

VENTURIES LITO

VSE-AVL

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RALETCH LAKE



2G05NW2002 2.19511

010

### **Report on Exploration Program**

**Raleigh Lake Property** 

for Assessment

### Raleigh Lake Area G-2557

### Kenora Mining Division, Ontario

NTS 52 G/5 NW

Latitude 49°25' N Longitude 91°57' W

Magnetic Declination in 1998: 0°14' E

2.19<sub>511</sub> RECEIVED JUN 0 1 1999 GEOSCIENCE ASSESSMENT NEFICE

Jens C. Pedersen, Senior Geologist Avalon Ventures Ltd. 31 May 1999

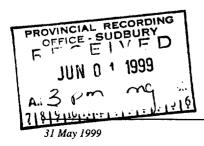
### **SUMMARY**

The Raleigh Lake property is situated 23 kilometres west of Ignace, Ontario in the Wabigoon Subprovince of the Superior Province of the Canadian Shield. Avalon Ventures Ltd. optioned the Raleigh Lake property in May 1998 on the basis of significant mineralization of the rare metals lithium, tantalum and rubidium from pegmatitic dykes of the Raleigh Lake Pegmatite Field.

Following a property visit and a brief compilation, Avalon conducted an initial exploration program which consisted of a lithogeochemical sampling program on the claims of the Raleigh Lake property and a regional reconnaissance sampling program both on and off the claims. The objectives of the program were to: 1) sample granite plutons in the vicinity of Raleigh Lake for major oxide analysis, 2) sample mafic volcanic rocks for lithogeochemical analysis in order to determine regional fractionation trends, and 3) prospect for new rare metal pegmatites in the vicinity of Raleigh Lake.

The regional reconnaissance program confirmed the presence of the previously reported pegmatite bodies and also the potential for discovering new pegmatites with economic concentrations of rare metals. Within the claim group, the limited geochemical sampling program did not indicate any new potential pegmatites. As sample density was sporadic due to a paucity of outcrop and the limited scope of the survey, it cannot be concluded that the claim area does not have further pegmatite occurrences.

As a result of the initial reconnaissance and lithogeochemical sampling program, further work is recommended. Recommendations for follow-up work on the claim group include detailed lithogeochemical sampling, data compilation and interpretation, and diamond drilling. These components would help to delineate pegmatite geometry and orientation, identify other areas for pegmatite emplacement, and test continuity and fractionation of the known pegmatites.



Avalon Ventures Ltd.

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Map 1Lithogeochemical Sample Location MapScale 1:5000

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RALEIGH LAKE

31 May 1999

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Avalon Ventures Ltd.

### **1.0 INTRODUCTION**

Avalon Ventures Ltd. optioned the Raleigh Lake property in May 1998 on the basis of significant mineralization of the rare metals lithium (Li), tantalum (Ta) and rubidium (Rb) from pegmatitic dykes of the Raleigh Lake Pegmatite Field (Breaks 1993).

Avalon's initial exploration program consisted of a ten day program, completed during July 18 to July 28, 1998, of regional reconnaissance sampling and specific lithogeochemical sampling within the claim group. The objectives of the program were to: 1) sample granite plutons in the vicinity of Raleigh Lake for major oxide analysis, 2) sample mafic volcanic rocks for lithogeochemical analysis in order to determine regional fractionation trends, and 3) prospect for new rare metal pegmatites in the vicinity of Raleigh Lake. The purpose of this report is to document the results of the portion of the program on the claim block and to make recommendations for further work.

# 2.0 LOCATION, ACCESS AND TOPOGRAPHY

The Raleigh Lake property is located approximately 23 kilometres west of Ignace, Ontario (Figure 1). The property can be accessed by boat from Raleigh Lake, or via a wellmaintained network of logging (Avenor) roads that branch south from Highway 17 (Trans Canada Highway) approximately 25 kilometres west of Ignace and 3.8 kilometres west of Raleigh Lake Road (Cobblestone Lodge). Upon departing Highway 17, travel 8.7 kilometres south to the "Moose Hide Road" junction and continue to the left. After another 3.1 kilometres, turn east onto logging road 46-02. Approximately 1.5 kilometres from this junction, an old logging road leads north onto the Raleigh Lake property and provides easy access to claim K 1178331. Road 46-02 continues to the eastern side of Raleigh Lake and eventually back to Highway 17.

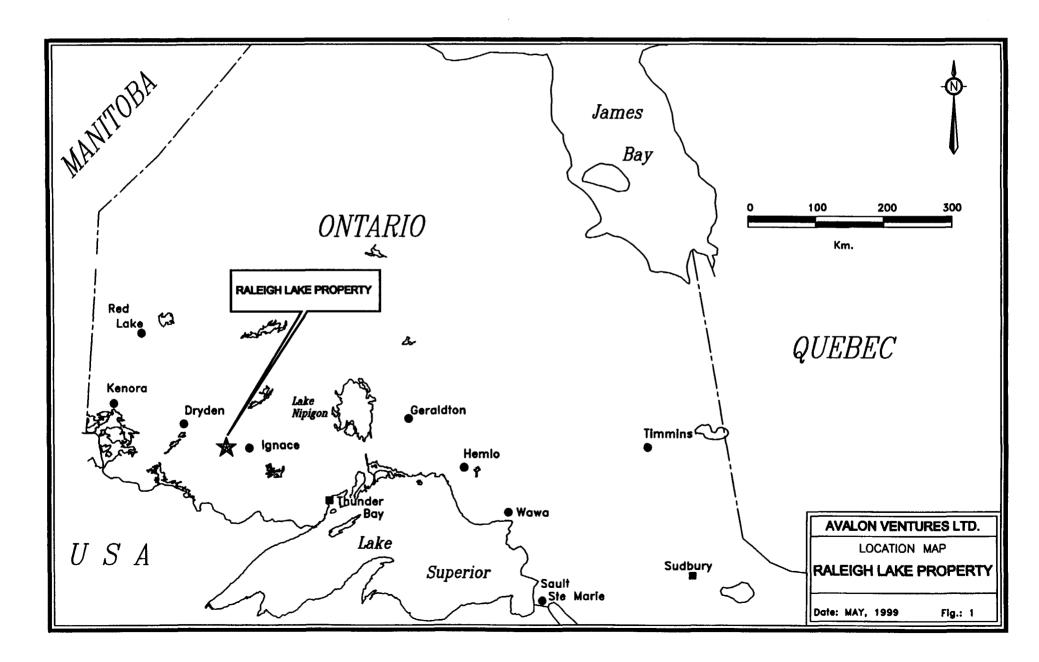
The Raleigh Lake area is covered by extensive glacial till and sandy soil. Outcrop exposure is generally poor, even along the shorelines of numerous lakes in the area, including Raleigh Lake.

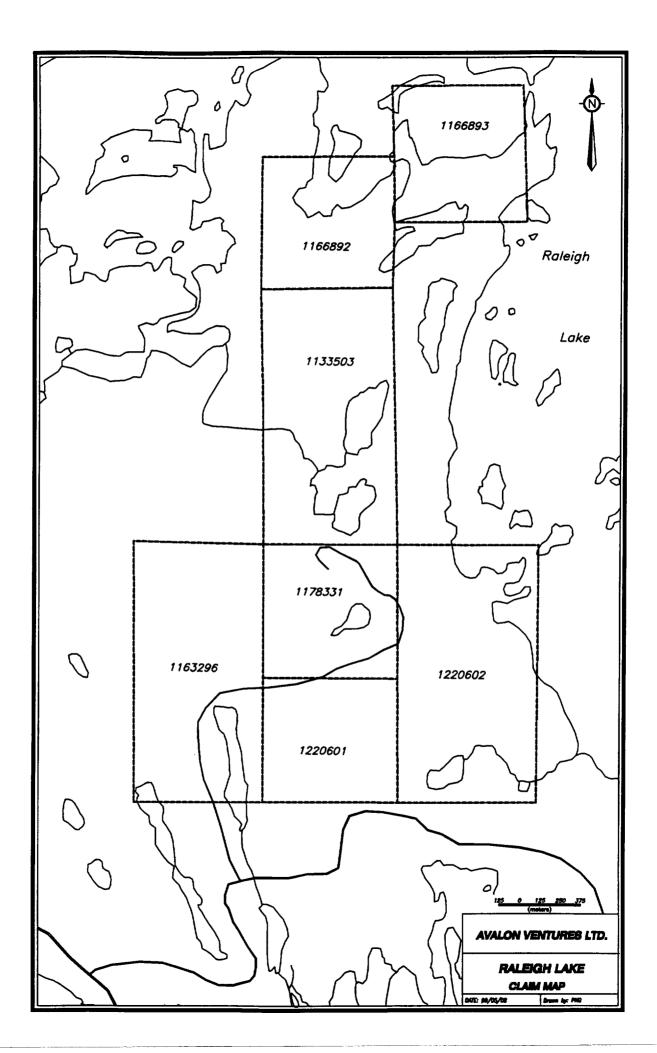
## 3.0 LAND POSITION

The Raleigh Lake property consists of seven claims, which comprise 40 claim units for a land area totalling 1,600 acres (Figure 2). The claims are located in the northwest corner of claim sheet G-2557, Raleigh Lake Area, just west of Raleigh Lake. NTS reference for the property is 52 G/5, with the property being centred on Latitude 49°25' N Longitude 91°57' W.

