

**J. TUACH GEOLOGICAL CONSULTANTS, INC.  
DIAMOND DRILL CORE LOG**

Sheet No. 1

GPS CO-ORDINATES 13314.9 E 8773.86 N  
 GRID CO-ORDINATES 133+00 E 87+50 N  
 ELEVATION 250.11 m  
 DIP AT COLLAR -90°  
 BEARING \_\_\_\_\_  
 TOTAL DEPTH 592.1 m CORE SIZE NQ  
 REMARKS \_\_\_\_\_

| Tests<br>Depth | Dip         | Magnetic<br>Bearing | Corrected<br>Bearing |
|----------------|-------------|---------------------|----------------------|
| <u>416 m</u>   | <u>-88°</u> | <u>176°</u>         | <u>201°</u>          |
| _____          | _____       | _____               | _____                |
| _____          | _____       | _____               | _____                |
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Project No. \_\_\_\_\_ Hole No. BE-97-21  
 Property Buchans River Ltd.  
 NTS 12A/15 Grid Name Buchans East  
 Date started Nov. 9/97 Completed \_\_\_\_\_  
 Contractor Logan Drilling  
 \_\_\_\_\_  
 Logged by J. Harris

| Depth & Lithology | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Alteration                            | Mineralization                                                                                                |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------------------------------|
| 0 - 14.6          | Overburden                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                       |                                                                                                               |
| 14.6 - 24.4       | Mafic volcanic<br>medium green, medium grained with abundant greenish plagioclase crystals, rare quartz grains<br>very likely tuffaceous at least in part<br>hint of layering at 60 - 70° to the core<br>occasional wispy more felsic looking clasts - epidotized and calcite rich<br>moderately foliated @ ≈ 60° to the core below 20.0 m<br>23.1 - 23.9m - dark brown, intermediate - felsic dyke or flow<br>rubby fractured core 23.9 - 24.4                  | weak chloritic and epidote alteration | very minor disseminated pyrite                                                                                |
| 24.4 - 31.1       | Felsic intrusive or flow (most likely intrusive)<br>dark brown to purplish, aphanitic<br>mostly hard and siliceous, but locally softer<br>up to 10% mafic minerals - chlorite<br>@ 24.9 - soft pale green fault gouge<br>24.9 - 25.4 - inclusion of above unit<br>contacts sharp, upper contact at ≈ 50° to the core and lower contact at ≈ 60°<br>foliation in the mafic unit is stronger near the contacts<br>occasional calcite and/or quartz fracture infill |                                       | SG values<br>@ 556.6 m - 2.66<br>@ 582.2 m - 2.71<br>@ 296.1 m - 2.84<br><br>minor pyrite with quartz veining |
| 31.1 - 249.6      | Mafic volcanic to locally intermediate - tuff<br>as for 14.6 - 24.4 (crystal lithic tuff)<br>medium green, local larger basalt clasts with weakly altered rims - some wispy black chloritic fragments<br>crystals and fragments weakly aligned at ≈ 50 - 60° to the core                                                                                                                                                                                         | weak chloritic and epidote alteration | very minor pyrite                                                                                             |

