

## **VEGETATION GEOCHEMICAL SURVEY**

### **Introduction**

Unlike the 1996 survey, only vegetation crown twigs were sampled and analysed. This modification to the sampling plan was instituted due to higher contrast geochemical response for most elements in the crown twigs. Data interpretation proceeds from the Edmund Lake belt to the Sharpe Lake belt; results for INAA and ICP-AES are integrated for purposes of discussion.

It should be noted that unlike rocks, soils, lake sediments and other types of geochemical sample media, trees and other plants have certain nutrient requirements in order to survive. This effectively divides elements into essential and non-essential categories. For these reasons, the essential element Zn, which is necessary for plant metabolism, must be interpreted with caution since subtle variations in the Zn concentrations of vegetation samples from site to site may only reflect the general state of the health of the tree. Major differences may indicate the presence of mineralization containing Zn or a Zn-enriched substrate. Tables 1 and 2 summarize essential and non-essential elements and their role in plant function.

### **Sample Collection**

Samples of twigs from the crowns of black spruce (*Picea mariana*) were collected from each sampling site. Sampling was undertaken over an 8-week period between June and August, 1997. At most sites, the vegetation samples were collected from within 20m of the till sampling pit. Black spruce was selected as the target sampling medium on the basis of its ubiquitous presence throughout the survey area and for its usefulness in delineating metal-enriched substrates in other vegetation geochemical surveys (Fedikow and Dunn, 1996).

Black spruce crown twigs were obtained by cutting down the tree and collecting the upper 45 cm of the tree using anvil-type pruning shears. These samples were stored in labelled, brown paper bags and allowed to dry before preparation. A thin 2-3 cm wafer was cut from each tree for age dating and for comparisons between element content and tree age.

### **Sample Preparation and Analysis**

Subsequent to drying, the needles and cones were removed from the crown twigs and stored separately for future study. For twig samples, approximately 50g of material was weighed into aluminum trays and the trays placed into a pottery kiln. The kiln temperature was raised incrementally over a 2-3 hour time period to a maximum of 470°C. This temperature was maintained for 12 hours at which time the vegetation had been

reduced to about 1g of ash without charcoal. One half of this ash was accurately weighed into polyethylene vials and submitted for instrumental neutron activation analysis. The second half of the ash was submitted for ICP-AES analysis subsequent to an aqua regia dissolution. Both analytical approaches to vegetation ashes were undertaken at Activation Laboratories Ltd. (Ancaster, Ontario). The aqua regia dissolution is a total digestion for most metals but is only partial for some elements such as Ni and Zn. The element distribution patterns for elements that are only partially taken into solution by the aqua regia digest are considered to be valid since analytical precision for most elements is acceptable.

Geochemical data is presented in Appendices 1 (ICP-AES) and 4 (INAA); duplicate pair geochemical data is given in Appendices 2 (ICP-AES) and 5 (INAA). Percentile bubble plots are presented in Appendices 3 (ICP-AES) and 6 (INAA).

## **Results**

### **Ash**

Ash contents in black spruce crown twigs is similar for both the Edmund Lake and Sharpe Lake greenstone belts. Ash contents vary between 1.72 – 2.34% and 1.77 – 2.79%, respectively. Interestingly, the highest ash contents coincide with some of the areas of high vegetation metal contents that are also reflected by other sampling media. Examples are in the areas southeast of Little Stull Lake near the Manitoba-Ontario provincial border and on the east shore of Edmund Lake in the Edmund Lake belt and from the Monument Bay and west Sharpe Lake areas in the Sharpe Lake belt.

### **Edmund Lake Belt**

Vegetation geochemical results along the belt vary from multi- to single sample, high to moderate contrast multi-element responses that successfully delineate the location of known mineral deposits, regional structures such as the Wolf Bay Shear Zone (WBSZ) and unique lithologies. The Little Stull Lake area, including the gold deposits on the southwest shore of the lake, is an excellent example of the usefulness of the vegetation geochemical approach. The area is marked by 100<sup>th</sup> percentile values for As (3.8 ppm), Ba (2800 ppm), Pb (64 ppm) and a 98<sup>th</sup> percentile value of 3500 ppm Zn just west of the deposits. The 100<sup>th</sup> and 99<sup>th</sup> percentile values for Zn (4300 ppm and 3600 ppm, respectively) and the 99<sup>th</sup> and 98<sup>th</sup> percentile values of 1500 ppm and 1400 ppm, respectively, are documented from the Ken Bay area as well as east and west of the Little Stull Lake gold deposits. Additional responses include the 100<sup>th</sup> percentile value of 4300 ppm for Sr east of the deposits and a 100<sup>th</sup> percentile value of 14 ppm Sb northwest of the deposits along the WBSZ. Northeast of the deposits on the east shore of Little Stull Lake 100<sup>th</sup> and 99<sup>th</sup> percentile values for Cr (28 ppm and 20 ppm, respectively) are documented. The 100<sup>th</sup>, 99<sup>th</sup> and 98<sup>th</sup> percentile values for Na (3870 ppm, 3380 ppm and 3310 ppm, respectively) occur directly over the Little Stull Lake deposits as well as a 100<sup>th</sup> percentile value of 0.93% Fe. The north and northwest shores of Little Stull Lake are marked by 100<sup>th</sup> percentile values for Fe (0.62%), V (12 ppm, as well as 98<sup>th</sup> percentiles of 10 ppm both east and west of the 100<sup>th</sup> percentile), REE (42.8 ppm, and a 99<sup>th</sup> percentile of 29.4 ppm just west of the gold deposits along the WBSZ) and Hf (1.5 ppm). An Al response of 0.58% (99<sup>th</sup> percentile) must be viewed with caution since twig over the Little Stull Lake deposits as well as a 100<sup>th</sup> percentile value of 0.93% Fe. The north and samples were ashed in aluminum trays and some Al contamination could have affected the samples during preparation. A 99<sup>th</sup> percentile value for Sc (2.2 ppm) at the north end of Little Stull Lake as well as a 99<sup>th</sup> percentile response for Zn (2894 ppm) on the northeast shore and a 98<sup>th</sup> percentile value for K (13.85%) on the north shore are documented. A 100<sup>th</sup> percentile value for Pb (64 ppm) and Cr (21 ppm) occurs on the east and southeast shores of the lake, respectively. A 98<sup>th</sup> percentile response for Br (66 ppm) occurs at the Little Stull Lake gold deposits.

Southeast of the Little Stull Lake area to the Manitoba-Ontario border is an area of significant precious and base metal signatures, as well as responses that could be attributed to unique lithologies such as high-Mg basalt or ultramafic rocks. Base metal signatures are reflected by 99<sup>th</sup> percentile values for Pb (3 responses – 37 ppm) and Ni (156 ppm), and 98<sup>th</sup> percentile values for Fe (clustered at 0.67%), and Cu (378 ppm). Precious metal responses are documented for Au (99<sup>th</sup> and 98<sup>th</sup> percentiles of 27 and 25 ppb, respectively), Sb (99<sup>th</sup> percentile of 10 ppm) and As (98<sup>th</sup> percentile of 2.9 ppm). A high-Mg lithology is suggested by 100<sup>th</sup> and 99<sup>th</sup> percentile responses for Mg (7.64% and 7.16%, respectively), 99<sup>th</sup> and 98<sup>th</sup> percentiles for Cr (16 and 12 ppm, respectively) and two 98<sup>th</sup> percentiles for V (10 ppm). Alteration accompanying base and/or precious metal mineralization or a primary source of rare earth elements may be reflected by 98<sup>th</sup> percentile values for REE (25.3 ppm), Ba (374 ppm), Zr (7 ppm), Sc (2.1 ppm and a 95<sup>th</sup> percentile of 1.7 ppm) and Al (2 responses – 0.51%, contamination?). Ninety-eighth and 95<sup>th</sup> percentile values of 13.85% and 13.24% K, respectively may be indicators of the relative health of the tree (metal-induced stress?) since K is an element essential to metabolism.

Southwest of Little Stull Lake at the belt margin where faulting may characterize the contact between basaltic volcanic rocks and the granitic intrusive terrane, a strong precious metal response is documented. This vegetation geochemical signature is characterized by a 100<sup>th</sup> percentile value for Au (65 ppb), 99<sup>th</sup> percentiles for As (3.2 ppm), and Mn (30854 ppm, as well as a 98<sup>th</sup> percentile of 28837 ppm), and 98<sup>th</sup> percentiles for REE (25.3 ppm), Fe (0.58%) and Rb (750 ppm). A 95<sup>th</sup> percentile for Sb (7 ppm) and a 90<sup>th</sup> percentile for Sr (808 ppm) are also documented at the contact. It is noteworthy that the contact southwest of Little Stull Lake is parallel to the regional trend of the WBSZ.

The deflection point of the WBSZ that occurs approximately midway between the northwest end of Little Stull Lake and Margaret Lake has been hypothesized as representing a dilational zone produced by dextral movement along the WBSZ. The general area of the deflection is marked by moderate contrast precious metal and related responses. In this general area, 100<sup>th</sup> percentile values for Sb (2.6 ppm), Rb (870 ppm) and Cs (78 ppm), 98<sup>th</sup> percentile responses for Au (25 ppb), Ba (2200 ppm), Fe (0.67%), K (13.85%) and a cluster of 98<sup>th</sup> percentile responses (66 ppm) and 95<sup>th</sup> percentiles (59 ppm) for Br. The association of anomalous Br with Au has been documented in previous vegetation geochemical surveys in Saskatchewan and Manitoba. West of the deflection along the WBSZ, a 98<sup>th</sup> percentile value for Ni (147 ppm) is observed. A 100<sup>th</sup> percentile for K (31.9%) occurs southeast of the deflection and a 99<sup>th</sup> percentile (29.5%) is documented to the northwest. Southeast of the deflection along the WBSZ, a 99<sup>th</sup> percentile K response of 15.2% as well as a 98<sup>th</sup> percentile value for Ni (110 ppm) is observed. West and southwest of the deflection, at or near the belt margin a 98<sup>th</sup> percentile response for As (2.9 ppm) and Sr (808 ppm) and a 95<sup>th</sup> percentile for Sb (7 ppm) are documented.

The general area of the periphery of the altered and mineralized Margaret Lake granite intrusion has been recognized as conspicuous on the basis of the 1997 multimedia geochemical survey results and these observations have been re-affirmed by vegetation geochemical signatures. Moreover, significant regional differences are present in the distribution of elements such as Rb and Cs in proximity to the intrusion, when compared to the southeast end of the belt near Little Stull Lake. In the Margaret Lake area, multiple 99<sup>th</sup> (52 ppm) and 98<sup>th</sup> (37 ppm) percentile Cs responses are observed, as well as 100<sup>th</sup> (870 ppm), 99<sup>th</sup> (760 ppm) and 98<sup>th</sup> percentile values for Rb. These responses are clustered about the Margaret Lake intrusion, whereas to the southeast in the Little Stull Lake area geochemical flux is essentially nil. Ni responses about the intrusion are marked by 100<sup>th</sup> (230 ppm), 99<sup>th</sup> (130 ppm), and 98<sup>th</sup> (110 ppm) percentile values. Anomalous peripheral geochemical percentile responses are also observed for Au (98<sup>th</sup> – 25 ppb), Br (100<sup>th</sup> – 71 ppm), Fe (98<sup>th</sup> – 0.67%; 95<sup>th</sup> – 0.61%), Cu (100<sup>th</sup> – 460 ppm; 99<sup>th</sup> – 388 ppm), Mo (100<sup>th</sup> – 5.5 ppm; 99<sup>th</sup> – 4 ppm; 98<sup>th</sup> – 3 ppm), Cd (98<sup>th</sup> – 3.6 ppm), Ag (100<sup>th</sup> – 1.1 ppm), Sr (100<sup>th</sup> – 2800 ppm; 99<sup>th</sup> – 972 ppm), Mn (100<sup>th</sup> – 31996 ppm; 98<sup>th</sup> – 28837 ppm), Ba (100<sup>th</sup> – 650 ppm; 98<sup>th</sup> – 374 ppm), Mg (100<sup>th</sup> – 7.64%), P. (100<sup>th</sup> – 21667 ppm; 98<sup>th</sup> – 20974 ppm), V (98<sup>th</sup> – 10 ppm), Zr (98<sup>th</sup> – 7 ppm), K (13.85%) and a cluster of 100<sup>th</sup> and 99<sup>th</sup> percentile Sb responses (2.6 and 1-2 ppm, respectively distributed between the WBSZ deflection and the Margaret Lake intrusion. Approximately 3 km southeast of the intrusion a 100<sup>th</sup> percentile value for REE (42.8 ppm) is documented and 5 km southeast is the 100<sup>th</sup> percentile response for Zn (3539 ppm). A 100<sup>th</sup> percentile Cd response of 6 ppm occurs south of the intrusion along the WBSZ. Additional responses include a cluster of Ba anomalies that extends south of the east end of the margin of the intrusion to the belt margin on the east that is marked by 100<sup>th</sup> (2800 ppm), 99<sup>th</sup> (2300 ppm) and 98<sup>th</sup> (2200 ppm) percentiles. At the east end of the intrusion is a northeast-southwest trend of 100<sup>th</sup> (69 ppm), 99<sup>th</sup> (20 ppm), 98<sup>th</sup> (17 ppm) and 95<sup>th</sup> (12 ppm) Co percentile values. At the intrusions west end the 99<sup>th</sup> percentile for Na (3380 ppm) occurs along the WBSZ. The magnetite-rich iron formation exposed in outcrop at the west end of Margaret Lake is marked by a 98<sup>th</sup> percentile value for P (20974 ppm).

The Edmund Lake area is characterized by anomalous responses for base-and precious metals as well as unique high-Mg lithologies. The precious metal signature is reflected by a 98<sup>th</sup> percentile value for Au (25 ppb) associated with a 98<sup>th</sup> percentile for Ba (2200 ppm) on the southeast shore south of the WBSZ, as well as a 95<sup>th</sup> percentile for Sb (7 ppm) from the south shore. A strong Cu signature consisting of a 100<sup>th</sup> percentile response (460 ppm) from the central portion of the lake, and two 98<sup>th</sup> percentiles (378 ppm) from the east side of the lake, a 98<sup>th</sup> percentile for Mo (3 ppm) from the south shore and a 98<sup>th</sup> percentile for Ni (110 ppm) from the west shore characterize the base metal responses. Geochemical responses that may be attributed to high-Mg sources include 98<sup>th</sup> percentile values for Cr (16 ppm – west shore), Mg (7.12% - central islands) as well as 100<sup>th</sup> (21667 ppm – central islands) and 98<sup>th</sup> (west shore – 20974 ppm; east shore – 20974 ppm) percentile values for P. The west shore of Edmund Lake is also characterized by 100<sup>th</sup> percentile responses for Ca (40.2%) and K (18.84%) and a 99<sup>th</sup> and 98<sup>th</sup> percentile for Cs (52 and 37 ppm, respectively). The south shore is marked by a 100<sup>th</sup> percentile for Ca (40.2%) and a 98<sup>th</sup> percentile for Ba

(374 ppm) whereas the central islands in Edmund Lake have 98<sup>th</sup> percentiles for Mg (7.12%) and Na (0.20%). A 100<sup>th</sup> percentile value for Mn (31996 ppm) is documented from the east shore of Edmund Lake at the WBSZ.

Other areas of anomalous vegetation geochemical responses include those of Rorke Lake and Kistigan Lake. The northwest shore of Rorke Lake is characterized by 100<sup>th</sup> percentile values for Au (65 ppb), Ag (1.1 ppm) and Zr (8 ppm), 99<sup>th</sup> percentiles for Al (0.52% - contamination?) and Sc (2.2 ppm), and a 10 ppm 98<sup>th</sup> percentile for V. The west shore of Rorke Lake near the Manitoba-Ontario border has a 99<sup>th</sup> percentile Ba response of 388 ppm.

The west end of Kistigan Lake is also marked by an interesting geochemical response consisting of 100<sup>th</sup> percentile values for Mo (5.5 ppm) and Sb (14 ppm) and a 99<sup>th</sup> percentile value for Ba (388 ppm).

Midway between Kistigan Lake and Margaret Lake in an area geologically characterized by Hayes River basalts intruded by an apophysis of Margaret Lake granite, a significant base metal and possible high-Mg lithologic response was documented. A 100<sup>th</sup> percentile response was obtained for Zn (4300 ppm), Cd (6 ppm), Fe (0.93%), Hf (1.5 ppm) and Cr (28 ppm) as well as 99<sup>th</sup> percentile values for Pb (44 ppm), Sc (2.2 ppm) and AlI (0.52% - contamination?). These responses are restricted to a couple of sampling sites in this area.

### **Sharpe Lake Belt**

Multiple vegetation geochemical anomalies are documented from known mineralized zones (Twin Lakes and Seeber River gold deposits), distinctive geophysical responses and unique lithologies in the Sharpe Lake belt. Excellent coincidence between the vegetation responses and those defined by rock, till, b-horizon soil and humus geochemical surveys is observed.

The Monument Bay area, including the north shore at or near the Oxford Lake Group sedimentary-volcanic subgroup contact, as well as the south and west shores are marked by multiple, high contrast geochemical signatures. The base metal response at the north end of the lake is marked by significant percentile responses for Zn (99<sup>th</sup> – 4700 ppm, 98<sup>th</sup> – 3300 ppm), Cu (4 responses, 95<sup>th</sup> – 271 ppm), Pb (98<sup>th</sup> – 26 ppm), Co (98<sup>th</sup> – 10 ppm, 95<sup>th</sup> – 8 ppm) and Ni (99<sup>th</sup> – 100 ppm, 98<sup>th</sup> – 2 responses, 93 ppm). Precious metal responses include Au (95<sup>th</sup> – 2 responses, 17 ppb) and Sb (98<sup>th</sup> – 2 responses, 6 ppm and 95<sup>th</sup> – 5.5 ppm). Other significant responses at the north end of Monument Bay including those that delineate this stratigraphic contact are Ba (100<sup>th</sup> – 2300 ppm, 98<sup>th</sup> – 2100 ppm); Rb (100<sup>th</sup> – 1200 ppm), Al (98<sup>th</sup> – 0.5%; contamination?), Mn (99<sup>th</sup> – 30970 ppm), Zr (99<sup>th</sup> – 8 ppm). The sedimentary-volcanic contact that marks the location of significant gold mineralization in the Twin Lakes area can be traced westward from the north end

of Monument Bay to southern Twin Lakes on the basis of the percentiles for Br (100<sup>th</sup> – 68 ppm, 99<sup>th</sup> – 65 ppm, 98<sup>th</sup> – 63 ppm), K (100<sup>th</sup> – 35.1%, 98<sup>th</sup> – 3 responses, 28.35%), Na (100<sup>th</sup> – 2900 ppm, 99<sup>th</sup> – 2250 ppm, 98<sup>th</sup> – 2230 ppm) and Sr (100<sup>th</sup> – 2 responses, 1150 ppm, 95<sup>th</sup> – 3 responses, 828 ppm).

South of Monument Bay to the Manitoba-Ontario border is another area of base-precious metal response. This includes a 100<sup>th</sup> percentile value for Au (214 ppb) and two 98<sup>th</sup> percentiles for Sb (0.9 ppm albeit at low concentration levels) as well as a base metal association of high percentiles for Cu (100<sup>th</sup> – 352 ppm) Zn (98<sup>th</sup> – 3300 ppm) and Fe (98<sup>th</sup> – 0.44%). A 98<sup>th</sup> percentile for Sr (898 ppm) is also documented from this area. Perhaps the most significant response in terms of delineating highly prospective areas is the response obtained for K. Elevated K signatures are localized at the contact between Oxford Lake Group sedimentary rocks and Hayes River basalts as well as the contact between the sedimentary subgroup and the granitic intrusive rocks. The anomalies trend westward to southern Makataysip Lake and are marked by 99<sup>th</sup> (28.9%), 98<sup>th</sup> (28.35%) and 95<sup>th</sup> (26.40%) percentiles. This trend is similar to that for the gold mineralized Oxford Lake Group sedimentary-volcanic subgroup in the north.

The Twin Lakes area is marked by a significant precious metal assemblage in the area of the known gold mineralization but also westward along the Oxford Lake Group sedimentary-volcanic contact. The significant elevated percentile responses include Au (99<sup>th</sup> – 32 ppb), As (99<sup>th</sup> – 4 ppm), Co (98<sup>th</sup> – 10 ppm), Cs (95<sup>th</sup> – 15 ppm), Sb (99<sup>th</sup> – 7.5 ppm, 95<sup>th</sup> – 5.5 ppm), Sr (100<sup>th</sup> – 1600 ppm, 99<sup>th</sup> – 1400 ppm) and a 98<sup>th</sup> percentile for Cr (14 ppm).

The area south of Twin Lakes is also marked by multiple base and precious metal responses in crown twig samples. These responses may be reflecting mineralized east-west trending structures, an unrecognized sedimentary-volcanic contact or the probable sheared south margin of the belt (sedimentary-granite contact) and associated mineralization. These responses include elevated percentiles for Au (98<sup>th</sup> – 30 ppb, 95<sup>th</sup> – 2 responses, 20 ppb), As (99<sup>th</sup> – 4 ppm, 98<sup>th</sup> – 2 responses, 3.8 ppm, 95<sup>th</sup> – 3.4 ppm), Sb (99<sup>th</sup> – 1 ppm) and a low 99<sup>th</sup> percentile of 1.2 ppm for Ag. Base metal signatures include Zn (100<sup>th</sup> – 4700 ppm, 95<sup>th</sup> – 2 responses 2900 ppm), Cu (98<sup>th</sup> – 284 ppm), Pb (100<sup>th</sup> – 36 ppm), Mo (100<sup>th</sup> – 20 ppm, 98<sup>th</sup> – 2.5 ppm) and Fe (100<sup>th</sup> – 0.78%, 98<sup>th</sup> – 0.52%). Other significant associated responses include elevated percentiles for REE (100<sup>th</sup> – 28.9 ppm), Cs (100<sup>th</sup> – 37 ppm, 98<sup>th</sup> – 22 ppm), Sc (100<sup>th</sup> – 2.1 ppm, 98<sup>th</sup> – 1.4 ppm), Rb (98<sup>th</sup> – 2 responses, 780 ppm, 95<sup>th</sup> – 640 ppm), Ba (98<sup>th</sup> – 2 responses, 2100 ppm), Mn (100<sup>th</sup> – 34296 ppm, 98<sup>th</sup> – 30798 ppm), Cr (99<sup>th</sup> – 17 ppm), V (100<sup>th</sup> – 12 ppm, 98<sup>th</sup> – 10 p ppm), Zr (99<sup>th</sup> – 2 responses, 8 ppm), Mg (99<sup>th</sup> – 7.86%), Na (98<sup>th</sup> – 2 responses, 0.10%) and Al (100<sup>th</sup> – 0.64%, 98<sup>th</sup> – 0.5%, 95<sup>th</sup> – 2 responses 0.46%; contamination from ashing tray?).

The west shore of Makataysip Lake is marked by a circular 6700 nT aeromagnetic anomaly that is marked by a 100<sup>th</sup> percentile response for Ni (120 ppm) and a 95<sup>th</sup> percentile for Fe (0.45%) as well as elevated

percentiles for Al (99<sup>th</sup> – 0.52%), 98<sup>th</sup> percentiles for Na (0.10%), Br (2 responses, 63 ppm) and Ca (28.3%). A 95<sup>th</sup> percentile for Cs (15 ppm) was also documented in this area.

The area south and west of Makataysip Lake is characterized geologically by the contact between the Oxford Lake Group sedimentary subgroup and the Hayes River basalt and the Hayes River basalt – granite contact. Consistent with the Oxford Lake Group sedimentary – volcanic contact and the contact with granites at the southern margin of the belt, the area south of Makataysip Lake contains significant base and precious metal vegetation geochemical signatures. A group of elevated percentiles for precious metals includes Au (98<sup>th</sup> – 30 ppb, 95<sup>th</sup> – 20 ppb), As (95<sup>th</sup> – 2 responses, 3.4 ppm), Sb (99<sup>th</sup> – 1 ppm), Ag (100<sup>th</sup> – 1.4 ppm) and Br (100<sup>th</sup> – 110 ppm). The base metal assemblage is represented by Cu (99<sup>th</sup> – 286 ppm, 98<sup>th</sup> – 284 ppm), Pb (99<sup>th</sup> – 30 ppm), Ni (99<sup>th</sup> – 120 ppm, 98<sup>th</sup> – 104 ppm) and Fe (98<sup>th</sup> – 0.50%, 95<sup>th</sup> – 0.45%). Associated responses include K (100<sup>th</sup> – 20.44%), Hf (100<sup>th</sup> – 1.2 ppm), and 98<sup>th</sup> percentiles for Mn (30798 ppm), Ba (2100 ppm and two 95<sup>th</sup> percentiles, 1800 ppm), Mg (two 98<sup>th</sup> – 7.4% and three 95<sup>th</sup> – 7.14%), Rb (780 ppm) and a 95<sup>th</sup> percentile for Cr (12 ppm). A cluster of elevated Cs responses are localized along the southern margin of the belt, as well as at the sedimentary-volcanic rock contact. These include the 100<sup>th</sup> (37 ppm), 99<sup>th</sup> (25 ppm) and 98<sup>th</sup> (3 responses – 22 ppm) percentiles.

Similarly elevated precious and base metal responses were isolated in the east Sharpe Lake and west-central Sharpe Lake areas. The precious metal signatures of Au (98<sup>th</sup> – 30 ppb) and As (100<sup>th</sup> – 5.7 ppm, 98<sup>th</sup> – 3.8 ppm) and the base metal responses of Pb (98<sup>th</sup> – 26 ppm), Cd (99<sup>th</sup> – 3.4 ppm), Fe (99<sup>th</sup> – 0.46%) and an east-west linear trend of 99<sup>th</sup> (100 ppm), 98<sup>th</sup> (93 ppm) and 95<sup>th</sup> (82 ppm) percentiles for Ni are generally associated with long strike length airborne EM conductors. Associated responses include elevated percentiles for Ba (98<sup>th</sup> – 2 responses, 1800 ppm), Cr (98<sup>th</sup> – 14 ppm), Mn (98<sup>th</sup> – 2 responses 30798 ppm), Mg (100<sup>th</sup> – 8.11%), V (98<sup>th</sup> – 10 ppm) and P (98<sup>th</sup> – 2 responses, 18462 ppm). In the same manner that Rb and Cs defined significant regional differences in concentrations between the west end of the Edmund Lake belt (Margaret Lake area), and the east end of the belt in Manitoba (Little Stull Lake area), significantly elevated P concentrations are documented from the west end of the Sharpe Lake belt; in contrast P contents are very low east of Sharpe Lake.

The association of elevated vegetation geochemical responses with airborne EM conductors observed at Sharpe Lake is maintained in the west-central portion of the belt and is best illustrated by the results from the area south of Webber Lake. The area is characterized by elevated percentiles for Zn (100<sup>th</sup> – 4700 ppm), Cu (100<sup>th</sup> – 352 ppm, 98<sup>th</sup> – 284 ppm), Pb (100<sup>th</sup> – 36 ppm), Fe (100<sup>th</sup> – 0.68%), REE (100<sup>th</sup> – 28.9 ppm, 98<sup>th</sup> – 17.7 ppm), Mg (100<sup>th</sup> – 8.11%), Cr (99<sup>th</sup> – 2 responses, 12 ppm), V (100<sup>th</sup> – 12 ppm), Mn (100<sup>th</sup> – 34296 ppm), Na (100<sup>th</sup> – 2900 ppm), Sc (100<sup>th</sup> – 2.1 ppm), Sr (98<sup>th</sup> – 898 ppm) and Rb (99<sup>th</sup> – 850 ppm, 98<sup>th</sup> – 780 ppm). Additional responses in this part of the belt include Ba (98<sup>th</sup> – 2 responses), Ag (100<sup>th</sup> – 1.4 ppm), K (99<sup>th</sup> – 28.9%, 98<sup>th</sup> – 28.35%), Cd (100<sup>th</sup> – 3.8 ppm, 99<sup>th</sup> – 3.4 ppm, 98<sup>th</sup> – 3 ppm), P (100<sup>th</sup> – 19284 ppm, 98<sup>th</sup>



– 3 responses, 18462 ppm) and Ba (100<sup>th</sup> - 478 ppm). Linear east-west trending anomalies are defined in the area west of Sharpe Lake to south of Webber Lake for Co (99<sup>th</sup> – 2 responses, 13 ppm, 98<sup>th</sup> – 2 responses, 11 ppm, 95<sup>th</sup> – 9 ppm) and Cr (98<sup>th</sup> – 3 responses, 14 ppm, 95<sup>th</sup> – 12 ppm). Bleached, yellow stained, fractured, pyritic felsic intrusions near the west end of Sharpe Lake (sites 249 and 266) are marked by the 100<sup>th</sup> percentile responses for Au (214 ppb), Mo (100<sup>th</sup> – 20 ppm), Ba (100<sup>th</sup> – 478 ppm) and Sb (99<sup>th</sup> – 1 ppm).

The small area of greenstone mapped north of the west end of Sharpe Lake and centered on Barclay Lake is characterized by an areally restricted, circular aeromagnetic response on its west shore. Vegetation geochemical responses from this area are marked by elevated percentiles of Fe (98<sup>th</sup> – 2 responses, 0.50%), Cr (100<sup>th</sup> – 21 ppm), Co (100<sup>th</sup> – 15 ppm, 98<sup>th</sup> – 11 ppm), Ni (100<sup>th</sup> – 128 ppm) and P (100<sup>th</sup> – 19284 ppm). These responses are suggestive of high-Mg source rocks; a carbonate-altered and epidotized mafic intrusion (diorite/gabbro) was documented from limited exposure on the west shore of Barclay Lake. Additional responses in the area include a base metal signature Zn (98<sup>th</sup> – 3200 ppm) and Pb (98<sup>th</sup> – 26 ppm), a 98<sup>th</sup> percentile response for Au (30 ppb), a 98<sup>th</sup> and 95<sup>th</sup> percentile for REE (17.8 and 16 ppm, respectively), a 98<sup>th</sup> percentile for K (18%) and three 98<sup>th</sup> percentiles for Ba (442 ppm).

## Synthesis

The proliferation of multi-element, multi-sample high contrast vegetation geochemical signatures, defined in both greenstone belts surveyed in 1997, is somewhat surprising given the abundance of peat lands and other areas of significant and hostile clay-rich surficial deposits. This point is given further relevance by the fact that 80% of all b-horizon soil samples collected in 1997 were developed in lacustrine clays deposited in glacial Lake Agassiz. Clearly, the nature of the surficial deposits in the study area has not proven to be a significant barrier to element migration and subsequent acquisition by the relatively shallow root systems of the black spruce (*Picea mariana*) trees. Moreover, the coincidence between areas of anomalous geochemical response for bedrock and vegetation samples indicates the vegetation anomalies are reflecting bedrock sources of metal concentrations associated with mineralization and related alteration zones, unique geophysical signatures and lithologies.

It is of considerable interest that the elements reflecting bedrock geological features of interest to mineral explorationists are defined on regional and more localized scales by both essential and non-essential elements. Examples of this are provided by both the Edmund Lake and Sharpe Lake greenstone belts. The area of the Margaret Lake intrusion and in general the west end of the Edmund Lake belt is marked by highly elevated Rb and Cs responses whereas the east end of the belt has very low contents of these elements. Rb is an element essential for plant metabolism whereas Cs is a non-essential element. A regional P enrichment west of the east end of Sharpe Lake in the Sharpe Lake belt and the low contents of this element in

vegetation samples collected between Sharpe Lake and the Manitoba-Ontario border is based upon the geochemical flux of an element essential for energy metabolism in vegetation. Regional stratigraphic-structural features such as the contact between (i) Oxford Lake Group sedimentary and volcanic rocks (ii) Oxford Lake Group sedimentary rocks and Hayes River basalt, and (iii) belt margins are well defined by vegetation geochemical responses which include “ore and ore-related” elements (Au, As, Sb, Cu, Pb, Zn), elements indicative of unique lithologies (Ni, Co, Cr, Fe, P) and by essential elements such as K (plant metabolism). The entire contact of the Oxford Lake Group sedimentary rocks with associated basalts can be traced in its entirety by the K response in crown twigs. This is particularly relevant because it is this contact and associated faults that localize gold mineralization at the Twin Lakes and Seeber River deposits.

Localized, point-specific vegetation anomalies that correlate to bedrock sources are recognized throughout both greenstone belts with examples from the Wolf Bay Shear Zone (WBSZ) in the Edmund Lake belt, including the Little Stull Lake gold deposits and a gold occurrence in the Ken Bay area of Little Stull Lake, and the Twin Lakes and Seeber River gold deposits in the Sharpe Lake belt. An interesting mineral occurrence characterized by bleached, yellow-stained, fractured felsic intrusive rocks with up to 20% disseminated and veinlet pyrite mineralization was observed in an intensely burned area of the north shore of west central Sharpe Lake. Crown twig samples from this area are anomalous in Au, Mo, Ba and Sb and correspond to anomalies in these elements as well as U and Th in other sample media. Platinum group elements should be determined on rock chip samples of this site.

## **Conclusions**

This vegetation geochemical survey based on the INA and ICP-AES analysis of ashed samples of the crown twigs of the black spruce (*Picea mariana*) tree indicates:

- 1) geochemical flux in the ashed vegetation datasets define metallogenetically significant regional features as well as more localized bedrock point source mineralized zones, unique lithologies and anomalous magnetic and electromagnetic responses;
- 2) the vegetation geochemical responses are based upon the variation in concentration of essential and/or non-essential elements;
- 3) the coincidence of vegetation geochemical anomalies with those defined by the analysis of outcrop rock chip, b-horizon soil and humus samples suggests the relatively hostile, clay-rich surficial deposits are not necessarily “geochemically impenetrable” by the shallow root system of the black spruce tree;

- 4) the observation of coincident vegetation and outcrop rock chip geochemical anomalies is also indicative of the lack of relevance of the observed range in ash content (1.7 – 2.7%) of crown twigs as pertains to the recognition of mineralized sites;
- 5) new areas of interest, partially afforded by an intense forest fire along parts of the north shore of Sharpe Lake, have been identified by the survey and include altered and mineralized felsic intrusions at west Sharpe Lake (U-REE-Au), the Oxford Lake Group sedimentary contact (Au-Ag), central and west shores of Edmund Lake (Au, Ni), the periphery of the Margaret Lake granite intrusion (base and precious metals), site of the WBSZ deflection (Au), Ken Bay area of Little Stull Lake (Au), and an area midway between Kistigan Lake and Margaret Lake (Au, Ni). The Barclay Lake outlier should be reconnoitered to assess the high-Mg, base and precious metal vegetation geochemical anomalies.

Table 1. Essential and non-essential elements determined by INAA.

