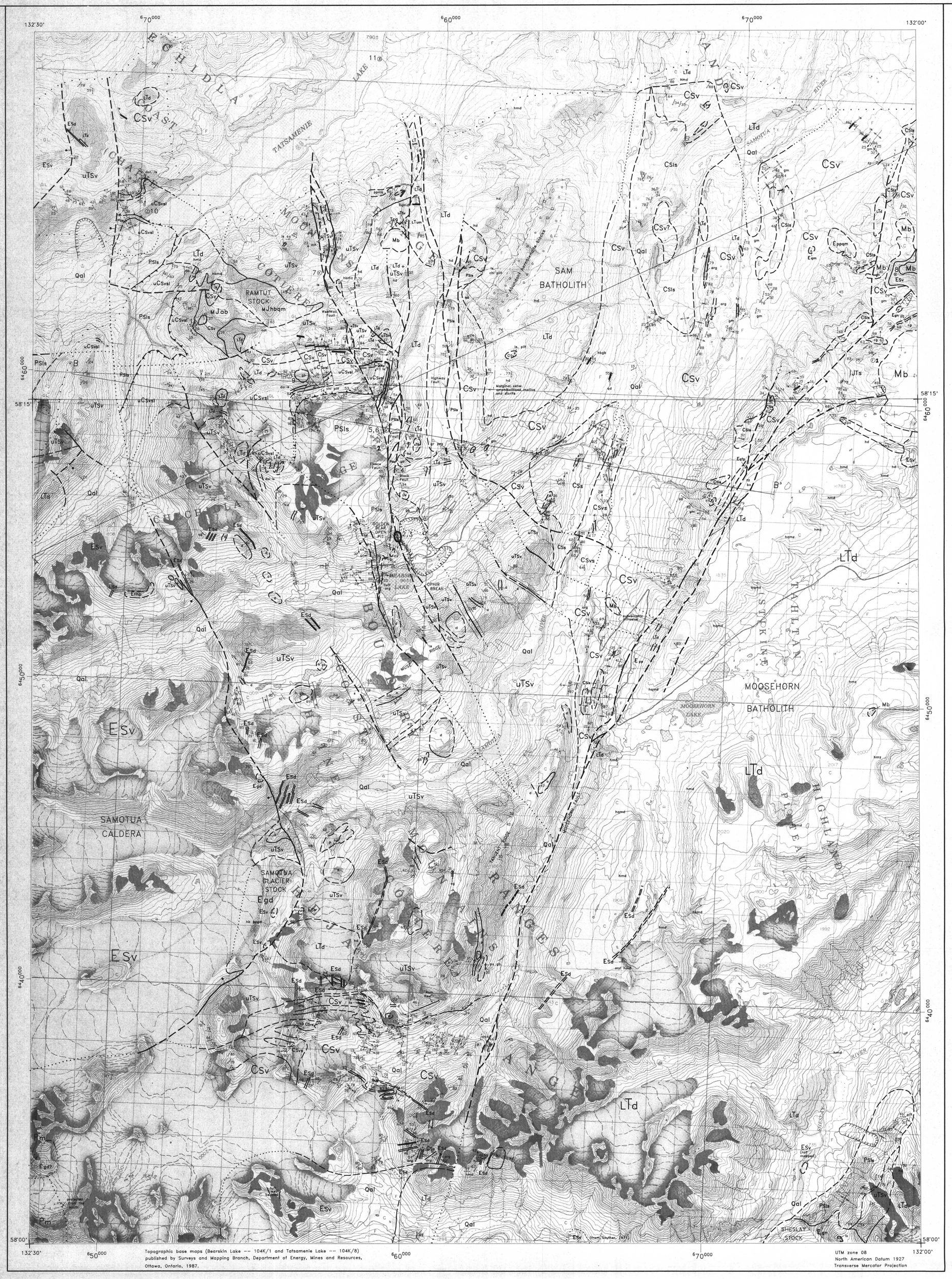
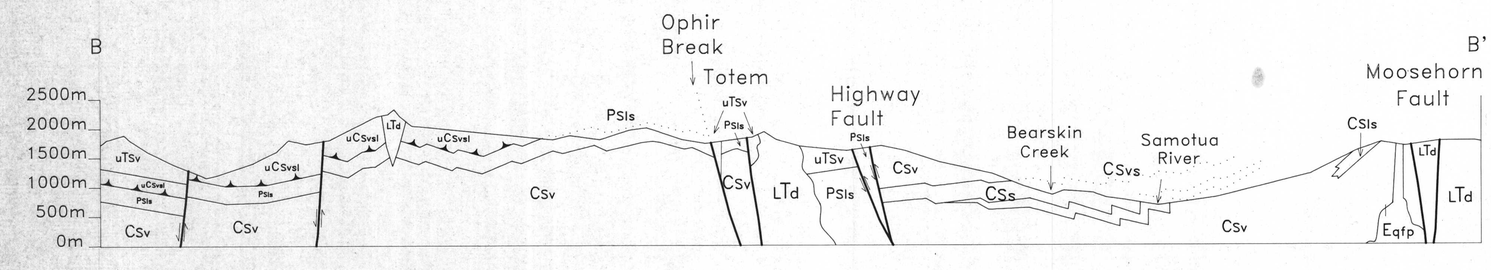
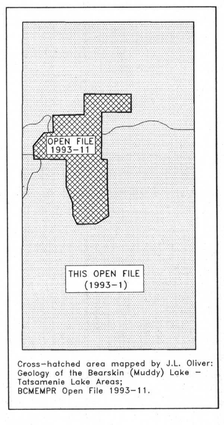



Topographic base maps (Bearskin Lake -- 104K/1 and Tatsamenie Lake -- 104K/8) published by Surveys and Mapping Branch, Department of Energy, Mines and Resources, Ottawa, Ontario, 1987.

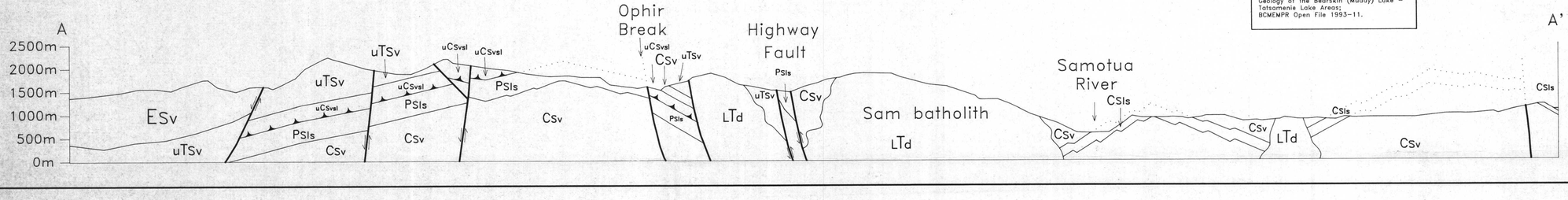
UTM zone 08
North American Datum 1927
Transverse Mercator Projection

# Schematic Cross-sections




Cross-hatched area mapped by J.L. Oliver: Geology of the Bearskin (Muddy) Lake - Tatsamenie Lake Areas; BCMEMPR Open File 1993-11.





