21.0 BUILDINGS 2661 AND 2665: OGILVIE GRADER STATION COMPOUND

21.1 Description of Existing Water Supply System

The Ogilvie Grader Station (Building 2661) and Living Complex (Building 2665) are currently serviced by a water supply system that delivers water from a 6.6 m dug well that is located in the basement of the living complex. Piping between the buildings is enclosed in an insulated and heat traced tin clad utilidor. A site plan is provided as Figure 2665-A in Appendix A21. The coordinates of the wellhead, as measured by a handheld GPS device, were recorded as:

- UTM ZONE 7
- Northing: 7251342
- Easting: 655265

At the time of the assessment, the well in the Living Complex was supplying water to both buildings. This water system is not equipped with any treatment or disinfection. A schematic detailing the water supply system is provided as Figure 2665-B in Appendix A21. Photos of the well and water system are also included at the back of Appendix 21.

An abandoned 5.5 m deep dug well is located in the maintenance garage. The system is equipped with a pump and pressure tank, but this side of the system is currently not in use and is separated from the rest of the system by a closed valve. The coordinates of the wellhead, as measured by a handheld GPS device, were recorded as:

- UTM ZONE 7
- Northing: 7251301
- Easting: 625315

21.2 Description of Existing Wastewater Systems

The living complex and maintenance garage are both equipped with in-ground sewage disposal systems. The living complex septic effluent is discharged to septic system located the north of the building; and the tank and discharge field are located

greater than 30 m north and likely crossgradient from the well. The septic system serving the maintenance garage is located on the east side of the building approximately 25 m, and likely downgradient from the abandoned well, and greater than 30 m downgradient from the well that currently serves this system. Septic systems locations are shown on Figure 2665-A in Appendix A21.

21.3 Water Quality Results

21.3.1 Water Quality Results from Previous Sampling

Bacteriological

Six samples were collected from the Ogilvie Grader Station maintenance garage water system between October 2004 and June 2005 and were tested for total coliform and *E. coli* by Yukon Environmental Health Services using the presence/absence test method. Coliform bacteria and *E. coli* were reported as absent in each of the six samples for which results are provided. Six samples were also collected from the Ogilvie Living Complex water system between September 2004 and June 2005 and were tested for total coliform and *E. coli* by Yukon Environmental Health Services using the presence/absence test method. One out of the six sampling events reported the presence of total coliform bacteria. Because the most recent sampling event for which results are available (June 9, 2005) had total coliform present, it is recommended that re-sampling be completed as soon as possible. Results from bacteriological analyses are included in Table 2661/2665-1 in Appendix A21.

Potability

YTG representatives collected water samples from the Ogilvie Grader Station maintenance garage water system on June 8, 2005. The samples were submitted to ALS Environmental in Vancouver BC for potability analyses. The results of these analyses are summarized in Table 2661/2665-2 in Appendix A21. EBA reviewed the analytical results for comparison with the Canadian Drinking Water Quality Guidelines (CDWQG) to observe general water quality, identify and recommend additional sampling and analytical and identify potential indicators of contamination. Details are summarized below:

- The water quality results indicated that all health based and aesthetic objectives (AO) were met for the parameters analyzed;
- The water quality results indicated that the groundwater from which this system receives its water supply is calcium bi-carbonate type with a pH of approximately 8; and,
- The hardness (as $CaCO_3$) was 126 mg/L, and is considered moderately hard.

YTG representatives collected water samples from the Ogilvie Living Complex water system on September 28, 2004 and July 15, 2005. The following observations were made:

- The water quality results indicated that all health based and AOs were met for the parameters analyzed;
- The water quality results indicated that the groundwater is calcium bi-carbonate type with a pH of approximately 8; and,
- The hardness (as $CaCO_3$) was 231 mg/L during the first sampling event and 228 mg/L during the second sampling event, and is considered very hard.

There are significant differences in the water quality results for the individual systems; this suggests that the water samples collected on these dates were from different sources. The dug well within the Grader station was not in use at the time of the assessment (the supply valve was closed). The water quality results suggest that the previous analytical data for the maintenance garage was taken when the maintenance garage dug well was still in use.

21.3.2 Identification of Additional Analytical Testing Required

Additional analytical for the Ogilvie Grader Station and Living Complex that was identified to be included during the water system assessments is detailed below:

- UV absorbance and UV transmissivity, as well as tannins and lignin, to determine potential for UV treatment as a disinfection option for this water system;
- Total organic carbon (TOC); and,
- Measurements in the field for total dissolved solids, conductivity, pH, and temperature.

Additional Analytical Results

A water sample was obtained from the Ogilvie Living Complex during the water system assessment on August 18, 2005, and was submitted to ALS Environmental in Vancouver BC for analysis. Since both buildings are now plumbed into this well, water quality results are relevant for both buildings. Results are summarized in Table 2661/2665-2 in Appendix A21 and the laboratory reports are included in Appendix B.

21.3.3 Indicators of Potential Contamination

Chloride, nitrate and nitrite concentrations can indicate impacts from surface water sources or septic waste. The chloride concentrations were relatively low and are likely within the normal background range for groundwater in the area. Nitrate and nitrite concentrations for this sample are also low and likely within the normal background range for this area. Monitoring of these indicator parameters over time for trends is recommended.

21.4 Conceptual Hydrogeology

The well that supplies this system is a shallow dug well. The well completion depth is approximately 5.6 m below grade and the static water level is 3.6 m below grade. Although there is no information available to review lithology, the shallow depth of the well indicates that the aquifer is vulnerable to surficial sources of contamination. The well is most likely completed within an unconfined aquifer with a static water level similar to the Ogilvie River water level. Water levels in the well are most likely connected to water levels in the Ogilvie River. The abandoned well in the grader station maintenance garage has a similar completion depth and static water level. The shallow depth of the well and close proximity to the Ogilvie River indicate that the well is potentially under the direct influence of surface water. The expected direction of groundwater flow is east to northeast towards the Ogilvie River.

