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Report on Prospecting at Claim 1199564  
on the Federal Mine Property  
Teck Township  
Larder Lake Mining Division

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*May 19, 2017*

## Table of Contents

Introduction .....	3
Summary .....	3
Property Descriptions and Access.....	3
History .....	5
Property Geology .....	6
General Description of Sampled Rock Units .....	7
Greenstone facies gabbro .....	7
Deformed polymict conglomerate.....	8
Trachyte .....	8
Description of Recent Work.....	9
Conclusions and Recommendations .....	10
Data .....	11

FIGURE 1: LOCATION OF TECK TOWNSHIP RELATIVE TO THE PROVINCE OF ONTARIO AND CANADIAN MALARTIC CLAIMS (SHADED GREY); WHERE THE CLAIMS 1242952, 1242943 AND 1199564 ARE LOCATED (SHADED PALE ORANGE) .....	4
FIGURE 2: A 1:15,000 SCALE MAP SHOWING MNDM LISTED MINING CLAIMS FOR TECK TOWNSHIP IN THE AREA OF THE MUNICIPALITY OF KIRKLAND LAKE. THE CLAIMS 1242952, 1242943 AND 1199564 ARE HIGHLIGHTED, EACH HAVE A SEPARATE FILE FOR SUBMISSION.....	5
FIGURE 3: LOCAL GEOLOGY IN THE CLAIM AREA NORTH OF KIRKLAND LAKE. THE MAP SHOWS THE BANDS OF TEMISKAMING META-SEDIMENTS INTRUDED WITH FELSIC-INTERMEDIATE INTRUSIVES AND KEEWATIN VOLCANICS IN CONTACT TO THE NORTH OF THE TEMISKAMING SEDIMENTS. ....	9
FIGURE 4: MAP SHOWING THE GPS TRACKS AND WAYPOINTS FOR THE WORKER'S TRAVERSES ON MAY 19, 2019 FOR CLAIM 1199564. ....	13
FIGURE 5: A 1:2,000 SCALE SATELLITE MAP SHOWING ACCESS AND TRAVERSE TRACKS FOR CLAIM 1199564. ....	14

## **Introduction**

This report is written for submission to the Ministry of Northern Development and Mines to fulfill the assessment work requirements for part of the historic Federal Kirkland Mine property. This report summarizes the activities completed in the period of May 19, 2017 on the un-patented mining claim 1199564. This report was prepared by Canadian Malartic Corporation (CMC) geologist Christopher A. L. Clarke, P.Geol under supervision from Mark Masson, P.Geol.

## **Summary**

The claim 1199564 in Teck Township is associated with the historic Federal Mine property, whose shaft is located on claim 1222223. The claim is held by Canadian Malartic Corporation and it is contiguous with other claims on the Federal Mine property which Canadian Malartic also holds. Claim 1199564 was staked on July 7, 2003. Workers for Canadian Malartic conducted a prospecting and sampling program to fulfill the work requirements of the claim. Historically, the Federal Mine property has been the focus of extensive exploration both above and below ground.

## **Property Descriptions and Access**

Claim 1199564, is situated along the north-eastern edge of the Town of Kirkland Lake in Teck Township, District of Temiskaming, Larder Lake Mining Division, Ontario, Canada (Figure 1). Claim 1199564 can be accessed along the east side of Goodfish road, 1.5-2km from the intersection of Duncan Ave and Goodfish Rd and ranges 80-300m from the road. There are several ATV trails/old dirt roads leading to the claim. The property is almost immediately north of a residential neighborhood and abandoned residential lots. To the immediate east of the claim is a man-made dam which defines the Wright-Hargreaves mine tailings pond to the east.

The claim is composed of one, un-patented unit roughly 16 hectares in size. The surface right owner (SRO claim #L2093) is FiveTwelveFourteen Property Investments Inc. The claim hosts a large pond/swamp within its central and north-eastern quadrant.

