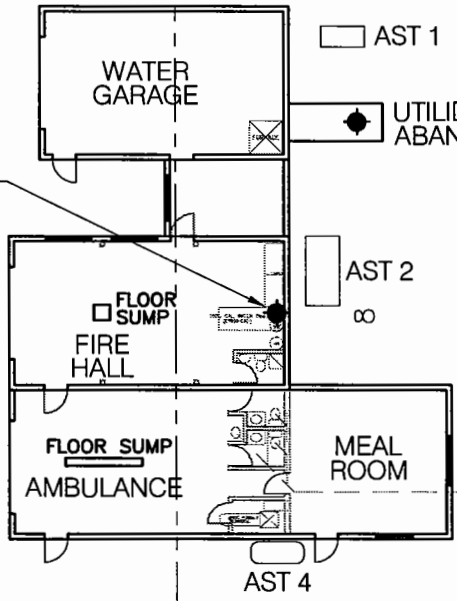


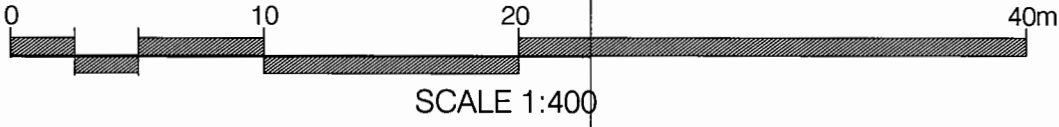
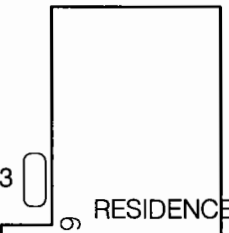
FOURTH STREET

ROAD

WELL 1137
 N 6 670 070
 E 516 069
 DRILLERS REPORT
 NO. 204020023



DOMESTIC FUEL OIL STORAGE - GASOLINE & OIL (JERRY CANS, QUARTS OF OIL & MISC. HYDROCARBON SOURCES)



NOTES:
 1. UTM COORDINATES OBTAINED WITH A HAND HELD GPS USING NAD83 SYSTEM AND ARE CONSIDERED TO BE ACCURATE TO 10.0 m, APPROXIMATELY.
 2. LOCATIONS OF BUILDINGS & STRUCTURES ON THIS PROPERTY ARE APPROXIMATE ONLY.

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: JUNE 2005
 SCALE: AS SHOWN
 PROJECT No.: 1260002.001
 ACAD FILENAME: 001-WHITEHORSE REGION

CLIENT:

 Highways and Public Works
 Property Management Branch

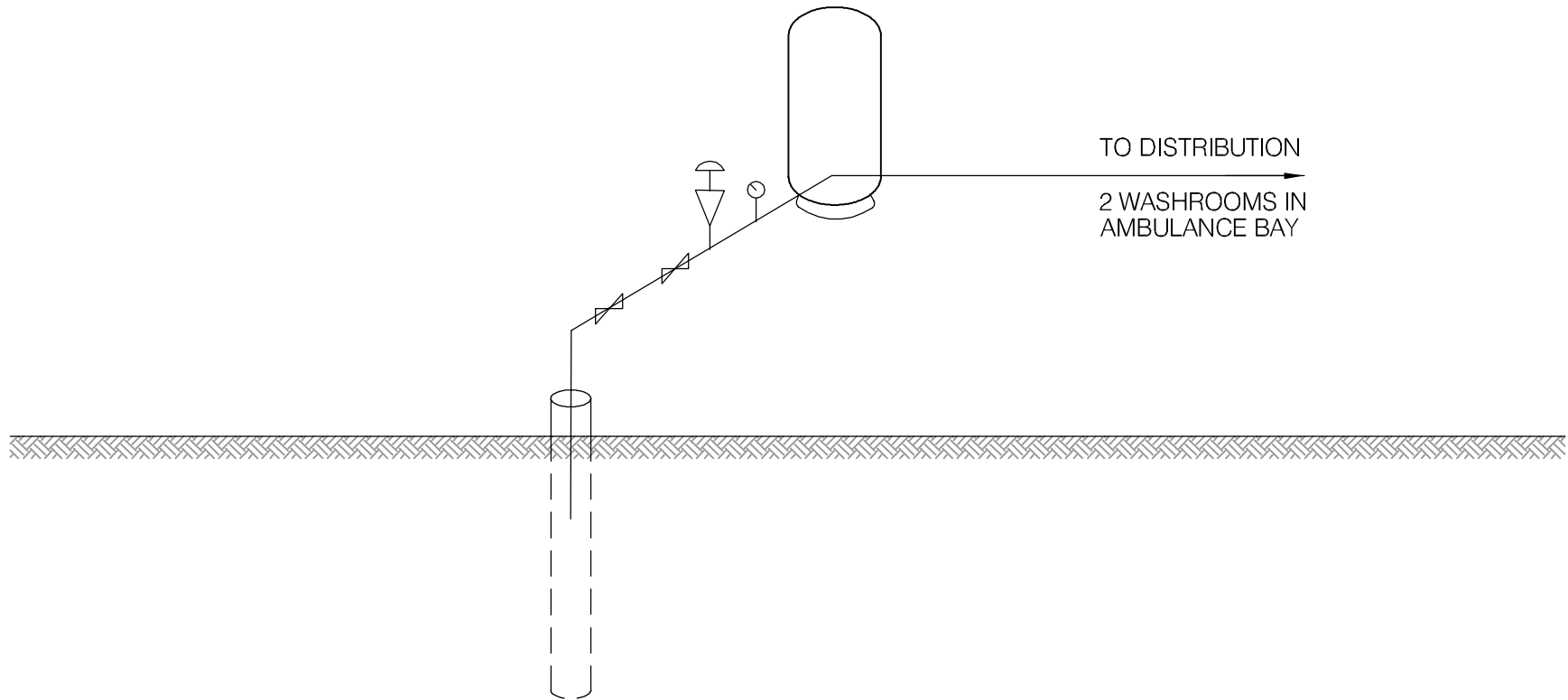
SMALL PUBLIC WATER SYSTEMS ASSESSMENT
 WHITEHORSE REGION

GOVERNMENT OF YUKON
 HIGHWAYS & PUBLIC WORKS

CARCROSS FIRE HALL
 BUILDING 1137
 SITE LOCATION DIAGRAM
 WELL ID: 1137

REVISION ISSUE
 0

DRAWING No.
 FIGURE 1137A



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



EBA Engineering Consultants Ltd.

PROJECT

SMALL PUBLIC WATER SYSTEMS ASSESSMENT
WHITEHORSE REGION

CLIENT



TITLE

WATER SYSTEM DISTRIBUTION/TREATMENT
SCHEMATIC SYSTEM ID.: 1137
CARCROSS FIRE HALL BUILDING

DATE APRIL 2006

DWN. JSB

CHKD. RMM

FILE NO. 1260002.001

DWG.: FIGURE 1137B

Whitehorse Region – Carcross School
Building # 1134

DISTRIBUTION & TREATMENT SYSTEM DATA

Item	Description	Manufacturer	Model	Part No.	Serial No.	Size
1	Pump #1 Well	GRUNDFOS				1 HP.
2	Pump #2 Well	JACUZZI				2 HP.
3	Pump #1 (Potable)	MONARCH	JKC-53		1191	3/4 HP
4	Pump #2 (Potable)	MONARCH	MJS-75		5102	3/4 HP
5	Pressure Tank	MONARCH	FG42			42 Gallon
6	Storage Tank	CUSTOM				6 ^W FT x 3 ^H x 12 ^L
7	Pressure Tank	MONARCH	M-302			
8						
9						
10						