BC Ministry of Energy, Mines and Petroleum Resources

BRITISH COLUMBIA GEOLOGICAL SURVEY

OPEN FILE 1993-1 (SHEET 1 OF 3)


# GEOLOGY, MINERAL OCCURRENCES AND GEOCHEMISTRY OF THE BEARSKIN AND TATSAMENIE LAKES AREA, NORTHWESTERN BRITISH COLUMBIA

NTS 104K/1, 8S


By J.A. Bradford and D.A. Brown

Additional geology by D.J. Barron, T.M. Parsons and J.N. Rouse


Kilometres 0 1 2 3 4 Kilometres

SCALE 1 : 50 000

*** Comments and additional contributions would be appreciated (604) 356-8180 ***
*** Descriptions of map units can be found in Bradford and Brown (1993) ***

## STRATIFIED ROCKS

### QUATERNARY

**Qal** — Alluvium, unconsolidated glaciofluvial deposits.

### MIOCENE (?)

**Mb** — Aphyric, and olivine, plagioclase and augite-phyric, fine-grained basalt flows, in part columnar-jointed, locally vesicular or amygdaloidal; may include massive, fine-grained diabase sills. Possibly Eocene in part.

### TERTIARY

**Tcg** — Poorly bedded, poorly indurated pebble to cobble conglomerate, containing felsic volcanic clasts possibly derived from Sloko Group.

### EOCENE -- SLOKO GROUP

**ESv** — Rhyolitic to andesitic pyroclastic and epiclastic rocks, including massive, poorly bedded heterolithic tuff-breccia, crystal-vitric-lithic lapilli tuff, ash tuff and volcanic conglomerate; locally includes welded ignimbrite, massive rhyolitic glass and flow-banded rhyolite.

**fhp** - columnar jointed, feldspar-hornblende porphyry dacite.

### LOWER JURASSIC TAKWAHONI GROUP

**lJTs** — Thin to medium-bedded, fine to coarse-grained arkosic wacke and interbedded shale and siltstone; turbiditic, contains ammonites, belemnoids and plant fragments.

**cg** - polymictic pebble to cobble conglomerate with felsic to intermediate volcanic, chert, granodiorite and limestone clasts.

### UPPER TRIASSIC STUHINI GROUP

**uTSv** — Mafic to intermediate pyroclastic and epiclastic rocks, including well-bedded to massive ash tuff, lapilli tuff, plagioclase and augite-bearing crystal tuff, lesser tuff-breccia; locally cross-bedded or graded tuffaceous siltstone, sandstone and interbedded argillite (volcanic turbidites); massive, aphyric or plagioclase and augite-phyric mafic to intermediate flows, sills and massive "greenstone"; minor limestone, calcareous tuff, carbonaceous limestone, chert and volcanic conglomerate; pillow basalt occurs north of Bearskin Lake. Ranges from unfoliated to strongly foliated, with a bedding parallel shear fabric locally between Bearskin Lake and Tatsamenie Lake; foliated varieties include porphyroblastic chlorite schist to phyllite.

**ls** - grey to white, thin to medium-bedded limestone; impure limestone and calcareous tuff; or carbonaceous limestone.
**ch** - buff to grey, thin bedded ribbon chert.
**a** - argillite, lesser tuff, volcanic siltstone and sandstone.
**px gb** - pyroxene gabbro sills, dikes or plugs.
**h gb** - hornblende gabbro to hornblendite.
**p** - bladed, megacrystic plagioclase - augite - hornblende porphyry dikes and plugs.
**s** - chlorite schist, generally related to steep faults.
**d** - diabase or hornblende diorite plugs, sills and dikes.

### PALEOZOIC -- STIKINE ASSEMBLAGE

### PERMIAN LIMESTONE

**PSls** — Thin to thick-bedded or massive, dark grey to white, variably recrystallized limestone, locally containing abundant crinoidal debris; buff to orange weathering dolomitic limestone; lesser dark grey carbonaceous limestone and calcareous siltstone; rare tuff lenses.

### UPPER CARBONIFEROUS VOLCANICS, SEDIMENTS AND LIMESTONE

**uCSvsl** — Pale grey, tan or brown-weathering, varicoloured (green, grey, brown, pink), thin-bedded to laminated or massive felsic phyllite (felsic metatuff); lesser dark green, chloritic, intermediate to mafic metavolcanic rocks, tan to orange-weathering dolostone and dolomitic phyllite, argillaceous phyllite, and blue-grey to white and pinkish marble.
**chl pllt** - chloritic phyllite (mafic metavolcanics); includes marble layers and lenses.
**dol ls** - pink dolomitic limestone, grey to white limestone.

### CARBONIFEROUS (?) VOLCANICS

**CSv** — Intermediate to mafic, aphyric, plagioclase or pyroxene-phyric flows and/or sills, ash tuff, lapilli tuff; includes chloritic phyllite to chloritic schist with strong flattening foliation and stretch lineation; also thinly foliated calcareous chloritic phyllite, lesser white to grey or pink dolomitic marble, argillite, grey phyllite, pillow basalt; minor heterolithic volcanic pebble conglomerate, felsic tuff, felsic sills. Possibly Permian in part; may include rocks both younger and older than Unit uCSvsl.

**ls** - limestone
**arg** - argillite
**gm** - green and maroon metavolcanics, including flows, tuff and breccia, and green and maroon phyllite.
**fp** - feldspar-phyric flows or sills.
**d** - diabase or hornblende diorite plugs, sills and dikes.
**bx** - clast-supported heterolithic breccia, with foliated clasts.
**f** - felsic tuff; possibly equivalent to Unit uCSvsl ?

### CARBONIFEROUS? SEDIMENTS

**CSs** — Slate to argillaceous phyllite, minor ash tuff, siltstone and brown-weathering calcarenite.

**cg** - matrix-poor, stretched-pebble to cobble conglomerate with felsic volcanic and minor black chert or cherty argillite and black silty limestone clasts.

### CARBONIFEROUS? VOLCANICS AND SEDIMENTS

**CSvs** — Thin to medium-bedded, felsic to intermediate ash tuff, tuffaceous sandstone, siltstone and argillite (volcanic turbidites); minor limestone, calcareous ash tuff and foliated, porphyroblastic pyroxene-phyric mafic sills.

### CARBONIFEROUS (?) LIMESTONE

**CSls** — Massive to thin and thick-bedded, white to medium grey, recrystallized limestone, locally with grey siliceous layers and pods, minor chloritic phyllite (tuff) lenses. Unfossiliferous; possibly Permian.

### PALEOZOIC (?) METAMORPHIC ROCKS (BOUNDARY RANGES METAMORPHIC SUITE ?)

**Pm** — Rusty brown-weathering, quartzofeldspathic biotite schist, amphibole(?)-chlorite schist (mafic metavolcanics), marble, and orthogneiss (felsic sills?).

## INTRUSIVE ROCKS

### EOCENE

**ESd** — Aphyric or plagioclase-phyric felsic dikes.

**Egd** — Plagioclase phyric biotite (hornblende) granodiorite.

**Egn** — Coarse-grained, potassium feldspar megacrystic biotite-hornblende granite.

**Epp** — Orange or rusty weathering, altered plagioclase biotite-hornblende quartz monzonite (?).

**Eqfp** — White, grey or mauve, quartz-plagioclase porphyry rhyolite dikes.

**Eqm** — Equigranular or potassium feldspar-phyric biotite quartz monzonite. Possibly Middle Jurassic?

### MIDDLE JURASSIC

**MJqm** — Medium to fine-grained hornblende quartz monzonite to monzonite.

**ppmz** - equigranular or plagioclase porphyritic, potassium-feldspar megacrystic hornblende monzonite to quartz monzonite.
**hbmz** - hornblende-biotite monzonite.
**gb** - medium to coarse-grained hornblende gabbro.

**MJab** — Equigranular to plagioclase-phyric albitite to albitized hornblende quartz monzonite; albitized equivalent of MJqm.

