11.0 BUILDING 4799: SWIFT RIVER LIVING COMPLEX

11.1 Description of Existing Water system

Building 4799, the Swift River Living Complex, is a five-unit complex that houses highway maintenance workers and is served by a well located in a pit approximately 1 m from the living complex. The well location and other details about the surrounding area are provided in Figure 4799-A in Appendix A11. The coordinates of the wellhead were recorded as:

- UTM ZONE 9
- Northing: 6653783
- Easting: 377966

At the time of the assessment, there was no treatment in place for this system. A schematic detailing the water system is provided as Figure 4799-B in Appendix A11.

11.2 Description of Existing Wastewater Systems

A septic field that serves both the Swift River Living Complex and the foreman's residence is located greater than 60 m from this well. A sewer line of wood stave construction runs approximately 25 m west of the well, and could potentially be leaking. A site plan showing the location of the sewer line is given by Figure 4799-A in Appendix A11. The grader station septic field is approximately 60 m northwest from this well.

11.3 Water Quality Results

11.3.1 Water Quality Results from Previous Sampling

Bacteriological

Six samples were collected from the Swift River Living Complex water system between September 2004 and March 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 4799-1 in Appendix A11. Coliform bacteria

and *E. coli* were reported as absent in each of the six samples for which results are provided.

Potability

A water sample was collected by YTG representatives from the Swift River Living Complex water system on September 13, 2004. The sample was submitted to Northwest Labs for detailed potability analyses. Additional baseline results were provided by YTG for a sample collected on June 22, 2005. The results of these analyses are summarized in Table 4799-2 in Appendix 11. EBA reviewed the analytical results to compare them with the CDWQG to observe general water quality, to identify and recommend additional sampling and analytical, and to identify potential indicators of contamination.

- At 2.34 mg/L, the copper concentration exceeded the CDWQG MAC of 1 mg/L on September 13, 2004, however routine sampling on June 22, 2005 indicated the total copper concentration below 1 mg/L;
- On June 22, 2005, turbidity at 2.64 NTU was detected above the CDWQG MAC of 1 NTU;
- All other health based and aesthetic objectives were met for the parameters analyzed;
- The total dissolved solids concentration of 40 mg/L indicated that the water is very fresh; and,
- The hardness (as $CaCO_3$) of approximately 25 mg/L is considered very soft.

11.3.2 Identification of Additional Analytical Testing Required

Additional analytical for the Swift River Living Complex that was identified to be included during the water system assessments is detailed below:

- UV absorbance, as well as tannins and lignin, to determine potential for UV treatment as a disinfection option for this water system;
- Analysis to determine total and dissolved copper, iron and manganese content;
- Total Organic Carbon to assist with treatment system selection; and,
- Measurements in the field for total dissolved solids, conductivity, pH, and temperature.

Additional Analytical Results

A water sample was obtained by EBA during the field program on June 20, 2005, and was submitted to ALS Environmental in Vancouver, BC for analysis of the parameters indicated above. Results are summarized in Table 4799-2 in Appendix A11 and the laboratory reports are included in Appendix B.

11.3.3 Indicators of Potential Contamination

Additional analytical sampling for copper on June 20 and 22, 2005 found that it was below the CDWQG maximum acceptable concentration. One hypothesis is that the reported total copper concentration from the first baseline-sampling event was elevated because the water had been sitting stagnant in the piping and was not thoroughly purged before samples were taken.

No elevated concentrations of indicator parameters were observed in the sample results reviewed.

11.4 Conceptual Hydrogeology

No log was available for this well, or any other wells in the Swift River area. No information is available on the well depth or static water level. The direction of groundwater flow in this area as inferred from topography and air photos is easterly to southeasterly towards Seagull Creek or Swift River as the well is equidistant between the two surface water bodies.

11.5 Potential Contaminant Sources

Potential contaminant sources observed during the site investigation are provided in field notes in Appendix A11. Photos of potential contaminant sources are also provided.

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

- Wood stave sewage line at 25 m; and,
- Fuel drums at 8 m.

11.5.1 Spills Records and Contaminated Sites Search Results

No documented contaminated sites were reported for this property or neighbouring property. However, the Government of Yukon Environmental Programs Branch and Environment Canada Environmental Protection Branch identified two spill events for sites neighbouring the Swift River Living Complex, and they are outlined below.