<b>Element</b>	<b>Essential/Non-Essential/Comments</b>
Au	Non-essential
Ag	Non-essential
As	Essential/metabolism of carbohydrates
Ba	Non-essential
Br	Non-essential
Ca	Essential/cell wall construction
Co	Essential/major nutrient fixation
Cr	Non-essential
Cs	Non-essential
Fe	Essential/photosynthesis, chlorophyll
Hf	Non-essential
K	Essential/metabolism
Mo	Essential
Na	Non-essential
Rb	Essential
Sb	Non-essential
Sc	Non-essential
Se	Essential
Sn	Non-essential
Sr	Essential
Ta	Non-essential
Th	Non-essential
U	Non-essential
W	Non-essential
Zn	Essential/carbohydrate and protein metabolism
REE	Non-essential

Table 2. Essential and non-essential elements determined by ICP-AES

<b>Element</b>	<b>Essential/Non-Essential/Comment</b>
Al	Non-essential
B	Essential/plant growth, sugar translocation
Be	Non-essential
Cd	Non-essential
Cu	Essential/respiration, photosynthesis
Li	Essential/metabolism
Mg	Essential/photosynthesis, enzyme reaction
Mn	Essential
Ni	Non-essential
P	Essential/energy metabolism
Pb	Essential in small amounts/cell walls (?)
Ti	Essential/photosynthesis
V	Non-essential

## Appendix 1

### Black Spruce (*Picea mariana*) Crown Twig Geochemistry: Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP- AES), Analyses for Ashed Samples

Sample Site	UTM		Ash %	Ag ppm	Cd ppm	Cu ppm	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm	Al %	Ba ppm	Co ppm	Cr ppm	Fe %
	EAST	NORTH														
BSC-1	517844	6046787	1.80	0.60	2.00	258	12986	2.0	34	24	2478	0.40	158	4	4	0.50
BSC-2	520028	6046856	1.69	0.40	2.60	206	18498	2.0	72	26	1772	0.58	170	8	10	0.62
BSC-3	522022	6045835	1.60	0.25	2.40	188	28837	2.5	59	54	2329	0.42	324	5	21	0.47
BSC-4	523123	6047360	1.87	0.20	1.20	190	11296	2.0	16	6	2032	0.12	248	2	4	0.18
BSC-5	529662	6044145	1.89	0.20	1.60	186	11070	2.0	36	20	1882	0.24	388	4	4	0.28
BSC-6	518401	6043035	1.90	0.20	0.50	88	11372	2.0	8	10	2818	0.18	202	1	2	0.26
BSC-7	517331	6040220	1.77	0.20	0.50	328	26634	2.0	56	8	2562	0.12	276	6	6	0.14
BSC-8	524367	6055073	1.77	0.20	1.20	278	11694	2.0	28	8	2238	0.12	218	2	2	0.16
BSC-9	524733	6056170	1.94	1.10	0.80	212	15946	5.5	30	10	2118	0.16	319	4	3	0.23
BSC-10	525113	6057420	1.83	0.40	1.80	298	12542	2.0	30	12	2242	0.22	170	6	4	0.26
BSC-11	522988	6055725	1.81	0.20	0.50	213	13206	2.0	98	12	1888	0.23	197	4	1	0.18
BSC-12	519560	6055914	2.02	0.20	0.50	180	17146	2.0	18	8	1580	0.10	232	2	2	0.14
BSC-13	520245	6058104	1.72	0.20	0.50	190	20036	2.0	58	10	2136	0.18	190	4	4	0.20
BSC-14	511198	6058043	1.81	0.60	3.80	190	6426	2.0	118	44	1662	0.52	206	8	16	0.58
BSC-15	502125	6054351	2.08	0.20	1.40	218	18754	2.0	78	6	1292	0.08	242	14	2	0.12
BSC-16	501813	6056254	1.78	0.20	1.20	170	18152	2.0	40	14	1952	0.20	218	4	2	0.22
BSC-17	501778	6057331	2.14	0.20	0.50	228	16560	2.0	48	4	1340	0.18	250	6	2	0.12
BSC-18	502316	6058450	1.87	0.20	1.20	166	27270	2.0	100	10	1824	0.26	228	14	2	0.20
BSC-19	503981	6058302	1.69	0.20	1.60	154	16846	2.0	88	18	1652	0.48	160	10	6	0.36
BSC-20	504550	6057806	1.81	0.20	2.40	388	27798	2.0	82	2	2262	0.12	160	14	2	0.14
BSC-21	510943	6056465	1.59	0.20	1.60	212	14380	2.0	64	14	1972	0.26	158	2	4	0.26
BSC-22	509841	6054884	1.74	0.20	1.40	174	10824	2.0	30	16	1850	0.28	190	2	4	0.34
BSC-23	509948	6053778	1.82	0.20	1.20	254	22592	2.0	64	10	1718	0.26	214	10	4	0.24
BSC-24	509040	6054136	1.79	0.20	3.60	242	21850	2.0	74	16	2028	0.44	234	6	4	0.34
BSC-25	509160	6053238	1.87	0.20	3.40	130	15610	2.0	30	22	2336	0.48	202	4	6	0.46
BSC-26	507026	6053858	1.63	0.20	1.20	264	19988	2.0	78	8	1728	0.24	216	4	4	0.20
BSC-27	503212	6061166	2.00	0.40	1.40	231	15253	3.0	92	13	1737	0.34	312	10	3	0.27
BSC-28	500798	6058006	1.80	0.60	6.00	266	31436	2.0	102	4	1906	0.20	278	56	2	0.16
BSC-29	500018	6058670	1.77	0.20	1.40	286	22538	2.0	66	16	2204	0.34	218	6	4	0.30
BSC-30	498526	6059429	1.88	0.20	0.55	238	18817	2.0	37	9	2264	0.18	233	4	2	0.22
BSC-31	494124	6062419	2.04	0.40	1.00	238	16968	2.0	30	6	1522	0.12	174	6	6	0.16
BSC-32	495219	6061599	1.72	0.20	1.40	274	18336	2.0	96	8	2598	0.30	176	8	6	0.18
BSC-33	502168	6064279	1.90	0.40	1.80	260	19180	2.0	102	10	2270	0.24	190	8	4	0.20
BSC-34	519499	6053552	2.22	0.20	1.60	126	13376	2.0	36	26	2052	0.38	274	2	6	0.40
BSC-35	517033	6052297	2.09	0.20	2.60	162	23958	2.0	46	18	2300	0.28	408	4	4	0.32
BSC-36	514597	6053054	1.78	0.20	1.60	138	15230	2.0	22	20	2016	0.24	280	2	4	0.30
BSC-37	512445	6053053	1.37	0.20	2.20	174	20632	2.0	76	16	2650	0.50	194	4	6	0.38
BSC-38	511021	6053344	1.66	0.60	1.90	166	17376	2.0	60	17	2414	0.41	181	4	4	0.41
BSC-39	508748	6056431	2.01	0.20	2.40	204	12832	2.0	84	12	1680	0.26	222	8	4	0.20
BSC-40	506940	6057166	1.58	0.20	1.20	261	28221	2.0	66	14	2771	0.31	334	2	5	0.31
BSC-41	507184	6058780	1.74	0.20	2.40	178	21728	2.0	26	26	2578	0.46	198	2	6	0.48
BSC-42	508372	6058594	1.55	0.90	2.20	245	20563	2.0	30	13	3539	0.24	146	4	4	0.30
BSC-43	504203	6061045	1.69	0.40	0.50	286	19316	2.0	88	12	1908	0.22	178	10	4	0.22
BSC-44	503423	6060019	1.71	0.40	2.60	460	21791	2.0	79	15	1879	0.31	154	11	4	0.26
BSC-45	501781	6059766	1.76	0.80	1.00	214	16132	2.0	96	4	1822	0.16	208	12	4	0.14
BSC-46	499940	6063989	1.81	0.40	2.20	198	6872	2.0	162	14	1382	0.42	168	6	8	0.24
BSC-47	507524	6062152	1.44	0.25	1.70	259	22690	2.5	108	17	2002	0.22	262	5	7	0.26
BSC-48	505621	6063322	2.25	0.80	1.20	259	4143	4.0	147	7	1315	0.19	259	18	6	0.16
BSC-49	505397	6061922	1.65	0.25	3.20	142	12086	5.0	76	24	2009	0.37	203	2	5	0.42
BSC-50	505247	6059379	1.89	0.60	1.40	202	12182	2.0	62	8	1996	0.24	170	6	2	0.20
BSC-51	504271	6063350	1.96	0.40	1.00	246	8540	2.0	20	8	1446	0.14	180	4	4	0.20
BSC-52	504799	6056393	1.60	0.40	1.05	253	21581	2.0	62	13	2062	0.30	216	5	4	0.29
BSC-53	504700	6054812	1.54	0.20	1.40	189	17721	2.0	86	16	2174	0.32	261	4	7	0.27
BSC-54	486916	6066031	1.78	0.80	1.70	225	9956	2.0	61	13	1846	0.23	242	4	4	0.25
BSC-55	485756	6066892	1.98	0.40	2.20	300	23194	2.0	42	10	2164	0.20	216	8	4	0.22
BSC-56	485088	6068682	2.28	0.20	2.60	238	12532	2.0	76	18	1798	0.20	196	6	10	0.26
BSC-57	485524	6066062	1.76	0.40	2.00	378	31996	2.0	60	8	2888	0.22	170	8	4	0.22
BSC-58	485360	6065468	1.92	0.40	1.40	336	17326	2.0	42	12	2058	0.18	232	6	4	0.20
BSC-59	500719	6060166	1.99	0.40	1.00	204	16628	2.0	82	12	1242	0.26	216	6	4	0.26
BSC-60	499348	6060438	1.96	0.40	0.50	158	12966	2.0	102	12	1084	0.32	192	8	4	0.22

Sample Site	UTM		Ash	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	Ba	Co	Cr	Fe
	EAST	NORTH	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	%
BSC-61	497206	6060852	1.86	1.00	1.50	131	8225	3.0	18	17	1997	0.29	650	2	4	0.27
BSC-62	496583	6059870	1.75	0.20	0.50	202	25282	2.0	104	12	2368	0.34	284	6	4	0.28
BSC-63	495649	6062459	1.67	0.80	1.40	168	9650	2.0	20	12	1620	0.20	332	2	4	0.24
BSC-64	495880	6064914	1.35	0.35	2.60	222	10898	3.0	20	17	2140	0.31	336	6	6	0.37
BSC-65	498817	6064616	1.66	0.60	1.70	323	19461	2.0	63	10	2058	0.19	223	10	4	0.19
BSC-66	491433	6062854	1.75	0.60	1.00	278	17202	2.0	34	12	1482	0.18	188	4	4	0.20
BSC-67	491159	6063714	1.68	0.20	1.10	176	20292	2.0	112	19	1905	0.40	241	10	6	0.28
BSC-68	492958	6064176	1.64	0.20	1.60	182	4658	2.0	38	14	1722	0.24	262	2	4	0.24
BSC-69	494161	6064535	1.79	0.20	0.50	230	15342	2.0	106	8	1958	0.32	172	8	6	0.20
BSC-70	492821	6062333	1.72	0.20	1.20	234	19240	2.0	44	14	2182	0.24	186	2	4	0.30
BSC-71	518287	6046419	1.75	0.60	2.20	194	9590	2.0	26	30	2852	0.36	188	4	6	0.50
BSC-72	518901	6044811	2.11	0.40	0.50	192	7124	2.0	22	8	2138	0.12	168	8	4	0.18
BSC-73	520311	6044617	1.72	0.20	1.20	124	16404	2.0	18	22	2396	0.22	138	2	6	0.32
BSC-74	521245	6042332	1.95	0.20	1.20	146	15816	2.0	22	16	2456	0.18	138	2	4	0.26
BSC-75	520867	6044001	2.09	0.20	1.10	139	19732	2.0	24	12	2309	0.12	137	1	6	0.19
BSC-76	522120	6041844	2.06	0.20	0.50	40	11038	2.0	8	4	3118	0.06	158	2	2	0.14
BSC-78	522282	6036707	1.83	0.20	1.80	132	13156	2.0	28	24	2510	0.36	270	4	4	0.42
BSC-79	523264	6036507	1.83	0.20	1.00	186	17272	2.0	30	20	2028	0.24	178	2	12	0.36
BSC-80	522574	6036479	1.90	0.20	1.20	214	11588	2.0	26	14	2286	0.20	150	2	10	0.28
BSC-81	519985	6039050	2.11	0.80	0.50	234	5574	2.0	14	8	1560	0.12	142	2	6	0.18
BSC-82	521310	6040504	1.62	0.40	2.20	302	8622	2.0	42	30	2624	0.34	162	4	14	0.50
BSC-83	521313	6039495	2.14	0.20	1.60	140	7656	2.0	22	22	1844	0.20	212	2	4	0.30
BSC-84	521039	6038827	2.02	0.20	2.40	156	13078	2.0	26	32	1410	0.34	190	4	4	0.46
BSC-85	521819	6038559	2.04	0.40	1.80	166	25582	2.0	52	34	1610	0.36	342	4	4	0.44
BSC-86	523226	6037995	2.06	0.40	1.40	230	15550	2.0	34	14	1740	0.22	184	2	8	0.30
BSC-87	520938	6037469	1.87	0.40	1.00	340	9412	2.0	34	16	2664	0.20	184	4	10	0.28
BSC-88	520527	6041691	1.77	0.20	0.70	213	17265	2.0	46	30	2259	0.37	270	5	6	0.42
BSC-89	523975	6039555	1.89	0.20	1.60	222	20904	2.0	156	30	1812	0.50	78	8	6	0.50
BSC-90	523174	6042220	1.85	0.20	2.00	220	21508	2.0	30	32	2194	0.32	282	4	6	0.42
BSC-91	518535	6038263	1.68	0.20	1.00	200	22436	2.0	96	10	2100	0.28	164	10	4	0.24
BSC-92	520156	6037478	1.95	0.20	2.20	144	11598	2.0	24	30	2300	0.46	200	4	6	0.54
BSC-93	520504	6036253	2.02	0.20	2.30	197	26626	2.0	48	37	2366	0.51	320	4	6	0.55
BSC-94	522084	6035823	2.34	0.60	0.50	128	6084	2.0	20	6	1510	0.10	202	1	2	0.12
BSC-95	519219	6039836	1.82	0.20	1.00	160	15324	2.0	74	10	2370	0.16	166	1	6	0.22
BSC-96	516558	6040903	1.84	0.20	1.40	116	8002	2.0	14	20	2384	0.30	222	2	4	0.34
BSC-97	516780	6043256	2.01	0.40	0.50	122	12018	2.0	20	6	1938	0.12	186	2	2	0.16
BSC-98	517540	6044424	1.81	0.20	1.20	146	14790	2.0	28	12	2364	0.22	108	2	8	0.30
BSC-99	517575	6045717	1.87	0.20	2.00	140	6812	2.0	34	26	2842	0.34	216	4	10	0.38
BSC-100	516705	6045308	1.85	0.20	1.60	150	15052	2.0	32	20	2466	0.26	244	2	4	0.32
BSC-101	518918	6036134	1.67	0.40	2.80	164	6188	2.0	30	36	2838	0.40	214	4	6	0.46
BSC-102	527707	6043021	1.98	0.20	1.60	136	26226	2.0	30	14	2314	0.24	234	2	4	0.30
BSC-103	528252	6043105	1.89	0.20	1.60	132	12796	2.0	46	32	2606	0.48	230	4	6	0.50
BSC-104	527779	6044102	1.89	0.20	0.50	170	16108	2.0	32	16	1860	0.16	274	4	8	0.20
BSC-105	525805	6044636	1.82	0.20	2.40	88	17348	2.0	24	36	2894	0.38	374	4	10	0.42
BSC-106	529083	6046462	2.13	0.20	1.80	172	17652	2.0	18	6	1304	0.08	158	4	4	0.12
BSC-107	528059	6047170	1.59	0.20	1.40	146	14150	2.0	38	18	2066	0.40	162	4	6	0.38
BSC-108	522025	6044072	1.70	0.20	1.60	278	25004	2.0	38	12	1782	0.12	286	2	6	0.16
BSC-109	532452	6050373	1.94	0.40	1.00	330	14782	2.0	68	6	2148	0.22	120	4	6	0.20
BSC-110	531121	6050631	1.73	0.20	0.85	228	21230	2.0	103	9	1993	0.26	93	7	3	0.20
BSC-111	527183	6049725	2.11	0.30	2.35	179	19214	3.0	54	13	1966	0.19	320	1	3	0.22
BSC-112	524659	6049276	1.81	0.20	2.40	150	26390	2.0	40	32	1894	0.52	240	4	6	0.54
BSC-113	525825	6049073	1.63	0.20	3.60	162	18992	2.0	32	16	1844	0.30	264	2	4	0.28
BSC-114	522154	6047887	1.85	0.40	0.50	154	15144	2.0	36	14	2186	0.26	246	2	8	0.28
BSC-115	476770	6068319	1.74	0.40	1.80	284	13516	2.0	70	22	1710	0.42	108	6	10	0.36
BSC-116	476939	6067881	1.89	0.40	1.60	134	11644	2.0	32	18	1398	0.26	226	4	4	0.30
BSC-117	476804	6064944	2.08	0.80	1.20	250	15956	2.0	54	4	1190	0.08	158	4	4	0.10
BSC-118	476238	6065100	1.95	0.80	1.00	154	13446	2.0	20	8	1478	0.12	254	2	2	0.16
BSC-119	477063	6066473	1.92	0.40	1.60	272	8290	2.0	166	8	1154	0.28	122	12	4	0.18
BSC-120	478086	6066782	1.79	0.40	1.60	260	17794	2.0	26	12	2254	0.22	176	6	10	0.26
BSC-121	484469	6064950	1.95	0.40	1.60	142	7150	2.0	36	22	1304	0.22	178	4	4	0.26
BSC-122	483447	6064669	2.27	0.50	1.40	156	7324	3.0	62	17	1361	0.21	349	9	1	0.20
BSC-123	480778	6065799	1.73	0.20	1.20	140	8728	2.0	28	14	1156	0.18	182	2	8	0.22
BSC-124	481778	6066491	1.52	0.40	2.00	416	25368	2.0	30	16	2578	0.26	202	6	6	0.30
BSC-125	480838	6068726	1.59	0.40	1.80	215	11322	2.0	78	16	2202	0.23	127	4	4	0.27
BSC-126	480508	6066960	1.70	0.40	1.90	334	16466	2.0	38	13	2314	0.25	118	6	4	0.29
BSC-127	512649	6046145	1.56	0.20	1.50	145	21893	2.0	40	21	1774	0.34	178	4	6	0.38
BSC-128	512908	6048360	2.11	0.20	1.60	138	8136	2.0	28	20	2014	0.26	144	4	4	0.32
BSC-129	514002	6047001	1.98	0.80	1.60	120	9446	2.0	22	26	2600	0.38	258	4	6	0.40
BSC-130	514803	6046016	1.88	0.20	1.40	140	20622	2.0	38	24	1582	0.38	266	2	4	0.42
BSC-131	515458	6047081	1.74	0.60	3.60	174	7960	2.0	42	64	2546	0.48	186	4	6	0.58

Sample Site	UTM		Ash	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	Ba	Co	Cr	Fe
	EAST	NORTH	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	%
BSC-132	513910	6049816	1.92	0.60	0.50	162	10748	2.0	106	12	1154	0.32	222	6	2	0.14
BSC-133	514916	6050947	1.67	0.20	1.00	170	24694	2.0	54	12	1512	0.26	128	2	4	0.24
BSC-134	513021	6050137	1.73	0.40	1.20	200	11076	2.0	26	16	1468	0.16	130	2	2	0.18
BSC-135	513049	6050683	1.84	0.20	1.00	226	23438	2.0	24	12	1476	0.16	138	4	6	0.18
BSC-136	513377	6052104	1.88	0.20	1.80	162	17060	2.0	72	10	1668	0.24	90	4	6	0.20
BSC-137	515612	6054401	1.92	0.60	1.30	170	14723	2.0	30	22	1653	0.26	153	2	4	0.26
BSC-138	513788	6053203	1.90	0.40	1.20	184	10678	2.0	64	22	1266	0.38	116	2	4	0.32
BSC-139	512201	6047079	2.00	0.20	0.50	120	19048	2.0	22	18	1932	0.20	192	1	4	0.22
BSC-140	510561	6051207	2.12	0.40	2.20	158	11670	2.0	38	22	1424	0.32	158	4	4	0.38
BSC-141	509638	6050746	1.85	0.20	1.40	184	15560	2.0	32	16	1670	0.22	148	2	4	0.24
BSC-142	508624	6051341	2.06	0.20	1.60	130	19052	2.0	20	16	1794	0.20	192	4	4	0.28
BSC-143	503707	6055102	2.02	0.40	1.45	191	14509	2.5	55	20	1413	0.32	179	4	7	0.29
BSC-144	505932	6054078	1.71	0.20	0.50	148	18212	2.0	114	12	1688	0.36	106	6	6	0.20
BSC-145	506193	6051607	1.94	0.40	1.20	108	5024	2.0	14	14	2414	0.18	160	2	4	0.24
BSC-146	514730	6044196	1.86	0.20	0.50	136	30854	2.0	32	8	1454	0.18	124	4	4	0.22
BSC-147	515949	6041823	2.25	0.40	1.00	120	14448	2.0	24	20	1680	0.30	254	2	10	0.32
BSC-148	515048	6043031	1.64	0.20	1.70	142	21252	2.5	41	34	2338	0.46	182	4	7	0.58
BSC-149	514154	6044555	1.89	0.40	1.20	136	8552	2.0	22	20	1874	0.32	152	4	4	0.38
BSC-150	517486	6033988	1.94	0.80	0.50	254	8112	2.0	28	6	1664	0.14	146	2	4	0.18
BSC-151	517522	6032623	2.07	0.20	0.50	254	30970	2.0	56	10	1716	0.20	132	6	2	0.20
BSC-152	517917	6030851	1.79	0.20	1.80	174	13702	2.0	38	20	1788	0.26	314	2	4	0.36
BSC-153	517089	6028676	2.12	0.40	1.40	244	23244	2.0	28	10	2212	0.14	140	2	2	0.18
BSC-154	516412	6032166	1.91	0.20	1.40	254	23636	2.0	98	14	2434	0.30	160	10	8	0.24
BSC-155	512777	6028202	2.09	0.20	0.50	172	25356	2.0	44	6	1414	0.18	118	2	4	0.16
BSc-156	514874	6028199	1.60	0.20	1.30	131	26608	2.0	34	13	1585	0.28	135	2	4	0.28
BSC-157	514218	6029291	2.48	0.25	0.80	222	10753	2.5	19	5	1735	0.12	133	7	2	0.15
BSC-158	513703	6027484	2.02	0.30	0.90	191	13174	2.0	83	8	1344	0.22	143	5	3	0.19
BSC-159	512845	6033996	2.79	0.40	0.50	180	7460	2.0	16	2	1252	0.08	146	2	1	0.12
BSC-160	495421	6033104	2.01	0.20	1.40	284	16040	2.0	42	30	1536	0.20	202	4	8	0.24
BSC-161	494348	6031542	2.01	0.20	1.00	154	12614	2.0	22	12	1670	0.24	102	4	8	0.26
BSC-162	494356	6030881	1.71	0.20	2.00	200	21514	2.0	120	12	1764	0.44	134	8	4	0.30
BSC-163	514501	6026145	2.09	0.80	1.60	352	20564	2.0	64	8	1528	0.16	166	6	4	0.20
BSC-164	513589	6026247	1.91	0.20	1.00	146	13142	2.0	14	6	1896	0.14	172	2	2	0.18
BSC-165	512599	6026335	1.69	0.60	3.00	162	10414	2.0	32	20	1900	0.40	140	4	6	0.44
BSC-166	511598	6026204	2.01	0.60	1.00	182	5386	2.0	12	6	1350	0.14	176	1	2	0.18
BSC-167	513297	6027660	1.77	0.20	1.60	140	14654	2.0	50	10	1602	0.32	260	6	4	0.26
BSC-168	512386	6027803	1.79	0.20	1.20	184	19244	2.0	56	10	1914	0.30	168	4	4	0.26
BSC-169	501038	6027746	1.72	0.20	1.00	200	24920	2.0	100	8	3016	0.38	170	4	4	0.32
BSC-170	515084	6033390	2.16	0.60	0.50	264	6676	2.0	36	4	1436	0.06	254	4	2	0.10
BSC-171	516472	6033483	1.90	0.20	0.50	110	23870	2.0	54	18	1426	0.32	190	8	6	0.30
BSC-172	513930	6032694	1.84	0.20	1.40	136	19062	2.0	128	14	1738	0.50	220	8	4	0.26
BSC-173	511989	6032692	2.17	0.20	1.40	94	15684	2.0	18	18	2388	0.28	194	2	6	0.30
BSC-174	509849	6029481	1.85	0.20	1.00	142	8054	2.0	24	10	1820	0.22	138	4	4	0.22
BSC-175	508028	6029647	2.04	0.20	1.20	104	10280	2.0	18	10	1846	0.20	264	1	4	0.22
BSC-176	507855	6030497	1.72	0.40	1.20	140	13862	2.0	66	20	1444	0.50	214	4	6	0.44
BSC-177	505523	6031030	2.10	0.80	1.20	272	18164	2.0	42	2	1808	0.20	132	6	4	0.16
BSC-178	508908	6028815	2.02	0.20	1.00	110	8312	2.0	10	12	1878	0.18	176	1	6	0.24
BSC-179	511145	6030626	1.97	0.40	1.20	124	5792	2.0	18	14	1990	0.20	188	1	6	0.22
BSC-180	511087	6033247	1.95	0.40	1.20	132	14218	2.0	24	16	1844	0.32	194	4	6	0.34
BSC-181	510327	6032208	2.10	0.60	1.30	217	12027	2.0	28	9	1793	0.19	170	4	2	0.19
BSC-182	513479	6031215	1.83	0.25	1.70	139	11044	2.5	21	16	2641	0.34	186	1	7	0.35
BSC-183	502520	6029633	1.96	0.30	1.00	178	17126	2.0	25	12	1760	0.29	190	3	5	0.30
BSC-184	521348	6034014	2.01	0.20	1.40	168	15834	2.0	24	14	2172	0.22	210	4	8	0.26
BSC-185	519147	6033381	1.73	1.00	1.60	220	3190	2.0	24	24	2298	0.30	144	2	4	0.34
BSC-186	518573	6031574	2.33	0.60	1.00	124	7492	2.0	22	12	1886	0.22	226	2	2	0.24
BSC-187	499197	6032410	1.66	0.80	1.20	158	13886	2.0	38	8	1986	0.22	196	4	4	0.22
BSC-188	498282	6033227	1.98	0.80	1.00	206	13518	2.0	68	10	1624	0.32	228	4	4	0.24
BSC-189	498849	6029766	1.63	0.20	0.50	186	22822	2.0	66	10	2568	0.28	184	4	8	0.28
BSC-190	498167	6028367	2.11	0.20	0.50	274	15482	2.0	30	8	1626	0.16	150	4	8	0.18
BSC-191	497208	6028893	1.78	0.20	1.00	196	28956	2.0	80	14	1868	0.34	188	4	6	0.32
BSC-192	485905	6033746	1.77	0.20	1.00	246	17370	2.0	72	10	1654	0.30	190	6	8	0.24
BSC-193	489935	6033983	1.92	0.20	1.00	238	22248	2.0	60	14	2034	0.28	146	4	4	0.32
BSC-194	491164	6032643	1.94	0.40	1.00	286	13740	2.0	22	8	2214	0.18	116	4	2	0.22
BSC-195	501211	6032956	1.93	0.40	1.20	175	13504	2.5	47	13	1949	0.30	190	5	4	0.30
BSC-196	494312	6029503	1.79	0.80	1.00	176	13760	2.0	102	8	1886	0.28	198	4	4	0.24
BSC-197	496064	6031902	1.85	0.20	1.80	170	16252	2.0	96	20	1882	0.46	170	4	6	0.40
BSC-198	495940	6029992	1.82	0.20	1.00	152	21476	2.0	48	8	1640	0.16	170	2	4	0.20
BSC-199	495793	6029002	1.97	0.20	1.00	158	22562	2.0	94	10	1812	0.28	146	4	4	0.20
BSC-200	491974	6031864	1.99	0.40	1.80	150	8124	2.0	52	12	1452	0.36	202	4	4	0.34
BSC-201	501310	6029875	1.88	0.20	1.80	128	24546	2.0	52	32	1540	0.64	262	4	10	0.60



Sample Site	UTM		Ash	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	Ba	Co	Cr	Fe
	EAST	NORTH	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	%
BSC-202	503202	6031243	1.93	1.20	1.40	162	30798	2.0	28	18	2500	0.46	290	4	6	0.42
BSC-203	504582	6032523	1.76	0.20	1.60	228	12010	2.0	30	20	1708	0.42	134	6	4	0.40
BSC-204	493311	6034135	1.93	0.20	1.20	189	15702	2.0	89	11	1603	0.35	97	5	7	0.24
BSC-205	492691	6034939	1.89	0.80	2.40	186	12852	2.0	66	22	1982	0.52	158	4	4	0.38
BSC-206	492813	6032211	1.81	1.40	0.50	270	10322	2.0	28	8	1858	0.24	104	4	8	0.24
BSC-207	505903	6027507	1.92	0.20	0.50	128	23256	2.0	22	14	2386	0.18	162	4	4	0.24
BSC-208	508016	6027463	1.83	0.20	0.50	128	12218	2.0	22	10	1600	0.18	82	2	6	0.22
BSC-209	506661	6028140	1.62	0.20	2.40	212	12362	2.0	22	10	1896	0.22	124	2	4	0.26
BSC-210	506619	6029127	1.95	0.30	0.50	122	34296	3.0	16	11	1834	0.14	272	1	3	0.20
BSC-211	506226	6029915	1.61	0.20	2.20	164	26482	2.0	52	10	2082	0.34	100	2	8	0.32
BSC-212	504366	6029454	2.21	0.40	1.60	152	8392	2.0	62	6	1318	0.34	102	6	4	0.18
BSC-213	503971	6027895	1.87	0.40	0.50	202	16396	2.0	52	10	2782	0.16	64	6	4	0.18
BSC-214	507873	6033627	2.13	0.40	1.40	114	9072	2.0	22	12	1694	0.22	118	2	4	0.24
BSC-215	502859	6032947	1.83	0.20	1.60	238	16776	2.0	46	14	2514	0.32	118	4	6	0.34
BSC-216	500430	6031458	2.31	0.20	1.40	120	17690	2.0	10	10	1554	0.14	318	2	10	0.18
BSC-217	477524	6032937	1.89	0.20	1.20	162	19962	2.0	32	10	1964	0.18	300	1	4	0.20
BSC-218	479469	6034111	1.96	0.40	1.20	164	6182	2.0	14	6	1588	0.14	268	2	2	0.16
BSC-219	476476	6033291	1.69	0.20	2.00	140	23022	2.0	42	26	2088	0.48	274	4	8	0.46
BSC-220	494292	6033037	1.95	0.20	1.20	130	20038	2.0	30	12	2124	0.28	314	2	4	0.30
BSC-221	491778	6033333	2.02	0.20	1.40	230	21528	2.0	36	12	2486	0.30	252	2	4	0.32
BSC-222	489734	6033070	1.58	0.60	2.00	212	10860	2.0	46	16	2020	0.30	188	4	4	0.30
BSC-223	482129	6034706	1.74	0.20	3.40	172	11334	2.0	92	10	1378	0.26	160	4	2	0.18
BSC-224	481343	6033144	2.43	0.60	1.40	154	9740	2.0	60	10	1176	0.18	242	8	2	0.16
BSC-225	484355	6033976	1.78	0.30	2.00	218	15436	2.0	68	11	1416	0.29	199	4	7	0.22
BSC-226	507579	6032592	1.88	0.20	0.70	153	26548	2.5	38	10	2005	0.20	251	1	9	0.18
BSC-227	509576	6033495	1.72	0.40	1.60	156	9720	2.0	28	14	1992	0.16	310	2	8	0.18
BSC-228	504672	6033921	1.90	0.20	1.40	250	22760	2.0	68	12	1780	0.22	250	10	10	0.16
BSC-229	464202	6029599	2.41	0.40	1.20	178	26176	2.0	66	6	1132	0.16	260	10	4	0.16
BSC-230	465126	6029280	1.77	0.40	1.20	200	12884	2.0	20	8	2036	0.14	372	2	8	0.18
BSC-231	468014	6029211	1.94	0.20	1.80	222	23312	2.0	20	10	1874	0.14	256	4	4	0.18
BSC-232	474714	6032147	1.82	0.20	1.80	170	16080	2.0	90	8	1384	0.22	210	8	6	0.22
BSC-233	475878	6031424	1.90	0.20	1.40	192	25772	2.0	54	6	2056	0.18	252	1	4	0.20
BSC-234	472653	6030759	2.21	0.20	1.40	180	25190	2.0	22	6	1858	0.10	248	4	4	0.14
BSC-235	473647	6031180	1.84	0.40	2.60	156	5744	2.0	40	20	1296	0.36	456	4	4	0.38
BSC-236	471481	6030684	1.75	0.20	1.80	170	27498	2.0	36	10	2080	0.14	442	4	6	0.16
BSC-237	467781	6031932	1.89	0.20	1.80	198	24694	2.0	104	6	1700	0.26	386	6	6	0.14
BSC-238	467303	6030943	1.96	0.40	1.20	260	18830	2.0	84	6	1528	0.20	334	10	6	0.16
BSC-239	461733	6028498	1.91	0.40	2.40	214	19952	2.0	68	8	1740	0.14	238	8	4	0.16
BSC-240	460875	6028462	1.99	0.20	0.50	166	5706	2.0	10	6	2434	0.10	478	1	8	0.14
BSC-241	461875	6027235	1.90	0.20	2.00	202	18472	2.0	36	12	2062	0.20	272	4	4	0.20
BSC-242	459946	6027489	1.68	0.20	2.40	176	19452	2.0	30	12	2012	0.22	228	4	4	0.28
BSC-243	456102	6028120	1.69	0.20	1.40	194	12246	2.0	50	8	1726	0.20	208	4	2	0.18
BSC-245	452251	6028338	2.16	0.40	2.00	138	4694	2.0	10	12	1840	0.24	348	2	4	0.28
BSC-246	458806	6027939	2.70	0.80	2.70	187	11671	2.0	55	3	1076	0.16	474	12	3	0.12
BSC-247	455132	6028325	1.80	0.20	1.20	174	8442	2.0	14	4	1732	0.10	412	2	2	0.14
BSC-248	452495	6028976	2.01	0.20	1.80	158	10410	2.0	14	8	1996	0.16	368	1	4	0.18
BSC-249	450994	6027808	1.96	0.20	2.20	204	10676	20.0	48	6	1250	0.12	346	4	4	0.14
BSC-250	449886	6028510	1.82	0.40	1.80	116	4500	2.0	18	18	2166	0.38	376	2	8	0.36
BSC-251	448682	6028724	1.68	0.20	2.80	178	17192	2.0	36	10	2024	0.24	266	2	8	0.26
BSC-252	445395	6029398	2.06	0.20	1.60	184	21630	2.0	10	8	2538	0.18	288	2	8	0.22
BSC-253	443963	6030330	1.72	0.20	1.30	236	16562	2.0	41	13	1625	0.19	262	5	10	0.22
BSC-254	443423	6028525	2.21	0.60	2.40	148	9832	2.0	26	20	1826	0.36	296	2	4	0.36
BSC-255	442843	6030013	1.76	0.20	1.60	194	16712	2.0	34	10	2268	0.14	284	2	10	0.20
BSC-256	442448	6029172	1.71	0.60	3.80	214	11052	2.0	64	36	1974	0.60	366	6	8	0.68
BSC-257	439225	6030492	1.87	0.20	2.10	134	17794	2.0	66	18	1523	0.39	284	4	8	0.37
BSC-258	437900	6030559	1.87	0.40	2.20	190	18232	2.0	58	8	1558	0.28	180	4	4	0.28
BSC-259	438456	6031752	1.56	0.40	2.90	271	27265	2.0	57	8	1946	0.29	232	4	4	0.21
BSC-260	437640	6031393	1.45	0.90	3.40	178	9026	2.0	24	11	1709	0.19	228	4	4	0.24
BSC-261	448532	6027763	1.66	0.20	2.20	138	12146	2.0	40	14	1802	0.32	196	2	4	0.34
BSC-262	435111	6031848	1.72	0.20	2.80	140	12200	2.0	40	8	2092	0.28	236	2	8	0.26
BSC-263	436445	6031287	1.97	0.40	2.40	150	6928	2.0	12	12	1728	0.22	268	2	6	0.26
BSC-264	435337	6030452	1.95	0.80	2.80	162	8212	2.0	30	14	1918	0.38	224	2	4	0.38
BSC-265	440681	6030640	1.71	0.40	2.60	184	13716	2.0	46	8	1424	0.22	258	4	12	0.18
BSC-266	447639	6028463	2.01	0.20	1.00	212	13068	2.0	36	8	1732	0.16	350	2	2	0.18
BSC-267	449222	6028541	1.53	0.40	1.10	273	5388	2.0	34	6	2030	0.09	155	2	2	0.13
BSC-268	457373	6028180	1.97	1.00	1.40	178	10594	2.0	26	6	1768	0.16	154	2	4	0.20
BSC-269	457918	6028804	1.81	0.40	1.40	142	12652	2.0	34	14	1946	0.28	256	2	4	0.28
BSC-270	457492	6027529	1.81	0.40	1.80	164	16974	2.0	54	12	1524	0.32	136	4	4	0.24
BSC-271	465155	6030614	2.00	1.40	1.60	152	8226	2.0	24	6	1550	0.16	138	2	2	0.18
BSC-272	467904	6033232	1.84	0.20	1.80	160	23818	2.0	42	8	1980	0.16	180	1	10	0.16

