2012 Assesment Report for Sugarloaf Resources Inc.

Exploration Licences 09387 & 09389

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1.0 Summary

A group of 2 exploration licences (09387 &09389) referred to as the Sugarloaf southern block, lie in the basalts of the Diamond Brook Formation in the Cobequid Highlands of Nova Scotia. Field observations suggest that the geology is a little more complicated than the existing maps suggest as rhyolite flow units are commonly observed throughout the property along with minor meta-sedimentary sequences. A detailed mapping of these units/sequences is planned for future work programs. In any case this area is thought to be part of an epithermal gold system.

The 2012 work program focused on a stream sediment sampling program. 27 stream sediments were sluiced, bagged, dried and sieved to different size fractions. They were then analyzed by portable handheld XRF for gold indicators and then subsequently hand panned. Panned concentrates were observed thru a binocular microscope and gold grains were counted, with additional notes recorded about other heavy minerals observed.

Gold was visually observed thru panning in 1 of the 27 stream sediment samples (sample SL-12-228). Observed gold grains did not correlate well with XRF gold indicators as no anomalous readings were recorded in the one sample where visible gold was observed.

These results will be combined with earlier 2012 results from Sugarloaf licences north of licence 09387 and 09389 to further delineate the zones of the potential source of the gold.

2.0 Introduction

The Sugarloaf southern block is composed of exploration licenses 09387 and 09389 which are located in the Cobequid Highlands area of Nova Scotia and are the basis of this report.

Since 1986-87, when Au anomalies were detected in the Northern Nova Scotia Regional Stream Sediment sampling program (OFR 89-007), companies have been trying to source the Au anomalies. The 2012 Sugarloaf work program was focused on further narrowing in on these historic anomalies by collecting sluice stream sediment samples.

Stream sluice samples were dried and sieved to various size fractions, resulting fractions were analyzed with a portable XRF analyzer. Finer fractions (-18,-45,-60,-80,-140) were subsequently hand panned and visually inspected for gold grains and other heavy minerals.

XRF analyses of the samples were completed using an Olympus Innovx portable DP-6000 X-ray fluorescence analyzer. The XRF was used to analyze for epithermal Au indicators arsenic (As), antimony (Sb), lead (Pb) and zinc (Zn). Gold indicators were chosen based on suggestions in MacHattie, 2011 that these elements are associated with Au mineralization in the Warwick Mountain Area. XRF results at this point remain uncorrected due to the lack of a known set of assayed reference samples to analyze and generate XRF correction factors. Due to this, XRF results must be evaluated for anomalies rather than assuming absolute values.

3.0 Location and Access

The licenses are located in Colchester County, Nova Scotia approximately 4km southeast of Earltown. Access to the property is gained by taking Exit 11 off Highway 104 and proceeding north on Highway #4. Head east at Junction 246, which merges with Hwy 256 in West New Annan, continuing east out of West New Annan until junction 311. Head south and junction 311 and proceed through the village of Earltown until the village of Nuttby. Access to both licences can be gained via the Old Nuttby Road which heads north out of the village of Nuttby. Access to the licence 09389 is from the wind farm roads which occupy a significant portion of the license. Access to 09387 can be gained by private forestry roads which branch of northeast from the Old Nuttby Road. See Figure 1 on the following page for location map.

Sugarloaf Licences Location Map

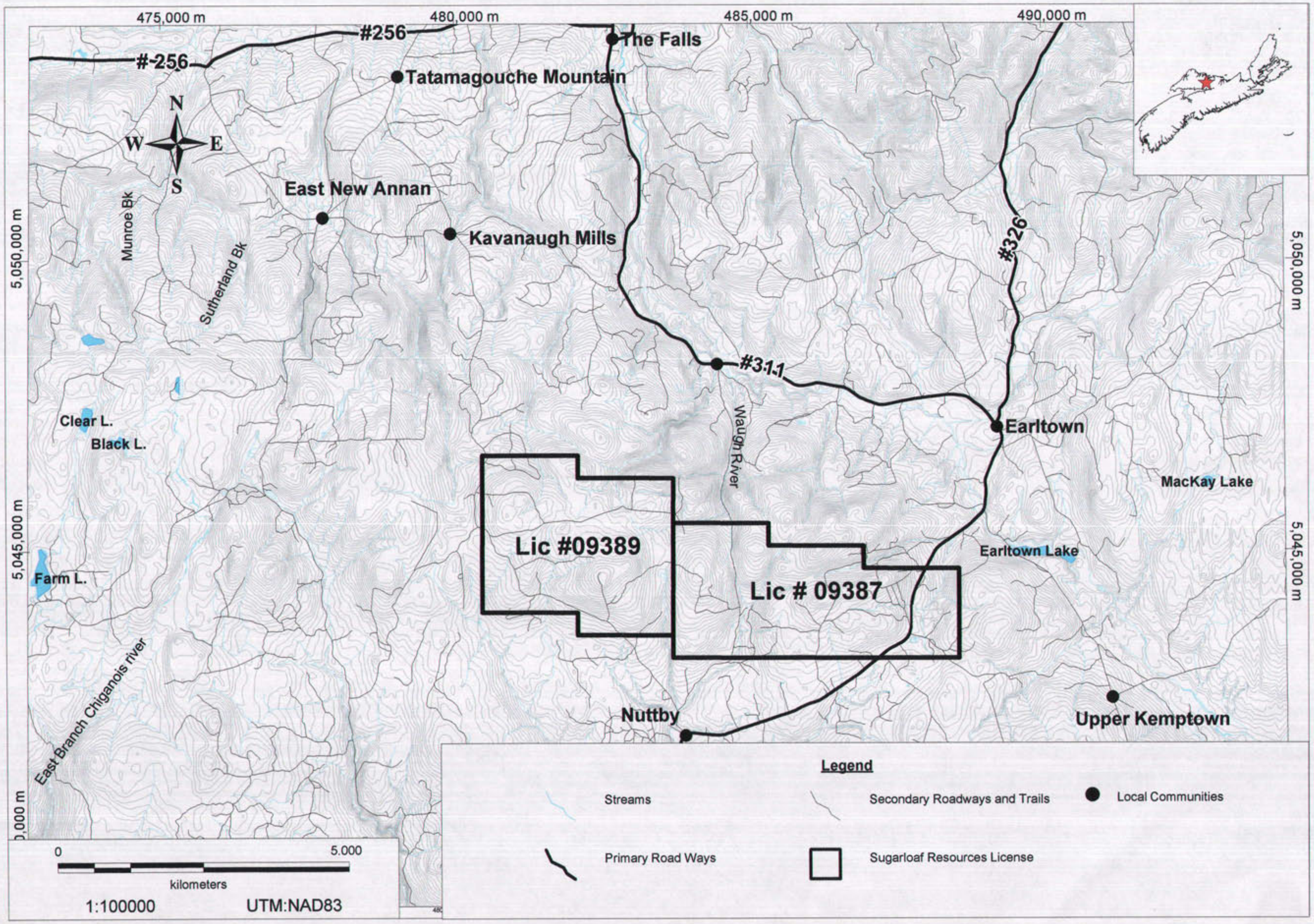

Figure 1

4.0 License Tabulation

Table 1-Claims List

License #	NTS Map Sheet	Tract	Claims	Anniversary Date
09389	11E/11A	37	JKLMNOPQ	10/28/2012
09389	11E/11A	38	EFGH JKLMNOPQ	10/28/2012
09389	11E/11A	59	ABCDEFGH JKLMNOPQ	10/28/2012
09389	11E/11A	60	ABCDEFGH JKLMNOPQ	10/28/2012
09389	11E/11A	61	ABCD	10/28/2012

License #	NTS Map Sheet	Tract	Claims	Anniversary Date
09387	11E/11A	39	ABCDEFGH JKLMNOPQ	10/28/2012
09387	11E/11A	40	ABCDEFGH JKLMNOPQ	10/28/2012
09387	11E/11A	41	ABCDEFGH JKLMNOPQ	10/28/2012
09387	11E/11A	57	ABCD	10/28/2012
09387	11E/11A	58	ABCDEFGH	10/28/2012

5.0 Previous Work

Several exploration programs have been conducted in the Cobequids over the years for both base and precious metals as well as for nuclear fuels. Past work was briefly reviewed in conjunction with the 2012 work program, but a through compilation of historic work should be undertaken.