The claims are held under an option agreement with beneficial owners Robert Fairservice of Kenora, Ontario, Sherridon Johnson of Dryden, Ontario, and James Bond II of Welch, West Virginia. The recorded holders and other pertinent claim information is listed in Table 1.

31 May 1999





The claims are held under a four year option during which time Avalon must make a total of \$100,000 in cash payments, issue 20,000 shares and incur a minimum of \$400,000 in exploration expenditures on the property to keep the option in good standing. At the end of the term, and by meeting these commitments, Avalon will have earned a 100% undivided interest in the property, subject to a 3.0% Net Smelter Returns royalty retained by the vendors, of which 1.5% can be purchased by Avalon at any time for \$1.0 million cash.

Claim	Units	Recorded Holder	Recorded	Assessment Due
K 1178331	4	Fairservice 100%	13 Nov 1997	13 Nov 1999
K 1220601	4	Fairservice 100%	08 Apr 1998	08 Apr 2000
K 1220602	8	Fairservice 100%	08 Apr 1998	08 Apr 2000
K 1133503	8	Bond 75% Johnson 25%	13 Jun 1997	13 Jun 1999
K 1163296	8	Bond 75% Johnson 25%	29 Jan 1998	29 Jan 2000
K 1166892	4	Bond 75% Johnson 25%	12 Feb 1998	12 Feb 2000
K 1166893	4	Bond 75% Johnson 25%	12 Feb 1998	12 Feb 2000
	40			

Table 1: Raleigh Lake Property Claims List

### 4.0 PREVIOUS EXPLORATION

Work has been carried out near the Raleigh Lake area for greenstone hosted gold and base metal mineralization. However, there has been little to no previous exploration for rare metal mineralization. Spodumene-bearing pegmatite was discovered in the area by Stan Johnson in 1966, though the mineralization was not disclosed until sometime in the early 1990s. Since that time, this area and others have become the focus of various studies on granite-related mineralization in the Superior Province by the Ontario Geological Survey (Breaks 1993 and Stone et al. 1998, 1999). Breaks documented the historic spodumene showing and discovered several new occurrences of rare metal mineralization within the Raleigh Lake Pegmatite Field (Breaks 1993).

The current claims were staked by the property vendors in 1997 and 1998. Following staking, and prior to the current program, the vendors and Avalon have carried out limited prospecting on the claims in the known showing areas. Sampling of the pegmatites returned anomalous lithium, tantalum and rubidium, thereby prompting Avalon to enter into an option agreement with the vendors.

### 5.0 REGIONAL GEOLOGY

The Raleigh Lake property is situated within the Wabigoon Subprovince of the Superior Province of the Canadian Shield. More specifically, it occurs in the western portion of the central Wabigoon region (CWR). The CWR is characterized by ovoid gneissic domes and elliptical batholiths with screens and small belts of supracrustal rocks. Older foliated and gneissic tonalitic bodies are cut and surrounded by younger massive and foliated granitic bodies forming large-scale dome and basin structures. Minor greenstone belts of relatively low metamorphic grade occur within the CWR (Figure 3).

The Indian Lake granitoid batholith is a major feature of the Raleigh Lake area, with smaller bodies, such as the Raleigh Lake Pluton (4 x 6 kilometres in size), and the Crocker Bay Stock ( $0.5 \times 1.5$  kilometres in size) occurring in the immediate vicinity. These stocks are surrounded by mafic metavolcanic rocks ranging from foliated to gneissic flows and fragmentals. To the south and west, the mafic volcanics are in contact with intermediate to felsic flows and fragmental units (Stone et al. 1998, 1999).

# 6.0 PROPERTY GEOLOGY AND MINERALIZATION

The Raleigh Lake property (Figure 3, Map 1) is predominantly underlain by mafic volcanic rocks of the Raleigh Lake greenstone belt (Sage et al. 1974). Though not examined in detail during the current program, it is reported that these volcanics range from thin strongly foliated to gneissic flows. In the property area, the belt of mafic volcanics is bounded to the east by the Raleigh Lake Pluton, which outcrops on the northeast corner of claim K 1220602, and to the north by the Crocker Bay Stock, which covers portions of claims K 1166892 and K 1166893.

The mafic volcanics are cut by numerous peraluminous (S-type) granite to granodiorite dykes of the Raleigh Lake Pegmatite Field (Breaks 1993). Numerous occurrences of rare element mineralization, in a zone approximately 1.5 kilometres wide and at least 4 kilometres in length, were described by Breaks as part of a study on granite-related mineralization in northwestern Ontario. The rare element-bearing minerals identified by Breaks include spodumene, beryl, holmquistite, ixiolite, microlite, bismuthinite, columbite, and tantalite. Prospecting by one of the Raleigh Lake property holders has revealed significant rare metal mineralization including lithium up to 2.713% Li<sub>2</sub>O, tantalum up to 0.097% Ta<sub>2</sub>O<sub>5</sub>, cesium up to 0.018% Cs<sub>2</sub>O and rubidium up to 0.240% Rb<sub>2</sub>O in the pegmatite dykes. A subsequent property visit by the author just prior to acquiring the property returned values up to 1.679% Li<sub>2</sub>O, 0.04% Ta<sub>2</sub>O<sub>5</sub>, 0.029% Cs<sub>2</sub>O, and 0.915% Rb<sub>2</sub>O.

The pegmatites belong to the albite spodumene sub-type of rare metal pegmatites, which commonly contain tantalum minerals, but are not at the high fractionation end of rare metal pegmatites. Nevertheless, their occurrence could indicate part of a continuum of a continuous fractionation sequence, which would ultimately end in deposition of evolved and mineralized rare metal pegmatites.

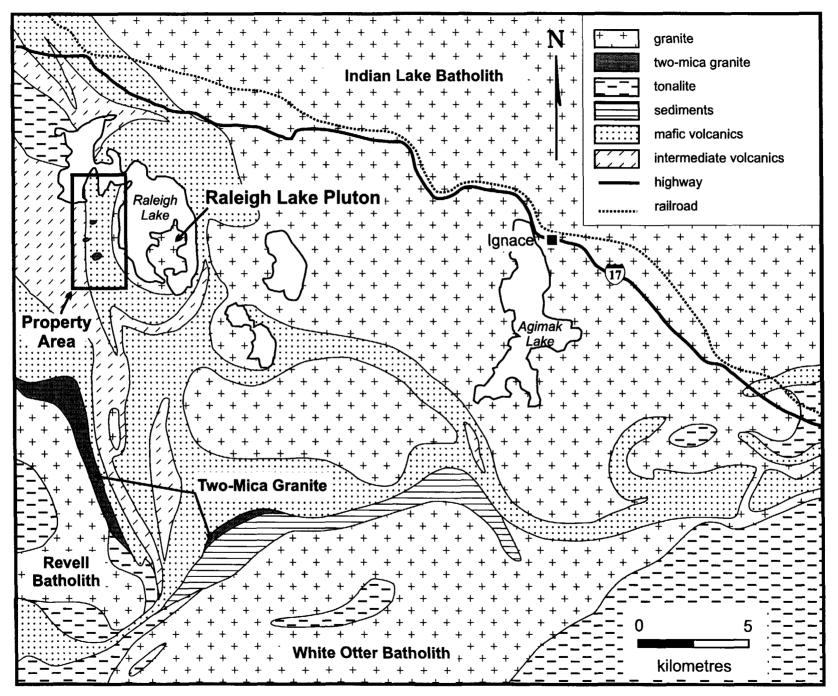


Figure 3 Regional Geology of Raleigh Lake Area

Modified After Stone et al. 1998

### 7.0 CURRENT PROGRAM METHODOLOGY AND RESULTS

Avalon's initial exploration program on the Raleigh Lake property consisted of a ten day program, completed during July 18 to July 28, 1998, of regional reconnaissance sampling and specific lithogeochemical sampling within the claim group. The objectives of the program were to: 1) sample granite plutons in the vicinity of Raleigh Lake for major oxide analysis, 2) sample mafic volcanic rocks for lithogeochemical analysis in order to determine regional fractionation trends, and 3) prospect for new rare metal pegmatites in the vicinity of Raleigh Lake. The prospecting and sample collection program was completed by Field Geologist, Jeffrey Morgan, and Geological Assistant, Jacob Willoughby, under the direction of the author.

