

19.0 BUILDING 3172: DESTRUCTION BAY FIRE HALL

19.1 Description of Existing Water Supply System

Building 3172, the Destruction Bay Fire Hall, is currently served by a water supply system that delivers water from an approximately 31.4 m deep well. The well is located in a pit approximately 5 m from the fire hall. The well location and other details about the surrounding area are provided in Figure 3172-A in Appendix A19. The coordinates of the wellhead, as measured by a handheld GPS device, were recorded as:

- UTM ZONE 7
- Northing: 6792050
- Easting: 617956

There is no treatment or disinfection system for the water supplying this system. The water system splits to supply the domestic system and the system for fire fighting use. The system for fire fighting use is equipped with an elevated 22,500 L water storage tank. A schematic detailing the well supply system is provided as Figure 3172-B in Appendix A19.

19.2 Description of Existing Wastewater Systems

The Destruction Bay Fire Hall uses a community sewage collection system. Community sewage discharge fields are located greater than 100 m down gradient and approximately 100 m cross gradient.

19.3 Water Quality Results

19.3.1 Water Quality Results from Previous Sampling

Bacteriological

Nine samples were collected from the Destruction Bay Fire Hall water system between September 2004 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 3172-1 in Appendix A19. *E. coli* bacteria were reported as absent in each of the nine samples for which results are provided, however, the sample tested on February 17, 2005, reported positive for total coliform bacteria. Results provided by YTG indicate that samples collected since February 17th, have not have total coliform present.

Potability

Water samples were previously collected from the Destruction Bay Fire Hall water system on October 19, 2004 and June 16, 2005. The samples were submitted to Northwest Labs in Surrey, BC and ALS Environmental in Vancouver, BC for potability analyses. The results of these analyses are summarized in Table 3172-2 in Appendix A19. EBA reviewed the analytical results to compare them with the Canadian Drinking Water Quality Guidelines (CDWQG) to observe general water quality, identify and recommend additional sampling and analytical, and to identify indicators of potential contamination. Items of note are detailed below:

- The turbidity had been reported to be 53.5 NTU during the first sampling event and 11.0 NTU during the second sampling event. Both sampling events reported turbidity in exceedence of the CDWQG MAC of 1.0 NTU and aesthetic objective of 5.0 NTU;
- The colour during the first sampling event was greater than 60 CU, which is in exceedence of CDWQG aesthetic objective of 15 CU;
- The water quality results indicated that all other health based and aesthetic objectives were met for the parameters analyzed;
- The water quality results indicated that the groundwater from which this system receives its water supply is a magnesium bicarbonate sulphate type water; and,
- The hardness (as CaCO_3) was 308 mg/L during the first sampling event and 312 mg/L during the second sampling event, and is considered very hard.

19.3.2 Identification of Additional Analytical Testing Required

Additional analytical for the Destruction Bay Fire Hall that was identified to be included during the water system assessments is detailed below:

- UV absorbance and UV transmissivity, as well as tannins and lignin, to determine potential for UV treatment as a disinfection option for this water system;
- Total organic carbon (TOC);
- Turbidity and color; and,
- Measurements in the field for total dissolved solids, conductivity, pH, and temperature.

Additional Analytical Results

A water sample was obtained during the water system assessment on July 28, 2005, and was submitted to ALS Environmental in Vancouver, BC for analysis. These results are summarized in Table 3172-2 in Appendix A19 and the laboratory reports are included in Appendix B.

- At 3.04 NTU, turbidity was in exceedence of the CDWQG MAC of 1.0 NTU; and,
- The water quality results from additional analytical sampling indicated that all other health based and aesthetic objectives were met for the parameters analyzed.

