Current River / Boulevard Lake Dam
Water Management Report 2009

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City of Thunder Bay
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TABLE OF CONTENTS

1.0 Introduction

A water management plan was completed in March 2006 for Boulevard Lake (Current River) Dam. The water management plan identified that there were information gaps with respect to the fish management aspect of the operation. This report provides data and analysis related to these gaps, including information related to the fish ladder, dam and generating station.

The main information gaps surrounding the operation of the dam and generating station relate to water flows and levels through the fish ladder. This information is necessary to promote Rainbow Trout movement upstream and up through the fish ladder. A monitoring and reporting program for stop log configuration, reservoir water level and flow through the fish ladder during times of expected Rainbow Trout runs is provided in this report to evaluate these operations.

In September of 2009 some discrepancies were identified with the recorded lake and fish ladder levels included in the 2006, 2007, and 2008 reports. These discrepancies were investigated by the City by obtaining additional survey data and performing a detailed analysis of the current and previous data sets. It was determined that both the lake level elevations and fish ladder depths were inaccurate due to problems with the conversion process that transformed the recorded readings into elevations. However, the raw data collected could still be used to produce the elevation data required. The conversion process was corrected and the 2009 elevations were calculated and verified to be accurate by cross referencing to the 2009 survey elevations and on site observations. Using the new conversion process the 2006-2008 data was re-calculated and has been included in Appendix B of this report.

2.0 Stop Log Configuration

2.1. Background

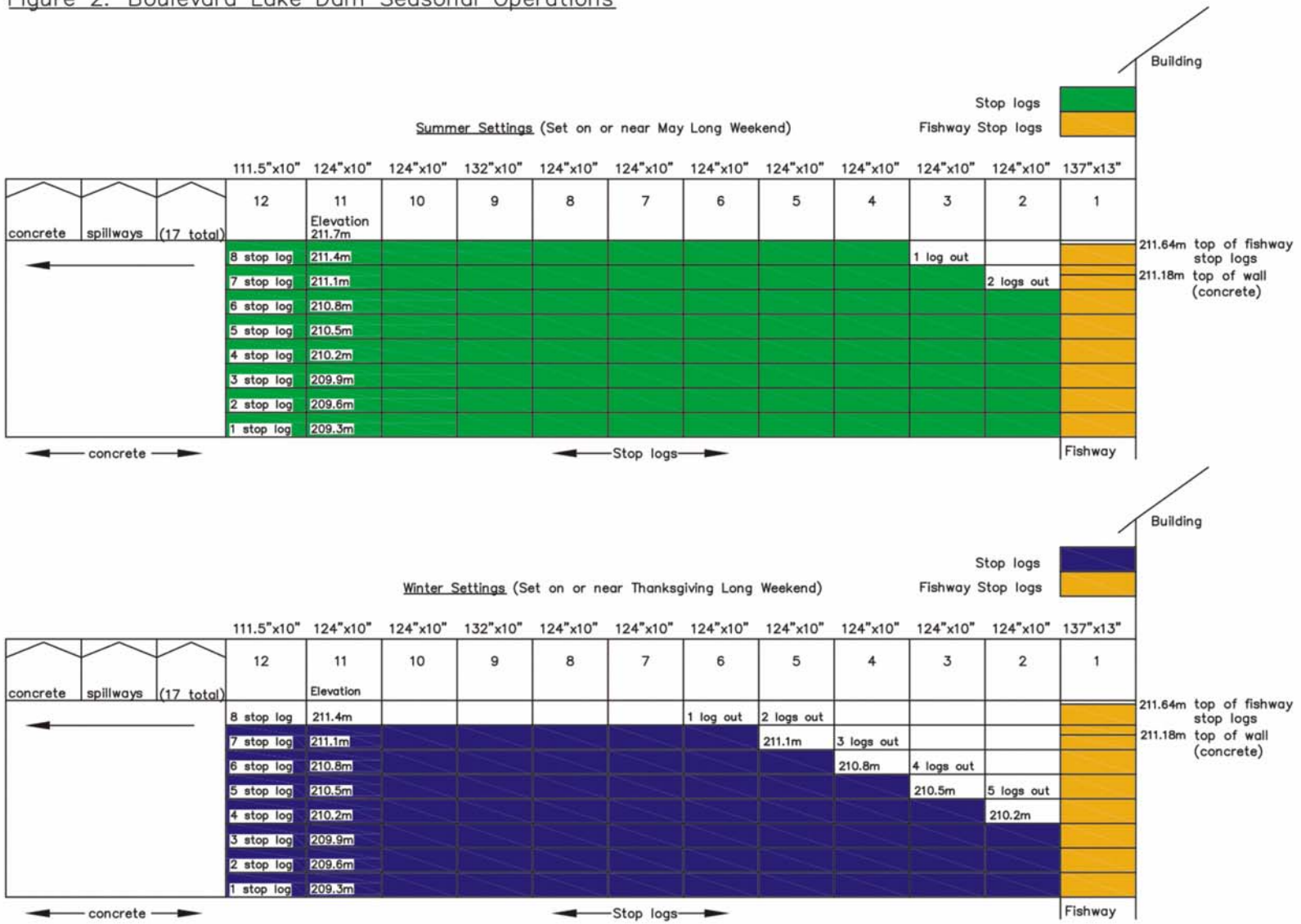
The Boulevard Lake water elevation levels are controlled by the insertion and removal of the spillway logs. Figure 2.0 illustrates the standard configuration of the logs for both the summer and winter settings. The log settings are monitored and adjusted to achieve the optimal lake level for the various functions, including maintaining a clean lake surface, recreational use, power generation, and fish ladder flows.

The summer set is typically applied on or near May long weekend. This setting is based on the water level being higher than 211.7m. If the water level drops below 211.7m then logs are removed from the fish ladder cell to maintain flow.

The winter set is typically applied on or near Thanksgiving long weekend. Starting in April the winter set is transitioned into the summer set as ice conditions will allow. Logs are added once the ice subsides so that the lake level can be maintained above the top of the concrete wall in the fish ladder cell (211.18m).

A permanent diary is located in the gatehouse for maintenance staff to accurately record the configuration of the stop logs; the level of water passing over the stop logs and if any fish are spotted using the ladder.

Figure 2: Boulevard Lake Dam Seasonal Operations



2.2. General Activity

The two aluminium gates removed in previous years from the fish ladder were not re-installed. With these gates out, the flow of water through the fish ladder seemed to be aided. The elevation of the concrete notch (bottom of the steel gates) is 210.676 with the gates removed. These gates can only be installed or removed when there is no flow through the fish ladder as the forces of the water are too great to complete this during flow.

Operation of the stop logs within the dam structure and the fish ladder occurred during the recording period of April 1, 2009 to October 15, 2009.

Due to extreme ice conditions in the winter of 2009, the fish ladder remained full of ice in early April of 2008.

The full summer stop log setting was applied on May 26, 2009 in order to achieve required lake levels for recreational purposes. On May 28 the summer set was slightly altered due to lake level conditions. One stop log was removed from chute number 1 (the fish ladder chute) to try to increase the flow through the ladder. One stop log was added to cell 2 in order to maintain optimum lake levels. This resulted in the lowest log being set at 211.40m.

The Winter Setting of the logs (210.2m) was applied on October 21, 2009 when the lake was drained for winter maintenance.

2.3. Routine Maintenance

No routine maintenance took place in 2009.

3.0 Boulevard Lake Water Levels

A level recorder is in operation at the Boulevard Lake Dam and the signal is transmitted to the Bare Point Water Treatment Plant via a SCADA System. Lake level elevation measurements are taken and logged every 12 seconds, along with all the other data points, then put in the archive files, so not to fill the hard drive of the computer.

Using this data the average daily lake levels were calculated for the time periods of April 23, 2009 to June 15, 2009 and September 15, 2009 to October 15, 2009. These average daily lake levels have been graphed along side the fish ladder elevation data in figures 4.2-A and 4.2-B located in section 4.0 Fish Ladder.

