

DATE 29 September 2011

PROJECT No. 09-1373-1004

TO Rick Schryer
Fortune Minerals Limited

FROM Golder Associates Ltd.

RE: LOU LAKE BATHYMETRY

Introduction

On 2 September 2011, Fisheries and Oceans Canada (DFO) requested Fortune Minerals Limited to provide clarification on the accuracy of the bathymetric mapping completed for Lou Lake in relation to the water withdrawal protocol, which were proposed for the NICO Project. The below provides a summary on Golder Associates Ltd.'s (Golder) bathymetry program and results.

Summary

Lou Lake bathymetry data were collected in July 1998 by Golder (Yellowknife) using a chart recording echosounder (Golder 1998). Data from the echosounder, in the form of a paper-trace, was used to create the bathymetric map. Data were collected along 31 bathymetric transects during the survey in 1998 on Lou Lake. See attached map (Figure 1) showing transect locations and drafted bathymetric isobath lines.

In 2008, the 1998 bathymetry map was updated by Golder GIS by interpolation of the 4 m interval isobaths to create 1 m interval isobaths (Figure 2). Due to the data interpretation used to create the 1 m isobaths, a certain degree of error is associated with the exact location of the interpolated isobath lines.

Water depth information collected in September 2009 during water quality and benthic invertebrate sample collection from 4 locations in Lou Lake is compared to 1998 bathymetry map depths in Table 1 below.

Table 1: 2009 Measured Water Depths and Corresponding 1998 Bathymetry Map Water Depths

2009 UTM Coordinates NAD 83; Zone 11 V		2009 Measured Water Depth (m)	1998 Bathymetry Depth (m)
Easting	Northing		
511308	7048954	6.5	4.0 – 5.0
511176	7048847	12.5	15.0 – 16.0
511117	7048819	17.5	17.0 - 18.0
511054	7048725	23.5	22.0 – 23.0

The accuracy of the hand held GPS unit that was used to collect the 2009 sample locations has an associated error of less than 15 m (Garmin website <http://www8.garmin.com/aboutGPS/>), but typically within 5 to 10 m. This could explain some of the discrepancy between the 1998 bathymetric survey and the 2009 water depths. This is



most likely for the shallow sample location because the isobath contour lines are tightly spaced in that area (Figure 2).

As reported in the Fortune Minerals Limited NICO Developer's Assessment Report, Lou Lake water levels fluctuate by approximately 0.5 m throughout the year. This fluctuation could account for some of the discrepancies in water depths, as Lou Lake reaches its maximum water level in June and then steadily drops to base levels by September. The 1998 bathymetry data were collected in mid July when water levels are typically still high versus the 2009 benthic survey, where the data were collected in early September when water levels typically are near base levels.

According to DFO Protocol for Winter Water Withdrawal in the Northwest Territories and the associated bathymetric survey protocol (DFO 2005), Lou Lake would require a minimum of one longitudinal transect and 7 perpendicular transects (spaced a maximum of 500 m apart) along its approximate 3900 m length to calculate lake volume. Although the 1998 survey transects were collected using a zigzag pattern and not the suggested single longitudinal transect with additional transects running perpendicular, there were substantially more transects used in the bathymetric survey than were required according to the protocol (i.e., 31 versus a minimum of 8 survey transects). Thus, it is our opinion that the bathymetric data presented provide an adequate base for calculating lake volumes for the purposes of assessing water withdrawal.

Closure

We trust that this meets your requirements; if you have any additional questions, please contact one of the undersigned.