19.3.3 Indicators of Potential Contamination

Chloride, nitrate and nitrite concentrations can indicate impacts from surfacewater sources or septic waste. Chloride concentrations were reported to be low and are considered to be within the normal background ranges for groundwater in the area. Nitrate and nitrite concentrations for this sample were also low and within the normal background range for this area. These water quality results do not suggest that the aquifer from which the groundwater is obtained for the Destruction Bay Fire Hall is under the influence of surfacewater sources or septic wastes.

19.4 Conceptual Hydrogeology

The log for this well indicates that the well is completed at a depth of 29.9 m within a sand aquifer. Overlying the aquifer is approximately 29.8 m of interbedded clay and till. The static water level at the time of drilling was 7.6 m below ground. This is consistent with most well logs in the Destruction Bay area, which typically indicate 25 m to 50 m of fine grained material overlying a confined sand and gravel aquifer. The presence of a fine grained confining layer provides some aquifer protection from surficial sources of contamination. The expected direction of groundwater flow in the vicinity of the site is likely east to northeast towards Kluane Lake.

19.5 Potential Contaminant Sources

Potential contaminant sources from observations during the water system assessment are compiled in field notes in Appendix A19. Photos of potential contaminant sources are also provided in Appendix A19.

Potential contaminant sources within 30 m of the wellhead are:

- An above ground fuel storage tank (AST) at 1 m; and,
- An underground fuel storage tank (UST) at 18 m.

Other potential contaminant sources in the vicinity of the wellhead are a number of scrap cars are located approximately 20 m away from the wellhead, an above ground fuel storage tank located at 39 m, and septic lines located within 30 m of the wellhead.

19.5.1 Spills Records and Contaminated Sites Search Results

The Environment Canada Environmental Protection Branch did identify recorded spill events near this site as summarized below:

On September 26, 2003, approximately 500 L of diesel fuel spilled at the Yukon Electrical Company complex in Destruction Bay due to a faulty vent. The spill had reportedly been cleaned up but the soil was reportedly not removed.

There had been multiple spill events of raw sewage due to failures with the community sewage system in Destruction Bay. On two occasions in 1993, a mechanical failure caused approximately 37 800 L and 11 340 L of raw sewage to spill. The sewage had in both cases reportedly flowed over the ground surface and ponded near Kluane Lake. Additionally, four recorded spill events occurred in 1995 and 1996 caused by leaking or broken sewer mains, spilling raw sewage in the Destruction Bay area. Two events recorded spills of approximately 200 L each, but the other two events spilled an unknown amount.

The Government of Yukon Environmental Programs Branch and Environment Canada Environmental Protection Branch did not identify any other recorded spill event or any contaminated sites issues for this site or neighbouring sites. Spill records are provided in Appendix A19.

19.6 Identified Water System Deficiencies and Associated Risk

19.6.1 High and Medium Risk Deficiencies

- Poor wellhead construction (located in a pit below grade);
- There is no surface sanitary seal (grout or bentonite seal as required by the Canadian Groundwater Association's Guidelines for Water Well Construction);
- By definition of the Draft Yukon GUDI Assessment Guideline, the well is potentially under the direct influence of surface water because it does not meet the requirements of the Guidelines for Water Well Construction;
- The well is within 30 m of potential sources of contamination, including an above ground fuel storage tank at 2 m, an underground fuel storage tank at 18 m, and scrap cars within 20 m;
- There had been raw sewage spill events reported for the community sewage system;
- A recent bacteriological sample reported a positive total coliform count;
- The turbidity has been reported to be consistently above the CDWQG MAC of 1.0 NTU. Turbidity has been reported to be as high as 53.5 mg/L; and,
- There is no treatment or disinfection system.

19.6.2 Low Risk Deficiencies

- The color had previously exceeded the CDWQG aesthetic objective; and,
- It is unlikely that the supports for the elevated water storage tank are earthquake or collision proof.

19.7 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).