21.5 Potential Contaminant Sources

Details and photographs of potential contaminant sources observed during the site investigation are compiled in Appendix A21. No potential contaminant sources were observed within 30 m of the well or within the area inferred to be upgradient of the well.

21.5.1 Spills Records and Contaminated Sites Search Results

Environment Canada spills records indicate that 220 tonnes of calcium chloride was washed from this site and into the Ogilvie River in 1998 due to a heavy rainfall event. No fish kill was observed and no residue was reported down stream. Reportedly, the stock pile was relocated above the new highwater mark.

21.6 Identified Water System Deficiencies and Associated Risk

21.6.1 High and Medium Risk Deficiencies

High and medium risk deficiencies for this water system that were identified during this study include:

- The well is a shallow dug well likely completed in an unconfined aquifer vulnerable to surficial sources of contamination and potentially under the direct influence of surface water;
- The well in the maintenance garage has not been properly decommissioned;
- A water sample collected for bacteriological analysis tested positive for total coliform bacteria; and,
- There is no treatment or disinfection system present.

21.6.2 Low Risk Deficiencies

- The top of the culvert well does not extend above grade, but is adequately constructed with a tight-fitting lid in the basement of the living complex enclosure, with a low risk of flooding, and is approximately 1.15 m above the basement floor.

21.7 Mitigative Options for Deficiencies

Mitigative options were developed to address the deficiencies identified in the previous section. Deficiencies are categorized by recommended level of priority (with Priority 1 being most critical).

21.7.1 Priority 1

If not already completed, the water system should be re-sampled for total coliform and *E. coli* bacteria immediately. The following mitigative options are recommended to address the high-risk deficiencies associated with the water system at the Ogilvie Maintenance Camp:

- It would be prudent to install an adequate disinfection system due to the vulnerability of this aquifer to potential biological parameters, and the absence of a bentonite/grout sanitary seal. Based on water quality results, it is anticipated that a UV system could be utilized without pre-treatment. Since the well is potentially under the direct influence of surface water it is recommended that a disinfection system such as filtration (NSF 61 certified to 1 micron absolute) followed by an NSF/ANSI 55 certified UV (or equivalent) be installed. These are conceptual design recommendations based on the information available for planning and budgeting purposes. Engineering input will be required for final system specifications.
- The well and water system should be shock chlorinated.

21.7.2 Priority 2

The following Priority 2 upgrades are recommended to mitigate remaining health risks to this water system:

- Decommissioning of the abandoned well in the Grader Station building in accordance with proposed regulations. Consideration should be given to completing this work at the same time as Priority 1 upgrades to save on mobilization/demobilization costs.

21.7.3 Priority 3

No low risk deficiencies have been identified for this site.

21.8 Cost Estimates for Mitigative Options

Engineering costs for mitigative options are estimated to be 20% of construction costs, and would include inspection and completion reporting. The costs for materials and labour (not including engineering) are provided in the sections below. An additional contingency allowance of 20% is suggested for budgetary purposes.

21.8.1 Priority 1

Estimated costs for Priority 1 recommended upgrades are detailed below:

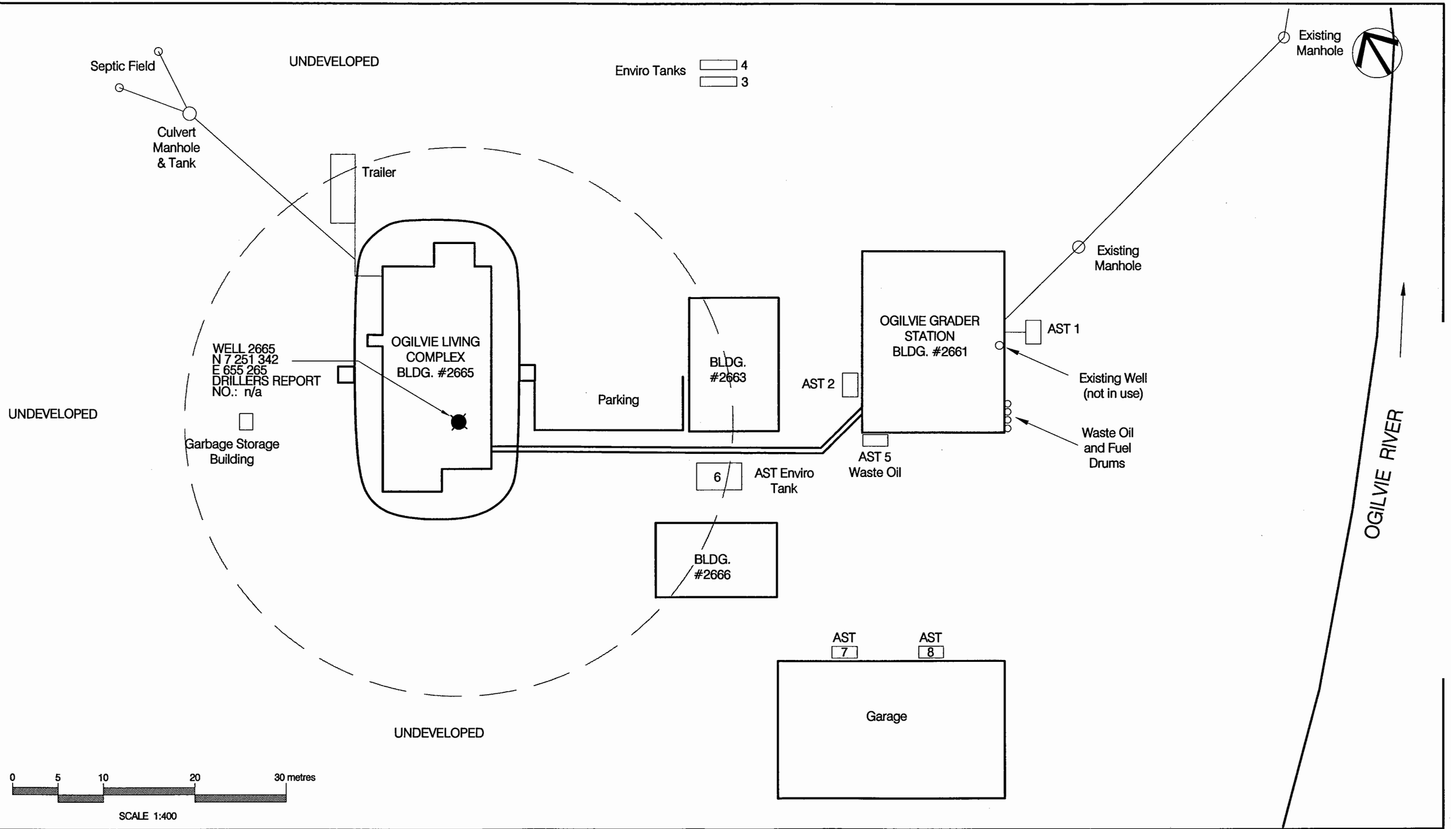
- An NSF certified filtration and UV disinfection system would cost approximately **$4,500** for materials, labour and contractor mobilization/demobilization.
- Shock chlorination of the well and water system could be completed for approximately **$200** for material and labour.