### LATE TRIASSIC

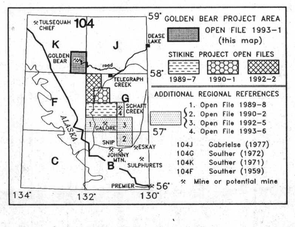
**LTd** — Weakly to strongly foliated hornblende diorite to quartz monzonite.

**hd** - hornblende diorite
**hmd** - hornblende monzodiorite
**hbmd** - biotite-hornblende monzodiorite
**hqmd** - hornblende quartz monzodiorite
**hmz** - hornblende monzonite
**hqmz** - hornblende quartz monzonite
**h** - hornblendite
**qd** - quartz diorite
**flt bx** - fault breccia

**LTum** — Clinopyroxenite, olivine clinopyroxenite, hornblendite and serpentinite; may include small bodies of diorite.

## SYMBOLS

- Bedding, tops known, overturned, subhorizontal
- Foliation
- Shear fabric
- Minor fold axial plane
- Fold axis – general
- Fold axis – M, S, Z asymmetry
- Lineation – crenulation, intersection, mineral
- Lineation – pebble elongation
- Minor fault
- Geological contact – defined, approximate, assumed
- Fault trace – defined, approximate, assumed
- Thrust fault – defined, approximate, assumed
- Antiform hinge
- Synform hinge
- Landslide scar
- A A' Cross-section line
- Fossil locality
- K/Ar sample locality
- U/Pb zircon sample locality
- Outcrop distribution shown as grey tone



## STREAM SEDIMENT GEOCHEMISTRY*: -- a subset of the entire 104K data
## BEARSKIN LAKE AND THE SOUTHERN PART OF TATSAMENIE LAKE MAP AREAS (104K/01,08)