Sample Site	UTM		Ash	Ag	Cd	Cu	Mn	Mo	Ni	Pb	Zn	Al	Ba	Co	Cr	Fe
	EAST	NORTH	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	%
BSC-273	466096	6029651	1.94	0.40	1.60	211	15926	2.0	18	10	1860	0.13	216	3	5	0.17
BSC-274	468869	6031353	1.95	0.20	1.60	226	27316	2.0	32	8	1528	0.20	196	6	4	0.20
BSC-275	441854	6030334	1.97	0.20	1.40	155	23020	2.0	58	12	1809	0.24	384	2	4	0.24
BSC-276	441356	6029317	1.44	0.40	0.50	303	33787	2.0	28	11	3580	0.19	170	2	11	0.26
BSC-277	455200	6033531	1.73	0.40	1.80	184	6724	2.0	22	20	2674	0.38	348	2	4	0.38
BSC-278	456290	6033898	1.87	0.20	2.00	124	16820	2.0	30	26	2152	0.40	434	4	18	0.44
BSC-279	455920	6035035	2.22	0.20	1.60	116	25814	2.0	18	22	2374	0.36	424	4	6	0.44
BSC-280	456272	6032489	2.00	0.80	0.50	246	13886	2.0	34	10	1416	0.16	364	2	4	0.18
BSC-281	458988	6036919	2.01	1.00	0.50	202	6936	2.0	8	4	1542	0.12	432	2	2	0.16
BSC-282	459526	6035375	2.04	0.40	0.50	98	12654	2.0	8	8	1610	0.16	334	1	2	0.20
BSC-283	457995	6036193	1.76	0.60	0.50	200	11028	2.0	38	8	1590	0.16	206	12	4	0.22
BSC-284	457394	6031755	1.84	0.20	1.40	108	16476	2.0	16	8	2174	0.24	372	4	10	0.26
BSC-285	454410	6030342	1.70	0.60	1.10	211	8946	2.0	62	13	2169	0.24	202	2	9	0.26
BSC-286	453991	6031977	2.00	0.20	1.00	222	20750	2.0	128	14	1880	0.42	164	12	6	0.32

Sample Site	K %	Mg %	Na %	P ppm	Sb ppm	Sr ppm	V ppm	Zr ppm
BSC-1	9.76	3.64	0.20	3954	5.0	284	8	4
BSC-2	13.60	4.34	0.10	4688	5.0	246	12	6
BSC-3	10.08	4.49	0.07	3988	5.0	129	9	7
BSC-4	10.46	5.06	0.04	3632	5.0	448	2	2
BSC-5	18.84	4.64	0.12	5068	5.0	188	4	4
BSC-6	11.74	5.58	0.08	4116	5.0	808	4	2
BSC-7	10.90	7.64	0.04	4436	5.0	112	2	4
BSC-8	11.72	4.88	0.04	20766	5.0	104	2	4
BSC-9	9.19	4.92	0.08	4189	14.0	163	4	3
BSC-10	10.84	5.48	0.10	20766	5.0	188	4	4
BSC-11	10.68	4.65	0.06	4032	5.0	244	2	2
BSC-12	11.22	5.96	0.04	4568	5.0	156	2	4
BSC-13	11.76	4.52	0.04	4484	5.0	154	2	4
BSC-14	9.52	4.76	0.08	4160	5.0	328	8	4
BSC-15	12.24	5.20	0.02	5674	5.0	292	1	4
BSC-16	10.08	5.78	0.08	4284	5.0	236	4	4
BSC-17	12.44	5.46	0.04	5296	5.0	182	1	4
BSC-18	9.36	5.62	0.06	4524	5.0	360	4	6
BSC-19	12.68	5.64	0.04	3088	5.0	278	6	4
BSC-20	13.22	7.06	0.04	20762	5.0	108	1	6
BSC-21	9.44	7.12	0.10	4580	5.0	94	4	4
BSC-22	10.10	5.84	0.04	3914	5.0	224	6	2
BSC-23	10.42	4.62	0.06	4182	5.0	256	4	6
BSC-24	12.56	4.62	0.04	4930	5.0	198	6	6
BSC-25	6.80	2.82	0.06	2350	5.0	352	8	4
BSC-26	13.42	5.08	0.04	4528	5.0	284	2	4
BSC-27	8.64	4.57	0.04	4269	7.0	258	3	4
BSC-28	8.18	4.66	0.04	5104	5.0	910	2	6
BSC-29	10.38	6.50	0.06	3976	5.0	364	6	6
BSC-30	12.12	5.21	0.04	5394	5.0	134	4	4
BSC-31	11.56	4.92	0.04	20974	5.0	170	2	4
BSC-32	10.32	7.30	0.06	5342	5.0	208	2	4
BSC-33	12.22	5.62	0.06	5542	5.0	158	2	4
BSC-34	12.62	3.96	0.10	4646	5.0	264	8	4
BSC-35	10.80	4.20	0.06	3660	5.0	156	6	6
BSC-36	10.86	4.38	0.06	3400	5.0	438	6	4
BSC-37	10.38	4.78	0.08	4826	5.0	266	6	6
BSC-38	10.60	4.26	0.09	3694	5.0	232	6	4
BSC-39	10.98	5.60	0.06	4994	5.0	294	4	4
BSC-40	9.89	5.43	0.07	5584	5.0	226	5	7
BSC-41	11.14	4.50	0.14	3772	5.0	704	10	6
BSC-42	6.39	4.99	0.13	4829	5.0	525	4	4
BSC-43	12.40	5.90	0.08	21402	5.0	164	4	4
BSC-44	10.91	3.85	0.04	4266	5.0	260	4	4
BSC-45	13.24	5.26	0.04	5904	5.0	300	2	4
BSC-46	9.48	4.60	0.08	5286	5.0	398	4	2
BSC-47	13.85	5.81	0.10	6850	5.0	110	5	5
BSC-48	10.97	6.15	0.06	6176	8.0	319	2	2
BSC-49	10.81	5.37	0.15	3957	5.0	407	7	2
BSC-50	9.92	4.54	0.06	4024	5.0	332	4	2
BSC-51	10.82	5.82	0.10	4960	5.0	332	2	2
BSC-52	11.14	5.67	0.10	4422	5.0	180	5	5
BSC-53	10.53	6.08	0.05	5324	5.0	106	5	4
BSC-54	10.25	4.91	0.06	4345	5.0	225	4	2
BSC-55	12.14	3.78	0.04	20974	5.0	184	4	6
BSC-56	10.24	5.08	0.06	5230	5.0	194	4	4
BSC-57	11.06	5.30	0.08	20970	5.0	148	4	6
BSC-58	11.94	4.98	0.06	5066	5.0	274	4	4
BSC-59	10.56	3.68	0.06	3246	5.0	264	4	4
BSC-60	8.68	5.10	0.06	3128	5.0	318	4	4

Sample Site	K %	Mg %	Na %	P ppm	Sb ppm	Sr ppm	V ppm	Zr ppm
BSC-61	10.17	3.12	0.08	3349	9.0	434	5	2
BSC-62	10.58	6.18	0.08	4400	5.0	296	4	6
BSC-63	9.70	6.30	0.06	3888	5.0	228	4	2
BSC-64	9.09	6.70	0.09	4845	8.5	316	6	3
BSC-65	12.31	6.28	0.04	6443	5.0	233	2	4
BSC-66	12.42	5.06	0.20	3838	5.0	266	4	6
BSC-67	9.93	5.11	0.09	4251	5.0	205	4	4
BSC-68	10.48	4.82	0.08	20974	5.0	354	4	2
BSC-69	12.90	5.62	0.04	5196	5.0	166	2	4
BSC-70	11.54	4.42	0.08	3760	5.0	224	4	4
BSC-71	12.78	4.22	0.22	5858	5.0	416	8	4
BSC-72	12.66	5.52	0.08	5574	5.0	972	2	2
BSC-73	9.60	4.46	0.06	5346	5.0	542	4	4
BSC-74	7.30	4.62	0.08	3932	5.0	452	4	4
BSC-75	10.58	4.72	0.07	5413	5.0	276	2	5
BSC-76	13.16	5.52	0.06	5090	5.0	542	1	2
BSC-78	9.94	4.16	0.16	2996	10.0	172	8	4
BSC-79	11.94	3.90	0.10	5234	5.0	164	6	4
BSC-80	12.10	4.96	0.10	4480	5.0	386	4	2
BSC-81	13.50	4.32	0.06	4484	5.0	282	2	1
BSC-82	10.64	5.38	0.12	4636	5.0	184	6	4
BSC-83	10.44	3.42	0.04	3686	5.0	506	4	2
BSC-84	8.04	3.28	0.10	3124	5.0	386	8	4
BSC-85	7.92	3.20	0.08	2622	5.0	132	8	6
BSC-86	9.18	4.94	0.08	4786	5.0	212	4	4
BSC-87	12.94	4.82	0.10	5780	5.0	314	4	2
BSC-88	11.80	4.28	0.10	4459	5.0	201	7	5
BSC-89	9.40	4.56	0.06	3832	5.0	324	8	6
BSC-90	9.26	5.00	0.10	4878	5.0	280	6	6
BSC-91	9.22	5.24	0.06	5038	5.0	238	4	6
BSC-92	9.88	3.42	0.06	3248	5.0	404	10	4
BSC-93	8.53	3.61	0.11	3339	5.0	121	9	7
BSC-94	10.28	3.92	0.04	2952	5.0	410	1	1
BSC-95	9.76	7.16	0.06	5172	5.0	184	2	4
BSC-96	9.72	3.94	0.08	3018	5.0	224	6	2
BSC-97	11.88	7.12	0.08	4258	5.0	304	2	4
BSC-98	11.80	5.18	0.10	5240	5.0	456	4	4
BSC-99	12.16	5.52	0.12	4396	5.0	286	6	2
BSC-100	10.08	4.38	0.12	4172	5.0	368	6	4
BSC-101	11.66	3.60	0.10	3902	5.0	478	8	2
BSC-102	11.14	5.04	0.10	5584	5.0	252	6	6
BSC-103	9.88	5.34	0.10	3242	5.0	210	8	4
BSC-104	11.24	4.54	0.10	4072	5.0	158	4	4
BSC-105	9.82	3.56	0.14	3224	5.0	324	8	4
BSC-106	12.26	3.28	0.16	3358	5.0	178	1	4
BSC-107	9.36	5.04	0.10	3038	5.0	210	6	4
BSC-108	10.36	5.30	0.08	4798	5.0	100	2	6
BSC-109	11.82	6.52	0.06	20972	5.0	248	2	4
BSC-110	9.68	5.83	0.04	4443	5.0	214	3	5
BSC-111	8.88	5.04	0.16	4199	8.0	138	3	3
BSC-112	8.00	4.22	0.10	3454	5.0	116	10	8
BSC-113	9.38	5.16	0.12	4096	5.0	110	4	4
BSC-114	10.28	3.56	0.06	3056	5.0	218	4	4
BSC-115	8.22	4.14	0.12	4176	5.0	300	6	4
BSC-116	9.26	4.50	0.08	3244	5.0	248	6	2
BSC-117	15.50	3.46	0.04	20974	5.0	94	1	4
BSC-118	13.14	5.00	0.10	3178	5.0	216	2	4
BSC-119	12.60	6.28	0.10	20974	5.0	256	2	2
BSC-120	9.74	4.32	0.06	5232	5.0	260	4	4
BSC-121	8.24	5.28	0.10	3010	5.0	558	4	2
BSC-122	8.48	3.31	0.11	3278	8.0	442	3	2
BSC-123	11.44	4.48	0.08	3508	5.0	300	4	2
BSC-124	12.52	4.58	0.10	5446	5.0	212	6	6
BSC-125	12.20	7.09	0.18	21667	5.0	119	4	2
BSC-126	11.07	5.33	0.06	5137	5.0	279	4	4
BSC-127	10.54	6.34	0.08	5137	5.0	460	6	6
BSC-128	10.02	4.92	0.06	3672	5.0	680	6	2
BSC-129	10.62	2.94	0.12	3228	5.0	358	8	4
BSC-130	10.04	3.86	0.08	3408	5.0	120	8	6
BSC-131	9.12	2.62	0.20	3024	5.0	1422	10	4

Sample Site	K %	Mg %	Na %	P ppm	Sb ppm	Sr ppm	V ppm	Zr ppm
BSC-132	10.16	3.76	0.04	3464	14.0	324	2	2
BSC-133	7.54	6.20	0.04	3386	5.0	264	4	6
BSC-134	13.36	5.24	0.06	3340	5.0	256	2	2
BSC-135	15.20	4.06	0.06	3642	5.0	202	2	6
BSC-136	11.42	5.30	0.06	3642	5.0	96	4	4
BSC-137	9.42	3.29	0.04	3074	5.0	140	4	4
BSC-138	8.08	3.34	0.06	2884	5.0	142	6	2
BSC-139	8.40	3.22	0.06	2176	5.0	276	4	4
BSC-140	10.30	3.54	0.08	2260	5.0	272	6	2
BSC-141	8.68	4.14	0.06	2946	5.0	214	4	4
BSC-142	9.26	2.88	0.06	2366	5.0	386	4	4
BSC-143	7.55	3.61	0.05	2515	6.0	173	6	4
BSC-144	13.10	4.06	0.08	2936	5.0	192	4	4
BSC-145	10.08	3.24	0.08	3304	5.0	584	4	1
BSC-146	8.50	4.66	0.06	3254	5.0	374	4	6
BSC-147	8.48	2.62	0.06	2736	5.0	194	6	4
BSC-148	9.46	2.93	0.14	2693	6.0	478	10	5
BSC-149	10.74	3.82	0.08	2396	5.0	722	6	2
BSC-150	12.40	5.32	0.04	3966	5.0	218	2	1
BSC-151	12.16	3.22	0.04	2880	5.0	242	4	6
BSC-152	12.16	4.70	0.08	2632	5.0	280	6	4
BSC-153	10.92	3.50	0.06	3142	5.0	282	4	6
BSC-154	13.40	3.70	0.10	4236	5.0	224	4	6
BSC-155	9.98	5.00	0.06	3094	5.0	166	4	6
BSC-156	12.13	5.96	0.06	3595	5.5	101	6	6
BSC-157	8.83	3.69	0.07	3866	6.0	473	2	2
BSC-158	10.87	4.01	0.06	2804	5.0	225	3	3
BSC-159	15.42	4.18	0.08	2430	5.0	390	1	1
BSC-160	18.56	5.20	0.08	4054	5.0	146	4	4
BSC-161	11.50	7.40	0.06	3564	5.0	486	4	4
BSC-162	13.14	6.96	0.06	3144	5.0	338	6	6
BSC-163	16.40	4.24	0.06	3910	5.0	160	2	6
BSC-164	12.10	4.14	0.04	3214	5.0	160	4	4
BSC-165	9.84	4.22	0.08	2978	5.0	850	8	4
BSC-166	12.08	4.16	0.04	2900	5.0	322	2	1
BSC-167	12.66	2.74	0.06	3078	5.0	316	4	4
BSC-168	12.18	4.64	0.06	3138	5.0	180	4	6
BSC-169	14.60	6.42	0.10	3516	5.0	174	6	8
BSC-170	20.44	4.42	0.04	4208	5.0	366	1	1
BSC-171	13.32	5.58	0.08	3548	5.0	306	6	8
BSC-172	9.82	4.14	0.14	2764	5.0	926	6	6
BSC-173	13.14	2.68	0.08	2670	5.0	1078	8	4
BSC-174	15.00	5.64	0.08	2928	5.0	524	6	2
BSC-175	13.82	6.08	0.06	2990	5.0	284	4	4
BSC-176	12.62	2.60	0.08	3256	5.0	256	10	6
BSC-177	13.46	4.92	0.04	3886	5.0	280	2	2
BSC-178	14.82	5.12	0.04	3418	5.0	880	4	2
BSC-179	15.78	5.40	0.04	3014	5.0	440	4	1
BSC-180	14.48	3.72	0.06	3400	5.0	444	6	4
BSC-181	13.91	3.38	0.09	4350	5.5	393	2	2
BSC-182	9.88	3.45	0.09	3003	6.0	898	7	2
BSC-183	11.15	4.37	0.06	2934	5.0	150	6	3
BSC-184	12.82	5.30	0.10	3420	5.0	256	6	4
BSC-185	13.82	4.44	0.10	3614	5.0	828	6	1
BSC-186	13.12	3.44	0.06	3016	5.0	286	4	1
BSC-187	14.46	4.34	0.04	3788	5.0	152	4	2
BSC-188	15.60	5.40	0.06	3698	5.0	378	4	4
BSC-189	13.84	5.42	0.06	3232	5.0	282	6	4
BSC-190	13.26	4.62	0.04	3534	5.0	190	4	4
BSC-191	14.86	4.70	0.06	3622	5.0	110	6	6
BSC-192	14.30	7.18	0.06	4770	5.0	200	4	4
BSC-193	11.88	7.14	0.08	5040	5.0	88	6	6
BSC-194	12.32	5.54	0.06	3592	5.0	274	4	2
BSC-195	12.06	4.61	0.07	2964	6.0	306	7	2
BSC-196	11.52	7.40	0.06	3380	5.0	262	4	2
BSC-197	12.56	5.08	0.08	4016	5.0	212	8	4
BSC-198	13.92	6.68	0.06	3668	5.0	84	4	4
BSC-199	13.54	6.72	0.08	3658	5.0	376	4	6
BSC-200	10.36	6.04	0.08	2664	5.0	202	8	2
BSC-201	8.94	3.30	0.10	2682	5.0	190	12	6

Sample Site	K %	Mg %	Na %	P ppm	Sb ppm	Sr ppm	V ppm	Zr ppm
BSC-202	11.42	4.14	0.08	2460	5.0	160	10	4
BSC-203	11.44	5.88	0.06	2968	5.0	1150	8	2
BSC-204	13.97	5.90	0.08	4245	5.0	252	5	4
BSC-205	10.20	3.64	0.10	2550	5.0	438	8	4
BSC-206	10.90	5.52	0.08	4748	5.0	540	4	2
BSC-207	14.84	6.02	0.04	3754	5.0	442	4	6
BSC-208	11.24	5.90	0.04	2940	5.0	576	4	2
BSC-209	13.94	6.30	0.08	3610	5.0	216	6	2
BSC-210	15.26	6.05	0.06	4170	7.5	328	3	8
BSC-211	12.54	4.84	0.06	3144	5.0	92	6	6
BSC-212	14.92	7.86	0.06	4152	5.0	294	4	2
BSC-213	15.46	5.34	0.06	3774	5.0	396	4	4
BSC-214	11.74	3.26	0.06	2672	5.0	582	4	2
BSC-215	12.86	4.62	0.06	3824	5.0	342	8	4
BSC-216	14.10	4.32	0.06	3756	5.0	596	4	4
BSC-217	14.04	4.38	0.06	4780	5.0	96	4	4
BSC-218	12.84	3.52	0.04	3114	5.0	272	4	1
BSC-219	12.98	5.86	0.08	3630	5.0	206	10	6
BSC-220	13.38	4.32	0.06	3248	5.0	160	6	4
BSC-221	10.94	4.38	0.06	3158	5.0	242	6	6
BSC-222	11.36	6.84	0.08	4070	5.0	312	6	4
BSC-223	13.94	7.94	0.04	3770	5.0	554	4	2
BSC-224	12.72	6.62	0.04	3588	5.0	242	2	2
BSC-225	13.54	6.11	0.05	3898	5.0	232	5	4
BSC-226	18.54	5.18	0.03	4078	7.0	58	3	6
BSC-227	14.00	6.24	0.04	3778	5.0	722	4	2
BSC-228	13.24	5.74	0.04	4698	5.0	190	2	6
BSC-229	10.60	4.72	0.04	4514	5.0	156	4	6
BSC-230	14.30	5.52	0.04	3344	5.0	208	4	4
BSC-231	15.46	5.28	0.04	4278	5.0	238	4	6
BSC-232	14.90	7.04	0.04	4420	5.0	246	4	4
BSC-233	11.80	5.56	0.04	18462	5.0	84	4	6
BSC-234	15.06	4.76	0.04	18462	5.0	756	2	4
BSC-235	10.64	4.76	0.06	3692	5.0	318	8	4
BSC-236	15.68	5.50	0.04	5186	5.0	138	2	4
BSC-237	13.22	5.78	0.02	5106	5.0	126	2	4
BSC-238	13.42	5.84	0.04	3616	5.0	332	2	4
BSC-239	14.72	6.62	0.04	4804	5.0	322	2	4
BSC-240	15.28	5.68	0.04	18462	5.0	646	2	1
BSC-241	10.70	6.26	0.04	4386	5.0	230	4	4
BSC-242	14.26	6.62	0.06	18462	5.0	238	6	6
BSC-243	11.12	6.48	0.04	3524	5.0	206	4	2
BSC-245	12.26	3.12	0.04	2966	5.0	288	6	1
BSC-246	9.77	2.81	0.02	2219	11.0	265	1	1
BSC-247	15.00	4.86	0.02	3864	5.0	278	2	1
BSC-248	12.68	4.66	0.04	4298	5.0	482	4	2
BSC-249	18.00	4.20	0.04	18464	5.0	126	2	2
BSC-250	13.12	3.46	0.06	3572	5.0	418	6	2
BSC-251	12.48	5.32	0.04	4058	5.0	112	4	4
BSC-252	13.16	3.80	0.04	3548	5.0	494	4	4
BSC-253	13.54	6.24	0.04	11311	5.0	134	4	4
BSC-254	12.10	5.38	0.08	4474	5.0	350	8	4
BSC-255	14.44	5.22	0.04	18462	5.0	206	2	4
BSC-256	11.60	4.52	0.08	3892	5.0	850	12	6
BSC-257	9.89	4.46	0.04	3114	5.0	168	6	4
BSC-258	10.44	7.40	0.04	3798	5.0	162	6	4
BSC-259	15.52	5.56	0.04	4822	5.0	174	4	6
BSC-260	14.04	8.11	0.06	4534	5.0	357	4	2
BSC-261	13.86	6.72	0.06	3944	5.0	334	6	4
BSC-262	13.52	5.10	0.06	3856	5.0	136	4	4
BSC-263	12.76	5.66	0.06	3430	5.0	330	4	2
BSC-264	8.92	5.32	0.06	3376	5.0	288	8	2
BSC-265	14.48	5.36	0.04	3542	5.0	198	4	2
BSC-266	10.98	4.86	0.04	3530	5.0	292	4	2
BSC-267	11.89	5.48	0.04	5534	5.0	318	1	1
BSC-268	11.84	3.84	0.04	3788	5.0	288	4	2
BSC-269	11.92	3.72	0.06	3178	5.0	346	6	2
BSC-270	12.28	4.16	0.06	3242	5.0	228	4	4
BSC-271	12.04	4.82	0.04	3562	5.0	226	4	2
BSC-272	11.74	6.48	0.04	5220	5.0	268	4	4

Sample Site	K %	Mg %	Na %	P ppm	Sb ppm	Sr ppm	V ppm	Zr ppm
BSC-273	12.36	5.07	0.04	3939	5.0	365	3	3
BSC-274	11.44	4.10	0.04	3894	5.0	170	4	6
BSC-275	10.21	4.91	0.04	3483	5.0	107	4	4
BSC-276	9.31	6.04	0.02	5831	5.5	290	4	4
BSC-277	15.84	4.22	0.08	2726	5.0	564	8	1
BSC-278	11.00	3.98	0.06	2632	5.0	342	8	4
BSC-279	10.18	2.86	0.06	2914	5.0	546	8	6
BSC-280	10.24	4.56	0.04	3468	5.0	180	4	4
BSC-281	14.14	3.84	0.02	3866	5.0	426	2	1
BSC-282	11.66	5.14	0.04	3394	5.0	726	4	2
BSC-283	13.26	6.34	0.04	19284	5.0	404	4	4
BSC-284	15.54	4.24	0.04	4600	5.0	468	4	4
BSC-285	11.87	4.99	0.04	3988	5.0	230	4	2
BSC-286	13.70	4.78	0.06	4666	5.0	212	6	6

## Appendix 2

**Black Spruce (*Picea mariana*) Crown Twig Geochemistry:  
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-  
AES), Analyses for Ashed Samples, Duplicate Pairs.**

Sample Site	UTM		Ash %	Ag ppm	Cd ppm	Cu ppm	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm	Al %	Ba ppm	Co ppm	Cr ppm	Fe %
	EAST	NORTH														
BSC-9	524733	6056170	1.94	0.80	2.00	217	16229	8.0	32	8	2206	0.16	338	4	4	0.24
BSC-9	524733	6056170	1.94	0.30	1.40	207	15663	3.0	28	11	2030	0.17	300	3	2	0.22
BSC-27	503212	6061166	1.85	0.60	1.40	292	15024	2.0	82	8	1354	0.32	236	16	2	0.20
BSC-27	503212	6061166	2.08	0.30	0.80	198	15203	3.0	96	13	1901	0.33	337	7	2	0.30
BSC-27	503212	6061166	2.08	0.35	2.10	203	15533	3.5	98	18	1956	0.35	364	7	4	0.32
BSC-48	505621	6063322	2.25	0.90	1.50	256	4084	3.0	143	6	1287	0.18	256	18	6	0.15
BSC-48	505621	6063322	2.25	0.70	0.85	262	4202	3.5	150	7	1343	0.20	262	17	7	0.17
BSC-52	504799	6056393	1.58	0.60	0.50	270	19130	2.0	66	10	2158	0.30	216	6	4	0.26
BSC-52	504799	6056393	1.62	0.20	1.60	236	24032	2.0	57	16	1966	0.31	217	4	4	0.31
BSC-61	497206	6060852	1.86	0.70	1.50	122	8003	3.0	18	15	1950	0.22	773	2	4	0.26
BSC-61	497206	6060852	1.86	1.20	1.60	140	8448	3.0	19	19	2043	0.25	527	2	3	0.28
BSC-67	491159	6063714	1.89	0.20	1.60	150	19468	2.0	92	16	1732	0.40	238	10	6	0.26
BSC-67	491159	6063714	1.46	0.25	0.55	202	21116	2.5	131	21	2077	0.39	244	9	5	0.30
BSC-75	520867	6044001	2.09	0.20	1.40	137	19502	2.0	22	12	2302	0.12	146	1	5	0.19
BSC-75	520867	6044001	2.09	0.20	0.55	140	19962	2.0	25	11	2315	0.11	128	2	7	0.20
BSC-88	520527	6041691	2.00	0.20	1.20	172	16490	2.0	46	26	1706	0.24	204	6	6	0.28
BSC-88	520527	6041691	1.53	0.20	2.00	254	18040	2.0	46	34	2812	0.50	336	4	6	0.56
BSC-93	520504	6036253	2.02	0.20	2.40	196	26633	2.0	48	35	2365	0.51	319	4	7	0.55
BSC-93	520504	6036253	2.02	0.25	2.20	198	26619	2.5	49	39	2367	0.51	321	5	5	0.56
BSC-110	531121	6050631	1.81	0.20	0.50	200	18976	2.0	70	4	1836	0.18	86	8	2	0.16
BSC-110	531121	6050631	1.65	0.20	1.20	256	23484	2.0	136	14	2150	0.34	100	6	4	0.24
BSC-111	527183	6049725	2.11	0.30	2.60	185	19871	3.0	52	13	2031	0.20	335	2	3	0.23
BSC-111	527183	6049725	2.11	0.30	2.10	174	18556	2.0	56	12	1900	0.18	304	2	2	0.21
BSC-122	483447	6064669	2.27	0.30	1.40	160	7512	2.0	64	17	1389	0.22	294	8	2	0.20
BSC-122	483447	6064669	2.27	0.70	1.30	152	7135	3.0	59	16	1333	0.20	403	10	2	0.20
BSC-143	503707	6055102	2.20	0.40	1.10	216	17899	2.0	40	18	1641	0.22	233	4	4	0.24
BSC-143	503707	6055102	1.84	0.30	1.40	221	17889	3.0	39	20	1697	0.25	244	3	6	0.25
BSC-143	503707	6055102	2.20	0.40	1.60	162	11124	2.0	70	20	1156	0.40	118	4	8	0.34
BSC-157	514218	6029291	2.48	0.25	0.52	208	10128	2.5	17	5	1634	0.10	113	7	2	0.15
BSC-157	514218	6029291	2.48	0.25	1.00	235	11378	2.5	20	5	1838	0.13	152	8	2	0.15
BSC-158	513703	6027484	2.11	0.40	0.50	152	12142	2.0	56	6	1140	0.16	128	4	2	0.14
BSC-158	513703	6027484	1.92	0.20	1.20	230	14206	2.0	110	10	1548	0.28	158	6	4	0.24
BSC-183	502520	6029633	1.89	0.40	1.00	206	15096	2.0	28	14	1758	0.32	218	4	4	0.34
BSC-183	502520	6029633	2.03	0.20	0.50	150	19156	2.0	22	10	1762	0.26	162	2	6	0.26
BSC-195	501211	6032956	1.93	0.50	1.20	170	13169	2.5	46	14	1906	0.29	166	5	5	0.29
BSC-195	501211	6032956	1.93	0.25	1.10	179	13838	2.5	48	11	1991	0.31	213	6	3	0.31
BSC-204	493311	6034135	1.93	0.20	1.20	212	17144	2.0	66	12	1730	0.36	84	6	6	0.26
BSC-204	493311	6034135	1.88	0.20	1.20	166	14260	2.0	112	10	1476	0.34	110	4	8	0.22
BSC-210	506619	6029127	1.95	0.30	0.55	113	32297	3.0	12	9	1723	0.12	265	2	3	0.18
BSC-210	506619	6029127	1.95	0.30	0.55	130	36295	3.0	19	12	1944	0.16	279	2	3	0.22
BSC-225	484355	6033976	1.74	0.40	2.00	244	10812	2.0	74	14	1416	0.34	178	4	4	0.28



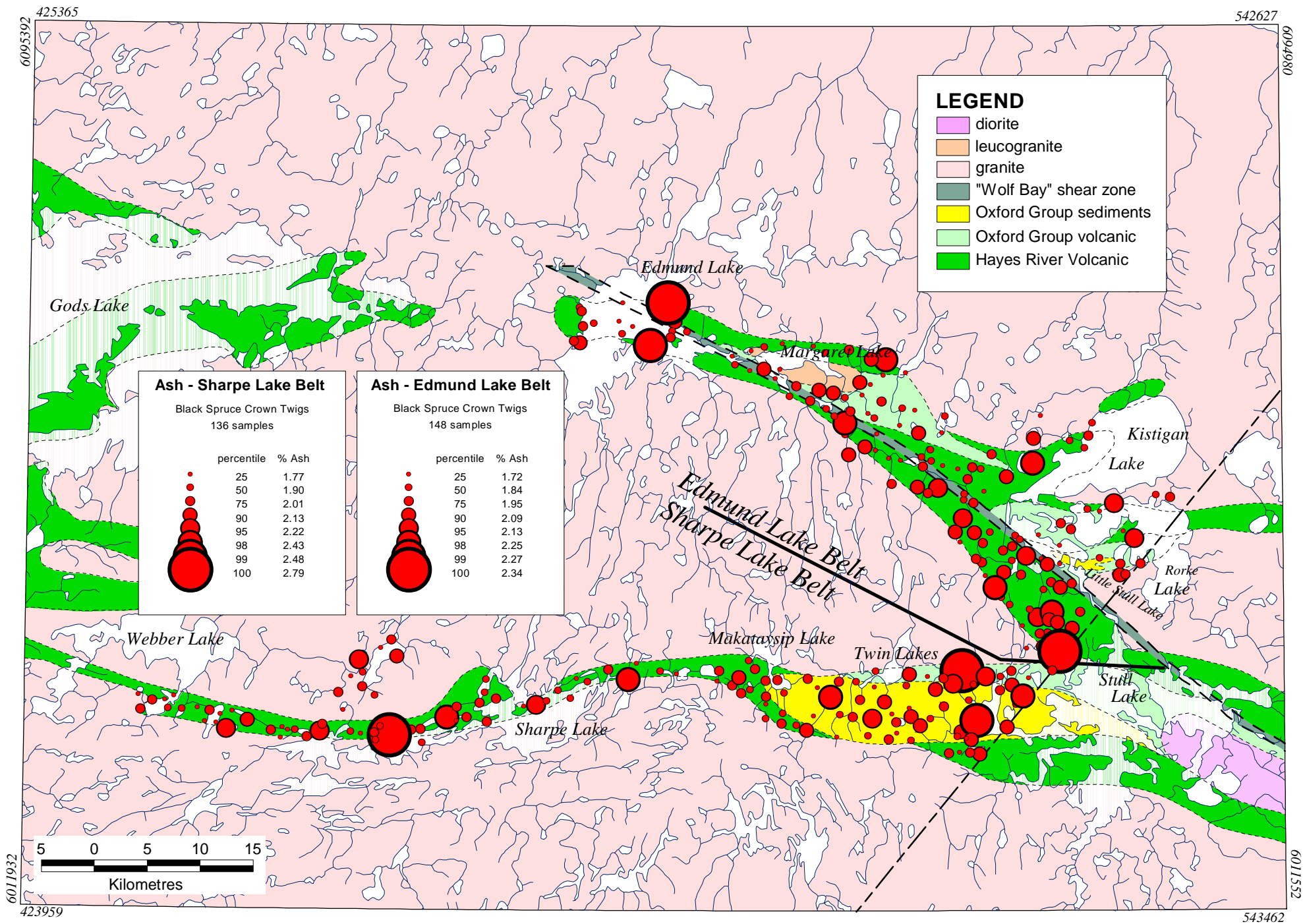
Sample Site	UTM		Ash %	Ag ppm	Cd ppm	Cu ppm	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm	Al %	Ba ppm	Co ppm	Cr ppm	Fe %
	EAST	NORTH														
BSC-225	484355	6033976	1.82	0.20	1.00	192	20060	2.0	62	8	1892	0.24	220	4	10	0.16
BSC-226	507579	6032592	1.88	0.25	0.53	151	26386	2.5	37	8	1982	0.19	249	2	8	0.19
BSC-226	507579	6032592	1.88	0.25	0.55	154	26709	2.5	38	12	2027	0.20	252	2	9	0.17
BSC-246	458806	6027939	2.70	0.70	2.70	182	11239	2.0	54	4	1058	0.16	367	11	4	0.11
BSC-246	458806	6027939	2.70	1.00	2.80	191	12102	2.5	56	2	1094	0.15	581	13	2	0.13
BSC-257	439225	6030492	1.87	0.20	2.30	131	17478	2.0	66	18	1486	0.37	271	4	8	0.35
BSC-257	439225	6030492	1.87	0.25	1.90	136	18109	2.5	66	19	1560	0.40	296	5	7	0.38
BSC-273	466096	6029651	1.87	0.40	1.40	226	16516	2.0	20	14	1884	0.16	218	4	8	0.20
BSC-273	466096	6029651	2.00	0.40	1.80	196	15336	2.0	16	6	1836	0.10	214	2	2	0.14
BSC-275	441854	6030334	1.97	0.20	1.00	146	21712	2.0	54	12	1706	0.24	360	2	4	0.24
BSC-275	441854	6030334	1.97	0.25	1.80	163	24327	2.5	62	12	1911	0.25	407	1	5	0.25