On August 17, 2000, 1 L of gasoline was reportedly spilled at the Swift River Lodge. This, however, likely poses a minimal risk to this water system.

On March 1, 1993, it was identified that approximately 250 L of calcium chloride solution had been dumped at the Swift River Lodge while a de-icing operation had been conducted, but there had been no effort made to collect the solution. The runoff had reportedly travelled towards Swift River, downgradient from this well and would not have likely posed a risk to this water system.

On February 1, 1999, it was identified that approximately 10 L of diesel fuel was spilled at the Yukon Electric Company facility when an EnviroTank was overfilled. The contaminated snow was reportedly recovered and this spill likely poses a minimal risk to this water system.

11.6 Identified Water System Deficiencies and Associated Risk

11.6.1 High and Medium Risk Deficiencies

The following deficiencies were identified as high-risk for the Swift River Living Complex:

- The well is located within 30 m of potential sources of contamination, including a wood stave septic line and fuel drums;
- Poor surface completion of the well (located in a pit below grade);

- 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 likely completed within a vulnerable type (unconfined aquifer), and does not meet the requirements of the Guidelines for Water Well Construction;
- The copper concentration has been previously reported to be in exceedence of CDWQG MAC. The most recent water sampling results, however, were below the CDWQG MAC; and,
- There is no treatment or disinfection system present.

11.6.2 Low Risk Deficiencies

There were no low-risk deficiencies identified at this site, all deficiencies are either high or medium risk.

11.7 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).

11.7.1 Priority 1

It was identified during the water system assessment program that two other YTG facilities in Swift River had high-risk deficiencies that are not easily mitigated, and finding a new drinking water source for these buildings was recommended. One potential option is to utilize the living complex well to supply water to the grader station and foreman's residence, while another option considered is a new well to provide water to each of the three buildings, including the living complex. These options are presented below:

Option 1:

To utilize the well at the living complex, the following would be required:

- Further assessment is required to determine the suitability of this well to serve the complex and other YTG maintained buildings at Swift River. This would involve obtaining the well log in order to determine the depth, and

other wellhead construction details that were unavailable during this assessment. Sustainable well yield would also need to be verified by pumping tests;

- If the well is deemed suitable to supply all three buildings, it will require physical upgrades including installation of a surface sanitary seal (grout or bentonite) to a depth of at least 3 m, and extending the well casing at least 500 mm above grade;
- A underground piped water distribution line should be installed, and should be properly freeze-protected through heat-trace and insulation; and,
- An NSF/ANSI 55 certified UV disinfection system complete with NSF-61 certified pre-filtration to 1 micron absolute should be installed near the point of entry in the Swift River Living complex.

These are conceptual design recommendations based on the information available, and are intended to be used for planning and budgeting purposes. Engineering input will be required for final system specifications or design.

Option 2:

The second option considered involves construction of a new well. A new well could potentially be used to supply all the YTG maintained buildings in Swift River, including the grader station, living complex, and foreman's residence. The new well should be constructed in consideration of the following recommendations:

- The well should be equipped with a surface seal to at least 6 m and the casing should be extended above grade (500 mm) within a lockable enclosure that is inaccessible to animals and unauthorized personnel;
- The well should be located upgradient from the current well and must be greater than 30 m from any potential source of contamination;
- The water from the new well must meet all CDWQG health based guidelines. If there are any exceedences in the CDWQG health-based guidelines then a treatment system must be designed and installed as necessary; and
- An NSF/ANSI certified UV disinfection system should be installed at a centralized location complete with adequate NSF approved pre-filtration.

11.8 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.

11.8.1 Priority 1

Class D cost estimates for Priority 1 mitigative options to address the well deficiencies for this site are outlined below.