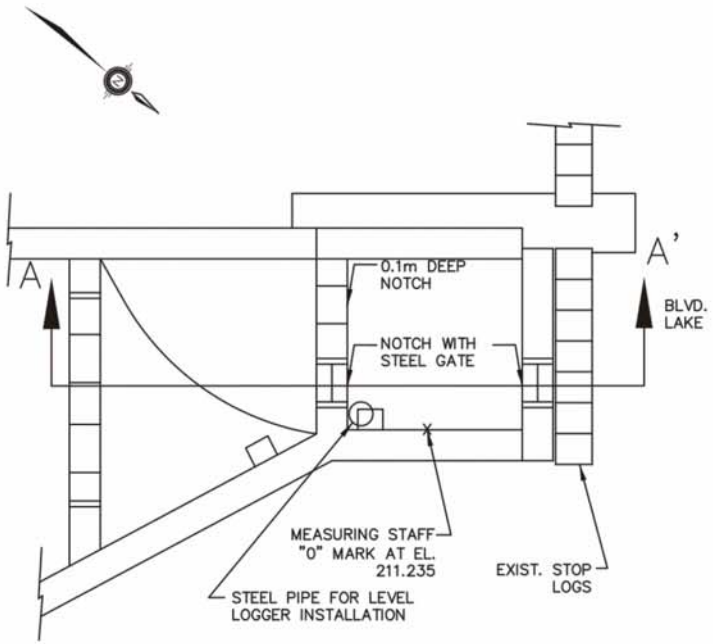
The tabulated average daily lake level data is also included in Appendix A of this report.

4.0 Fish Ladder

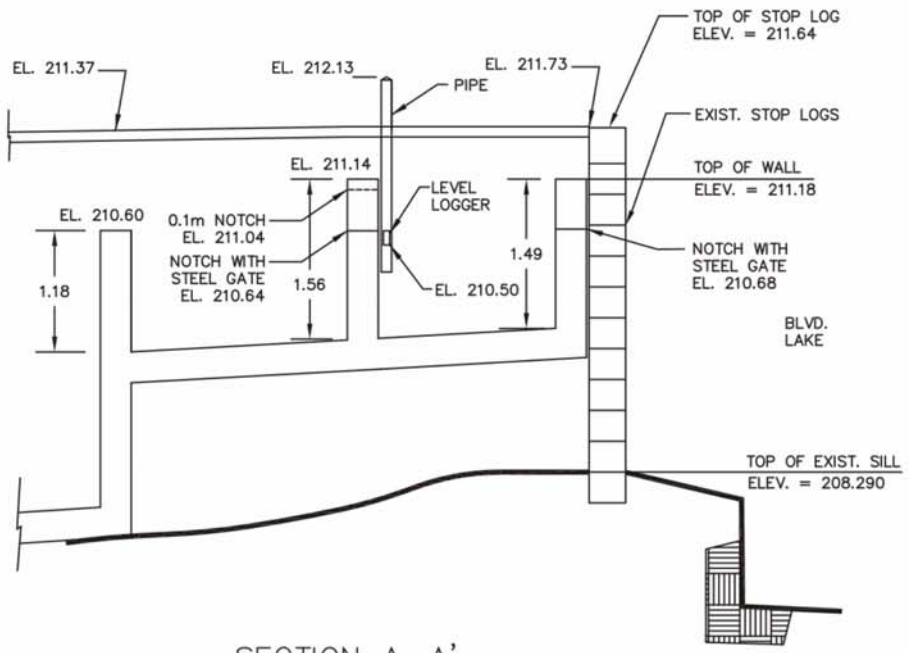
4.1. Configuration Overview

The fish ladder structure consists of a concrete spillway segmented into cells by concrete weirs. A level logger has been installed in the top cell of the fish ladder so that water level measurements can be recorded during the operation of the fish ladder. Figure 4.1 illustrates the configuration of the top fish ladder cell and the installation of the water level recording device.

The bottom of the optimal 30cm water depth in the fish ladder is defined by the top of the concrete wall in the fish ladder (elevation 211.18m). Therefore the optimal range is 211.18m to 211.48m. When the lake level drops below 211.18m flow is maintained though the open gates by removing additional logs down to 210.68m (bottom of concrete notch).



PLAN



SECTION A–A'

FISH LADDER – PLAN & SECTION

FIGURE 4.1

N.T.S.

4.2. Recorded Water Levels

Spring 2009

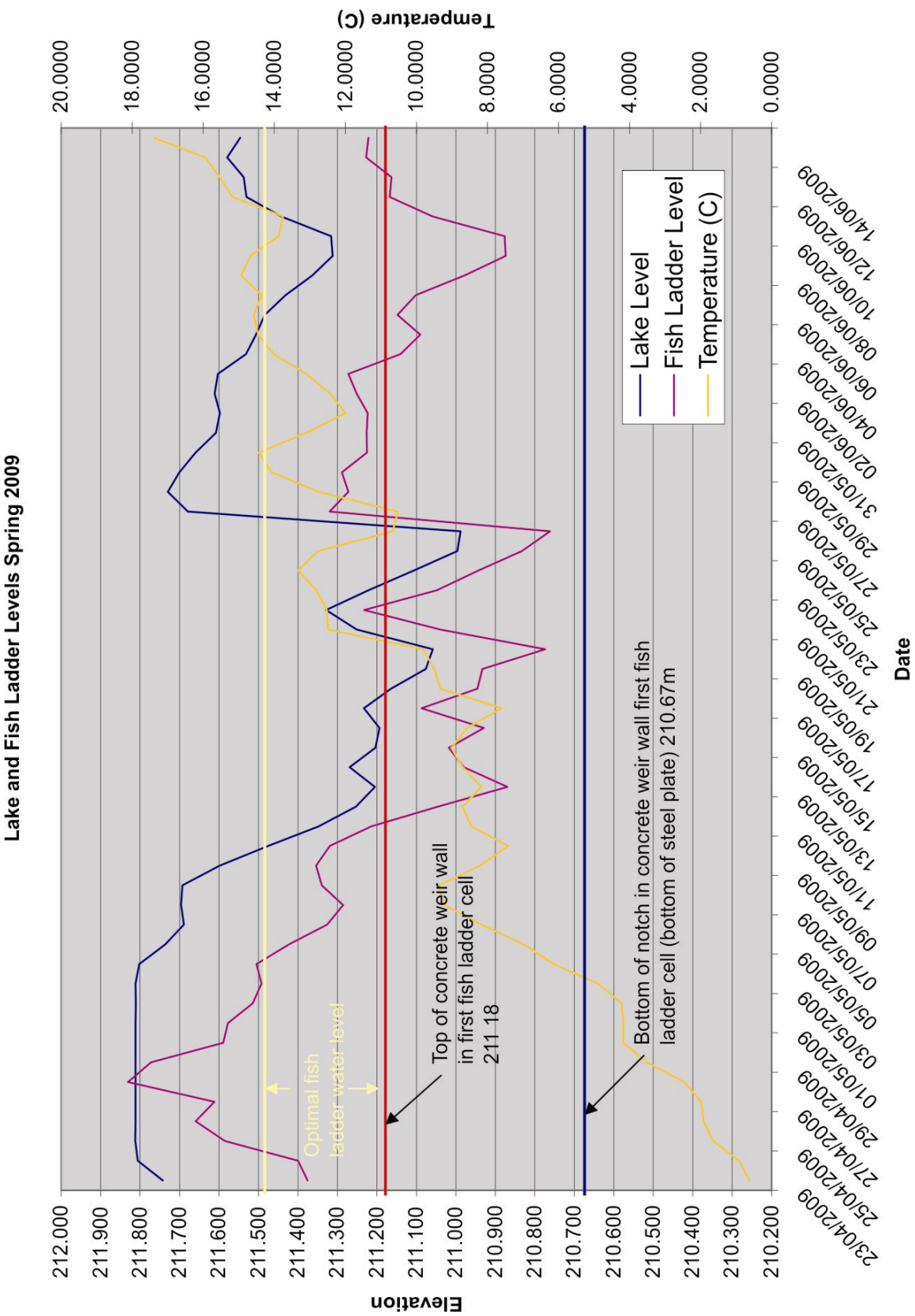
Recording of the water level in the fish ladder commenced on April 23, 2009 when the ice had melted away enough to install the logger. Monitoring continued through to June 15, 2008 when the level logger was removed.

The two aluminium gates in the fish ladder remained out during this recording period.

The fish ladder water levels and the lake water levels recorded in the time period are shown in Figure 4.2-A.

Refer to Appendix “A” for tabulated fish ladder data for Spring 2009.

