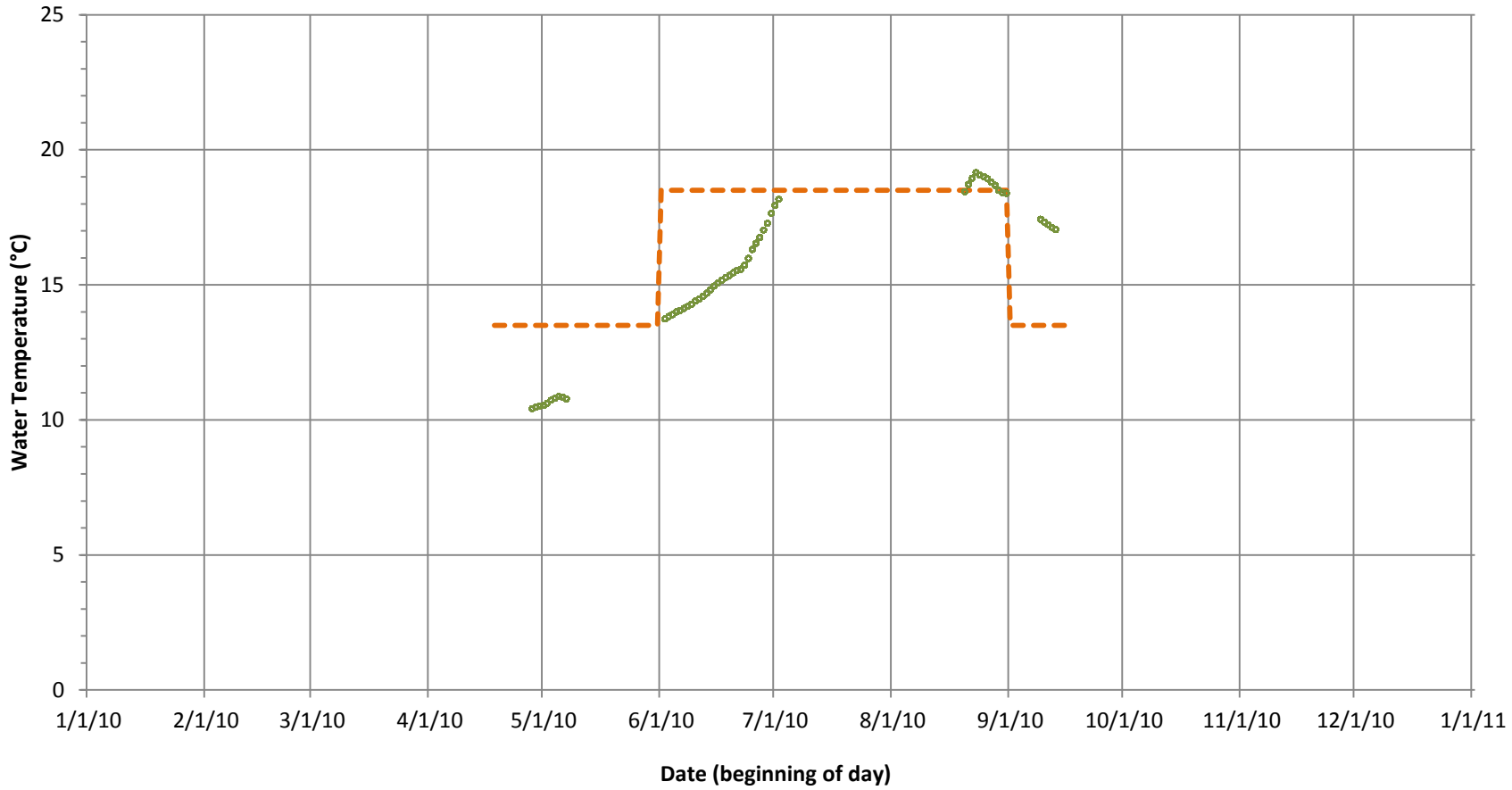


Golder Associates

Title	LLTR Temperature Time Series, 2011		
Project Name	LL HED Temp Monitoring Report	Project No.	073-93081-03.100
Client Name	Avista	Date	February 29, 2012

FIGURE 3-12

J:\Doc-Dev\2007\073-93081 Avista_Mattax\x03\100\February 2012\022812blm1_Temp_WQAP_Tables_Figures_.xlsx



Golder Associates

Title	LLTR 7-DADM Time Series, 2010		
Project Name	LL HED Temp Monitoring Report	Project No.	073-93081-03.100
Client Name	Avista	Date	February 29, 2012