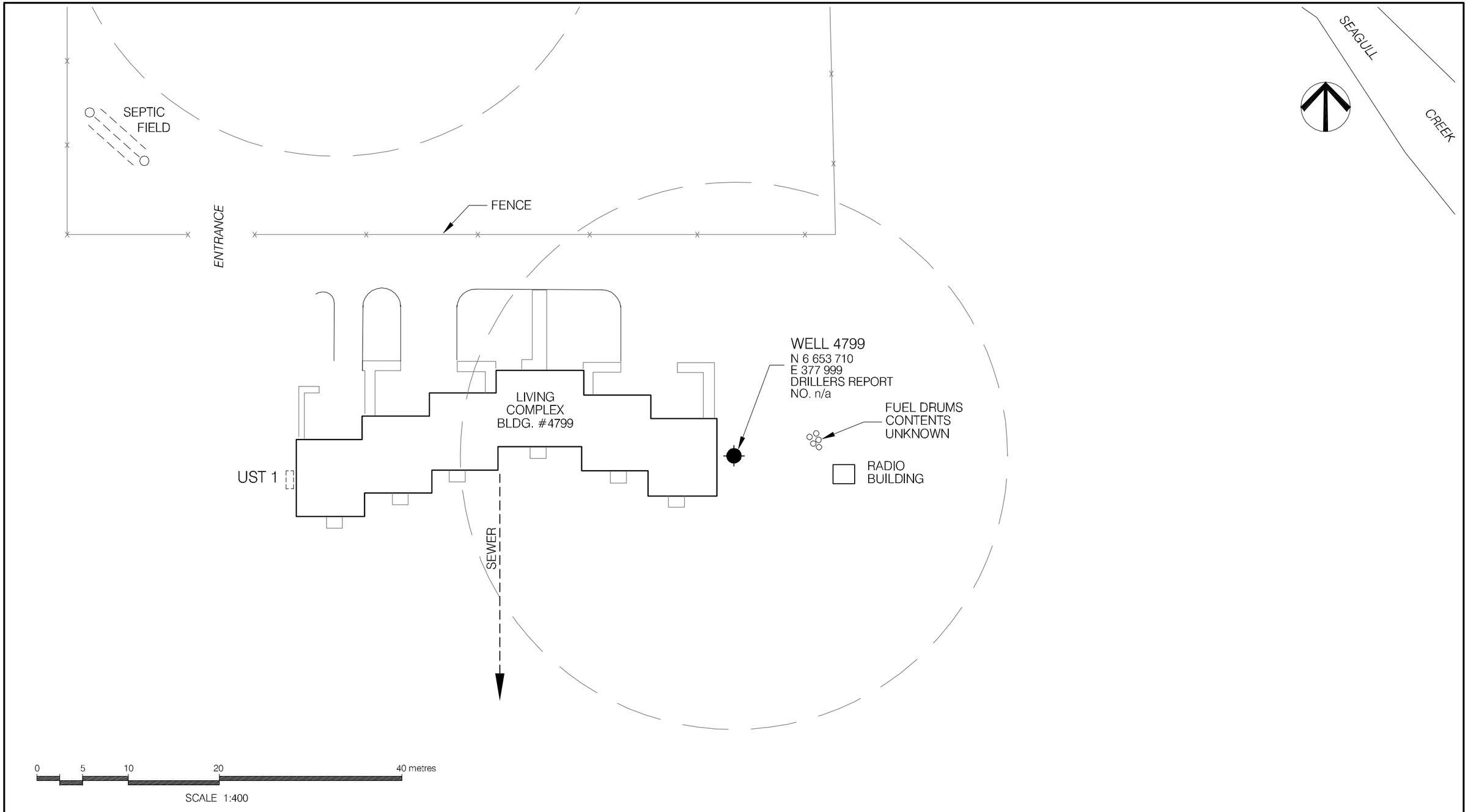
Option 1:

Some of the costs associated with this option depend on whether or not the Swift River Grader Station will also be supplied by this well (costs to this proposed system are reported as the average of the cost with two systems and the cost with three systems).

- Obtaining the well log, an additional site inspection, short-term pump test to verify well yield, would likely cost in the order of **$2,000**. This cost could be divided equally among the buildings supplied by this well, and would be approximately **$800** for this site;
- If deemed suitable, the cost associated with improving the living quarters well would be in the order of **$5,000**. This cost could be divided equally among the buildings supplied by this well, and would be approximately **$1,700**;
- The proposed filtration and UV disinfection system would cost approximately **$5,000**. This cost could be divided equally among the buildings supplied by this well, and would be approximately **$1,700**;

Option 2:

- Assuming that the well would be drilled in overburden to a depth of approximately 30 m, it is recommended that **$30,000** be budgeted for materials and labour to drill, test, and complete the well. Since this well would serve three sites, the cost to this system would be approximately **$10,000**;
- Approximately 200 m of water distribution line would be required to serve all three buildings, and assuming $120 per metre, this would likely amount to a total installed cost of **$24,000**. Since this well would serve three sites, the cost to this system would be approximately **$8,000**;
- The proposed filtration and UV disinfection system would cost approximately **$5,000**. This cost could be divided equally among the buildings supplied by this well, and would be approximately **$1,700**;
- The cost associated with decommissioning the existing living complex well in accordance with the Guidelines for Water Well Construction would likely amount to **$1000**.