Figure 4.2-A Spring 2009



Fall 2009

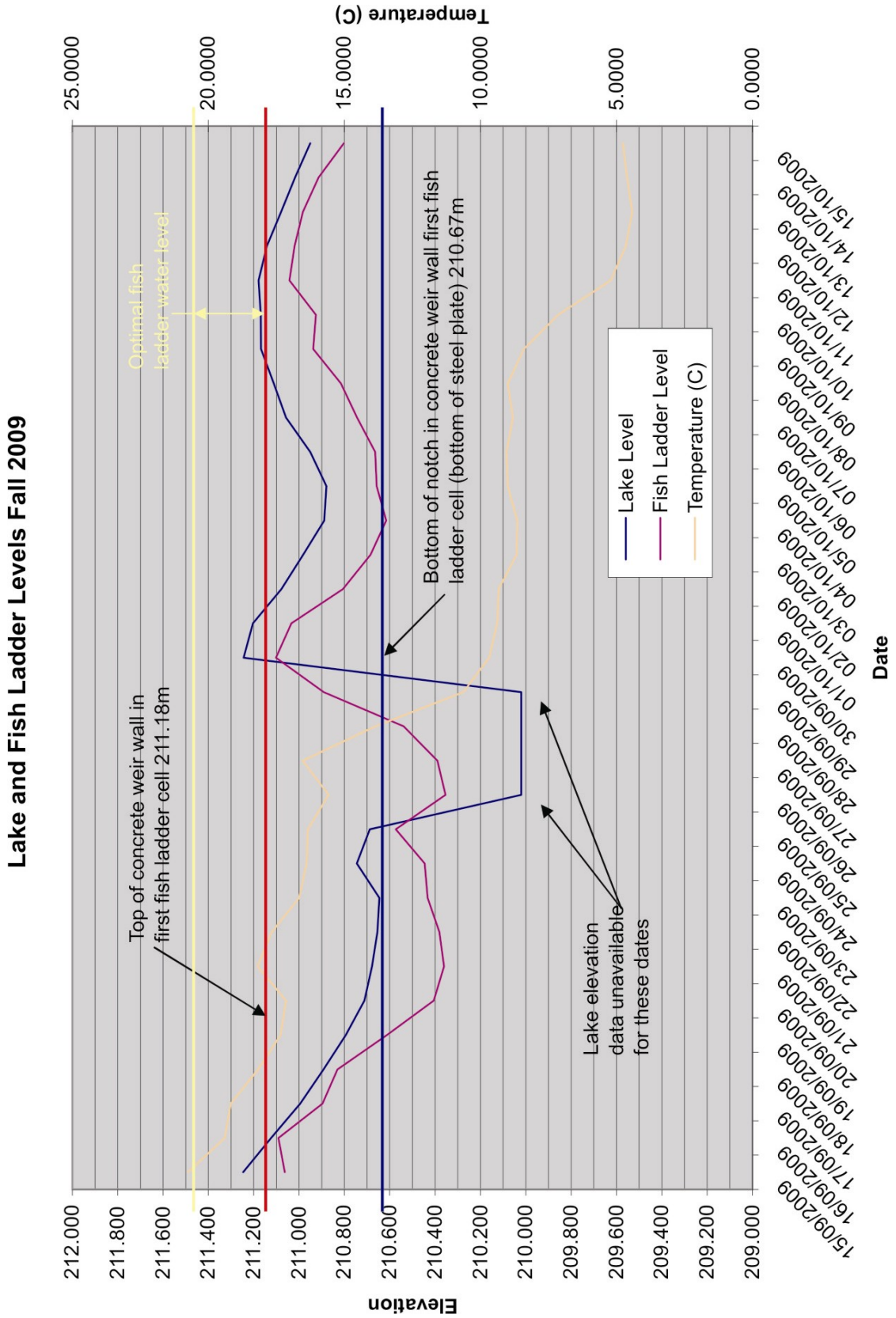
The level logger was installed on September 14, 2009 and began recording data on September 15, 2009 through to October 19, 2009 when the level logger was once again removed.

The two aluminium gates in the fish ladder remained out during this recording period.

The fish ladder water levels and the lake water levels recorded in the time period are shown in Figure 4.2-B.

Refer to Appendix “A” for tabulated fish ladder data for Fall 2009.

Figure 4.2-B Fall 2009



5.0 Generating Station Records

Run Time Records are not available for the power generating station.

The lease agreement does not require the owner of the power generating station to provide detailed run time records to the City of Thunder Bay. When the owner of the power generating station was contacted on November 7, 2006, and asked to produce any run time records for the generating station, he said, “I do not have any record of run time schedules for the generating station”.

The agreement and protocols state that the power generator is able to draw water 0.15 m below the level set by the City as long as water is allowed to spill daily to maintain a clean lake surface during the months that he is permitted to operate.

Based on this protocol we have identified the days where the lake level was high enough to support the taking of water for generating electricity (based on the recorded log set of 211.40m starting May 28th, allowing it to be drawn down no lower than 211.25m). This is illustrated in the tabulated 2009 Lake Level and Fish Ladder Elevations data located in Appendix A.

Appendix “A” - 2009 Fish Ladder and Lake Level Data

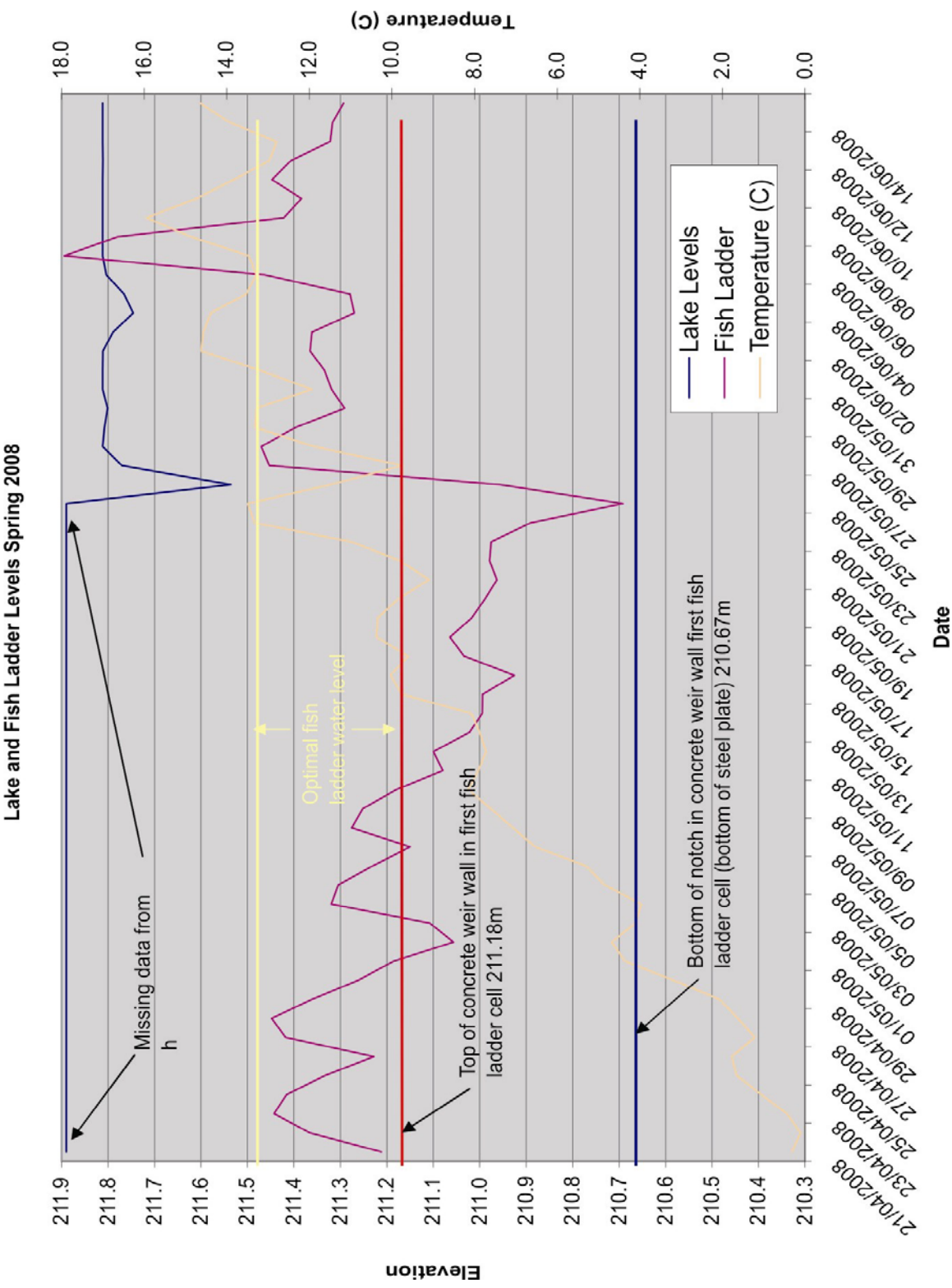
2009 Lake Level and Fish Ladder Elevations
Boulevard Lake