TABLE 1137 - 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?
1137	Carcross Firehall	9	Sept-04 to Mar-05	no	0/9	no	2-Mar-05	no



Table 1137-2: Water Quality Results

	SOURCE:		Building 1137 - Carcross Fire Hall		
Location/ Resident			Carcross		
Address			Lot 7 Block 3		
Treatment			No		
Source of Water			On-Site Well		
Purpose of Sampling	Baseline		Additional Sampling		
Sample Location			Laundry Sink		
Date Sampled		11-May-05	Lower Limit	Upper Limit	
Total Metals (ALS)			AO	MAC	AO
Arsenic T-As		0.0193		0.025	
Field Chemistry (EBA)					
pH		8.02	6.5		8.5
TDS		195			500
EC (uS/cm)		381			
Temperature		8.6			

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 1137-3: 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)
1137	Carcross Fire Hall	Carcross	6670070	516069	665

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)
150	1976	Yes	104.6	Silt and Clay - 8m to 60m Till - 83m to 98m	64	1hp submersible pump Size of pump meets needs	?

Well Construction Details				
Above	Well Cap	Well Screen	Seal	Grading
0.12 above grade	Split Cap Gasket	1.2m of 80 slot 1.5m of 40 slot	Unlikely	Inside building



**Table 1137-4: Potential Contaminant Sources
Building 1137 – Carcross Fire Hall**

Potential Contaminant Source	Potential Contaminants	Distance from Water Source	Northing	Easting
Industrial Refuse	<i>Organic</i> and inorganic chemicals.	50 m		
Septic fields	<i>Biological and Inorganic</i> parameters.	Unknown		
Sewage lines, tanks or lift stations	<i>Biological, inorganic and organic parameters</i>	19 m		
Above ground storage tanks (ASTs)	<i>Organic parameters.</i>	2 m, 10 m, 10 m, 20 m		
Naturally occurring sources of contamination	<i>Arsenic in Groundwater and Radionuclides, Bacteria, Viruses from Surfacewater Sources</i>	Approx. 100 m to surfacewater		

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 Lebel

Date May 11, 2005

WELL ID #	Owner	Location Description
1137	YTS	Carcross FireHall

1. Well Location and Potential Contaminant Sources

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

Carcross, see Fig 1137-A

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

Carcross FireHall

c. GPS location: 516069 Easting 6670070 Northing 665 elevation ±11

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 _____
services the firehall

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

f. Nearest building, specify The well is located within the
garage of the Carcross Firehall

g. Distance from well to building _____

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

i. Distance from well to nearest point of known field: There are multiple septic holding
tanks nearby

j. Well location relative to field: upslope downslope lateral

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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

There are residential septic tanks within 30m

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

the well is ~50m from a junkyard and ~10m from a residential home with various old vehicles, fuel/oil storage tanks

n. 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
is located within the local volunteer fire dept w/ locked doors. Although inside, there is evidence (cobwebs, grime, ect.) that area is not cleaned regularly

o. Is well site subject to flooding? Yes No

p. Is the well site well drained? Yes No N/A

q. Is there a buried fuel tank on the property? Yes No There is a Buried Fuel Tank nearby (<120m) at the Carcross School
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: AST 2 ; Distance from well to Potential Source 1: ~2m

Potential Source 2: AST 1 ; Distance from well to Potential Source 2: ~10m

Potential Source 3: AST 3 ; Distance from well to Potential Source 3: ~20m

Potential Source 4: AST 4 ; Distance from well to Potential Source 4: ~10m

s. Are there other wells on this property? Yes No There are 2 wells, however, from the Carcross school within 120m of the well