21.8.2 Priority 2

- Decommissioning of the abandoned well would cost approximately **$1,500** including materials and labour.

21.8.3 Priority 3

There are no Priority 3 upgrades recommended at this time.



NOTES:
1. UTM COORDINATES OBTAINED WITH A HAND HELD GPS USING NAD83 SYSTEM AND ARE CONSIDERED TO BE ACCURATE TO 10.0 m, APPROXIMATELY.

30 m RADIUS FROM WATER WELL FOR CONSIDERATION OF PROXIMITY TO POTENTIAL CONTAMINANT SOURCES.

No.	DESCRIPTION	DATE	APPROVED
0	ISSUED FOR CLIENT REVIEW	DD/MM/YY	XXX

REVISION

EBA Engineering Consultants Ltd.

DESIGNED BY:	R. MARTIN
DRAWN BY:	J. BUYCK
DATE:	SEPT. 2005
SCALE:	AS SHOWN
PROJECT No.:	1260002.004
ACAD FILENAME:	004-NORTHERN REGION

CLIENT: Yukon
Highways and Public Works
Property Management Branch

SMALL PUBLIC WATER SYSTEMS ASSESSMENT
NORTHERN REGION

GOVERNMENT OF YUKON
HIGHWAYS & PUBLIC WORKS

OGILVIE GRADER STATION
& LIVING COMPLEX
BUILDING # 2665
SITE LOCATION DIAGRAM
WELL ID: 2665

REVISION ISSUE: 0

FIGURE No.: FIGURE 2665-A

LEGEND


PUMP


PRESSURE GAUGE


GATE VALVE

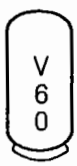

CHECK VALVE


SOLENOID

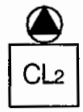
#2 COMPONENT ID. No.
(SEE TABLE ON FOLLOWING PAGE)

FLOW METER

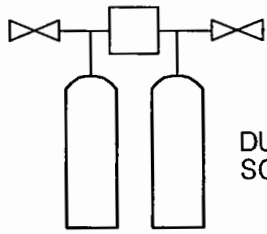
WATER FILTER
(CARTRIDGE TYPE)



