Ontario

# 2016 UAV Airborne Magnetometer Survey

## On the Raleigh Lake Property

**Ignace Area**
**Kenora Mining Division**
**Raleigh Lake Township**
**Northwestern Ontario**

Prepared For:
International Lithium Corp.
Suite 1910
1030 West Georgia Street
Vancouver, British Columbia
V6E 2Y3

NTS Map Sheet 52G/05 NW
Latitude 49°23' N, Longitude 91°57' W

**Prepared By:** **Patrick McLaughlin, P.Geo**
Coast Mountain Geological Ltd.
9th January 2019

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# SUMMARY

The Raleigh Lake Property ("Project") is located approximately 25 kilometres west of Ignace in northwestern Onatrio just south of the Trans Canada Highway. It consists of 48 single cell and 9 boundary cell mining claims, as defined by the MNDM and the Mining Act, totalling 1197 Ha.

The Project was acquired by International Lithium Corp. ("ILC") from Robert Fairservice in March of 2016 and was subsequently optioned to a strategic joint venture Pioneer Resources Ltd ("Pioneer") in July, 2016. Pioneer can earn a 51% interest in the Project by spending $1.25 million dollars (CAD) over the next three years (or other option agreements). The property was acquired because of the rare-metal significance hosted in LCT type pegmatite dykes within the Raleigh Lake Pegmatite Field ("RLPF").

After a preliminary reconnaissance visit by Pioneer and ILC management and pegmatite specialist F.Breaks followed by a brief compilation period along with a property-wide bedrock sampling program, ILC commissioned Pioneer Aerial Surveys Ltd., formally Pioneer Exploration Ltd., to conduct a low-cost, unmanned airborne magnetometer survey ("UAV") to conclude whether the technique could effectively differentiate between the highly contrasting geophysical properties of mineralized pegmatite and mafic metavolcanic host rocks that would preclude a more expensive ground based survey.

This report documents the historical exploration, geology, mineralogy in addition to the details, results, conclusions and recommendations from the UAV survey and is formatted for assessment filing purposes with the Ministry of Northern Development and Mines.

# 1. PROPERTY LOCATION, DESCRIPTION AND LAND POSITION

The Raleigh Lake Property ("Project") is located approximately 25 kilometres west of Ignace, and 235 kilometres west of Thunder Bay in northwestern Ontario within the Kenora Mining District and is as part of the National Topographic Systems (NTS) map sheet 52G/05 (Figure 1). The main pegmatite field is centred on UTM co-ordinates 576550mE/ 5473800mN (EPSG: 26915).

ILC entered in to an agreement with Robert Fairservice for 100% ownership interest in March of 2016 for six mining claims (K4218370, K4218371, K4242501, K4242502, K4242505, K4245250) and subsequently the remaining 8 (K4274924, K4274925, K4274926, K4274927, K4279997, K4279998, K4279999, K4280000) additional claims were staked contiguously to this group the following July of the same year.

On April 9th, 2018, as part of the 3rd and final phase of the Modernization of the Mining Act by the Ministry of Northern Development and Mines, the provinces mining lands and administration system ("MLAS") has moved from ground and paper map staking system to an Online registration and management system. As a result, the Projects pre-existing ground and paper map staked unpatented mineral claims, now considered 'Legacy' claims, have been converted to either a single cell claim(s) or boundary cell claim(s) within a more precise Universal Transverse Mercator (UTM) Provincial system of coordinates. The fourteen 14 contiguous unpatented 'legacy' mineral claims were converted to forty-eight (48) contiguous single cell and nine (9) boundary cell claims (Figure 2). All pertinent claim information is located in Table 1. The single and boundary cell claims range in surface area from 20.992 Ha in the North to 21.010 Ha in the South part of the claim group. Prior to conversion, the 14 contiguous legacy claims had a total area of 806 Ha. After conversion, the total area of single and boundary cell claims is 1008 Ha and 189 Ha respectively. The only encumbrance to the claim group are 9 boundary cell claims at the southern end of the claim group in contact with claims owned by Perry English.

An option agreement announced July 13th, 2016. Pioneer Resources Ltd. of West Perth, Australia can earn up to 51% interest in ILC's 100% owned Raleigh Lake Claims.
The key terms of the Raleigh Lake option agreement:

• Pioneer may earn a 51% interest in the Project by expending C$1.25 million on exploration activities within a period of 3 years ("First Earn In"); and paying to ILC a total amount CDN$250,000 in an approximate 50/50 proportion of cash and shares over three years. Pioneer has indicated that it plans to adopt a minimum CDN$500,000 budget for the Project, for the next 12 months.

• Following the First Earn In, ILC will accrue a 1.5% Net Smelter Return royalty. Pioneer may buy back this royalty for CDN$1.5 million.

• ILC and Pioneer will either form a Joint Venture with further development expenditure met on a pro-rata basis, or Pioneer may earn an additional 29% (to earn a total interest of 80%) through completing a prefeasibility study, as defined by the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) standards, within 7 years. Thereafter the Joint Venturers will contribute on a pro-rata basis. If either party dilutes to 15% project equity, it will retire from the joint venture and revert to a 1.5% royalty.

• Pioneer may participate in the acquisition of other lithium project opportunities identified by ILC

**Table 1: Raleigh Lake Claim Cell information**

| TENURE_ID | HOLDER | Claim Cell Type | ISSUE_DATE | ANNIV. | Work Com. | Bank Credits |
|---|---|---|---|---|---|---|
| 341323 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 110552 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-03-21 | $ 400.00 | $ - |
| 114888 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2021-07-30 | $ 400.00 | $ - |
| 117719 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-03-21 | $ 400.00 | $ - |
| 117720 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 116359 | (100%) ILC | Boundary Cell Mining Claim | 2018-04-10 | 2020-07-03 | $ 200.00 | $ - |
| 123040 | (100%) ILC | Boundary Cell Mining Claim | 2018-04-10 | 2020-07-03 | $ 200.00 | $ - |
| 121808 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 121809 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 123750 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-03-21 | $ 400.00 | $ - |
| 123751 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-03-21 | $ 400.00 | $ - |
| 126334 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2021-07-30 | $ 400.00 | $ - |
| 136723 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 136724 | (100%) ILC | Boundary Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 200.00 | $ - |
| 136638 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 156145 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2021-07-30 | $ 400.00 | $ 71,018 |
| 158259 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2020-06-02 | $ 400.00 | $ 144,492 |
| 161635 | (100%) ILC | Boundary Cell Mining Claim | 2018-04-10 | 2020-07-03 | $ 200.00 | $ - |
| 168356 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-03-21 | $ 400.00 | $ - |
| 166926 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 168866 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 174123 | (100%) ILC | Boundary Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 200.00 | $ - |
| 179765 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 181525 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-03-21 | $ 400.00 | $ - |
| 188631 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 197571 | (100%) ILC | Boundary Cell Mining Claim | 2018-04-10 | 2020-07-03 | $ 200.00 | $ - |
| 198290 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 204912 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2020-06-02 | $ 400.00 | $ - |
| 212174 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2020-06-02 | $ 400.00 | $ - |
| 214865 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 216336 | (100%) ILC | Boundary Cell Mining Claim | 2018-04-10 | 2020-07-03 | $ 200.00 | $ - |
| 234365 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2020-07-03 | $ 400.00 | $ - |
| 234255 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2020-06-02 | $ 400.00 | $ - |
| 237632 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-03-21 | $ 400.00 | $ - |
| 249532 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 255412 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 255303 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 256298 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-03-21 | $ 400.00 | $ - |
| 270290 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 282385 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 288157 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2021-07-30 | $ 400.00 | $ - |
| 288158 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2021-09-28 | $ 400.00 | $ 778 |
| 287365 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 287958 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 289745 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 294903 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2021-09-28 | $ 400.00 | $ - |
| 295467 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 304697 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 307597 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 307598 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 314890 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 321809 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 326795 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2020-07-03 | $ 400.00 | $ 1,557 |
| 330212 | (100%) ILC | Boundary Cell Mining Claim | 2018-04-10 | 2020-07-03 | $ 200.00 | $ - |
| 335753 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| 329495 | (100%) ILC | Boundary Cell Mining Claim | 2018-04-10 | 2020-07-03 | $ 200.00 | $ - |
| 344211 | (100%) ILC | Single Cell Mining Claim | 2018-04-10 | 2019-07-28 | $ 400.00 | $ - |
| | | | | TOTAL | $ 21,000 | $ 217,845 |

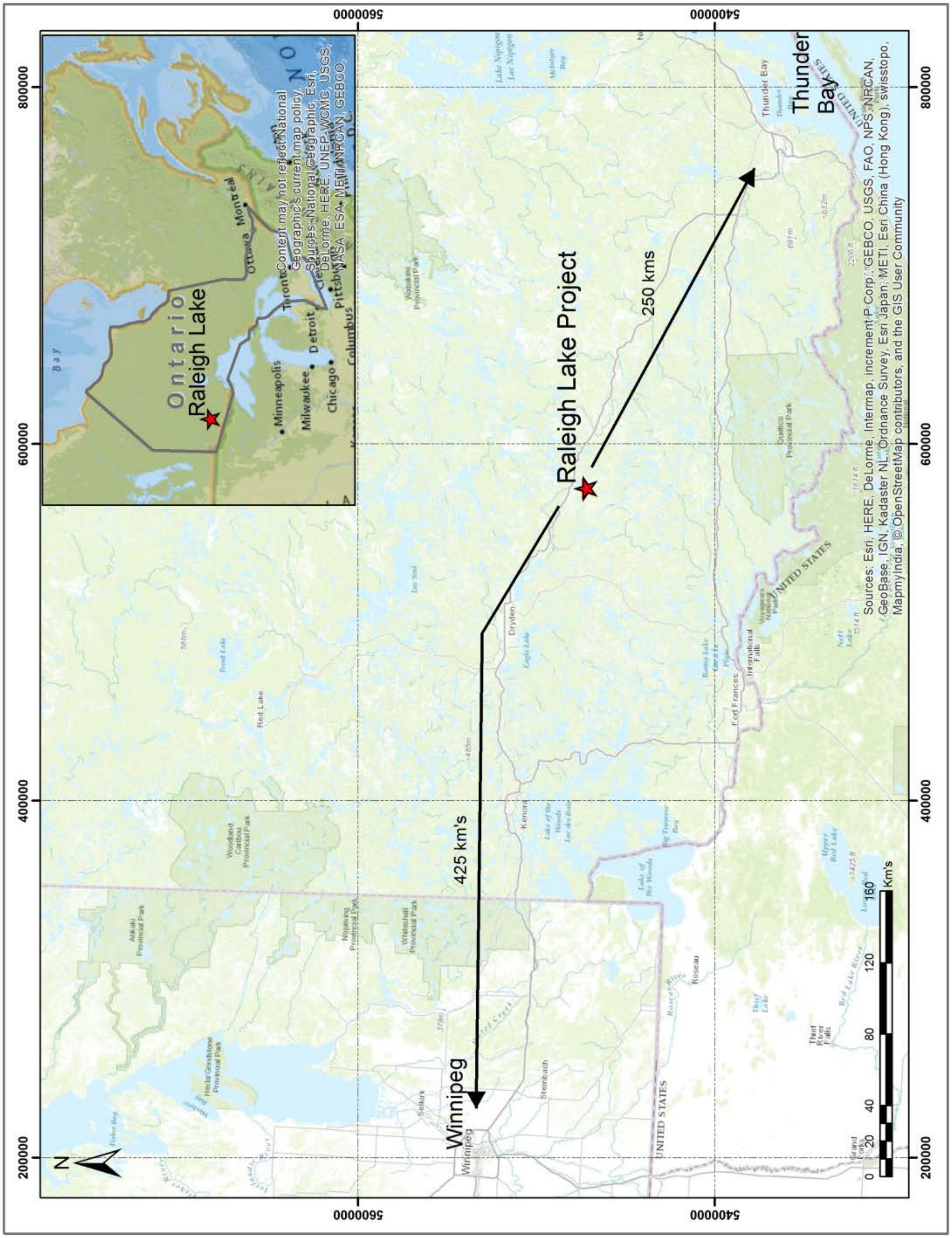


**Figure 1: Raleigh Lake Project location map in northwestern Ontario**

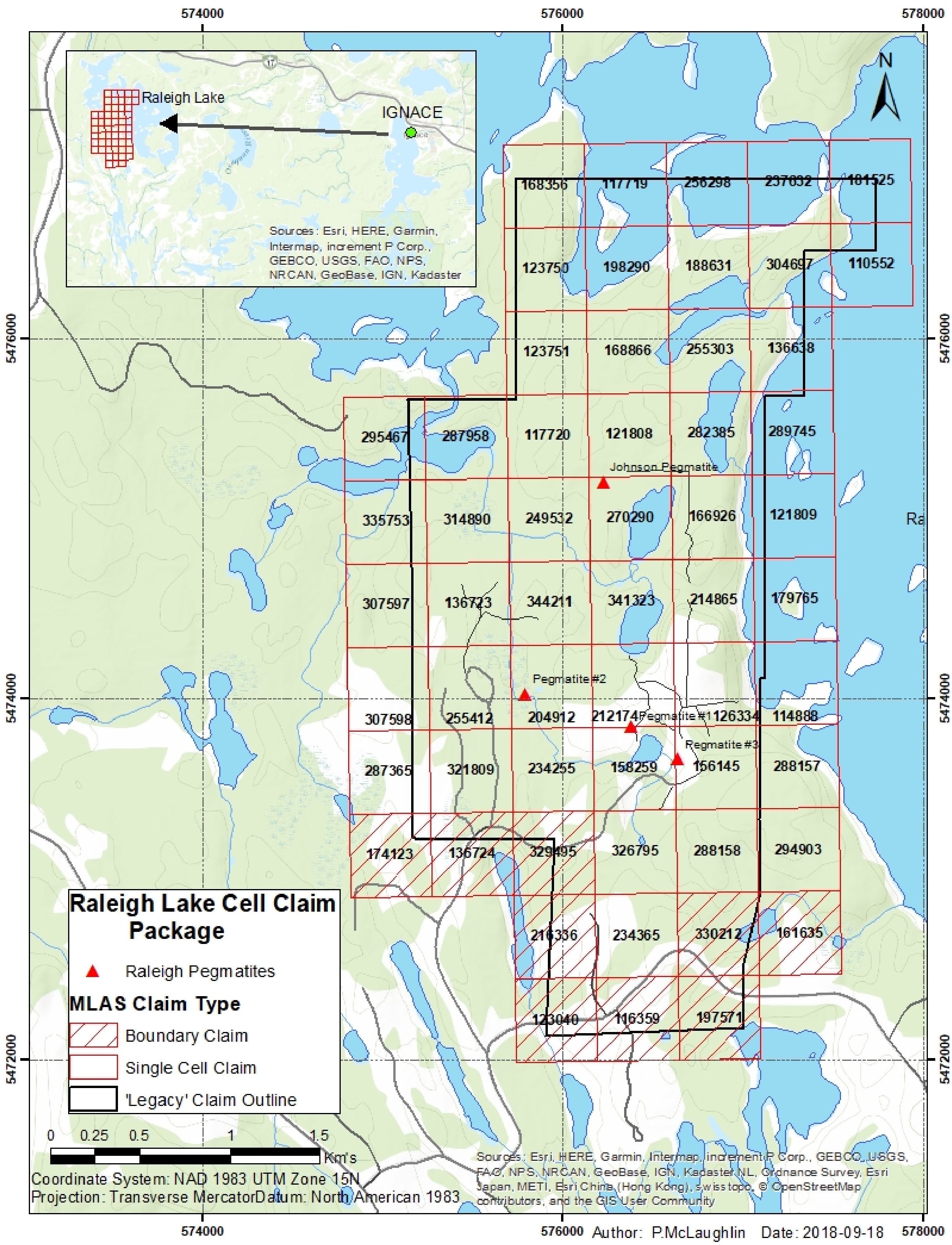


**Figure 2: Raleigh Lake project Cell claim outline with the outline of pre-conversion 'legacy' claims**

# 2. ACCESSIBILITY, LOCAL RESOURCES, INFRASTRUCTURE, CLIMATE AND PHYSIOGRAPHY

## 2.1 ACCESSIBILITY

The Project is located approximately 25m west of Ignace and 235 Km's west of Thunder Bay, ON. It is easily accessed by watercraft from Raleigh Lake or via a well-maintained network of logging roads that branch south from Highway 17 (Trans-Canada Highway) along the Doreen Lake road (Figure 3).