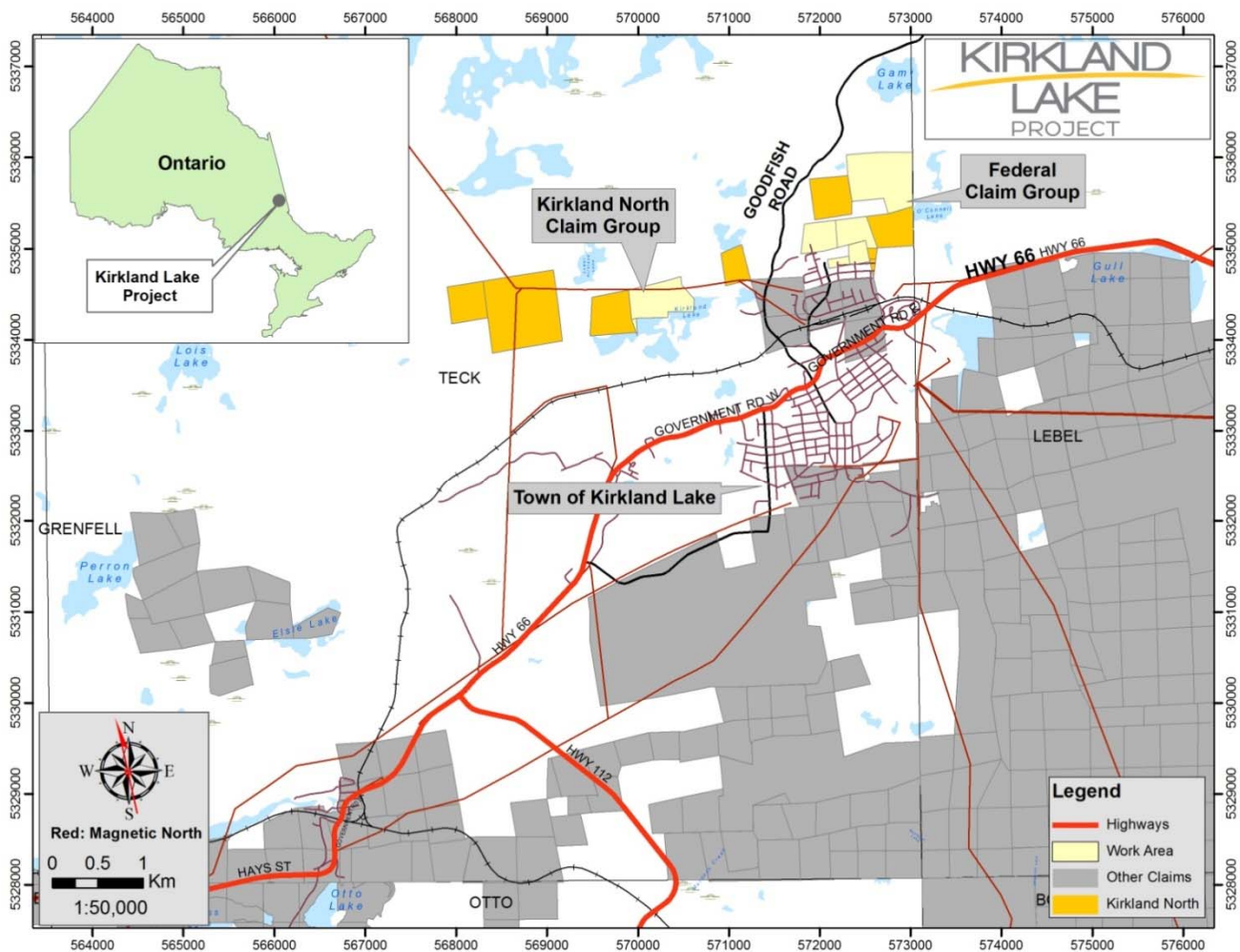


Figure 1: Location of Teck Township relative to the Province of Ontario and Canadian Malartic Claims (shaded grey); where the claims 1242952, 1242943 and 1199564 are located (shaded pale orange).