FIGURE 4-1

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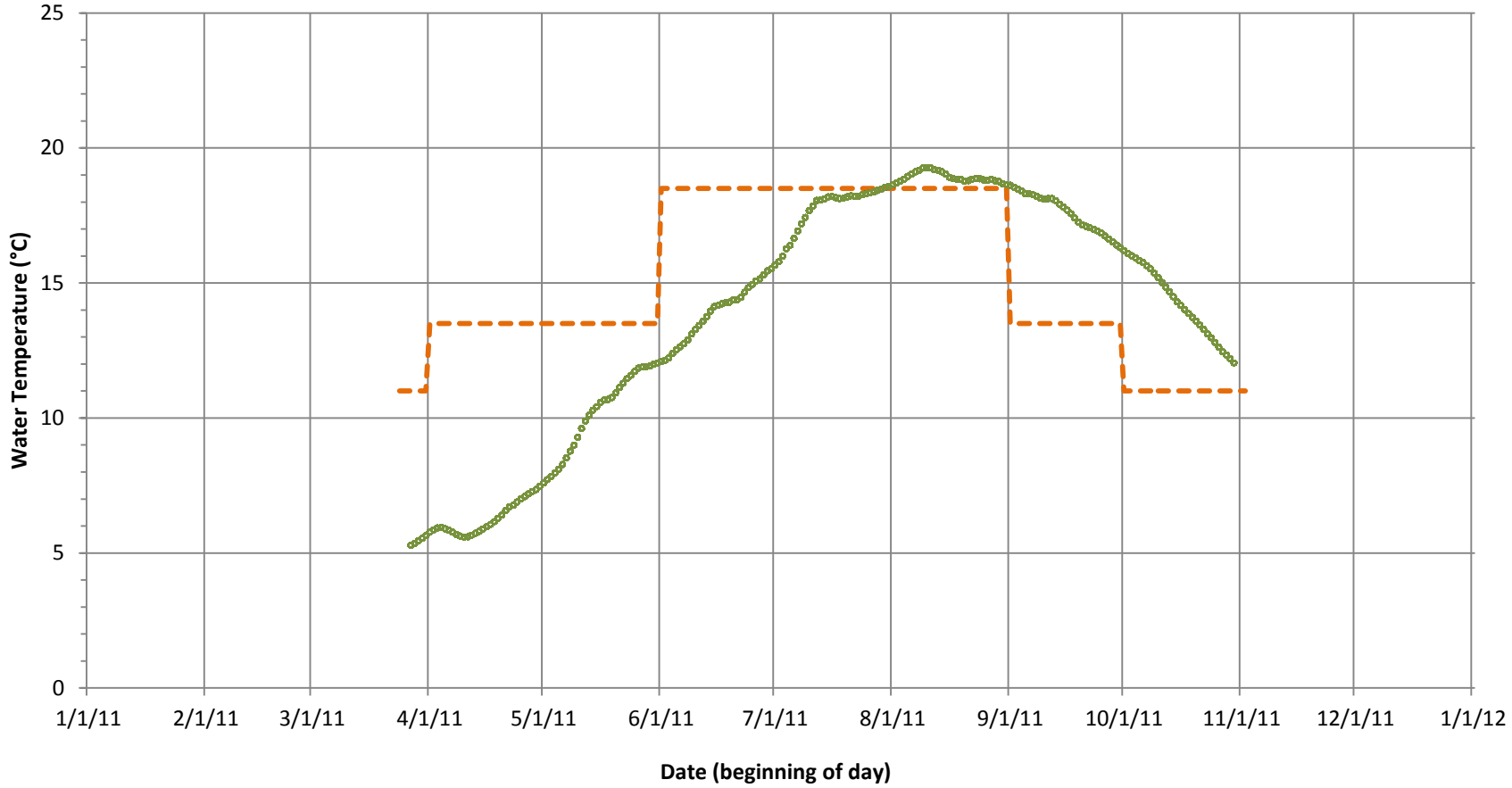

Golder Associates	Title: LLTR 7-DADM Time Series, 2011		
	Project Name: LL HED Temp Monitoring Report	Project No.: 073-93081-03.100	FIGURE 4-2
	Client Name: Avista	Date: February 29, 2012	

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APPENDIX A
CONSULTATION RECORD

February 29, 2012

Marcie Mangold, Water Quality Program
Washington Department of Ecology
Eastern Region Office
4601 N Monroe Street
Spokane, WA 99205-1295

Subject: Spokane River Hydroelectric Project, FERC Project No. 2545
2010 and 2011 Long Lake Hydroelectric Development Temperature Monitoring Report

Dear Ms. Mangold:

I have enclosed the 2010 and 2011 Long Lake Hydroelectric Development Temperature Monitoring Report (Temperature Monitoring Report) for your review and approval. The Temperature Monitoring Report was completed in accordance with the Long Lake Dam Reservoir and Tailrace Temperature Water Quality Attainment Plan, required by the Spokane River Hydroelectric Project License (License) Appendix B, Section 5.5.B of the Washington Department of Ecology Section 401 Water Quality Certification.

