FINAL REPORT

MELIADINE PROJECT:
HYDROLOGY BASELINE STUDIES 2008

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EXECUTIVE SUMMARY

This "2008 Hydrology Baseline Studies" report was commissioned to characterize the prevailing hydroclimatic and hydrological parameters at the Meliadine West Project (Project). The baseline is based on data collected in 2008 as well as regional and site data that were collected or reported in previous studies.

Hydrology baseline investigations conducted by Golder Associates Ltd. in 2008 were divided into the following components:

- spring 2008 snow course survey in peninsula basins A1, B2, and B7;
- daily and monthly rainfall from 15 June to 15 September 2008;
- development of hydrographs from 2008 data at A1 Lake and Outflow, B2 Lake and Outflow, B7 Lake and Outflow, and Meliadine Lake;
- preliminary site assessments at four proposed watercourse crossings;
- review of long-term and regional meteorology; and
- review of long-term and regional hydrology.

Baseline data collection in 2008 was to update and expand data collected during previous field programs to characterize hydroclimatic and hydrological parameters relevant to the Project. This report is intended to provide a basis for more detailed hydrological modelling and analysis that may take place during preparation of an environmental impact assessment.

The baseline report characterizes hydroclimatic and hydrological parameters relevant to the Project, including the following:

- precipitation based on regional data and compared to site-specific data;
- lake evaporation and evapotranspiration from land surfaces, based on regional and local data;
- development of an average annual water balance for a typical watershed in the Project area;
- hydrological regimes of local waterbodies based on an examination of site-specific and regional data; and
- local lake and watercourse ice regimes.

Field Program and Monitoring

Results of the 2008 field monitoring program are summarized as follows:

- the mean snow water equivalent was 105.4 mm in Basin B7, 109.2 mm in Basin B2, and 108.3 mm in Basin A1;

- the Meliadine West Camp rain gauge station recorded 101.6 mm of rainfall between June and September 2008; and
- the water yields for Basins A1, B2, and B7 were 13.7, 16.1 and 27.3 mm, respectively.

Available Site and Regional Data

Local data include snow course surveys, which were undertaken from 1997 to 2000 and reinitiated in 2008, to estimate spring runoff volumes. Additional local data include streamflows, water levels, and pan evaporation recorded during the same years in 1997, 1998, 1999, 2000, and 2008, and lake ice thickness at various locations in 1998, 1999, and 2000. Data for a local Water Survey of Canada (WSC) hydrometric station located on the Diana River are also available for a period of seven years, from 1989 to 1995.

Regional temperature and precipitation data are available from several stations in Nunavut. The closest long term station is Rankin Inlet A, approximately 30 km south of the Project camp site. Climate data collection at Rankin Inlet A was initiated in 1981 and records are complete from 1981 to 2008. The closest regional evaporation estimates are from a long-term station operated by Environment Canada at Churchill, Manitoba. Marine ice information is available from the Canadian Ice Database.

Baseline Climate Conditions

Air Temperature

Air temperature at the Project site may fall below 0°C on any day of the year. The monthly mean air temperature is typically above 0°C for the months of June to September, and below 0°C between October and May. July has been the warmest month and January has been the coldest month. The mean annual temperature for the period of record was -10.6°C.

Precipitation

Mean annual precipitation at the Project site, based on the hydrological year from October 1 to September 30, was estimated to be 401.8 mm after accounting for rainfall and snowfall undercatch. Approximately 50% of precipitation occurs as rain (201.5 mm) and 50% occurs as snow (194.7 mm). The 24-hour extreme rainfall intensity with 10-year return period was estimated to be 1.9 mm/h, or 45.6 mm total depth. Corresponding values for the 100-year return period are 2.6 mm/h or 62.4 mm total depth.

Evaporation

Mean annual evaporation for small lakes in the Project area is estimated to be 323 mm between June and September.

Snowpack Sublimation

Based on the terrain in the Project area, the mean annual loss of snowpack to sublimation and snow redistribution is estimated to be 46%.

Baseline Hydrological Conditions

Lake Ice Regime

Late-winter ice thicknesses on freshwater lakes in the Project area have ranged from 1.00 m to about 2.20 m. Ice covers usually develop by the end of October and are completely formed in early November. The spring ice melt typically begins in mid-June and is complete by early July. Ice was observed along the margins of water bodies at the hydrology stations in mid-September, 2008.

Lake Bathymetry

Typical average depths of the peninsula lakes varied from 1.5 m to 2.5 m and maximum depths varied from 2.5 m to 5.5 m. The south basin of Meliadine Lake is 20 m in some places.

Water Yield

Estimates of mean annual water yield range from 60 mm to 204 mm for sub-basins in the Project area, and depend on factors such as annual precipitation and proportion of lake surface in an evaporation-dominated environment. Basin runoff typically peaks in June.

Conclusions

A summary of baseline mean values is presented below. This ongoing climate and surface water hydrologic baseline provides a strong basis for environmental impact assessment and water management planning at the Project site. The climate and hydrology characteristics described for the Project area are based on long-term regional information as well as site-specific data that have been collected since 1997. The available site data confirm that the Project area fits within the established regional context of precipitation and runoff.

Summary of Baseline Mean Values of Key Climate and Hydrologic Variables

Variable	Value
Mean Annual Air Temperature	-11 °C
Mean Annual Rainfall Mean Annual Snowfall Mean Annual Precipitation	202 mm 195 mm 402 mm
Mean Snowpack Sublimation and Snow Re-distribution	46%
Mean Annual Small Lake Evaporation	323 mm
Mean Lake Freeze-up Date Mean Lake Break-up Date Maximum Observed Ice Cover Thickness	End of October Mid June 2.2 m
Mean Small Lake Depth	1.5 to 2.5 m
Observed Annual Small Basin Runoff Depth	60 to 204 mm

Note: °C= temperature, mm= millimetres, m= metres

Water availability is a key issue in terms of operating logistics and costs. It is affected by the amount of precipitation that occurs and by the amount that is lost to infiltration and to the atmosphere. Continued field monitoring is recommended to improve estimates of water availability by refining site-specific runoff characteristics, estimates of basin evapotranspiration, and evaporative losses in the Project area.

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ACRONYMS

ADCP	Acoustic Doppler Current Profiler - Workhorse Rio Grande
AEE	Agra Earth and Environmental Ltd.
AMEC	AMEC Earth and Environmental Ltd.
CID	Canadian Ice Database
Comaplex	Comaplex Minerals Corporation
D	Discovery area (as prefix for site names)
ET	Evapotranspiration
IDF	Intensity-duration-frequency
GD	Granger and Gray (GD relationship)
Golder	Golder Associates Ltd.
M	Meliadine West area (as prefix for site names)
MSC	Meteorological Services of Canada
NE	North East
NW	North West
Project	Meliadine West Gold Project
RL&L	R.L.&L. Environmental Services Ltd.
SE	South East
SW	South West
SWE	Snow Water Equivalent
UTM	Universal Transverse Mercator
WSC	Water Survey of Canada

UNITS

°C	degrees Celsius
cm	centimetres
g/cm^3	grams per cubic centimetres
dam^3	cubic decametres
ha	hectares
km	kilometres
km^2	square kilometres
m	metres
m^3	cubic metres
m^3/s	cubic meters per second
min	minutes
mm	millimetres
%	percent
<	less than
>	greater than

1 INTRODUCTION

1.1 BACKGROUND

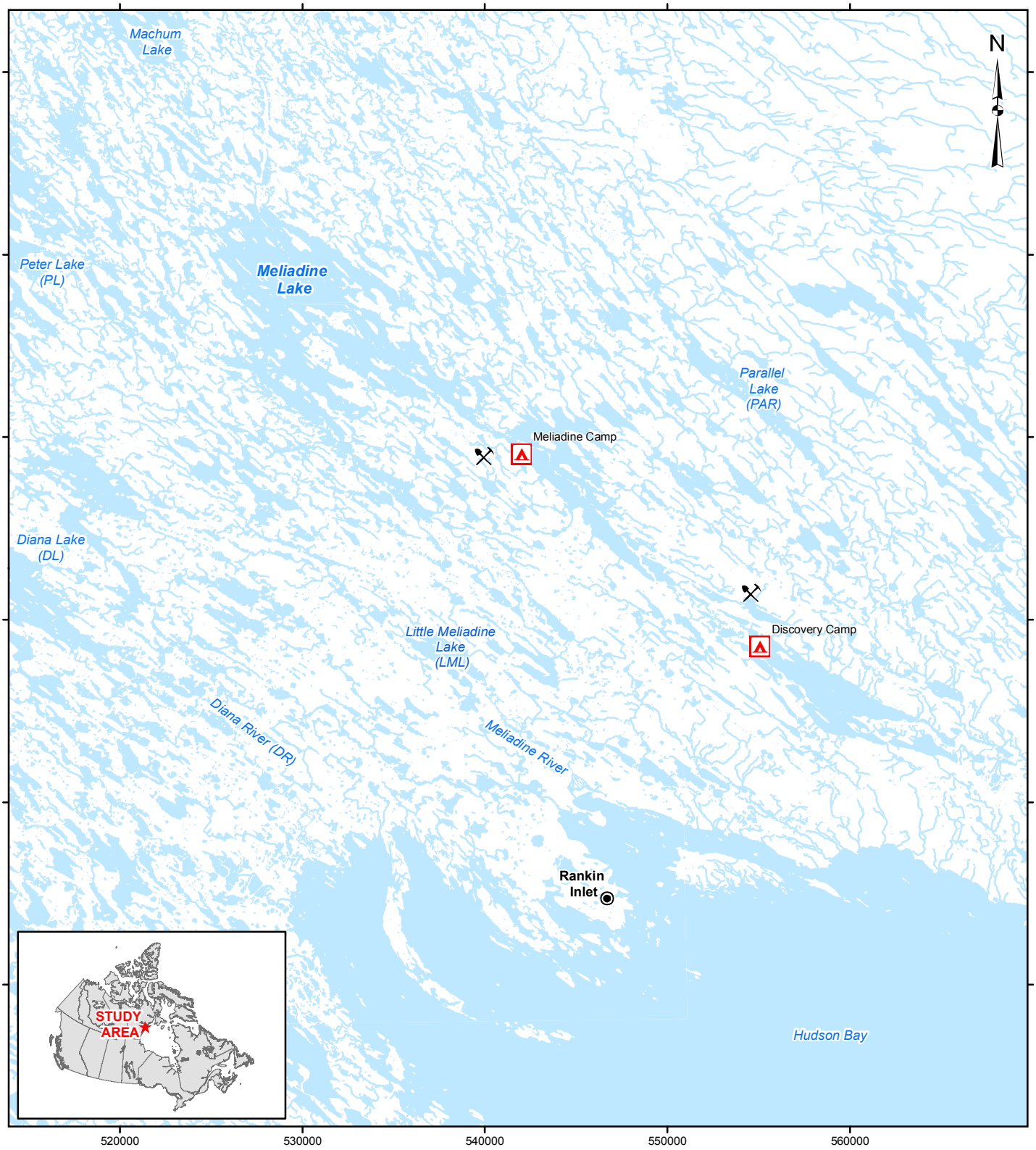
Comaplex Minerals Corporation (Comaplex) proposes to construct and operate an underground gold mine, known as the Meliadine West Gold Project (Project). The Project is located approximately 30 km north of Rankin Inlet in the Kivalliq Region of Nunavut, and 80 km south of Chesterfield Inlet (Figure 1-1). The proposed Project is located between the east and south basins of Meliadine Lake on Inuit Owned Land.

The Project area is within the zone of continuous permafrost approximately 400 km north of the tree line with typical sub-arctic vegetation. The terrain is dominated by glacial landforms that include drumlins of glacial till, eskers consisting of gravels and sands and numerous shallow lakes. The glacial deposits form low relief ridges oriented in a northwest-southeast direction. Regional drainage patterns are controlled by these ridges and the prevailing permafrost.

Meliadine Lake is 107 km^2 in area with a maximum length of 31 km (Environment Canada 1973). It features a highly convoluted shoreline (465 km in length) and over 200 islands. Most of the lake drains via the Meliadine River, originating at the south end of the lake flowing through a series of waterbodies and short river segments into Hudson Bay (distance of 39 km). A second, smaller outflow from the west basin of Meliadine Lake drains into Peter Lake, which flows to Hudson Bay through the Diana River system (distance of 70 km).

Several small watersheds drain into Meliadine Lake from a large peninsula that is located between the south and east basins of Meliadine Lake. These peninsula watersheds comprise an extensive network of lakes, ponds, and interconnecting streams.

WMC International Ltd. undertook a multi-year gold exploration program in the Project area in 1995. That program included hydrology baseline studies from 1997 to 2000 (Agra Earth and Environmental Ltd. [AEE] 1998a, 1998b, 1999; AMEC Earth and Environmental Ltd. [AMEC] 2000). Hydrology studies focused on deriving a water balance for the Meliadine Basin. The main areas of emphasis within the Project study area included Meliadine Lake, Meliadine River, Peter Lake, Diana River and selected sub-basins of the peninsula area expected to be affected by Project development. Collected data included hydrometric monitoring and/or discharge measurements, snow surveys, and meteorological data. Water quality, fisheries, and wildlife studies were also carried in the Project area.



LEGEND

- CAMP
- PROPOSED MINE SITE
- WATERCOURSE
- WATERBODY

10 0 10

SCALE 1:300,000 KILOMETRES

REFERENCE

Base data obtained from NTDB.
Projection: UTM Zone 15 Datum: NAD 83

PROJECT

COMAPLEX MINERALS
MELIADINE WEST

TITLE

LOCATION OF THE MELIADINE WEST GOLD PROJECT

Golder Associates
Calgary, Alberta

PROJECT No. 07-1373-0055			SCALE AS SHOWN	REV. 0
DESIGN	PS	02 Jun. 2008	**FIGURE: 1-1**	
GIS	DE	26 Sep. 2008		
CHECK	JL	01 Dec. 2008		
REVIEW	NS	01 Dec. 2008		

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1.2 BASELINE STUDIES IN 2008

Hydrology baseline investigations conducted by Golder Associates Ltd. in 2008 were divided into the following components:

- spring 2008 snow course survey in the peninsula basins A1, B2, and B7;
- daily and monthly rainfall from 15 June to 15 September 2008;
- development of hydrographs from 2008 data at A1 Lake and Outflow, B2 Lake and Outflow, B7 Lake and Outflow and Meliadine Lake;
- preliminary site assessments on four watercourse crossings;
- review of long-term and regional meteorology; and
- review of long-term and regional hydrology.

Baseline data collection in 2008 was to update and expand data collected during previous field programs to characterize hydroclimatic and hydrological parameters relevant to the Project. This report is intended to provide a basis for more detailed hydrological modelling and analysis that may take place during an environmental impact assessment of the Project.

This baseline report characterizes hydroclimatic and hydrological parameters relevant to the Project, including the following:

- rain, snow and precipitation (long-term mean, wet and dry values for a range of return periods; short-term rainfall characterized by intensity-duration-frequency curves) based on regional data and compared to site-specific data;
- lake evaporation and evapotranspiration from land surfaces, based on regional and local data;
- development of an average annual water balance for a typical watershed in the Project area;
- hydrological regimes of local waterbodies, including Diana and Meliadine Rivers, based on examination of site-specific and regional data; and
- local lake and watercourse ice regimes.

2 2008 FIELD PROGRAM

2.1 METHODS

2.1.1 Snow Course Survey

The water equivalent of a snowpack (the equivalent depth of water if the snowpack is melted) is the product of snow depth and snow density. Snow surveys to determine the late spring snow water equivalent (SWE) in the peninsula basins A1, B2, and B7 were conducted between 23 and 27 April 2008.

Transect and Plot locations

Five transects were located and surveyed for snow depth, as shown on Figure 2-1. Two of these transects followed the same path as the 1997 snowpack surveys and were located in the B7 basin (Transect T1) and the upper part of the A1 sub-basin (Transect T2). Transect T3 followed a 2000 snowpack survey path. Transect T4 is located in the middle part of the B2 basin and Transect T5 is located in the middle part of the A1 basin.

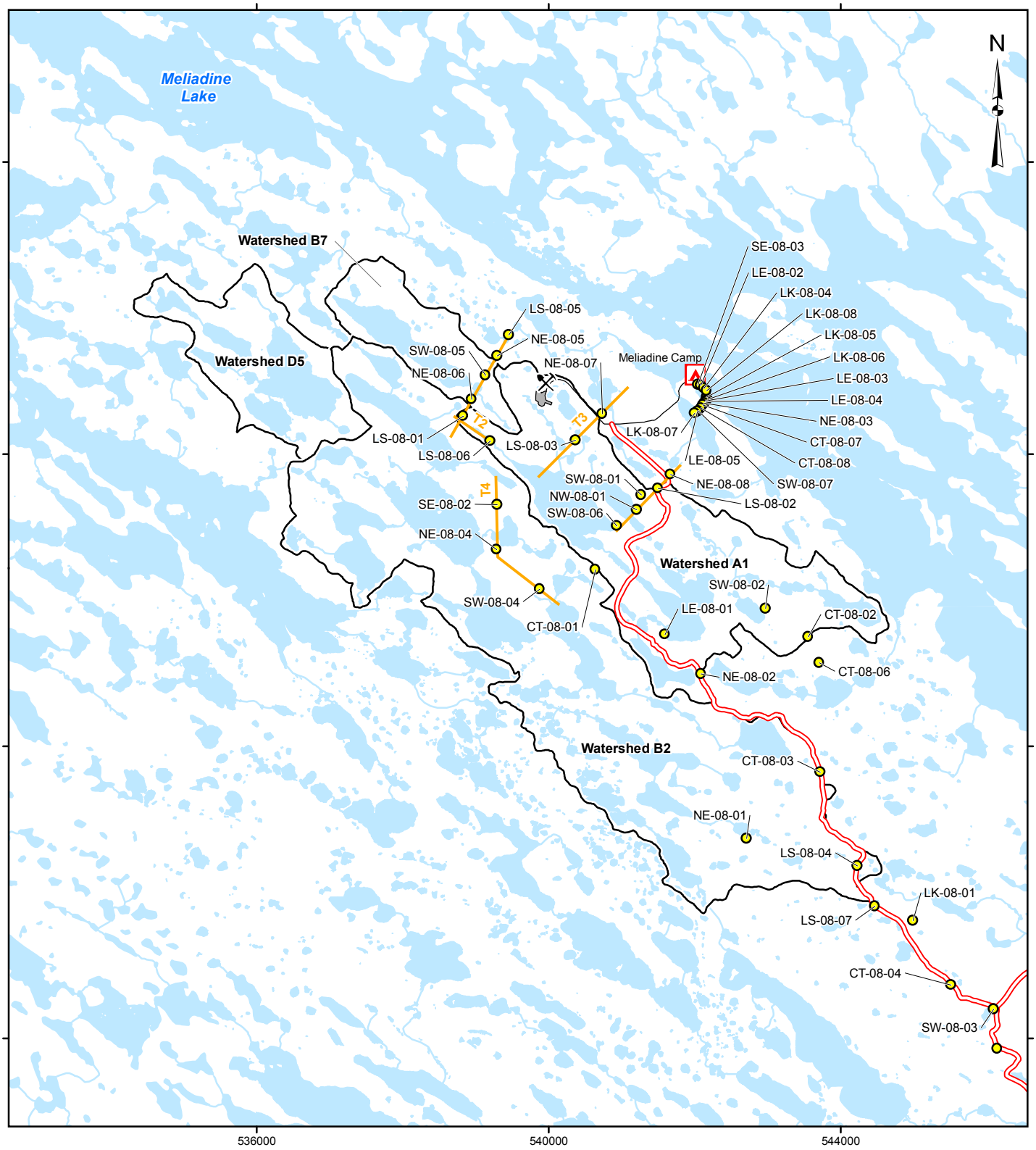
A series of supplemental plots were chosen in the peninsula area to gather more snow depth and density data for all terrain units and to better identify differences in snow accumulation among terrain types. These plots were mainly located inside the peninsula watersheds but a number of plots were distributed along the proposed road route south. All plots were considered in determining the mean SWE values.

Snow Depth Measurement

Along each transect snow depth was measured every 10 m. At each plot, 30 depth measurements were taken at randomly selected locations within a large circle, approximately 10 m in radius. These depth measurements were taken by inserting a metal stick into the snowpack and reading the snowline mark.

Snow Density Measurement

Three density measurements were recorded at each plot, using a snow density sampler. The sampler was carefully inserted to avoid compacting the snowpack. The snow depth was read on the tube, when the corer reached the soil surface. The corer was then inserted/twisted deeply into the ground to ensure that a plug of soil was extracted with the sampler to prevent granular snow from falling out. After extracting the sampler and carefully removing the soil plug, the sampler weight was measured with and without the snow core, to allow the weight of the snow and snow water equivalent to be calculated.



LEGEND

- CAMP
- PROPOSED MINE SITE
- SNOW SURVEY PLOT LOCATION
- ROAD - EXISTING
- ROAD - PROPOSED ALIGNMENT
- SNOW SURVEY TRANSECT
- WATERCOURSE
- PORTAL WORK AREA
- WATERBODY
- WATERSHED

REFERENCE

Base data obtained from NTDB. Hydrology data obtained from field survey.
Projection: UTM Zone 15 Datum: NAD 83

2 0 2
SCALE 1:75,000 KILOMETRES

PROJECT

COMAPLEX MINERALS
MELIADINE WEST

TITLE

SNOW COURSE SURVEY LOCATIONS FOR MELIADINE WEST, 23-27 APRIL 2008

Golder Associates
Calgary, Alberta

PROJECT No. 07-1373-0055			SCALE AS SHOWN	REV. 0
DESIGN	DC	27 Oct. 2008	FIGURE: 2-1	
GIS	PT	27 Nov. 2008		
CHECK	JL	01 Dec. 2008		
REVIEW	NS	01 Dec. 2008		

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2.1.2 Rainfall

Rainfall at the Meliadine West Camp station was recorded using a tipping bucket rain gauge, and the rainfall record data was used to derive total daily and monthly rainfall for the period of 15 June to 15 September 2008. The location of the rain gauge is shown on Figure 2-2.

2.1.3 Hydrometry

Two types of hydrometric stations were established on 14 June 2008: continuous measurement stations and discrete measurement stations.

Continuous measurement stations were set up at A1 Lake and Outflow, B2 Lake and Outflow, B7 Lake and Outflow, and Meliadine Lake to develop stage-discharge relationships for the open water season. These stations were equipped with pressure transducers coupled with data loggers. Manual discharge and water level measurements were also collected at these stations during each visit.

Discrete measurement stations were set up at Meliadine Lake West Outlet, Meliadine Lake Main Outlet (Diana River), Meliadine River near the Mouth, Pump Lake, and Peanut Lake (A54) to provide additional data on discharges and water levels. Discharges and water levels were manually collected at these locations and tied to a local benchmark during each visit.

Hydrographs of A1 Lake and Outflow, B2 Lake and Outflow, B7 Lake and Outflow and Meliadine Lake were derived using the following methods:

- a Keller Acculevel Submersible Level Transmitter solid-state pressure transducer and Optimum Instruments DD-520 data logger were installed, at each hydrometric station. Each data logger was programmed to record water pressure measurements at 15-minute intervals. Each station was referenced to an elevation benchmark;
- the transducers were installed after the peak flow, as permitted by ice conditions and site access;
- the water surface elevations were surveyed from the permanent benchmark, and the pressure transducer readings were recorded during selected data logger downloads;
- the stream discharge measurements were performed (if applicable) according to the Water Survey of Canada standard described by Terzl et al. (1994) during the first and subsequent visits to stations with flowing water;

- the data loggers at each station were downloaded periodically and pressure transducer readings coincident with each discharge measurement were noted;
- the pressure transducers and data loggers were removed during the last visit; and
- the record of water surface elevations versus discharge was used to establish a stage-discharge rating curve for each station, when all data were available for flowing water stations. This rating curve was then applied to the continuous record of water surface elevations, as measured by the pressure transducer and recorded by the data logger at each station, to derive a continuous record of discharges. For some stations, limited stage-discharge data are available and continuous discharges could not be derived.

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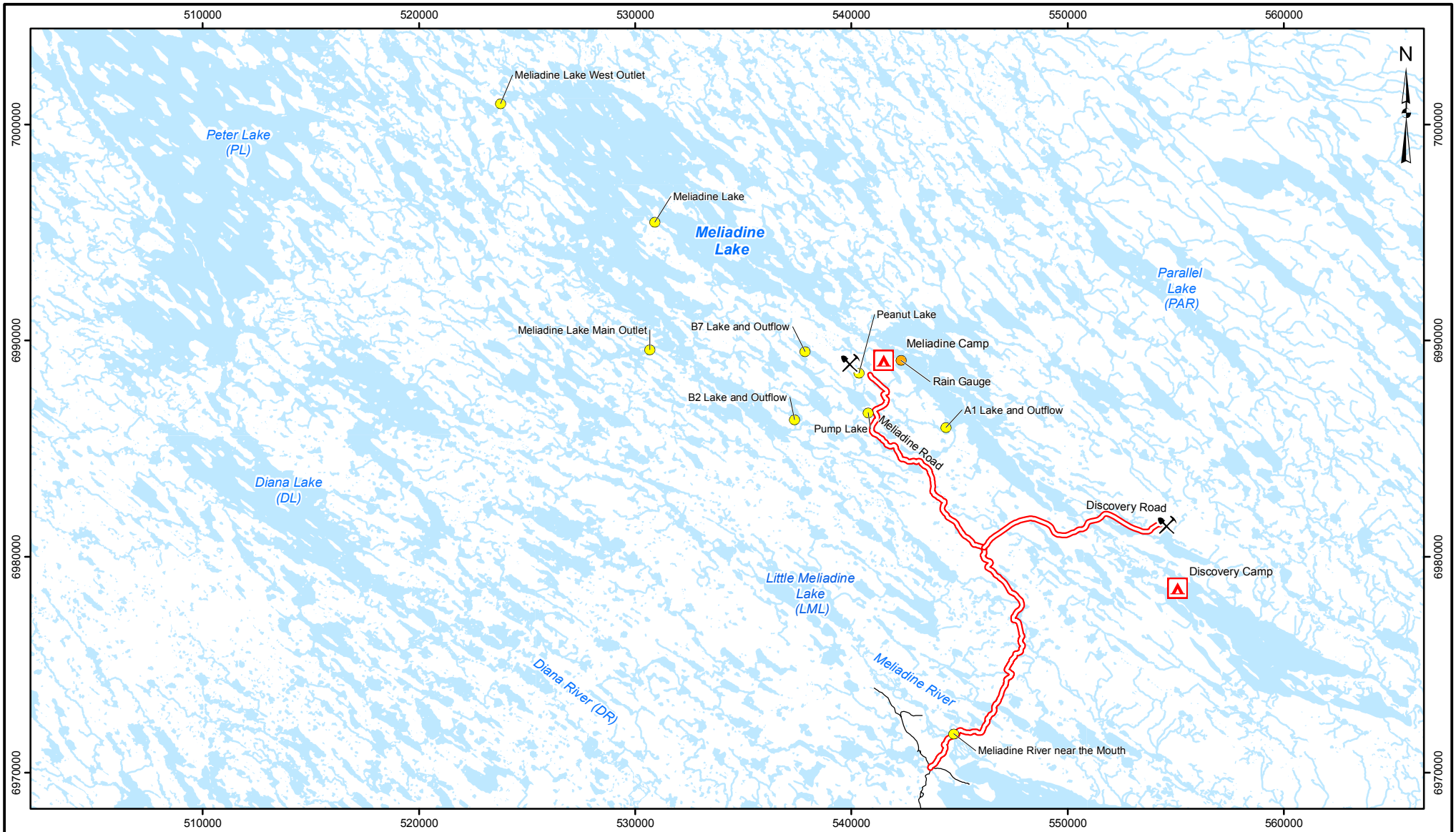


LEGEND

- CAMP
- PROPOSED MINE SITE
- HYDROMETRIC STATION
- RAIN GAUGE
- ROAD - MUNICIPAL
- ROAD - PROPOSED ALIGNMENT
- WATERCOURSE
- WATERBODY

REFERENCE

Base data obtained from NTDB. Water quality data obtained from field.
Projection: UTM Zone 15 Datum: NAD 83

5,000 0 5,000
SCALE 1:250,000 METRES

PROJECT

COMAPLEX MINERALS
MELIADINE WEST

TITLE

RAIN GAUGE AND HYDROMETRIC STATION LOCATIONS AT MELIADINE WEST, 2008 FIELD PROGRAM

Golder Associates
Calgary, Alberta

PROJECT NO. 07-1373-0055			SCALE AS SHOWN	REV. 0
DESIGN	KS	16 Sep. 2008	FIGURE: 2-2	
GIS	PT	27 Nov. 2008		
CHECK	JL	01 Dec. 2008		
REVIEW	NS	01 Dec. 2008		

Discharge measurements were collected at all stations in a similar manner, except at the Meliadine River near the Mouth on the second visit. Velocity and depth measurements, used to calculate discharge, were collected using a Swoffer Model 2100™ velocity meter and top-setting wading rod. During the second visit, at the Meliadine River near the Mouth, velocity, discharge and cross-sectional data were collected using an RD Instruments Workhorse Rio Grande Acoustic Doppler Current Profiler (ADCP).

Manual water level measurements were collected using a rod and level, tied to a local benchmark.

2.2 SNOW COURSE SURVEY RESULTS

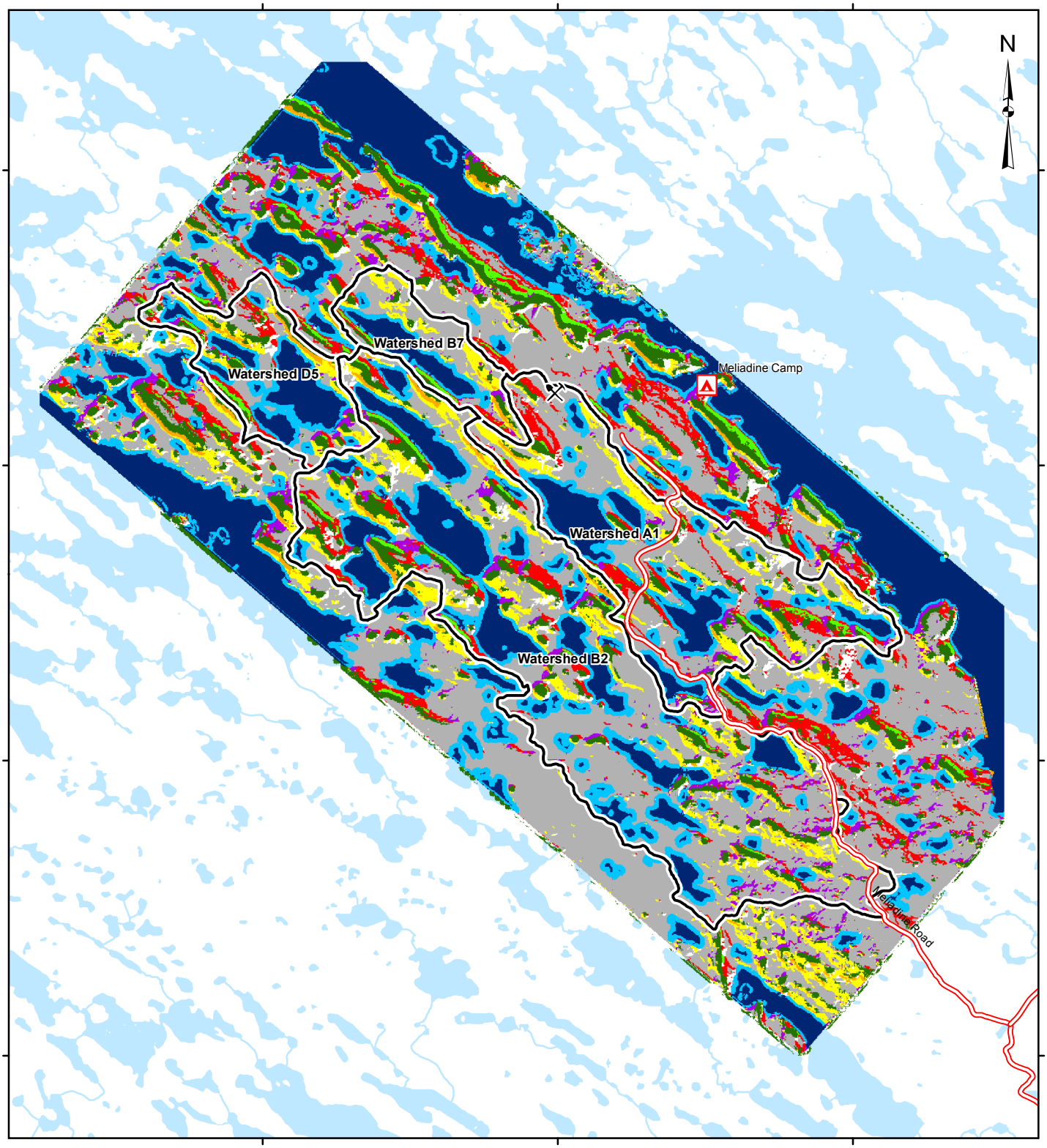
Snow surveys to determine the late spring snow water equivalent (SWE) in the peninsula basins A1, B2, and B7 were conducted between 23 and 27 April 2008.

Terrain type classification was defined by AMEC (2000) and the distribution of each terrain type is shown on Figure 2-3. For watersheds A1, B2, and B7, the area for each terrain type was calculated and these are presented in Table 2-1.

Table 2-1 Terrain Type Distributions for Basins B7, B2 and A1

Terrain Type	BASIN B7		BASIN B2		BASIN A1	
	Area (km^2)	Percent	Area (km^2)	Percent	Area (km^2)	Percent
Crest	0.30	12.63%	2.33	10.45%	0.89	9.48%
Lake	0.44	18.44%	3.74	16.75%	1.40	14.92%
Lake Edges	0.29	12.02%	3.40	15.24%	1.41	15.00%
Low Slopes	0.76	31.90%	7.81	35.02%	3.31	35.26%
NE Slopes (>8.5%)	0.06	2.55%	0.32	1.43%	0.16	1.75%
NE Slopes (3-8.5%)	0.09	3.81%	0.95	4.23%	0.79	8.40%
NW Slopes (>3%)	0.05	1.99%	0.72	3.21%	0.20	2.14%
SE Slopes (>3%)	0.02	0.97%	0.51	2.28%	0.24	2.61%
SW Slopes (>8.5%)	0.03	1.40%	0.31	1.37%	0.09	0.91%
SW Slopes (3-8.5%)	0.34	14.28%	2.23	10.01%	0.90	9.54%
Total Area	**2.39**	**100%**	**22.32**	**100%**	**9.39**	**100%**

Note: km^2= squared kilometres, %= Percent, >= greater than



LEGEND

- CAMP
- PROPOSED MINE SITE
- ROAD - PROPOSED ALIGNMENT
- WATERCOURSE
- WATERBODY
- WATERSHED

TERRAIN TYPES

- 1 LAKE
- 2 LAKE EDGES
- 3 CREST
- 4 LOW SLOPES
- 5 NE SLOPES (3 - 8.5%)
- 6 NE SLOPES (> 8.5%)
- 7 SW SLOPES (3 - 8.5%)
- 8 SW SLOPES (> 8.5%)
- 9 NW SLOPES (> 3%)
- 10 SE SLOPES (> 3%)

2 0 2

SCALE 1:75,000 KILOMETRES

REFERENCE

Base data obtained from NTDB. Hydrology data obtained from field survey. Terrain Types and Watershed delineation and definition from AGRA 1998 Data Report.
Projection: UTM Zone 15 Datum: NAD 83

PROJECT

COMAPLEX MINERALS
MELIADINE WEST

TITLE

DISTRIBUTION OF TERRAIN TYPES AT THE MELIADINE WEST GOLD PROJECT

Golder Associates
Calgary, Alberta

PROJECT No. 07-1373-0055			SCALE AS SHOWN	REV. 0
DESIGN	DC	27 Oct. 2008	**FIGURE: 2-3**	
GIS	DE	25 Nov. 2008		
CHECK	JL	01 Dec. 2008		
REVIEW	NS	01 Dec. 2008		

I:\2007\07-1373\07-1373-0055\Mapping\MXD\Hydrology\Fig2-3_Terrain_Units.mxd

Wind redistributes snowfall over the course of a winter, and in general, exposed surfaces, such as open lake areas, collect less snow than sheltered lowland areas. Similarly, prevailing winds redistribute snow unequally across slopes of differing aspect. These effects may result in significant snow accumulation differences between terrain types.

Snow depths and densities were measured at 51 plots over 10 terrain types during the snow course survey. Table 2-2 presents, by terrain type, the snowpack measurement data collected in April 2008.

For each terrain type, a mean SWE value was calculated and used to derive the SWE for each watershed based on the proportion of that terrain type over the entire watershed. The results are presented in the Table 2-3.

Table 2-2 Snow Course Survey Data for Meliadine West Gold Project, 23-27 April 2008

Terrain Type	2008 Snow Course Survey			
	Survey Plot Number	Snow Density (g/cm^3)	Snow Depth (cm)	Snow Water Equivalent (mm)
Crest	CT-08-01	0.241	17.4	42.0
	CT-08-02	0.247	13.6	33.6
	CT-08-03	0.265	22.1	55.1
	CT-08-04	0.245	11.0	18.0
	CT-08-05	0.262	25.4	66.4
	CT-08-06	0.245	25.4	62.3
	CT-08-07	0.247	22.0	54.3
	CT-08-08	0.217	19.0	41.1
	2008 Mean Value	**0.246**	**19.5**	**46.6**
Lake	LK-08-01	0.305	30.3	92.2
	LK-08-02	0.287	31.6	90.7
	LK-08-03	0.290	21.0	60.8
	LK-08-04	0.336	36.0	120.9
	LK-08-05	0.298	25.0	74.4
	LK-08-06	0.350	38.0	133.1
	LK-08-07	0.213	22.0	46.9
	LK-08-08	0.320	29.0	92.8
	2008 Mean Value	**0.300**	**29.1**	**89.0**
Lake Edges	LE-08-01	0.317	43.2	136.8
	LE-08-02	0.349	47.0	163.8
	LE-08-03	0.331	85.0	281.5
	LE-08-04	0.316	65.0	205.7
	LE-08-05	0.342	114.0	389.8
	2008 Mean Value	**0.331**	**70.8**	**235.5**
Low Slopes	LS-08-01	0.268	14.3	38.5
	LS-08-02	0.250	16.4	40.9
	LS-08-03	0.216	12.9	27.8
	LS-08-04	0.214	19.8	42.3
	LS-08-05	0.261	13.7	35.7
	LS-08-06	0.332	20.4	67.7
	LS-08-07	0.266	25.1	66.8

Table 2-2 Snow Course Survey Data for Meliadine West Gold Project, 23-27 April 2008 (continued)

Terrain Type	2008 Snow Course Survey			
	Survey Plot Number	Snow Density (g/cm^3)	Snow Depth (cm)	Snow Water Equivalent (mm)
Low Slopes (continued)	LS-08-08	0.221	16.7	36.8
	LS-08-09	0.211	20.8	43.9
	LS-08-10	0.247	20.2	49.9
	LS-08-11	0.226	20.5	46.3
	2008 Mean Value	**0.247**	**18.3**	**45.1**
NE Slopes (>8.5%)	NE-08-01	0.293	46.1	134.9
	NE-08-02	0.286	76.4	218.5
	NE-08-03	0.226	27.0	60.9
	2008 Mean Value	**0.268**	**49.8**	**138.1**
NE Slopes (3-8.5%)	NE-08-04	0.274	17.1	46.9
	NE-08-05	0.326	27.2	88.7
	NE-08-06	0.303	29.0	87.8
	NE-08-07	0.276	14.7	40.6
	NE-08-08	0.257	20.7	53.4
	2008 Mean Value	**0.287**	**21.7**	**63.5**
NW Slopes (>3%)	NW-08-01	0.251	25.0	62.8
	2008 Mean Value	**0.251**	**25.0**	**62.8**
SE Slopes (>3%)	SE-08-01	0.399	160.0	638.9
	SE-08-02	0.353	101.8	359.4
	SE-08-03	0.348	73.0	254.0
	2008 Mean Value	**0.367**	**111.6**	**417.4**
SW Slopes (>8.5%)	SW-08-01	0.342	90.6	309.6
	SW-08-02	0.332	81.8	271.8
	2008 Mean Value	**0.337**	**86.2**	**290.7**
SW Slopes (3-8.5%)	SW-08-03	0.301	61.0	184.0

Table 2-2 Snow Course Survey Data for Meliadine West Gold Project, 23-27 April 2008 (continued)

Terrain Type	2008 Snow Course Survey			
	Survey Plot Number	Snow Density (g/cm^3)	Snow Depth (cm)	Snow Water Equivalent (mm)
SW Slopes (3-8.5%) (continued)	SW-08-04	0.313	63.8	199.4
	SW-08-05	0.326	51.9	169.0
	SW-08-06	0.310	39.0	120.9
	SW-08-07	0.319	64.0	204.2
	2008 Mean Value	**0.314**	**55.9**	**175.5**

Note: g/cm^3= grams per cubic centimetre, cm= centimetres, mm= millimetres, %= percent

Table 2-3 Mean Snow Water Equivalent (SWE) Values by Terrain Type

Terrain Type	Mean SWE (mm)	BASIN B7 SWE (mm)	BASIN B2 SWE (mm)	BASIN A1 SWE (mm)
Crest	46.6	5.9	4.9	4.4
Lake	89.0	16.4	14.9	13.3
Lake Edges	235.5	28.3	35.9	35.3
Low Slopes	45.1	14.4	15.8	15.9
NE Slopes (>8.5%)	138.1	3.5	2.0	2.4
NE Slopes (3-8.5%)	63.5	2.4	2.7	5.3
NW Slopes (>3%)	62.8	1.2	2.0	1.3
SE Slopes (>3%)	417.4	4.1	9.5	10.9
SW Slopes (>8.5%)	290.7	4.1	4.0	2.7
SW Slopes (3-8.5%)	175.5	25.1	17.6	16.7
	Total	**105.4**	**109.2**	**108.3**

Note: mm= millimetres, >= greater than, %= percent

2.3 RAINFALL RESULTS

The Meliadine West Camp rain gauge station was installed on 15 June 2008. Rainfall data were recorded at the station until 15 September, when it was removed for the year. Monthly rainfall totals for 2008 are provided in Table 2-4, and daily and annual cumulative rainfall are plotted on Figure 2-4. It is possible that trace rainfall events, and localized rainfall events in parts of the watershed distant from the rain gauge station, occurred over the course of the open water months and were not recorded at the station.

Table 2-4 Monthly Rainfall Measured at Meliadine West Camp Rain Gauge Station and Reported at Rankin Inlet A, June to September 2008

Month	Measured Rainfall at Meliadine West (mm)	Reported Rainfall at Rankin Inlet A [b] (mm)
June	9.2[a]	2.0
July	41.6	26.8
August	42.6	74.0
September	8.2[(a)]	12.3
Total	**101.6**[a]	**115.1**

a Monitoring in 2008 began when the rain gauge was installed on 15 June and ended when it was removed on 15 September.

b Daily rainfall values from the Rankin Inlet (Environment Canada Climate Station 2303401)

Note: mm= millimetres.

The Meliadine West Camp rain gauge station recorded 101.6 mm of rainfall between June and September 2008. This is comparable to the value of 115.1 mm reported at the Rankin Inlet climate station for the same period, as shown in Figure 2-5. Previous reports also showed similarities between both locations (AEE 1998, 1999). Rainfall data from the Rankin Inlet climate station is considered representative of the conditions in the Project area.

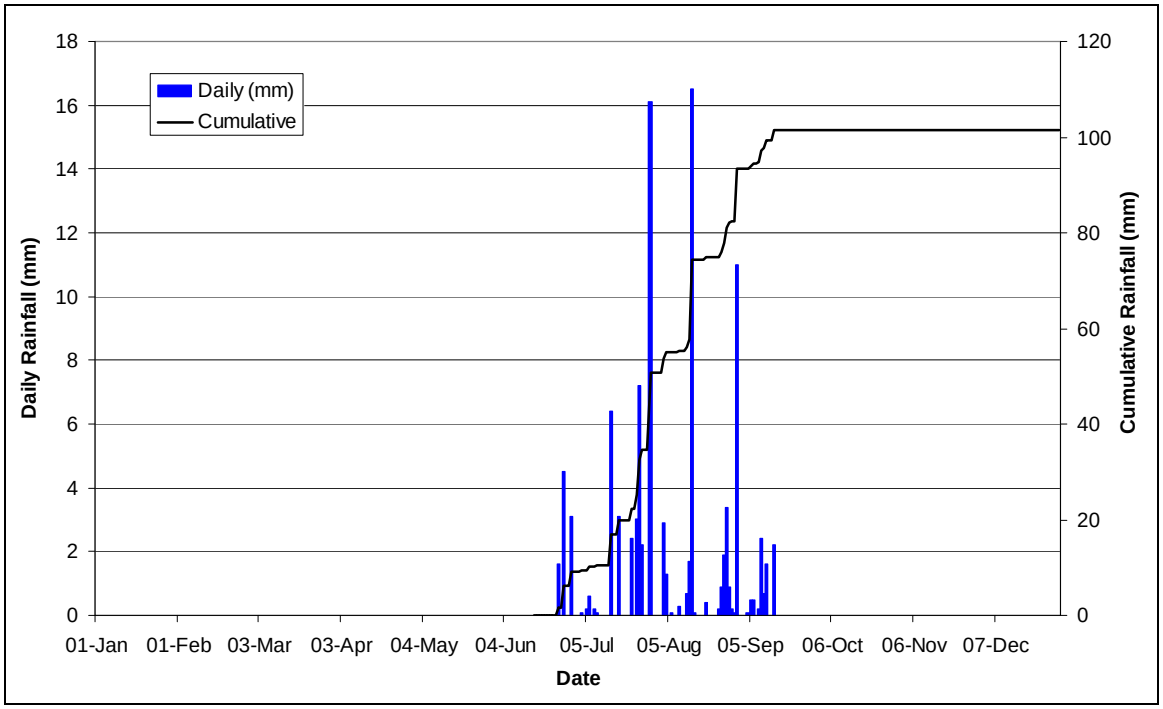


Figure 2-4 Daily and Cumulative Rainfall at Meliadine West Rain Gauge, June to September 2008

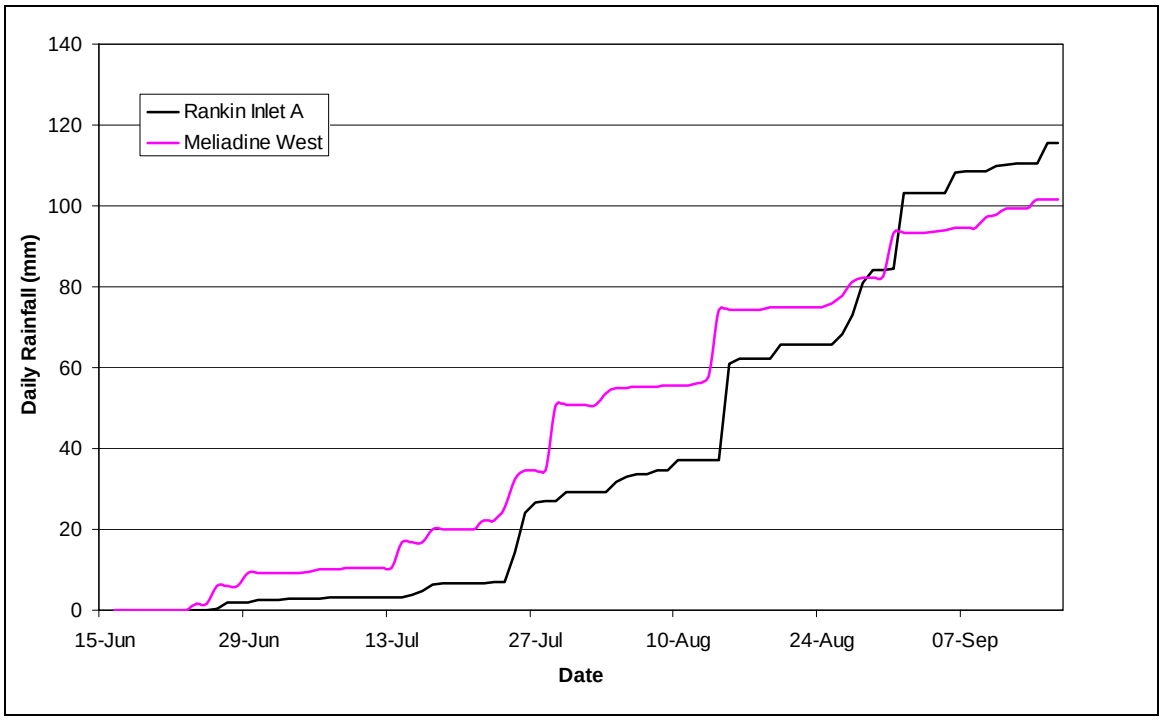


Figure 2-5 Comparison between Meliadine West Rain Gauge and Rankin Inlet A Rainfall Data, 2008

2.4 HYDROMETRY RESULTS

Factsheets describing the location of the hydrometric stations and equipment installed are provided in Appendix A. The appendix also contains stage-discharge data, the derived stage-discharge rating curve based on data collected in 2008, tabulated mean daily discharge and water level data; and manual discharge measurement data and related calculation sheets.

2.4.1 A1 Lake and Outflow

The A1 Lake and Outflow hydrometric station was visited four times during the 2008 field program, and a continuous hydrograph was derived for the period of 15 June to 16 September 2008 based on continuous logger data. Details of each site visit are provided in Table 2-5. The hydrographs for A1 Lake and Outflow in 2008 are presented in Figure 2-6.

Table 2-5 Site Visits to A1 Lake and Outflow Hydrometric Station, 2008

Date	Activities	Lake	Lake Water Surface Elevation (non-geodetic)	Outflow	Discharge
15 Jun	Installed pressure transducer and data logger. Measured discharge and water surface elevation.	✓	98.120 m	✓	0.061 m^3/s
10 Jul	Measured discharge and water surface elevation and downloaded data logger.	✓	98.040 m	✓	0.006 m^3/s
02 Aug	Measured discharge and water surface elevation and downloaded data logger.	✓	98.024 m	✓	0.002 m^3/s
16 Sep	Measured discharge and water surface elevation and downloaded data logger. Removed pressure transducer and data logger.	✓	98.074 m	✓	0.024 m^3/s

Note: m= metres, m^3/s= cubic metres per second

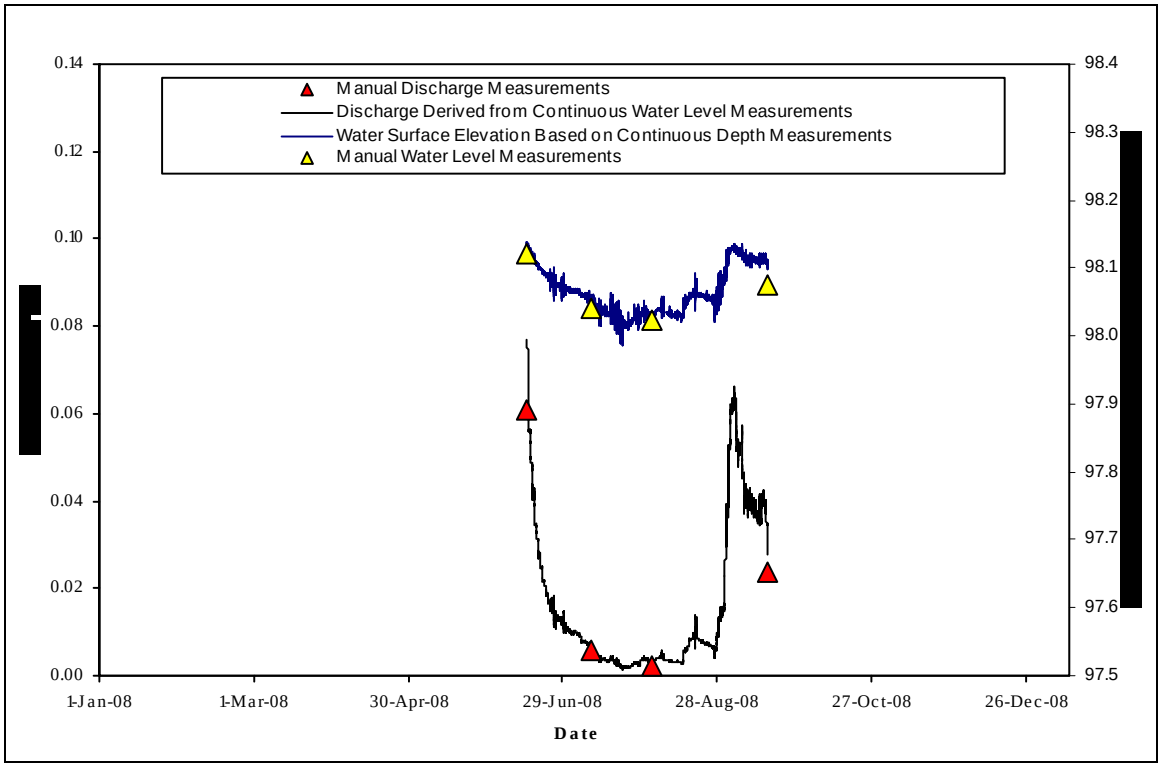


Figure 2-6 Hydrograph for A1 Lake and Outflow, 2008

2.4.2 B2 Lake and Outflow

The B2 Lake and Outflow hydrometric station was visited four times during the 2008 field program, and a continuous hydrograph was derived for the period of 15 June to 16 September 2008 based on continuous logger data. Details of each site visit are provided in Table 2-6. The hydrographs for B2 Lake and Outflow in 2008 are presented in Figure 2-7.