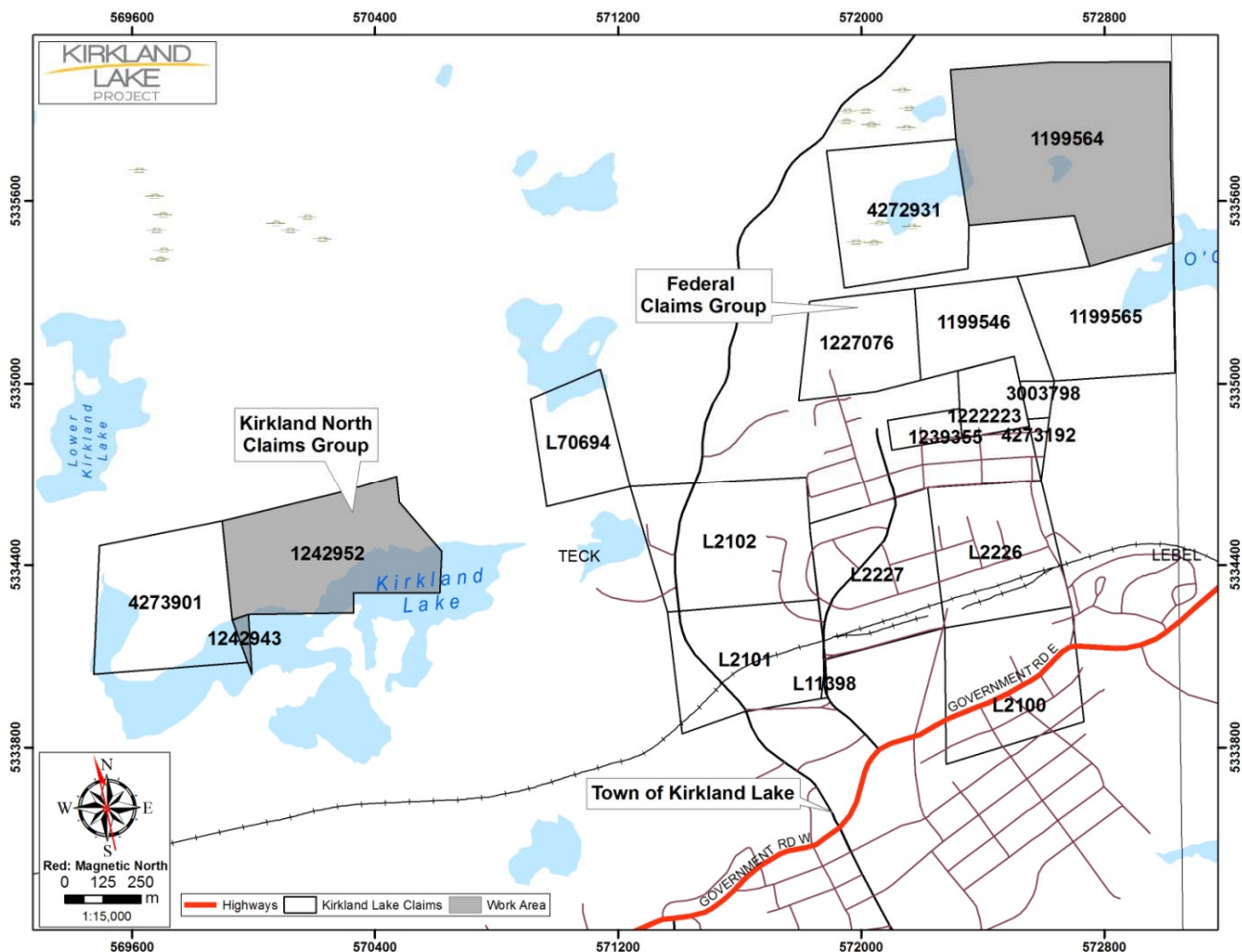


Figure 2: A 1:15,000 scale map showing MNDM listed mining claims for Teck Township in the area of the Municipality of Kirkland Lake. The claims 1242952, 1242943 and 1199564 are highlighted, each have a separate file for submission.

## History

Claim 1199564 was staked on July 7, 2003. No previous assessment has been reported on this claim, but the property has been part of previous claims and an active Mine. The most recent work conducted immediately adjacent to claim 1199564 was reported by Canadian Malartic Corporation in 2015 and consisted of prospecting and geochemical sampling. Work was also conducted by Vault Minerals in 2006 and published in 2013 under assessment files AFRI# 20000001685 and 20000001686. The Vault Minerals work was designed to assess the Kirkland Basin and Federal Kirkland historic

properties. Vault Minerals was 100% acquired by Queenston Mining Inc. which in turn was 100% acquired by Osisko Mining Ltd and was then acquired by a 50-50% agreement between Agnico Eagle and Yamana Gold who formed the Osisko properties into the Canadian Malartic Corporation. Vault Minerals conducted a mapping and sampling program on their claims on the Federal Mine property.