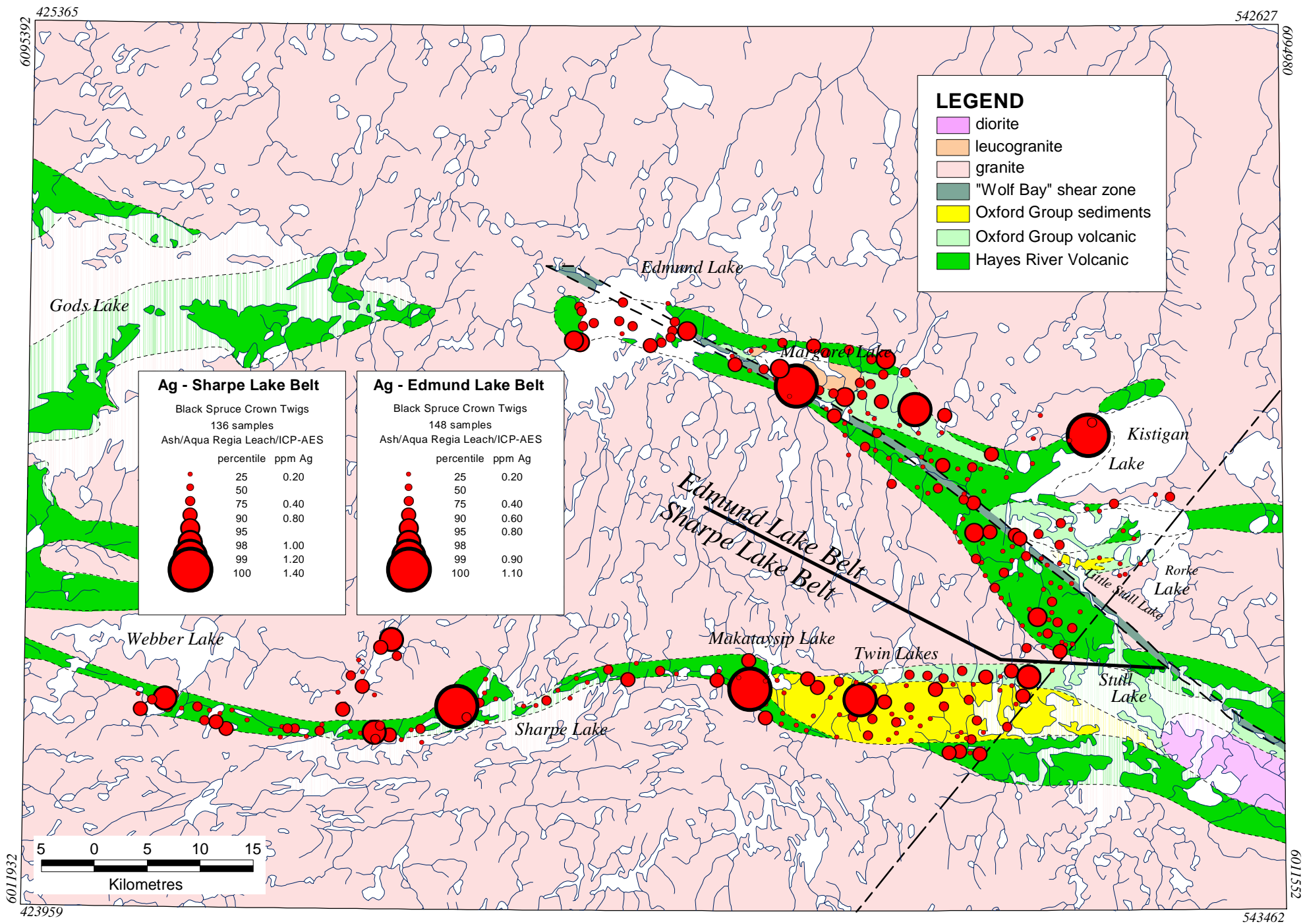
Sample Site	K %	Mg %	Na %	P ppm	Sb ppm	Sr ppm	V ppm	Zr ppm
BSC-9	9.42	5.07	0.08	4379	20.0	169	4	4
BSC-9	8.96	4.76	0.08	3998	7.0	157	3	3
BSC-27	9.70	4.86	0.04	5060	5.0	250	2	4
BSC-27	8.02	4.36	0.03	3841	8.0	257	3	3
BSC-27	8.19	4.48	0.04	3906	8.5	266	4	4
BSC-48	10.86	6.07	0.06	6018	7.5	314	2	2
BSC-48	11.08	6.22	0.07	6334	8.5	323	2	2
BSC-52	11.14	6.02	0.12	4652	5.0	184	4	4
BSC-52	11.15	5.31	0.08	4192	5.0	176	6	6
BSC-61	9.77	3.03	0.07	3234	9.0	422	4	2
BSC-61	10.57	3.26	0.09	3463	7.5	446	6	2
BSC-67	9.60	4.38	0.04	3756	5.0	198	4	4
BSC-67	10.26	5.84	0.14	4745	5.5	212	5	5
BSC-75	10.51	4.68	0.07	5390	5.5	276	2	5
BSC-75	10.64	4.75	0.07	5436	5.5	277	2	4
BSC-88	12.38	4.32	0.06	4468	5.0	208	4	4
BSC-88	11.22	4.24	0.14	4450	5.0	194	10	6
BSC-93	8.51	3.63	0.11	3335	5.5	121	9	7
BSC-93	8.55	3.58	0.10	3342	6.0	122	10	7
BSC-110	11.50	5.50	0.04	4972	5.0	220	2	4
BSC-110	7.86	6.16	0.04	3914	5.0	208	4	6
BSC-111	9.17	5.20	0.16	4339	8.0	143	3	3
BSC-111	8.58	4.87	0.15	4059	7.5	133	3	3
BSC-122	8.68	3.39	0.11	3332	7.0	451	3	2
BSC-122	8.28	3.23	0.10	3224	8.0	432	2	2
BSC-143	5.46	3.01	0.02	2308	5.5	185	4	4
BSC-143	5.63	3.08	0.06	2374	7.0	190	6	3
BSC-143	9.54	4.16	0.06	2688	5.0	158	6	4
BSC-157	8.28	3.45	0.07	3621	6.0	446	1	1
BSC-157	9.38	3.93	0.08	4110	6.0	500	3	2
BSC-158	9.90	3.08	0.06	2398	5.0	154	2	2
BSC-158	11.84	4.94	0.06	3210	5.0	296	4	4
BSC-183	13.54	4.60	0.06	3240	5.0	124	6	2
BSC-183	8.76	4.14	0.06	2628	5.0	176	6	4
BSC-195	11.74	4.46	0.07	2851	6.0	295	7	2
BSC-195	12.38	4.76	0.08	3077	7.0	316	6	3
BSC-204	13.88	6.72	0.08	4888	5.0	276	6	4
BSC-204	14.06	5.08	0.08	3602	5.0	228	4	4
BSC-210	14.34	5.67	0.06	3922	7.5	308	3	6
BSC-210	16.18	6.42	0.06	4418	7.5	347	3	9
BSC-225	14.52	6.32	0.06	3976	5.0	268	6	4

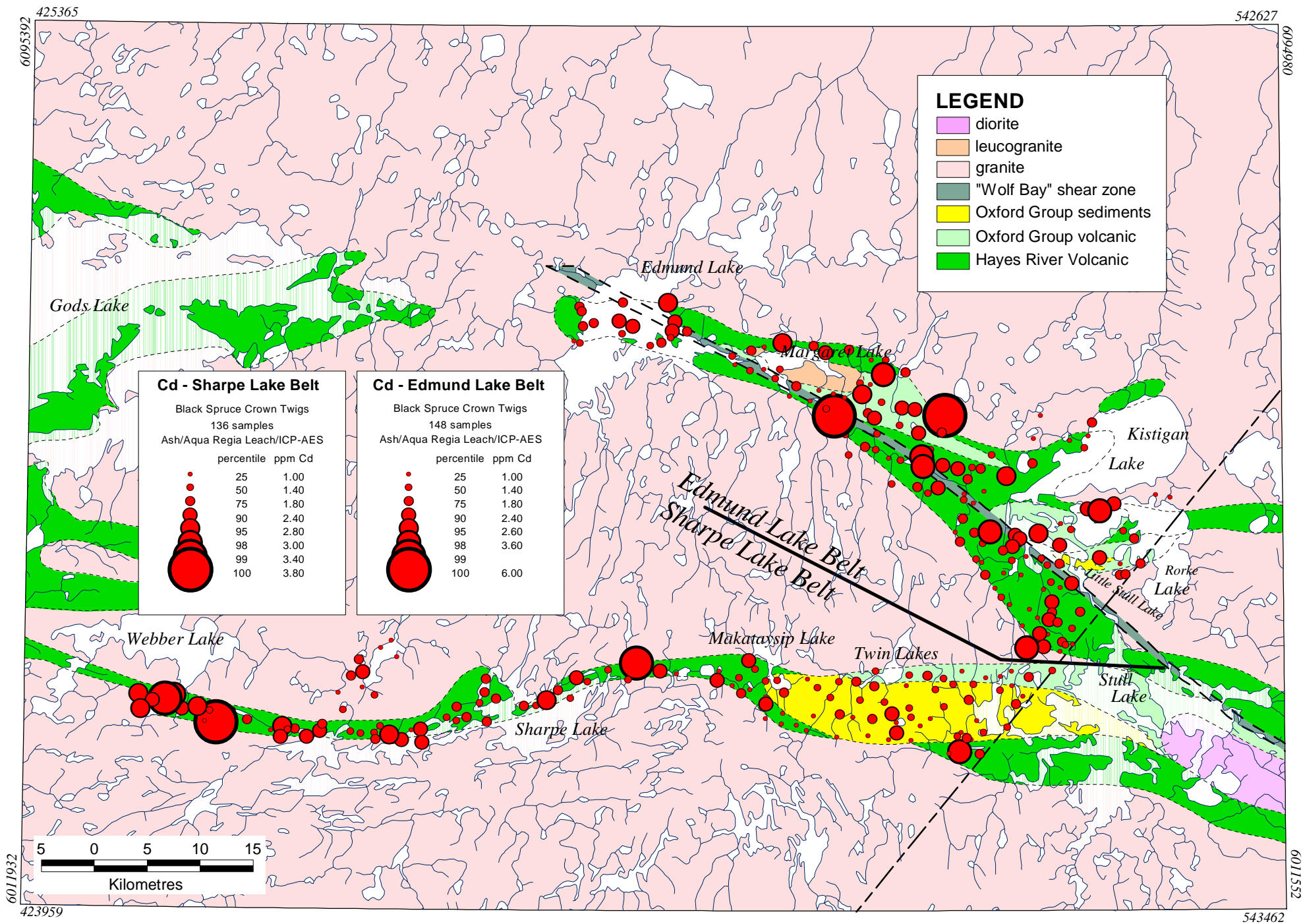
Sample Site	K %	Mg %	Na %	P ppm	Sb ppm	Sr ppm	V ppm	Zr ppm
BSC-225	12.56	5.90	0.04	3820	5.0	196	4	4
BSC-226	18.42	5.14	0.03	4017	6.5	58	3	5
BSC-226	18.65	5.22	0.03	4138	7.5	58	3	6
BSC-246	9.52	2.75	0.02	2174	11.0	254	1	1
BSC-246	10.02	2.86	0.03	2264	13.0	275	1	1
BSC-257	9.64	4.37	0.04	3030	5.0	164	6	4
BSC-257	10.13	4.54	0.05	3198	6.0	172	7	5
BSC-273	12.36	5.44	0.04	3724	5.0	268	4	4
BSC-273	12.36	4.70	0.04	4154	5.0	462	2	2
BSC-275	9.62	4.62	0.04	3274	5.0	100	4	4
BSC-275	10.79	5.20	0.05	3692	5.5	113	5	5

### Appendix 3

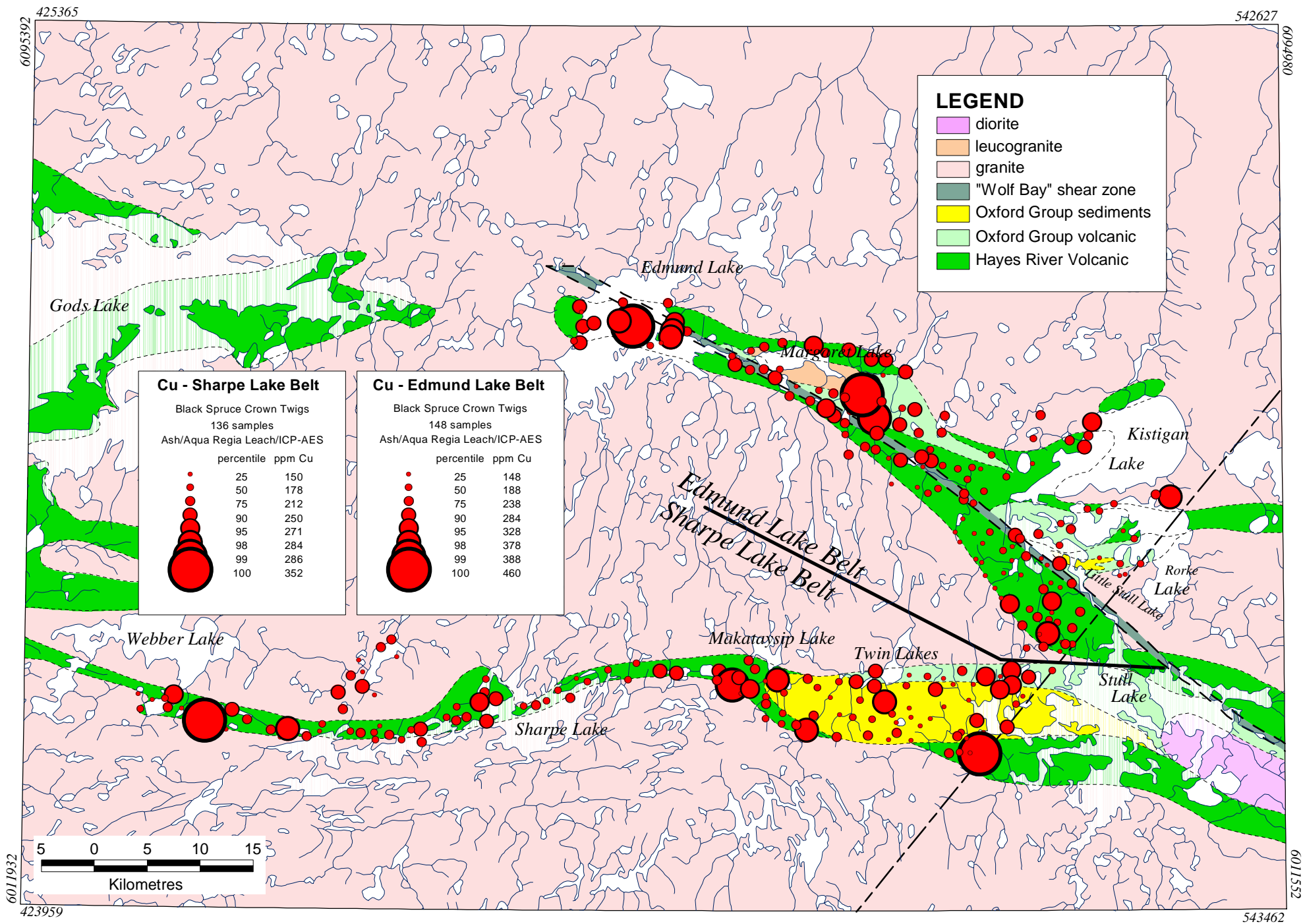
#### **Black Spruce (*Picea mariana*) Crown Twig Geochemistry: Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP- AES) Percentile Bubble Plots.**



