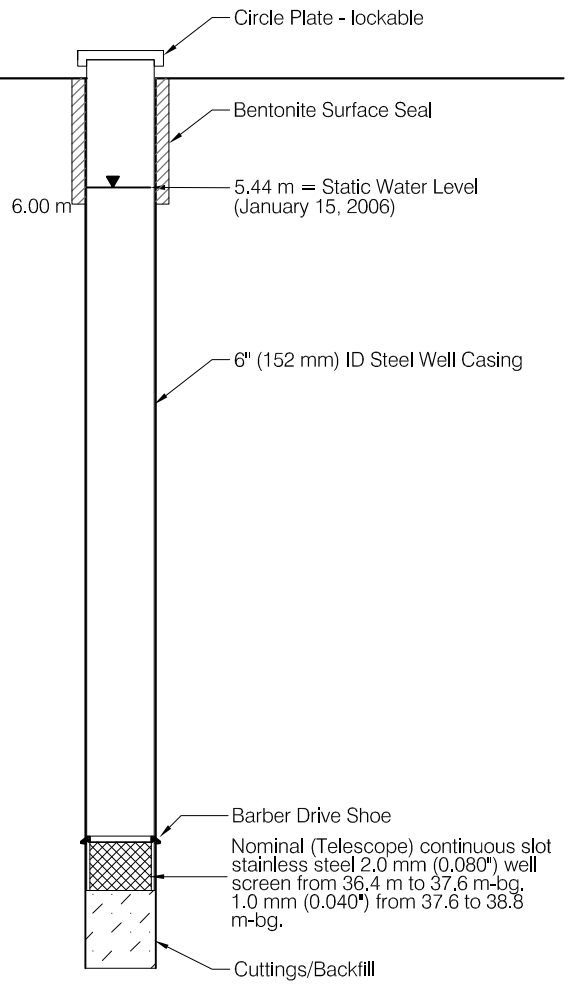
HYDROGEOLOGIC LOG

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 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, 15m moist, grey 16.5 m SAND - silty, trace of gravel, some organics, fine-med. grained sand 20m 22.5 m SAND - silty, med. grained, some coarse 25m sand becoming coarser with depth, wet, grey 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, 40m wet, grey 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	[redacted]	[redacted]	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

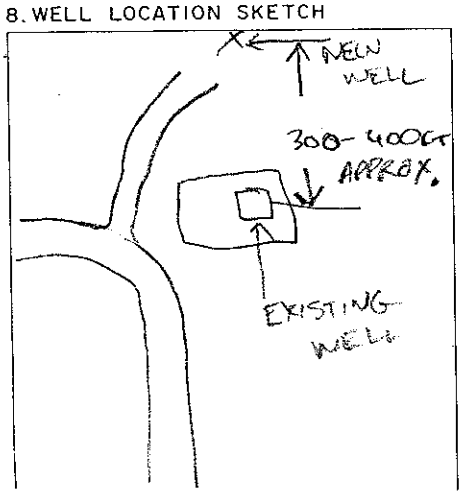
5. MEASUREMENTS from 1 ☒ ground level 2 ☐ top of casing
casing height above ground level 3.28 ft.

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 KNOCKER 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 [redacted]
S

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

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