Historically, The Federal Mine property has had extensive and near continuous work conducted on it, most notably a 745 ft shaft which is currently capped in the northeast corner of claim #1222223. The underground workings consist of four levels situated at 200, 400, 500 and 700 feet below surface with pervasive drifting. Another notable period in the Federal Mine property was in 1986 and 1987, when a drill program was initiated by Goldhunter Explorations Inc. The drill program consisted of 27 diamond drill holes primarily targeting the mine workings on claim #1222223 and 1227076.

None of the historic drilling or stripping programs listed by Goldhunter Explorations Inc. or other assessment files appears to have been situated on claim 1199564. Only limited prospecting and mapping appears to have been reported on the claim area.

## **Property Geology**

The claim 1199564 is situated within the prolific Kirkland Lake gold camp which is part of the Abitibi Greenstone belt in the Superior Province. The Abitibi Greenstone belt is Archean in age and is composed of greenschist facies volcanic and sedimentary rocks with localized syn-post tectonic intrusions of granitic to dioritic dykes to batholiths. The Abitibi Greenstone belt forms an east plunging synclinerium between the Abitibi batholith, northeast of Timmins and the Round Lake batholith, south of Kirkland Lake. Mesozoic aged kimberlitic dykes are also present in the Kirkland Lake Camp but are rare in occurrence. The Kirkland Lake Camp hosts Keewatin (2750-2700 Ma) and Temiskaming (2690-2670 Ma) aged assemblages associated with the Abitibi Greenstone belt. The Keewatin assemblages

within the Kirkland Lake Camp are composed of the greenschist facies volcanoclastic-sedimentary lithologies of the: Pacaud, Deloro, Stoughton-Roquemaure, Kidd-Munro, Tisdale, Kinojevis, and Blake River groups. The Temiskaming assemblage within the Kirkland Lake camp is the Temiskaming group, noted for its non-marine, variably metamorphosed, pyroclastic and clastic-sedimentary (conglomerate) lithological units. Temiskaming group meta-sedimentary rocks form along the north facing side of the Larder Lake-Cadillac Deformation Zone (LLCDZ), a major east-west structural control associated with chemical alteration and sulphide mineralization. The LLCDZ length coincides with a folded and deformed sinuous belt of sedimentary rocks of Temiskaming age.

Claim 1199564 hosts Temiskaming meta-sediments (conglomerate) and a Kinojevis mafic intrusive suite (gabbro, **Error! Reference source not found.**). The Temiskaming sediments are present in the south of the claim while the mafic intrusives are in the north of the claim. The inferred contact from Ontario Geological Survey maps is striking northeast, through the centre of the claim. Both map units host various degrees of structural deformation from brittle (faults) to ductile (foliation/shearing).

To the North of the claim are a series of Keewatin aged basic volcanics (greenstone) of the Kinojevis Group. To the south are a series of Temiskaming meta-sedimentary units and felsic-intermediate intrusives (syenite-diorite).

## **General Description of Sampled Rock Units**

### ***Greenstone facies gabbro***

**Grain Size:** Fine to medium, euhedral and equigranular

**Texture:** massive

**Alteration:** Generally fresh with weak chlorite-carbonate alteration

**Mineralization:** <1-1mm anhedral pyrite disseminated within matrix

**Magnetism:** weak

**Veining:** There are <1% abundant, <1-3mm thick, milky quartz-carbonate stringers and <1% abundant discontinuous black chlorite fracture-fill



***Deformed polymict conglomerate***

**Clasts:** Polymict; various igneous and volcanic pebble to cobble sized clasts which are matrix supported

**Sorting:** Moderately sorted, clasts form strata which can be gradational or sharply change in size

**Matrix:** Tuffaceous with fine bedding/deformation

**Deformation:** clasts display pressure shadows and elongation parallel to bedding; the matrix also displays a bedding/foliation along this same plane roughly striking NE-SW with weak undulations.

