G022.DOC

File 022 - Stream water data  Operation Bathurst

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Project 570022

***Note***  for complete text see File 021

A total of 3,500 water samples was analyzed on site for total heavy metals. Most of the heavy metal in water is zinc (see Boyle et al, 1966, map 32-1965) with little Pb and only minor Cu. Temperature and pH of waters were measured at sample sites.

About 250 water samples were collected for detailed water analyses by the (then) Industrial Waters Section, Mines Branch. Samples were filtered at the sample site to remove suspensions, then shipped in polyethylene bottles.

This file contains data for 187 samples. Each sample has three cards, as follows:

Card 1  Field Card, coded as follows:

| Column | Information |
|---|---|
| 1- 6 | sample number; col. 3-6 is a four-digit number; col. 2 is is zero; col. 1 is the field party number. |
| 7- 9 | stream width in feet. |
| 10-12 | stream depth in feet. |
| 13 | flow rate<br>0=not flowing  1=slow  2=moderate  3=fast |
| 14 | water level<br>0=dry  1=low  2=average  3=high |
| 15 | colour of turbid material in water or water colour (1)<br>1=clear  2=red  3=brown  4=grey  5=black<br>6=white  7=orange  8=yellow |
| 16 | colour of precipitate or stain on boulders of stream bottom<br>Code is as col. 15 except for 1 which means green |
| 17 | environment of sediment sample<br>0=dry stream bed  1=active, below water level<br>2=active, at water level  3=active, above water level<br>4=bank |
| 18 | sample location in stream profile<br>1=right bank  2=mid stream  3=left bank |
| 19 | colour of sediment. Code as colour of precipitate (col. 16) |
| 20-24 | sediment size analysis. Estimated from 1 to 9 for each component category of gravel, sand, silt, clay and organic material. Totals to 10. |

| Example | Component | Percent | Code |
|---|---|---|---|
| | gravel | 10 | 1 |
| | sand | 20 | 2 |
| | silt | 50 | 5 |
| | clay | 10 | 1 |
| | organic | 10 | 1 |

25-28 rock type of local drainage area. See mnemonic code ff.
29-32 eH of water given in range -600 to +600 millivolts
33-34 pH of water given as 0 to 9.9
35-36 temperature of water in degrees C.
37 sample map reference number. coded as follows:
2 - 21 P/13
3 - 21 O/16
4 - 21 O/9
5 - 21 P/12
38-40 total cold-extractable metal in ppm. Samples titrated to 20 ppm only. For values greater than titration limit (20 ppm) the notation -20 is used.
41-42 UTM zone
43-56 UTM co-ordinates. Cols. 43-49 is easting, cols. 50-56 is northing.
57-58 materials classification
00=igneous rock 10=metamorphic rock
20=sedimentary rock 30=mineral
50=unconsolidated material
59=combined stream water and sediment 60=water
90=unclassified.
59-60 sample type identified more specifically than cols. 57-58
1=water and sediment 2=water only 3=sediment only
4=spring water and sediment 5=spring water sample
6=spring sediment
7=heavy mineral, water, and sediment sample.
61-62 stratigraphic age, all coded 44 (Quaternary)
63-73 Geological Survey of Canada sample number
74-80 total metal-zinc equivalent in water, in ppm

Rock Type (mnemonic) code (cols. 25-28) follows:

| | | | |
|---|---|---|---|
| ALLUV | alluvia | MDSN | mudstone |
| ANDS | andesite | PCSC | pelitic schist |
| ARGL | argillite | PHLT | phyllite |
| BRCC | breccia | QRTZ | quartzite |
| BSLT | basalt | RYLT | rhyolite |
| CGLM | conglomerate | SCST | schist |
| DIBS | diabase | SHLE | shale |
| DIRT (DORT) | diorite | SLSN | siltstone |
| GBBR | gabbro | SLTE | slate |
| GRNT | granite | SNDS | sandstone |
| GRSC | greenschist | TRCT | trachyte |
| IRFM | iron formation | TUFF | tuff |
| LMSN | limestone | WCKE | wacke |