Table 2-6 Site Visits to B2 Lake and Outflow Hydrometric Station, 2008

Date	Activities	Lake	Lake Water Surface Elevation (non-geodetic)	Outflow	Discharge
15 Jun	Installed pressure transducer and data logger. Measured discharge and water surface elevation.	✓	97.875 m	✓	0.219 m^3/s
10 Jul	Measured discharge and water surface elevation and downloaded data logger.	✓	97.792 m	✓	0.049 m^3/s
02 Aug	Measured discharge and water surface elevation and downloaded data logger.	✓	97.655 m	✓	0.021 m^3/s
16 Sep	Measured discharge and water surface elevation and downloaded data logger. Removed pressure transducer and data logger.	✓	97.640 m	✓	0.019 m^3/s

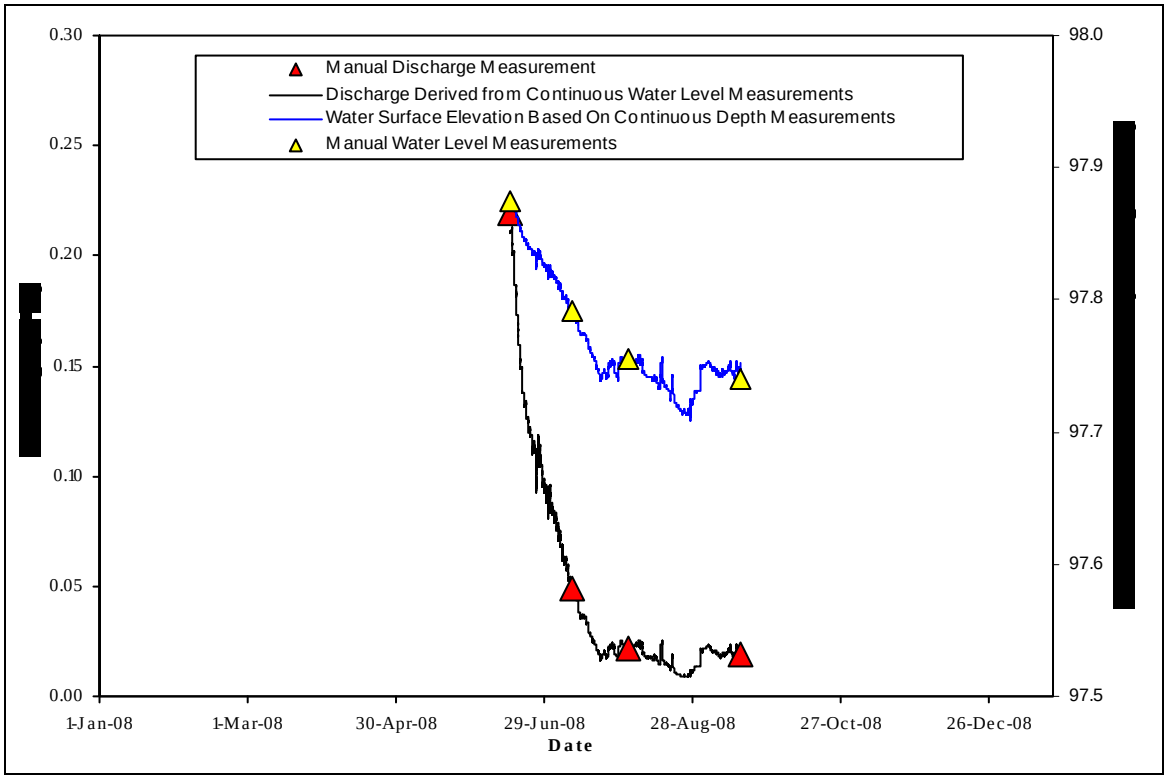


Figure 2-7 Hydrograph for B2 Lake and Outflow, 2008

2.4.3 B7 Lake and Outflow

The B7 Lake and Outflow hydrometric station was visited four times during the 2008 field program, and a continuous hydrograph was derived for the period of 19 June to 16 September 2008 based on continuous logger data. Details of each site visit are provided in Table 2-7. The hydrographs for B7 Lake and Outflow in 2008 are presented in Figure 2-8.

During the visit of 10 July, 2008, approximately 50% of the flow was dispersed in grass and was not measurable.

Table 2-7 Site Visits to B7 Lake and Outflow Hydrometric Station, 2008

Date	Activities	Lake	Lake Water Surface Elevation (non-geodetic)	Outflow	Discharge
19 Jun, 2008	Installed pressure transducer and data logger. Measured discharge and water surface elevation.	✓	99.575 m	✓	0.030 m^3/s
10 Jul, 2008	Measured discharge and water surface elevation and downloaded data logger.	✓	99.465 m	✓	0.005 m^3/s
02 Aug, 2008	Measured discharge and water surface elevation and downloaded data logger.	✓	99.418 m	✓	0.004 m^3/s
16 Sep, 2008	Measured discharge and water surface elevation and downloaded data logger. Removed pressure transducer and data logger.	✓	99.454 m	✓	0.006 m^3/s

Note: m= metres, m^3/s= cubic metres per second

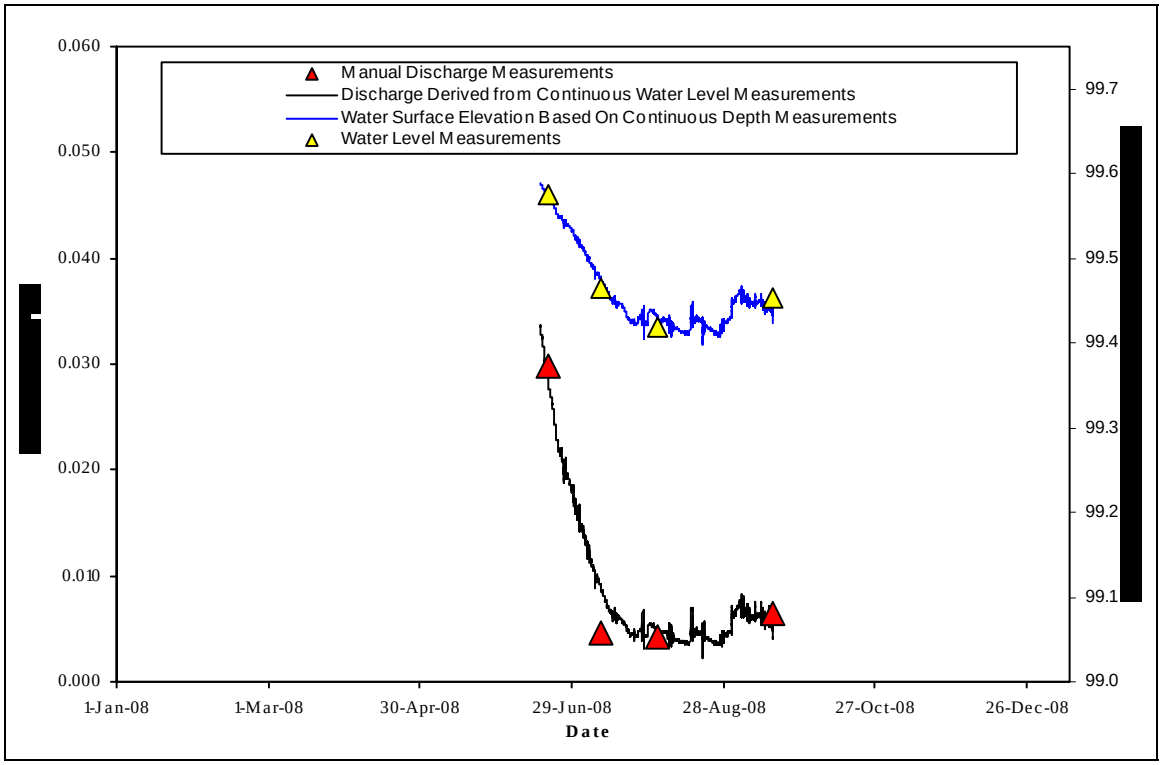


Figure 2-8 Hydrograph for B7 Lake and Outflow, 2008

2.4.4 Meliadine Lake

The Meliadine Lake hydrometric station was visited four times during the 2008 field program. A continuous hydrograph was derived for the period of 2 August to 30 August 2008 based on continuous logger data, as discussed below. Details of each site visit are provided in Table 2-8. The hydrographs for Meliadine Lake in 2008 are presented in Figure 2-9.

Table 2-8 Site Visits to Meliadine Lake Hydrometric Station, 2008

Date	Activities	Lake	Lake Water Surface Elevation (non-geodetic)
14 Jun, 2008	Installed pressure transducer and data logger. Measured water surface elevation.	✓	98.936 m
10 Jul, 2008	Measured water surface elevation and downloaded data logger. Noticed datalogger malfunction.	✓	98.905 m
02 Aug, 2008	Measured water surface elevation and replaced data logger.	✓	98.848 m
18 Sep, 2008	Measured water surface elevation and downloaded data logger. Removed pressure transducer and data logger.	✓	97.755 m

Note: m= metres

During the second visit, it was noted that the pressure transducer was malfunctioning. It was replaced during the third visit in August. In September, the pressure transducer was not in its housing and it had broken connections. Animal disturbance is suspected to be the cause of damage. Continuous data for the 2008 field program are available from 2 August to 30 August, 2008.

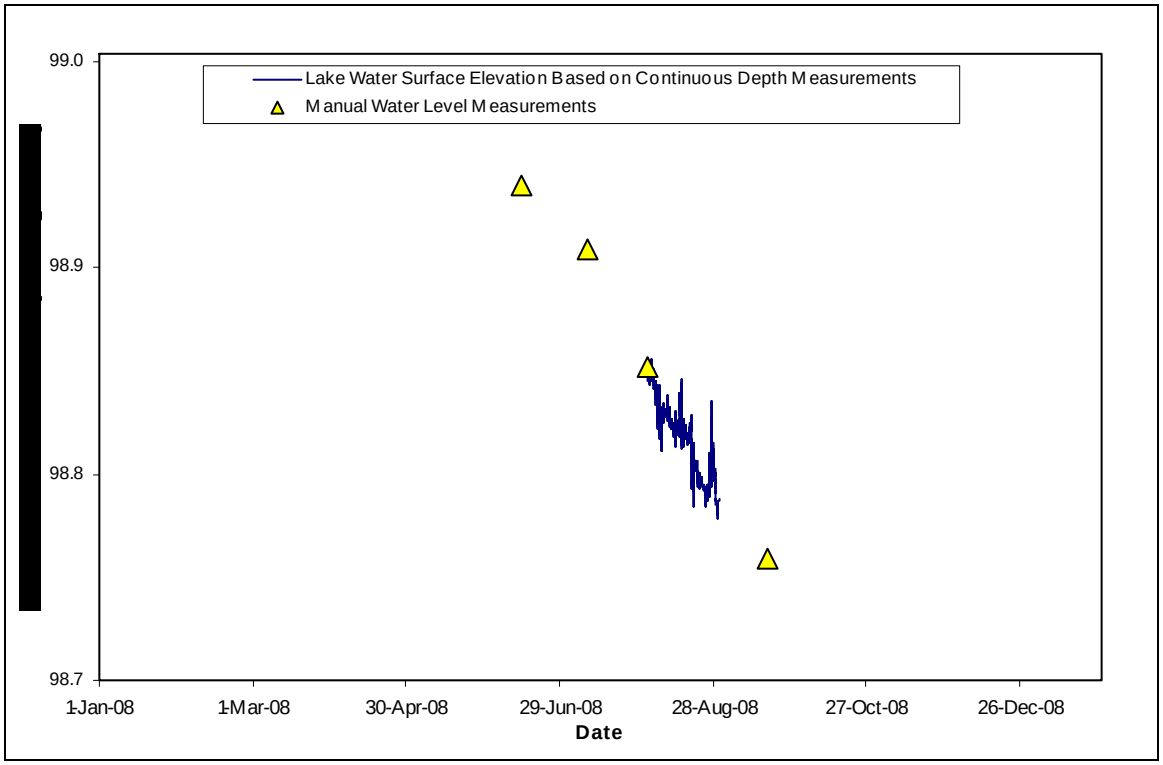


Figure 2-9 Hydrograph for Meliadine Lake, 2008

2.4.5 Meliadine Lake West Outlet (Diana River)

The Meliadine Lake West Outlet (Diana River) hydrometric station was visited four times during the 2008 field program. Details of each site visit are provided in Table 2-9.

Table 2-9 Site Visits to Meliadine Lake West Outlet (Diana River) Hydrometric Station, 2008

Date	Activities	Outflow	Lake Water Surface Elevation (non-geodetic)	Discharge
16 Jun, 2008	Measured water surface elevation.	✓	98.880 m	n/a[a]
10 Jul, 2008	Measured discharge and water surface elevation.	✓	98.883 m	1.19 m^3/s
03 Aug, 2008	Measured discharge and water surface elevation.	✓	98.795 m	0.981 m^3/s
18 Sep, 2008	Measured discharge and water surface elevation.	✓	98.569 m	0.461 m^3/s

a Discharge measurement during the first trip on 16 June, 2008 was not possible due to equipment shipping problems creating time constraints.

2.4.6 Meliadine Lake Main Outlet

The Meliadine Lake Main Outlet hydrometric station was visited four times during the 2008 field program. Details of each site visit are provided in Table 2-10.

Table 2-10 Site Visits to Meliadine Lake Main Outlet Hydrometric Station, 2008

Date	Activities	Outlet	Lake Water Surface Elevation (non-geodetic)	Discharge
14 Jun, 2008	Measured water surface elevation.	✓	98.951 m	n/a[a]
10 Jul, 2008	Measured discharge and water surface elevation.	✓	98.945 m	3.37 m^3/s
02 Aug, 2008	Measured discharge and water surface elevation.	✓	98.879 m	3.27 m^3/s
17 Sep, 2008	Measured discharge and water surface elevation.	✓	98.720 m	0.662 m^3/s

a Discharge measurement during the first trip on 14 June, 2008 was not possible due to equipment shipping problems creating time constraints.

2.4.7 Meliadine River near the Mouth

The Meliadine River near the Mouth hydrometric station was visited four times during the 2008 field program. Details of each site visit are provided in Table 2-11.

Table 2-11 Site Visits to Meliadine River near the Mouth Hydrometric Station, 2008

Date	Activities	Outflow	Discharge
19 Jun, 2008	Site visit.	✓	n/a[a]
10 Jul, 2008	Measured discharge.	✓	9.00 m^3/s
02 Aug, 2008	Measured discharge. Installed benchmark.	✓	4.76 m^3/s
17 Sep, 2008	Measured discharge.	✓	2.21 m^3/s

a Discharge measurement was not possible due to safety concerns related to rapid, high water during the first visit on 19 June, 2008

Note: m^3/s= cubic metres per second.

The wading method described in Section 2.1 could not be used due to rapid, high water. The discharge measurement was performed using an Acoustic Doppler Current Profiler (ADCP) during the second visit on 10 July.

Water level measurements were taken at different locations throughout the field program due to channel bed configuration and could therefore not be tied to a single vertical datum. A suitable location for future measurements was established based on observations at the end of the program.

2.4.8 Pump Lake

The Pump lake hydrometric station was visited three times during the 2008 field program. Details of each site visit are provided in Table 2-13.

Table 2-13 Site Visits to Pump Lake and Outflow Hydrometric Station, 2008

Date	Activities	Lake	Lake Water Surface Elevation (non-geodetic)	Outflow	Discharge
10 Jul, 2008l	Measured water surface elevation.	✓	99.900 m	✓	< 0.001 m^3/s
03 Aug, 2008	Measured water surface elevation.	✓	99.856 m	✓	< 0.001 m^3/s
16 Sep, 2008	Measured water surface elevation.	✓	99.890 m	✓	< 0.001 m^3/s

Note: m^3/s= cubic metres per second, m= metres

This site was not visited in June 2008 due to time constraints. No continuous monitoring was planned for this site. Some flow was observed during each visit at the Pump Lake outlet, but was too small to measure. Ice formation was noticed along the Lake shore on the last visit on 16 September, 2008.

2.4.9 Peanut Lake

The Peanut Lake hydrometric station was visited three times during the 2008 field program. Details of each site visit are provided in Table 2-12.

Table 2-12 Site Visits to Peanut Lake Hydrometric Station, 2008

Date	Activities	Lake	Lake Water Surface Elevation (non-geodetic)
11 Jul, 2008	Measured water surface elevation.	✓	99.354 m
1 Aug, 2008	Measured water surface elevation.	✓	99.309 m
16 Sep, 2008	Measured water surface elevation.	✓	99.310 m

Note: m= metres

This site was not visited in June due to time constraints. No continuous monitoring was planned for this site. Ice formation was observed along the lake shore during the last visit on 16 September. No flow was observed during that site visit

2.5 ROAD CROSSING ASSESSMENTS

Preliminary site visits were conducted to four watercourse crossings located along two proposed road corridors. One watercourse crossing was located along a primary corridor extending from Rankin Inlet to the proposed Project site (Figure 2-10). Three crossings were located along a secondary corridor that extends from the primary road to the Discovery area. The Discovery area is located approximately 16 km southeast from the Meliadine West camp (Figure 2-10). The surveyed stream crossings were assigned a unique designation that included a corridor prefix (M for Meliadine and D for Discovery) followed by the distance (in kilometres) along the road alignment from its southern terminus.

Assessments were attempted on 20 June and on 10 July, 2008. A complete assessment was not possible on the first visit due to ice conditions and high flows. Measurements performed in July are summarized in Table 2-14. Stream characteristics of the Meliadine River crossing are provided in Appendix A-10. Additional information on the other 12 crossings in the Meliadine area is presented in the Fisheries Baseline Studies 2008 (Golder 2008).

In the Discovery area, stream crossing assessments were performed on 20 June and on 12 July 2008. On the first visit, the area was free of snow, but ice was present along the margins of some of the watercourses. Most meltwater had drained from the area, but standing water was often observed along stream margins. Standing water was also observed on the second visit.

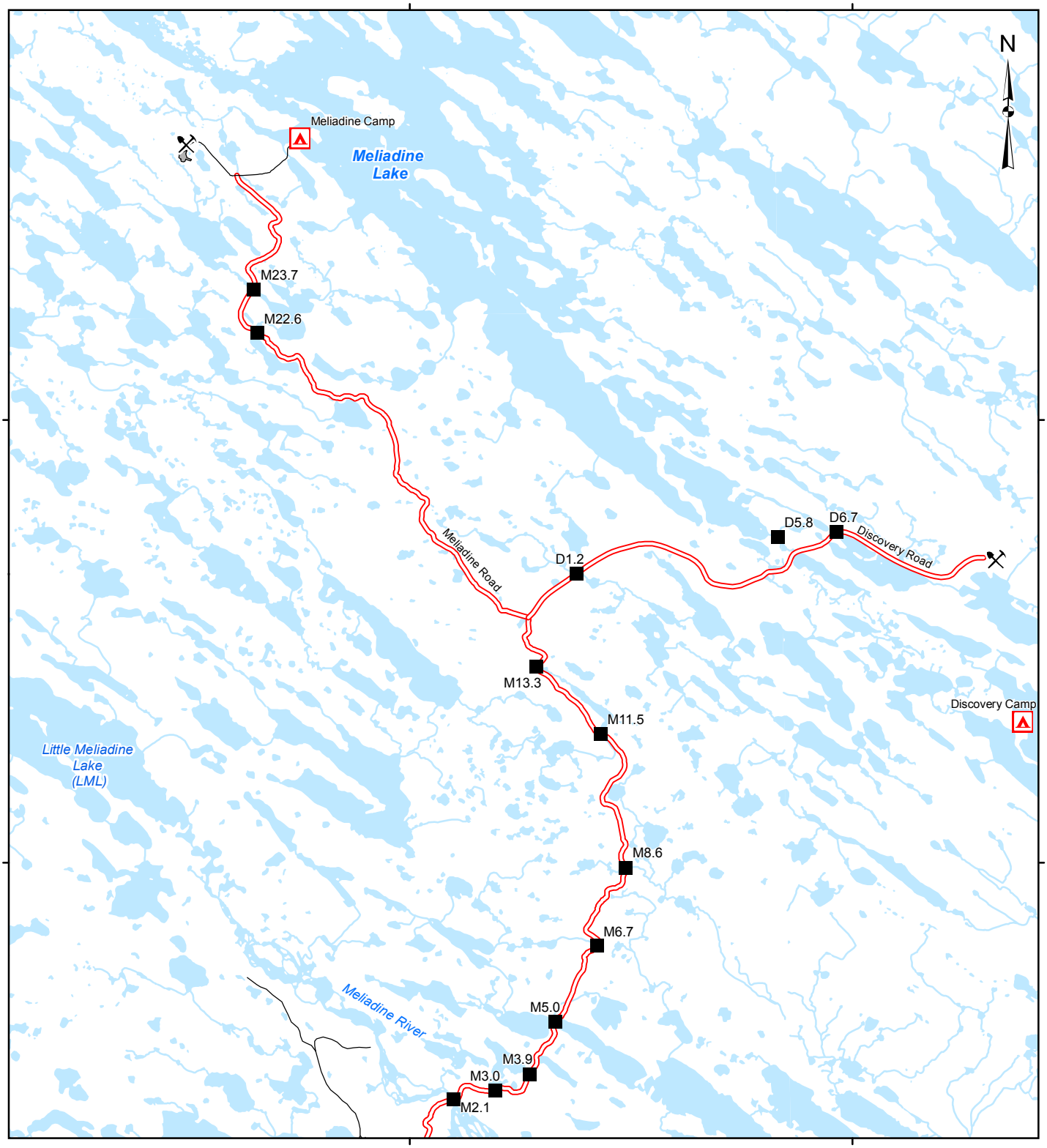
The watercourses at road crossings in the Discovery area are generally small, ephemeral streams, characterized by poorly defined multiple channels that extend over a wide area. Manual stream discharge measurements using the method described in Section 2.1 were not possible due to low flow on both visits. Stream characteristics were measured along the road crossings and are provided in Appendices A-11 to A13. A summary of the road crossing characteristics is provided in Table 2-14.

Table 2-14 Meliadine and Discovery Road Crossing Watercourse Characteristics

Crossing ID	Bankfull Width (m)[a]	Bankfull Depth (m)[a]	Bed Slope (m/m)	Dominant Bed Material	Comments
M2.1	55	2.25	0.0029	Boulders	Well defined single channel
D1.2	29	0.34	n/a	Organics	Dry at the time of visit. Ill defined multiple channels.
D5.8	27	0.22	0.0093	Cobbles	Ill defined multiple channels.
D6.7	n/a	n/a	n/a	Organics	Channel could not be identified at crossing location.

a Estimated based on observed channel geometry, vegetation and substrate characteristics

Note: m= metres



LEGEND

- CAMP
- PROPOSED MINE SITE
- WATERCOURSE CROSSING
- ROAD - EXISTING
- ROAD - PROPOSED ALIGNMENT
- WATERCOURSE
- PORTAL WORK AREA
- WATERBODY

3 0 3

SCALE 1:100,000 KILOMETRES

NOTE

Water crossing sites investigated in June and July 2008. Proposed road alignment as of September 2008.

REFERENCE

Base data obtained from NTDB.
Note: Water crossing sites investigated in June and July 2008. Proposed road alignment as of September 2008.
Projection: UTM Zone 15 Datum: NAD 83

PROJECT

COMAPLEX MINERALS
MELIADINE WEST

TITLE

WATERCOURSE CROSSINGS ALONG PROPOSED ROAD ALIGNMENT

Golder Associates
Calgary, Alberta

PROJECT No. 07-1373-0055			SCALE AS SHOWN	REV. 0
DESIGN	DC	27 Oct. 2008	**FIGURE: 2-10**	
GIS	DE	26 Nov. 2008		
CHECK	JL	01 Dec. 2008		
REVIEW	NS	01 Dec. 2008		

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3 LONG-TERM AND REGIONAL METEOROLOGY

3.1 AVAILABLE DATA

The most proximate long-term climate station to the Project site that is operated by Meteorological Services of Canada (MSC) is Rankin Inlet A (Station 2303401) (Environment Canada 2008b). This is located approximately 30 km south of the Project site and provides records from January 1981 to October 2008. The station is considered to be close enough to represent the meteorological conditions at the Project site.

Regional data are available from MSC stations (Environment Canada 2008b) at Chesterfield Inlet, located approximately 80 km north of the Project site, and Whale Cove, approximately 90 km south. These climate stations each provide 23 years of recent meteorological data. Basic information on these MSC stations is summarized in Table 3-1.

Table 3-1 Regional MSC Climate Stations within 90 km of the Project

Station Name	MSC Station Number	Period of Record	Latitude	Longitude	Distance from Project
Rankin Inlet A	2303401	1981 – 2008	92° 07.2’	62° 49.2’	30 km S
Chesterfield Inlet A	2300707	1985 – 2007	90° 43.8’	63° 21.0’	80 km N
Whale Cove A	2303986	1985 – 2007	92° 36.0’	62° 14.4’	90 km S

Note: km= kilometres

3.2 AIR TEMPERATURE

Continuous air temperature data are available at the Rankin Inlet A climate station for the period 1981 to 2008. The station is thought to be close enough to describe the long-term temperature conditions of the Project site. Temperatures for this period are presented on a monthly basis in Table 3-2 and Figure 3-1. Monthly and annual temperature data are provided in Appendix B-2.

Air temperature at the Project site may fall below 0°C on any day of the year. The monthly mean air temperature is typically above 0°C for the months of June to September, and is below 0°C between October and May. July has been the warmest month and January has been the coldest month. The mean annual temperature for the period of record was -10.6°C.

Over the period 1985 to 2007, the mean annual temperature was -10.6°C at Chesterfield Inlet A and -10.0°C at Whale Cove A. Long-term air temperature characteristics for these climate stations are available in Appendix C-3.

Table 3-2 Air Temperature Statistics at Rankin Inlet A, 1981 to 2008

Month	Warmest and Coldest Day in the Month				Monthly Mean
	Extremes		Means		
	Maximum	Minimum	Maximum	Minimum	
January	0.00	-46.10	-27.47	-34.57	-31.04
February	-4.40	-49.80	-26.48	-33.85	-30.19
March	1.30	-43.40	-20.71	-29.30	-25.03
April	3.40	-35.70	-11.32	-20.37	-15.87
May	14.10	-23.80	-2.29	-8.90	-5.62
June	26.10	-9.40	7.83	0.43	4.15
July	28.90	-1.90	14.96	6.08	10.54
August	30.50	-1.40	13.11	6.18	*9.67*
September	20.60	-9.00	6.13	1.16	*3.66*
October	9.30	-27.40	-1.91	-7.41	*-4.68*
November [a]	0.90	-36.50	-13.42	-21.20	*-17.33*
December [a]	-2.00	-43.60	-21.89	-29.62	*-25.77*
Annual	**30.50**	**-49.80**	**14.96**	**-34.57**	**-10.62**

a Data from 1981 – 2007. 2008 record was incomplete at the time of reporting.

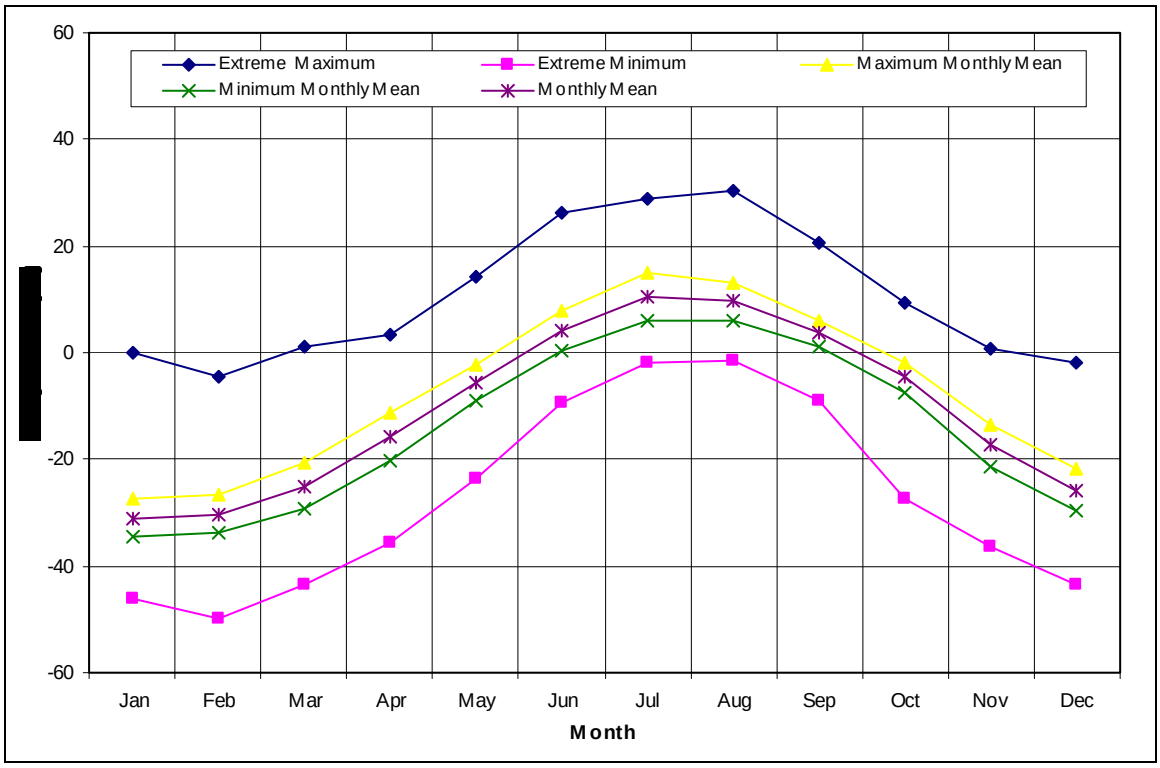

Figure 3-1 Air Temperature Statistics at Rankin Inlet A, 1981 to 2008

Observations of the Rankin Inlet climate station and inspections of historical records (Environment Canada 2008c) provide the following information that is not available on the Environment Canada web site. These changes must be considered when making any judgments on climate change based on temperature data from this station:

- the station was moved approximately 200 m northwest, after 1996. The original station was fenced, and the existing station is not fenced;
- the original station appears to have been sited on a gravel pad on grade, while the existing station is located on a gravel pad up to 2 m thick; and
- snow clearing at the gravel pad may have a microsite effect on surface albedo. The original station was fenced, but the current site is not fenced and can be accessed by powered snow clearing equipment.

3.3 PRECIPITATION

3.3.1 Monthly Precipitation

Precipitation data recorded at the Rankin Inlet A climate station from 1981 to 2007 were compared with the concurrent records at the Chesterfield Inlet and the Whale Cove active climate stations, as shown on Figure 3-2.

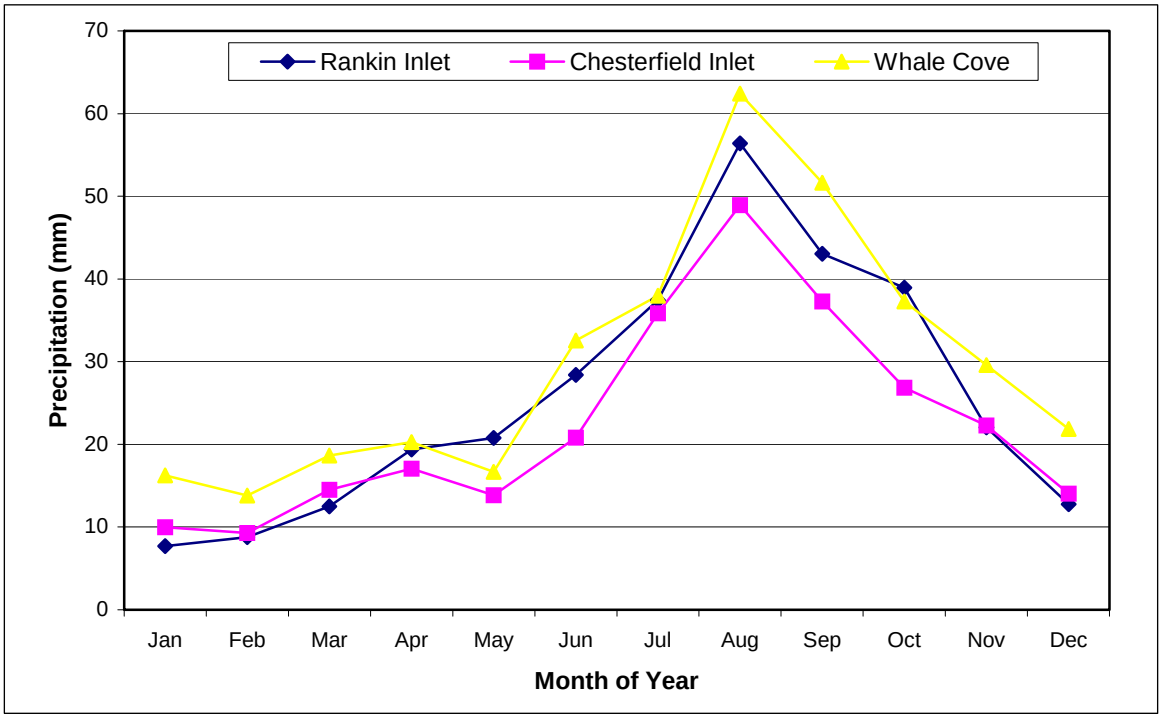

Figure 3-2 Comparison of Regional Precipitation

Figure 3-2 shows that the three locations have similar precipitation patterns. The lowest monthly precipitation occurs during the winter months of January and February, and peaks occur in August. While the precipitation amounts are comparable, the data show that precipitation is greater in the south and lower in the north. Monthly and annual precipitation data for both regional climate stations are available in Appendices C-1 and C-2.

The recorded mean monthly rainfall, snowfall, and precipitation at the Rankin Inlet A climate station for the period of record 1981 to 2008 are presented in Table 3-3. Details of the monthly data series are provided in Tables 3-4 to 3-6. Based on the precipitation data series, 58% of precipitation in the Project area typically occurs as rain and 42% occurs as snow. Precipitation in the form of rain usually occurs between June and September, and while it can snow in any month, the majority of snow occurs in October and November. Additional precipitation data for the Rankin Inlet A climate station are provided in Appendix B-1.

MSC records present rainfall in units of millimetres and snowfall in units of centimetres. Because of variable snow densities, the reported precipitation, presented in units of millimetres, may not equal the sum of the value of rainfall plus the value of snowfall divided by ten (a commonly used, but not necessarily accurate, conversion factor).

Table 3-3 Mean Monthly and Annual Precipitation at Rankin Inlet, 1981 to 2008

Month	Rainfall (mm)	Snowfall (cm)	Precipitation (mm)
Jan	0.00	8.18	8.04
Feb	0.04	8.53	8.21
Mar	0.03	12.31	12.10
Apr	1.21	18.86	19.61
May	7.20	13.18	19.98
Jun	23.10	4.92	27.88
Jul	36.96	0.09	37.08
Aug	56.83	0.18	57.00
Sep	39.03	3.94	42.96
Oct	13.75	24.65	37.95
Nov[a]	0.33	21.71	21.01
Dec[a]	0.01	12.75	12.20
Annual	**178.48**	**128.06**	**302.84**

a 2008 record was incomplete at the time of reporting

Note: mm= millimetres, cm= centimetres

Table 3-4 Monthly and Annual Rainfall (mm) at Rankin Inlet A, 1981 to 2008

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1981	0.0	0.0	0.0	0.0	16.2	31.0	57.8	31.0	40.4	22.6	0.0	0.0	199.0
1982	0.0	0.0	0.0	0.0	4.9	10.7	65.7	30.7	17.9	41.1	0.0	0.0	171.0
1983	0.0	0.0	0.0	0.0	0.0	100.9	33.1	39.0	41.5	19.2	0.2	0.0	233.9
1984	0.0	0.0	0.0	3.6	0.2	35.7	12.0	95.9	24.7	2.8	0.0	0.0	174.9
1985	0.0	0.0	0.0	0.0	0.0	13.1	30.8	123.3	71.3	17.2	0.0	0.0	255.7
1986	0.0	0.0	0.0	0.2	19.3	23.6	10.4	85.1	30.0	0.2	0.0	0.0	168.8
1987	0.0	0.0	0.0	3.9	1.2	30.1	27.8	74.2	24.0	0.2	0.0	0.0	161.4
1988	0.0	0.0	0.0	0.0	0.0	14.6	22.6	32.2	29.6	10.7	0.6	0.0	110.3
1989	0.0	0.0	0.0	0.0	0.0	14.0	48.6	23.1	39.3	8.4	0.0	0.0	133.4
1990	0.0	0.0	0.0	0.0	7.9	29.7	118.6	62.9	32.7	1.6	0.0	0.0	253.4
1991	0.0	0.0	0.0	0.0	13.0	8.5	47.9	36.4	102.0	20.6	0.0	0.2	228.6
1992	0.0	0.0	0.0	0.0	4.0	11.4	3.6	75.8	45.0	0.0	0.0	0.0	139.8
1993	0.0	0.0	0.0	0.0	11.8	1.4	48.8	56.6	19.4	0.0	0.0	0.0	138.0
1994	0.0	0.0	0.0	0.0	0.0	20.8	4.0	39.0	50.8	5.4	0.0	0.0	120.0
1995	0.0	0.0	0.0	0.2	0.0	10.2	69.8	75.2	17.0	25.4	0.0	0.0	197.8
1996	0.0	0.0	0.0	0.0	0.0	37.6	10.4	50.2	60.0	1.0	0.0	0.0	159.2
1997	0.0	0.0	0.0	0.6	4.0	47.6	17.8	11.8	13.0	45.1	0.0	0.0	139.9
1998	0.0	1.0	0.0	0.2	32.4	9.2	49.8	49.4	43.4	3.2	1.2	0.0	189.8
1999	0.0	0.0	0.0	3.4	29.2	50.4	41.6	69.8	60.8	13.2	0.0	0.0	268.4
2000	0.0	0.0	0.0	7.2	2.7	0.2	29.4	73.2	20.4	0.2	0.0	0.0	133.3
2001	0.0	0.0	0.0	0.2	5.6	26.4	58.2	82.8	34.2	22.6	0.4	0.0	230.4
2002	0.0	0.0	0.0	0.0	0.0	14.6	44.4	63.6	45.6	5.8	0.0	0.2	174.2
2003	0.0	0.0	0.0	0.0	22.4	25.8	40.8	37.0	8.8	21.8	1.8	0.0	158.4
2004	0.0	0.0	0.0	0.0	0.0	5.0	12.8	45.6	86.0	7.4	0.0	0.0	156.8
2005	0.0	0.0	0.0	7.0	19.6	28.2	32.0	22.4	40.8	13.0	0.0	0.0	163.0
2006	0.0	0.0	0.8	6.2	4.4	26.4	44.2	50.4	30.8	54.6	4.8	0.0	222.6
2007	0.0	0.0	0.0	1.0	0.8	16.0	25.3	80.5	22.3	16.0	0.0	0.0	161.9
2008	0.0	0.0	0.0	0.2	2.0	3.7	26.8	7.4	41.1	5.6	a	a	153.4
Mean	0.0	0.0	0.0	1.2	7.2	23.1	37.0	56.8	39.0	13.7	0.3	0.0	178.5
Median	0.0	0.0	0.0	0.0	3.4	18.4	32.6	53.5	36.8	9.6	0.0	0.0	165.9
Minimum	0.0	0.0	0.0	0.0	0.0	0.2	3.6	11.8	8.8	0.0	0.0	0.0	110.3
Maximum	0.0	1.0	0.8	7.2	32.4	100.9	118.6	123.3	102.0	54.6	4.8	0.2	268.4
Std Dev	0.0	0.2	0.2	2.3	9.6	20.1	24.3	25.7	21.6	14.4	1.0	0.1	43.2

a 2008 record was incomplete at the time of reporting. Note: mm= millimeters

Table 3-5 Monthly and Annual Snowfall (cm) at Rankin Inlet A, 1981 to 2008

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1981	9.1	21.1	10.5	12.1	8.7	1.6	0.0	0.0	0.0	18.4	26.1	2.6	110.2
1982	0.7	3.2	12.2	17.5	17.6	5.0	0.2	0.2	15.5	22.4	7.6	6.6	108.7
1983	9.8	3.1	18.9	3.1	28.5	0.4	0.0	0.0	1.6	20.4	5.2	6.2	97.2
1984	7.5	19.6	7.1	17.2	0.6	1.6	0.0	0.0	1.5	22.0	19.8	5.6	102.5
1985	4.2	10.4	17.7	24.8	6.8	1.4	0.0	4.8	10.2	52.0	71.2	6.0	209.5
1986	12.0	0.2	11.6	3.3	5.8	15.2	0.0	0.0	8.8	28.6	7.6	10.4	103.5
1987	9.8	5.4	30.2	38.1	5.2	34.4	0.0	0.0	3.6	13.1	31.6	18.0	189.4
1988	1.2	1.0	11.0	9.2	27.7	4.0	0.0	0.0	0.2	22.2	23.0	17.9	117.4
1989	6.5	1.6	4.6	3.4	24.0	0.0	0.0	0.0	11.2	10.4	4.8	2.0	68.5
1990	6.8	15.1	21.7	10.3	1.8	23.5	0.0	0.0	3.2	22.7	47.5	10.0	162.6
1991	4.5	2.8	25.0	34.6	18.8	0.0	0.0	0.0	12.0	37.7	16.2	14.2	165.8
1992	14.8	7.0	2.6	9.8	13.0	2.8	0.0	0.0	9.8	16.6	26.2	2.0	104.6
1993	0.4	5.6	2.0	8.2	19.2	5.4	0.0	0.0	3.8	11.4	6.2	8.6	70.8
1994	1.6	0.4	6.8	26.0	6.0	0.8	0.0	0.0	0.0	18.6	30.4	20.5	111.1
1995	6.2	1.8	2.8	15.0	10.4	0.0	0.0	0.0	2.4	12.4	13.6	9.0	73.6
1996	6.2	42.4	10.0	1.8	0.8	1.0	0.0	0.0	1.0	22.2	10.8	12.6	108.8
1997	3.4	8.0	4.6	10.6	4.0	0.0	0.0	0.0	0.0	41.0	7.6	20.4	99.6
1998	4.6	12.8	5.8	9.4	5.2	0.0	0.0	0.0	1.2	25.0	24.8	13.8	102.6
1999	10.2	10.6	15.6	7.2	18.8	0.4	0.0	0.0	0.8	14.0	23.2	19.8	120.6
2000	2.8	12.6	34.8	7.2	5.2	1.2	0.0	0.0	1.8	22.4	8.2	11.8	108.0
2001	10.0	8.8	8.6	4.8	29.6	0.4	2.4	0.0	0.0	39.4	23.0	18.8	145.8
2002	7.6	7.4	2.4	26.7	11.6	2.4	0.0	0.0	2.4	31.7	11.0	11.8	115.0
2003	13.8	0.6	14.8	5.4	4.4	13.4	0.0	0.0	6.4	31.8	31.0	25.2	146.8
2004	4.2	7.2	18.0	5.8	12.0	5.6	0.0	0.0	4.2	73.4	39.0	11.0	180.4
2005	15.6	10.4	20.6	94.8	35.4	0.0	0.0	0.0	4.2	10.8	41.4	25.0	258.2
2006	33.4	5.0	9.2	27.8	22.2	0.0	0.0	0.0	0.0	15.6	16.6	22.8	152.6
2007	1.0	12.2	7.2	55.2	18.0	2.8	0.0	0.0	4.6	15.7	12.6	11.7	141.0
2008	21.2	2.6	8.3	38.7	7.6	14.4	0.0	0.0	0.0	18.2	a	a	111.0
Mean	8.2	8.5	12.3	18.9	13.2	4.9	0.1	0.2	3.9	24.6	21.7	12.8	128.1
Median	6.7	7.1	10.3	10.5	11.0	1.5	0.0	0.0	2.4	22.1	19.8	11.8	111.1
Minimum	0.4	0.2	2.0	1.8	0.6	0.0	0.0	0.0	0.0	10.4	4.8	2.0	68.5
Maximum	33.4	42.4	34.8	94.8	35.4	34.4	2.4	4.8	15.5	73.4	71.2	25.2	258.2
Std Dev	7.1	8.7	8.5	20.0	9.7	8.2	0.5	0.9	4.3	14.0	15.4	6.9	43.3

a 2008 record was incomplete at the time of reporting. Note: cm= centimetres

Table 3-6 Monthly and Annual Precipitation (mm) at Rankin Inlet A, 1981 to 2008

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1981	9.1	20.3	10.5	11.5	24.9	32.6	57.8	31.0	40.4	41.0	25.2	2.6	306.9
1982	0.7	3.2	11.7	17.5	22.3	15.7	65.9	30.9	33.4	63.5	7.6	4.9	277.3
1983	8.9	2.5	18.9	2.5	26.1	101.3	33.1	39.0	43.1	38.6	4.9	4.5	323.4
1984	6.9	13.3	6.5	20.2	0.8	36.9	12.0	95.9	26.0	22.5	15.8	5.4	262.2
1985	4.0	9.6	17.5	23.6	6.4	14.5	30.8	128.1	81.5	61.4	66.2	5.6	449.2
1986	11.8	0.2	11.4	3.3	24.9	37.8	10.4	85.1	38.6	28.6	7.6	10.4	270.1
1987	9.8	5.4	30.2	42.0	6.4	64.5	27.8	74.2	27.6	15.9	31.6	17.1	352.5
1988	1.2	1.0	10.6	9.0	25.9	18.6	22.6	32.2	29.8	31.5	22.1	16.9	221.4
1989	6.7	1.6	4.4	3.2	20.8	14.0	48.6	23.1	50.5	18.4	4.8	2.0	198.1
1990	6.8	14.1	20.7	9.6	9.7	50.8	118.6	62.9	35.9	23.6	37.4	9.8	399.9
1991	3.9	2.8	24.1	33.4	30.1	8.5	47.9	36.4	114.0	57.3	16.2	13.2	387.8
1992	14.8	6.8	2.6	9.8	17.0	14.2	3.6	75.8	54.8	16.6	26.1	2.0	244.1
1993	0.4	5.6	2.0	8.2	31.0	6.8	48.8	56.6	23.2	11.4	6.2	8.6	208.8
1994	1.6	0.4	6.8	26.0	6.0	21.6	4.0	39.0	50.8	24.0	30.8	20.5	231.5
1995	6.2	1.8	2.8	15.2	10.4	10.2	69.8	75.2	19.4	37.8	13.4	9.0	271.2
1996	6.2	42.4	10.0	1.8	0.6	38.6	10.4	50.2	61.0	23.0	10.4	10.6	265.2
1997	3.2	7.6	3.6	11.1	7.8	47.6	17.8	11.8	13.0	92.7	5.8	18.6	240.6
1998	4.6	13.8	4.6	9.6	37.6	9.2	49.8	49.4	44.6	28.2	25.6	12.8	289.8
1999	10.2	10.6	15.6	10.6	48.0	50.8	41.6	69.8	61.6	26.2	23.2	19.8	388.0
2000	2.8	12.6	34.8	14.4	7.9	1.4	29.4	73.2	22.2	22.6	7.8	12.6	241.7
2001	10.0	8.8	8.6	5.0	35.6	26.8	61.2	82.8	34.2	58.0	23.4	17.4	371.8
2002	7.0	7.4	2.0	26.7	11.6	17.0	44.4	63.6	48.0	37.1	11.0	12.0	287.8
2003	13.8	0.6	14.8	4.4	26.8	39.2	40.8	37.0	15.2	53.6	32.2	25.2	303.6
2004	4.2	7.2	18.0	5.8	12.0	10.6	12.8	45.6	90.2	80.8	39.0	11.0	337.2
2005	15.6	10.4	20.6	101.8	55.0	28.2	32.0	22.4	45.0	23.8	40.2	22.4	417.4
2006	32.6	5.0	10.0	34.0	26.6	26.4	44.2	50.4	30.8	70.2	20.6	22.8	373.6
2007	1.0	12.2	7.2	50.0	17.6	18.8	25.3	80.5	26.9	30.7	12.2	11.7	294.1
2008	21.2	2.6	8.3	38.9	9.6	18.1	26.8	74.0	41.1	23.6	a	a	264.2
Mean	8.0	8.2	12.1	19.6	20.0	27.9	37.1	57.0	43.0	38.0	21.0	12.2	302.8
Median	6.8	7.0	10.3	11.3	19.2	20.2	32.6	53.5	39.5	29.7	20.6	11.7	288.8
Minimum	0.4	0.2	2.0	1.8	0.6	1.4	3.6	11.8	13.0	11.4	4.8	2.0	198.1
Maximum	32.6	42.4	34.8	101.8	55.0	101.3	118.6	128.1	114.0	92.7	66.2	25.2	449.2
Std Dev	7.0	8.4	8.5	20.8	13.7	21.3	24.5	26.1	22.9	21.1	14.3	6.7	67.4

a 2008 record was incomplete at the time of reporting. Note: mm= millimetres

3.3.2 Annual Precipitation

Annual rainfall, snowfall, and precipitation for Rankin Inlet A are presented for each hydrological year of record in Table 3-7 and Figure 3-3. A hydrological year is defined to include most, if not all, precipitation that contributes to the annual runoff. For the Project site, most precipitation occurring after October 1 will fall as snow and accumulate over the winter to contribute to the next year's

runoff. The hydrological year is thus defined to extend from October 1 of the previous year to September 30 of the current year.

Table 3-7 Annual Precipitation at Rankin Inlet A by Hydrological Year

Hydrological Year	Recorded Data		
	Rain (mm)	Snow (mm)	Precipitation (mm)
1982	152.5	119.2	270.1
1983	255.6	102.0	351.4
1984	191.5	86.9	266.5
1985	241.3	127.7	359.7
1986	185.8	186.1	356.7
1987	161.4	173.3	334.5
1988	99.2	117.0	215.5
1989	136.3	114.4	243.4
1990	260.2	99.6	354.3
1991	209.4	177.9	371.9
1992	160.6	127.9	286.1
1993	138.0	89.4	227.3
1994	114.6	67.8	182.4
1995	177.8	108.1	286.3
1996	183.6	98.2	281.4
1997	95.8	76.2	167.5
1998	230.5	108.0	340.3
1999	259.6	127.2	385.4
2000	146.3	122.6	267.9
2001	207.6	107.0	316.0
2002	191.2	141.7	326.5
2003	140.8	113.3	252.7
2004	173.0	145.0	317.4
2005	157.4	304.4	461.8
2006	176.2	174.8	346.4
2007	205.3	156.0	353.1
2008	163.8	132.8	295.2
Mean	**178.3**	**129.8**	**304.4**
Median	**176.2**	**119.2**	**316.0**

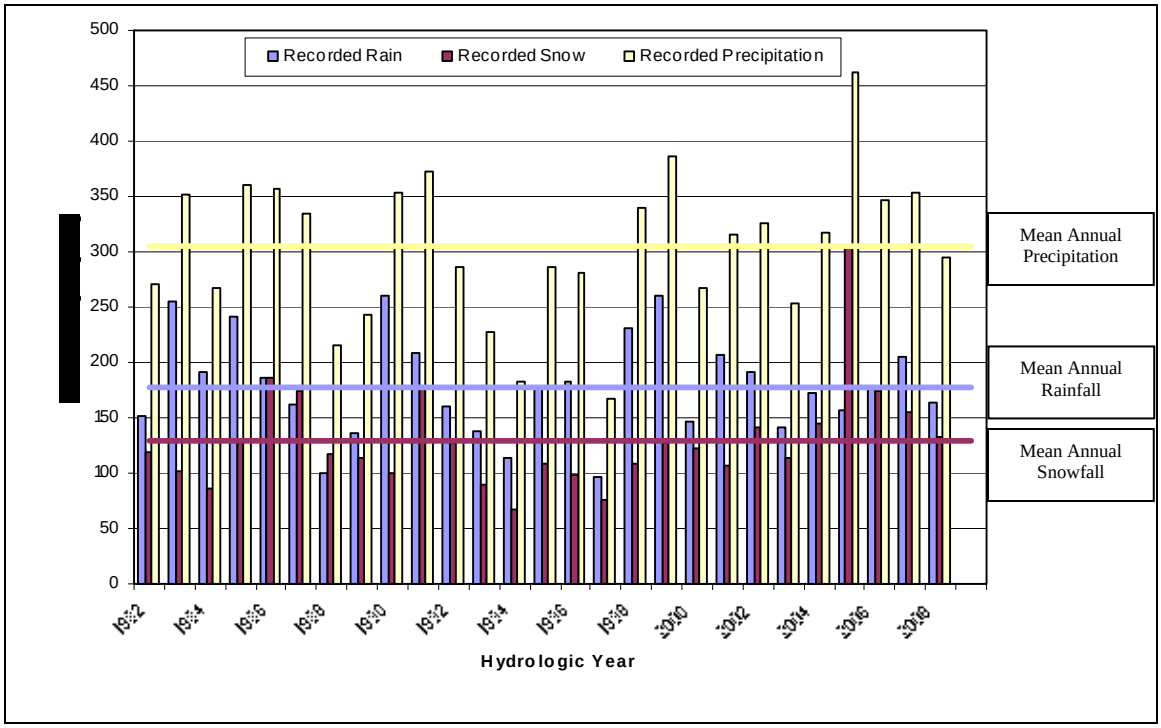

Figure 3-3 Annual Precipitation at Rankin Inlet A by Hydrological Year, 1982 to 2008

The driest year on record occurred in 1997 with a total recorded precipitation of 168 mm, or 55% of the mean, while the wettest year occurred in 2005 with a total recorded precipitation of 462 mm, or 152% of the mean.