**Alteration:** Beige-Red colouration suggests sericite-hematite; <1% abundant bright red jasperoid alteration clasts

**Mineralization:** trace abundant, 1-2mm anhedral disseminations of pyrite within the tuffaceous matrix and around the red jasper

**Magnetism:** weak to moderate

**Veining:** There <1% abundant milky quartz-carbonate veins

***Trachyte***

**Grain size:** aphanitic

**Texture:** massive, sub-conchoidal fracturing

**Alteration:** purplish-brown weathering colour, weak patches of red hematite alteration

**Mineralization:** 0.5% abundant, 1-2mm disseminations of anhedral pyrite

**Magnetism:** weak-moderate

**Veining:** isolated, sub-planar stringers of <2mm thick quartz-carbonate which are <<1% abundant.

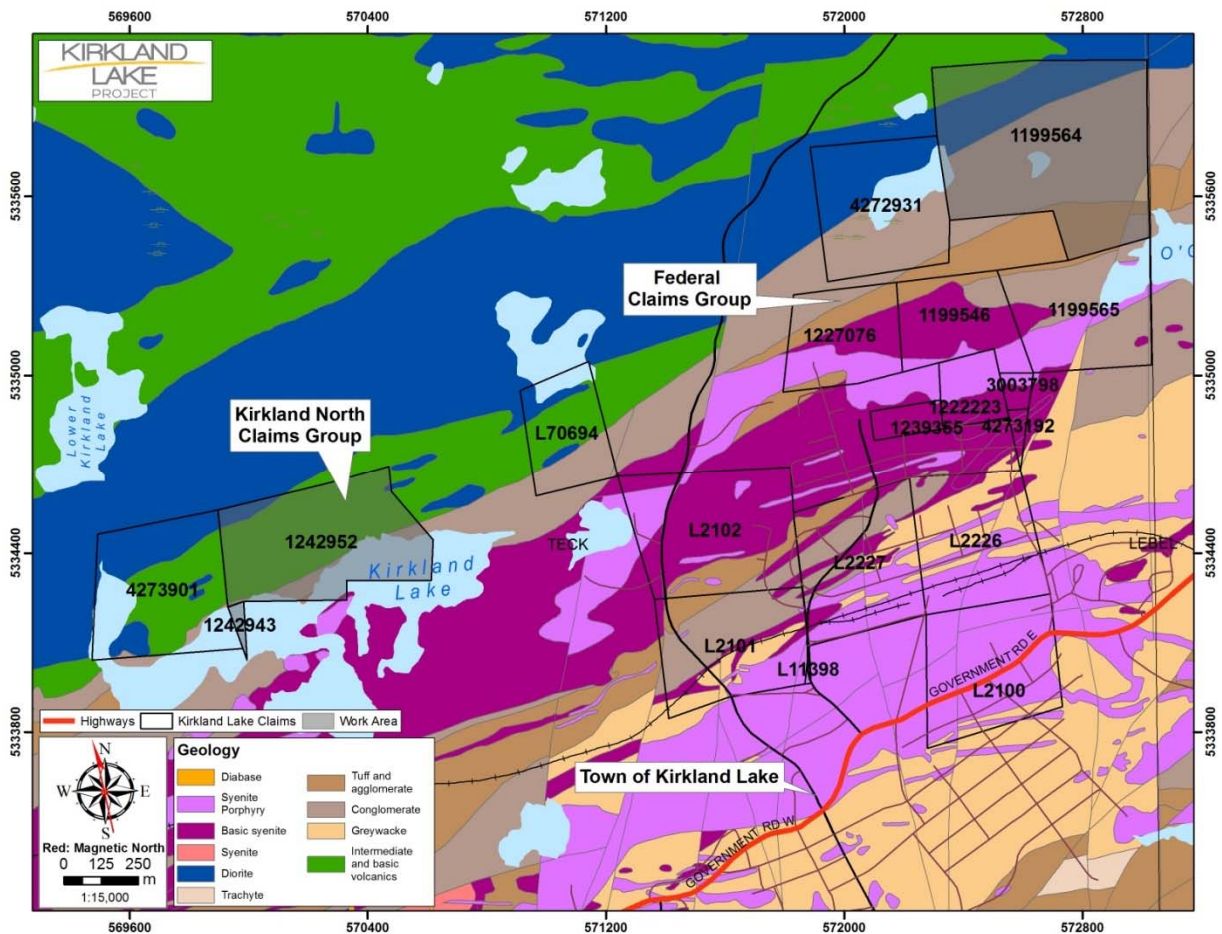


Figure 3: Local Geology in the Claim area north of Kirkland Lake. The map shows the bands of Temiskaming meta-sediments intruded with felsic-intermediate intrusives and Keewatin volcanics in contact to the north of the Temiskaming sediments.