Land access by watercraft is gained by driving 25 kilometres west of Ignace on Highway 17 to the Raleigh Lake Road. This road winds southward for one kilometre to the Raleigh Lake shoreline and Raleigh Lake Outpost and Resort at which point the watercraft can be navigated to the Northern and Eastern portions of the claim group. This approach is a particularly effective if frequent access to the northernmost part of the property is necessary. Particularly if the project is supported by a team from these lodges, or cabins in the area during the summer months.

Vehicular access to the Project via logging roads is gained by driving 3.8 kilometres west of Raleigh Lake Road and turning south from Highway 17 on Doreen Lake Road. Travelling 8.7 kilometres south to the George Lake junction, continue to the left and travel another 3.1 kilometres before turning left again (East) on to Trent Road (logging road 46-02). Approximately 1.5 kilometres from this junction, an old logging road veers off of Trent Road to the left (North) on to the property and provides easy access to the Projects main pegmatite occurrences on claim cell 158259. Trent Road continues to the eastern side of Raleigh Lake and ultimately reconnects with Highway 17.

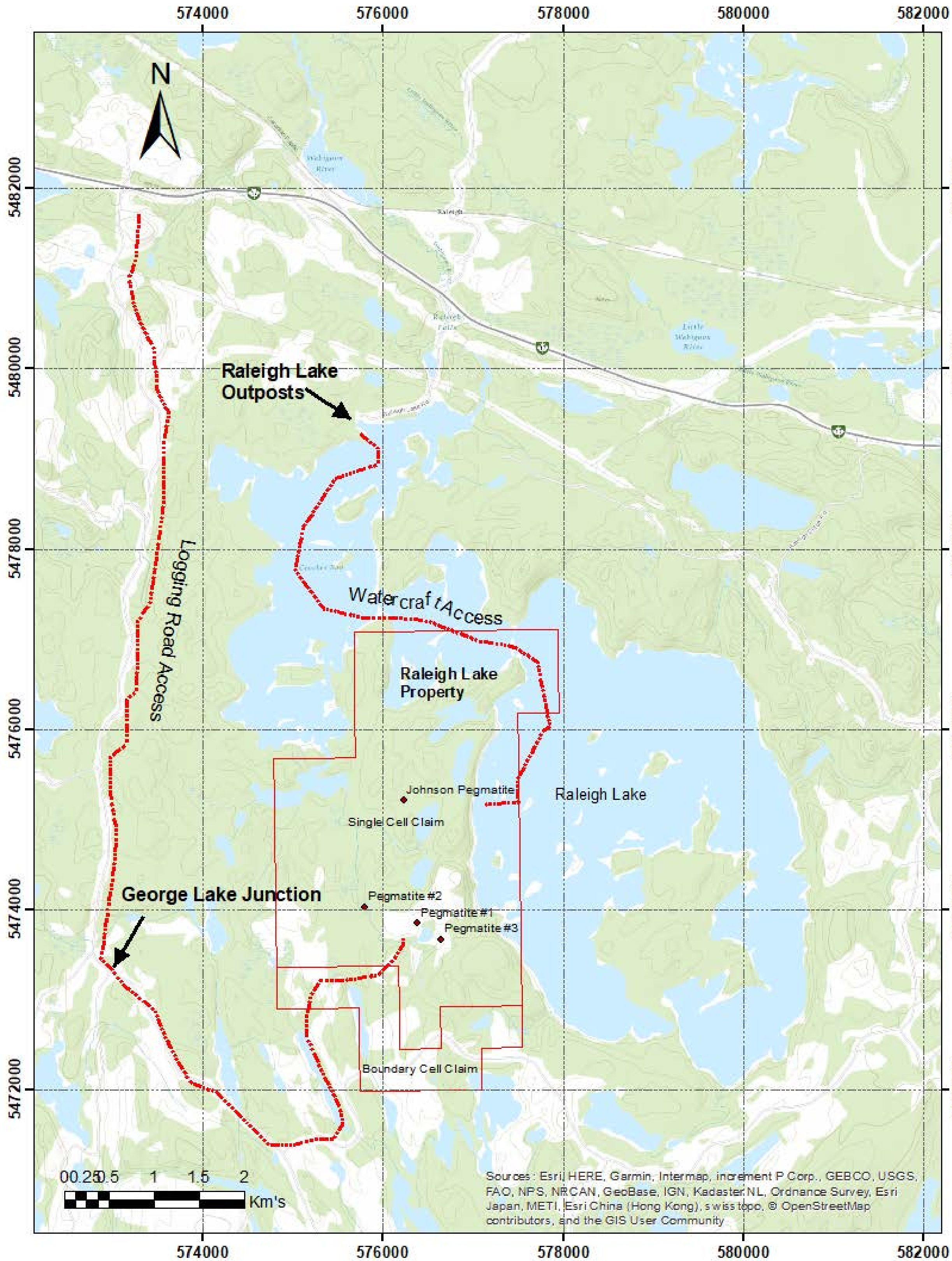


Figure 3: Property location and access

## 2.2 LOCAL RESOURCES AND INFRASTRUCTURE

The property is conveniently located 25 km West of the town of Ignace, Ontario with a population of 1,202 inhabitants (2016 Census) in the Kenora District of Northwestern Ontario. The town of Ignace offers little for support services and skilled labour therefore mining and specialized exploration services and equipment are better sourced from larger nearby towns such as Dryden, or even larger centres such as Thunder Bay, Ontario, and Winnipeg, Manitoba, which are respectively located 250 km east and 425km km west of Ignace. The nearest airport is 100km west in Dryden with connecting flights to many major Canadian cities, including Thunder Bay and Winnipeg, which can also serve as points to many international flights.

Highway 17 and the CP rail line are major transportation arteries for both truck and trailer traffic and train services with links to eastern and western Canada and also south to the USA is readily available from Ignace.

## 2.3 CLIMATE

The property regionally located within the Southern Boreal Shield climate of Canada and generally classified as having long cold winters with short and warm summers. The climate is considered to be temperate and is classified as a mid-lattitude continental environment where field operations are possible year round with no restrictions on access. The average mid-winter temperatures is -15°C while the midsummer temperatures hover around 17°C.

## 2.4 PHYSIOGRAPHY, TOPOGRAPHY AND WILDLIFE

The topography is typical of a Canadian Shield paleo-glacial terrain varying from generally flat low-lying swamps to slightly undulating areas with prominent hills. The topographic relief for the project is approximately 50m with elevations ranging around 450m along the lakeshore to crests and ridges as high as 500m on select areas of the property.

Characteristic vegetation includes a succession from trembling aspen, paper birch, white and black spruce, and balsam fir. Cooler and wetter areas support black spruce and tamarack growth.

Characteristic wildlife includes moose, black bear, wolf, lynx, snowshoe hare and woodchuck. Bird species include ruffed grouse, woodpecker, bald eagle, herring gull and waterfowl. Forestry, recreation, fishing and hunting are the major land uses in this region.

# 3. HISTORY

Historically, work has been carried out near the Raleigh Lake area for greenstone hosted gold and base metal mineralization. Relatively recent exploration activity, primarily from Avalon Ventures Ltd. ("Avalon"), has focused on developing the property solely on the tantalum potential and with little regard to developing and understanding the lithium potential of the Project.

1) **1966**: Stan Johnson: Discovered a spodumene-bearing pegmatite, classified in his name as the Johnson pegmatite, in the Raleigh Lake area that was not fully disclosed until the early 1990's. Tenements were held by Johnson during the 1970's and 1980's.
2) **1993-1998**: Ontario Geological Survey: Studied the Raleigh Lake pegmatite field as part of a significant project on various granite-related mineralization occurrences in the Superior Province. Breaks (1993) included descriptions of the Johnson Pegmatite and detailed several new pegmatite occurrences including Pegmatite #1, #2 and #3 from boulder mapping (Figure 4.).

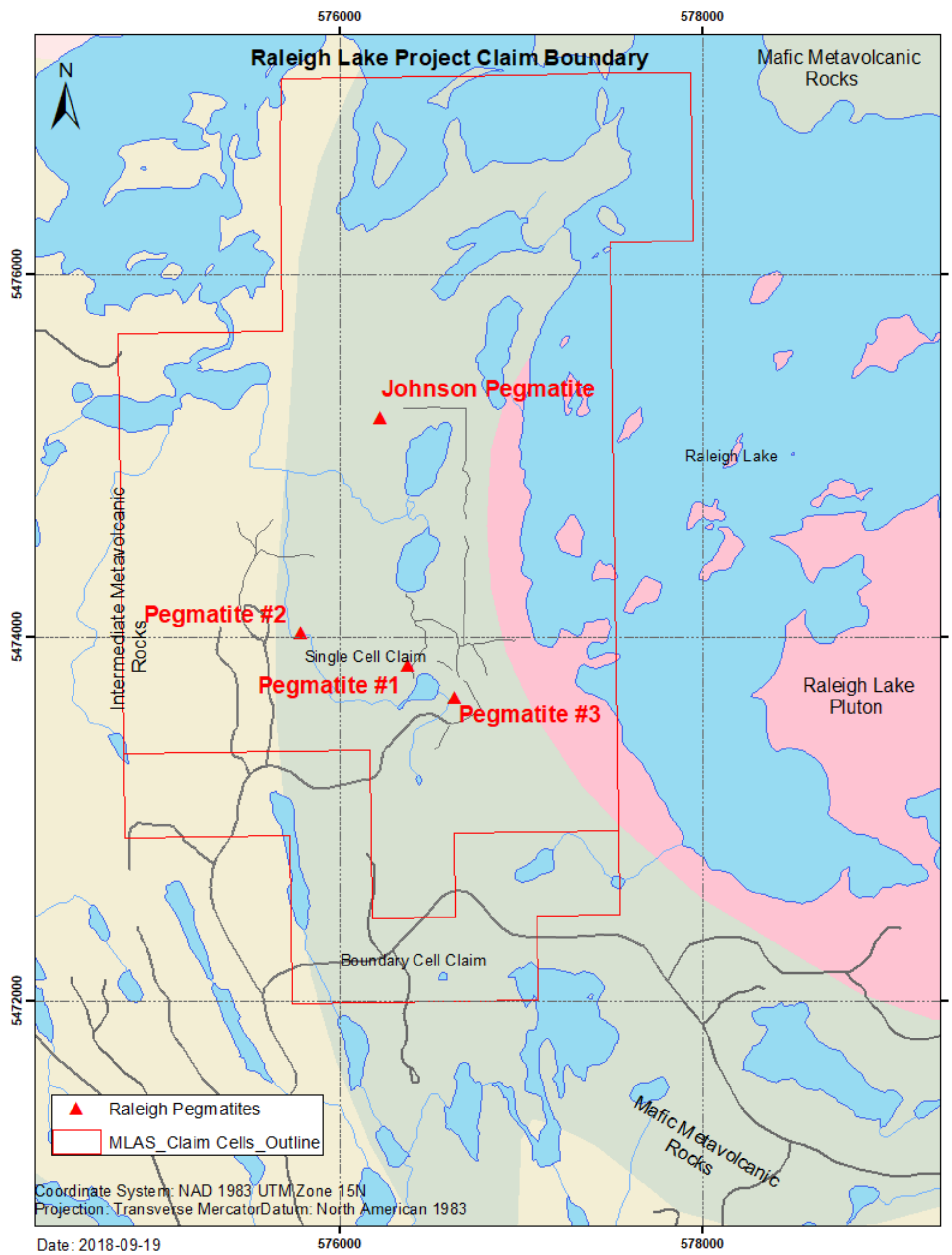


Figure 4: Sketch highlighting the main pegmatite occurrences on the property.

3) **1996-1998**; Ontario Geological Survey: Field mapping and geological compilation work of the Ignace area including Raleigh Lake (Stone, 1999) identified and mapped the two-mica granite outcrops believed to be the parent source to the Raleigh Lake pegmatite bodies.
4) **1997-1998**: R. Fairservice, S. Johnson, J.Bond staked and subsequently optioned the properties to Avalon in 1998.
5) **1998-2000**; Following a preliminary property visit and brief compilation period Avalon subsequently carried out a property wide and regional prospecting program. The initial exploration period in July confirmed the presence of pegmatite bodies and also included a 29 sample lithogeochemical program across 4 widely spaced East-West traverses designed to review the breadth of lithophile enrichment halo within the mafic metavolcanic host rocks (Pederson, 1999a).

6) Additional claims were staked the following year in 1999 and in September a small grid was cut over the main pegmatite occurrence encompassing Pegmatites #1 and #3 to provide control for diamond drilling. This was in turn followed by a 5-hole, 602 metre diamond drilling program in October of 1999 delineating the tanatalum potential around Pegmatite #1 and #3 (Pedersen, 1999b). The diamond drilling both confirmed the presence of and outlined a set of stacked pegmatite body geometries that were determined to have significant lateral and subsurface continuity up to 450m down dip from surface exposures (Figure 5: Pederson, 1999b). It was observed that pegmatite #3 had elevated Ta and higher Ta/Nb ratios relative pegmatite #1 leading Avalon to interpret a fractionation pattern trending towards the south-east (Pederson, 2000). A complete list of all historically significant drillhole intersections are listed in Table 2.