Kent Kristensen, B.Sc.
B.Sc. Fisheries Biologist

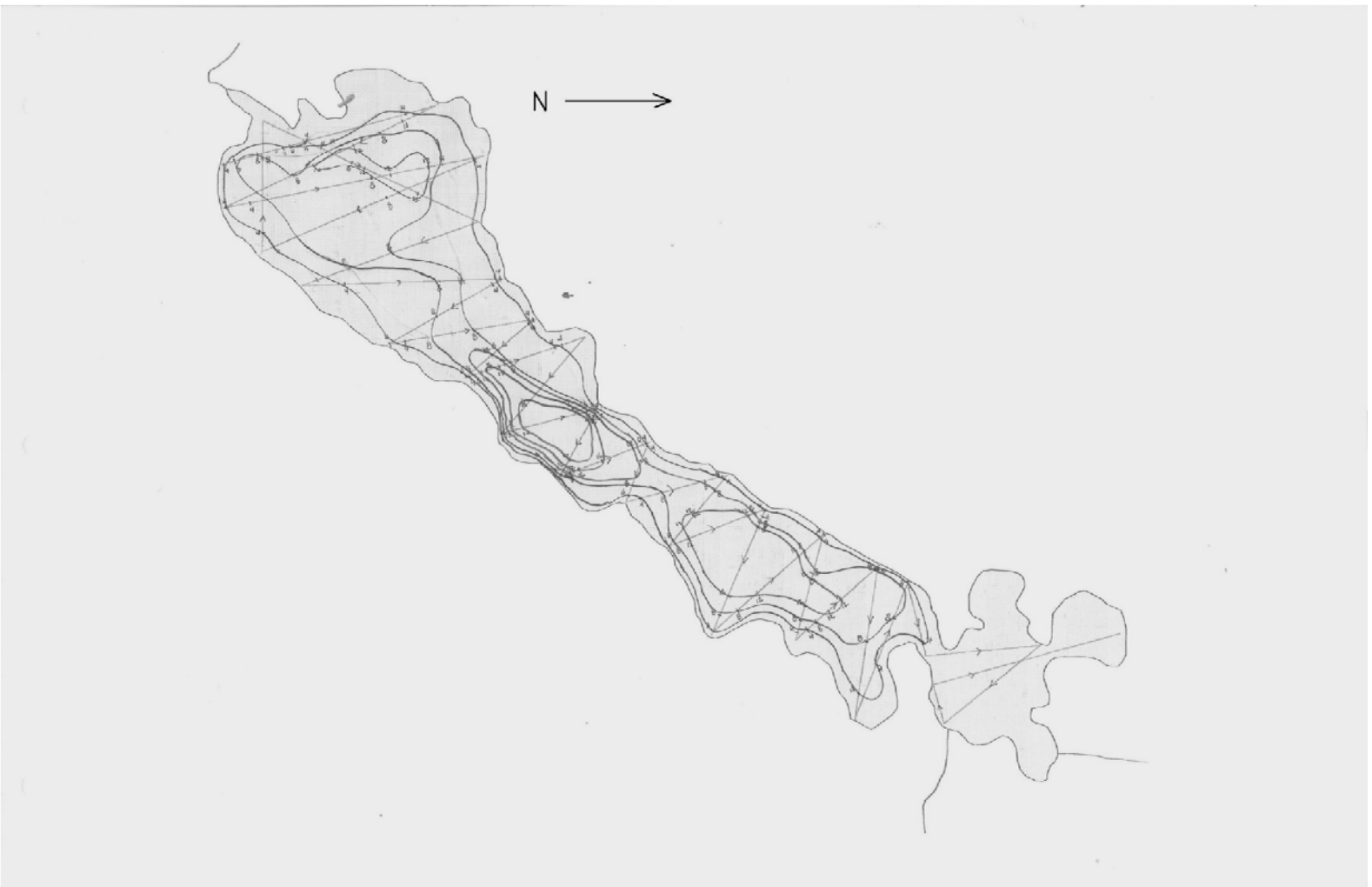
KK/GRA/jg

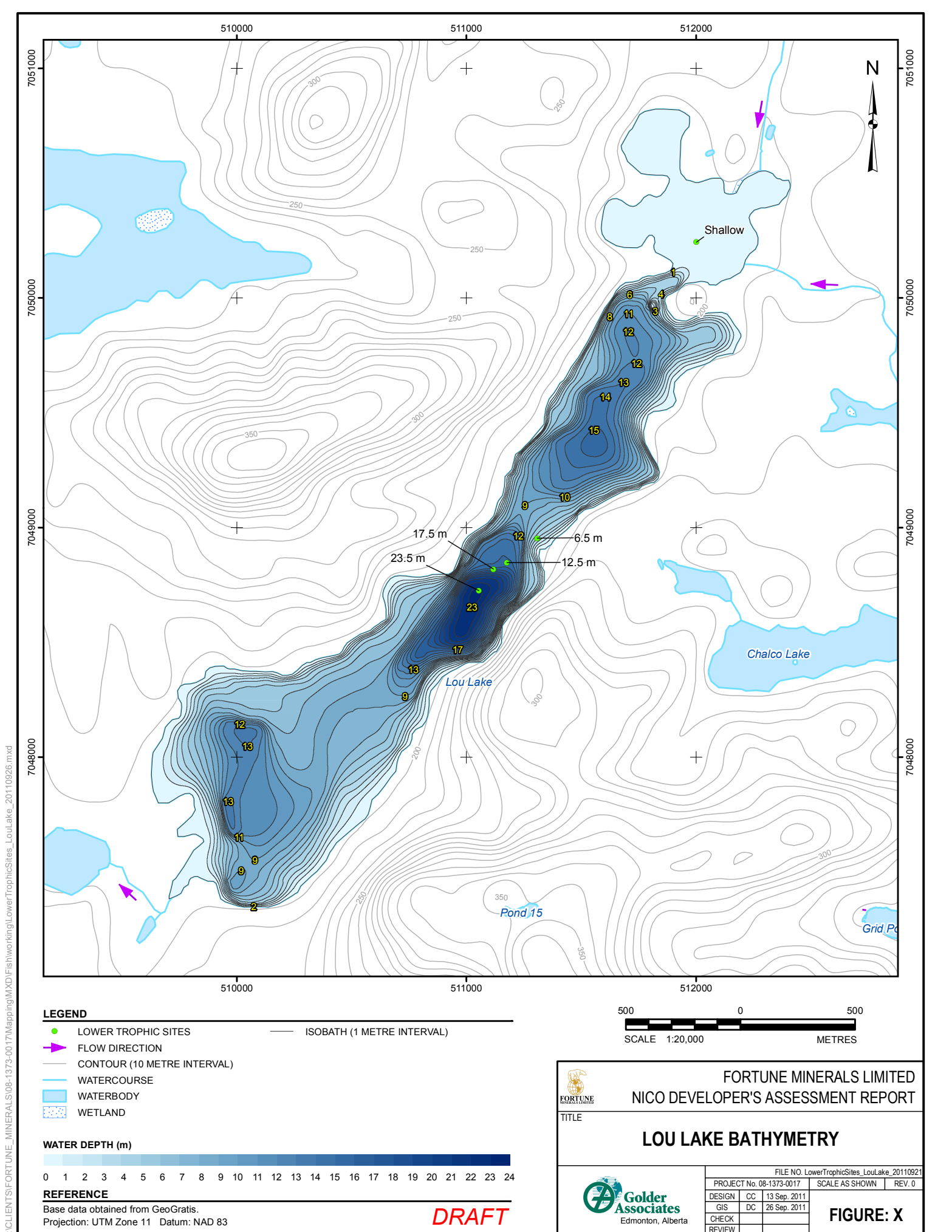


Gary Ash, M.Sc., P.Biol.
Principal M.Sc. Fisheries Biologist

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Figure 1: Lou Lake 1998 Bathymetric Transect Locations

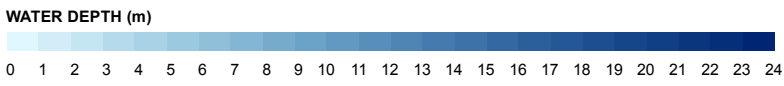




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LEGEND

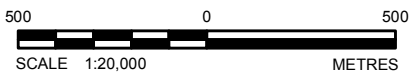
- LOWER TROPIC SITES
- FLOW DIRECTION
- CONTOUR (10 METRE INTERVAL)
- ISOBATH (1 METRE INTERVAL)
- WATERCOURSE
- WATERBODY
- WETLAND



REFERENCE

Base data obtained from GeoGratis.
 Projection: UTM Zone 11 Datum: NAD 83

DRAFT



 FORTUNE MINERALS LIMITED	FORTUNE MINERALS LIMITED		
	NICO DEVELOPER'S ASSESSMENT REPORT		
TITLE			
LOU LAKE BATHYMETRY			
FILE NO. LowerTrophicSites_LouLake_20110921			
PROJECT No.	08-1373-0017	SCALE AS SHOWN	REV. 0
DESIGN	CC 13 Sep. 2011		
GIS	DC 26 Sep. 2011		
CHECK			
REVIEW			
 Golder Associates Edmonton, Alberta			FIGURE: X