HOLE NO. BE-97-21

## Sheet No. 2

| Depth & Lithology     | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Alteration                                                                                                                                                                                                                                                                                                                                                                                                        | Mineralization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| 31.1 - 249.6 (cont'd) | <p>may be due to foliation</p> <p>31.9 - 32.0 - fault gouge and breccia</p> <p>local zones with common quartz grains</p> <p>fairly massive and only weakly foliated below 40.0 m</p> <p>occasional calcite and calcite quartz stringers</p> <p>62.0 - 62.7 - fine grained, dark green mafic dyke</p> <p>sharp contacts @ 70 - 80° to the core</p> <p>67.2 - 67.4 - fracture zone with white and pink calcite infill</p> <p>80.6 - 81.1 - strongly foliated @ ≈ 80° to the core</p> <p>below ≈ 86.0 m - becomes strongly foliated at 70 - 85° to the core</p> <p>less common plagioclase crystals</p> <p>local stretched and flattened purple felsic clasts</p> <p>96.5 - 102.0 - very strongly foliated to schistose @ 85° to the core</p> <p>99.2 - 99.3 - fault gouge</p> <p>local minor folding and offsets in foliation</p> <p>108.0 - 112.0 - light green bleached zone, may be more felsic</p> <p>123.3 - 124.5 - crystal lithic tuff with common quartz grains</p> <p>124.5 - 142.8 - similar to top of hole, less foliated and flecked with abundant plag phenos. Some lithic fragments and still a few quartz grains. Local amygdoidal zones or clasts.</p> <p>becomes gradationally more strongly foliated again towards 143.0 m</p> <p>143.0 - 152.0 - very strongly foliated @ 70 - 80° to the core - wispy flattened lithic fragments fairly common</p> <p>145.0 - 147.8 - light green - bleached, maybe more felsic</p> <p>148.7 - 149.0 - fine grained, massive zone, maybe a mafic dyke</p> <p>151.0 - 158.0 - lithic tuff, some rhyolitic clasts - plagioclase crystals throughout</p> <p>158.0 - 172.5 - similar to 151.0 - 158.0 without purple rhyolitic clasts, contains large clasts or alteration blotches of yellowish-green epidote - silica with quartz phenos - mostly look like clasts but some indistinct boundaries</p> <p>172.5 - 174.0 - felsic to intermediate dyke</p> <p>brownish green colour - hard, fine grained and massive, also magnetic</p> <p>176.4 - ≈ 179.0 - strongly foliated and layered @ 80° to the core</p> <p>below ≈ 180.0 - local bleached felsic looking zones, may be due to alteration</p> <p>187.4 - 187.9 - felsic tuff or alteration, small shear @ 187.7</p> <p>191.3 - 192.0 - strong foliation @ 80° to the core</p> <p>≈ 192.2 - 193.8 - light green felsic zone (may be alteration) - upper contact gradational, lower contact sharp and conformable</p> <p>193.8 - 212.3 - mafic tuffs, maybe some sheared flows, plagioclase crystals common, occasional quartz</p> <p>212.3 - 213.1 - contains 15 - 20% fairly large pink feldspars - k-spar - patchy zones with pink feldspars to 224.0</p> <p>213.1 - 214.5 - may have been an amygdoidal basalt</p> <p>216.2 - 216.5 - mafic dyke, fine grained, green, appears to be deformed with host rocks</p> | <p>somewhat stronger green chloritic alteration</p> <p>local sericitic alteration</p> <p>123.3 - 124.5 - local hematitized fragments</p> <p>@ 145.0 - flattened clast of quartz - sericite - pyrite altered felsic vol.</p> <p>patchy epidote alteration</p> <p>weak chloritic alteration</p> <p>212.3 - 213.3 - somewhat stronger chloritic and sericitic alteration</p> <p>pink feldspars may be alteration</p> | <p>@ 111.1 - minor cpy in a quartz epidote pod</p> <p>@ 111.9 - 112.0 - 0.07 m quartz "vein"? With sp, ga and cpy - some honey coloured sp as well as grey</p> <p>@ 117.5 - minor cpy with small quartz lens</p> <p>131.0 - 131.4 - minor cpy with a small quartz vein along the core</p> <p>145.8 - 145.9 - to 1% sp, ga, cpy and py associated with felsic bands or quartz stringers</p> <p>158 - 172.5 - very minor pyrite</p> <p>@ 181.8 - 0.04 m - felsic "clast" with 2-3% py elsewhere very minor py</p> <p>192.2 - 193.8 - 1% py</p> |

