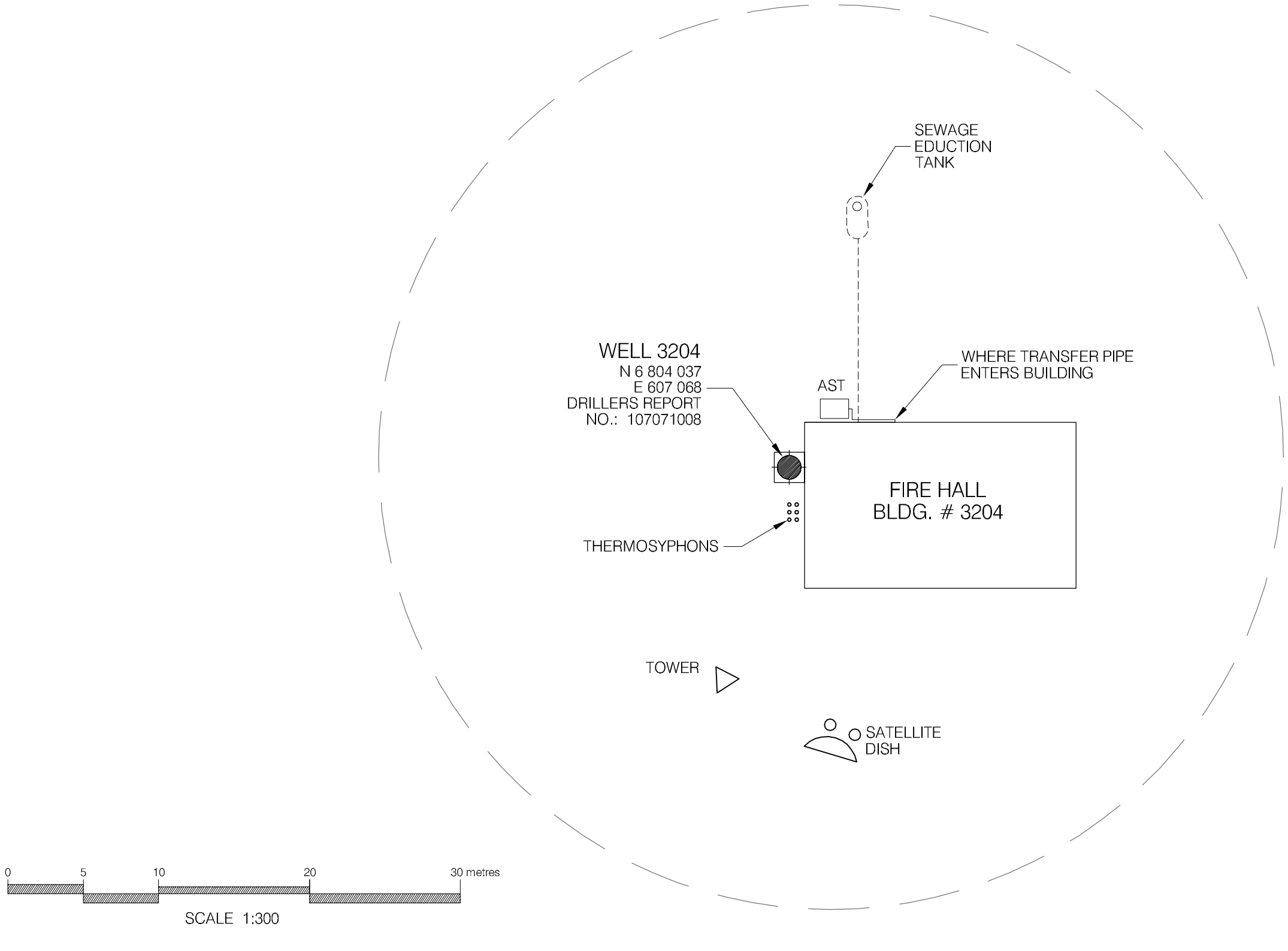


NOTES:

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.

BUILDING STRUCTURES RELATIVE TO PROPERTY LINES ARE APPROXIMATE ONLY.