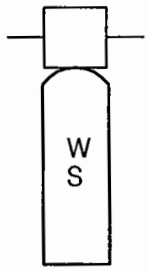
PRESSURE TANK



CHLORINE RESERVOIR AND
INJECTION PUMP


DUPLEX WATER
SOFTENER

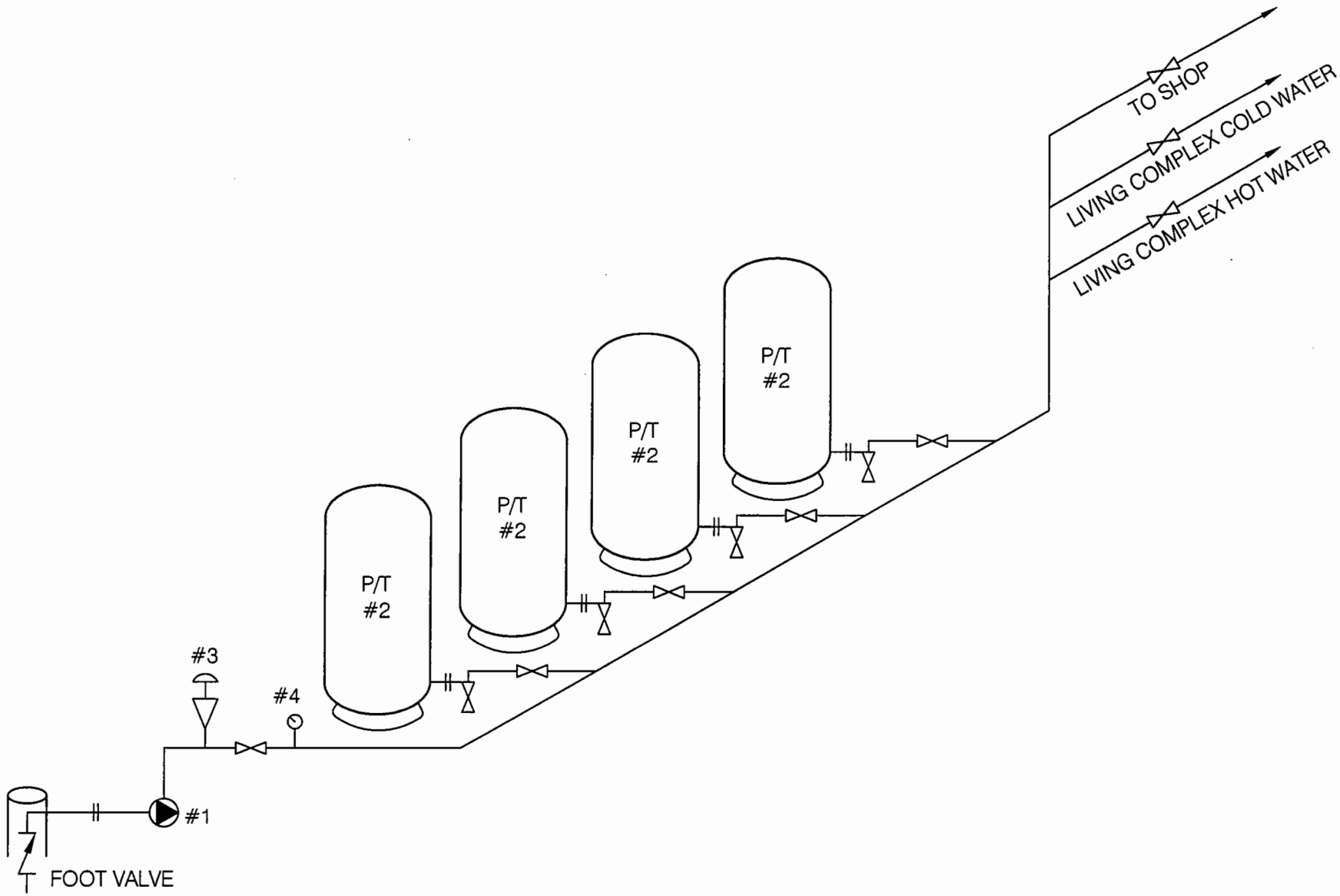
WELL WITH
SUBMERSIBLE PUMP



ACTIVATED
CARBON

EBA Engineering Consultants Ltd.			PROJECT	SMALL PUBLIC WATER SYSTEMS ASSESSMENT WESTERN REGION	
CLIENT Yukon Highways and Public Works Property Management Branch			TITLE	SCHEMATIC SYSTEM LEGEND	
DATE APRIL 2006	DWN. JSB	CHKD. RMM	FILE NO. 1260002		DRWG. LEGEND

Z:\0201Drawings\1260002 Water Assessment YTG\1260002003 Schematic_LEGEND.dwg, 4/4/2006 4:44:42 PM, Adobe PDF, jbuyck



SCHEMATIC PRODUCED BY BERT ALBISSER OF AQUA TECH SUPPLIES AND SERVICES LTD.

EBA Engineering Consultants Ltd.				PROJECT	SMALL PUBLIC WATER SYSTEMS ASSESSMENT NORTHERN REGION
CLIENT	Yukon Highways and Public Works Property Management Branch			TITLE	WATER SYSTEM DISTRIBUTION/TREATMENT SCHEMATIC SYSTEM ID.: 2661 OGILVIE GRADER STATION - DAWSON, YT.
DATE SEPT. 2005	DWN. JSB	CHKD. RMM		FILE NO. 1260002.004	DWG.: FIGURE 2661-B

Northern Region – Ogilvie Grader Station
Building # 2661

DISTRIBUTION & TREATMENT SYSTEM DATA

Item	Description	Manufacturer	Model	Part No.	Serial No.	Size
1	JET PUMP	MONARCH	SERIES 70	-1		1/3 HP.
2	PRESSURE TANK	WELL X TROL	WX-102			4.5 GALLON
3	SUB. PUMP	MONARCH				1/2 HP - 4"
4	PRESSURE TANK	CHALLENGER	PC 111			111L
5	PRESSURE SWITCH	SQUARE D	FSG-2			
6	PRESSURE GAUGE	MARSH	0-100 PSI			2" - 1/4 FIPT
7						
8						
9						
10						

Northern Region – Ogilvie Living Complex
Building # 2665

DISTRIBUTION & TREATMENT SYSTEM DATA

Item	Description	Manufacturer	Model	Part No.	Serial No.	Size
1	JET PUMP	MONARCH	MJC-100			1Hp.
2	PRESSURE TANKS (4)	MONARCH	M302			
3	PRESSURE SWITCH	SQUARE D	FSG-2			2Hp- 1/4" FIPT
4	PRESSURE GAUGE	WINTERS	0-100			4" 1/4" FIPT
5						
6						
7						
8						
9						
10						

TABLE 2661/2665 - 1: SUMMARY OF BACTERIOLOGICAL RESULTS

Building #	Building Name	Number of Sampling Events	Time Period over which Sampling was Done	Any Positive Total Coliform Results? (yes or no)	Fraction of Positive Total Coliform Results vs. Total Sampling Events	Any positive E.Coli results? (yes or no)	Most Recent Sampling Event Available for EBA Review	Is Most Recent Result Positive?
2661	Ogilvie Grader Station	6	Oct-04 to Jun-05	no	0/6	no	9-Jun-05	no
2665	Ogilvie Living Complex	6	Sept-04 to Jun-05	**yes**	1/6	no	9-Jun-05	**yes**