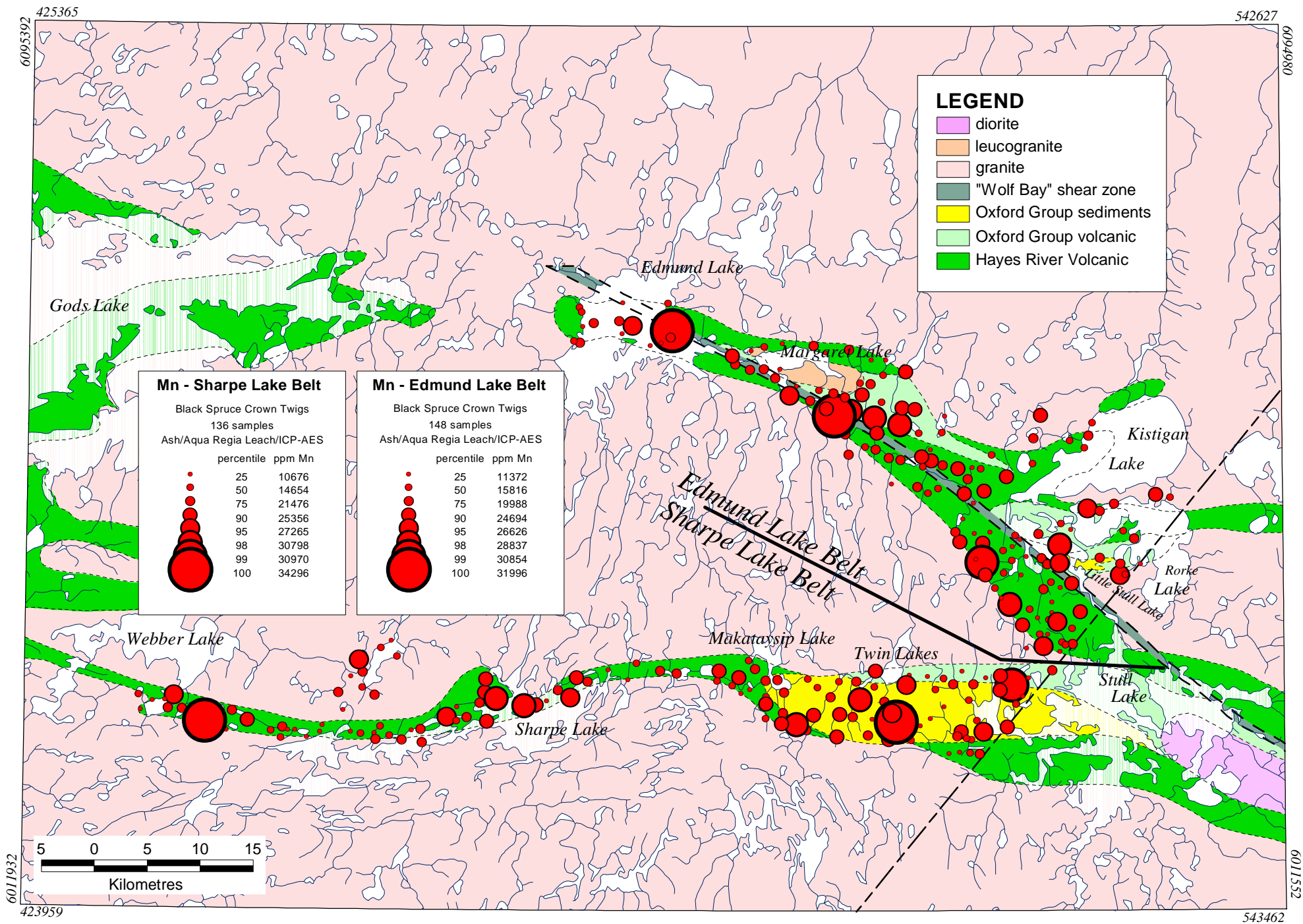


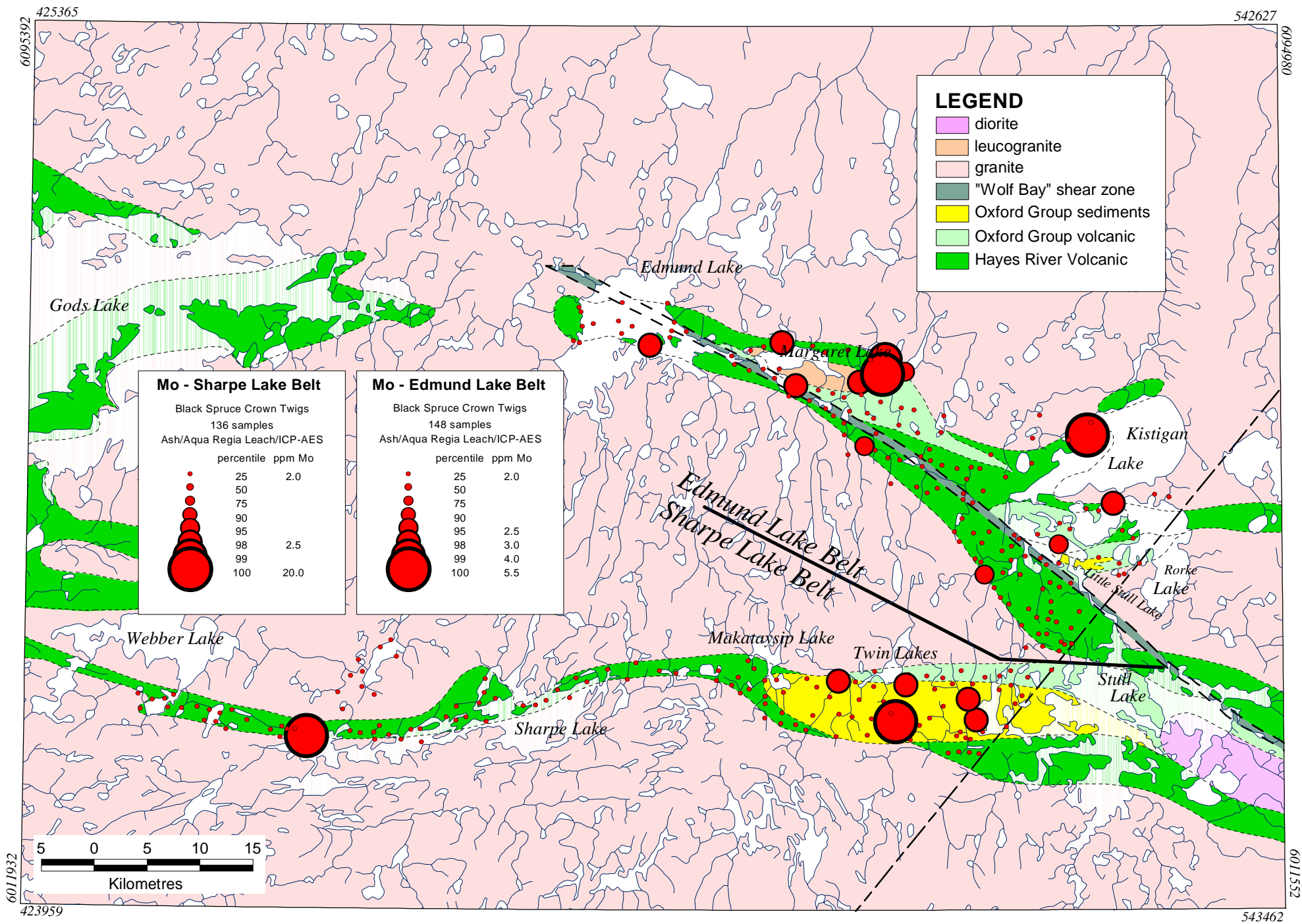


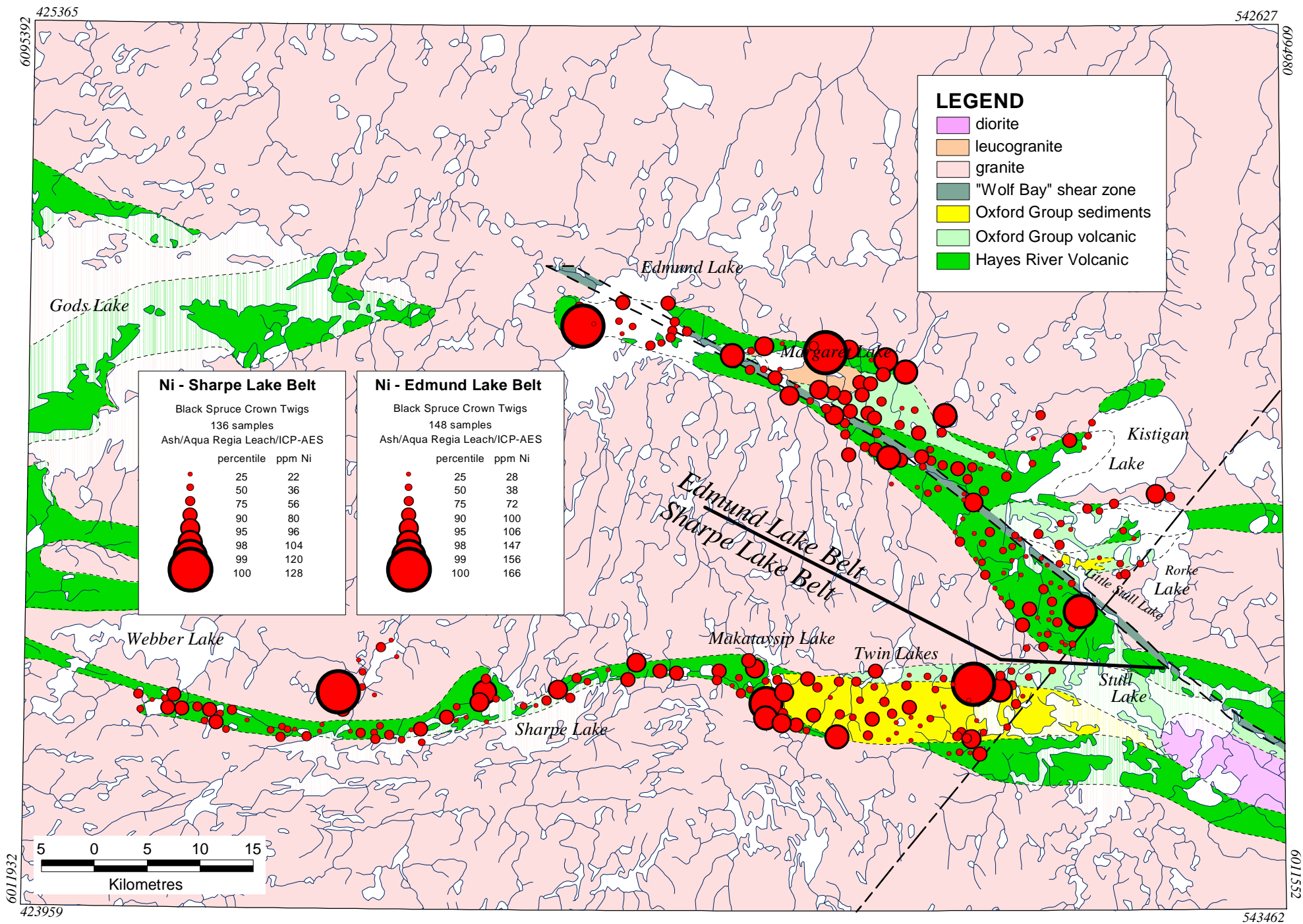




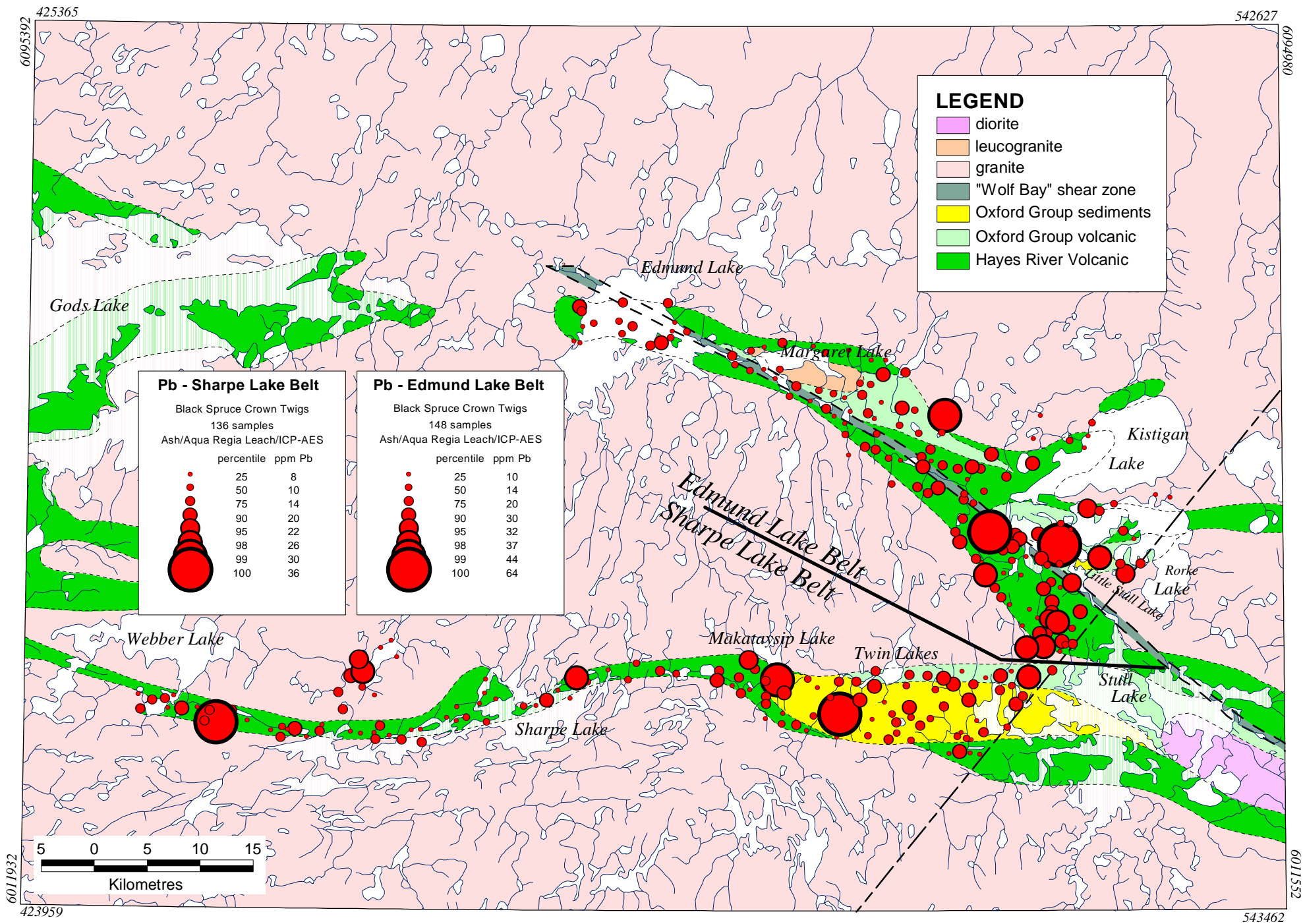


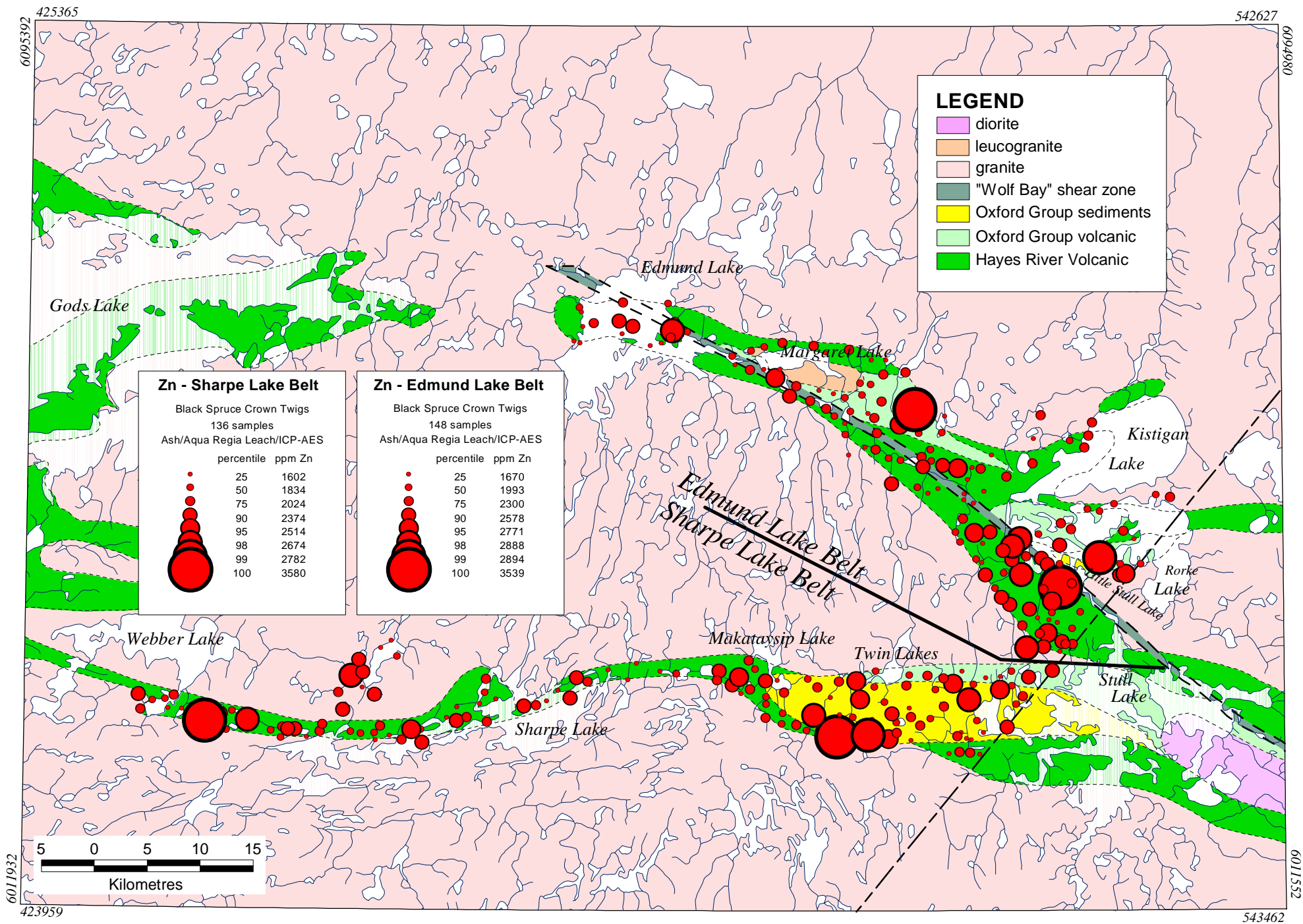


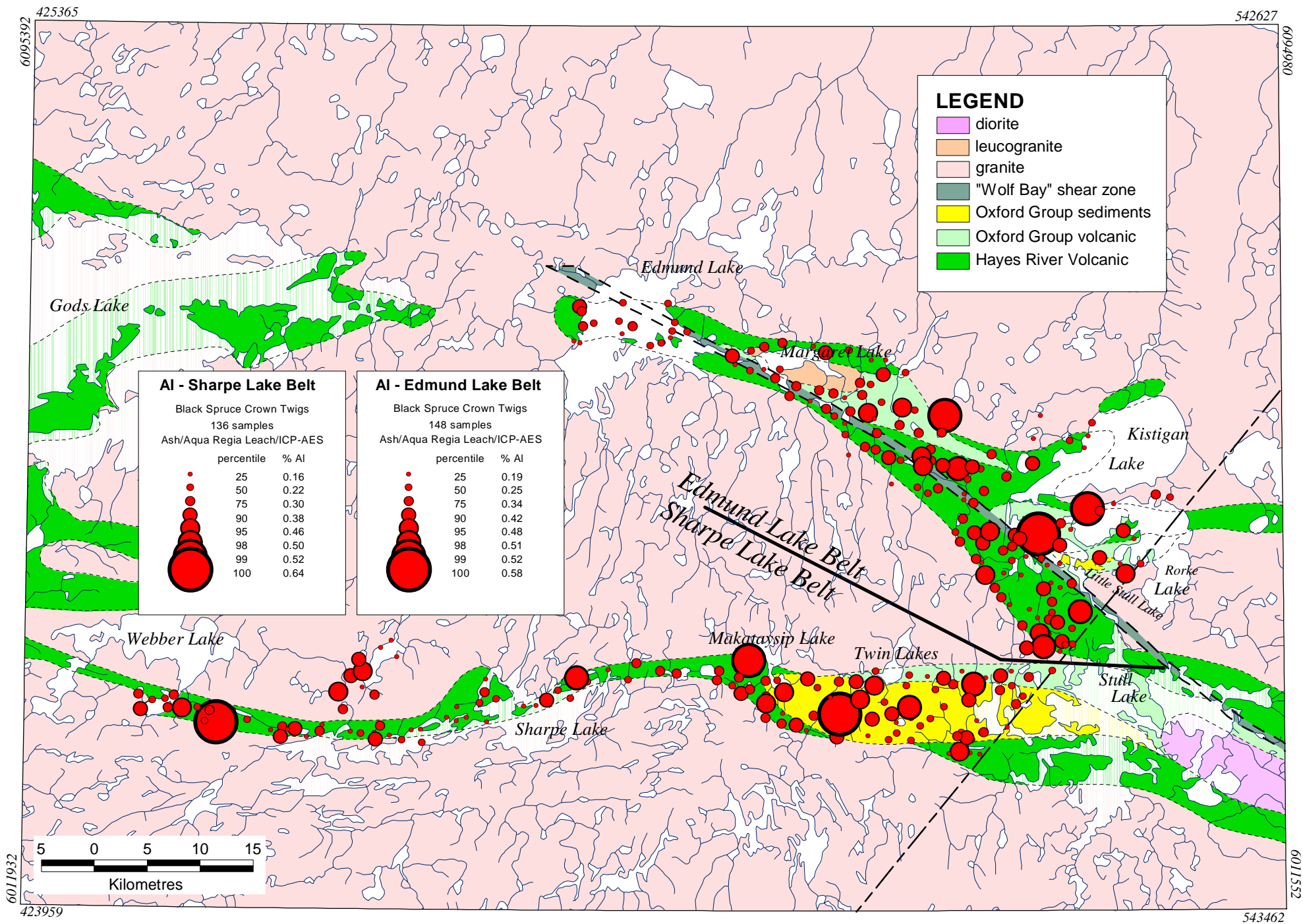




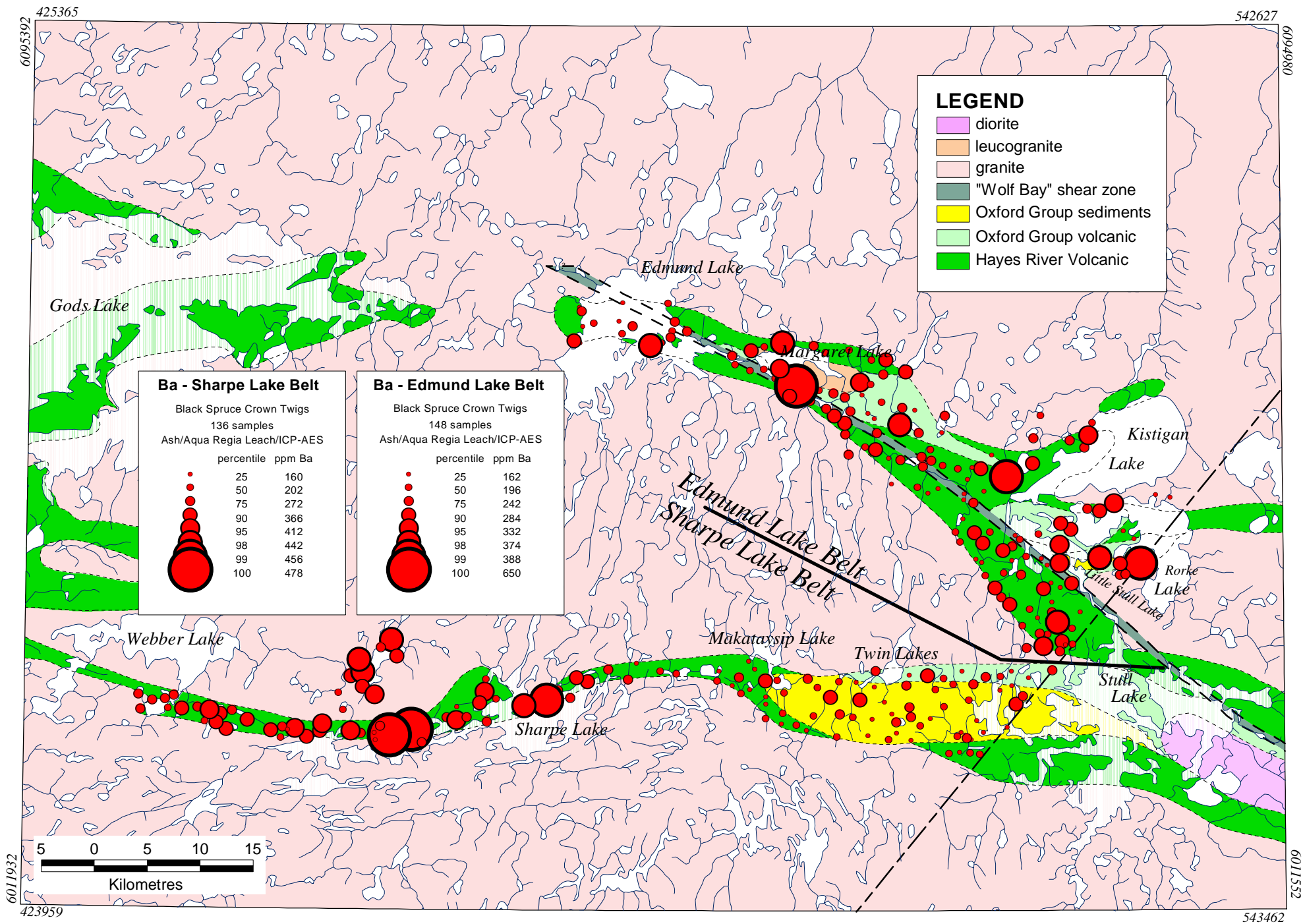


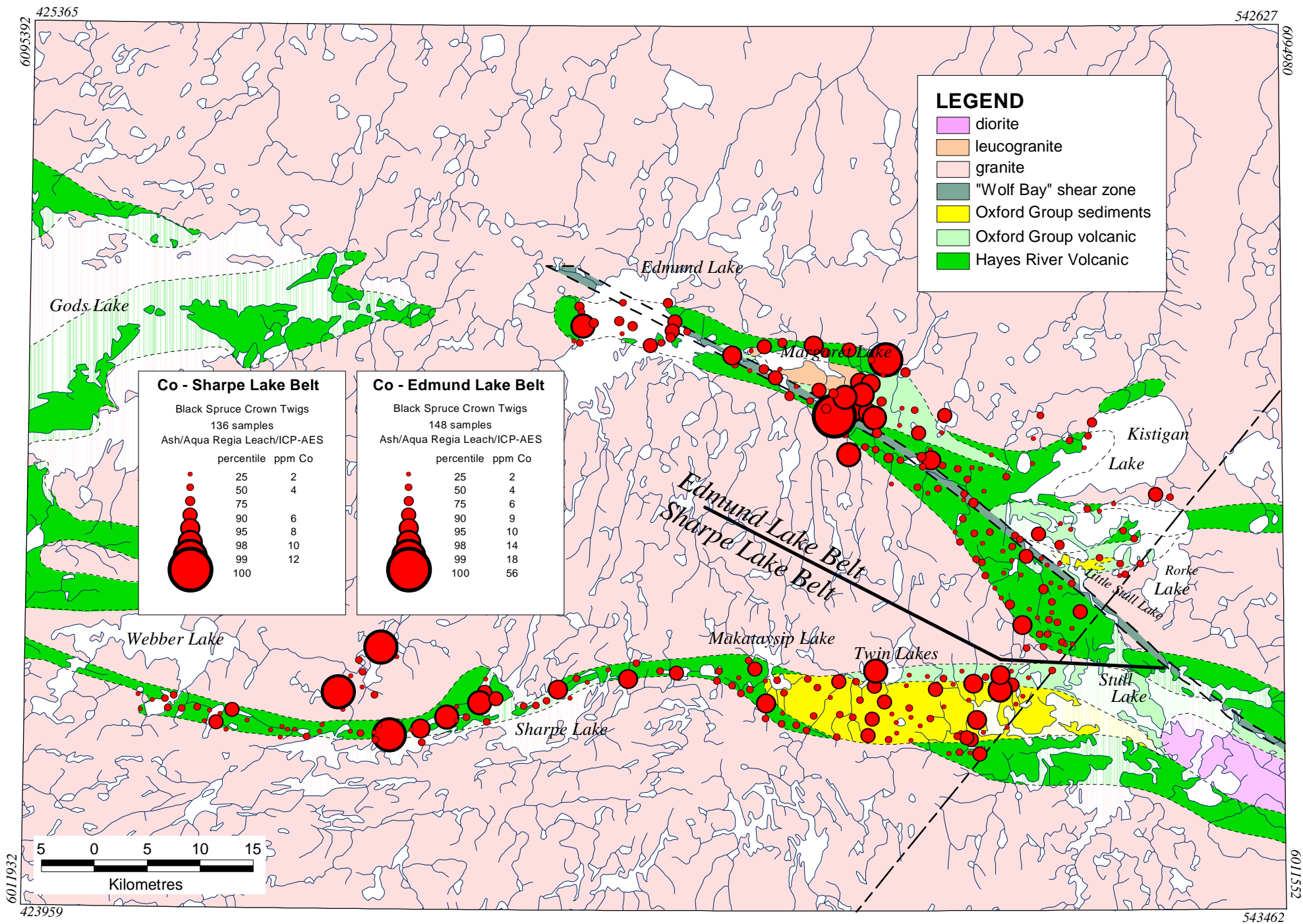




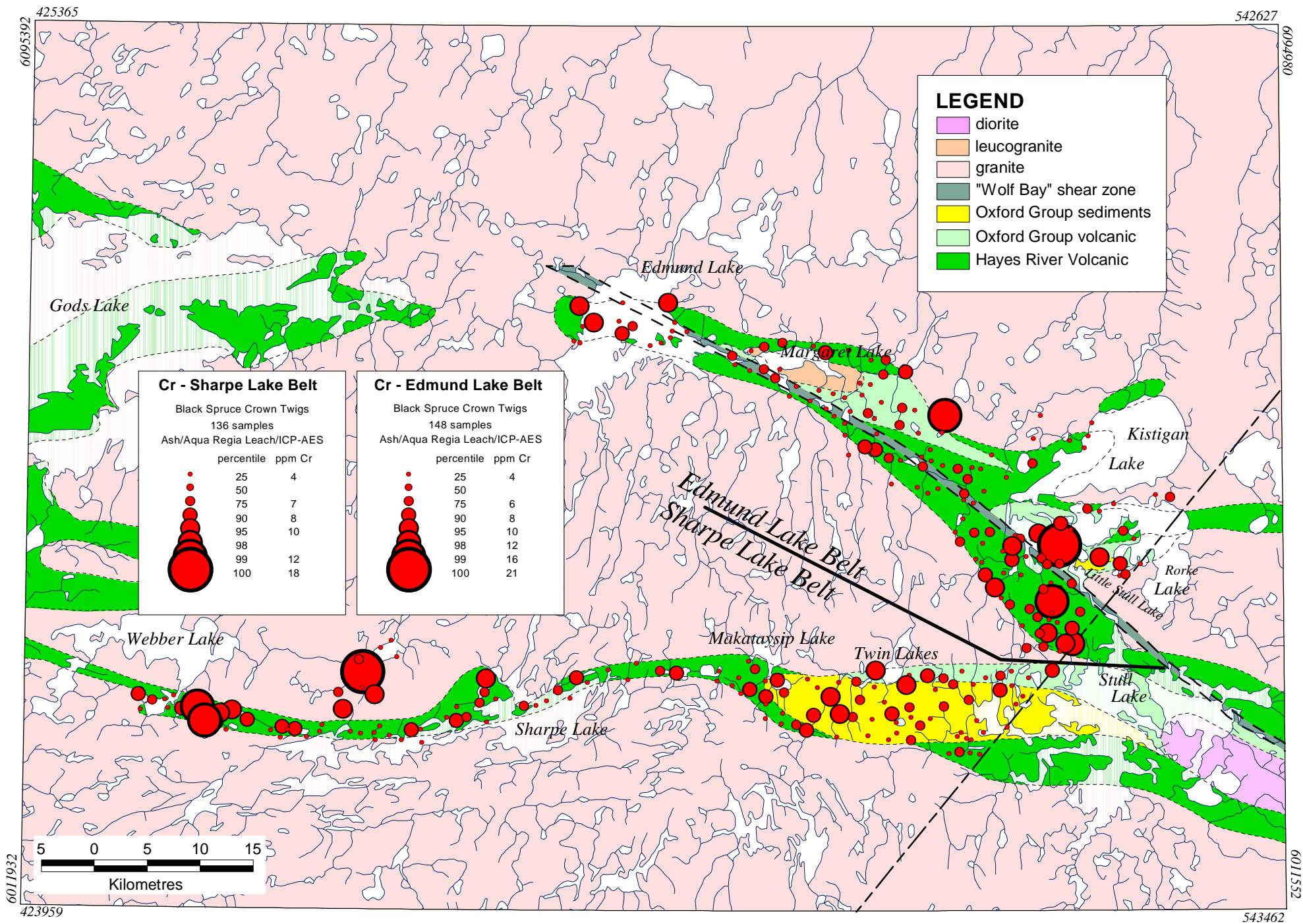


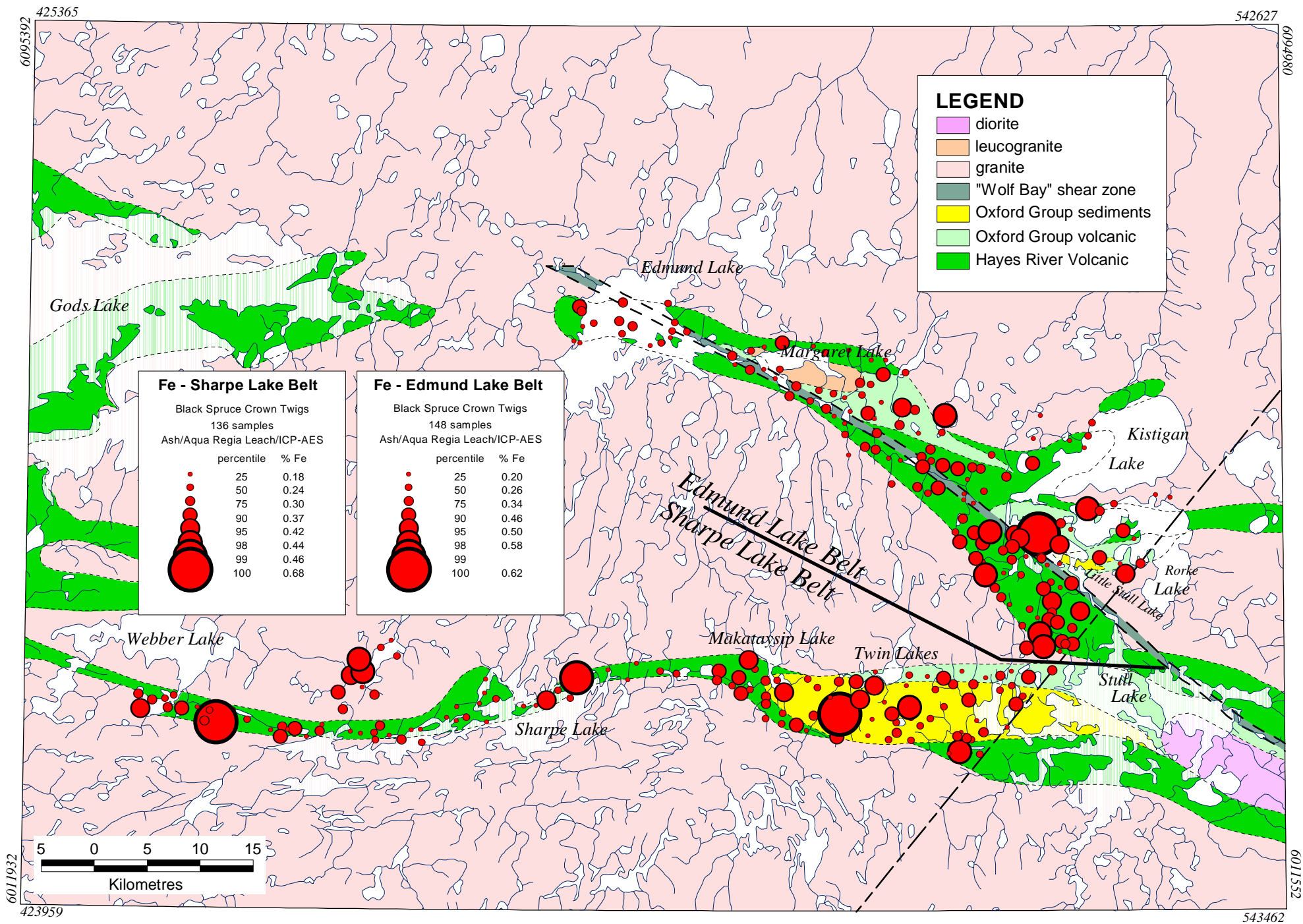


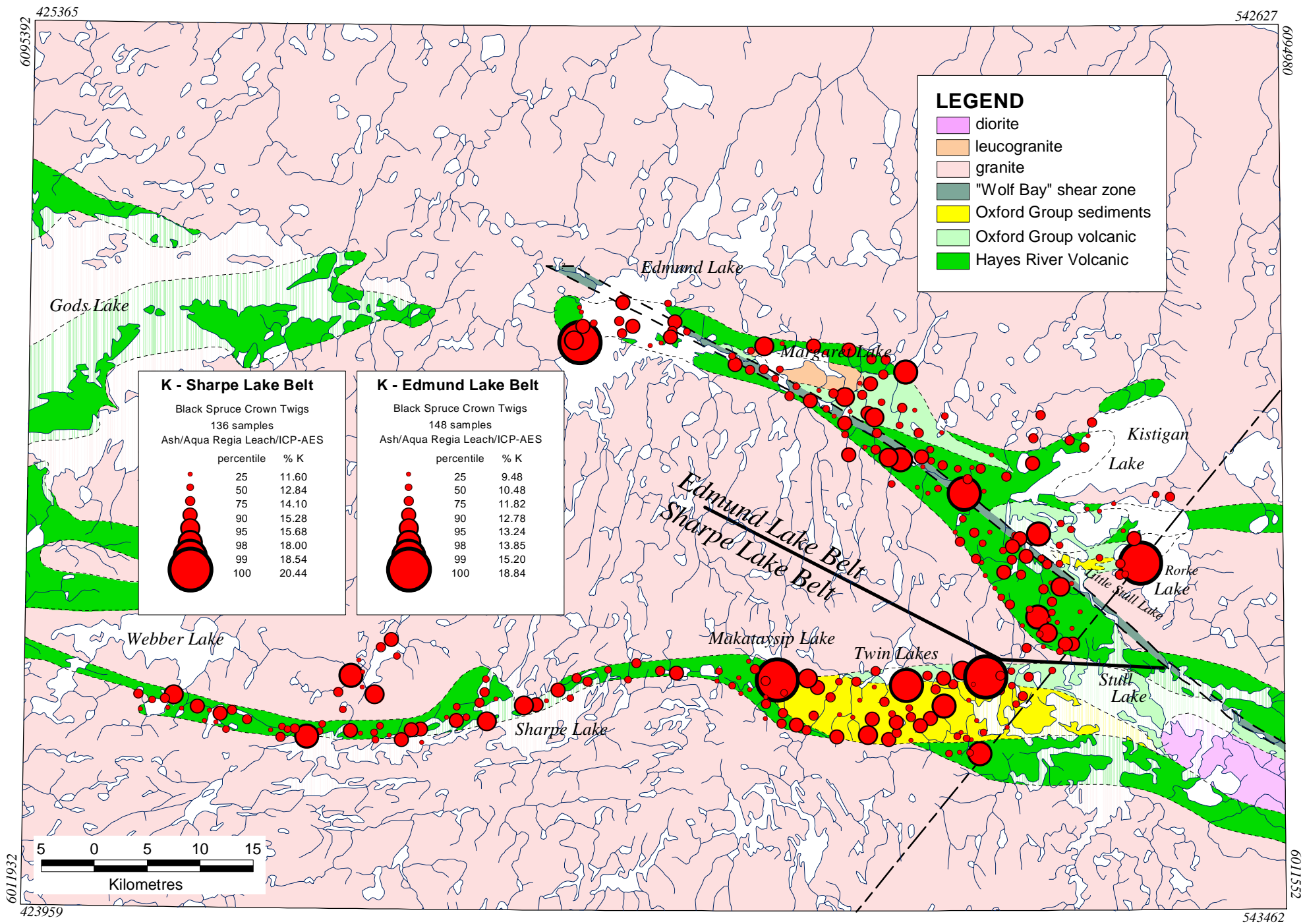




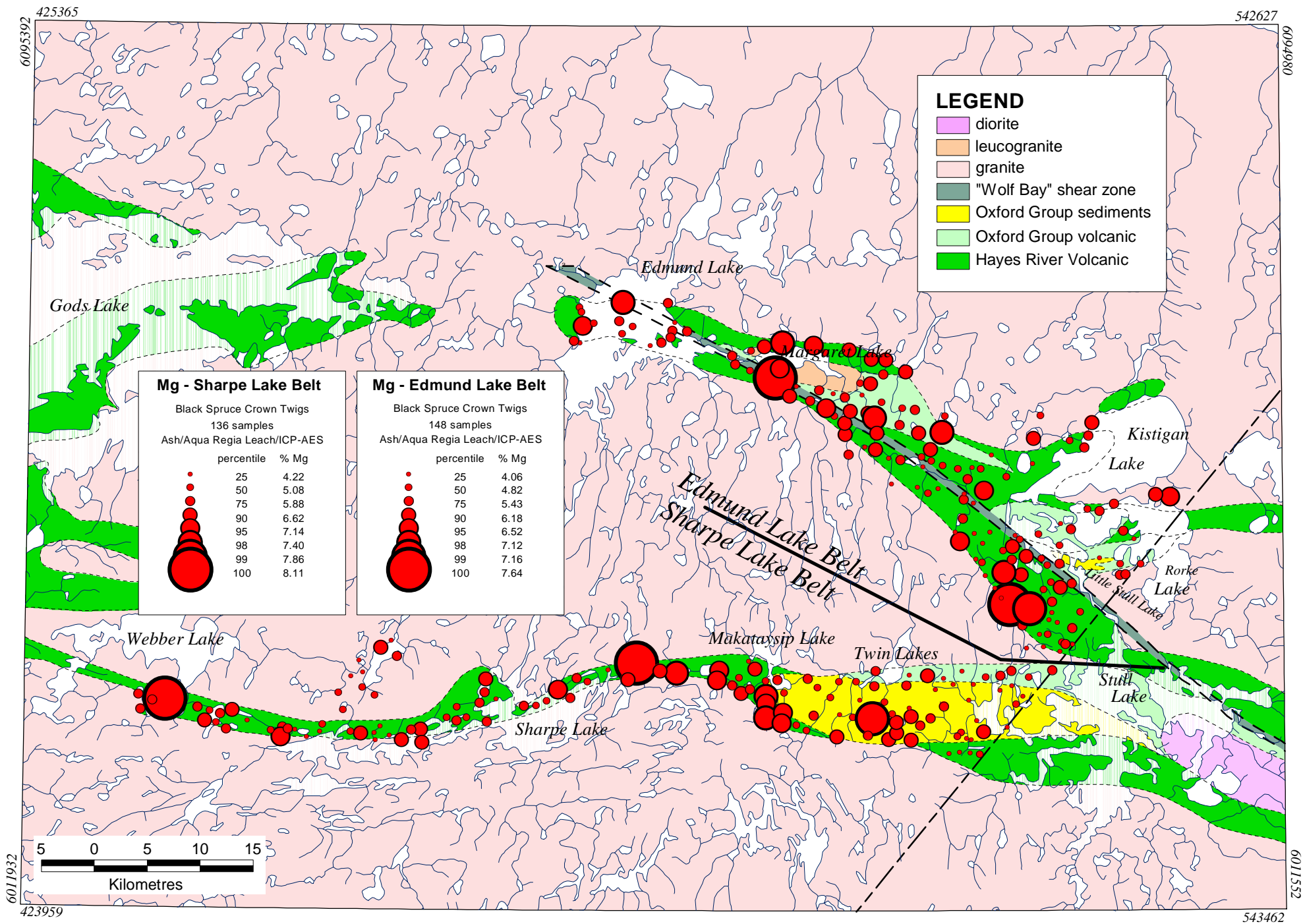


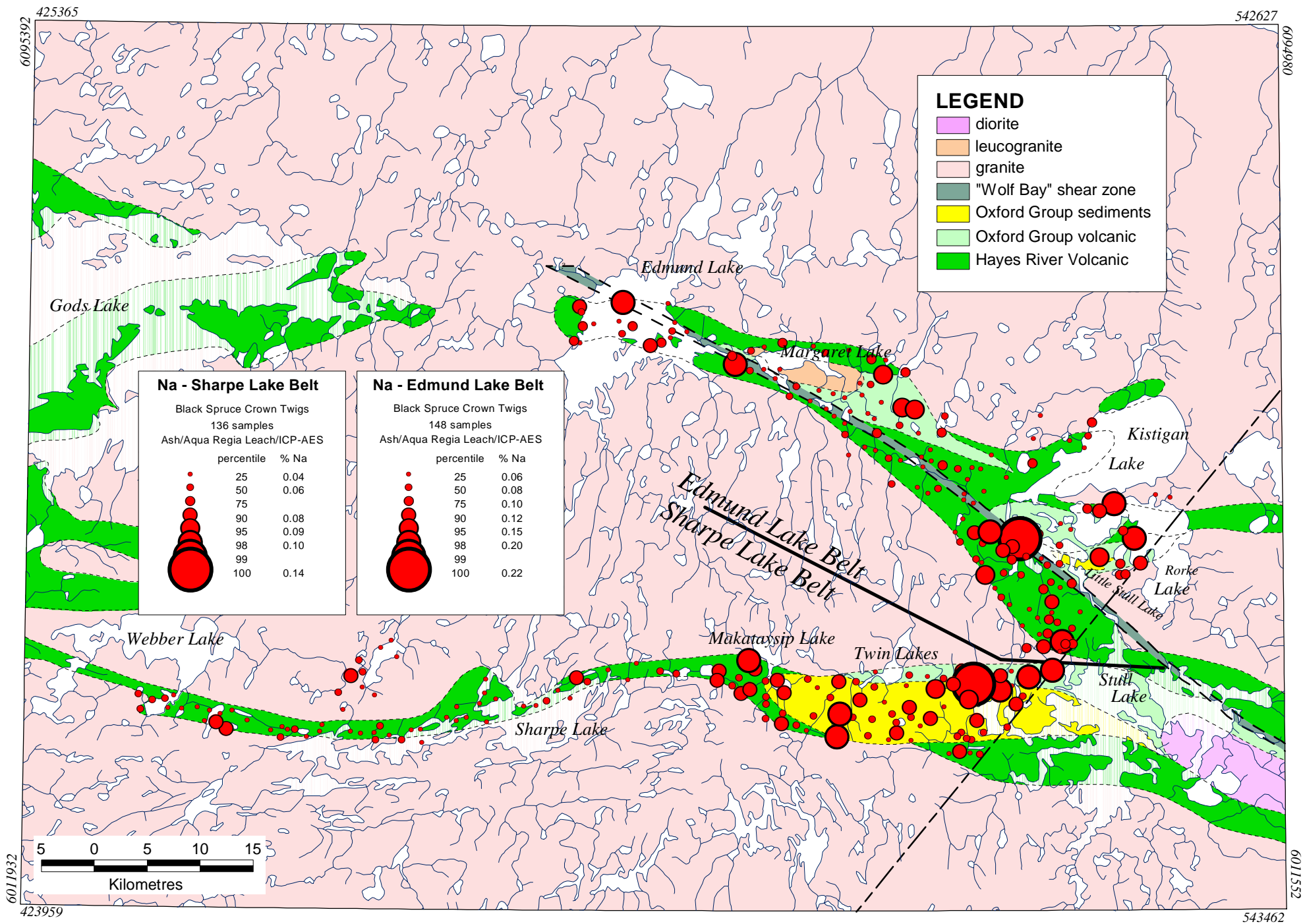


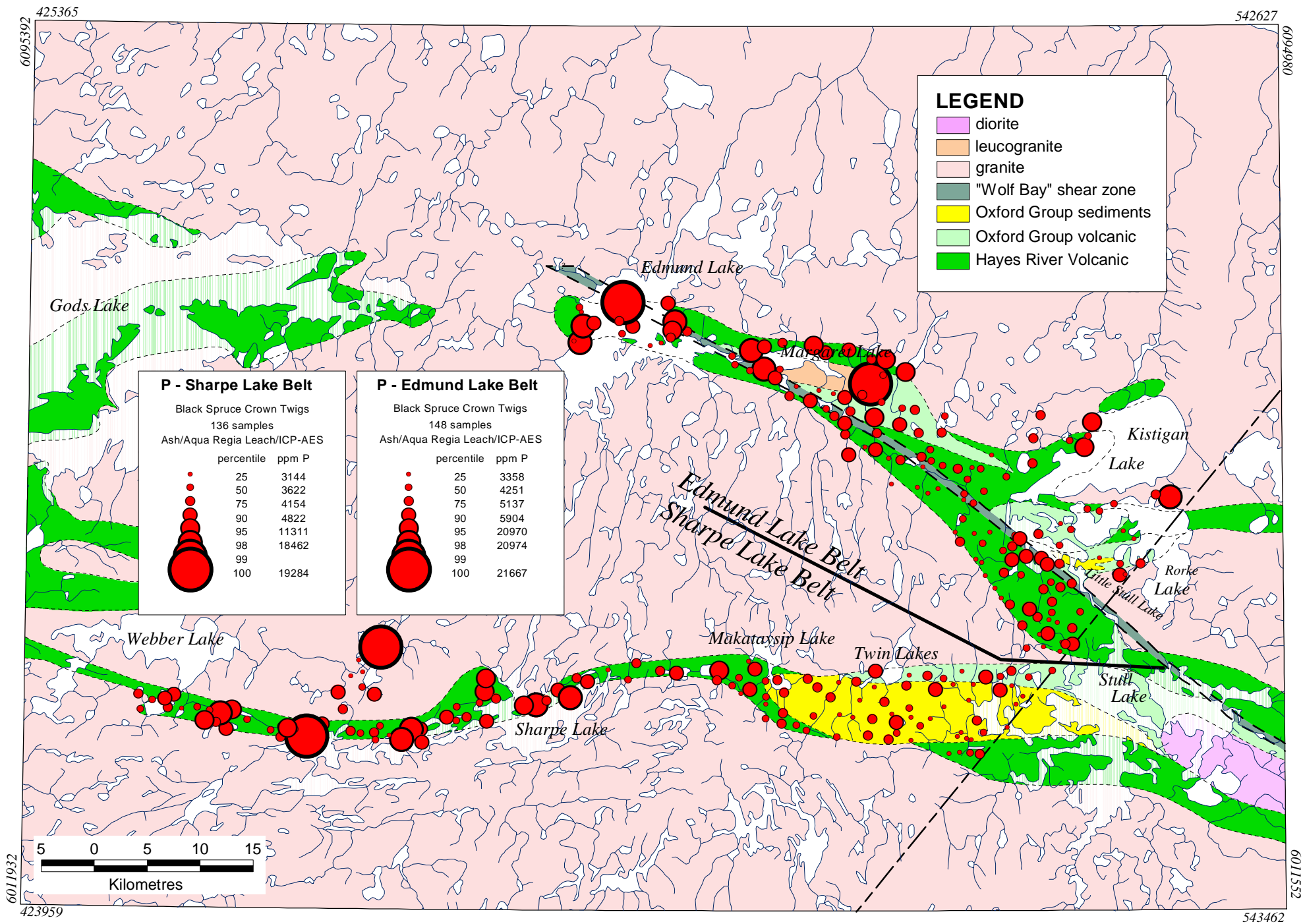




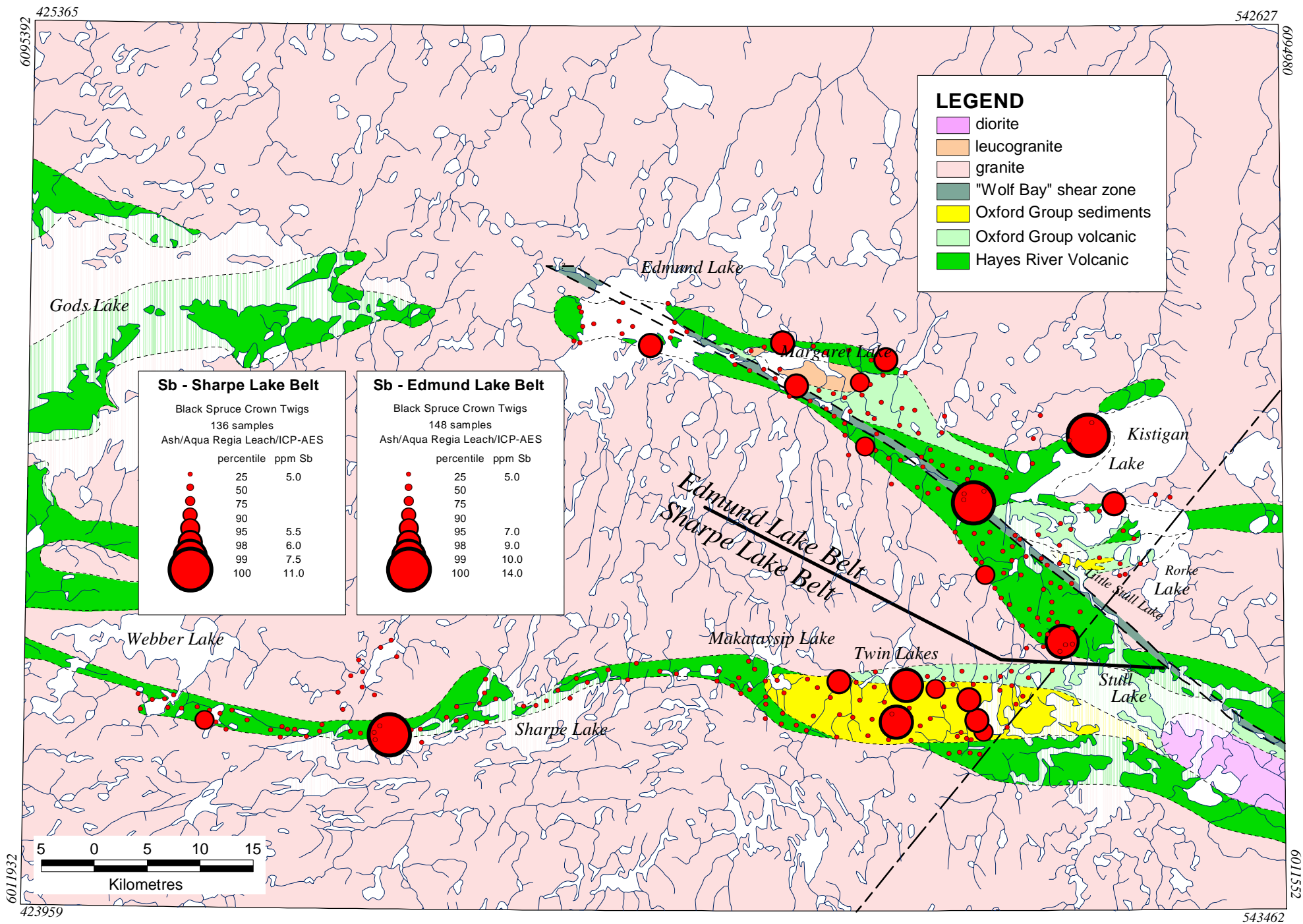


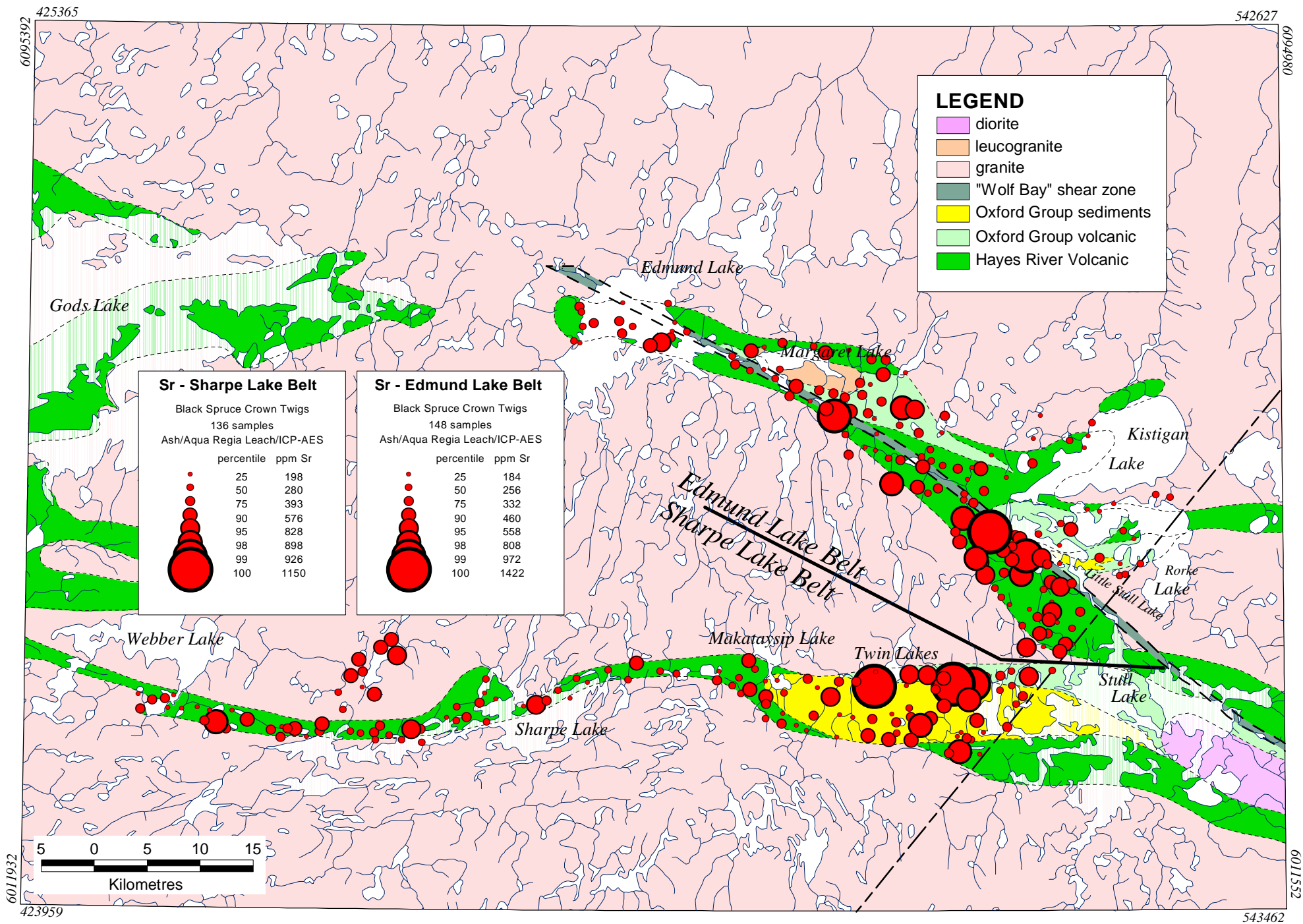




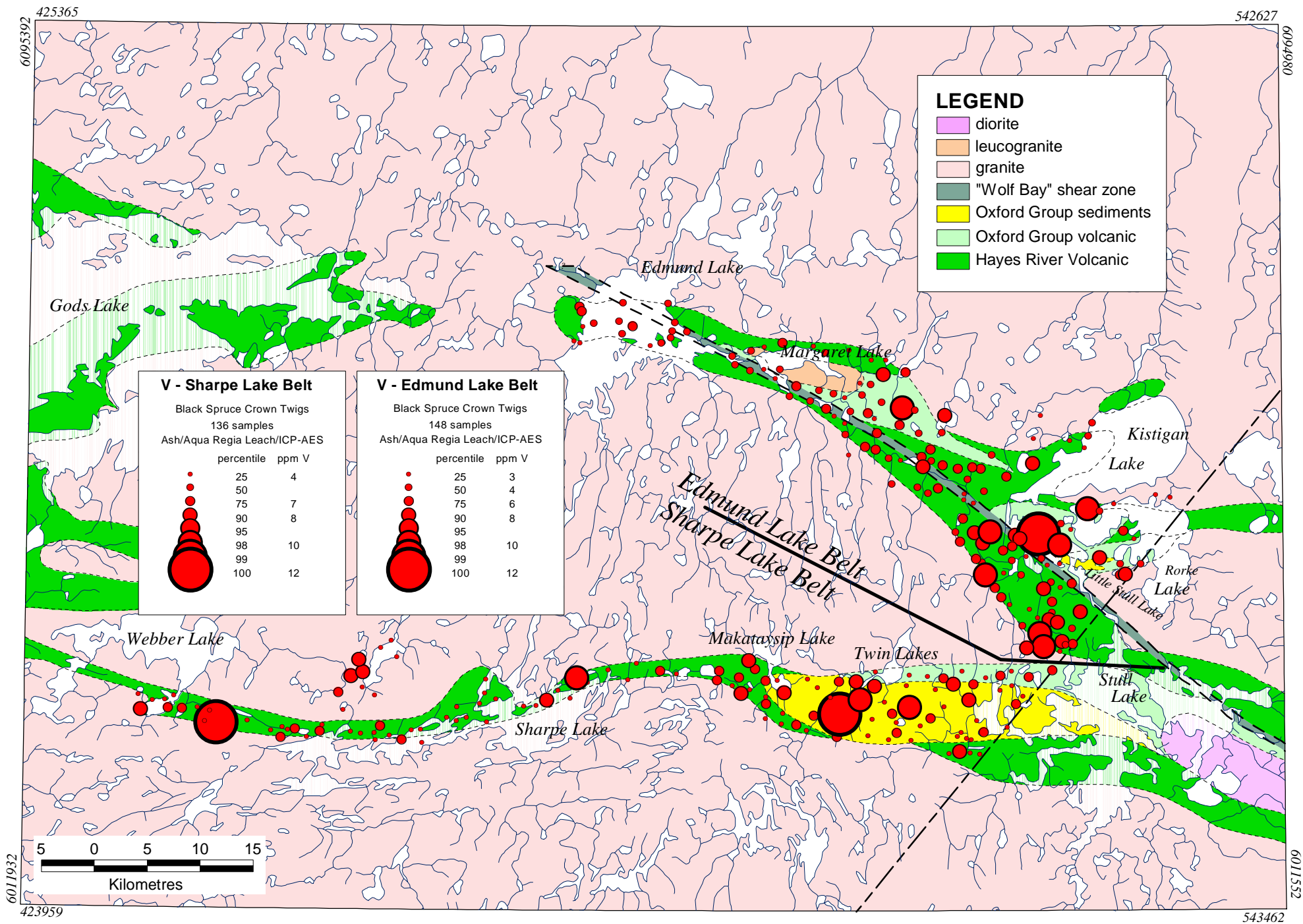


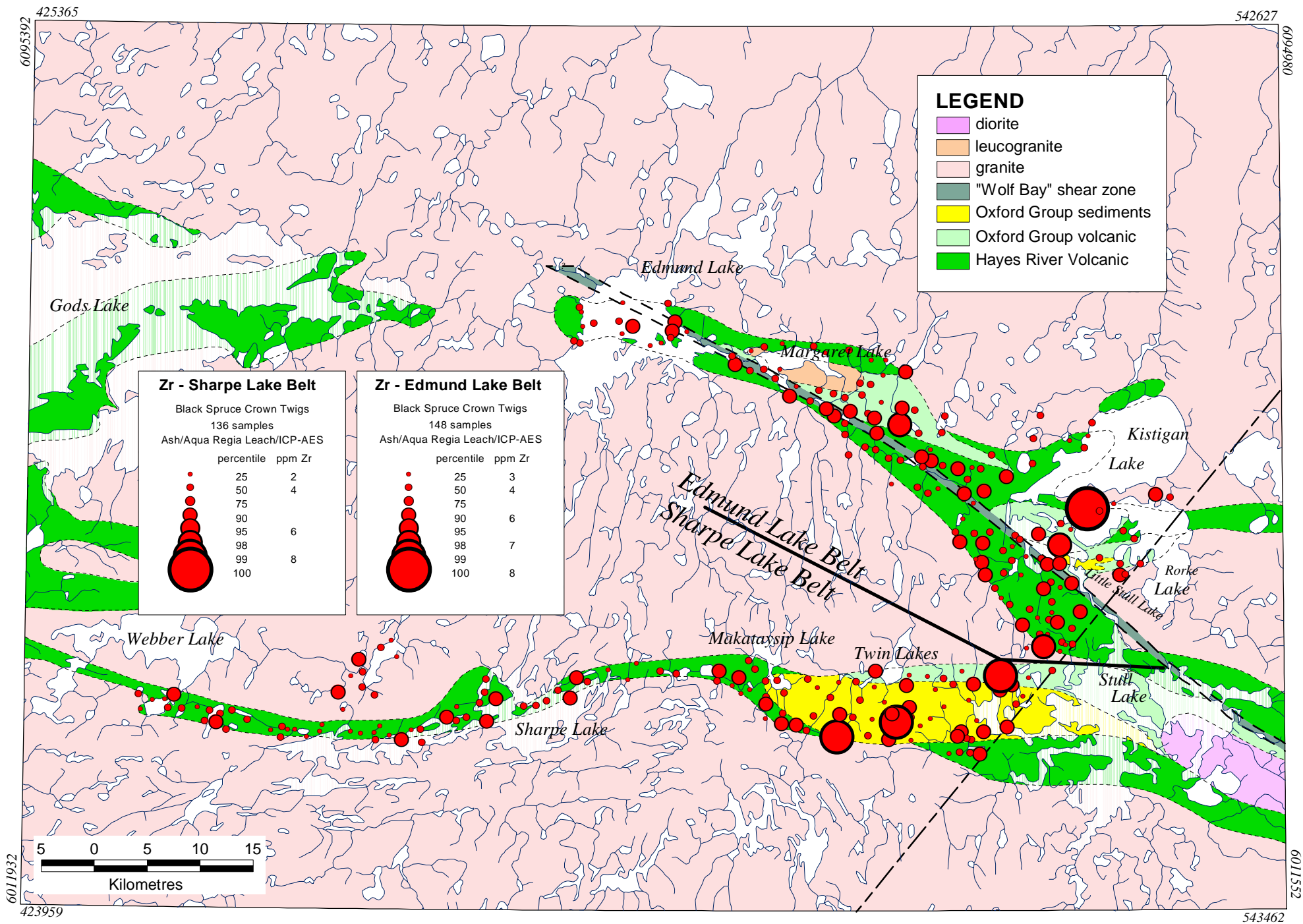


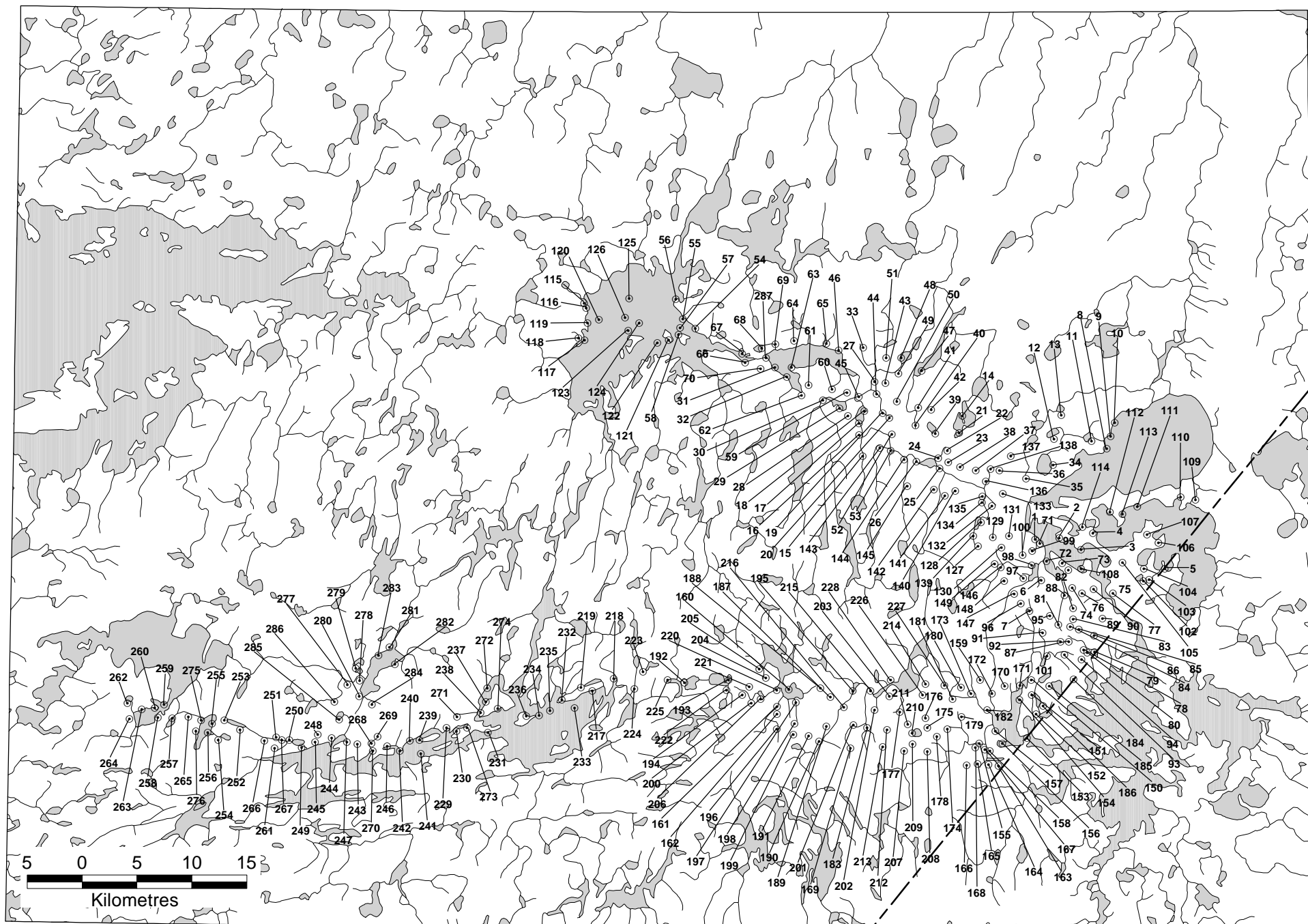












# Appendix 4

## Black Spruce (*Picea mariana*) Crown Twig Geochemistry: Instrumental Neutron Activation Analyses (INAA) for Ashed Samples

Sample Site	UTM		Ash	Au	As	Ba	Br	Ca	Co	Cr	Cs	Fe	Hf	K	Na
	EAST	NORTH	%	ppb	ppm	ppm	ppm	%	ppm	ppm	ppm	%	ppm	%	ppm
BSC-1	517844	6046787	1.80	9.0	1.80	1000	27	22.50	4	8.0	2.20	0.49	0.60	14.10	2950
BSC-2	520028	6046856	1.69	10.0	3.80	810	41	14.90	10	20.0	2.70	0.84	1.50	21.80	2890
BSC-3	522022	6045835	1.60	12.0	2.00	390	33	21.80	3	28.0	4.60	0.57	1.00	15.60	1880
BSC-4	523123	6047360	1.87	2.5	1.70	780	19	23.60	3	6.0	7.80	0.26	0.25	16.00	733
BSC-5	529662	6044145	1.89	2.5	0.25	480	37	13.50	4	0.5	2.60	0.34	0.25	27.80	2000
BSC-6	518401	6043035	1.90	7.0	1.10	880	33	17.20	3	7.0	2.30	0.42	0.70	18.80	1430
BSC-7	517331	6040220	1.77	7.0	0.90	540	24	20.00	5	7.0	22.00	0.25	0.70	15.90	782
BSC-8	524367	6055073	1.77	7.0	1.40	290	26	19.00	3	0.5	4.30	0.24	0.25	19.30	928
BSC-9	524733	6056170	1.94	11.0	2.20	365	30	23.45	4	0.5	1.75	0.39	0.25	16.00	1555
BSC-10	525113	6057420	1.83	8.0	0.25	620	22	18.10	7	0.5	5.50	0.45	0.25	17.90	1570
BSC-11	522988	6055725	1.81	8.0	1.70	770	40	21.80	6	6.0	9.10	0.31	0.25	19.10	1030
BSC-12	519560	6055914	2.02	2.5	1.40	610	11	19.50	3	7.0	7.10	0.26	0.90	16.10	745
BSC-13	520245	6058104	1.72	2.5	1.50	880	47	20.60	6	8.0	4.40	0.37	0.25	19.60	836
BSC-14	511198	6058043	1.81	2.5	1.60	690	45	19.40	9	26.0	8.60	0.93	1.50	16.70	2760
BSC-15	502125	6054351	2.08	2.5	0.25	2300	15	20.00	17	0.5	1.90	0.29	0.25	22.10	503
BSC-16	501813	6056254	1.78	2.5	1.60	910	23	21.50	5	0.5	11.00	0.41	0.25	17.40	1450
BSC-17	501778	6057331	2.14	2.5	0.90	1300	24	20.90	6	7.0	5.70	0.25	1.00	17.80	759
BSC-18	502316	6058450	1.87	14.0	0.70	2200	21	23.70	15	5.0	22.00	0.34	0.25	16.00	1140
BSC-19	503981	6058302	1.79	5.8	1.85	995	71	19.60	10	9.5	5.55	0.62	0.75	19.25	2065
BSC-20	504550	6057806	1.81	11.0	0.25	700	26	14.30	17	0.5	19.00	0.23	0.25	22.10	657
BSC-21	510943	6056465	1.59	8.0	2.30	230	28	21.20	3	7.0	9.20	0.41	0.80	16.00	1750
BSC-22	509841	6054884	1.74	24.0	1.60	700	18	22.30	2	9.0	3.00	0.47	0.25	16.80	1280
BSC-23	509948	6053778	1.82	2.5	1.00	1400	44	22.00	10	0.5	78.00	0.34	0.25	18.80	1230
BSC-24	509040	6054136	1.79	11.0	1.20	930	62	20.90	6	7.0	16.00	0.43	0.60	19.60	1230
BSC-25	509160	6053238	1.87	10.0	1.90	1800	31	27.40	4	10.0	4.70	0.65	1.30	11.80	1980
BSC-26	507026	6053858	1.63	12.0	0.25	2000	31	22.20	4	9.0	6.60	0.32	0.25	21.40	848
BSC-27	503212	6061166	2.03	3.3	0.80	1425	39	24.13	11	4.3	6.25	0.33	0.25	14.43	1117
BSC-28	500798	6058006	1.80	6.0	0.80	2800	20	23.20	69	0.5	32.00	0.22	0.25	14.40	714
BSC-29	500018	6058670	1.77	8.0	0.25	1400	44	19.20	8	10.0	10.00	0.32	0.60	19.50	1270
BSC-30	498526	6059429	1.88	2.5	0.25	650	40	22.50	3	0.5	4.90	0.28	0.25	21.60	975
BSC-31	494124	6062419	2.04	5.0	0.25	880	43	20.50	6	7.0	4.60	0.25	0.25	21.40	799
BSC-32	495219	6061599	1.72	7.0	0.50	980	31	22.40	8	0.5	33.00	0.22	0.25	16.00	974
BSC-33	502168	6064279	1.90	12.0	0.50	600	46	20.90	9	9.0	12.00	0.23	0.25	19.50	977
BSC-34	519499	6053552	2.22	7.0	2.60	550	58	20.30	3	9.0	3.40	0.44	0.50	20.50	1940
BSC-35	517033	6052297	2.09	16.0	1.50	580	32	22.90	2	6.0	2.70	0.35	0.25	19.10	1230
BSC-36	514597	6053054	1.78	7.0	1.70	740	28	24.80	2	5.0	2.00	0.42	0.70	19.00	1580
BSC-37	512445	6053053	1.37	2.5	2.90	1300	61	19.70	5	8.0	11.00	0.44	0.50	17.90	1830
BSC-38	511021	6053344	1.66	7.0	2.30	910	45	21.10	4	8.0	4.10	0.51	0.90	18.90	1930
BSC-39	508748	6056431	2.01	2.5	1.50	1600	33	23.10	9	5.0	13.00	0.29	0.50	18.90	1040
BSC-40	506940	6057166	1.58	10.0	0.25	430	33	25.10	4	5.0	21.00	0.35	0.25	15.10	1380
BSC-41	507184	6058780	1.74	8.0	0.25	860	45	18.60	3	5.0	2.70	0.51	0.80	15.50	2350
BSC-42	508372	6058594	1.55	6.0	1.00	1000	21	23.00	5	0.5	29.00	0.33	0.25	10.10	1970
BSC-43	504203	6061045	1.69	6.0	0.80	700	44	18.80	11	4.0	17.00	0.26	0.25	23.20	1260
BSC-44	503423	6060019	1.71	25.0	0.90	1900	40	25.30	11	0.5	13.00	0.31	0.25	20.90	1030
BSC-45	501781	6059766	1.76	6.0	0.25	2100	33	15.80	13	0.5	4.80	0.15	0.25	23.80	645
BSC-46	499940	6063989	1.81	2.5	2.20	930	24	19.30	6	9.0	15.00	0.26	0.25	16.10	1330
BSC-47	507524	6062152	1.44	13.0	0.25	430	69	16.60	7	11.0	6.00	0.32	0.25	24.90	1580
BSC-48	505621	6063322	2.25	5.0	0.25	1600	36	20.35	20	0.5	52.00	0.26	0.25	20.70	1170
BSC-49	505397	6061922	1.65	2.5	2.20	880	66	22.90	5	13.0	3.60	0.60	1.00	21.00	2560
BSC-50	505247	6059379	1.89	6.0	0.25	900	31	24.70	6	0.5	14.00	0.27	0.25	17.60	1100
BSC-51	504271	6063350	1.96	6.0	0.70	1400	23	23.90	2	0.5	8.30	0.22	0.25	16.70	1350
BSC-52	504799	6056393	1.60	14.0	0.40	970	43	24.20	6	9.0	15.00	0.33	0.25	18.95	1445
BSC-53	504700	6054812	1.54	2.5	1.60	540	49	22.30	4	7.0	12.00	0.30	0.25	18.50	991
BSC-54	486916	6066031	1.78	10.0	0.25	850	32	22.20	6	6.0	3.20	0.33	0.25	16.90	1220
BSC-55	485756	6066892	1.98	6.0	0.25	860	33	24.50	10	3.0	2.00	0.22	0.25	22.30	924
BSC-56	485088	6068682	2.28	6.0	1.10	780	37	23.50	6	11.0	18.00	0.31	0.80	16.30	1240
BSC-57	485524	6066062	1.76	15.0	2.60	1200	36	22.10	7	0.5	6.00	0.22	0.25	20.40	1480
BSC-58	485360	6065468	1.92	2.5	1.70	2000	54	21.70	7	4.0	2.10	0.26	0.25	19.70	931
BSC-59	500719	6060166	1.99	2.5	0.25	1200	51	25.20	6	5.0	5.00	0.32	0.70	18.00	1150
BSC-60	499348	6060438	1.96	11.0	0.25	1500	43	25.40	8	4.0	15.00	0.32	0.80	17.60	1080