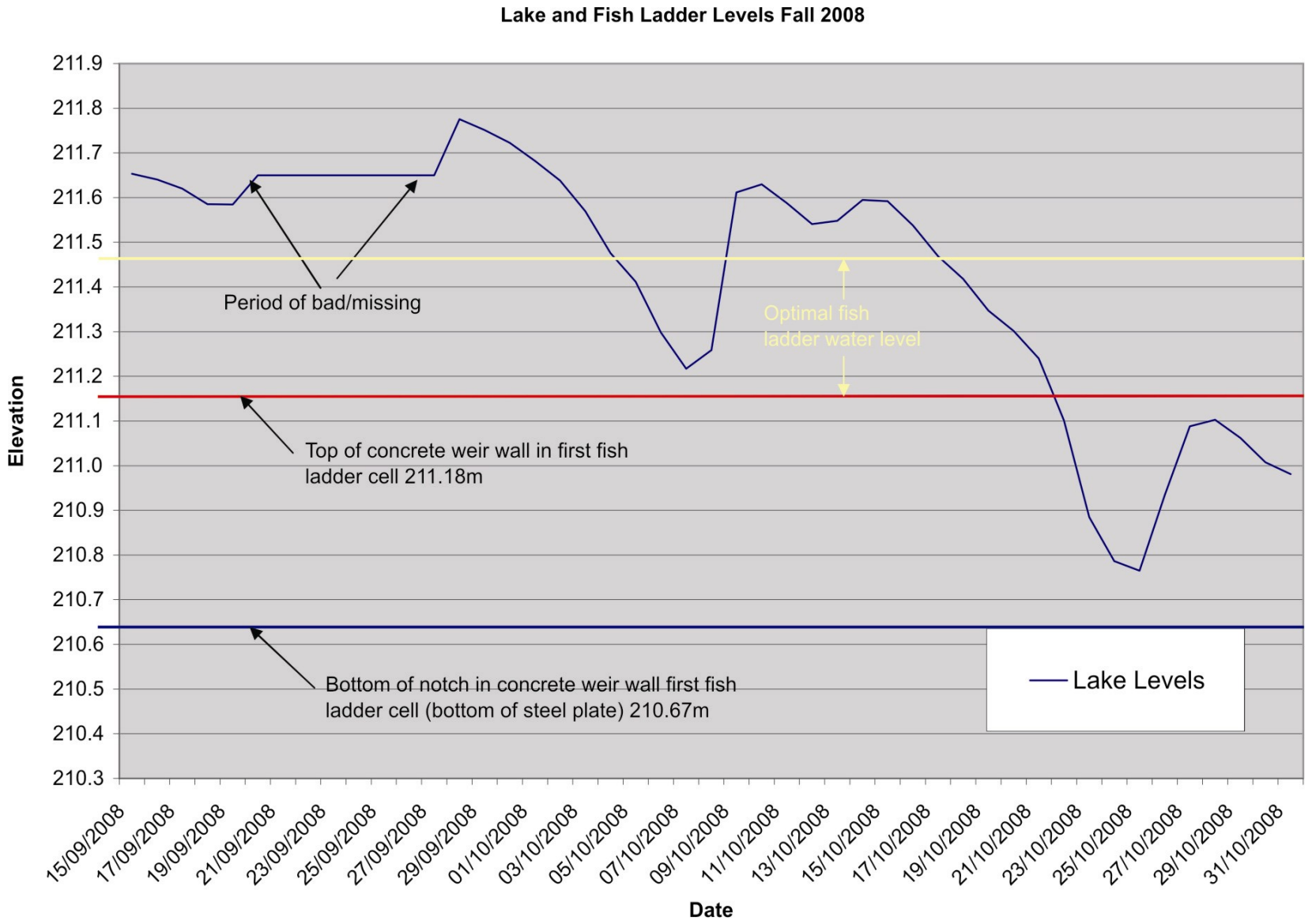
Date	Ave. Lake Level (m)	Ave. Fish Ladder Level (m)	Temp (C)
23/04/2009	211.742	211.376	0.6
24/04/2009	211.806	211.400	0.9
25/04/2009	211.812	211.585	1.7
26/04/2009	211.811	211.659	1.9
27/04/2009	211.811	211.612	2.0
28/04/2009	211.812	211.831	2.5
29/04/2009	211.811	211.772	3.5
30/04/2009	211.811	211.590	4.2
01/05/2009	211.812	211.577	4.2
02/05/2009	211.811	211.515	4.2
03/05/2009	211.811	211.493	4.9
04/05/2009	211.802	211.505	6.1
05/05/2009	211.736	211.423	7.0
06/05/2009	211.689	211.326	8.2
07/05/2009	211.696	211.286	9.2
08/05/2009	211.693	211.340	9.4
09/05/2009	211.598	211.354	8.2
10/05/2009	211.475	211.319	7.4
11/05/2009	211.348	211.214	8.5
12/05/2009	211.253	211.046	8.7
13/05/2009	211.205	210.869	8.2
14/05/2009	211.269	210.980	8.7
15/05/2009	211.204	211.018	9.0
16/05/2009	211.194	210.929	8.6
17/05/2009	211.233	211.087	7.6
18/05/2009	211.165	210.946	9.3
19/05/2009	211.076	210.933	9.5
20/05/2009	211.059	210.774	9.8
21/05/2009	211.251	211.040	12.5
22/05/2009	211.329	211.233	12.5
23/05/2009	211.222	211.049	12.8
24/05/2009	211.107	210.943	13.3
25/05/2009	210.996	210.833	12.8
26/05/2009	210.988	210.762	10.7
27/05/2009	211.679	211.320	10.5
28/05/2009	211.730	211.273	12.8
29/05/2009	211.700	211.289	14.1
30/05/2009	211.659	211.225	14.4

31/05/2009	211.608	211.226	13.1
01/06/2009	211.597	211.223	12.0
02/06/2009	211.611	211.252	12.4
03/06/2009	211.603	211.272	13.1
04/06/2009	211.532	211.141	14.0
05/06/2009	211.506	211.090	14.4
06/06/2009	211.484	211.148	14.6
07/06/2009	211.431	211.102	14.4
08/06/2009	211.364	210.978	14.9
09/06/2009	211.312	210.874	14.7
10/06/2009	211.316	210.877	13.9
11/06/2009	211.442	211.059	13.8
12/06/2009	211.530	211.168	15.2
13/06/2009	211.538	211.163	15.5
14/06/2009	211.580	211.227	15.9
15/06/2009	211.547	211.222	17.4
15/09/2009	211.246	211.063	20.8
16/09/2009	211.124	211.091	19.4
17/09/2009	210.995	210.897	19.2
18/09/2009	210.892	210.831	18.2
19/09/2009	210.794	210.613	17.3
20/09/2009	210.712	210.406	17.1
21/09/2009	210.678	210.361	18.2
22/09/2009	210.655	210.381	17.7
23/09/2009	210.646	210.433	16.7
24/09/2009	210.745	210.446	16.4
25/09/2009	210.688	210.574	16.3
26/09/2009		210.354	15.6
27/09/2009		210.390	16.5
28/09/2009		210.539	13.9
29/09/2009		210.891	10.6
30/09/2009	211.245	211.102	9.7
01/10/2009	211.204	211.033	9.4
02/10/2009	211.078	210.807	9.3
03/10/2009	210.982	210.684	8.7
04/10/2009	210.889	210.616	8.6
05/10/2009	210.879	210.658	9.0
06/10/2009	210.951	210.664	9.0
07/10/2009	211.058	210.744	8.8
08/10/2009	211.112	210.815	9.0
09/10/2009	211.168	210.938	8.4
10/10/2009	211.169	210.926	7.1
11/10/2009	211.179	211.042	5.2

12/10/2009	211.142	211.020	4.7
13/10/2009	211.079	210.984	4.4
14/10/2009	211.018	210.914	4.6
15/10/2009	210.951	210.803	4.8
Values highlighted in green denote the days where lake levels supported power generation when compared to the stop log setting.			