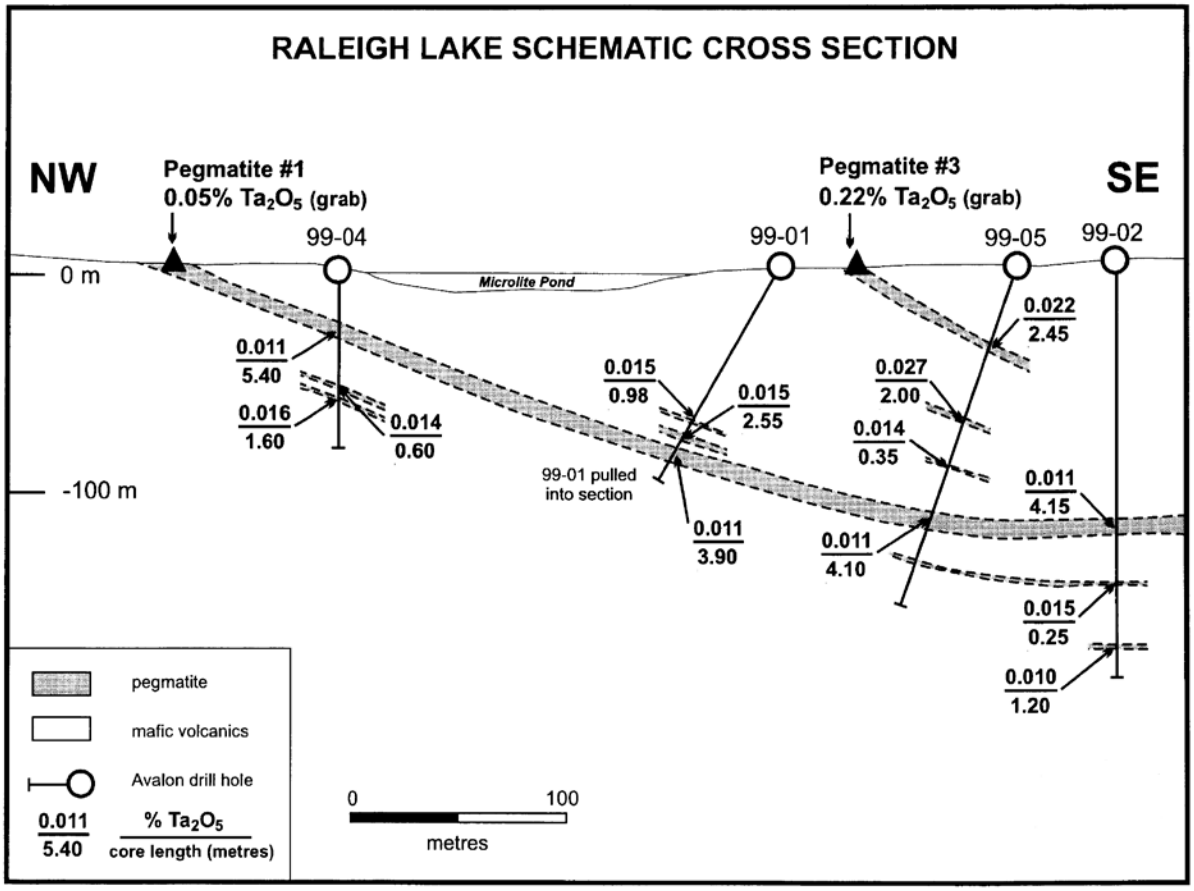


Figure 5: Schematic cross section showing 'stacked' geometry and down dip continuity of pegmatite #1 (Pederson, 2000)

In the fall of 2000, a $120,000 surface exploration program funded by Global Canada Company ("Global") consisted of linecutting, lithogeochemical sampling and pegmatite evaluation (Pedersen, 2000). Approximately 966 bedrock samples identified three significant bedrock rare-metal geochemical trends 1 through 3 with several minor sub-parallel trends a, b, c, etc..(Figure 6:Pederson 2001).

7) **2001:** Avalon carried out lithogeochemical sampling, trenching, structural studies and diamond drilling. A total of 398 surface bedrock samples were collected in 3 separate areas south of the primary survey area from 2000 work with a fourth single line survey traverse at the south side of the claim group (Figure 6).

Campbell (2001) believes the bedrock sampling didn't identify any new or significant anomalies because the highest bedrock chip sample assay of 92 ppm Li wasn't considered anomalous.

Six trenches totalling 1500m linear metres were excavated across several lithogeochemical trends. Trenches were identified as A1, 2A, 2B and 3-1, 3-2 and 3-, identified by their respective trend they transected (Figure 6). Trenches were mapped at a 1:500 scale. Trenching uncovered areas with significant pegmatite dyklets that could potentially explain the lithogeochemical responses for trends targets 2A (Johnson pegmatite) and 2B (Pegmatite #2). All other trenches did not uncover anything of geological significance with the exception that some of results from samples located at the end of the trenches were suggestive of unexposed pegmatite bodies beyond the trench margins (Campbell, 2001).

J.Willoughby, while working simultaneously on the project during the field season, completed a B.Sc. (Honours) thesis at the University of Windsor in Ontario consisting of petrological and geochemical studies on Archean granitoids related to the Raleigh Lake pegmatites (Willoughby, 1999). Willoughby divided the granitoid rocks in the study area into three main suites and suggested a continuous fractionation trending towards the southeast.

Structural studies by Barclay (2001), conducted during the bedrock sampling program concluded that major pegmatite bodies have not been significantly modified from interpreted regional deformation patterns and they should have extensive lateral continuity (Campbell 2001). Barclay (2001) also notes that more evolved dykes and bodies emplaced at higher elevations that the current known pegmatite bodies may occur to the southeast.

A 752metre, four-hole diamond drilling program was conducted between July and August 2001. The program was a continuation to previous activity and carried on testing the main pegmatite occurrences at depth which also included several holes testing lithogeochemical anomalies. RL01-06 through RL01-08 intersected multiple shallow dipping pegmatite dikes and dikelets and RL01-09 was the only drilh hole testing an anomalous surface lithogeochem that failed to intersect any pegmatite veins as it collared and remained in a felsic dike or Raleigh Lake Pluton granite (Campbell 2001).

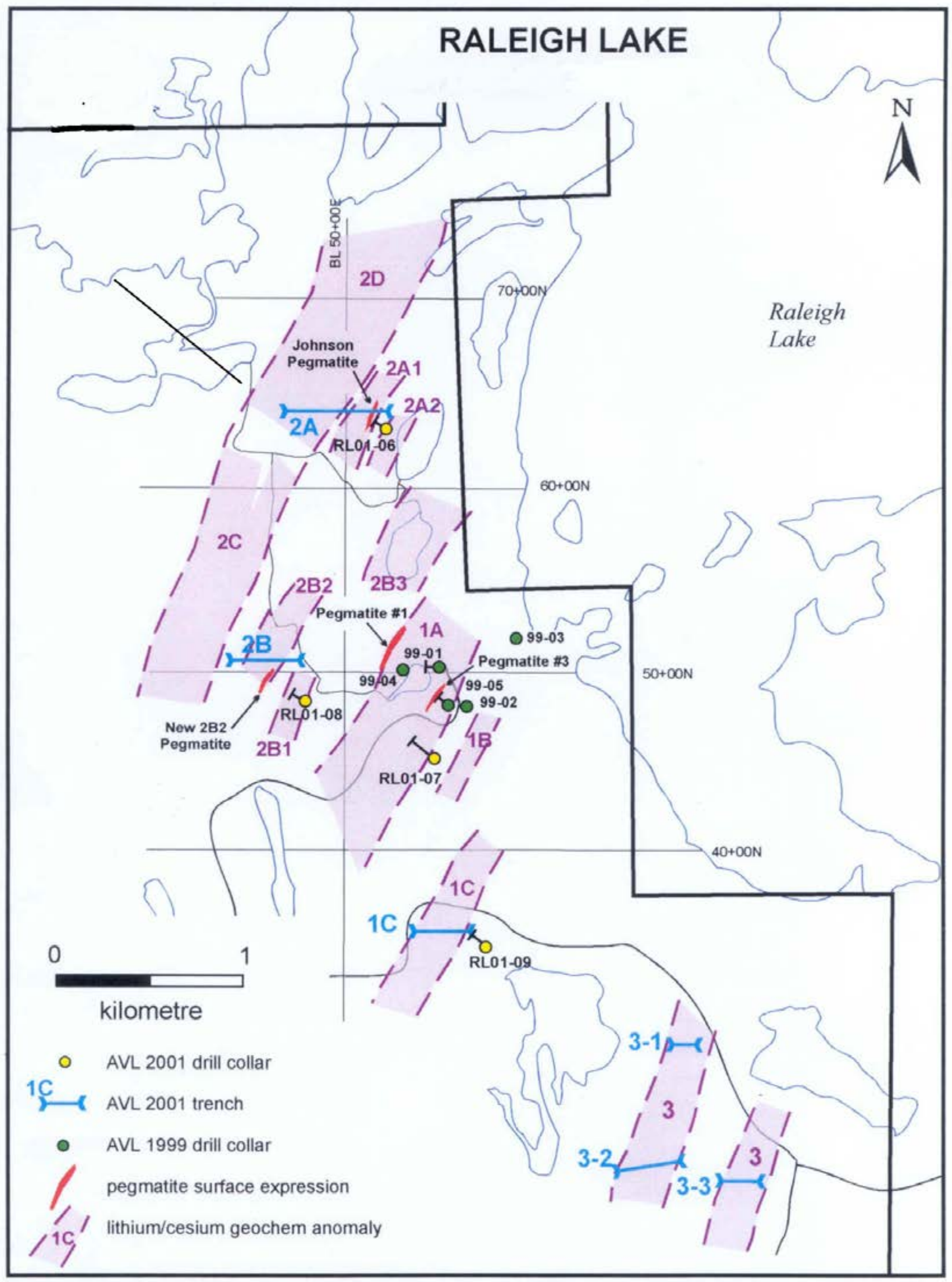


**Figure 6: Interpretation from Avalon Ventures Ltd highlighting the main geochemical trends, pegmatite occurrences, trench locations and diamond drilling (from Pederson, 2001).**

8) **2001:** Kings Bay Gold Corp collected 520 soil samples were collected from the property in November. The program was designed to mainly target the properties Au potential within the

mafic metavolcanic host rocks towards the Southwest of the main pegmatite occurrences and claim group.

9) **2010**: Consolidated Abaddon Resources Inc. ("Abaddon") conducted 50 line km's ground based magnetometer survey in October 2009 which was followed up with 7 diamond drill holes totalling 1463.5 metres in February and March of 2010 to further evaluate the properties tantalum potential. Diamond drilling confirmed the presence of several stacked and shallow dipping spodumene-bearing pegmatite bodies. Significant drill intersections are listed in Table 5.

   The ground-based magnetometer survey was conducted at 12.5 metre station intervals and was carried out over the main pegmatite occurrences near pegmatite #1 and #3. The magnetometer results were used to primarily characterize and highlight any significant structural elements for pegmatite emplacement. A combined review of the newly acquired magnetic data and lithogeochemical surveys highlighted number potential subsurface structural trends that required further investigation (Figure 7).

   In February of 2010, P. Vanstone of Vanstone Geological services and former Chief Geologist at Cabot Corporations' Tanco Mine was commissioned by Abaddon to conduct a property and diamond drill core review. Key comments from his report confirm that the pegmatite fractionation trends are towards the southeast. Additionally, there is a prominent gabbroic hosting body encapsulating pegmatite #1, and this information, along with sheared contact relationships caused by reactivated structural features, multiple pegmatite phases insinuating a complex pegmatite emplacement history that adds exceptional value to the to the Project and its potential to host a significant pegmatite body (Vanstone, 2010).

10) **2016**: PIO conducted an 8-day 310 sample lithogeochemistry bedrock sampling program at the end of September through to October, 2016. The programs primary objective was to re-establish positional control on the known pegmatite occurrences in addition to refining existing anomalous geochemical trends from previous work that ultimately would aid in delineating drill targets for a follow-up drill program. The work was effective at defining narrower geochemical trends within the broader geochemical corridors.

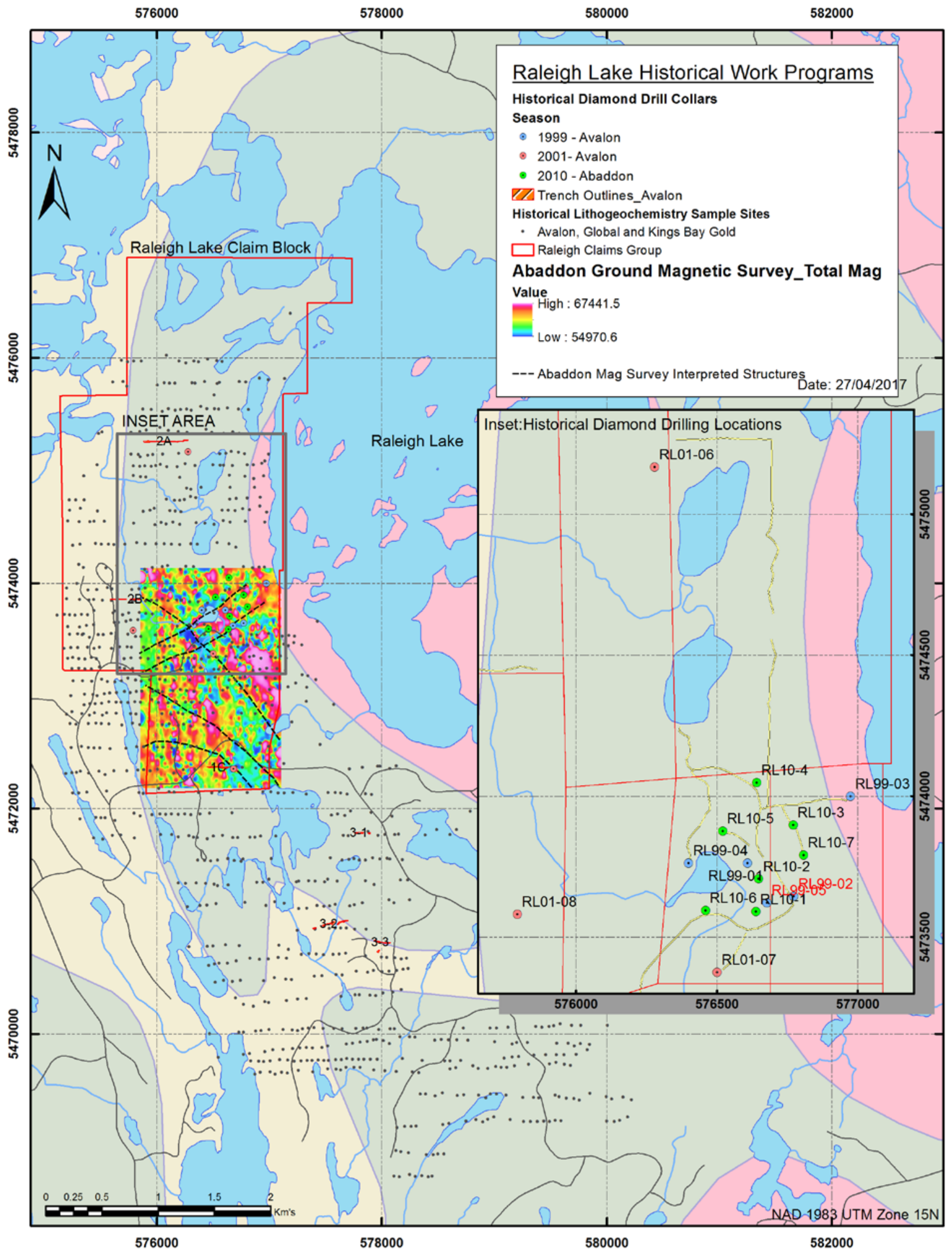


**Figure 7: Outline of historical exploration activity on the Raleigh Lake Property (*note that claim boundaries reflect legacy claim shapes.**

