



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

 EBA Engineering Consultants Ltd.		PROJECT SMALL PUBLIC WATER SYSTEMS ASSESSMENT EASTERN REGION	
CLIENT 		TITLE WATER SYSTEM DISTRIBUTION/TREATMENT SCHEMATIC SYSTEM ID.: 1955 MOUNTE LORNE FIRE HALL - WELL ID.: 1955	
DATE	JULY 2005	DWN.	JSB
CHKD.	RMM	FILE NO.	1260002.002
		DWG.:	FIGURE 1955B

Whitehorse Region – Mount Lorne Firehall
Building # 1955

DISTRIBUTION & TREATMENT SYSTEM DATA

Item	Description	Manufacturer	Model	Part No.	Serial No.	Size
1	4" SUB. PUMP	?	?			4" - 2 HP.
2	PRESSURE TANK	CHALLENGER	PC266			
3	FLOAT CONTROL	MC CONNELL	# 21			3/4"
4	PRESSURE SWITCH	SQ. D.	FSG 2			1/4" FIPT
5	PRESSURE GAUGE	MARSH	0-100			1/4 HIPT
6						
7						
8						
9						
10						

TABLE 1955 - 1: SUMMARY OF BACTERIOLOGICAL RESULTS

		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?
Building #	Building Name							
1955	Mount Lorne Firehall	6	Sept-04 to Mar-05	no	0/6	no	2-Feb-05	no



Table 1955-2: Water Quality Results

SOURCE:		Building 1955 - Mount Lorne Firehall		GCDWQ Criteria		
Location/ Resident Address		Mount Lorne				
Treatment		No				
Source of Water		On-Site Well				
Purpose of Sampling		Baseline	Additional Sampling			
Sample Location		Kitchen Tap	Kitchen Tap			
Date Sampled		4-Oct-04	19-May-05	Lower Limit		Upper Limit
Physical Tests (ALS)				AO	MAC	AO
Colour (CU)	5					15
Conductivity (uS/cm)	301					
Total Dissolved Solids	220					500
Hardness CaCO3	206			AO >200 = poor, > 500 unacceptable ^A		
pH	8.0			6.5		8.5
Turbidity (NTU)	0.8				1	5
UV Absorbance		0.0073				
Dissolved Anions (ALS)						
Alkalinity-Total CaCO3	177					
Chloride Cl	<1					250
Fluoride F	0.17				1.5	
Sulphate SO4	32					500
Nitrate Nitrogen N	0.1				10	
Nitrite Nitrogen N	0.11				1	
Ammonia Nitrogen N						
Total Metals (ALS)						
Aluminum T-Al	<0.02					
Antimony T-Sb	0.0008				0.006	
Arsenic T-As	<0.0004				0.025	
Barium T-Ba	0.0318				1	
Boron T-B	<0.02				5	
Cadmium T-Cd	<0.0002				0.005	
Calcium T-Ca	62.1					
Chromium T-Cr	<0.0008				0.05	
Copper T-Cu	0.016				1	
Iron T-Fe	0.131					0.3
Lead T-Pb	0.0012				0.01	
Magnesium T-Mg	9.6					
Manganese T-Mn	0.004					0.05
Mercury T-Hg	<0.0002				0.001	
Potassium T-K	1.3					
Selenium T-Se	<0.0004				0.01	
Sodium T-Na	4					200
Uranium T-U	0.0028				0.02	
Zinc T-Zn	0.019					5
Field Chemistry (EBA)						
pH		7.70		6.5		8.5
TDS		181				500
EC (uS/cm)		358				
Temperature		15.9				
Free Available Chlorine						250

Notes:

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

Shading indicates exceedence of Proposed MAC guideline (arsenic).

Bold Underline with Yellow shading 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)



**Table 1955-3: Summary of Well Assessment Results
SMALL PUBLIC DRINKING WATER SYSTEMS**

Well Identification and Location					
Building #	Building Name	Location	Northing (+/- 10 m)	Easting (+/- 10 m)	Grade Elevation (+/- 10 m)
1955	Mount Lorne Firehall	Robinson Subdivision	6704424	507749	784

Well Details							
Well Casing Diameter (mm)	Year Well Installed	Well Log?	Well Depth (m bg)	Reported Low Permeability Protective Layer?	Pump Setting (m bg)	Well Capacity - Tested, or Reported by User	Static Water Level Below Ground (m-btwc)
Unknown	?	No	?	?	?	?	?