On the Raleigh Lake claims, rock samples were collected at 50 metre stations, where possible, along east-west oriented traverse lines across the northern, central and southern portions of the Raleigh Lake claims (see lines 0N, 1N, 2N, 3N on Map 1). Lines were traversed from east to west using a compass and hip-chain, with 1:20,000 scale air photos used for control. Outcrop exposure along these lines is moderate to poor. A total of 29 mafic metavolcanic samples (556301-556310, 556317-556335) were collected along the traverse lines within the claim boundaries. Sample descriptions can be found in Appendix 1. These 29 samples were analyzed at XRAL Laboratories in Toronto, Ontario for lithium (ICP 90), cesium (AA 90), and rubidium (AA 90). Assay certificates are included in Appendix 2.

Several other samples were collected as part of the regional reconnaissance program. Five of these samples (556201-556203, 556208 and 556214) fall within the claim boundaries. Sample descriptions are included in Appendix 1. These samples were sent to Activation Laboratories Ltd. in Ancaster, Ontario for analysis. Analyses for each of the samples consisted of the Research Quality whole rock analysis (fusion-ICP) and Research Quality trace metal analysis (ICP/MS). Additionally, all samples were analyzed for lithium using the same ICP/MS method. Assay certificates are included in Appendix 2.

The regional reconnaissance program confirmed the presence of the previously reported pegmatite bodies and also the potential for discovering new pegmatites with economic concentrations of rare metals. Substantial fractionation and rare metal enrichment was indicated in several samples from the current program. The results also provide direct evidence that the pegmatite field is quite highly evolved and therefore has good potential for the occurrence of other fractionated pegmatites. This could include the most highly fractionated dykes which typically occur the most distal from the parent granite and are the most likely to contain tantalum and cesium. The shallow dipping character and the possible regional domal structure also suggest potential for excellent large structural traps.

The 29 amphibolite samples collected on four prospecting traverses (lines ON, 1N, 2N, 3N) were spaced to cover the northern, central, and southern portions of the claim group. These trial lines were designed to get a broad geochemical profile over the main metavolcanic host rocks of the known pegmatites on the property and identify lithogeochemical anomalies attributable to "blind" pegmatites at depth or under proximal overburden cover. Analyzed for

Li, Rb, and Cs, the typical mobile lithophile metals associated with dispersion haloes around fractionated pegmatites, one sample (Sample 556324) in the proximity of the main showing pegmatite returned anomalous lithium (870 ppm) and rubidium (165 ppm). The paucity of other anomalous samples from the present program is not necessarily indicative of the absence of pegmatites; rather it is reflective of low outcrop availability. The anomalous sample indicates concretely that the pegmatites do indeed exhibit lithophile metal dispersion and as such shows that lithogeochemical sampling of host rocks is an excellent tool in this terrain where good outcrop exposure is encountered.

The samples of pegmatite from the main showing indicate strong fractionation in terms of rubidium (Rb) content in K-feldspars and suggest the possibility of continuous fractionation toward highly evolved rare metal mineralization, either within the pegmatite itself along strike or down dip, or distal to the pegmatite, either laterally or at depth in another pegmatite. The presence of evolved tantalum (Ta) minerals such as microlite and ixiolite as identified by Breaks (1993) support this possibility. The fact that no new pegmatites were uncovered in this relatively short reconnaissance program in no way suggests that others don't exist. Clearly more ground follow-up is required, in addition to other geochemical surveys such as soil and lithogeochemical programs.

### 8.0 CONCLUSIONS

It is readily apparent from previous sampling of the main pegmatites on the property that elevated tantalum is pervasive. Generally associated with albitic assemblages which may be secondary, the possibility for zones of economic tantalum enrichment, either within the known pegmatites or in distal bodies, is good. High rubidium in K-feldspar provides another indication for evolved fractionation.

The limited lithogeochemical sampling over the claim area has not indicated any new potential pegmatites. However, the very narrow scope of the lithogeochemical survey is inconclusive, since sample density is very sporadic. As such, it cannot by any means be concluded that the claim area does not have further pegmatite occurrences, and further work in the form of tighter line and sample spacing would be a preliminary first step in follow-up evaluation.

#### 9.0 RECOMMENDATIONS

Although the amphibolite lithogeochemical sampling does not indicate any "blind" pegmatite occurrences, it cannot be concluded that they don't occur on the claim group. The very narrow scope of the sampling survey, sporadic sample locations, and lack of outcrop preclude any negative conclusions on the possibility of further pegmatite occurrences within the claim group.

Based on the preceding observations, the following is proposed for further exploration on the Raleigh Lake property:

- Detailed lithogeochemical lines over the entire claim group with 100 metre line spacing and 25 metre sample spacing. Lines should be run in an east-west orientation. A cut grid for this survey is not necessary, as airphoto controlled compass and topofil traverses are adequate.
- Production of a preliminary geological map obtained from the geochemical survey, with observations on pegmatite geometry and orientation, and structural observations to indicate preferred orientations and traps for pegmatite emplacement.
- Sub-vertical drill holes on the main pegmatite showing to test both for continuity and fractionation down dip and along strike, also for horizontal stacking, with other dikes/sills at depth.

### REFERENCES

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- Breaks, F.W. 1993. Granite-related mineralization in northwestern Ontario: I. Raleigh Lake and Separation Rapids (English River) rare-metal pegmatite fields; *in* Summary of Field Work and Other Activities 1993, Ontario Geological Survey, Miscellaneous Paper 162, p. 104-110.
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- Stone, D., Hall—, J. and Chaloux, E. 1999. Precambrian geology, Ignace area; Ontario Geological Survey, Map P.3360, scale 1:50,000.
- Willoughby, J., 1999. Petrology and Geochemistry of Archean granitoids in the Raleigh Lake area of northwestern Ontario and relation to rare-metal pegmatites; unpublished B.Sc. (Hons.) thesis, University of Waterloo.

# STATEMENT OF EXPENDITURES

# FOR WORK ON CLAIM GROUP

Geochemical Sampling Program (Geologist and Assistant)	5 days @ \$325/day	\$ 1,625.00
Sample Analyses – Activation Labs	5 samples @ \$91/sample	\$ 455.00
Sample Analyses – XRAL Labs	29 samples @ \$15/sample	\$ 435.00
Supervision, Interpretation, Report and Drafting	10 days @ \$300/day	\$ 3,000.00
Supplies and Sample Shipping		\$ 155.00
Accommodation and Meals, Boat and Truck Rentals	10 persondays @ \$75/day	\$ 750.00
	Total	¢ < 430.00

Total \$ 6,420.00

# STATEMENT OF QUALIFICATIONS

I, Jens C. Pedersen of Box 1, Group 5 RR#1, East Selkirk, Manitoba ROE 0M0, do hereby certify that:

- 1) I am a graduate of the University of Manitoba with a Bachelor of Science degree (Geology), 1976-1979.
- 2) I am presently employed by Avalon Ventures Ltd. of 851 Field Street, Thunder Bay, Ontario P7B 6B6 in the capacity of Senior Geologist.
- 3) I have been practicing my profession as exploration geologist for the past 20 years with various Canadian mining companies in Canada, the United States, and Greenland, and as an independent geological consultant. Much of that time has been spent exploring for and evaluating rare metal pegmatites and related deposits while in the employ of Tantalum Mining Corp. of Canada and Highwood Resources Ltd.
- 4) This report on the Raleigh Lake property is based on my personal examination of, and supervision of, the work on the property.

Dated in Thunder Bay, Ontario this 31st day of May, 1999.

