

Allan Beach Resort Floodplain Delineation



Final Report

Date: May 2012

Prepared for: TRG Developments Corp.

Prepared by: Sameng Inc.

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May 11, 2012

Our file: 1097

TRG Developments Corp.
171 New Brighton Dr. SE
Calgary, AB T2Z 0E1

Attention: Laura Burt

Re: Allan Beach Resort Floodplain Delineation – Final Report

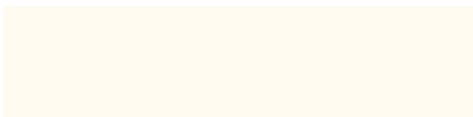
Dear Ms. Burt,

Please find enclosed two copies of the Allan Beach Resort Floodplain Delineation report.

The preparation of this floodplain delineation has been a rewarding experience and I would like to thank you for the opportunity to complete this study.

Should you have any questions or wish discussion on any aspect of this report, please contact me at (780) 482-2557.

Yours truly,



Maxime Bélanger, M.Sc., E.I.T.
Project Manager / Water Resources Engineer

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Corporate Authorization



1500 Baker Centre, 10025-106 Street, Edmonton, Alberta, T5J 1G4
Phone: (780)482-2557, Fax: (780)482-2538

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Signature/Date

PROFESSIONAL SEAL

Signature/Date

COMPANY PERMIT

1.0 Introduction

1.1 Overview

The Allan Beach Resort at Hubbles Lake, an RV Strata Development, is currently being redeveloped. The proposed development will include RV properties and amenities including a beach house by the lake.

TRG Developments Corp. retained Sameng to determine the 1:100-yr floodplain elevation within the Allan Beach Resort site. Hubbles Lake, located to the northwest of the Allan Beach Resort, is the main water body in its vicinity. An assessment of the lake's hydrology and hydraulics was completed to determine this floodplain elevation.

This report outlines the methodology used to delineate the 1:100-yr floodplain elevation within the Allan Beach Resort at Hubbles Lake site. It outlines the data collection and review process, the drainage assessment, Hubbles Lake's hydrology, and the floodplain delineation for the Allan Beach Resort site.

1.2 Site Description

The Allan Beach Resort at Hubbles Lake, shown in Figure 1-1, is located in Parkland County, approximately 40 km west of the City of Edmonton and 7 km west of the Town of Stony Plain. The site is located north of Diamond Drive, just west of Range Road 13, south of Highway 16 and north of Highway 16A. More precisely, it is located within the subsection NE-09-53-01-W5M.

The site, with an area of 15.3 ha, is located on the southeast corner of Hubbles Lake and includes a small pond within the resort property. Hubbles Lake has a surface area of approximately 38.1 ha. The Hubbles Lake area was first developed around the 1960's, and is now primarily comprised of low-density rural residential developments with lots of green spaces and vegetation.

1.3 Project Objectives

The main objectives of the study are:

1. Conduct a site survey and site investigation of Hubbles Lake and its outlet channel;
2. Assess Hubbles Lake's hydrology and hydraulic properties;
3. Determine the 1:100-yr water elevation of Hubbles Lake;
4. Delineate the 1:100-yr floodplain elevation of Hubbles Lake within the Allan Beach Resort site.



2010 Aerial Photograph

Scale: NTS	Project: Allan Beach Resort Floodplain Delineation	Prepared By:  sameng inc. better water better world #1500, 10025 - 106 Street, Edmonton, Alberta T5J 1G3 Ph: (780) 482-2557, Fax: (780) 482-2538	Legend: Allan Beach Resort Boundary..... - - - Waterbodies and Wetlands.....  Existing Culvert.....  Overflow Path.....  Downstream Outlet Channel..... 
Client: TRG Developments Corp.	Figure 1-1: Location Plan		

2.0 Data Collection and Review

2.1 Site Survey and Site Investigation

A GPS survey and site investigation in the vicinity of the Allan Beach Resort site was performed on March 12, 2012. The GPS survey was georeferenced to ASCM 32136. Elevation data was collected for areas south of Hubbles Lake, including the wetland area directly south of Hubbles Lake, as well as the outlet area on the south-west corner of Hubbles Lake. Relevant surveyed elevations are:

- Culvert invert elevation at potential drainage outlet location – 731.07 m
- Top of road elevation a culvert location – 733.60 m
- Lake surface elevation (top of ice) – 728.01 m
- Wetlands surface elevation (top of ice) – 726.81 m

Relevant surveyed ground elevations and areas investigated are shown on Figure 2-1.

2.2 Historical Water Elevation Data

Historical water elevation data for Hubbles Lake was retrieved from Alberta Environment. The data is from Station No. 05EA915, named “Hubbles Lake near Stony Plain” for years 1968 to 2011. A complete list of this water elevation data can be found in Appendix A.

2.3 Air Photos

Historical air photos were reviewed at the Government of Alberta Air Photo Distribution Office. Photos of the Hubbles Lake area from 1949, 1962, 1971, 1975, 1980, 1986, 1991, 1994, 1996, 1997, and 2005 were looked at. The 1991 air photo was collected for further analysis as it showed the highest lake elevation. A list of available air photos can be found in Appendix B.

An air photo taken during the summer of 2010 was purchased from Valtus Imagery Services. The photo was used to assess the existing site conditions.

2.4 Communications with Government Agencies

Sameng contacted Alberta Environment in March 2012 to obtain any information about existing floodplain elevation and lake hydrology. No relevant information was available with the exception of historical water elevation data.

Sameng contacted Parkland County in March 2012. The County did not have any floodplain elevation for the lake, or any relevant information on past historical flooding in the area. However, the County does not recall any flooding occurring in the vicinity of the lake. The County also indicated that a floodplain delineation of Hubbles Lake was recently completed by FOCUS. Sameng attempted to obtain their results of this study but was unsuccessful.

2.5 Other Data

Other data used for the development of this floodplain delineation include:

- Contour/Elevation data (LIDAR) in the vicinity of the Resort site provided by IBI Group;
- Natural Resources Canada (1:50,000) topographical maps (Alberta Maps) from FUGAWI software (2004).
- Historical rainfall data for the City of Edmonton Municipal Airport from 1961 to 2011 – Alberta Environment (<http://environment.alberta.ca/>);
- Lake Evaporation in Alberta from 1961 to 1996 - Alberta Environmental Protection Water Sciences Branch (1999);
- City of Edmonton rainfall events from the City of Edmonton Design and Construction Standards (Volume 3 – Drainage, 2009);



Scale: 1: 12,000	Project: Allan Beach Resort Floodplain Delineation	Prepared By:  #1500, 10025 - 106 Street, Edmonton, Alberta T5J 1G3 Ph: (780) 482-2557, Fax: (780) 482-2538	Legend: - Allan Beach Resort Boundary..... - - - - Hubbles Lake Basin Boundary..... - - - - Waterbodies and Wetlands..... - Existing Culvert..... - Overflow Path..... - Downstream Outlet Channel.....
Client: TRG Developments Corp.	Figure 2-1: Existing Drainage		

3.0 Drainage Assessment

3.1 Existing Drainage

3.1.1 Hubbles Lake Basin

Drainage in the vicinity of Hubbles Lake is generally to the southeast. Through examination of air photos, LIDAR elevation data and site investigation, the drainage basin area of Hubbles Lake was estimated as 184.6 ha, including the lake, as shown in Figure 2-1. The area surrounding Hubbles Lake and the Allan Beach Resort site has many noticeable depressions, including several considerable ponding areas, small lakes, and wetlands which leaves Hubbles Lake with a small drainage basin area.

3.1.2 Pond

A 1.6 ha pond is located within the Allan Beach Resort site, to the southeast of Hubbles Lake. The pond is not directly connected to the lake by surface drainage, but is believed to have hydraulic connectivity via groundwater. Due to the proximity of the pond to Hubbles Lake, it was assumed that a groundwater connectivity exists between the pond and Hubbles Lake which regulates water elevations between the two. The overflow elevation from the pond to Hubbles Lake is approximately 730.0 m. A review of historical air photos did not show any overflow or flooding of the pond.

3.1.3 Hubbles Lake Outlet

Typically, lakes have an outlet channel which regulates the water level of the lake once its elevation reaches a certain value. Air photos and contour data show that the natural outlet of the lake should be to the south of the lake where a natural wetland area and drainage channel can be observed.

Site investigation and site survey revealed that Hubbles Lake does not seem to have a natural outlet. The most probable overflow location from Hubbles Lake was found to be at a culvert located to the southwest of the lake, west of the wetland area. This culvert (top of ice) has an invert elevation of 731.07 m, which is significantly higher than the surveyed lake surface elevation (top of ice) of 728.01 m and very close to the elevation of some current residences surrounding Hubbles Lake. It should be noted that only the south side of the culvert could be found during the site investigation. The adjacent wetlands had a lower surface elevation (top of ice) of 726.81 m. The culvert is the lowest overflow path from the lake into the wetlands and the outlet channel downstream. A photo of this overflow location can be seen in Figure 3-1.

Two other potential lake outlet/overflow sites were explored, including the area directly between the wetlands and Hubbles Lake, and the Allan Beach Resort site itself. The survey shows that the ridge that runs between the wetlands and Hubbles Lake has an elevation of 736.54 m. Elevations within Allan Beach Resort were taken from LIDAR and show that

ground overflow of Diamond Drive to the south of the resort site is at about 735.0 m. Both of these elevations are significantly higher than the culvert located to the southwest of Hubbles Lake.



Figure 3-1: Diamond Drive looking north towards Hubbles Lake at culvert location (Photo taken on March 12, 2012)

3.2 Historical Water Elevation Review

Historical water elevation data for Hubbles Lake from 1968 to 2011 was retrieved from Alberta Environment. A graph showing variation in water elevation can be found in Figure 3-2 below. The graph shows water elevations varying from 727.78 m to 729.01 m above mean sea level (AMSL). High water elevations were recorded from 1978 to 1993 with maximum elevations of 729.01 m in 1981 and 1991. It should be noted that water levels were not always recorded on a daily basis such that instantaneous maximum water levels might not have been recorded. A complete water elevation dataset can be found in Appendix A.

