# HYDROGEOLOGIC LOG

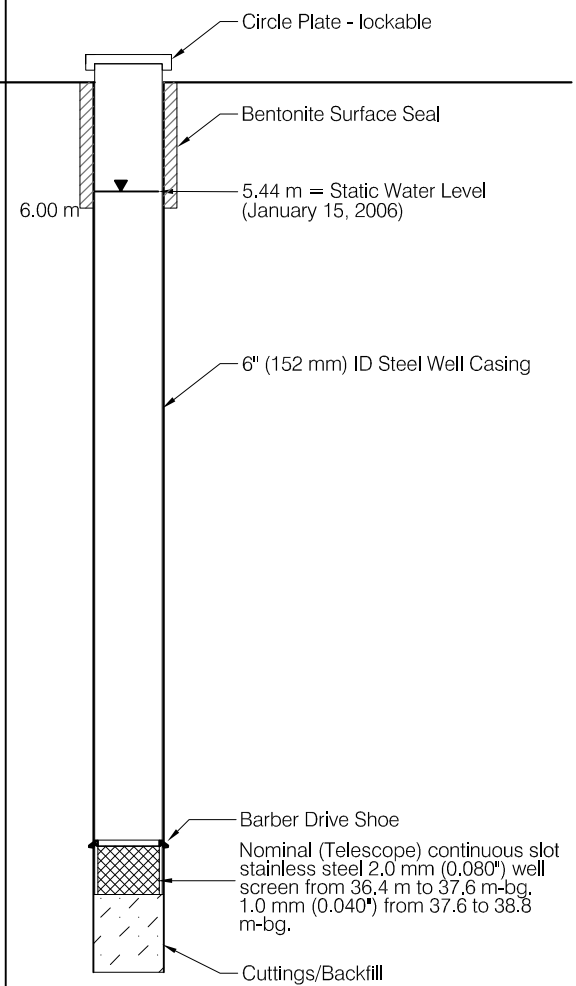
BOREHOLE NO. TW05-01

PURPOSE OF HOLE: Water Supply
DRILLING METHOD: N/A
START DRILLING: November 9, 2005
SCREEN INSTALLED: November 17, 2005
CONTRACTOR: N/A

GROUND ELEV. (m-geod): 695.15
TOP OF CASING (m-geod): 696.15
CASING STICK UP (m): 1.00 m
DEPTH TO STATIC (m): 5.44 m below grd.
DEPTH TO SCREEN TOP (m): 36.4 m - bg
UTM COORD'S FROM GPS: 6673241 N, 183022 E

| Lithology<br>Depth (m) | Comments | Well Installation Summary |
|---|---|---|

0m
GRAVEL - some sand, fine-med. grained sub-rounded gravel, sand is well graded, moist, brown/grey
5m
5.2 m
SAND & GRAVEL - trace of silt, wet, brown
8.5 m
10m GRAVEL - some sand, fine-coarse grained sub-rounded gravel, wet, brown
11.9 m
SILT & SAND (TILL) - some gravel, fine-med. grained sand, angular gravel, moist, grey
15m
16.5 m
SAND - silty, trace of gravel, some organics, fine-med. grained sand
20m
22.5 m
SAND - silty, med. grained, some coarse sand becoming coarser with depth, wet, grey
25m
23.8 m
SILT & SAND - wood
29.0 m
30m WOOD (PEAT) - trace of silt, trace of sand, moist, brown
35m
35.0 m
SAND - silty, fine-med, grained sand, wet, grey
SAND & GRAVEL - well graded sand, fine-med. grained gravel becoming coarser with depth, wet, grey
40m
39.0 m
SAND - trace of gravel, well graded sand, wet, grey
41.1m
END OF HOLE
45m




EBA Engineering Consultants Ltd.

PROJECT: HYDROGEOLOGICAL ASSESSMENT FOR WATER SUPPLY - WATSON LAKE, YUKON

CLIENT: TOWN OF WATSON LAKE

TITLE: WELL LOG TW05-01

| DATE | DWN. | CHKD. | FILE NO. | DRWG. |
|---|---|---|---|---|
| DEC. 2005 | JSB | KSJ | 1260004 | FIGURE A1 |

Province of British Columbia — BC Environment — Water Management Division

# WATER WELL RECORD

Date 05 11 18 (YR MO DY)

NTS MAP _____ WELL No. _____ ELEV _____ Location Accuracy GPS READING

UTM Z _____ _____ E _____ N _____ UTM Date 19__ Well Type _____ 60° 04' 30" N 128° 41' 61" W