Card 2 Analytical, coded as follows:
Cols. item
1- 6 NTS map sheet
7-12 sample number
13-16 sample type ident. ***wter*** on all cards
17-20 blank
21-25 pH

26-30 colour (Hazen units)
31-35 turbidity units
36-40 total alkalinity as $CaCO_3$
41-45 specific conductance, micro mhos at 25 degrees C.
46-50 hardness at total $CaCO_3$
51-75 two fields of F5.1 containing results for Ca and Mg. Three fields of F5.2 containing results for Fe, Al, and Mn.

Card 3 Analytical, coded as follows:

| Cols. | Item |
|---|---|
| 1-16 | coded as card 2 |
| 17-21 | blank |
| 21-30 | two fields of F5.3 containing results for Cu and Zn |
| 31-55 | five fields of F5.1 containing results for Na, K, $HCO_3$, $SO_4$, Cl |
| 56-60 | one field of F5.2 containing results for F |
| 61-75 | three fields of F5.1 containing results for $NiO_3$, $SiO_2$, and sum of constituents. |

***Note that as is the case for stream sediments the existing data printout (R.G. Garrett, Bathurst N.B., stream water survey, summer 1965) groups samples by map sheet number and merges field and analytical card data as follows***

| cols. | item |
|---|---|
| 1- 6 | sample number |
| 7 | blank |
| 8- 9 | UTM zone |
| 10-22 | UTM co-ordinates |
| 23-24 | blank |
| 25-27 | pH |
| 28 | blank |
| 29-32 | colour (Hazen units) |
| 33 | blank |
| 34-36 | turbidity units |
| 37 | blank |
| 38-41 | total alkalinity |
| 42 | blank |
| 43-47 | specific conductance |
| 48 | blank |
| 49-53 | total hardness |

followed by results in ppm. for Ca, Mg, Fe, Al, Mn, Cu, Zn, Na, K, $HCO_3$, $SO_4$, Cl, F, $NO_3$, $SiO_2$

***Note that the sum of constituents of card 3 has been omitted in the merge.

The following detection limits are estimated for the Bathurst water analyses:

| Element or Constituent | Detection Limit (ppm) |
|---|---|
| Ca | 0.1 |
| Mg | 0.1 |
| Fe | 0.01 |

| | |
|---|---|
| Al | 0.01 |
| Mn | 0.01 |
| Cu | 0.001 |
| Zn | 0.001 |
| Na | 0.1 |
| K | 0.1 |
| $HCO_3$ | NA |
| SO4 | 0.5 |
| Cl | 0.5 |
| F | 0.04 |
| $NO_3$ | 0.1 |
| $SiO_2$ | 0.3 |

Precision and accuracy data are not available.

GAS file header records:

```
22    2  166  187   47    0
 WIDTH DEPTHRAFLOWWATLEVTURBID PPTE   ENVIRSAMLOCSEDCOLSICOMPROKTYP
 EH     PH TEMWAT   MAP    CXM   UTMZ   UTME   UTMN   CLASSTYPSAM   AGE
GSCSAM   TMZ   WATER PHW COLOURTURBUN ALKALSPCOND HARD    CA     MG
 FE     AL     MN     CU     ZN     NA     K    HCO3    SO4    CL     F
NIO3  SIO2   SUM
(A6,F3.0,F3.1,7F1.0,F5.0,A4,F4.0,2F2.1,F1.0,F3.0,F2.0,2F7.0,3F2.0,
A11,F7.0/12X,A4,4X,F5.1,F5.0,6F5.1,3F5.2,5X/20X,2F5.3,5F5.1,F5.2,3
F5.1,5X)
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Digital Data:

file location: w:\adcock\archives\gas
file name: g022.gas
file type: 80 character fixed record length, ASCII
file size: 58,720 bytes