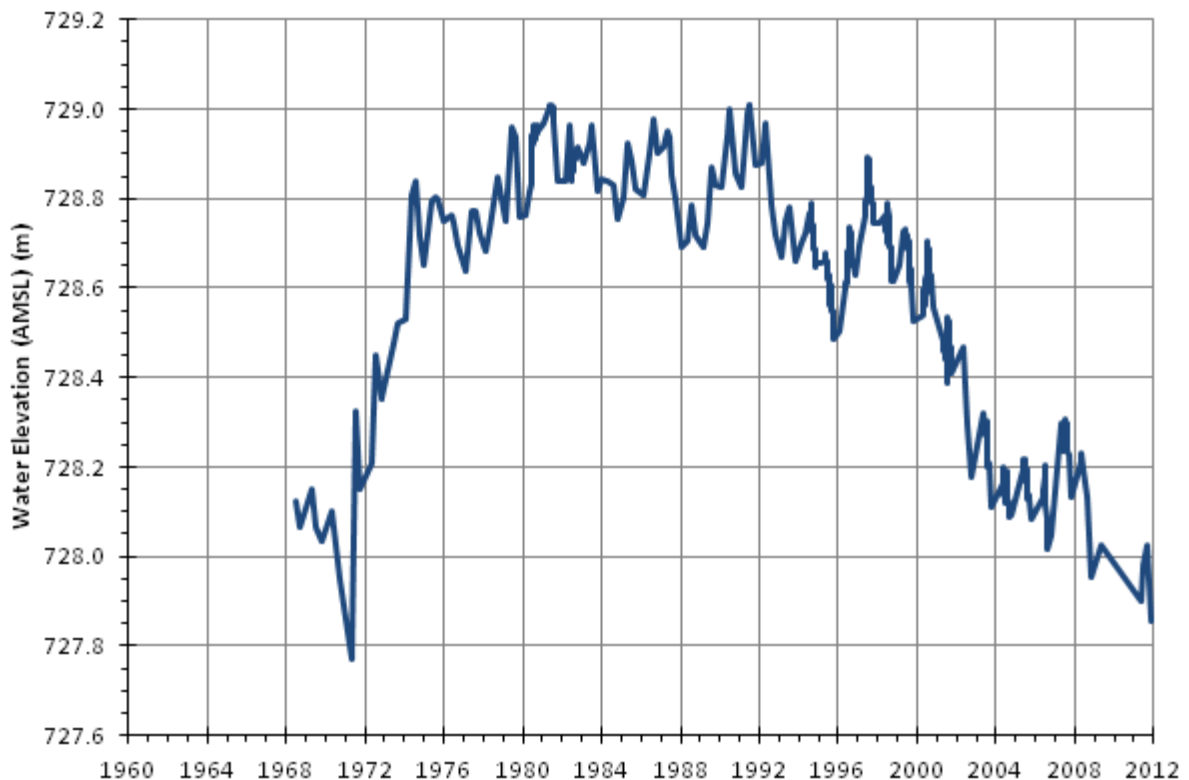


Figure 3-2: Historical Water Elevations of Hubbles Lake from 1968 to 2011

3.3 Air Photos Review

Historical air photos were reviewed at the Government of Alberta Air Photo Distribution Office. Air photos from years 1949 to 2005 were reviewed and compared with one another. The 1991 air photo was observed to show the highest elevation for Hubbles Lake. The September 25, 1991 photo and the summer 2010 air photo are presented in Figure 3-3 for comparison purposes. A higher water elevation is clearly seen in the 1991 photo, where the island to the northwest of the lake is observed to be flooded.

A comparison of the September 25, 1991 photo's lake water boundaries with the LIDAR data determined that the lake water level was approximately 728.85 m. This is in line with the recorded elevations which varied around 728.91 m on that day.



September 25, 1991 Air Photo of Hubbles Lake – Water Elevation: ~728.91m



Summer 2010 Air Photo of Hubbles Lake – Water Elevation: ~727.96m

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Client: TRG Developments Corp.			

Figure 3-3:
Air Photos from September 25, 1991 and Summer 2010

4.0 Hubbles Lake Hydrology

4.1 General

A hydrological assessment of Hubbles Lake was completed to evaluate the impact of rainfall and evaporation on the lake and determine a relation between the theoretical and historical measured water elevation of the lake. The impact of a 1:100-yr rainfall event in the lake's drainage basin on the water elevation change of Hubbles Lake was also evaluated.

4.2 Runoff Coefficient

The estimated average runoff coefficient in the Hubbles Lake basin is presented in Table 4-1 below. This runoff coefficient was calibrated in the water balance model by matching theoretical water elevation change with recorded water elevations. The model was very sensitive to the runoff coefficient value; a variation in this coefficient of only 0.01 would significantly change the results.

Table 4-1: Average Runoff Coefficient in Hubbles Lake Basin

	Area (ha)	Runoff Coefficient
Land and Pond	146.5	0.122
Lake	38.1	1
Total	184.6	0.30

A runoff coefficient of 0.122 for the land area provided the best correlation between the water balance water elevations and the recorded water elevations. As land usage and existing developments in the Hubbles Lake basin is mostly low density residences with large amount of trees and green spaces, this runoff coefficient is in line with existing land usage. Low amount of runoff is expected in the Hubbles Lake basin as the soil will absorb most of the rainfall.

4.3 Water Balance Model

A water balance model of Hubbles Lake's water elevations based on historical precipitation and evaporation data from the City of Edmonton from 1961 to 2011 was completed. The results from this water balance model will be compared with historical water elevation data of the lake in order to determine if water level fluctuations in Hubbles Lake are related to evaporation and precipitation. The following assumptions were made in constructing this model:

- Runoff coefficient of 0.122 (land) and 1.0 (lake);
- No groundwater inflow or outflow;

- No outlet flow from Hubbles Lake;
- 1961 water elevation is estimated at 728.75 m;
- Evaporation data was extrapolated from 1997 to 2012 (average monthly evaporation used for that period);
- 0.5 m reduction of water elevation on January 1997 to ensure continuity in the water balance model.

The water balance results are provided in Figure 4-1 below.

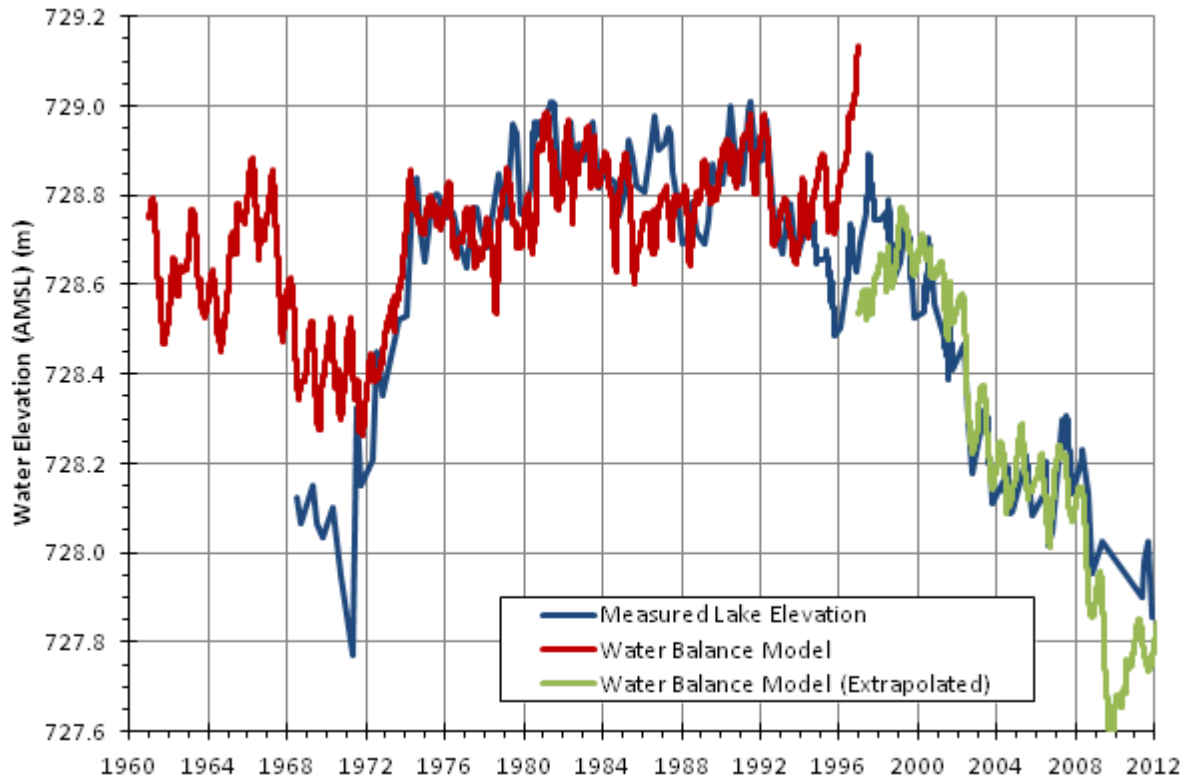


Figure 4-1: Water Balance Model Results compared with Recorded Water Elevation Data from 1961 to 2012

As shown in Figure 4-1, the water elevation results from the water balance model are generally in line with recorded water elevations measured in the lake. Detailed analysis of the water balance model is presented as follows:

- Prior to 1968: no recorded water elevation data available: water elevations might have ranged between 728.4 m and 728.9 m during that period;
- 1968 to 1972: water balance model shows higher elevations than recorded elevations by about 0.4 m;
- 1972 to 1994: generally in line with measured water elevation with the exception of 1986 to 1988 where recorded elevations were higher than model elevations by about 0.2 m;

- 1994 to 1997: water balance model shows rapid rise in water elevation while rise in recorded water elevations were not as significant;
- 1997 to 2011: steady decline in water elevations observed from both the water balance model and the measured water elevations.

Discrepancies between the measured lake elevations and the model results can be observed at various time periods where model results expect higher results than the measured lake elevations and vice versa. This discrepancy could be a result of using precipitation and evaporation data from the Edmonton municipal airport that differs from weather patterns that actually occurred at Hubbles Lake or that groundwater played an important role in stabilizing water elevations.

Overall, the model results line up with the recorded water elevations. This confirms that Hubbles Lake water elevation fluctuates in accordance with precipitation and evaporation tendencies and that groundwater does not have a significant impact on the Lake's water elevation.

A summary of maximum yearly water elevations from the water balance model and recorded water elevations is presented in Appendix C.

4.4 Rainfall-Runoff Events

The estimated water inflow volumes and expected elevation changes to Hubbles Lake following a 1:100-yr 4-hr and 1:100-yr 24-hr events was calculated. The City of Edmonton rainfall events were used for this assessment. The 1:100-yr 4-hr event has a rainfall depth of 69.2 mm, while the 1:100-yr 24-hr event has a rainfall depth of 126.6 mm. A runoff coefficient of 0.3 was used for the land area. For these large rainfall events, the drainage basin is allotted a higher runoff coefficient to account for added water saturation of the drainage basin and larger runoff.

Table 4-2: Inflow Volume and Hubbles Lake Elevation Increase from a 1:100-yr 4-hr and 1:100-yr 24-hr Rainfall Event

	Total Rainfall (mm)	Runoff Coefficient		Total Inflow Volume (m ³)	Lake Elevation Increase (m)
		Lake	Land		
100-yr 4-hr Event	69.18	1.0	0.3	56,800	0.15
100-yr 24-hr Event	126.63	1.0	0.3	104,000	0.27

As seen in Table 4-2, Hubbles Lake's water level will increase by about 0.15 m following a 1:100-yr 4-hr rainfall event, and by about 0.27 m following a 1:100-yr 24-hr rainfall event.