HOLE NO. BE-97-21

**J. TUACH GEOLOGICAL CONSULTANTS, INC.**  
**DIAMOND DRILL CORE LOG**

Sheet No. 3

| Depth & Lithology     | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Alteration                                                                                                                                                                                                                                                                           | Mineralization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| 31.1 - 249.6 (Cont'd) | 219.3 - 219.7 and 220.4 - 221.2 - fine grained, dark green to black - may be dykes<br>223.232.5 - more common thin felsic layers, in folded?<br>230.6 - 231.0 - buff felsic volcanic<br>233.5 - 237.4 and 238.2 - 240.0 - porphyritic with coarse plagioclase (white to pale green) and pink k-spar<br>240.0 - 245.1 - fine grained, dark green basalt flow and local flow breccia - magnetic - could be dyke thin chilled contacts around fragments in breccia - inclusions<br>245.1 - 245.5 - chloritic mafic tuff<br>245.5 - 248.0 - as for 240.0 - 245.1, but no breccia and non-magnetic<br>248.0 - 249.6 - chloritic mafic tuff                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | below 223.5 - local moderate black chloritic alteration in mafic tuffs and moderate to strong quartz - sericite alteration in felsic "clasts" chloritic alteration especially from 223.5 - 226.5 and 229.0 - 232.5<br><br>241 - 242 - local growths of pink feldspar along fractures | 2 - 3% fine pyrite in felsic clasts - zones<br>226 - 229.0 - 2-3% pyrite<br>230.1 - 230.2 - 10% pyrite, minor sphalerite<br>230.6 - 231.0 - 2-3% py                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 249.6 - 250.7         | Felsic volcanic - altered<br>buff coloured, foliated @ 60 - 80° to the core<br>2 short (0.05 m) included zones of above mafic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | strong quartz - sericite alteration                                                                                                                                                                                                                                                  | 4 - 8% pyrite <1% sp and ga, minor cpy - disseminated<br>@ 250.1 - 2 cm bead of sp-ga                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 250.7 - 388.3         | Mafic volcanic tuffs and flows as for 31.1 - 249.6<br>Interbanded plagioclase phyrice and more massive chloritic mafic. Commonly foliated @ 65 - 75° to the core<br>some of the more massive mafic zones have thin chilled margins, may be bombs or pillows<br>occasional felsic clasts in fragmental sections<br>below 280.0 - fairly common elongated - buff to pink sericitic felsic clasts<br>@ 282.5 - small fault gouge<br>calcite and quartz calcite stringers and broken veinlets throughout rounded quartz grains locally - amygdulose or phenos?<br>@ 298.2 - rubbly core some fault gouge<br>299.9 - 300.0 - some fault gouge<br>@ 302.4 - 302.5 - fault gouge and breccia, some brecciation down to 303.2<br>@ 316.7 - small fault gouge<br>321.5 - 322.1 and 322.7 - 323.3 - brown intermediate to mafic dykes<br>fault gouge @ 323.3, 333.6 and 334.3 - 334.4<br>334.4 - 334.7 - felsic volcanic<br>334.3 - 346.3 - quartz-feldspar porphyry - intermediate chloritic "mafic" groundmass - fairly hard with fairly large quartz and feldspar phenos. - sharp lower contact - slightly irregular @ ≈ 60° to the core - gradational upper contact<br>346.3 - 346.6 - may be mafic dyke<br>347.0 - 354.8 - commonly bleached a lighter green - very strong and locally folded foliation generally at 70 - 80° to the core<br>350.5 - 351.5 - common fault breccia and gouge zones<br>353.0 - 353.4 - prominent quartz phenos in a chloritic groundmass<br>362.5 - 370.0 - common calcite and a few quartz veinlets and stringers - often disrupted<br>354.8 - 360.5 - more massive<br>360.5 - 388.3 - strongly foliated and chloritic again<br>377.0 - 378.0 - foliation contorted, locally along core<br>371.8 - 372.3 - brown intermediate to mafic dyke | moderate black chloritic alteration, especially in tuff horizons<br>sericitic alteration of felsic clasts                                                                                                                                                                            | minor pyrite<br>local chalcopyrite throughout as disseminated blebs or associated with tiny quartz stringers<br>275.95 - 276.1 ≈ 8% py to 1% sp<br>282.5 - 282.6 - to 1% py and 1% cpy with minor sp in vein quartz<br>296.0 - 296.2 ≈ 20% sp, cpy and py associated with vein quartz<br><br>320.5 - 326.6 - 3-4% pyrite<br><br>334.4 - 334.7 - 3-4% py<br><br>only minor py between zones noted<br><br>353.5 - 353.6 - 15-20% pyrite and minor sp-ga as conformable bands<br><br>354.4 - 354.55 and 354.7 - 354.8 ≈ 20% py in more felsic bands<br><br>@ 367.3 - 0.05 m quartz vein with minor py, cpy and sp<br><br>371.4 - 371.5 - 10% py |