Jens-C. Pedersen

Appendix 1

**Rock Sample Descriptions** 

Sample Number	Field Description
556201	Pegmatite dyke, bounded by medium grained grey granite, striking 030°. Bleached white, possible zoning from K-feldspar rich in south to K-feldspar- albite-quartz muscovite at north. Large microcline feldspars up to 75 cm, blebby quartz (waxy), coarse grained patches of muscovite, and saccharoidal albite containing fine grained (<1 mm garnet).
556202	Composite chip sample from pegmatite at RL-20-02 described above.
556203	K-feldspar sample taken near 556208.
556208	Whole rock sample from outcrop RL-20-04: Medium grained granite, equigranular and homogeneous. Average grain size 2-3 mm. Predominantly K- feldspar, hornblende, minor plagioclase and biotite.
556214	Sample of dyke from outcrop RL-21-01: Felsic/granitic dyke cutting mafic metavolcanic at 125°, up to 1 m wide. Biotite alteration of volcanic/amphibolite. Exposed outcrop 1x1 m.
556301	Mafic metavolcanic, strongly foliated at 020/62° E.
556302	Mafic metavolcanic.
556303	Amphibolite/mafic metavolcanic, biotite alteration.
556304	Medium grained, mafic to intermediate metavolcanic, possibly tuffaceous, strongly foliated.
556305	Medium grained, mafic to intermediate metavolcanic, possibly tuffaceous, strongly foliated.
556306	Mafic metavolcanic.
556307	Mafic metavolcanic, moderate to strong biotite.
556308	Fine to medium grained intermediate intrusive, weakly foliated, trace very fine grained pyrite.
556309	Altered mafic to intermediate intrusive. Weak silicification, trace very fine grained pyrite.
556310	Amphibolite/mafic metavolcanic, with fine grained amphibole crystals.
556311	Pyroxenite, foliated.
556312	Fine to medium grained mafic metavolcanic, strongly foliated.

556313	Medium grained intermediate to mafic intrusive.
556314	Medium grained intermediate to mafic intrusive.
556315	Fine to medium grained mafic metavolcanic.
556316	Medium grained, altered mafic to intermediate intrusive. Finely banded gneissic texture.
556317	Medium to coarse grained pyroxenite. Trace sulphides.
556318	Foliated mafic metavolcanic.
556319	Rusty mafic metavolcanic. Finely banded gneissic texture.
556320	Quartz-anthophyllite schist, altered metasediments??
556321	Fine grained mafic metavolcanic. Moderately to strongly foliated.
556322	Fine to medium grained foliated mafic metavolcanic.
556323	Rusty, gossanous mafic metavolcanic.
556324	Fine grained mafic metavolcanic. Biotite alteration.
556325	Medium grained mafic intrusive, pyroxene with lesser plagioclase. Moderately foliated.
556326	Mafic metavolcanic.
556327	Mafic metavolcanic, strongly foliated.
556328	Altered pyroxenite? medium grained intrusive.
556329	Mafic metavolcanic. Finely banded, "pseudo-gneissic" texture.
556330	Fine to medium grained mafic metavolcanic.
556331	Mafic metavolcanic.
556332	Fine grained mafic metavolcanic. Strongly foliated.
556333	Foliated mafic metavolcanic.
556334	Foliated mafic metavolcanic.
556335	Foliated mafic metavolcanic.

Appendix 2

Assay Certificates



XRAL Laboratories A Division of SGS Canada Inc.

1885 Leslie Street Don Mills, Ontario Canada M3B 3J4 Telephone (416) 445-5755 Fax (416) 445-4152

### **CERTIFICATE OF ANALYSIS**

Work Order: 054193

To:	Avalon Ventures Ltd	
	Attn: Ian Campbell	
	851 Field Street	

THUNDER BAY ONTARIO, CANADA P7B 6B6

:

:

Copy 1 to

Copy 2 to

P.O. No.	:	
Project No.	:	533
No. of Samples	:	29 Rock
Date Submitted	:	15/02/99
Report Comprises	:	Cover Sheet plus
		Pages 1 to 1

Distribution of unused material: Pulps: Store Rejects: Store

Certified By

:

Date

:

24/02/99

Dr. Hugh de Souza, General Manager XRAL Laboratories

#### **ISO 9002 REGISTERED**

 Report Footer:
 L.N.R.
 = Listed not received
 I.S.
 = Insufficient Sample

 n.a.
 = Not applicable
 - = No result

 \*INF
 = Composition of this sample makes detection impossible by this method

 M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

SGS Member of the SGS Group (Société Générale de Surveillance)



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XRAL Laboratories A Division of SGS Canada Inc.

24/02/99

Work Order:	054193	Date:					
Element.	Li	Cs	Rb				
Method.	ICP90	AA90	AA90				
Det.Lim.	10	100	10				
Units.	ppm	ppm	ppm				
556301	33	<100	13				
556302	51	<100	<10				
556303	36	<100	<10				
556304	17	<100	<10				
556305	33	<100	12				
556306	33	<100	<10				
556307	28	<100	<10				
556308	68	<100	<00				
556309 556310 556317	73 66	<100 <100	92 47 33				
556317	30	<100	<10				
556318	42	<100	<10				
556319	45	<100	<10				
556320	131	<100	60				
556321	38	<100	14				
556322	21	<100	<10				
556323	43	<100	<10				
556324	870	<100	165				
556325	28	<100	<10				
556326	57	<100	31				
556327	102	<100	<10				
556328	68	<100	14				
556329	141	<100	<10				
556330	174	<100	16				
556331	58	<100	<10				
556332	36	<100	17				
556333	<10	<100	92				
556334	18	<100	86				
556335	124	<100	24				
*Dup 556301	36	<100	14				
*Dup 556319	56	<100	<10				
*Dup 556331	63	<100	<10				

FINAL

Page 1 of 1

ACTLABS

# ACTIVATION LABORATORIES LTD

Invoice No.: 16763 Work Order: 16901 Invoice Date: 20-JAN-99 Date Submitted: 17-DEC-98 Your Reference: LETTER Account Number: A010

AVALON VENTURES LTD. 851 FIELD STREET THUNDER BAY, ON P7B 6B6 ATTN: KAREN REES/IAN CAMPBELL

# CERTIFICATE OF ANALYSIS

24 ROCKS (PREP.REV2)

were submitted for analysis.

The following analytical packages were requested. Please see our current fee schedule for elements and detection limits.

REPORT 16763 LI-TOTAL DIGESTION ICP REPORT 16763 B CODE 4B-MAJ ELEM FUS ICP(WRA.REV2)

REPORT 16763 RPT.XLS TRACE ELEM FUS ICP/MS(WRA4B2.REV4)

This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of material submitted for analysis.

**CERTIFIED BY :** 

DR E.HOFFMAN/GENERAL MANAGER

1336 SANDHILL DRIVE, ANCASTER, ONTARIO, CANADA L9G 4V5 • TEL: 905-648-9611 • FAX: 905-648-9 E-MAIL: ACTLABA@IBM.NET or 102040.700 @ COMPUSERVE.COM

Sample description	LI PPM
556201	22.
556202	94.
556203	6.
556204	102.
556205	4.
556206	6.
556207	57.
556208	65.
556209	28.
RE 556209	28.
556210	30.
556211	25.
556213	38.
556214	5.
556215	41.
556216	18.
556217	76.
556218	9.
556225	24.
556227	61.
556228	14.
556337	21.
556338	27.
556348	20.
556350	61.
556350 (PULP DUP	59.