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

SWIFT RIVER LIVING COMPLEX
BUILDING # 4799
SITE LOCATION DIAGRAM
WELL ID: 4799

REVISION ISSUE: 0

FIGURE No.: 4799-A

Z:\02\01Drawings\1260002 Water Assessment YTG\002 - Eastern Region\swift\1260002 Swift River Grader Station_4793 Site Plan.dwg, 7/20/2005 4:34:56 PM, Adobe PDF

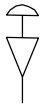
LEGEND

PUMP

PRESSURE GAUGE

GATE VALVE

CHECK VALVE



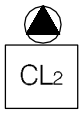
SOLENOID

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

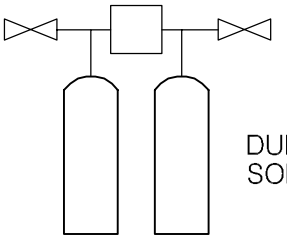
FLOW METER

WATER FILTER
(CARTRIDGE TYPE)

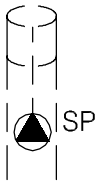
PRESSURE TANK



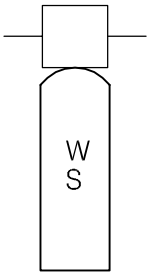
CHLORINE RESERVOIR AND
INJECTION PUMP



DUPLEX WATER
SOFTENER

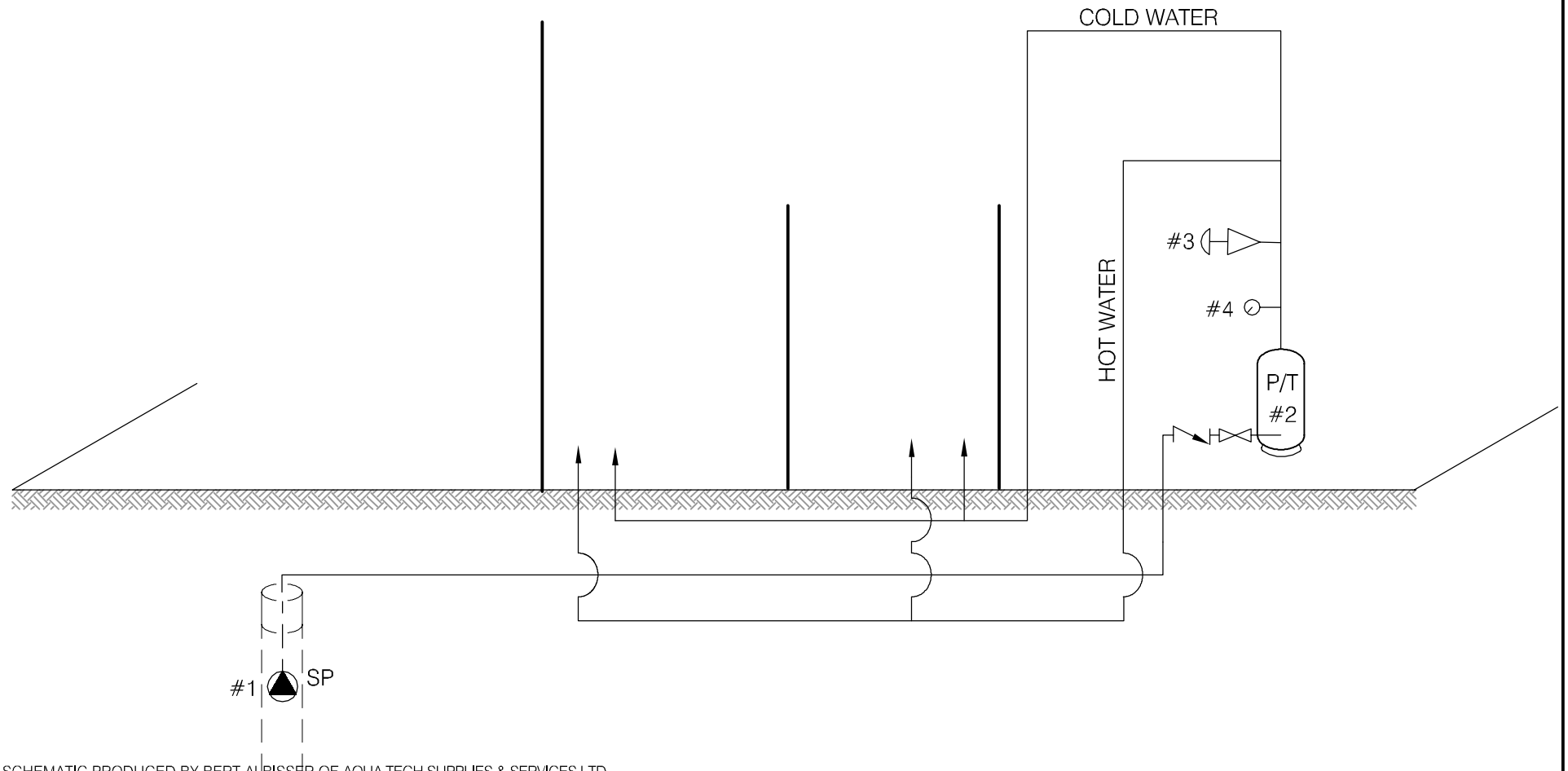


WELL WITH
SUBMERSIBLE PUMP



ACTIVATED
CARBON

EBA Engineering Consultants Ltd.			PROJECT	SMALL PUBLIC WATER SYSTEMS ASSESSMENT EASTERN 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 & SERVICES LTD.