During the late 1970's Gulf Minerals Canada Ltd. carried out an extensive exploration program for Uranium and base metals in the Cobequid Highlands. Gulf's program included geological mapping, soil and rock sampling, trenching, and drilling. Gulf also carried out ground and airborne gamma ray spectrometry surveys as well as VLF-EM- magnetometer (Downey, 1978). Unfortunately, Gulf's work was focused to the north and west of the Sugarloaf southern block of licenses.

In 1989 NS Mines and Energy conducted regional stream sediment fines and heavy metal concentrates survey over northern Nova Scotia. Several Au anomalies were reported in the Cobequid Highlands (Mills, 1989).

In 1990 Seabright conducted a regional exploration program focused on epithermal and/or structurally controlled gold mineralization in the Cobequids. Seabright collected 77 stream sediment samples, 196 soil samples and 57 rock samples. Several of which showed positive Au anomalies using -200 mesh, hence reinforcing anomalies discovered by Mills in 1989.

In 1994 Ecum Secum Enterprises also attempted to source the Au anomalies of Mills, 1989 and Seabright. 30 stream sediment and 33 rock samples were collected. Ecum Secum obtained their best results in alteration zones in rhyolite and cherty sediments along the contact of the Byers Brook Formation and the overlying Diamond Brook Formation (Black, 1994).

In 2004 Cobequid Gold Corporation Ltd. (CGC) once again attempted to source the Au anomalies by prospecting brooks and silt sampling. CGC analyzed the -60 mesh fraction as opposed to the -200 mesh fraction by Seabright and was unable to reproduce Au anomalies.

6.0 Local and Regional Geology

Regional geology of the area is dominated by four Late Devonian-Early Carboniferous mafic-felsic volcanic and plutonic units as shown in figure 2. This suite of rocks is bound to the north by unconformably overlying late Carboniferous sediments of the Cumberland Basin and to the south by the Rockland Brook fault (RBF) (MacHattie, 2010a). From west to east the units are: the Folly Lake gabbro-diorite (DCd), the Hart Lake-Byers Lake granite (Cg), the Byers Brook Formation (DCB) and the Diamond Brook Formation (DCD-M).

The Sugarloaf southern block geology lies at the eastern limit of what is mapped as Diamond Brook Formation. Field work suggests that the geology is a little more complicated as rhyolite flow units are commonly observed throughout the property as well as minor meta-sedimentary sequences.

Sugarloaf Resources Licences Regional Geology

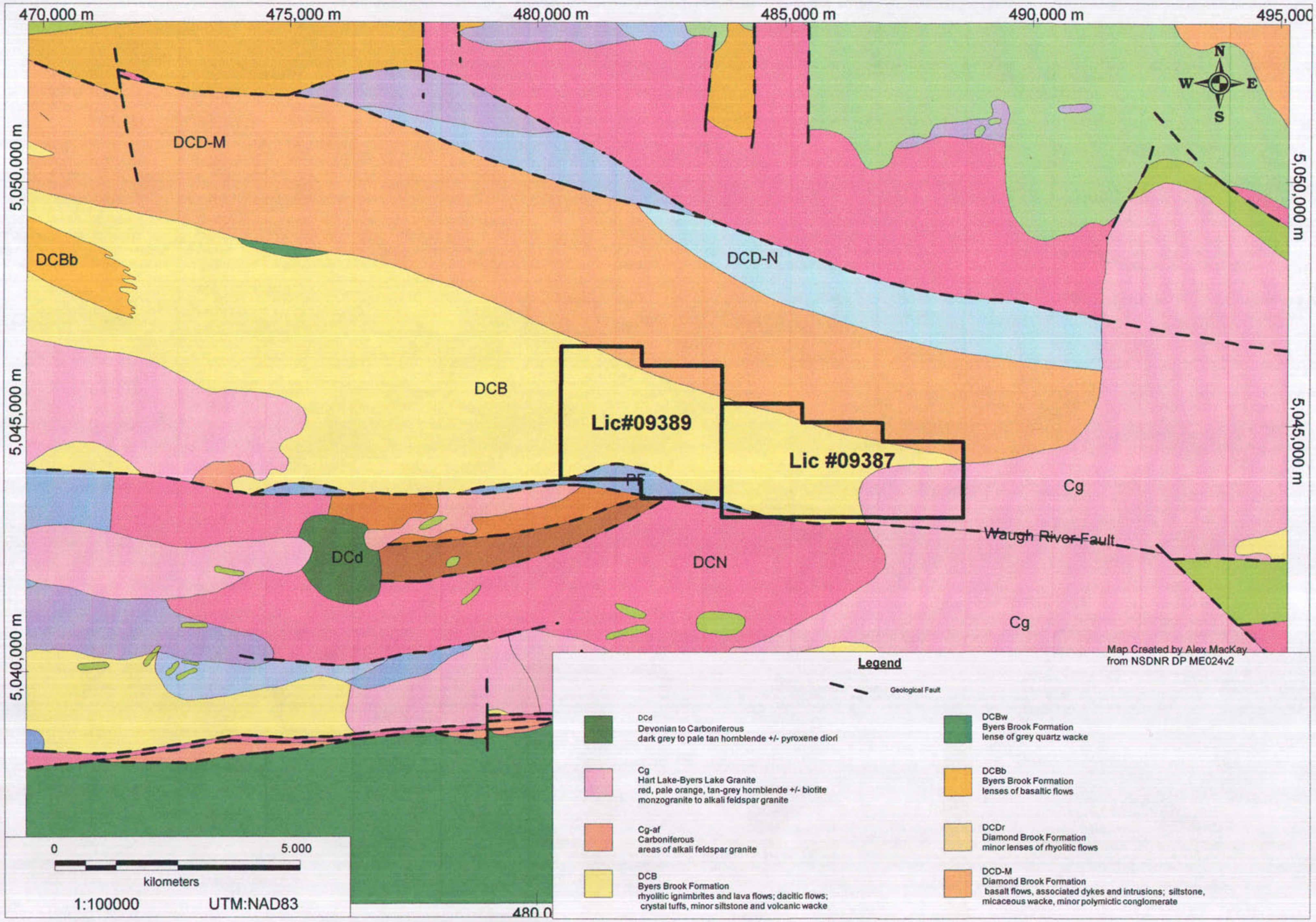

Figure 2

7.0 Work Performed

The work program focused on the collection heavy mineral concentrates from stream sediments using a Keene Engineering A52 sluice box. In total, 27 sluice samples were collected; 12 on or on streams draining license 09389 and 15 on license 09387. Set up procedure included setting sluice box in the river in the vicinity of a natural trap, such as large boulders, gravel bars or rock ledges. Material from the trap was shoveled into two gallon buckets and passed through the sluice. Approximately 100lbs (5 buckets x 20lbs/bucket) of material was fed through a ¼" screen emptying directly into the sluice. +¼" material was inspected for mineralization and discarded. Upon completion, the sluice box was carefully removed from the river and the concentrated heavy minerals were collected in a plastic sample bag, which was then tagged and transported back to the lab for further processing.

The first step back at the lab was to dry the samples. This was done by putting the samples in an enclosed air tight drying room with a dehumidifier. Samples generally took 3-4 days to dry completely. When the sample was dry, the sample was classified by size fraction. This was accomplished using a Ro-tap testing sieve shaker. Sieve sizes are available in table 2.

Table 2-Sieve Sizes Used

Size	Tyler Equivalent	US Sieve #
1.7mm	10 mesh	No. 12
1.00mm	16 mesh	No. 18
355µm	42 mesh	No. 45
250µm	60 mesh	No. 60
180µm	80 mesh	No. 80
104 µm	150 mesh	No. 140


Figure 3-Sample Test Vial

The No. 12 and 18 sieves were used primarily to remove the coarsest material. These fractions were inspected and retained for later analysis. Material from finer size fractions was collected with some material being put into 3.5cm diameter plastic vials. Vials were fitted with a thin plastic cover retained by a rubber band (see figure 3). The vials were then analyzed with an Olympus Innovx DP-6000 portable XRF fitted to an Innovx test stand. The analyzer was set to export epithermal gold indicators Zn, As, Pb and Sb. Results can be seen in maps 2-5 in Appendix D.

Upon completion of XRF analyses the five finest fractions (-18,-45,-60,-80,-140) were inspected for visible gold grains. As there was not enough material from each sample fraction to utilize the Wilfley Table, each sample was carefully hand panned. The resulting heavy minerals were inspected under a binocular microscope for visible gold grains. Any visible gold was subjected to a 'smear test' which involved crushing and smearing gold grains on the bottom of a hard plastic pan using a dental pick under the microscope. Notes regarding other heavy minerals such as Fe-oxides and sulfides were also recorded and tabulated (See Appendix A-Stream Sediment Table of Results).