Appendix “B” - Re-calculated Data for 2006, 2007, and 2008 Reports


Lake and Fish Ladder Levels Spring 2008
Elevation
Temperature (C)
Date
Lake Levels
Fish Ladder
Temperature (C)
Missing data from h
Optimal fish ladder water level
Top of concrete weir wall in first fish ladder cell 211.18m
Bottom of notch in concrete weir wall first fish ladder cell (bottom of steel plate) 210.67m

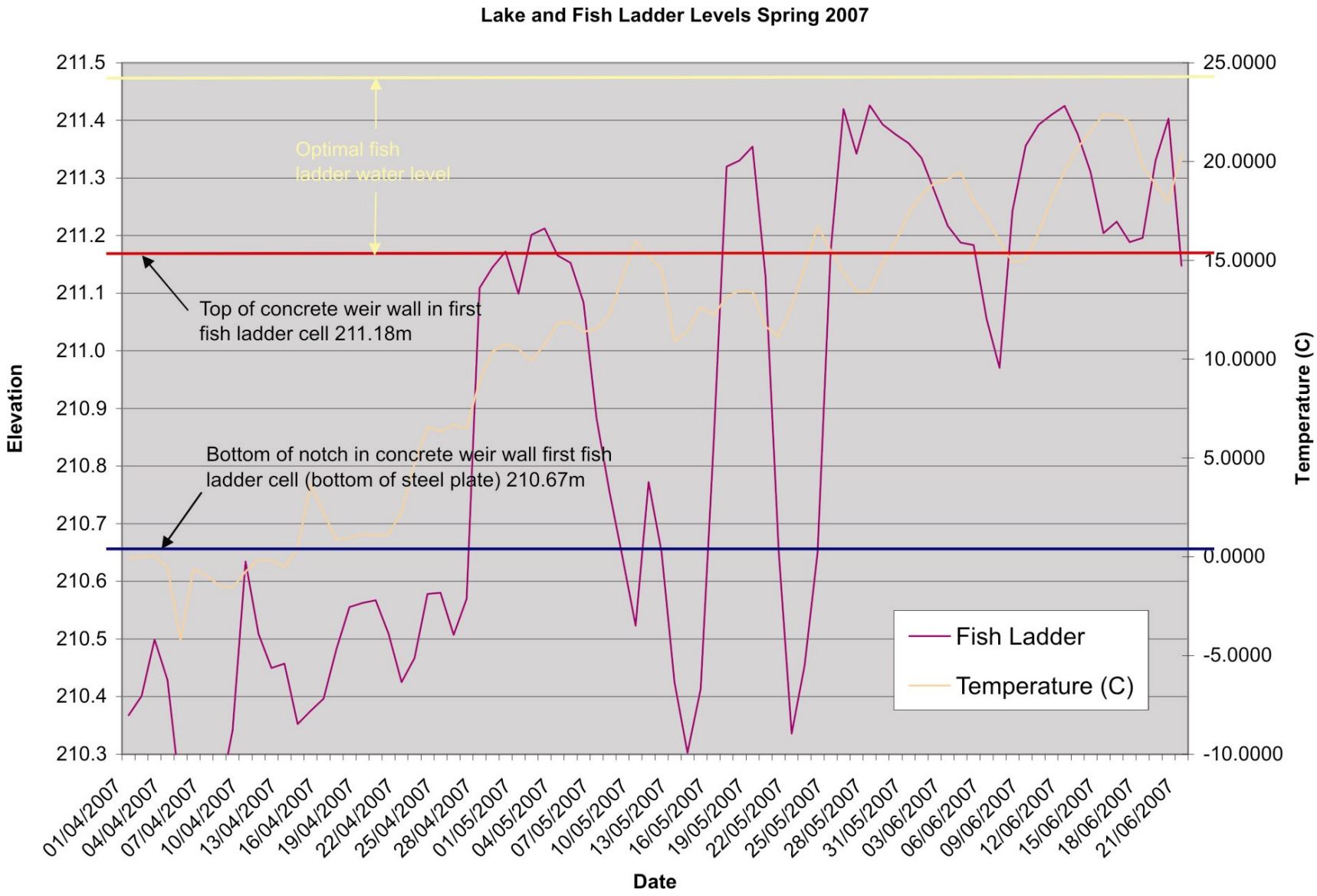

Lake and Fish Ladder Levels Fall 2008
Elevation
211.9
211.8
211.7
211.6
211.5
211.4
211.3
211.2
211.1
211.0
210.9
210.8
210.7
210.6
210.5
210.4
210.3
Period of bad/missing
Optimal fish ladder water level
Top of concrete weir wall in first fish ladder cell 211.18m
Bottom of notch in concrete weir wall first fish ladder cell (bottom of steel plate) 210.67m
Lake Levels
15/09/2008
17/09/2008
19/09/2008
21/09/2008
23/09/2008
25/09/2008
27/09/2008
29/09/2008
01/10/2008
03/10/2008
05/10/2008
07/10/2008
09/10/2008
11/10/2008
13/10/2008
15/10/2008
17/10/2008
19/10/2008
21/10/2008
23/10/2008
25/10/2008
27/10/2008
29/10/2008
31/10/2008
Date

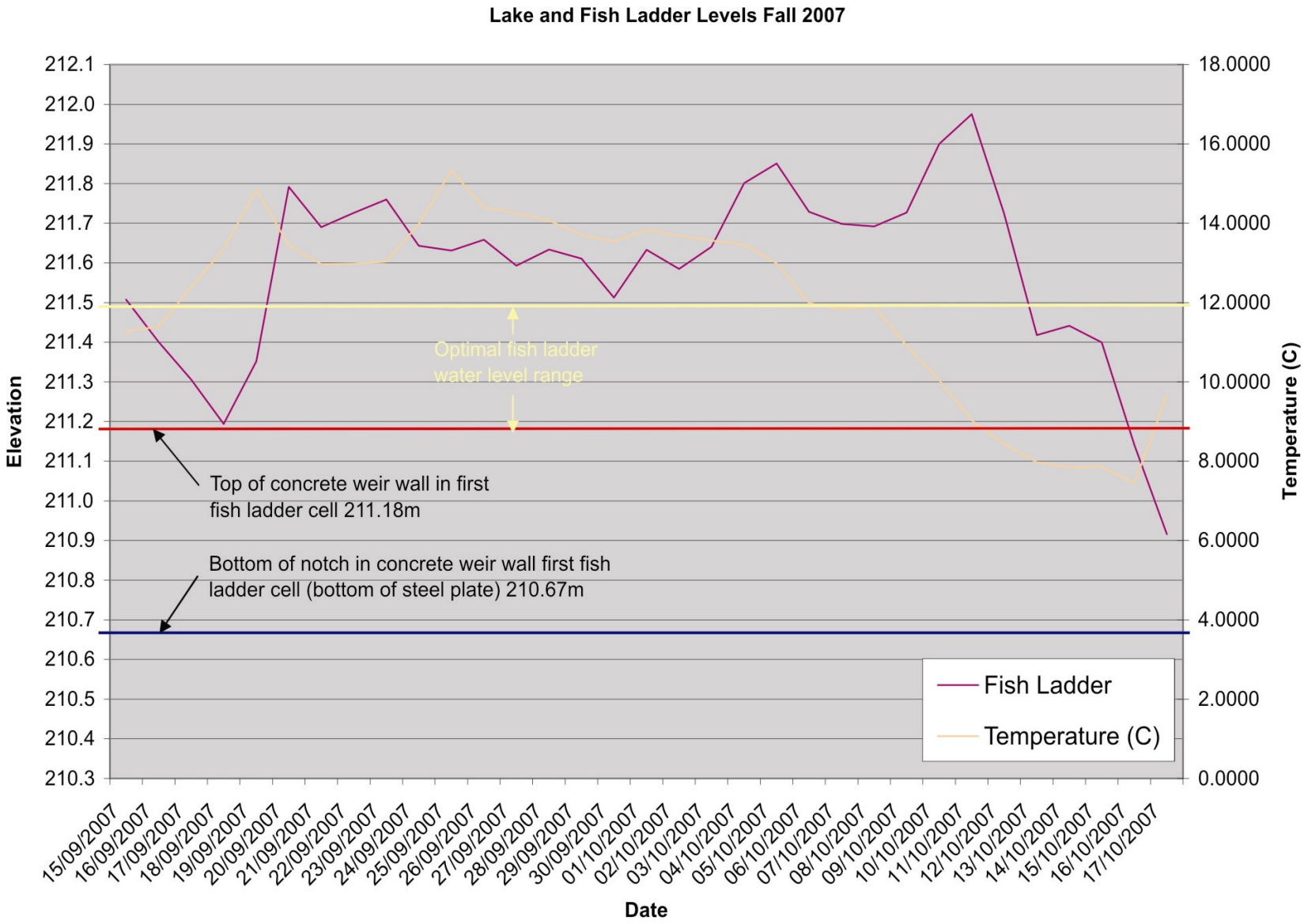
2008 Lake Level and Fish Ladder Elevations
Boulevard Lake