When considering potential upgrades, the costs were compared between completing the necessary upgrades to the Fire Hall wellhead and installation of treatment in order to provide safe domestic water at this site versus plumbing the domestic system into the Kluane School system. In light of the very poor water quality provided by the Fire hall well, all treatment options would include significant capital costs for pre-treatment (softening and filtration for turbidity reduction). Combined with these costs, the water treatment costs, the cost for disinfection, standard wellhead upgrades, and relocation of the AST adjacent to the well are far in excess of the option of plumbing the domestic water

system into the adjacent school. This option would also provide reduced maintenance requirements and therefore, reduced life cycle costs. The remedial options presented below assume that plumbing the upgraded School well into the domestic water supply for the Fire hall would be logistically feasible. Should PMA wish to consider other options, these could be provided. The option presented assumes that minor upgrades would be completed to the Fire hall well to protect the integrity of the aquifer, and that this well would remain in service to provide water for fire fighting requirements.

19.7.1 Priority 1

Until such time as the water system is plumbed into the adjacent school water system, it is recommended that appropriate signage be posted indicating that the water is not treated and should not be used for drinking purposes. PMA should consult with Environmental Health and Social Services to ensure that the wording on the advisory is appropriate. In the interim, until Priority 2 upgrades are completed, it is recommended that a bottled water station be provided by PMA.

19.7.2 Priority 2

The following Priority 2 upgrades are recommended to provide safe drinking water to the Destruction Bay Fire Hall:

- Following Priority 1 upgrades to the adjacent Kluane School water supply system, it is recommended that a new service line consisting of 1 inch insulated and heat traced pipe should be installed below grade between the School and the Fire Hall. The system should be re-plumbed so that the domestic water supply and the fire fighting supply are independent. An option for emergency back-up use of the domestic water for fire fighting purposes should be considered.
- The well casing should be extended to at least 500 mm above grade and the portion of the well pit that is below grade should be backfilled with a low permeability material such as bentonite or grout.

19.7.3 Priority 3

All risks with respect to the safety of the drinking water supply would be mitigated through Priority 2 upgrades.

19.8 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.