Hydrology field programs at the Project site took place during dry years in 1997 and 2000, and wet years in 1998 and 1999. Precipitation in the 2008 hydrological year was slightly under the long term mean.

3.3.3 Undercatch

Precipitation occurs as rainfall or as snowfall. In general, the accuracy of measurements for actual rainfall and snowfall amount is subject to limitations inherent in methods and equipment, most of which result in measured amounts being less than actual amounts. This phenomenon is termed “undercatch”. Three main factors influence undercatch:

- wind turbulence at the gauge which tends to deflect some precipitation (especially snow) away from the gauge opening;
- wetting of gauge surfaces, which later evaporates and is not recorded as precipitation; and
- trace events, which are too small to measure.

These cumulative effect of these factors are relatively larger in northern climates than southern climates due to the high incidence of wind during snowfall events and more frequent occurrences of trace events.

A discussion of the issues involved, and the approach taken by Environment Canada in assessing undercatch and developing corrections, is presented by Mekis and Hogg (1999). The corrected datasets for many climate stations throughout Canada, including MSC stations around the Project area, are available to researchers from Environment Canada (Environment Canada 2008). The corrected datasets are currently available to the end of 2007.

The corrected data are conventionally termed “adjusted” data; the data as recorded and published by Environment Canada are conventionally termed the “archived” data. Archived and adjusted datasets for Chesterfield Inlet A are presented in Appendix C-4 and used in this report, as appropriate for the intended purpose.

No adjusted data set for the Rankin Inlet A station was available. Corrected precipitation factors developed by Environment Canada (Mekis 2004) were used to derive the undercatch factor for Rankin Inlet A and Whale Cove A and are available in Figure A-11.

Undercatch factors for the Rankin Inlet A and Chesterfield Inlet A climate stations are shown in Table 3-8.

Adjusting observed average annual rainfall, snowfall and precipitations at Rankin Inlet by 13%, 50% and 32% respectively to account for undercatch yields means of 201.5 mm of rainfall, 194.7 mm of snowfall, and 401.8 mm of precipitation based on the hydrological year.

Table 3-8 Mean Undercatch Factors for Regional Climate Stations

Climate Station	Rainfall	Snowfall	Total Precipitation
Rankin Inlet A[(a)]	1.13	1.50	1.32
Chesterfield Inlet A	1.06	1.58	1.30
Whale Cove A[(a)]	1.13	1.49	1.31

a Reported by Environment Canada (Mekis 2004)

3.3.4 Extreme Precipitation

3.3.4.1 Annual Precipitation

A frequency analysis was conducted on the annual precipitation data to characterize extreme values for various return periods at the Project site, using the Pearson 3 distribution for rainfall and snowfall and Log Pearson 3 distribution for precipitation, according to the best-of-fit (Environment Canada 1994). Results of these analyses are tabulated in Table 3-9. Annual rainfall, snowfall and precipitation events were estimated using data from the Rankin Inlet A climate station for periods of 1981 to 2008.

Adjustment for undercatch was not considered in the analysis.

Table 3-9 Frequency Analysis of Annual Precipitation at Rankin Inlet A

Return Period (years)		Rainfall (mm)	Snowfall (cm)	Precipitation (mm)
Wet	200	297.7	359.2	469.6
	100	286.6	311.5	454.1
	50	274.2	269.0	437.0
	20	255.1	219.7	411.3
	10	237.9	186.7	388.2
	5	216.8	156.3	359.9
Median	2	177.0	117.8	305.1
Dry	5	139.9	95.2	249.2
	10	122.8	87.5	219.5
	20	110.4	82.7	194.8
	50	98.9	78.9	166.7
	100	92.8	77.0	147.9
	200	88.3	75.7	130.5

Note: mm= millimetres, cm= centimetres

Note that the 1:2 year values for Rankin Inlet (e.g., 177.0 mm for rainfall) represent statistical median values, and are not the same as the arithmetic means (e.g., 178.5 mm for rainfall) that were reported in Tables 3-4 to 3-6.

It is also noted that the sum of rainfall and snowfall depths for a particular return period does not equal the precipitation amount as these values are independent (e.g., the 10 year wet rainfall and the 10 year dry snowfall event could occur in the same year, resulting in something close to the mean annual precipitation).

Because of the short data series, there is a low degree of confidence in derived values with return periods of 100 years and greater. Annual rainfall depths at

Rankin Inlet A for the period 1981 to 2008 ranged from a low of 110.3 mm in 1988, to a high of 268.4 mm in 1999.

3.3.4.2 Short Duration Rainfall Events

Derivation of rainfall intensity-duration-frequency (IDF) curves for short durations ranging from 5 minutes to 24 hours requires a rainfall record in 5-minute intervals. The climate station at Churchill, Manitoba (MSC Station Number 5060600) is the closest long-term station that records this type of data and for which Environment Canada has derived IDF statistics. Churchill is located in Northern Manitoba, on Hudson Bay, approximately 480 km south of the Project area. While the climate station is located on Hudson Bay, Environment Canada reports annual precipitation normals of 432 mm for years 1971 to 2000 (Environment Canada 2004). Mean annual precipitation in the Project area was estimated to be 303 mm (Section 3.3.1), suggesting that the reported short duration rainfall events may overestimate the conditions of the Project area. Thus, these values are likely conservative if used for stormwater management design purposes.

No adjustments were made for undercatch, because undercatch is generally not significant for extreme rainfall events on a daily time scale. IDF statistics are presented in Table 3-10.

Table 3-10 Short Duration Rainfall Intensities in millimetres per hour at Churchill, Manitoba

Duration	Return Period (years)					
	2	5	10	25	50	100
5 min	38.4	57.6	70.8	86.4	98.4	110.4
10 min	26.4	39.6	48.6	60.0	68.4	76.8
15 min	21.6	32.4	39.6	49.2	56.0	62.8
30 min	14.4	21.2	25.8	31.6	36.0	40.2
1 h	9.8	14.5	17.6	21.6	24.5	27.4
2 h	6.6	9.0	10.7	12.7	14.3	15.8
6 h	3.4	4.6	5.3	6.3	7.1	7.8
12 h	2.1	2.8	3.2	3.8	4.2	4.7
24 h	1.2	1.6	1.9	2.2	2.4	2.6

Note: h=hour, min= minutes

3.3.5 Evaporation

3.3.5.1 Local Data

Evaporation of water from lakes, ponds, and other open water surfaces is one of the primary mechanisms for moisture loss from a watershed. Evaporation is influenced by air and water temperatures, solar radiation, relative humidity, and wind combined.

Evaporation from waterbodies is difficult to measure directly. It is typically estimated by using local evaporation pan measurements and applying a coefficient (the "pan" coefficient), or by using energy budget relationships and computations based on the net energy input to the evaporation process.

Evaporation pan data were collected at the Project site using a Class A evaporation pan, during the open water season (AEE 1998a, 1998b, 1999; AMEC 2000). The Class A evaporation pan is recommended by the World Meteorological Organization and is used at many Environment Canada climate stations. Those data, as reported by AEE and AMEC, are presented in Table 3-11.

Table 3-11 Previously Reported Meliadine West Camp Pan Evaporation Data

Year	Pan Evaporation (mm)[a]					Lake Evaporation (mm)[b]
	Jun	Jul	Aug	Sep	Annual	Annual
1997	67.0	203.0	139.0	59.0	468.0	328.0
1998	93.8	138.2	117.7	42.5	392.2	321.6
1999	99.2	133.9	109.5	54.4	397.0	325.5
2000	44.2	161.2	120.5	60.8	386.7	317.1
Mean	**76.1**	**159.1**	**121.7**	**54.2**	**411.0**	**323.1**

a Gross pan evaporation

b Calculated using AES method (Kohler et al. 1955). Note: mm= millimetres

It was estimated that evaporation only occurs in the months of June through September. The evaporation pan was usually in service from mid-June to the end of September. Typical adjustments were made to account for missing measurements as follows:

1. The total for June was increased, at a linear rate from zero at the start of the month to the first recorded measurement.

2. The total for September was decreased, declining at a linear rate to zero at the end of the month.

3. Missing measurements due to data collection problems were estimated based on values for preceding and following days.

For the period of record 1997 to 2000, the observed mean annual pan evaporation value was 411 mm with a peak of 159 mm in July. The mean annual lake evaporation value was 323 mm and represents 106% of mean annual precipitation reported in Section 3.3.2.

This lake evaporation value is larger than the regional values presented by Prowse and Ommanney (1990), who suggest a value slightly greater than 200 mm would be appropriate. However, monthly values for the months of July, August, and September are similar to the 1971-2000 climate normals published for Churchill, Manitoba. It is likely that the long-term mean value of lake evaporation for the Project area is less than the mean of the derived values for the period 1997-2000.

3.3.5.2 Regional Data

Regional pan and lake evaporation data are scarce for northern Canada. Lake evaporation normals were available regionally at the MSC Churchill climate station and are presented in Table 3-12, with Project values for the period 1997 to 2000 provided for comparison. Normals refer to averages based on observed values for a given location over a specific period of time (Environment Canada 2004). The Churchill mean annual lake evaporation value is 268 mm, with a peak of 121 mm in July, based on the most recent normal period of 1971 to 2000.

Table 3-12 Regional Lake Evaporation Data at Churchill A

Station	Evaporation (mm/d)			Evaporation: Derived Quantities (mm)			
	July	August	September	July	August	September	Annual
Churchill A (MSC)[a]	3.9	3.0	1.8	121	93	54	268
Meliadine West 1997-2000	4.0	3.1	1.4	124	96	43	263

a Climate normals for 1971-2000 reported by Environment Canada. Note: mm/d= millimetres per day, mm= millimetres

The normal annual lake evaporation at Churchill represents 62% of the normal annual precipitation of 431.6 mm (Environment Canada 2004). Note that no value of daily evaporation is reported for the month of June, and the estimated mean lake evaporation for the period 1997 to 2000 at the Project was 2.0 mm/d. Adopting this value from the Churchill site would produce a mean annual lake evaporation value of 328 mm for the Project area.

3.3.6 Evapotranspiration

Evapotranspiration (ET) is defined as the moisture loss from land surfaces. ET is the combination of evaporation of moisture from the soil surface plus transpiration of moisture from vegetation.

Values of ET estimated by previous studies were 33.8 mm (AEE 1998a), 37.8 mm (AEE 1998b), and 38.0 mm (AEE 1999). The 1997 value was calculated by using the GD relationship (Granger and Gray 1989) and applying a coefficient to account for factors limiting available moisture. These factors included land areas with sparse or non-existent vegetation, vegetation that do not transpire or do so at lower rates than the reference vegetation for the GD relationship, and dry soil conditions after snowmelt.

3.3.7 Sublimation and Snow Redistribution

The quantity of spring snow melt water depends on the quantity of snow accumulated, redistributed, and sublimated over the preceding winter. Sublimation is the direct conversion of ice or snow to water vapor. Sublimation can occur directly from static snowpack or during blowing snow events, and rates of sublimation depend on humidity and wind speed (Essery et al. 1999; Déry and Yau 2002). Snow can also be redistributed by wind and gravity.

Snow sublimation and redistribution can have a large effect on the amount of snow available for melt in the spring. In dry areas located above the treeline, wind redistribution and sublimation during blowing snow events can have a large effect on snow depths (Marsh et al. 1994; Pomeroy et al. 1997). The assessment of these two processes in the Project area is based on the snowfall amounts discussed in Section 3.3.1 and on snow survey observations, discussed below.

Estimating snow sublimation and redistribution losses directly is difficult and requires extensive local data. The 2008 spring snow course survey results can be used to estimate sublimation, by comparing the pre-melt snow water equivalent with the estimated accumulated precipitation corrected for undercatch. It is assumed that all precipitation from October 2007 through May 2008 was accumulated on or in the snowpack, because snow as well as rain would be captured by the snowpack already on the ground. The calculation by this method is summarized in Table 3-13.

Table 3-13 Sublimation Losses

Parameter	Gross Value	Undercatch Correction Factor	Corrected Value
Snowfall (Oct 1 - May 31) (cm)	118.4a	1.50	177.6
Rainfall (Oct 1 - May 31) (mm)	18.2b	1.13	20.6
Total Precipitation (Oct 1 - May 31) (mm)	136.6	1.45	198.1
Weighted SWE (Snow Survey)			107.6
Sublimation Losses (Total Precipitation – Weighted SWE)			90.5

a From Table 3-4

b From Table 3-5.

Note: cm= centimetres, mm= millimetres

Sublimation losses in 2008 are estimated to be 91 mm, or 46% of the undercatch-adjusted accumulated precipitation for the period October 2007 to May 2008.

Using a similar approach, the sublimation for the 1998 hydrological year was 113.0 mm, or 46% of the accumulated amount (AEE 1999). This loss was greater in 1999 than 1998, likely due to higher wind peak speeds. Sublimation values estimated for the 2008 field program as well as previous programs are reported in Table 3-14.

Table 3-14 Estimated Sublimation Losses at Meliadine West

Amount	1997 [a]	1998 [a]	1999 [a]	2008
(mm)	27	113	> 113	91
(%)	20%	46%	> 46%	46%

a AEE (1998a, 1998b & 1999). Note: %= percent, mm= millimetres

The Project site is located in a relatively open area, surrounded by a large waterbody (i.e., Meliadine Lake). According to Essery et al. (1999), losses to sublimation for open tundra can reach up to 47% of the snow pack, and losses to snow redistribution can account for an additional 18 to 22% for lakes and open tundra. The range of average loss to snow redistribution and sublimation estimated at the Project site is within this reported range.

Sublimation losses from the spring snowpack prior to and during the melt process are estimated to be small relative to those occurring over the winter. Arctic water balance studies (Marsh and Woo 1979; Marsh et al. 1994) generally do not correct for this. Losses due to snow redistribution and sublimation depend on local geography and meteorological conditions, and therefore the range of loss estimated for the Project site should apply only to local watersheds within the immediate Project area.

4 LONG-TERM AND REGIONAL HYDROLOGY

4.1 LOCAL WATERBODIES

The 2008 hydrometry program was the fifth year of hydrological data collection for the Project aquatic studies program. Continuous open-water season data sets of water surface elevation and discharge were collected for A1 Lake and Outflow, B2 Lake and Outflow, and B7 Lake and Outflow from mid-June to mid-September. Calculated annual water yields for these stations are presented in Table 4-1, with previously reported values for comparison. Calculated monthly water yields for the 2008 field program are presented in Table 4-2.

Table 4-1 Calculated Annual Water Yields for A1, B2 and B7 Lakes

Watershed	Total Annual Discharge in 2008 (dam^3)	Watershed Area (km^2)[a]	Annual Water Yield (mm)				
			1997[a]	1998[a]	1999[a]	2000[b]	2008[c]
A1 Lake	125	9.39	60	143	204	129	13.7
B2 Lake	353	22.6	n/a	150	189	107	16.1
B7 Lake	70.7	2.63	114	113	159	102	27.3

a Reported by AEE (1998a, 1998b & 1999)

b Reported by AMEC (2000)

c Water yield from 15 June 2008 to 16 September 2008. Continuous monitoring commenced after the peak flow and only a portion of the total water yield was measured.

Note: dam^3= cubic decametres km^2= squared kilometres, mm= millimetres

Table 4-2 Calculated Monthly Water Yields for A1, B2 and B7 Lakes

Watershed	Total Annual Discharge in 2008 (dam^3)	Watershed Area (km^2)[a]	2008 Field Program Monthly Water Yield (mm)				
			Jun[b]	Jul	Aug	Sept[c]	Total
A1 Lake	125	9.39	3.7	1.4	2.0	6.6	**13.7**
B2 Lake	353	22.55	8.2	4.8	1.9	1.2	**16.1**
B7 Lake	70.7	2.63	11.8	7.8	4.4	3.3	**27.3**

a Reported by AEE (1998a, 1998b & 1999)

b Program initiated on 15 June 2008

c Program completed on 16 September 2008

Note: dam^3= cubic decametres, km^2= square kilometres, mm= millimetres

4.2 DIANA RIVER FLOW REGIME

The Diana River is located southwest of the Project area and flows directly into Hudson Bay from Peter Lake and other nearby minor sub basins. Its main stem runs parallel to the Meliadine River, which is located roughly 10 km northeast. The Diana River near the mouth has an average width of approximately 40 m.

The Diana River near Rankin Inlet has a gross drainage area of 1460 km^2 and is the largest watercourse in the area. The flow regime for the Diana River is characterized in Table 4-3, based on seven years of data from 1989 to 1995 recorded at Environment Canada Hydrometric Station 06NC001 (Diana River near Rankin Inlet; Environment Canada 2006). Additional manual data were also available for the open water seasons of 1997 – 1999 from previous studies (AEE 1998a, 1998b, and 1999) but were not used in the flow regime analysis. Mean monthly discharges vary from 0 m^3/s (due to frozen conditions) during January to May, to 37.9 m^3/s in July. The peak daily flow occured in June with a value of 102 m^3/s. A frequency analysis was not performed due the short period of record.

Table 4-3 Diana River Flow Regime, 1989 to 1995

Mean Daily Flow (m^3/s)	Month of Year											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Maximum	0.00	0.00	0.00	0.00	0.08	102	75.8	39.8	36.4	22.2	4.80	0.86
Mean	0.00	0.00	0.00	0.00	0.00	25.5	37.9	19.9	16.0	7.39	1.56	0.09
Minimum	0.00	0.00	0.00	0.00	0.00	0.00	15.7	6.91	5.68	1.85	0.11	0.00

Note: m^3/s= cubic metres per second

4.3 MELIADINE RIVER FLOW REGIME

The Meliadine River is located southwest of the Project area and flows directly from Meliadine Lake into Hudson Bay. It flows parallel to the Diana River, which is located roughly 10 km to the southwest. The Meliadine River near the Mouth has a gross drainage area of 796 km^2, including approximately 143 km^2 of non-contributing area (AEE 1999). It is fed by Meliadine Lake and other smaller sub-watersheds.

Tables 4-4 and 4-5 present monthly discharges measured at the Meliadine River near the Mouth during a dry year (AEE 1999) and a wet year (AMEC 2000) for the months of June through September. The wet year of 1999 had a reported annual precipitation of 385 mm at Rankin Inlet A, while the dry year of 2000 had a reported annual precipitation of 268 mm, as reported in Section 3.3.2. The reported values are derived from measurements taken from mid-June to mid-

September. Because the Meliadine River is smaller than the Diana River, it is likely that the monthly mean discharges for the period of January to May are zero. It is also likely that the flow decreases from September to December, following the flow pattern of the Diana River.

Table 4-4 1999 (Wet Year) Monthly Flows at Meliadine River near the Mouth

Mean Daily Flow (m^3/s)	Month of Year											
	Jan	Feb	Mar	Apr	May	Jun[a]	Jul	Aug	Sep[a]	Oct	Nov	Dec
Maximum	---	---	---	---	---	39.2	20.0	9.95	9.07	---	---	---
Mean	---	---	---	---	---	24.7	11.3	6.21	7.55	---	---	---
Minimum	---	---	---	---	---	18.0	6.65	3.94	5.89	---	---	---

a 1999 monitoring period 17 June to 22 September. Note: m^3/s= cubic meters per second.

Table 4-5 2000 (Dry Year) Monthly Flows at Meliadine River near the Mouth

Mean Daily Flow (m^3/s)	Month of Year											
	Jan	Feb	Mar	Apr	May	Jun[a]	Jul	Aug	Sep[a]	Oct	Nov	Dec
Maximum	---	---	---	---	---	28.5	14.5	6.37	4.16	---	---	---
Mean	---	---	---	---	---	20.1	9.49	4.21	3.32	---	---	---
Minimum	---	---	---	---	---	15.1	5.99	3.28	2.91	---	---	---

a 2000 monitoring period 19 June to 19 September. Note: m^3/s= cubic meters per second

4.4 ICE REGIME

Ice thicknesses in the Project area were measured prior to spring melt during previous field studies (AEE 1998, 1999; AMEC 2000) and are provided in Table 4-6. No direct measurements were performed during the 2008 field program due to the lack of accessibility at the time of visit. Ice was observed during the June and September hydrology field visits.

Late-winter ice thicknesses on freshwater lakes in the Project area ranged from 1.00 m to about 2.20 m. Ice covers usually appeared by the end of October and were completely formed in early November. The spring ice melt typically began in mid-June and was complete by early July. Ice was observed along the margins of waterbodies at the hydrology stations in mid-September, 2008.

Table 4-6 Ice Thicknesses in the Meliadine River Watershed

Lake	Ice Thickness (m)		
	May-98	**May-99**	**May-00**
Meliadine Lake	1.97	n/a	1.98
Peter Lake	2.19	n/a	n/a
Diana Lake	2.14	n/a	n/a
Lake A6	1.60	n/a	n/a
Lake A1	1.82	n/a	1.75
Lake B7	1.99	1.2	2
Lake B5	2.09	1.3	n/a
Lake B4	1.00	1.3	n/a
Lake B2	1.90	1.3	1.42
Lake D5	1.30	1.3	n/a
Mean	**1.80**	**1.3**	**1.79**
Minimum	**1.00**	**1.2**	**1.42**
Maximum	**2.19**	**1.3**	**1.98**

Note: m= metres

Long term marine ice observations at Melvin Bay near Rankin Inlet were obtained from the Canadian Ice Database (CID, Lenormand et al. 2002) and are presented in Table 4-7 for the period of 1975 to 2000. Based on these records, the mean duration of the marine ice-covered season at Melvin Bay is estimated to be at least 225 days, from 7 November to 20 June.

Table 4-7 Long Term Ice Observations in Melvin Bay near Rankin Inlet

Season	First Observations	Freeze up Date	Melting Date	Ice Free Date
1975/76			6/27/1976	7/10/1976
1976/77		11/6/1976		
1977/78				
1980/81			6/10/1981	7/13/1981
1981/82		11/11/1981	6/11/1982	7/12/1982
1982/83		11/9/1982	6/15/1983	7/22/1983
1983/84		11/7/1983	6/15/1984	7/7/1984
1984/85		2/8/1985[(a)]	6/21/1985	7/7/1985
1985/86		11/5/1985	7/9/1986	7/17/1986
1986/87	10/25/1986	10/27/1986	7/13/1987	7/24/1987
1987/88	10/21/1987	11/2/1987	6/15/1988	6/20/1988
1988/89	10/27/1988	11/13/1988	6/23/1989	7/11/1989
1989/90	10/27/1989	11/1/1989	6/26/1990	7/12/1990
1990/91	10/15/1990	11/1/1990	6/26/1991	7/5/1991
1991/92	10/15/1991	11/4/1991	7/10/1992	7/25/1992
1992/93	10/16/1992	10/26/1992	6/24/1993	7/12/1993
1993/94	11/18/1993	11/20/1993	6/10/1994	7/8/1994
1994/95	11/18/1994	11/20/1994	6/19/1995	7/1/1995
1995/96	11/3/1995	11/7/1995	6/13/1996	7/6/1996
1996/97			6/1/1997	6/30/1997
1997/98	10/17/1997	11/3/1997	5/25/1998	7/1/1998
1998/99	11/15/1998	11/17/1998		
1999/00	11/7/1999	11/20/1999		
Mean	**29-Oct**	**7-Nov**	**20-Jun**	**10-Jul**

a This measurement was not included in the average calculation. Temperatures were typical during that year and no evidence can be found to support such a late freezing date.

4.5 LAKE BATHYMETRY

A bathymetry study was conducted in 1998 by RL&L Environmental Services Ltd. on the ten lakes outlined in Figure 4-1 in the Meliadine River watershed (RL&L 1999). Results of the bathymetry are provided in Figures A-1 to A-11 (Appendix A-14). Available sub-basin lake depths in the Meliadine River watershed are presented in Table 4-8. With the exception of the south basin of Meliadine Lake, mean depths of the peninsula lakes vary from 1.5 m to 2.5 m and maximum depths varied from 2.5 m to 5.5 m. The maximum depth of the south basin of Meliadine Lake is 20 m.

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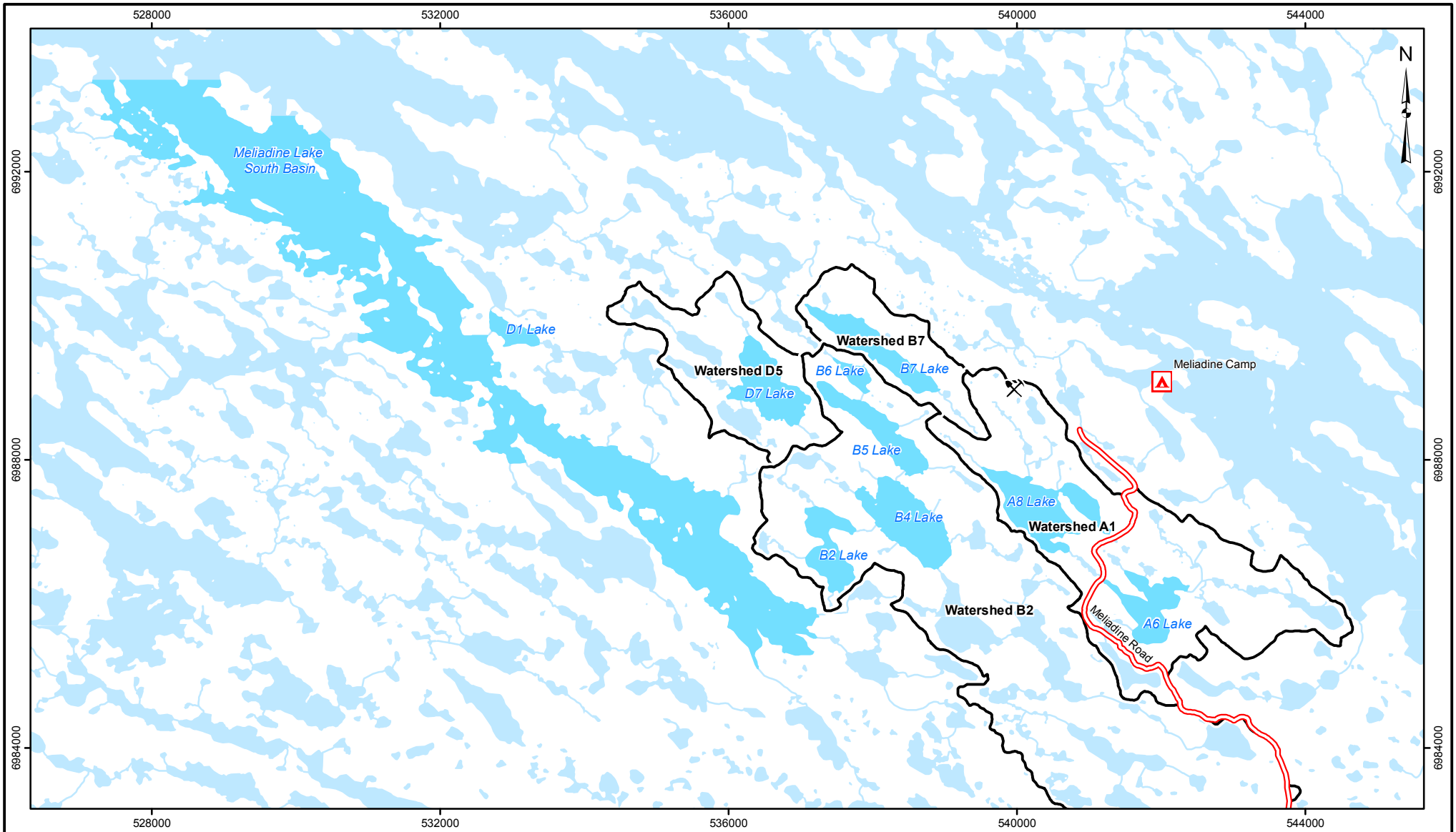


LEGEND

- CAMP
- PROPOSED MINE SITE
- ROAD - PROPOSED ALIGNMENT
- WATERCOURSE
- SURVEYED WATERBODY
- WATERBODY
- WATERSHED

REFERENCE

Base data obtained from NTDB.
Projection: UTM Zone 15 Datum: NAD 83

2,000 0 2,000
SCALE 1:75,000 METRES

PROJECT

COMAPLEX MINERALS
MELIADINE WEST

TITLE

LOCATIONS OF BATHYMETRIC SURVEYS

Golder Associates
Calgary, Alberta

PROJECT NO. 07-1373-0055			SCALE AS SHOWN	REV. 0
DESIGN	KS	16 Sep. 2008	**FIGURE: 4-1**	
GIS	PT	17 Nov. 2008		
CHECK	JL	01 Dec. 2008		
REVIEW	NS	01 Dec. 2008		

Table 4-8 Maximum and Mean Depths of Selected Lakes in the Meliadine River Basin

Basin	Mean Depth (m)[a]	Max Depth (m)
Meliadine Lake - South Basin	8.0	20.0
A6 Lake	2.0	4.5
A8 Lake	2.5	4.5
A2 Lake	2.0	3.5
B4 Lake	1.5	2.5
B5 Lake	2.0	3.5
B6 Lake	2.5	4.0
B7 Lake	2.5	5.5
D1 Lake	2.0	3.0
D7 Lake	2.5	3.0

a Estimated from bathymetry maps. Note: m= metres

4.6 BASIN WATER BALANCES

An average annual water balance for a typical watershed in the Project area can be developed based on the mean values of the various parameters on a hydrological year basis. Water yield data are not available for the full open-water season in 2008, so examples are provided for Lake A1, Lake B2 and Lake B7 watersheds based on the 1999 field program (AEE 1999). These are provided in Tables 4-9 to 4-11. Data reported in 1999 presented few data gaps and were recorded during a wet year.

Table 4-9 A1 Watershed, Annual Water Balance, 1999

Input (mm)		Output (mm)	
Snow Water Equivalent	133.5	204.0	Water Yield
Rainfall[a]	237.0	59.0	Basin Storage Change
		80.1	Lake Evaporation at 325.5 mm x 24.6%
		27.4	Evapotranspiration at 36.4 mm x 75.4%
Net Watershed Input	370.5	370.5	Net Watershed Output

a Rainfall depth recorded by a tipping bucket rain gauge at Meliadine West (AEE 1999)
Note: mm= millimetres

Table 4-10 B2 Watershed, Annual Water Balance, 1999

Input (mm)		Output (mm)	
Snow Water Equivalent	132.4	189.0	Water Yield
Rainfall[a]	237.0	66.0	Basin Storage Change
		80.7	Lake Evaporation at 325.5 mm x 24.8%
		33.7	Evapotranspiration at 44.8 mm x 75.2%
Net Watershed Input	369.4	369.4	Net Watershed Output

a Rainfall depth recorded by a tipping bucket rain gauge at Meliadine West (AEE 1999)

Note: mm= millimetres

Table 4-11 B7 Watershed, Annual Water Balance, 1999

Input (mm)		Output (mm)	
Snow Water Equivalent	128.6	159.0	Water Yield
Rainfall[a]	237.0	98.0	Basin Storage Change
		86.9	Lake Evaporation at 325.5 mm x 24.8%
		21.7	Evapotranspiration at 44.8 mm x 75.2%
Net Watershed Input	365.6	365.6	Net Watershed Output

a Rainfall depth recorded by a tipping bucket rain gauge at Meliadine West (AEE 1999)

Note: mm= millimetres

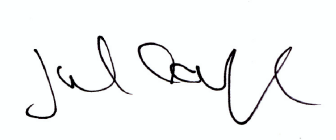
In Tables 4-9 to 4-11, the water loss from the watershed due to evapotranspiration (ET) is a computed value obtained by deducting the runoff, lake evaporation, and basin storage change amounts from the net watershed output, to balance the net precipitation input. The resulting mean value of ET is 28 mm, computed from the percent land surface in the watershed.

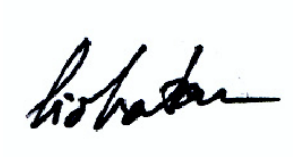
The reported basin storage changes appear to be high, and values may incorporate differences in actual precipitation at the basin relative to those measured by snowcourse surveys and the local rain gauge. These values are presented to illustrate typical water balances for watersheds in the Project area.

5 CONCLUSION

The results of this ongoing climate and surface water hydrology baseline program provide a strong basis for impact assessment and water management planning at the Project. The climate and hydrology characteristics described for the Project area are based on long-term regional information as well as site-specific data that have been collected since 1997. The available site data confirm that the Project area fits within the regional context of precipitation and runoff; however there are still some gaps related to actual site runoff factors, seasonal variation in these factors, and losses to evaporation and evapotranspiration. Continued climate monitoring and additional hydrology monitoring is recommended to fill these data gaps and to reduce the degree of uncertainty in these processes.

GOLDER ASSOCIATES LTD.





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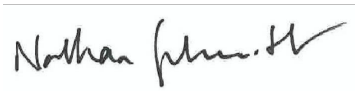
Reviewed by:



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6 REFERENCES

AGRA Earth & Environmental (AEE) (1998a). WMC International Ltd. Meliadine West Gold Project Water Balance Study 1997 Data Report. Report Prepared for WMC International Ltd. April 1998.

AGRA Earth & Environmental (AEE) (1998b). WMC International Ltd. Meliadine West Gold Project Water Balance Study 1998 Data Report. Report Prepared for WMC International Ltd. December 1998.

AGRA Earth & Environmental (AEE) (1999). WMC International Ltd. Meliadine West Gold Project Water Balance Study 1999 Data Report. Report Prepared for WMC International Ltd. December 1999.

AMEC Earth & Environmental Limited (2000). WMC International Ltd. Meliadine West Gold Project Water Balance Study 2000 Data Report. Report Prepared for WMC International Ltd. December 2000.

Environment Canada (1973). Inventory of Canadian freshwater lakes. Inland Waters Directorate, Water Resources Branch. Ottawa. 34 p.

Environment Canada (2004). Canadian Climate Normals 1971 – 2000. Retrieved July/August/September/October 2008 from: http://climate.weatheroffice.ec.gc.ca/climate_normals/results_e.html

Environment Canada (1994). Consolidated Frequency Analysis Version 3.1, Reference Manual. 91 p.

Environment Canada (2008). Adjusted Historical Canadian Climate Data (AHCCD). Retrieved August 2008 from: http://www.cccma.bc.ec.gc.ca/hccd/

Environment Canada (2008a). Archived Hydrometric Data. Water Survey of Canada. Retrieved July/August/September/October 2008 from: http://www.wsc.ec.gc.ca/hydat/H2O/index_e.cfm?cname=main_e.cfm

Environment Canada (2008b). National Climate Data and Information Archive. Retrieved July/August/September/October 2008 from: http://www.climate.weatheroffice.ec.gc.ca/climateData/canada_e.html

Environment Canada (2008c). *Personal Communication*, 2008.

Essery, R., Li, L., and Pomeroy, J. (1999). "A Distributed Model of Blowing Snow Over Complex Terrain". *Hydrological Processes*, Vol.13, p. 2423-2438.

Granger, R.J. and D.M" Gray (1989). Evaporation from Natural Nonsaturated Surfaces. J. Hydrology, 111, 21-29.

Golder Associates Ltd. 2008. Fisheries Baseline Studies 2008. Report Prepared for Comaplex Minerals Corporation. In Progress.

Golder Associates Ltd. (2007) 2007 Review of Baseline Climate and Surface Water Hydrology for the Diavik Diamond Mine Ver. C. Report prepared for Diavik Diamond Mines Inc. February 2008.

Kohler, M.A., T.J. Nordenson, and W.E. Fox (1955). "Evaporation from Pans and Lakes". Research Paper No. 38, U.S. Weather Bureau.

Lenormand, F., C.R. Duguay and R. Gauthier. (2002). Canadian Ice Database. Laboratoire de Teledetection et de Modelisation des Environnements Froids. Centre d'études Nonordiques et Departement de Géographie, Université Laval, Cite universitaire, Sainte-Foy, Québec.

Marsh, P., Quinton, B., and Pomeroy, J. (1994). Hydrological processes and runoff at the Arctic treeline in northwestern Canada. Proceedings of the10th International Northern Research Basin Symposium and Workshop. Svalbar, Norway, p.368-397.

Marsh, P., and Woo, M.K. (1979). Annual Water Balance of Small High Arctic Basin, Proceedings, Canadian Hydrology Symposium '79, Vancouver, pp. 537-546

Mekis, Eva and Hogg William D. (1999). Rehabilitation and Analysis of Canadian Precipitation Time Series, Atmosphere-Ocean 37 (a) 1999, 53-85.

Meteorological Service of Canada. (2000). Canadian Snow Data: Daily Snow Depth and Snow Water Equivalent; Snow Water Equivalent Database, update to 2004. Climate Processes and Earth Observation Division, MSC, Environment Canada, Downsview, Ontario, Canada. Accessed via www.ccin.ca website, August 2008.

Pomeroy, J.W., Marsh, P., and Gray, D.M. (1997). "Application of a distributed blowing snow model to the Arctic". Hydrological Processes, Vol. 11, p. 1451-1464.

R.L.& L. Environmental Services Ltd. 1999. Meliadine West Baseline Aquatic Studies: 1998 Data Report. Prepared for WMC International Ltd. R.L.&L. Report No. 558-98F: 177p.+4 app.

R.L.& L. Environmental Services Ltd. 2001. Meliadine West Baseline Aquatic Studies: 2000 Data Report. Prepared for WMC International Ltd. R.L.&L. Report No. 558-00: 65p.+4 app.

Terzl, F.A., T. Winkler and B. Routledge. 1994. Hydrometric Field and RelatedManuals, Water Survey of Canada. Environment Canada, Ottawa.

APPENDIX A

2008 FIELD MEASUREMENTS

APPENDIX A-1

A1 LAKE

A1 LAKE AND OUTFLOW HYDROMETRIC STATION

A 1

FACTSHEET

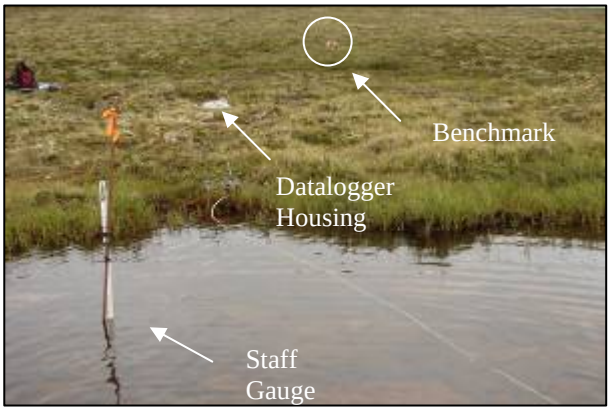
LOCATION AND DETAILS

Located approximately 4 kilometres South East of Meliadine West Camp.

Operational:	1997	1998	1999	2000	2008
	11/6-25/9	5/6-23/9	14/6-20/9	13/6-19/9	15/6-16/9

Benchmark:	Bolt on boulder; 100.304 m (non geodetic)	Drainage Area:	9.3913 km^2
Coordinates:	UTM: 544479 m E, 6985918 m N (NAD83)	Lat/Long:	63°00'00" N, 92°7'18" W
Transducer:	Keller Acculevel Submersible Level Transmiter	Datalogger:	Optimum Instrument DD-520

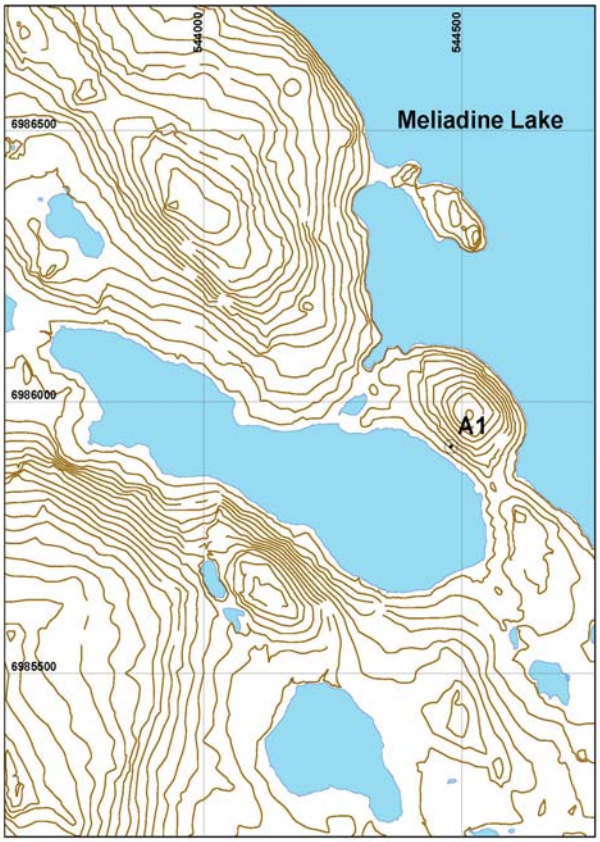
View of A1 Lake from hydrometric station.



Hydrometric station from A1 Lake.

View of A1 Lake from outlet.

Downstream view of A1 Lake Outlet.



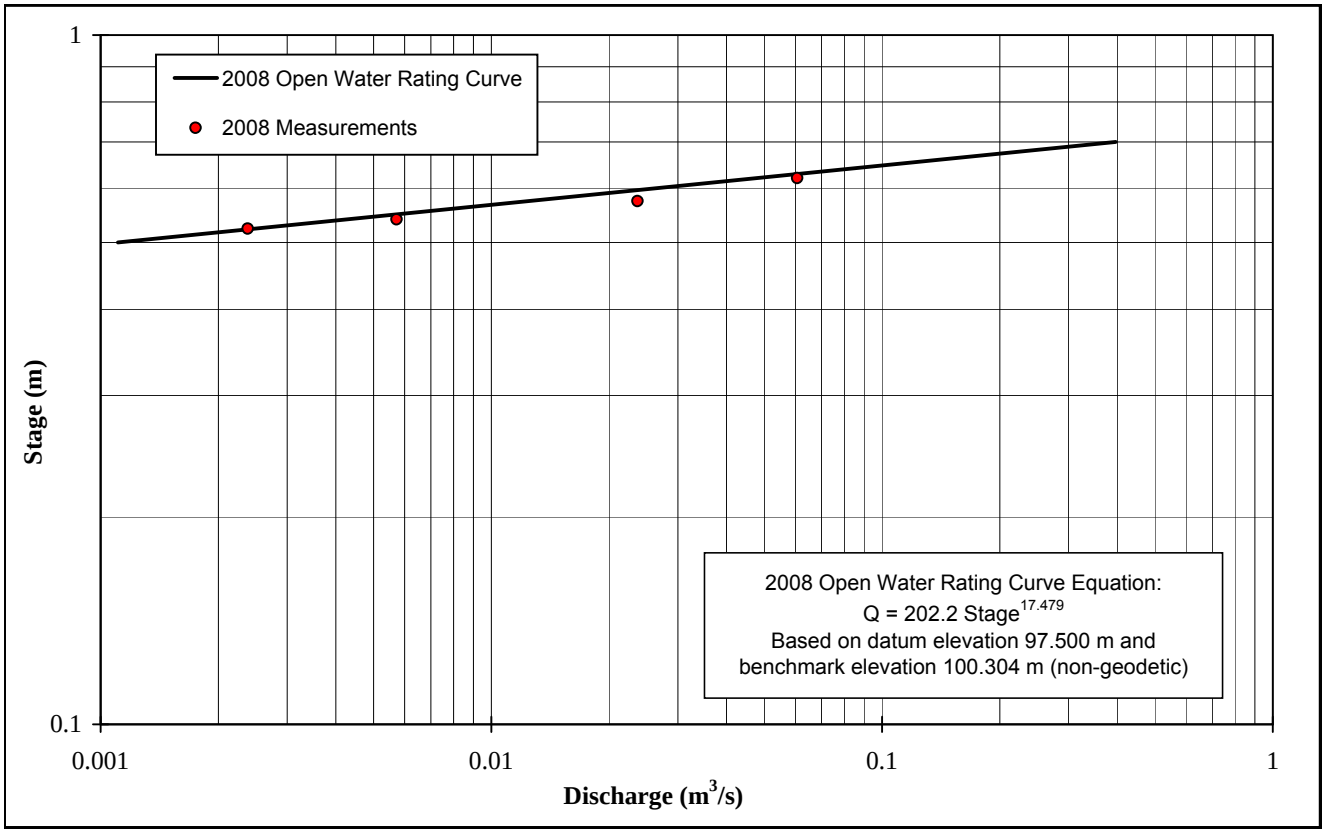
NTS Mapping of Area.

FACT-A1-2008.DOC

STATION C02 - BENCHMARK ELEVATION 100.304 m (non-geodetic) - DATUM ELEVATION 97.5 m (non-geodetic)

BM elevation	100.000
Stage_Datum	97.500
New BM elevation [bolt]	100.304

Date and Time	BM_read	WS_read	BM_Elev	WS_Elev	Transducer Reading	Transducer Elevation	Average Transducer Elevation	Stage	Measured Discharge	Staff Gauge
15-Jun-2008 09:30	1.690	3.570	100.000	98.120	0.403	97.717	97.735	0.620	0.061	0.365
10-Jul-2008 08:35	1.765	3.725	100.000	98.040	0.318	97.722		0.540	0.006	0.270
02-Aug-2008 10:52	0.299	2.275	100.000	98.024	0.300	97.724		0.524	0.002	0.241
16-Sep-2008 14:00	0.840	3.070	100.304	98.074	0.299	97.775		0.574	0.024	0.315



A1 Lake Outlet - 2008

MEAN DAILY DISCHARGE (m^3/s)

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	-	-	-	-	-	-	0.010	0.004	0.046	-	-	-
2	-	-	-	-	-	-	0.010	0.003	0.059	-	-	-
3	-	-	-	-	-	-	0.010	0.003	0.062	-	-	-
4	-	-	-	-	-	-	0.010	0.004	0.057	-	-	-
5	-	-	-	-	-	-	0.009	0.004	0.051	-	-	-
6	-	-	-	-	-	-	0.008	0.004	0.051	-	-	-
7	-	-	-	-	-	-	0.008	0.004	0.042	-	-	-
8	-	-	-	-	-	-	0.007	0.004	0.041	-	-	-
9	-	-	-	-	-	-	0.007	0.003	0.040	-	-	-
10	-	-	-	-	-	-	0.006	0.003	0.039	-	-	-
11	-	-	-	-	-	-	0.005	0.003	0.039	-	-	-
12	-	-	-	-	-	-	0.004	0.003	0.037	-	-	-
13	-	-	-	-	-	-	0.004	0.003	0.037	-	-	-
14	-	-	-	-	-	-	0.004	0.003	0.038	-	-	-
15	-	-	-	-	-	0.065 P	0.004	0.006	0.040	-	-	-
16	-	-	-	-	-	0.053	0.003	0.006	0.036 P	-	-	-
17	-	-	-	-	-	0.044	0.004	0.008	-	-	-	-
18	-	-	-	-	-	0.036	0.004	0.009	-	-	-	-
19	-	-	-	-	-	0.029	0.003	0.010	-	-	-	-
20	-	-	-	-	-	0.026	0.003	0.009	-	-	-	-
21	-	-	-	-	-	0.022	0.002	0.008	-	-	-	-
22	-	-	-	-	-	0.020	0.002	0.008	-	-	-	-
23	-	-	-	-	-	0.018	0.002	0.007	-	-	-	-
24	-	-	-	-	-	0.016	0.002	0.007	-	-	-	-
25	-	-	-	-	-	0.014	0.002	0.007	-	-	-	-
26	-	-	-	-	-	0.013	0.003	0.006	-	-	-	-
27	-	-	-	-	-	0.013	0.003	0.006	-	-	-	-
28	-	-	-	-	-	0.013	0.002	0.011	-	-	-	-
29	-	-	-	-	-	0.012	0.003	0.014	-	-	-	-
30	-	-	-	-	-	0.011	0.004	0.015	-	-	-	-
31	-	-	-	-	-	-	0.004	0.030	-	-	-	-
MIN	-	-	-	-	-	0.011	0.002	0.003	0.036	-	-	-
MEAN	-	-	-	-	-	0.025	0.005	0.007	0.045	-	-	-
MAX	-	-	-	-	-	0.065	0.010	0.030	0.062	-	-	-

NOTES: P - PARTIAL DAILY AVERAGE

Water Yield (m^3) =	128,668	34,986	13,165	18,704	61,814
Water Yield (mm) =	13.7	3.7	1.4	2.0	6.6

A1 Lake - 2008

MEAN DAILY WATER SURFACE ELEVATION (m) BASED ON BENCHMARK ELEVATION 100.304 m (non geodetic)

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	-	-	-	-	-	-	98.069	98.034	98.119	-	-	-
2	-	-	-	-	-	-	98.067	98.034	98.128	-	-	-
3	-	-	-	-	-	-	98.067	98.033	98.130	-	-	-
4	-	-	-	-	-	-	98.066	98.036	98.126	-	-	-
5	-	-	-	-	-	-	98.064	98.039	98.123	-	-	-
6	-	-	-	-	-	-	98.060	98.041	98.122	-	-	-
7	-	-	-	-	-	-	98.058	98.039	98.116	-	-	-
8	-	-	-	-	-	-	98.057	98.034	98.114	-	-	-
9	-	-	-	-	-	-	98.055	98.033	98.113	-	-	-
10	-	-	-	-	-	-	98.051	98.032	98.113	-	-	-
11	-	-	-	-	-	-	98.045	98.031	98.113	-	-	-
12	-	-	-	-	-	-	98.041	98.031	98.111	-	-	-
13	-	-	-	-	-	-	98.037	98.032	98.111	-	-	-
14	-	-	-	-	-	-	98.035	98.032	98.112	-	-	-
15	-	-	-	-	-	98.131 P	98.037	98.049	98.114	-	-	-
16	-	-	-	-	-	98.123	98.033	98.053	98.110 P	-	-	-
17	-	-	-	-	-	98.117	98.034	98.059	-	-	-	-
18	-	-	-	-	-	98.110	98.036	98.062	-	-	-	-
19	-	-	-	-	-	98.103	98.032	98.064	-	-	-	-
20	-	-	-	-	-	98.099	98.025	98.063	-	-	-	-
21	-	-	-	-	-	98.094	98.018	98.060	-	-	-	-
22	-	-	-	-	-	98.089	98.015	98.059	-	-	-	-
23	-	-	-	-	-	98.086	98.017	98.058	-	-	-	-
24	-	-	-	-	-	98.083	98.014	98.057	-	-	-	-
25	-	-	-	-	-	98.078	98.019	98.055	-	-	-	-
26	-	-	-	-	-	98.076	98.026	98.053	-	-	-	-
27	-	-	-	-	-	98.076	98.028	98.051	-	-	-	-
28	-	-	-	-	-	98.075	98.023	98.068	-	-	-	-
29	-	-	-	-	-	98.073	98.030	98.077	-	-	-	-
30	-	-	-	-	-	98.069	98.037	98.081	-	-	-	-
31	-	-	-	-	-	-	98.036	98.102	-	-	-	-
MIN	-	-	-	-	-	98.069	98.014	98.031	98.110	-	-	-
MEAN	-	-	-	-	-	98.093	98.040	98.050	98.117	-	-	-
MAX	-	-	-	-	-	98.131	98.069	98.102	98.130	-	-	-

NOTES: P - PARTIAL DAILY AVERAGE

Project Name:	Comaplex	**Date**	19-Jun	**Crew:**	JL / RP
Watercourse:	A1 Lake	**Start Time**	8:00		
Crossing ID:	A1 Lake Outflow	**End Time**	8:40		
BM GPS Location: (given/measured)		**Datalogger SN:**	1900		new ☐
East	544445 BM1 / 544479 BMnew	Depth Reading			
North	6985955 BM1 / 6985918 BMnew	Battery			
Survey: BM_Elevation =	100	**Transducer SN:**	21573		new ☐
BM_Reading :	1.69 Staff Gauge 0.365	**Meter Type/SN:**			
WS_Reading :	3.57	**Photos #**			
WS_Elevation :	98.12	**Obs:**	Transducer was setup on 15-June-08		
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1	0.0		0.00		0.00					
2	0.2		0.13		0.14					
3	0.4		0.14		0.21					
4	0.6		0.15		0.25					
5	0.8		0.15		0.25					
6	1.0		0.20		0.10					
7	1.2		0.18		0.30					
8	1.4		0.20		0.27					
9	1.6		0.18		0.21					
10	1.8		0.11		0.15					
11	2.0		0.00		0.00					
12										
13										
14										
15										
16										
17										
18										
19										
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21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33						Q (m3/s)	0.061		WS(m)	98.120
34						A(m2)	0.29			
35						B(m)	2.0			

Project Name:	Comaplex	**Date**	10-Jul	**Crew:**	JL / RP
Watercourse:	A1 Lake	**Start Time**	8:00		
Crossing ID:	A1 Lake Outflow	**End Time**	8:40		
BM GPS Location: (given/measured)		**Datalogger SN:**			new ☐
East	544445 BM1 / 544479 BMnew	Depth Reading			
North	6985955 BM1 / 6985918 BMnew	Battery			
Survey: BM_Elevation =	100	**Transducer SN:**			new ☐
BM_Reading :	1.765 Staff Gauge 0.27	**Meter Type/SN:**			
WS_Reading :	3.725	**Photos #**			
WS_Elevation :	98.04	**Obs:**			
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1	0.0		0.00							
2	0.2		0.05		0.03					
3	0.4		0.15		0.10					
4	0.6		0.15		0.07					
5	0.8		0.16		0.01					
6	1.0		0.17		0.00					
7	1.2		0.15		0.00					
8	1.4		0.20		0.00					
9	1.6		0.17		0.00					
10	1.8		0.16		0.00					
11	2.1		0.00							
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33						Q (m3/s)	0.006		WS(m)	98.040
34						A(m2)	0.28			
35						B(m)	2.1			

Project Name:	Comaplex	**Date**	02-Aug	**Crew:**	DC / AU
Watercourse:	A1 Lake	**Start Time**	11:37		
Crossing ID:	A1 Lake Outflow	**End Time**	12:25		
BM GPS Location: (given/measured)		**Datalogger SN:**	1996		new ☐
East	544445 BM1 / 544479 BMnew	Depth Reading	0.29 - 0.33 after move		
North	6985955 BM1 / 6985918 BMnew	Battery	-		
Survey: BM_Elevation =	100	**Transducer SN:**	-		new ☐
BM_Reading :	0.299 Staff Gauge 0.241	**Meter Type/SN:**			
WS_Reading :	2.275	**Photos #**			
WS_Elevation :	98.024	**Obs:**			
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1	0.3		0.00		0.00					
2	0.4		0.05		0.01					
3	0.5		0.07		0.08					
4	0.6		0.07		0.12					
5	0.7		0.08		0.08					
6	0.8		0.07		0.05					
7	0.9		0.05		0.01					
8	1.0		0.00		0.00					
9										
10										
11										
12										
13										
14										
15										
16										
17										
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24										
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27										
28										
29										
30										
31										
32										
33						Q (m3/s)	0.002		WS(m)	98.024
34						A(m2)	0.03			
35						B(m)	0.7			

Project Name:	Comaplex	**Date**	16-Sep	**Crew:**	JL / AU
Watercourse:	A1 Lake	**Start Time**	13:00		
Crossing ID:	A1 Lake Outflow	**End Time**	14:00		
BM GPS Location: (given/measured)		**Datalogger SN:**	1996		new ☐
East	544445 BM1 / 544479 BMnew	Depth Reading			
North	6985955 BM1 / 6985918 BMnew	Battery	-		
Survey: BM_Elevation =	100.304	**Transducer SN:**	-		new ☐
BM_Reading :	0.84 Staff Gauge 0.315	**Meter Type/SN:**			
WS_Reading :	3.07	**Photos #**			
WS_Elevation:	98.074	**Obs:**			
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1	0.0		0.00		0.00					
2	0.2		0.11		0.00					
3	0.4		0.18		0.11					
4	0.6		0.20		0.18					
5	0.8		0.21		0.22					
6	1.0		0.19		0.09					
7	1.2		0.21		0.00					
8	1.4		0.25		0.00					
9	1.6		0.22		0.00					
10	1.8		0.19		0.00					
11	2.0		0.10		0.00					
12	2.2		0.00		0.00					
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33						Q (m3/s)	0.024		WS(m)	98.074
34						A(m2)	0.25			
35						B(m)	2.2			

APPENDIX A-2

B2 LAKE

B2 LAKE AND OUTFLOW HYDROMETRIC STATION

B 2

FACTSHEET

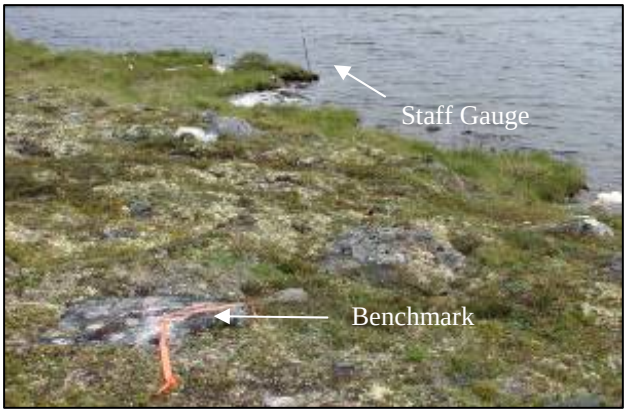
LOCATION AND DETAILS

Located approximately 5.4 kilometres South West of Meliadine West Camp.