**Table 2: Table of all significant historical diamond drillhole intersection modified from Eddison 2016.**

| Hole ID | From_m | To_m | Width (m) | $Li_2O$ % | $Ta_2O_5$ % | $Rb_2O$ % | $Cs_2O$ % | $Nb_2O_5$ % |
|---|---|---|---|---|---|---|---|---|
| RL99-01 | 90.4 | 91.2 | 0.8 | 1.278 | 0.011 | 0.201 | 0.017 | 0.010 |
| incl. | 90.4 | 90.8 | 0.4 | 1.747 | 0.010 | 0.174 | 0.016 | 0.008 |
| RL99-02 | 107.15 | 108.6 | 1.45 | 1.900 | 0.014 | 0.437 | 0.058 | 0.012 |
| RL99-04 | 26.0 | 29.4 | 3.4 | 1.402 | 0.009 | 0.234 | 0.019 | 0.011 |
| incl. | 27.3 | 28.3 | 1.0 | 2.186 | 0.011 | 0.331 | 0.024 | 0.011 |
| RL99-04 | 57.35 | 57.75 | 0.40 | 1.076 | 0.019 | 0.314 | 0.015 | 0.012 |
| RL99-05 | 32.50 | 33.95 | 1.45 | 1.164 | 0.025 | 0.311 | 0.022 | 0.011 |
| RL99-05 | 108.48 | 112.00 | 3.52 | 1.048 | 0.010 | 0.248 | 0.016 | 0.010 |
| incl. | 108.48 | 108.95 | 0.47 | 2.389 | 0.011 | 0.236 | 0.015 | 0.008 |
| incl. | 111.3 | 112 | 0.7 | 1.881 | 0.017 | 0.283 | 0.018 | 0.008 |
| RL01-7 | 182.3 | 185.4 | 3.1 | 1.054 | 0.018 | 0.225 | 0.009 | 0.010 |
| incl. | 182.3 | 183.75 | 1.45 | 1.619 | 0.011 | 0.113 | 0.004 | 0.009 |
| RL10-1 | 29.3 | 32.0 | 2.7 | 2.015 | 0.013 | 0.304 | 0.018 | 0.008 |
| RL10-1 | 153.2 | 161.0 | 7.8 | 1.486 | 0.012 | 0.171 | 0.010 | 0.012 |
| incl. | 153.2 | 154.3 | 1.1 | 1.773 | 0.034 | 0.245 | 0.014 | 0.030 |
| incl. | 154.3 | 154.8 | 0.5 | 2.038 | 0.012 | 0.162 | 0.012 | 0.009 |
| incl. | 155.3 | 156 | 0.7 | 2.733 | 0.005 | 0.078 | 0.006 | 0.007 |
| incl. | 159 | 160 | 1.0 | 2.927 | 0.004 | 0.066 | 0.004 | 0.003 |
| RL10-1 | 216.8 | 219.5 | 2.7 | 1.137 | 0.007 | 0.144 | 0.011 | 0.006 |
| incl. | 218.3 | 219.1 | 0.8 | 1.670 | 0.011 | 0.080 | 0.004 | 0.007 |
| RL10-2 | 84.0 | 92.5 | 8.5 | 2.379 | 0.006 | 0.126 | 0.009 | 0.005 |
| incl. | 84.0 | 84.5 | 0.5 | 4.476 | 0.001 | 0.229 | 0.012 | 0.001 |
| incl. | 87.0 | 87.5 | 0.5 | 2.798 | 0.006 | 0.073 | 0.008 | 0.004 |
| incl. | 87.5 | 88.0 | 0.5 | 3.357 | 0.013 | 0.129 | 0.012 | 0.009 |
| incl. | 88.0 | 88.5 | 0.5 | 3.551 | 0.009 | 0.079 | 0.006 | 0.011 |
| incl. | 88.5 | 89.0 | 0.5 | 4.648 | 0.010 | 0.029 | 0.003 | 0.008 |
| incl. | 89.0 | 89.5 | 0.5 | 4.950 | 0.007 | 0.067 | 0.005 | 0.007 |
| incl. | 89.5 | 90.0 | 0.5 | 3.465 | 0.003 | 0.103 | 0.006 | 0.002 |
| RL10-3 | 103.05 | 109.00 | 5.95 | 1.635 | 0.027 | 0.295 | 0.033 | 0.009 |
| incl. | 103.05 | 104.00 | 0.95 | 2.075 | 0.006 | 0.222 | 0.027 | 0.003 |
| incl. | 104.0 | 105.0 | 1.0 | 2.137 | 0.055 | 0.202 | 0.032 | 0.009 |
| RL10-4 | 185.0 | 186.8 | 1.8 | 1.226 | 0.015 | 0.454 | 0.030 | 0.013 |
| RL10-5 | 26.0 | 31.0 | 5.0 | 1.308 | 0.018 | 0.167 | 0.018 | 0.015 |
| incl. | 27.0 | 28.0 | 1.0 | 1.668 | 0.020 | 0.150 | 0.010 | 0.025 |
| incl. | 30.0 | 31.0 | 1.0 | 1.982 | 0.022 | 0.163 | 0.012 | 0.012 |
| RL10-6 | 114.0 | 128.2 | 14.2 | 1.070 | 0.008 | 0.164 | 0.017 | 0.007 |
| incl. | 114 | 114.7 | 0.7 | 2.303 | 0.013 | 0.156 | 0.010 | 0.007 |
| incl. | 124.7 | 125.2 | 0.5 | 2.733 | 0.004 | 0.147 | 0.009 | 0.005 |
| NOTE: Calculated core widths are core length and not true width | | | | | | | | |

# 4. GEOLOGICAL SETTING

## 4.1 REGIONAL GEOLOGY

The Raleigh Lake property is located within the Wabigoon Subprovince of the Canadian Shields' Archean Superior Province (Figure 8). More specifically, it is situated in the western portion of the central

Wabigoon Region which is characterized by bifurcated and anastomosed supracrustal greenstone belts separated by large ovoid gneissic domes and elliptical batholiths (Tomlinson et al., 2004).

The supracrustal greenstone belt is composed essentially of mafic meta-volcanic rocks with lesser parts of intermediate to felsic metavolcanic and volcaniclastic rocks, gabbros and their derived metsasedimentary equivalents (Breaks, 1991). This metavolcanic rocks both overly and are intruded by older foliated and gneissic tonalitic bodies and are cut and surrounded by younger massive and foliated granitic bodies forming large-scale dome and basin structures (Breaks, 1991). Greenstone sequences of the western Wabigoon terrane are interpreted to have developed in a somatic environment about 2745 to 2712 Ma and tectonically emplaced onto the Winnipeg River and Marmion terranes at 2703 to 2695 Ma (Davis, Sutcliffe and Trowell 1988; Sandborn-Barrie Skulski 2006)

Metamorphism in the region is commonly low pressure greenschist facies grading to lower amphibolite facies in aureoles around pre and post tectonic plutons (Easton 2004).

## 4.2 PROPERTY GEOLOGY

Excluding regional work by OGS geologists (Breaks, 1993; Stone et. al., 1998, 1999), and exploration work by Avalon (Pedersen, 1999a, 1999b, 2000; Campbell, 2001; Willoughby, 1999), little is known about structural or lithological details of the Projects pegmatite bodies. The property is predominantly underlain by Archean supracrustal rocks comprised essentially of mafic metavolcanics and their derived metasedimentary equivalents, which both overlie and are intruded by granitic plutons and batholiths of various ages including the peraluminous (S-type) Revell Lake Batholith (Break, 1993) (Figure 9). The supracrustal volcanic rocks of the Raleigh Lake Greenstone Belt extends southeasterly over a distance of 50km in to the central Wabigoon Subprovince and are truncated in the east by the oval granite White otter and Indian Batholiths (Figure 9). The elongate, northwesterly trending Revell Lake Batholith transitions in the northwest from a foliated tonalite, granodiorite and a muscovite and biotite Two-mica granite in the southeastern margin of the batholith. The last two-mica granite phase and is believed to be parental to the rare element pegmatites of the Raleigh Lake pegmatite field (Campbell, 2001).

A preliminary structural study by Barclay (2001) suggest primary bedding and cleavage foliation trends are generally North- and Northwest of Raleigh Lake, varying from 160°-220° and dipping moderately to the east between 25°-75° to the east of Raleigh Lake, and swinging around to an easterly trend south of Raleigh Lake. These structural features imply doma and basin fold features, particularly in the vicinity of Raleigh Lake that could be topographic expressions of shalow-dipping, gently undulating layers and sills. Most pegmatites occurrences trend north-northeast with moderate easterly dips ranging from 25°-40° (Barclay, 2001).

The Raleigh Lake area is extensively covered by thin to moderate layers of glacial till and sandy soil. Outcrop exposure is generally poor, even along the shorelines of numerous lakes examined in the area, including Raleigh Lake (Campbell, 2001).

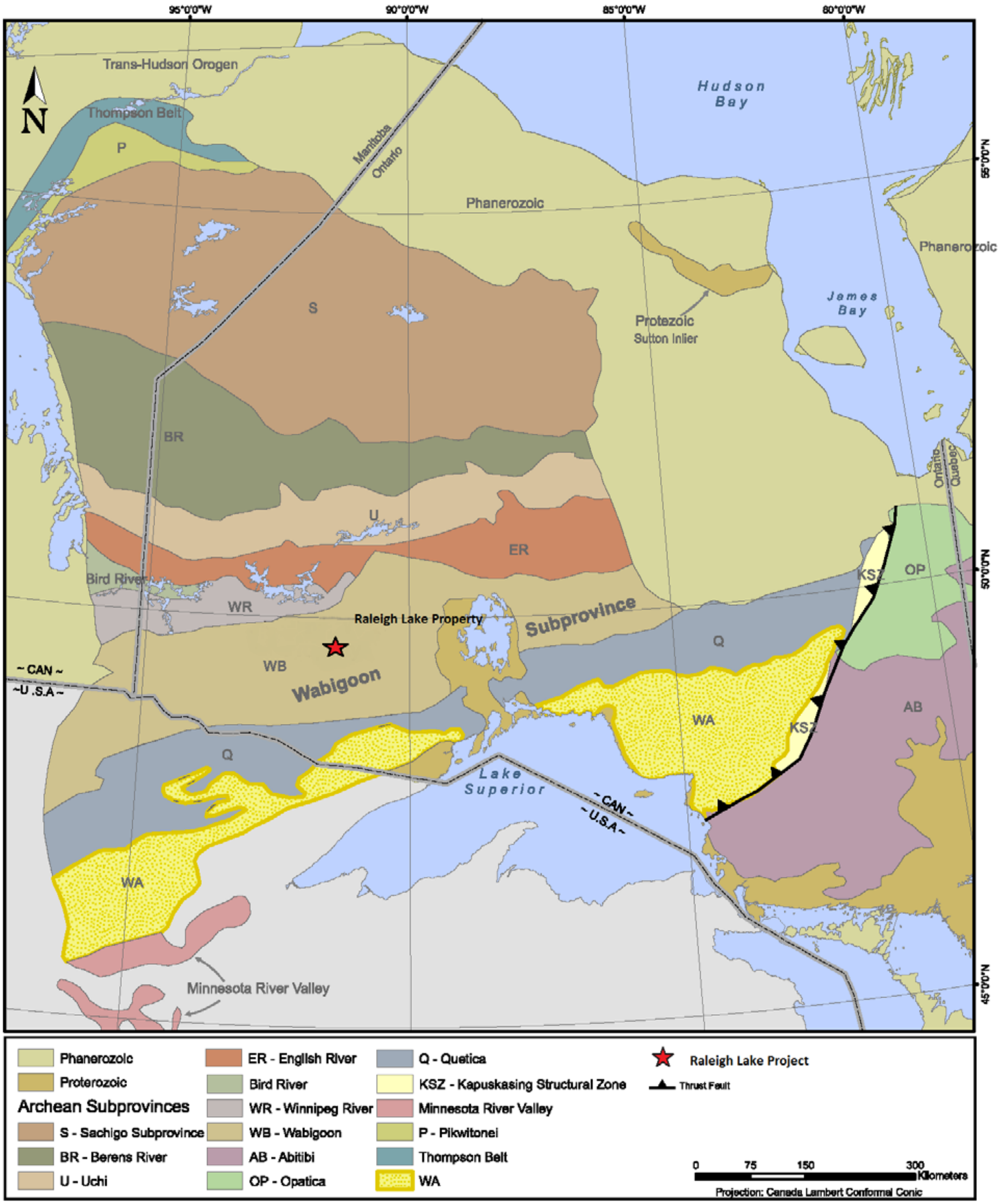


Figure 8: Geological setting of the Raleigh Lake Property within the Wabigoon Subprovince of the Superior Province of the Canadian Shield (Modified from Map