5.0 Floodplain Delineation

5.1 1:100 Year Floodplain Delineation

In order to determine the 1:100 year floodplain elevation of Hubbles Lake, a statistical analysis of the last 44 years of recorded water elevations was performed. The maximum yearly recorded water elevation data from 1968 to 2011 were distributed using the Lognormal and Log Pearson Type III Distribution and using the Weibull ranking method. The Log Pearson III distribution best fitted the data such that it was useful for the rest of this analysis. This allows the calculation of return period of any water elevations, and as such allows the determination of the 1:100-yr elevation, which is the elevation associated with a 1% probability of exceedence. The results of this statistical analysis, showing water elevations for various return periods, is tabulated in Table 5-1 and plotted in the graph of Figure 5-1.

Table 5-1: Water Elevations for different Probabilities of Exceedence and Yearly Periods

Probability of Exceedence (%)	Return Period (yr)	Water Elevation (m)
0.2	500	729.329
0.5	200	729.281
1.0	100	729.239
2.0	50	729.189
5.0	20	729.106
10.0	10	729.024
20.0	5	728.915
50.0	2	728.673
80.0	1.25	728.385
90.0	1.11	728.214
95.0	1.05	728.063
99.0	1.01	727.753

As shown in Table 5-1, the 1:100-yr (1% probability of exceedence) water elevation of Hubbles Lake is estimated at 729.239 m. Therefore, 729.239 m is the 1:100-yr floodplain elevation within the Allan Beach Resort Site. Based on this statistical analysis, the 1981 and 1991 historically high recorded water elevations had a probability of exceedence of approximately 10% (10-yr return period). The 2012 lake water elevation of Hubbles Lake is very low and has a return period of about 1.05 years (95% probability of exceedence).

5.2 Freeboard Determination

To compensate for recording errors, environmental factors, and other unknowns, a freeboard was estimated for the Allan Beach Resort site. A freeboard of 0.50 m was determined to be

appropriate for this site. All permanent structures and buildings within the Allan Beach Resort should be constructed at a minimum elevation of 729.74 m to ensure flooding protection against a 1:100-yr flooding event.

As is noted in Section 4.4, a 1:100-yr, 24-hr rainfall event increases the Hubbles Lake water elevation by approximately 0.27 m. A 0.5 m freeboard will be able to accommodate for this large rainfall event if it were to occur at a time when the lake's water elevations were at a 100-yr high. Furthermore, as seen in Table 5-1, this freeboard will provide a safety factor higher than the projected 1:500-yr water elevation (0.2% probability of exceedence).

5.3 Floodplain Delineation

The floodplain delineation of the Allan Beach Resort site using LiDAR ground elevation data is presented in Figure 5-2. The 1:100-yr floodplain elevation, including a 0.50 m freeboard, is 729.74 m. It should be noted that this floodplain elevation assumes no significant groundwater impact, no outflow into the downstream outlet (as its overflow point is much higher than the 1:100 year water elevation), and no significant increase in surface runoff in the basin. This delineation also assumes that the recorded water elevation data is accurate, which, from the water balance model and other assessments presented throughout the report, seems to be.

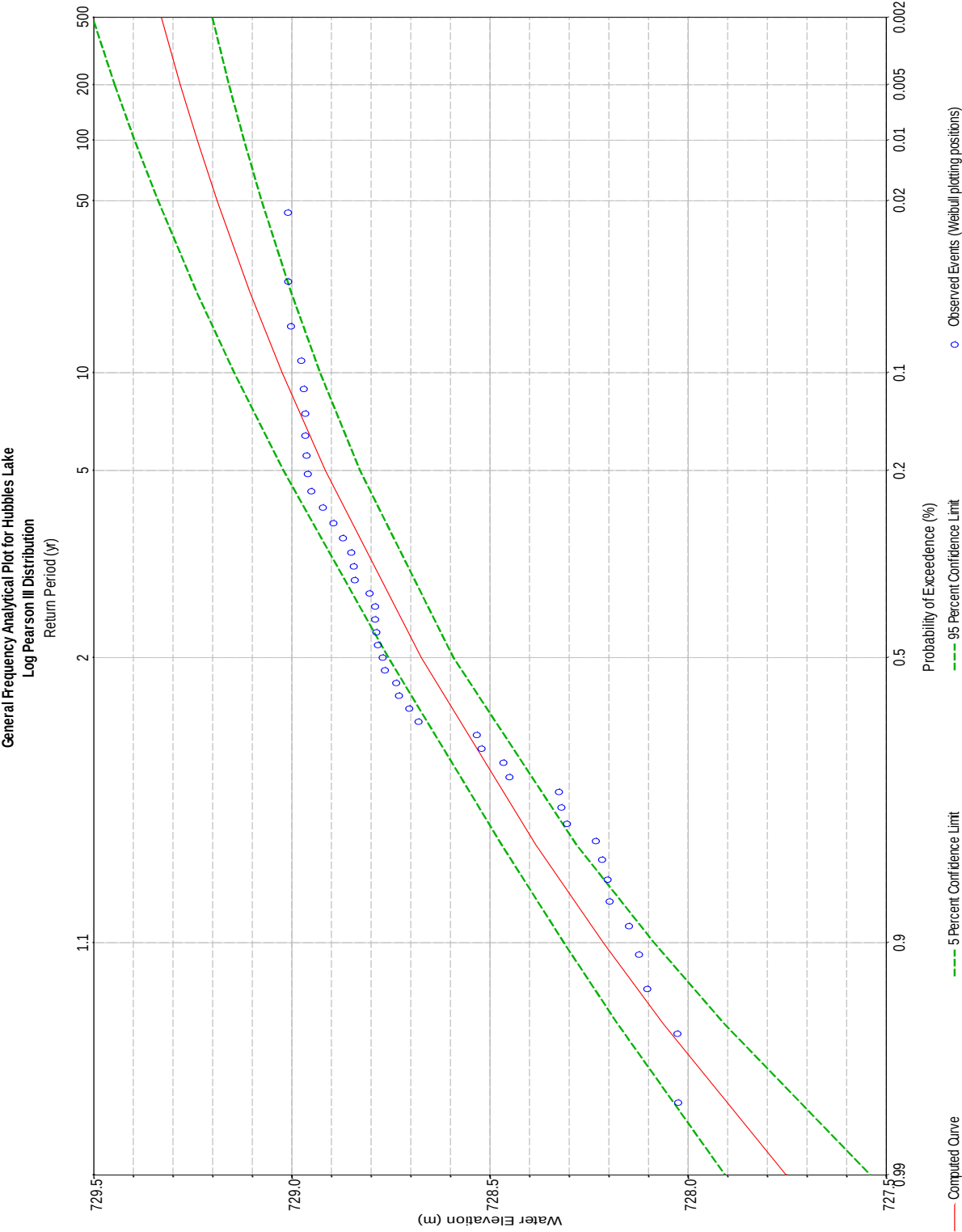


Figure 5-1: General Frequency Analytical Plot for Hubbles Lake – Log Pearson III Distribution



Scale: 1: 5,000	Project: Allan Beach Resort Floodplain Delineation	Prepared By:  sameng inc. better water better world #1500, 10025 - 106 Street, Edmonton, Alberta T5J 1G3 Ph: (780) 482-2557, Fax: (780) 482-2538	Legend: Allan Beach Resort Boundary..... - - - Major 1.0m Interval Contours..... Minor 0.5m Interval Contours..... 1:100 yr Water Elevation @ 729.24m..... 1:100 yr Water Elevation +0.5m..... Freeboard @ 729.74m.....
Client: TRG Developments Corp.	Figure 5-2: Floodplain Delineation		

6.0 Conclusion

- Sameng was contracted by TRG Developments Corp to determine the 1:100-yr floodplain elevation of the Allan Beach resort at Hubbles Lake, an RV Strata Development.
- Hubbles Lake, located to the northwest of the site, is the most significant water feature in the vicinity of the site that has the potential to flood the property.
- The Hubbles Lake basin is small and surface drainage is generally to the southeast. It has an area of 184.6 ha, 38.1 of which is occupied by the lake, and an average land runoff coefficient of 0.122.
- Site survey and site investigation determined that Hubbles Lake does not have a natural outlet. The minimum overflow elevation is 731.07 m at a culvert located to the southwest of the lake.
- Air photo examination and historical recorded water elevation data revealed that highest water elevations from 1968 to 2012 were recorded as 729.01 m in 1981 and 1991.
- A water balance model was completed and concluded that water elevations recorded in Hubbles Lake are highly related to precipitation and evaporation. Groundwater inflows and outflows do not seem to have a significant impact on water levels.
- A statistical analysis was performed using a Log Pearson type III distribution of the last 44 years of recorded water elevation data. The 1:100-yr water elevation was estimated to be 729.239 m (1% probability of exceedence). The recorded 1981 and 1991 water elevations of 729.01 m have an estimated return period of 10 years (10% probability of exceedence).
- Increases in Hubbles Lake water elevations due to 1:100-yr rainfall-runoff events were calculated. The 1:100-yr 4-hr rainfall event will have a 0.15 m increase on Hubbles Lake water elevations, while 1:100-yr 24-hr storm will have a 0.27 m increase on Hubbles Lake water elevation.
- A floodplain delineation of Hubbles Lake and Allan Beach Resort site was completed:
 - The 1:100-yr floodplain elevation is 729.239 m
 - A freeboard of 0.5 m is recommended to account for measuring errors, environmental factors and other unknowns.
 - The floodplain elevation of the Allan Beach Resort site at Hubbles Lake, including freeboard is 729.74 m

Appendix A – Hubbles Lake Water Elevation Data from Alberta Environment

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Date	Lake Elevation
12/07/1968	728.1240234
11/09/1968	728.0670166
05/05/1969	728.1489868
08/07/1969	728.0670166
21/10/1969	728.03302
13/05/1970	728.1030273
05/10/1970	727.9509888
18/05/1971	727.7709961
16/07/1971	728.3259888
06/10/1971	728.1489868
09/05/1972	728.2069702
04/08/1972	728.4509888
20/10/1972	728.3530273
24/10/1972	728.3709717
31/10/1972	728.3560181
30/05/1973	728.4749756
16/08/1973	728.5209961
22/01/1974	728.5300293
15/05/1974	728.8070068
23/07/1974	728.8410034
30/09/1974	728.7160034
07/01/1975	728.6519775
02/06/1975	728.7949829
30/07/1975	728.8040161
24/09/1975	728.8010254
13/01/1976	728.7490234
08/06/1976	728.7650146
19/07/1976	728.7459717
28/09/1976	728.6970215
02/02/1977	728.6370239
14/06/1977	728.7709961
12/08/1977	728.7709961
07/10/1977	728.7219849
14/02/1978	728.6820068
08/05/1978	728.7340088
02/10/1978	728.8499756
01/02/1979	728.7490234
28/05/1979	728.960022
07/08/1979	728.9379883
03/11/1979	728.7579956
04/03/1980	728.7639771
16/05/1980	728.815979
01/06/1980	728.8330078

