

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

Sheet No. 1

|                                              |                |     |                     |                      |                                                        |
|----------------------------------------------|----------------|-----|---------------------|----------------------|--------------------------------------------------------|
| GPS CO-ORDINATES <u>13828.4 E 9582 N</u>     | Tests<br>Depth | Dip | Magnetic<br>Bearing | Corrected<br>Bearing | Project No. <u>4293</u> Hole No. <u>BE-97-23</u>       |
| GRID CO-ORDINATES <u>L138 E 96+25 N</u>      |                |     |                     |                      | Property <u>Buchans River Ltd.</u>                     |
| ELEVATION <u>270.3</u>                       |                |     |                     |                      | NTS <u>12A/15</u> Grid Name <u>Buchans East</u>        |
| DIP AT COLLAR <u>-70°</u>                    |                |     |                     |                      | Date started <u>30/11/97</u> Completed <u>04/12/97</u> |
| BEARING <u>180°</u>                          |                |     |                     |                      | Contractor <u>Logan Drilling</u>                       |
| TOTAL DEPTH <u>305.6</u> CORE SIZE <u>NO</u> |                |     |                     |                      |                                                        |
| REMARKS _____                                |                |     |                     |                      | Logged by <u>J. Harris</u>                             |

| Depth & Lithology | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Alteration                                                                                                                                                                  | Mineralization                                                                                                                                        |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0 - 4.1           | Overburden                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                             |                                                                                                                                                       |
| 4.1 - 53.2        | <p>Felsic to intermediate volcanic (dacite - rhyolite) with interbands of mafic dyke and/or mafic volcanic mostly dark grey-green to black<br/> fine grained and generally hard, 2-3% disseminated chlorite in "felsic" zones<br/> fairly common grey to white carbonate veins and vein breccias<br/> 6.0 - 10.0 m - commonly rubbly and fractured, fault gouge at <math>\approx 9.0</math> m<br/> generally moderately foliated at <math>\approx 80^\circ</math> to the core<br/> contacts between mafic and felsic units indistinct, likely due to foliation<br/> 13.0 - 14.4 - commonly mafic - likely dyke, local, stretched and flattened calcite amygdules<br/> 16.0 - 16.5 - fine grained mafic "dyke"?<br/> 17.6 - 18.0 - fine grained mafic "dyke"?<br/> 23.0 - 23.2 - fine grained mafic "dyke"?<br/> 23.4 - 24.1 - mostly mafic dyke or volcanic<br/> 37.1 - 38.0 - mostly mafic dyke or volcanic<br/> some of above mafic units have slightly irregular contacts<br/> below 30.0 m local small "phenocrysts" of green sericite after plagioclase?<br/> 32.0 - 32.6 - white and pink calcite vein along core<br/> 40.6 - 41.0 - grey carbonate vein breccia or cemented fault breccia<br/> 43.2 - 43.8 - black fine grained mafic dyke<br/> 44.2 - 46.8 - commonly fractured with pink calcite infill<br/> 43.8 - 53.2 - grey green dacite<br/> from <math>\approx 52.0</math> - 53.2 - strongly foliated @ <math>\approx 80^\circ</math> to the core</p> | <p>some of felsic to intermediate may be altered (silicified) mafic local bleaching and pink felsic alteration</p> <p>weak quartz-sericite alteration of felsic locally</p> | <p>minor local, disseminated pyrite<br/> fairly common disseminated magnetite<br/> pyrite to 1% locally with alteration</p> <p>SG = 2.74 @ 24.8 m</p> |