EBA Engineering Consultants Ltd.			PROJECT	SMALL PUBLIC WATER SYSTEMS ASSESSMENT EASTERN REGION	
CLIENT	Yukon Highways and Public Works Property Management Branch		TITLE	WATER SYSTEM DISTRIBUTION/TREATMENT SCHEMATIC SYSTEM ID.: 4799 SWIFT RIVER LIVING COMPLEX	
DATE JULY 2005	DWN. JSB	CHKD. RMM	FILE NO. 1260002.002		DWG.: FIGURE 4799-B

Z:\0201Drawings\1260002 Water Assessment YTG\002 - Eastern Region\swift\1260002 Swift River Living Complex_4799 Schematic.dwg, 7/20/2005 4:29:34 PM, Adobe PDF

Eastern Region – Swift River Living Complex
Building # 4799

DISTRIBUTION & TREATMENT SYSTEM DATA

Item	Description	Manufacturer	Model	Part No.	Serial No.	Size
1	SUB. PUMP					4"
2	PRESSURE TANK	WELL X TROL	WX-302			
3	PRESSURE SWITCH	SQ. D	FSG-M4			
4	PRESSURE GAUGE	MARSH	0-100			2"
5						
6						
7						
8						
9						
10						

TABLE 4799- 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?
4799	Swift River Living Complex	6	Sept-04 to Mar-05	no	0/6	no	9-Mar-05	no