Operational:	1997	1998 8/6-24/9	1999 14/6-20/9	2000 16/6-18/9	2008 15/6-16/9

Benchmark:	Bolt on boulder; 100.08 m (non geodetic)	Drainage Area:	22.5516 km^2
Coordinates:	UTM: 537375 m E, 6986232 m N (NAD83)	Lat/Long:	63°00'13" N, 92°15'43" W
Transducer:	Keller Acculevel Submersible Level Transmiter	Datalogger:	Optimum Instrument DD-520

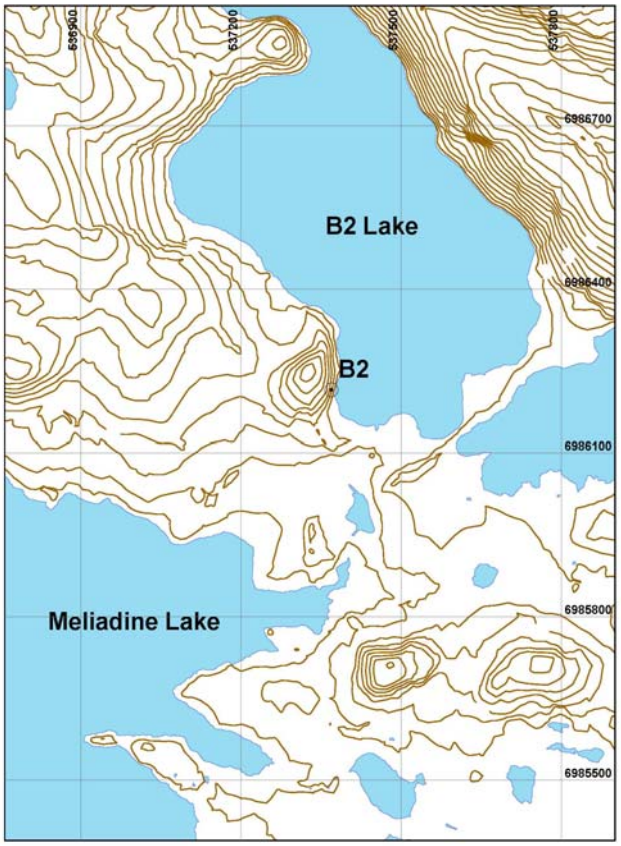
View of B2 Lake from hydrometric station.



B2 Lake from benchmark.

Upstream view of B2 Lake outlet.

B2 Lake from outlet.



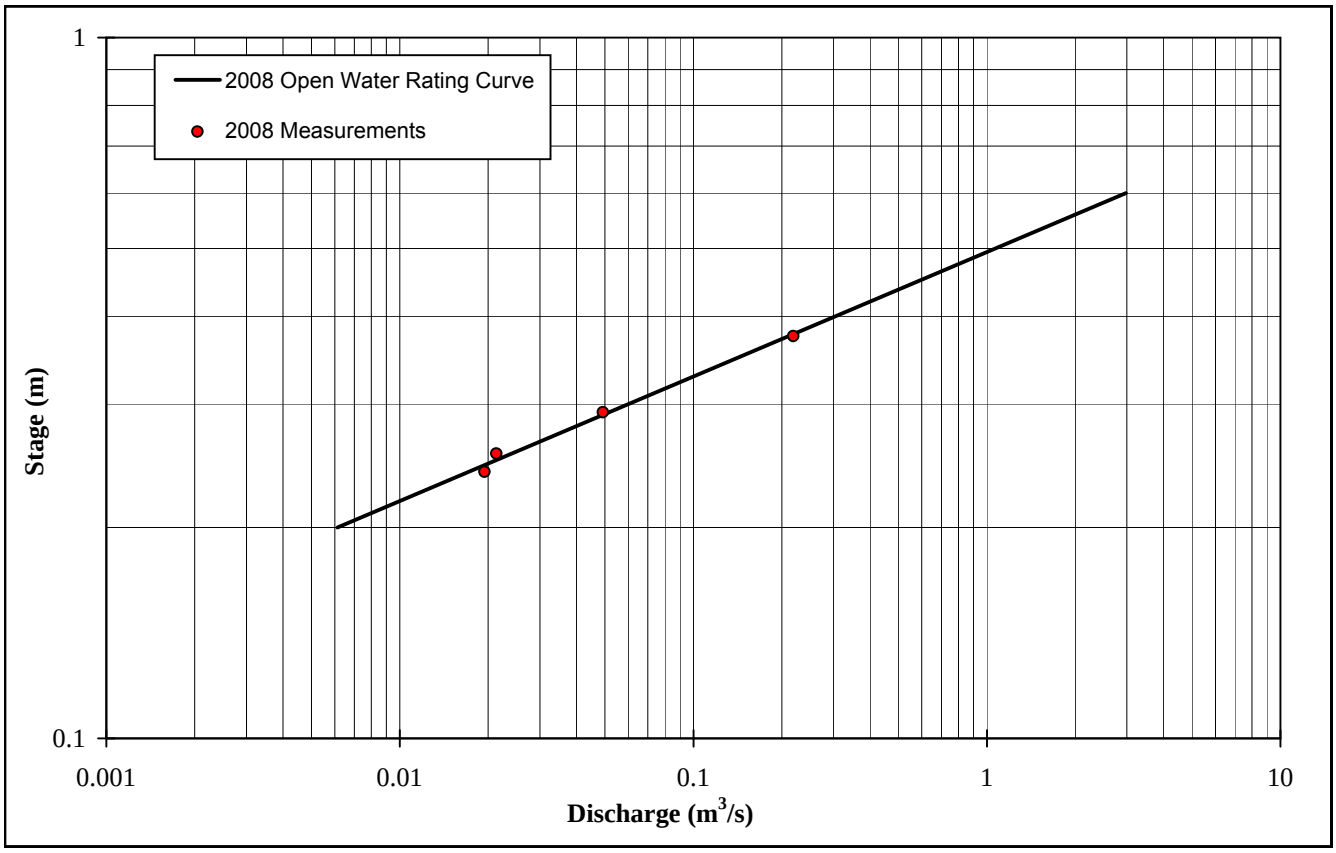
NTS Mapping of Area.

FACT-B2-2008.DOC

STATION C03 - BENCHMARK ELEVATION 100.00 m (non-geodetic) - DATUM ELEVATION 97.5m (non-geodetic)

BM elevation	100
Stage_Datum	97.5
New BM elevation [bo	100.08

Date and Time	BM_read	WS_read	BM_Elev	WS_Elev	Transducer Reading	Transducer Elevation	Average Transducer Elevation	Stage	Measured Discharge	Staff Gauge
15-Jun-2008 13:50	0.955	3.080	100	97.875	0.350	97.525	97.524	0.375	0.219	0.240
10-Jul-2008 11:45	1.280	3.488	100	97.792	0.270	97.522		0.292	0.049	0.120
02-Aug-2008 10:20	1.235	3.580	100	97.655	0.226	97.429		0.255	0.021	0.080
16-Sep-2008 14:00	0.970	3.410	100.08	97.640	0.235	97.405		0.240	0.019	0.115



B2 Lake Outlet 2008

MEAN DAILY DISCHARGE (m^3/s)

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	-	-	-	-	-	-	0.089	0.023	0.021	-	-	-
2	-	-	-	-	-	-	0.084	0.022	0.022	-	-	-
3	-	-	-	-	-	-	0.080	0.021	0.023	-	-	-
4	-	-	-	-	-	-	0.075	0.023	0.022	-	-	-
5	-	-	-	-	-	-	0.071	0.023	0.020	-	-	-
6	-	-	-	-	-	-	0.065	0.024	0.020	-	-	-
7	-	-	-	-	-	-	0.060	0.022	0.019	-	-	-
8	-	-	-	-	-	-	0.057	0.019	0.018	-	-	-
9	-	-	-	-	-	-	0.052	0.018	0.019	-	-	-
10	-	-	-	-	-	-	0.050	0.018	0.019	-	-	-
11	-	-	-	-	-	-	0.047	0.017	0.020	-	-	-
12	-	-	-	-	-	-	0.042	0.017	0.021	-	-	-
13	-	-	-	-	-	-	0.037	0.017	0.019	-	-	-
14	-	-	-	-	-	-	0.036	0.015	0.020	-	-	-
15	-	-	-	-	-	0.210 P	0.036	0.020	0.021	-	-	-
16	-	-	-	-	-	0.202	0.033	0.016	0.020	-	-	-
17	-	-	-	-	-	0.184	0.029	0.015	-	-	-	-
18	-	-	-	-	-	0.166	0.026	0.014	-	-	-	-
19	-	-	-	-	-	0.150	0.024	0.014	-	-	-	-
20	-	-	-	-	-	0.138	0.021	0.014	-	-	-	-
21	-	-	-	-	-	0.132	0.018	0.011	-	-	-	-
22	-	-	-	-	-	0.124	0.018	0.010	-	-	-	-
23	-	-	-	-	-	0.119	0.019	0.010	-	-	-	-
24	-	-	-	-	-	0.113	0.018	0.009	-	-	-	-
25	-	-	-	-	-	0.106	0.022	0.009	-	-	-	-
26	-	-	-	-	-	0.109	0.023	0.009	-	-	-	-
27	-	-	-	-	-	0.107	0.022	0.011	-	-	-	-
28	-	-	-	-	-	0.097	0.018	0.012	-	-	-	-
29	-	-	-	-	-	0.094	0.022	0.014	-	-	-	-
30	-	-	-	-	-	0.091	0.025	0.014	-	-	-	-
31	-	-	-	-	-	-	0.023	0.020	-	-	-	-
MIN	-	-	-	-	-	0.091	0.018	0.009	0.018	-	-	-
MEAN	-	-	-	-	-	0.134	0.040	0.016	0.020	-	-	-
MAX	-	-	-	-	-	0.210	0.089	0.024	0.023	-	-	-

NOTES: P - PARTIAL DAILY AVERAGE

Water Yield (m^3) =	363,529	185,072	107,330	43,142	27,986
Water Yield (mm) =	16.1	8.2	4.8	1.9	1.2

B2 Lake 2008
MEAN DAILY WATER SURFACE ELEVATION (m) BASED ON BENCHMARK ELEVATION 100.08 m (non geodetic)

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	-	-	-	-	-	-	97.822	97.752	97.749	-	-	-
2	-	-	-	-	-	-	97.818	97.750	97.751	-	-	-
3	-	-	-	-	-	-	97.815	97.749	97.753	-	-	-
4	-	-	-	-	-	-	97.812	97.753	97.750	-	-	-
5	-	-	-	-	-	-	97.809	97.754	97.747	-	-	-
6	-	-	-	-	-	-	97.804	97.754	97.746	-	-	-
7	-	-	-	-	-	-	97.800	97.750	97.744	-	-	-
8	-	-	-	-	-	-	97.797	97.745	97.743	-	-	-
9	-	-	-	-	-	-	97.793	97.742	97.745	-	-	-
10	-	-	-	-	-	-	97.790	97.741	97.745	-	-	-
11	-	-	-	-	-	-	97.786	97.741	97.748	-	-	-
12	-	-	-	-	-	-	97.782	97.741	97.749	-	-	-
13	-	-	-	-	-	-	97.775	97.740	97.744	-	-	-
14	-	-	-	-	-	-	97.774	97.735	97.746	-	-	-
15	-	-	-	-	-	97.875 P	97.773	97.745	97.747	-	-	-
16	-	-	-	-	-	97.872	97.769	97.736	97.748 P	-	-	-
17	-	-	-	-	-	97.866	97.763	97.734	-	-	-	-
18	-	-	-	-	-	97.860	97.758	97.731	-	-	-	-
19	-	-	-	-	-	97.853	97.755	97.731	-	-	-	-
20	-	-	-	-	-	97.848	97.749	97.727	-	-	-	-
21	-	-	-	-	-	97.845	97.742	97.721	-	-	-	-
22	-	-	-	-	-	97.841	97.742	97.719	-	-	-	-
23	-	-	-	-	-	97.839	97.746	97.716	-	-	-	-
24	-	-	-	-	-	97.836	97.743	97.715	-	-	-	-
25	-	-	-	-	-	97.832	97.751	97.714	-	-	-	-
26	-	-	-	-	-	97.833	97.753	97.715	-	-	-	-
27	-	-	-	-	-	97.832	97.749	97.719	-	-	-	-
28	-	-	-	-	-	97.827	97.742	97.725	-	-	-	-
29	-	-	-	-	-	97.825	97.751	97.731	-	-	-	-
30	-	-	-	-	-	97.823	97.756	97.731	-	-	-	-
31	-	-	-	-	-	-	97.753	97.746	-	-	-	-
MIN	-	-	-	-	-	97.823	97.742	97.714	97.743	-	-	-
MEAN	-	-	-	-	-	97.844	97.773	97.736	97.747	-	-	-
MAX	-	-	-	-	-	97.875	97.822	97.754	97.753	-	-	-

NOTES: P - PARTIAL DAILY AVERAGE

Project Name:	Comaplex	**Date**	19-Jun	**Crew:**	JL / RP
Watercourse:	B2 Lake	**Start Time**	10:30		
Crossing ID:	B2 Lake Outflow	**End Time**	11:10		
BM GPS Location: (given/measured)		**Datalogger SN:**	1896		new ☐
East		Depth Reading			
North		Battery			
Survey: BM_Elevation =	100	**Transducer SN:**	21914		new ☐
BM_Reading :	0.955 Staff Gauge	0.24 **Meter Type/SN:**			
WS_Reading :	3.08 TOB	**Photos #**			
WS_Elevation :	97.875	**Obs:**	Tranducer was setup on 15-June-08		
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1	0.0		0.00		0.00					
2	0.3		0.33		0.27					
3	0.6		0.23		0.05					
4	0.9		0.20		0.19					
5	1.2		0.16		0.18					
6	1.5		0.20		0.31					
7	1.8		0.18		0.29					
8	2.1		0.16		0.31					
9	2.4		0.19		0.21					
10	2.7		0.19		0.18					
11	3.0		0.21		0.19					
12	3.3		0.2		0.26					
13	3.6		0.19		0.31					
14	3.9		0.2		0.31					
15	4.2		0.31		0.37					
16	4.5		0.00		0.00					
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33						Q (m3/s)	0.219		WS(m)	97.875
34						A(m2)	0.88			
35						B(m)	4.5			

Project Name:	Comaplex	**Date**	10-Jul	**Crew:**	JL / SB
Watercourse:	B2 Lake	**Start Time**	12:10		
Crossing ID:	B2 Lake Outflow	**End Time**	12:45		
BM GPS Location: (given/measured)		**Datalogger SN:**			new ☐
East		Depth Reading			
North		Battery			
Survey: BM_Elevation =	100	**Transducer SN:**			new ☐
BM_Reading :	1.28 Staff Gauge	0.12 **Meter Type/SN:**			
WS_Reading :	3.488	**Photos #**			
WS_Elevation :	97.792	**Obs:**			
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1	0.0		0.00							
2	0.3		0.11		0.07					
3	0.6		0.00		0.00					
4	0.9		0.11		0.08					
5	1.2		0.04		0.04					
6	1.5		0.06		0.09					
7	1.8		0.06		0.10					
8	2.1		0.08		0.36					
9	2.4		0.11		0.36					
10	2.7		0.16		0.41					
11	3.0		0.09		0.06					
12	3.25		0							
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33						Q (m3/s)	0.049		WS(m)	97.792
34						A(m2)	0.24			
35						B(m)	3.3			

Project Name:	Comaplex	**Date**	02-Aug	**Crew:**	DC/AU
Watercourse:	B2 Lake	**Start Time**	10:06		
Crossing ID:	C03 B2 Lake Outlet	**End Time**	11:15		
BM GPS Location: (given/measured)		**Datalogger SN:**	1896		new ☐
East	537373 BM1	Depth Reading	0.2-0.54 after move		
North	6986232 BM1	Battery			
Survey: BM_Elevation =	100	**Transducer SN:**			new ☐
BM_Reading :	1.235 Staff Gauge	0.08	**Meter Type/SN:**		
WS_Reading :	3.58		**Photos #**		
WS_Elevation :	97.655		**Obs:**		
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1	0.6		0.00							
2	0.7		0.12		0.00					
3	0.7		0.12		0.07					
4	0.8		0.12		0.11					
5	0.9		0.10		0.23					
6	1.0		0.10		0.30					
7	1.1		0.11		0.23					
8	1.2		0.10		0.25					
9	1.3		0.12		0.24					
10	1.4		0.12		0.28					
11	1.5		0.11		0.21					
12	1.6		0.1		0.17					
13	1.7		0		0					
14										
15										
16		add 0.0005 to final Q								
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33						Q (m3/s)	0.021		WS(m)	97.655
34						A(m2)	0.11			
35						B(m)	1.1			

Project Name:	Comaplex	**Date**	16-Sep	**Crew:**	JL / AU
Watercourse:	B2 Lake	**Start Time**	14:50		
Crossing ID:	C03 B2 Lake Outlet	**End Time**	15:00		
BM GPS Location: (given/measured)		**Datalogger SN:**	1896		new ☐
East	537373 BM1	Depth Reading	0.2-0.54 after move		
North	6986232 BM1	Battery			
Survey: BM_Elevation =	100.08	**Transducer SN:**			new ☐
BM_Reading :	0.97 Staff Gauge	0.115	**Meter Type/SN:**		
WS_Reading :	3.41		**Photos #**		
WS_Elevation :	97.64		**Obs:**		
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1	0.0		0.00		0.00					
2	0.2		0.13		0.00					
3	0.4		0.13		0.06					
4	0.6		0.13		0.14					
5	0.8		0.10		0.20					
6	1.0		0.14		0.19					
7	1.2		0.11		0.07					
8	1.4		0.12		0.00					
9	1.6		0.10		0.13					
10	1.8		0.14		0.25					
11	2.0		0.00		0.00					
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33						Q (m3/s)	0.019		WS(m)	97.640
34						A(m2)	0.22			
35						B(m)	2.0			

APPENDIX A-3

B7 LAKE

B7 LAKE AND OUTFLOW HYDROMETRIC STATION

B 7

FACTSHEET

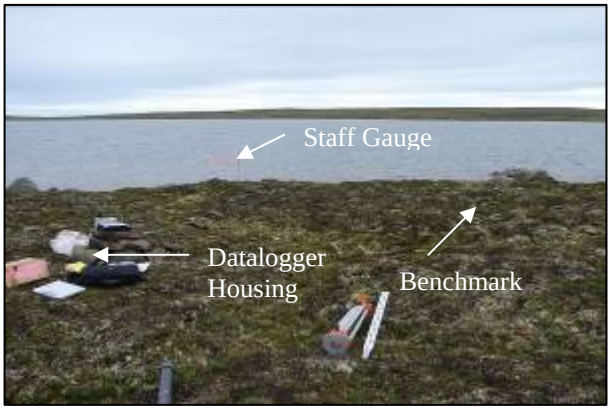
LOCATION AND DETAILS

Located approximately 4 kilometres West of Meliadine West Camp.

Operational:	1997	1998	1999	2000	2008
		7/6-24/9	14/6-20/9	15/6-19/9	16/6-16/9

Benchmark:	Bolt on boulder; 100.131 m (non geodetic)	Drainage Area:	2.6268 km^2
Coordinates:	UTM: 537935 m E, 6989488 m N (NAD83)	Lat/Long:	63°01'58" N, 92°15'00" W
Transducer:	Keller Acculevel Submersible Level Transmiter	Datalogger:	Optimum Instrument DD-520

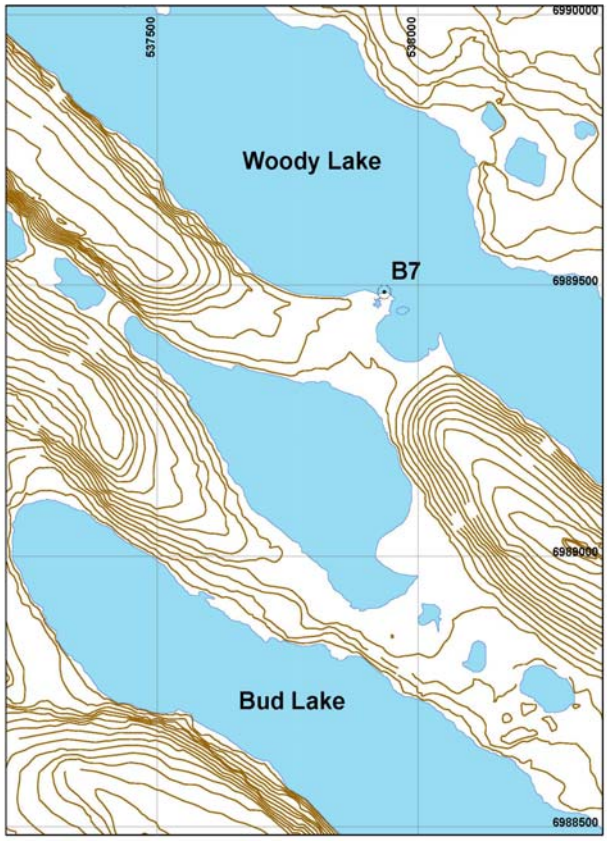
View of B7 Lake from hydrometric station.



B7 Lake hydrometric station.

B7 Lake outlet.

B7 Lake from outlet.



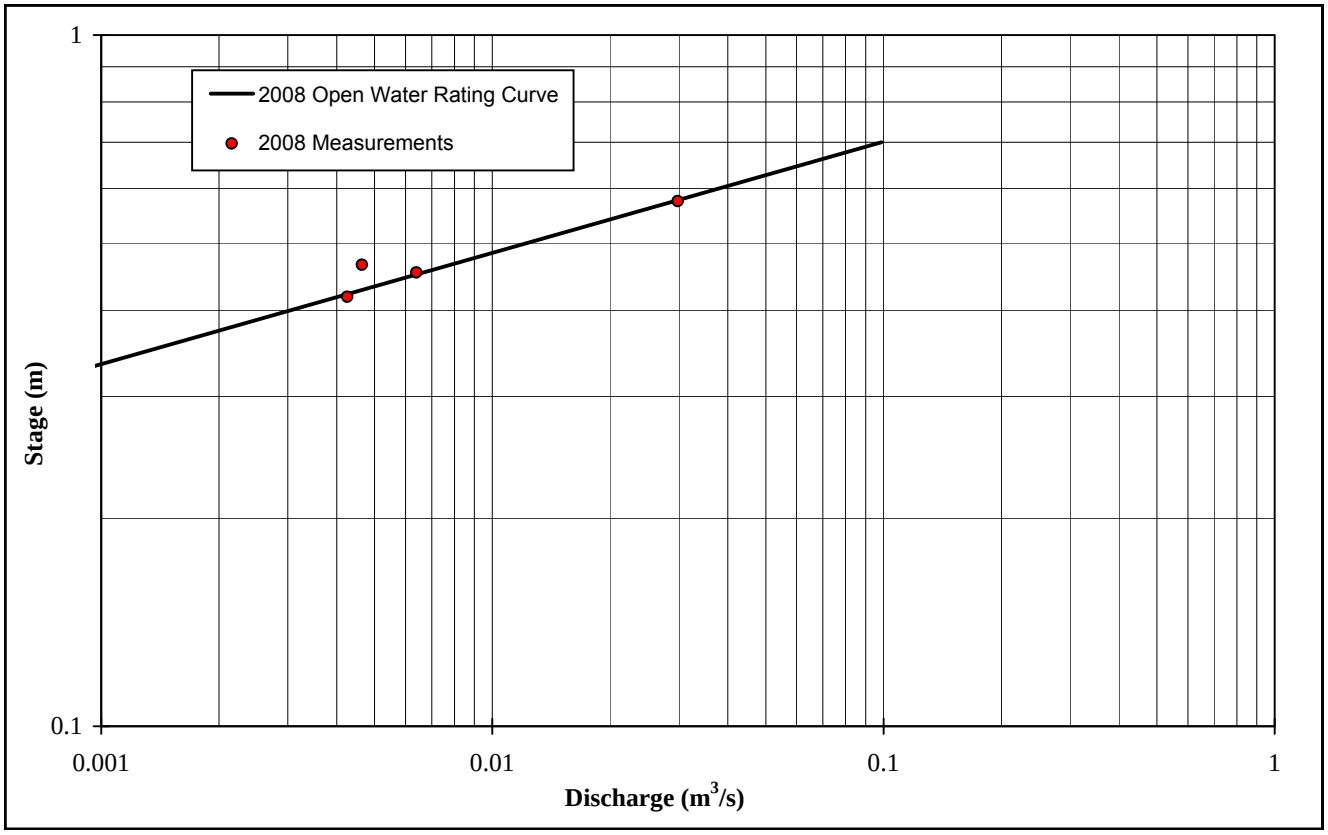
NTS Mapping of Area.

FACT-B7-2008.DOC

STATION C04 - BENCHMARK ELEVATION 100.00 m (non-geodetic) - DATUM ELEVATION 99.0m (non-geodetic)

BM elevation	100
Stage_Datum	99
New BM elevation [bolt]	100.131

Date and Time	BM_read	WS_read	BM_Elev	WS_Elev	Transducer Reading	Transducer Elevation	Average Transducer Elevation	Stage	Measured Discharge	Staff Gauge
19-Jun-2008 09:50	1.530	1.955	100.000	99.575	0.350	99.225	99.2257	0.575	0.030	0.000
10-Jul-2008 12:25	1.765	2.300	100.000	99.465	0.250	99.215		0.465	0.005	0.000
02-Aug-2008 08:45	1.769	2.351	100.000	99.418	0.201	99.217		0.418	0.004	0.090
16-Sep-2008 16:10	1.483	2.160	100.131	99.454	0.208	99.246		0.454	0.006	0.135



B7 Lake Outlet - 2008

MEAN DAILY DISCHARGE (m^3/s)

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	-	-	-	-	-	-	0.016	0.005	0.006	-	-	-
2	-	-	-	-	-	-	0.015	0.005	0.007	-	-	-
3	-	-	-	-	-	-	0.014	0.005	0.007	-	-	-
4	-	-	-	-	-	-	0.013	0.005	0.007	-	-	-
5	-	-	-	-	-	-	0.012	0.005	0.007	-	-	-
6	-	-	-	-	-	-	0.011	0.005	0.006	-	-	-
7	-	-	-	-	-	-	0.011	0.004	0.006	-	-	-
8	-	-	-	-	-	-	0.010	0.004	0.006	-	-	-
9	-	-	-	-	-	-	0.010	0.004	0.006	-	-	-
10	-	-	-	-	-	-	0.009	0.004	0.006	-	-	-
11	-	-	-	-	-	-	0.008	0.004	0.006	-	-	-
12	-	-	-	-	-	-	0.008	0.004	0.006	-	-	-
13	-	-	-	-	-	-	0.007	0.004	0.006	-	-	-
14	-	-	-	-	-	-	0.007	0.004	0.006	-	-	-
15	-	-	-	-	-	-	0.006	0.005	0.006	-	-	-
16	-	-	-	-	-	0.033 P	0.006	0.005	0.005 P	-	-	-
17	-	-	-	-	-	0.032	0.006	0.005	-	-	-	-
18	-	-	-	-	-	0.030	0.006	0.005	-	-	-	-
19	-	-	-	-	-	0.029	0.006	0.005	-	-	-	-
20	-	-	-	-	-	0.027	0.005	0.004	-	-	-	-
21	-	-	-	-	-	0.026	0.005	0.004	-	-	-	-
22	-	-	-	-	-	0.024	0.004	0.004	-	-	-	-
23	-	-	-	-	-	0.023	0.004	0.004	-	-	-	-
24	-	-	-	-	-	0.022	0.004	0.004	-	-	-	-
25	-	-	-	-	-	0.021	0.005	0.004	-	-	-	-
26	-	-	-	-	-	0.020	0.005	0.004	-	-	-	-
27	-	-	-	-	-	0.019	0.005	0.004	-	-	-	-
28	-	-	-	-	-	0.019	0.004	0.004	-	-	-	-
29	-	-	-	-	-	0.018	0.005	0.005	-	-	-	-
30	-	-	-	-	-	0.017	0.005	0.005	-	-	-	-
31	-	-	-	-	-		0.005	0.006	-	-	-	-
MIN	-	-	-	-	-	0.017	0.004	0.004	0.005	-	-	-
MEAN	-	-	-	-	-	0.024	0.008	0.004	0.006	-	-	-
MAX	-	-	-	-	-	0.033	0.016	0.006	0.007	-	-	-

NOTES: P - PARTIAL DAILY AVERAGE

Water Yield (m^3) =	71,837	31,039	20,580	11,505	8,714
Water Yield (mm) =	27.3	11.8	7.8	4.4	3.3

B7 Lake - 2008

MEAN DAILY WATER SURFACE ELEVATION (m) BASED ON BENCHMARK ELEVATION 100.131 m (non geodetic)

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	-	-	-	-	-	-	99.521	99.432	99.451	-	-	-
2	-	-	-	-	-	-	99.516	99.428	99.457	-	-	-
3	-	-	-	-	-	-	99.512	99.426	99.459	-	-	-
4	-	-	-	-	-	-	99.507	99.428	99.456	-	-	-
5	-	-	-	-	-	-	99.501	99.427	99.452	-	-	-
6	-	-	-	-	-	-	99.494	99.424	99.451	-	-	-
7	-	-	-	-	-	-	99.490	99.417	99.448	-	-	-
8	-	-	-	-	-	-	99.483	99.419	99.447	-	-	-
9	-	-	-	-	-	-	99.481	99.417	99.448	-	-	-
10	-	-	-	-	-	-	99.476	99.415	99.448	-	-	-
11	-	-	-	-	-	-	99.469	99.414	99.450	-	-	-
12	-	-	-	-	-	-	99.463	99.412	99.447	-	-	-
13	-	-	-	-	-	-	99.457	99.412	99.441	-	-	-
14	-	-	-	-	-	-	99.453	99.413	99.443	-	-	-
15	-	-	-	-	-	-	99.450	99.431	99.443	-	-	-
16	-	-	-	-	-	99.588 P	99.446	99.427	99.437 P	-	-	-
17	-	-	-	-	-	99.584	99.446	99.428	-	-	-	-
18	-	-	-	-	-	99.579	99.445	99.427	-	-	-	-
19	-	-	-	-	-	99.574	99.441	99.426	-	-	-	-
20	-	-	-	-	-	99.569	99.436	99.417	-	-	-	-
21	-	-	-	-	-	99.564	99.429	99.419	-	-	-	-
22	-	-	-	-	-	99.558	99.424	99.416	-	-	-	-
23	-	-	-	-	-	99.552	99.425	99.415	-	-	-	-
24	-	-	-	-	-	99.548	99.423	99.413	-	-	-	-
25	-	-	-	-	-	99.543	99.428	99.411	-	-	-	-
26	-	-	-	-	-	99.542	99.432	99.413	-	-	-	-
27	-	-	-	-	-	99.538	99.423	99.421	-	-	-	-
28	-	-	-	-	-	99.535	99.422	99.424	-	-	-	-
29	-	-	-	-	-	99.532	99.432	99.426	-	-	-	-
30	-	-	-	-	-	99.525	99.439	99.429	-	-	-	-
31	-	-	-	-	-	-	99.436	99.441	-	-	-	-
MIN	-	-	-	-	-	99.525	99.422	99.411	99.437	-	-	-
MEAN	-	-	-	-	-	99.555	99.458	99.421	99.449	-	-	-
MAX	-	-	-	-	-	99.588	99.521	99.441	99.459	-	-	-

NOTES: P - PARTIAL DAILY AVERAGE

Project Name:	Comaplex	**Date**	19-Jun	**Crew:**	JL / RP
Watercourse:	B7 Lake	**Start Time**	11:40		
Crossing ID:	B7 Lake Outflow	**End Time**	3:36		
BM GPS Location: (given/measured)		**Datalogger SN:**	1904		new ☐
East	537933	Depth Reading			
North	6989475	Battery			
Survey: BM_Elevation =	100	**Transducer SN:**	25889		new ☐
BM_Reading :	1.53 Staff Gauge	0.24 **Meter Type/SN:**			
WS_Reading :	1.955	**Photos #**			
WS_Elevation :	99.575	**Obs:**	Transducer was setup on 16-June-08		
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1	0.0		0.00		0.00					
2	0.1		0.01		0.00					
3	0.2		0.10		0.00					
4	0.3		0.17		0.00					
5	0.4		0.30		0.00					
6	0.5		0.31		0.07					
7	0.6		0.33		0.10					
8	0.7		0.31		0.13					
9	0.8		0.31		0.12					
10	0.9		0.31		0.12					
11	1.0		0.30		0.10					
12	1.1		0.31		0.06					
13	1.2		0.325		0.08					
14	1.3		0.325		0.08					
15	1.4		0.325		0.04					
16	1.5		0.31		0.05					
17	1.6		0.03		0.00					
18	1.7		0.00		0.00					
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33						Q (m3/s)	0.030		WS(m)	99.575
34						A(m2)	0.41			
35						B(m)	1.7			

Project Name:	Comaplex	**Date**	10-Jul	**Crew:**	JL / SB
Watercourse:	B7 Lake	**Start Time**	13:20		
Crossing ID:	B7 Lake Outflow	**End Time**	13:55		
BM GPS Location: (given/measured)		**Datalogger SN:**			new ☐
East	537933	Depth Reading			
North	6989475	Battery			
Survey: BM_Elevation =	100	**Transducer SN:**			new ☐
BM_Reading :	1.765 Staff Gaug 13.5	**Meter Type/SN:**			
WS_Reading :	2.3	**Photos #**			
WS_Elevation :	99.465	**Obs:**			
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1	0.0		0.00							
2	0.1		0.08		0.00					
3	0.2		0.20		0.00					
4	0.3		0.17		0.00					
5	0.4		0.20		0.02					
6	0.5		0.20		0.07					
7	0.6		0.17		0.10					
8	0.7		0.19		0.06					
9	0.8		0.17		0.00					
10	0.9		0.16		0.00					
11	1.0		0.15		0.00					
12	1.15		0		0					
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33						Q (m3/s)	0.005		WS(m)	99.465
34						A(m2)	0.17			
35						B(m)	1.2			

Project Name:	Comaplex	**Date**	02-Aug	**Crew:**	DC / AU
Watercourse:	B7 Lake	**Start Time**	8:31		
Crossing ID:	B7 Lake Outflow	**End Time**	10:00		
BM GPS Location: (given/measured)		**Datalogger SN:**	1904		new ☐
East	537935 BM1	Depth Reading	0.2033		
North	6989488 BM1	Battery			
Survey: BM_Elevation =	100	**Transducer SN:**			new ☐
BM_Reading :	1.769 Staff Gaug 0.09	**Meter Type/SN:**			
WS_Reading :	2.351	**Photos #**			
WS_Elevation :	99.418	**Obs:**			
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1	0.5		0.00		0.00					
2	0.5		0.70		0.07					
3	0.6		0.14		0.06					
4	0.7		0.12		0.05					
5	0.8		0.12		0.01					
6	0.9		0.07		0.00					
7	1.0		0.00		0.00					
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33						Q (m3/s)	0.004		WS(m)	99.418
34						A(m2)	0.08			
35						B(m)	0.5			

Project Name:	Comaplex		**Date**	16-Sep	**Crew:** JL / AU
Watercourse:	B7 Lake		**Start Time**	16:03	
Crossing ID:	B7 Lake Outflow		**End Time**	16:30 PM	
BM GPS Location: (given/measured)			**Datalogger SN:**	1904	new
East	537935 BM1		Depth Reading		
North	6989488 BM1		Battery		
Survey: BM_Elevation =	100.131		**Transducer SN:**		new
BM_Reading :	1.4825	Staff Gauge 0.135	**Meter Type/SN:**		
WS_Reading :	2.16		**Photos #**		
WS_Elevation :	99.4535		**Obs:**		
BM location inf.		D WL			

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1	0.1		0.00		0.00					
2	0.2		0.04		0.00					
3	0.3		0.14		0.00					
4	0.4		0.18		0.04					
5	0.5		0.15		0.08					
6	0.6		0.18		0.06					
7	0.7		0.18		0.10					
8	0.8		0.18		0.08					
9	0.9		0.15		0.02					
10	1.0		0.10		0.00					
11	1.1		0.00		0.00					
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33						Q (m3/s)	0.006		WS(m)	99.454
34						A(m2)	0.13			
35						B(m)	1.0			

APPENDIX A-4

MELIADINE LAKE

MELIADINE LAKE HYDROMETRIC STATION

ML

FACTSHEET

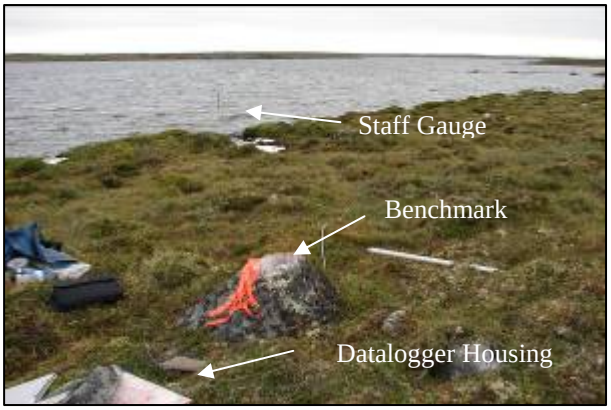
LOCATION AND DETAILS

Located approximately 13 kilometres North West of Meliadine West Camp.

Operational:	1997	1998	1999	2000	2008
	12/6-25/9	6/6-22/9	6/6-22/9	13/6-18/9	2/8-31/8

Benchmark:	Bolt on boulder; 100.0 m (non geodetic)	Drainage Area:	569 km^2
Coordinates:	UTM: 530573 m E, 6995555 m N (NAD83)	Lat/Long:	63°05'17" N, 92°23'40" W
Transducer:	Keller Acculevel Submersible Level Transmiter	Datalogger:	Optimum Instrument DD-520

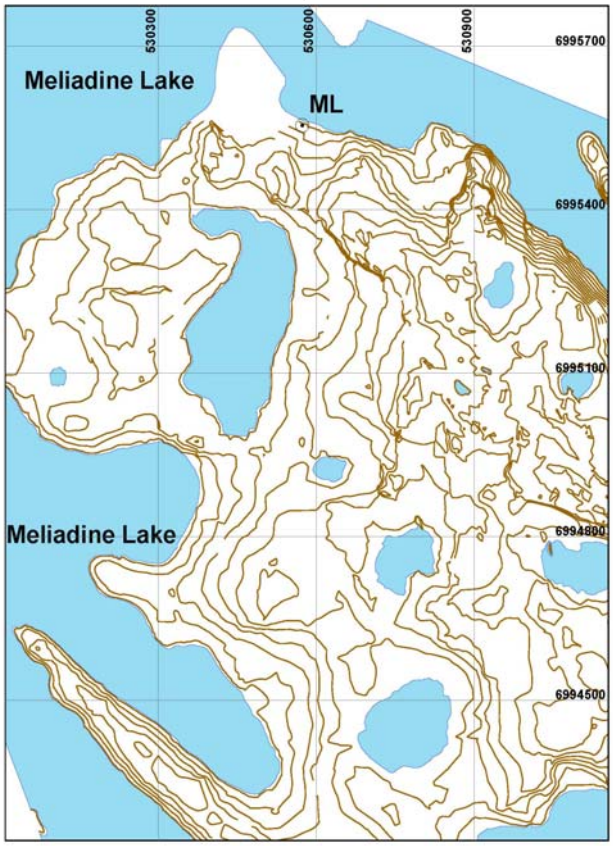
Meliadine Lake from hydrometric station.



Meliadine Lake hydrometric station.

Meliadine Lake, looking North.

Meliadine Lake, lokking South.



NTS Mapping of Area.

FACT-ML-2008.DOC

Maliadine Lake - 2008

MEAN DAILY WATER SURFACE ELEVATION (m) BASED ON BENCHMARK ELEVATION 100 m (non geodetic)

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	98.844 P	-	-	-	-
3	-	-	-	-	-	-	-	98.844	-	-	-	-
4	-	-	-	-	-	-	-	98.844	-	-	-	-
5	-	-	-	-	-	-	-	98.837	-	-	-	-
6	-	-	-	-	-	-	-	98.829	-	-	-	-
7	-	-	-	-	-	-	-	98.821	-	-	-	-
8	-	-	-	-	-	-	-	98.825	-	-	-	-
9	-	-	-	-	-	-	-	98.826	-	-	-	-
10	-	-	-	-	-	-	-	98.826	-	-	-	-
11	-	-	-	-	-	-	-	98.821	-	-	-	-
12	-	-	-	-	-	-	-	98.819	-	-	-	-
13	-	-	-	-	-	-	-	98.820	-	-	-	-
14	-	-	-	-	-	-	-	98.822	-	-	-	-
15	-	-	-	-	-	-	-	98.824	-	-	-	-
16	-	-	-	-	-	-	-	98.817	-	-	-	-
17	-	-	-	-	-	-	-	98.816	-	-	-	-
18	-	-	-	-	-	-	-	98.814	-	-	-	-
19	-	-	-	-	-	-	-	98.814	-	-	-	-
20	-	-	-	-	-	-	-	98.798	-	-	-	-
21	-	-	-	-	-	-	-	98.799	-	-	-	-
22	-	-	-	-	-	-	-	98.794	-	-	-	-
23	-	-	-	-	-	-	-	98.792	-	-	-	-
24	-	-	-	-	-	-	-	98.789	-	-	-	-
25	-	-	-	-	-	-	-	98.785	-	-	-	-
26	-	-	-	-	-	-	-	98.795	-	-	-	-
27	-	-	-	-	-	-	-	98.808	-	-	-	-
28	-	-	-	-	-	-	-	98.798	-	-	-	-
29	-	-	-	-	-	-	-	98.782	-	-	-	-
30	-	-	-	-	-	-	-	98.722	-	-	-	-
31	-	-	-	-	-	-	-	98.650 P	-	-	-	-
MIN	-	-	-	-	-	-	-	98.650	-	-	-	-
MEAN	-	-	-	-	-	-	-	98.806	-	-	-	-
MAX	-	-	-	-	-	-	-	98.844	-	-	-	-

NOTES: P - PARTIAL DAILY AVERAGE

APPENDIX A-5

MELIADINE LAKE WEST

MELIADINE LAKE WEST OUTLET HYDROMETRIC STATION

ML-W

FACTSHEET

LOCATION AND DETAILS

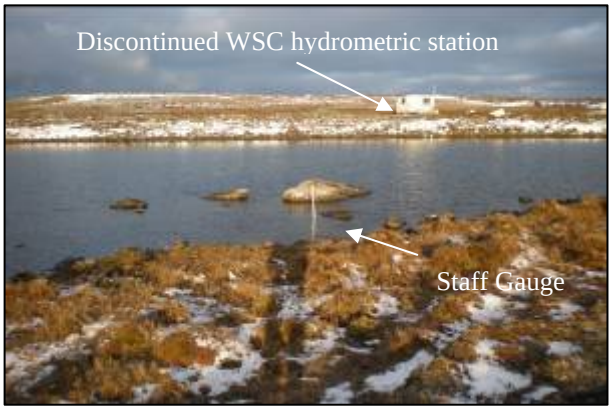
Located approximately 22 kilometres North West of Meliadine West Camp.

Operational:	1997	1998	1999	2000	2008
	12/6-25/9	6/6-22/9	16/6-20/9	19/6-18/9	16/6-18/9

Benchmark: Bolt on boulder; 100.0 m (non geodetic)
Coordinates: UTM: 523818 m E, 7000994 m N (NAD83)
Transducer: none

Drainage Area: 569 km^2
Lat/Long: 63°08'14" N, 92°31'39" W
Datalogger: none

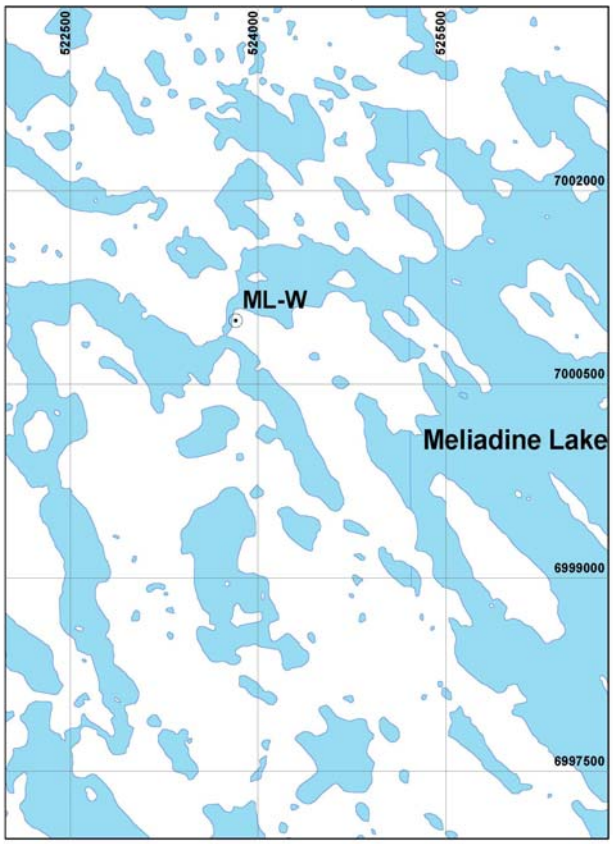
Meliadine Lake west outlet from staff gauge.



Meliadine Lake west outlet hydrometric station.

Downstream view of outlet.

Benchmark.



NTS Mapping of Area.