SAMPLE	SiO2	AI2O3	Fe2O3	MnO	MgO	CaO	Na2O	К2О	TiO2	P2O5	LOI	TOTAL	Ba	Sr	Y	Sc	Zr	Be	v	
	%	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
556201	65.59	18.46	0.30	-0.01	0.01	0.05	2.40	13.33	-0.01	0.02	0.10	100.28	148	115*	1	-1	43	10	-5	
556202	70.93	16.54	0.41	0.08	0.02	0.24	6.14	5.60	-0.01	0.04	0.26	100.25	80	64*	8	-1	35	77	-5	
556203	65.57	18.60	0.14	-0.01	0.01	0.04	2.35	13.61	-0.01	0.01	0.14	100.48	29	77*	-1	-1	27	3	-5	
556204	74.02	14.06	1.73	0.03	0.33	1.07	3.88	4.79	0.18	0.07	0.56	100.71	820	142	15	2	179	2	9	
556205	75.49	13.35	1.13	0.23	0.10	1.22	6.35	0.70	0.05	0.01	0.29	98.93	104	60	63	6	51	8	11	
556206	78.53	12.56	0.66	0.02	0.07	0.5 <del>9</del>	5.06	2.82	0.05	0.01	0.26	100.62	204	80	15	2	53	5	-5	
556207	67.96	16.06	2.50	0.04	0.86	3.02	5.48	2.57	0.40	0.17	0.51	99.57	924	821	5	3	163	4	30	
556208	66.24	15.41	3.96	0.06	2.12	3.82	4.86	2.34	0.40	0.16	0.45	99.81	939	698	7	7	150	2	60	
556209	69.09	16.07	2.46	0.03	0.83	2.56	5.96	2.80	0.35	0.15	0.21	100.52	1185	958	5	3	183	2	29	
556210	69.72	15.67	1.92	0.02	0.55	2.04	5.72	3.24	0.28	0.07	0.36	99.59	982	796	4	2	153	2	17	
556211	70.81	15.77	2.05	0.03	0.79	2.56	5.49	2.80	0.35	0.13	0.19	100.98	933	796	5	3	150	2	30	
556213	68.67	15.86	2.69	0.04	1.10	2.66	5.66	3.02	0.38	0.16	0.40	100.62	1240	880	6	4	170	3	36	
556214	77.49	13.99	0.70	-0.01	0.04	1.24	6.93	0.20	0.03	-0.01	0.13	100.76	26	59	-1	-1	49	3	5	
556215	75.16	13.86	0.74	0.18	0.03	0.30	4.56	4.81	0.02	0.01	0.21	99.89	6	14	83	19	47	3	-5	
556216	72.91	13.87	1.45	0.03	0.20	0.83	4.47	5.04	0.12	0.03	0.60	99.55	759	125	11	2	144	2	7	
556217	74.06	14.14	1.73	0.03	0.25	1.04	3.91	5.18	0.14	0.05	0.21	100.74	914	158	10	2	166	3	7	
556218	79.49	11.91	1.02	0.02	0.15		3.64	3.34	0.05	-0.01		100.98	284	122	3	-1	61	2	-5	
556225	72.52	15.33	2.02	0.03	0.66	2.23	6.10	0.63	0.21	0.05	0.82	100.60	556	670	3	3	96	2	29	
556227	74.15	12.44	3.60	0.07	0.18	1.46	4.49	3.44	0.31	0.03	0.10	100.27	953	133	42	6	392	3	-5	
556228	75.45	12.74	2.22	0.03	-	0.93	4.19	3.88	0.18		0.15			278	49	1	298	4	6	
556337	67.85	17.56	2.50	0.03		3.69	4.87	2.10	0.40		0.98			869	4	3	153	2	32	
556338	67.09	16.50	3.25	0.04	1.28	3.37	4.51	2.35	0.46	0.19	0.95	99.99	1204	834	6	5	145	2	45	
556348	66.73	17.04	2.49	0.03	0.85	4.06	4.93	3.07	0.40	0.16	0.45	100.21	1186	1008	4	3	140	2	33	
556350	67.99	16.77	2.30	0.04	0.98		5.21	2.62	0.35		1.12	100.34		945	4	2	144	2	26	
556350 (PULP DUP)	67.99	16.68	2.33	0.04	0.98	2.90	5.21	2.84	0.35	0.09	1.01	100.41	1783	947	4	2	151	2	27	

\* Suspected Rb interference

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Adrienne I. Rittau, B.Sc., C.Chem ICP Technical Manager

Lithogeochem (Research Package) Job #: 169	01	Report#	: 1676	3		-	Custom	er: Ava	alon Ve	ntures L	td.			Contac	t: Ian C	Campbell
Trace Element Values Are in Parts Per Million.	Negative Values E	qual No	t Detec	ted at	That Lov	ver Lim	it.									-
Sample ID:	v	Cr	Co	Ni	Cu	Zn	Ga	Ge	As	Rb	Sr	Y	Zr	Nb	Мо	Ag
556201	-5	-20	2	43	-10	33	43	4.3	-5	6,900	33	-0.5	35	1.8	-2	-0.5
556202	-5	37	-1	-15	-10	41	54	4.9	-5	3,059	27	7.5	36	59	-2	-0.5
556203	-5	-20	-1	-15	-10	-30	39	4.1	-5	5,732	8	-0.5	13	3.4	-2	-0.5
556204	10	-20	2	32	27	54	22	1.1	-5	309	128	15	192	14	-2	-0.5
556205	14	-20	-1	30	-10	-30	27	1.9	-5	84	57	69	53	37	21	-0.5
556206	-5	-20	-1	-15	-10	-30	23	1.7	-5	159	70	14	50	14	3	-0.5
556207	29	-20	5	16	-10	79	25	0.8	-5	103	829	5.5	189	6.6	-2	0.6
556208	54	84	10	58	12	73	21	0.8	-5	80	664	7.4	148	3.6	-2	0.7
556209	27	-20	4	30	10	79	23	0.7	-5	75	965	6.5	191	5.9	-2	-0.5
556210	18	-20	2	-15	-10	69	23	0.8	-5	75	758	4.0	157	3.8	-2	0.5
556211	27	-20	5	-15	20	73	26	0.8	-5	82	828	6.0	168	4.4	-2	0.6
556213	33	28	15	20	22	67	23	0.7	-5	115	870	6.8	173	5.7	-2	-0.5
556214	-5	-20	-1	-15	-10	-30	29	1.0	-5	20	58	1.1	48	2.0	-2	-0.5
556215	-5	-20	-1	-15	-10	48	42	2.8	-5	903	4	84	39	67	-2	-0.5
556216	6	-20	-1	-15	-10	-30	21	1.0	-5	274	114	11	144	15	-2	-0.5
556216 rep	7	-20	1	-15	-10	33	22	1.1	-5	291	121	11	151	16	-2	-0.5
556217	9	-20	1	-15	-10	50	22	1.1	-5	327	146	10	175	13	-2	0.6
556218	7	23	-1	-15	-10	-30	20	1.0	-5	189	116	3.3	54	4.6	-2	-0.5
556225	34	41	7	15	13	38	23	0.6	-5	40	667	3.3	118	2.4	-2	0.9
556227	-5	21	5	16	12	59	19	1.3	-5	102	123	43	426	16	-2	-0.5
556228	8	-20	-1	-15	-10	48	23	1.5	-5	133	253	51	322	21	-2	1.4
556337	31	-20	4	-15	19	72	23	0.8	-5	52	812	3.9	156	3.5	-2	1.1
556338	46	29	9	36	67	58	23	0.8	-5	68	813	6.5	171	4.1	-2	1.5
556348	34	-20	3	16	18	73	23	0.7	-5	86	982	4.2	161	3.8	-2	0.9
556350	27	-20	3	18	-10	69	22	0.7	-5	61	880	4.0	147	3.4	-2	1.1
556350 pulp dup	28	-20	3	20	10	69	21	0.7	-5	61	909	4.0	154	3.5	-2	0.9
Blank	-5	-20	-1	-15	-10	-30	-1	-0.5	-5	-2	-2	-0.5	-1	-0.5	-2	-0.5
Standard STM1	-5	-20	-1	-15	-10	227	37	1.5	-5	116	707	47	1,217	268	5	-0.5
Certified STM1	(8.7)	(4.3)	0.9	(3)	(4.6)	235*	36*	(1.4)	4.6	118*	700*	46*	1210*	268*	5.2	0.079*
Standard MAG1	146	91	22	50	26	132	20	1.6	11	148	139	28	117	15	-2	-0.5
Certified MAG1	140*	97*	20.4*	53*	30*	130*	20.4*		9.2	149*	146*	28*	126*	12	1.6	0.08
Standard BIR1	313	370	50	160	127	74	16	1.4	-5	-2	107	16	17	0.6	-2	-0.5
Certified BIR1	313*	382*	51.4*	166*	126*	71*	16	1.5	(0.4)	0.25*	108*	16*	16	0.6	(0.5)	(0.036)
Standard DNC1	158	277	59	228	97	64	15	1.3	-5	4	145	19	37	1.6	-2	-0.5
Certified DNC1	148*	285*	54.7*	247*	96*	66*	15	(1.3)	(0.2)	(4.5)	145*	18*	41*	3	(0.7 <b>)</b>	(0.027)
Standard W2	264	86	43	74	105	80	18	1.5	-5	20	193	23	108	7.5	-2	-0.5
Certified W2	262*	93*	44*	70*	103*	77*	20*	(1.0)	1.24	20*	194*	24*	94*	7.9	(0.6)	(0.046)
Standard MRG1	523	440	86	198	132	187	19	1.5	-5	7	265	14	109	21	-2	-0.5
Certified MRG1	526*	430	87*	193*	134*	191*	17		0.73	8.5	266*	14	108*	20	0.87	0.11
Standard SY3	49	-40	6	-30	47	246	39	3.2	23	216	308	721	318	146	-4	-1
Certified SY3	50	(11)	8.8	11	17	244*	27*	1.4	18.8	206*	302*	718*	320	148	(1.0)	(1.5)