Date	Lake Elevation
02/06/1980	728.8330078
03/06/1980	728.8530273
04/06/1980	728.8729858
05/06/1980	728.8729858
06/06/1980	728.8829956
07/06/1980	728.8829956
08/06/1980	728.8729858
09/06/1980	728.8729858
10/06/1980	728.8629761
11/06/1980	728.8629761
12/06/1980	728.8629761
13/06/1980	728.8530273
14/06/1980	728.8530273
15/06/1980	728.8430176
16/06/1980	728.8330078
17/06/1980	728.8330078
18/06/1980	728.8330078
19/06/1980	728.8430176
20/06/1980	728.8530273
21/06/1980	728.8729858
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23/06/1980	728.8629761
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25/06/1980	728.9030151
26/06/1980	728.9130249
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28/06/1980	728.9429932
29/06/1980	728.9429932
30/06/1980	728.9329834
01/07/1980	728.9130249
02/07/1980	728.9329834
03/07/1980	728.9530029
04/07/1980	728.9530029
05/07/1980	728.9429932
06/07/1980	728.9329834
07/07/1980	728.9329834
08/07/1980	728.9229736
09/07/1980	728.9329834
10/07/1980	728.9429932
11/07/1980	728.9630127
12/07/1980	728.9630127
13/07/1980	728.9530029
14/07/1980	728.9429932

Date	Lake Elevation
15/07/1980	728.9429932
16/07/1980	728.9429932
17/07/1980	728.9290161
18/07/1980	728.9429932
19/07/1980	728.9429932
20/07/1980	728.9530029
21/07/1980	728.9429932
22/07/1980	728.9429932
23/07/1980	728.9329834
24/07/1980	728.9329834
25/07/1980	728.9429932
26/07/1980	728.9429932
27/07/1980	728.9329834
28/07/1980	728.9329834
29/07/1980	728.9429932
30/07/1980	728.9439697
31/07/1980	728.9539795
01/08/1980	728.9439697
02/08/1980	728.9439697
03/08/1980	728.934021
04/08/1980	728.934021
05/08/1980	728.9539795
06/08/1980	728.9439697
07/08/1980	728.9439697
08/08/1980	728.9439697
09/08/1980	728.9439697
10/08/1980	728.9539795
11/08/1980	728.9439697
12/08/1980	728.9439697
13/08/1980	728.934021
14/08/1980	728.934021
15/08/1980	728.9439697
16/08/1980	728.9439697
17/08/1980	728.9439697
18/08/1980	728.9439697
19/08/1980	728.934021
20/08/1980	728.9439697
21/08/1980	728.9439697
22/08/1980	728.9439697
23/08/1980	728.934021
24/08/1980	728.9539795
25/08/1980	728.9650269
26/08/1980	728.9650269

Date	Lake Elevation
27/08/1980	728.9650269
28/08/1980	728.9650269
29/08/1980	728.9550171
30/08/1980	728.9550171
31/08/1980	728.9550171
01/09/1980	728.9650269
02/09/1980	728.9550171
03/09/1980	728.9550171
04/09/1980	728.9450073
05/09/1980	728.9450073
06/09/1980	728.9450073
07/09/1980	728.9550171
08/09/1980	728.9450073
09/09/1980	728.9550171
10/09/1980	728.9550171
11/09/1980	728.9450073
12/09/1980	728.9450073
13/09/1980	728.9550171
14/09/1980	728.9550171
15/09/1980	728.9550171
16/09/1980	728.9550171
17/09/1980	728.9650269
18/09/1980	728.9650269
19/09/1980	728.9550171
20/09/1980	728.9559937
21/09/1980	728.9660034
22/09/1980	728.9660034
23/09/1980	728.9559937
24/09/1980	728.9559937
25/09/1980	728.9660034
26/09/1980	728.9559937
27/09/1980	728.9459839
28/09/1980	728.9559937
29/09/1980	728.9559937
30/09/1980	728.9459839
02/10/1980	728.9530029
06/02/1981	728.96698
08/05/1981	729.0050049
09/05/1981	729.0079956
10/05/1981	729.0089722
11/05/1981	729.0089722
12/05/1981	729.0089722
13/05/1981	729.007019

Date	Lake Elevation
14/05/1981	729.0079956
15/05/1981	729.0089722
16/05/1981	729.0089722
17/05/1981	729.0079956
18/05/1981	729.0079956
19/05/1981	729.007019
20/05/1981	729.007019
21/05/1981	729.0059814
22/05/1981	729.007019
23/05/1981	729.007019
24/05/1981	729.0079956
25/05/1981	729.0079956
26/05/1981	729.0089722
27/05/1981	729.0089722
28/05/1981	729.0079956
29/05/1981	729.0079956
30/05/1981	729.0059814
31/05/1981	729.0059814
01/06/1981	729.007019
02/06/1981	729.007019
03/06/1981	729.0079956
04/06/1981	729.007019
05/06/1981	729.007019
06/06/1981	729.007019
07/06/1981	729.0079956
08/06/1981	729.0079956
09/06/1981	729.007019
10/06/1981	729.007019
11/06/1981	729.0059814
12/06/1981	729.007019
13/06/1981	729.0059814
14/06/1981	729.007019
15/06/1981	729.007019
16/06/1981	729.0079956
17/06/1981	729.0079956
18/06/1981	729.007019
19/06/1981	729.007019
20/06/1981	729.0079956
21/06/1981	729.0079956
22/06/1981	729.0079956
23/06/1981	729.0079956
24/06/1981	729.007019
25/06/1981	729.007019

Date	Lake Elevation
26/06/1981	729.0059814
27/06/1981	729.0059814
28/06/1981	729.0059814
29/06/1981	729.007019
30/06/1981	729.007019
01/07/1981	729.007019
02/07/1981	729.0059814
03/07/1981	729.0040283
04/07/1981	729.0050049
05/07/1981	729.0040283
06/07/1981	729.0029907
07/07/1981	729.0029907
08/07/1981	729.0020142
09/07/1981	729.0020142
10/07/1981	729.0009766
11/07/1981	729
12/07/1981	728.9979858
13/07/1981	728.9979858
14/07/1981	728.9970093
15/07/1981	728.9940186
16/07/1981	728.9940186
17/07/1981	728.992981
18/07/1981	728.9899902
19/07/1981	728.9899902
20/07/1981	728.9869995
21/07/1981	728.9860229
22/07/1981	728.9840088
23/07/1981	728.973999
24/07/1981	728.9819946
25/07/1981	728.9810181
26/07/1981	728.9810181
27/07/1981	728.9780273
28/07/1981	728.9769897
29/07/1981	728.9799805
30/07/1981	728.9840088
31/07/1981	728.9829712
10/08/1981	728.9689941
15/10/1981	728.8400269
18/02/1982	728.8380127
19/05/1982	728.9660034
11/06/1982	728.9000244
16/06/1982	728.8400269
17/06/1982	728.8400269

Date	Lake Elevation
18/06/1982	728.8380127
19/06/1982	728.8389893
20/06/1982	728.8389893
21/06/1982	728.8410034
22/06/1982	728.8439941
23/06/1982	728.8439941
24/06/1982	728.84198
25/06/1982	728.8439941
26/06/1982	728.8449707
27/06/1982	728.8469849
28/06/1982	728.848999
29/06/1982	728.8499756
30/06/1982	728.8480225
01/07/1982	728.8499756
02/07/1982	728.8530273
03/07/1982	728.8569946
04/07/1982	728.8569946
05/07/1982	728.8579712
06/07/1982	728.8599854
07/07/1982	728.8599854
08/07/1982	728.8629761
09/07/1982	728.8629761
10/07/1982	728.8629761
11/07/1982	728.8619995
12/07/1982	728.8619995
13/07/1982	728.8619995
14/07/1982	728.8640137
15/07/1982	728.8709717
16/07/1982	728.8709717
17/07/1982	728.8740234
18/07/1982	728.8740234
19/07/1982	728.8759766
20/07/1982	728.8790283
21/07/1982	728.8809814
22/07/1982	728.8809814
23/07/1982	728.8829956
24/07/1982	728.8839722
25/07/1982	728.8859863
26/07/1982	728.8870239
27/07/1982	728.8889771
28/07/1982	728.8889771
29/07/1982	728.8900146
30/07/1982	728.8920288

Date	Lake Elevation
31/07/1982	728.8920288
01/08/1982	728.8920288
02/08/1982	728.8950195
03/08/1982	728.8930054
04/08/1982	728.8950195
05/08/1982	728.8959961
06/08/1982	728.8939819
07/08/1982	728.8920288
08/08/1982	728.8930054
09/08/1982	728.8950195
10/08/1982	728.8930054
11/08/1982	728.8950195
12/08/1982	728.8950195
13/08/1982	728.8920288
14/08/1982	728.8920288
15/08/1982	728.8939819
16/08/1982	728.8920288
17/08/1982	728.8920288
18/08/1982	728.8900146
19/08/1982	728.8900146
20/08/1982	728.8909912
21/08/1982	728.8909912
22/08/1982	728.8909912
23/08/1982	728.8930054
24/08/1982	728.8909912
25/08/1982	728.8909912
26/08/1982	728.8930054
27/08/1982	728.8939819
28/08/1982	728.8920288
29/08/1982	728.8920288
30/08/1982	728.8939819
31/08/1982	728.8939819
05/10/1982	728.9169922
15/02/1983	728.8809814
16/05/1983	728.9260254
12/07/1983	728.9630127
06/10/1983	728.815979
16/01/1984	728.8439941
07/05/1984	728.8369751
23/07/1984	728.8289795
16/10/1984	728.7550049
14/02/1985	728.8049927
06/05/1985	728.9219971

Date	Lake Elevation
17/07/1985	728.8839722
01/10/1985	728.8209839
31/01/1986	728.8079834
20/05/1986	728.9030151
01/08/1986	728.9760132
30/10/1986	728.901001
10/02/1987	728.914978
01/05/1987	728.9509888
09/06/1987	728.9370117
20/07/1987	728.8510132
07/10/1987	728.8010254
28/01/1988	728.6920166
25/04/1988	728.7050171
19/07/1988	728.7869873
14/10/1988	728.71698
20/02/1989	728.690979
10/05/1989	728.7449951
13/07/1989	728.8709717
25/10/1989	728.8280029
16/01/1990	728.8239746
11/05/1990	728.9400024
12/07/1990	729.0020142
12/10/1990	728.8579712
21/01/1991	728.8259888
13/05/1991	728.9910278
18/07/1991	729.0100098
18/10/1991	728.8740234
23/01/1992	728.8779907
01/05/1992	728.9699707
04/08/1992	728.7869873
06/10/1992	728.7199707
27/01/1993	728.6690063
03/05/1993	728.75
26/07/1993	728.78302
12/10/1993	728.6589966
25/02/1994	728.7020264
09/05/1994	728.7249756
29/07/1994	728.7680054
08/08/1994	728.7390137
09/08/1994	728.7410278
13/08/1994	728.7390137
16/08/1994	728.7399902
18/08/1994	728.789978