Owners Name & Address TOWN OF WATSON LAKE

Legal Description & Address _____

Descriptive Location WATSON LK. YT

1. TYPE OF WORK: 1 ☒ New Well 2 ☐ Reconditioned 3 ☐ Deepened 4 ☐ Abandoned

2. WORK METHOD: 1 ☐ Cable tool 2 ☐ Bored 3 ☐ Jetted 4 ☒ Rotary a ☐ mud b ☒ air c ☐ reverse ☐ Other _____

3. WATER WELL USE: 1 ☒ Domestic 2 ☐ Municipal 3 ☐ Irrigation 4 ☐ Comm. & Ind. ☐ Other _____

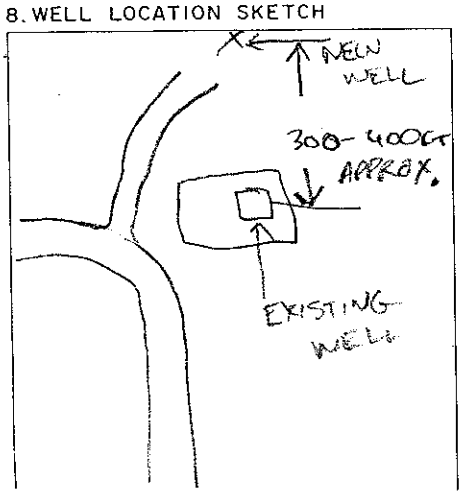
4. DRILLING ADDITIVES NONE

5. MEASUREMENTS from 1 ☒ ground level 2 ☐ top of casing
casing height above ground level 3.28 ft.

| FROM ft | TO ft | 6. WELL LOG DESCRIPTION | SWL ft |
|---|---|---|---|
| 0 | 17 | BRN. SAND GRAVEL + BOULDERS | |
| 17 | 28 | BRN. SAND + FINE GRAVEL | |
| 28 | 39 | BRN, SAND COARSE AND MED. GRAVEL | |
| 39 | 40 | SAND, BOULDER | |
| 40 | 54 | GREY SAND GRAVEL + SILT. (DRY) | |
| 54 | 74 | SILTY GREY SAND + WOOD | |
| 74 | 78 | MED - COARSE GREY SAND + WOOD (CLEAN) | |
| 78 | 95 | WOOD + SILT | |
| 95 | 115 | WOOD AND OR PEAT | |
| 115 | 119 | SILTY SAND. | |
| 119 | 128 | MED - COARSE SAND + TRACES OF GRAVEL, | |
| 128 | 135 | FINE - MED GREY SAND, | |

7. CONSULTANT _____
Address _____

8. WELL LOCATION SKETCH




9. CASING: Materials 1 ☒ Steel 2 ☐ Galvanized 3 ☐ Wood 4 ☐ Plastic 5 ☐ Concrete ☐ Other _____

| | | | | | | | units |
|---|---|---|---|---|---|---|---|
| Hole Diameter | 6 5/8 | | | | | | ins |
| Diameter | 6 | | | | | | ins |
| from | 0 | | | | | | ft |
| to | 119.5 | | | | | | ft |
| Thickness | .188 | | | | | | ins |
| Weight | | | | | | | lb/ft |

Pitless unit _____ ft 1 ☐ above 2 ☐ below ground level
1 ☐ Welded 2 ☐ Cemented 3 ☐ Threaded | 1 ☐ New 2 ☐ Used
Perforations: _____
Shoe(s): BARBER DRIVE SHOE
Open hole, from _____ to _____ ft Diameter _____ ins
Grout: _____

10. SCREEN: 1 ☒ Nominal (Telescope) 2 ☐ Pipe Size
Type 1 ☒ Continuous Slot 2 ☐ Perforated 3 ☐ Louvre ☐ Other _____
Material 1 ☐ Stainless Steel 2 ☐ Plastic ☐ Other _____
Set from 119.5 to 127.5 ft below ground level

| RISER, SCREEN & BLANKS | | | | | | | units |
|---|---|---|---|---|---|---|---|
| Length | 2.5 | 4 | 4 | | | | ft |
| Diam. I D | 5 | 5 | 5 | | | | ins |
| Slot Size | 0 | .080 | .040 | | | | ins |
| from | 117.0 | 119.5 | 123.5 | | | | ft |
| to | 119.5 | 123.5 | 127.5 | | | | ft |