Date	Ave. Lake Level (m)	Ave. Fish Ladder Level (m)	Temp (C)
21/04/2008		211.212	0.3
22/04/2008		211.366	0.1
23/04/2008		211.443	0.4
24/04/2008		211.416	1.1
25/04/2008		211.333	1.7
26/04/2008		211.228	1.8
27/04/2008		211.418	1.2
28/04/2008		211.448	1.6
29/04/2008		211.361	2.1
30/04/2008		211.262	3.2
01/05/2008		211.185	4.4
02/05/2008		211.056	4.7
03/05/2008		211.108	4.1
04/05/2008		211.319	4.0
05/05/2008		211.305	4.9
06/05/2008		211.230	5.3
07/05/2008		211.150	6.5
08/05/2008		211.276	7.1
09/05/2008		211.252	7.6
10/05/2008		211.180	8.2
11/05/2008		211.079	7.9
12/05/2008		211.100	7.7
13/05/2008		211.022	7.9
14/05/2008		210.994	8.1
15/05/2008		210.994	9.8
16/05/2008		210.925	10.0
17/05/2008		211.034	9.6
18/05/2008		211.064	10.4
19/05/2008		211.017	10.3
20/05/2008		210.989	9.9
21/05/2008		210.963	9.1
22/05/2008		210.979	9.8
23/05/2008		210.975	11.0
24/05/2008		210.891	13.3
25/05/2008		210.692	13.5
26/05/2008	211.536	210.957	11.5

27/05/2008	211.770	211.453	9.7
28/05/2008	211.811	211.470	11.9
29/05/2008	211.808	211.396	13.3
30/05/2008	211.801	211.291	13.3
31/05/2008	211.812	211.319	11.9
01/06/2008	211.812	211.334	13.2
02/06/2008	211.811	211.365	14.6
03/06/2008	211.789	211.361	14.6
04/06/2008	211.746	211.270	14.4
05/06/2008	211.765	211.279	13.5
06/06/2008	211.804	211.463	13.3
07/06/2008	211.812	211.895	13.5
08/06/2008	211.812	211.780	14.9
09/06/2008	211.812	211.422	15.9
10/06/2008	211.812	211.384	14.7
11/06/2008	211.812	211.447	13.8
12/06/2008	211.811	211.406	13.0
13/06/2008	211.811	211.322	12.8
14/06/2008	211.812	211.317	13.9
15/06/2008	211.812	211.293	14.6
15/09/2008	211.654		
16/09/2008	211.641		
17/09/2008	211.620		
18/09/2008	211.585		
19/09/2008	211.585		
20/09/2008	211.226		
21/09/2008	211.147		
22/09/2008			
23/09/2008			
24/09/2008			
25/09/2008			
26/09/2008			
27/09/2008			
28/09/2008	211.775		
29/09/2008	211.751		
30/09/2008	211.722		
01/10/2008	211.682		
02/10/2008	211.638		
03/10/2008	211.570		
04/10/2008	211.476		
05/10/2008	211.412		
06/10/2008	211.298		
07/10/2008	211.217		

08/10/2008	211.259		
09/10/2008	211.612		
10/10/2008	211.630		
11/10/2008	211.587		
12/10/2008	211.541		
13/10/2008	211.548		
14/10/2008	211.595		
15/10/2008	211.592		
16/10/2008	211.538		
17/10/2008	211.469		
18/10/2008	211.418		
19/10/2008	211.347		
20/10/2008	211.301		
21/10/2008	211.240		
22/10/2008	211.101		
23/10/2008	210.885		
24/10/2008	210.787		
25/10/2008	210.765		
26/10/2008	210.934		
27/10/2008	211.088		
28/10/2008	211.103		
29/10/2008	211.062		
30/10/2008	211.008		
31/10/2008	210.981		


Lake and Fish Ladder Levels Spring 2007
Elevation
Temperature (C)
Date
Optimal fish ladder water level
Top of concrete weir wall in first fish ladder cell 211.18m
Bottom of notch in concrete weir wall first fish ladder cell (bottom of steel plate) 210.67m
Fish Ladder
Temperature (C)
211.5
211.4
211.3
211.2
211.1
211.0
210.9
210.8
210.7
210.6
210.5
210.4
210.3
25.0000
20.0000
15.0000
10.0000
5.0000
0.0000
-5.0000
-10.0000
01/04/2007
04/04/2007
07/04/2007
10/04/2007
13/04/2007
16/04/2007
19/04/2007
22/04/2007
25/04/2007
28/04/2007
01/05/2007
04/05/2007
07/05/2007
10/05/2007
13/05/2007
16/05/2007
19/05/2007
22/05/2007
25/05/2007
28/05/2007
31/05/2007
03/06/2007
06/06/2007
09/06/2007
12/06/2007
15/06/2007
18/06/2007
21/06/2007


Lake and Fish Ladder Levels Fall 2007
Elevation
Temperature (C)
Date
Optimal fish ladder water level range
Top of concrete weir wall in first fish ladder cell 211.18m
Bottom of notch in concrete weir wall first fish ladder cell (bottom of steel plate) 210.67m
Fish Ladder
Temperature (C)
212.1
212.0
211.9
211.8
211.7
211.6
211.5
211.4
211.3
211.2
211.1
211.0
210.9
210.8
210.7
210.6
210.5
210.4
210.3
18.0000
16.0000
14.0000
12.0000
10.0000
8.0000
6.0000
4.0000
2.0000
0.0000
15/09/2007
16/09/2007
17/09/2007
18/09/2007
19/09/2007
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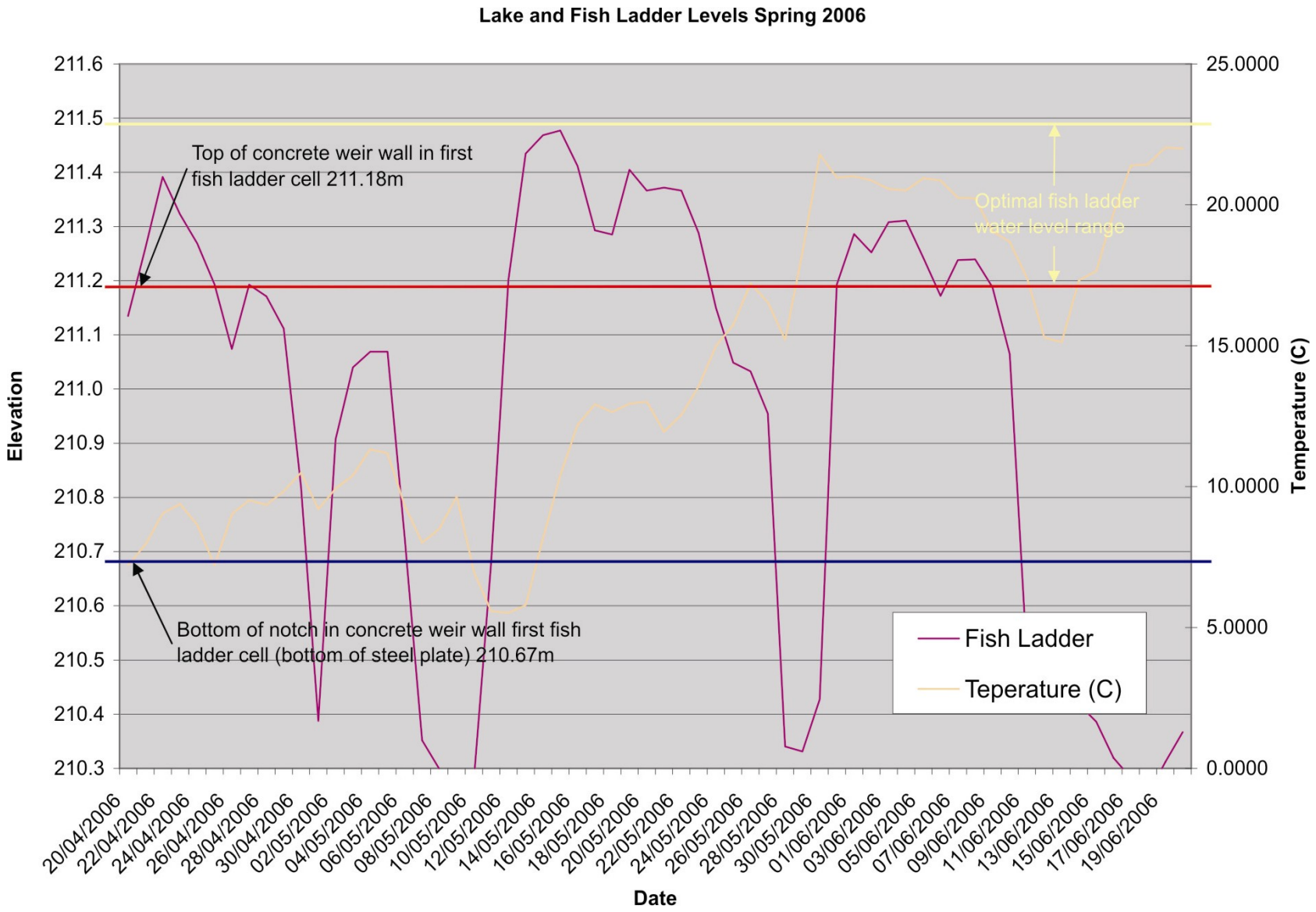
22/09/2007
23/09/2007
24/09/2007
25/09/2007
26/09/2007
27/09/2007
28/09/2007
29/09/2007
30/09/2007
01/10/2007
02/10/2007
03/10/2007
04/10/2007
05/10/2007
06/10/2007
07/10/2007
08/10/2007
09/10/2007
10/10/2007
11/10/2007
12/10/2007
13/10/2007
14/10/2007
15/10/2007
16/10/2007
17/10/2007