Date	Lake Elevation
24/08/1994	728.7540283
28/08/1994	728.7390137
31/08/1994	728.742981
01/09/1994	728.7390137
03/09/1994	728.7290039
04/09/1994	728.7379761
06/09/1994	728.7280273
07/09/1994	728.7280273
08/09/1994	728.7280273
09/09/1994	728.7280273
10/09/1994	728.7360229
11/09/1994	728.7369995
12/09/1994	728.7390137
13/09/1994	728.7379761
14/09/1994	728.7369995
15/09/1994	728.7290039
16/09/1994	728.7290039
17/09/1994	728.7280273
18/09/1994	728.7269897
19/09/1994	728.7269897
21/09/1994	728.71698
22/09/1994	728.7150269
23/09/1994	728.7069702
24/09/1994	728.7009888
25/09/1994	728.6970215
26/09/1994	728.6950073
27/09/1994	728.6950073
28/09/1994	728.6970215
29/09/1994	728.6970215
30/09/1994	728.6970215
01/10/1994	728.6970215
03/10/1994	728.6959839
04/10/1994	728.6959839
05/10/1994	728.6959839
07/10/1994	728.6939697
08/10/1994	728.6939697
09/10/1994	728.6859741
11/10/1994	728.6870117
12/10/1994	728.6870117
13/10/1994	728.6870117
14/10/1994	728.6859741
15/10/1994	728.6859741
16/10/1994	728.6859741

Date	Lake Elevation
17/10/1994	728.6849976
18/10/1994	728.6849976
19/10/1994	728.684021
20/10/1994	728.684021
22/10/1994	728.684021
23/10/1994	728.6660156
24/10/1994	728.6660156
25/10/1994	728.6640015
26/10/1994	728.6640015
27/10/1994	728.6640015
28/10/1994	728.6640015
30/10/1994	728.6469727
31/10/1994	728.6469727
01/11/1994	728.6560059
02/11/1994	728.6560059
03/11/1994	728.6560059
04/11/1994	728.6569824
05/11/1994	728.6569824
23/01/1995	728.6539917
10/05/1995	728.6610107
11/05/1995	728.6610107
12/05/1995	728.6690063
13/05/1995	728.677002
14/05/1995	728.6690063
15/05/1995	728.6799927
16/05/1995	728.6779785
18/05/1995	728.6799927
19/05/1995	728.6690063
20/05/1995	728.6669922
21/05/1995	728.6669922
22/05/1995	728.6599731
23/05/1995	728.6599731
24/05/1995	728.6599731
25/05/1995	728.6599731
26/05/1995	728.6599731
27/05/1995	728.6500244
28/05/1995	728.6500244
29/05/1995	728.651001
30/05/1995	728.651001
31/05/1995	728.651001
01/06/1995	728.6500244
02/06/1995	728.6500244
03/06/1995	728.6500244

Date	Lake Elevation
04/06/1995	728.6610107
05/06/1995	728.6610107
06/06/1995	728.6610107
07/06/1995	728.6610107
08/06/1995	728.6610107
09/06/1995	728.651001
10/06/1995	728.6489868
11/06/1995	728.6420288
12/06/1995	728.6420288
13/06/1995	728.632019
14/06/1995	728.6309814
15/06/1995	728.6309814
16/06/1995	728.6290283
17/06/1995	728.632019
18/06/1995	728.6420288
19/06/1995	728.6420288
20/06/1995	728.6420288
21/06/1995	728.6420288
22/06/1995	728.6400146
23/06/1995	728.632019
24/06/1995	728.6300049
25/06/1995	728.632019
26/06/1995	728.632019
27/06/1995	728.6290283
28/06/1995	728.6209717
29/06/1995	728.6209717
30/06/1995	728.6209717
01/07/1995	728.6199951
03/07/1995	728.6220093
04/07/1995	728.6220093
05/07/1995	728.6300049
06/07/1995	728.6300049
07/07/1995	728.6309814
08/07/1995	728.6229858
09/07/1995	728.6229858
10/07/1995	728.6229858
11/07/1995	728.6199951
12/07/1995	728.6119995
13/07/1995	728.6119995
14/07/1995	728.6110229
15/07/1995	728.6090088
16/07/1995	728.6030273
17/07/1995	728.6010132

Date	Lake Elevation
18/07/1995	728.5930176
19/07/1995	728.5930176
20/07/1995	728.5910034
21/07/1995	728.59198
22/07/1995	728.5819702
23/07/1995	728.5819702
24/07/1995	728.5809937
25/07/1995	728.572998
27/07/1995	728.5640259
29/07/1995	728.5640259
30/07/1995	728.5640259
31/07/1995	728.5819702
02/08/1995	728.5819702
03/08/1995	728.5830078
04/08/1995	728.5750122
05/08/1995	728.5750122
06/08/1995	728.5739746
07/08/1995	728.5739746
08/08/1995	728.5739746
09/08/1995	728.5809937
10/08/1995	728.5949707
11/08/1995	728.6049805
12/08/1995	728.6049805
13/08/1995	728.6049805
14/08/1995	728.6049805
15/08/1995	728.6060181
16/08/1995	728.6060181
17/08/1995	728.6060181
18/08/1995	728.6049805
19/08/1995	728.5949707
20/08/1995	728.5949707
21/08/1995	728.5859985
22/08/1995	728.5859985
23/08/1995	728.5859985
24/08/1995	728.5859985
25/08/1995	728.5859985
26/08/1995	728.5869751
27/08/1995	728.5869751
28/08/1995	728.585022
29/08/1995	728.5839844
30/08/1995	728.5839844
31/08/1995	728.5839844
01/09/1995	728.5770264

Date	Lake Elevation
02/09/1995	728.5770264
03/09/1995	728.5750122
05/09/1995	728.5670166
06/09/1995	728.5670166
07/09/1995	728.565979
08/09/1995	728.565979
09/09/1995	728.5579834
10/09/1995	728.5549927
11/09/1995	728.5549927
12/09/1995	728.5549927
13/09/1995	728.5479736
14/09/1995	728.5479736
15/09/1995	728.5479736
16/09/1995	728.5460205
17/09/1995	728.5380249
18/09/1995	728.5369873
19/09/1995	728.5289917
20/09/1995	728.5269775
21/09/1995	728.5219727
22/09/1995	728.5180054
23/09/1995	728.5180054
24/09/1995	728.5189819
25/09/1995	728.5189819
26/09/1995	728.5170288
27/09/1995	728.5150146
28/09/1995	728.4990234
29/09/1995	728.4990234
30/09/1995	728.5
01/10/1995	728.5
02/10/1995	728.5
03/10/1995	728.4990234
04/10/1995	728.4990234
05/10/1995	728.4990234
06/10/1995	728.5
07/10/1995	728.5
09/10/1995	728.5
10/10/1995	728.5
11/10/1995	728.4990234
12/10/1995	728.4990234
13/10/1995	728.4990234
14/10/1995	728.4979858
16/10/1995	728.4879761
15/01/1996	728.5040283

Date	Lake Elevation
03/05/1996	728.6040039
04/05/1996	728.6079712
05/05/1996	728.6079712
06/05/1996	728.6079712
07/05/1996	728.6090088
08/05/1996	728.6090088
09/05/1996	728.6090088
10/05/1996	728.6069946
11/05/1996	728.6069946
12/05/1996	728.6049805
13/05/1996	728.6049805
14/05/1996	728.6060181
15/05/1996	728.6049805
16/05/1996	728.6049805
17/05/1996	728.6049805
18/05/1996	728.6030273
19/05/1996	728.6030273
21/05/1996	728.5980225
22/05/1996	728.5980225
23/05/1996	728.5980225
24/05/1996	728.5980225
25/05/1996	728.5980225
26/05/1996	728.598999
27/05/1996	728.5969849
28/05/1996	728.5980225
29/05/1996	728.5980225
30/05/1996	728.6099854
31/05/1996	728.617981
01/06/1996	728.617981
02/06/1996	728.617981
03/06/1996	728.617981
04/06/1996	728.6190186
06/06/1996	728.6279907
07/06/1996	728.6279907
08/06/1996	728.6279907
09/06/1996	728.6279907
10/06/1996	728.6199951
12/06/1996	728.6190186
13/06/1996	728.6190186
15/06/1996	728.6110229
20/06/1996	728.6820068
21/06/1996	728.6820068
22/06/1996	728.6820068

Date	Lake Elevation
23/06/1996	728.6820068
24/06/1996	728.6829834
25/06/1996	728.6829834
26/06/1996	728.6829834
27/06/1996	728.6829834
28/06/1996	728.6829834
29/06/1996	728.6820068
01/07/1996	728.6810303
02/07/1996	728.6829834
03/07/1996	728.6829834
04/07/1996	728.6829834
06/07/1996	728.6810303
08/07/1996	728.6820068
09/07/1996	728.6820068
12/07/1996	728.6829834
13/07/1996	728.6829834
15/07/1996	728.684021
16/07/1996	728.6820068
17/07/1996	728.6820068
18/07/1996	728.6820068
19/07/1996	728.7360229
20/07/1996	728.7360229
21/07/1996	728.7349854
23/07/1996	728.7360229
24/07/1996	728.7360229
26/07/1996	728.7340088
27/07/1996	728.7340088
28/07/1996	728.723999
29/07/1996	728.7249756
30/07/1996	728.7249756
31/07/1996	728.7249756
01/08/1996	728.7109985
02/08/1996	728.7150269
03/08/1996	728.7150269
05/08/1996	728.7369995
06/08/1996	728.7369995
07/08/1996	728.7369995
08/08/1996	728.7369995
09/08/1996	728.7340088
10/08/1996	728.7340088
11/08/1996	728.7340088
13/08/1996	728.7230225
14/08/1996	728.7230225