| RGS NO. | UTM ZONE 8 EASTING | NORTHING | Au(1) ppb | Au(2) ppb | Ag ppm | Cu ppm | Pb ppm | Zn ppm | Ni ppm | Co ppm | Mo ppm | Sn ppm | W ppm | F ppm | U ppm | As ppm | Sb ppm | Hg ppm | Ba ppm | Mn ppm | Fe % | V ppm | Cd ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Detection Limits: | | | Var | Var | <0.1 | <2 | <2 | <2 | <2 | <2 | <1 | <2 | <2 | <40 | <0.5 | <1 | <0.2 | <5 | <20 | <5 | <0.02 | <5 | <0.1 |
| Analytical Technique: | | | NAA | NAA | AAS | AAS | AAS | AAS | AAS | AAS | AAS | AAS | COLM | SIE | DNA | AAS | AAS | AAS | XRF | AAS | AAS | AAS | AAS |
| 90th percentile values: | | | 20 | 20 | 0.5 | 122 | 17 | 122 | 87 | 23 | 5 | | 5 | 590 | 4.0 | 56 | 3.0 | 130 | 1100 | 800 | 3.80 | 88 | 0.7 |
| **SLOKO GROUP:** | | | | | | | | | | | | | | | | | | | | | | | |
| 1090 | 652659 | 6451596 | 10 | N.A. | 0.1 | 40 | 11 | 46 | 19 | 6 | 2 | 1 | 3 | 350 | 3.9 | 13 | 0.3 | 5 | **1400** | 430 | 1.65 | 38 | 0.3 |
| 1091 | 652246 | 6451501 | 10 | N.A. | 0.1 | 10 | 14 | 67 | 1 | 2 | 2 | 1 | 4 | 550 | **5.0** | 7 | 0.3 | 5 | **1600** | 480 | 2.05 | 31 | 0.2 |
| 3070 | 649549 | 6456626 | 9 | N.A. | 0.1 | 11 | 19 | 58 | 4 | 4 | 2 | 1 | 2 | 500 | **6.2** | 23 | 0.3 | 5 | **1500** | 500 | 1.70 | 17 | 0.1 |
| 3071 | 649549 | 6456626 | 4 | N.A. | 0.1 | 10 | 19 | 56 | 4 | 4 | 3 | 1 | 2 | 480 | **6.0** | 22 | 0.4 | 5 | **1500** | 490 | 1.70 | 15 | 0.3 |
| **TRIASSIC AND OLDER VOLCANICS AND SEDIMENTS:** | | | | | | | | | | | | | | | | | | | | | | | |
| 1003 | 652608 | 6465428 | 5 | 14 | 0.2 | 27 | **18** | 60 | 7 | 8 | 3 | 1 | 3 | 320 | 2.3 | **90** | 7.4 | 30 | 520 | 570 | 1.70 | 45 | 0.5 |
| 1004 | 653454 | 6466360 | **29** | **32** | 0.3 | 71 | 13 | 76 | 13 | 13 | 1 | 1 | 2 | 280 | 2.7 | 42 | **3.2** | 55 | 520 | 790 | 2.85 | 80 | **0.8** |
| 1005 | 652642 | 6467320 | 7 | N.A. | 0.1 | 77 | 1 | 46 | 80 | 21 | 1 | 1 | 2 | 300 | 1.9 | 40 | **3.6** | **350** | 490 | 670 | 2.95 | 75 | 0.1 |
| 1006 | 653119 | 6467771 | 6 | N.A. | 0.1 | 112 | 1 | 62 | **138** | **31** | 1 | 2 | 3 | 240 | 1.0 | 21 | **3.8** | **300** | 290 | **810** | **4.20** | **135** | 0.1 |
| 1007 | 655850 | 6467837 | 5 | N.A. | 0.3 | **130** | **19** | **164** | **105** | **26** | **5** | 1 | 4 | 530 | 2.1 | **190** | **5.2** | 65 | 770 | 650 | **4.40** | **110** | **0.7** |
| 1008 | 655850 | 6467837 | 9 | N.A. | 0.3 | **138** | **19** | **166** | **100** | **26** | **6** | 1 | 3 | 550 | 2.2 | **200** | **4.9** | 75 | 830 | 635 | **4.30** | **110** | **0.7** |
| 1009 | 656760 | 6468693 | 4 | N.A. | 0.1 | 56 | 3 | 48 | 52 | 17 | 2 | 1 | 2 | 360 | 1.5 | 14 | 1.3 | 10 | 650 | 495 | 2.65 | 58 | 0.1 |
| 1010 | 657434 | 6469378 | 1 | N.A. | 0.1 | 90 | 2 | 63 | **120** | **25** | 3 | 2 | 2 | 260 | 1.6 | 13 | 1.0 | 35 | 500 | 435 | 3.35 | 84 | 0.1 |
| 1011 | 657841 | 6469936 | 1 | N.A. | 0.1 | 77 | 2 | 66 | 28 | 15 | 2 | 2 | 3 | 360 | 2.2 | 8 | 1.0 | 55 | 590 | 660 | 3.20 | 85 | 0.1 |
| 1092 | 655957 | 6453382 | 17 | N.A. | 0.1 | 87 | 4 | 41 | 25 | 13 | 1 | 1 | 2 | 270 | 1.2 | 6 | 0.6 | 5 | 330 | 405 | 2.40 | 57 | 0.1 |
| 1093 | 656376 | 6452943 | 9 | N.A. | 0.1 | 21 | 14 | 60 | 8 | 4 | 1 | 1 | 2 | 360 | **4.5** | 10 | 0.4 | 5 | **1500** | 470 | 1.85 | 28 | 0.4 |
| 1094 | 656561 | 6453426 | 12 | 8 | 0.1 | 93 | 3 | 46 | 38 | 13 | 1 | 1 | 3 | 260 | 1.7 | 7 | 0.6 | 5 | 660 | 500 | 2.50 | 59 | 0.1 |
| 1095 | 658453 | 6452947 | 13 | N.A. | 0.1 | **148** | 3 | 39 | **120** | **24** | 1 | 1 | 4 | 270 | 0.9 | 10 | 0.3 | 5 | 280 | 460 | 3.05 | 71 | 0.1 |
| 1096 | 658511 | 6453899 | **22** | **33** | 0.3 | 18 | 6 | 56 | 20 | 6 | 1 | 1 | 3 | 240 | 1.7 | 50 | **11.0** | **150** | 40 | 400 | 1.20 | 18 | 0.5 |
| 1176 | 659082 | 6462466 | 13 | 8 | 0.1 | 30 | 7 | 79 | 14 | 10 | 3 | 1 | 3 | 320 | 1.5 | **74** | **5.5** | 70 | 610 | 410 | 1.60 | 33 | 0.3 |
| 1177 | 659006 | 6462868 | **23** | N.A. | 0.3 | 95 | **20** | 75 | 25 | 15 | 4 | 1 | 2 | 240 | 3.1 | **56** | 2.1 | 15 | 600 | 400 | 2.55 | 70 | 0.5 |
| 1179 | 664305 | 6460312 | 4 | N.A. | 0.1 | **125** | 3 | 65 | 71 | 20 | 2 | 1 | 4 | 250 | 1.0 | 17 | 0.2 | 15 | 350 | 440 | 2.85 | 79 | 0.2 |
| 1180 | 665570 | 6461028 | 9 | N.A. | 0.1 | **145** | 2 | 78 | 41 | **24** | 3 | 1 | 2 | 290 | 1.7 | 12 | 0.4 | 30 | 360 | 580 | 3.70 | **108** | 0.2 |
| 1182 | 667280 | 6462321 | **136** | **70** | 0.1 | 38 | 4 | 55 | 14 | 9 | 2 | 1 | 3 | 220 | 1.3 | 8 | 1.2 | 30 | 660 | 360 | 2.40 | 60 | 0.1 |
| 1185 | 670393 | 6463047 | 14 | 7 | 0.1 | 52 | 10 | **155** | 22 | 17 | 3 | 1 | 3 | 490 | 2.7 | 18 | 2.0 | 110 | 1000 | 740 | **3.95** | 55 | 0.6 |
| 1186 | 671728 | 6463642 | 12 | N.A. | 0.3 | 78 | 12 | **140** | 31 | **25** | 3 | 1 | 2 | 330 | 1.7 | 23 | 1.3 | 60 | 690 | 705 | **4.35** | 87 | 0.6 |
| 1187 | 671728 | 6463642 | 7 | N.A. | 0.3 | 80 | 13 | **160** | 32 | **25** | 3 | 1 | 3 | 380 | 1.3 | 24 | 1.3 | 75 | 670 | 740 | **4.60** | 78 | **0.7** |
| 1189 | 670863 | 6467943 | 3 | N.A. | 0.1 | 57 | 9 | **150** | 29 | 15 | 4 | 1 | 3 | 370 | 1.9 | 15 | 1.1 | 90 | 860 | 560 | 3.35 | 67 | **0.8** |