Figure 4-Portable XRF in test stand

8.0 Results

Field work was focused on stream sediment collection but during the course of field work it was noted that the geology is more complex than is mapped. Donahoe and Wallace mapped the licence area as basalt, but rhyolites are common throughout the property. Meta-sediments were also observed in several locals. Detailed mapping of these units/sequence is planned for future work programs.

Gold grain counts resulted in minimal gold (one flake) being observed in one sample SL-12-228. See sample location map (Map 1) in Appendix D. Other minerals observed included, arsenopyrite, specular hematite, hematite, pyrite, as well as some notes on light and dark coloured minerals observed in the panned results. The full table of results from the panning is located in Appendix A-Stream Sediment Table of Results.

No significant anomalies were observed in the XRFing of sluice sample fractions. See Maps 2-5 in Appendix D.

9.0 Conclusions and Recommendations

As little gold was observed in this block of Sugarloaf licences some portions of the licences may be dropped. Dropped claims should be in the highest density windmills area of the wind farm. Some portions of the northern licences should be held as gold has been observed in several Sugarloaf licenses north of licenses 09387 and 09389.

10.0 References

Black D.L. 1994: Work Report on the French River Claim Group EL# 01452; Ecum Secum Enterprises; Nova Scotia Dept of Mines and Energy; Assessment Report 95-071

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Downey, N. 1978: Cobequid Project, exploration program 1977-78 on parts of 11E/11A, B, C and D; Gulf minerals Exploration Limited; Nova Scotia Department of Mines; Assessment Report ME 11E/11B 54-D-16(02).

Hogg, D. 1990: 1990 Exploration Program on General Licenses 15248, 15258, 15259,15260, 15261 and15516 Nuttby Mountain Colchester County, Nova Scotia NTS:11E/11; Seabright Explorations Incorporated; Nova Scotia Dept. of Mines and Energy; Assessment Report 90-165

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MacHattie, T.G. and O'Reilly, G.A. 2009b: Field and Geochemical Evidence for Contemporaneous Mafic Magmatism and Iron Oxide-Copper-Gold (IOCG) Mineralization and Alteration along the Cobequid-Chedabucto Fault Zone; *in* Mineral Resources Branch, Report of Activities 2008; Nova Scotia Department of Natural Resources, Report ME 2009-1, p. 71-83.

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MacHattie, T.G., 2011: Volcanic Stratigraphy and nature of Epithermal-style Gold mineralization in Upper Devonian-Lower carboniferious Rocks of the Northeastern Cobequid Highlands, Nova Scotia; *in* Mineral Resources Branch, Geology Matters 2011: Program with Abstracts; Nova Scotia Department of Natural Resources, Report ME 2011-2, p. 14.

11.0 Statement of Qualifications

Lindsay John Allen
Elk Exploration Ltd
11 River Rd, Terence Bay River, NS
B3T 1X2

Prospector ID #760

25 years Prospecting Experience
Completed DNR Basic Prospecting Course 1986
Completed DNR Advanced Prospecting Course 1987
DNR Due Diligence Course
Red Cross Emergency First Aid/CPR
Boulder Buster Certification
Inexperienced Miner
Level 2 Handheld XRF Certification

Sample #		Float or Outcrop	Fractions (US Mesh)					Other Materials Noted in heaviest panned concentrates (Units of grains, % as applicable, or yes/no)							Gold			
									Iron (Fe)			Black Sand						
SL-12-	Licence #	Description	-18 to +45	-45 to +60	-60 to +80	-80	-140	Arsenopyrite (AsPy)	Specular Hematite	Regular Hemitite	Iron Pyrite (FeS)	%	% Magnetic	Light Colour Minerals (v/m-very minor, m-minor, avg-average)	(Y/N)	# Units	Size (mm)	Description
201	09387	Float	X					0	n	n	n	na	na	na	n			
		very mixed, thick till?		X				0	n	n	n	na	na	na	n			
					X			0	n	n	n	na	na	na	n			
						X		0	n	n	n	75%	85%	v/m epidote, v/m clear garnet	n			
							X	na	na	na	na	na	na	na	n			
202	09387		X					0	n	y	n	na	na	na	n			
				X				0	n	y	n	na	na	na	n			
		Float			X			0	n	y	n	na	na	na	n			
		large boulders (granitic/ryholitic/basalt)				X		0	n	y	n	85%	95%	m epidote, m pink + clear garnet	n			
							X	na	na	na	na	na	na	na	n			
203	09387		X					0	n	n	n	na	na	na	n			
				X				0	n	n	n	na	na	na	n			
		Float			X			0	n	n	n	na	na	na	n			
		very mixed				X		0	n	n	n	70%	85%	v/m lilac + clear garnet, avg epidote	n			
							X	na	na	na	na	na	na	na	n			
204	09387		X					0	n	y	n	na	na	na	n			
				X				0	n	y	n	na	na	na	n			
		Float			X			0	n	y	n	na	na	na	n			
		very mixed, larger boulder white granite				X		0	n	y	n	70%	95%	v/m clear garnet, v/m epidote	n			
							X	na	na	na	na	na	na	na	n			
205	09387		X					0	n	y	n	na	na	na	n			
				X				0	y	n	n	na	na	na	n			
		Float			X			0	y	y	n	na	na	na	n			
		very mixed, larger boulders white granite & dark mafic				X		1	y	y	n	60%	95%	v/m epidote, v/m pink + clear garnet	n			
							X	na	na	na	na	na	na	na	n			
206	09387		X					0	n	n	n	na	na	na	n			
				X				0	n	n	n	na	na	na	n			
		Float			X			0	n	n	n	na	na	na	n			
		mostly granitic/rhyolitic				X		1	n	n	n	50%	95%	v/m epidote	n			
							X	na	na	na	na	na	na	na	n			
207	09387		X					0	n	n	n	na	na	na	n			
				X				0	n	n	n	na	na	na	n			
		Float			X			0	n	n	n	na	na	na	n			
		silicified rock (wacke?)				X		0	n	n	n	65%	95%	negligible	n			
							X	na	na	na	na	na	na	na	n			

Sample #	Licence #	Float or Outcrop	Fractions (US Mesh)					Other Materials Noted in heaviest panned concentrates (Units of grains, % as applicable, or yes/no)							Gold			
									Iron (Fe)			Black Sand						
SL-12-		Description	-18 to +45	-45 to +60	-60 to +80	-80	-140	Arsenopyrite (AsPy)	Specular Hematite	Regular Hemitite	Iron Pyrite (FeS)	%	% Magnetic	Light Colour Minerals (v/m-very minor, m-minor, avg-average)	(Y/N)	# Units	Size (mm)	Description
208	09389		X					0	n	y	n	na	na	na	n			
				X				0	n	y	n	na	na	na	n			
		Float			X			0	n	y	n	na	na	na	n			
		large boulders, grey conglomerate + dk grey wacke (South of RBF?)				X		0	n	y	n	85%	85%	v/m epidote	n			
							X	na	na	na	na	na	na	na	n			
209	09389		X					0	n	n	n	na	na	na	n			
				X				0	n	n	n	na	na	na	n			
		Float			X			0	n	n	n	na	na	na	n			
		ryolitic / granitic				X		0	n	n	n	60%	90%	negligible	n			
							X	na	na	na	na	na	na	na	n			
210	09389		X					0	n	n	n	na	na	na	n			
				X				0	n	n	n	na	na	na	n			
		Float			X			0	n	n	n	na	na	na	n			
		swamp				X		0	n	n	n	50%	90%	negligible	n			
							X	na	na	na	na	na	na	na	n			
218	09389		X					0	n	y	n	na	na	na	n			
				X				0	n	y	n	na	na	na	n			
		Outcrop			X			1	n	y	y	na	na	na	n			
		dk grey black wacke: weathers rusty, quartz veins + silicification				X		3	n	y	y	80%	85%	Negligible	n			
							X	na	na	na	na	na	na	na	n			
219	09389		X					0	n	y	n	na	na	na	n			
				X				0	y	y	y	na	na	na	n			
		Float			X			1	y	y	y	na	na	na	n			
		silicified wacke + m basalt				X		2	y	y	y	70%	85%	m red + orange + clear garnet, m epidote	n			
							X	na	na	na	na	na	na	na	n			
220	09389		X					0	n	y	n	na	na	na	n			
				X				0	n	y	n	na	na	na	n			
		Outcrop			X			0	y	y	n	na	na	na	n			
		dk grey to grey rhyolitic / basaltic				X		0	y	y	n	60%	90%	v/m garnet, v/m epidote	n			
							X	na	na	na	na	na	na	na	n			
221	09389		X					0	n	y	n	na	na	na	n			
				X				0	n	y	n	na	na	na	n			
		Float			X			0	y	y	y	na	na	na	n			
		wacke? horizontal bedding?				X		0	y	y	y	60%	85%	negligible garnet	n			
							X	na	na	na	na	na	na	na	n			