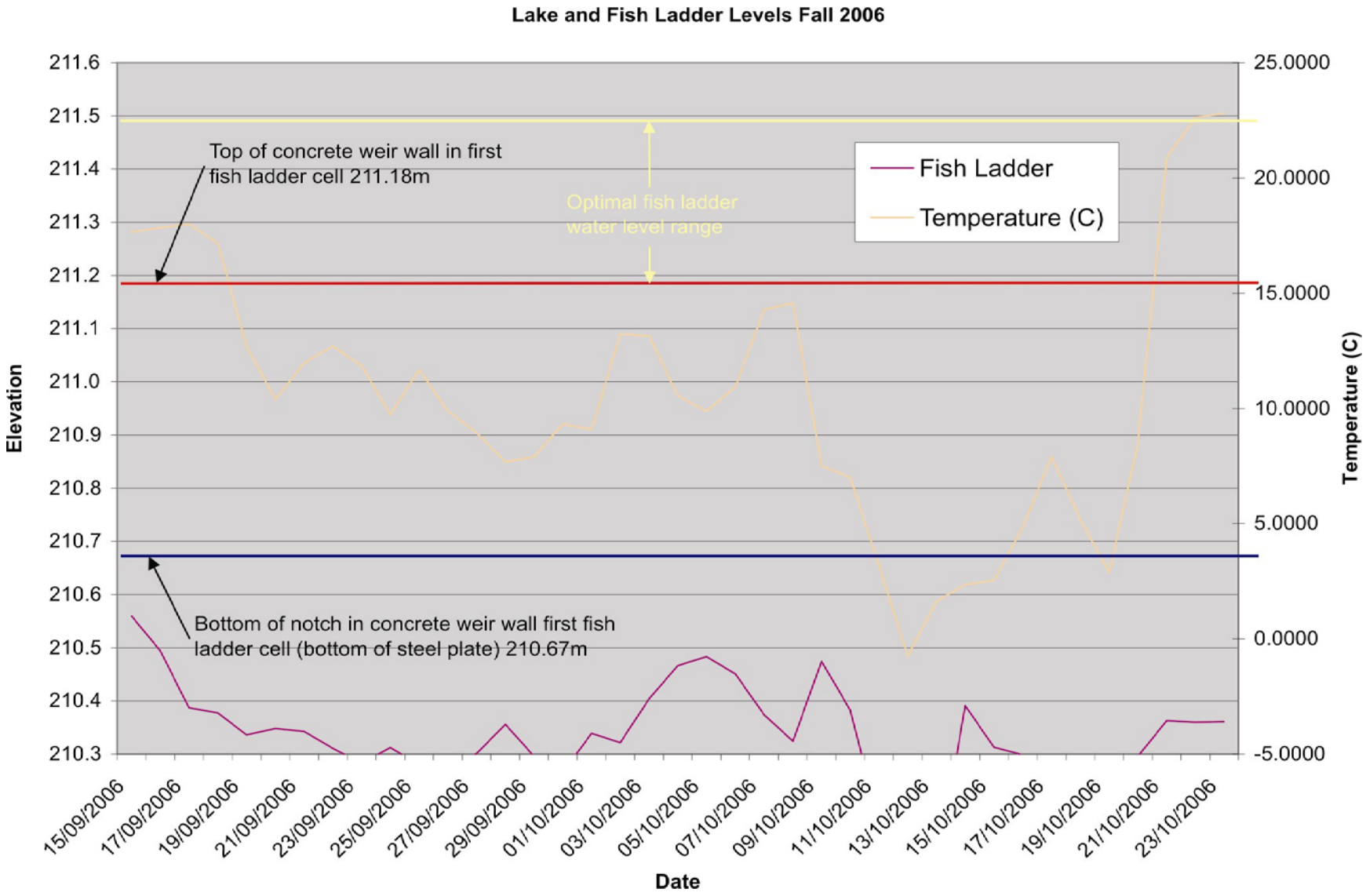
2007 Lake Level and Fish Ladder Elevations
Boulevard Lake

Date	Ave. Lake Level (m)	Ave. Fish Ladder Level (m)	Temp (C)
01/04/2007		210.368	-0.1
02/04/2007		210.401	0.0
03/04/2007		210.499	0.0
04/04/2007		210.429	-0.5
05/04/2007		210.229	-4.2
06/04/2007		210.259	-0.6
07/04/2007		210.243	-0.9
08/04/2007		210.226	-1.5
09/04/2007		210.341	-1.6
10/04/2007		210.634	-0.7
11/04/2007		210.509	-0.2
12/04/2007		210.450	-0.2
13/04/2007		210.457	-0.5
14/04/2007		210.353	0.4
15/04/2007		210.375	3.7
16/04/2007		210.396	2.2
17/04/2007		210.483	0.9
18/04/2007		210.556	1.0
19/04/2007		210.563	1.1
20/04/2007		210.567	1.1
21/04/2007		210.509	1.1
22/04/2007		210.425	2.3
23/04/2007		210.467	4.7
24/04/2007		210.578	6.6
25/04/2007		210.580	6.3
26/04/2007		210.507	6.7
27/04/2007		210.570	6.5
28/04/2007		211.109	8.9
29/04/2007		211.145	10.4
30/04/2007		211.173	10.7
01/05/2007		211.099	10.5
02/05/2007		211.202	9.9
03/05/2007		211.212	10.7
04/05/2007		211.166	11.8
05/05/2007		211.153	11.9
06/05/2007		211.084	11.4
07/05/2007		210.884	11.5