BSC-61	497206	6060852	1.86	5.0	0.68	1035	43	26.50	2	5.0	2.70	0.31	0.73	15.90	1510
BSC-62	496583	6059870	1.75	14.0	1.20	630	66	22.10	5	4.0	36.00	0.29	0.80	18.30	1190

Sample Site	UTM		Ash	Au	As	Ba	Br	Ca	Co	Cr	Cs	Fe	Hf	K	Na
	EAST	NORTH	%	ppb	ppm	ppm	ppm	%	ppm	ppm	ppm	%	ppm	%	ppm
BSC-63	495649	6062459	1.67	9.0	0.25	390	47	23.80	3	5.0	15.00	0.29	0.60	16.10	1200
BSC-64	495880	6064914	1.35	8.0	0.25	760	44	22.50	4	6.0	5.60	0.43	0.60	14.10	1490
BSC-65	498817	6064616	1.66	7.0	0.25	1600	35	19.40	12	6.0	13.00	0.26	0.25	23.10	931
BSC-66	491433	6062854	1.75	13.0	0.25	1400	48	23.40	4	2.0	20.00	0.34	0.25	20.40	3380
BSC-67	491159	6063714	1.68	6.0	1.20	655	45	19.90	9	9.0	11.10	0.32	0.63	17.10	1684
BSC-68	492958	6064176	1.64	2.5	0.25	540	32	20.70	3	9.0	5.60	0.32	0.25	17.90	1640
BSC-69	494161	6064535	1.79	2.5	0.25	260	42	20.30	8	8.0	3.20	0.26	0.25	20.90	937
BSC-70	492821	6062333	1.72	7.0	2.00	700	37	21.30	3	4.0	5.50	0.33	0.25	21.40	1520
BSC-71	518287	6046419	1.75	2.5	1.70	920	28	20.20	3	9.0	2.00	0.53	0.60	22.70	3380
BSC-72	518901	6044811	2.11	6.0	0.25	970	64	18.10	8	3.0	2.00	0.22	0.25	22.90	1260
BSC-73	520311	6044617	1.72	13.0	2.30	910	40	21.60	3	8.0	1.60	0.37	0.50	15.50	1560
BSC-74	521245	6042332	1.95	2.5	1.30	790	18	24.50	3	5.0	1.40	0.33	0.60	12.70	1520
BSC-75	520867	6044001	2.09	9.0	0.25	765	22	18.10	2	3.0	2.70	0.32	0.50	18.90	1310
BSC-76	522120	6041844	2.06	2.5	0.50	720	25	22.70	3	0.5	3.10	0.16	0.25	23.40	907
BSC-78	522282	6036707	1.83	7.0	1.70	450	34	23.10	3	8.0	2.50	0.49	0.80	16.20	2730
BSC-79	523264	6036507	1.83	2.5	0.25	430	31	18.10	4	13.0	2.10	0.41	0.25	20.10	1940
BSC-80	522574	6036479	1.90	9.0	0.25	920	31	18.90	3	15.0	3.10	0.33	0.25	21.80	1930
BSC-81	519985	6039050	2.11	2.5	0.25	830	20	19.40	3	9.0	3.70	0.26	0.25	27.00	1170
BSC-82	521310	6040504	1.62	20.0	0.25	800	42	16.40	4	16.0	4.00	0.58	0.90	19.00	2740
BSC-83	521313	6039495	2.14	2.5	0.25	1200	21	24.10	2	8.0	1.50	0.39	0.25	18.60	1250
BSC-84	521039	6038827	2.02	10.0	0.25	1400	27	24.80	4	9.0	1.50	0.59	0.90	14.40	2460
BSC-85	521819	6038559	2.04	27.0	1.80	540	35	24.20	4	6.0	6.00	0.60	0.80	15.10	2300
BSC-86	523226	6037995	2.06	5.0	0.25	950	19	23.30	3	10.0	2.50	0.37	0.70	16.40	1780
BSC-87	520938	6037469	1.87	16.0	1.00	890	19	23.80	5	12.0	1.80	0.31	0.25	23.70	1590
BSC-88	520527	6041691	1.77	10.0	1.40	515	40	22.95	6	10.0	2.40	0.46	0.50	20.95	1855
BSC-89	523975	6039555	1.89	17.0	1.60	1900	35	23.40	8	10.0	4.40	0.56	0.80	16.40	1770
BSC-90	523174	6042220	1.85	5.0	2.00	540	33	26.30	4	10.0	2.50	0.49	0.60	16.30	1880
BSC-91	518535	6038263	1.68	13.0	1.40	880	20	27.80	12	4.0	9.90	0.27	0.25	16.80	941
BSC-92	520156	6037478	1.95	5.0	1.90	1100	28	24.40	3	12.0	2.00	0.62	0.80	16.50	1780
BSC-93	520504	6036253	2.02	7.0	2.70	405	41	29.20	5	10.0	5.90	0.62	0.70	14.50	2340
BSC-94	522084	6035823	2.34	9.0	0.60	960	14	29.90	2	0.5	0.25	0.16	0.25	18.30	676
BSC-95	519219	6039836	1.82	2.5	1.10	580	28	23.60	2	8.0	5.70	0.26	0.25	19.40	981
BSC-96	516558	6040903	1.84	5.0	1.00	430	29	27.40	3	7.0	3.80	0.40	0.60	17.80	1590
BSC-97	516780	6043256	2.01	8.0	1.20	440	15	22.60	2	4.0	1.80	0.22	0.25	20.70	949
BSC-98	517540	6044424	1.81	6.0	0.60	870	36	20.30	3	6.0	2.20	0.33	0.25	20.30	1570
BSC-99	517575	6045717	1.87	2.5	2.10	600	33	22.80	4	12.0	1.40	0.46	0.60	19.30	2000
BSC-100	516705	6045308	1.85	6.0	1.80	550	32	29.00	3	7.0	1.70	0.35	0.25	16.30	1740
BSC-101	518918	6036134	1.67	2.5	2.40	860	22	26.00	3	9.0	1.90	0.46	0.60	17.80	1780
BSC-102	527707	6043021	1.98	7.0	1.60	470	41	25.00	3	5.0	6.70	0.34	0.60	19.30	1440
BSC-103	528252	6043105	1.89	6.0	1.80	540	38	24.70	4	11.0	2.80	0.57	0.90	16.50	2090
BSC-104	527779	6044102	1.89	5.0	0.90	520	34	27.40	4	10.0	2.40	0.25	0.25	22.90	1530
BSC-105	525805	6044636	1.82	7.0	2.40	650	39	26.30	4	12.0	3.00	0.51	0.70	18.50	2530
BSC-106	529083	6046462	2.13	2.5	0.80	1300	25	26.50	4	5.0	1.70	0.14	0.25	22.10	2060
BSC-107	528059	6047170	1.59	9.0	1.90	840	37	26.10	4	8.0	3.90	0.49	0.60	18.00	1930
BSC-108	522025	6044072	1.70	10.0	1.00	640	21	26.80	3	6.0	6.20	0.18	0.25	19.60	1220
BSC-109	532452	6050373	1.94	2.5	1.10	950	14	23.80	4	5.0	6.50	0.17	0.25	17.70	585
BSC-110	531121	6050631	1.73	9.0	0.50	1350	29	25.30	8	0.5	28.00	0.22	0.25	18.20	811
BSC-111	527183	6049725	2.11	7.0	1.20	405	29	27.80	3	0.5	3.15	0.24	0.25	14.10	1835
BSC-112	524659	6049276	1.81	7.0	2.80	340	39	24.20	4	12.0	3.00	0.67	0.90	14.30	2480
BSC-113	525825	6049073	1.63	31.0	2.00	380	39	28.50	3	6.0	4.00	0.37	0.70	16.30	1920
BSC-114	522154	6047887	1.85	2.5	1.80	740	54	30.60	4	13.0	4.30	0.37	0.25	21.60	1500
BSC-115	476770	6068319	1.74	10.0	1.80	1600	37	32.60	7	13.0	5.70	0.45	0.25	16.00	2090
BSC-116	476939	6067881	1.89	11.0	1.80	960	49	29.30	5	8.0	2.90	0.41	0.25	18.40	1830
BSC-117	476804	6064944	2.08	2.5	0.25	970	32	23.40	4	3.0	45.00	0.11	0.25	30.30	527
BSC-118	476238	6065100	1.95	2.5	0.60	620	35	27.90	4	5.0	5.20	0.22	0.60	25.70	1380
BSC-119	477063	6066473	1.92	17.0	1.10	1300	29	24.90	15	6.0	37.00	0.24	0.25	25.80	1770
BSC-120	478086	6066782	1.79	2.5	1.30	1300	30	28.40	7	15.0	4.30	0.32	0.25	18.80	1360
BSC-121	484469	6064950	1.95	20.0	1.60	1300	33	30.80	4	7.0	18.00	0.36	0.50	17.20	1650
BSC-122	483447	6064669	2.27	6.5	1.50	1600	45	40.20	11	2.8	5.40	0.30	0.25	17.50	1870
BSC-123	480778	6065799	1.73	7.0	0.25	470	35	26.10	3	9.0	4.60	0.27	0.25	22.30	1230
BSC-124	481778	6066491	1.52	14.0	1.30	1100	42	26.70	6	0.5	3.30	0.30	0.60	23.20	1500
BSC-125	480838	6068726	1.59	9.0	1.30	570	30	19.30	5	4.0	6.00	0.32	0.25	21.90	2470
BSC-126	480508	6066960	1.70	2.5	1.10	1500	27	24.20	7	4.0	8.60	0.33	0.60	19.50	1140
BSC-127	512649	6046145	1.56	10.0	1.80	620	45	23.10	4	10.0	9.10	0.44	0.70	18.90	1720
BSC-128	512908	6048360	2.11	5.0	1.30	780	40	26.70	4	7.0	1.80	0.41	0.25	18.80	1370
BSC-129	514002	6047001	1.98	65.0	1.80	590	46	27.90	4	9.0	2.40	0.48	0.60	18.50	2340
BSC-130	514803	6046016	1.88	9.0	2.10	570	48	26.40	4	7.0	2.60	0.50	0.25	18.10	1830
BSC-131	515458	6047081	1.74	11.0	3.50	2600	45	27.10	6	10.0	2.20	0.72	0.90	18.40	3870
BSC-132	513910	6049816	1.92	5.0	1.00	1100	53	28.00	8	6.0	8.50	0.19	0.25	19.70	740
BSC-133	514916	6050947	1.67	9.0	0.90	930	28	27.10	3	6.0	11.00	0.32	0.60	12.80	1020