Table 2661/2665 - 2: Water Quality Results

SOURCE:	Building 2661 - Ogilvie Grader Station	Building 2665 - Ogilvie Living Complex			GCDWQ Criteria		
Location/ Resident	Olgilvie	Olgilvie					
Address							
Treatment	None	None					
Disinfection	None	None					
Source of Water	Abandoned Well at Maintenance Building	On-site well (shared with 2661)					
Purpose of Sampling	Base Line	Base Line	Base Line	Additional Sampling			
Sample Location				Washroom faucet			
Date Sampled	8-Jun-05	29-Sep-04	8-Jun-05	18-Aug-05	Lower	Upper Limit	
Physical Tests *(ALS)*					**AO**	**MAC**	**AO**
Colour (CU)	<5.0	<5.0	<5.0				15
Conductivity (uS/cm)	267		465				
Total Dissolved Solids	160	270	279				500
Hardness CaCO3	126	231	228		AO >200 = poor, > 500 unacceptable[A]		
pH	7.92	7.98	8.10		6.5		8.5
Turbidity (NTU)	0.33	0.2	0.1			1	5
UV Absorbance				0.037			
% UV Transmittance				91.8			
Dissolved Anions *(ALS)*							
Alkalinity-Total CaCO3	89.4	178	169				
Chloride Cl	2.12	4.7	6.25				250
Fluoride F	0.092	0.08	0.094			1.5	
Silicate SiO4							
Sulphate SO4	48.2	67.8	73.0				500
Nitrate Nitrogen N	0.2	<0.1	<0.10			10	
Nitrite Nitrogen N	<0.10	<0.05	<0.10			1	
Ammonia Nitrogen N							
Total Phosphate PO4							
Total Metals *(ALS)*							
Aluminum T-Al	<0.010	<0.005	<0.010			0.1	
Antimony T-Sb	<0.00050	<0.0002	<0.00050			0.006	
Arsenic T-As	0.00016	0.0002	0.00011			0.025	
Barium T-Ba	0.069	0.115	0.091			1	
Boron T-B	<0.10	0.02	<0.10			5	
Cadmium T-Cd	<0.00020	<0.00001	<0.00020			0.005	
Calcium T-Ca	34.6		63.4				
Chromium T-Cr	<0.0020	0.0011	<0.0020			0.05	
Copper T-Cu	0.0567	0.053	0.039			1	
Iron T-Fe	<0.030	0.01	<0.030				0.3
Lead T-Pb	<0.0010	0.0003	<0.0010			0.01	
Magnesium T-Mg	9.56		16.9				
Manganese T-Mn	0.0156	<0.005	<0.0020				0.05
Mercury T-Hg	<0.00020		<0.00020			0.001	
Potassium T-K	0.67		0.55				
Selenium T-Se	<0.0010		<0.0010			0.01	
Sodium T-Na	2.2	9.9	9				200
Uranium T-U	0.00053	0.002	0.00184			0.02	
Vanadium T-V							
Zinc T-Zn	<0.050	0.018	<0.050				5
Organic Parameters							
Tannin and Lignin				0.28			
Total Organic Carbon C				1.9			
Field Chemistry (EBA)							
pH				8.17	6.5		8.5
TDS (ppm)				223			500
EC (uS/cm)				446			
Temperature (°C)				7.4			
Free Available Chlorine							

Notes:

A. Guidelines indicated for hardness are not CDWQG, rather they are general aesthetic guidelines - exceedences are indicated in yellow highlighting.

Italics and underline indicates exceedence of proposed MAC (ie. arsenic)

Bold with Yellow highlighting indicates exceedence of CDWQG Aesthetic Objective (AO)

Bold Underline with Yellow highlighting indicates exceedence of CDWQG MAC

Results are expressed as milligrams per litre except for pH and Colour (CU) Conductivity (umhos/cm),Temperature (°C) and Turbidity (NTU)

< = Less than the detection limit indicated.

AO = Aesthetic Objective

MAC = Maximum Acceptable Concentration (Health Based)

SMALL PUBLIC WATER SYSTEM ASSESSMENT

PART A: EBA Site Inspection

Inspector: Ryan Martin, Luke Lebel Date August 18, 2005

WELL ID #	Owner	Location Description
2665	YTG	Ogilvie Grader Station Living Complex

1. Well Location and Potential Contaminant Sources

a. General location of well: (Community, Subdivision, etc.)
Ogilvie

b. Specific location: (Road or street, Building number, name of owner and/, legal description,
Km 195 Dempster Highway

c. GPS location: N 7251342 E 625265 elv 609m ± 13m UTM Zone 7

d Is there electric power? ☒ Yes ☐ No

e Is there outside water access? ☒ Yes ☐ No

f. Does the well system have:

☐ 15 or more service connections to a piped distribution system ? If so how many_____
Living complex, maintenance garage, generating station

☐ 5 or more delivery sites on a trucked distribution system? If so how many_____

g. Nearest building, specify Located in basement of living complex

h. Distance from well to building _____

i. If there is an effluent disposal field, is its location known? ☐ Yes ☐ No

j. Distance from well to nearest point of known field: _____

k. Well location relative to field: ☐ upslope ☐ downslope ☐ lateral

l. Is there any part of a sewage disposal system(s)or other potential sources of pollution that may pose a health and safety risk within 30 m? ☐ Yes ☐ No

---

m. Is the well located within 300 m from a sewage lagoon or pit? ☐ Yes ☒ No

n. Is the well located within 120 m from a solid waste site or dump, cemetery? ☐ Yes ☒ No

o. Is the infrastructure protecting the wellhead, pumphouse, storage tank and/or water treatment plant designed and secured to prevent:

Unauthorized access by humans? ☒ Yes ☐ No Entrance by animals? ☒ Yes ☐ No
located inside locked building

p. Is well site subject to flooding? ☐ Yes ☒ No

q. Is the well site well drained? ☒ Yes ☐ No

r. Is there a buried fuel tank on the property? ☐ Yes ☐ No

If yes, is it ☐ in use ☐ abandoned

Is the location known? ☐ Yes ☐ No

Distance from the well to known buried tank _____

s. Are there any other known contaminant sources on the property?

☐ Yes ☐ No Describe _____

If yes, specify the source: ☐ dump ☐ sewage lagoon ☐ cemetery ☐ other

Potential Source 1:_____; Distance from well to Potential Source 1:_____

Potential Source 2:_____; Distance from well to Potential Source 2:_____

Potential Source 3:_____; Distance from well to Potential Source 3:_____

Potential Source 4:_____; Distance from well to Potential Source 4:_____

t. Are there other wells on this property? ☐ Yes ☐ No

How many?_____ ☐ in use ☐ abandoned ☐ require proper sealing

2. Well and Wellhead information:

a. When was well installed? Year unknown Month _____

b. Type: ☐ drilled ☒ dug ☐ sand point ☐ other _____

c. Is there a drillers log for the well: ☐ Yes ☐ No n/a

d. Is there a surface seal to 6 m ☐ Yes ☒ No ☐ unknown ☐ unlikely

e. Surface casing: ☐ Yes Diameter _____ ☒ No

f. Well casing: Diameter 85cm Material: ☒ galvanized steel ☐ plastic ☐ concrete

g. Depth of well: ~5.6m bg ☒ measured (if possible) ☐ reported ☐ from log

h. Static water level below ground: ~3.6m bg

☒ measured (if possible) ☐ reported ☐ from log ☐ flowing

i. (If granular) Is the well completed: ☒ open end casing ☐ with a well screen

☐ with slotted pipe ☐ unknown other _____

j. (If bedrock) Does the well have a liner? ☐ yes ☐ No ☐ steel ☐ plastic

k. If there is a well screen: length n/a slot size(s) _____
Location of screen: from _____ to _____ from log reported