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 No
Diameter _____
Located within firehall garage
- f. Well casing: Diameter 15cm Material: steel plastic concrete
- * 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 unlikely
- m. Is the well head: in pumphouse in pit pitless adaptor in a building
within a garage of the Carcross Fire Hall
 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 12cm above grade
- ii. Are there signs of ponding on the enclosure(e.g. water stains, etc.)? Yes No
There are mineral deposits from pipe leakage
- iii. Is the wellhead enclosed by fiberglass insulations? Yes No
It is, however, within the firehall
- iv. Any evidence of rodents? Specify There is no evidence of rodents
- v. Does the well casing have a proper seal cap? Yes No
The condition of it, however, is poor due to water leakage as there are mineral deposits and rust present.
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

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: The well is located inside of a heated and insulated

l. Comments on pump ^{building} installation: _____

6. Conclusions

a. Comments on overall installation:

The well is located in a garage where oil and other automotive
chemicals can potentially leak around the wellhead

b. Recommendations: _____

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PART B: EBA Site Inspection

Inspector: Bert Arnesen

Date May 11/05

WELL ID #	Owner	Location Description
1137	YTG	CARROSS FIRE HALL

6. Water Treatment

- WELL -

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 *NOT AVAILABLE*
- 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: Pressure Tank

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?

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 INSTALLATION IS NOT UP TO
STANDARDS.
THE WELL REQUIRES EXTENSIVE TREATMENT.
THIS SYSTEM CAN BE FED FROM THE
ATTACHED COMMUNITY WATER SYSTEM.

b. Recommendations:

ABANDON THE WELL, PUMP WATER
SUPPLY FROM ATTACHED COMMUNITY
WATER SYSTEM WHICH IS FILTERED
AND CHLORINATED.

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PART C Property Manager/ System Operator Questionnaire

Inspector: STARKY JACKSON Date May 10/05

Property manager: Carcross fire hall

1) Water Source:

- a. Is the well water the major source of drinking water? Yes No
- b. Is the well water used for other non-drinking purposes? Yes No

2) Well information:

a. When was your well installed? Year _____ Month _____

b. Type: drilled dug sand point other _____

c. Is there a driller's log for the well?: Yes No

d. Do you know the depth of your well? If so, please indicate: _____

e. Who was the well constructed by?

Indicate contractor's name: _____

f. Are you, the owner Yes or other: _____

g. Who maintains the well? VTG

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

How many? ____; Are they: in use abandoned require proper sealing

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

If yes, is it in use abandoned

Is the location known? _____

How was it abandoned? _____

3) Pump Installation

a. Who installed your pump, and when did they install it? _____

b. What type of pump do you have? 1 hp

c. Pump delivers water to: pressure tank elevated tank other _____

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4) Water Treatment

a. Is your well water treated? Yes No

Type of treatment: chlorination iron and or manganese removal
other _____

5) Well Capacity:

a. Well capacity: User's opinion adequate inadequate

b. Are there any times of year when your well goes dry, or does not produce enough water?

c. Has well capacity decreased since it was installed? Yes No

6) Water Quality:

a. In general, do you like your water?: yes no

b. Does the water stain household plumbing? yes No slight severe

Type of stain: brown red black

c. Does the water contain sediment? Yes No occasional constant

d. Is there an unpleasant odour? Yes No

Sulphur (rotten egg smell) Other _____

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

f. Hardness: Is it hard to lather with soap?: yes, very moderate no

g. Is water softener being used? Yes No

h. Are samples for bacterial analysis (coliforms) taken regularly? Yes No

If so, at what time intervals? _____

Who takes them? _____

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

j. Is there a chemical analysis? Yes No adequate incomplete

7) Do you have any overall comments or complaints about your water well system?

*Well is used for non potable water
only should not be used as drinking
water*



Photo 0123: 1137 Carcross Firehall Front View



Photo 0129: 1137 Well, Pressure Tank and Pump Controls



Photo 0124: 1137 Above Ground Storage Tanks Adjacent to Well



Photo 0125: 1137 Neighbouring Building with Mechanical Equipment, Fuel and Oil Storage (foreground), Commercial Junkyard (background)