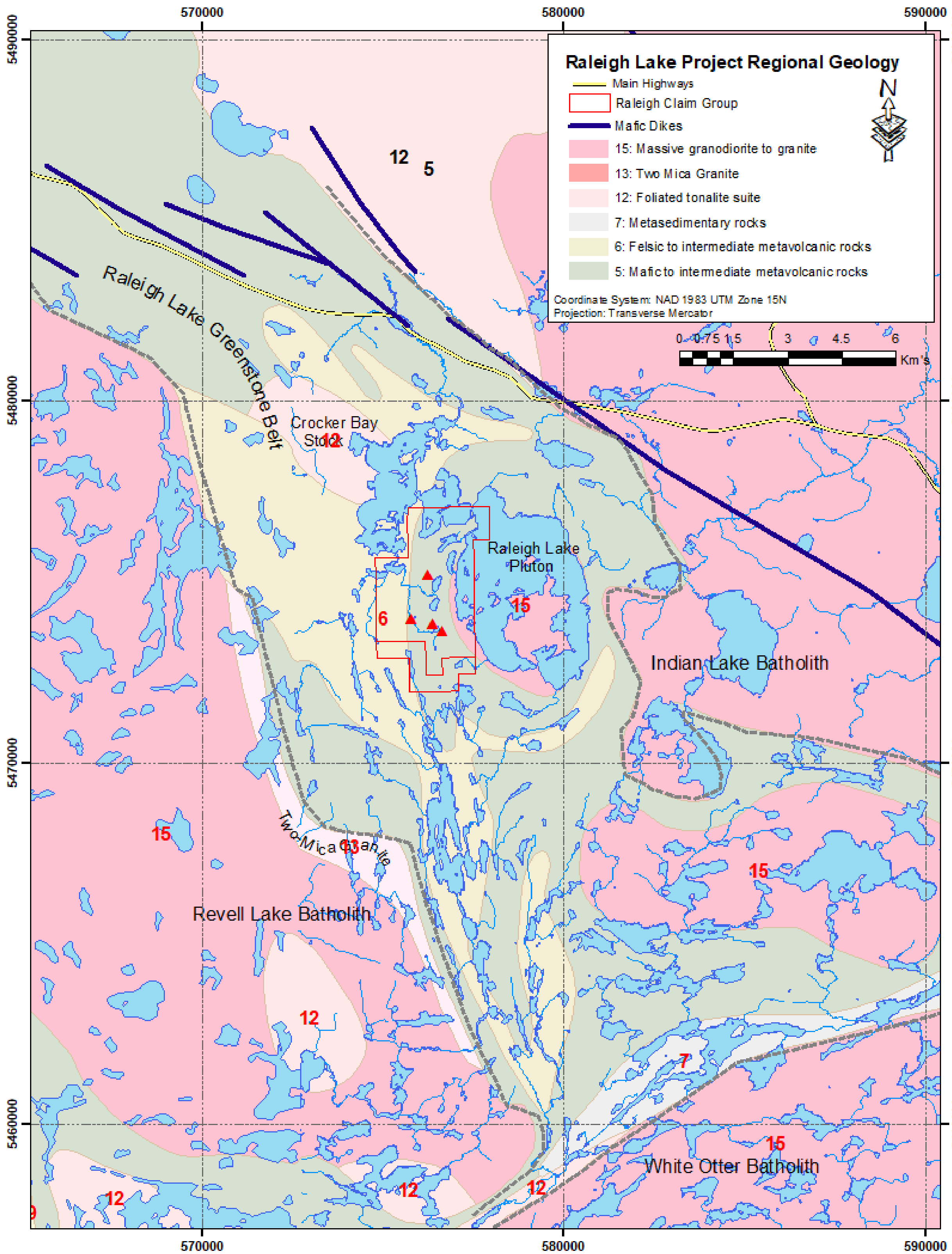


Figure 9: Raleigh Lake Project Regional and Property Scale Geology

## 4.3 LOCAL GEOLOGY

### 4.3.1 MAFIC TO INTERMEDIATE META-VOLCANIC ROCKS

The metavolcanics in the Raleigh Lake area are comprised predominantly of meta-basalts, likely flows and interbedded pillowed horizons. Where observed, pillows range from exceptionally preserved and undeformed, to highly flattened and recrystallized (Campbell, 2001). These mafic units are intercalated with lighter coloured, more siliceous volcanic rocks that range in composition from calc-alkalic basalts to rhyolites (Breaks, 1991). All varieties are generally fine-grained, semi-massive with moderate foliation, and dark green-grey to grey-yellow in colour. Chloritic alteration varies from absent to abundant, including zones of intense silica flooding and remobilization, in large part due to metamorphic recrystallization. In these sections, breccia textures are common, as is hematization of disseminated sulphides, as seen in drill core from the 1999 and 2001 drill programs (Campbell, 2001). Quartz veins commonly contain epidote and possible ankerite. Mafic units are locally moderately to strongly magnetic in the presence of locally common disseminated pyrrhotite (Campbell, 2001). Calcareous horizons are also locally common, and in places resemble zones of silica flooding due to their siliceous character. These horizons contain distorted nodules and bands of quartz-epidote-calcite-diopside-grossular. Garnet, var. Grossular, is commonly very coarse, to several centimetres.

### 4.3.2 FELSIC TO INTERMEDIATE INTRUSIVE ROCKS

Feldspar porphyries have been noted mainly in the vicinity of the 1999 drilling program near Microlite Pond, but also occur randomly as narrow cross-cutting dykes distributed throughout the property (Campbell, 2001). They are massive, medium-grained, medium to dark grey in colour, with common to abundant 1 to 2 mm subhedral feldspar phenocrysts (Pederson, 1999b). The matrix is aphanitic to fine-grained, commonly with fine-grained biotite, and local disseminated sulphides. They are generally unaltered and are associated with local zones of silica flooding and brecciation. Trace to minor pyrite, pyrrhotite, and chalcopyrite occur in the siliceous zones. The porphyries are granodioritic to dioritic, and may be related to the Raleigh Lake Pluton.

### 4.3.3 PEGMATITES

The rare-metal-bearing pegmatite dykes on the Raleigh Lake property occur in a south- southeast striking zone approximately 1.5 kilometres wide and at least 4 kilometres long (Breaks, 1993), with a new trend of tantalum-mineralized albitic dykes occurring south of Raleigh Lake. The main pegmatite trend, which includes Pegmatite #1 through #3, and the Johnson Pegmatite, belong to the albite-spodumene sub-type of rare metal pegmatites (Cerny, 1989). It is likely that the dykes south of Raleigh Lake are genetically linked, although no spodumene-bearing dykes have been found to date (Campbell, 2001). Several of the spodumene-bearing dykes were described by Breaks (1993) as part of a study on granite-related mineralization in northwestern Ontario. The dyke mineralogy is K-feldspar-albite, including secondary cleavelandite, quartz, and spodumene. Accessory minerals identified in the field and in drilling include microlite, tantalite, and bismuthinite (Breaks, 1993).

Pegmatite #1 has a minimum surface exposure of 200 metres, an average width ranging from 3.90 to 8.00 metres, and has been traced along strike for 300 metres and down dip for over 400 metres (Pederson, 2000: Figure 6). Highly anomalous tantalum values were encountered in drilling ranging from 0.011% Ta205 over 5.40 metres to 0.027% Ta205 over 2.00 metres, with the best individual sample assaying 0.039% Ta20s over 0.70 metres in hole RL99-05 (Campbell, 2001). It is crudely zoned with local strong albitization with heterogeneous intermediate zones consisting of light green to tan spodumene and K-feldspar in an albitic matrix with local muscovite. These zones are bounded by albitic "wall" zones.

Breaks and Nurmikivi (1995) have mapped Pegmatite #1 in detail. The pegmatite is the widest and most laterally continuous pegmatite intercepted to date and forms a train of outcrops up to 10 m wide that extend for 200 m. Drilling has shown that Pegmatite #1 flattens down-dip from 15–20° easterly to a horizontal position (Pederson, 2000) (Figure 5). Campbell (20010) considered the flattening as evidence for structural modification of pegmatite emplacement conditions, which would provide areas for ponding and continued remobilization of volatiles in the pegmatites, such as at the Tanco deposit. The country rock is albitised and contains exomorphic minerals of holmquistite and biotite adjacent to the dyke. This pegmatite, along with Pegmatite #3, is characterized by a strong crescumulate texture defined by elongate spodumene crystals up to 1.5 by 75 cm oriented normal to pegmatite contacts.

Pegmatite #2, was discovered and subsequently mapped by Breaks (1993) owing to the presence of several bright blue, holmquistite bearing boulders nearby. The pegmatite is located approximately 800m west of Microlite Lake and specifically noted to have a lithium dispersion halo greater than the Johnson pegmatite at 2 metres (Breaks 1993). However, shortly after discovery, the exposure was enclosed beneath a beaver dam and then forgotten during all future exploration endeavors. It was re-discovered by F.Breaks and ILC/Pioneer representatives during a brief property visit in May of 2016 and a volcanic host rock sample collected during this time was analysed to have the highest lithium assay of 2290ppm to date. Avalons' lithogeochemical corridor 2B and trench 2B2 potentially represents SW extension to this overlooked pegmatite body.

Pegmatite #3, located SE of Microlite Lake, is exposed for at least 50 metres and is at least four metres thick at surface (Figure 6). It is crudely zoned with feldspathic wall zones and heterogeneous intermediate and "core" zones comprised of albite-quartz-muscovite, and spodumene-K-feldspar-albite. Diamond drilling has shown that Pegmatite #3 ranges up to 1.20 metres in thickness at depth but does show strong lateral continuity having been identified over approximately 300 metres of strike length.

The Johnson Pegmatite, located 1400 metres north of Pegmatites #1, is exposed on surface for 83 metres along strike, with an apparent width of 3 to 4 metres (Figure 6). It consists predominantly of coarse white to pink K-feldspar and accessory muscovite and trace tantalum oxides. Diamond drilling of hole RLO1-06 produced an average grade of 0.017% Ta205 over a core length of 2.65 metres (Campbell, 2001).

Avalon Ventures Ltd considered the two-mica granite fringed Revell Lake Batholith to be the likely source of the pegmatite melt (Pedersen, 2000) (Figure 9), and that the pegmatites formed swarms of 'stacked' bodies aligned parallel with the pluton margin (Pedersen, 2000).

The known pegmatites form shallowly to moderately dipping, north-northeasterly trending undeformed sheets with a significant potential for extensive lateral continuity. Strong fractionation minerals and the fact that the dykes are weakly zoned suggest the potential that strongly enriched rare-metal zonation may exist within other domains of the main pegmatites. They are hosted in both mafic and intermediate volcanic rocks. Crude zoning is evident in the wider pegmatites, with albitic 'wall' zones and 'core' (intermediate) zones of albite–quartz– muscovite or spodumene–K-feldspar–albite.

Spodumene crystals are generally green in colour, exhibiting tan colours locally in the presence of albite. Grains typically range in size from <1 cm to >8 cm, and display ragged, corroded grain boundaries that have undergone complete replacement by "a dark green, aphanitic, serpentine-like assemblage" (Pedersen, 1999b).

# 5. 2016 EXPLORATION PROGRAM

## 5.1 AIRBORNE UNMANNED AERIAL VEHICLE MAGNETOMETER SURVEY (UAV-MAG™)

Pioneer Aerial Surveys Ltd., a wholly owned subsidiary of Alta Vista Ventures and formerly Pioneer Exploration Consultants Ltd. at the time of surveying, was commissioned to conduct the airborne magnetometer survey using an Unmanned Aerial Vehicle ("UAV") and a Gems Systems GSMP-35A Potassium magnetometer. The magnetometer specifications are listed in Table 3 and base station locations in Table 4.

A total of 270 line kilometers with a 40m line pacing was designed with a NW- SE orientation across the claim group. The flight line orientation was designed nearly normal to the known pegmatite geometries and potential pegmatite hosting structural features.

A final total of 189.8 line km's of continuous profiling at 50m AGL (above ground level) was conducted between October 25$^{th}$ to 29$^{th}$ with one standby day due to inclement weather on the 27th. The field teams had limited accessibility to the northern sections of the property which greatly affected the UAV controller's capacity to maintain a line of sight with the instrument thus limiting the survey coverage to the southernmost 189.8 km's of the grid (Figure 10).

The Pioneer Aerial Survey's Logistics Report is attached in Appendix II.

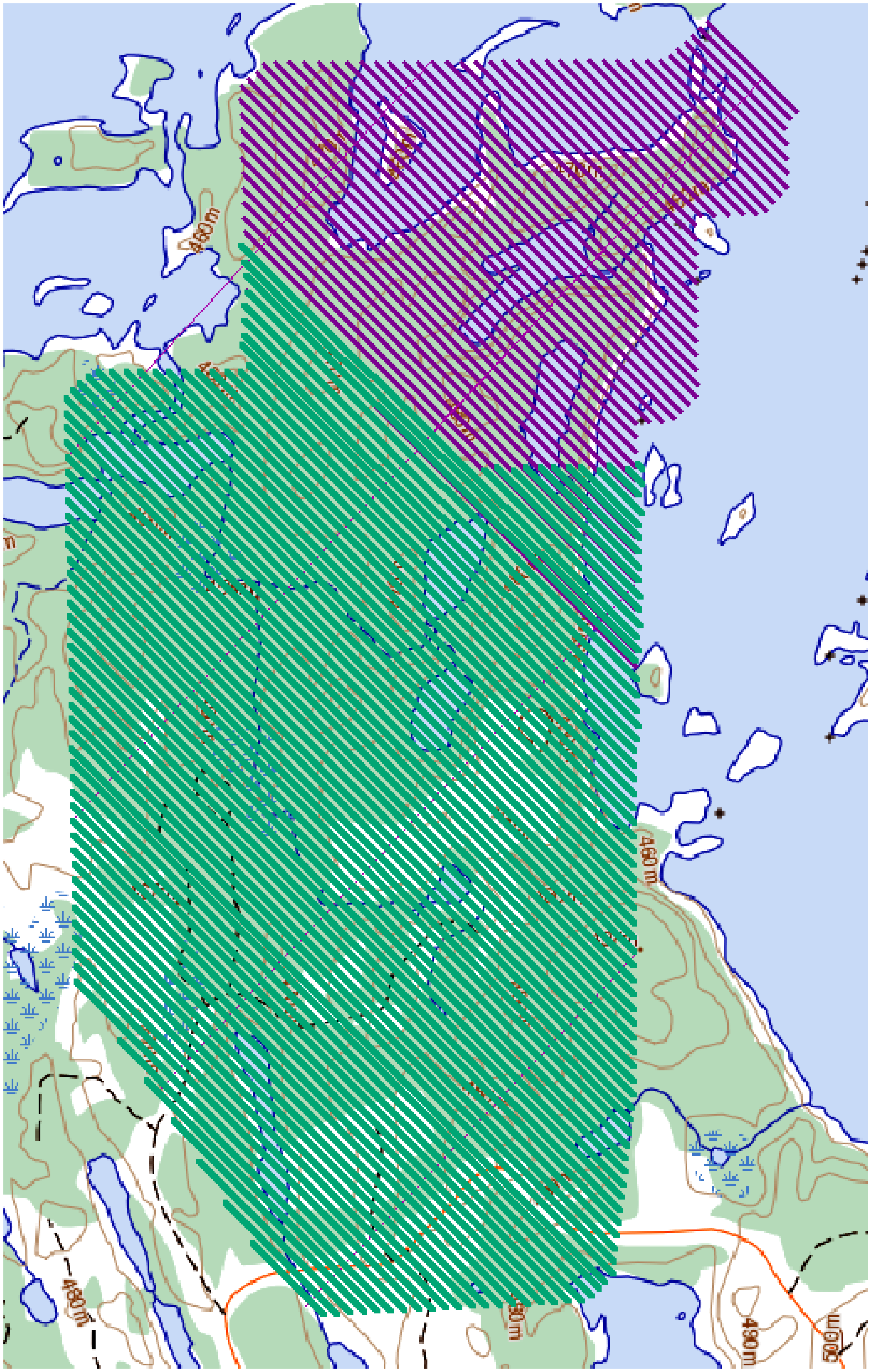

Figure 10: UAV Airborne 270 line km proposed (blue and green) and completed grid (green)

**Table 3: Potassium Magnetometer specifications**

| **GSMP-35A Potassium Vapor Sensor Specs** |
|---|
| · 0.0003 nT @1 Hz sensitivity |
| · 0.0001 nT resolution |
| · +/- 0.1 nT absolute accuracy |
| · 50,000 nT/m Gradient tolerance |
| · 20,000 nT - 120,000 nT dynamic range |
| · 10° to 80° and 100° to 170° orientation range |
| · Operating Temperature: -40°C to +55°C |
| · Heading error less than 0.05 nT combined for sensor spins on all orientations from 10° to 80° and 360° full rotation about axis |

**Table 4; Magnetometer Base station locations for airborne survey**

| Survey Date | Base Station Co-Ordinate | | Datum |
|---|---|---|---|
| | Latitude | Longitude | |
| Oct 25th | 49.3979805 | -91.9526467 | WGS 84 |
| Oct 26th | 49.3982648 | -91.9518023 | WGS 84 |
| Oct 28th | 49.3983852 | -91.9516431 | WGS 84 |
| Oct 29th | 49.3983557 | -91.9517003 | WGS 84 |

## 5.2 Operational Logistics

CMG personnel by air from Vancouver, BC. and then drove from Winnipeg, MB, to the Ignace area. Thunder Bay is another significant airport hub to access the property however this route adds significant mobilisation time to the property as all air transportation needs to connect through Toronto, Ontario.