l. Is there a sump below the screen? ☐ Yes ☒ No

m. Is the well head: ☐ in pumphouse ☐ in pit ☐ pitless adaptor ☒ in a building

☐ in a wooden enclosure other, describe _____

n. If the well head is located in a wooden enclosure,

i. Is the well head below grade? describe in detail top of well ~ 1.6m below grade

ii. Are there signs of ponding on the enclosure(e.g. water stains, etc.)? ☐ Yes ☒ No

iii. Is the wellhead enclosed by fiberglass insulations? ☐ Yes ☒ No

iv. Any evidence of rodents? Specify No

v. Does the well casing have a proper seal cap? ☒ Yes ☐ No

If no, describe condition Tight fitting wooden lid

3. Water Supplying This Well:

a. By definition is the water from a surface water source or under the direct influence of surface water?

☒ Yes ☐ No ☐ farther investigation required.

If yes is there treatment or disinfection ☐ Yes ☒ No

Explain (filtration, disinfection etc...)

---

4. Aquifer Supplying This Well:

a. The aquifer is: ☐ bedrock ☒ granular sediment ☐ unknown

b. Does water level and/or well capacity show seasonal fluctuation? ☐ Yes ☐ No Unknown

5. Pump Installation:

a. Is the well equipped with a pump? ☒ yes ☐ No

b. Type of pump: ☐ hand ☐ electric submersible ☒ jet

☐ shallow well centrifugal ☐ other,

c. Description: Manufacturer _____ Model _____

horsepower _____ capacity _____ voltage _____

d. Date installed: _____ By: _____

e. For submersible pump, depth of setting below surface n/a

f. Drop pipe for submersible pump: ☒ steel ☐ plastic

g. Pump delivers water to: ☒ pressure tank ☐ elevated tank ☐ other

h. Are there automatic pump controls: ☒ Yes ☐ No

i. Is there provision for taking water samples before water reaches storage? ☒ Yes ☐ No
But tap is directly against floor

j. Is there a water meter on the system? ☐ Yes ☒ No

k. Is the pump and piping protected from freezing? ☒ Yes ☐ No

If yes, describe: located inside heated building

l. Comments on pump installation: _____

6. Conclusions

a. Comments on overall installation:

b. Recommendations:

PART B: EBA Site Inspection

Inspector: BERT ALBISSER Date AUG. 18/05

WELL ID #	Owner	Location Description
2665	YTG	OGILVIE GRADER STATION

6. **Water Treatment**

a. Is well water treated? ☐ Yes ☑ No; Type of treatment:

☐ chlorination ☐ iron and or manganese removal ☐ other _____

b. Is water entering plumbing or piped distribution system treated with chlorine or another treatment that is as effective as chlorine used to achieve disinfection throughout the system?

☐ Yes ☑ No If so how _____

c. If treated with chlorine, is the free residual chlorine concentration less than 0.2 mg/L

☐ Yes ☑ No _____ reading.

Tested at _____ (location)

d. Is testing for chlorine residual concentration done at the tap (eg. Kitchen faucet) or from representative points in a piped distribution system, including a point from tap at the end line

☐ Yes ☑ No If yes how often? _____

e. If the drinking water is being transported by water delivery truck does it have a minimum chlorine free residual of 0.4 mg/L at the time of fill. ☐ Yes ☑ No

7. **Water Quality (observations):**

a. Does the water stain plumbing? ☑ yes ☐ No ☑ slight ☐ severe

Type of stain: ☐ brown ☑ red ☐ black

b. Does the water contain sediment? ☐ Yes ☑ No ☐ occasional ☐ constant

c. Is there an unpleasant odour? ☐ Yes ☑ No ☐ H_2S ☐ Other _____

d. Is there an unpleasant taste? ☐ Yes ☑ No ☐ brackish ☐ Other _____

e. Is there a history of bad bacterial analyses? ☐ Yes ☐ No

f. Is there a chemical analysis? ? ☐ Yes ☐ No ☐ adequate ☐ incomplete

g. Is there analysis of trihalomethanes (THMs) where the water source is a surface water supply or a well under the direct influence of surface water? ☐ Yes ☑ No

h. Is the drinking water tested daily with an accurate reading chlorine test kit capable of reading in the range 0 to 3.5 mg/L of free chlorine residual in increments of 0.1mg/L? ☐ Yes ☑ No ☐ unknown

i. If yes is the test performed in accordance with manufactures directions? ☐ Yes ☑ No ☐ unknown

j. Is a record of the date, time,name of person performing the test and results of the drinking water sample kept? ☐ Yes ☑ No

TANK AND PIPING DETAILS

Tank Room

Is there a water tank? Yes No Details: PRESSURE TANKS

Where is it located?
Comments: UTILITY ROOM IN BASEMENT

Is the room in which the water tank is located heated to maintain an optimum temperature of 4°C for stored water?
YES NO
Comments: _____

Are there windows in the add-on that may allow direct sunlight onto the water holding tank? YES NO

Comments: _____

Are there other heat sources near the tank? YES NO
Comments: _____

Is there waterproof flooring with a sealed base to contain spills? YES NO
Comments: _____

Overall Tank

What are the tank size and dimensions?