Date	Lake Elevation
15/08/1996	728.7230225
16/08/1996	728.7230225
17/08/1996	728.7230225
18/08/1996	728.7150269
19/08/1996	728.7150269
20/08/1996	728.7150269
21/08/1996	728.7089844
22/08/1996	728.7030029
23/08/1996	728.6939697
24/08/1996	728.6950073
25/08/1996	728.6950073
26/08/1996	728.6950073
27/08/1996	728.6950073
28/08/1996	728.6849976
29/08/1996	728.6849976
30/08/1996	728.6849976
31/08/1996	728.6829834
04/09/1996	728.6530151
05/09/1996	728.6539917
06/09/1996	728.6530151
07/09/1996	728.6530151
08/09/1996	728.6530151
09/09/1996	728.6589966
10/09/1996	728.6589966
11/09/1996	728.6589966
12/09/1996	728.6530151
13/09/1996	728.6530151
14/09/1996	728.6530151
15/09/1996	728.6530151
16/09/1996	728.6530151
17/09/1996	728.6589966
18/09/1996	728.6589966
19/09/1996	728.65802
20/09/1996	728.65802
21/09/1996	728.6599731
22/09/1996	728.6599731
25/09/1996	728.6599731
26/09/1996	728.6599731
27/09/1996	728.6589966
28/09/1996	728.6589966
29/09/1996	728.6589966
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10/10/1996	728.6500244

Date	Lake Elevation
26/10/1996	728.6300049
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28/10/1996	728.6300049
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30/10/1996	728.6300049
31/10/1996	728.6279907
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10/11/1996	728.6300049
11/11/1996	728.6290283
12/02/1997	728.6939697
12/05/1997	728.7639771
16/05/1997	728.7620239
18/05/1997	728.7630005
19/05/1997	728.7630005
20/05/1997	728.7630005
22/05/1997	728.7860107
23/05/1997	728.7860107
24/05/1997	728.7860107
25/05/1997	728.7860107
26/05/1997	728.7860107
27/05/1997	728.7860107
28/05/1997	728.7860107
29/05/1997	728.7869873
30/05/1997	728.7890015
31/05/1997	728.7890015
01/06/1997	728.7919922
02/06/1997	728.7960205
03/06/1997	728.7960205
04/06/1997	728.7960205
05/06/1997	728.8060303
06/06/1997	728.8060303
07/06/1997	728.8079834
08/06/1997	728.8079834
09/06/1997	728.809021
10/06/1997	728.809021

Date	Lake Elevation
11/06/1997	728.809021
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13/06/1997	728.809021
14/06/1997	728.809021
15/06/1997	728.8109741
16/06/1997	728.8270264
17/06/1997	728.8270264
18/06/1997	728.8270264
20/06/1997	728.8319702
21/06/1997	728.8359985
22/06/1997	728.8480225
23/06/1997	728.8939819
24/06/1997	728.8939819
25/06/1997	728.8950195
26/06/1997	728.8950195
27/06/1997	728.8950195
28/06/1997	728.8950195
29/06/1997	728.8950195
30/06/1997	728.8950195
01/07/1997	728.8950195
02/07/1997	728.8939819
03/07/1997	728.8939819
04/07/1997	728.8939819
05/07/1997	728.8939819
07/07/1997	728.8930054
08/07/1997	728.8870239
09/07/1997	728.8870239
10/07/1997	728.8870239
11/07/1997	728.8870239
12/07/1997	728.8889771
13/07/1997	728.8900146
14/07/1997	728.8900146
15/07/1997	728.8900146
16/07/1997	728.8900146
17/07/1997	728.8889771
18/07/1997	728.8889771
20/07/1997	728.8870239
21/07/1997	728.8870239
22/07/1997	728.8870239
23/07/1997	728.8649902
24/07/1997	728.8660278
25/07/1997	728.8660278
26/07/1997	728.8640137

Date	Lake Elevation
27/07/1997	728.8400269
28/07/1997	728.8400269
29/07/1997	728.8259888
30/07/1997	728.8319702
31/07/1997	728.8319702
01/08/1997	728.8319702
02/08/1997	728.8319702
03/08/1997	728.8330078
06/08/1997	728.8330078
07/08/1997	728.8330078
08/08/1997	728.8319702
09/08/1997	728.8179932
10/08/1997	728.8179932
11/08/1997	728.8179932
12/08/1997	728.8140259
13/08/1997	728.809021
14/08/1997	728.809021
15/08/1997	728.809021
16/08/1997	728.8389893
17/08/1997	728.8250122
18/08/1997	728.8250122
19/08/1997	728.8250122
20/08/1997	728.8250122
21/08/1997	728.8189697
22/08/1997	728.8189697
23/08/1997	728.8200073
24/08/1997	728.8120117
25/08/1997	728.8120117
26/08/1997	728.8099976
27/08/1997	728.8099976
28/08/1997	728.8070068
29/08/1997	728.8049927
30/08/1997	728.8049927
31/08/1997	728.8049927
01/09/1997	728.7990112
02/09/1997	728.7999878
03/09/1997	728.8010254
04/09/1997	728.802002
05/09/1997	728.802002
08/09/1997	728.8029785
09/09/1997	728.8010254
10/09/1997	728.8010254
11/09/1997	728.8010254

Date	Lake Elevation
12/09/1997	728.802002
13/09/1997	728.7979736
14/09/1997	728.7979736
15/09/1997	728.7979736
16/09/1997	728.7979736
17/09/1997	728.7969971
18/09/1997	728.7949829
19/09/1997	728.7930298
20/09/1997	728.7910156
21/09/1997	728.7910156
22/09/1997	728.7919922
23/09/1997	728.7919922
24/09/1997	728.7919922
25/09/1997	728.7919922
26/09/1997	728.789978
27/09/1997	728.789978
28/09/1997	728.789978
29/09/1997	728.789978
30/09/1997	728.789978
16/10/1997	728.7449951
02/02/1998	728.7440186
04/05/1998	728.7609863
06/05/1998	728.757019
07/05/1998	728.757019
08/05/1998	728.75
09/05/1998	728.7509766
10/05/1998	728.7509766
11/05/1998	728.7509766
12/05/1998	728.7509766
13/05/1998	728.7509766
14/05/1998	728.75
15/05/1998	728.75
16/05/1998	728.7600098
17/05/1998	728.757019
18/05/1998	728.7559814
19/05/1998	728.7550049
20/05/1998	728.7550049
21/05/1998	728.7550049
22/05/1998	728.75
23/05/1998	728.7600098
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26/05/1998	728.75

Date	Lake Elevation
27/05/1998	728.75
28/05/1998	728.75
29/05/1998	728.7509766
30/05/1998	728.7390137
31/05/1998	728.7390137
02/06/1998	728.7310181
03/06/1998	728.7299805
04/06/1998	728.7299805
05/06/1998	728.7299805
06/06/1998	728.7280273
07/06/1998	728.7280273
08/06/1998	728.7290039
09/06/1998	728.7290039
10/06/1998	728.7290039
11/06/1998	728.7290039
12/06/1998	728.7310181
13/06/1998	728.7310181
14/06/1998	728.7299805
15/06/1998	728.7299805
16/06/1998	728.7199707
17/06/1998	728.7199707
18/06/1998	728.7189941
19/06/1998	728.71698
22/06/1998	728.7069702
23/06/1998	728.7000122
24/06/1998	728.7000122
25/06/1998	728.7000122
26/06/1998	728.7000122
28/06/1998	728.7390137
29/06/1998	728.7410278
30/06/1998	728.7410278
01/07/1998	728.7810059
02/07/1998	728.7810059
03/07/1998	728.7810059
06/07/1998	728.7810059
07/07/1998	728.7890015
08/07/1998	728.789978
09/07/1998	728.789978
10/07/1998	728.7890015
11/07/1998	728.7890015
12/07/1998	728.7890015
13/07/1998	728.7819824
14/07/1998	728.7819824

Date	Lake Elevation
15/07/1998	728.7800293
17/07/1998	728.7579956
18/07/1998	728.757019
20/07/1998	728.757019
21/07/1998	728.757019
23/07/1998	728.7540283
24/07/1998	728.7410278
29/07/1998	728.7410278
01/08/1998	728.7410278
04/08/1998	728.7410278
05/08/1998	728.7410278
06/08/1998	728.7210083
07/08/1998	728.7210083
08/08/1998	728.7199707
12/08/1998	728.697998
13/08/1998	728.6959839
14/08/1998	728.697998
15/08/1998	728.697998
16/08/1998	728.6939697
17/08/1998	728.6939697
18/08/1998	728.6920166
19/08/1998	728.6920166
20/08/1998	728.6900024
21/08/1998	728.6900024
22/08/1998	728.6900024
23/08/1998	728.6900024
24/08/1998	728.690979
25/08/1998	728.6870117
26/08/1998	728.6870117
27/08/1998	728.6810303
28/08/1998	728.677002
29/08/1998	728.6710205
30/08/1998	728.6669922
31/08/1998	728.6669922
01/09/1998	728.6569824
02/09/1998	728.651001
03/09/1998	728.6409912
04/09/1998	728.6389771
05/09/1998	728.6389771
06/09/1998	728.6389771
07/09/1998	728.6309814
08/09/1998	728.6290283
09/09/1998	728.6199951

Date	Lake Elevation
10/09/1998	728.617981
11/09/1998	728.617981
12/09/1998	728.617981
13/09/1998	728.617981
14/09/1998	728.617981
15/09/1998	728.6160278
13/10/1998	728.6170044
27/01/1999	728.6500244
07/05/1999	728.7290039
08/05/1999	728.7290039
09/05/1999	728.7290039
10/05/1999	728.7269897
11/05/1999	728.7280273
12/05/1999	728.7280273
13/05/1999	728.7299805
14/05/1999	728.7299805
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18/05/1999	728.7299805
19/05/1999	728.7299805
20/05/1999	728.7260132
21/05/1999	728.7260132
22/05/1999	728.723999
23/05/1999	728.723999
24/05/1999	728.723999
25/05/1999	728.723999
26/05/1999	728.7150269
27/05/1999	728.7130127
28/05/1999	728.7089844
29/05/1999	728.7089844
30/05/1999	728.7089844
31/05/1999	728.7030029
01/06/1999	728.7030029
02/06/1999	728.7030029
03/06/1999	728.7039795
04/06/1999	728.7020264
05/06/1999	728.7020264
10/06/1999	728.7020264
11/06/1999	728.7030029
12/06/1999	728.7030029
13/06/1999	728.6970215
14/06/1999	728.6970215