Due to the excellent road accessibility with a good internal network of forestry roads, excellent local infrastructure and support services, the field crew's operational logistics were simple and straightforward. Field crews travelled to and from the property from their local motel accommodation sourced in Ignace.

## 5.3 Statement of Expenditures

**Table 5: Pioneer UAV-MAG Expenditures Table**

| Raleigh Lake 2016 UAV-MAG™ Survey | | |
|---|---|---|
| **Statement of Expenditures** | | **Total Expenditures** |
| **Associated Costs** | | |
| Field | UAV Magnetometer Survey (189.8km @$93/km) | $17,651.40 |
| Field | UAV MAG Mobilisation Costs | $5,850.00 |
| | No credit applied for Radiometric Survey | |
| | Standby (3 man days) | $1,200.00 |
| **Meals and Lodging** | | |
| | Lodging and Meals for UAV Mag team | $2,660.00 |
| | | |
| | . | |
| | | |
| | Program Total | $27,361.40 |
| | Program Total (incl. 13% HST) | **$30,918.38** |

# 6. DISCUSSION

## 6.1 Magnetometer Results

Total Magnetic Field and First Vertical Derivative results are respectively appended in Appendix III and IV. The magnetic data dynamic range for the surveyed area is approximately 600 nT. The magnetic highs are generally oriented in a NNW and SSE direction that are likely reflecting the regional metavolcanic stratigraphy. The magnetic data dynamic range between anomalies is greatest in the southeast whereby magnetic units are clearly discernible.

Although the metavolcanic host rocks within the surveyed area likely have significantly contrasting magnetic properties to the target rocks, it is difficult to distinguish the narrow, known pegmatite occurrences and their geometries within the resultant data. Although the surveys elevated component has removed any potential cultural or environmental interference, the UAV's elevation of approximately 50m above ground level and survey speed has produced a significant smoothing effect that considerably hinders interpretive efforts to discriminate tiny or narrow inflections in the gridded data that should be associated pegmatite bodies.

Lithological discrimination may be difficult to identify with magnetic results alone, however, significant breaks or offsets can be interpreted from that data that likely correspond to equally significant pegmatite hosting structures within the metavolcanic stratigraphy. A compilation map highlighting structural breaks, plotted along with the 1st derivative magnetic and lithogeochemical results from the 2016 field work is plotted in Map 3 in Appendix 5. The main structural 'breaks' are trending NNE to NE and are oriented at both a moderate to high angle to stratigraphy and near parallel/parallel to the strike directions of the known and widest pegmatite bodies. Coincidentally, the interpreted breaks appear to have a moderate to strong correlation to the majority of the Li/Cs geochemical alteration corridors and their boundaries. These interpreted structural features, particularly areas with high angle interfering structures, coupled with anomalous lithogeochemical trends should be considered for high priority drill targets or at the minimum ground truthed.

The northern to northeastern deflection of the mafic metavolcanic bedding direction around the Raleigh Lake Pluton towards the northern tip of the grid is also confirmed within the magnetic data. Additionally, anomaly asymmetry with a shallower magnetic gradient on Eastern edge confirms the shallow, eastern-dipping strata.

# 7. CONCLUSIONS AND RECOMMENDATIONS

The final UAV-MAG™ airborne data may be too coarse and pegmatite intersections too narrow to delineate individual pegmatite bodies on its own merit, however the interpreted structural features and bedrock architecture become readily identifiable within the resultant data. The position of the interpreted structures marries well with structural features identified within the nosier ground-based magnetics survey by Abaddon in 2010.

A further evaluation of the magnetic line profile data from Pioneer/ILC, particularly in the immediate vicinity of known pegmatite occurrences is warranted. It may be easier to identify subtle inflections in the magnetic data around pegmatite bodies in the line data that is potentially obscured when gridding the results.

A diamond drilling program of up to 1200-2000 metres 15-20 holes and $300,000 to $500,000 (CAD) is recommended to effectively drill test the lateral extension of the Projects main pegmatite bodies that are in alignment with narrow anomalous lithogeochemistry corridors that also coincide with the most significant structural breaks.

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## APPENDICES LIST

### APPENDIX I

**Author Qualifications**

### APPENDIX II

**UAV-MAG™ Raleigh Lake Logistics Report**

### APPENDIX III

**1:12,500 UAV-Mag™ map with Total Magnetic Intensity results**

### APPENDIX IV

**1:12,500 UAV-Mag™ map with 1st Verticle Derivative results**

### APPENDIX V

**1:12,500 Map with recent with 1st vertical derivative mag results and recent lithogeochemical data**

## Appendix I

## Statement of Qualifications

***01/09/2019***

I, Patrick David Michael McLaughlin, declare that:

1. I reside at 22-1560 Prince Street of the city of Port Moody, in the province of British Columbia and do herby certify that:

:

2. I am a graduate of the University of Manitoba (2005) with a Bachelor of Science (Honours) from the Faculty of Science, Department of Geological Sciences and have been continuously practicing my profession since 2004.

3. I am a registered professional Geoscientist with Engineers and Geoscientists British Columbia, member **#41479**

4. I am a Project Geologist for Coast Mountain Geological and have directly supervised the field exploration program described in this report and all contributions on my behalf are true and accurate to the best of my knowledge.

5. I hold no direct or indirect personal interest in the property that is the subject of this report.

PROVINCE OF BRITISH COLUMBIA
P.D.M. McLAUGHLIN
# 41479
GEOSCIENTIST

Patrick McLaughlin, B.Sc., P.Geo

# APPENDIX II

UAV-MAG™ Raleigh Lake Logistics Report

international lithium corp.
Power of Blue Sky Discoveries + Green Technology

# UAV-MAG$^{TM}$ Survey Logistics Report


GLOBAL UAV
TECHNOLOGIES

Pioneer Aerial Surveys Ltd. is a Subsidiary of Global UAV Technologies Ltd., a vertically integrated drone technology company that is publicly traded on the Canadian Securities Exchange under the symbol UAV. For more information refer to www.globaluavtech.com

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## Introduction

From October 3rd, 2017 to October 27th, 2017 Pioneer Exploration Consultants Ltd. (Pioneer) completed an airborne magnetic survey (UAV-MAG™) over the Raleigh Lake property using an Unmanned Aerial Vehicle (UAV). The survey was flown at the request of International Lithium.

This report covers data acquisition, instrument descriptions, data processing and presentations. The digital data delivery is described later in this report. This report does not include any geological interpretations of the geophysical dataset. Key survey personnel are listed in Table 1.

**Table 1: Personnel involved with the project.**

| | |
|---|---|
| *Pilot* | Jean Francois Roy |
| *Ground Supervisor* | Michael Burns |
| *Data Processing and QA/QC* | Kiyavash Parvar |

## Location

The survey area is located approximately 20km's east of the town of Ignace, Ontario. The grid was accessed by 4x4 truck to the staging areas. Due to complexity of the area and rough terrain multiple staging areas were required to complete the survey safely and within the requirements set by Transport Canada (TC). A tree stand was required to maintain line of sight to the drone over the treetops. The general location of the survey grid is shown in Figure 1.


**Figure 1:** Location of survey area (Shown in red)

## Survey Specifications and Procedures

The nominal altitude above ground level (AGL) was set to 50 m. Elevation data used to determine ground level for this survey was sourced from the Canadian Digital Elevation Model (CDEM) 0.75-arcsecond dataset. The nominal production airspeed is 10 m/s for flat topography with no wind. This may be modified by the field crew in areas of rugged terrain or in windy conditions.

The original survey plan was initially larger than what was completed. When the field crew was on site, they determined that some areas were not able to be surveyed due to lack of access and line of sight requirements. Details of the completed survey can be found in Table 2.

**Table 2:** Raleigh surveys details

| Area Name | Line Spacing (m) | Line Direction (deg) | Tie Line Spacing (m) | Flight Lines (km) | Tie Lines (km) | Total Line Kilometres (km) |
|---|---|---|---|---|---|---|
| Raleigh Lake | 40 | 135° | N/A | 189.79 | N/A | 189.79 |

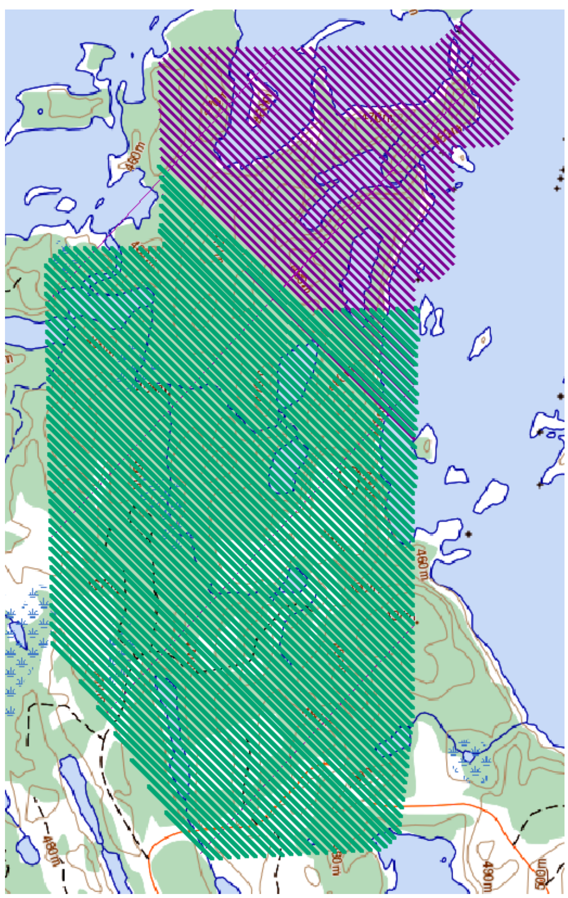


**Figure 2:** Updated Survey Extents (Green Lines – Flown, Purple Lines – Not Flown)

## Instrumentation and Software

The principal airborne sensor used was a Gem Systems Canada GSMP-35UA potassium vapor sensor mounted on a UAV platform. Ancillary equipment included Global Positioning Satellite (GPS) system antenna and Inertial Measurement Unit (IMU). A stationary GSM-19 Overhauser magnetometer was used as a base station. Raw aerial magnetometer data was collected at a rate of 10 Hz while base station data was collected at a rate of 0.16 Hz. Total field and GPS UTC time was recorded with each data point, enabling diurnal correction to be applied during final data processing.

### *Magnetic Base Station*

A GSM-19 Overhauser Magnetometer base station was placed in a location of low magnetic gradient, away from electrical transmission lines and moving metallic objects, such as motor vehicles and aircrafts. The data collected from this base station was used to diurnally correct the aeromagnetic data. The GSM-19 Overhauser Magnetometer is supplied by GEM systems of Markham, Ontario. General specifications of the magnetometer are included in Appendix 1: Instrument Specification.

### *Unmanned Aerial Vehicle – Procyon 800E*

Pioneer used the Procyon 800E helicopter UAV to complete this survey. The Procyon 800E is a single rotor helicopter UAV platform designed for industrial surveying applications. The helicopter is built in Canada by NOVaerial Robotics Inc.

*Total Integration:* The modular design makes the Procyon 800E easy to set up and ready to use in just minutes. Its dust proof propulsion systems simplify maintenance while actively cooled motors make for reliable operation during extended use.

*Smart Flight Safety:* The Procyon 800E uses intelligent ESCs to ensure it performs accurately, safely and efficiently while PixHawk self-adaptive flight systems adjust flight parameters automatically based on different payloads.

### *UAV-MAG™ Configuration*

GEM System's UAV GSMP-35UA is a potassium magnetometer providing unmatched sensitivity in addition to a low heading error effect. The GSMP-35UA operates on principles similar to other alkali vapor magnetometers however benefits from the unique nuclear properties of potassium. Each GSMP-35UA system has 0.0002 nT sensitivity combined with +/- 0.1 nT absolute accuracy over its full operating range. More details on the instrument can be found in Appendix 1: Instrument Specification.

## Data Deliverables and Channel Descriptions

All data is typically delivered in either Geosoft Database (GDB) or simple formats such as .txt or csv. The data deliverables are client specific to best suit their needs and software requirements. Regardless of software, a database is supplied to the client with channel descriptions as described in Table 3.

**Table 3:** Database channel descriptions

| Parameter | Explanation | Units/Format |
|---|---|---|
| year | Date(Year) | - |
| month | Date(Month) | - |
| day | Date(day) | - |
| hhmmss_s | GNSS time stamp (UTC) | hhmmss.ss |
| lat | Latitude (WGS84) | Decimal degrees |
| lon | Longitude (WGS84) | Decimal degrees |
| alt | GPS altitude above the average sea level | metres |
| utmE | UTM easting (WGS84) | metres |
| utmN | UTM northing (WGS84) | metres |
| sat | Number of locked satellites | metres |
| zone | UTM zone | - |
| yaw | IMU yaw reading | Degrees |
| pitch | IMU pitch reading | Degrees |
| roll | IMU roll reading | Degrees |
| nT | Magnetic field readings (Raw) | Nanotesla |
| nT2 | Diurnal correction has been applied on the nT channel (Diurnal datum: 54700 nT) | Nanotesla |
| Final | Final leveled and micro-leveled data | Nanotesla |
| VD1 | 1$^{st}$ Vertical derivative | nT/m |
| Dist | Distance to the first point of the line | metres |

## Data Processing

In general, all typical magnetic QA/QC and data processing techniques have been applied to the data. All post-field data processing was carried out using Geosoft Oasis Montaj, Python and Microsoft Excel software/ programing languages. Presentation of final maps used ESRI ArcMap and/or Geosoft's Oasis Montaj. Results were gridded using minimum curvature method and a grid cell size of approximately 1/3 of flight line spacing.

The geophysical images accompanying this report are positioned using the WGS 1984 datum. The survey geodetic GPS positions have been map projected using the Universal Transverse Mercator (UTM) projection. A summary of the map datum and projection specifications are as follows:

- Datum: WGS 1984 UTM Zone 15U
- Scale Factor: 1 : 15,000
- Linear Unit: Metre (1)

The magnetic data was first quality checked in the field and any points lacking sufficient georeferenced data or which were excessively noisy were removed. The resulting data was processed as mosaics throughout the survey area as data was collected daily. A final combination of all data formed the final results including lines that were re-flown due to weak or insufficient magnetic signal.

The base station readings were initially processed and filtered to remove sudden spikes. The filtered base station dataset was then used to perform a diurnal correction on the magnetic survey data. The diurnally corrected profile data were interpolated into a grid using the minimum curvature technique with a grid size of approximately 1/3 of flight line spacing. All final maps have a normalized color interval.

After finishing interpolation, initial processing subjected the data to a non-linear filter with a wavelength limit of 3-4 fiducials and tolerance of 0.001. This filter removes extra high frequency features which mostly occur because the sensor is in the dead zone. This usually occurs due to sudden changes in sensor orientation, effect of ferro-metallic objects, or the influence of weather conditions on the sensor. This filter smooths out noise and high frequency features.

After leveling the data using the tie lines, to mitigate the corrugation effect associated with gaps between the data lines, the data was micro-leveled. This task was done by applying a high-pass butterworth filter with the threshold of 100 metres (line spacing x 4) followed by a directional cosine filter perpendicular to the line direction. The resulted noise channel was then subtracted from the leveled values to microlevel the data. The final result of the leveling and micro-leveling processes was then put in “Final” Channel of the database.