Sample #	Licence #	Float or Outcrop	Fractions (US Mesh)					Other Materials Noted in heaviest panned concentrates (Units of grains, % as applicable, or yes/no)							Gold			
									Iron (Fe)			Black Sand						
SL-12-		Description	-18 to +45	-45 to +60	-60 to +80	-80	-140	Arsenopyrite (AsPy)	Specular Hematite	Regular Hemitite	Iron Pyrite (FeS)	%	% Magnetic	Light Colour Minerals (v/m-very minor, m-minor, avg-average)	(Y/N)	# Units	Size (mm)	Description
222	09387		X					0	n	n	n	na	na	na	n			
				X				0	n	y	n	na	na	na	n			
		Float			X			0	n	y	n	na	na	na	n			
		dk grey wacke + basalt + m red sinter? with quartz				X		1	y	y	n	60%	80%	m orange + pink garnet, some carbonate (white/soft)	n			
							X	na	na	na	na	na	na	na	n			
223	09387		X					0	n	y	n	na	na	na	n			
				X				0	n	n	n	na	na	na	n			
		Float			X			0	n	y	n	na	na	na	n			
		dk grey wacke with quartz gash veins				X		0	n	y	n	60%	80%	m orange + pink + clear garnet, m epidote, v/m green crystals (beryl?), m carbonate (white/soft)	n			
							X	na	na	na	na	na	na	na	n			
224A	09389		X					0	n	n	n	na	na	na	n			
				X				0	n	n	n	na	na	na	n			
		Float			X			0	n	y	n	na	na	na	n			
		dk grey wacke with quartz gash veins + dk grey basalt				X		0	y	y	n	60%	90%	v/m orange + clear garnet, v/m epidote, v/m carbonate	n			
							X	na	na	na	na	na	na	na	n			
224B	09387		X					0	n	n	n	na	na	na	n			
				X				0	n	y	n	na	na	na	n			
		Float			X			0	y	y	n	na	na	na	n			
		grey basalt + dk mafic				X		0	y	y	n	50%	60%	v/m garnet, avg epidote, negligible carbonate	n			
							X	na	na	na	na	na	na	na	n			
225	09387		X					0	n	y	n	na	na	na	n			
				X				0	n	n	n	na	na	na	n			
		Outcrop			X			0	n	n	n	na	na	na	n			
		granodiorite?, bass river complex?				X		0	n	y	n	70%	85%	v/m garnet, abundant epidote, negligible carbonate	n			
							X	na	na	na	na	na	na	na	n			
226	09387		X					0	n	y	n	na	na	na	n			
				X				0	n	y	n	na	na	na	n			
		Float			X			0	n	y	n	na	na	na	n			
		very mixed				X		0	n	y	n	70%	85%	negligible garnet, abundant epidote, abundant carbonate	n			
							X	na	na	na	na	na	na	na	n			

Sample #	Licence #	Float or Outcrop	Fractions (US Mesh)					Other Materials Noted in heaviest panned concentrates (Units of grains, % as applicable, or yes/no)							Gold			
									Iron (Fe)			Black Sand						
SL-12-		Description	-18 to +45	-45 to +60	-60 to +80	-80	-140	Arsenopyrite (AsPy)	Specular Hematite	Regular Hemitite	Iron Pyrite (FeS)	%	% Magnetic	Light Colour Minerals (v/m-very minor, m-minor, avg-average)	(Y/N)	# Units	Size (mm)	Description
227	09387		X					0	n	y	n	na	na	na	n			
				X				0	n	y	n	na	na	na	n			
		Float			X			0	n	y	n	na	na	na	n			
		80% dk grey basalt, 20% mafic? or wacke?				X		0	y	y	n	80%	80%	avg epidote, abundant carbonate, m light-green crystals (beryl?)	n			
							X	na	na	na	na	na	na	na	n			
228	09387		X					0	n	y	n	na	na	na	n			
				X				0	n	y	n	na	na	na	n			
		Outcrop			X			0	y	y	n	na	na	na	n			
		dk grey basalt				X		0	y	y	n	85%	90%	v/m garnet, v/m epidote, v/m carbonate	y	1	0.1	pristine flat flake/crystal
							X	na	na	na	na	na	na	na	n			
229	09387		X					0	n	y	n	na	na	na	n			
				X				0	n	y	n	na	na	na	n			
		Outcrop			X			0	n	y	n	na	na	na	n			
		pinkish-grey basalt				X		0	y	y	n	70%	90%	v/m epidote	n			
							X	na	na	na	na	na	na	na	n			
230	09389		X					0	n	y	n	na	na	na	n			
				X				0	n	y	n	na	na	na	n			
		Float			X			0	n	y	n	na	na	na	n			
		mostly bass river complex				X		0	n	y	n	80%	90%	negligible garnet	n			
							X	na	na	na	na	na	na	na	n			
231	09389							0	n	y	n	na	na	na	n			
				X				0	n	y	n	na	na	na	n			
		Float			X			0	n	y	n	na	na	na	n			
		pinkish-grey basalt				X		0	y	y	n	65%	90%	negligible garnet, negligible epidote, m carbonate	n			
							X	na	na	na	na	na	na	na	n			
232	09389							0	n	y	n	na	na	na	n			
				X				0	n	y	n	na	na	na	n			
		Float			X			0	n	y	n	na	na	na	n			
		very mixed				X		0	n	y	n	50%	90%	negligible garnet, negligible epidote, v/m carbonate	n			
							X	na	na	na	na	na	na	na	n			
233	09389							0	n	n	n	na	na	na	n			
				X				0	n	n	n	na	na	na	n			
		Float			X			0	n	y	n	na	na	na	n			
		very mixed				X		0	n	y	n	95%	95%	negligible	n			
							X	na	na	na	na	na	na	na	n			

APPENDIX B

XRF Analyzer Specs and Theory

DELTA
Dynamic XRF

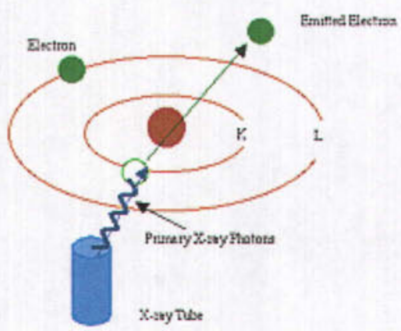
X-Ray Fluorescence (XRF) Spectrometry

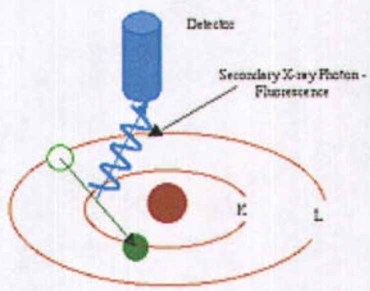
BASIC THEORY

Although more popularly known for its diagnostic use in the medical field, the use of x-rays forms the basis of many other powerful measurement techniques, including X-ray Fluorescence (XRF) Spectrometry.

XRF Spectrometry is used to identify elements in a substance and quantify the amount of those elements present to ultimately determine the elemental composition of a material. An element is identified by its characteristic X-ray emission wavelength (λ) or energy (E). The amount of an element present is quantified by measuring the intensity (I) of its characteristic emission.

All atoms have a fixed number of electrons (negatively charged particles) arranged in orbitals around the nucleus. Energy Dispersive (ED) XRF and Wavelength Dispersive (WD) XRF Spectrometry typically utilize activity in the first three electron orbitals, the K, L, and M lines, where K is closest to the nucleus.