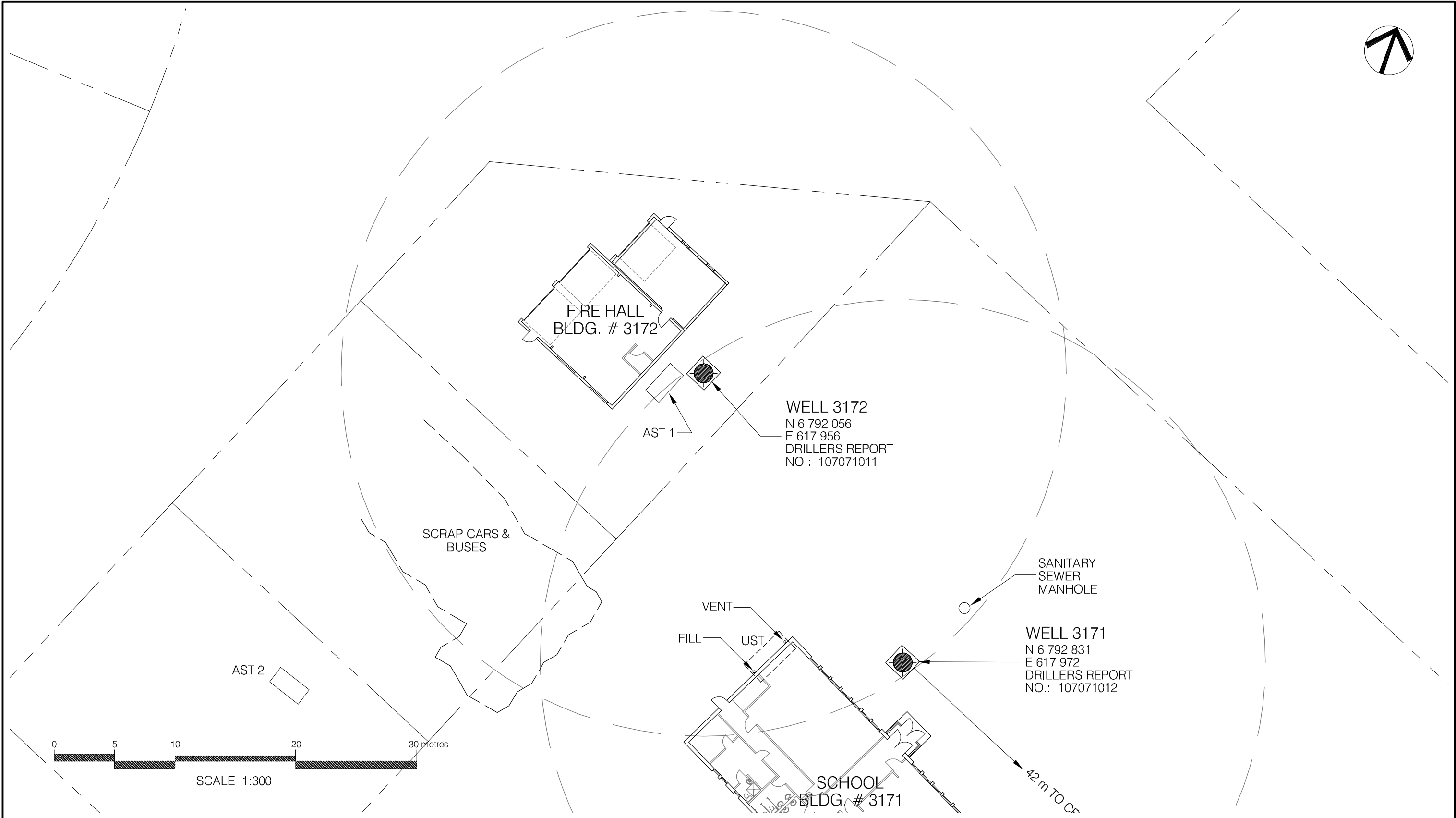
19.8.1 Priority 1

The cost would be minimal to provide appropriate advisory, and provide a bottled water station.

19.8.2 Priority 2

The estimated cost to complete the recommended Priority 2 upgrades are summarized below:

- A service line installed as recommended would cost approximately **\$3,600** for materials and labour;
- Plumbing modifications would cost approximately **\$200** for materials and labour.
- The minor well upgrades described above are estimated to cost in the order of **\$1,000**.




NOTES:
1. UTM COORDINATES OBTAINED WITH A HAND HELD GPS USING NAD83 SYSTEM AND ARE CONSIDERED TO BE ACCURATE TO 10.0 m, APPROXIMATELY.

30 m RADIUS FROM WATER WELL FOR CONSIDERATION OF PROXIMITY TO POTENTIAL CONTAMINANT SOURCES.

BUILDING STRUCTURES RELATIVE TO PROPERTY LINES ARE APPROXIMATE ONLY.


0	ISSUED FOR CLIENT REVIEW	DD/MM/YY	XXX		
No.	DESCRIPTION	DATE	APPROVED		
	REVISION				

**EBA Engineering Consultants Ltd.**

DESIGNED BY:
DRAWN BY:
DATE:
SCALE:
PROJECT No.:
ACAD FILENAME:

R. MARTIN
J. BUYCK
AUG. 2005
AS SHOWN
1260002.003
003-WESTERN REGION

CLIENT:

**Yukon**
Highways and Public Works
Property Management Branch

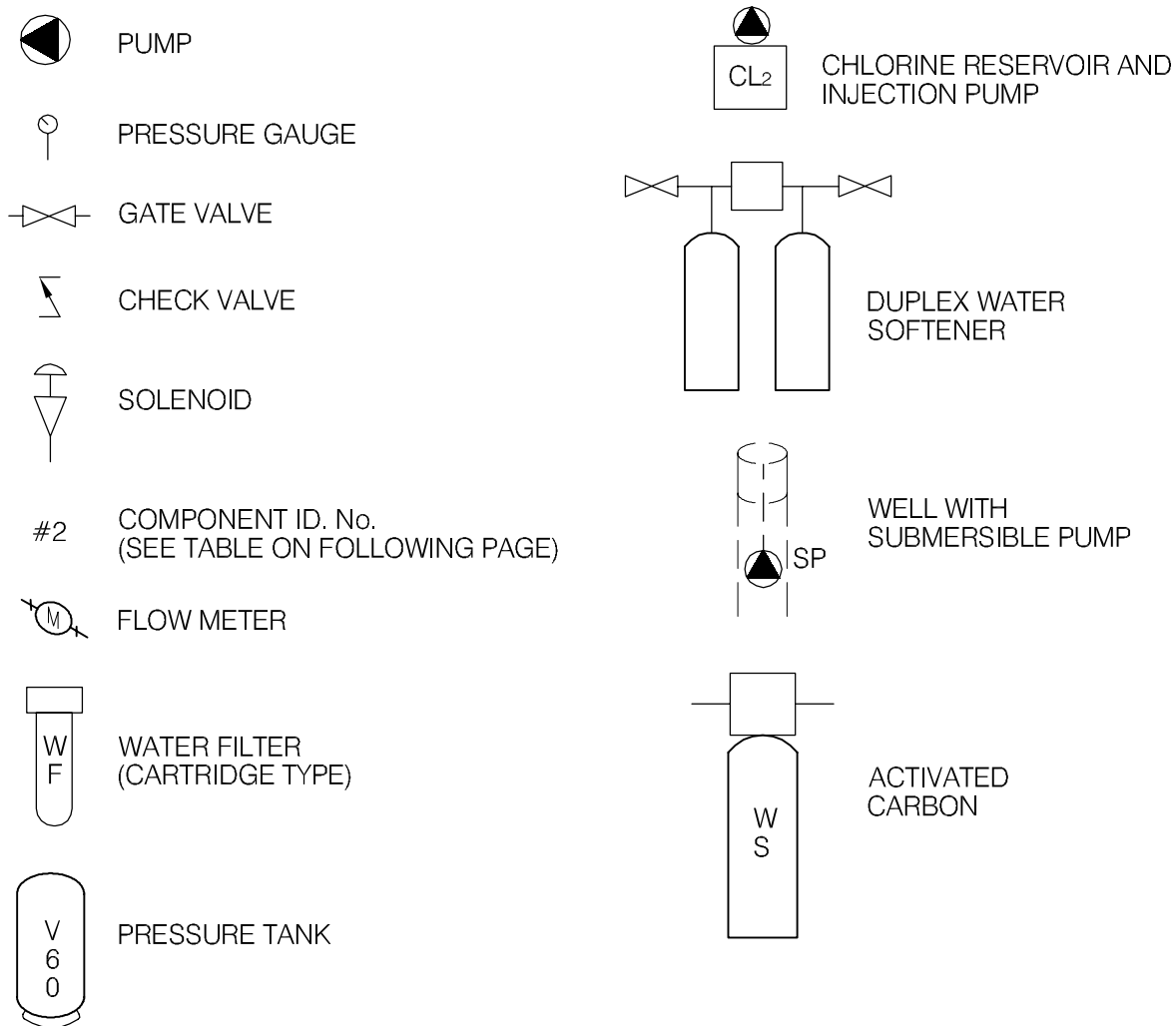
SMALL PUBLIC WATER SYSTEMS ASSESSMENT
WESTERN REGION

GOVERNMENT OF YUKON
HIGHWAYS & PUBLIC WORKS

DESTRUCTION BAY FIRE HALL
BUILDING # 3172
SITE LOCATION DIAGRAM
WELL ID: 3172

REVISION ISSUE
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FIGURE No.
FIGURE 3172-A