The following corrections were applied to the airborne magnetic data:

- Correction for diurnal variation using the digitally recorded ground base station magnetic values as described above
- Lag was negligible therefore only a minor lag correction was applied
- Heading biases were negligible therefore no heading correction was applied
- Micro-leveling
- First Vertical Derivative calculation

The final maps are included in Appendix 2: Final Maps.

## Data Comments

Pioneer's UAV-MAG™ surveys result in a high quality, high resolution data product. The increased flight line density and lower flight elevation possible with the use of a UAV platform result in superior resolution data products when compared to conventional airborne magnetic data. Using an auto-controlled UAV platform also allows for minimal deviation from pre-planned flight lines, and greatly reduces the impact of human error during data collection.

The final magnetic data has been presented in the form of several different magnetic maps (Appendix 2: Final Maps). Each of these different data presentations is a useful tool for identifying geological structures and other features. The total magnetic intensity (TMI) map is created by interpolating the filtered magnetic data. This is the standard presentation of magnetic data and can be used to highlight major geological structures that may be visible in the survey area by their magnetic signature or their magnetic contrast to their surroundings. The first vertical derivative (VD1) quantifies the rate of change of the magnetic field as a function of elevation. This presentation of the magnetic data emphasizes high frequency features , such as shallow structures and the edges of magnetic source bodies.

Logistics remains a major challenge of UAV surveying. In order to operate legally within the guidelines set by Transport Canada, line of sight must be maintained to the UAV and surrounding airspace at all times. This often results in several staging locations being necessary to cover a survey area, and sometimes requires the employment of additional equipment such as an aerial platform or scissor lift in order to achieve unobstructed line of sight beyond surrounding buildings or vegetation.

Pioneer makes every effort to identify potential sources of noise and mitigate their impact on our collected survey data. Flight lines are planned with a minimum of 50 m overlap past the survey boundaries so that the magnetic sensor has time to stabilize itself after the UAV has completed its turns. Wind speeds are carefully monitored and when excessive data inconsistency is noted due to weather conditions, flights area suspended until conditions improve.

Respectfully submitted,

*Michael Burns*

Michael Burns
President

# Appendix 1: Instrument Specification

## GSM-19 Overhauser Magnetometer

**Performance**

Sensitivity: Standard
GSM-19 0.022 nT @ 1 Hz
GSM-19PRO 0.015 nT @ 1 Hz
Resolution: 0.01 nT
Absolute Accuracy: 0.1 nT
Dynamic Range: 20,000 to 120,000 nT
Gradient Tolerance: up to 10,000 nT/m
Samples at: 60+, 5, 3, 2, 1, 0.5, 0.2 sec
Operating Temperature: -40°C to +50°C

**Operating Modes**

Manual: Coordinates, time, date and reading stored automatically at up to 0.2 sec.
Base Station: Time, date and reading stored at 1 to 60 second intervals.
Remote Control: Optional remote control using RS-232 interface.
Input / Output: Input/Output: RS-232 using 6-pin weatherproof connector with USB adapter.

**Memory - (# of Readings in millions)**

Mobile: 1.4M,
Base Station: 5.3M,
Gradiometer: 1.2M,
Walking Mag: 2.6M

**Dimensions**

Console: 223mm x 69mm x 240 mm(8.7x2.7x9.5in)
Sensor: 175mm x 75mm diameter cylinder (6.8in long by 3 in diameter)

**Weights**

Console with Belt: 2.1 kg
Sensor and Staff Assembly: 1.0 kg

# ***Procyon 800E*** System Specifications

## DIMENSIONS:

Rotor Diameter 1780mm
Length (Not including main and tail rotor)
Overall (including rotor disks)
1440mm
2058mm
Height 420mm
Width 440mm
Empty Weight 5.8kg
Operational Weight 11.1kg
Maximum Weight 15.1kg
Payload Weight 1-4kg

## PERFORMANCE:

Hover Endurance
(no payload)
35 minutes
Cruise Endurance
(no payload)
50 minutes
Hover Wind Tolerance 50 km/h (14 m/s)
Best Time Cruise Speed 54 km/h (15 m/s)*
Best Range Flight Speed 72 km/h (20 m/s)*
Maximum Straight & Level Speed 90 km/h (25 m/s)*
VNE Airspeed 108 km/h (30 m/s)*
Climb Rate (Altitude Controlled Modes) 2 m/s
Climb Rate (Manual Modes, no payload) 6 m/s
Maximum Altitude 2500m
Minimum Temperature -10°C
Maximum Temperature +30°C
Manual Control Range 1 km
Telemetry Range 20 km
Battery 2X Parallel 6S 22,000mAH LiPo
* Total Relative Airspeed

## Flight Control:

Flight Control Hardware mRobotics Pixhawk 2.4.6
Flight Control Software Ardupilot AC3.3.3-NR1
Max Tilt Range 30°
Hovering Accuracy

(GPS Loiter Mode)
+/- 0.5m Vertical
+/-1.5m Horizontal
Remote Control Frequency 2.4-2.4835 GHz FHSS
Telemetry Frequency 902 – 928 MHz (USA)
915 – 928 MHz (Australia)
868 - 869 MHz (Europe)
Available Flight Modes: ❏ Acro: Manual Angular Rate Control, Manual Collective
❏ Stabilize: Manual Angle Control with self-leveling, Manual Collective
❏ Altitude Hold: Self-leveling (no GPS), Auto Collective
❏ Loiter: GPS Positioning, Auto Collective
❏ Auto: Automated Waypoint Flight
❏ RTL: Automatic Return to Launch
❏ Circle: Automatic Circle/Orbit or Panograph
❏ Stop: Automatic Full-Stop and Hold
Failsafe: ❏ Low Battery
❏ Remote Control Loss
❏ Telemetry Loss
❏ AHRS Error
Ground Control Software: ❏ Mission Planner
❏ QGC
❏ uGCS
❏ Tower
**❏ Inexa Control**

## GEM GSMP-35UA: Ultra Light-Weight Potassium Magnetometer

**Magnetometer Specifications**

Sensitivity: 0.0002 nT @ 1 Hz
Resolution: 0.0001 nT
Absolute Accuracy: +/- 0.1 nT
Heading Error: + / – 0.05 nT
Dynamic Range: 15,000 to 120,000 nT
Gradient Tolerance: 50,000 nT/m
Sampling Intervals: 1, 2, 5, 10, 20 Hz
Operating Temperature: -40°C to +55°C

## GEM GSMP-35UA: Ultra Light-Weight Potassium Magnetometer (continued)

**Orientation**

Sensor Angle: optimum angle 35° between sensor head axis & field vector.
Proper Orientation: 10° to 80° & 100° to 170
Heading Error: +/- 0.05 nT between 10° to 80°and 360° full rotation about axis.

**Environmental**

Operating Temperature: -40°C to +55°C
Storage Temperature: -70°C to +55°C
Humidity:0 to 100%, splashproof

**Dimensions & Weight**

Sensor: 161mm x 64mm (external dia) with 2m cabling ; 0.43 kg
Electronics Box: 236mm x 56mm x 39mm; 0.46 kg
Option 1 cabling; .125kg
Option 3 light weight battery; .250kg

**Power**

Power Supply:18 to 32 V DC
Power Requirements: approx. 50 W at start up, dropping to 12 W after warm-up
Power Consumption:12 W typical at 20°C
Warm-up Time: <15 minutes at -40°C

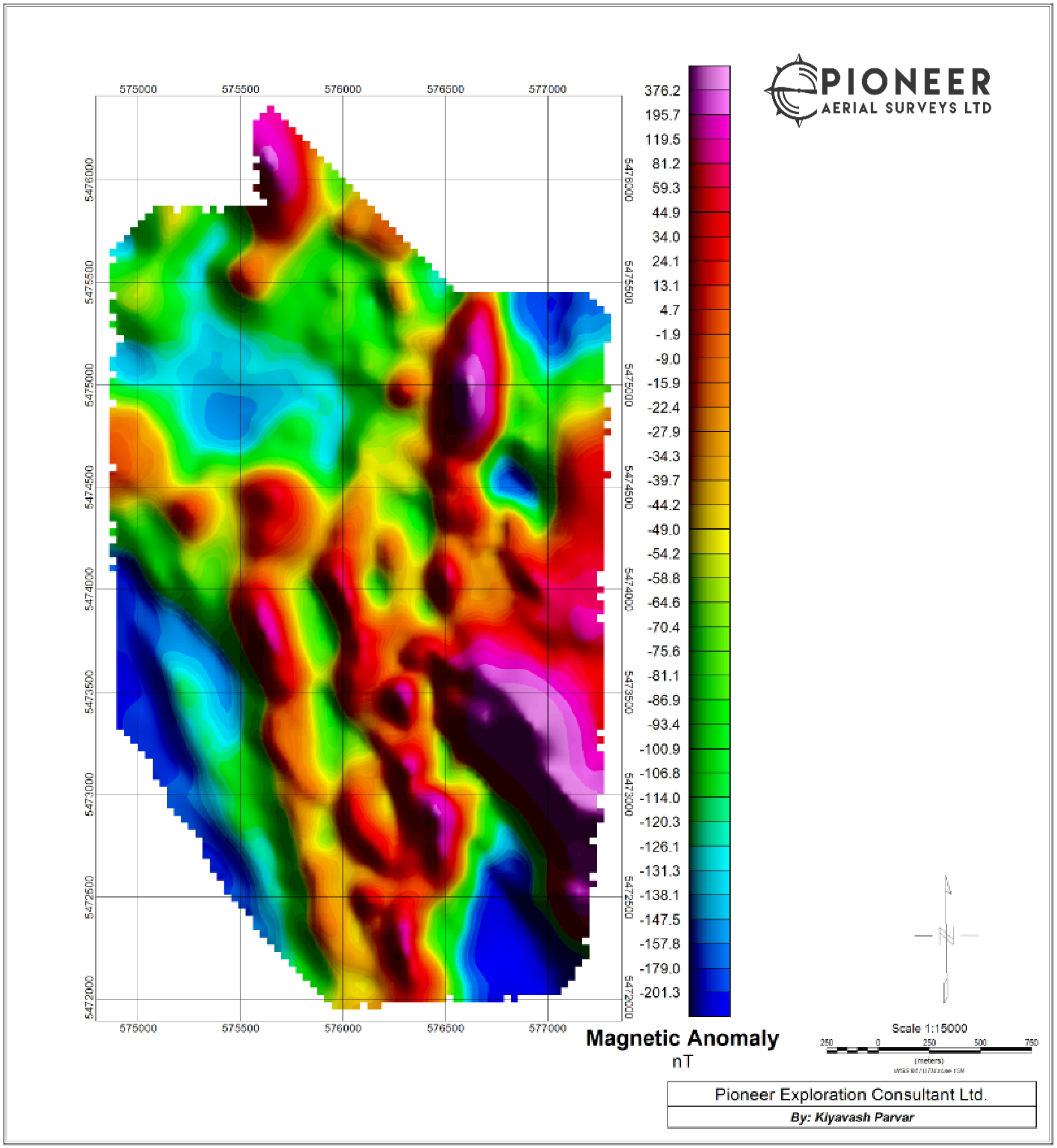
**Outputs**

20 Hz RS-232 output with comprehensive Windows Personal Computer (PC) software for data acquisition and display.
Outputs UTC time, magnetic field, lock indication, heater, field reversal, GPS position (latitude, longitude altitude, number of satellites)

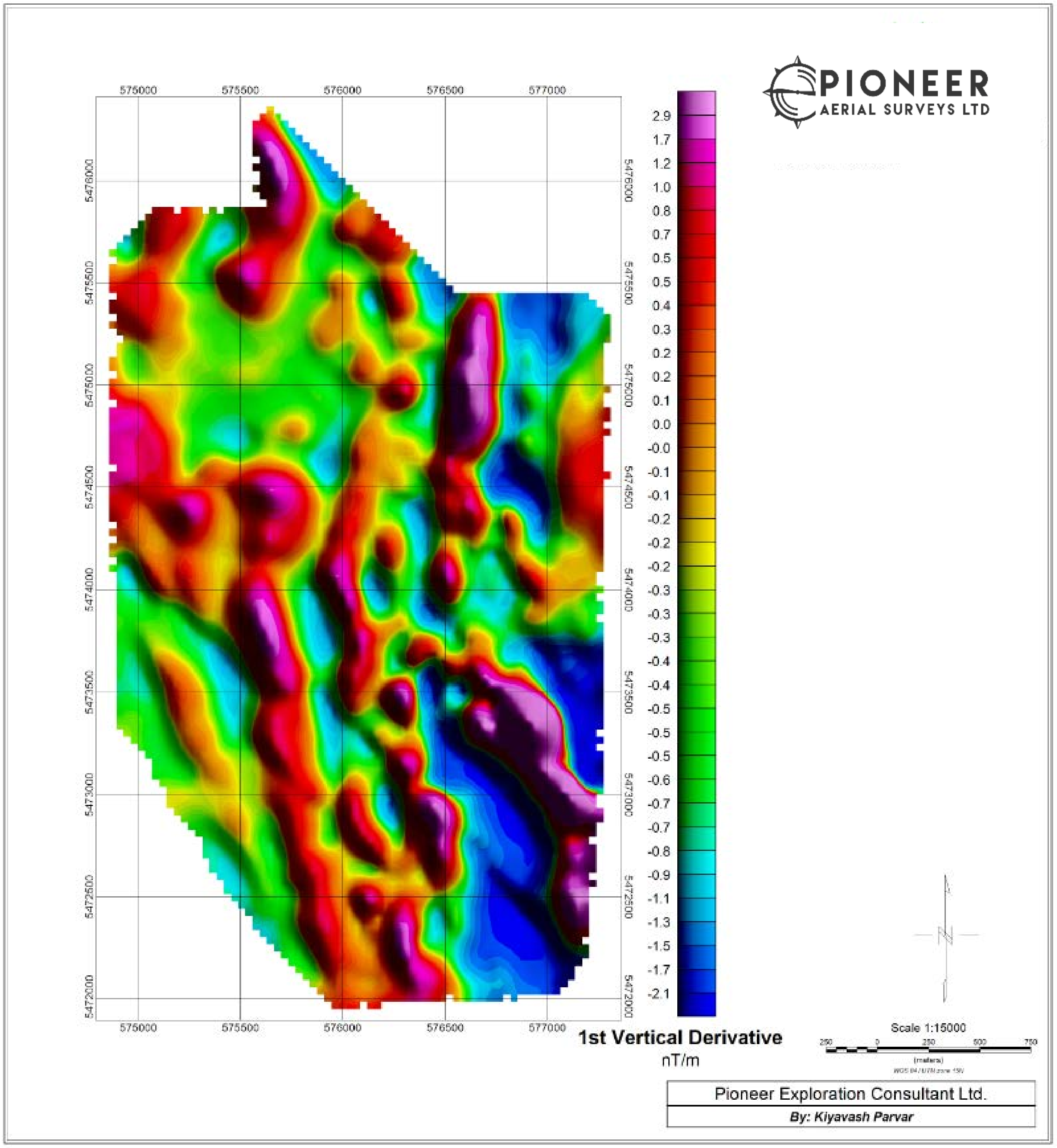
**Components**

Sensor, pre-amplifier box, 2m sensor /pre-amplifier cable (optional cable 3-5m), manual & shipping case