Lithogeochem (Research Package) Job #: 169	01 F	Report#:	: 16763	3		(	Custome	er: Ava	lon Ver	ntures Li	d.			Contact	: Ian Ca	mpbell
Trace Element Values Are in Parts Per Million.	Negative Values Ec	ual No	t Detect	ed at i	That Lov	ver Lim	it.									
Sample ID:	V	Cr	Co	Ni	Cu	Zn	Ga	Ge	As	Rb	Sr	Y	Zr	Nb	Мо	Ag
Standard GXR1	82	-40	8	40	1,121	771	14	3.1	427	-4	294	34	29	1	18	31
Certified GXR1	80	12	8.2	41	1,110	760	13.8		427	(14)	275	32	(38)	(0.8)	18	31

NOTE: '\*' = RECOMMENDED VALUES

'()' = INFORMATION VALUES

ALL OTHER VALUES ARE PROPOSED

Certified By:

Davio OAma

D. D'Anna, Dipl. T. ICPMS Technical Manager, Activation Laboratories Ltd.

Date: 26 JAN 99

This report shall not be reproduced except in full without the written approval of the laboratory. Unless otherwise instructed, samples will be disposed of 90 days from the date of this report.

#### Lithogeochem (Research Package) Job #: 16901

Trace Element Values Are in Parts Per Million. Negative

Trace Licincite Values Are in Farts For Miniotic Hogative																
Sample ID:	In	Sn	Sb	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Но	
556201	-0.1	1	0.4	588	135	0.18	0.4	0.05	0.19	0.16	0.032	0.13	0.02	0.07	-0.01	
556202	-0.1	10	0.5	390	72	1.25	4.7	0.67	2.67	2.27	0.025	1.83	0.31	1.05	0.09	
556203	-0.1	-1	-0.2	328	26	0.18	0.5	0.05	0.23	0.17	0.009	0.13	0.02	0.09	-0.01	
556204	-0.1	2	-0.2	8.0	722	37.4	106	10.3	34.0	5.26	0.579	4.00	0.53	2.50	0.46	
556205	-0.1	1	-0.2	1.3	95	2.67	12	1.41	6.22	3.09	0.064	4.97	1.41	9.26	1.72	
556206	-0.1	1	-0.2	6.7	174	3.39	13	1.26	4.60	1.47	0.136	1.38	0.29	1.91	0.40	
556207	-0.1	4	-0.2	15	915	17.5	56	6.29	24.8	4.14	0.974	2.78	0.30	1.11	0.16	
556208	-0.1	-1	-0.2	7.2	884	10.1	33	3.78	15.4	3.20	0.831	2.35	0.30	1.35	0.25	
556209	-0.1	1	-0.2	2.5	1,160	20.0	61	6.90	27.1	4.76	1.137	3.26	0.34	1.31	0.20	
556210	-0.1	1	-0.2	2.6	921	10.2	31	3.82	15.5	3.18	0.771	2.14	0.23	0.87	0.13	
556211	-0.1	1	-0.2	2.2	946	18.6	55	6.79	26.6	4.57	1.001	3.07	0.33	1.20	0.18	
556213	-0.1	1	-0.2	4.9	1,218	14.7	54	5.95	24.3	4.62	1.083	3.19	0.35	1.41	0.21	
556214	-0.1	-1	-0.2	1.3	23	0.69	3.0	0.36	1.55	0.32	0.101	0.24	0.03	0.14	0.02	
556215	0.1	9	-0.2	24	5	7.72	32	4.05	16.2	5.16	0.022	5.16	1.05	6.96	1.46	
556216	-0.1	2	0.3	4.9	671	17.0	48	4.30	13.8	2.17	0.353	1.77	0.27	1.54	0.31	
556216 rep	-0.1	2	-0.2	5.1	707	16.5	47	4.24	13.5	2.12	0.355	1.74	0.28	1.61	0.33	
556217	-0.1	9	-0.2	26	823	16.9	54	4.55	14.0	2.33	0.421	2.02	0.28	1.42	0.31	
556218	-0.1	1	-0.2	3.7	258	1.65	4.7	0.50	1.78	0.40	0.249	0.40	0.08	0.45	0.10	
556225	-0.1	-1	-0.2	4.6	500	6.72	22	2.44	9.32	1.71	0.493	1.27	0.13	0.58	0.11	
556227	-0.1	2	-0.2	9.8	907	22.9	76	8.74	32.2	6.56	1.469	6.18	1.10	6.83	1.50	
556228	-0.1	3	-0.2	8.2	1,380	34.3	117	12.9	45.8	8.73	1.351	7.65	1.30	7.87	1.77	
556337	-0.1	-1	-0.2	2.9	970	22.8	66	7.90	29.5	4.35	1.050	2.78	0.26	0.82	0.13	
556338	-0.1	-1	-0.2	6.1	1,192	26.0	75	9.16	32.7	5.16	1.222	3.55	0.33	1.28	0.21	
556348	-0.1	-1	-0.2	6.1	1,184	10.3	35	4.43	17.5	3.33	0.885	2.18	0.22	0.88	0.14	
556350	-0.1	-1	-0.2	4.9	1,670	7.57	41	3.41	13.8	2.84	0.775	1.88	0.21	0.78	0.12	
556350 pulp dup	-0.1	1	-0.2	4.9	1,723	7.28	39	3.27	13.5	2.68	0.740	1.71	0.19	0.78	0.12	
Blank	-0.1	-1	-0.2	-0.1	-3	-0.05	-0.1	-0.02	-0.05	-0.02	-0.005	-0.02	-0.01	-0.02	-0.01	
Standard STM1	-0.1	7	1.4	1.6	579	150	259	20.7	82.1	12.5	3.366	9.53	1.50	8.00	1.58	
Certified STM1	(0.12)	6.8	1.66*	1.54*	560*	150*	259*	19*	79*	12.6*	3.6*	9.5*	1.55*	8.1*	1.9	
Standard MAG1	-0.1	3	0.9	8.6	485	42.5	88	9.89	38.8	7.44	1.418	5.69	0.95	5.19	1.04	
Certified MAG1	(0.18)	3.6	0.96*	8.6*	479*	43*	88*	9.3	38*	7.5*	1.55*	5.8*	0.96*	5.2*	1.02*	
Standard BIR1	-0.1	-1	0.4	-0.1	7	0.64	2.0	0.38	2.43	1.10	0.523	1.61	0.36	2.53	0.59	
Certified BIR1		0.65	0.58	0.005	7	0.62*	1.95*	0.38*	2.5*	1.1*	0.54*	1.85*	0.36*	2.5*	0.57*	
Standard DNC1	-0.1	1	0.9	0.2	108	3.73	8.4	1.13	5.18	1.44	0.574	1.90	0.40	2.72	0.66	
Certified DNC1			0.96*	(0.34)	114*	3.8*	10.6	1.3	4.9*	1.38*	0.59*	2	0.41*	2.7	0.62	
Standard W2	-0.1	2	0.7	0.9	173	10.6	23	3.01	13.3	3.35	1.072	3.55	0.63	3.83	0.81	
Certified W2			0.79	0.99*	182*	11.4*	24*	(5.9)	14	3.25*	1.1*	3.6*	0.63	3.8*	0.76*	
Standard MRG1	-0.1	3	0.5	0.6	49	9.74	27	3.89	18.9	4.61	1.421	4.03	0.59	3.00	0.54	
Certified MRG1		(3.6)	0.86	0.57	61	9.8*	26	3.4	19.2*	4.5*	1.39*	4	0.51*	2.9	0.49*	
Standard SY3	-0.2	8	0.5	2.9	452	1,346	2,234	223	673	109	17.25	105	18.1	118	29.5	
Certified SY3		(6.5)	0.31	2.5	450	1340*	2230*	223*	670	109	17*	105*	18	118	29.5*	

