

## **15.0 BUILDINGS M0126 AND M0127: WATSON LAKE RCMP RESIDENCE**

### **15.1 Description of Existing Water system**

Buildings M0126 and M0127, the Watson Lake RCMP Residences located at 4 and 5 Adela Trail, are served by a water system that delivers water from a 16.7 m deep well. The wellhead is located in a wooden enclosure off from the basement of the M0127 residence. The well location, and other site details are provided as Figure M0127-A in Appendix A15. The coordinates of the wellhead measured using a handheld GPS device were:

- UTM ZONE 9
- Northing: 6657683
- Easting: 518271

The water system is equipped with a water softener, but no disinfection. A schematic detailing the water system is provided as Figure M0127-B in Appendix A15.

### **15.2 Description of Existing Wastewater Systems**

There is a community septic field that is used communally by these two residences located approximately 35 m north of the M0127 well. Figure M0127-A, provided in Appendix A15, shows the location of the septic system.

### **15.3 Water Quality Results**

#### 15.3.1 Results from Water Quality Analysis

##### *Bacteriological*

Two samples collected from each building between May and June 2005 and were tested for total coliform and *E. coli* by Yukon Environmental Health Services using the presence/absence test method. Results are tabulated in Table M0127-1 in Appendix A15. Coliform bacteria and *E. coli* were reported as absent in each of the four samples for which results were provided.

### *Potability*

This site was only recently added as one of the YTG maintained facilities and as such baseline water quality was taken at the same time as the water system assessments. A YTG contractor took samples for baseline water quality.

Some additional samples were taken during the water system assessments in order to determine parameters relative to the predesign of a potential treatment system, and are summarized below:

- UV absorbance, as well as tannins and lignin, to determine potential for UV treatment as a disinfection option for this water system; and,
- TOC in order to determine the total organic carbon concentration to assist with treatment system selection.

Additionally, Measurements in the field for total dissolved solids, conductivity, pH, and temperature. Results of the baseline and additional analytical sampling are summarized in Table M0127-2 in Appendix 15 and the laboratory results are included in Appendix B.

- Water quality results indicate that the groundwater supplying this system is a calcium-bicarbonate type water with very high hardness; and,
- All health-based and aesthetic objectives were met for the additional parameters analyzed.

#### 15.3.2 Indicators of Potential Contamination

Chloride, nitrate and nitrite concentrations can indicate impacts from surface water sources or septic waste. Chloride, nitrate and nitrite concentrations in the sample obtained from this well were above the normal background ranges for groundwater in the Watson Lake Area area. It is possible that the aquifer from which the groundwater is obtained for the M0126 and M0127 Watson Lake RCMP Residences well system is under the influence of surface water sources or septic wastes.

## 15.4 Conceptual Hydrogeology

No log was available for this well. Most wells in the area are completed at depths of less than 30 m within surficial morainic and colluvial deposits. These deposits are described as gravel, sand and silt, with occurrences of silty till sediments. This well is completed at a depth of 16.71 m with a static water level of 8.6 m below grade. This well is situated on the north side of a groundwater flow divide near an area of groundwater discharge. The interpreted groundwater flow direction is likely northeasterly towards an unnamed lake.

## 15.5 Potential Contaminant Sources

Potential contaminant sources observed during the site investigation are provided in field notes in Appendix A15. Photos of potential contaminant sources are provided in Appendix A15.

A summary of potential contaminant sources within 30 m of the well is provided below:

- Fuel storage tank located in the basement of residence at 10 m (approx.).

### 15.5.1 Spills Records and Contaminated Sites Search Results

The Government of Yukon Environmental Programs Branch and Environment Canada Environmental Protection Branch did not identify any recorded spill events or contaminated sites issues for this property or neighbouring properties.

## 15.6 Identified Water System Deficiencies and Associated Risk

### 15.6.1 High and Medium Risk Deficiencies

- Poor surface completion of the well (located below grade in an enclosure off from basement);
- The well is not equipped with a surface sanitary seal as required by the Canadian Groundwater Association's Well Construction Guidelines;
- By definition of the Draft Yukon GUDI Assessment Guideline, the well is potentially under the direct influence of surface water because it is a vulnerable type (unconfined aquifer), has a production zone less than 15 m below grade, and does not meet the requirements of the Guidelines for Water Well Construction;

- There is no disinfection system present;
- The well shows signs of elevated chloride and nitrate and may be under the influence of surface water or septic sources.