Well Construction Details				
Wellhead Above ground (m)	Well Cap	Well Screen	Surface Seal	Apron Grading
Greater than 0.85m below ground	?	?	Unlikely	Slopes towards pit



**Table 1955-4: Potential Contaminant Sources
Building 1955 – Mount Lorne Fire Hall**

Potential Contaminant Source	Potential Contaminants	Distance from Water Source	Northing	Easting
Dump or Landfill	<i>Organic</i> and inorganic chemicals.	180 m		
Cemetery	<i>Biological</i> ¹ , inorganic ² and organic parameters.	>120 m		
Sewage lagoon	<i>Biological</i> , inorganic and organic parameters.	>300 m		
Sewage lines, tanks and lift stations	<i>Biological</i> , inorganic and organic parameters.	Approx. 26 m		
Septic fields	<i>Biological and Inorganic</i> parameters.	30 m	6704391	507729
Gas stations	<i>Organic and Inorganic</i> parameters.	>>30 m		
Undergrounds Fuel Storage Tanks (USTs)	<i>Organic</i> parameters.	>>30 m		
Above ground storage tanks (ASTs)	<i>Organic parameters.</i>	N/A		
Naturally occurring sources of contamination	<i>Radionuclides, Bacteria and Viruses from surfacewater sources.</i>	>150 m		

Notes: *Bold highlighting of distances indicates non-compliance with proposed guidelines*

1- Biological parameters include: bacteria, viruses, protozoa (parasitic organisms), helminthes (intestinal worms), and bio aerosols (inhalable moulds and fungi).

2 – Inorganic contaminants could include arsenic in embalming chemicals (prior to early 1900's), and heavy metals in caskets.

Required Setback Distances Draft Guidelines for Part III – Small Public Drinking Water Systems:

300 m (1,000 ft) from a sewage lagoon or pit and manure heaps

120 m (400 ft) from a solid waste dump or a cemetery

30 m (100 ft) from any other potential source of contamination

SMALL PUBLIC WATER SYSTEM ASSESSMENT

PART A: EBA Site Inspection

Inspector: Ryan Martin
Luke Label

Date May 19, 2005

WELL ID #	Owner	Location Description
<u>1965</u>	<u>YTG</u>	<u>Mount Lorne Firehall</u>

1. Well Location and Potential Contaminant Sources

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

Robinson Subdivision

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

Mount Lorne Firehall

c. GPS location: 507749 Easting 6704427 Northing 784m elevation ± 13m

d. Is there electric power? Yes No

e. Does the well system have:

15 or more service connections to a piped distribution system? If so how many _____
Mount Lorne Firehall

5 or more delivery sites on a trucked distribution system? If so how many _____

f. Nearest building, specify Mount Lorne Firehall

g. Distance from well to building 4.5m

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

i. Distance from well to nearest point of known field: ~30m

j. Well location relative to field: upslope downslope lateral

123
180
240
283

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k. 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

Septic Tank ~ 30m away. Field begins ~ 2m after that

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

m. Is the well located within 120 m from a solid waste site or dump, cemetery? Yes No
Solid waste dump 180m away

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

Unauthorized access by humans? Yes No
unfastened lid. No lock

Entrance by animals? Yes No
No evidence of animals. Access possible

o. Is well site subject to flooding? Yes No

Extremely serious flooding. Well head is inaccessible due to sediment carried down by flooding

p. Is the well site well drained? Yes No

q. Is there a buried fuel tank on the property? Yes No unlikely

If yes, is it in use abandoned

Is the location known? Yes No

Distance from the well to known buried tank _____

r. 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: Dump; Distance from well to Potential Source 1: 2180m refuse @ 123m

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: _____

s. Are there other wells on this property? Yes No

How many? _____ in use abandoned require proper sealing

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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
Unknown due to sediment and flood damage.
- * g. Depth of well: _____ measured (if possible) reported from log
- * h. Static water level below ground: _____
 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
Inside wood (puff exterior) and insulated pit.
 in a wooden enclosure other, describe _____
- n. If the well head is located in a wooden enclosure,