Date	Lake Elevation
15/06/1999	728.6970215
16/06/1999	728.6950073
17/06/1999	728.6950073
18/06/1999	728.6959839
19/06/1999	728.6989746
20/06/1999	728.71698
21/06/1999	728.71698
24/06/1999	728.7050171
25/06/1999	728.7050171
26/06/1999	728.7000122
27/06/1999	728.7000122
30/06/1999	728.697998
01/07/1999	728.6879883
02/07/1999	728.6879883
06/07/1999	728.7000122
07/07/1999	728.7000122
09/07/1999	728.710022
10/07/1999	728.710022
11/07/1999	728.7109985
12/07/1999	728.7109985
13/07/1999	728.7109985
14/07/1999	728.7109985
15/07/1999	728.7109985
16/07/1999	728.7109985
17/07/1999	728.7109985
18/07/1999	728.7050171
19/07/1999	728.7059937
20/07/1999	728.7059937
21/07/1999	728.7050171
22/07/1999	728.7030029
23/07/1999	728.7030029
06/08/1999	728.6569824
07/08/1999	728.6589966
08/08/1999	728.6589966
09/08/1999	728.6589966
10/08/1999	728.6430054
11/08/1999	728.6430054
12/08/1999	728.6430054
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15/08/1999	728.6430054
16/08/1999	728.6430054
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Date	Lake Elevation
18/08/1999	728.6329956
19/08/1999	728.6329956
20/08/1999	728.6329956
21/08/1999	728.6229858
23/08/1999	728.6240234
24/08/1999	728.6240234
25/08/1999	728.6140137
26/08/1999	728.6140137
27/08/1999	728.6140137
28/08/1999	728.6040039
29/08/1999	728.5999756
30/08/1999	728.6240234
31/08/1999	728.6240234
01/09/1999	728.6439819
02/09/1999	728.6439819
03/09/1999	728.6339722
04/09/1999	728.6339722
05/09/1999	728.6339722
06/09/1999	728.6329956
07/09/1999	728.6229858
08/09/1999	728.6229858
09/09/1999	728.6209717
10/09/1999	728.6209717
11/09/1999	728.6129761
12/09/1999	728.6090088
13/09/1999	728.6030273
14/09/1999	728.6030273
15/09/1999	728.6030273
21/10/1999	728.5250244
04/05/2000	728.5390015
05/05/2000	728.5579834
06/05/2000	728.5579834
07/05/2000	728.5579834
08/05/2000	728.5579834
09/05/2000	728.5579834
11/05/2000	728.598999
12/05/2000	728.598999
13/05/2000	728.598999
14/05/2000	728.5999756
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16/05/2000	728.5999756
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Date	Lake Elevation
19/05/2000	728.6049805
20/05/2000	728.6049805
21/05/2000	728.6049805
22/05/2000	728.6049805
24/05/2000	728.5999756
25/05/2000	728.5809937
26/05/2000	728.5809937
27/05/2000	728.5809937
29/05/2000	728.5809937
30/05/2000	728.5809937
31/05/2000	728.5809937
03/06/2000	728.5720215
04/06/2000	728.5720215
05/06/2000	728.5720215
06/06/2000	728.5720215
07/06/2000	728.5620117
08/06/2000	728.6010132
09/06/2000	728.6010132
10/06/2000	728.6010132
12/06/2000	728.6220093
13/06/2000	728.6220093
14/06/2000	728.6220093
15/06/2000	728.6220093
16/06/2000	728.6220093
17/06/2000	728.6220093
18/06/2000	728.6220093
19/06/2000	728.632019
20/06/2000	728.632019
21/06/2000	728.632019
24/06/2000	728.6229858
25/06/2000	728.6240234
26/06/2000	728.6140137
27/06/2000	728.6140137
28/06/2000	728.6140137
29/06/2000	728.6140137
30/06/2000	728.6140137
01/07/2000	728.6040039
03/07/2000	728.6439819
04/07/2000	728.6439819
05/07/2000	728.6439819
07/07/2000	728.6339722
08/07/2000	728.6339722
09/07/2000	728.6439819

Date	Lake Elevation
10/07/2000	728.6939697
11/07/2000	728.6929932
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13/07/2000	728.6939697
14/07/2000	728.684021
15/07/2000	728.684021
16/07/2000	728.684021
17/07/2000	728.684021
18/07/2000	728.7039795
19/07/2000	728.7039795
20/07/2000	728.7039795
21/07/2000	728.7039795
22/07/2000	728.7039795
23/07/2000	728.6939697
24/07/2000	728.684021
25/07/2000	728.684021
26/07/2000	728.6849976
27/07/2000	728.6849976
28/07/2000	728.6749878
29/07/2000	728.6749878
30/07/2000	728.6749878
31/07/2000	728.6749878
01/08/2000	728.6749878
02/08/2000	728.6760254
11/08/2000	728.6450195
12/08/2000	728.6459961
13/08/2000	728.6459961
14/08/2000	728.6259766
15/08/2000	728.6259766
16/08/2000	728.6259766
17/08/2000	728.6259766
18/08/2000	728.6160278
19/08/2000	728.6160278
20/08/2000	728.617981
21/08/2000	728.6079712
22/08/2000	728.6079712
23/08/2000	728.6079712
24/08/2000	728.6079712
25/08/2000	728.6079712
26/08/2000	728.5980225
27/08/2000	728.5980225
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29/08/2000	728.5969849

Date	Lake Elevation
01/09/2000	728.5869751
02/09/2000	728.5969849
07/09/2000	728.6290283
08/09/2000	728.6290283
09/09/2000	728.6290283
10/09/2000	728.6290283
11/09/2000	728.6290283
12/09/2000	728.6190186
13/09/2000	728.6190186
14/09/2000	728.6190186
15/09/2000	728.6190186
18/10/2000	728.559021
12/05/2001	728.4799805
14/05/2001	728.4680176
15/05/2001	728.4680176
16/05/2001	728.4689941
17/05/2001	728.4589844
18/05/2001	728.4589844
19/05/2001	728.4589844
20/05/2001	728.4589844
21/05/2001	728.4589844
22/05/2001	728.4589844
23/05/2001	728.4589844
24/05/2001	728.460022
25/05/2001	728.460022
26/05/2001	728.4500122
27/05/2001	728.4500122
28/05/2001	728.4400024
29/05/2001	728.4400024
30/05/2001	728.4400024
31/05/2001	728.4400024
01/06/2001	728.440979
02/06/2001	728.440979
03/06/2001	728.440979
04/06/2001	728.4509888
05/06/2001	728.4509888
06/06/2001	728.4509888
07/06/2001	728.4509888
08/06/2001	728.4509888
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10/06/2001	728.4520264
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Date	Lake Elevation
13/06/2001	728.4420166
14/06/2001	728.4420166
15/06/2001	728.4420166
16/06/2001	728.4420166
27/06/2001	728.4439697
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29/06/2001	728.434021
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03/07/2001	728.4349976
04/07/2001	728.4349976
05/07/2001	728.4349976
06/07/2001	728.4349976
07/07/2001	728.4349976
08/07/2001	728.414978
09/07/2001	728.4050293
10/07/2001	728.4050293
11/07/2001	728.4060059
12/07/2001	728.4060059
13/07/2001	728.3859863
14/07/2001	728.3959961
15/07/2001	728.3859863
16/07/2001	728.3859863
17/07/2001	728.3859863
18/07/2001	728.4160156
19/07/2001	728.4169922
20/07/2001	728.4069824
21/07/2001	728.4069824
23/07/2001	728.4169922
24/07/2001	728.4119873
25/07/2001	728.4219971
26/07/2001	728.4219971
27/07/2001	728.4229736
28/07/2001	728.4229736
29/07/2001	728.492981
30/07/2001	728.53302
31/07/2001	728.5230103
01/08/2001	728.5230103
02/08/2001	728.5230103
03/08/2001	728.5230103
04/08/2001	728.5239868
05/08/2001	728.5239868

Date	Lake Elevation
06/08/2001	728.5239868
07/08/2001	728.5139771
08/08/2001	728.5139771
09/08/2001	728.5139771
10/08/2001	728.5040283
11/08/2001	728.5040283
12/08/2001	728.5050049
13/08/2001	728.5050049
14/08/2001	728.5050049
15/08/2001	728.5050049
16/08/2001	728.4949951
17/08/2001	728.4949951
18/08/2001	728.4949951
19/08/2001	728.5250244
20/08/2001	728.526001
21/08/2001	728.5159912
22/08/2001	728.5159912
23/08/2001	728.5059814
24/08/2001	728.5059814
25/08/2001	728.4959717
26/08/2001	728.4959717
27/08/2001	728.4959717
28/08/2001	728.4970093
29/08/2001	728.4970093
30/08/2001	728.4869995
31/08/2001	728.4869995
01/09/2001	728.4769897
02/09/2001	728.4769897
03/09/2001	728.4769897
04/09/2001	728.4780273
05/09/2001	728.4780273
06/09/2001	728.4680176
07/09/2001	728.4680176
08/09/2001	728.4680176
09/09/2001	728.4580078
10/09/2001	728.4580078
11/09/2001	728.4580078
12/09/2001	728.4489746
13/09/2001	728.4489746
14/09/2001	728.4489746
15/09/2001	728.4489746
09/10/2001	728.40802
21/05/2002	728.4660034

Date	Lake Elevation
29/07/2002	728.2930298
11/10/2002	728.177002
26/05/2003	728.3189697
27/05/2003	728.3200073
28/05/2003	728.3200073
06/06/2003	728.2860107
07/06/2003	728.2960205
08/06/2003	728.2860107
09/06/2003	728.2860107
10/06/2003	728.2860107
11/06/2003	728.2860107
12/06/2003	728.2849731
13/06/2003	728.2849731
14/06/2003	728.2949829
15/06/2003	728.2849731
16/06/2003	728.2849731
17/06/2003	728.2949829
18/06/2003	728.2839966
19/06/2003	728.2839966
20/06/2003	728.2839966
21/06/2003	728.2940063
22/06/2003	728.2940063
23/06/2003	728.2940063
24/06/2003	728.2940063
25/06/2003	728.28302
26/06/2003	728.2930298
27/06/2003	728.3029785
28/06/2003	728.2930298
29/06/2003	728.2930298
30/06/2003	728.2930298
01/07/2003	728.28302
02/07/2003	728.2819824
03/07/2003	728.302002
04/07/2003	728.2719727
05/07/2003	728.2919922
06/07/2003	728.2919922
07/07/2003	728.2919922
08/07/2003	728.2910156
09/07/2003	728.3010254
10/07/2003	728.2910156
11/07/2003	728.2910156
12/07/2003	728.2910156
13/07/2003	728.2810059

Date	Lake Elevation
14/07/2003	728.2910156
15/07/2003	728.2700195
16/07/2003	728.2700195
17/07/2003	728.2999878
18/07/2003	728.2700195
19/07/2003	728.2600098
20/07/2003	728.25
21/07/2003	728.2490234
22/07/2003	728.2390137
23/07/2003	728.2390137
24/07/2003	728.2579956
27/07/2003	728.2490234
28/07/2003	728.2490234
29/07/2003	728.2490234
30/07/2003	728.2490234
31/07/2003	728.2390137
01/08/2003	728.2390137
02/08/2003	728.2390137
03/08/2003	728.2290039
04/08/2003	728.2290039
05/08/2003	728.2089844
06/08/2003	728.2089844
07/08/2003	728.1989746
08/08/2003	728.2089844
09/08/2003	728.2089844
10/08/2003	728.1989746
11/08/2003	728.1989746
12/08/2003	728.2089844
13/08/2003	728.210022
14/08/2003	728.210022
09/10/2003	728.1119995
13/05/2004	728.1640015
18/05/2004	728.177002
24/05/2004	728.1370239
31/05/2004	728.197998
07/06/2004	728.1779785
14/06/2004	728.15802
21/06/2004	728.1589966
28/06/2004	728.1290283
05/07/2004	728.1190186
06/07/2004	728.1190186
12/07/2004	728.1890259
19/07/2004	728.1799927