#### 15.6.2 Low Risk Deficiencies

- The well is located approximately 35 m from communal septic system;
- There is a fuel storage tank located inside the basement of the residence. This is not a high-risk deficiency because the residents should notice any fuel leak or spill before well contamination could occur.

### 15.7 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).

Considering that this well and other wells in the RCMP complex in Watson Lake may show signs of potential contamination from surface water or septic sources, it is proposed that a treated community water distribution system be installed to serve the entire RCMP complex, with its source from the existing detachment well.

#### 15.7.1 Priority 1

The following recommendations are provided in order to mitigate deficiencies that are of immediate concern for the M0086 Watson Lake RCMP Residence:

- The well and distribution system should be superchlorinated; and,
- An NSF approved UV disinfection system with pre filtration should be installed at the point of entry to disinfect water to be provided to both buildings.

#### 15.7.2 Priority 2

- A centralized treatment system should be installed in the basement of the RCMP detachment. This treatment system could consist of either a chlorine disinfection system with suitable retention or a UV disinfection (NSF/ANSI 55 certified) system. This is a conceptual design recommendation based on the information

---

available, and is intended to be used for planning and budgeting purposes. Engineering input will be required for final system specifications or design.

- The wellhead construction of the existing detachment well should be improved, including extending the well to at least 500 mm above grade and installing a commercial pitless unit. A surface sanitary seal (grout or bentonite) to at least 3 m below grade should be retrofitted around the well and then the ground be graded to promote surface drainage away from the wellhead;
- Additional assessment, including pumping tests, should be completed to determine the detachment wells yield and construction details, and,
- A low-flow/low pressure water distribution line should be installed to service each building. Service lines should be run to M0086, to one of M0087 or M0088 and existing piping can be used to connect to the other, to one of M0126 or M0127 and existing piping can be used to connect to the other, and existing piping between the detachment and the RCMP gym can be used to serve the gym.

### 15.7.3 Priority 3

- Decommission well in accordance with regulation.

## 15.8 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.

### 15.8.1 Priority 1

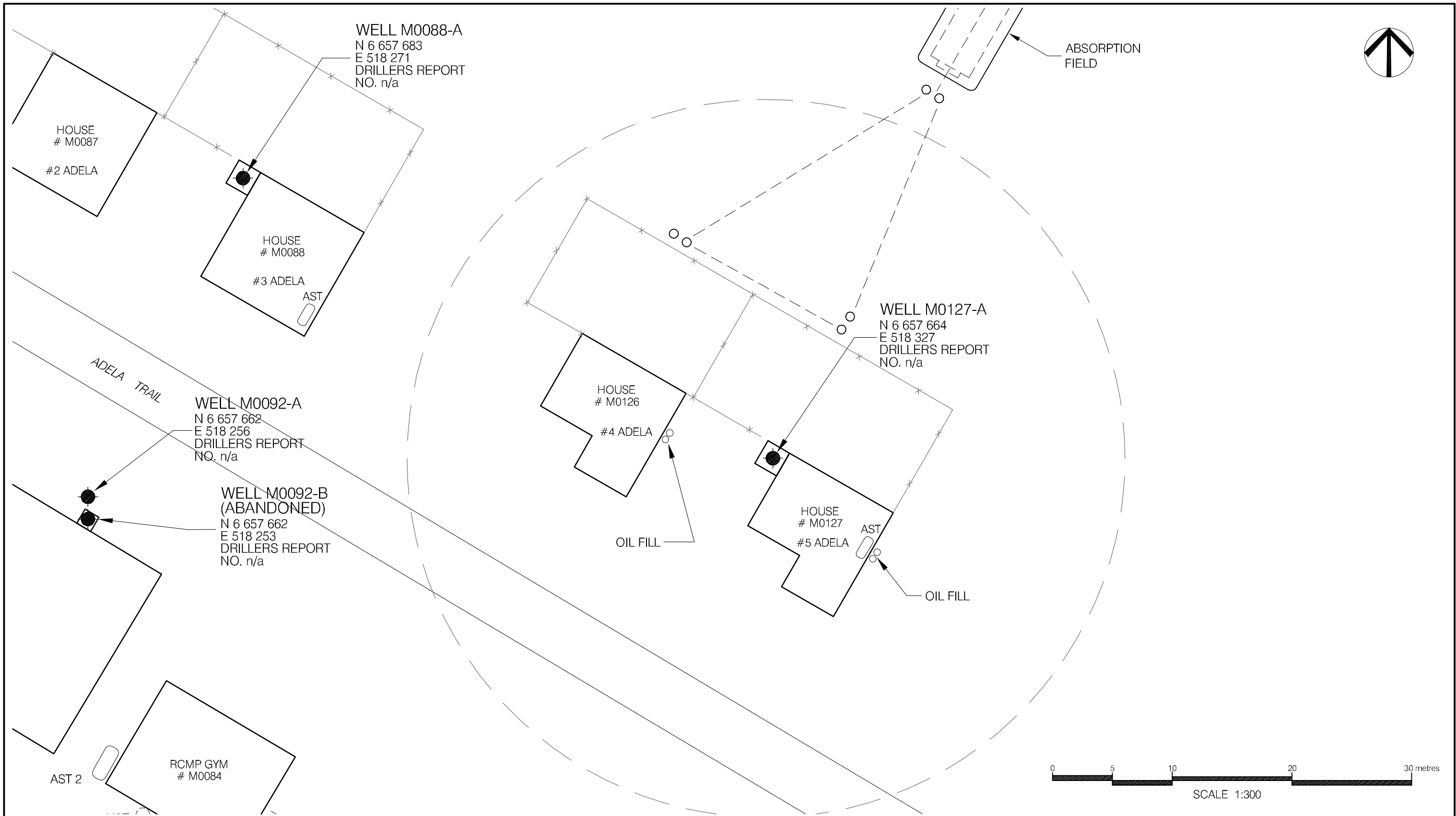
- The cost associated with superchlorinating the water system (including the well) and installing a well cap, and then installing a point of entry UV disinfection system with pre-filter would cost in the order of **\$2,500** for all materials and labour.