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Sheet No. 2

| Depth & Lithology | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Alteration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Mineralization                                                                                                                                                                                                                                                                               |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 53.2 - 56.6       | Mafic dyke<br>black, fine grained, magnetic<br>dyke may be along a thrust fault?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | SG - 3.1 @ 56.1 m                                                                                                                                                                                                                                                                            |
| 56.6 - 60.0       | Felsic volcanic or altered mafic<br>green to grey-green, very strongly foliated/sheared foliations are mainly at 80 - 85° to the core but are fairly commonly folded and contorted<br>becomes gradationally more mafic downward                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | sericitic and chloritic alteration<br>associated with shearing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | minor pyrite<br>SG - 2.91 @ 86.2                                                                                                                                                                                                                                                             |
| 60.0 - 164.4      | Mafic volcanic<br>generally dark green and fine grained, locally black<br>likely flows with some tuffs, locally magnetic. foliation varies from weak to strong and is generally at high angles to the core 70 - 85°<br>65.0 - 71.3 - generally very strongly foliated<br>68 - 74.0 - some included purple clasts, (felsic volcanic or altered mafic)<br>@ 75.3 - small shear zone @ 45° to the core<br>76.0 - 89.8 - massive fine grained basalt, with local plagioclase phenos and local quartz grains - amygdulites?<br>89.8 - 91.4 - sheared, mafic cut by epidote - calcite stockwork epidote is mainly crystalline<br>91.4 - 112.5 - massive dark green to black mafic volcanic with local plag. phenos and occasional calcite and/or silica amygdulites<br>117.5 - 120.0 - well foliated @ 75-80° to the core - weakly bleached<br>120.0 - 125.0 - as for 91.4 - 117.5, but well fractured with hematite coated fractures<br>125.0 - 126.2 - fine grained, massive, magnetic, may be a mafic dyke<br>125.0 - 135.3 - somewhat bleached mafic volcanic with fractured and rubbly core and some fault gouge zones<br>127.0 - 127.8 - calcite cemented breccia, some gouge @ 127.1 m<br>134.4 - 135.1 - fault breccia and gouge<br>136.5 - 136.7 - rubbly core, some fault gouge<br>below 137.0 - mafic volcanic is more commonly altered and is locally fragmental - some fragments are of altered felsic volcanic - local slickensides on fractures<br>141.6 - 141.7 - fault breccia to fracture zone<br>147.3 - 148.2 - strongly foliated @ 80-85° to the core - small gouge @ 147.9 m<br>156.0 - 160.7 - strongly foliated - sheared 160.0 - 160.7<br>Lower contact sharp and appears conformable @ ≈ 80° to the core, however some quartz and calcite veining along contact | moderately chloritized (regional alteration)<br>local epidote blotches and stringers<br><br>73.0 - 73.1 - pink felsic alteration associated with a fracture<br>115.2 - 115.6 - epidote alteration<br><br>137.0 - 140.5 - patchy pink felsic and epidote alteration<br>142.9 - 143.4 - bleached - weak-moderate quartz - sericite alteration<br><br>below 137.0 - locally developed black chloritic alteration<br>149.0 - 149.3 - strong epidote silica alteration<br>156.0 - 160.7 - moderate sericite - chlorite ± quartz ± pyrite alteration | pyrite generally rare @ 61 small ≈ 1 cm quartz-carbonate vein with 20% py, cpy and specular hematite<br><br>73.0 - 73.1 - to 1% py<br>SG - 2.77 @ 122.1 m<br>SG - 2.77 @ 190.0 m<br><br>132.0 - 164.4 - increase in pyrite, generally less than 1% but locally 1-2% with stronger alteration |
| 164.4 - 167.7     | Altered felsic volcanic<br>light grey to buff, strongly foliated @ ≈ 80° to the core, likely altered lapilli tuff?<br>appears to be fragmental locally but may be due to foliation<br>166.2 - 166.7 - brecciated by white carbonate stringers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | strong quartz - sericite - pyrite ± chlorite alteration<br>also bright green mica                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 15-20% pyrite <1% sphalerite as thin stringers and disseminations                                                                                                                                                                                                                            |