_____

What material is the tank constructed of? _____

Is tank and associated piping constructed of safe materials (i.e. CSA approved and material that does not affect the taste of the water)? YES NO

Comments: _____

Tank Inlet, Outlet and Lid

Is there adequate access on the tank for cleaning (i.e. min 15" access lid)? YES NO

Does the lid have a tight seal and is it watertight when closed? YES NO

Does the tank have an overflow or high level whistle? YES NO

Is the water tank drain accessible? YES NO

WATER TANK AND WATER QUALITY CONDITION

Are there signs of staining or biofouling? YES NO
Comments: _____

Is there any sediment or scum in bottom of tank? YES NO
Comments: _____

Is there any odour associated with the water or tank? YES NO

Have there been any bacteriological analyses conducted previously? YES NO

Does the tank appear that it has been cleaned recently? YES NO

Are the tanks easily assessed for the purpose of cleaning and disinfection? YES NO

8. Conclusions

a. Comments on overall installation:

THIS IS CONSIDERED A SURFACE WATER SUPPLY. THE SYSTEM IS MECHANICALLY SOUND - I SUSPECT TWO OF THE PRESSURE TANKS ARE WATER LOGGED.

b. Recommendations:

REPAIR OR REPLACE THE DEFECTIVE PRESSURE TANKS. INSTALL A SUITABLE TREATMENT SYSTEM IF THE WATER ANALYSIS INDICATES THAT IT IS NEEDED. INSTALL 10 & 1 MICRON IN LINE FILTRATION FOLLOWED BY A 20 GPM UV SYSTEM (NSF55 CERTIFIED

EBA Engineering Consultants Ltd.
Creating and Delivering Better Solutions

SMALL PUBLIC WATER SYSTEM ASSESSMENT

PART A: EBA Site Inspection

Inspector: Ryan Martin, Luke Lebel Date August 18, 2005

WELL ID #	Owner	Location Description
2661	YTG	Ogilvie Grader Station Abandoned well

1. Well Location and Potential Contaminant Sources

a. General location of well: (Community, Subdivision, etc.)
Ogilvie

b. Specific location: (Road or street, Building number, name of owner and/, legal description,
Km 195 Dempster Highway

c. GPS location: N 7251301 E 625315 elv 604 m ± 10m UTM zone 7

d Is there electric power? ☐ Yes ☒ No

e Is there outside water access? ☐ Yes ☒ No

f. Does the well system have:

☐ 15 or more service connections to a piped distribution system ? If so how many_____
Well Abandoned

☐ 5 or more delivery sites on a trucked distribution system? If so how many_____

g. Nearest building, specify located inside maintenance garage

h. Distance from well to building _____

i. If there is an effluent disposal field, is its location known? ☐ Yes ☐ No

j. Distance from well to nearest point of known field: _____

k. Well location relative to field: ☐ upslope ☐ downslope ☐ lateral

l. Is there any part of a sewage disposal system(s)or other potential sources of pollution that may pose a health and safety risk within 30 m? ☐ Yes ☐ No

m. Is the well located within 300 m from a sewage lagoon or pit? ☐ Yes ☒ No

n. Is the well located within 120 m from a solid waste site or dump, cemetery? ☐ Yes ☒ No

o. Is the infrastructure protecting the wellhead, pumphouse, storage tank and/or water treatment plant designed and secured to prevent:

Unauthorized access by humans? ☒ Yes ☐ No Inside locked building Entrance by animals? ☐ Yes ☒ No Access possible

p. Is well site subject to flooding? ☐ Yes ☒ No

q. Is the well site well drained? ☒ Yes ☐ No

r. Is there a buried fuel tank on the property? ☐ Yes ☐ No

If yes, is it ☐ in use ☐ abandoned

Is the location known? ☐ Yes ☐ No

Distance from the well to known buried tank _____

s. Are there any other known contaminant sources on the property?

☐ Yes ☐ No Describe _____

If yes, specify the source: ☐ dump ☐ sewage lagoon ☐ cemetery ☐ other

Potential Source 1:_____; Distance from well to Potential Source 1:_____

Potential Source 2:_____; Distance from well to Potential Source 2:_____

Potential Source 3:_____; Distance from well to Potential Source 3:_____

Potential Source 4:_____; Distance from well to Potential Source 4:_____

t. Are there other wells on this property? ☐ Yes ☐ No

How many?_____ ☐ in use ☐ abandoned ☐ require proper sealing

2. Well and Wellhead information:

a. When was well installed? Year unknown Month _____

b. Type: ☐ drilled ☒ dug ☐ sand point ☐ other _____

c. Is there a drillers log for the well: ☐ Yes ☐ No n/a

d. Is there a surface seal to 6 m ☐ Yes ☒ No ☐ unknown ☐ unlikely

e. Surface casing: ☐ Yes Diameter _____ ☒ No

f. Well casing: Diameter ~1 m Material: ☒ steel ☐ plastic ☐ concrete
galvanized steel culvert likely

g. Depth of well: 5.54 m bg ☒ measured (if possible) ☐ reported ☐ from log

h. Static water level below ground: 3.35 m bg

☒ measured (if possible) ☐ reported ☐ from log ☐ flowing

i. (If granular) Is the well completed: ☒ open end casing ☐ with a well screen

☐ with slotted pipe ☐ unknown other _____

j. (If bedrock) Does the well have a liner? ☐ yes ☐ No ☐ steel ☐ plastic

k. If there is a well screen: length n/a slot size(s) _____
Location of screen: from _____ to _____ from log reported

l. Is there a sump below the screen? ☐ Yes ☐ No n/a

m. Is the well head: ☐ in pumphouse ☐ in pit ☐ pitless adaptor ☒ in a building

☐ in a wooden enclosure other, describe _____

n. If the well head is located in a wooden enclosure,

i. Is the well head below grade? describe in detail No

ii. Are there signs of ponding on the enclosure(e.g. water stains, etc.)? ☐ Yes ☒ No

iii. Is the wellhead enclosed by fiberglass insulations? ☐ Yes ☒ No

iv. Any evidence of rodents? Specify Access possible

v. Does the well casing have a proper seal cap? ☒ Yes ☐ No

If no, describe condition lid over well, but there are open holes for drop pipe

3. Water Supplying This Well:

a. By definition is the water from a surface water source or under the direct influence of surface water?