Table 4799-2: Water Quality Results

Location/ Resident	Swift River			**GCDWQ Criteria**		
Address	km 1181 Alaska Highway					
Treatment	No					
Disinfection	No					
Source of Water	On-Site Well					
Purpose of Sampling	Baseline	Additional Sampling	Baseline			
Sample Location		Kitchen Tap	Kitchen Tap			
Date Sampled	13-Sep-04	20-Jun-05	22-Jun-05	**Lower Limit**	**Upper Limit**	
Physical Tests *(ALS)*				**AO**	**MAC**	**AO**
Colour (CU)	<5		<5			15
Conductivity (uS/cm)			65.3			
Total Dissolved Solids	39		40			500
Hardness CaCO3	31.8		19.3	AO >200 = poor, > 500 unacceptable[A]		
pH	7.26		6.77	6.5		8.5
Turbidity (NTU)	0.3	0.41	***2.64***		1	5
UV Absorbance		0.035				
% Transmittance						
Dissolved Anions *(ALS)*						
Alkalinity-Total CaCO3	34		22			
Chloride Cl	0.5		4.7			250
Fluoride F	0.71		0.818		1.5	
Silicate SiO4						500
Sulphate SO4	3.65		3.41			
Nitrate Nitrogen N	<0.1		<0.10		10	
Nitrite Nitrogen N	<0.05		<0.10		1	
Ammonia Nitrogen N						
Total Phosphate PO4						
Total Metals *(ALS)*						
Aluminum T-Al	<0.005		0.03			
Antimony T-Sb	<0.0002		<0.0005		0.006	
Arsenic T-As	<0.0002		0.00046		0.025	
Barium T-Ba	0.012		<0.020		1	
Boron T-B	0.005		<0.10		5	
Cadmium T-Cd	0.00001		<0.00020		0.005	
Calcium T-Ca			6.31			
Chromium T-Cr	<0.0005		<0.0020		0.05	
Copper T-Cu	***2.34***	0.147	0.174		1	
Iron T-Fe	0.01	0.04	0.116			0.3
Lead T-Pb	0.0007		0.0047		0.01	
Magnesium T-Mg			0.85			
Manganese T-Mn	0.009	0.003	0.0064			0.05
Mercury T-Hg			<0.0002		0.001	
Potassium T-K			0.27			
Selenium T-Se			<0.0010		0.01	
Sodium T-Na	1.8		4.5			200
Uranium T-U	<0.0005		0.00085		0.02	
Vanadium T-V						
Zinc T-Zn	0.07		0.083			5
Dissolved Metals						
Aluminum D-Al						
Antimony D-Sb						
Arsenic D-As						
Barium D-Ba						
Boron D-B						
Cadmium D-Cd						
Calcium D-Ca						
Chromium D-Cr						
Copper D-Cu		0.154				
Iron D-Fe		<0.030				
Lead D-Pb						
Magnesium D-Mg						
Manganese D-Mn		0.0022				
Mercury D-Hg						
Potasium D-K						
Selenium D-Se						
Sodium D-Na						
Uranium D-U						
Vanadium D-V						
Zinc D-Zn						
Trihalomethanes						
Bromodichloromethane						
Bromoform						
Chloroform						
Dibromochloromethane						
Total Trihalomethanes						
Organic Parameters						
Tannin and Lignin		0.24				
Total Organic Carbon C		1.21				
Haloacetic Acids						
Bromoacetic Acid						
Bromochloroacetic Acid						
Chloroacetic Acid						
Dibromoacetic Acid						
Dichloroacetic Acid						
Trichloroacetic Acid (TCA)						
Polycyclic Aromatic Hydrocarbons						
Acenaphthene						
Acenaphthylene						
Acridine						
Anthracene						
Benz(a)anthracene						
Benzo(a)pyrene						
Benzo(b)fluoranthene						
Benzo(g,h,i)perylene						
Benzo(k)fluoranthene						
Chrysene						
Dibenz(a,h)anthracene						
Fluoranthene						
Fluorene						
Indeno(1,2,3-c,d)pyrene						
Naphthalene						
Phenanthrene					0.1	
Pyrene						
Quinoline						
Extractable Hydrocarbons						
EPH10-19						
EPH19-32						
LEPH						
HEPH						
Field Chemistry (EBA)						
pH		7.93		6.5		8.5
TDS (ppm)		29				500
EC (uS/cm)		59				
Temperature (°C)		10.0				
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)

Table 4799-3: 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)**
4799	**Living Complex**	**Swift River**	6653710	377999	892

Well Details							
Well Casing Diameter (mm)	**Year Well Installed**	**Well Log?**	**Well Depth (m bg)**	**Reported Low Permeabilty Protective Layer?**	**Pump Setting (m bg)**	**Well Capacity - Tested, or Reported by User**	**Static Water Level Below Ground (m-btwc)**
150		No		Unknown		Able to service 5 unit living complex	

Potential Contaminant Sources					
Distance from well to nearest point of septic field (m)	**Distance from well to nearest building (m)**	**Distance to surface water body (m)**	**AST present on property?**	**Distance from well to AST (m)**	**Other potential sources of contamination observed on property, and distance to well**
Approximately 60 m, 25 m to sewage line	1	75 m to Seagull Creek			Fuel Drums at 8 m

Well Construction Details					
Wellhead Above ground (m)	**Well Cap**	**Well Screen**	**Surface Seal**	**Apron Grading**	**Comments**
0.65 m below grade	Split seal gasket cap		Unlikely	Yes	Well services the 5 units and 1 common room in the Swift River Living Complex.