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:	AUG. 2005
SCALE:	AS SHOWN
PROJECT No.:	1260002.003
ACAD FILENAME:	003-WESTERN REGION

CLIENT:

Yukon
Highways and Public Works
Property Management Branch

SMALL PUBLIC WATER SYSTEMS ASSESSMENT
WESTERN REGION

GOVERNMENT OF YUKON
HIGHWAYS & PUBLIC WORKS

BURWASH LANDING FIRE HALL
BUILDING # 3204
SITE LOCATION DIAGRAM
WELL ID: 3204

REVISION ISSUE 0

FIGURE No. FIGURE 3204-A

Z:\0201Drawings\1260002 Water Assessment YTG\003 -Western Region\burwash\1260002 B Landing Fire Hall_3204B Site Plan.dwg, 8/11/2005 2:40:31 PM, Adobe PDF

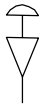
LEGEND


PUMP


PRESSURE GAUGE


GATE VALVE


CHECK VALVE

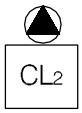

SOLENOID

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

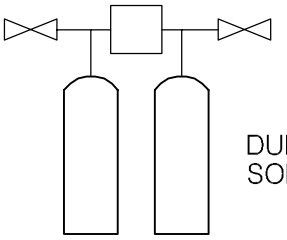
FLOW METER

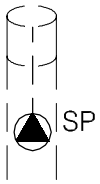
WATER FILTER
(CARTRIDGE TYPE)