| 1190 | 672097 | 6469211 | 16 | N.A. | 0.1 | 62 | **18** | 69 | 12 | 14 | 4 | 1 | 3 | 380 | 2.6 | 25 | 1.2 | 15 | 640 | 520 | 3.10 | 61 | 0.3 |
| 3064 | 648294 | 6463985 | 8 | N.A. | 0.1 | 101 | 1 | 55 | 82 | **24** | 2 | 1 | 3 | 310 | 0.7 | 29 | **4.3** | 140 | 230 | 690 | 3.50 | 84 | 0.2 |
| 3066 | 647136 | 6463046 | 10 | N.A. | 0.1 | 39 | 1 | 34 | 3 | 5 | 1 | 1 | 2 | 530 | 2.5 | 4 | 0.6 | 5 | 810 | 390 | 1.60 | 32 | 0.1 |
| 3067 | 649798 | 6457185 | **35** | 7 | 0.1 | 68 | 2 | 48 | 43 | 13 | 1 | 1 | 3 | 310 | 3.1 | 33 | 0.6 | 5 | 820 | 460 | 2.20 | 45 | 0.1 |
| 3119 | 649174 | 6467237 | **155** | **410** | 0.1 | 60 | 1 | 41 | 61 | 18 | 1 | 1 | 4 | 320 | 3.2 | 34 | **2.4** | **335** | 510 | 565 | 2.45 | 46 | 0.1 |
| 3146 | 665905 | 6448182 | 1 | N.A. | 0.1 | 27 | 2 | 23 | 2 | 4 | 1 | 1 | 2 | 360 | 0.9 | 4 | 0.8 | 20 | 980 | 275 | 1.10 | 38 | 0.1 |
| 3147 | 665905 | 6448182 | 1 | N.A. | 0.1 | 30 | 1 | 24 | 2 | 4 | 1 | 2 | 3 | 360 | 0.8 | 4 | 0.6 | 35 | 1000 | 285 | 1.10 | 38 | 0.1 |
| 3149 | 665458 | 6446213 | 2 | 1 | **0.6** | 61 | 3 | 90 | 10 | 13 | 2 | 2 | 4 | 390 | 1.1 | 7 | 0.4 | 10 | 1000 | **805** | 3.10 | 64 | 0.2 |
| 3150 | 664287 | 6444391 | 3 | N.A. | 0.4 | **166** | 1 | 96 | **121** | **36** | 2 | 1 | 2 | 410 | 0.7 | 28 | 2.9 | **130** | 650 | **1160** | **6.30** | **109** | 0.3 |
| 3151 | 663898 | 6442613 | 2 | N.A. | 0.3 | 62 | 3 | 78 | 9 | 14 | 1 | 2 | 3 | 310 | 1.0 | 8 | 1.0 | 30 | 1000 | 580 | 3.20 | **103** | 0.1 |
| 3152 | 663731 | 6441209 | 10 | N.A. | 0.1 | 45 | 1 | 38 | 6 | 7 | 1 | 3 | 2 | 270 | 0.4 | 4 | 0.3 | 10 | **1100** | 255 | 1.85 | 50 | 0.1 |
| 3153 | 663215 | 6439970 | 3 | N.A. | 0.1 | 39 | 1 | 38 | 3 | 6 | 1 | 1 | 3 | 380 | 0.4 | 4 | 0.3 | 5 | 950 | 355 | 1.65 | 50 | 0.2 |
| 3154 | 662489 | 6438860 | 3 | N.A. | 0.4 | 38 | **24** | **122** | 22 | 14 | 4 | 2 | 2 | **660** | 1.9 | 18 | 0.6 | 20 | 800 | 575 | 2.75 | 27 | **0.8** |
| 3155 | 662203 | 6439114 | **38** | **50** | 0.4 | 46 | 5 | 82 | 14 | 15 | 2 | 3 | 2 | **450** | 1.2 | 51 | 0.8 | 15 | 990 | 615 | 3.40 | 63 | 0.3 |
| 3156 | 657638 | 6446852 | 3 | N.A. | 0.2 | 37 | 8 | 55 | 26 | 8 | 1 | 1 | 3 | 410 | 3.6 | 29 | 0.2 | 15 | **1100** | 485 | 2.05 | 28 | 0.2 |
| 3157 | 658070 | 6446540 | 17 | N.A. | 0.1 | 62 | 1 | 35 | 36 | 9 | 1 | 1 | 2 | 240 | 1.0 | 6 | 0.2 | 5 | 520 | 400 | 2.00 | 47 | 0.1 |
| 3158 | 660244 | 6447458 | 1 | N.A. | 0.2 | 106 | 1 | 64 | **161** | **28** | 1 | 3 | 3 | 260 | 0.8 | 10 | 0.2 | 5 | 620 | 610 | 3.65 | **91** | 0.1 |
| 3159 | 661183 | 6446936 | 7 | N.A. | 0.3 | 105 | 1 | 52 | 58 | 18 | 1 | 1 | 4 | 240 | 0.7 | 12 | 0.2 | 20 | 380 | 535 | 2.70 | 71 | 0.1 |
| 3160 | 662570 | 6448046 | **110** | 20 | 0.3 | 98 | 1 | 57 | 52 | 17 | 2 | 1 | 3 | 270 | 1.1 | 6 | 0.2 | 10 | 650 | 575 | 2.90 | 73 | 0.1 |
| 3162 | 662609 | 6451223 | 1 | N.A. | **0.5** | **164** | 1 | 80 | **90** | **28** | **6** | 1 | 4 | 420 | 1.4 | 35 | 0.7 | 25 | 640 | 675 | 3.65 | 76 | 0.3 |
| 3164 | 666121 | 6453060 | 4 | 12 | 0.1 | 64 | 6 | 102 | 11 | 17 | 1 | 3 | 2 | 350 | 0.6 | 13 | 2.0 | 75 | 670 | **975** | 3.00 | 57 | 0.2 |
| 3165 | 666999 | 6454623 | 4 | N.A. | 0.1 | 46 | 2 | 71 | 11 | 13 | 2 | 2 | 3 | 420 | 1.6 | 14 | 1.6 | **850** | **1200** | 745 | 2.25 | 48 | 0.1 |
| 3166 | 666791 | 6455309 | 11 | N.A. | 0.3 | 31 | 2 | 80 | 11 | 15 | 2 | 2 | 2 | 380 | 0.9 | 10 | 0.6 | 40 | **990** | **2908** | **4.10** | 61 | 0.1 |
| 3167 | 659464 | 6454422 | 5 | N.A. | 0.2 | 47 | 1 | 70 | 24 | 10 | 3 | 3 | 2 | 420 | 1.5 | 54 | **5.8** | 80 | 100 | 480 | 2.15 | 44 | 0.6 |
| 3168 | 662324 | 6454730 | 1 | N.A. | 0.2 | **220** | 1 | 58 | **139** | **28** | 2 | 2 | 3 | 310 | 0.8 | 9 | 0.2 | 15 | 230 | 440 | 3.25 | 85 | 0.1 |
| 3169 | 662110 | 6456541 | 6 | N.A. | 0.2 | 92 | 1 | 39 | 81 | 19 | 1 | 2 | 2 | 330 | 0.9 | 26 | 0.7 | 25 | 240 | 340 | 2.40 | 59 | 0.1 |
| 3170 | 666406 | 6457991 | 9 | N.A. | 0.1 | 51 | 1 | 105 | 25 | **24** | 3 | 2 | 3 | **730** | 1.7 | 9 | 1.2 | 125 | 470 | **1160** | **4.30** | 67 | 0.1 |
| 3171 | 666262 | 6459681 | 1 | N.A. | 0.1 | 43 | 1 | 66 | 23 | 14 | 2 | 3 | 2 | 310 | 1.6 | 7 | 0.4 | 25 | 470 | 665 | 3.00 | 59 | 0.1 |
| 3172 | 666732 | 6459700 | **23** | **29** | 0.1 | 62 | 1 | 65 | 47 | 13 | 2 | 2 | 2 | 360 | 2.0 | 17 | 0.4 | 10 | 900 | 585 | 2.60 | 53 | 0.2 |
| 3173 | 671331 | 6459173 | 3 | N.A. | 0.2 | 63 | 7 | **166** | 31 | 16 | 4 | 2 | 3 | 550 | 2.9 | 23 | 2.6 | **185** | **1100** | 680 | **3.85** | 51 | **0.8** |
| **PERMIAN LIMESTONE:** | | | | | | | | | | | | | | | | | | | | | | | |
| 1002 | 650777 | 6464154 | 15 | N.A. | 0.2 | 58 | **23** | **146** | 40 | 14 | 2 | 2 | 3 | **620** | 2.8 | **380** | **22.0** | 70 | 680 | **855** | 2.85 | 58 | 0.6 |
| 1178 | 658317 | 6460682 | **228** | **65** | 0.2 | 65 | 10 | 110 | 25 | 17 | 3 | 1 | 3 | 320 | 1.2 | **73** | 2.7 | 35 | 540 | 660 | 2.70 | 65 | 0.4 |
| 1188 | 670209 | 6467670 | 4 | 7 | 0.1 | 50 | 7 | 115 | 22 | 18 | 2 | 1 | 2 | 450 | 1.4 | 12 | 1.7 | 50 | 820 | **965** | **3.80** | 51 | 0.3 |
| 3062 | 650378 | 6463951 | 20 | 16 | **0.6** | 12 | **50** | 114 | 10 | 4 | 2 | 1 | 4 | **650** | 2.9 | **400** | **19.0** | 30 | 800 | 410 | 1.40 | 14 | **0.9** |