## Description of Recent Work

The work conducted was prospecting, sampling and limited mapping. The goal of the work was to gain an understanding of the geology of the claim, identify historic trenches and pits, map outcrops, gather samples for gold and major-trace element abundances, and recording the locations using a GPS. The majority of the claim was overlaid with tailings and partially submerged in water a knob of Greywacke was exposed in the centre of the tailings pond which was sampled. The southeastern portion of the claim was the primary focus this field season since it was not reached last year due to a windstorm which created a barrier of deadfall coupled with deep melting snow. The southeastern

portion of the claim again proved to be a difficult area this year because of extensive deadfall and blowdown but there was less snow making it possible to navigate safely. This area of the claim hosted an east-west ridgeline surrounded by swamp and topped with balsam and pine stands. The ridgeline was primarily conglomerate with graded bedding but there were thin exposures of a cryptic trachyte/syenite along the north margin of the ridge. A total of 3 grab samples from the trachyte outcrops were collected on the property (plus a blank and standard for QA/QC purposes) and sent for major oxide, trace element (reported separately) and gold assay to ALS minerals (see attached certificates). The gold assay results were negligible.

## **Conclusions and Recommendations**

A grid should be established in a low impact manner to reduce disturbance of the environment and residents. The removal of the extensive deadfall and vegetation debris from the southeast corner of the claim would also be beneficial in terms of safety. Following the establishment of a grid an IP survey and limited stripping should be conducted pending the geochemical results of the grab sample analysis.

Respectfully Submitted,  
Christopher A. L. Clarke

## Data

### *The work was carried out as follows:*

#### Field:

Prospecting      May 19, 2017

#### Office:

Report            May 20, 2017

### *Persons who carried out the work:*

#### Prospecting:

Christopher A.L. Clarke	Larder Lake, On
Louis Sautelli	Thunder Bay, On
Sophie Michel	Sudbury Ontario, On
Sarah Mills	Sudbury Ontario, On

#### Report:

Christopher A.L. Clarke

### *Sample List (UTM zone 17 NAD 83)*

Waypoint	Northing	Easting	Rock Type
S140841	5335591	573003	Trachyte
S140842	5335574	572900	Trachyte
S140843	5335543	572754	Trachyte

**May 19, 2017 – 1 Day Prospecting**

Workers: Christopher Clarke; Louis Sautelli, Sophie Michel, Sarah Mills

Weather: Cold (11°C) and fresh snow in the morning (2-4cm); snow melted by noon

We drove our truck to 'Finn Town' which is the northern (unmapped) extent of Foss Rd. and parked our vehicle. Upon exiting the vehicle in Finn Town, we proceeded north on foot towards the mid-point of the southern boundary of the claim. From the southern boundary, we traversed east along the digital gridline encountering conglomerate outcrops along an east-west ridgeline and a glacial erratic boulder until we reached the eastern claim boundary. Upon reaching the eastern claim boundary we proceeded south to the next digital gridline which happened to coincide with the edge of O'Connor Lake and a glacially polished outcrop of trachyte which we sampled (sample S140841). The outcrop was surrounded by high water levels to the south and west which resulted in the group having to retrace our steps to the opposite side of the water where we observed a ~5-10m ridge of rock. Upon reaching the outcrop west of the lake spur/swamp we took another sample of trachyte (sample S140842) which was red in colour (potassium feldspar alteration?). Ascending the ridge, we noted that it was primarily conglomerate and we continued west along the digital line. The ridge gently sloped into a swampy area to the west; it was at this point we uncovered an outcrop of trachyte under a mass of pine brush and took a sample (sample S140843). At this point we continued south to the final digital line but the area was flooded to the east towards O'Connell Lake in a mixture of swamp and flooded alders/balsam. From the southeastern corner of the claim we retraced our steps to Finn Town and left in the Truck.