HOLE NO. BE-97-23

**J. TUACH GEOLOGICAL CONSULTANTS, INC.  
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Sheet No. 3

| Depth & Lithology              | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Alteration                                                                                                                                                                       | Mineralization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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| 167.7 - 171.8                  | Mafic to intermediate<br>grey-green altered, fine grained, fairly massive<br>mostly looks like altered basalt<br>white calcite fracture fill common                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Patchy quartz sericite $\pm$ chlorite<br>alteration often associated with<br>fractures, altered areas look like felsic<br>volcanic and may be in part felsic<br>fragments        | to 1% pyrite 2 or 3 thin sphalerite<br>stringers @ $\approx 80^\circ$ to the core                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 171.8 - 250.3                  | Fragmental units, altered<br>generally green to black, strongly foliated @ $75-85^\circ$ to the core<br>mostly pyritic altered felsic fragments in a chloritic mafic to intermediate tuff matrix<br>local short amygdoidal (calcite and silica), basalt sections or fragments<br>felsic volcanic zones or fragments range from 1 cm to 1 m<br>some felsic looking fragments may be altered mafic volcanic<br>@ 175.9 - 0.05 m gouge<br>179.0 - 182.5 - predominately felsic<br>187.5 - 187.9 - 0.1 m shear/breccia zone at $20^\circ$ to the core<br>191.0 - 193.0 - common gouge coated partings parallel to foliation<br>occasional thin quartz veins and lenses of vein quartz<br>202.6 - 203.5 - dark chloritized mafic volcanic or dyke with a few stretched and flattened calcite<br>amygdules<br>210.4 - 212.3 - mainly felsic<br>small gouge @ 212.0<br>227 - 230.0 - well foliated grey felsic tuff?<br>small gouge @ 227.5 and @ 230.0<br>231.5 - 232.9 - mainly light green bleached mafic volcanic, foliation locally @ $50^\circ$ to the core in this<br>section<br>236.3 - 243.5 - black to brownish fine grained mafic to intermediate rock - strongly foliated @ $80-90^\circ$<br>to the core<br>239.4 - 240.5 - highly fractured with some fault gouge<br>243.5 - 246.9 - very strongly foliated grey felsic "tuff"?<br>some ductile shearing throughout<br>@ 243.6 - small (0.05 m) fault gouge<br>248.3 - 248.5 - small chilled mafic dyke, black irregular contacts | generally moderate to strong<br>chloritic and sericitic $\pm$ pyrite alteration<br>of "matrix"<br>strong quartz-sericite-pyrite $\pm$ chlorite<br>alteration of felsic fragments | pyrite = 10% locally to 20%<br>disseminated and stringer sphalerite and<br>galena locally throughout, less than 1%<br>base metal sulphides are more common<br>in felsic zones/fragments but are present<br>in chloritic areas<br>local chalcopyrite<br>some clasts with to 50% py<br><br>184.5 - 184.7 - felsic clast with 1-2%<br>sp-ga<br><br>SG - 2.74 @ 212.0 m<br><br>229.0 - 231.5 - minor sphalerite and<br>galena associated with calcite veinlets<br><br>236.3 - 243.5 - zones of $\approx 30\%$ very<br>fine pyrite giving brown colour similar<br>to pyrite in Hole BE-11 but host rock is<br>much more mafic |
| 250.3 - 256.1<br>thrust fault? | Mafic dyke/sill<br>fine grained, black, magnetic, irregular chilled contacts<br>250.5 - 250.65 - mafic tuff inclusion<br>255.4 - 255.8 - felsic volcanic inclusion - pyritic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 256.1 - 257.8                  | Quartz porphyry<br>light green, massive with abundant 1-3 mm quartz phenos                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

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

Sheet No. 4

| Depth & Lithology | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Alteration                                  | Mineralization                                                                                                                                    |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 257.8 - 284.5     | Intermediate to mafic "tufts"<br>similar to above dyke but not as strongly altered<br>medium to dark green, strongly foliated @ 80-90° to the core, contains a few brown altered and pyritic clasts or bands (flattened clasts)<br>possible quartz amygdules locally<br>266.8 - 267.1 - fractured with some fault gouge<br>foliation and alteration appear to die out gradually down hole<br>elongated felsic fragments more easily recognized towards 284.5<br>lower contact somewhat arbitrary | moderate chloritic and sericitic alteration | generally 1% or less of pyrite, but locally 2-3% especially in zones with altered felsic clasts or bands<br><br>273.0 - ≈ 274.5 - 10% fine pyrite |
| 284.5 - 305.6     | Andesite tuff<br>light to medium green, moderately foliated<br>abundant plagioclase crystals and a few of quartz<br>contains a few felsic fragments especially near the top and local mafic volcanic fragments<br>below ≈ 299.0 - only locally foliated                                                                                                                                                                                                                                          | weakly chloritized (regional alteration)    | minor pyrite<br>minor cpy @ 300.3                                                                                                                 |

HOLE NO. BE-97-23

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

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

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

HOLE NO. BE-97-23

PROPERTY Buchans River Ltd.

[illegible]