# Appendix 2: Final Maps



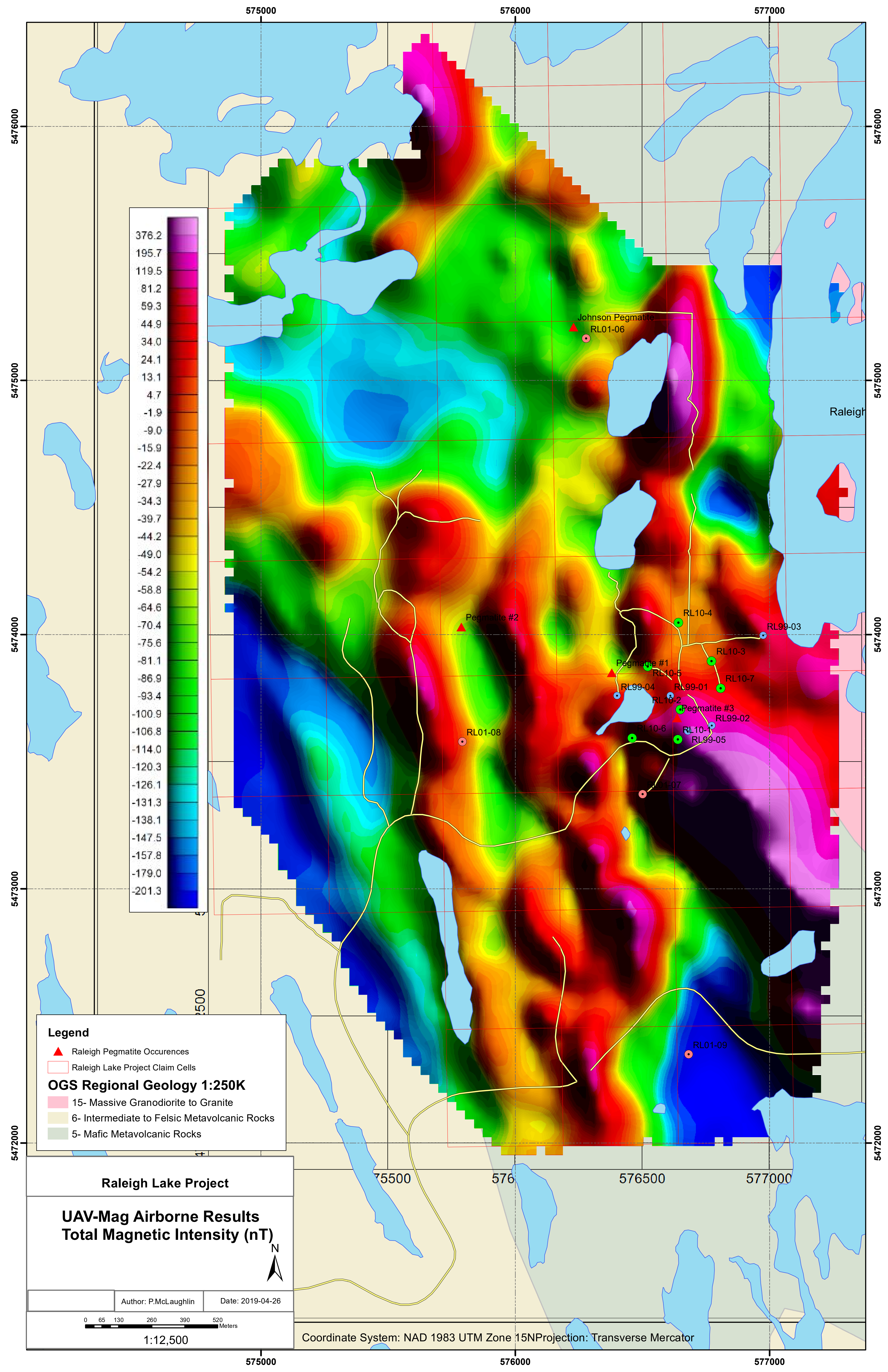

**Total Magnetic Intensity (TMI) Reduced to Pole (RTP)**




**First Vertical Derivative (VD1) Reduced to Pole (RTP)**

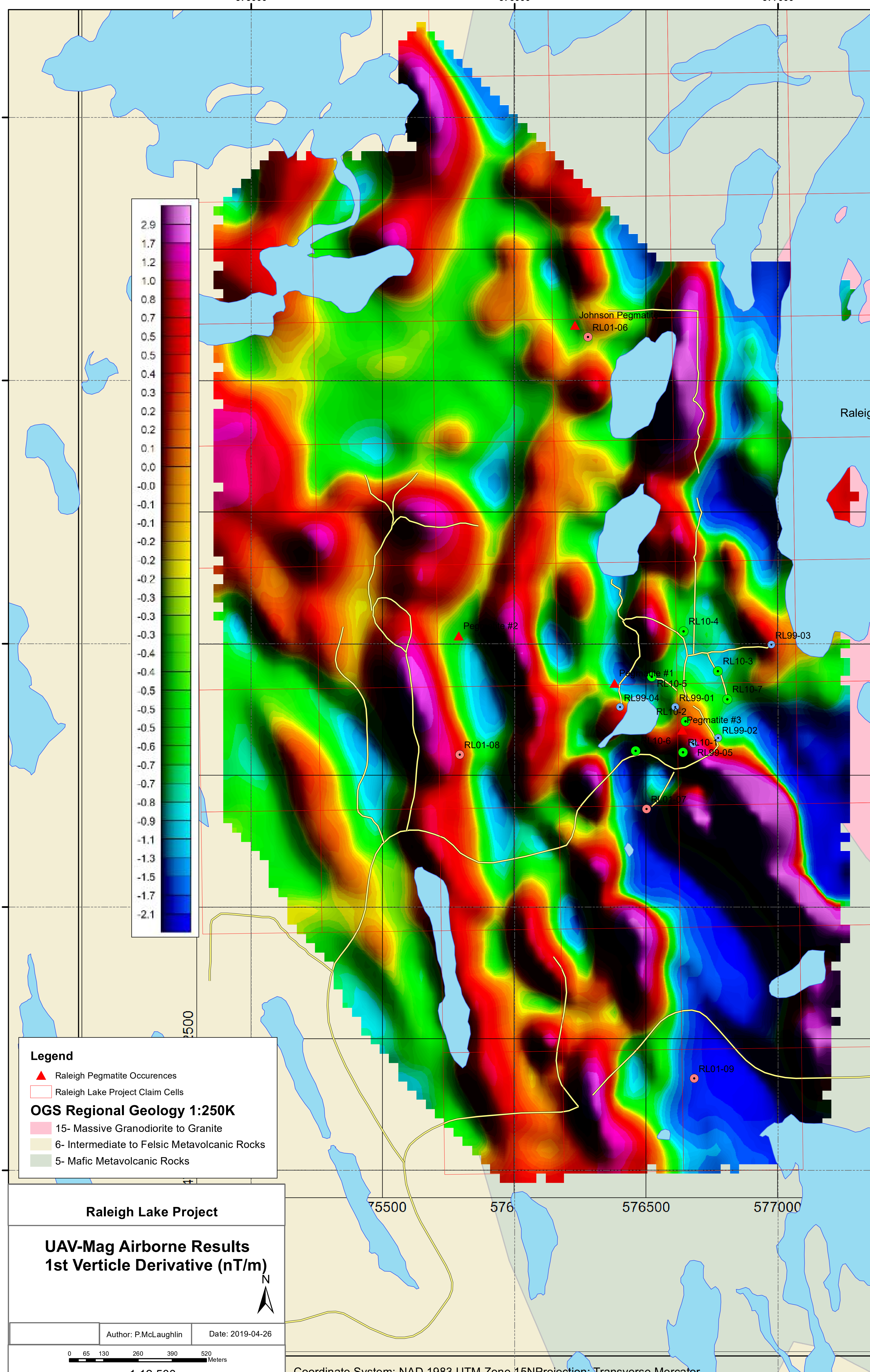
# APPENDIX III

**1:12,500 UAV-Mag™ map with Total Magnetic Intensity results**


Raleigh Lake Project
UAV-Mag Airborne Results
Total Magnetic Intensity (nT)
Legend
Raleigh Pegmatite Occurences
Raleigh Lake Project Claim Cells
OGS Regional Geology 1:250K
15- Massive Granodiorite to Granite
6- Intermediate to Felsic Metavolcanic Rocks
5- Mafic Metavolcanic Rocks
Author: P.McLaughlin
Date: 2019-04-26
0 65 130 260 390 520 Meters
1:12,500
N
Coordinate System: NAD 1983 UTM Zone 15NProjection: Transverse Mercator
376.2
195.7
119.5
81.2
59.3
44.9
34.0
24.1
13.1
4.7
-1.9
-9.0
-15.9
-22.4
-27.9
-34.3
-39.7
-44.2
-49.0
-54.2
-58.8
-64.6
-70.4
-75.6
-81.1
-86.9
-93.4
-100.9
-106.8
-114.0
-120.3
-126.1
-131.3
-138.1
-147.5
-157.8
-179.0
-201.3
Johnson Pegmatite
RL01-06
Pegmatite #2
Pegmatite #1
Pegmatite #3
RL10-4
RL99-03
RL10-3
RL10-5
RL10-7
RL99-04
RL99-01
RL10-2
RL99-02
RL10-6
RL10-1
RL99-05
RL01-08
RL01-09
Raleigh
575000
576000
577000
575500
576500
5476000
5475000
5474000
5473000
5472000

# APPENDIX IV

**1:12,500 UAV-Mag™ map with 1st Verticle Derivative results**




**Raleigh Lake Project**

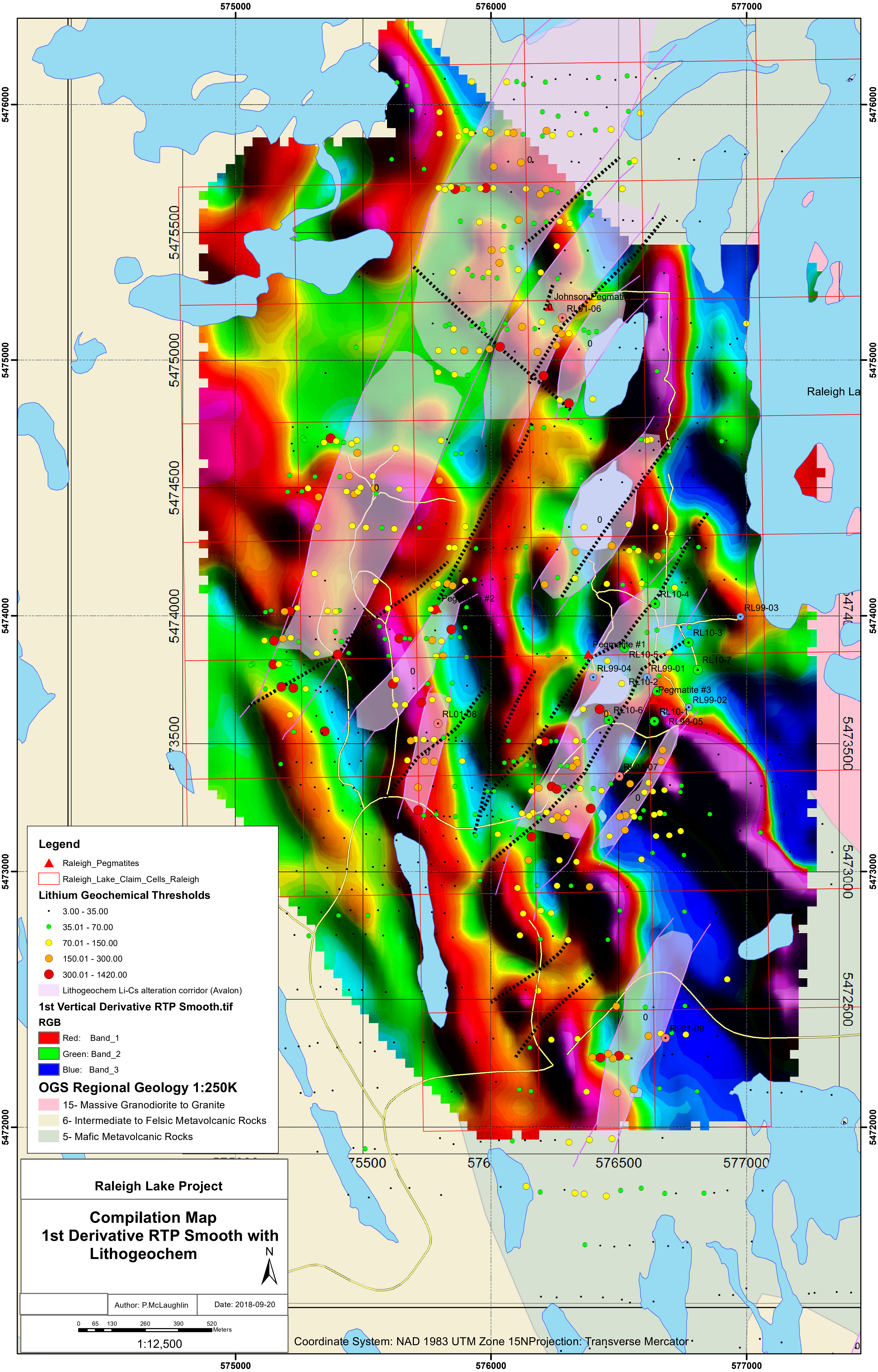
**UAV-Mag Airborne Results**
**1st Verticle Derivative (nT/m)**

Author: P.McLaughlin | Date: 2019-04-26

1:12,500

# APPENDIX V

**1:12,500 Map with recent with 1st vertical derivative mag results and recent lithogeochemical data**



575000
576000
577000
5476000
5475500
5475000
5474500
5474000
5473500
5473000
5472500
5472000
575500
576500
577000
Johnson Pegmatite
RL01-06
Raleigh La
Pegmatite #2
RL99-03
RL10-4
RL10-3
Pegmatite #1
RL10-5
RL10-7
RL99-04
RL99-01
RL10-2
Pegmatite #3
RL99-02
RL01-08
RL10-6
RL10-1
RL99-05
RL01-09
Legend
Raleigh_Pegmatites
Raleigh_Lake_Claim_Cells_Raleigh
Lithium Geochemical Thresholds
3.00 - 35.00
35.01 - 70.00
70.01 - 150.00
150.01 - 300.00
300.01 - 1420.00
Lithogeochem Li-Cs alteration corridor (Avalon)
1st Vertical Derivative RTP Smooth.tif
RGB
Red: Band_1
Green: Band_2
Blue: Band_3
OGS Regional Geology 1:250K
15- Massive Granodiorite to Granite
6- Intermediate to Felsic Metavolcanic Rocks
5- Mafic Metavolcanic Rocks
Raleigh Lake Project
Compilation Map
1st Derivative RTP Smooth with
Lithogeochem
N
Author: P.McLaughlin
Date: 2018-09-20
0 65 130 260 390 520
Meters
1:12,500
Coordinate System: NAD 1983 UTM Zone 15NProjection: Transverse Mercator