In XRF Spectrometry, high-energy primary X-ray photons are emitted from a source (X-ray tube) and strike the sample. The primary photons from the X-ray tube have enough energy to knock electrons out of the innermost, K or L, orbitals. When this occurs, the atoms become ions, which are unstable. An electron from an outer orbital, L or M, will move into the newly vacant space at the inner orbital to regain stability. As the electron from the outer orbital moves into the inner orbital space, it emits an energy known as a secondary X-ray photon. This phenomenon is called fluorescence. The secondary X-ray produced is characteristic of a specific element. The energy (E) of the emitted fluorescent X-ray photon is determined by the difference in energies between the initial and final orbitals of the individual transitions.

This is described by the formula

$$E=hc\lambda^{-1}$$

where h is Planck's constant; c is the velocity of light; and λ is the characteristic wavelength of the photon.

Energies are inversely proportional to the wavelengths; they are characteristic for each element. For example the Kα energy for Iron (Fe) is about 6.4keV. Typical spectra for EDXRF Spectrometry appear as a plot of Energy (E) versus the Intensity (I).

Elemental Analysis

XRF Spectrometry is the choice of many analysts for elemental analysis. XRF Spectrometry easily and quickly identifies and quantifies elements over a wide dynamic concentration range, from PPM levels up to virtually 100% by weight. XRF Spectrometry does not destroy the sample and requires little, if any, sample preparation. It has a very fast overall analysis turnaround time. These factors lead to a significant reduction in the per sample analytical cost when compared to other elemental analysis techniques.

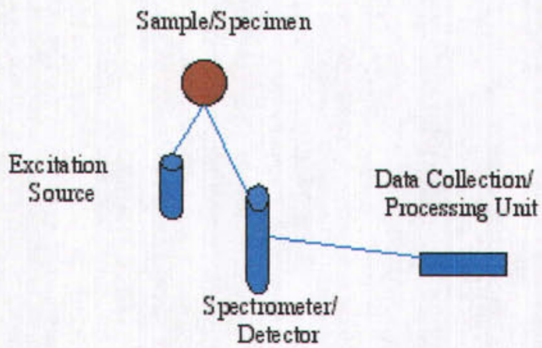
Aqueous elemental analysis instrument techniques typically require destructive and time-consuming specimen preparation, often using concentrated acids or other hazardous materials. Not only is the sample destroyed, waste streams are generated during the analysis process that need to be disposed of, many of which are hazardous. These aqueous elemental analysis techniques often take twenty minutes to several hours for sample preparation and analysis time. All of these factors lead to a relatively high cost per sample. However, if PPB and lower elemental concentrations are the primary measurement need, aqueous instrument elemental analysis techniques are necessary.

All elemental analysis techniques experience interferences, both chemical and physical in nature, and must be corrected or compensated for in order to achieve adequate analytical results. Most aqueous instrument techniques for elemental analysis suffer from interferences that are corrected for by extensive and complex sample preparation techniques, instrumentation modifications or enhancements, and by mathematical corrections in the system's software. In XRF Spectrometry, the primary interference is from other specific elements in a substance that can influence (matrix effects) the analysis of the element(s) of interest. However, these interferences are well known and documented; and, instrumentation advancements and mathematical corrections in the system's software easily and quickly correct for them. In certain cases, the geometry of the sample can affect XRF analysis, but this is easily compensated for by selecting the optimum sampling area, grinding or polishing the sample, or by pressing a pellet or making glass beads.

Quantitative elemental analysis for XRF Spectrometry is typically performed using Empirical Methods (calibration curves using standards similar in property to the unknown) or Fundamental Parameters (FP). FP is frequently preferred because it allows elemental analysis to be performed without standards or calibration curves. This enables the analyst to use the system immediately, without having to spend additional time setting up individual calibration curves for the various elements and materials of interest. The capabilities of modern computers allow the use of this no-standard mathematical analysis, FP, accompanied by stored libraries of known materials, to determine not only the elemental composition of an unknown material quickly and easily, but even to identify the unknown material itself.

Spectrometers

Innov-X Systems utilizes the EDXRF Spectrometer technique for its mechanical simplicity and excellent adaptation to portable field use. An EDXRF system typically has three major components: an excitation source, a spectrometer/detector, and a data collection/processing unit. The ease of use, rapid analysis time, lower initial purchase price and substantially lower long-term maintenance costs of EDXRF Spectrometers have led to having more systems in use today worldwide than WDXRF Spectrometer systems. Handheld, field portable EDXRF units can be taken directly to the sample as opposed to bringing the sample to the analyzer and configuring it to fit in an analysis chamber. Innov-X Systems portable, handheld EDXRF units solve real 21 st century application problems: solving crimes, analyzing alloys, exposing pollution, preserving history, searching for WMD's, conserving art treasures, and a myriad of other elemental field-oriented analyses.



The Deltas' Cutting-edge features include:

- Exceptional speed and sample throughput due to state-of-the-art electronics, a floating point processor, and redesigned analytical geometry

- Ruggedized, weather and dustproof industrialized LEXAN housing – no PDA or movable screen – provides superior reliability

- Significant improvement in LODs and light element analysis resulting from the DELTA's unique 4W, 200µA (max) x-ray tube

- Advanced integrated technology including an accelerometer, barometer, true hot-swap battery capabilities, and other innovations
- Icon-driven UI via bright, Blanview ™ color touchscreen
  - brightens in sunlight – easy to read in all environments
- Available with fully integrated camera and X-ray spot collimation
  - crisp accurate sample images that can be archived into memory
  - small spot collimation for focusing the beam to a 3mm diameter spot.

Innov-X has reinvented on-site analysis with the DELTA line; a new breed of handheld XRF. We've redesigned our analyzers from the ground up to create instruments that are both analytically superior AND rugged enough for virtually any environment. The DELTA analyzers feature the very latest in large area silicon drift detector technology, and unique 4W, 200μA (max) x-ray tubes for maximized accuracy and precision.

DELTA analyzers are also fully industrialized tools, and offer unsurpassed testing speed; yielding significantly increased productivity and throughput for operators. Take hundreds more tests per day with the DELTA analyzer. Smart on the inside. Tough on the outside. **No compromises.**

The DELTA line of analyzers feature our signature upgradeability. Customers may purchase a value-leading **Classic** model and upgrade to the analytically best **Premium** model at any time as analytical needs change - all with the same hardware platform and intuitive, friendly user interface.

The Innov-X Handheld XRF for elemental analysis meets EPA Method 6200 for metals in soil, NIOSH Method 7702 for lead in air filters, and OSHA Methods OSSA1 and OSS1 for lead in air filters and dust wipes. The 8 RCRA Metals and Priority Pollutant Metals are easily monitored on-site with the Innov-X Handheld XRF.