### 15.8.2 Priority 2


- The estimated total cost to install the distribution system would be in the order of **\$25,000**, including all materials and labour. Since the distribution system would serve five residences the cost to these systems would be approximately **\$10,000**.

### 15.8.3 Priority 3

- It would cost in the order of **\$1,000** to properly decommission the well.




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: JULY 2005  
 SCALE: AS SHOWN  
 PROJECT No.: 1260002.002  
 ACAD FILENAME: 002-EASTERN REGION

CLIENT:  
  
 Yukon  
 Highways and Public Works  
 Property Management Branch

SMALL PUBLIC WATER SYSTEMS ASSESSMENT  
 EASTERN REGION

GOVERNMENT OF YUKON  
 HIGHWAYS & PUBLIC WORKS

WATSON LAKE RCMP HOUSE  
 BUILDING # M0127  
 SITE LOCATION DIAGRAM  
 WELL ID: M0127-A

REVISION ISSUE  
 0  
 FIGURE No.  
 M0127-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)

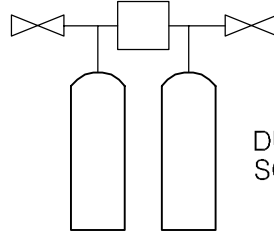


PRESSURE TANK

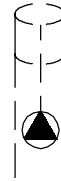


CL<sub>2</sub>

CHLORINE RESERVOIR AND  
INJECTION PUMP

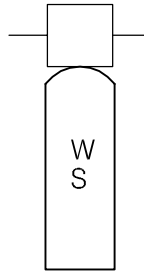


DUPLEX WATER  
SOFTENER



SP

WELL WITH  
SUBMERSIBLE PUMP



ACTIVATED  
CARBON

Z:\0201\Drawings\1260002 - Water Assessment YTG\002 - Eastern Region\1260002\003 Eastern Schematic\_LEGEND.dwg, 4/11/2006 10:31:08 AM, Adobe PDF, jbuyck



