

February 13, 2013

EDI Job Number: 12-Y-0450

Assessment and Abandoned Mines
Yukon Government
Box 2703
Whitehorse, YT

Attention: Adrienne Turcotte, Project Officer

Re: Dixon Lake Fish Tissue and Water Quality Project – Field Update

In September 2012, EDI Environmental Dynamics Inc. (EDI) reported the capture of Arctic grayling (*Thymallus arcticus*) with unusual dark skin pigmentation from Dixon Lake, upstream from the Faro Mine site. Assessment and Abandoned Mines (AAM) subsequently retained EDI to conduct a field program, which included fish tissue and water quality sampling to investigate this further. The intent of this letter is to provide a summary of the tasks completed, site conditions and relevant observations noted during the field program.

Methods

Field investigations were conducted January 8 and 9, 2013 by EDI Biologists Meighan Kearns and Graeme Pelchat. Dixon Lake was accessed by snowmobile. Fish sampling was conducted both days via under-ice angling with a variety of lures and bait. Table 1 and Figure 1 (attached) summarize fish sampling locations and effort. Water quality investigations were conducted January 9, 2013. Two surface samples were collected for laboratory analysis and shipped to Maxxam Analytics. A YSI multi-meter was used to record in-situ parameters as well as temperature and dissolved oxygen profiles at 0.5 m depth increments at the deepest sample site.

Interim Results

Weather conditions were overcast both days, with air temperatures from -15 to -20°C and a south wind. Fish sampling was conducted at 10 locations for a total effort of 41.7 rod-hours (Table 1). A total of three Arctic grayling were captured (Table 2); each fish was frozen whole and submitted to DFO for analysis by a fish pathologist. The pathologist's report will be summarized in a technical memorandum upon receipt of the analysis.



Surface in-situ water quality was recorded at Site I, resulting in temperature, dissolved oxygen, specific conductivity and pH values of 0.1°C, 13.38 mg/L, 53.2 µS/cm and 6.16, respectively. Temperature and dissolved oxygen profiles were conducted at Site I, the deepest sample site. Two surface water samples were collected for laboratory analysis at sites I and H; these were shipped to Maxxam Analytics January 10, 2013. Detailed water quality results will be summarized in a technical memorandum upon receipt of the laboratory analysis.

Table 1. Dixon Lake fish sampling locations and effort, January 8-9, 2013.

Date	Site	UTM Coordinates (Zone 8V)		Depth (m)			Fishing Effort		
		Easting	Northing	Ice	Water	Effective Depth	Start Time	End Time	Effort (hrs)
08-Jan-13	A	593701	6911005	0.8	7.2	8.0	11:50	16:00	4.2
	B	593707	6911011	0.8	7.5	8.3	12:00	16:05	4.1
	C	593711	6911019	0.8	6.5	7.3	12:10	16:10	4.0
	D	593713	6911027	0.8	8.0	8.8	12:30	16:10	3.7
	E	593711	6911037	0.8	7.5	8.3	12:50	16:15	3.4
	F	593731	6911053	0.8	7.5	8.3	13:05	16:15	3.2
09-Jan-13	A	593701	6911005	0.8	7.2	8.0	10:00	15:30	5.5
	B	593707	6911011	0.8	7.5	8.3	10:00	15:30	5.5
	C	593711	6911019	0.8	6.5	7.3	10:05	10:30	0.4
	Z	593496	6910682	0.7	2.5	3.2	11:05	11:30	0.4
	G	593475	6910696	0.7	5.5	6.2	11:10	11:30	0.3
	H	593620	6910848	1.0	7.0	8.0	12:00	15:40	3.7
	I	593630	6910858	1.0	10.3	11.3	12:20	15:40	3.3
Total Effort (Rod-Hrs)									41.7

Table 2. Dixon Lake fish capture data, January 8-9, 2013.

Fish ID	Species	Fork Length (mm)	Weight (g)	Sample Site	Date Captured	Photos	Comments
01	GR	275	200	C	08-Jan-13	1	Overall dark colour but not blotchy
02	GR	301	300	A	08-Jan-13	2	Distinct dark discolouration on lower jaw
03	GR	234	150	B	09-Jan-13	-	Possible dark pigmentation (spots) on lower jaw



Photo 1. Fish 01 captured at Site C, Dixon Lake, January 8, 2013.



Photo 2. Fish 02 captured at Site A, Dixon Lake, January 8, 2013. Note the discolouration on the lower jaw.



Challenges

The crew experienced mechanical issues with the power auger. The hand auger was used, resulting in a smaller hole (8 inch diameter) that did not allow for depth sampling with the Van Dorn sampler. Instead of collecting water samples from the top, mid and bottom of the water column, the crew collected two surface water samples from sites H and I.

Previous sampling found fish that exhibited a dark pigmentation in fleshy areas of the body. During this sampling event, obvious discolouration was only observed on the lower jaw area of one fish captured. The field crew decided to freeze each fish whole; subsequent communication with DFO confirmed these samples could be submitted to the pathologist.

Conclusion

In summary, the field program was completed, with methodology adjustments, as required. Follow-up reports will be submitted to AAM upon receipt of fish tissue and water quality analysis results.

Should you have any questions or concerns, please feel free to contact me via email (mkearns@edynamics.com) or phone (867-393-4882).