Sample Site	UTM		Ash	Au	As	Ba	Br	Ca	Co	Cr	Cs	Fe	Hf	K	Na
	EAST	NORTH	%	ppb	ppm	ppm	ppm	%	ppm	ppm	ppm	%	ppm	%	ppm
BSC-134	513021	6050137	1.73	2.5	1.10	960	47	19.50	3	0.5	5.00	0.20	0.25	23.50	764
BSC-135	513049	6050683	1.84	8.0	1.40	1200	59	19.60	6	8.0	3.30	0.18	0.25	31.90	949
BSC-136	513377	6052104	1.88	7.0	0.90	99	57	24.00	6	7.0	4.20	0.24	0.25	24.20	1010
BSC-137	515612	6054401	1.92	7.0	1.90	840	65	26.30	4	9.0	4.70	0.32	0.90	21.50	1180
BSC-138	513788	6053203	1.90	16.0	2.00	910	53	26.50	4	9.0	6.40	0.39	0.60	17.70	1510
BSC-139	512201	6047079	2.00	7.0	1.50	650	40	29.50	3	6.0	1.90	0.28	0.25	19.60	1260
BSC-140	510561	6051207	2.12	9.0	2.10	910	51	22.30	6	9.0	11.00	0.48	0.60	23.50	2550
BSC-141	509638	6050746	1.85	2.5	1.70	1100	26	28.30	3	5.0	3.30	0.31	0.90	19.10	1510
BSC-142	508624	6051341	2.06	2.5	1.70	850	36	27.20	3	6.0	3.00	0.35	0.50	19.10	1550
BSC-143	503707	6055102	2.02	10.3	1.80	1370	44	27.70	5	10.0	9.85	0.35	0.64	16.70	1493
BSC-144	505932	6054078	1.71	2.5	1.50	1200	50	19.50	8	11.0	5.90	0.27	0.25	29.50	1400
BSC-145	506193	6051607	1.94	13.0	2.70	760	16	26.30	2	5.0	1.20	0.31	0.25	22.00	1680
BSC-146	514730	6044196	1.86	25.0	1.60	750	22	24.40	4	5.0	9.10	0.28	0.25	16.60	1360
BSC-147	515949	6041823	2.25	5.0	1.90	640	34	29.30	3	11.0	2.80	0.36	0.90	17.40	1550
BSC-148	515048	6043031	1.64	2.5	3.20	900	28	23.90	4	13.0	2.00	0.61	1.10	20.00	3310
BSC-149	514154	6044555	1.89	11.0	2.50	1400	25	24.00	4	7.0	7.30	0.46	0.90	21.30	2200
BSC-150	517486	6033988	1.94	2.5	1.70	840	20	21.70	3	5.0	0.80	0.20	0.60	26.00	1240
BSC-151	517522	6032623	2.07	9.0	1.50	1900	42	25.50	8	6.0	15.00	0.24	0.25	23.40	989
BSC-152	517917	6030851	1.79	2.5	1.70	460	31	24.00	3	6.0	1.50	0.44	0.80	21.60	2110
BSC-153	517089	6028676	2.12	2.5	1.30	1300	28	27.20	2	3.0	2.50	0.18	0.25	19.70	903
BSC-154	516412	6032166	1.91	2.5	2.60	1400	51	23.00	11	5.0	3.30	0.28	0.25	22.20	1550
BSC-155	512777	6028202	2.09	2.5	0.80	1100	27	24.90	3	4.0	6.40	0.17	0.60	18.00	829
BSC-156	514874	6028199	1.60	8.0	2.10	530	49	18.50	3	4.0	3.70	0.28	0.60	22.20	1290
BSC-157	514218	6029291	2.48	6.0	1.05	1800	32	28.30	9	2.0	2.05	0.15	0.25	16.10	1120
BSC-158	513703	6027484	2.02	2.5	1.80	1450	30	23.50	5	3.5	7.15	0.21	0.53	20.55	975
BSC-159	512845	6033996	2.79	2.5	0.80	1000	19	24.20	3	4.0	6.20	0.14	0.25	26.10	1020
BSC-160	495421	6033104	2.01	9.0	1.60	680	25	18.90	3	9.0	2.70	0.25	0.70	28.50	968
BSC-161	494348	6031542	2.01	18.0	1.20	1500	17	20.50	3	12.0	6.60	0.25	0.25	18.80	1130
BSC-162	494356	6030881	1.71	9.0	2.20	2100	47	21.10	9	5.0	37.00	0.34	0.25	24.20	1370
BSC-163	514501	6026145	2.09	10.0	0.60	690	30	24.00	6	4.0	2.40	0.20	0.25	27.80	828
BSC-164	513589	6026247	1.91	214.0	1.40	600	19	20.20	3	3.0	1.50	0.19	0.25	20.50	938
BSC-165	512599	6026335	1.69	13.0	2.50	1300	25	25.30	4	8.0	2.30	0.43	0.80	18.50	2170
BSC-166	511598	6026204	2.01	18.0	1.50	1100	25	26.30	2	4.0	2.90	0.20	1.00	24.90	1240
BSC-167	513297	6027660	1.77	14.0	1.60	760	27	22.40	5	6.0	2.40	0.26	0.60	19.40	1500
BSC-168	512386	6027803	1.79	5.0	1.90	480	35	19.70	5	5.0	5.50	0.26	0.60	19.30	1230
BSC-169	501038	6027746	1.72	11.0	1.90	760	36	20.00	5	5.0	26.00	0.33	0.25	25.70	2040
BSC-170	515084	6033390	2.16	9.0	0.90	1200	26	18.50	4	0.5	1.10	0.11	0.25	35.10	437
BSC-171	516472	6033483	1.90	20.0	1.90	1400	44	20.10	8	8.0	1.90	0.34	0.50	21.70	1710
BSC-172	513930	6032694	1.84	19.0	2.00	2300	52	25.10	8	7.0	7.00	0.29	0.80	11.40	2220
BSC-173	511989	6032692	2.17	6.0	2.20	1200	62	25.00	3	6.0	1.70	0.33	0.70	20.70	1560
BSC-174	509849	6029481	1.85	30.0	2.10	880	37	18.00	4	6.0	5.30	0.22	0.25	20.50	1490
BSC-175	508028	6029647	2.04	18.0	1.40	370	27	15.50	3	0.5	1.70	0.22	0.25	19.80	1340
BSC-176	507855	6030497	1.72	16.0	2.20	590	30	14.90	4	9.0	2.70	0.45	0.70	15.60	2250
BSC-177	505523	6031030	2.10	2.5	1.20	2100	22	21.70	6	5.0	10.00	0.13	0.25	22.30	631
BSC-178	508908	6028815	2.02	13.0	1.50	890	31	16.20	2	9.0	1.30	0.22	0.25	18.00	1040
BSC-179	511145	6030626	1.97	9.0	1.40	670	27	15.40	2	10.0	1.70	0.24	0.25	19.80	1110
BSC-180	511087	6033247	1.95	2.5	2.00	820	62	19.30	3	8.0	2.10	0.33	0.60	24.20	1570
BSC-181	510327	6032208	2.10	5.0	2.10	1400	36	19.00	5	5.0	2.70	0.22	0.25	18.60	2660
BSC-182	513479	6031215	1.83	4.3	0.78	1025	28	26.40	3	9.5	1.90	0.38	0.25	16.90	1725
BSC-183	502520	6029633	1.96	9.0	1.20	665	31	25.00	3	7.0	3.70	0.31	0.50	18.80	1415
BSC-184	521348	6034014	2.01	2.5	1.10	790	22	24.60	3	12.0	1.40	0.29	0.25	21.80	1420
BSC-185	519147	6033381	1.73	5.0	1.50	1000	44	26.00	3	5.0	0.70	0.40	0.25	22.20	1580
BSC-186	518573	6031574	2.33	13.0	0.90	520	23	24.40	2	6.0	1.60	0.25	0.25	18.40	1010
BSC-187	499197	6032410	1.66	5.0	0.50	640	38	23.70	4	4.0	5.30	0.23	0.25	23.10	768
BSC-188	498282	6033227	1.98	2.5	0.80	970	31	20.30	4	6.0	4.20	0.25	0.25	20.40	954
BSC-189	498849	6029766	1.63	10.0	1.30	990	31	15.30	4	10.0	4.70	0.24	0.25	20.80	1200
BSC-190	498167	6028367	2.11	12.0	0.60	840	26	17.40	3	9.0	2.50	0.19	0.25	20.20	889
BSC-191	497208	6028893	1.78	9.0	1.00	540	65	21.00	5	5.0	2.60	0.33	0.25	26.50	1230
BSC-192	485905	6033746	1.77	15.0	0.90	660	44	27.00	7	9.0	17.00	0.28	0.25	21.20	933
BSC-193	489935	6033983	1.92	5.0	2.70	400	33	23.10	4	6.0	9.90	0.34	0.25	18.40	1260
BSC-194	491164	6032643	1.94	9.0	0.25	1300	26	22.40	4	3.0	14.00	0.24	0.25	21.30	906
BSC-195	501211	6032956	1.93	8.0	1.80	1050	33	28.70	5	8.0	2.20	0.36	0.55	20.90	1510
BSC-196	494312	6029503	1.79	13.0	1.40	890	31	24.00	5	4.0	25.00	0.30	0.60	19.10	1060
BSC-197	496064	6031902	1.85	17.0	2.80	660	110	24.60	6	11.0	7.40	0.50	1.20	21.30	1690
BSC-198	495940	6029992	1.82	12.0	1.10	500	47	21.20	3	0.5	4.00	0.20	0.25	22.30	850
BSC-199	495793	6029002	1.97	12.0	1.50	650	49	23.20	5	6.0	14.00	0.23	0.25	21.40	992
BSC-200	491974	6031864	1.99	30.0	1.50	710	40	26.10	4	8.0	3.80	0.42	0.25	16.40	1430
BSC-201	501310	6029875	1.88	10.0	2.00	550	57	26.40	5	17.0	3.80	0.72	0.90	15.20	2200
BSC-202	503202	6031243	1.93	6.0	1.80	580	42	24.50	3	8.0	1.90	0.47	0.70	16.90	1470
BSC-203	504582	6032523	1.76	17.0	0.80	1500	40	26.20	7	8.0	2.00	0.38	0.60	16.60	1260



Sample Site	UTM		Ash	Au	As	Ba	Br	Ca	Co	Cr	Cs	Fe	Hf	K	Na
	EAST	NORTH	%	ppb	ppm	ppm	ppm	%	ppm	ppm	ppm	%	ppm	%	ppm
BSC-204	493311	6034135	1.93	13.0	0.25	1095	58	21.95	7	8.0	15.00	0.29	0.48	22.75	1070
BSC-205	492691	6034939	1.89	6.0	2.10	1200	63	28.10	5	7.0	9.30	0.43	0.50	14.70	1550
BSC-206	492813	6032211	1.81	2.5	2.10	1600	28	24.50	5	8.0	9.20	0.29	0.60	15.40	1150
BSC-207	505903	6027507	1.92	11.0	0.25	480	52	21.30	4	0.5	3.60	0.24	0.25	26.20	824
BSC-208	508016	6027463	1.83	14.0	3.40	990	27	20.00	3	8.0	3.40	0.27	0.60	18.60	902
BSC-209	506661	6028140	1.62	13.0	2.80	500	20	21.20	3	4.0	2.00	0.31	0.60	21.60	1220
BSC-210	506619	6029127	1.95	7.0	4.00	405	43	16.70	4	3.0	3.60	0.19	0.25	20.95	770
BSC-211	506226	6029915	1.61	20.0	3.80	660	22	20.30	4	10.0	3.40	0.35	0.25	16.70	1280
BSC-212	504366	6029454	2.21	6.0	1.60	680	42	13.90	8	0.5	15.00	0.18	0.25	18.20	928
BSC-213	503971	6027895	1.87	13.0	3.80	1900	24	17.40	6	6.0	22.00	0.19	0.60	21.20	852
BSC-214	507873	6033627	2.13	2.5	3.90	930	22	19.80	3	6.0	1.40	0.25	0.25	15.10	1130
BSC-215	502859	6032947	1.83	14.0	3.30	1100	29	19.30	4	7.0	1.40	0.41	0.80	20.10	1530
BSC-216	500430	6031458	2.31	2.5	2.10	1000	29	19.90	3	11.0	2.20	0.20	0.25	17.50	1100
BSC-217	477524	6032937	1.89	6.0	3.80	260	18	16.80	3	0.5	1.40	0.21	0.25	15.40	1100
BSC-218	479469	6034111	1.96	2.5	2.70	1000	27	18.10	3	3.0	2.90	0.19	0.25	19.10	798
BSC-219	476476	6033291	1.69	7.0	5.70	610	28	14.60	4	14.0	1.60	0.45	0.90	17.00	2090
BSC-220	494292	6033037	1.95	2.5	3.20	370	46	17.20	3	9.0	3.60	0.28	0.25	17.20	1400
BSC-221	491778	6033333	2.02	2.5	2.00	1000	34	22.40	3	6.0	2.60	0.33	0.60	15.40	1320
BSC-222	489734	6033070	1.58	11.0	3.40	1600	14	17.60	4	6.0	18.00	0.31	0.25	17.60	1680
BSC-223	482129	6034706	1.74	12.0	2.20	1300	20	16.50	5	4.0	22.00	0.23	0.70	23.00	674
BSC-224	481343	6033144	2.43	14.0	1.60	1100	28	20.70	8	3.0	8.40	0.18	0.25	19.80	711
BSC-225	484355	6033976	1.78	8.3	2.45	645	30	15.20	6	10.0	13.50	0.26	0.38	19.15	1136
BSC-226	507579	6032592	1.88	2.5	3.00	220	98	16.70	5	8.0	2.50	0.21	0.25	28.35	771
BSC-227	509576	6033495	1.72	32.0	2.60	700	24	23.30	2	10.0	1.10	0.20	0.25	21.80	762
BSC-228	504672	6033921	1.90	22.0	3.80	960	26	23.90	10	11.0	6.40	0.26	0.25	18.00	758
BSC-229	464202	6029599	2.41	6.0	3.20	540	22	28.50	11	3.0	2.00	0.23	0.25	12.70	969
BSC-230	465126	6029280	1.77	2.5	2.40	470	20	25.60	2	11.0	2.30	0.23	0.25	18.30	975
BSC-231	468014	6029211	1.94	9.0	1.50	1100	16	22.90	4	5.0	3.20	0.20	0.25	21.10	1020
BSC-232	474714	6032147	1.82	2.5	1.10	1200	31	21.50	8	9.0	2.20	0.30	0.25	22.20	1250
BSC-233	475878	6031424	1.90	2.5	1.60	160	14	11.10	2	3.0	0.80	0.17	0.25	7.60	827
BSC-234	472653	6030759	2.21	7.0	1.50	950	57	21.40	5	0.5	2.50	0.18	0.25	22.10	896
BSC-235	473647	6031180	1.84	13.0	2.70	980	22	27.10	4	9.0	8.10	0.52	1.00	17.90	1960
BSC-236	471481	6030684	1.75	6.0	2.50	710	17	21.40	5	9.0	2.00	0.22	0.25	22.70	1000
BSC-237	467781	6031932	1.89	2.5	2.00	630	35	23.80	6	6.0	4.30	0.20	0.25	22.20	726
BSC-238	467303	6030943	1.96	2.5	2.10	1600	25	24.30	10	8.0	4.10	0.19	0.25	20.30	881
BSC-239	461733	6028498	1.91	17.0	2.30	2100	51	20.50	9	3.0	3.80	0.20	0.25	26.50	816
BSC-240	460875	6028462	1.99	2.5	1.60	630	20	22.10	2	7.0	1.10	0.19	0.50	21.30	1010
BSC-241	461875	6027235	1.90	2.5	2.90	1100	15	24.00	3	0.5	8.50	0.30	0.25	14.00	1350
BSC-242	459946	6027489	1.68	2.5	2.60	700	32	18.00	4	5.0	4.50	0.34	0.80	21.40	1730
BSC-243	456102	6028120	1.69	2.5	2.10	720	29	22.60	6	5.0	7.20	0.27	0.25	15.30	1310
BSC-245	452251	6028338	2.16	17.0	2.00	520	30	22.90	3	6.0	1.10	0.39	0.25	21.60	1670
BSC-246	458806	6027939	2.70	5.0	1.80	1500	25	35.60	13	4.0	3.80	0.20	0.50	14.90	941
BSC-247	455132	6028325	1.80	2.5	2.10	530	34	24.40	2	0.5	2.20	0.23	0.25	26.40	922
BSC-248	452495	6028976	2.01	13.0	2.20	560	19	19.80	2	5.0	0.90	0.22	0.25	17.10	1030
BSC-249	450994	6027808	1.96	6.0	1.50	350	37	18.20	5	0.5	2.80	0.16	0.25	28.90	731
BSC-250	449886	6028510	1.82	11.0	1.80	410	24	21.20	3	13.0	0.50	0.38	0.50	17.90	1560
BSC-251	448682	6028724	1.68	5.0	1.50	380	29	19.30	2	9.0	1.90	0.29	0.60	17.00	1120
BSC-252	445395	6029398	2.06	5.0	1.50	540	33	21.90	2	10.0	1.00	0.23	0.25	19.70	914
BSC-253	443963	6030330	1.72	14.0	1.30	575	29	18.05	5	11.0	5.40	0.23	0.25	19.80	861
BSC-254	443423	6028525	2.21	8.0	2.60	630	43	20.70	3	6.0	1.80	0.41	0.50	18.00	1820
BSC-255	442843	6030013	1.76	2.5	1.20	370	54	16.50	3	10.0	1.50	0.19	0.25	22.70	993
BSC-256	442448	6029172	1.71	12.0	2.10	1100	26	16.80	6	14.0	4.00	0.78	0.90	16.20	2900
BSC-257	439225	6030492	1.87	2.5	1.65	755	27	22.05	5	11.0	4.80	0.40	0.70	13.95	1480
BSC-258	437900	6030559	1.87	2.5	2.00	790	24	18.00	4	4.0	8.70	0.30	0.25	14.90	1120
BSC-259	438456	6031752	1.56	7.0	2.30	560	44	17.70	3	5.0	6.60	0.20	0.25	17.70	741
BSC-260	437640	6031393	1.45	10.0	3.20	780	39	19.40	5	4.0	4.70	0.23	0.25	18.80	1080
BSC-261	448532	6027763	1.66	12.0	3.00	380	37	18.70	2	5.0	3.50	0.36	0.25	20.20	1230
BSC-262	435111	6031848	1.72	13.0	2.80	360	37	19.80	2	8.0	3.70	0.27	0.25	18.70	865
BSC-263	436445	6031287	1.97	7.0	2.00	730	24	20.80	3	5.0	2.50	0.23	0.25	15.30	954
BSC-264	435337	6030452	1.95	6.0	2.40	620	34	23.00	3	8.0	2.60	0.38	0.25	12.60	1840
BSC-265	440681	6030640	1.71	6.0	1.00	540	31	18.00	4	12.0	3.50	0.20	0.25	20.70	775
BSC-266	447639	6028463	2.01	2.5	1.30	650	25	24.60	2	5.0	1.00	0.20	0.25	15.60	718
BSC-267	449222	6028541	1.53	145.0	2.00	1200	48	24.80	4	0.5	1.80	0.13	0.25	21.40	891
BSC-268	457373	6028180	1.97	14.0	2.00	1100	34	24.20	2	0.5	2.10	0.22	0.25	20.50	934
BSC-269	457918	6028804	1.81	8.0	2.00	960	28	23.60	4	5.0	2.60	0.33	0.25	19.10	1110
BSC-270	457492	6027529	1.81	7.0	1.30	1900	38	22.00	7	7.0	4.50	0.27	0.25	21.70	1060
BSC-271	465155	6030614	2.00	10.0	1.90	960	41	22.00	4	3.0	2.60	0.21	0.25	19.40	795
BSC-272	467904	6033232	1.84	2.5	1.90	650	41	18.70	4	11.0	7.80	0.17	0.25	20.40	732
BSC-273	466096	6029651	1.94	16.0	1.50	1550	40	22.70	4	5.0	2.55	0.19	0.25	20.10	634
BSC-274	468869	6031353	1.95	2.5	1.60	1700	46	20.30	8	0.5	9.20	0.24	0.25	17.90	767

Sample Site	UTM		Ash	Au	As	Ba	Br	Ca	Co	Cr	Cs	Fe	Hf	K	Na
	EAST	NORTH	%	ppb	ppm	ppm	ppm	%	ppm	ppm	ppm	%	ppm	%	ppm
BSC-275	441854	6030334	1.97	7.0	1.70	420	55	22.55	4	4.0	2.80	0.27	0.25	17.80	1065
BSC-276	441356	6029317	1.44	7.0	1.10	730	39	18.90	4	14.0	15.00	0.30	0.25	15.70	909
BSC-277	455200	6033531	1.73	23.0	2.20	790	37	18.10	4	7.0	3.70	0.44	0.70	23.10	1860
BSC-278	456290	6033898	1.87	6.0	1.90	600	26	19.40	4	21.0	1.30	0.49	0.50	16.40	1700
BSC-279	455920	6035035	2.22	7.0	1.40	960	18	24.00	4	7.0	1.30	0.46	0.60	15.00	2230
BSC-280	456272	6032489	2.00	6.0	0.25	440	22	24.80	2	0.5	2.60	0.20	0.25	15.70	950
BSC-281	458988	6036919	2.01	7.0	0.80	870	23	19.90	3	5.0	2.80	0.17	0.25	22.10	689
BSC-282	459526	6035375	2.04	2.5	1.00	720	24	21.00	3	5.0	2.40	0.25	0.25	23.30	999
BSC-283	457995	6036193	1.76	2.5	0.25	970	23	17.40	15	0.5	4.90	0.27	0.25	21.40	882
BSC-284	457394	6031755	1.84	13.0	1.70	590	38	18.00	4	10.0	2.60	0.30	0.25	26.00	1250
BSC-285	454410	6030342	1.70	2.5	1.20	620	32	17.80	4	11.0	3.00	0.33	0.25	21.50	1170
BSC-286	453991	6031977	2.00	6.0	1.70	940	46	13.70	10	6.0	2.50	0.31	0.70	17.00	1250



Sample Site	Ni ppm	Rb ppm	Sb ppm	Sc ppm	Sr ppm	Zn ppm	La ppm	Ce ppm	Nd ppm	Sm ppm	Eu ppm	Yb ppm	TREE ppm
BSC-1	25	110	0.70	1.50	150	2800	4.30	8.0	2.5	0.70	0.025	0.400	15.9
BSC-2	25	160	0.70	2.20	150	2400	6.40	15.0	20.0	1.00	0.025	0.400	42.8
BSC-3	25	140	0.70	1.40	150	2800	4.10	7.0	2.5	0.60	0.025	0.300	14.5
BSC-4	25	360	0.20	0.50	150	2300	1.70	5.0	2.5	0.20	0.025	0.280	9.7
BSC-5	25	250	0.30	0.90	150	2200	2.80	1.5	2.5	0.30	0.025	0.440	7.6
BSC-6	25	250	0.40	1.00	1400	3600	2.90	1.5	2.5	0.40	0.025	0.380	7.7
BSC-7	25	640	0.40	0.40	150	3200	1.40	1.5	2.5	0.20	0.025	0.025	5.7
BSC-8	25	400	0.20	0.50	150	3100	1.70	1.5	2.5	0.20	0.025	0.025	6.0
BSC-9	25	160	0.30	0.80	150	2900	2.55	6.0	2.5	0.30	0.025	0.230	11.6
BSC-10	25	490	0.40	0.90	150	3200	2.30	1.5	2.5	0.30	0.025	0.250	6.9
BSC-11	25	420	0.30	0.60	150	2400	1.70	6.0	2.5	0.30	0.025	0.025	10.6
BSC-12	25	530	0.30	0.50	150	2000	1.40	4.0	2.5	0.20	0.025	0.025	8.2
BSC-13	25	530	0.20	0.70	150	2600	2.00	1.5	2.5	0.30	0.025	0.025	6.4
BSC-14	25	340	0.70	2.20	150	2300	6.90	14.0	2.5	1.00	0.370	0.520	25.3
BSC-15	25	260	0.10	0.50	150	1700	1.10	1.5	2.5	0.10	0.025	0.025	5.3
BSC-16	25	580	0.30	0.90	150	2400	2.40	7.0	2.5	0.30	0.025	0.025	12.3
BSC-17	25	420	0.05	0.50	150	1600	1.00	1.5	2.5	0.20	0.025	0.025	5.3
BSC-18	25	510	0.50	0.90	150	2400	2.30	5.0	2.5	0.30	0.025	0.025	10.2
BSC-19	25	315	0.50	1.65	290	2250	4.70	9.0	2.5	0.65	0.123	0.203	17.2
BSC-20	25	760	0.60	0.30	150	2800	1.10	1.5	2.5	0.05	0.025	0.025	5.2
BSC-21	25	260	0.40	1.00	150	2700	2.90	5.0	2.5	0.40	0.025	0.025	10.9
BSC-22	25	270	0.30	1.10	760	2200	3.70	1.5	2.5	0.50	0.025	0.025	8.3
BSC-23	25	870	2.60	0.80	490	2300	3.10	8.0	2.5	0.40	0.025	0.025	14.1
BSC-24	25	440	0.60	1.10	150	2300	3.30	8.0	2.5	0.40	0.025	0.025	14.3
BSC-25	25	160	0.50	1.70	580	3100	5.00	11.0	2.5	0.80	0.200	0.320	19.8
BSC-26	25	400	0.20	0.60	490	2300	1.90	1.5	2.5	0.30	0.025	0.290	6.5
BSC-27	25	245	0.35	0.85	433	2425	2.73	3.3	2.5	0.43	0.025	0.315	9.2
BSC-28	25	360	0.70	0.40	2200	2500	1.50	1.5	2.5	0.20	0.025	0.025	5.8
BSC-29	25	330	0.40	0.90	150	2900	2.80	8.0	2.5	0.40	0.025	0.025	13.8
BSC-30	25	260	0.20	0.70	150	2900	2.10	5.0	2.5	0.30	0.025	0.025	10.0
BSC-31	25	330	0.20	0.50	460	2000	1.40	3.0	2.5	0.20	0.160	0.025	7.3
BSC-32	25	440	0.60	0.40	150	3300	1.50	1.5	2.5	0.20	0.025	0.025	5.8
BSC-33	25	430	0.40	0.50	150	2800	1.70	1.5	2.5	0.20	0.025	0.025	6.0
BSC-34	25	280	0.50	1.30	150	2500	4.00	8.0	2.5	0.60	0.120	0.400	15.6
BSC-35	25	190	0.20	0.90	150	2900	2.80	10.0	2.5	0.40	0.025	0.025	15.8
BSC-36	25	180	0.30	1.10	600	2200	3.00	6.0	2.5	0.50	0.025	0.025	12.1
BSC-37	25	400	0.80	1.30	540	3400	3.90	6.0	2.5	0.60	0.025	0.550	13.6
BSC-38	25	250	0.20	1.30	150	3200	4.40	9.0	2.5	0.60	0.025	0.200	16.7
BSC-39	80	360	0.40	0.70	510	2300	2.30	1.5	2.5	0.30	0.025	0.025	6.7
BSC-40	25	290	0.90	0.80	490	3300	2.70	5.0	2.5	0.40	0.025	0.025	10.7
BSC-41	25	160	0.40	1.50	1100	3000	4.50	10.0	17.0	0.70	0.025	0.025	32.3
BSC-42	25	300	1.00	0.90	1100	4200	2.70	5.0	5.0	0.40	0.025	0.320	13.4
BSC-43	25	530	0.80	0.60	150	2500	2.00	10.0	2.5	0.30	0.025	0.025	14.9
BSC-44	130	600	0.50	0.80	150	2500	2.60	5.0	2.5	0.40	0.025	0.230	10.8
BSC-45	120	380	0.10	0.40	150	2200	1.40	1.5	2.5	0.20	0.025	0.025	5.7
BSC-46	230	480	0.80	0.70	150	1800	2.20	1.5	2.5	0.30	0.025	0.025	6.6
BSC-47	25	420	0.30	0.80	150	2600	2.40	5.0	2.5	0.30	0.025	0.220	10.4
BSC-48	98	860	1.70	0.50	550	1900	1.60	3.0	16.0	0.10	0.025	0.025	20.8
BSC-49	25	250	0.30	1.40	520	2900	4.60	10.0	2.5	0.70	0.160	0.580	18.5
BSC-50	25	410	0.70	0.60	630	2800	2.10	3.0	2.5	0.30	0.025	0.025	8.0
BSC-51	25	470	0.30	0.60	340	1800	1.90	4.0	2.5	0.30	0.025	0.025	8.8
BSC-52	25	605	0.60	0.80	150	2600	2.80	7.0	2.5	0.30	0.025	0.310	12.9
BSC-53	25	410	0.60	0.80	150	2900	2.40	6.0	2.5	0.40	0.025	0.025	11.4
BSC-54	25	320	0.30	0.80	630	2300	2.70	5.0	2.5	0.40	0.025	0.025	10.7
BSC-55	80	310	0.20	0.60	150	2800	2.20	1.5	2.5	0.30	0.025	0.320	6.8
BSC-56	25	490	0.60	0.80	150	2400	2.50	4.0	2.5	0.40	0.025	0.025	9.5
BSC-57	25	460	0.60	0.70	150	3500	2.30	1.5	2.5	0.60	0.025	0.025	7.0
BSC-58	25	250	0.30	0.60	150	2500	1.90	1.5	2.5	0.30	0.025	0.025	6.3
BSC-59	110	390	0.40	0.80	370	1600	2.80	5.0	2.5	0.40	0.150	0.270	11.1
BSC-60	80	420	0.70	0.80	630	1500	2.70	8.0	2.5	0.40	0.160	0.600	14.4
BSC-61	25	175	0.30	0.90	310	2350	3.10	5.0	2.5	0.40	0.025	0.050	11.1
BSC-62	25	460	1.20	0.80	500	2800	2.40	4.0	2.5	0.30	0.130	0.250	9.6

Sample Site	Ni	Rb	Sb	Sc	Sr	Zn	La	Ce	Nd	Sm	Eu	Yb	TREE
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
BSC-63	25	230	0.40	0.70	510	1800	2.30	1.5	2.5	0.30	0.170	0.520	7.3
BSC-64	25	360	0.40	1.00	440	2500	3.40	9.0	2.5	0.50	0.025	0.025	15.5
BSC-65	25	680	0.60	0.60	630	2800	2.20	1.5	2.5	0.30	0.025	0.025	6.6
BSC-66	110	730	0.80	0.80	150	2200	2.60	5.0	2.5	0.30	0.025	0.025	10.5
BSC-67	58	385	0.50	1.00	300	2250	2.60	4.0	2.5	0.40	0.025	0.150	9.7
BSC-68	25	330	0.30	0.80	150	2300	2.50	6.0	2.5	0.40	0.025	0.025	11.5
BSC-69	25	320	0.40	0.70	150	2500	2.00	1.5	2.5	0.30	0.130	0.025	6.5
BSC-70	25	350	0.40	0.90	150	2700	2.90	5.0	2.5	0.50	0.140	0.025	11.1
BSC-71	25	230	0.50	1.30	930	3200	3.90	7.0	2.5	0.70	0.025	0.360	14.5
BSC-72	25	340	0.20	0.40	1500	2600	1.60	1.5	2.5	0.20	0.025	0.025	5.9
BSC-73	25	200	0.50	1.10	1100	3000	3.30	6.0	2.5	0.50	0.025	0.025	12.4
BSC-74	25	120	0.40	0.90	790	3200	2.60	5.0	2.5	0.40	0.025	0.025	10.6
BSC-75	25	280	0.30	0.60	325	2800	1.90	5.0	2.5	0.30	0.110	0.025	9.8
BSC-76	25	410	0.40	0.30	950	4300	1.20	1.5	2.5	0.20	0.025	0.025	5.5
BSC-78	25	170	0.60	1.30	310	3100	4.50	9.0	2.5	0.60	0.140	0.360	17.1
BSC-79	25	170	0.20	1.10	150	2400	3.80	6.0	2.5	0.50	0.210	0.320	13.3
BSC-80	25	240	0.30	0.90	850	2900	2.80	6.0	2.5	0.50	0.025	0.025	11.9
BSC-81	25	390	0.30	0.50	580	2100	1.80	5.0	2.5	0.30	0.025	0.190	9.8
BSC-82	25	200	0.50	1.60	470	3100	5.00	10.0	2.5	0.80	0.250	0.480	19.0
BSC-83	25	290	0.30	1.00	1000	2400	3.60	7.0	2.5	0.50	0.150	0.310	14.1
BSC-84	25	180	0.30	1.70	600	2000	5.30	10.0	2.5	0.90	0.220	0.520	19.4
BSC-85	25	200	0.50	1.60	150	2100	5.60	13.0	2.5	0.90	0.025	0.550	22.6
BSC-86	25	150	0.20	1.00	320	2100	3.30	6.0	2.5	0.40	0.025	0.200	12.4
BSC-87	25	120	0.30	0.80	630	3300	2.40	5.0	2.5	0.40	0.025	0.240	10.6
BSC-88	25	155	0.40	1.35	345	2700	3.80	8.0	2.5	0.60	0.025	0.210	15.1
BSC-89	25	150	0.40	1.60	660	2100	4.80	10.0	2.5	0.70	0.025	0.390	18.4
BSC-90	25	130	0.40	1.40	150	2600	4.00	10.0	2.5	0.60	0.025	0.280	17.4
BSC-91	25	220	0.30	0.70	150	2700	2.00	4.0	2.5	0.30	0.025	0.250	9.1
BSC-92	25	96	0.40	1.80	480	2700	4.90	11.0	6.0	0.80	0.270	0.330	23.3
BSC-93	25	91	0.50	1.85	150	2900	4.80	9.0	2.5	0.75	0.025	0.450	17.5
BSC-94	25	75	0.05	0.40	970	1900	1.30	1.5	2.5	0.20	0.170	0.170	5.8
BSC-95	25	190	0.20	0.60	150	2800	1.50	3.0	2.5	0.30	0.025	0.025	7.4
BSC-96	25	150	0.30	1.20	150	2900	3.30	6.0	2.5	0.50	0.025	0.240	12.6
BSC-97	25	130	0.20	0.50	530	2200	1.40	1.5	2.5	0.20	0.025	0.160	5.8
BSC-98	25	160	0.30	0.90	1000	2800	2.50	5.0	2.5	0.40	0.100	0.220	10.7
BSC-99	25	94	0.40	1.30	150	3100	3.50	8.0	2.5	0.50	0.025	0.290	14.8
BSC-100	25	110	0.30	1.00	150	2800	2.70	5.0	2.5	0.40	0.025	0.200	10.8
BSC-101	25	99	0.30	1.40	860	3200	4.20	10.0	2.5	0.60	0.025	0.380	17.7
BSC-102	25	180	0.40	0.80	150	2700	2.50	5.0	2.5	0.40	0.025	0.220	10.6
BSC-103	25	100	0.50	1.80	150	2600	5.00	9.0	2.5	0.70	0.230	0.340	17.8
BSC-104	25	170	0.30	0.60	150	2500	1.80	4.0	2.5	0.20	0.025	0.220	8.7
BSC-105	25	150	0.60	1.50	700	3400	3.90	8.0	2.5	0.60	0.025	0.290	15.3
BSC-106	25	120	0.10	0.30	150	1700	1.00	1.5	2.5	0.10	0.025	0.025	5.2
BSC-107	25	140	0.40	1.30	150	2700	4.00	7.0	2.5	0.60	0.025	0.320	14.4
BSC-108	25	210	0.30	0.50	150	2300	1.30	1.5	2.5	0.20	0.025	0.025	5.6
BSC-109	25	340	0.20	0.40	150	2200	1.10	1.5	6.0	0.20	0.025	0.025	8.9
BSC-110	60	325	0.45	0.60	315	2650	1.55	4.0	2.5	0.25	0.025	0.110	8.4
BSC-111	25	130	0.25	0.65	150	2400	1.75	1.5	2.5	0.30	0.060	0.090	6.2
BSC-112	25	130	0.60	2.20	150	2400	5.80	12.0	2.5	0.90	0.230	0.420	21.9
BSC-113	25	140	0.30	1.10	150	2400	2.80	6.0	2.5	0.50	0.025	0.300	12.1
BSC-114	25	120	0.40	1.20	150	3300	3.50	6.0	2.5	0.50	0.025	0.240	12.8
BSC-115	72	250	0.50	1.30	600	2300	3.70	6.0	2.5	0.60	0.025	0.240	13.1
BSC-116	25	190	0.40	1.20	630	1900	3.20	5.0	2.5	0.50	0.025	0.300	11.5
BSC-117	25	750	0.60	0.20	150	1600	0.70	1.5	2.5	0.05	0.025	0.025	4.8
BSC-118	25	270	0.20	0.50	150	2000	1.40	1.5	2.5	0.20	0.025	0.150	5.8
BSC-119	110	630	0.60	0.70	150	1600	1.80	4.0	2.5	0.30	0.025	0.250	8.9
BSC-120	25	180	0.30	0.90	150	3200	2.50	4.0	2.5	0.30	0.025	0.230	9.6
BSC-121	25	330	0.50	1.00	1000	1900	2.80	6.0	2.5	0.40	0.025	0.150	11.9
BSC-122	57	275	0.35	0.85	1150	2100	2.55	3.8	2.5	0.35	0.025	0.310	9.5
BSC-123	25	230	0.30	0.80	650	1500	1.90	4.0	2.5	0.20	0.025	0.220	8.8
BSC-124	25	210	0.30	0.90	150	3200	2.60	1.5	2.5	0.30	0.025	0.230	7.2
BSC-125	25	260	0.30	0.70	470	2700	1.90	1.5	2.5	0.30	0.025	0.260	6.5
BSC-126	25	370	0.30	0.90	150	2800	2.90	6.0	2.5	0.40	0.025	0.250	12.1
BSC-127	25	180	0.50	1.30	810	2200	3.50	7.0	2.5	0.50	0.025	0.250	13.8
BSC-128	60	120	0.40	1.10	1400	2600	3.20	7.0	8.0	0.50	0.025	0.025	18.8
BSC-129	25	140	0.50	1.50	730	3100	3.90	8.0	2.5	0.60	0.220	0.330	15.6
BSC-130	25	180	0.50	1.50	150	2000	4.00	8.0	2.5	0.60	0.025	0.340	15.5
BSC-131	25	140	0.60	2.10	2800	3400	6.60	13.0	8.0	1.00	0.240	0.560	29.4
BSC-132	25	430	0.05	0.50	390	1600	1.60	5.0	2.5	0.20	0.110	0.230	9.6
BSC-133	67	190	0.30	0.90	590	2000	2.20	4.0	2.5	0.30	0.025	0.025	9.1