| 3063 | 649901 | 6463621 | 12 | N.A. | 0.4 | **44** | 16 | 55 | 19 | 15 | 2 | 1 | 2 | 360 | **4.0** | 44 | 1.3 | 10 | 990 | 430 | 2.60 | 36 | 0.3 |
| 3065 | 650102 | 6462083 | 15 | N.A. | 0.3 | 62 | **29** | 68 | 25 | 14 | 2 | 1 | 4 | 260 | 2.8 | 38 | 0.9 | 5 | 490 | 335 | 2.75 | 40 | 0.6 |
| 3163 | 666517 | 6449719 | 1 | N.A. | **0.5** | 48 | 11 | 83 | 25 | 10 | 2 | 1 | 2 | 410 | **4.3** | 12 | 1.0 | 50 | 1000 | 450 | 3.35 | 69 | 0.3 |
| **INTRUSIVE ROCKS:** | | | | | | | | | | | | | | | | | | | | | | | |
| 1171 | 664666 | 6468199 | 6 | N.A. | 0.1 | 120 | 4 | 105 | 19 | 18 | 2 | 1 | 2 | **590** | **4.2** | 11 | 1.2 | 25 | 770 | 785 | 3.70 | **104** | 0.1 |
| 1172 | 662608 | 6468107 | 6 | N.A. | 0.1 | **123** | 3 | 100 | 14 | 18 | 1 | 1 | 3 | **590** | **4.3** | 9 | 1.0 | **15** | 800 | **830** | 3.60 | **96** | 0.1 |
| 1173 | 662454 | 6467446 | 7 | N.A. | 0.1 | 78 | 1 | 40 | 50 | 13 | 1 | 1 | 3 | 250 | 0.8 | 9 | 0.3 | 5 | 410 | 250 | 1.75 | 55 | 0.1 |
| 1174 | 663216 | 6467198 | 4 | N.A. | 0.1 | 63 | 9 | 85 | 38 | 13 | 2 | 1 | 2 | 280 | 1.6 | 50 | **3.2** | 25 | 590 | 400 | 1.85 | 52 | 0.3 |
| 1175 | 661026 | 6463282 | 9 | N.A. | 0.1 | **145** | 1 | 75 | 58 | 21 | 2 | 1 | 2 | 290 | 1.0 | 16 | 0.9 | 30 | 370 | 525 | 3.20 | **89** | 0.2 |
| 1183 | 666401 | 6464862 | 6 | N.A. | 0.2 | 118 | 7 | **148** | 48 | 20 | **6** | 1 | 2 | 330 | 2.5 | 34 | 1.8 | 50 | 900 | 540 | 3.50 | 82 | **1.6** |
| 1184 | 665516 | 6462939 | 1 | N.A. | 0.1 | 103 | 1 | 83 | 40 | 13 | 2 | 1 | 3 | 210 | 2.0 | 6 | 0.4 | 15 | 320 | 355 | 2.30 | 61 | 0.2 |
| 3069 | 649060 | 6456468 | 19 | N.A. | 0.1 | 29 | 3 | 30 | 2 | 3 | 1 | 1 | 2 | 360 | 4.0 | 3 | 0.1 | 5 | 930 | 260 | 1.20 | 22 | 0.1 |
| 3120 | 661967 | 6432329 | 7 | N.A. | 0.1 | 68 | 1 | 85 | 10 | 13 | 1 | 2 | 3 | 500 | 1.4 | 19 | 0.9 | 15 | 950 | 580 | 2.85 | 69 | 0.3 |
| 3122 | 662145 | 6432761 | 3 | N.A. | 0.1 | 63 | 1 | 82 | 8 | 11 | 1 | 1 | 2 | 460 | 1.0 | 15 | 0.8 | 5 | 980 | 545 | 2.60 | 65 | 0.2 |
| 3123 | 664172 | 6432606 | 3 | N.A. | 0.1 | 43 | 1 | 21 | 20 | 9 | 1 | 2 | 3 | 270 | 0.1 | 4 | 0.3 | 5 | 430 | 240 | 1.25 | 32 | 0.1 |
| 3125 | 673098 | 6434755 | 4 | N.A. | 0.1 | 37 | 2 | 37 | 6 | 6 | 1 | 1 | 2 | 550 | 3.0 | 7 | 0.9 | 10 | **1100** | 285 | 1.40 | 54 | 0.1 |
| 3126 | 673806 | 6434939 | 6 | 3 | 0.1 | 41 | 2 | 58 | 17 | 7 | 1 | 2 | 3 | 340 | 3.9 | 12 | 0.6 | 10 | 700 | 425 | 1.50 | 32 | 0.3 |
| 3127 | 674414 | 6438451 | 4 | N.A. | 0.1 | 66 | 2 | 52 | 12 | 9 | 2 | 2 | 2 | 450 | 3.5 | 9 | 0.7 | 20 | 920 | 465 | 2.10 | 53 | 0.2 |
| 3128 | 673623 | 6436025 | 8 | N.A. | 0.1 | 30 | 1 | 25 | 5 | 6 | 1 | 2 | 2 | 360 | 0.9 | 3 | 0.4 | 20 | 660 | 255 | 1.40 | 53 | 0.1 |
| 3129 | 674067 | 6435821 | 5 | N.A. | 0.1 | 57 | 3 | 61 | 27 | 12 | 2 | 1 | 3 | 450 | 2.1 | 24 | **4.1** | 20 | 450 | 475 | 2.00 | 34 | 0.3 |
| 3130 | 674067 | 6435821 | **30** | 9 | 0.2 | 55 | 5 | 56 | 25 | 12 | 2 | 2 | 2 | 420 | 2.1 | 26 | **3.6** | 25 | 440 | 445 | 1.95 | 33 | 0.4 |
| 3131 | 676098 | 6439453 | **36** | **45** | 0.1 | 52 | 1 | 51 | 10 | 11 | 1 | 1 | 3 | **600** | 2.9 | **65** | 2.1 | **550** | 970 | 570 | 2.00 | 36 | 0.1 |
| 3132 | 676144 | 6440038 | 3 | N.A. | 0.1 | 30 | 5 | 52 | 6 | 6 | 2 | 1 | 3 | 270 | 2.0 | 7 | 0.4 | 30 | **1100** | **1850** | 3.10 | 72 | 0.1 |
| 3133 | 674244 | 6445084 | 3 | N.A. | 0.1 | 25 | 4 | 46 | 5 | 5 | 2 | 1 | **5** | 250 | 0.4 | 5 | 0.4 | 25 | 980 | 300 | 2.90 | 69 | 0.1 |
| 3134 | 674396 | 6444741 | 3 | N.A. | 0.1 | 51 | 1 | 50 | 7 | 7 | 1 | 1 | 3 | 550 | 3.2 | 8 | 0.4 | 50 | 860 | 480 | 1.60 | 35 | 0.1 |
| 3135 | 676189 | 6446575 | 1 | N.A. | 0.1 | 68 | 2 | 49 | 4 | 7 | 1 | 1 | 3 | **460** | **4.0** | 6 | 0.3 | 5 | 740 | 380 | 2.10 | 71 | 0.1 |
| 3136 | 670177 | 6450223 | 1 | N.A. | 0.1 | 45 | 2 | 55 | 7 | 7 | 1 | 1 | 2 | 450 | 3.4 | 11 | 0.4 | 50 | 800 | 460 | 1.75 | 43 | 0.1 |
| 3137 | 671772 | 6450011 | 1 | N.A. | 0.1 | 41 | 2 | 51 | 7 | 7 | 1 | 1 | 2 | 550 | 3.2 | 11 | 0.6 | 35 | 840 | 375 | 1.80 | 36 | 0.1 |
| 3138 | 672875 | 6453307 | 1 | N.A. | 0.1 | 36 | 1 | 42 | 4 | 5 | 1 | 2 | 2 | 530 | 3.7 | 7 | 0.4 | 35 | 900 | 360 | 1.40 | 45 | 0.1 |
| 3139 | 672748 | 6453568 | 1 | N.A. | 0.1 | 29 | 3 | 66 | 7 | 8 | 1 | 1 | **5** | 330 | 3.1 | 9 | 0.5 | 65 | 910 | **840** | 2.70 | 46 | 0.2 |
| 3140 | 675260 | 6455325 | 10 | N.A. | 0.1 | 42 | 7 | 75 | 5 | 8 | 2 | 1 | 2 | **650** | **5.0** | 18 | 1.6 | 65 | 820 | 585 | 2.20 | 49 | 0.4 |
| 3142 | 676074 | 6456543 | 2 | N.A. | 0.1 | 28 | 3 | 60 | 6 | 7 | 1 | 1 | 2 | **860** | **5.4** | 20 | **3.2** | **140** | 850 | 615 | 2.05 | 52 | 0.1 |
| 3143 | 674165 | 6453985 | 1 | 1 | 0.1 | 37 | 1 | 48 | 8 | 6 | 1 | 3 | 4 | 380 | 2.8 | 6 | 0.2 | 15 | 950 | 345 | 1.65 | 45 | 0.2 |
| 3144 | 668747 | 6443808 | 2 | N.A. | 0.1 | 73 | 1 | 72 | 8 | 13 | 1 | 1 | 4 | **650** | 1.6 | 7 | 0.8 | 70 | 870 | 795 | 2.30 | 54 | 0.3 |
| 3145 | 668309 | 6444202 | 1 | N.A. | 0.1 | 30 | 1 | 25 | 2 | 4 | 1 | 2 | 3 | 330 | 0.5 | 4 | 0.6 | 15 | **1100** | 250 | 1.10 | 35 | 0.1 |