Fittings, top PACKER bottom THREADED PLUG
Gravel Pack _____

11. DEVELOPED BY: 1 ☒ Surging 2 ☐ Jetting 3 ☒ Air 4 ☐ Bailing 5 ☐ Pumping ☐ Other _____

12. TEST 1 ☐ Pump 2 ☐ Bail 3 ☒ Air Date 05 11 18 (YR MO DY)
Rate 80+ USgpm Temp. _____ °C SWL before test _____ ft
Water Level _____ ft after test of _____ hrs

| ☐ DRAWDOWN in ft | | | | ☐ RECOVERY in ft | | | |
|---|---|---|---|---|---|---|---|
| mins | WL | mins | WL | mins | WL | mins | WL |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

13.

| RECOMMENDED PUMP TYPE | RECOMMENDED PUMP SETTING ft | RECOMMENDED PUMPING RATE USgpm |
|---|---|---|
| | | |

14. WATER TYPE: 1 ☐ fresh 2 ☐ salty 3 ☒ clear 4 ☐ cloudy
colour NO smell NO ; gas 1 ☐ yes 2 ☐ no

15. WATER ANALYSIS: 1 Hardness _____ mg/L 2 Iron _____ mg/L 3 Chloride _____ mg/L 4 pH _____ Field Date _____ Lab Date _____ (YR MO DY)

SITE I D No _____

16. FINAL WELL COMPLETION DATA
Well Depth 127.5 ft Well Yield 80 PLUS US gpm
Static Water Level 17.02 ft @ Artesian Flow _____ US gpm Pressure Head _____ ft
~~Back-filled~~ GROUND LEVEL
Well Head Completion LOCKABLE HINGED LID.

17. DRILLER PLEASE PRINT SURNAME STANWICK FIRST NAME DOUG CAS
Signature _____

18. CONTRACTOR, DOUBLE D DRILLING LTD.
Address BOX 766 TERRACE B.C. V8G-4R1 (250) 635 7877
Member, BCWWDA ☒ yes ☐ no ; DOUG STANWICK

**Table 1: Well Drilling and Completion Summary**
**Town of Watson Lake**
**GUDI Assessment for Wells 1, 1A, 3 and 4**

| Well ID | Date Drilled | Lithology (m) | Screened Interval (m) | Slot Size[1] | Pumping Rates |
|---|---|---|---|---|---|
| Well 1 | December 1973 | 0 - 5.8 Gravel, Boulders, some clay<br>5.8 - 12.8 Gravel and Boulders | 8.8 - 13 | 0.125" (125 slot) | 11.7 L/sec<br>(186 USgpm) |
| Well 1A | May 1977 | 0 - 14.3 Gravel and Sand<br>14.3 - 15.2 Till<br>15.2 - 25.9 Sand and Gravel<br>25.9 - 32 Sand, trace silt & wood | 20 - 23.2 | 0.040" (40 slot) | 10.1 L/sec<br>(160 USgpm);<br>later reduced to<br>8.3 L/sec<br>(132 USgpm) |
| Well 2 | September 1993 | 0 - 24.9 Gravel<br>24.9 - 25.6 Silt | 21.85 - 24.9 [2] | 0.200" (200 slot) | 11.9 L/sec<br>(189 USgpm) |
| Well 3 | November 2005 | 0 - 11.9 Sand and Gravel<br>11.9 - 16.5 Silt and Sand (Till)<br>16.5 - 23.8 Silty Sand<br>23.8 - 29 Silt and Sand, wood<br>29 - 35 Peat<br>35 - 36 Silty Sand<br>36 - 41.1 Sand and Gravel | 36.4 - 38.8 | 0.080" (80 slot)<br>36.4 - 37.6 m<br>0.040" (40 slot)<br>37.6 - 38.8 m | 12.7 L/sec<br>(202 USgpm) |
| Well 4 [3] | April 2012 | 0 - 12.2 Sand and Gravel<br>12.2 - 13.8 Till<br>13.8 - 22.9 Gravelly Sand<br>22.9 – 29.9 Sand, trace gravel | 28.3 - 31.34 | 0.060" (60 slot) | 30 L/sec<br>(475 USgpm) [4] |

**Notes:**
Well details from EBA 2006, unless otherwise noted.
1. Slot sizes are given in 1/1000 inch. So, a 100 slot well screen is 1/10 inch or 2.54 mm.
The maximum typically manufactured slot size is 250 slot or 1/4 inch, 6.25 mm.
2. Screen depths from RCPL 1993.
3. Well information from AECOM, 2012.
4. Estimated long-term yield