08/05/2007		210.756	12.2
09/05/2007		210.641	14.2
10/05/2007		210.523	16.0
11/05/2007		210.772	15.2
12/05/2007		210.651	14.6
13/05/2007		210.425	10.9
14/05/2007		210.303	11.4
15/05/2007		210.413	12.6
16/05/2007		210.840	12.2
17/05/2007		211.320	13.2
18/05/2007		211.331	13.4
19/05/2007		211.355	13.4
20/05/2007		211.130	11.7
21/05/2007		210.653	11.1
22/05/2007		210.336	12.7
23/05/2007		210.454	14.6
24/05/2007		210.650	16.7
25/05/2007		211.170	15.5
26/05/2007		211.420	14.4
27/05/2007		211.342	13.4
28/05/2007		211.426	13.4
29/05/2007		211.393	14.9
30/05/2007		211.376	15.9
31/05/2007		211.360	17.4
01/06/2007		211.335	18.3
02/06/2007		211.277	18.9
03/06/2007		211.217	19.1
04/06/2007		211.188	19.5
05/06/2007		211.184	18.0
06/06/2007		211.056	17.1
07/06/2007		210.971	16.0
08/06/2007		211.244	14.9
09/06/2007		211.356	15.0
10/06/2007		211.393	16.4
11/06/2007		211.410	18.1
12/06/2007		211.425	19.5
13/06/2007		211.377	20.7
14/06/2007		211.311	21.5
15/06/2007		211.205	22.4
16/06/2007		211.224	22.3
17/06/2007		211.189	22.0
18/06/2007		211.196	19.8
19/06/2007		211.330	18.8
20/06/2007		211.403	18.0

21/06/2007		211.148	20.3
15/09/2007		211.508	11.3
16/09/2007		211.400	11.4
17/09/2007		211.306	12.4
18/09/2007		211.194	13.3
19/09/2007		211.352	14.9
20/09/2007		211.792	13.4
21/09/2007		211.690	13.0
22/09/2007		211.727	13.0
23/09/2007		211.760	13.0
24/09/2007		211.643	14.0
25/09/2007		211.631	15.3
26/09/2007		211.659	14.4
27/09/2007		211.593	14.3
28/09/2007		211.634	14.1
29/09/2007		211.611	13.7
30/09/2007		211.513	13.5
01/10/2007		211.633	13.8
02/10/2007		211.585	13.7
03/10/2007		211.641	13.6
04/10/2007		211.801	13.5
05/10/2007		211.850	13.0
06/10/2007		211.729	12.0
07/10/2007		211.698	11.8
08/10/2007		211.692	11.9
09/10/2007		211.727	10.9
10/10/2007		211.900	10.0
11/10/2007		211.975	9.0
12/10/2007		211.724	8.4
13/10/2007		211.418	8.0
14/10/2007		211.442	7.8
15/10/2007		211.400	7.9
16/10/2007		211.141	7.4
17/10/2007		210.916	9.7


Lake and Fish Ladder Levels Spring 2006
Elevation
Temperature (C)
Date
Top of concrete weir wall in first fish ladder cell 211.18m
Optimal fish ladder water level range
Bottom of notch in concrete weir wall first fish ladder cell (bottom of steel plate) 210.67m
Fish Ladder
Teperature (C)
211.6
211.5
211.4
211.3
211.2
211.1
211.0
210.9
210.8
210.7
210.6
210.5
210.4
210.3
25.0000
20.0000
15.0000
10.0000
5.0000
0.0000
20/04/2006
22/04/2006
24/04/2006
26/04/2006
28/04/2006
30/04/2006
02/05/2006
04/05/2006
06/05/2006
08/05/2006
10/05/2006
12/05/2006
14/05/2006
16/05/2006
18/05/2006
20/05/2006
22/05/2006
24/05/2006
26/05/2006
28/05/2006
30/05/2006
01/06/2006
03/06/2006
05/06/2006
07/06/2006
09/06/2006
11/06/2006
13/06/2006
15/06/2006
17/06/2006
19/06/2006


Lake and Fish Ladder Levels Fall 2006
Top of concrete weir wall in first fish ladder cell 211.18m
Optimal fish ladder water level range
Fish Ladder
Temperature (C)
Bottom of notch in concrete weir wall first fish ladder cell (bottom of steel plate) 210.67m
Elevation
Temperature (C)
Date
211.6
211.5
211.4
211.3
211.2
211.1
211.0
210.9
210.8
210.7
210.6
210.5
210.4
210.3
25.0000
20.0000
15.0000
10.0000
5.0000
0.0000
-5.0000
15/09/2006
17/09/2006
19/09/2006
21/09/2006
23/09/2006
25/09/2006
27/09/2006
29/09/2006
01/10/2006
03/10/2006
05/10/2006
07/10/2006
09/10/2006
11/10/2006
13/10/2006
15/10/2006
17/10/2006
19/10/2006
21/10/2006
23/10/2006

2006 Lake Level and Fish Ladder Elevations
Boulevard Lake

Date	Ave. Lake Level (m)	Ave. Fish Ladder Level (m)	Temp (C)
20/04/2006		211.135	7.2
21/04/2006		211.260	7.9
22/04/2006		211.392	9.0
23/04/2006		211.323	9.4
24/04/2006		211.269	8.6
25/04/2006		211.193	7.2
26/04/2006		211.074	9.0
27/04/2006		211.193	9.5
28/04/2006		211.171	9.3
29/04/2006		211.112	9.8
30/04/2006		210.819	10.5
01/05/2006		210.388	9.2
02/05/2006		210.908	9.9
03/05/2006		211.040	10.4
04/05/2006		211.069	11.3
05/05/2006		211.069	11.2
06/05/2006		210.723	9.3
07/05/2006		210.352	8.0
08/05/2006		210.299	8.5
09/05/2006		210.264	9.6
10/05/2006		210.282	7.0
11/05/2006		210.678	5.6
12/05/2006		211.200	5.5
13/05/2006		211.435	5.8
14/05/2006		211.469	8.2
15/05/2006		211.477	10.4
16/05/2006		211.412	12.2
17/05/2006		211.293	12.9
18/05/2006		211.285	12.6
19/05/2006		211.405	12.9
20/05/2006		211.366	13.0
21/05/2006		211.372	11.9
22/05/2006		211.366	12.5
23/05/2006		211.288	13.6
24/05/2006		211.150	15.0
25/05/2006		211.049	15.7
26/05/2006		211.033	17.2

27/05/2006		210.955	16.5
28/05/2006		210.340	15.2
29/05/2006		210.331	18.3
30/05/2006		210.428	21.8
31/05/2006		211.193	21.0
01/06/2006		211.286	21.0
02/06/2006		211.252	20.9
03/06/2006		211.308	20.6
04/06/2006		211.311	20.5
05/06/2006		211.243	20.9
06/06/2006		211.172	20.9
07/06/2006		211.238	20.2
08/06/2006		211.240	20.2
09/06/2006		211.188	19.1
10/06/2006		211.064	18.7
11/06/2006		210.500	17.4
12/06/2006		210.427	15.3
13/06/2006		210.407	15.1
14/06/2006		210.418	17.3
15/06/2006		210.386	17.6
16/06/2006		210.319	19.7
17/06/2006		210.283	21.4
18/06/2006		210.252	21.4
19/06/2006		210.312	22.0
20/06/2006		210.367	22.0
15/09/2006		210.560	17.7
16/09/2006		210.494	17.8
17/09/2006		210.387	18.0
18/09/2006		210.377	17.2
19/09/2006		210.336	12.7
20/09/2006		210.348	10.4
21/09/2006		210.343	12.0
22/09/2006		210.311	12.7
23/09/2006		210.283	11.9
24/09/2006		210.313	9.7
25/09/2006		210.280	11.7
26/09/2006		210.280	9.9
27/09/2006		210.301	8.9
28/09/2006		210.356	7.7
29/09/2006		210.296	7.9
30/09/2006		210.266	9.3
01/10/2006		210.339	9.1
02/10/2006		210.321	13.2

03/10/2006		210.404	13.1
04/10/2006		210.466	10.5
05/10/2006		210.483	9.9
06/10/2006		210.451	10.9
07/10/2006		210.374	14.3
08/10/2006		210.324	14.6
09/10/2006		210.474	7.5
10/10/2006		210.383	7.0
11/10/2006		210.169	3.1
12/10/2006		210.123	-0.7
13/10/2006		210.084	1.6
14/10/2006		210.391	2.4
15/10/2006		210.313	2.5
16/10/2006		210.299	4.9
17/10/2006		210.194	7.9
18/10/2006		210.231	5.2
19/10/2006		210.300	2.9
20/10/2006		210.295	8.5
21/10/2006		210.363	20.9
22/10/2006		210.360	22.6
23/10/2006		210.361	22.8