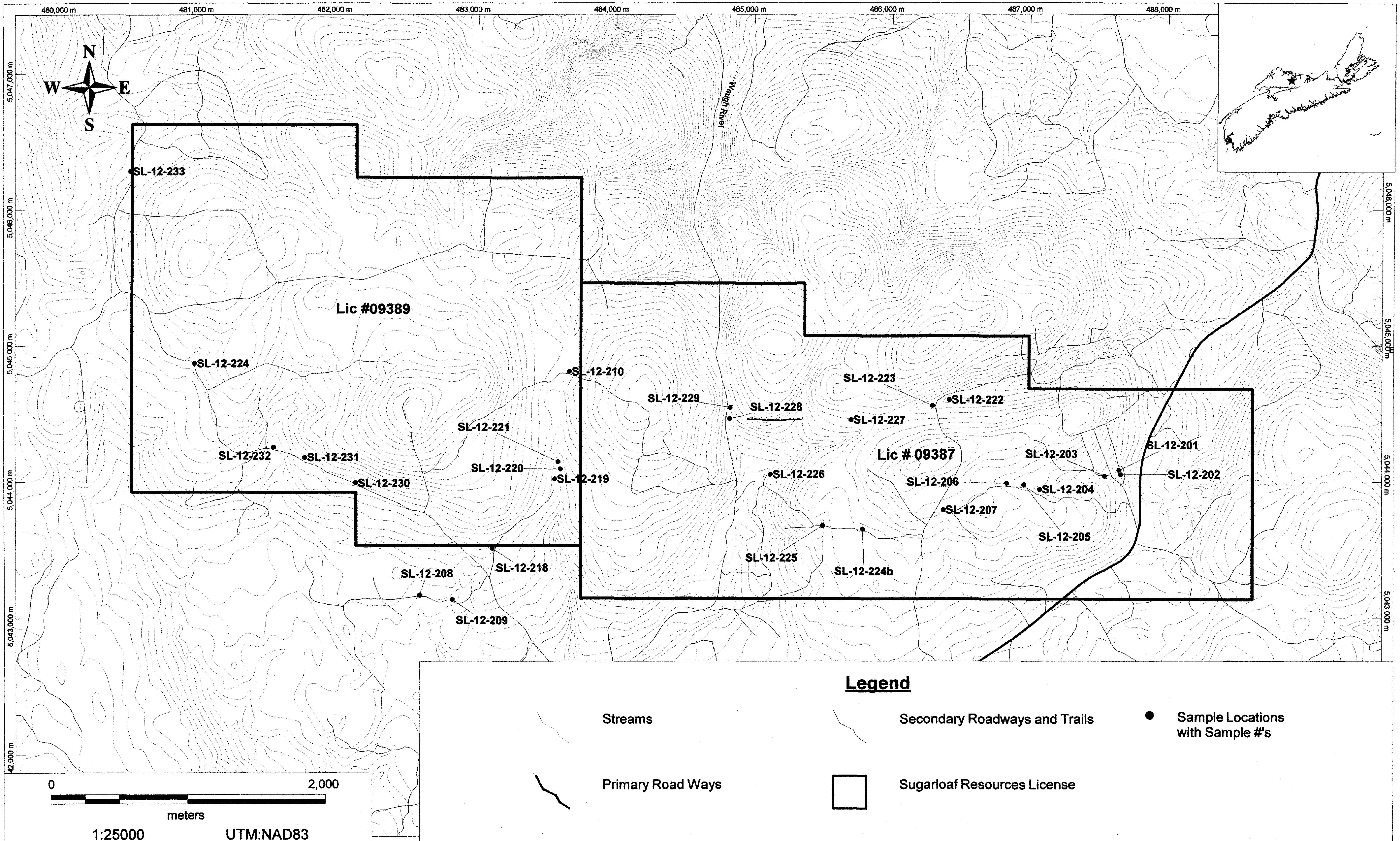
The Innov-X Systems Materials Testing & Mining Analyzers include standard hardware and accessories. Capabilities available include Fundamental Parameters, Empirical Analysis, linear or quadratic calibration modes, LEAP for Light Element Analysis, and Single or Multi element analysis capability.

XRF Data Table

sample	X_NAD83	Y_NAD83	Zn+45	As+45	Sb+45	Pb+45	Zn+60	As+60	Sb+60	Pb+60	Zn80	As+80	Sb+80	Pb+80	Zn-80	As-80	Sb-80	Pb-80	Zn-140	As-140	Sb-140	Pb-140
SL-12-201	487646	5044086	262	8	3	29	239	5	9	31	236	4	-5	32	211	3	-55	33	263	6	2	36
SL-12-202	487658	5044054	231	6	-9	26	165	0	-18	32	588	3	-8	28	1421	1	-42	53	1058	-1	1	69
SL-12-203	487541	5044044	196	2	25	22	167	2	15	24	240	5	-3	29	335	6	-2	38	365	-3	33	72
SL-12-204	487070	5043945	488	7	12	76	525	7	-4	83	532	3	14	76	643	0	-39	91	598	7	22	65
SL-12-205	486956	5043978	548	17	8	106	559	5	9	116	559	10	-5	117	569	9	-41	109	558	15	33	63
SL-12-206	486832	5043990	657	8	-9	118	578	5	1	109	564	12	-37	84	609	6	40	70	543	7	-5	44
SL-12-207	486371	5043794	260	6	-6	56	262	9	-32	57	234	3	15	62	268	11	-21	54	239	2	16	51
SL-12-208	482570	5043171	81	6	-5	16	119	4	6	29	121	6	-37	26	263	6	18	58	315	17	30	65
SL-12-209	482807	5043137	66	5.4	-10	15	79	0	-4	34	83	3	-3	23	114	14	-33	16	173	16	-13	32
SL-12-210	483658	5044811	113	7	30	41	102	6	-22	42	93	7	-22	35	98	7	55	33	83	8	-64	32
SL-12-218	483099	5043513	92	18	-27	23	85	18	-17	35	84	18	-33	36	88	19	-10	40	90	18	-30	47
SL-12-219	483551	5044022	117	9	1	53	131	12	-1	49	149	11	-1	58	156	5	-28	48	112	8	-1	33
SL-12-220	483592	5044095	412	10	13	163	357	13	-1	154	279	15	-20	137	404	34	-39	202	319	-1	-26	154
SL-12-221	483576	5044148	316	19	3	144	384	19	21	182	347	25	-10	198	313	17	25	160	432	35	10	292
SL-12-222	486416	5044602	217	5	1	50	184	5	-1	42	87	-2	-1	31	139	4	-32	48	392	5	-17	90
SL-12-223	486294	5044559	116	3	-5	29	92	1.6	-45	24	63	-1.7	9	25	81	-2	-60	32	158	3	-31	44
SL-12-224	480945	5044871	197	7	9	83	203	10	21	89	201	13	-16	90	711	26	31	201	585	13	41	158
SL-12-224b	485786	5043653	673	9	-9	221	821	16	-12	228	661	16	5	204	174	6	18	74	201	1	13	78
SL-12-225	485496	5043676	474	15	-37	397	557	24	-28	502	511	39	12	540	580	50	60	594	667	13	29	574
SL-12-226	485118	5044056	584	10	-2	214	769	19	-2	241	632	17	19	211	597	6	28	197	730	6	-9	268
SL-12-227	485704	5044455	184	9	14	71	169	8	-4	62	128	17	-9	38	148	9	-25	48	119	4	48	46
SL-12-228	484823	5044462	123	27	5	59	127	36	13	72	121	21	-4	64	227	26	8	125	215	26	-29	75
SL-12-229	484826	5044544	183	20	12	133	159	16	21	104	204	34	18	118	230	20	-4	112	251	15	18	118
SL-12-230	482110	5043994	85	6	-33	13	94	3.9	-18	18	100	7	-2	22	116	4	-4	23	158	12	47	35
SL-12-231	481743	5044181	75	6	38	26	80	3	12	31	78	5	-15	30	140	6	8	21	131	2	-51	24
SL-12-232	481516	5044257	156	7	-23	15	163	8	5	27	145	3	-6	26	200	6	40	28	252	-2	-46	57
SL-12-233	480479	5046284	166	8	-36	28	216	2	-19	49	174	4	-22	37	159	8	-20	28	208	5	-45	35

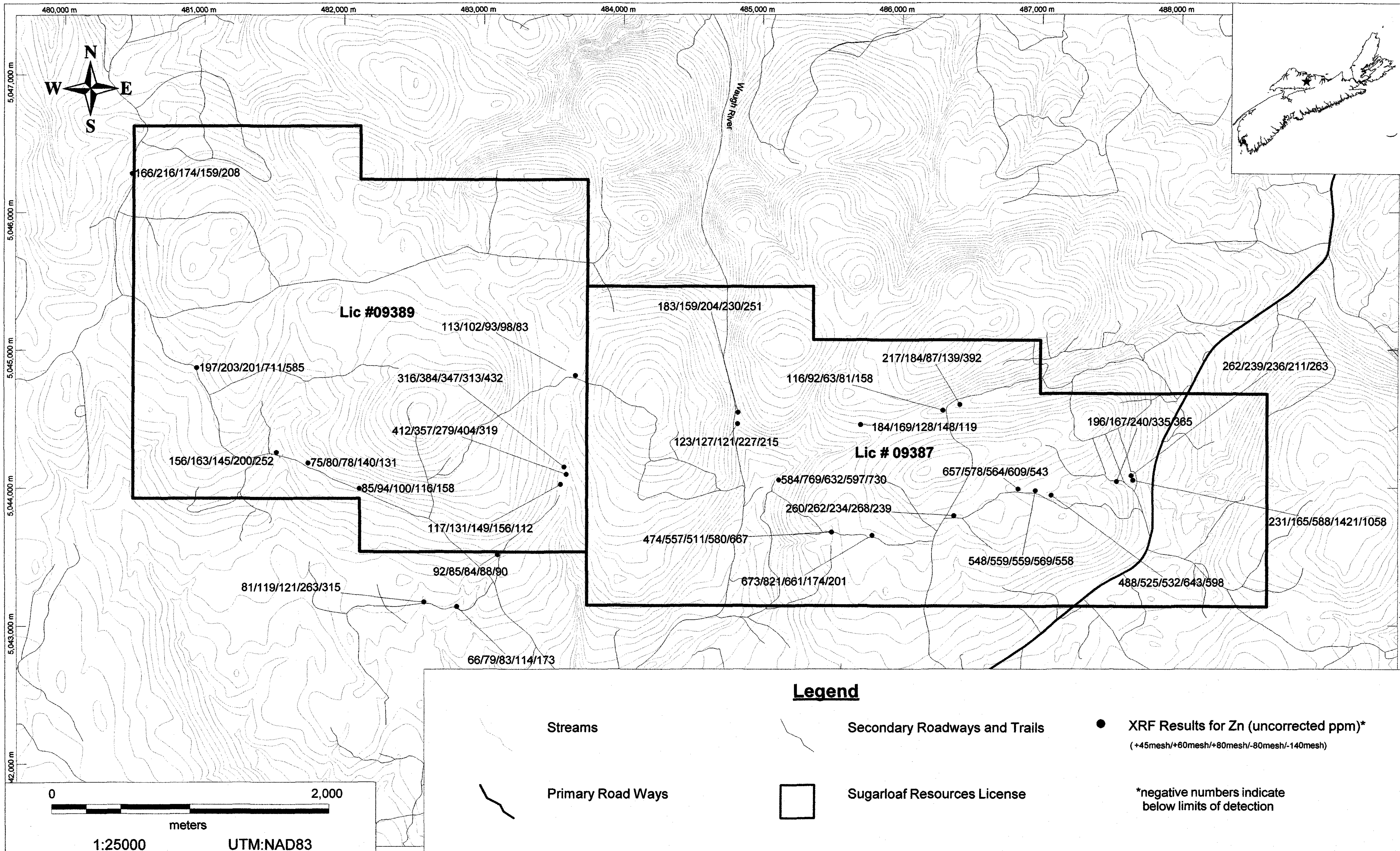
-Column headers are element and mesh size
-Units of uncorrected ppm
-Negative numbers indicate below limit of Detection