Date	Lake Elevation
26/07/2004	728.1539917
02/08/2004	728.1300049
09/08/2004	728.1300049
16/08/2004	728.1199951
23/08/2004	728.1099854
30/08/2004	728.0900269
13/10/2004	728.0910034
09/05/2005	728.1950073
18/05/2005	728.1970215
23/05/2005	728.21698
30/05/2005	728.177002
06/06/2005	728.177002
13/06/2005	728.1669922
20/06/2005	728.177002
23/06/2005	728.1870117
27/06/2005	728.2069702
04/07/2005	728.21698
11/07/2005	728.1970215
18/07/2005	728.1970215
25/07/2005	728.1870117
29/07/2005	728.1749878
01/08/2005	728.1669922
08/08/2005	728.1469727
15/08/2005	728.1270142
22/08/2005	728.1270142
29/08/2005	728.1370239
05/09/2005	728.1270142
05/10/2005	728.0819702
15/05/2006	728.1339722
06/06/2006	728.1519775
12/06/2006	728.1829834
19/06/2006	728.2030029
26/06/2006	728.1829834
03/07/2006	728.1539917
10/07/2006	728.1339722
17/07/2006	728.1149902
24/07/2006	728.085022
26/07/2006	728.0739746
07/08/2006	728.0449829
14/08/2006	728.0349731
21/08/2006	728.0150146
23/10/2006	728.0469971
11/05/2007	728.2960205

Date	Lake Elevation
20/05/2007	728.276001
27/05/2007	728.276001
03/06/2007	728.2459717
10/06/2007	728.2360229
17/06/2007	728.276001
22/06/2007	728.2940063
24/06/2007	728.3060303
01/07/2007	728.2960205
08/07/2007	728.2960205
15/07/2007	728.2960205
22/07/2007	728.2860107
29/07/2007	728.2960205
03/08/2007	728.2789917
05/08/2007	728.2860107
12/08/2007	728.2659912
15/08/2007	728.2559814
19/08/2007	728.2459717
26/08/2007	728.2360229
02/09/2007	728.2260132
15/10/2007	728.132019
12/05/2008	728.2109985
15/05/2008	728.2329712
20/05/2008	728.1929932
30/07/2008	728.1329956
23/10/2008	727.9539795
11/05/2009	728.0269775
16/05/2011	727.9000244
28/06/2011	727.9799805
18/08/2011	728.0250244
27/10/2011	727.8569946

Appendix B – List of Available Historical Air Photos in the Vicinity of Hubbles Lake - Government of Alberta Air Photo Distribution Office

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APRS Search Results

When ordering aerial photography there are two methods:

- provide the roll and print/frame numbers (e.g. AS-5112-014) from the flight index maps (refer to "Readme" file in the zip file for more instructions).

User Information:

- Blue Underlined Project numbers (e.g. 92-159) - click on the project number to download and view the flight index map(s) associated with that project. Index maps show photo centres/locations not the actual photographic image.
- "P" (in red) - identifies incomplete or partial coverage of the specified section. View the index map(s) to determine if second/third choices should be included with your request.
- "Tr" Projects (e.g. 06-078Tr) - in general projects with this suffix are of superior quality. For example, well-site details can usually be observed even at small scales (e.g. 1:60,000). Check "Comments" column for product availability.
- More detailed instructions on using the flight indices (a "Read Me" file) are included as part of the map download.

Legal Description (Sec. Twp. Rge. Meridian): 9 - 53 - 1 - 5

Project No.	Sub. ID	Coverage (Partial/Complete)	Date	Scale (1:)	Emulsion	Comments
<u>T10-200</u>	6	C	2010-05-15	10000	Kodak DX 2405	AS5522 OSL 3418
<u>T10-201</u>	6	C	2010-05-12	20000	Kodak DX 2405	AS5522 OSL 3418
<u>T09-291</u>	3	P	2009-08-24	20000	Kodak DX 2405	OSL-3418
<u>T08-270</u>	8	P	2008-10-02	20000	B/W	Neg.scans-2,032 ppi
<u>T07-259 P5</u>	3	C	2007-08-30	20000	B/W Kodak-2405	Hwy. 16
<u>05-EDM</u>	22	C	2005-04-21	20000	B/W Pan-80	
<u>01-EDM</u>	7	C	2001-04-00	20000	B/W	Roll:ED-2001-01,02
<u>T97-83G.6</u>	5	P	1997-07-28	20000	B/W	AS 4836
<u>T96-83G</u>	5	C	1996-10-12	20000	B/W Kodak-2405	
<u>T94-077</u>	23	C	1994-09-00	20000	B/W	Rolls: RMNL-5,6,7
<u>92-146</u>	2	C	1992-07-00	20000	B/W PAN	Rolls: AS-4345,4346,4347,4348,4349
<u>T91-077 P7</u>	4	C	1991-09-25	20000	B/W Pan-XX	Hwy.16 - Roll:AS-4212
<u>T91-037</u>	1	P	1991-05-16	10000	B/W Pan-XX	Roll:AS-4130
<u>T91-037</u>	4	P	1991-05-16	10000	B/W Pan-XX	Roll:AS-4130
<u>91-CM01B</u>	3	P	1991-04-17	8000	B/W Kodak XX	
<u>T91-077 P8</u>	13	P	1991-00-00	20000	B/W Pan-XX	Hwy.16 - Roll:AS-4213
<u>T91-077</u>	34	C	1991-00-00	20000	B/W PANXX	
<u>T90-182</u>	1	C	1990-11-06	40000	B/W PAN XX	
<u>T90-185</u>	5	C	1990-10-00	20000	B/W PANXX	
<u>F88-014 4</u>	3	C	1988-10-07	20000	B/W PANXX	
<u>F87-004</u>	3	P	1987-09-21	25000	B/W Pan-2405	
<u>87-089 83G</u>	27	C	1987-00-00	30000	B/W Pan-2405	
<u>S86-030</u>	2	C	1986-05-30	25000	B/W Kodak-2405	Hwy.16X; Roll:AS-3285
<u>85-123</u>	6	C	1985-05-09	60000	B/W 2405	
<u>S85-021H P6</u>	6	P	1985-05-05	25000	B/W Kodak-2405	Hwy.16; Roll:AS-3114
<u>S84-057</u>	2	C	1984-04-15	25000	B/W Pan-2405	Hwy.16

<u>E84-028-15 P2</u>	10	P	1984-00-00 50000 False Colour.*	Laser/Digital Only - Roll:AS-3072
<u>S83-065</u>	2	C	1983-04-28 25000 PAN 2405	
<u>S82-015B P3</u>	8	C	1982-04-29 25000 B/W Pan-2405	Hwy.16; Roll:AS-2454
<u>82-089 83G</u>	4	C	1982-00-00 30000 B/W Pan-2405	
<u>81-050</u>	4	C	1981-08-08 60000 B/W PAN-2405	
<u>S80-028</u>	2	P	1980-05-01 5000 B/W Pan-2405	Hwy.16X
<u>S80-028A</u>	1	P	1980-05-01 10000 B/W Pan-2405	
<u>80-121 83G</u>	8	C	1980-00-00 60000 B/W Pan-2405	
<u>S78-196</u>	2	C	1978-04-25 25000 PAN 2405	Roll:AS-2900
<u>77-108A 83G</u>	3	C	1977-06-18 50000 B/W Pan-2405	Rolls:AS-1602,1603,1604
<u>77-102</u>	24	C	1977-06-07 31680 B/W Pan-2405	Rolls:AS-1591,1592,1593
<u>76-170 83G</u>	19	C	1976-09-00 20000 B/W Pan-2405	
<u>75-204</u>	6	C	1975-05-21 24000 B/W Pan-2405	Roll:AS-1557
<u>74-053</u>	20	P	1974-04-22 12000 B/W IR 2424	Pembina River flood; Roll:AS-1283
<u>73-186</u>	4	P	1973-10-08 12000 B/W Estar-Pan	Roll:AS-1289
<u>73-025 83G</u>	35	C	1973-07-00 31680 B/W IR-2424.	Substandard
<u>71-365</u>	13	C	1971-10-04 24000 B/W Kodak-2405	Hwy.16; Roll:AS-1310
<u>70-268</u>	1	P	1970-04-16 12000 B/W Pan-2405	Roll:AS-1466
<u>70-322 83G</u>	2	C	1970-00-00 80000 B/W Pan-2405	
<u>67-83G</u>	7	C	1967-00-00 31680 B/W.	Neg.Scan - 1270dpi
<u>62-83G</u>	18	C	1962-00-00 31680 B/W	Neg. scan-1270dpi
<u>49-83G</u>	3	C	1949-00-00 40000 B/W Super-XX	Years 49-51; Photogrammetric scans available

Appendix C – Maximum Yearly Recorded Water Elevation and Water Elevation from Water Balance Model for Hubbles Lake

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Year	Maximum Recorded Water Elevation (m)	Maximum Water Elevation from Water Balance Model (m)
1961		728.7960
1962		728.6664
1963		728.7681
1964		728.6316
1965		728.7950
1966		728.8836
1967		728.8560
1968	728.1240	728.6160
1969	728.1490	728.5184
1970	728.1030	728.5282
1971	728.3260	728.5250
1972	728.4510	728.4939
1973	728.5210	728.7054
1974	728.8410	728.8564
1975	728.8040	728.8002
1976	728.7650	728.8285
1977	728.7710	728.7734
1978	728.8500	728.8106
1979	728.9600	728.8596
1980	728.9660	728.9645
1981	729.0090	728.9851
1982	728.9660	728.9667
1983	728.9630	728.9550
1984	728.8440	728.8960
1985	728.9220	728.8932
1986	728.9760	728.7998
1987	728.9510	728.8190
1988	728.7870	728.8217
1989	728.8710	728.8778
1990	729.0020	728.9246

Year	Maximum Recorded Water Elevation (m)	Maximum Water Elevation from Water Balance Model (m)
1991	729.0100	728.9817
1992	728.9700	728.9819
1993	728.7830	728.7923
1994	728.7900	728.8623
1995	728.6800	728.8946
1996	728.7370	729.1355
1997	728.8950	728.6280
1998	728.7900	728.6984
1999	728.7300	728.7712
2000	728.7040	728.7127
2001	728.5330	728.6532
2002	728.4660	728.5813
2003	728.3200	728.3746
2004	728.1980	728.2480
2005	728.2170	728.2888
2006	728.2030	728.2220
2007	728.3060	728.2420
2008	728.2330	728.1473
2009	728.0270	727.9601
2010		727.8013
2011	728.0250	727.8498