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 June 20, 2005

WELL ID #	Owner	Location Description
4799	YTG	Swift River Living Complex

1. Well Location and Potential Contaminant Sources

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

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

c. GPS location: N: 6653710 E: 377999 elv. 892 m ± 13m

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_____
5 apartements in living complex

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

g. Nearest building, specify Living complex

h. Distance from well to building ~1m

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
Sewer pipe @ 25m, septic field ~60m

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
unlocked wooden enclosure

Entrance by animals? ☐ Yes ☒ No
Access possible - signs of rodents

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 ~50m

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: Fuel drums ; Distance from well to Potential Source 1: 8m
Potential Source 2: Seagull Creek; Distance from well to Potential Source 2: 75m
Potential Source 3: Highway ; Distance from well to Potential Source 3: 90m
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

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: unknown ☐ measured (if possible) ☐ reported ☐ from log

h. Static water level below ground: unknown

☐ 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
wooden (non-pwf) enclosed pit.

☒ 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 Yes, 0.65 m 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 some evidence, access possible

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

If no, describe condition split gasket cap - does not appear to be properly fastened

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…)_____

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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 _____

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: Insulation - no visible heat trace

l. Comments on pump installation: _____

_____

6. Conclusions

a. Comments on overall installation:

_____

_____

_____

_____

_____

_____

_____

b.Recommendations: _____

_____

_____

_____

_____

_____

_____

PART B: EBA Site Inspection

Inspector: BOB ARBUTHNOT Date JUNE 20/05

WELL ID #	Owner	Location Description
4799	YTG.	SWIFT RIVER LIVING COMPLEX

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: BOILER ROOM

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?

WX-302

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:

THE WATER SYSTEM FOR THIS COMPLEX NEEDS TO BE UPGRADED TO MEET NEW STANDARDS. TREATMENT WILL HAVE TO BE ADDED

b. Recommendations:

EXTEND WELL CASING TO PROPER HEIGHT. BUILD PROPER WELL HOUSE TO ACCOMODATE CHLORINATION SYSTEM.

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 #	9321
Jurisdiction	Yukon
Community	
Address	
Highway	Alaska Highway
Milepost	M 733
Feature	Swift River
Location and Cause	Swift River Lodge - de-icing operation being conducted without collection of solution
Latitude	60.0080555555556
Longitude	-131.184166666667
Incident Date	3/1/1993
Lead Agency	Environment Canada - Environmental Protection Service
Other Agency	
Company(s)	Swift River Lodge
Amount	250
Units	Litres
Quantity	Estimate
Release Description	Dumped
Additional Quanitit	
Concentration	
Concentration Unit	
Phase	Liquid
Major Contaminant	Calcium Chloride
2nd Contaminant	
3rd Contaminant	
4th Contaminant	
Outcome	de-icing solution not being contained - no runoff to river yet but potential - advised operation to be moved and solution contained - toxic to fish

Environment Canada Environnement Canada

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Spill Report Information

Spill #	9902
Jurisdiction	Yukon
Community	Swift River
Address	
Highway	Alaska Highway
Milepost	M 733
Feature	Swift River
Location and Cause	YECL Envirotank overfilled - tanker truck driver unsure of storage tanks capacity
Latitude	60.004
Longitude	-131.1864
Incident Date	2/1/1999 11:50:00 AM
Lead Agency	Yukon Government - Environmental Programs
Other Agency	
Company(s)	Healey Enterprises (Fort Nelson, BC)
Amount	10
Units	Litres
Quantity	Estimate
Release Description	Spilled
Additional Quanitit	
Concentration	
Concentration Unit	
Phase	Liquid
Major Contaminant	Diesel
2nd Contaminant	
3rd Contaminant	
4th Contaminant	
Outcome	fuel ran down sides of tank into snow - contaminated snow to be recovered and free product soaked up - pump shut off as soon as fuel came out vent - no further information

Photo 0238: 4799 Wellhead enclosure

Photo 0237: 4799 Wellhead in pit

Photo 0240: 4799 Swift River Living Complex (back) and wellhead enclosure (in front)

Photo 0239: 4799 Fuel drums (centre), and radio building (right)