PRESSURE TANK

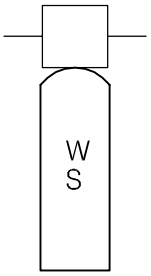


CHLORINE RESERVOIR AND
INJECTION PUMP


DUPLEX WATER
SOFTENER

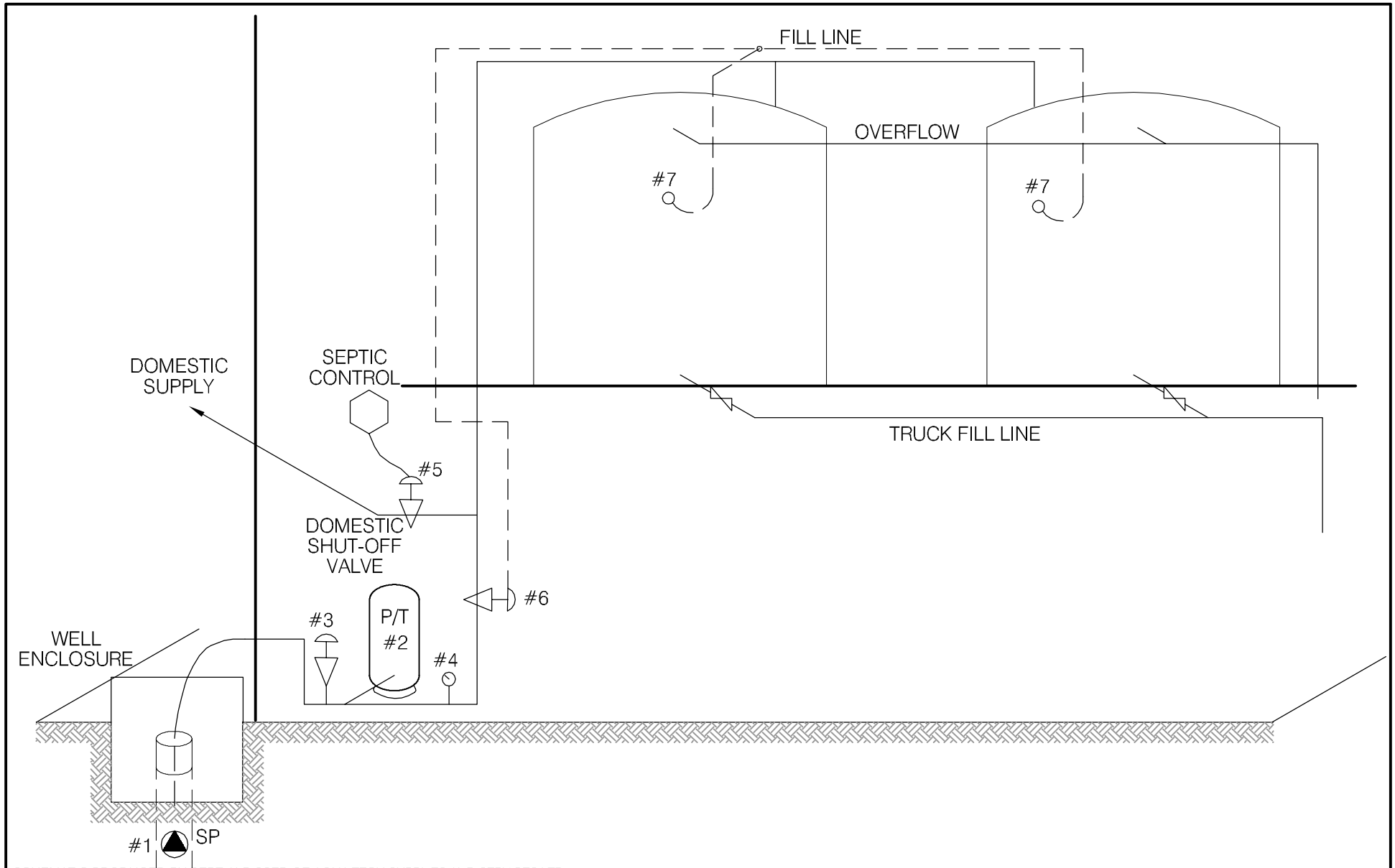


WELL WITH
SUBMERSIBLE PUMP



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



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

EBA Engineering Consultants Ltd.			PROJECT	SMALL PUBLIC WATER SYSTEMS ASSESSMENT WESTERN REGION	
CLIENT Yukon Highways and Public Works Property Management Branch			TITLE	WATER SYSTEM DISTRIBUTION/TREATMENT SCHEMATIC SYSTEM ID.: 3204 BURWASH LANDING FIRE HALL	
DATE SEPT. 2005	DWN. JSB	CHKD. RMM	FILE NO. 1260002.003		DWG.: FIGURE 3204-B

Z:\0201Drawings\1260002 Water Assessment YTG\003 -Western Region\burwash\1260002 B Landing Fire HalL_3204B Schematic.dwg, 4/4/2006 1:40:49 PM, Adobe PDF, jbuyck

Western Region – Burwash Firehall
Building # 3204

DISTRIBUTION & TREATMENT SYSTEM DATA

Item	Description	Manufacturer	Model	Part No.	Serial No.	Size
1	SUB PUMP	GRUNDFOS	15SQE07B		P10105	3" - 3/4HP
2	PRESSURE TANK	CON-AIRE	SCA80-P		N88	
3	PRESSURE SWITCH	SQUARE D	FSG-2			2" - 1/4" NPT
4	PRESSURE GAUGE	MARSH	0-100 PSI			2" - 1/4" NPT
5	PUMP SHUTOFF	JOHN'S SALES	SEPTIC CONTROL		ASCO 1"	SOLENOID
6	TANK FILL CONTROL		S211AF02N5FG9E			1"S/VALVE
7	FILL FLOAT CONTROL	SJE	PUMPMASTER PUMPUP			115/230V
8						
9						
10						

TABLE 3204- 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?
3204	Burwash Landing Fire Hall	9	Sept-04 to Jun-05	no	0/9	no	16-Jun-05	no

Table 3204-2: Water Quality Results

SOURCE:	Building 3204 - Burwash Landing Fire Hall			GCDWQ Criteria		
Location/ Resident	Burwash Landing					
Address						
Treatment	None					
Disinfection	None					
Source of Water	On-site well					
Purpose of Sampling	Base Line	Base Line	Additional Analytical			
Sample Location			Washroom tap			
Date Sampled	21-Sep-04	15-Jun-05	28-Jul-05	**Lower**	**Upper Limit**	
Physical Tests *(ALS)*				**AO**	**MAC**	**AO**
Colour (CU)	10	<5.0	-			15
Conductivity (uS/cm)		365	-			
Total Dissolved Solids	206	218	-			500
Hardness CaCO3	115	117	-	AO >200 = poor, > 500 unacceptable[A]		
pH	8.38	8.26	-	6.5		8.5
Turbidity (NTU)	**9.8**	**11.1**	**4.01**		1	5
UV Absorbance			0.0700			
% UV Transmittance			85.1			
Dissolved Anions *(ALS)*						
Alkalinity-Total CaCO3	148	165	-			
Chloride Cl	1.2	1.15	-			250
Fluoride F	0.18	0.257	-		1.5	
Silicate SiO4			-			
Sulphate SO4	42.2	39.0	-			500
Nitrate Nitrogen N	0.1	<0.10	-		10	
Nitrite Nitrogen N	<0.05	<0.10	-		3.2	
Ammonia Nitrogen N			-			
Total Phosphate PO4			-			
Total Metals *(ALS)*						
Aluminum T-Al	0.047	0.017	-			
Antimony T-Sb	<0.0002	<0.00050	-		0.006	
Arsenic T-As	*0.0055*	0.00432	-		0.025	
Barium T-Ba	0.018	<0.020	-		1	
Boron T-B	0.504	0.41	-		5	
Cadmium T-Cd	<0.00001	<0.00020	-		0.005	
Calcium T-Ca		22.0	-			
Chromium T-Cr	0.0006	<0.0020	-		0.05	
Copper T-Cu	0.017	0.0034	-		1	
Iron T-Fe	**0.45**	0.154	-			0.3
Lead T-Pb	0.001	<0.0010	-		0.01	
Magnesium T-Mg		15.0	-			
Manganese T-Mn	**0.059**	0.0467	-			0.05
Mercury T-Hg		<0.00020	-		0.001	
Potassium T-K		2.79	-			
Selenium T-Se		0.0014	-		0.01	
Sodium T-Na	34.4	37.2	-			200
Uranium T-U	<0.0005	0.00015	-		0.02	
Vanadium T-V			-			
Zinc T-Zn	0.011	<0.050	-			5
Organic Parameters						
Tannin and Lignin			0.31			
Total Organic Carbon C			11.6			
Field Chemistry (EBA)						
pH			Undetectable due to turbulence	6.5		8.5
TDS (ppm)						500
EC (uS/cm)						
Temperature (°C)						
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)