Sugarloaf Sluice Samples Map



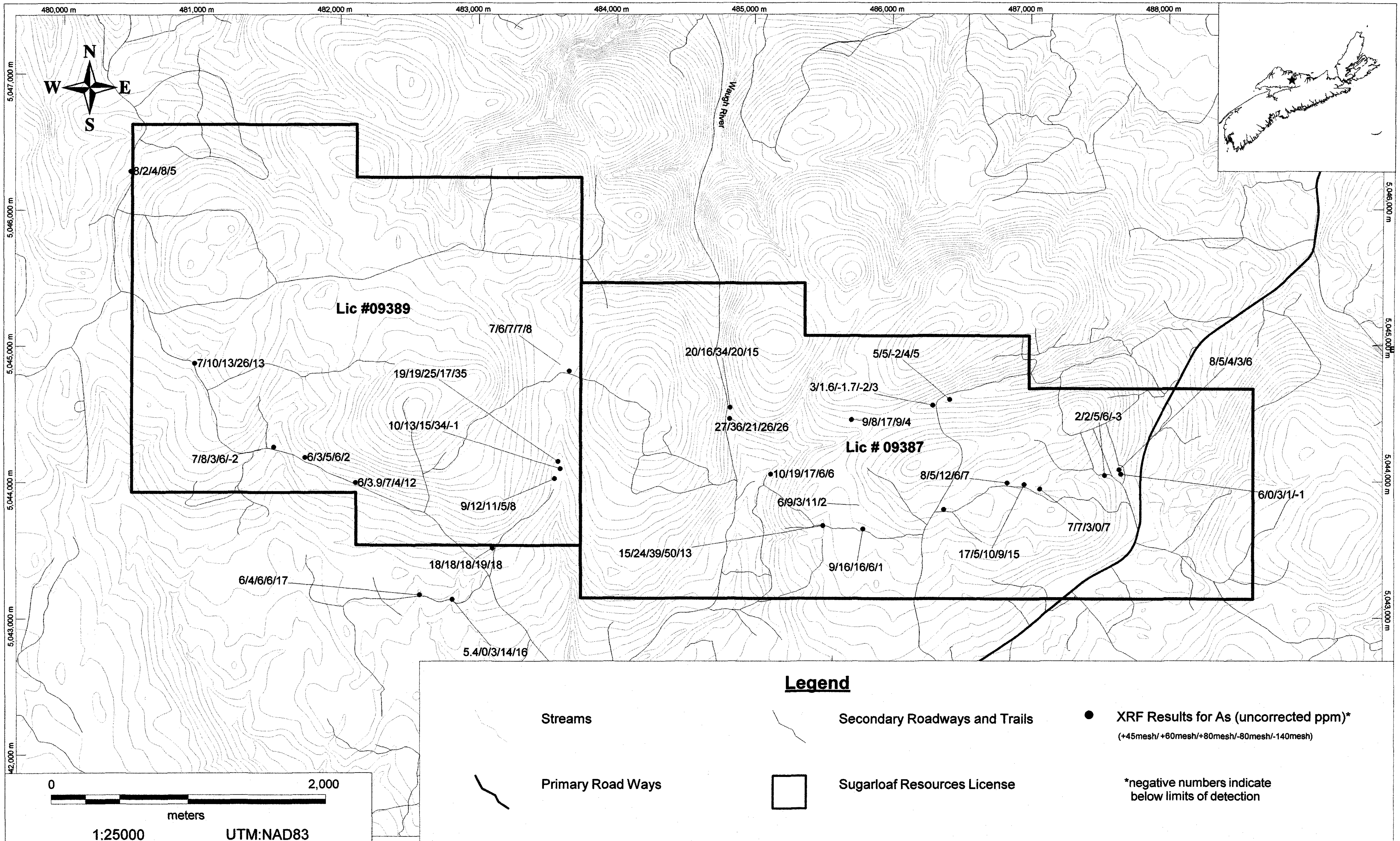
Map 1

Sugarloaf Sluice Sample XRF Results for Zn



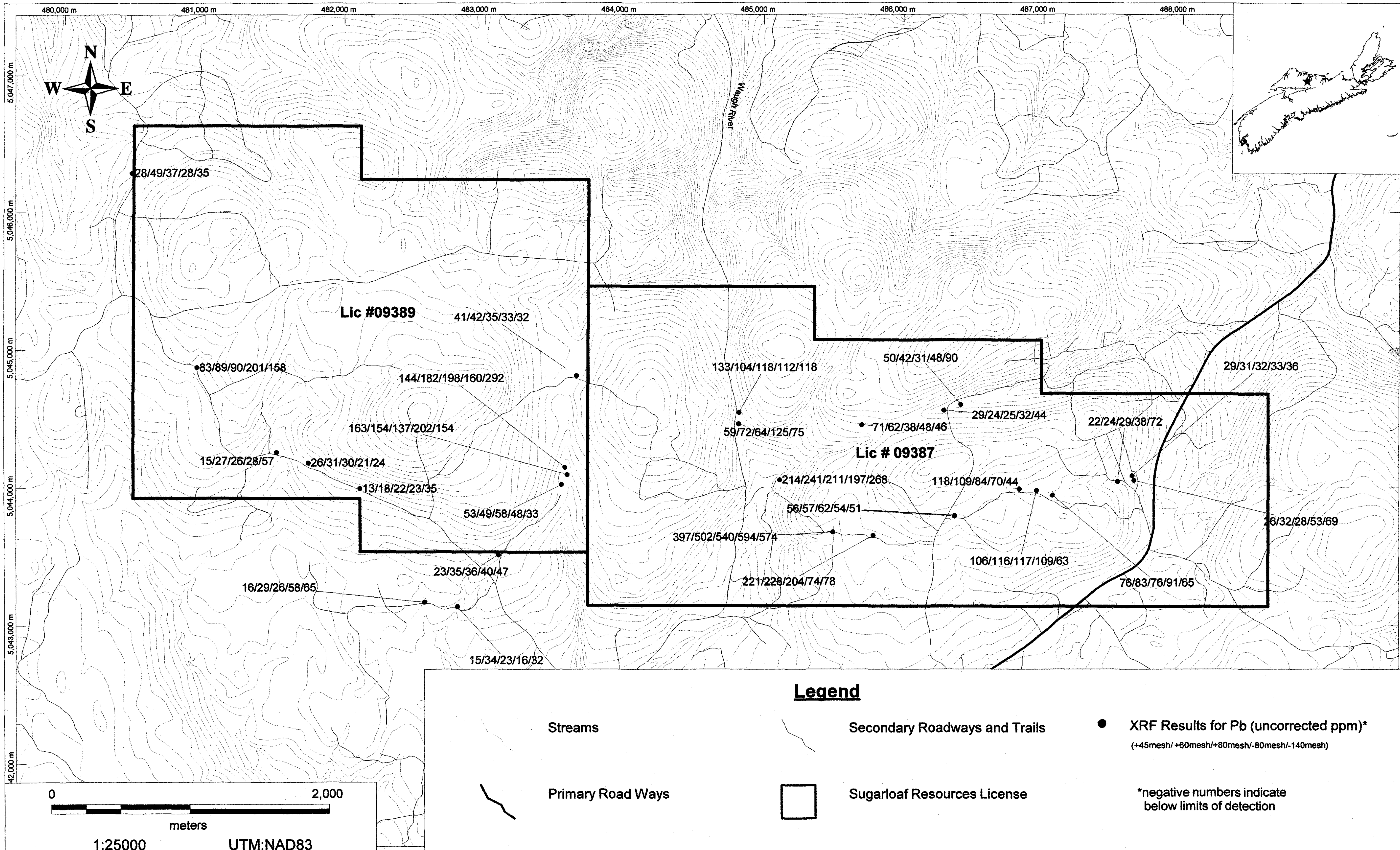
Map 2

Sugarloaf Sluice Sample XRF Results for As



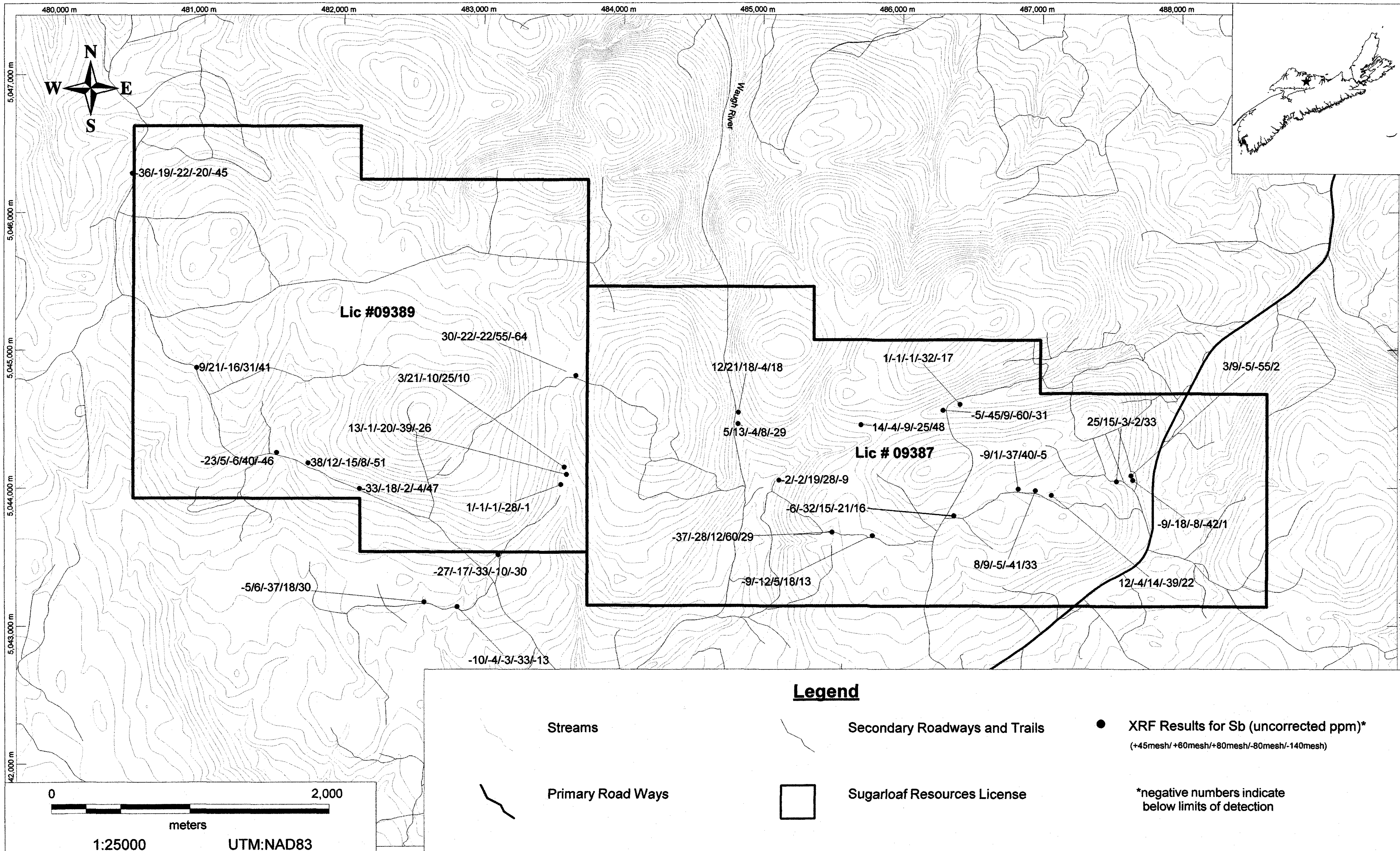
Map 3

Sugarloaf Sluice Sample XRF Results for Pb



Map 4

Sugarloaf Sluice Sample XRF Results for Sb



Map 5

Rec'd

NOVA SCOTIA
Natural Resources

Map 11E 11A
Refs.

Form 10 - Statement of Assessment Work Expenditure
(pursuant to the *Mineral Resources Act*, S.N.S. 1990, c. 18, s. 43(1))

(Complete as necessary to substantiate the total claimed.)
Re: Licence No. 09389 Date of issue October 28, 2010

Type of Work		Amount Spent
1. Prospecting	2 days	700
2. Geological mapping	days	
3. Trenching/stripping/refilling	m² / m³	
4. Assaying & whole rock analysis	#	
5. Other laboratory	60 #	8,700
6. Grid:		
(a) Line cutting	km	
(b) Picket setting	km	
(c) Flagging	km	
7. Geophysical surveys Airborne:		
(a) EM/VLF	km	
(b) Mag or Grad	km	
(c) Radiometric	km	
(d) Combination	km	
(e) Other	km	
8. Geophysical surveys Ground:		
(a) EM/VLF	km	
(b) Seismic soundings	#	
(c) Magnetic/telluric	km	
(d) IP/resistivity	km	
(e) Gravity	km	
(f) Other	km	
9. Geochemical surveys		
(a) Lake, stream, spring (i) Water	samples	
(ii) Sediments	samples	
(b) (i) Rock	84 samples	
(ii) Core	samples	
(iii) Chips	samples	
(c) (i) Soil	samples	
(ii) Overburden	samples	
(d) Gas	samples	
(e) Biogeochemistry	samples	
(f) Sample collection	samples	
(g) Other	12 days	4,400
10. Drilling:		