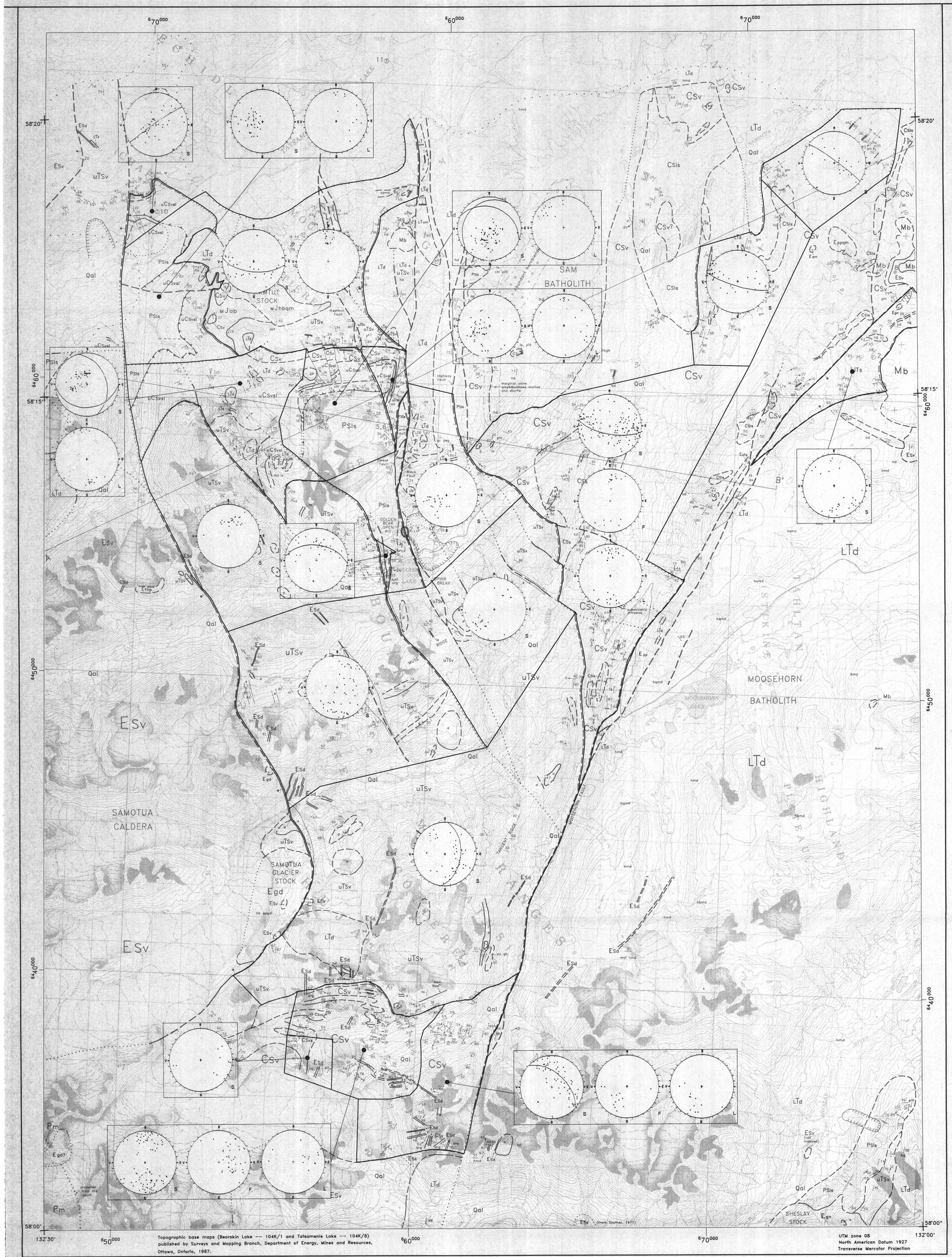
Note: Bold values are in the 90th percentile for the sample population from map-areas 104K01 and 08.