eba

SMALL PUBLIC WATER SYSTEM ASSESSMENT

PART A: EBA Site Inspection

Inspector: Ryan Martin, Luke Lebel Date July 28, 2005

WELL ID #	Owner	Location Description
3204	YTG	Burwash FireHall

1. Well Location and Potential Contaminant Sources

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

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

c. GPS location: N 6804037 E 607068 el. 808m ±8m

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_____
Burwash Landing Fire Hall

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

g. Nearest building, specify Located in enclosure off from basement

h. Distance from well to building 1m - in add-on to building
likely constructed at same time as building

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

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

k. Well location relative to field: ☐ upslope ☐ downslope ☐ lateral
WELL IS UPSLOPE OF SEWAGE EDUCTION TANK

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

sewage eduction tank @ 15 m

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

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 above ground AST heating oil tank

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 _____ Month _____

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

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

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

e. Surface casing: ☐ Yes Diameter _____ ☑ No

f. Well casing: Diameter _____ Material: ☐ steel ☐ plastic ☐ concrete

g. Depth of well: >39.15 ☐ measured (if possible) ☐ reported ☐ from log
↳ MAY BE PUMP

h. Static water level below ground: 6.10m

☒ 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 _____ 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
↳ building add-on - put in aluminum siding - put plywood floor

☑ 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 _____

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 None

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

If no, describe condition _____

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
↳ based on hydrogeology of area

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

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 _____ } see Bert's Notes

d. Date installed: _____ By: _____

e. For submersible pump, depth of setting below surface _____

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: insulated add-on beside building

l. Comments on pump installation: _____

6. Conclusions

a. Comments on overall installation:

below grade and lacking surface seal, however; based on lithology → silt & till, likely tight bond between casing and formation; otherwise - installation is good.
Note: strong sulphur odour & off gassing of water, likely SO_2 - perhaps caused by biofouling

b. Recommendations: _____

PART B: EBA Site Inspection

Inspector: BERT ALBISSER Date _____

WELL ID #	Owner	Location Description
3204	YTG	BURWASH LANDING FIRE HALL

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 TANK.

Where is it located?
Comments: MECHANICAL ROOM. FIRE STORAGE UPSTAIRS

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?

2 X 1250 87 ϕ X 65" H.

What material is the tank constructed of? POLYETHELYNE

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:

OVERALL INSTALLATION IS ACCEPTABLE WITH THE FOLLOWING EXCEPTIONS.
FILL PIPING IS LOOSE.
PUMP HEAT TRACE INSTALLATION DOES NOT MEET CODE.

b. Recommendations:

INSTALL WATER TREATMENT AS REQUIRED BY WATER ANALYSIS FOR UV PRETREATMENT.
INSTALL UV FOR DOMESTIC WATER SUPPLY AT ONCE. UV MUST MEET (NSF 55 CERTIFICATION)
INITIATE BI ANNUAL WELL MAINTENANCE PROGRAM.
INITIATE REGULAR CLEANING SCHEDULE FOR FICE STORAGE TANKS.

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 #	9846
Jurisdiction	Yukon
Community	Burwash Landing
Address	
Highway	
Milepost	
Feature	Burwash Landing
Location and Cause	Burwash Landing Garage - Burwash Fuels - valve left on on 10,000 ga fuel storage tank
Latitude	61.358
Longitude	-139.0065
Incident Date	11/10/1998
Lead Agency	Yukon Government - Fire Marshall
Other Agency	
Company(s)	
Amount	1000
Units	Gallons (US, liquid)
Quantity	Estimate
Release Description	Spilled
Additional Quanitit	
Concentration	
Concentration Unit	
Phase	Liquid
Major Contaminant	Diesel
2nd Contaminant	
3rd Contaminant	
4th Contaminant	
Outcome	fuel running down road 1/4 mile towards Lodge - not threatening lake - Ollie to put 'speedy dry' on spill tomorrow - is on frozen ground - YG-FM to investigate further

Photo 0581: 3204 Burwash Landing Fire Hall. Note: well enclosure on (right), AST (middle), septic (front).

Photo 0585: 3204 Water storage tanks

Photo 0577: 3204 Pressure tank.