Sample Site	Ni	Rb	Sb	Sc	Sr	Zn	La	Ce	Nd	Sm	Eu	Yb	TREE
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
BSC-134	25	470	0.20	0.40	150	1800	1.50	4.0	2.5	0.20	0.025	0.025	8.3
BSC-135	25	460	0.30	0.40	150	1900	1.50	1.5	7.0	0.20	0.120	0.025	10.3
BSC-136	25	440	0.20	0.60	150	2200	2.00	4.0	2.5	0.30	0.110	0.410	9.3
BSC-137	25	350	0.20	0.80	620	2400	3.00	5.0	2.5	0.40	0.025	0.290	11.2
BSC-138	53	200	0.30	1.10	150	1900	3.60	8.0	2.5	0.50	0.025	0.390	15.0
BSC-139	25	150	0.30	0.70	550	2900	2.60	5.0	2.5	0.40	0.025	0.250	10.8
BSC-140	93	280	0.60	1.30	430	2100	4.50	9.0	5.0	0.70	0.190	0.270	19.7
BSC-141	25	290	0.60	0.80	620	2300	2.80	6.0	9.0	0.40	0.025	0.240	18.5
BSC-142	56	130	0.50	0.90	680	2300	3.40	7.0	2.5	0.50	0.025	0.170	13.6
BSC-143	25	345	0.68	0.95	150	2050	3.68	8.0	4.8	0.55	0.025	0.355	17.4
BSC-144	25	650	0.40	0.60	150	2300	2.20	1.5	7.0	0.30	0.025	0.190	11.2
BSC-145	25	110	0.50	0.80	1000	3300	2.80	5.0	2.5	0.40	0.025	0.240	11.0
BSC-146	25	150	0.50	0.60	780	2000	2.60	4.0	2.5	0.40	0.025	0.200	9.7
BSC-147	25	250	0.60	1.00	150	2300	3.40	7.0	2.5	0.50	0.025	0.330	13.8
BSC-148	25	320	0.80	1.80	760	3100	6.50	13.0	2.5	0.90	0.025	0.570	23.5
BSC-149	25	170	0.70	1.20	1400	2700	4.40	13.0	2.5	0.70	0.025	0.470	21.1
BSC-150	25	210	0.40	0.60	150	2700	1.90	6.0	2.5	0.30	0.025	0.240	11.0
BSC-151	91	1200	0.50	0.60	150	2500	2.40	7.0	2.5	0.30	0.120	0.270	12.6
BSC-152	25	130	0.60	1.10	150	2400	4.20	8.0	2.5	0.60	0.025	0.390	15.7
BSC-153	25	210	0.40	0.40	500	3200	1.70	4.0	2.5	0.20	0.025	0.025	8.5
BSC-154	25	320	0.70	0.70	150	3300	2.30	5.0	2.5	0.40	0.025	0.390	10.6
BSC-155	25	420	0.40	0.40	150	1900	1.50	1.5	2.5	0.20	0.025	0.025	5.8
BSC-156	25	450	0.50	0.80	150	2200	2.60	4.0	2.5	0.40	0.025	0.290	9.8
BSC-157	25	285	0.50	0.40	1010	2500	1.30	1.5	2.5	0.20	0.170	0.100	5.8
BSC-158	55	460	0.75	0.50	365	1950	2.05	4.0	2.5	0.30	0.025	0.118	9.0
BSC-159	25	550	0.40	0.30	600	1600	1.10	1.5	2.5	0.20	0.040	0.025	5.4
BSC-160	25	310	0.50	0.50	150	1800	1.70	1.5	2.5	0.30	0.025	0.100	6.1
BSC-161	25	500	0.60	0.70	770	2000	2.50	5.0	2.5	0.40	0.230	0.200	10.8
BSC-162	79	780	1.00	0.80	150	2200	3.20	8.0	2.5	0.50	0.025	0.290	14.5
BSC-163	25	450	0.60	0.30	150	1900	1.40	3.0	2.5	0.20	0.025	0.025	7.2
BSC-164	25	170	0.40	0.50	150	2300	1.80	3.0	2.5	0.30	0.025	0.110	7.7
BSC-165	25	150	0.80	1.20	1300	2400	4.50	8.0	2.5	0.60	0.200	0.450	16.3
BSC-166	25	220	0.90	0.50	150	1900	2.10	1.5	2.5	0.30	0.025	0.025	6.5
BSC-167	54	270	0.60	0.70	410	1700	2.70	5.0	2.5	0.30	0.025	0.190	10.7
BSC-168	25	380	0.70	0.60	150	2100	2.20	5.0	2.5	0.40	0.025	0.280	10.4
BSC-169	93	490	1.00	0.80	150	3900	2.90	5.0	2.5	0.40	0.025	0.025	10.9
BSC-170	25	370	0.30	0.20	560	1800	0.80	1.5	2.5	0.05	0.025	0.140	5.0
BSC-171	97	170	0.60	0.90	470	1800	3.40	6.0	2.5	0.50	0.025	0.025	12.5
BSC-172	85	250	0.30	0.70	1200	1800	2.50	5.0	7.0	0.40	0.025	0.250	15.2
BSC-173	25	170	0.50	0.90	1600	2800	3.20	6.0	2.5	0.50	0.025	0.310	12.5
BSC-174	25	280	0.30	0.60	740	1800	1.80	6.0	2.5	0.30	0.025	0.190	10.8
BSC-175	25	200	0.20	0.60	500	1800	1.70	3.0	2.5	0.30	0.025	0.240	7.8
BSC-176	25	230	0.40	1.20	150	1400	3.80	6.0	2.5	0.50	0.180	0.260	13.2
BSC-177	25	640	0.40	0.30	150	2100	1.00	4.0	2.5	0.20	0.025	0.120	7.8
BSC-178	25	210	0.10	0.50	1100	2000	1.80	4.0	2.5	0.30	0.025	0.060	8.7
BSC-179	25	260	0.20	0.60	730	2000	1.80	5.0	2.5	0.30	0.025	0.200	9.8
BSC-180	25	250	0.60	0.90	390	2100	3.10	7.0	2.5	0.50	0.025	0.025	13.2
BSC-181	25	290	0.20	0.60	850	1800	2.30	4.0	2.5	0.20	0.025	0.120	9.1
BSC-182	25	102	0.60	1.10	1300	3000	3.40	7.5	4.3	0.45	0.088	0.315	16.0
BSC-183	25	180	0.35	0.90	335	2150	2.70	5.0	2.5	0.40	0.025	0.220	10.8
BSC-184	25	69	0.30	0.80	380	2500	2.40	6.0	2.5	0.40	0.025	0.250	11.6
BSC-185	25	70	0.30	1.10	1300	2500	3.30	7.0	2.5	0.50	0.025	0.260	13.6
BSC-186	25	110	0.20	0.80	500	2000	2.00	4.0	2.5	0.30	0.140	0.170	9.1
BSC-187	25	300	0.20	0.60	150	2100	1.60	1.5	2.5	0.20	0.025	0.190	6.0
BSC-188	25	160	0.30	0.80	630	2600	2.20	3.0	2.5	0.30	0.150	0.200	8.4
BSC-189	25	250	0.30	0.60	610	2200	1.70	4.0	2.5	0.30	0.025	0.230	8.8
BSC-190	25	200	0.20	0.50	350	1900	1.30	3.0	2.5	0.20	0.025	0.110	7.1
BSC-191	25	250	0.30	1.00	150	2300	2.70	5.0	2.5	0.40	0.025	0.400	11.0
BSC-192	25	330	0.40	0.60	150	1900	2.20	5.0	2.5	0.30	0.025	0.240	10.3
BSC-193	25	210	0.30	1.00	150	2400	2.50	5.0	2.5	0.40	0.025	0.210	10.6
BSC-194	25	310	0.40	0.70	610	2700	1.80	1.5	2.5	0.20	0.025	0.025	6.1
BSC-195	25	240	0.40	1.15	365	2350	3.00	7.0	2.5	0.40	0.800	0.280	14.0
BSC-196	62	380	0.60	0.90	150	2300	2.10	4.0	2.5	0.30	0.025	0.025	9.0
BSC-197	25	290	0.40	1.40	150	2500	4.30	8.0	2.5	0.60	0.025	0.430	15.9
BSC-198	25	260	0.20	0.60	320	2100	1.50	4.0	2.5	0.20	0.025	0.025	8.3
BSC-199	25	380	0.40	0.70	150	2200	1.70	1.5	2.5	0.20	0.025	0.025	6.0
BSC-200	25	170	0.40	1.30	150	1700	3.60	7.0	2.5	0.50	0.025	0.025	13.7
BSC-201	25	140	0.50	2.10	150	2000	6.20	11.0	8.0	0.90	0.230	0.470	26.8
BSC-202	25	150	0.30	1.40	150	2900	3.90	7.0	2.5	0.50	0.140	0.290	14.3
BSC-203	25	140	0.40	1.30	1500	1900	3.80	8.0	2.5	0.50	0.025	0.220	15.0

Sample Site	Ni	Rb	Sb	Sc	Sr	Zn	La	Ce	Nd	Sm	Eu	Yb	TREE
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
BSC-204	56	435	0.50	0.80	425	1900	2.30	6.0	2.5	0.30	0.025	0.025	11.2
BSC-205	25	180	0.40	1.20	850	2200	3.80	7.0	2.5	0.60	0.210	0.250	14.4
BSC-206	25	340	0.30	0.80	830	2300	2.20	6.0	2.5	0.40	0.025	0.260	11.4
BSC-207	25	190	0.30	0.80	730	2900	2.30	4.0	2.5	0.30	0.025	0.025	9.2
BSC-208	25	200	0.40	0.80	1000	2200	2.00	1.5	2.5	0.30	0.025	0.190	6.5
BSC-209	25	230	0.40	0.90	390	2400	2.30	5.0	2.5	0.30	0.025	0.200	10.3
BSC-210	25	300	0.30	0.40	150	2000	1.20	3.0	2.5	0.20	0.260	0.025	7.2
BSC-211	25	200	0.40	0.80	150	2500	2.20	5.0	2.5	0.30	0.025	0.300	10.3
BSC-212	25	680	0.40	0.30	390	1300	1.10	1.5	2.5	0.20	0.025	0.025	5.4
BSC-213	25	780	0.60	0.40	700	2900	1.60	5.0	2.5	0.20	0.025	0.025	9.4
BSC-214	25	98	0.30	0.60	970	1700	2.00	3.0	2.5	0.30	0.025	0.025	7.9
BSC-215	25	140	0.60	1.00	520	2800	3.10	6.0	2.5	0.50	0.025	0.280	12.4
BSC-216	25	240	0.30	0.40	700	1600	1.60	1.5	2.5	0.20	0.025	0.025	5.9
BSC-217	69	190	0.30	0.40	150	1900	1.40	5.0	2.5	0.20	0.025	0.025	9.2
BSC-218	64	250	0.20	0.40	150	1700	1.40	4.0	2.5	0.20	0.025	0.025	8.2
BSC-219	25	110	0.60	1.20	150	2200	3.80	7.0	2.5	0.60	0.150	0.250	14.3
BSC-220	120	230	0.30	0.80	150	2100	2.40	5.0	2.5	0.40	0.250	0.270	10.8
BSC-221	25	170	0.30	0.80	410	2600	2.70	6.0	2.5	0.40	0.190	0.210	12.0
BSC-222	25	640	0.60	0.80	610	2200	2.60	5.0	2.5	0.40	0.025	0.270	10.8
BSC-223	25	670	0.60	0.40	1000	1500	1.60	3.0	2.5	0.20	0.025	0.190	7.5
BSC-224	25	540	0.60	0.40	150	1300	1.40	1.5	2.5	0.20	0.025	0.025	5.7
BSC-225	25	475	0.55	0.60	230	1800	1.90	3.3	2.5	0.30	0.025	0.143	8.1
BSC-226	25	265	0.80	0.40	150	2350	1.40	1.5	2.5	0.20	0.025	0.160	5.8
BSC-227	25	170	0.20	0.40	1400	2400	1.40	1.5	2.5	0.20	0.025	0.200	5.8
BSC-228	25	430	0.30	0.60	150	2300	1.70	1.5	2.5	0.20	0.025	0.120	6.0
BSC-229	25	190	0.20	0.70	350	1300	1.50	1.5	11.0	0.20	0.025	0.140	14.4
BSC-230	25	180	0.05	0.70	150	2300	1.60	3.0	2.5	0.20	0.025	0.025	7.4
BSC-231	25	460	0.20	0.50	150	2000	1.40	4.0	2.5	0.20	0.025	0.025	8.2
BSC-232	82	380	0.20	0.80	440	1600	2.00	1.5	2.5	0.20	0.025	0.025	6.3
BSC-233	25	100	0.05	0.50	150	1100	1.00	1.5	2.5	0.05	0.025	0.025	5.1
BSC-234	67	460	0.20	0.40	840	1900	1.20	1.5	2.5	0.10	0.025	0.025	5.4
BSC-235	25	300	0.40	1.30	490	1800	4.10	10.0	2.5	0.60	0.025	0.460	17.7
BSC-236	25	290	0.20	0.60	150	2300	1.70	4.0	2.5	0.20	0.025	0.190	8.6
BSC-237	100	400	0.20	0.60	150	2100	1.40	3.0	2.5	0.20	0.025	0.290	7.4
BSC-238	89	230	0.10	0.40	380	1700	1.50	3.0	2.5	0.20	0.025	0.025	7.3
BSC-239	25	320	0.20	0.40	150	2200	1.40	1.5	2.5	0.20	0.025	0.320	5.9
BSC-240	25	190	0.10	0.50	810	2600	1.30	3.0	2.5	0.20	0.025	0.200	7.2
BSC-241	25	360	0.30	0.80	150	2200	2.10	5.0	2.5	0.30	0.025	0.270	10.2
BSC-242	25	310	0.30	0.90	150	2200	2.40	3.0	2.5	0.30	0.025	0.160	8.4
BSC-243	25	390	0.30	0.80	370	2100	1.90	4.0	2.5	0.30	0.025	0.130	8.9
BSC-245	25	140	0.30	0.90	510	2400	3.20	6.0	2.5	0.50	0.025	0.190	12.4
BSC-246	25	275	0.20	0.60	285	1300	1.45	3.0	2.5	0.10	0.025	0.090	7.2
BSC-247	25	220	0.20	0.60	550	2100	1.50	1.5	2.5	0.20	0.025	0.025	5.8
BSC-248	25	200	0.20	0.60	810	1900	1.60	3.0	2.5	0.20	0.170	0.100	7.6
BSC-249	25	480	0.10	0.40	150	1300	1.20	1.5	2.5	0.20	0.025	0.025	5.5
BSC-250	25	81	0.30	1.10	730	2300	3.50	7.0	2.5	0.50	0.250	0.260	14.0
BSC-251	25	230	0.40	0.70	150	2400	2.20	3.0	2.5	0.30	0.170	0.200	8.4
BSC-252	25	210	0.20	0.60	670	2900	1.70	4.0	2.5	0.30	0.025	0.025	8.6
BSC-253	25	850	0.30	0.50	290	1800	1.70	4.0	2.5	0.30	0.060	0.090	8.7
BSC-254	25	190	0.20	1.00	410	2000	3.20	6.0	2.5	0.50	0.190	0.300	12.7
BSC-255	25	230	0.05	0.50	150	2600	1.70	5.0	2.5	0.30	0.025	0.180	9.7
BSC-256	65	230	0.60	2.10	1300	2300	6.30	10.0	11.0	1.00	0.025	0.560	28.9
BSC-257	47	345	0.30	1.05	150	1700	3.20	6.0	6.0	0.50	0.025	0.230	16.0
BSC-258	25	390	0.40	0.80	150	1800	2.40	4.0	2.5	0.40	0.130	0.180	9.6
BSC-259	25	550	0.20	0.40	150	1900	1.30	1.5	2.5	0.20	0.025	0.025	5.6
BSC-260	25	770	0.20	0.60	460	1900	1.70	4.0	10.0	0.30	0.025	0.025	16.1
BSC-261	25	210	0.30	0.90	640	2000	2.80	6.0	2.5	0.40	0.025	0.380	12.1
BSC-262	25	200	0.30	0.60	150	2200	1.90	3.0	2.5	0.30	0.025	0.240	8.0
BSC-263	25	230	0.30	0.60	570	1600	1.80	3.0	2.5	0.30	0.025	0.150	7.8
BSC-264	25	130	0.30	1.10	560	2100	3.20	6.0	2.5	0.50	0.025	0.330	12.6
BSC-265	68	360	0.30	0.50	150	1500	1.40	1.5	2.5	0.20	0.025	0.025	5.7
BSC-266	25	120	0.10	0.50	430	2000	1.40	3.0	2.5	0.20	0.025	0.025	7.2
BSC-267	25	410	1.00	0.30	150	2600	1.10	1.5	2.5	0.20	0.025	0.025	5.4
BSC-268	25	190	0.40	0.50	150	2200	1.80	3.0	2.5	0.30	0.025	0.025	7.7
BSC-269	25	130	0.60	0.70	760	2300	2.80	1.5	2.5	0.40	0.120	0.190	7.5
BSC-270	25	370	0.50	0.70	150	1900	2.50	3.0	2.5	0.40	0.025	0.025	8.5
BSC-271	25	420	0.80	0.40	150	2000	1.60	1.5	2.5	0.30	0.150	0.025	6.1
BSC-272	25	240	0.30	0.40	550	2500	1.50	1.5	6.0	0.20	0.025	0.270	9.5
BSC-273	25	235	0.25	0.40	575	2100	1.45	1.5	7.0	0.30	0.025	0.090	10.4
BSC-274	25	520	0.30	0.50	150	1800	1.90	1.5	2.5	0.30	0.025	0.140	6.4

Sample Site	Ni ppm	Rb ppm	Sb ppm	Sc ppm	Sr ppm	Zn ppm	La ppm	Ce ppm	Nd ppm	Sm ppm	Eu ppm	Yb ppm	TREE ppm
BSC-275	25	170	0.25	0.70	150	2300	2.20	4.0	2.5	0.30	0.025	0.110	9.1
BSC-276	25	420	0.40	0.70	150	4700	2.20	1.5	2.5	0.40	0.230	0.025	6.9
BSC-277	25	310	0.30	1.10	1000	3000	4.20	9.0	2.5	0.60	0.120	0.290	16.7
BSC-278	25	100	0.40	1.30	620	2400	4.00	6.0	2.5	0.60	0.025	0.350	13.5
BSC-279	25	91	0.40	1.30	440	2700	5.20	9.0	2.5	0.70	0.025	0.380	17.8
BSC-280	25	260	0.20	0.50	150	1700	1.60	1.5	2.5	0.20	0.025	0.025	5.9
BSC-281	25	140	0.20	0.50	830	1800	1.40	3.0	2.5	0.20	0.025	0.025	7.2
BSC-282	25	200	0.20	0.60	1300	2100	2.20	6.0	2.5	0.30	0.025	0.025	11.1
BSC-283	25	410	0.05	0.50	770	1900	1.70	4.0	2.5	0.30	0.025	0.025	8.6
BSC-284	25	270	0.20	0.80	780	2500	2.50	6.0	2.5	0.30	0.025	0.220	11.5
BSC-285	25	140	0.30	0.80	630	2900	2.80	6.0	2.5	0.40	0.025	0.210	11.9
BSC-286	69	310	0.20	0.80	150	1600	2.90	4.0	2.5	0.50	0.025	0.260	10.2

# Appendix 5

## Black Spruce (*Picea mariana*) Crown Twig Geochemistry: Duplicate Pair INA Analyses.

Sample Site	UTM		Ash %	Au ppb	As ppm	Ba ppm	Br ppm	Ca %	Co ppm	Cr ppm	Cs ppm	Fe %	Hf ppm	K %	Na ppm
	EAST	NORTH													
BSC-9-1	524733	6056170		6.0	2.30	330	30	23.60	4	0.5	1.20	0.39	0.25	17.90	1540
BSC-9-2	524733	6056170		15.0	2.10	400	30	23.30	3	0.5	2.30	0.38	0.25	14.10	1570
BSC-27-1	503212	6061166		2.5	0.60	1600	28	20.30	17	8.0	17.00	0.26	0.25	16.20	987
BSC-27-2	503212	6061166		5.0	1.40	1300	39	25.80	8	7.0	2.80	0.37	0.25	13.70	1140
BSC-27-3	503212	6061166		2.5	0.60	1400	44	25.20	9	1.0	2.60	0.34	0.25	13.90	1170
BSC-48-1	505621	6063322		2.5	0.25	1500	38	20.00	20	0.5	51.00	0.27	0.25	19.80	1060
BSC-48-2	505621	6063322		7.0	0.25	1700	34	20.70	19	0.5	53.00	0.24	0.25	21.60	1280
BSC-52-1	504799	6056393		21.0	0.50	840	38	23.80	6	7.0	15.00	0.32	0.25	18.90	1570
BSC-52-2	504799	6056393		6.0	0.25	1100	48	24.50	5	10.0	15.00	0.34	0.25	19.00	1320
BSC-61-1	497206	6060852		2.5	0.25	970	39	27.40	2	10.0	2.50	0.33	0.25	16.80	1400
BSC-61-2	497206	6060852		7.0	1.10	1100	47	25.50	2	0.5	2.80	0.29	1.20	14.90	1620
BSC-67-1	491159	6063714		2.5	0.90	630	46	23.90	10	9.0	9.20	0.30	0.25	16.10	977
BSC-67-2	491159	6063714		8.0	1.50	680	44	15.80	8	10.0	13.00	0.33	1.00	18.00	2390
BSC-75-1	520867	6044001		7.0	0.25	790	24	19.30	2	4.0	2.70	0.34	0.70	19.00	1300
BSC-75-2	520867	6044001		11.0	0.25	740	19	16.80	2	2.0	2.70	0.29	0.25	18.80	1320
BSC-88-1	520527	6041691		11.0	0.70	580	41	22.70	7	11.0	2.50	0.35	0.25	23.80	1310
BSC-88-2	520527	6041691		8.0	2.10	450	38	23.20	4	9.0	2.30	0.56	0.60	18.10	2400
BSC-93-1	520504	6036253		2.5	2.20	390	40	29.10	5	10.0	5.70	0.65	0.70	14.70	2280
BSC-93-2	520504	6036253		11.0	3.20	420	42	29.30	4	11.0	6.00	0.58	0.70	14.30	2400
BSC-110-1	531121	6050631		2.5	0.25	1500	35	23.60	10	0.5	40.00	0.17	0.25	22.40	666
BSC-110-2	531121	6050631		13.0	0.70	1200	22	27.00	6	0.5	15.00	0.27	0.25	13.90	956
BSC-111-1	527183	6049725		7.0	1.00	410	29	29.40	3	0.5	3.10	0.24	0.25	14.10	1880
BSC-111-2	527183	6049725		8.0	1.40	400	28	26.10	3	0.5	3.20	0.23	0.25	14.10	1790
BSC-122-1	483447	6064669		8.0	1.50	1600	45	38.50	11	5.0	5.30	0.29	0.25	16.30	1900
BSC-122-2	483447	6064669		5.0	1.50	1600	44	41.90	10	0.5	5.50	0.30	0.25	18.70	1840
BSC-143-1	503707	6055102		2.5	1.20	1800	57	31.80	5	10.0	6.90	0.31	0.25	12.70	1190
BSC-143-2	503707	6055102		2.5	1.80	2000	55	30.60	5	9.0	6.50	0.32	1.30	12.60	1160
BSC-143-3	503707	6055102		18.0	2.10	840	31	24.20	5	10.0	13.00	0.39	0.50	20.70	1810
BSC-157-1	514218	6029291		8.0	0.70	1800	34	28.50	9	3.0	2.20	0.13	0.25	16.80	1150
BSC-157-2	514218	6029291		2.5	1.40	1800	29	28.10	8	0.5	1.90	0.17	0.25	15.40	1090
BSC-158-1	513703	6027484		2.5	2.30	1400	31	22.70	4	4.0	9.00	0.17	0.25	21.80	919
BSC-158-2	513703	6027484		2.5	1.30	1500	28	24.30	6	3.0	5.30	0.25	0.80	19.30	1030
BSC-182-1	513479	6031215		2.5	1.30	1100	29	26.00	3	9.0	2.30	0.37	0.25	18.10	1880
BSC-182-2	513479	6031215		6.0	0.25	950	26	26.80	3	10.0	1.50	0.38	0.25	15.70	1570
BSC-183-1	502520	6029633		15.0	2.10	420	40	19.60	3	6.0	4.20	0.35	0.60	23.60	1730
BSC-183-2	502520	6029633		2.5	0.25	910	22	30.30	3	8.0	3.20	0.27	0.25	14.00	1100
BSC-195-1	501211	6032956		12.0	1.40	1100	33	28.00	5	6.0	2.20	0.32	0.60	19.90	1410
BSC-195-2	501211	6032956		2.5	2.20	1000	34	29.40	4	9.0	2.20	0.40	0.50	21.80	1610
BSC-204-1	493311	6034135		23.0	0.25	1600	66	21.00	8	6.0	15.00	0.31	0.70	22.20	1140
BSC-204-2	493311	6034135		2.5	0.25	590	50	22.90	6	10.0	15.00	0.26	0.25	23.30	1000
BSC-210-1	506619	6029127		8.0	3.20	360	41	16.10	4	5.0	3.70	0.19	0.25	20.60	787
BSC-210-2	506619	6029127		5.0	4.80	450	44	17.30	4	0.5	3.50	0.20	0.25	21.30	752

Sample Site	UTM		Ash %	Au ppb	As ppm	Ba ppm	Br ppm	Ca %	Co ppm	Cr ppm	Cs ppm	Fe %	Hf ppm	K %	Na ppm
	EAST	NORTH													
BSC-225-1	484355	6033976		14.0	2.60	660	33	13.00	6	6.0	12.00	0.32	0.50	20.60	1420
BSC-225-2	484355	6033976		2.5	2.30	630	27	17.40	5	14.0	15.00	0.20	0.25	17.70	852
BSC-226-1	507579	6032592		2.5	3.00	160	99	16.60	5	9.0	2.50	0.21	0.25	28.00	764
BSC-226-2	507579	6032592		2.5	3.10	280	97	16.80	6	7.0	2.40	0.20	0.25	28.70	778
BSC-246-1	458806	6027939		6.0	1.90	1500	24	36.00	12	4.0	3.60	0.20	0.60	15.20	980
BSC-246-2	458806	6027939		2.5	1.70	1500	26	35.20	14	5.0	4.20	0.21	0.25	14.60	901
BSC-253-1	443963	6030330		2.5	1.20	300	35	15.90	4	11.0	4.80	0.21	0.25	21.40	940
BSC-253-2	443963	6030330		24.0	1.40	850	24	20.20	6	11.0	6.00	0.24	0.25	18.20	782
BSC-257-1	439225	6030492		2.5	1.80	790	27	21.50	5	11.0	4.80	0.38	0.70	14.20	1510
BSC-257-2	439225	6030492		2.5	1.50	720	28	22.60	5	12.0	4.90	0.41	0.60	13.70	1450
BSC-273-1	466096	6029651		28.0	1.50	1100	44	22.20	4	8.0	2.70	0.22	0.25	21.40	803
BSC-273-2	466096	6029651		2.5	1.60	2000	36	23.20	3	0.5	2.40	0.16	0.25	18.80	465
BSC-275-1	441854	6030334		7.0	1.80	370	55	22.30	4	0.5	3.00	0.27	0.25	17.20	1110
BSC-275-2	441854	6030334		8.0	1.60	470	54	23.00	4	6.0	2.60	0.28	0.25	18.40	1020

Sample Site	Ni ppm	Rb ppm	Sb ppm	Sc ppm	Sr ppm	Zn ppm	La ppm	Ce ppm	Nd ppm	Sm ppm	Eu ppm	Yb ppm	TREE ppm
BSC-9-1	25	150	0.30	0.80	150	2900	2.50	6.0	2.5	0.30	0.030	0.420	11.8
BSC-9-2	25	170	0.30	0.80	150	2900	2.60	7.0	2.5	0.30	0.035	0.025	12.5
BSC-27-1	25	450	0.50	0.60	150	1900	1.90	1.5	2.5	0.30	0.015	0.420	6.6
BSC-27-2	25	170	0.30	1.00	480	2600	2.80	1.5	2.5	0.40	0.015	0.030	7.2
BSC-27-3	25	180	0.30	0.90	550	2600	3.10	5.0	2.5	0.50	0.015	0.400	11.5
BSC-48-1	25	870	1.80	0.50	150	2000	1.70	4.0	2.5	0.10	0.015	0.025	8.3
BSC-48-2	170	850	1.50	0.40	950	1800	1.50	1.5	29.0	0.10	0.025	0.025	32.2
BSC-52-1	25	670	0.60	0.70	150	2700	2.60	7.0	2.5	0.30	0.025	0.280	12.7
BSC-52-2	25	540	0.70	0.90	150	2500	3.00	7.0	2.5	0.40	0.010	0.340	13.3
BSC-61-1	25	180	0.30	0.90	470	2300	3.10	5.0	2.5	0.40	0.015	0.050	11.1
BSC-61-2	25	170	0.30	0.80	150	2400	3.20	6.0	2.5	0.40	0.025	0.025	12.2
BSC-67-1	91	340	0.50	0.90	450	2200	2.60	5.0	2.5	0.40	0.025	0.260	10.8
BSC-67-2	25	430	0.60	1.10	150	2300	2.50	1.5	2.5	0.30	0.025	0.025	6.9
BSC-75-1	25	290	0.30	0.60	150	2800	1.80	5.0	2.5	0.30	0.190	0.025	9.8
BSC-75-2	25	270	0.30	0.60	500	2800	2.00	5.0	2.5	0.30	0.025	0.025	9.9
BSC-88-1	25	170	0.30	1.00	540	2200	2.70	6.0	2.5	0.40	0.015	0.025	11.6
BSC-88-2	25	140	0.50	1.70	150	3200	4.90	10.0	2.5	0.70	0.015	0.400	18.5
BSC-93-1	25	93	0.50	1.90	150	2800	4.70	8.0	2.5	0.70	0.015	0.410	16.3
BSC-93-2	25	89	0.40	1.80	150	3000	4.90	10.0	2.5	0.80	0.015	0.480	18.7
BSC-110-1	25	460	0.60	0.40	150	2400	1.00	4.0	2.5	0.20	0.015	0.025	7.7
BSC-110-2	95	190	0.30	0.70	480	2900	2.10	4.0	2.5	0.30	0.015	0.190	9.1
BSC-111-1	25	130	0.20	0.70	150	2500	1.80	1.5	2.5	0.30	0.090	0.150	6.3
BSC-111-2	25	130	0.30	0.60	150	2300	1.70	1.5	2.5	0.20	0.015	0.025	5.9
BSC-122-1	25	290	0.30	0.90	1200	2100	2.50	6.0	2.5	0.40	0.015	0.370	11.8
BSC-122-2	88	260	0.40	0.80	1100	2100	2.60	1.5	2.5	0.30	0.015	0.250	7.2
BSC-143-1	25	330	0.60	0.80	150	2500	3.40	6.0	2.5	0.50	0.015	0.340	12.8
BSC-143-2	25	330	0.70	0.80	150	2500	3.30	9.0	11.0	0.50	0.015	0.330	24.1
BSC-143-3	25	360	0.70	1.10	150	1600	4.00	8.0	2.5	0.60	0.010	0.370	15.5
BSC-157-1	25	290	0.50	0.40	1100	2500	1.30	1.5	2.5	0.20	0.190	0.025	5.7
BSC-157-2	25	280	0.50	0.40	820	2500	1.30	1.5	2.5	0.20	0.140	0.200	5.8
BSC-158-1	25	580	1.00	0.40	340	1900	1.60	3.0	2.5	0.30	0.015	0.025	7.4
BSC-158-2	84	340	0.50	0.60	390	2000	2.50	5.0	2.5	0.30	0.010	0.210	10.5
BSC-182-1	25	130	0.80	1.00	1300	3000	3.50	10.0	2.5	0.50	0.150	0.320	17.0
BSC-182-2	25	74	0.40	1.20	1300	3000	3.30	5.0	6.0	0.40	0.015	0.310	15.0
BSC-183-1	25	200	0.40	1.00	150	2200	2.80	5.0	2.5	0.40	0.010	0.230	10.9
BSC-183-2	25	160	0.30	0.80	520	2100	2.60	5.0	2.5	0.40	0.010	0.210	10.7
BSC-195-1	25	250	0.40	1.10	580	2300	2.90	5.0	2.5	0.40	0.015	0.260	11.1
BSC-195-2	25	230	0.40	1.20	150	2400	3.10	8.0	2.5	0.50	0.140	0.290	14.5
BSC-204-1	25	460	0.40	0.90	700	2000	2.50	6.0	2.5	0.30	0.015	0.025	11.3
BSC-204-2	86	410	0.60	0.70	150	1800	2.10	5.0	2.5	0.30	0.015	0.025	9.9
BSC-210-1	25	290	0.30	0.40	150	1900	1.30	1.5	2.5	0.20	0.270	0.025	5.8
BSC-210-2	25	310	0.30	0.40	150	2100	1.10	4.0	2.5	0.20	0.250	0.025	8.1



Sample Site	Ni ppm	Rb ppm	Sb ppm	Sc ppm	Sr ppm	Zn ppm	La ppm	Ce ppm	Nd ppm	Sm ppm	Eu ppm	Yb ppm	TREE ppm
BSC-225-1	25	450	0.40	0.80	150	1400	2.50	5.0	2.5	0.40	0.015	0.260	10.7
BSC-225-2	25	500	0.70	0.40	310	2200	1.30	1.5	2.5	0.20	0.015	0.025	5.5
BSC-226-1	25	270	0.90	0.40	150	2400	1.40	1.5	2.5	0.20	0.020	0.100	5.7
BSC-226-2	25	260	0.60	0.40	150	2300	1.30	1.5	2.5	0.20	0.020	0.210	5.7
BSC-246-1	25	260	0.20	0.60	420	1300	1.30	4.0	2.5	0.10	0.010	0.140	8.1
BSC-246-2	25	290	0.20	0.60	150	1300	1.60	1.5	2.5	0.20	0.010	0.025	5.8
BSC-253-1	25	940	0.20	0.50	150	1800	1.70	5.0	2.5	0.30	0.110	0.025	9.6
BSC-253-2	25	760	0.40	0.50	430	1800	1.60	3.0	2.5	0.20	0.010	0.140	7.5
BSC-257-1	25	340	0.30	1.00	150	1600	3.20	6.0	9.0	0.50	0.010	0.230	18.9
BSC-257-2	69	350	0.30	1.10	150	1800	3.20	6.0	2.5	0.60	0.010	0.230	12.5
BSC-273-1	25	250	0.40	0.50	150	2200	1.80	1.5	11.0	0.30	0.020	0.150	14.8
BSC-273-2	25	220	0.10	0.30	1000	2000	1.10	1.5	2.5	0.20	0.015	0.025	5.3
BSC-275-1	25	180	0.20	0.70	150	2300	2.20	5.0	2.5	0.30	0.020	0.180	10.2
BSC-275-2	25	160	0.30	0.60	150	2300	2.10	1.5	2.5	0.30	0.020	0.025	6.4

## Appendix 6

### **Black Spruce (*Picea mariana*) Crown Twig Geochemistry: Instrumental Neutron Activation Analyses (INAA) Percentile Bubble Plots.**