FACT-ML-W-2008.DOC

Meliadine Lake West Outlet - 2008

MANUAL DISCHARGE MEASUREMENT (m^3/s)

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	0.981	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	1.185	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	0.461	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-

Meliadine Lake West Outlet - 2008

WATER SURFACE ELEVATION (m) BASED ON BENCHMARK ELEVATION 100 m (non geodetic)

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	98.795	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	98.883	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	98.569	-	-	-
19	-	-	-	-	-	98.880	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-

Project Name:	Comaplex	**Date**	16-Jun	**Crew:**	JL / W
Watercourse:	Meliadine Lake West Outlet	**Start Time**	16:30		
Crossing ID:	C06 Meliadine Lake West outlet	**End Time**	18:00		
BM GPS Location: (given/measured)		**Datalogger SN:**			new ☐
East	523818	Depth Reading			
North	7000994	Battery			
Survey: BM_Elevation =	100	**Transducer SN:**			new ☐
BM_Reading :	1.32 Staff Gaug 0.37	**Meter Type/SN:**			
WS_Reading :	2.44	**Photos #**			
WS_Elevation :	98.880	**Obs:**			
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33						Q (m3/s)	#DIV/0!		WS(m)	98.880
34						A(m2)	0.00			
35						B(m)	0.0			

Project Name:	Comaplex	**Date**	10-Jul	**Crew:**	JL / LM
Watercourse:	Meliadine Lake West Outlet	**Start Time**			
Crossing ID:	C06 Meliadine Lake West outlet	**End Time**			
BM GPS Location: (given/measured)		**Datalogger SN:**			new ☐
East	523818	Depth Reading			
North	7000994	Battery			
Survey: BM_Elevation =	100	**Transducer SN:**			new ☐
BM_Reading :	1.475 Staff Gauge 0.32	**Meter Type/SN:**			
WS_Reading :	2.5925	**Photos #**			
WS_Elevation :	98.8825	**Obs:**			
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1	2.5		0.00			34.00		0.08	0.87	
2	3.0		0.12	0		34.50		0.13	1.14	
3	4.0		0.00			35.00		0.18	0.87	
4	5.0		0.00			36.00		0.05	0.15	
5	6.0		0.00			36.50		0		
6	7.0		0.12	0		37.00				
7	8.0		0.08	0		40.50				
8	9.0		0.06	0		41.00		0.09	0.2	
9	10.0		0.20	0		41.50		0.17	0.3	
10	11.0		0.11	0		42.00		0.17	0.12	
11	12.0		0.06	0.09		42.50		0.15	0.23	
12	13.0		0.17	0		43.00		0.08	0.06	
13	13.5		0.20	0		43.50		0.075	0.48	
14	14.0		0.11	0.3		44.00		0.07	0.35	
15	14.5		0.12	0.18		44.50		0.14	0.3	
16	15.0		0.29	0.00		45.00				
17	15.5		0.13	0.20		58.50				
18	16.0		0.19	0.18		59.00		0		
19	16.5		0.10	0.25		59.50		0.15	0.03	
20	17.0		0.18	0.10		60.00		0.18	0.05	
21	17.5		0.20	0.25		60.50		0.19	0.03	
22	18.0		0.16	0.00		61.00		0		
23	18.5		0.25	0.00		61.50		0		
24	19.0		0.05	0.57		62.00		0.13	0.54	
25	19.5		0.24	0.25		62.50		0.04	0	
26	20.0		0.10	0.39		63.00				
27	20.5		0.16	0.42						
28	21.0		0.16	0.36						
29	21.5		0.13	0.75						
30	22.0		0.15	0.59						
31	22.5		0.00							
32	23.0		0.00							
33	23.5		0.13	0.28						
34	24.0		0.29	0.42						
35	24.5		0.19	0.32						
36	25.0		0.20	0.05						
37	25.5		0.53	0.03						
38	26.0		0.15	0.25						
39	26.5		0.36	0.06						
40	27.0		0.15	0.31						
41	27.5		0.20	0.13						
42	28.0		0.14	0.96						
43	28.5		0.00							
44	29.0		0.15	0.65						
45	29.5		0.00							
46	30.0		0.23	0.50						
47	30.5		0.08	0.30						
48	31.0		0.00							
49	31.5		0.18	0.33						
50	32.0		0.20	0.04						
33	32.5		0.12	0.38		Q (m3/s)	#REF!		WS(m)	98.883
34	33		0.05	0.57		A(m2)	#REF!			
35	33.50		0.10	0.45		B(m)	63.0			

Project Name:	Comaplex	**Date**	03-Aug	**Crew:**	DC / AU
Watercourse:	Meliadine Lake West Outlet	**Start Time**	9:36		
Crossing ID:	C06 Meliadine Lake West outlet	**End Time**	11:00		
BM GPS Location: (given/measured)		**Datalogger SN:**			new ☐
East	523818	Depth Reading			
North	7000994	Battery			
Survey: BM_Elevation =	100	**Transducer SN:**			new ☐
BM_Reading :	1.731 Staff Gaug 0.28	**Meter Type/SN:**			
WS_Reading :	2.936	**Photos #**			
WS_Elevation :	98.795	**Obs:**			
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1	0.0		0.00		0.00					
2	0.7		0.16		0.00					
3	1.7		0.17		0.02					
4	3.7		0.23		0.02					
5	5.7		0.20		0.05					
6	7.7		0.31		0.03					
7	9.7		0.52		0.04					
8	11.7		0.50		0.06					
9	13.7		0.60		0.05					
10	15.7		0.70		0.03					
11	17.7		0.63		0.05					
12	19.7		0.72		0.04					
13	21.7		0.71		0.04					
14	23.7		0.65		0.06					
15	25.7		0.56		0.07					
16	27.7		0.52		0.09					
17	29.7		0.75		0.04					
18	31.7		0.35		0.08					
19	32.7		0.50		0.08					
20	33.7		0.47		0.07					
21	34.7		0.37		0.06					
22	36.7		0.61		0.03					
23	38.7		0.63		0.03					
24	40.7		0.50		0.01					
25	42.7		0.55		0.00					
26	44.7		0.47		0					
27	46.7		0.43		0					
28	48.7		0.35		0					
29	49.7		0.00		0					
30										
31										
32										
33						Q (m3/s)	0.981		WS(m)	98.795
34						A(m2)	24.55			
35						B(m)	49.7			

Project Name:	Comaplex	**Date**	18-Sep	**Crew:**	JL / KO
Watercourse:	Meliadine Lake West Outlet	**Start Time**	8:00		
Crossing ID:	C06 Meliadine Lake West outlet	**End Time**	10:35		
BM GPS Location: (given/measured)		**Datalogger SN:**			new ☐
East	523818	Depth Reading			
North	7000994	Battery			
Survey: BM_Elevation =	100 / 100.0025	**Transducer SN:**			new ☐
BM_Reading :	0.1825 Staff Gaug / 0.18	**Meter Type/SN:**			
WS_Reading :	2.91	**Photos #**			
WS_Elevation :	98.569	**Obs:**			
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1	0		0		0					
2	0.5		1.6		0.05					
3	1		0.15		0.15					
4	1.5		0.1		0.1					
5	2		0.05		0.07					
6	2.5		0.06		0					
7	3		0		0					
8										
9	0		0		0					
10	1		0.05		0.14					
11	2		0.25		0.56					
12	3		0.17		0.1					
13	4		0.07		0.23					
14	5		0.15		0.15					
15	6		0.06		0.3					
16	7		0.2		0.04					
17	8		0.14		0.16					
18	9		0.09		0.33					
19	10		0.03		0.14					
20	11		0.1		0.24					
21	12		0.09		0.05					
22	13		0.06		0.13					
23	14		0.06		0.29					
24	15		0.14		0.13					
25	16		0.18		0.13					
26	17		0		0					
27	18		0.075		0.26					
28	19		0.05		0.07					
29	20		0		0					
30	21		0		0					
31										
32										
33						Q (m3/s)	0.461		WS(m)	98.569
34						A(m2)	2.95			
35						B(m)	21.0			

APPENDIX A-6

MELIADINE LAKE MAIN OUTLET

MELIADINE LAKE MAIN OUTLET HYDROMETRIC STATION

ML-M

FACTSHEET

LOCATION AND DETAILS

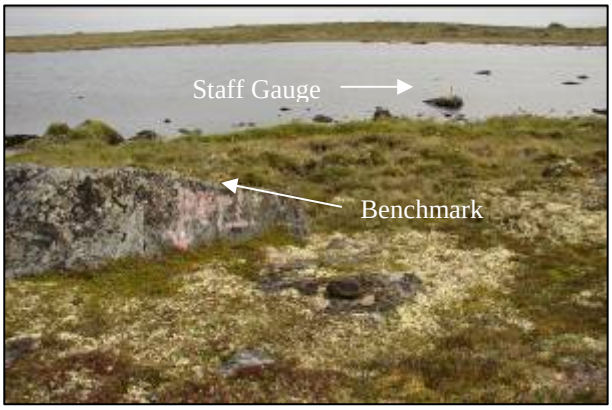
Located approximately 11 kilometres West of Meliadine West Camp.

Operational:	1997	1998	1999	2000	2008
	12/6-25/9	6/6-22/9	16/6-20/9	13/6-18/9	14/6-17/9

Benchmark: Bolt on boulder; 100.0 m (non geodetic)
Coordinates: UTM: 530780 m E, 6989640 m N (NAD83)
Transducer: none

Drainage Area: 569 km^2
Lat/Long: 63°02'06" N, 92°23'29" W
Datalogger: none

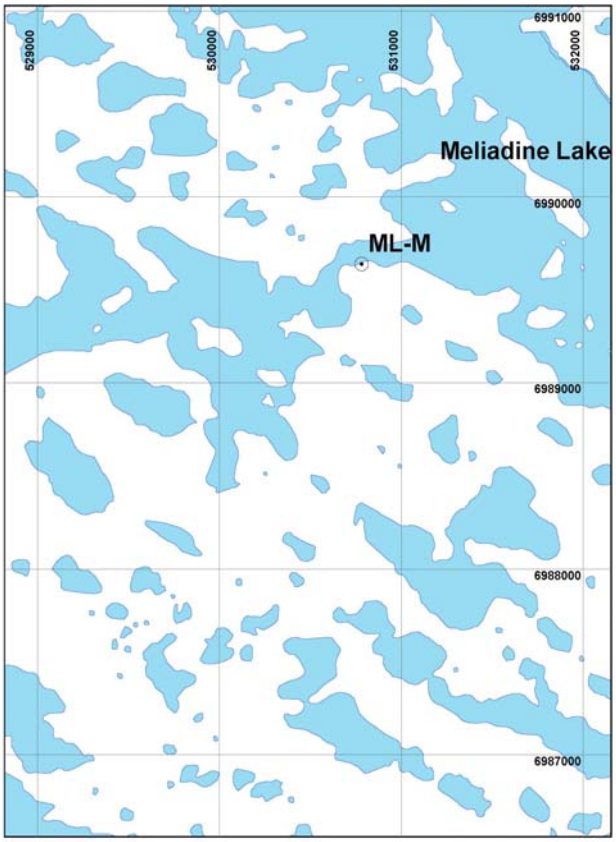
Staff gauge.



Meliadine Lake main outlet hydrometric station.

Downstream view of outlet from staff gauge.

Downstream view of outlet



NTS Mapping of Area.

FACT-ML-M-2008.DOC

Meliadine Lake Main Outlet - 2008

MANUAL DISCHARGE MEASUREMENT (m^3/s)

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	3.268	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	3.369	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	0.662	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-

Meliadine Lake Main Outlet - 2008

WATER SURFACE ELEVATION (m) BASED ON BENCHMARK ELEVATION 100 m (non geodetic)

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	98.879	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	98.945	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	98.720	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	98.951	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-

Project Name:	Comaplex	**Date**	14-Jun	**Crew:**	JL / T
Watercourse:	Meliadine Lake Main Outlet	**Start Time**	12:20		
Crossing ID:	C05 Meliadine Lake Main Outlet	**End Time**	14:00		
BM GPS Location: (given/measured)		**Datalogger SN:**			new ☐
East	530779 BM1 / 530780	Depth Reading			
North	6989638 BM1 / 6989640	Battery			
Survey: BM_Elevation =	100	**Transducer SN:**			new ☐
BM_Reading :	Staff Gaug 0.46	**Meter Type/SN:**			
WS_Reading :		**Photos #**			
WS_Elevation :	98.951	**Obs:**			
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33						Q (m3/s)	#DIV/0!		WS(m)	98.951
34						A(m2)	0.00			
35						B(m)	0.0			

Project Name:	Comaplex	**Date**	10-Jul	**Crew:**	JL / L
Watercourse:	Meliadine Lake Main Outlet	**Start Time**	8:31		
Crossing ID:	C05 Meliadine Lake Main Outlet	**End Time**	10:00		
BM GPS Location: (given/measured)		**Datalogger SN:**			new ☐
East	530779 BM1 / 530780	Depth Reading			
North	6989638 BM1 / 6989640	Battery			
Survey: BM_Elevation =	100	**Transducer SN:**			new ☐
BM_Reading :	2.57 Staff Gaug 0.4	**Meter Type/SN:**			
WS_Reading :	3.625	**Photos #**			
WS_Elevation :	98.945	**Obs:**			
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1	0.0									
2	3.0		0.00		0.00					
3	6.0		0.08		0.01					
4	9.0		0.15		0.02					
5	12.0		0.24		0.02					
6	15.0		0.28		0.06					
7	18.0		0.24		0.06					
8	21.0		0.28		0.15					
9	24.0		0.28		0.18					
10	27.0		0.43		0.19					
11	30.0		0.38		0.19					
12	33.0		0.42		0.16					
13	36.0		0.27		0.21					
14	39.0		0.50		0.23					
15	42.0		0.58		0.22					
16	45.0		0.50		0.19					
17	48.0		0.70		0.16					
18	51.0		0.58		0.17					
19	54.0		0.68		0.12					
20	57.0		0.27		0.11					
21	60.0		0.28		0.05					
22	63.0		0.36		0.05					
23	66.0		0.28		0.03					
24	69.0		0.32		0.02					
25	72.0		0.28		0.02					
26	75.0		0.30		0.01					
27	75.8		0.00		0					
28										
29										
30										
31										
32										
33						Q (m3/s)	3.369		WS(m)	98.945
34						A(m2)	25.69			
35						B(m)	75.8			

Project Name:	Comaplex	**Date**	02-Aug	**Crew:**	DC / AU
Watercourse:	Meliadine Lake Main Outlet	**Start Time**	8:31		
Crossing ID:	C05 Meliadine Lake Main Outlet	**End Time**	10:00		
BM GPS Location: (given/measured)		**Datalogger SN:**			new ☐
East	530779 BM1 / 530780	Depth Reading			
North	6989638 BM1 / 6989640	Battery			
Survey: BM_Elevation =	100	**Transducer SN:**			new ☐
BM_Reading :	1.139 Staff Gaug 0.39	**Meter Type/SN:**			
WS_Reading :	2.26	**Photos #**			
WS_Elevation :	98.879	**Obs:**			
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1	0.0		0.00		0.00					
2	1.0		0.06		0.03					
3	3.0		0.14		0.06					
4	5.0		0.15		0.09					
5	7.0		0.16		0.20					
6	9.0		0.22		0.14					
7	11.0		0.33		0.09					
8	13.0		0.43		0.09					
9	15.0		0.35		0.08					
10	17.0		0.32		0.17					
11	19.0		0.40		0.22					
12	21.0		0.33		0.19					
13	23.0		0.31		0.2					
14	25.0		0.42		0.18					
15	27.0		0.60		0.14					
16	29.0		0.41		0.19					
17	31.0		0.62		0.15					
18	33.0		0.63		0.20					
19	35.0		0.51		0.17					
20	37.0		0.59		0.17					
21	39.0		0.67		0.10					
22	41.0		0.62		0.17					
23	43.0		0.52		0.17					
24	45.0		0.80		0.1					
25	47.0		0.82		0.09					
26	49.0		0.73		0.08					
27	51.0		0.47		0.04					
28	52.0		0.47		0.06					
29	54.0		0.53		0.01					
30	56.0		0.45		0.01					
31	58.0		0.65		0.01					
32	70.0		0.00		0					
33						Q (m3/s)	3.268		WS(m)	98.879
34						A(m2)	30.17			
35						B(m)	70.0			

Project Name:	Comaplex	**Date**	17-Sep	**Crew:**	JL / AV
Watercourse:	Meliadine Lake Main Outlet	**Start Time**	13:20		
Crossing ID:	C05 Meliadine Lake Main Outlet	**End Time**	16:00		
BM GPS Location: (given/measured)		**Datalogger SN:**			new
East	530779 BM1 / 530780	Depth Reading			
North	6989638 BM1 / 6989640	Battery			
Survey: BM_Elevation =	100 / 99.644	**Transducer SN:**			new
BM_Reading :	2 Staff Gauge / 0.32	**Meter Type/SN:**			
WS_Reading :	3.28	**Photos #**			
WS_Elevation :	98.72	**Obs:**			
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1	0.0		0.00		0.00					
2	3.0		0.04		0.00					
3	6.0		0.06		0.00					
4	9.0		0.10		0.00					
5	12.0		0.08		0.01					
6	15.0		0.21		0.05					
7	18.0		0.41		0.02					
8	21.0		0.55		0.02					
9	24.0		0.56		0.01					
10	27.0		0.71		0.01					
11	30.0		0.74		0.02					
12	33.0		0.60		0					
13	36.0		0.85		0.02					
14	39.0		0.91		0					
15	42.0		0.83		0.01					
16	45.0		0.65		0.08					
17	48.0		0.61		0.06					
18	51.0		0.70		0.06					
19	54.0		0.35		0.02					
20	57.0		0.25		0.00					
21	60.0		0.20		0.00					
22	63.0		0.26		0.00					
23	66.0		0.19		0.00					
24	69.0		0.40		0					
25	72.0		0.30		0					
26	75.0		0.30		0					
27	76.5		0.00		0					
28										
29										
30										
31										
32										
33						Q (m3/s)	0.662		WS(m)	97.774
34						A(m2)	32.33			
35						B(m)	76.5			

APPENDIX A-7

MELIADINE LAKE NEAR THE MOUTH

MELIADINE RIVER NEAR THE MOUTH HYDROMETRIC STATION

ML-R

FACTSHEET

LOCATION AND DETAILS

Located approximately 18 kilometres South of Meliadine West Camp.

Operational:	1997	1998	1999	2000	2008
	13/6-25/9	4/6-22/9	17/6-22/9	12/6-19/9	10/7-17/9

Benchmark: Bolt on boulder; 100.0 m (non geodetic)
Coordinates: UTM: 544835 m E, 6971643 m N (NAD83)
Transducer: none

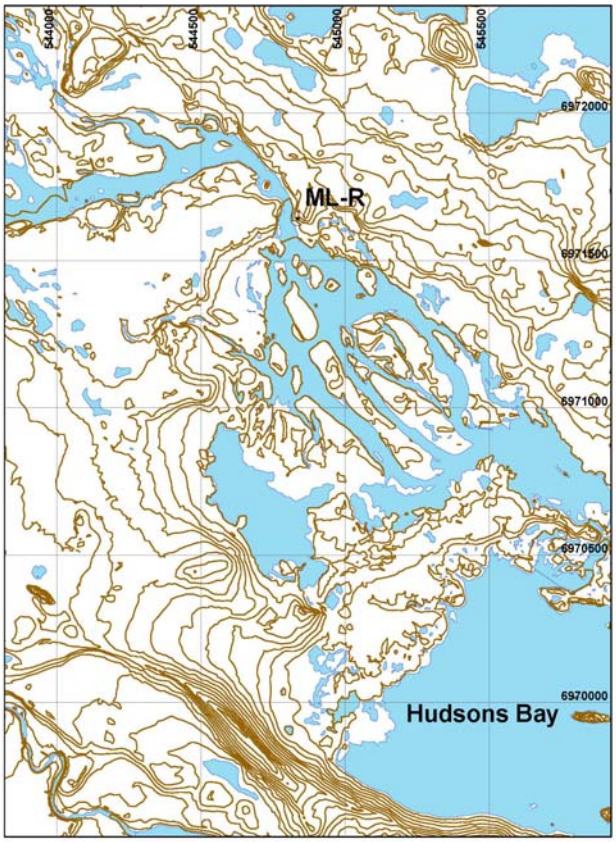
Drainage Area: 689 km^2
Lat/Long: 62°52'19" N, 92°07'07" W
Datalogger: none

Upstream view of the Meliadine River near Rankin Inlet.

Downstream view of the Meliadine River near Rankin Inlet.

Meliadine River near Rankin, June 2008.

Benchmark.



NTS Mapping of Area.

FACT-ML-R-2008.DOC

Meliadine River near the Mouth - 2008

MANUAL DISCHARGE MEASUREMENT (m^3/s)

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	4.758	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	9.000	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	2.206	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-

Project Name:	Comaplex	**Date**	02-Aug	**Crew:**	DC / AU
Watercourse:	Meliadine Lake near Rankin	**Start Time**	13:00		
Crossing ID:	C07 Meliadine Lake n	**End Time**	16:10		
BM GPS Location: (given/measured)		**Datalogger SN:**			new ☐
East	544721 BM1 / 544835	Depth Reading			
North	6971568 BM1 / 6971643	Battery			
Survey: BM_Elevation =	100	**Transducer SN:**			new ☐
BM_Reading :	Staff Gauge	**Meter Type/SN:**			
WS_Reading :		**Photos #**			
WS_Elevation :		**Obs:**			
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1	0.0		0.00		0.00	35.00		0.17		0.010
2	1.0		0.27		0.08	36.00		0.13		0.000
3	2.0		0.33		0.08	41.00		0		0.000
4	3.0		0.43		0.01					
5	4.0		0.55		0.05	0.00		0		0.140
6	5.0		0.62		0.02	1.00		0.17		0.240
7	6.0		0.63		0.20	2.00		0.26		0.220
8	7.0		0.53		0.16	3.00		0.26		0.320
9	8.0		0.50		0.16	4.00		0.29		0.280
10	9.0		0.50		0.17	5.00		0.4		0.180
11	10.0		0.50		0.15	6.00		0.44		0.130
12	11.0		0.50		0.16	7.00		0.45		0.150
13	12.0		0.50		0.16	8.00		0.52		0.210
14	13.0		0.50		0.2	9.00		0.49		0.250
15	14.0		0.51		0.2	10.00		0.5		0.280
16	15.0		0.46		0.21	11.00		0.53		0.290
17	16.0		0.50		0.21	12.00		0.61		0.310
18	17.0		0.52		0.22	13.00		0.65		0.310
19	18.0		0.50		0.24	14.00		0.67		0.370
20	19.0		0.50		0.24	15.00		0.58		0.310
21	20.0		0.45		0.25	16.00		0.58		0.320
22	21.0		0.46		0.21	17.00		0.56		0.330
23	22.0		0.44		0.21	18.00		0.5		0.220
24	23.0		0.40		0.13	19.00		0.46		0.230
25	24.0		0.38		0.14	20.00		0.45		0.190
26	25.0		0.29		0.14	21.00		0.42		0.150
27	26.0		0.32		0.12	22.00		0.32		0.110
28	27.0		0.32		0.13	23.00		0.3		0.100
29	28.0		0.30		0.1	24.00		0		0.000
30	29.0		0.31		0.09			0		
31	30.0		0.25		0.08			0		
32	31.0		0.21		0.07			0		
33	32.0		0.21		0.06	Q (m3/s)	4.758		WS(m)	0.000
34	33.0		0.21		0.02	A(m2)	27.11			
35	34.0		0.16		0.02	B(m)	41.0			

Project Name:	Comaplex	**Date**	17-Sep	**Crew:**	JL / AU
Watercourse:	Meliadine Lake near Rankin	**Start Time**	11:00		
Crossing ID:	C07 Meliadine Lake n	**End Time**	11:45		
BM GPS Location: (given/measured)		**Datalogger SN:**			new ☐
East	544721 BM1 / 544835	Depth Reading			
North	6971568 BM1 / 6971643	Battery			
Survey: BM_Elevation =	100	**Transducer SN:**			new ☐
BM_Reading :	Staff Gaug 0.38	**Meter Type/SN:**			
WS_Reading :		**Photos #**			
WS_Elevation :		**Obs:**			
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1	0		0		0					
2	2		0.25		0.02					
3	4		0.36		0					
4	6		0.4		0					
5	8		0.35		0.09					
6	10		0.42		0.12					
7	12		0.45		0.15					
8	14		0.42		0.21					
9	16		0.4		0.16					
10	18		0.4		0.15					
11	20		0.32		0.05					
12	22		0.25		0.13					
13	24		0.25		0.1					
14	26		0.2		0.08					
15	28		0.2		0.05					
16	30		0.16		0					
17	32		0.08		0.04					
18	34		0		0					
19										
20	0		0		0					
21	2		0.24		0.18					
22	4		0.25		0.17					
23	6		0.25		0.18					
24	8		0.3		0.15					
25	10		0.34		0.05					
26	12		0.425		0.2					
27	14		0.5		0.24					
28	16		0.58		0.23					
29	18		0.41		0.15					
30	20		0.35		0.07					
31	22		0.2		0.1					
32	23.3		0		0					
33						Q (m3/s)	2.206		WS(m)	0.000
34						A(m2)	17.44			
35						B(m)	34.0			

APPENDIX A-8

PUMP LAKE

PUMP LAKE HYDROMETRIC STATION

Pp

FACTSHEET

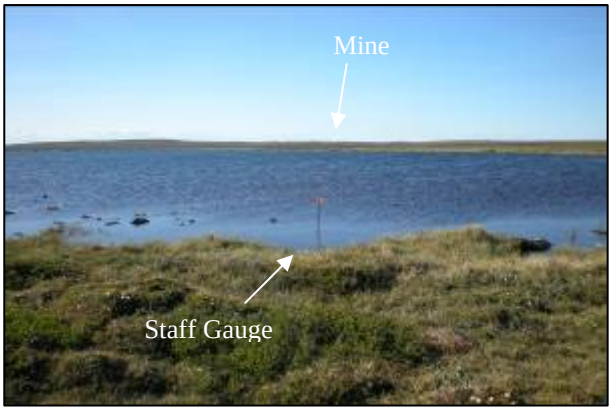
LOCATION AND DETAILS

Located approximately 2.6 kilometres South West of Meliadine West Camp.

Operational:	1997	1998	1999	2000	2008 10/7-16/9

Benchmark:	Bolt on boulder; 100.0 m (non geodetic)	Drainage Area:	n/a km^2
Coordinates:	UTM: 540728 m E, 6986693 m N (NAD83)	Lat/Long:	63°00'27" N, 92°11'44" W
Transducer:	none	Datalogger:	none

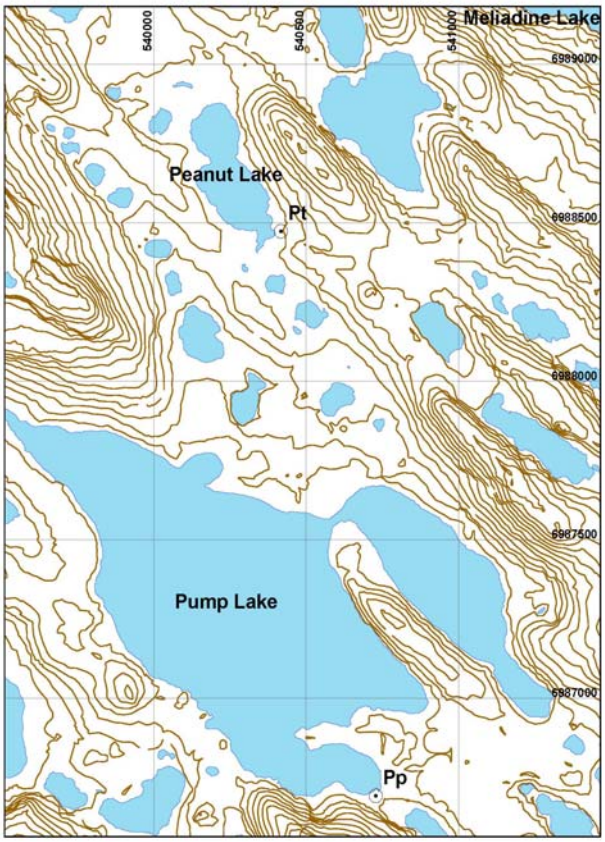
Benmark location (before installation of bolt).



Staff gauge with mine in background.

Pump Lake from outlet..

Downstream view of outlet.



NTS Mapping of Area.

FACT-ML-Pp-2008.DOC

Pump Lake and Outlet - 2008

MANUAL DISCHARGE MEASUREMENT (m^3/s)

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	< 0.001	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	< 0.001	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	< 0.001	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-

Pump Lake - 2008

WATER SURFACE ELEVATION (m) BASED ON BENCHMARK ELEVATION 100 m (non geodetic)

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	99.856	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	99.900	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	99.890	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-

Project Name:	Comaplex	**Date**	10-Jul	**Crew:**	JL / SB
Watercourse:	Pump Lake	**Start Time**	17:00		
Crossing ID:	Pump Lake	**End Time**			
BM GPS Location: (given/measured)		**Datalogger SN:**			new
East	540728	Depth Reading			
North	6986693	Battery			
Survey:	BM_Elevation = 100	**Transducer SN:**			new
BM_Reading :	Staff Gauge	**Meter Type/SN:**			
WS_Reading :		**Photos #**			
WS_Elevation :	99.9	**Obs:**			
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1	0.0		0.00							
2	0.2		0.06		0.00					
3	0.4		0.06		0.00					
4	0.6		0.09		0.03					
5	0.8		0.07		0.00					
6	1.0		0.04		0.00					
7	1.2		0.02		0.00					
8	1.4		0.02		0.00					
9	1.6		0.02		0.00					
10	1.8		0.01		0.00					
11	2.0		0.00							
12										
13										
14										
15										
16										
17										
18										
19										
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22										
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24										
25										
26										
27										
28										
29										
30										
31										
32										
33						Q (m3/s)	0.001		WS(m)	99.900
34						A(m2)	0.28			
35						B(m)	2.0			

Project Name:	Comaplex	**Date**	03-Aug	**Crew:**	DC / AMOS
Watercourse:	Pump Lake	**Start Time**	11:30		
Crossing ID:	Pump Lake	**End Time**			
BM GPS Location: (given/measured)		**Datalogger SN:**			new
East	540728	Depth Reading			
North	6986693	Battery			
Survey:	BM_Elevation = 100	**Transducer SN:**			new
BM_Reading :	1790 Staff Gauge	**Meter Type/SN:**			
WS_Reading :	1934	**Photos #**			
WS_Elevation :	99.856	**Obs:**			
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1										
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25										
26										
27										
28										
29										
30										
31										
32										
33						Q (m3/s)			WS(m)	99.856
34						A(m2)				
35						B(m)	0.0			

Project Name:	Comaplex	**Date**	16-Aug	**Crew:**	JL / AMOS
Watercourse:	Pump Lake	**Start Time**	9:55		
Crossing ID:	Pump Lake	**End Time**			
BM GPS Location: (given/measured)		**Datalogger SN:**			new
East	540728	Depth Reading			
North	6986693	Battery			
Survey:	BM_Elevation = 100	**Transducer SN:**			new
BM_Reading :	1330 Staff Gauge	**Meter Type/SN:**			
WS_Reading :	1440	**Photos #**			
WS_Elevation :	99.89	**Obs:**			
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1										
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3										
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11										
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21										
22										
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24										
25										
26										
27										
28										
29										
30										
31										
32										
33						Q (m3/s)	0.000		WS(m)	99.890
34						A(m2)	0.00			
35						B(m)	0.0			

APPENDIX A-9

PEANUT LAKE

PEANUT LAKE HYDROMETRIC STATION

Pt

FACTSHEET

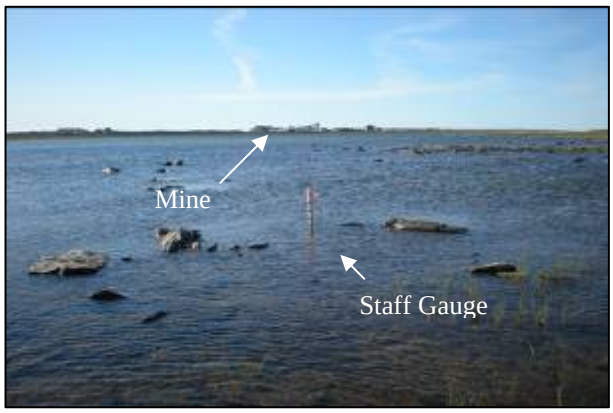
LOCATION AND DETAILS

Located approximately 1.7 kilometres West of Meliadine West Camp.

Operational:	1997	1998	1999	2000	2008 11/7-16/9

Benchmark:	Bolt on boulder; 100.0 m (non geodetic)	Drainage Area:	n/a km^2
Coordinates:	UTM: 540417 m E, 6988473 m N (NAD83)	Lat/Long:	63°01'25" N, 92°12'05" W
Transducer:	none	Datalogger:	none

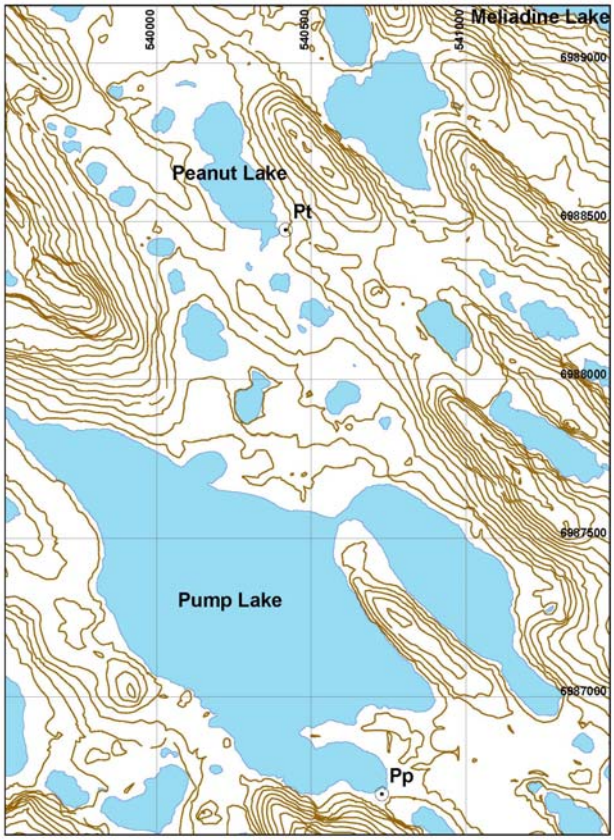
Benchmark.



Staff gauge with mine in background.

Peanut Lake, looking North.

Peanut Lake, looking North West..



NTS Mapping of Area.

FACT-ML-Pt-2008.DOC

Peanut Lake - 2008

WATER SURFACE ELEVATION (m) BASED ON BENCHMARK ELEVATION 100 m (non geodetic)

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	-	-	-	-	-	-	-	99.309	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	99.354	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	99.310	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-

Project Name:	Comaplex	**Date**	11-Jul	**Crew:**	JL / SB
Watercourse:	Peanut Lake	**Start Time**	17:30		
Crossing ID:	Peanut Lake	**End Time**			
BM GPS Location: (given/measured)		**Datalogger SN:**			new
East 540417		Depth Reading			
North 6988473		Battery			
Survey: BM_Elevation =	100	**Transducer SN:**			new
BM_Reading :	559 Staff Gauge	**Meter Type/SN:**			
WS_Reading :	1205 0.675	**Photos #**			
WS_Elevation :	99.354	**Obs:**			
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1										
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24										
25										
26										
27										
28										
29										
30										
31										
32										
33						Q (m3/s)	0.000		WS(m)	99.354
34						A(m2)	0.00			
35						B(m)	0.0			

Project Name:	Comaplex	**Date**	01-Aug	**Crew:**	DC / AMOS
Watercourse:	Peanut Lake	**Start Time**	17:30		
Crossing ID:	Peanut Lake	**End Time**			
BM GPS Location: (given/measured)		**Datalogger SN:**			new
East 540417		Depth Reading			
North 6988473		Battery			
Survey: BM_Elevation =	100	**Transducer SN:**			new
BM_Reading :	1205 Staff Gauge	**Meter Type/SN:**			
WS_Reading :	1896	**Photos #**			
WS_Elevation :	99.309	**Obs:**	photos of staff gauge instead of measurements		
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1										
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24										
25										
26										
27										
28										
29										
30										
31										
32										
33						Q (m3/s)	0.000		WS(m)	99.309
34						A(m2)	0.00			
35						B(m)	0.0			

Project Name:	Comaplex	**Date**	16-Aug	**Crew:**	JL / AMOS
Watercourse:	Peanut Lake	**Start Time**	8:00		
Crossing ID:	Peanut Lake	**End Time**			
BM GPS Location: (given/measured)		**Datalogger SN:**			new
East 540417		Depth Reading			
North 6988473		Battery			
Survey: BM_Elevation =	100	**Transducer SN:**			new
BM_Reading :	860 Staff Gauge	**Meter Type/SN:**			
WS_Reading :	1550	**Photos #**			
WS_Elevation :	99.31	**Obs:**	photos of staff gauge instead of measurements		
BM location inf.	D WL				

STATION Start RDB	DISTANCE FROM RDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)	DISTANCE FROM RDB / LDB BANK (m)	ICE THICKNESS (m)	DEPTH (m)	VELOCITY 0.2 Depth (m/s)	VELOCITY 0.6/0.8 Depth (m/s)
1										
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6										
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8										
9										
10										
11										
12										
13										
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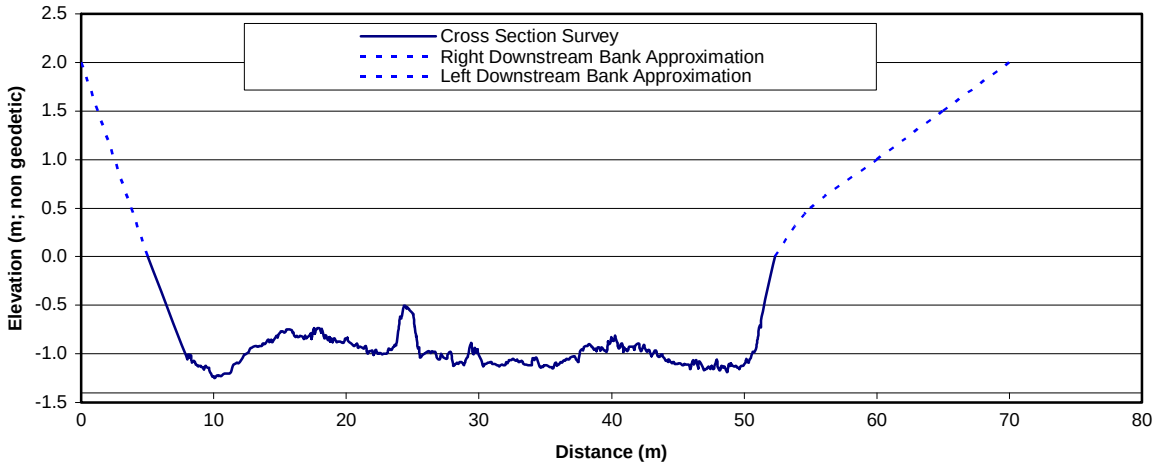
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33						Q (m3/s)	0.000		WS(m)	99.310
34						A(m2)	0.00			
35						B(m)	0.0			

APPENDIX A-10

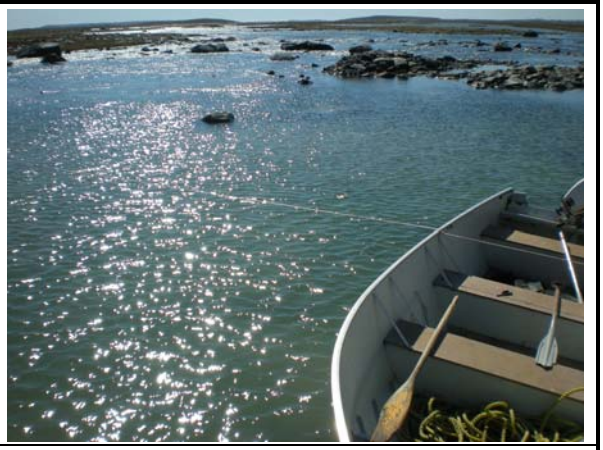
MEALIADINE ROAD CROSSING M2.1

MELIADINE ROAD CROSSING: M2.1

Parameter	Value	Note
Bankfull Width	Approx. 75 m	Measured in the field
Bankfull Depth	Approx. 3.25 m	Measured in the field
Approximate Channel Length	Over 39 km	From NTS Maps
Slope	0.00285 m/m	Measured in the field
Bed Material	50% boulder, 20% cobble, 20% gravel, 10% fines	
Bank Material	Boulders, organics	
Bank Vegetation	Grass	
UTM Coordinates (Easting, Northing)	544835 m, 6971643 m	NAD83 Zone 15
Comment	Erosion was noticed on the right downstream bank. See Fisheries Baseline Studies 2008 (Golder 2008) for additional information.	



10 July 2008. Downstream view of watercourse crossing looking at left downstream bank.



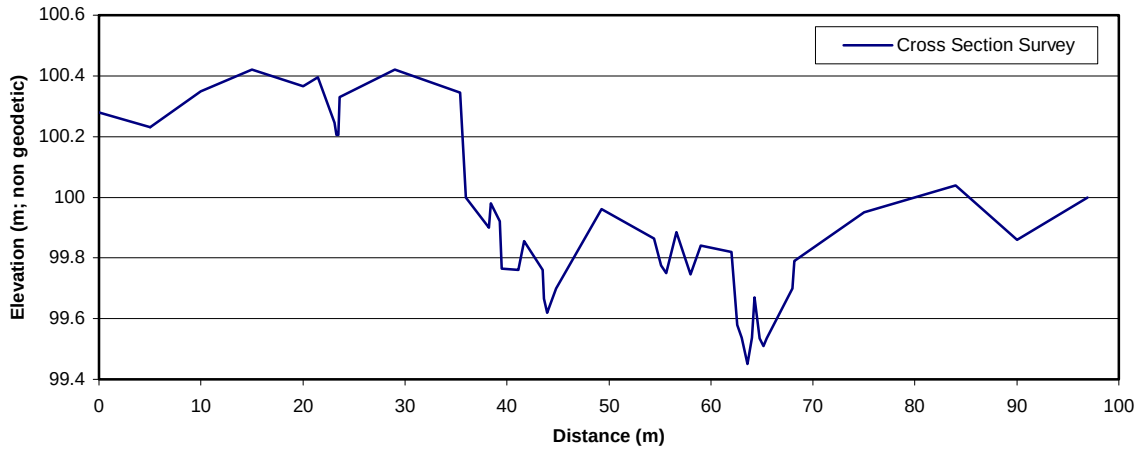
10 July 2008. Downstream view of watercourse crossing.

APPENDIX A-11

DISCOVERY ROAD CROSSING D1.2

DISCOVERY ROAD CROSSING: D1.2

Parameter	Value	Note
Bankfull Width	29 m	Measured in the field
Bankfull Depth	0.34 m	Measured in the field
Approximate Channel Length	530 m	Measured in the field
Slope	n/a	Channel could not be identified at the time of visit
Bed Material	85% organics, 15% silt	
Bank Material	Organics	
Bank Vegetation	Grass	
UTM Coordinates (Easting, Northing)	551732 m, 6981938 m	NAD83 Zone 15
Comment	Ill defined multiple channels. Channel was dry at the time of visit. See Fisheries Baseline Studies 2008 (Golder 2008) for additional information.	



12 July 2008. Upstream view of watercourse crossing.

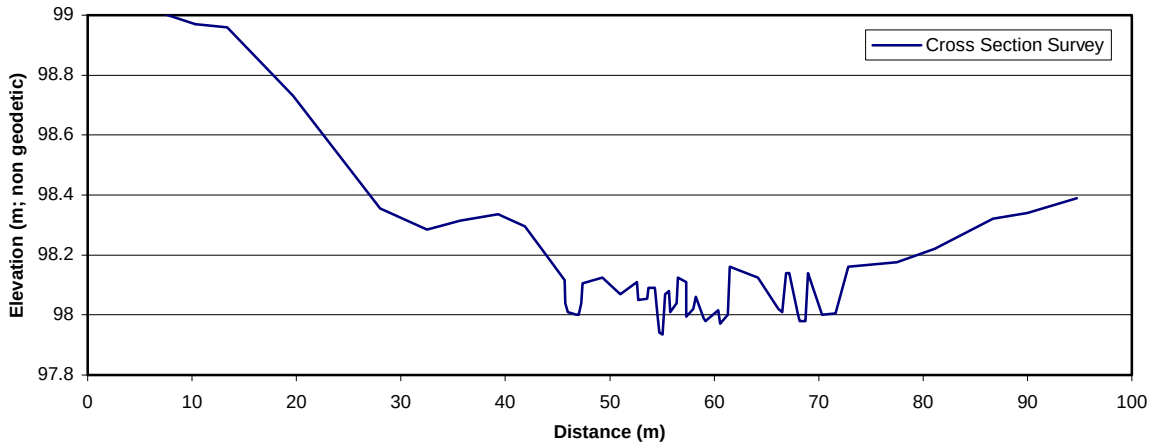
12 July 2008. Downstream view of watercourse crossing.

APPENDIX A-12

DISCOVERY ROAD CROSSING D5.8

DISCOVERY ROAD CROSSING: D5.8

Parameter	Value	Note
Bankfull Width	27 m	Measured in the field
Bankfull Depth	0.22 m	Measured in the field
Approximate Channel Length	270 m	Measured in the field
Slope	0.00927 m/m	Measured in the field.
Bed Material	70% cobble, 15% gravel, 7.5% silt, 2.5% boulder	
Bank Material	Organics	
Bank Vegetation	Grass	
UTM Coordinates (Easting, Northing)	539303 m, 6986680 m	NAD83 Zone 15
Comment	Ill defined multiple channels. See Fisheries Baseline Studies 2008 (Golder 2008) for additional information.	



12 July 2008. Upstream view of watercourse crossing.

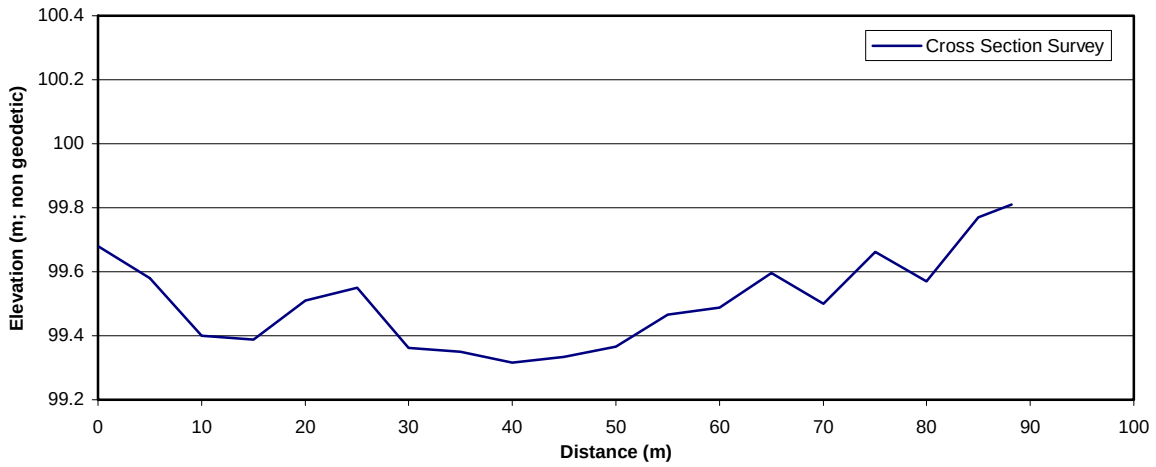
12 July 2008. Downstream view of watercourse crossing.

APPENDIX A-13

DISCOVERY ROAD CROSSING D6.7

DISCOVERY ROAD CROSSING: D6.7

Parameter	Value	Note
Bankfull Width	n/a	Channel could not be identified at the crossing location
Bankfull Depth	n/a	Channel could not be identified at the crossing location
Approximate Channel Length	140 m	Measured in the field from lake to lake
Slope	n/a	Channel could not be identified at the time of visit
Bed Material	50% organics, 35% boulder, 10% cobble, 5% gravel	
Bank Material	Organics	
Bank Vegetation	Grass	
UTM Coordinates (Easting, Northing)	551732 m, 6981938 m	NAD83 Zone 15
Comment	Ill defined multiple channels downstream of crossing location. Channel could not be identified at the crossing location. See Fisheries Baseline Studies 2008 (Golder 2008) for additional information.	