**EBA Engineering Consultants Ltd.**

PROJECT SMALL PUBLIC WATER SYSTEMS ASSESSMENT  
EASTERN REGION

CLIENT



TITLE

SCHEMATIC SYSTEM  
LEGEND

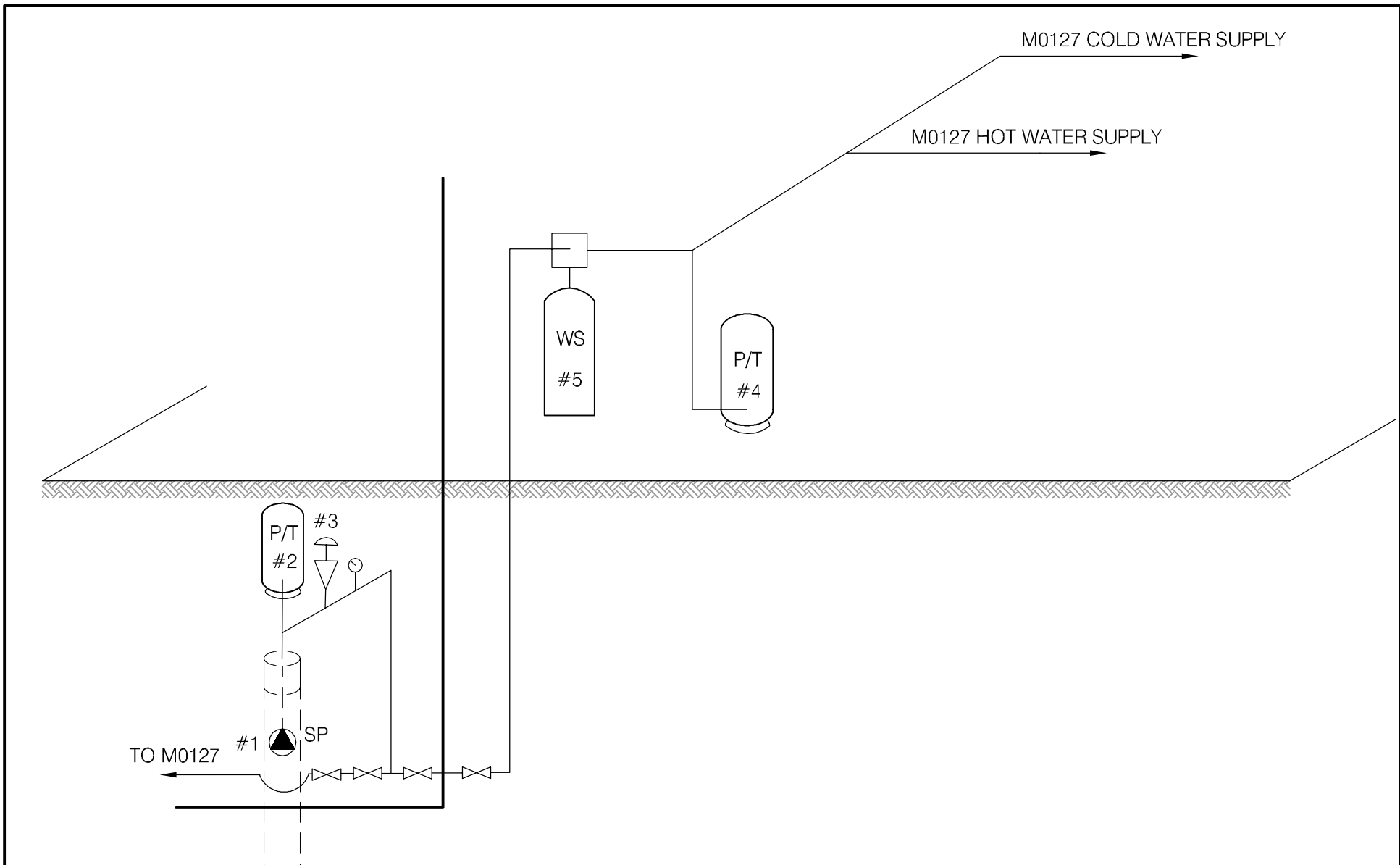
DATE APRIL 2006

DWN. JSB



CHKD. RMM

FILE NO. 1260002

DRWG. LEGEND



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

 <b>EBA Engineering Consultants Ltd.</b>		PROJECT SMALL PUBLIC WATER SYSTEMS ASSESSMENT EASTERN REGION	
CLIENT 		TITLE WATER SYSTEM DISTRIBUTION/TREATMENT SCHEMATIC SYSTEM ID.: M0127 WATSON LAKE RCMP HOUSING	
DATE	JULY 2005	DWN.	JSB
CHKD.	FMM	FILE NO.	1260002.002
		DWG.:	FIGURE M0127-B