HOLE NO. BE-97-21

**J. TUACH GEOLOGICAL CONSULTANTS, INC.**  
**DIAMOND DRILL CORE LOG**

Sheet No. 4

| Depth & Lithology      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Alteration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Mineralization                                                                                                                                                                               |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 250.7 - 388.3 (cont'd) | 380.7 - 380.8 - fault gouge (2 small zones)<br>lower contact strongly sheared, also 0.05 m fault gouge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                              |
| 388.3 - 400.1          | Quartz porphyry<br>reddish brown, prominent quartz porphyry<br>some shearing over upper 0.10 m, but elsewhere fresh<br>some small waxy feldspar phenos to about 396 m<br>below 396 m orange feldspar phenos<br>rhyolitic groundmass<br>unit contains veins or inclusions of mafic "dyke" to 0.1 m thick, locally not all the way through core<br>lower 0.4 m bleached and altered<br>ductile shear at lower contact<br>porphyry resistant to shearing or intruded during shearing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | some black chloritic fracture coatings<br>feldspars altered to sericite locally<br><br>399.7 - 400.1 - moderate quartz -<br>sericite alteration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | to 1% disseminated hematite<br>minor, local disseminated py<br>very minor sp and cpy with calcite on<br>hairline fractures<br><br>399.7 - 400.1 - local<br>very fine pyrite                  |
| 400.1 - 405.5          | Very strongly foliated mafic volcanic<br>as for above Q.F.P.<br>sheared lower contact                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                              |
| 405.5 - 592.1          | Arkose and arkosic conglomerate - Sandy Lake Fm.<br>brick red arkose and conglomerate<br>variety of clast types<br>mostly sandy arkose<br>somewhat sheared down to 409.0 m<br>occasional quartz veins<br>rare bedding @ 60 - 70° to the core<br>464.9 - 465.0 - small sericitic ductile shear, no change in arkose below shear<br>very narrow 3 - 5 mm - ductile shear @ 495<br>503 - 514 - local quartz and calcite stockwork veining with associated bleaching<br>538.0 - 542.0 - interbedded black shale and green to pink sand - bedding @ = 80° to the core<br>533 - 554 - occasional fractures lined with quartz and sericite 60 - 70° TCA<br>- alternating fine and coarse, gritty layers, graded beds, tops uphole?<br>- 559.2 - 10 cm zone of coarse grained arkose with prominent quartz - small chlorite blebs<br>559.0 - 566.9 - buff grey to dark grey, fine grained sandstone/siltstone. Bedding 70° TCA @ 561.5 m<br>- dark green chlorite on fractures. Lower 1 m mainly buff-orange sandstone. Small well-rounded,<br>quartz and feldspar grains, locally sericitic<br>562 - 565 - abundant dark brownish - grey, wispy, micaceous stringers, possible disrupted laminae<br>566.9 - fairly abrupt transition to dark brown, medium-coarse grained arkose, grades rapidly into fine<br>grained brown, grey and orange varieties. Alternating bands of coarse, gritty and fine grained arkose.<br>Bedding 60° @ 579 m<br>580 - 590 - fairly uniform, brown, fine-medium grained arkose | 464.0 - 465.0 - weak sericitic<br>alteration<br>476.0 - 488.0 - fairly common blocky<br>fractured core with quartz and black<br>chlorite on some fractures<br>486.0 - 486.4 - silica flooding of<br>brittle fracture<br><br>495 - 501 - network of green sericitic<br>alteration in otherwise fresh rock<br>local minor associated py<br>local stockwork veining and chloritic<br>fractures<br><br>562 - 564 - occasional thin quartz<br>stringers<br>chlorite coatings on some fractures<br>567 - narrow (< 1 cm) wispy, pyrite -<br>sericite stringers<br>577.9 0 red-purple hematite along<br>fractures<br>575 - 585 - somewhat higher<br>concentration of wispy quartz - sericite<br>- lined fractures, esp. 582 - 585 | 494 - 495 < 1% disseminated py<br>associated with quartz stockwork<br><br>538 - 542.0 < 1% py<br><br>no conductance 538.0 - 542.0<br><br>very rare, medium-coarse grained<br>disseminated py |
| E.O.H. 592.1           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                              |

HOLE NO. BE-97-21

**J. TUACH GEOLOGICAL CONSULTANTS, INC.**  
**DIAMOND DRILL CORE ASSAYS**

SHEET NO. \_\_\_\_\_

PROJECT NO. \_\_\_\_\_

HOLE NO. BE-97-21

PROPERTY Buchans River Ltd.

[illegible]