Prospecting Diary for Christopher Clarke, B.Sc, M.Sc, P.Geo

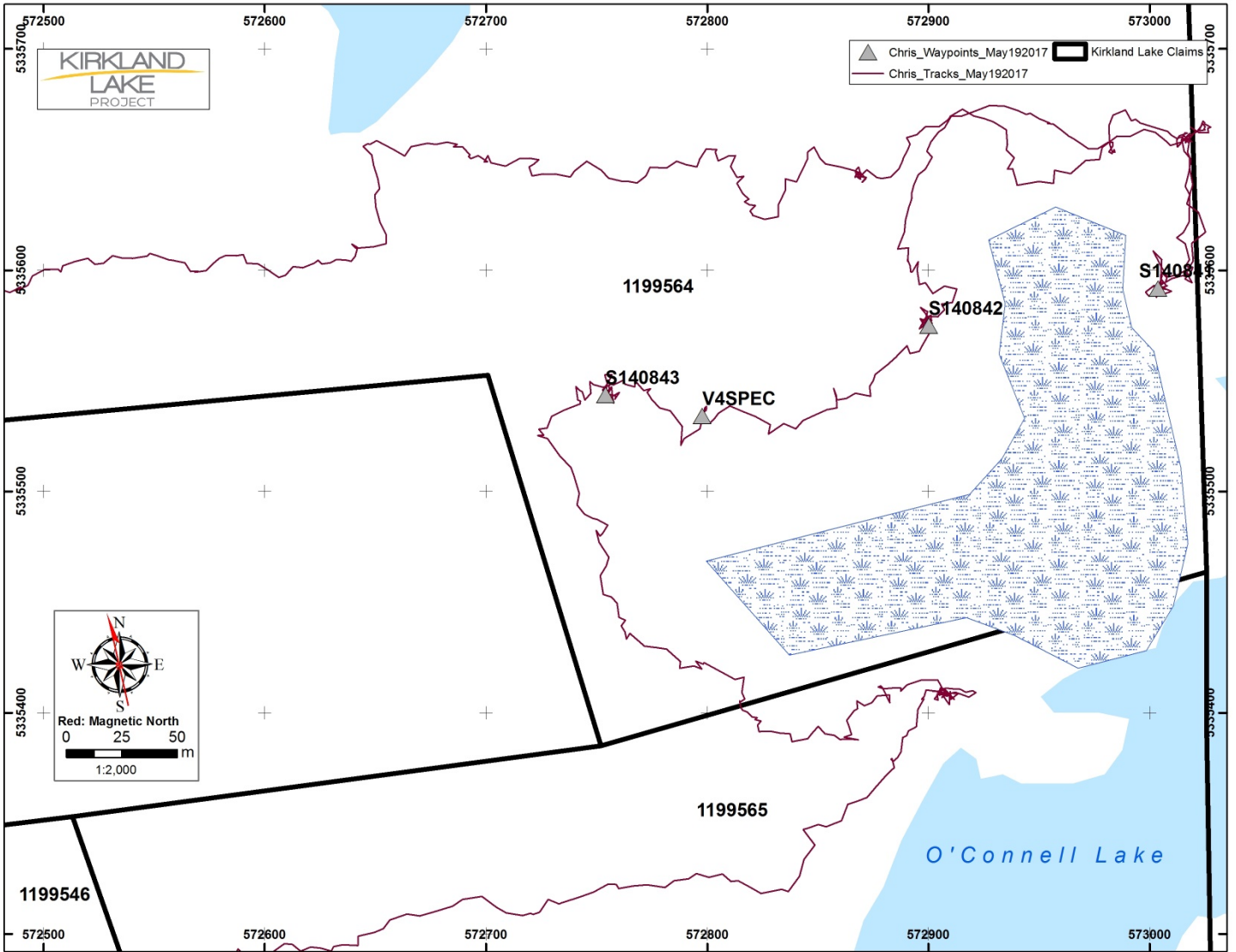


Figure 4: Map showing the GPS tracks and waypoints for the worker's traverses on May 19, 2011 for claim 1199564.



Figure 5: A 1:2,000 scale satellite map showing access and traverse tracks for claim 1199564.