**TABLE M0127- 1: SUMMARY OF BACTERIOLOGICAL RESULTS**

<b>Building #</b>	<b>Building Name</b>	<b>Number of Sampling Events</b>	<b>Time Period over which Sampling was Done</b>	<b>Any Positive Total Coliform Results? (yes or no)</b>	<b>Fraction of Positive Total Coliform Results vs. Total Sampling Events</b>	<b>Any positive E.Coli results? (yes or no)</b>	<b>Most Recent Sampling Event Available for EBA Review</b>	<b>Is Most Recent Result Positive?</b>
M0126	R.C.M.P. Housing	2	May -05 to Jun-05	no	0/2	no	23-Jun-05	no
M0127	R.C.M.P. Housing	2	May -05 to Jun-05	no	0/2	no	23-Jun-05	no



**Table M0127-2: Water Quality Results**

Location/ Resident		Watson Lake		<b>GCDWQ Criteria</b>		
Address		4 and 5 Adela Trail				
Treatment		Water Softener				
Disinfection		No				
Source of Water		On-Site Well				
Purpose of Sampling		Baseline	Additional Sampling			
Sample Location		M0126	M0127			
Date Sampled		22-Jun-05	22-Jun-05	Lower Limit	Upper Limit	
Physical Tests (ALS)				AO	MAC	AO
Colour (CU)	<5.0					15
Conductivity (uS/cm)	590					
Total Dissolved Solids	350					500
Hardness CaCO3	<b>312</b>			AO >200 = poor, > 500 unacceptable <sup>A</sup>		
pH	7.95			6.5		8.5
Turbidity (NTU)	0.43				1	5
UV Absorbance		0.0120				
Dissolved Anions (ALS)						
Alkalinity-Total CaCO3	319					
Chloride Cl	16.3					250
Fluoride F	0.031				1.5	
Sulphate SO4	5.07					
Nitrate Nitrogen N	1.01				10	
Nitrite Nitrogen N	<0.10				1	
Total Metals (ALS)						
Aluminum T-Al	<0.010					
Antimony T-Sb	<0.00050				0.006	
Arsenic T-As	0.00062				0.025	
Barium T-Ba	0.417				1	
Boron T-B	<0.10				5	
Cadmium T-Cd	<0.00020				0.005	
Calcium T-Ca	99.8					
Chromium T-Cr	<0.0020				0.05	
Copper T-Cu	0.116				1	
Iron T-Fe	<0.030					0.3
Lead T-Pb	0.0014				0.01	
Magnesium T-Mg	15.3					
Manganese T-Mn	0.0031					0.05
Mercury T-Hg	<0.00020				0.001	
Potassium T-K	1.26					
Selenium T-Se	<0.0010				0.01	
Sodium T-Na	7.0					200
Uranium T-U	0.00052				0.02	
Zinc T-Zn	<0.050					5
Organic Parameters						
Tannin and Lignin		0.16				
Total Organic Carbon C		0.93				
Field Chemistry (EBA)						
pH		7.69	6.5			8.5
TDS (ppm)		292				500
EC (uS/cm)		585				
Temperature (°C)		6.4				

**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)



**Table M0127-3: Summary of Well Assessment Results  
SMALL PUBLIC DRINKING WATER SYSTEMS**

Well Identification			GPS Coordinates		
Building #	Building Name	Location	Northing (+/- 10 m)	Easting (+/- 10 m)	Grade Elevation (+/- 10 m)
M0127	R.C.M.P. Housing	Watson Lake	6657664	518327	714

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	2001	No	16.7	Unlikely	11.0		6.895

Potential Contaminant Sources					
M0086, M0087, M0088 septic field at 65 m	Located inside basement	Greater than 60 m	Basement AST's	10 m	UST at 60 m
M0092 septic field at 45 m			AST 1	95 m	4 other wells on property at approximately 100 m, 70 m, 70m (abandoned), and 60 m
M0126 and M00127 septic at 35 m			AST 2	65 m	

Well Construction Details					
Wellhead Above ground (m)	Well Cap	Well Screen	Surface Seal	Apron Grading	Comments
1.75 below grade	Split seal gasket cap		Unlikely	Ground above wellhead enclosure is relatively flat	Well services both M0127 and M0126 RCMP residences.