We request your review by **March 29, 2012**. This will allow us time to incorporate your comments and recommendations as appropriate, and submit the Temperature Monitoring Report to the Federal Energy Regulatory Commission by **April 15, 2012**.

Please feel free to call me at (509) 495-4643 if you have any questions about the Temperature Monitoring Report.

Sincerely,

Meghan Lunney
Aquatic Resource Specialist

Enclosure (1)

Cc: Chad Brown, Ecology
Brian Crossley, Spokane Tribe of Indians

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
4601 N Monroe Street • Spokane, Washington 99205-1295 • (509)329-3400

March 28, 2012

Mr. Elvin "Speed" Fitzhugh
Spokane River License Manager
Avista Corporation
1411 East Mission Ave., MSC-1
Spokane, WA 99220-3727

RE: Request for Review and Approval
Spokane River Hydroelectric Project No. 2545
2010 and 2011 Long Lake Hydroelectric Development
Temperature Monitoring Report – Washington 401 Certification, Section 5.5(B)

Dear Mr. Fitzhugh:

We have reviewed the Detailed 2010 and 2011 Long Lake Hydroelectric Development Temperature Monitoring Report that was mailed to the Department of Ecology (Ecology) on March 2, 2012.

Ecology does not have any comments and approves the 2010 and 2011 Long Lake Hydroelectric Development Temperature Monitoring Report.

Please feel free to contact me at (509) 329-3450 or by email at dman461@ecy.wa.gov if you have any further questions regarding this matter.

Sincerely,

D. Marcie Mangold

D. Marcie Mangold
Water Quality Program

DMM:dw
cc: Brian Crossley, Spokane Tribe of Indians
Meghan Lunney, Avista
David Moore, Ecology/WQP

February 29, 2012

Brian Crossley
Spokane Tribe of Indians
P.O. Box 480
Wellpinit, WA 99040

Subject: Spokane River Hydroelectric Project, FERC Project No. 2545
2010 and 2011 Long Lake Hydroelectric Development Temperature Monitoring Report

Dear Mr. Crossley:

I have enclosed the 2010 and 2011 Long Lake Hydroelectric Development Temperature Monitoring Report (Temperature Monitoring Report) for your review and comment. The Temperature Monitoring Report was completed in accordance with the Long Lake Dam Reservoir and Tailrace Temperature Water Quality Attainment Plan, required by the Spokane River Hydroelectric Project License (License) Appendix B, Section 5.5.B of the Washington Department of Ecology Section 401 Water Quality Certification.

Per the October 2008 Settlement Agreement between Avista and the Spokane Tribe, we request your review and comment on the Temperature Monitoring Report by **March 29, 2012**. This will allow us time to incorporate your comments and recommendations as appropriate, and submit the Temperature Monitoring Report to the Federal Energy Regulatory Commission by **April 15, 2012**.

Please feel free to call me at (509) 495-4643 if you have any questions about the Temperature Monitoring Report.

Sincerely,

Meghan Lunney
Aquatic Resource Specialist

Enclosure (1)

cc: Marcie Mangold, Ecology

Lunney, Meghan

From: Brian Crossley [crossley@SpokaneTribe.com]
Sent: Wednesday, April 04, 2012 3:27 PM
To: Lunney, Meghan
Subject: temperature monitoring report

I did not have any substantive comments on the Temperature Monitoring Report below Long Lake Dam. I am interested in hearing more as time goes on about the specific actions taken by Avista to reduce temperature.

Brian Crossley
Water & Fish Program
Spokane Tribe

SPOKANE TRIBE COMMENTS ON 2010 and 2011 LONG LAKE HED ANNUAL TEMPERATURE MONITORING REPORT

Spokane Tribe Comment: I did not have any substantive comments on the Temperature Monitoring Report below Long Lake Dam. I am interested in hearing more as time goes on about the specific actions taken by Avista to reduce temperature.

Avista Response: Avista appreciates the Tribe's comment and will keep them involved in future projects.