#### Lithogeochem (Research Package) Job #: 16901

Trace Element Values Are in Parts Per Million. Negative															
Sample ID:	în	Sn	Sb	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	ТЬ	Dy	Ho
Standard GXR1	0.8	54	122	3.0	699	7.51	15	2.00	9.14	3.10	0.669	3.98	0.81	5.08	1.07
Certified GXR1	0.77	54	122	3	750	7.5	17		(18)	2.7	0.69	4.2	0.83	4.3	

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#### Lithogeochem (Research Package) Job #: 16901

Trace Element Values Are in Parts Per Million. Negative

Trace Element Values Ale in Faits Fer Minion.	Negative											
Sample ID:	Er	Tm	Yb	Lu	Hf	Ta	W	TI	Pb	Bi	Th	U
556201	0.02	-0.005	0.03	0.002	0.9	9.4	0.2	58.0	21	0.11	0.16	0.81
556202	0.17	0.023	0.14	0.012	2.2	82	0.3	29.9	13	2.52	3.26	3.26
556203	0.01	-0.005	0.02	-0.002	0.3	4.7	-0.2	50.0	20	0.71	0.13	0.13
556204	1.26	0.195	1.06	0.150	5.1	1.5	-0.2	3.09	17	0.12	38.0	3.84
556205	4.85	0.835	4.93	0.643	4.5	12	0.3	0.75	5	3.56	7.28	3.65
556206	1.20	0.219	1.36	0.196	2.8	2.8	0.3	1.34	13	0.29	13.7	6.15
556207	0.43	0.051	0.30	0.035	4.4	1.4	-0.2	0.89	8	0.13	6.03	1.21
556208	0.66	0.095	0.58	0.091	3.5	0.3	-0.2	0.74	9	0.11	4.51	0.83
556209	0.55	0.069	0.34	0.043	4.5	0.4	-0.2	1.41	12	0.10	7.28	2.14
556210	0.33	0.039	0.24	0.024	4.0	0.3	-0.2	0.96	12	0.11	5.04	1.51
556211	0.50	0.059	0.32	0.041	4.2	0.3	-0.2	0.81	13	0.08	6.26	2.95
556213	0.57	0.078	0.41	0.047	4.1	0.4	0.3	0.98	13	0.12	6.08	2.55
556214	0.07	0.013	0.09	0.013	3.0	0.1	-0.2	0.18	15	-0.06	3.44	3.65
556215	4.82	0.983	7.23	1.140	3.4	11	0.5	9.02	25	4.06	15.3	7.46
556216	0.96	0.166	1.04	0.161	4.3	2.3	-0.2	2.15	14	0.29	28.9	4.85
556216 rep	1.02	0.164	1.08	0.165	4.4	2.4	0.2	2.56	14	0.15	29.7	4.99
556217	0.90	0.148	0.96	0.159	4.4	1.8	-0.2	2.48	14	0.18	26.8	3.84
556218	0.28	0.049	0.31	0.056	2.2	0.6	-0.2	1.56	13	0.10	13.5	4.14
556225	0.28	0.039	0.23	0.035	3.1	0.3	-0.2	0.35	6	-0.06	4.24	1.64
556227	4.28	0.723	4.52	0.717	9.5	1.1	0.3	1.06	6	0.23	9.59	1.69
556228	4.97	0.831	4.94	0.729	8.4	6.0	0.2	0.98	11	0.13	15.5	2.45
556337	0.32	0.035	0.21	0.022	3.7	0.3	-0.2	0.50	12	0.09	6.43	1.41
556338	0.57	0.065	0.40	0.042	3.8	0.3	0.2	0.88	8	0.07	6.94	1.77
556348	0.34	0.036	0.24	0.031	3.8	0.3	-0.2	0.69	11	-0.06	5.09	1.60
556350	0.33	0.037	0.24	0.028	3.4	0.3	0.3	0.52	10	0.06	4.54	1.27
556350 pulp dup	0.31	0.039	0.22	0.029	3.5	0.2	-0.2	0.50	9	0.07	4.36	1.24
Blank	-0.01	-0.005	-0.01	-0.002	-0.1	-0.1	-0.2	-0.05	-5	-0.06	-0.05	-0.05
Standard STM1	4.44	0.701	4.23	0.623	28	18.6	3.1	0.26	10	0.06	31.1	8.71
Certified STM1	4.2*	0.69	4.4*	0.60	28*	18.6*	3.6*	0.26	17.7*	0.13	31*	9.06*
Standard MAG1	2.88	0.445	2.60	0.388	3.3	1.2	1.6	0.09	22	-0.06	11.5	2.91
Certified MAG1	3	0.43*	2.6*	0.40*	3.7*	1.1	1.4	(0.59)	24*	0.34	11.9*	2.7*
Standard BIR1	1.71	0.281	1.70	0.263	0.6	-0.1	-0.2	-0.05	-5	-0.06	0.09	-0.05
Certified BIR1	1.7*	0.26*	1.65	0.26*	0.6*	0.04	0.07	(0.01)	3	(0.02)	0.03	0.01
Standard DNC1	1.98	0.324	2.01	0.317	1.0	-0.1	0.3	-0.05	-5	-0.06	0.31	0.11
Certified DNC1	2*	(0.33)	2.01*	0.32*	1.01*	0.098*	(0.2)	(0.026)	6.3	(0.02)	(0.2)	(0.1)
Standard W2	2.29	0.355	2.09	0.315	2.7	0.5	0.5	0.08	11	-0.06	2.34	0.56
Certified W2	2.5	0.38	2.05*	0.33*	2.56*	0.5	(0.3)	(0.2)	9.3	(0.03)	2.2*	0.53
Standard MRG1	1.28	0.158	0.85	0.110	3.8	0.8	0.7	-0.05	-5	-0.06	0.82	0.21
Certified MRG1	1.12	0.11	(0.6)	0.12	3.76*	0.8*	0.3	0.055	10	(0.13)	0.93	0.24
Standard SY3	68.3	11.64	62.2	7.933	11	22	1.7	1.59	132	0.45	1,015	650
Certified SY3	68	11.6*	(62)	7.9	9.7	30*	1.1*	1.5	133*	(0.8)	1003*	650*

#### Lithogeochem (Research Package) Job #: 16901

Trace Element Values Are in Parts Per Million.	Negative											
Sample ID:	Er	Tm	Yb	Lu	Hf	Та	w	TI	Pb	Bi	Th	U
Standard GXR1	2.92	0.440	2.25	0.308	0.7	-0.2	164	0.52	748	1,380	2.83	35.2
Certified GXR1		(0.43)	1.9	0.28	0.96	0.175	164	(0.39)	730	1380	2.44	34.90

Solution Ministry of Northern Development and Mines	Declaration of Performed on I Mining Act, Subsection	Mining Lan	d	Transaction Number (office use)
52G05NW2002 2.19511 RALEIGH LAKE Instructions: - For work performed on Cru - Please type or print in ink.	y of a to rev ng Re 900 own Lands before re	PROVINCIAL	and 66(3) of the int work and com of Northern Di RECORDING	Mining Act. Under section 8 of the respond with the mining land holder svelopment and Mines, 6th Floor
1. Recorded holder(s) (Attach a list if n	ecessary)	A.M. ~9 ?181911011212	3 P.M	
(see attached list, Address	)		phone Number	
Correspondence to: Name Avalon Ventures Ltd. Address 851 Field Street Thunder Bay, ON PT		Clie	Number	301086 07-346-0404 07-346-4233
2. Type of work performed: Check (~) Geotechnical: prospecting, surveys, assays and work under section 18 (reg Work Type Prospecting and geochemica	gs) Physic trench	al: drilling, str ing and assoc 29 Co To	ipping,	
Dates Work Performed From / 8 07 98 Day Month Yeer	Day Month	98 NT	S Reference	
Morg	hip/Area Caleigh Lake Plan Number G-2557	Re	ning Division sident Geologi strict	Kenora
Please remember to: - obtain a work permit - provide proper notice - complete and attach - provide a map show - include two copies o	e to surface rights he a Statement of Cos ing contiguous minir of your technical repo <b>2.1</b>	olders before ts, form 0212; ng lands that i ort. 951	starting work are linked for	GEOSCIENCE ASSESSION
3. Person or companies who prepared to Name Chris Pedersen, Senior C			phone Number	
Address Avalon Ventures Ltd.	JUN -		Number	7-346-0404
Name 851 Field Street		Tela	phone Number	
Address Thunder Bay, ON Name	P7B 6B6		Number phone Number	
Address		Fax	Number	
4. Certification by Recorded Holder or A	Agent			
1. Karen Rees	, do hereby (	certify that I h	ave persona	I knowledge of the facts set

.