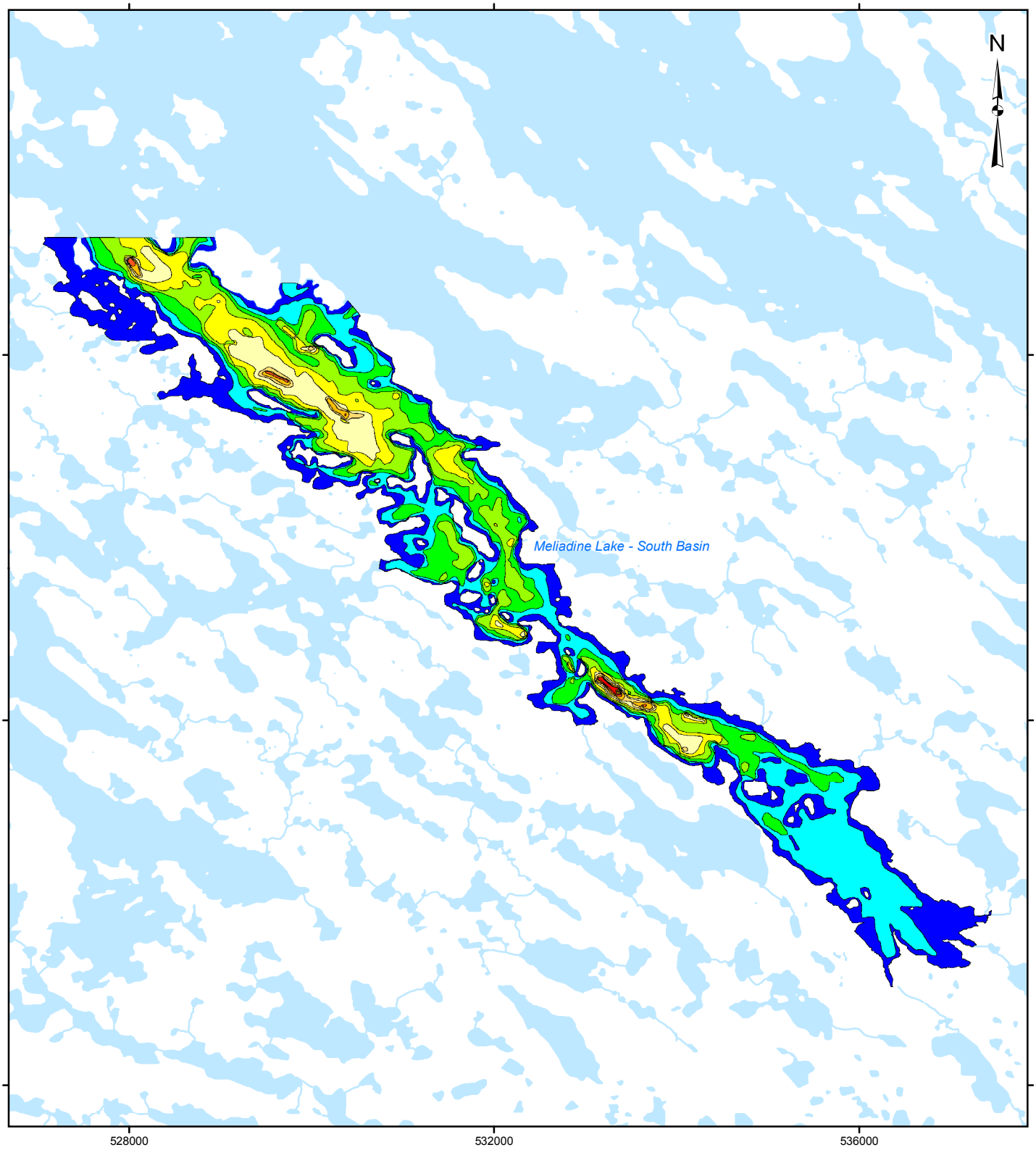


12 July 2008. Upstream view of watercourse crossing.

12 July 2008. Downstream view of watercourse crossing.

APPENDIX A-14

FIGURES A1-A11



LEGEND

WATERCOURSE

WATERBODY

BATHYMETRY (DEPTH IN METRES)

0-2	12-14
2-4	14-16
4-6	16-18
6-8	18-20
8-10	20-22
10-12	22-24

2 0 2

SCALE 1:60,000 KILOMETRES

REFERENCE

Base data obtained from NTDB. Bathymetry obtained from maps generated by RL&L Environmental Services.
Projection: UTM Zone 15 Datum: NAD 83

PROJECT

COMAPLEX MINERALS
MELIADINE WEST

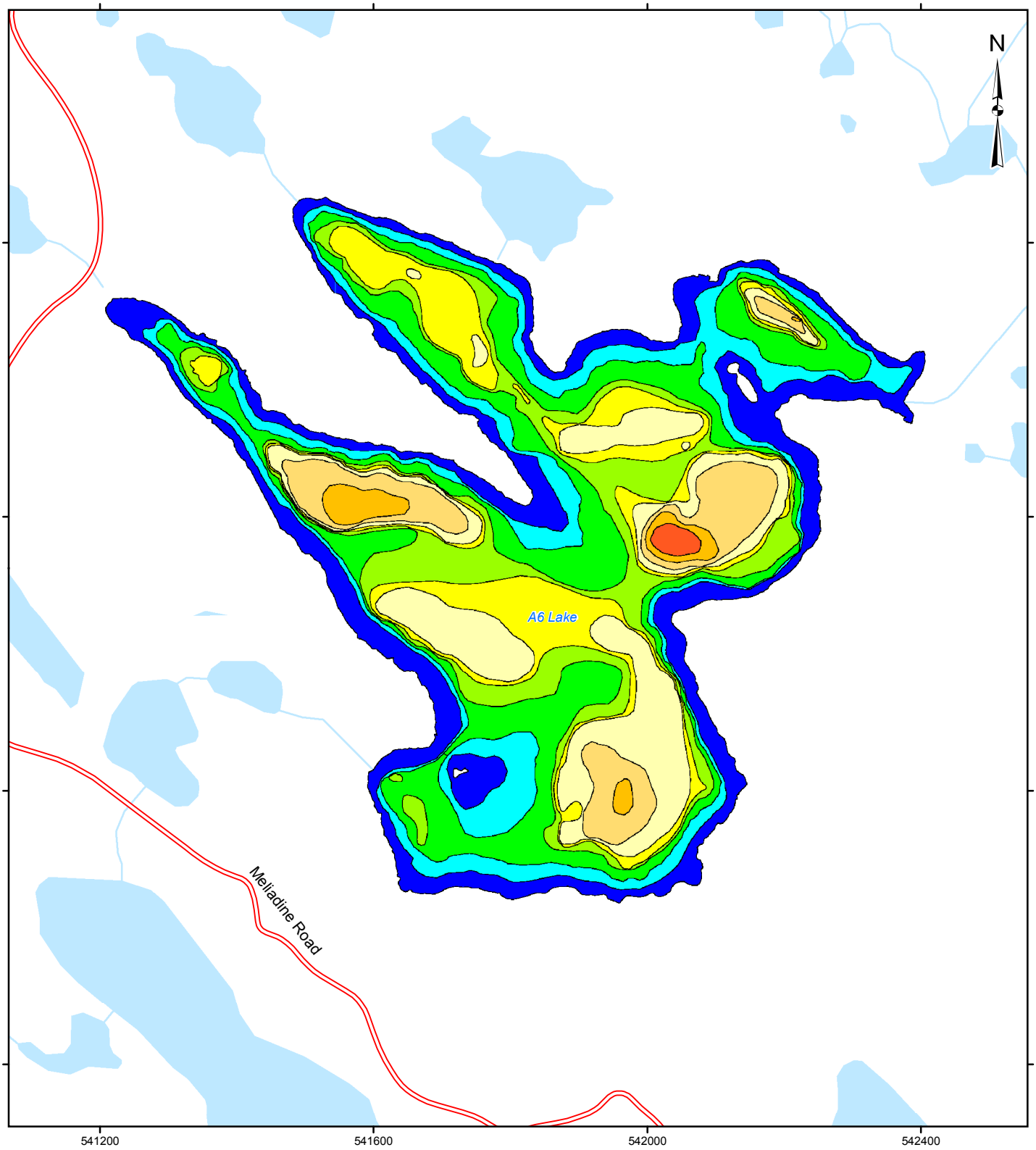
TITLE

BATHYMETRIC MAP OF MELIADINE LAKE SOUTH BASIN

Golder Associates
Calgary, Alberta

PROJECT No. 07-1373-0055			SCALE AS SHOWN	REV. 0
DESIGN	DC	27 Oct. 2008	**FIGURE: A-1**	
GIS	PT	14 Nov. 2008		
CHECK	JL	01 Dec. 2008		
REVIEW	NS	01 Dec. 2008		

I:\2007\07-1373\07-1373-0055\Mapping\MXD\Hydrology\FigA-1_BathymetricMap_MeliadineLakeSouthBasin.mxd



LEGEND

- ROAD - PROPOSED ALIGNMENT
- WATERCOURSE
- WATERBODY

BATHYMETRY (DEPTH IN METRES)

- 0.0-0.5
- 0.5-1.0
- 1.0-1.5
- 1.5-2.0
- 2.0-2.5
- 2.5-3.0
- 3.0-3.5
- 3.5-4.0
- 4.0-4.5

200 0 200

SCALE 1:8,000 METRES

REFERENCE

Base data obtained from NTDB. Bathymetry obtained from maps generated by RL&L Environmental Services.
Projection: UTM Zone 15 Datum: NAD 83

PROJECT

COMAPLEX MINERALS
MELIADINE WEST

TITLE

BATHYMETRIC MAP OF A6 LAKE

Golder Associates
Calgary, Alberta

PROJECT No. 07-1373-0055			SCALE AS SHOWN	REV. 0
DESIGN	DC	27 Oct. 2008	**FIGURE: A-2**	
GIS	PT	14 Nov. 2008		
CHECK	JL	01 Dec. 2008		
REVIEW	NS	01 Dec. 2008		

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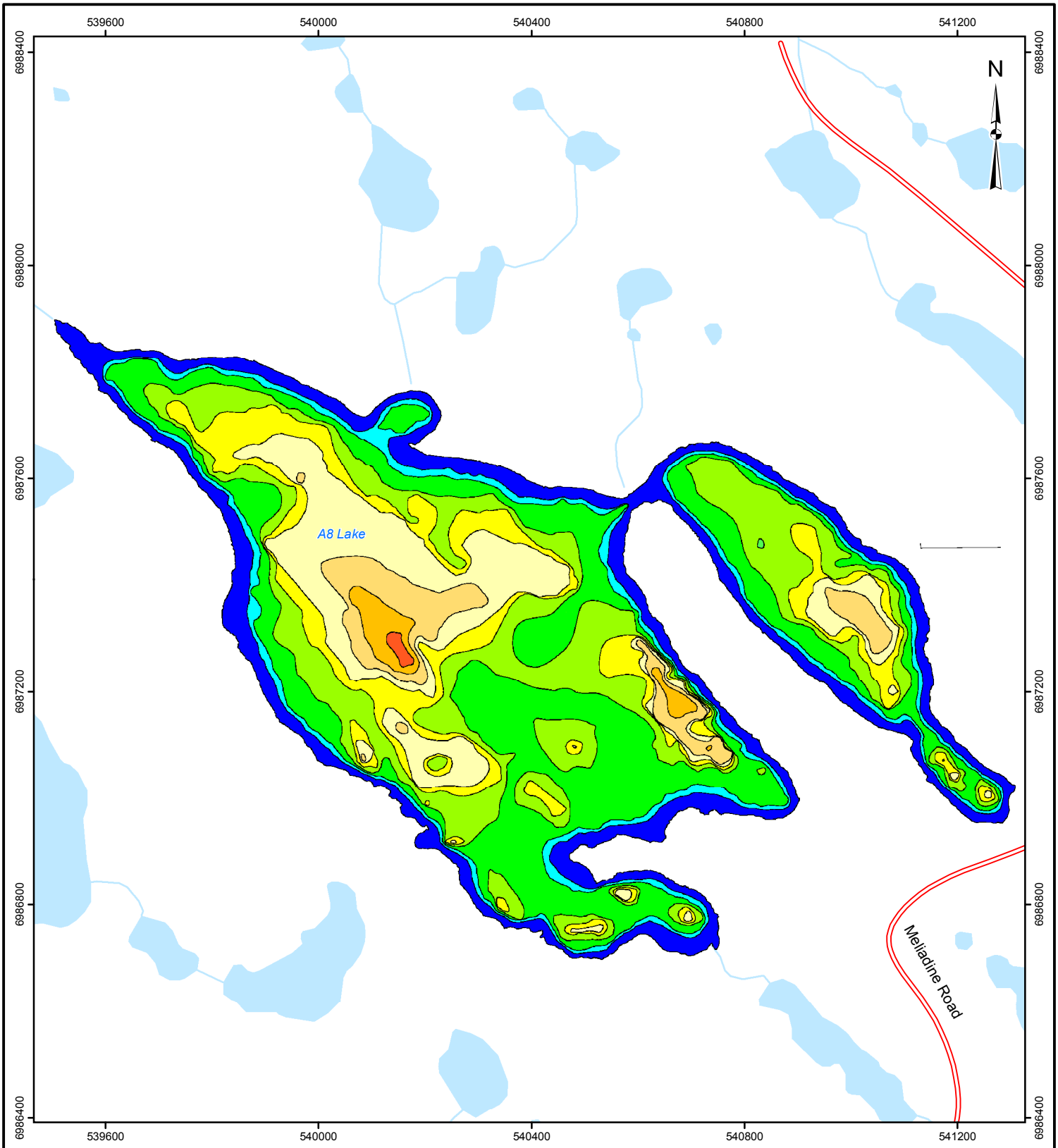

LEGEND

- ROAD - PROPOSED ALIGNMENT
- WATERCOURSE
- WATERBODY

BATHYMETRY (DEPTH IN METRES)

- 0.0-0.5
- 0.5-1.0
- 1.0-1.5
- 1.5-2.0
- 2.0-2.5
- 2.5-3.0
- 3.0-3.5
- 3.5-4.0
- 4.0-4.5

200 0 200

SCALE 1:10,000 METRES

REFERENCE

Base data obtained from NTDB. Bathymetry obtained from maps generated by RL&L Environmental Services.
Projection: UTM Zone 15 Datum: NAD 83

PROJECT

COMAPLEX MINERALS
MELIADINE WEST

TITLE

BATHYMETRIC MAP OF A8 LAKE

Golder Associates
Calgary, Alberta

PROJECT No. 07-1373-0055			SCALE AS SHOWN	REV. 0
DESIGN	DC	27 Oct. 2008	**FIGURE: A-3**	
GIS	PT	14 Nov. 2008		
CHECK	JL	01 Dec. 2008		
REVIEW	NS	01 Dec. 2008		

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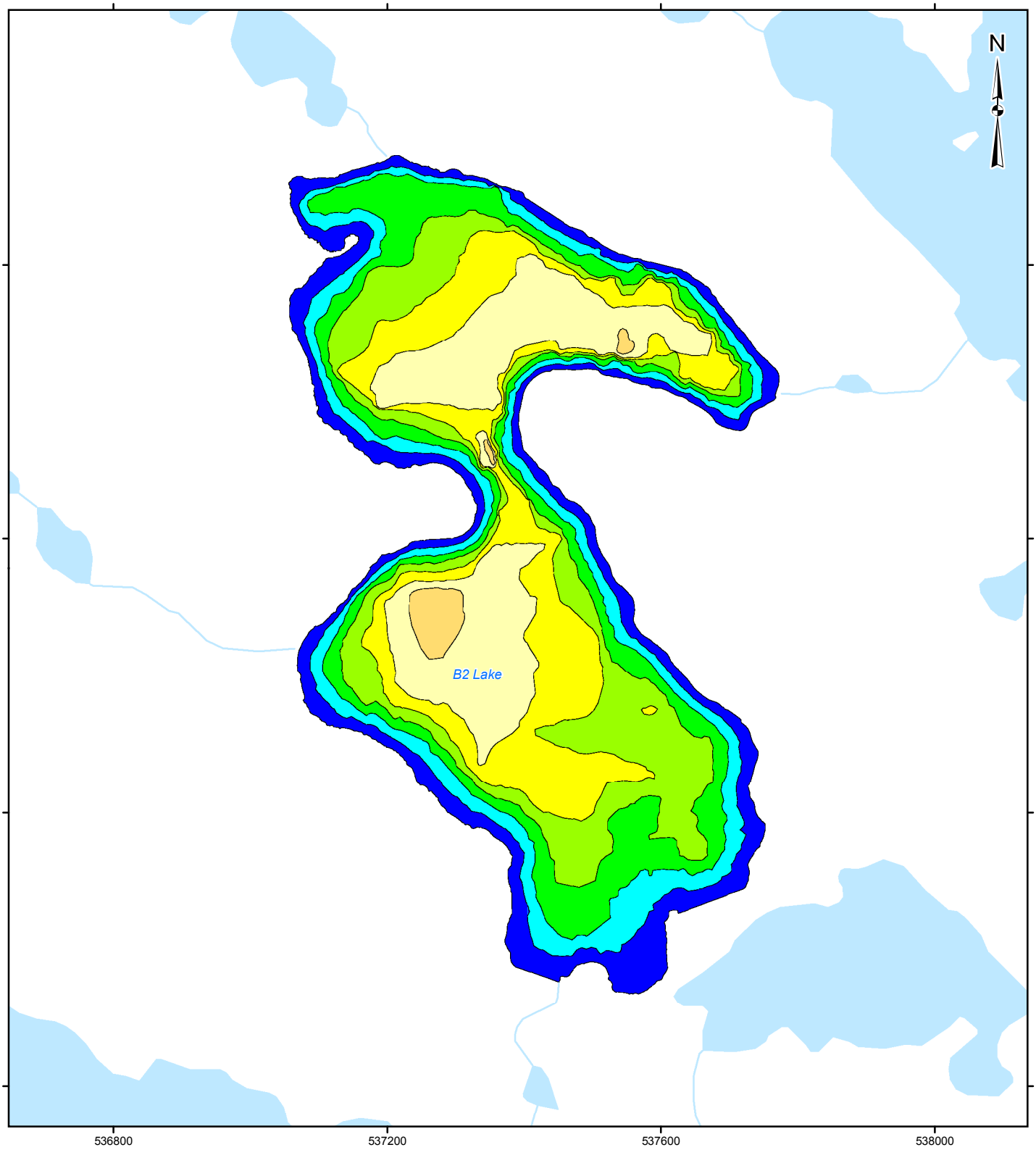

LEGEND

WATERCOURSE

WATERBODY

BATHYMETRY (DEPTH IN METRES)

- 0.0-0.5
- 0.5-1.0
- 1.0-1.5
- 1.5-2.0
- 2.0-2.5
- 2.5-3.0
- 3.0-3.5
- 3.5-4.0

200 0 200

SCALE 1:8,000 METRES

REFERENCE

Base data obtained from NTDB. Bathymetry obtained from maps generated by RL&L Environmental Services.
Projection: UTM Zone 15 Datum: NAD 83

PROJECT

COMAPLEX MINERALS
MELIADINE WEST

TITLE

BATHYMETRIC MAP OF B2 LAKE

Golder Associates
Calgary, Alberta

PROJECT No. 07-1373-0055			SCALE AS SHOWN	REV. 0
DESIGN	DC	27 Oct. 2008	**FIGURE: A-4**	
GIS	PT	14 Nov. 2008		
CHECK	JL	01 Dec. 2008		
REVIEW	NS	01 Dec. 2008		

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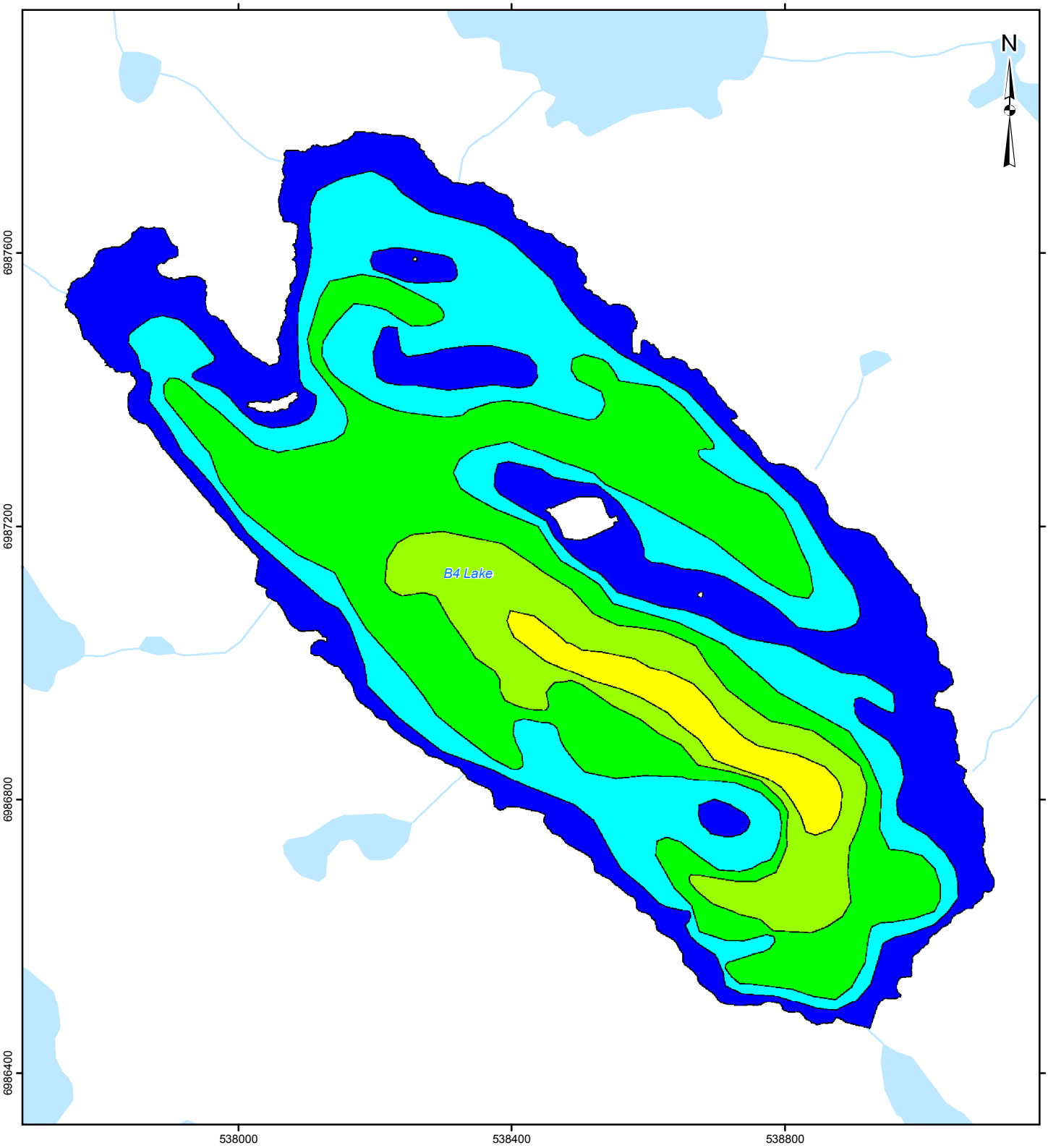

LEGEND

- WATERCOURSE
- WATERBODY

BATHYMETRY (DEPTH IN METRES)

- 0.0-0.5
- 0.5-1.0
- 1.0-1.5
- 1.5-2.0
- 2.0-2.5

200 0 200

SCALE 1:8,000 METRES

REFERENCE

Base data obtained from NTDB. Bathymetry obtained from maps generated by RL&L Environmental Services.
Projection: UTM Zone 15 Datum: NAD 83

PROJECT

COMAPLEX MINERALS
MELIADINE WEST

TITLE

BATHYMETRIC MAP OF B4 LAKE

Golder Associates
Calgary, Alberta

PROJECT No. 07-1373-0055			SCALE AS SHOWN	REV. 0
DESIGN	DC	27 Oct. 2008	**FIGURE: A-5**	
GIS	PT	14 Nov. 2008		
CHECK	JL	01 Dec. 2008		
REVIEW	NS	01 Dec. 2008		

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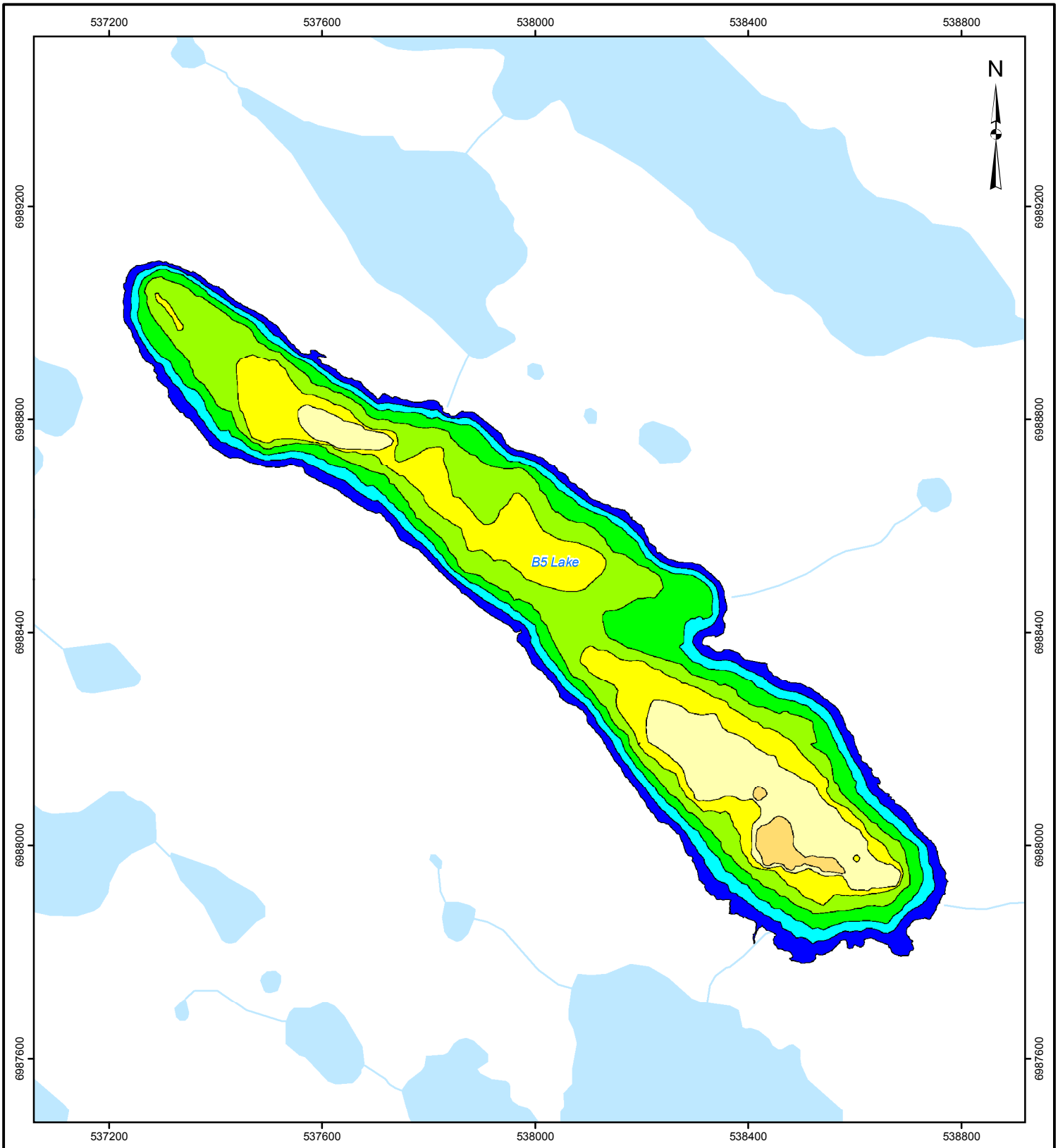

LEGEND

WATERCOURSE

WATERBODY

BATHYMETRY (DEPTH IN METRES)

- 0.0-0.5
- 0.5-1.0
- 1.0-1.5
- 1.5-2.0
- 2.0-2.5
- 2.5-3.0
- 3.0-3.5

200 0 200

SCALE 1:10,000 METRES

REFERENCE

Base data obtained from NTDB. Bathymetry obtained from maps generated by RL&L Environmental Services.
Projection: UTM Zone 15 Datum: NAD 83

PROJECT

COMAPLEX MINERALS
MELIADINE WEST

TITLE

BATHYMETRIC MAP OF B5 LAKE

Golder Associates
Calgary, Alberta

PROJECT No. 07-1373-0055			SCALE AS SHOWN	REV. 0
DESIGN	DC	27 Oct. 2008	**FIGURE: A-6**	
GIS	PT	14 Nov. 2008		
CHECK	JL	01 Dec. 2008		
REVIEW	NS	01 Dec. 2008		

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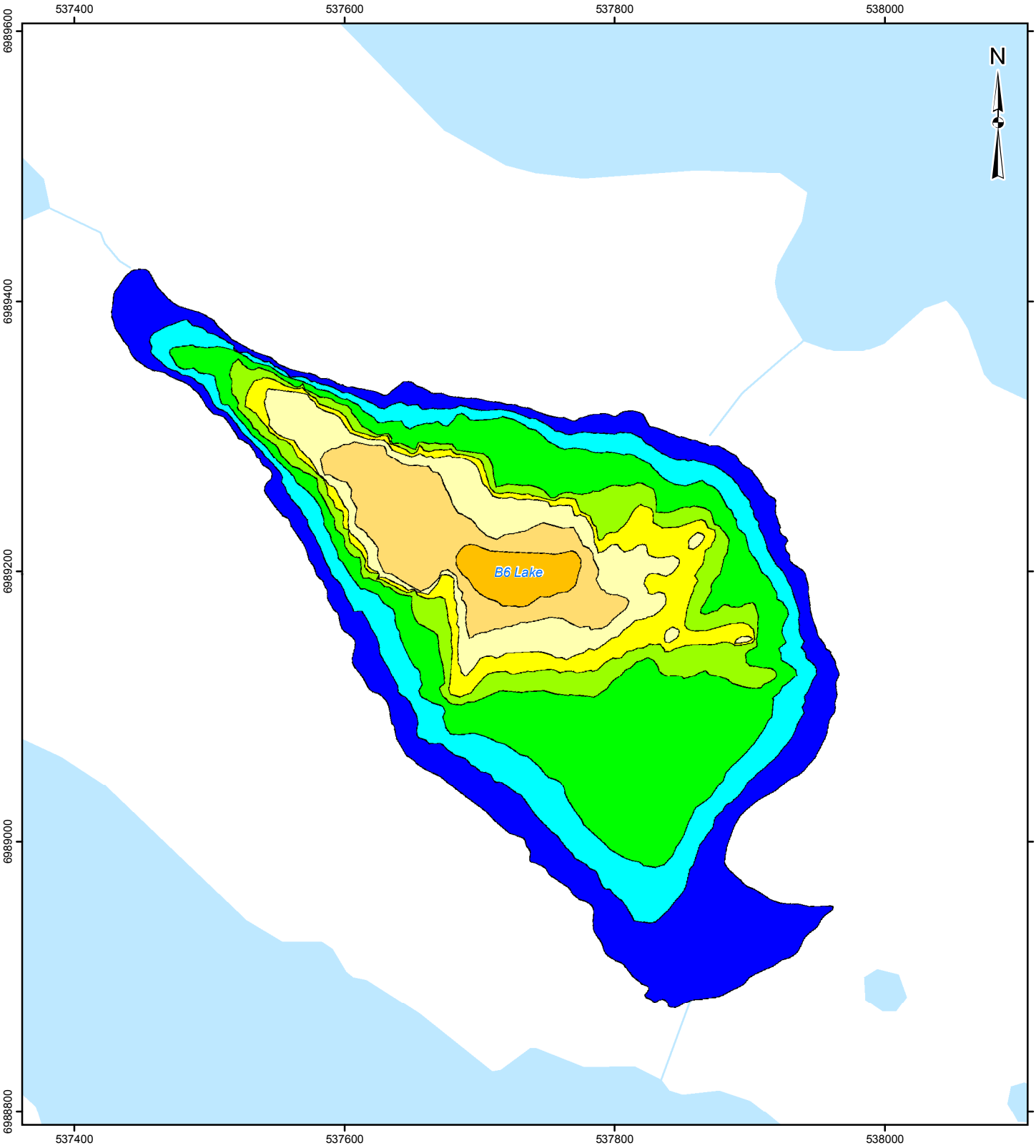

LEGEND

WATERCOURSE

WATERBODY

BATHYMETRY (DEPTH IN METRES)

- 0.0-0.5
- 0.5-1.0
- 1.0-1.5
- 1.5-2.0
- 2.0-2.5
- 2.5-3.0
- 3.0-3.5
- 3.5-4.0

100 0 100

SCALE 1:4,000 METRES

REFERENCE

Base data obtained from NTDB. Bathymetry obtained from maps generated by RL&L Environmental Services.
Projection: UTM Zone 15 Datum: NAD 83

PROJECT

COMAPLEX MINERALS
MELIADINE WEST

TITLE

BATHYMETRIC MAP OF B6 LAKE

Golder Associates
Calgary, Alberta

PROJECT No. 07-1373-0055			SCALE AS SHOWN	REV. 0
DESIGN	DC	27 Oct. 2008	**FIGURE: A-7**	
GIS	PT	14 Nov. 2008		
CHECK	JL	01 Dec. 2008		
REVIEW	NS	01 Dec. 2008		

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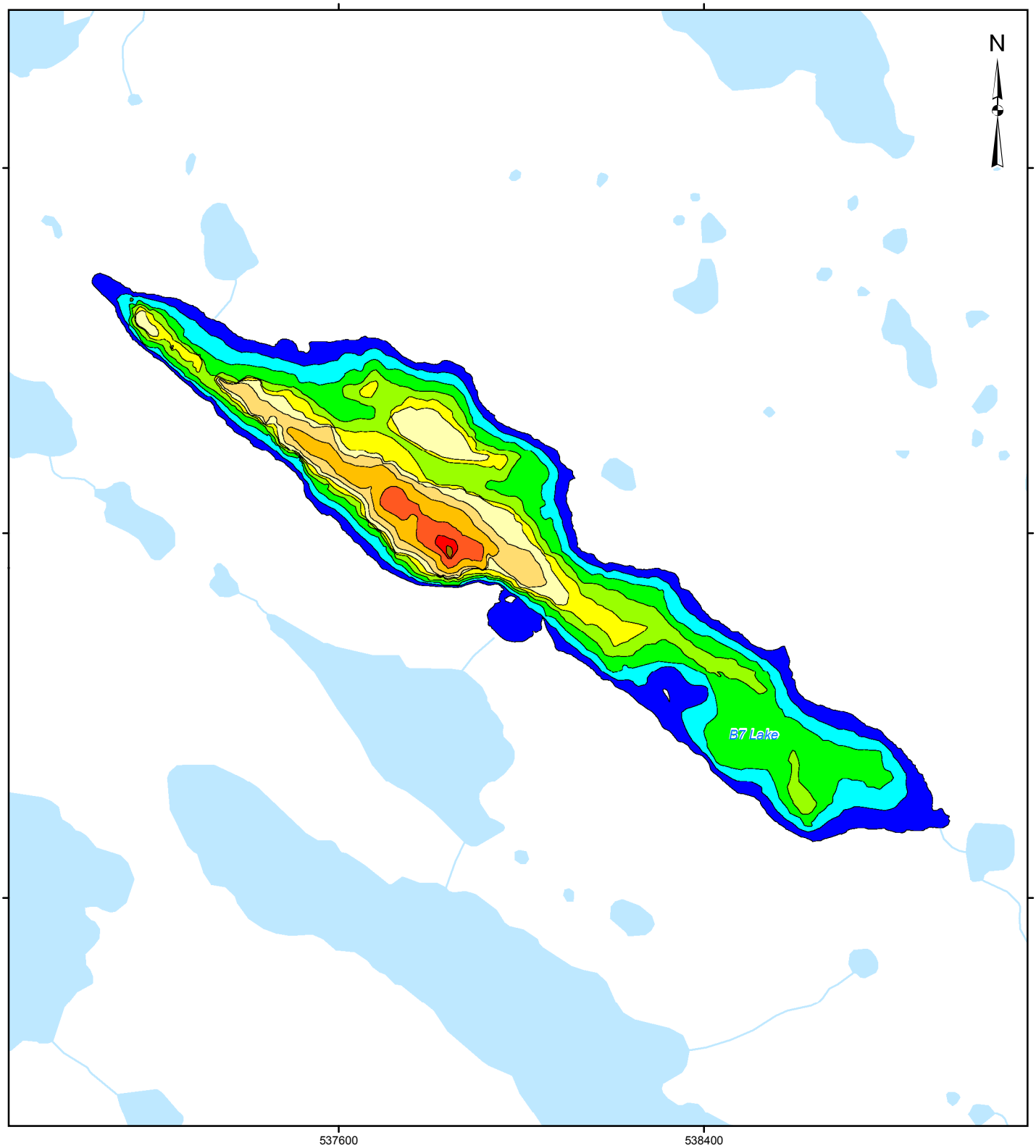

LEGEND

WATERCOURSE

WATERBODY

BATHYMETRY (DEPTH IN METRES)

0.0-0.5	3.0-3.5
0.5-1.0	3.5-4.0
1.0-1.5	4.0-4.5
1.5-2.0	4.5-5.0
2.0-2.5	5.0-5.5
2.5-3.0	

400 0 400

SCALE 1:12,000 METRES

REFERENCE

Base data obtained from NTDB. Bathymetry obtained from maps generated by RL&L Environmental Services.
Projection: UTM Zone 15 Datum: NAD 83

PROJECT

COMAPLEX MINERALS
MELIADINE WEST

TITLE

BATHYMETRIC MAP OF B7 LAKE

Golder Associates
Calgary, Alberta

PROJECT No. 07-1373-0055			SCALE AS SHOWN	REV. 0
DESIGN	DC	27 Oct. 2008	**FIGURE: A-8**	
GIS	PT	14 Nov. 2008		
CHECK	JL	01 Dec. 2008		
REVIEW	NS	01 Dec. 2008		

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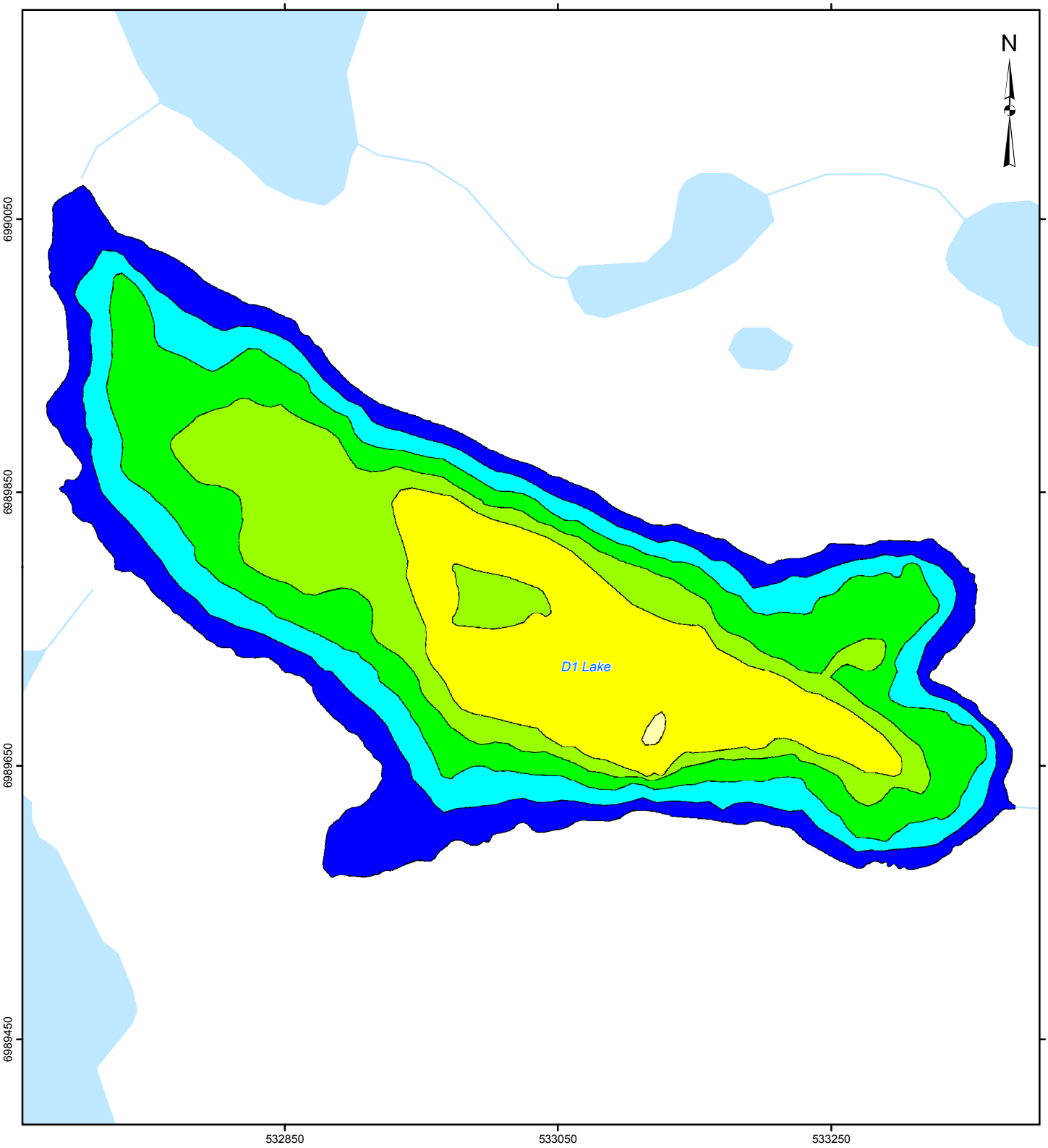

LEGEND

- WATERCOURSE
- WATERBODY

BATHYMETRY (DEPTH IN METRES)

- 0.0-0.5
- 0.5-1.0
- 1.0-1.5
- 1.5-2.0
- 2.0-2.5
- 2.5-3.0

100 0 100

SCALE 1:4,000 METRES

REFERENCE

Base data obtained from NTDB. Bathymetry obtained from maps generated by RL&L Environmental Services.
Projection: UTM Zone 15 Datum: NAD 83

PROJECT

COMAPLEX MINERALS
MELIADINE WEST

TITLE

BATHYMETRIC MAP OF D1 LAKE

Golder Associates
Calgary, Alberta

PROJECT No. 07-1373-0055			SCALE AS SHOWN	REV. 0
DESIGN	DC	27 Oct. 2008	**FIGURE: A-9**	
GIS	PT	14 Nov. 2008		
CHECK	JL	01 Dec. 2008		
REVIEW	NS	01 Dec. 2008		

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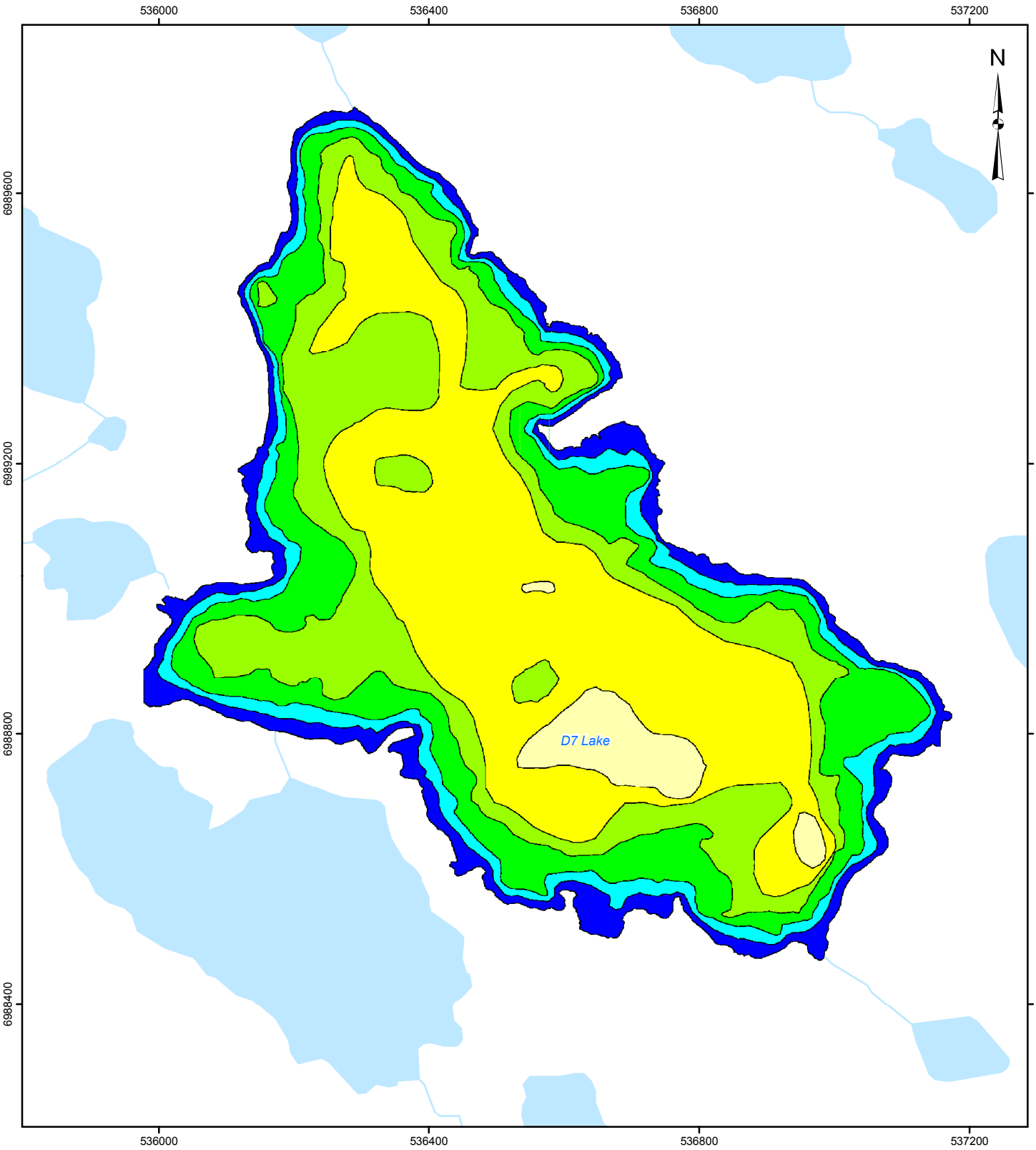

LEGEND

- WATERCOURSE
- WATERBODY

BATHYMETRY (DEPTH IN METRES)

- 0.0-0.5
- 0.5-1.0
- 1.0-1.5
- 1.5-2.0
- 2.0-2.5
- 2.5-3.0

200 0 200

SCALE 1:8,000 METRES

REFERENCE

Base data obtained from NTDB. Bathymetry obtained from maps generated by RL&L Environmental Services.
Projection: UTM Zone 15 Datum: NAD 83

PROJECT

COMAPLEX MINERALS
MELIADINE WEST

TITLE

BATHYMETRIC MAP OF D7 LAKE

Golder Associates
Calgary, Alberta

PROJECT No. 07-1373-0055			SCALE AS SHOWN	REV. 0
DESIGN	DC	27 Oct. 2008	**FIGURE: A-10**	
GIS	PT	14 Nov. 2008		
CHECK	JL	01 Dec. 2008		
REVIEW	NS	01 Dec. 2008		

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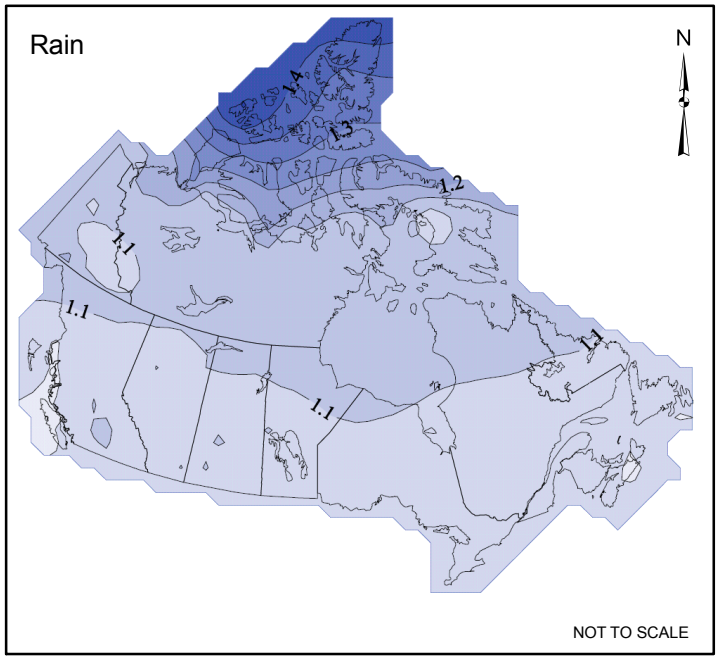

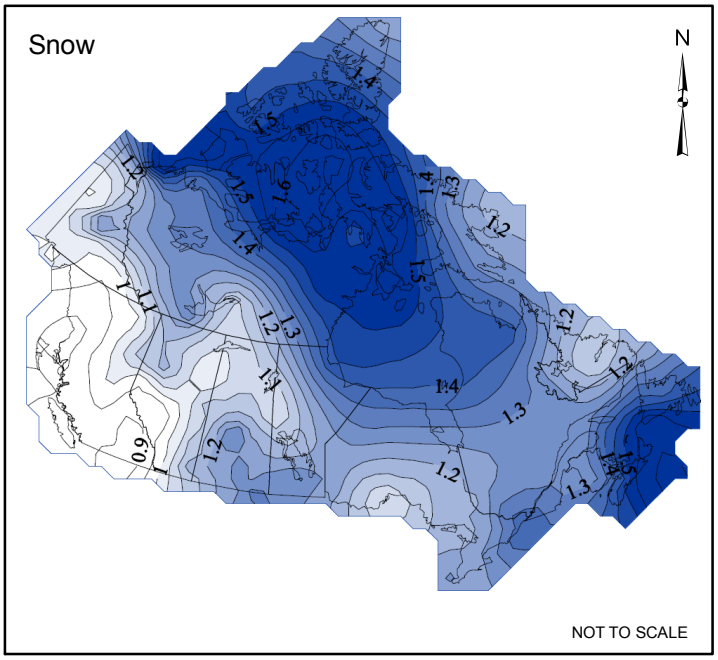

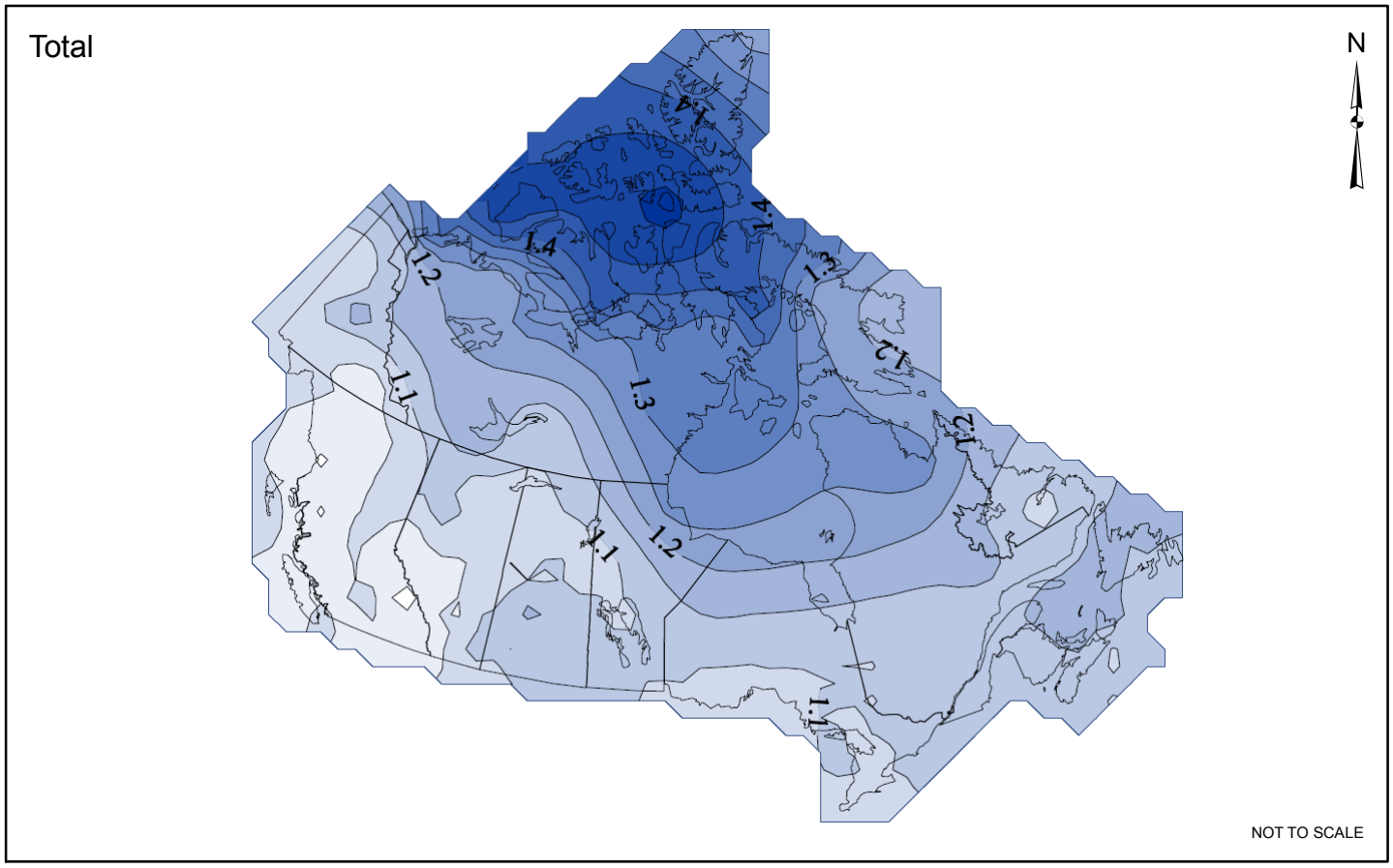

LEGEND

MAGNITUDE OF CORRECTION FOR PRECIPITATION

- 0.80 - 085
- 0.85 - 0.90
- 0.90 - 0.95
- 0.95 - 1.00
- 1.00 - 1.05
- 1.05 - 1.10
- 1.10 - 1.15
- 1.15 - 1.20
- 1.20 - 1.25
- 1.25 - 1.30
- 1.30 - 1.35
- 1.35 - 1.40
- 1.40 - 1.45
- 1.45 - 1.50
- 1.50 - 1.55
- 1.55 - 1.60
- 1.60 - 1.65

REFERENCE

Magnitude of correction data obtained from Environment Canada (Mekis, 2004).