Abbreviations: N.A. = not analyzed; NAA = Fire Assay - Neutron Activation; AAS = Atomic Absorption Spectroscopy , Ar & Sb analysed by Hydride Evolution AAS, Hg analysed by Flameless AAS; COLM = Colorimetry; SIE = Specific Ion Electrode; DNA = Delayed Neutron Activation, XRF = Energy dispersive X-ray Fluorescence

* Regional Geochemical Survey, 104K-Tulsequah, British Columbia Regional Geochemical Survey RGS-20 , GSC Open File 1647, 1:250 000 Map series.

## LITHOGEOCHEMICAL ANALYSES OF MINERALIZED AND ALTERED SAMPLES

| MAP NO. | FIELD NO. | UTM Zone 8 EASTING | NORTHING | SAMPLE DESCRIPTION | AU ppb | AG ppm | CU ppm | PB ppm | ZN ppm | AS ppm | SB ppm | MN ppm | F ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Detection Limits: | | | | | 5 | 0.2 | 2 | 3 | 2 | 1 | 0.5 | 6 | 10 |
| Analytical Technique: | | | | | FA/AAS | AAS | AAS | AAS | AAS | KC | KC | AAS | ION |
| 1 | DBA92-35 | 660119 | 6450145 | Py-Cp in chl-altered mafics | 25 | 0.9 | 0.32% | 10 | 278 | 6 | 0.9 | 0.27% | 308 |
| 2 | DBA92-67 | 656120 | 6449713 | Qtz-CO-FeMn oxides | 10 | 0.7 | 109 | 24 | 740 | 139 | 27 | 647 | 157 |
| 3 | DBA92-165 | 657334 | 6463408 | Sheared, Qtz-Py altered diorite | 5 | 0.3 | 82 | 6 | 39 | 8 | 0.7 | 788 | 316 |
| 4 | DBA92-186 | 658595 | 6462989 | Semimass. Py-Cp in shear zone | n.a. | 6.0 | 1.48% | 7 | 50 | 18 | 0.8 | 328 | n.a. |
| 5 | DBA92-230 | 650287 | 6468365 | Qtz-FeCb altered mafics | 5 | 0.3 | 151 | 6 | 58 | 101 | 21 | 0.14% | 275 |
| 6 | DBR92-35 | 670034 | 6464856 | Diss. Py in silic'd shear in mafics | 5 | 0.2 | 28 | 12 | 950 | 20 | 0.5 | 108 | 212 |
| 7 | DBR92-83 | 658521 | 6439131 | Qtz-Clay altered fault breccia | 15 | 0.5 | 19 | 20 | 37 | 38 | 5 | 0.15% | 390 |
| 8 | DBR92-165 | 662338 | 6440752 | Clay-Py altered felsic dyke | 15 | 0.2 | 337 | 5 | 41 | 1 | 0.5 | 494 | 308 |
| 9 | DBR92-170 | 662973 | 6442475 | Cp-Py-Ep in fractured mafics | 100 | 3.0 | 1.24% | 9 | 42 | 2 | 1 | 0.17% | 377 |
| 10 | DBR92-261 | 659075 | 6465431 | Qtz-Py-Cp vein in ultramafics | 3980 | 59.0 | 1.64% | 38 | 230 | 438 | 3 | 316 | 136 |
| 11 | DBR92-331 | 666837 | 6441533 | Qtz-Clay altered felsic dyke | 5 | 0.3 | 50 | 24 | 42 | 121 | 211 | 278 | 164 |
| 12 | DBR92-332 | 667074 | 6441945 | Qtz-Clay altered felsic dyke | 5 | 0.3 | 34 | 20 | 10 | 43 | 154 | 34 | 124 |
| 13 | DBR92-337 | 669189 | 6443161 | Qtz-Clay altered felsic dyke | 5 | 0.3 | 27 | 13 | 19 | 53 | 198 | 21 | 164 |
| 14 | DBR92-411 | 659077 | 6455222 | Golden Bear open pit | 12200 | 21.0 | 155 | 6 | 73 | 0.22% | 73 | 599 | 1213 |
| 15 | DBR92-412 | 659077 | 6455223 | Golden Bear open pit | 5670 | 17.0 | 97 | 16 | 85 | 0.10% | 74 | 536 | 1168 |
| 16 | DBR92-413 | 659078 | 6455224 | Golden Bear open pit | 95500 | 27.0 | 52 | 126 | 16 | 0.22% | 106 | 17 | 1756 |
| 17 | JBR92-38 | 665449 | 6458177 | Vuggy Fe-Cb veins in slates | 10 | 0.2 | 28 | 7 | 35 | 45 | 1 | 0.14% | 88 |
| 18 | JBR92-39A | 665710 | 6458013 | Qtz-FeCb-Py breccia in slates | 5 | 0.2 | 7 | 6 | 13 | 7 | 0.5 | 0.103% | 173 |
| 19 | JBR92-39B | 665710 | 6458013 | Qtz-FeCb-Py breccia in slates | 5 | 0.2 | 53 | 5 | 51 | 89 | 1 | 0.17% | 192 |
| 20 | JBR92-43 | 661937 | 6456781 | Chl-Ht altered mafics | 10 | 0.2 | 27 | 7 | 54 | 4 | 0.5 | 958 | 220 |
| 21 | JBR92-52 | 662954 | 6454318 | FeCb-Ht pod in mafics | 35 | 0.2 | 50 | 7 | 19 | 13 | 6 | 171 | 95 |
| 22 | JBR92-53A | 663129 | 6454530 | FeCb-Qtz-Py altered mafics | 5 | 0.2 | 135 | 8 | 68 | 131 | 7 | 0.13% | 199 |
| 23 | JBR92-53B | 663129 | 6454530 | FeCb-Qtz-Py altered mafics | 5 | 0.2 | 13 | 7 | 27 | 12 | 3 | 605 | 179 |
| 24 | JBR92-71 | 666273 | 6465690 | Silic'd limestone with Ht blebs | 10 | 0.2 | 17 | 7 | 16 | 3 | 0.7 | 0.17% | 112 |
| 25 | JBR92-92A | 668840 | 6464666 | Qtz-Ser-Py-Chl altered mafics | 5 | 0.2 | 28 | 7 | 69 | 34 | 3 | 319 | 604 |
| 26 | JBR92-92B | 668840 | 6464666 | Qtz-Ser-Py-Chl altered mafics | 10 | 3.0 | 34 | 7 | 57 | 13 | 2 | 120 | 1072 |
| 27 | JBR92-92C | 668840 | 6464666 | Qtz-Ser-Py-Chl altered mafics | 10 | 0.5 | 26 | 7 | 44 | 26 | 4 | 706 | 1036 |
| 28 | JBR92-92D | 668840 | 6464666 | Qtz-Ser-Py-Chl altered mafics | 5 | 0.3 | 18 | 7 | 57 | 10 | 1 | 243 | 668 |
| 29 | JBR92-140 | 660099 | 6450718 | FeCb-Qtz altered mafics | 20 | 0.2 | 61 | 5 | 44 | 5 | 0.9 | 0.13% | 269 |
| 30 | JBR92-158 | 664775 | 6448958 | FeCb-Qtz-Py altered tuff | 5 | 0.2 | 11 | 8 | 16 | 12 | 0.5 | 694 | 269 |
| 31 | JBR92-195 | 651790 | 6461021 | Silic'd brecciated argillite | 45 | 0.9 | 6 | 14 | 32 | 164 | 92 | 45 | 173 |
| 32 | JBR92-249A | 648157 | 6456936 | Qtz-Clay altered lapilli tuff | 5 | 0.2 | 11 | 11 | 9 | 42 | 1 | 95 | 243 |
| 33 | JBR92-249B | 648157 | 6456936 | Qtz-Clay altered lapilli tuff | 5 | 0.2 | 5 | 29 | 9 | 3 | 0.9 | 32 | 594 |
| 34 | JBR92-291 | 673880 | 6464590 | FeCb altered metatuff | 10 | 0.3 | 114 | 19 | 73 | 43 | 6 | 550 | 352 |
| 35 | JBR92-395 | 664483 | 6460474 | Qtz-Ser-Py-Chl altered mafics | 10 | 0.4 | 510 | 9 | 66 | 2 | 1 | 0.24 | 250 |
| 36 | JBR92-415 | 657246 | 6438912 | FeCb-Qtz-Py altered tuff | 970 | 0.4 | 57 | 12 | 67 | 9 | 5 | 0.105% | 318 |
| 37 | JRO92-27 | 664113 | 6447088 | Qtz-Cp vein in tuff, argillite | 100 | 0.6 | 0.26% | 3 | 9 | 1 | 0.5 | 87 | 168 |
| 38 | JRO92-29 | 664466 | 6448138 | FeCb-Qtz-Py altered lapilli tuff | 8 | 0.2 | 50 | 9 | 62 | 21 | 5 | 825 | 162 |
| 39 | JRO92-47 | 665743 | 6449058 | Qtz-Py altered metaseds/tuffs | 35 | 0.3 | 75 | 38 | 97 | 3 | 0.5 | 865 | 390 |
| 40 | JRO92-57 | 662587 | 6444084 | Qtz-Cb veins with Py | 10 | 0.2 | 7 | 6 | 45 | 30 | 20 | 0.14% | 235 |
| 41 | JRO92-58 | 662526 | 6443853 | Qtz-Cb veins with Py, As | 1170 | 0.3 | 60 | 73 | 155 | 0.84% | 188 | 0.13% | 192 |
| 42 | JRO92-99 | 646920 | 6451782 | Clay altered felsic tuff breccia | 5 | 0.2 | 6 | 22 | 59 | 14 | 4 | 862 | 625 |
| 43 | JRO92-103 | 648204 | 6457868 | FeCb-Py altered mafics | 5 | 0.2 | 29 | 13 | 36 | 177 | 4 | 750 | 390 |
| 44 | TPA92-14 | 665934 | 6448585 | Qtz-Py-Mal assoc. with FP dykes | 95 | 5.0 | 660 | 20 | 38 | 61 | 35 | 248 | 199 |
| 45 | TPA92-65 | 650049 | 6455793 | Qtz-Py-Clay altered felsic tuff brx. | 15 | 0.6 | 12 | 23 | 51 | 139 | 4 | 331 | 740 |
| 46 | TPA92-79A | 670558 | 6459271 | Silic'd limestone brx., Qtz veins | 10 | 0.4 | 9 | 2 | 4 | 7 | 4 | 107 | 147 |
| 47 | TPA92-79B | 670557 | 6459271 | Silic'd limestone brx., Qtz veins | 10 | 0.3 | 10 | 6 | 32 | 10 | 9 | 40 | 142 |
| 48 | TPA92-80A | 670291 | 6458700 | Silic'd limestone brx., Qtz veins | 10 | 0.9 | 111 | 230 | 311 | 27 | 93




BC
Ministry of Energy, Mines and Petroleum Resources

BRITISH COLUMBIA GEOLOGICAL SURVEY

OPEN FILE 1993-1 (SHEET 3 OF 3)

# STRUCTURAL DOMAINS AND STEREONET PLOTS FOR THE BEARSKIN AND TATSAMENIE LAKES AREA, NORTHWESTERN BRITISH COLUMBIA

NTS 104K/1, 8S

J.A. Bradford and D.A. Brown

Kilometres 0 1 2 3 4 Kilometres

SCALE 1 : 50 000

*** Comments and additional contributions would be appreciated (604) 356-8180 ***

*** Descriptions of map units can be found in Bradford and Brown (1993) ***

## LEGEND

S – Poles to bedding or dominant foliation

L – Lineations and minor fold axes, or lineations only if fold axis plot is present

F – Minor fold axes

All stereonets are Schmidt equal area lower hemisphere plots, produced with the DIPS structural analysis program.