# EBA Engineering Consultants Ltd.

Creating and Delivering Better Solutions

## SMALL PUBLIC WATER SYSTEM ASSESSMENT

### PART A: EBA Site Inspection

Inspector: ~~Bob Alkassab~~  
Ryan Martin, Luke Lebel

Date JUNE 22 / 05

WELL ID #	Owner	Location Description
<del>M0028</del> M0127	<del>YTG</del> RCMP	RCMP WATSON LAKE RESIDENCE

#### 1. Well Location and Potential Contaminant Sources

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

Watson Lake

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

RCMP complex - 5 Adela Trail

c. GPS location: N 6657664 E 518327 elv 714m ± 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 \_\_\_\_\_

4 + 5 Adela trail

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

g. Nearest building, specify located inside enclosure off from basement of residence

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: ~20m

k. Well location relative to field:  upslope  downslope  lateral

# EBA Engineering Consultants Ltd.

Creating and Delivering Better Solutions

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

All RCMP complex septic systems @ ~20m, ~45m, and ~65m

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 off from basement of residence access is 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 ~60m

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

Yes  No Describe ASTs in basement @ ~10m

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

Potential Source 1: AST 1; Distance from well to Potential Source 1: ~95m

Potential Source 2: AST 2; Distance from well to Potential Source 2: ~65m

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? 4  in use(i)  abandoned(i)  require proper sealing

# EBA Engineering Consultants Ltd.

Creating and Delivering Better Solutions

## 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
- d. Is there a surface seal to 6 m  Yes  No  unknown  unlikely
- e. Surface casing:  Yes Diameter \_\_\_\_\_  No
- f. Well casing: Diameter 15cm Material:  steel  plastic  concrete
- g. Depth of well: 14.960m bc <sup>likely</sup>  measured (if possible)  reported  from log
- h. Static water level below ground: 6.895m bc  
 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 unknown
- j. (If bedrock) Does the well have a liner?  yes  No  steel  plastic
- k. If there is a well screen: length unknown slot size(s) \_\_\_\_\_  
Location of screen: from \_\_\_\_\_ to \_\_\_\_\_ from log reported
- l. Is there a sump below the screen?  Yes  No unknown
- m. Is the well head:  in pumphouse  in pit  pitless adaptor  in a building  
in below grade enclosure off from basement of residence  
 in a wooden enclosure other, describe \_\_\_\_\_
- n. If the well head is located in a wooden enclosure,

# EBA Engineering Consultants Ltd.

Creating and Delivering Better Solutions

- i. Is the well head below grade? describe in detail ~1.75m below grade
- ii. Are there signs of ponding on the enclosure(e.g. water stains, etc.)?  Yes  No  
Some rusting is present
- iii. Is the wellhead enclosed by fiberglass insulations?  Yes  No  
However, likely in walls of enclosure
- iv. Any evidence of rodents? Specify No, but access is possible
- v. Does the well casing have a proper seal cap?  Yes  No  
  
If no, describe condition split gasket cap

### 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...) softener for both residences

### 4. Aquifer Supplying This Well:

- a. The aquifer is:  bedrock  granular sediment  unknown  
likely
- b. Does water level and/or well capacity show seasonal fluctuation?  Yes  No  
unlikely

### 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 \_\_\_\_\_

# EBA Engineering Consultants Ltd.

Creating and Delivering Better Solutions

- d. Date installed: 2001 By: \_\_\_\_\_
- e. For submersible pump, depth of setting below surface 11.040m bc -likely
- 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 off from heated basement - enclosure insulated
- l. Comments on pump installation: \_\_\_\_\_  
\_\_\_\_\_

## 6. Conclusions

- a. Comments on overall installation:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- b. Recommendations: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



# EBA Engineering Consultants Ltd.

Creating and Delivering Better Solutions

## PART B: EBA Site Inspection

Inspector: Bert ALBISER

Date JUNE 22/05

WELL ID #	Owner	Location Description
<u>M00127</u>	<del>ITG.</del> <u>RCMP</u>	<u>RCMP WATSON LAKE</u>

### 6. Water Treatment

a. Is well water treated?  Yes  No; Type of treatment: WATER SOFTNER.