(Print Name) forth in this Declaration of Assessment Work having caused the work to be performed or witnessed the same during or after its completion and, to the best of my knowledge, the annexed report is true.

Signature of Recorded Holder or Agent		······································	Data
	0 1 1	A 1 1 1 1 1 1 1	Date 11 DI 1000
Karen Villes	General Manager	Avalon Ventures Ltd	May 31, 1999
Agent's Address		Telephone Number	Fax Number
851 Field Street Th	under Bay PIBEBE		807-346-4233

the mining land where work was performed, at the one work was performed. A map showing the contiguous with must accompany this form.

work w mining column	Claim Number. Or if tas done on other eligible tand, show in this the location number ad on the claim map.	Number of Claim Units. For other mining land, list hectares.	Value of work performed on this claim or other mining land.	Value of work applied to this claim.	Value of work assigned to other mining claims.	<b>Bank.</b> Value of work to be distributed at a future date.
•9	TB 7827	16 ha	\$26, 825	N/A	\$24,000	\$2,825
øg	1234567	12	0	\$24,000	0	0
øg	1234568	2	\$ 8, 892	\$ 4,000	0	\$4,892
1	K 1178331	4	<i>i</i> ,475	# 1,600	٥	0
2	K 1220601	4	0	0	0	٥
3	K 12206020	8	710	U	125	585
4	K 1133503 .	8	900	3,200	0	٥
5	K 1163296.	8	575	υ	0	575
6	K 1166892.	4	1,475	0	<i>i</i> ,150	325
7	K 1166893 *	4	1,285	0	1,150	135
8						
9						
10			ECOBE	2.	10-	
11			ECOHD		-051	7
12			JUN - 1 1999		CEIVED	
13				JU	N 0 1 1999	
14					NCE ASSESSMENT	
15						
	<u>Annony - Honge - Hondel an aire - Anno 1997</u>	Column Totals	\$ 6,420	<b>4</b> ,800	# 2,425	\$ 1,620

I, <u>Karen Rees</u>, do hereby certify that the above work credits are eligible under (Print Full Name) subsection 7 (1) of the Assessment Work Regulation 6/96 for assignment to contiguous claims or for application to

the claim where the work was done.

Signature of Recorded Holder or Agent Authorized in Writing Karen Koes. General Manager, Avalon Ventures Ltd. May 31, 1999

#### 6. Instructions for cutting back credits that are not approved.

Some of the credits claimed in this declaration may be cut back. Please check ( $\nu$ ) in the boxes below to show how you wish to prioritize the deletion of credits:

1. Credits are to be cut back from the Bank first, followed by option 2 or 3 or 4 as indicated.

2. Credits are to be cut back starting with the claims listed last, working backwards; or

3. Credits are to be cut back equally over all claims listed in this declaration; or

4. Credits are to be cut back as prioritized on the attached appendix or as follows (describe):

Note: If you have not indicated how your credits are to be deleted, credits will be cut back from the Bank first, followed by option number 2 if necessary.

For Office Use Only		
Received Stamp	Deemed Approved Date	Date Notification Sent
	Date Approved	Total Value of Credit Approved
	Approved for Recording by Mining Re	ecorder (Signature)



Ministry of Northern Development and Mines

Statement of Costs for Assessment Credit

Transaction Number (office use)

Personal information collected on this form is obtained under the authority of subsection 6(1) of the Assessment Work Regulation 6/96. Under section 8 of the Mining Act, the information is a public record. This information will be used to review the assessment work and correspond with the mining land holder. Questions about this collection should be directed to the Chief Mining Recorder, Ministry of Northern Development and Mines, 6th Floor, 933 Ramsey Lake Road, Sudbury, Ontario, P3E 685.

Work Type	Units of Work Depending on the type of work, list the number of hours/days worked, metres of drilling, kilo- metres of grid line, number of samples, etc.	Cost Per Unit of work	Total Cost
Prospecting/sampling	geologist + assistant 5 clays	# 325/day	# 1,625.00
Activation Labs analyses		\$ 91/sample	\$ 455.00
XRAL Labs analyses	29 samples	# 15/sample	\$ 435.00
Supervision, Interpretation			
Report and Drafting	10 days	# 300/day	\$ 3,000.00
		] 	
Associated Costs (e.g. supplies,	mobilization and demobilization).	 	
Suppl	is and sample shipping		\$\$155.00
	2.19511 F	ECORDE	<u>}</u>
	ortation Costs	JUN - 1 1999	
	/truck rental		# 225.00
Food a	nd Lodging Costs		
Accu	mmodation and food	RECEIVED	\$525.00
		JUN 0 1 1999	
	Total Value	PSASSAGEDS MARK	\$ 6,420,00

#### **Calculations of Filing Discounts:**

1. Work filed within two years of performance is claimed at 100% of the above Total Value of Assessment Work.

2. If work is filed after two years and up to five years after performance, it can only be claimed at 50% of the Total Value of Assessment Work. If this situation applies to your claims, use the calculation below:

TOTAL VALUE OF ASSESSMENT WORK	× 0.50 =	Total \$ value of worked claimed.

#### Note:

- Work older than 5 years is not eligible for credit.

- A recorded holder may be required to verify expenditures claimed in this statement of costs within 45 days of a request for verification and/or correction/clarification. If verification and/or correction/clarification is not made, the Minister may reject all or part of the assessment work submitted.

#### **Certification verifying costs:**

I, <u>Karen Rees</u> , do	hereby certify, that the amounts shown are as accu	rate as may
reasonably be determined and the costs were in	curred while conducting assessment work on the land	indicated on
the accompanying Declaration of Work form as	Agent (recorded holder, agent, or state company position with signing authority)	I am authorized
to make this certification.		

Signature
-----------

Date

Ministry of Northern Development and Mines Ministère du Développement du Nord et des Mines

June 8, 1999

Karen Rees AVALON VENTURES LTD. 851 FIELD STREET THUNDER BAY, ONTARIO P7B-6B6



Geoscience Assessment Office 933 Ramsey Lake Road 6th Floor Sudbury, Ontario P3E 6B5

Telephone: (888) 415-9846 Fax: (877) 670-1555

Visit our website at: www.gov.on.ca/MNDM/MINES/LANDS/mlsmnpge.htm

Dear Sir or Madam:

Submission Number: 2.19511

 Subject: Transaction Number(s):
 W9910.00120
 Deemed Approval

We have reviewed your Assessment Work submission with the above noted Transaction Number(s). The attached summary page(s) indicate the results of the review. WE RECOMMEND YOU READ THIS SUMMARY FOR THE DETAILS PERTAINING TO YOUR ASSESSMENT WORK.

If the status for a transaction is a 45 Day Notice, the summary will outline the reasons for the notice, and any steps you can take to remedy deficiencies. The 90-day deemed approval provision, subsection 6(7) of the Assessment Work Regulation, will no longer be in effect for assessment work which has received a 45 Day Notice. Allowable changes to your credit distribution can be made by contacting the Geoscience Assessment Office within this 45 Day period, otherwise assessment credit will be cut back and distributed as outlined in Section #6 of the Declaration of Assessment work form.

Please note any revisions must be submitted in DUPLICATE to the Geoscience Assessment Office, by the response date on the summary.

If you have any questions regarding this correspondence, please contact Bruce Gates by e-mail at bruce.gates@ndm.gov.on.ca or by telephone at (705) 670-5856.

Yours sincerely,

110

ORIGINAL SIGNED BY Blair Kite Supervisor, Geoscience Assessment Office Mining Lands Section

# **Work Report Assessment Results**

Submission Number: 2.19511							
Date Correspondence Sent: June 08, 1999		Assessor:Bruce Gates					
Transaction Number	First Claim Number	Township(s) / Area(s)	Status	Approval Date			
W9910.00120	1178331	RALEIGH	Deemed Approval	June 08, 1999			
Section: 13 Geochemical G	GCHEM						
Correspondence	to:		Recorded Holder(s)	and/or Agent(s):			
Resident Geologist Kenora, ON		Karen Rees AVALON VENTURES LTD. THUNDER BAY, ONTARIO					
Assessment Files	Library		THUNDER DAT, UN	TARIO			
Sudbury, ON			JAMES EDWARD II BOND				
			WELCH, WEST VIR	GI			
			SHERRIDON PATR	ICK JOHNSON			
			DRYDEN, ONTARIC	)			
			ROBERT JOHN FA	IRSERVICE			
			KENORA, ON				