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- i. Is the well head below grade? describe in detail > 85cm below grade, Inaccessible due to flood damage/sediment
- ii. Are there signs of ponding on the enclosure (e.g. water stains, etc.)? Yes No
Very very serious flood damage, sediment carried down by flooding enough to bury all piping and well head, sheet piling walls (non-pvt). Evidence of water damage to insulation plywood insulation
- iii. Is the wellhead enclosed by fiberglass insulations? Yes No
However, evidence that it is quite wet
- iv. Any evidence of rodents? Specify Unknown No evidence. May have been covered by flood damage
- v. Does the well casing have a proper seal cap? Yes No
unknown due to flood damage
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 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

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 _____

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*d. Date installed: _____ By: _____

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

f. Drop pipe for submersible pump: steel plastic
unknown due to flood damage

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
unknown

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

k. Is the pump and piping protected from freezing? Yes No
unknown due to flood damage

If yes, describe: _____

l. Comments on pump installation: _____

6. Conclusions

a. Comments on overall installation:

b. Recommendations: _____

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PART B: EBA Site Inspection

Inspector: _____

Date May 31/05

WELL ID #	Owner	Location Description
<u>1955</u>	<u>VTG.</u>	<u>MOUNT LORNE FIREHALL</u>

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 H₂S Other _____

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- 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: UPSTAIRS IN FIRE HALL

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: _____

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Overall Tank

What are the tank size and dimensions?

2 x AG 1250 1250 Gallon EACH.

What material is the tank constructed of? FIBRE GLASS.

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 ABOVE TANK LIC

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

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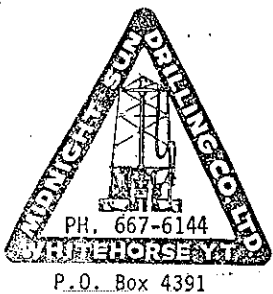
8. Conclusions

a. Comments on overall installation:

REASONABLY GOOD INSTALLATION.
TANK OVERFLOW IS ABOVE TANKS - TANKS
WILL OVERFLOW INTO BUILDING.

b. Recommendations:

INSTALL IN LINE COMMERCIAL FILTER
ON LINE FROM WELL PUMP. INSTALL
CHLORINATOR BETWEEN FILTER &
PRESSURE TANK.
LOWER OVERFLOW LINE TO TOP OF
TANK LEVEL, AND EXTEND OVERFLOW
LINE TO GROUND LEVEL. SCREEN
OVERFLOW PIPE



FIELD REPORT

W-1959

Started. Nov. 14... 1994

Completed. Nov. 18... 1994

filled ✓

NAME AND ADDRESS OF CLIENT	DESCRIPTION OF WORK	LOCATION OF WORK
Laywire Industrial Company	W/W	Fire Hall Robinson Subdiv.

FORMATION LOG			DESCRIPTION OF WORK	TIME			
FROM	TO	FORMATION		DATE	FROM	TO	HOURS
			MOVE				
			Loading	Nov. 14	8:00	9:00	1
			move on set up	"	9:00	11:30	2.5
2	7	silt		"	11:30	5:00	5.5
7	10	Gr. sand.					
0	22	fine sand					
2	46	fine sand some Gr.					
6	71	Gr. sand					
1	97	Gr. silt sand					
7	114	Gr. sand some silt					
			crew travel	"	5:00	6:00	1
			crew travel	Nov. 15	8:00	9:00	1
			set screen	"	9:00	10:30	1.5
			Develop	"	10:30	1:00	2.5
			move off to shop	"	1:00	2:30	1.5

rd. of Casing & Pipe	Type	Size	Type	Remarks:
1/2	Inch	Feet	Inch	30-GPM
2				1- drive shoe
				20 slot screen
				2' riser K Packer
				5/8" bit Pin

STATIC LEVEL	Total Rig Time	hrs.
Ground level 60'	Total Standby	hrs.
Top of casing	Drilling Mud	sacks

SIGNATURES

MIDNIGHT SUN..... CLIENT.....
 TITLE..... TITLE.....



Photo 0192: 1955 Well Head Enclosure



Photo 0191: 1955 Well Head



Photo 0193: 1955 180 Meters to Landfill Site



Photo 0194: 1955 Septic Field



Photo 0018: 1955 Hot Water Tank (left) and Pressure Tank (right)



Photo 0021: 1955 Water Storage Tanks



Photo 0020: 1955 Fill Control



Photo 0022: 1955 Storage Tank Piping