☒ Yes ☐ No ☐ farther investigation required.

If yes is there treatment or disinfection ☐ Yes ☐ No n/a

Explain (filtration, disinfection etc…)

---

4. Aquifer Supplying This Well:

a. The aquifer is: ☐ bedrock ☒ granular sediment ☐ unknown

b. Does water level and/or well capacity show seasonal fluctuation? ☐ Yes ☐ No unknown

5. Pump Installation:

a. Is the well equipped with a pump? ☒ yes ☐ No

b. Type of pump: ☐ hand ☐ electric submersible ☒ jet No longer in use

☐ shallow well centrifugal ☐ other,

c. Description: Manufacturer _____ Model _____

horsepower _____ capacity _____ voltage _____

d. Date installed: _____ By: _____

e. For submersible pump, depth of setting below surface n/a

f. Drop pipe for submersible pump: ☒ steel ☐ plastic

g. Pump delivers water to: ☒ pressure tank ☐ elevated tank ☐ other

h. Are there automatic pump controls: ☐ Yes ☒ No

i. Is there provision for taking water samples before water reaches storage? ☐ Yes ☒ No

j. Is there a water meter on the system? ☐ Yes ☒ No

k. Is the pump and piping protected from freezing? ☒ Yes ☐ No

If yes, describe: located inside heated building

l. Comments on pump installation: _____

6. Conclusions

a. Comments on overall installation:

This is a dug well. This well is no longer in use. The maintenance garage is supplied by the well in the living complex.

b. Recommendations: _____

PART B: EBA Site Inspection

Inspector: BERT ALBASSER Date AUG 18/05

WELL ID #	Owner	Location Description
2661	YTG.	OGILVIE GRADER STATION

6. **Water Treatment** THIS SYSTEM IS NO LONGER IN SERVICE!

a. Is well water treated? ☐ Yes ☑ No; Type of treatment:

☐ chlorination ☐ iron and or manganese removal ☐ other _____

b. Is water entering plumbing or piped distribution system treated with chlorine or another treatment that is as effective as chlorine used to achieve disinfection throughout the system?

☐ Yes ☑ No If so how _____

c. If treated with chlorine, is the free residual chlorine concentration less than 0.2 mg/L

☐ Yes ☑ No _____ reading.

Tested at _____ (location)

d. Is testing for chlorine residual concentration done at the tap (eg. Kitchen faucet) or from representative points in a piped distribution system, including a point from tap at the end line

☐ Yes ☑ No If yes how often? _____

e. If the drinking water is being transported by water delivery truck does it have a minimum chlorine free residual of 0.4 mg/L at the time of fill. ☐ Yes ☑ No

7. **Water Quality (observations):**

a. Does the water stain plumbing? ☐ yes ☐ No ☐ slight ☐ severe

Type of stain: ☐ brown ☐ red ☐ black

b. Does the water contain sediment? ☐ Yes ☐ No ☐ occasional ☐ constant

c. Is there an unpleasant odour? ☐ Yes ☐ No ☐ H_2S ☐ Other _____

d. Is there an unpleasant taste? ☐Yes ☐No ☐brackish ☐ Other _____

e. Is there a history of bad bacterial analyses? ☐ Yes ☐ No

f. Is there a chemical analysis? ☐ Yes ☐ No ☐adequate ☐ incomplete

g. Is there analysis of trihalomethanes (THMs) where the water source is a surface water supply or a well under the direct influence of surface water? ☐ Yes ☐ No

h. Is the drinking water tested daily with an accurate reading chlorine test kit capable of reading in the range 0 to 3.5 mg/L of free chlorine residual in increments of 0.1mg/L? ☐ Yes ☐ No ☐ unknown

i. If yes is the test performed in accordance with manufactures directions? ☐ Yes ☐ No ☐ unknown

j. Is a record of the date, time,name of person performing the test and results of the drinking water sample kept? ☐ Yes ☐ No

TANK AND PIPING DETAILS

Tank Room

Is there a water tank? Yes No Details:

Where is it located?
Comments: _____

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YES NO
Comments:_____

Are there windows in the add-on that may allow direct sunlight onto the water holding tank? YES NO

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What are the tank size and dimensions?

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Comments: _____

Is there any sediment or scum in bottom of tank? YES NO
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Is there any odour associated with the water or tank? YES NO

Have there been any bacteriological analyses conducted previously? YES NO

Does the tank appear that it has been cleaned recently? YES NO

Are the tanks easily assessed for the purpose of cleaning and disinfection? YES NO

8. Conclusions

a. Comments on overall installation:

THIS SYSTEM IS OBSOLETE.

b. Recommendations:

REMOVE EQUIPMENT AND DECOMMISSION THE WATER WELL

Environment Canada Environnement Canada

Enforcement and Emergencies Section
91782 Alaska Highway, Whitehorse, YT Y1A 5B7
PH: 867.667.3400 FAX: 867.667.7962

Spill Report Information

Spill #	9851
Jurisdiction	Yukon
Community	
Address	
Highway	Dempster Highway
Milepost	KM 197
Feature	Ogilvie River
Location and Cause	Quarry site on right hand side - Ogilvie River flooded banks due to high rainfall event - stock pile washed into river
Latitude	65.38021979
Longitude	-138.29201973
Incident Date	6/22/1998
Lead Agency	Department of Indian Affairs and Northern Development
Other Agency	
Company(s)	YTG Highways
Amount	220
Units	Tonnes (Metric)
Quantity	Actual
Release Description	Flooded
Additional Quanitit	
Concentration	
Concentration Unit	
Phase	Solid
Major Contaminant	Calcium Chloride
2nd Contaminant	
3rd Contaminant	
4th Contaminant	
Outcome	river came down old channel and washed entire stock pile into river - no fish kill observed - no residues downstream - new stock pile moved above new high water mark

Photo 206: 2661 Ogilvie grader station.

Photo 205: 2665 Ogilvie living complex.

Photo 210: 2665 Fueling station.

Photo 213: 2665 On site sewage disposal for grader station.