(a) Diamond (# holes/m)	/ m	
(b) Percussion (# holes/m)	/ m	
(c) Rotary (# holes/m)	/ m	
(d) Auger (# holes/m)	/ m	
(e) Reverse circulation (# holes/m)	/ m	
(f) Logging, supervision, etc.	days	
(g) Sealing (# holes)	#	
11. Other (describe) Hotel, Mileage, Food, Chainsaw, ATV		1,810
Subtotal		15,610
Overhead costs		
12. Secretarial services		
13. Drafting services		
14. Office expenses (rent, heat, light, etc.)		1,594
15. Field supplies		330
16. Compensation paid to landowners		
17. Legal fees		
18. Other (describe)		
Subtotal		1,924
Grand total		17,534

DNRMPT OCT 29'12 14:30

List the names of the persons who conducted the work reported in the previous table and the dates during which the work was performed.

Name	Address	Dates Worked
Lindsay Allen	Terence Bay River, NS	May 12, June 9,10,16,17,23,24
Robert Krienke	Halifax, NS	May 12, June 9,10,16,17,23,24
Alex MacKay	Dartmouth, NS	May 13, June 24

I hereby certify that the information in this form is true and correct, that it has not before been submitted for assessment work credit and that it is the total of all work conducted on the licence during the past licensed year.

As President I am duly authorized to make this certification.
(position in company or licensee)

Dated at Halifax in the Province of Nova Scotia on October 28 2012

Name and address of licensee: Sugarloaf Resources Inc.
549 Washmill Lake Drive, Suite 513, Halifax, NS B3S 0E6

Signature [signature]

For further information, contact the Registrar of Mineral and Petroleum Titles at 1-902-424-4068.