PROJECT

COMAPLEX MINERALS
MELIADINE WEST

TITLE

VARIATION OF UNDERCATCH FACTORS ACROSS CANADA

Golder Associates
Calgary, Alberta

PROJECT No. 07-1373-0055			SCALE AS SHOWN	REV. 0
DESIGN	DC	27 Oct. 2008	**FIGURE: A-11**	
GIS	PT	18 Nov. 2008		
CHECK	JL	01 Dec. 2008		
REVIEW	NS	01 Dec. 2008		

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APPENDIX B

LOCAL CLIMATE DATA

APPENDIX B-1

RANKIN INLET
PRECIPITATION DATA

Rankin Inlet 1981 - 2008 : Monthly & Annual Rainfall Data
Calendar Year

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1981	0	0	0	0	16.2	31	57.8	31	40.4	22.6	0	0	199
1982	0	0	0	0	4.9	10.7	65.7	30.7	17.9	41.1	0	0	171
1983	0	0	0	0	0	100.9	33.1	39	41.5	19.2	0.2	0	233.9
1984	0	0	0	3.6	0.2	35.7	12	95.9	24.7	2.8	0	0	174.9
1985	0	0	0	0	0	13.1	30.8	123.3	71.3	17.2	0	0	255.7
1986	0	0	0	0.2	19.3	23.6	10.4	85.1	30	0.2	0	0	168.8
1987	0	0	0	3.9	1.2	30.1	27.8	74.2	24	0.2	0	0	161.4
1988	0	0	0	0	0	14.6	22.6	32.2	29.6	10.7	0.6	0	110.3
1989	0	0	0	0	0	14	48.6	23.1	39.3	8.4	0	0	133.4
1990	0	0	0	0	7.9	29.7	118.6	62.9	32.7	1.6	0	0	253.4
1991	0	0	0	0	13	8.5	47.9	36.4	102	20.6	0	0.2	228.6
1992	0	0	0	0	4	11.4	3.6	75.8	45	0	0	0	139.8
1993	0	0	0	0	11.8	1.4	48.8	56.6	19.4	0	0	0	138
1994	0	0	0	0	0	20.8	4	39	50.8	5.4	0	0	120
1995	0	0	0	0.2	0	10.2	69.8	75.2	17	25.4	0	0	197.8
1996	0	0	0	0	0	37.6	10.4	50.2	60	1	0	0	159.2
1997	0	0	0	0.6	4	47.6	17.8	11.8	13	45.1	0	0	139.9
1998	0	1	0	0.2	32.4	9.2	49.8	49.4	43.4	3.2	1.2	0	189.8
1999	0	0	0	3.4	29.2	50.4	41.6	69.8	60.8	13.2	0	0	268.4
2000	0	0	0	7.2	2.7	0.2	29.4	73.2	20.4	0.2	0	0	133.3
2001	0	0	0	0.2	5.6	26.4	58.2	82.8	34.2	22.6	0.4	0	230.4
2002	0	0	0	0	0	14.6	44.4	63.6	45.6	5.8	0	0.2	174.2
2003	0	0	0	0	22.4	25.8	40.8	37	8.8	21.8	1.8	0	158.4
2004	0	0	0	0	0	5	12.8	45.6	86	7.4	0	0	156.8
2005	0	0	0	7	19.6	28.2	32	22.4	40.8	13	0	0	163
2006	0	0	0.8	6.2	4.4	26.4	44.2	50.4	30.8	54.6	4.8	0	222.6
2007	0	0	0	1	0.8	16	25.3	80.5	22.3	16	0	0	161.9
2008	0	0	0	0.2	2	3.7	26.8	74	41.1	5.6			153.4
Mean	**0**	**0**	**0**	**1.2**	**7.4**	**23.8**	**37.3**	**56.2**	**39.0**	**13.8**	**0.3**	**0**	**178.5**
Minimum	**0**	**0**	**0**	**0**	**0**	**0.2**	**3.6**	**11.8**	**8.8**	**0**	**0**	**0**	**110.3**
Maximum	**0**	**1**	**0.8**	**7.2**	**32.4**	**100.9**	**118.6**	**123.3**	**102**	**54.6**	**4.8**	**0.2**	**268.4**
Std Dev	**0**	**0.2**	**0.2**	**2.3**	**9.7**	**20.1**	**24.7**	**25.9**	**22.1**	**14.4**	**1**	**0.1**	**43.8**

Rankin Inlet 1981 - 2008 : Monthly & Annual Rainfall Data
Hydrologic Year

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual
1982	22.6	0	0	0	0	0	0	4.9	10.7	65.7	30.7	17.9	152.5
1983	41.1	0	0	0	0	0	0	0	100.9	33.1	39	41.5	255.6
1984	19.2	0.2	0	0	0	0	3.6	0.2	35.7	12	95.9	24.7	191.5
1985	2.8	0	0	0	0	0	0	0	13.1	30.8	123.3	71.3	241.3
1986	17.2	0	0	0	0	0	0.2	19.3	23.6	10.4	85.1	30	185.8
1987	0.2	0	0	0	0	0	3.9	1.2	30.1	27.8	74.2	24	161.4
1988	0.2	0	0	0	0	0	0	0	14.6	22.6	32.2	29.6	99.2
1989	10.7	0.6	0	0	0	0	0	0	14	48.6	23.1	39.3	136.3
1990	8.4	0	0	0	0	0	0	7.9	29.7	118.6	62.9	32.7	260.2
1991	1.6	0	0	0	0	0	0	13	8.5	47.9	36.4	102	209.4
1992	20.6	0	0.2	0	0	0	0	4	11.4	3.6	75.8	45	160.6
1993	0	0	0	0	0	0	0	11.8	1.4	48.8	56.6	19.4	138
1994	0	0	0	0	0	0	0	0	20.8	4	39	50.8	114.6
1995	5.4	0	0	0	0	0	0.2	0	10.2	69.8	75.2	17	177.8
1996	25.4	0	0	0	0	0	0	0	37.6	10.4	50.2	60	183.6
1997	1	0	0	0	0	0	0.6	4	47.6	17.8	11.8	13	95.8
1998	45.1	0	0	0	1	0	0.2	32.4	9.2	49.8	49.4	43.4	230.5
1999	3.2	1.2	0	0	0	0	3.4	29.2	50.4	41.6	69.8	60.8	259.6
2000	13.2	0	0	0	0	0	7.2	2.7	0.2	29.4	73.2	20.4	146.3
2001	0.2	0	0	0	0	0	0.2	5.6	26.4	58.2	82.8	34.2	207.6
2002	22.6	0.4	0	0	0	0	0	0	14.6	44.4	63.6	45.6	191.2
2003	5.8	0	0.2	0	0	0	0	22.4	25.8	40.8	37	8.8	140.8
2004	21.8	1.8	0	0	0	0	0	0	5	12.8	45.6	86	173
2005	7.4	0	0	0	0	0	7	19.6	28.2	32	22.4	40.8	157.4
2006	13	0	0	0	0	0.8	6.2	4.4	26.4	44.2	50.4	30.8	176.2
2007	54.6	4.8	0	0	0	0	1	0.8	16	25.3	80.5	22.3	205.3
2008	16	0	0	0	0	0	0.2	2	3.7	26.8	74	41.1	163.8
Mean	**14**	**0**	**0**	**0**	**0**	**0**	**1**	**7**	**23**	**36**	**58**	**39**	**179**
Minimum	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.2**	**3.6**	**12**	**9**	**96**
Maximum	**54.6**	**4.8**	**0.2**	**0**	**1.0**	**0.8**	**7.2**	**32.4**	**100.9**	**118.6**	**123.3**	**102.0**	**260.2**
Std Dev	**14.6**	**1.0**	**0.1**	**0**	**0.2**	**0.2**	**2.3**	**9.6**	**20.4**	**24.5**	**25.7**	**22.1**	**46.3**

Rankin Inlet 1981 - 2008 : Monthly & Annual Snowfall Data
Calendar Year

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1981	9.1	21.1	10.5	12.1	8.7	1.6	0	0	0	18.4	26.1	2.6	110.2
1982	0.7	3.2	12.2	17.5	17.6	5	0.2	0.2	15.5	22.4	7.6	6.6	108.7
1983	9.8	3.1	18.9	3.1	28.5	0.4	0	0	1.6	20.4	5.2	6.2	97.2
1984	7.5	19.6	7.1	17.2	0.6	1.6	0	0	1.5	22	19.8	5.6	102.5
1985	4.2	10.4	17.7	24.8	6.8	1.4	0	4.8	10.2	52	71.2	6	209.5
1986	12	0.2	11.6	3.3	5.8	15.2	0	0	8.8	28.6	7.6	10.4	103.5
1987	9.8	5.4	30.2	38.1	5.2	34.4	0	0	3.6	13.1	31.6	18	189.4
1988	1.2	1	11	9.2	27.7	4	0	0	0.2	22.2	23	17.9	117.4
1989	6.5	1.6	4.6	3.4	24	0	0	0	11.2	10.4	4.8	2	68.5
1990	6.8	15.1	21.7	10.3	1.8	23.5	0	0	3.2	22.7	47.5	10	162.6
1991	4.5	2.8	25	34.6	18.8	0	0	0	12	37.7	16.2	14.2	165.8
1992	14.8	7	2.6	9.8	13	2.8	0	0	9.8	16.6	26.2	2	104.6
1993	0.4	5.6	2	8.2	19.2	5.4	0	0	3.8	11.4	6.2	8.6	70.8
1994	1.6	0.4	6.8	26	6	0.8	0	0	0	18.6	30.4	20.5	111.1
1995	6.2	1.8	2.8	15	10.4	0	0	0	2.4	12.4	13.6	9	73.6
1996	6.2	42.4	10	1.8	0.8	1	0	0	1	22.2	10.8	12.6	108.8
1997	3.4	8	4.6	10.6	4	0	0	0	0	41	7.6	20.4	99.6
1998	4.6	12.8	5.8	9.4	5.2	0	0	0	1.2	25	24.8	13.8	102.6
1999	10.2	10.6	15.6	7.2	18.8	0.4	0	0	0.8	14	23.2	19.8	120.6
2000	2.8	12.6	34.8	7.2	5.2	1.2	0	0	1.8	22.4	8.2	11.8	108
2001	10	8.8	8.6	4.8	29.6	0.4	2.4	0	0	39.4	23	18.8	145.8
2002	7.6	7.4	2.4	26.7	11.6	2.4	0	0	2.4	31.7	11	11.8	115
2003	13.8	0.6	14.8	5.4	4.4	13.4	0	0	6.4	31.8	31	25.2	146.8
2004	4.2	7.2	18	5.8	12	5.6	0	0	4.2	73.4	39	11	180.4
2005	15.6	10.4	20.6	94.8	35.4	0	0	0	4.2	10.8	41.4	25	258.2
2006	33.4	5	9.2	27.8	22.2	0	0	0	0	15.6	16.6	22.8	152.6
2007	1	12.2	7.2	55.2	18	2.8	0	0	4.6	15.7	12.6	11.7	141
2008	21.2	2.6	8.3	38.7	7.6	14.4	0	0	0	18.2			83
Mean	**7.7**	**8.8**	**12.5**	**18.1**	**13.4**	**4.6**	**0.1**	**0.2**	**4.1**	**24.6**	**21.7**	**12.8**	**128.1**
Minimum	**0.4**	**0.2**	**2**	**1.8**	**0.6**	**0**	**0**	**0**	**0**	**10.4**	**4.8**	**2**	**68.5**
Maximum	**33.4**	**42.4**	**34.8**	**94.8**	**35.4**	**34.4**	**2.4**	**4.8**	**15.5**	**73.4**	**71.2**	**25.2**	**258.2**
Std Dev	**6.7**	**8.8**	**8.6**	**19.9**	**9.8**	**8.1**	**0.5**	**0.9**	**4.4**	**14**	**15.4**	**6.9**	**43.3**

Rankin Inlet 1981 - 2008 : Monthly & Annual Snowfall Data
Hydrologic Year

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual
1982	18.4	26.1	2.6	0.7	3.2	12.2	17.5	17.6	5	0.2	0.2	15.5	119.2
1983	22.4	7.6	6.6	9.8	3.1	18.9	3.1	28.5	0.4	0	0	1.6	102
1984	20.4	5.2	6.2	7.5	19.6	7.1	17.2	0.6	1.6	0	0	1.5	86.9
1985	22	19.8	5.6	4.2	10.4	17.7	24.8	6.8	1.4	0	4.8	10.2	127.7
1986	52	71.2	6	12	0.2	11.6	3.3	5.8	15.2	0	0	8.8	186.1
1987	28.6	7.6	10.4	9.8	5.4	30.2	38.1	5.2	34.4	0	0	3.6	173.3
1988	13.1	31.6	18	1.2	1	11	9.2	27.7	4	0	0	0.2	117
1989	22.2	23	17.9	6.5	1.6	4.6	3.4	24	0	0	0	11.2	114.4
1990	10.4	4.8	2	6.8	15.1	21.7	10.3	1.8	23.5	0	0	3.2	99.6
1991	22.7	47.5	10	4.5	2.8	25	34.6	18.8	0	0	0	12	177.9
1992	37.7	16.2	14.2	14.8	7	2.6	9.8	13	2.8	0	0	9.8	127.9
1993	16.6	26.2	2	0.4	5.6	2	8.2	19.2	5.4	0	0	3.8	89.4
1994	11.4	6.2	8.6	1.6	0.4	6.8	26	6	0.8	0	0	0	67.8
1995	18.6	30.4	20.5	6.2	1.8	2.8	15	10.4	0	0	0	2.4	108.1
1996	12.4	13.6	9	6.2	42.4	10	1.8	0.8	1	0	0	1	98.2
1997	22.2	10.8	12.6	3.4	8	4.6	10.6	4	0	0	0	0	76.2
1998	41	7.6	20.4	4.6	12.8	5.8	9.4	5.2	0	0	0	1.2	108
1999	25	24.8	13.8	10.2	10.6	15.6	7.2	18.8	0.4	0	0	0.8	127.2
2000	14	23.2	19.8	2.8	12.6	34.8	7.2	5.2	1.2	0	0	1.8	122.6
2001	22.4	8.2	11.8	10	8.8	8.6	4.8	29.6	0.4	2.4	0	0	107
2002	39.4	23	18.8	7.6	7.4	2.4	26.7	11.6	2.4	0	0	2.4	141.7
2003	31.7	11	11.8	13.8	0.6	14.8	5.4	4.4	13.4	0	0	6.4	113.3
2004	31.8	31	25.2	4.2	7.2	18	5.8	12	5.6	0	0	4.2	145
2005	73.4	39	11	15.6	10.4	20.6	94.8	35.4	0	0	0	4.2	304.4
2006	10.8	41.4	25	33.4	5	9.2	27.8	22.2	0	0	0	0	174.8
2007	15.6	16.6	22.8	1	12.2	7.2	55.2	18	2.8	0	0	4.6	156
2008	15.7	12.6	11.7	21.2	2.6	8.3	38.7	7.6	14.4	0	0	0	132.8
Mean	**24.9**	**21.7**	**12.8**	**8.1**	**8.1**	**12.4**	**19.1**	**13.3**	**5.0**	**0.1**	**0.2**	**4.1**	**129.7**
Minimum	**10.4**	**4.8**	**2.0**	**0.4**	**0.2**	**2.0**	**1.8**	**0.6**	**0.0**	**0.0**	**0.0**	**0.0**	**67.8**
Maximum	**73.4**	**71.2**	**25.2**	**33.4**	**42.4**	**34.8**	**94.8**	**35.4**	**34.4**	**2.4**	**4.8**	**15.5**	**304.4**
Std Dev	**14.2**	**15.4**	**6.9**	**7.2**	**8.5**	**8.7**	**20.3**	**9.9**	**8.3**	**0.5**	**0.9**	**4.4**	**47.4**

Rankin Inlet 1981 - 2008 : Monthly & Annual Precipitaion Data
Calendar Year

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1981	9.1	20.3	10.5	11.5	24.9	32.6	57.8	31	40.4	41	25.2	2.6	306.9
1982	0.7	3.2	11.7	17.5	22.3	15.7	65.9	30.9	33.4	63.5	7.6	4.9	277.3
1983	8.9	2.5	18.9	2.5	26.1	101.3	33.1	39	43.1	38.6	4.9	4.5	323.4
1984	6.9	13.3	6.5	20.2	0.8	36.9	12	95.9	26	22.5	15.8	5.4	262.2
1985	4	9.6	17.5	23.6	6.4	14.5	30.8	128.1	81.5	61.4	66.2	5.6	449.2
1986	11.8	0.2	11.4	3.3	24.9	37.8	10.4	85.1	38.6	28.6	7.6	10.4	270.1
1987	9.8	5.4	30.2	42	6.4	64.5	27.8	74.2	27.6	15.9	31.6	17.1	352.5
1988	1.2	1	10.6	9	25.9	18.6	22.6	32.2	29.8	31.5	22.1	16.9	221.4
1989	6.7	1.6	4.4	3.2	20.8	14	48.6	23.1	50.5	18.4	4.8	2	198.1
1990	6.8	14.1	20.7	9.6	9.7	50.8	118.6	62.9	35.9	23.6	37.4	9.8	399.9
1991	3.9	2.8	24.1	33.4	30.1	8.5	47.9	36.4	114	57.3	16.2	13.2	387.8
1992	14.8	6.8	2.6	9.8	17	14.2	3.6	75.8	54.8	16.6	26.1	2	244.1
1993	0.4	5.6	2	8.2	31	6.8	48.8	56.6	23.2	11.4	6.2	8.6	208.8
1994	1.6	0.4	6.8	26	6	21.6	4	39	50.8	24	30.8	20.5	231.5
1995	6.2	1.8	2.8	15.2	10.4	10.2	69.8	75.2	19.4	37.8	13.4	9	271.2
1996	6.2	42.4	10	1.8	0.6	38.6	10.4	50.2	61	23	10.4	10.6	265.2
1997	3.2	7.6	3.6	11.1	7.8	47.6	17.8	11.8	13	92.7	5.8	18.6	240.6
1998	4.6	13.8	4.6	9.6	37.6	9.2	49.8	49.4	44.6	28.2	25.6	12.8	289.8
1999	10.2	10.6	15.6	10.6	48	50.8	41.6	69.8	61.6	26.2	23.2	19.8	388
2000	2.8	12.6	34.8	14.4	7.9	1.4	29.4	73.2	22.2	22.6	7.8	12.6	241.7
2001	10	8.8	8.6	5	35.6	26.8	61.2	82.8	34.2	58	23.4	17.4	371.8
2002	7	7.4	2	26.7	11.6	17	44.4	63.6	48	37.1	11	12	287.8
2003	13.8	0.6	14.8	4.4	26.8	39.2	40.8	37	15.2	53.6	32.2	25.2	303.6
2004	4.2	7.2	18	5.8	12	10.6	12.8	45.6	90.2	80.8	39	11	337.2
2005	15.6	10.4	20.6	101.8	55	28.2	32	22.4	45	23.8	40.2	22.4	417.4
2006	32.6	5	10	34	26.6	26.4	44.2	50.4	30.8	70.2	20.6	22.8	373.6
2007	1	12.2	7.2	50	17.6	18.8	25.3	80.5	26.9	30.7	12.2	11.7	294.1
2008	21.2	2.6	8.3	38.9	9.6	18.1	26.8	74.0	41.1	23.6			240.6
Mean	**7.6**	**8.4**	**12.2**	**18.9**	**20.4**	**28.2**	**37.5**	**56.4**	**43**	**38**	**21**	**12.2**	**302.8**
Minimum	**0.4**	**0.2**	**2**	**1.8**	**0.6**	**1.4**	**3.6**	**11.8**	**13**	**11.4**	**4.8**	**2**	**198.1**
Maximum	**32.6**	**42.4**	**34.8**	**101.8**	**55**	**101.3**	**118.6**	**128.1**	**114**	**92.7**	**66.2**	**25.2**	**449.2**
Std Dev	**6.6**	**8.5**	**8.6**	**20.8**	**13.8**	**21.6**	**24.8**	**26.4**	**23.3**	**21.1**	**14.3**	**6.7**	**67.4**

Rankin Inlet 1981 - 2008 : Monthly & Annual Precipitation Data
Hydrologic Year

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual
1982	41	25.2	2.6	0.7	3.2	11.7	17.5	22.3	15.7	65.9	30.9	33.4	22.5
1983	63.5	7.6	4.9	8.9	2.5	18.9	2.5	26.1	101.3	33.1	39	43.1	29.3
1984	38.6	4.9	4.5	6.9	13.3	6.5	20.2	0.8	36.9	12	95.9	26	22.2
1985	22.5	15.8	5.4	4	9.6	17.5	23.6	6.4	14.5	30.8	128.1	81.5	30.0
1986	61.4	66.2	5.6	11.8	0.2	11.4	3.3	24.9	37.8	10.4	85.1	38.6	29.7
1987	28.6	7.6	10.4	9.8	5.4	30.2	42	6.4	64.5	27.8	74.2	27.6	27.9
1988	15.9	31.6	17.1	1.2	1	10.6	9	25.9	18.6	22.6	32.2	29.8	18.0
1989	31.5	22.1	16.9	6.7	1.6	4.4	3.2	20.8	14	48.6	23.1	50.5	20.3
1990	18.4	4.8	2	6.8	14.1	20.7	9.6	9.7	50.8	118.6	62.9	35.9	29.5
1991	23.6	37.4	9.8	3.9	2.8	24.1	33.4	30.1	8.5	47.9	36.4	114	31.0
1992	57.3	16.2	13.2	14.8	6.8	2.6	9.8	17	14.2	3.6	75.8	54.8	23.8
1993	16.6	26.1	2	0.4	5.6	2	8.2	31	6.8	48.8	56.6	23.2	18.9
1994	11.4	6.2	8.6	1.6	0.4	6.8	26	6	21.6	4	39	50.8	15.2
1995	24	30.8	20.5	6.2	1.8	2.8	15.2	10.4	10.2	69.8	75.2	19.4	23.9
1996	37.8	13.4	9	6.2	42.4	10	1.8	0.6	38.6	10.4	50.2	61	23.5
1997	23	10.4	10.6	3.2	7.6	3.6	11.1	7.8	47.6	17.8	11.8	13	14.0
1998	92.7	5.8	18.6	4.6	13.8	4.6	9.6	37.6	9.2	49.8	49.4	44.6	28.4
1999	28.2	25.6	12.8	10.2	10.6	15.6	10.6	48	50.8	41.6	69.8	61.6	32.1
2000	26.2	23.2	19.8	2.8	12.6	34.8	14.4	7.9	1.4	29.4	73.2	22.2	22.3
2001	22.6	7.8	12.6	10	8.8	8.6	5	35.6	26.8	61.2	82.8	34.2	26.3
2002	58	23.4	17.4	7	7.4	2	26.7	11.6	17	44.4	63.6	48	27.2
2003	37.1	11	12	13.8	0.6	14.8	4.4	26.8	39.2	40.8	37	15.2	21.1
2004	53.6	32.2	25.2	4.2	7.2	18	5.8	12	10.6	12.8	45.6	90.2	26.5
2005	80.8	39	11	15.6	10.4	20.6	101.8	55	28.2	32	22.4	45	38.5
2006	23.8	40.2	22.4	32.6	5	10	34	26.6	26.4	44.2	50.4	30.8	28.9
2007	70.2	20.6	22.8	1	12.2	7.2	50	17.6	18.8	25.3	80.5	26.9	29.4
2008	30.7	12.2	11.7	21.2	2.6	8.3	38.9	9.6	18.1	26.8	74	41.1	24.6
Mean	**38.5**	**21.0**	**12.2**	**8.0**	**7.8**	**12.2**	**19.9**	**19.8**	**27.7**	**36.7**	**57.4**	**43.1**	**25.4**
Minimum	**11.4**	**4.8**	**2.0**	**0.4**	**0.2**	**2.0**	**1.8**	**0.6**	**1.4**	**3.6**	**11.8**	**13.0**	**14.0**
Maximum	**92.7**	**66.2**	**25.2**	**32.6**	**42.4**	**34.8**	**101.8**	**55.0**	**101.3**	**118.6**	**128.1**	**114.0**	**38.5**
Std Dev	**21.3**	**14.3**	**6.7**	**7.1**	**8.3**	**8.7**	**21.1**	**13.9**	**21.7**	**25.0**	**26.5**	**23.8**	**5.6**

Rankin Inlet 2008: Daily Rainfall Data
Calendar Year

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0	0	0	0	0	0	0	0	0	0		
2	0	0	0	0	0	0	0.2	0	0	0		
3	0	0	0	0	0	10	0	2.6	0	0		
4	0	0	0	0	0	0	0	1	0	0		
5	0	0	0	0	0	0	0	0.6	4.8	0		
6	0	0	0	0	0	1.2	0.6	0	0.6	0		
7	0	0	0	0	0.8	0	0	1.2	0	3.2		
8	0	0	0	0	0	0	0	0	0	2.4		
9	0	0	0	0	0	0	0	2.4	1.2	0		
10	0	0	0	0	0	0	0	0	0.2	0		
11	0	0	0	0.2	0	0	0	0	0.4	0		
12	0	0	0	0	1	0	0	0	0	0		
13	0	0	0	0	0.2	0	0	0	0	0		
14	0	0	0	0	0	0	0.4	24	5.1	0		
15	0	0	0	0	0	0	1	1.2	0	0		
16	0	0	0	0	0	0	1.6	0	0	0		
17	0	0	0	0	0	0	0.4	0	0	0		
18	0	0	0	0	0	0	0	0	0	0		
19	0	0	0	0	0	0	0	3.3	0	0		
20	0	0	0	0	0	0	0	0	0	0		
21	0	0	0	0	0	0	0	0	0	0		
22	0	0	0	0	0	0	0.2	0	0	0		
23	0	0	0	0	0	0	0	0	6.3	0		
24	0	0	0	0	0	0	7.4	0	9.7	0		
25	0	0	0	0	0	0.2	9.8	2.6	6.2	0		
26	0	0	0	0	0	1.8	2.6	4.8	0	0		
27	0	0	0	0	0	0	0.4	8	0	0		
28	0	0	0	0	0	0	0	3	0	0		
29	0	0	0	0	0	0.5	2.2	0	0	0		
30	0		0	0	0	0	0	0.4	6.6	0		
31	0		0		0		0	18.9		0		
Mean	**0**	**0**	**0**	**0.0**	**0.1**	**0.5**	**0.9**	**2.4**	**1.4**	**0.2**		
Maximum	**0**	**0**	**0**	**0.2**	**1**	**10**	**9.8**	**24**	**9.7**	**3.2**		
Total	**0**	**0**	**0**	**0.2**	**2**	**13.7**	**26.8**	**74**	**41.1**	**5.6**		

Rankin Inlet 2008: Daily Snowfall Data
Calendar Year

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0	0	1.9	0	1.8	0.4	0	0	0	0		
2	0	0	2.4	2.4	0.4	0	0	0	0	0		
3	0.2	0	0	9.5	0	2.2	0	0	0	0		
4	0	0	0	5.8	0	1.6	0	0	0	0		
5	0.2	0	0	0.8	2	0.2	0	0	0	0		
6	0	0	0	3.3	0	0	0	0	0	0		
7	0	0	0	0	0	0	0	0	0	0		
8	0	0	0.8	0	0.9	0.2	0	0	0	0		
9	0.4	0	1	0	0	0	0	0	0	0		
10	0	0	0	0	0	0	0	0	0	0		
11	0.2	1.2	0	2.6	0	0	0	0	0	0		
12	0	0.8	0	1.8	0.4	0	0	0	0	0		
13	0	0	0	0	0.4	0	0	0	0	0		
14	0.4	0	0	3.6	0.5	0	0	0	0	0		
15	8.6	0	0	0	0	0	0	0	0	0		
16	6.4	0	0	0	0	0	0	0	0	0		
17	0	0	0	0	0.2	0	0	0	0	0		
18		0	0	0.2	0.2	0	0	0	0	0		
19	0	0	0	0	0	0	0	0	0	0		
20	0	0	0	0	0	0	0	0	0	0		
21	0	0	0	0	0	0	0	0	0	0.6		
22	0	0.6	0	8.7	0	0	0	0	0	14.4		
23	0	0	0	0	0	0	0	0	0	2		
24	2.6	0	0	0	0	0	0	0	0	0		
25	0	0	0	0	0	0	0	0	0	1.2		
26	0	0	0	0	0	0	0	0	0	0		
27	0.2	0	0	0	0	0	0	0	0	0		
28	0.6	0	0	0	0	0	0	0	0	0		
29	1.4	0	2.2	0	0	0	0	0	0	2.5		
30	0		0	0	0	0	0	0	0	2.3		
31			0		0.8		0	0		0		
Mean	**0.7**	**0.1**	**0.3**	**1.3**	**0.2**	**0.2**	**0**	**0**	**0**	**0.7**		
Maximum	**8.6**	**1.2**	**2.4**	**9.5**	**2.0**	**2.2**	**0**	**0**	**0**	**14.4**		
Total	**21.2**	**2.6**	**8.3**	**38.7**	**7.6**	**4.6**	**0**	**0**	**0**	**23.0**		

Rankin Inlet 2008: Daily Precipitation Data
Calendar Year

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0	0	1.9	0	1.8	0.4	0	0	0	0		
2	0	0	2.4	2.4	0.4	0	0.2	0	0	0		
3	0.2	0	0	9.5	0	12.2	0	2.6	0	0		
4	0	0	0	5.8	0	1.6	0	1	0	0		
5	0.2	0	0	0.8	2	0.2	0	0.6	4.8	0		
6	0	0	0	3.3	0	1.2	0.6	0	0.6	0		
7	0	0	0	0	0.8	0	0	1.2	0	3.2		
8	0	0	0.8	0	0.9	0.2	0	0	0	2.4		
9	0.4	0	1	0	0	0	0	2.4	1.2	0		
10	0	0	0	0	0	0	0	0	0.2	0		
11	0.2	1.2	0	2.8	0	0	0	0	0.4	0		
12	0	0.8	0	1.8	1.4	0	0	0	0	0		
13	0	0	0	0	0.6	0	0	0	0	0		
14	0.4	0	0	3.6	0.5	0	0.4	24	5.1	0		
15	8.6	0	0	0	0	0	1	1.2	0	0		
16	6.4	0	0	0	0	0	1.6	0	0	0		
17	0	0	0	0	0.2	0	0.4	0	0	0		
18		0	0	0.2	0.2	0	0	0	0	0		
19	0	0	0	0	0	0	0	3.3	0	0		
20	0	0	0	0	0	0	0	0	0	0		
21	0	0	0	0	0	0	0	0	0	0.6		
22	0	0.6	0	8.7	0	0	0.2	0	0	14.4		
23	0	0	0	0	0	0	0	0	6.3	2		
24	2.6	0	0	0	0	0	7.4	0	9.7	0		
25	0	0	0	0	0	0.2	9.8	2.6	6.2	1		
26	0	0	0	0	0	1.8	2.6	4.8	0	0		
27	0.2	0	0	0	0	0	0.4	8	0	0		
28	0.6	0	0	0	0	0	0	3	0	0		
29	1.4	0	2.2	0	0	0.5	2.2	0	0	2.5		
30	0		0	0	0	0	0	0.4	6.6	2.3		
31			0		0.8		0	18.9		0		
Mean	**0.7**	**0.1**	**0.3**	**1.3**	**0.3**	**0.6**	**0.9**	**2.4**	**1.4**	**0.9**		
Maximum	**8.6**	**1.2**	**2.4**	**9.5**	**2.0**	**12.2**	**9.8**	**24.0**	**9.7**	**14.4**		
Total	**21.2**	**2.6**	**8.3**	**38.9**	**9.6**	**18.3**	**26.8**	**74.0**	**41.1**	**28.4**		

APPENDIX B-2

RANKIN INLET
TEMPERATURE DATA

Rankin Inlet 1981 - 2008 : Monthly & Annual Mean Temperature Data
Hydrologic Year

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Mean	Min	Max
1982	-3.0	-13.4	-26.0	-36.2	-32.4	-28.3	-19.2	-6.1	2.1	9.7	8.7	1.9	-11.8	-36.2	9.7
1983	-3.8	-22.1	-30.7	-30.2	-32.8	-26.8	-17.1	-10.8	4.5	8.9	8.8	4.3	-12.3	-32.8	8.9
1984	-4.2	-15.3	-29.5	-33.8	-26.9	-25.5	-12.7	-4.0	4.7	10.2	9.6	1.3	-10.5	-33.8	10.2
1985	-4.8	-18.0	-31.5	-29.3	-30.6	-28.8	-18.6	-4.8	5.5	10.1	8.3	3.9	-11.6	-31.5	10.1
1986	-4.3	-18.4	-25.3	-31.7	-31.0	-27.7	-16.5	-4.6	1.8	8.2	7.9	2.2	-11.6	-31.7	8.2
1987	-9.9	-23.6	-26.6	-30.2	-27.4	-24.3	-16.3	-9.7	0.8	9.7	7.7	4.6	-12.1	-30.2	9.7
1988	-7.6	-17.6	-19.7	-34.8	-33.2	-25.2	-13.9	-7.7	3.7	10.5	10.4	4.6	-10.9	-34.8	10.5
1989	-4.7	-17.7	-29.0	-32.9	-30.0	-30.8	-14.8	-7.0	4.5	12.1	10.5	3.0	-11.4	-32.9	12.1
1990	-7.4	-21.4	-29.0	-31.7	-35.0	-21.1	-18.0	-6.3	3.4	9.6	7.7	3.0	-12.2	-35.0	9.6
1991	-5.8	-17.6	-33.3	-34.8	-29.7	-26.4	-15.1	-6.5	5.5	10.6	10.3	1.7	-11.8	-34.8	10.6
1992	-6.5	-19.9	-29.7	-29.8	-31.4	-23.9	-18.2	-7.5	0.1	6.9	8.2	1.7	-12.5	-31.4	8.2
1993	-5.7	-18.4	-21.2	-28.0	-32.2	-21.5	-18.5	-2.4	5.8	11.7	9.3	1.4	-10.0	-32.2	11.7
1994	-7.1	-21.0	-19.4	-35.7	-35.3	-23.9	-18.3	-4.7	6.7	11.9	8.8	4.6	-11.1	-35.7	11.9
1995	-3.1	-13.9	-20.8	-27.2	-30.9	-23.7	-12.8	-6.5	6.1	9.5	10.4	2.1	-9.2	-30.9	10.4
1996	-3.8	-20.9	-25.0	-33.8	-26.8	-26.1	-16.6	-6.3	5.0	14.9	9.9	6.8	-10.2	-33.8	14.9
1997	-5.7	-16.8	-24.9	-31.6	-31.1	-26.2	-14.2	-4.6	6.4	12.2	10.6	4.0	-10.2	-31.6	12.2
1998	-6.3	-16.8	-23.4	-36.2	-28.0	-26.9	-14.6	-3.5	6.3	11.6	11.0	5.7	-10.1	-36.2	11.6
1999	-1.9	-10.2	-25.3	-29.6	-24.0	-20.7	-10.4	-3.8	4.7	10.3	10.0	4.3	-8.0	-29.6	10.3
2000	-4.8	-13.8	-23.0	-29.2	-27.3	-22.0	-18.3	-4.8	2.1	10.7	11.1	3.1	-9.7	-29.2	11.1
2001	-5.7	-18.2	-26.6	-29.6	-30.5	-19.5	-15.0	-2.4	5.3	10.8	10.1	6.4	-9.6	-30.5	10.8
2002	-3.2	-16.8	-20.6	-30.4	-32.6	-28.5	-16.8	-7.5	2.9	9.6	9.2	4.4	-10.9	-32.6	9.6
2003	-4.8	-17.9	-22.8	-25.9	-35.2	-26.0	-17.1	-2.0	4.2	11.0	10.6	5.2	-10.1	-35.2	11.0
2004	-3.4	-13.4	-23.7	-37.2	-30.4	-28.3	-19.9	-8.8	2.7	10.1	8.9	4.1	-11.6	-37.2	10.1
2005	-7.4	-18.3	-31.0	-32.5	-31.1	-22.9	-11.5	-6.8	4.5	10.1	10.8	3.5	-11.1	-32.5	10.8
2006	-1.9	-13.4	-24.8	-24.6	-27.6	-18.8	-11.5	-3.2	6.4	10.7	11.2	4.9	-7.7	-27.6	11.2
2007	-0.5	-16.0	-19.8	-27.8	-26.7	-26.3	-13.9	-7.3	3.1	12.7	10.1	2.6	-9.1	-27.8	12.7
2008	-2.3	-19.0	-25.4	-27.3	-32.8	-28.4	-15.2	-1.2	4.3	11.2	10.4	3.3	-10.2	-32.8	11.2
Mean	**-4.8**	**-17.4**	**-25.5**	**-31.2**	**-30.5**	**-25.1**	**-15.7**	**-5.6**	**4.2**	**10.6**	**9.7**	**3.7**	**-10.6**	**-32.6**	**10.7**
Minimum	**-9.9**	**-23.6**	**-33.3**	**-37.2**	**-35.3**	**-30.8**	**-19.9**	**-10.8**	**0.1**	**6.9**	**7.7**	**1.3**	**-12.5**	**-37.2**	**8.2**
Maximum	**-0.5**	**-10.2**	**-19.4**	**-24.6**	**-24.0**	**-18.8**	**-10.4**	**-1.2**	**6.7**	**14.9**	**11.2**	**6.8**	**-7.7**	**-27.6**	**14.9**
Std Dev	**2.1**	**3.1**	**4.0**	**3.4**	**2.9**	**3.1**	**2.6**	**2.4**	**1.8**	**1.5**	**1.1**	**1.5**	**1.2**	**2.5**	**1.4**

Rankin Inlet 1981 - 2008 : Monthly & Annual Minimum Temperature Data
Hydrologic Year

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Mean	Min	Max
1982	-5.2	-17.3	-29.8	-39.3	-36.6	-32.5	-23.7	-9.4	-1.2	4.5	4.8	-0.4	-15.5	-39.3	4.8
1983	-6.3	-25.4	-33.9	-33.9	-36.6	-31.1	-21.5	-14.9	0.7	4.5	5.3	2.2	-15.9	-36.6	5.3
1984	-7.1	-18.8	-33.7	-37.2	-31.4	-29.8	-17.8	-8.0	0.7	5.3	6.0	-1.1	-14.4	-37.2	6.0
1985	-7.4	-21.9	-35.7	-33.3	-35.1	-33.2	-23.5	-7.6	1.1	5.5	4.9	1.6	-15.4	-35.7	5.5
1986	-6.9	-23.2	-29.7	-35.5	-34.1	-32.2	-21.3	-8.0	-1.5	4.0	4.3	-0.5	-15.4	-35.5	4.3
1987	-14.5	-27.2	-31.9	-34.4	-31.6	-28.7	-21.7	-13.5	-1.7	4.5	4.4	2.0	-16.2	-34.4	4.5
1988	-10.9	-22.2	-22.7	-38.1	-36.7	-29.2	-18.4	-11.4	-0.1	6.0	6.6	2.3	-14.6	-38.1	6.6
1989	-6.9	-22.9	-32.6	-36.8	-34.0	-35.3	-19.0	-11.2	0.4	7.0	6.4	0.3	-15.4	-36.8	7.0
1990	-11.1	-24.2	-32.2	-35.3	-38.7	-26.0	-23.3	-9.3	-0.4	5.5	4.6	0.7	-15.8	-38.7	5.5
1991	-8.2	-21.3	-36.2	-37.6	-32.7	-31.9	-20.0	-10.2	1.3	6.2	6.0	-0.3	-15.4	-37.6	6.2
1992	-8.9	-23.5	-33.6	-34.1	-34.7	-28.1	-22.4	-10.8	-2.8	2.7	5.2	-0.7	-16.0	-34.7	5.2
1993	-8.5	-23.0	-25.8	-33.1	-36.9	-25.8	-23.6	-4.6	1.4	7.1	5.9	-1.0	-14.0	-36.9	7.1
1994	-9.9	-24.5	-24.0	-38.3	-38.4	-27.7	-22.5	-7.8	2.0	7.2	5.5	2.1	-14.7	-38.4	7.2
1995	-5.6	-16.8	-24.3	-30.4	-34.6	-28.4	-16.2	-10.0	1.3	5.7	7.2	-0.4	-12.7	-34.6	7.2
1996	-6.4	-24.1	-28.8	-37.2	-30.5	-30.3	-21.0	-9.9	1.3	9.3	6.6	4.0	-13.9	-37.2	9.3
1997	-8.4	-20.9	-28.7	-34.7	-35.0	-30.1	-18.0	-8.0	2.4	7.8	6.5	0.8	-13.9	-35.0	7.8
1998	-8.9	-20.6	-27.1	-38.7	-32.6	-31.2	-18.5	-6.6	2.4	7.8	7.8	3.4	-13.6	-38.7	7.8
1999	-4.5	-13.2	-29.2	-33.1	-27.7	-24.7	-14.7	-6.7	1.0	6.6	6.6	1.9	-11.5	-33.1	6.6
2000	-7.6	-17.6	-27.0	-33.6	-31.4	-25.8	-22.8	-8.0	-1.4	6.0	8.0	0.4	-13.4	-33.6	8.0
2001	-9.2	-22.2	-30.0	-33.8	-34.6	-23.1	-19.2	-5.4	1.3	6.8	6.4	3.3	-13.3	-34.6	6.8
2002	-6.0	-20.7	-24.9	-33.7	-36.3	-32.4	-21.3	-10.5	-0.4	5.7	6.2	2.0	-14.4	-36.3	6.2
2003	-7.5	-22.6	-26.8	-29.4	-37.1	-30.1	-21.7	-5.3	0.6	6.6	7.0	2.5	-13.7	-37.1	7.0
2004	-5.8	-17.9	-28.8	-40.0	-34.2	-33.2	-24.5	-11.5	-0.4	5.2	5.3	1.8	-15.3	-40.0	5.3
2005	-10.3	-22.5	-35.0	-36.1	-34.9	-27.0	-15.7	-10.2	1.1	6.1	7.3	1.1	-14.7	-36.1	7.3
2006	-4.3	-17.4	-28.3	-28.9	-30.7	-22.7	-16.1	-5.6	2.0	6.8	7.5	1.7	-11.3	-30.7	7.5
2007	-2.3	-19.4	-23.6	-31.0	-30.0	-30.7	-18.0	-10.9	-0.1	8.0	7.3	0.3	-12.5	-31.0	8.0
2008	-4.7	-22.8	-28.5	-30.0	-35.4	-32.7	-20.1	-3.8	0.8	6.7	7.3	1.0	-13.5	-35.4	7.3
Mean	**-7.5**	**-21.3**	**-29.4**	**-34.7**	**-34.2**	**-29.4**	**-20.2**	**-8.9**	**0.4**	**6.1**	**6.2**	**1.1**	**-14.3**	**-36.0**	**6.6**
Minimum	**-14.5**	**-27.2**	**-36.2**	**-40.0**	**-38.7**	**-35.3**	**-24.5**	**-14.9**	**-2.8**	**2.7**	**4.3**	**-1.1**	**-16.2**	**-40.0**	**4.3**
Maximum	**-2.3**	**-13.2**	**-22.7**	**-28.9**	**-27.7**	**-22.7**	**-14.7**	**-3.8**	**2.4**	**9.3**	**8.0**	**4.0**	**-11.3**	**-30.7**	**9.3**
Std Dev	**2.5**	**3.1**	**3.9**	**3.1**	**2.7**	**3.2**	**2.7**	**2.7**	**1.3**	**1.4**	**1.1**	**1.4**	**1.3**	**2.3**	**1.2**

Rankin Inlet 1981 - 2008 : Monthly & Annual Maximum Temperature Data
Hydrologic Year

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Mean	Min	Max
1982	-0.8	-9.5	-22.0	-33.0	-28.3	-24.1	-14.7	-2.7	5.4	14.9	12.6	4.2	-8.2	-33.0	14.9
1983	-1.3	-18.7	-27.4	-26.5	-28.9	-22.5	-12.7	-6.7	8.1	13.3	12.1	6.4	-8.7	-28.9	13.3
1984	-1.2	-11.7	-25.2	-30.3	-22.3	-21.2	-7.5	0.0	8.7	15.0	13.1	3.8	-6.6	-30.3	15.0
1985	-2.2	-14.2	-27.3	-25.2	-26.1	-24.4	-13.6	-2.1	9.9	14.7	11.7	6.1	-7.7	-27.3	14.7
1986	-1.6	-13.5	-20.8	-27.7	-27.8	-23.0	-11.6	-1.1	5.1	12.3	11.4	4.7	-7.8	-27.8	12.3
1987	-5.2	-20.0	-21.2	-25.9	-23.3	-19.8	-10.8	-5.7	3.2	14.8	10.9	7.1	-8.0	-25.9	14.8
1988	-4.2	-13.0	-16.7	-31.5	-29.7	-21.2	-9.4	-3.9	7.4	15.0	14.1	6.9	-7.2	-31.5	15.0
1989	-2.3	-12.5	-25.4	-29.1	-26.0	-26.3	-10.6	-2.8	8.5	17.1	14.6	5.8	-7.4	-29.1	17.1
1990	-3.7	-18.6	-25.8	-28.1	-31.2	-16.2	-12.7	-3.2	7.1	13.7	10.8	5.2	-8.5	-31.2	13.7
1991	-3.4	-13.9	-30.4	-31.9	-26.7	-20.8	-10.1	-2.8	9.6	14.9	14.6	3.8	-8.1	-31.9	14.9
1992	-3.9	-16.3	-25.8	-25.4	-28.1	-19.6	-14.0	-4.2	3.0	11.0	11.2	4.1	-9.0	-28.1	11.2
1993	-2.9	-13.6	-16.4	-22.9	-27.4	-17.1	-13.3	-0.1	10.2	16.2	12.7	3.8	-5.9	-27.4	16.2
1994	-4.3	-17.4	-14.7	-33.1	-32.3	-20.1	-14.2	-1.6	11.4	16.5	12.1	7.0	-7.6	-33.1	16.5
1995	-0.6	-11.0	-17.2	-24.0	-27.2	-19.0	-9.4	-3.0	10.8	13.1	13.6	4.5	-5.8	-27.2	13.6
1996	-1.1	-17.7	-21.2	-30.3	-23.0	-21.9	-12.3	-2.5	8.8	20.4	13.0	9.6	-6.5	-30.3	20.4
1997	-2.9	-12.7	-21.5	-28.3	-27.2	-22.3	-10.5	-1.2	10.3	16.6	14.7	7.1	-6.5	-28.3	16.6
1998	-3.8	-12.9	-19.6	-33.6	-23.3	-22.7	-10.5	-0.3	10.1	15.4	14.2	7.9	-6.6	-33.6	15.4
1999	0.6	-7.2	-21.3	-26.1	-20.3	-16.5	-6.2	-0.9	8.5	14.1	13.4	6.6	-4.6	-26.1	14.1
2000	-1.9	-9.9	-19.0	-24.6	-23.1	-18.2	-13.6	-1.7	5.5	15.5	14.1	5.7	-5.9	-24.6	15.5
2001	-2.0	-14.1	-23.1	-25.4	-26.4	-15.8	-10.7	0.5	9.3	14.7	13.8	9.5	-5.8	-26.4	14.7
2002	-0.3	-12.9	-16.2	-27.0	-29.0	-24.6	-12.2	-4.4	6.1	13.5	12.2	6.8	-7.3	-29.0	13.5
2003	-2.1	-13.2	-18.7	-22.3	-33.1	-21.9	-12.5	1.4	7.7	15.3	14.1	7.9	-6.4	-33.1	15.3
2004	-0.9	-8.7	-18.4	-34.3	-26.5	-23.4	-15.2	-6.0	5.8	14.9	12.5	6.3	-7.8	-34.3	14.9
2005	-4.5	-14.1	-27.1	-28.9	-27.3	-18.8	-7.2	-3.4	7.8	14.1	14.2	5.8	-7.4	-28.9	14.2
2006	0.5	-9.3	-21.3	-20.3	-24.4	-14.8	-6.7	-0.7	10.7	14.5	14.8	8.0	-4.1	-24.4	14.8
2007	1.2	-12.5	-15.9	-24.6	-23.3	-22.0	-9.7	-3.6	6.2	17.4	12.8	5.0	-5.7	-24.6	17.4
2008	0.1	-15.1	-22.2	-24.5	-30.1	-24.0	-10.4	1.4	7.6	15.6	13.5	5.5	-6.9	-30.1	15.6
Mean	**-2.0**	**-13.5**	**-21.5**	**-27.6**	**-26.8**	**-20.8**	**-11.2**	**-2.3**	**7.9**	**15.0**	**13.1**	**6.1**	**-7.0**	**-29.1**	**15.0**
Minimum	**-5.2**	**-20.0**	**-30.4**	**-34.3**	**-33.1**	**-26.3**	**-15.2**	**-6.7**	**3.0**	**11.0**	**10.8**	**3.8**	**-9.0**	**-34.3**	**11.2**
Maximum	**1.2**	**-7.2**	**-14.7**	**-20.3**	**-20.3**	**-14.8**	**-6.2**	**1.4**	**11.4**	**20.4**	**14.8**	**9.6**	**-4.1**	**-24.4**	**20.4**
Std Dev	**1.7**	**3.2**	**4.2**	**3.7**	**3.2**	**3.0**	**2.5**	**2.1**	**2.3**	**1.8**	**1.2**	**1.6**	**1.2**	**2.9**	**1.7**

APPENDIX C

REGIONAL CLIMATE DATA

APPENDIX C-1

WHALE COVE
PRECIPITATION DATA

Whale Cove 1985 - 2007 : Monthly & Annual Rainfall Data
Calendar Year

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1985			0	0	0	33.5	62.5	125.5	132.4	0	0	0	353.9
1986	0	0	0	0	43	25	13.9	73.3	24	0.8	0	0	180
1987	0	0	0	0.2	0	62.3	25	66.6	11.6	0	0	0	165.7
1988	0	0	0	0	4	23.3	16.4	28.2	32.2	8.6	0	0	112.7
1989	0	0	0	0	0	9.2	61	38.2	41.6	5.8	0	0	155.8
1990	0	0	0	0	4.4	34.2	65.6	53.2	22.8	6.6		0	186.8
1991	0	0	0	0	2.4	4.8	4	50.5	240.2	16	0	0	317.9
1992	0	0	0	0	0	31	7.4	38.8	45.2	0	0	0	122.4
1993	0	0	0	0	8.4	13.3	24.2	61.5	37.2	0	0	0	144.6
1994	0	0	0	0	0	33.3	10.2	70.8	78.2	18.8	0.2	0	211.5
1995	0	0	0	0.2	0	12.2	89.7	111.8	23.4	21	0	0	258.3
1996	0	0	0	0	0.4	31.6	17.8	85.6	40.4	0	0	0	175.8
1997	0	0	0	0.2	0	24.7	17	26.6	13.2	14.6	0	0	96.3
1998	0	0	0	1	2	11.2	60.8	43	51.8	2.8	0	0	172.6
1999	0	0	0	0	7	22	59.2	59.8	34	3	0	0	185
2000	0	0	0	0	2	3.4		92.5	38.8	0	0	0	136.7
2001	0	0	0	0.4	7.8	22.2	60.6	86.4	9.6	17.2	0	0	204.2
2002	0	0	0	0	0	20.6	47.6	98.8	22.2	3	0	0	192.2
2003	0	0	0	0	30.6	48.6	33.8	65	7.2	16.4	1	0	202.6
2004	0	0	0	0	0	22	33.6	42.4	63.8	0.8	0	0	162.6
2005	0	0	0	6.2	14.3	22.6	43.6	8.8	17.3	11.2	0	0	124
2006	0	0	0	0	4.8	47	51	40.2	19.4	44.8	0	0	207.2
2007	0	0	0	0	3	21.8	30.4	66.6	43.4		0		165.2
Mean	**0.0**	**0.0**	**0.0**	**0.4**	**5.8**	**25.2**	**38.0**	**62.4**	**45.6**	**8.7**	**0.1**	**0.0**	**184.1**
Minimum	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**3.4**	**4.0**	**8.8**	**7.2**	**0.0**	**0.0**	**0.0**	**96.3**
Maximum	**0.0**	**0.0**	**0.0**	**6.2**	**43.0**	**62.3**	**89.7**	**125.5**	**240.2**	**44.8**	**1.0**	**0.0**	**353.9**
Std Dev	**0.0**	**0.0**	**0.0**	**1.3**	**10.6**	**14.2**	**23.5**	**28.6**	**50.4**	**10.9**	**0.2**	**0.0**	**60.5**

Whale Cove 1985 - 2007 : Monthly & Annual Snowfall Data
Calendar Year

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1985			60	23.8	2.1	6.8	0	2	14.2	113.8	201.6	111	535.3
1986	14.8	1	10.6	2.2	5.8	1.8	0	0	16.8	100.6	16.2	35.4	205.2
1987	29.8	26.8	46.8	83.6	1.4	77.1	0	0	1.6	25.2	25.8	19.4	337.5
1988	2.6	49	6	17.6	7.4	12.8	0	0	0	48.5	62.5	29.8	236.2
1989	7.2	20.8	50.6	45	42.6	0	0	0	4.4	3.8	3	0.6	178
1990	26.6	22.2	61	21.2	28.4	26.8	0	0	1.8	27.8		16.8	232.6
1991	41.2	44.4	33	46.6	18.8	0	0	0	19	62.4	15.4	33.8	314.6
1992	23	4.4	16.6	8.8	11.8	19.9	0	0	8.8	16.6	22	23.8	155.7
1993	47.8	12.2	2.8	16.6	10.8	4.6	0	0	17	12.6	32.8	23.2	180.4
1994	6.2	3	20	41.8	26	0.4	0	0	0.4	17.6	43.8	33.8	193
1995	25.8	10.4	9.2	31.9	16	0	0	0	30.2	19.6	21.2	22.6	186.9
1996	13.8	9.1	13.8	2.4	2.2	0	0	0	0.4	15.6	10	7.6	74.9
1997	0.4	3.2	6	6	2.8	0	0	0	0	3	4.2	11.4	37
1998	6	3.4	4.2	16.6	4.2	0	0	0	0	19.8	18	4.4	76.6
1999	10.4	9	14.2	7.4	0.6	0.2	0	0	0.4	15.4	33.2	19.8	110.6
2000	11	20	20.9	5.8	0.2	1.4	0	0	1.2	20	2.2	11.6	94.3
2001	17.4	11.4	17.3	6.4	6.8	0	0	0	0	18.4	14.4	21.6	113.7
2002	22.6	5.2	1.8	16.8	15.6	0	0	0	0.6	24	7.2	2.2	96
2003	17.2	3.6	13.2	2.6	3.2	2	0	0	13.8	27	42.6	26	151.2
2004	4	11.8	9.2	20.2	3.4	0.6	0	0	0	18.6	28.4	4.4	100.6
2005	2.4	9.8	15	9.8	15	0	0	0	6.6	5.4	25.4	8.8	98.2
2006	16.2	3.6	3.4	9.4	9	0	0	0	0	13.6	24.6	41	120.8
2007	31.6	21.8	10	19.9	15.2	15.2	0	0	0.4		18		132.1
Mean	**17.2**	**13.9**	**19.4**	**20.1**	**10.8**	**7.4**	**0.0**	**0.1**	**6.0**	**28.6**	**30.6**	**23.1**	**172.2**
Minimum	**0.4**	**1.0**	**1.8**	**2.2**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**3.0**	**2.2**	**0.6**	**37.0**
Maximum	**47.8**	**49.0**	**61.0**	**83.6**	**42.6**	**77.1**	**0.0**	**2.0**	**30.2**	**113.8**	**201.6**	**111.0**	**535.3**
Std Dev	**12.8**	**13.0**	**18.1**	**19.1**	**10.5**	**16.9**	**0.0**	**0.4**	**8.4**	**28.7**	**40.9**	**22.8**	**108.8**

Whale Cove 1985 - 2007 : Monthly & Annual Precipitation Data
Calendar Year

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1985			60	23.8	2.1	40.3	62.5	127.5	146.6	113.8	201.6	111	889.2
1986	14.8	1	10.6	2.2	48.8	26.8	13.9	73.3	40.8	101.4	16.2	35.4	385.2
1987	29.8	26.8	46.8	83.8	1.4	139.4	25	66.6	13.2	25.2	25.8	19.4	503.2
1988	2.6	49	6	17.6	11.4	36.1	16.4	28.2	32.2	57.1	62.5	29.8	348.9
1989	7.2	20.8	50.6	45	42.6	9.2	61	38.2	46	9.6	3	0.6	333.8
1990	26.6	22.2	61	21.2	32.8	61	65.6	53.2	24.6	34.4		16.8	419.4
1991	41.2	44.4	33	46.6	21.2	4.8	4	50.5	259.2	78.4	15.4	33.8	632.5
1992	24	4.4	16.6	8.8	11.8	50.9	7.4	38.8	54	16.6	22	23.8	279.1
1993	47.8	12.2	2.8	16.6	19.2	17.9	24.2	61.5	54.2	12.6	32.8	23.2	325
1994	6.2	3	20	41.8	26	33.7	10.2	70.8	78.6	36.4	44.2	33.8	404.7
1995	25.8	10.4	9.2	32.1	16	12.2	89.7	111.8	53.6	40.6	21.2	22.6	445.2
1996	13.8	9.1	13.8	2.4	2.6	31.6	17.8	85.6	40.8	15.6	10	7.6	250.7
1997	0.4	3.2	6	6.2	2.8	24.7	17	26.6	13.2	17.6	3.6	7.2	128.5
1998	5.8	4	4.8	13.2	6.4	11.2	60.8	43	51.8	22.6	18	3.2	244.8
1999	8.4	9	3.2	9	7.6	22.2	59.2	59.8	34.4	16.2	32.2	18.2	279.4
2000	10.6	16.8	17.3	5.8	2.2	4		92.5	40	20	2.2	11.6	223
2001	17.4	12	17.5	7.4	14.6	22.2	60.6	86.4	9.6	38.6	14.4	23.6	324.3
2002	22.6	5.2	1.8	16.8	15.6	20.6	47.6	98.8	22.8	28	7.2	2.2	289.2
2003	17.2	3.6	13.2	2.6	33.8	50.6	33.8	65	21	38.2	30.8	24.2	334
2004	2.4	11.8	6.2	18.8	3.4	22.6	33.6	42.4	63.8	22	25.4	4.4	256.8
2005	2.4	9.8	15	16.8	29.3	22.6	43.6	8.8	23.9	16.6	25.4	8.8	223
2006	16.2	3.6	3.4	9.4	13.8	47	51	40.2	19.4	58.4	18.6	19.4	300.4
2007	14.4	21.8	10	18.3	18.2	37	30.4	66.6	43.8		18		278.5
Mean	**16.3**	**13.8**	**18.6**	**20.3**	**16.7**	**32.5**	**38.0**	**62.4**	**51.6**	**37.3**	**29.6**	**21.8**	**352.1**
Minimum	**0.4**	**1.0**	**1.8**	**2.2**	**1.4**	**4.0**	**4.0**	**8.8**	**9.6**	**9.6**	**2.2**	**0.6**	**128.5**
Maximum	**47.8**	**49.0**	**61.0**	**83.8**	**48.8**	**139.4**	**89.7**	**127.5**	**259.2**	**113.8**	**201.6**	**111.0**	**889.2**
Std Dev	**12.6**	**12.9**	**18.5**	**19.0**	**13.5**	**27.8**	**23.5**	**28.8**	**53.6**	**28.5**	**40.9**	**22.6**	**157.5**