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<sub>2</sub>S  Other \_\_\_\_\_

# EBA Engineering Consultants Ltd.

Creating and Delivering Better Solutions

- 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: 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: \_\_\_\_\_

# **EBA Engineering Consultants Ltd.**

Creating and Delivering Better Solutions

---

## ***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**

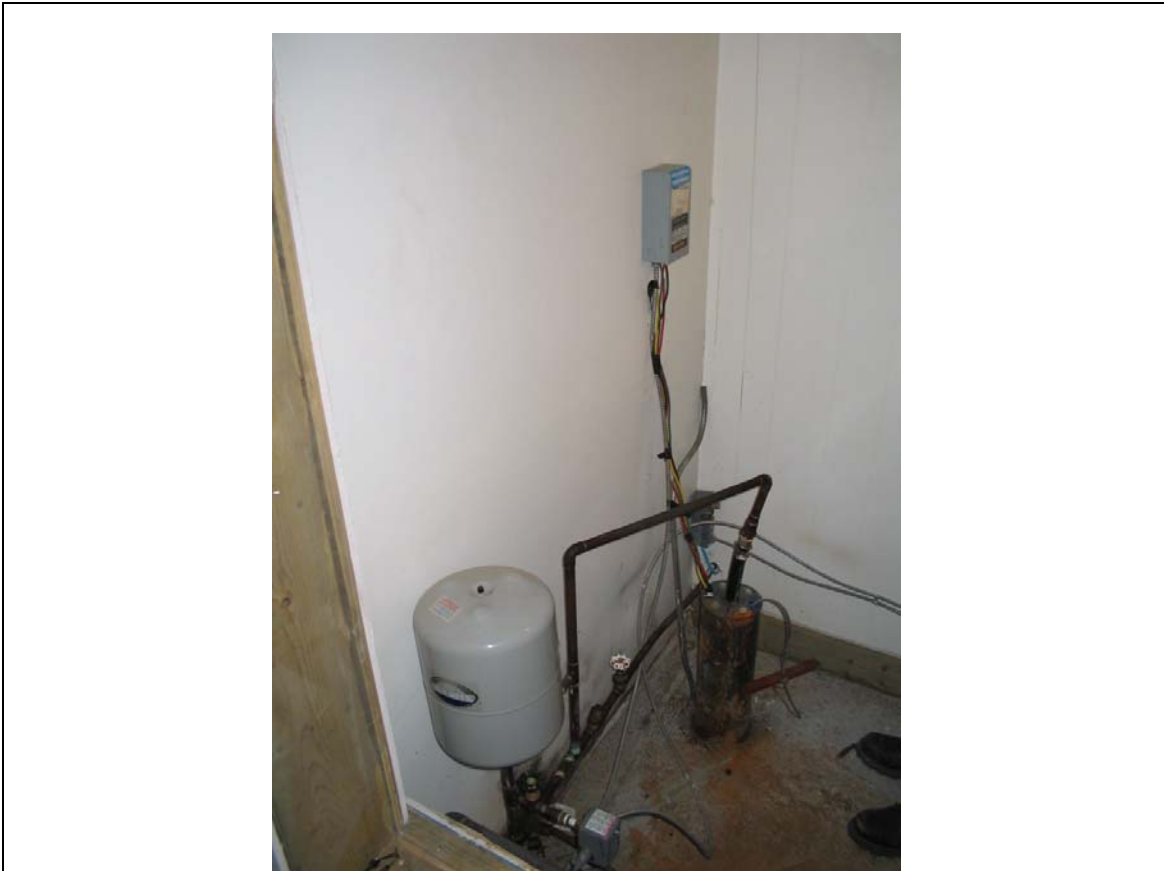
a. Comments on overall installation:

~~Well casing to be extended as required. install pitless adapter~~

This is a good installation.

b. Recommendations:

Well casing to be extended to proper height above ground. install pitless adapter. institute a bi annual well maintenance program of shock chlorination of well & piping. install appropriate UV system. water softener must be properly maintained.



**Photo 0040:** M0127 Wellhead (right) in wellhead enclosure off from basement of residence, and pressure tank (left)



**Photo 0038:** M0127 Pressure tank



**Photo 0039:** M0127 Water softener