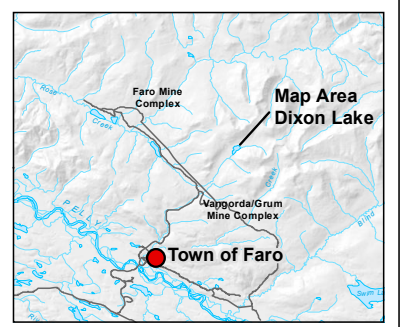
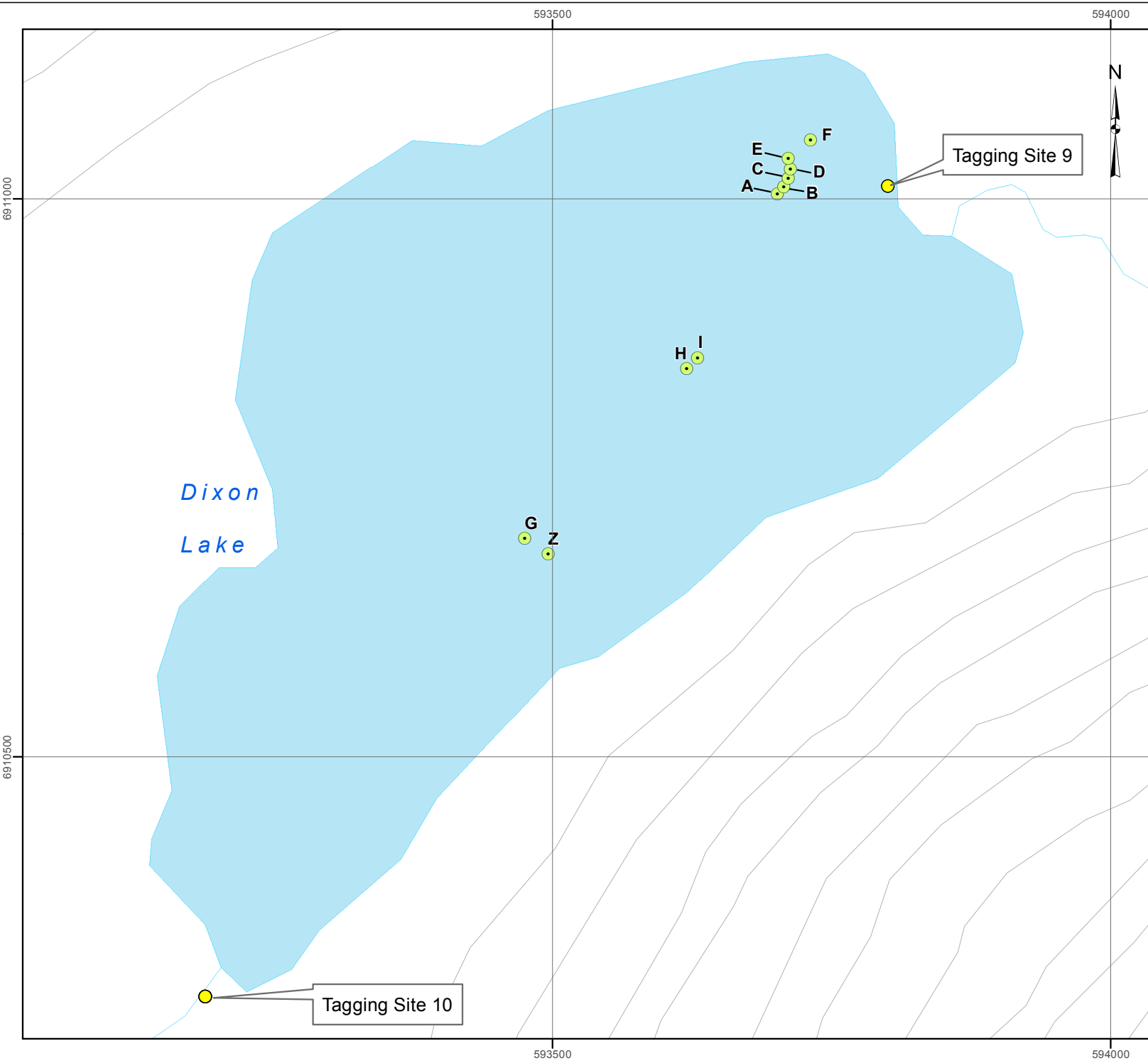
Yours truly,

EDI Environmental Dynamics Inc.

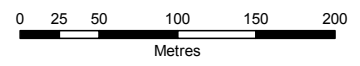
Meighan Kearns, B.Sc., R.P.Bio.

Aquatic Biologist

Attachments: Figure 1 (Fish sampling locations, Dixon Lake, January 8 – 9, 2013)



- Legend**
- A Sampling Sites
 - Location of tagging site, September 2012
 - Contours (30 metre interval)



Map scale 1:5,000 (printed at 8.5x11)
 Map Projection: North American Datum 1983 UTM Zone 8N

**Fish sampling locations,
 Dixon Lake, January 8 - 9, 2013.**

Data sources
 1:50,000 and 1:250,000 topographic spatial data provided by Geomatics - Yukon Government via online source (Corporate Spatial Warehouse) www.geomatics.yukon.ca.

National Road Network courtesy of Her Majesty the Queen in Right of Canada, Department of Natural Resources. All Rights Reserved.

Project data displayed is site specific. Data collected by EDI Environmental Dynamics Inc. was obtained using Garmin GPS technology.

This document is not an official land survey and the spatial data presented is subject to change.

Drawn: LG	Checked: MK / MP	Date: 28/01/2013	FIGURE 1
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