APPENDIX C-2

CHESTERFIELD INLET
PRECIPITATION DATA

Chesterfield Inlet 1985 - 2007 : Monthly & Annual Rainfall Data
Calendar Year

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1985	0	0	0	0	0		41	72	26	0	0	0	139
1986	0	0	0	0	21		0	32	47.6	0	0	0	100.6
1987	0	0	0	0	0	0	0	97.5	16	0	0	0	113.5
1988	0	0	0	0	0	5	23	0	30	15	0	0	73
1989	0	0	0	0	0	7	20	26	48.8	0	0	0	101.8
1990	0	0	0	0	1	0	68.1	91.6	21	0	0	0	181.7
1991	0	0	0	0	4	1.8	97	35.1	0	0	0	0	137.9
1992	0	0	0	0	0	10.5	10.5	25.3	31	0	0	0	77.3
1993	0	0	0	0	1	8.6	26.2	91	21.6	6	0	0	154.4
1994	0	0	0	0	0	24.5	1	44	69	7	0	0	145.5
1995	0	0	0	0	0	14	35.5	35	23	25	0	0	132.5
1996	0	0	0	0	0	33.8	37.5	53.8	46.8	0.6	0	0	172.5
1997	0	0	0	0	0	0	15.8	36.9	20	58.3	0	0	131
1998	0	0	0	0	14.4	24.4	112.5	65.2	59.2	5.2	0	0	280.9
1999	0	0	0	1.2	14.2	68.8	25.4	75.6	42.9	9	0	0	237.1
2000	0	0	0	0	0.6	2.8	13.6	53.6	27.8	3	0	0	101.4
2001	0	0	0	0	13.4	27.2	53	30.6	25.6	14.4	0	0	164.2
2002	0	0	0	0	2.4	14.2	61.6	44.2	45.4	14.3	0	0	182.1
2003	0	0	0	0	12.6	27.4	26.6	49.8	31	22	0	0	169.4
2004	0	0	0	0	0	13.4	14.2	33.3	70.4	1.2	0	0	132.5
2005	0	0	0	1.6	34.6	13.2	60.4	20.4	41.4	22.4	0	0	194
2006	0	0	0	0		43.4	50.6	34	9.6	43.2	0	0	180.8
2007	0	0	0	0	2.2	29.2	31.2	78.6	22.6		0		163.8
Mean	**0.0**	**0.0**	**0.0**	**0.1**	**5.5**	**17.6**	**35.9**	**48.9**	**33.8**	**11.2**	**0.0**	**0.0**	**150.7**
Minimum	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**73.0**
Maximum	**0.0**	**0.0**	**0.0**	**1.6**	**34.6**	**68.8**	**112.5**	**97.5**	**70.4**	**58.3**	**0.0**	**0.0**	**280.9**
Std Dev	**0.0**	**0.0**	**0.0**	**0.4**	**9.1**	**17.1**	**29.4**	**25.5**	**17.9**	**15.4**	**0.0**	**0.0**	**48.5**

Chesterfield Inlet 1985 - 2007 : Monthly & Annual Snowfall Data
Calendar Year

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1985	6.7	22	17	30	8.8		0	0	0	10	33	22.1	149.6
1986	8	4	4	23	2		0	0	10.4	27	53	29	160.4
1987	11	64	32	63	0	32	0	0	0	31	43	37	313
1988	12	15	8	10	2	0	0	0	4	16	28	11	106
1989	10	3	6.2	0	7.2	0	0	0	14	7.4	20.4	12	80.2
1990	11	9	30	18	15.6	18.8	0	0	6	32.4	30	6.6	177.4
1991	61	16	39	66	12	0	0	0	26	34.2	28.6	12.7	295.5
1992	34	3.3	12.2	18	5	3	0	0	4.5	19.3	15	14.5	128.8
1993	2	2.5	0	1.5	3.5	0	0	0	2	14	21.2	26	72.7
1994	2	1	8	14	1	0	0	0	0	2.5	25	12	65.5
1995	1	0	4	28	3	0	0	0	0	9.5	8	3	56.5
1996	1	1	5.5	0	0.5	0	0	0	0	9	6	11	34
1997	0	0	0	0	0	0	0	0	0	5	11.5	19.2	35.7
1998	3	9	6	4	2	0	0	0	0	15	13.2	5.8	58
1999	6.3	15.4	15.9	10.2	8	0	0	0	0	12.6	13.6	30.8	112.8
2000	4.6	16.6	9	15	4	0	0	0	2.6	10	17.6	5	84.4
2001	8	6	9.4	11	33	0	0	0	0	15.4	18	18.2	119
2002	6	0	3	12	11	0	0	0	0	11	18	6.2	67.2
2003	5	2.2	12.3	6.4	19	7	0	0	6.8	20.8	19.2	9.6	108.3
2004	22	2.8	45.2	20	24.2	1.4	0	0	1.8	31.2	50.6	6.8	206
2005	16.4	7	63.2	20.2	18.8	0	0	0	1.4	5	29.2	19.1	180.3
2006	16.4	16.4	3	29.2		3	0	0	0	9.2	12.6	21.8	111.6
2007	0	10.8	3.8	22.9	9.2	5	0	0	1.8		21.2		74.7
Mean	**10.8**	**9.9**	**14.6**	**18.4**	**8.6**	**3.3**	**0.0**	**0.0**	**3.5**	**15.8**	**23.3**	**15.4**	**121.6**
Minimum	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.5**	**6.0**	**3.0**	**34.0**
Maximum	**61.0**	**64.0**	**63.2**	**66.0**	**33.0**	**32.0**	**0.0**	**0.0**	**26.0**	**34.2**	**53.0**	**37.0**	**313.0**
Std Dev	**13.5**	**13.5**	**16.3**	**17.3**	**8.8**	**7.9**	**0.0**	**0.0**	**6.1**	**9.7**	**12.5**	**9.3**	**74.0**

Chesterfield Inlet 1985 - 2007 : Monthly & Annual Precipitation Data
Calendar Year

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1985	6.7	22	17	30	8.8		41	72	26	10	33	22.1	288.6
1986	8	4	4	23	23		0	32	58	27	53	29	261
1987	11	64	32	63	0	32	0	97.5	16	31	43	37	426.5
1988	12	15	8	10	2	5	23	0	34	31	28	11	179
1989	10	3	6.2	0	7.2	7	20	26	62.8	7.4	20.4	12	182
1990	11	9	30	18	16.6	18.8	68.1	91.6	27	32.4	30	6.6	359.1
1991	61	16	39	66	16	1.8	97	35.1	26	34.2	28.6	12.7	433.4
1992	34	3.3	12.2	14	5	12.7	10.5	25.3	35.5	15.3	12	14.7	194.5
1993	1.8	2.8	0	1.5	3.9	8.6	26.2	91	23.6	19.4	8.2	15.4	202.4
1994	2	0.8	4.6	8.5	0.5	24.5	1	44	69	8.5	34	13.3	210.7
1995	1	0	2	14.7	3	14	35.5	35	23	37	6.5	3	174.7
1996	2	1	4.4	0	0.5	33.8	37.5	53.8	46.8	9.6	6	11	206.4
1997	0	0	0	0	0	0	15.8	36.9	20	63.3	11.5	19.2	166.7
1998	3	9	6	4	16.4	24.4	112.5	65.2	59.2	19.8	8.2	6.4	334.1
1999	6.2	8	10.4	9.8	22	68.8	25.4	75.6	42.9	21.2	10.8	29.6	330.7
2000	4.4	15.2	5.4	13.2	5.2	2.8	13.6	53.6	30.6	12	16.4	4.8	177.2
2001	4	4.2	6.8	10.4	61.8	27.2	53	30.6	25.6	32.4	14.8	13.6	284.4
2002	3.2	0	1.6	8.2	14.6	14.2	61.6	44.2	45.4	26.5	20.4	5	244.9
2003	2.6	1.4	7.2	4.6	30.6	37.4	26.6	49.8	37.2	43.7	21.4	9.8	272.3
2004	22.2	2.2	45.4	20.6	10	14.8	14.2	33.3	72	31.4	60.6	7.4	334.1
2005	10.6	7.8	86.6	23.6	47.2	13.2	60.4	20.4	42.8	26.6	23.4	11.7	374.3
2006	12.6	13.4	1.4	26		44.4	50.6	34	9.6	50.8	8.4	13.2	264.4
2007	0	11.2	3	22.9	10.4	31.8	31.2	78.6	24.4		13.6		227.1
Mean	**10.0**	**9.3**	**14.5**	**17.0**	**13.9**	**20.8**	**35.9**	**48.9**	**37.3**	**26.8**	**22.3**	**14.0**	**270.6457**
Minimum	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**9.6**	**7.4**	**6.0**	**3.0**	**26**
Maximum	**61.0**	**64.0**	**86.6**	**66.0**	**61.8**	**68.8**	**112.5**	**97.5**	**72.0**	**63.3**	**60.6**	**37.0**	**851.1**
Std Dev	**13.6**	**13.4**	**20.3**	**17.4**	**15.7**	**16.7**	**29.4**	**25.5**	**17.3**	**14.2**	**14.9**	**8.7**	**207.1817**

APPENDIX C-3

WHALE COVE
TEMPERATURE DATA

Whale Cove Inlet Long-Term Air Temperature Characteristics 1985 - 2007

Month	Warmest and Coldest Day in the Month				Monthly Mean
	Extremes		Averages		
	Maximum	Minimum	Maximum	Minimum	
January	-2.00	-44.00	-26.81	-33.93	-30.43
February	-4.00	-47.50	-25.60	-33.12	-29.39
March	2.00	-43.00	-19.28	-28.38	-23.84
April	10.00	-36.00	-9.89	-19.25	-14.59
May	10.50	-25.50	-1.88	-8.28	-5.09
June	24.00	-9.50	6.59	0.43	3.52
July	26.00	-3.00	13.55	5.93	9.76
August	29.00	-1.00	12.50	6.76	9.65
September	20.00	-8.00	6.27	2.31	4.31
October	21.00	-24.50	-1.41	-6.20	-3.82
November	3.50	-34.00	-12.41	-19.81	-16.15
December	-2.00	-43.50	-20.33	-27.81	-24.09
Annual	29.00	-47.50	13.55	-33.93	-10.01

Chesterfield Inlet Long-Term Air Temperature Characteristics 1985 - 2007

Month	Warmest and Coldest Day in the Month				Monthly Mean
	Extremes		Averages		
	Maximum	Minimum	Maximum	Minimum	
January	-3.00	-46.00	-27.39	-34.73	-31.03
February	-5.50	-49.00	-26.78	-34.70	-30.74
March	2.00	-45.00	-20.52	-29.40	-24.97
April	3.50	-35.50	-10.78	-20.02	-15.38
May	14.00	-29.00	-2.47	-9.35	-5.96
June	26.00	-11.50	7.85	0.50	4.19
July	30.50	-1.50	15.05	6.10	10.55
August	27.00	-2.00	12.64	5.65	9.14
September	22.00	-9.00	5.89	0.96	3.42
October	10.00	-26.00	-2.07	-7.25	-4.66
November	12.00	-37.50	-12.51	-20.63	-16.60
December	-2.00	-44.00	-21.10	-29.07	-25.10
Annual	30.50	-49.00	15.05	-34.73	-10.60

APPENDIX C-4

CHESTERFIELD INLET ADJUSTED RAINFALL DATA

Chesterfield Inlet 1931 - 2007 Adjusted Rainfall Dataset

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Winter	Spring	Summer	Autumn
1931	-9999.9	0	0	0.6	0	67.3	26.9	12.4	54.8	5.3	2.8	0	-9999.9	-10	0.6	106.7	63
1932	0	0	0	0	0	18.7	62.4	96.9	77.9	18	0	0	274	0	0	178	96
1933	0	0	0	0	0	17.7	63.6	59	43.8	1.9	0	0	186	0	0	140.4	45.6
1934	0	0	0	0	0.3	20	85.2	61.8	27.1	5.8	0	0	200.3	0	0.3	167.1	33
1935	-9999.9	0	-9999.9	0	0	18.4	33.3	56.6	54.9	0	-9999.9	0	-9999.9	-9999.9	-9999.9	108.3	-9999.9
1936	0	0	0	0	0	21.6	18.5	26.1	73.6	0	0	0	139.8	0	0	66.2	73.6
1937	0	0	0	0	14.2	20.4	160.7	52.8	23.7	4.2	0	0	276.1	0	14.2	234	27.9
1938	0	0	0	0	2.4	12	41.1	37.2	32.3	39.3	0.3	0	164.6	0	2.4	90.3	71.8
1939	0	0	0	0.7	2.1	18.4	43.8	79.9	31.7	10.1	0	0	186.8	0	2.8	142.1	41.8
1940	0	0	0.3	0.3	4.3	41.1	43.3	26.3	32.6	41.1	0	0	189.4	0	4.9	110.7	73.7
1941	0	0	0	0	20.4	16.2	41.8	54.1	17	-9999.9	0	0	-9999.9	0	20.4	112.1	-9999.9
1942	0	0	0	3.1	0	42.4	21.3	39.9	11.6	5.4	0	0	123.7	0	3.1	103.6	17
1943	0	0	0	0	0	1.8	52.5	-9999.9	34.3	15.6	0.3	0	-9999.9	0	0	-9999.9	50.2
1944	0	0	0	0	7.1	16.9	65.2	50.5	33.9	6.5	0	0	180.1	0	7.1	132.6	40.4
1945	0	0	0	0	-9999.9	26.6	29.8	14.1	10.2	4.7	0	0	-9999.9	0	-9999.9	70.5	14.9
1946	0	0	0	0.6	0.3	31.9	72.8	49.1	53	3	0.3	0	211	0	0.9	153.8	56.3
1947	0	0	0	0	0	24.9	58.7	60.8	61.5	48.8	5.6	0	260.3	0	0	144.4	115.9
1948	0	0	0	4	3.4	14.5	28.2	78.9	31.6	10.9	-9999.9	0	-9999.9	0	7.4	121.5	-9999.9
1949	0	0	0	0	0	77.8	-9999.9	4.2	5.5	-9999.9	0	0	-9999.9	0	0	-9999.9	-9999.9
1950	0	0	0	0	8.3	30.1	18.5	22.3	35.6	4.2	0	0	119	0	8.3	70.9	39.8
1951	0	0	0	0	0.8	24.5	40.6	22.1	20.6	16	0	0	124.8	0	0.8	87.3	36.7
1952	0	0	0	0.3	5	24.8	63.4	76.7	56.3	16.6	0	0	243.2	0	5.3	164.9	73
1953	0	0	0	0.3	0	11.9	51.8	41.3	36.2	23.4	1.8	0	166.7	0	0.3	105	61.4
1954	0	0	0	0	6.3	39.9	30.5	9.1	46.8	12.8	0	0	145.5	0	6.3	79.5	59.6
1955	0	0	0	0.9	7.3	49.1	59.8	79.4	51.6	25.1	0.6	0	274	0	8.2	188.4	77.4
1956	0	0	0	0	0	2.2	30.8	69.5	12.5	10	0	0	124.9	0	0	102.5	22.5
1957	0	0	0	0	0.6	4.2	31.7	28	39.3	2.8	0	0	106.6	0	0.6	63.9	42.1
1958	0	0	0	0	19.7	27.3	60	25.9	58.8	7	0.3	0	199	0	19.7	113.3	66
1959	0	0	0	0	0.3	61.5	31.8	83.1	68.5	1.1	0.3	0	246.6	0	0.3	176.3	70
1960	0.6	0	0	0	4.8	12.4	65.7	46.9	43.6	13.4	0.6	0	188.1	0.6	4.8	125.1	57.7
1961	0	0	0	0.3	1.4	21.3	27.7	28.1	84.3	0.3	1	0	164.4	0	1.7	77.1	85.7
1962	0	0	0	0	0	12.7	19.7	38.6	25.6	13.6	0	0	110.1	0	0	70.9	39.2
1963	0	0	0	2.7	0.3	7.7	59.8	42.2	11.7	20.4	0.6	0	145.3	0	3	109.7	32.7
1964	0	0	0	0.3	0.3	10.8	24.8	30.7	29.4	2.4	1.6	0.9	101.2	0	0.6	66.3	33.4
1965	0	0	0	0.3	1.2	55.9	51.9	13.9	17.5	1.2	0.6	0	142.5	0.9	1.5	121.7	19.3
1966	0	0	0.3	0.6	45.9	24	20.8	46.4	31.8	3.2	0	0	173	0	46.8	91.2	35
1967	0	0	0.3	0	3.1	26.6	59.2	34.9	35.7	3.7	0.3	0.5	164.4	0	3.4	120.8	39.6
1968	0	0	0.3	0	2.4	11.1	46.3	38.2	77	34.7	0.9	0	211	0.5	2.7	95.7	112.6
1969	0	0	0	0	0.9	21	49.4	39.6	12.8	2.4	8	0	134.1	0	0.9	110	23.2
1970	0	0	0	0	0.3	34.3	122.7	46.8	66.9	29.1	0	0	300.1	0	0.3	203.8	96
1971	0	0	0	0.6	15.5	13.9	4.7	39.3	31	46.4	0	0	151.5	0	16.1	57.9	77.5
1972	0	0	0	0	1	2.5	77.7	31	18.9	1.3	0	0	132.4	0	1	111.1	20.2
1973	0	0	0	0	1.2	24.3	8.9	106.8	38.9	19.4	0	0	199.5	0	1.2	140	58.2
1974	0	0	0	0.3	0	23.4	29.1	42.4	22.5	1	0.3	0	119	0	0.3	94.9	23.8
1975	0	0.3	0	0.3	19.6	8.3	50.9	48.6	30.5	7.7	0	0	166.1	0.3	19.9	107.7	38.2
1976	0	0	0	0	12.7	19	41.5	26.7	36	3	0	0.6	139.4	0	12.7	87.1	39
1977	0	0	0	13	7.3	24.7	28.6	22.1	15	18.9	5.1	0	134.8	0.6	20.3	75.4	39.1
1978	0	0.3	0	0	18.2	11.1	60.3	31.4	8.6	3.4	0.3	0	133.5	0.3	18.2	102.8	12.3
1979	0	0	0	0.9	12.1	14.6	19.6	47.9	25.5	-9999.9	-9999.9	0.3	-9999.9	0	13	82.2	-9999.9
1980	0	0	0	2.4	5.3	7.8	92.6	78.4	55.8	0.6	0	0	243	0.3	7.7	178.9	56.4
1981	0	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9
1982	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9
1983	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9
1984	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9
1985	0	0	0	0	0	-9999.9	42.5	74.2	26.8	0	0	0	-9999.9	-9999.9	0	-9999.9	26.8
1986	0	0	0	0	22	-9999.9	0	33.2	49.8	0	0	0	-9999.9	0	22	-9999.9	49.8
1987	0	0	0	0	0.2	0.2	0.3	100.9	16.7	0	0	0.2	118.4	0	0.2	101.4	16.7
1988	0	0	0	0	0	5.3	24	-9999.9	32	15.6	0	0	-9999.9	0.2	0	-9999.9	47.6
1989	0	0	0	0	0	7.7	21.1	26.9	51	0	0	0	106.6	0	0	55.6	51
1990	0	0	0	0	1.1	0.3	70.7	94.8	22.3	0.2	0	0	189.4	0	1.1	165.8	22.5
1991	0	0	0	0	4.3	2.3	99.7	36.5	0.2	0	0	0	142.9	0	4.3	138.4	0.2
1992	0	0	0	0	0	11.4	11.6	27.1	32.3	0.2	0	0	82.5	0	0	50.1	32.4
1993	0	0	0	0	1.9	9.7	28.3	94.1	23.9	6.2	0.2	0	164.2	0	1.9	132.1	30.3
1994	0	0	0	0	0	26.1	1.4	46.9	72.5	8	0	0	155	0	0	74.5	80.5
1995	0	0	0	0	0	14.9	37.3	36.4	24.8	26.1	0	0	139.4	0	0	88.6	50.8
1996	0	0	0	0	0.6	35.5	39.6	56.7	49.1	0.7	0	0	182.2	0	0.6	131.8	49.8
1997	0	0	0	0	0	0	17.3	39.7	22.4	60.2	0.2	0	139.8	0	0	57	82.7
1998	0	0	0	0	15.7	25.8	116.4	68.5	63	6.1	0.2	0	295.5	0	15.7	210.6	69.2
1999	0	0	0	1.4	15.3	71.5	27.5	79.2	45.7	9.7	0	0	250.3	0	16.7	178.2	55.3
2000	0	0	0	0	0.9	3.6	14.8	56.3	29.2	3.6	0.2	0	108.5	0	0.9	74.7	33
2001	0	0	0	0	14.2	28.9	55.9	32.5	27.7	15.4	0.2	0	174.7	0	14.2	117.4	43.2
2002	0	0	0	0	2.7	16.2	64.6	46.9	48.1	15.5	0	0.3	194.3	0	2.7	127.7	63.6
2003	0	0	0	0	13.7	29.1	28.9	52.7	33.6	23.6	0.3	0	181.8	0.3	13.7	110.7	57.4
2004	0	0	0	0	0	15	15.8	35.8	74.2	2	0	0	142.8	0	0	66.6	76.3
2005	0	0	0	1.9	36	14.7	63.2	21.8	44.2	25	0	0	206.8	0	37.9	99.7	69.2
2006	0	0	0	0.2	-9999.9	45.3	54	36.9	12.1	46.1	0.5	0	-9999.9	0	-9999.9	136.1	58.7
2007	0	0	0	0	2.6	30.8	33	83.3	24.7	-9999.9	-9999.9	-9999.9	-9999.9	0	2.6	147.1	-9999.9

Chesterfield Inlet 1931 - 2007 Adjusted Snowfall Dataset

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Winter	Spring	Summer	Autumn
1931	-9999.9	23.5	5.9	16.4	8.5	17	0	0	0.3	38.5	42.7	69.6	-9999.9	-10	30.9	17	81.5
1932	11.7	34.8	6.4	79	8.5	0	0	0	0	80.4	74.3	50	345.2	116.1	93.9	0	154.7
1933	5.5	12.8	17.5	29.6	28.9	0	0	0	0.9	9.4	2.9	11.7	119.2	68.3	76	0	13.2
1934	4.7	2	5.9	5.9	10.6	0	0	0	10.3	59.3	26.6	30.7	156.1	18.4	22.5	0	96.2
1935	-9999.9	20.8	-9999.9	17.6	2.9	0	0	0	2.4	36.5	-9999.9	24.6	-9999.9	-9999.9	-9999.9	0	-9999.9
1936	2.7	30.5	63.4	49.5	30.4	0.3	0	0	16.1	56.4	26	20.8	296.2	57.9	143.3	0.3	98.5
1937	36.6	59.6	28.6	41.5	22.3	0.5	0	0	8.1	41.6	16.6	56.1	311.4	117	92.4	0.5	66.3
1938	37.2	17	23.7	29.5	29.3	0	0	0.2	0	4.4	50	54.3	245.6	110.3	82.5	0.2	54.4
1939	16.7	14.3	20.8	45.7	12.6	17.8	0	0	12.4	48.5	24.6	22.6	236.2	85.3	79.2	17.8	85.5
1940	16.6	10.1	22	38.1	17.6	0.8	0	0	0.8	30	48.2	23.7	207.8	49.3	77.8	0.8	78.9
1941	28.4	9.9	18.6	15.1	24.3	0.8	0	0	17.2	-9999.9	43.8	30.6	-9999.9	62	57.9	0.8	-9999.9
1942	23.6	25.8	63.4	97.6	65.5	0.2	0	0	0.5	54.4	54.4	29.3	414.7	80	226.5	0.2	109.3
1943	9.3	1.1	12.5	15	20.5	1.1	0	-9999.9	3.7	9.1	22.7	15.7	-9999.9	39.7	48	-9999.9	35.4
1944	6.4	4.6	7	12.8	7.2	0	0	0	16	65.7	84.5	4.4	208.5	26.6	27	0	166.1
1945	31.2	14.9	50.3	29.6	-9999.9	11.8	0	0	12.3	12.5	39.4	1.7	-9999.9	50.5	-9999.9	11.8	64.1
1946	7.6	6.7	11.3	6.2	12	4.9	0	0	10	40	18.9	16.1	133.7	16	29.5	4.9	68.9
1947	2.7	21.2	9.3	13.1	37.7	1.8	0	0	13.7	21.9	38	17.9	177.3	40	60	1.8	73.6
1948	12.5	8.1	16	10.2	16.6	2.9	0.2	0	0	7.6	-9999.9	13.1	-9999.9	38.5	42.7	3	-9999.9
1949	12.6	1.8	14.3	42.7	10.2	1.7	-9999.9	0.2	0.3	-9999.9	5.3	13.4	-9999.9	27.5	67.2	-9999.9	-9999.9
1950	0.2	4	5.8	6.1	1.5	8.2	0	0	0.5	48.5	36.7	50.2	161.5	17.5	13.4	8.2	85.6
1951	14.6	12.6	16.3	27.4	24.3	0.2	0	0	2.9	25.4	19.6	17.8	161.1	77.4	68	0.2	47.9
1952	7.2	3.5	6.8	23.3	6.1	0.5	0	0	4.7	25.7	9	105.8	192.5	28.5	36.2	0.5	39.4
1953	6.8	14.5	27.2	21.4	10.3	0.6	0	0	0.6	10.9	56.1	13.4	161.9	127.1	59	0.6	67.6
1954	1.5	15.5	12.5	18.9	7.5	0.5	0	0	2.6	5.9	14.1	9.7	88.6	30.4	38.8	0.5	22.6
1955	28.1	2	11.1	19.8	9.6	2	0.2	0	21	10.5	19.6	21.3	145	39.8	40.4	2.1	51.1
1956	21.4	6.1	4.3	31.6	11.1	0.6	0	0	7.6	54.4	13.7	10.5	161.2	48.8	47	0.6	75.6
1957	2.3	8.1	8.7	13.2	15.8	4.4	0	0	1.2	10	20.8	7	91.5	20.8	37.7	4.4	32
1958	16.7	12.2	9.3	6.2	10.8	6.9	0	0	2.7	34.5	29.2	7	135.5	35.9	26.3	6.9	66.5
1959	17.8	3.2	11.6	3	22	21.9	0	0	0.5	22.6	8.8	8.2	119.6	27.9	36.7	21.9	31.9
1960	4.4	7.1	13.5	5.3	2.9	0.2	0	0	12.5	20.7	21.1	5.8	93.5	19.7	21.7	0.2	54.3
1961	5	12.9	6.4	31.6	3.5	9.9	0	7	83.4	69.9	57.9	107.2	394.8	23.7	41.5	16.9	211.3
1962	0.9	0.6	31.5	41	79.5	11.1	0	0	1.5	55.9	18.2	6.2	246.5	108.7	152	11.1	75.7
1963	7.4	3.9	6.2	8.4	24.6	2.1	0	0	18.7	76.9	49.9	12.4	210.6	17.6	39.2	2.1	145.5
1964	26.9	4.6	4.8	24.9	21.1	38.9	0	0	2.3	35.9	25.2	8.8	193.4	43.9	50.8	38.9	63.4
1965	8	3	6.4	11.8	5.2	0.6	0	0	18.1	23.6	23.5	20	120.2	19.8	23.4	0.6	65.2
1966	11.8	18.7	7.4	11.8	3.6	0.2	0	0	5.6	17.6	20.8	14.4	112.1	50.6	22.9	0.2	44
1967	10.3	2	17.6	8.5	30.6	11.1	0	0	70.5	38	29.2	41.8	259.6	26.7	56.7	11.1	137.7
1968	15.5	11.7	49.7	15.2	25.1	25.4	0	0	0.8	27.7	46.8	24.6	242.4	69	90	25.4	75.2
1969	21.6	11.1	14.6	24.3	14.4	3.5	0	0	1	13.1	40	43.8	187.4	57.3	53.3	3.5	54.1
1970	28.4	2.4	15.8	1.9	18.1	0.2	0	0	8.2	93.3	35	4.1	207.4	74.6	35.8	0.2	136.5
1971	27.4	9.1	2.9	11	4.4	18.4	0	0.3	1.5	45.9	33.8	3.6	158.2	40.6	18.2	18.7	81.2
1972	2	4.5	14.4	5	35.6	4.6	0	0	9.4	20.4	32.1	5	132.9	10.1	55	4.6	61.9
1973	20.8	10.2	21.4	24.5	3.3	29.3	0	0	0.9	37.1	22.2	11.5	181.3	36	49.2	29.3	60.2
1974	8.8	15.5	12.1	23.7	1.5	0.5	0	0	20.4	78.3	47	43.2	250.9	35.8	37.4	0.5	145.6
1975	17.8	18.4	6.7	9.9	8.1	11.4	0	0	5.8	44.7	29.5	10.3	162.4	79.3	24.6	11.4	80
1976	14.3	6.4	7.4	26.8	14.8	0.8	0	0.5	18.1	54.4	63.1	10.5	216.9	31	49	1.2	135.6
1977	47.5	9.2	23.1	22.8	10.9	13.8	0	0	2	78.6	38.1	30.2	276.3	67.2	56.8	13.8	118.7
1978	3.3	10	12	41.9	22.5	6.2	31.3	0.3	2.7	49.8	28.5	10.4	219	43.5	76.4	37.8	81.1
1979	8.2	2.7	16.1	35.9	1.4	22.6	0	9.7	41.2	-9999.9	-9999.9	21.9	-9999.9	21.3	53.3	32.4	-9999.9
1980	5.6	7.3	21.4	11.2	24.6	3.5	0	0	37.5	29.8	31.9	43.5	216.2	34.7	57.2	3.5	99.2
1981	31.4	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9
1982	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9
1983	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9
1984	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9
1985	10.4	33.4	25.8	45.6	13.4	-9999.9	0	0	0	15.2	50.2	34.2	-9999.9	-9999.9	84.8	-9999.9	65.4
1986	12.6	6.2	6.3	35.5	3.1	-9999.9	0	0	16	41.8	80.6	44.2	-9999.9	52.9	45	-9999.9	138.4
1987	16.8	97.4	48.6	95.8	0.2	48.6	0	0	0.1	47.3	65.4	56.6	476.9	158.4	144.6	48.6	112.8
1988	18.4	23	12.5	15.3	3.1	0.1	0	0	6.2	24.3	43	16.8	162.8	98.1	30.9	0.1	73.6
1989	15.4	4.6	9.6	0	11.1	0.2	0	0	21.3	11.3	31.3	18.4	123.2	36.9	20.7	0.2	63.8
1990	17	13.9	45.6	27.4	23.9	28.8	0	0	9.4	49.3	45.8	10.7	271.6	49.4	96.8	28.8	104.4
1991	92.9	24.4	60	100.6	18.2	0	0	0	39.6	52.5	44	19.9	452.2	128	178.9	0	136.2
1992	52.2	5.3	18.9	27.5	7.7	4.7	0	0	7.2	30	23.8	23.2	200.5	77.4	54.1	4.7	61.1
1993	3.4	5	1.1	2.8	5.7	0.2	0	0	3.5	22.8	32.7	40.2	117.5	31.6	9.6	0.2	59
1994	4.6	3.2	13.3	22.2	1.5	0	0	0	0	4.4	38.8	19.4	107.3	48	37	0	43.2
1995	3.7	1.7	7.7	43	5.1	0	0	0	0.5	15.5	13.8	6.1	96.9	24.8	55.8	0	29.7
1996	3.4	2.7	9.6	1.3	1.3	0	0	0	0	13.7	9.1	16.7	57.8	12.2	12.2	0	22.8
1997	0	0	0	0	0	0	0	0	0.2	8.6	18.3	29.8	56.9	16.7	0	0	27.1
1998	5	13.8	9.4	6.8	3.7	0	0	0	0	23.4	20.9	9.3	92.4	48.7	19.8	0	44.4
1999	10.2	23.5	24.7	16.1	12.4	0.2	0	0	0.2	20.1	21.1	47.1	175.5	43	53.3	0.2	41.3
2000	7.4	25.9	14.2	23.3	6.6	0.2	0	0	4.1	15.8	27.1	8.1	132.6	80.3	44	0.2	47
2001	12.6	9.4	14.7	17	50.2	0	0	0	0	23.8	27.6	27.9	183.3	30.1	82	0	51.4
2002	9.5	0.1	4.8	18.6	17.4	0.2	0	0	0.6	17.8	27.8	10.2	107	37.5	40.8	0.2	46.2
2003	7.9	3.5	19	10	29	10.6	0	0	10.9	32.1	29.8	15.1	168.1	21.6	58.1	10.6	72.8
2004	33.6	4.5	69	30.5	37	2.3	0	0	3	48.3	77.3	10.6	316.2	53.2	136.6	2.3	128.7
2005	25.4	10.9	96.5	31	29	0	0	0	2.6	7.8	44.6	29	276.8	46.9	156.5	0	55
2006	25.3	25.1	5.1	44.6	-9999.9	4.6	0	0	0	15	19.4	33.4	-9999.9	79.4	-9999.9	4.6	34.4
2007	0.1	16.5	5.9	34.8	14.4	7.8	0	0	3.1	-9999.9	-9999.9	-9999.9	-9999.9	50	55	7.8	-9999.9

Chesterfield Inlet 1931 - 2007 Adjusted Precipitation Dataset

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Winter	Spring	Summer	Autumn
1931	-9999.9	23.5	5.9	17	8.5	84.3	26.9	12.4	55.1	43.8	45.5	69.6	-9999.9	-9999.9	31.5	123.7	144.4
1932	11.7	34.8	6.4	79	8.5	18.7	62.4	96.9	77.9	98.5	74.3	50	619.2	116.1	93.9	178	250.7
1933	5.5	12.8	17.5	29.6	28.9	17.7	63.6	59	44.7	11.3	2.9	11.7	305.1	68.3	76	140.4	58.9
1934	4.7	2	5.9	5.9	10.9	20	85.2	61.8	37.5	65.1	26.6	30.7	356.4	18.4	22.8	167.1	129.1
1935	-9999.9	20.8	-9999.9	17.6	2.9	18.4	33.3	56.6	57.4	36.5	-9999.9	24.6	-9999.9	-9999.9	-9999.9	108.3	-9999.9
1936	2.7	30.5	63.4	49.5	30.4	21.9	18.5	26.1	89.7	56.4	26	20.8	436	57.9	143.3	66.5	172.1
1937	36.6	59.6	28.6	41.5	36.6	20.9	160.7	52.8	31.8	45.8	16.6	56.1	587.5	117	106.6	234.4	94.2
1938	37.2	17	23.7	29.5	31.7	12	41.1	37.4	32.3	43.7	50.3	54.3	410.2	110.3	84.9	90.5	126.3
1939	16.7	14.3	20.8	46.5	14.7	36.2	43.8	79.9	44.1	58.6	24.6	22.6	423	85.3	82	159.9	127.4
1940	16.6	10.1	22.3	38.4	22	41.8	43.3	26.3	33.4	71.1	48.2	23.7	397.1	49.3	82.7	111.5	152.6
1941	28.4	9.9	18.6	15.1	44.8	16.9	41.8	54.1	34.2	-9999.9	43.8	30.6	-9999.9	62	78.4	112.8	-9999.9
1942	23.6	25.8	63.4	100.7	65.5	42.6	21.3	39.9	12	59.9	54.4	29.3	538.4	80	229.6	103.8	126.3
1943	9.3	1.1	12.5	15	20.5	2.8	52.5	-9999.9	38	24.7	23	15.7	-9999.9	39.7	48	-9999.9	85.6
1944	6.4	4.6	7	12.8	14.2	16.9	65.2	50.5	49.9	72.2	84.5	4.4	388.5	26.6	34	132.6	206.5
1945	31.2	14.9	50.3	29.6	-9999.9	38.5	29.8	14.1	22.5	17.1	39.4	1.7	-9999.9	50.5	-9999.9	82.4	79
1946	7.6	6.7	11.3	6.8	12.3	36.8	72.8	49.1	63	43	19.2	16.1	344.7	16	30.4	158.7	125.2
1947	2.7	21.2	9.3	13.1	37.7	26.7	58.7	60.8	75.2	70.6	43.6	17.9	437.6	40	60	146.3	189.5
1948	12.5	8.1	16	14.2	20	17.4	28.3	78.9	31.6	18.5	-9999.9	13.1	-9999.9	38.5	50.1	124.6	-9999.9
1949	12.6	1.8	14.3	42.7	10.2	79.4	-9999.9	4.3	5.8	-9999.9	5.3	13.4	-9999.9	27.5	67.2	-9999.9	-9999.9
1950	0.2	4	5.8	6.1	9.8	38.3	18.5	22.3	36	52.7	36.7	50.2	280.5	17.5	21.7	79.1	125.4
1951	14.6	12.6	16.3	27.4	25.1	24.7	40.6	22.1	23.5	41.4	19.6	17.8	285.9	77.4	68.8	87.5	84.6
1952	7.2	3.5	6.8	23.6	11.1	25.2	63.4	76.7	61.1	42.3	9	105.8	435.6	28.5	41.5	165.3	112.4
1953	6.8	14.5	27.2	21.7	10.3	12.5	51.8	41.3	36.8	34.4	57.9	13.4	328.6	127.1	59.3	105.6	129
1954	1.5	15.5	12.5	18.9	13.8	40.4	30.5	9.1	49.4	18.8	14.1	9.7	234.1	30.4	45.1	80	82.3
1955	28.1	2	11.1	20.7	16.9	51.1	60	79.4	72.6	35.6	20.2	21.3	419	39.8	48.6	190.5	128.4
1956	21.4	6.1	4.3	31.6	11.1	2.8	30.8	69.5	20	64.4	13.7	10.5	286.2	48.8	47	103.1	98.1
1957	2.3	8.1	8.7	13.2	16.4	8.6	31.7	28	40.5	12.9	20.8	7	198.2	20.8	38.3	68.3	74.2
1958	16.7	12.2	9.3	6.2	30.5	34.2	60	25.9	61.5	41.5	29.5	7	334.5	35.9	46	120.2	132.5
1959	17.8	3.2	11.6	3	22.3	83.4	31.8	83.1	69	23.8	9.1	8.2	366.2	27.9	37	198.2	101.9
1960	5	7.1	13.5	5.3	7.7	12.6	65.7	46.9	56.1	34.1	21.7	5.8	281.6	20.3	26.5	125.2	112
1961	5	12.9	6.4	31.9	4.9	31.2	27.7	35	167.8	70.2	59	107.2	559.2	23.7	43.2	93.9	296.9
1962	0.9	0.6	31.5	41	79.5	23.8	19.7	38.6	27.1	69.5	18.2	6.2	356.7	108.7	152	82	114.9
1963	7.4	3.9	6.2	11.1	24.9	9.8	59.8	42.2	30.4	97.3	50.5	12.4	356	17.6	42.2	111.8	178.2
1964	26.9	4.6	4.8	25.2	21.4	49.7	24.8	30.7	31.7	38.3	26.9	9.7	294.5	43.9	51.4	105.2	96.8
1965	8	3	6.4	12.1	6.4	56.5	51.9	13.9	35.6	24.8	24.1	20	262.7	20.7	24.9	122.3	84.5
1966	11.8	18.7	7.7	12.4	49.5	24.2	20.8	46.4	37.4	20.9	20.8	14.4	285.1	50.6	69.7	91.4	79.1
1967	10.3	2	17.9	8.5	33.7	37.7	59.2	34.9	106.2	41.7	29.5	42.3	424	26.7	60.1	131.9	177.3
1968	15.5	11.7	50	15.2	27.4	36.5	46.3	38.2	77.8	62.4	47.7	24.6	453.4	69.5	92.7	121.1	187.8
1969	21.6	11.1	14.6	24.3	15.3	24.4	49.4	39.6	13.8	15.5	48	43.8	321.5	57.3	54.2	113.5	77.3
1970	28.4	2.4	15.8	1.9	18.4	34.5	122.7	46.8	75.1	122.4	35	4.1	507.6	74.6	36.1	204	232.5
1971	27.4	9.1	2.9	11.6	19.9	32.3	4.7	39.6	32.5	92.3	33.8	3.6	309.7	40.6	34.3	76.6	158.6
1972	2	4.5	14.4	5	36.6	7.1	77.7	31	28.3	21.7	32.1	5	265.3	10.1	56	115.7	82.1
1973	20.8	10.2	21.4	24.5	4.5	53.7	8.9	106.8	39.8	56.5	22.2	11.5	380.8	36	50.4	169.4	118.4
1974	8.8	15.5	12.1	24	1.5	23.9	29.1	42.4	42.9	79.3	47.3	43.2	370	35.8	37.7	95.4	169.5
1975	17.8	18.7	6.7	10.2	27.7	19.7	50.9	48.6	36.3	52.4	29.5	10.3	328.6	79.6	44.5	119.1	118.2
1976	14.3	6.4	7.4	26.8	27.4	19.7	41.5	27.1	54.1	57.4	63.1	11.1	356.2	31	61.6	88.3	174.6
1977	47.5	9.2	23.1	35.8	18.2	38.5	28.6	22.1	17	97.5	43.2	30.2	411.1	67.8	77.1	89.3	157.8
1978	3.3	10.3	12	41.9	40.7	17.3	91.6	31.7	11.3	53.2	28.8	10.4	352.6	43.8	94.6	140.6	93.4
1979	8.2	2.7	16.1	36.8	13.5	37.3	19.6	57.7	66.7	-9999.9	-9999.9	22.1	-9999.9	21.3	66.3	114.6	-9999.9
1980	5.6	7.3	21.4	13.6	29.9	11.3	92.6	78.4	93.3	30.4	31.9	43.5	459.2	35	64.9	182.4	155.6
1981	31.4	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9
1982	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9
1983	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9
1984	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9	-9999.9
1985	10.4	33.4	25.8	45.6	13.4	-9999.9	42.5	74.2	26.8	15.2	50.2	34.2	-9999.9	-9999.9	84.8	-9999.9	92.1
1986	12.6	6.2	6.3	35.5	25.2	-9999.9	0	33.2	65.9	41.8	80.6	44.2	-9999.9	52.9	67	-9999.9	188.2
1987	16.8	97.4	48.6	95.8	0.3	48.8	0.3	100.9	16.8	47.3	65.4	56.8	595.3	158.4	144.7	150	129.5
1988	18.4	23	12.5	15.3	3.1	5.4	24	-9999.9	38.3	39.9	43	16.8	-9999.9	98.2	30.9	-9999.9	121.2
1989	15.4	4.6	9.6	0	11.1	7.9	21.1	26.9	72.3	11.3	31.3	18.4	229.8	36.9	20.7	55.9	114.8
1990	17	13.9	45.6	27.4	25	29.1	70.7	94.8	31.7	49.4	45.8	10.7	461	49.4	98	194.6	126.8
1991	92.9	24.4	60	100.6	22.6	2.3	99.7	36.5	39.8	52.5	44	19.9	595	128	183.2	138.4	136.3
1992	52.2	5.3	18.9	27.5	7.7	16.1	11.6	27.1	39.5	30.1	23.8	23.2	283	77.4	54.1	54.8	93.5
1993	3.4	5	1.1	2.8	7.6	9.9	28.3	94.1	27.4	29	32.9	40.2	281.7	31.6	11.5	132.2	89.3
1994	4.6	3.2	13.3	22.2	1.5	26.1	1.4	46.9	72.5	12.3	38.8	19.4	262.3	48	37	74.5	123.6
1995	3.7	1.7	7.7	43	5.1	14.9	37.3	36.4	25.2	41.6	13.8	6.1	236.3	24.8	55.8	88.6	80.6
1996	3.4	2.7	9.6	1.3	1.9	35.5	39.6	56.7	49.1	14.4	9.1	16.7	240.1	12.2	12.8	131.8	72.6
1997	0	0	0	0	0	0	17.3	39.7	22.6	68.8	18.4	29.8	196.7	16.7	0	57	109.8
1998	5	13.8	9.4	6.8	19.4	25.8	116.4	68.5	63	29.5	21.1	9.3	387.9	48.7	35.5	210.6	113.6
1999	10.2	23.5	24.7	17.5	27.7	71.7	27.5	79.2	45.8	29.8	21.1	47.1	425.8	43	69.9	178.4	96.7
2000	7.4	25.9	14.2	23.3	7.4	3.9	14.8	56.3	33.3	19.4	27.2	8.1	241.1	80.3	44.9	75	80
2001	12.6	9.4	14.7	17	64.4	28.9	55.9	32.5	27.7	39.2	27.7	27.9	358	30.1	96.2	117.4	94.6
2002	9.5	0.1	4.8	18.6	20.1	16.4	64.6	46.9	48.7	33.3	27.8	10.5	301.4	37.5	43.5	127.8	109.9
2003	7.9	3.5	19	10	42.7	39.7	28.9	52.7	44.5	55.7	30.1	15.1	349.9	21.9	71.8	121.3	130.2
2004	33.6	4.5	69	30.5	37	17.2	15.8	35.8	77.3	50.3	77.3	10.6	459	53.2	136.6	68.9	204.9
2005	25.4	10.9	96.5	32.9	65	14.7	63.2	21.8	46.8	32.9	44.6	29	483.6	46.9	194.4	99.7	124.2
2006	25.3	25.1	5.1	44.8	-9999.9	49.9	54	36.9	12.1	61.1	19.8	33.4	-9999.9	79.4	-9999.9	140.7	93.1
2007	0.1	16.5	5.9	34.8	17	38.6	33	83.3	27.7	-9999.9	-9999.9	-9999.9	-9999.9	50	57.7	154.9	-9999.9

Chesterfield Inlet 1985 - 2007 Archived Rainfall Dataset

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1985	0	0	0	0	0		41	72	26	0	0	0	139
1986	0	0	0	0	21		0	32	47.6	0	0	0	100.6
1987	0	0	0	0	0	0	0	97.5	16	0	0	0	113.5
1988	0	0	0	0	0	5	23	0	30	15	0	0	73
1989	0	0	0	0	0	7	20	26	48.8	0	0	0	101.8
1990	0	0	0	0	1	0	68.1	91.6	21	0	0	0	181.7
1991	0	0	0	0	4	1.8	97	35.1	0	0	0	0	137.9
1992	0	0	0	0	0	10.5	10.5	25.3	31	0	0	0	77.3
1993	0	0	0	0	1	8.6	26.2	91	21.6	6	0	0	154.4
1994	0	0	0	0	0	24.5	1	44	69	7	0	0	145.5
1995	0	0	0	0	0	14	35.5	35	23	25	0	0	132.5
1996	0	0	0	0	0	33.8	37.5	53.8	46.8	0.6	0	0	172.5
1997	0	0	0	0	0	0	15.8	36.9	20	58.3	0	0	131
1998	0	0	0	0	14.4	24.4	112.5	65.2	59.2	5.2	0	0	280.9
1999	0	0	0	1.2	14.2	68.8	25.4	75.6	42.9	9	0	0	237.1
2000	0	0	0	0	0.6	2.8	13.6	53.6	27.8	3	0	0	101.4
2001	0	0	0	0	13.4	27.2	53	30.6	25.6	14.4	0	0	164.2
2002	0	0	0	0	2.4	14.2	61.6	44.2	45.4	14.3	0	0	182.1
2003	0	0	0	0	12.6	27.4	26.6	49.8	31	22	0	0	169.4
2004	0	0	0	0	0	13.4	14.2	33.3	70.4	1.2	0	0	132.5
2005	0	0	0	1.6	34.6	13.2	60.4	20.4	41.4	22.4	0	0	194
2006	0	0	0	0		43.4	50.6	34	9.6	43.2	0	0	180.8
2007	0	0	0	0	2.2	29.2	31.2	78.6	22.6		0		163.8

Chesterfield Inlet 1985 - 2007 Archived Snowfall Dataset

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1985	6.7	22	17	30	8.8		0	0	0	10	33	22.1	149.6
1986	8	4	4	23	2		0	0	10.4	27	53	29	160.4
1987	11	64	32	63	0	32	0	0	0	31	43	37	313
1988	12	15	8	10	2	0	0	0	4	16	28	11	106
1989	10	3	6.2	0	7.2	0	0	0	14	7.4	20.4	12	80.2
1990	11	9	30	18	15.6	18.8	0	0	6	32.4	30	6.6	177.4
1991	61	16	39	66	12	0	0	0	26	34.2	28.6	12.7	295.5
1992	34	3.3	12.2	18	5	3	0	0	4.5	19.3	15	14.5	128.8
1993	2	2.5	0	1.5	3.5	0	0	0	2	14	21.2	26	72.7
1994	2	1	8	14	1	0	0	0	0	2.5	25	12	65.5
1995	1	0	4	28	3	0	0	0	0	9.5	8	3	56.5
1996	1	1	5.5	0	0.5	0	0	0	0	9	6	11	34
1997	0	0	0	0	0	0	0	0	0	5	11.5	19.2	35.7
1998	3	9	6	4	2	0	0	0	0	15	13.2	5.8	58
1999	6.3	15.4	15.9	10.2	8	0	0	0	0	12.6	13.6	30.8	112.8
2000	4.6	16.6	9	15	4	0	0	0	2.6	10	17.6	5	84.4
2001	8	6	9.4	11	33	0	0	0	0	15.4	18	18.2	119
2002	6	0	3	12	11	0	0	0	0	11	18	6.2	67.2
2003	5	2.2	12.3	6.4	19	7	0	0	6.8	20.8	19.2	9.6	108.3
2004	22	2.8	45.2	20	24.2	1.4	0	0	1.8	31.2	50.6	6.8	206
2005	16.4	7	63.2	20.2	18.8	0	0	0	1.4	5	29.2	19.1	180.3
2006	16.4	16.4	3	29.2		3	0	0	0	9.2	12.6	21.8	111.6
2007	0	10.8	3.8	22.9	9.2	5	0	0	1.8		21.2		74.7

Chesterfield Inlet 1985 - 2007 Archived Precipitation Dataset

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1985	6.7	22	17	30	8.8		41	72	26	10	33	22.1	288.6
1986	8	4	4	23	23		0	32	58	27	53	29	261
1987	11	64	32	63	0	32	0	97.5	16	31	43	37	426.5
1988	12	15	8	10	2	5	23	0	34	31	28	11	179
1989	10	3	6.2	0	7.2	7	20	26	62.8	7.4	20.4	12	182
1990	11	9	30	18	16.6	18.8	68.1	91.6	27	32.4	30	6.6	359.1
1991	61	16	39	66	16	1.8	97	35.1	26	34.2	28.6	12.7	433.4
1992	34	3.3	12.2	14	5	12.7	10.5	25.3	35.5	15.3	12	14.7	194.5
1993	1.8	2.8	0	1.5	3.9	8.6	26.2	91	23.6	19.4	8.2	15.4	202.4
1994	2	0.8	4.6	8.5	0.5	24.5	1	44	69	8.5	34	13.3	210.7
1995	1	0	2	14.7	3	14	35.5	35	23	37	6.5	3	174.7
1996	2	1	4.4	0	0.5	33.8	37.5	53.8	46.8	9.6	6	11	206.4
1997	0	0	0	0	0	0	15.8	36.9	20	63.3	11.5	19.2	166.7
1998	3	9	6	4	16.4	24.4	112.5	65.2	59.2	19.8	8.2	6.4	334.1
1999	6.2	8	10.4	9.8	22	68.8	25.4	75.6	42.9	21.2	10.8	29.6	330.7
2000	4.4	15.2	5.4	13.2	5.2	2.8	13.6	53.6	30.6	12	16.4	4.8	177.2
2001	4	4.2	6.8	10.4	61.8	27.2	53	30.6	25.6	32.4	14.8	13.6	284.4
2002	3.2	0	1.6	8.2	14.6	14.2	61.6	44.2	45.4	26.5	20.4	5	244.9
2003	2.6	1.4	7.2	4.6	30.6	37.4	26.6	49.8	37.2	43.7	21.4	9.8	272.3
2004	22.2	2.2	45.4	20.6	10	14.8	14.2	33.3	72	31.4	60.6	7.4	334.1
2005	10.6	7.8	86.6	23.6	47.2	13.2	60.4	20.4	42.8	26.6	23.4	11.7	374.3
2006	12.6	13.4	1.4	26		44.4	50.6	34	9.6	50.8	8.4	13.2	264.4
2007	0	11.2	3	22.9	10.4	31.8	31.2	78.6	24.4		13.6		227.1