LEGEND



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CLIENT

Yukon
Highways and Public Works
Property Management Branch

PROJECT

SMALL PUBLIC WATER SYSTEMS ASSESSMENT
WESTERN REGION

TITLE

SCHEMATIC SYSTEM
LEGEND

DATE APRIL 2006

DWN. JSB

CHKD. RMM

FILE NO. 1260002

DRWG. LEGEND

**Western Region – Destruction Bay Firehall
Building # 3172**

DISTRIBUTION & TREATMENT SYSTEM DATA

Item	Description	Manufacturer	Model	Part No.	Serial No.	Size
1	SUB PUMP	MONARCH	SKDCL10		8906	
2	PRESSURE TANK	CON-AIRE	SC82T		11489X	
3	PRESSURE SWITCH	SQUARE D	FSG-2			2HP- 1/4" NPT
4	PRESSURE GAUGE	MARSA	2" / 0-100 PSI			1/4" NPT.
5						
6						
7						
8						
9						
10						

TABLE 3172- 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							
3172	Destruction Bay Fire Hall	9	Sept-04 to Jun-05	yes	1/9	no	16-Jun-05	no



Table 3172-2: Water Quality Results

SOURCE:		Building 3172 - Destruction Bay Fire Hall			GCDWQ Criteria		
Location/ Resident		Destruction Bay					
Address							
Treatment		None					
Disinfection		None					
Source of Water		On-site well					
Purpose of Sampling		Base Line	Base Line	Additional Analytical			
Sample Location							
Date Sampled		19-Oct-05	16-Jun-05	28-Jul-05	Lower	Upper Limit	
Physical Tests (ALS)					AO	MAC	AO
Colour (CU)		>60	<5	<5.0			15
Conductivity (uS/cm)			672	-			
Total Dissolved Solids		389	413	-			500
Hardness CaCO3		308	312	-	AO >200 = poor, > 500 unacceptable		
pH		8.42	8.43	-	6.5		8.5
Turbidity (NTU)		53.5	11.0	3.04		1	5
UV Absorbance				0.077			
% UV Transmittance				83.8			
Dissolved Anions (ALS)							
Alkalinity-Total CaCO3		245	231	-			
Chloride Cl		6.1	1.04	-			250
Fluoride F		0.31	0.327	-		1.5	
Silicate SiO4				-			
Sulphate SO4		109	150	-			500
Nitrate Nitrogen N		<0.01	<0.10	-		10	
Nitrite Nitrogen N		<0.005	<0.10	-		3.2	
Ammonia Nitrogen N				-			
Total Phosphate PO4				-			
Total Metals (ALS)							
Aluminum T-Al		<0.005	<0.010	-			
Antimony T-Sb		<0.0002	<0.00050	-		0.006	
Arsenic T-As		0.0007	0.00081	-		0.025	
Barium T-Ba		0.022	<0.020	-		1	
Boron T-B		1.48	1.14	-		5	
Cadmium T-Cd		<0.00001	<0.00020	-		0.005	
Calcium T-Ca			38.5	-			
Chromium T-Cr		0.0017	<0.0020	-		0.05	
Copper T-Cu		<0.001	<0.0010	-		1	
Iron T-Fe		0.09	0.291	-			0.3
Lead T-Pb		0.0007	<0.0010	-		0.01	
Magnesium T-Mg			52.4	-			
Manganese T-Mn		0.029	0.0479	-			0.05
Mercury T-Hg			<0.00020	-		0.001	
Potassium T-K			5.37	-			
Selenium T-Se			0.0026	-		0.01	
Sodium T-Na		31.3	30.9	-			200
Uranium T-U		0.0008	0.00072	-		0.02	
Vanadium T-V				-			
Zinc T-Zn		0.008	<0.050	-			5
Organic Parameters							
Tannin and Lignin				0.23			
Total Organic Carbon C				7.02			
Field Chemistry (EBA)							
pH				8.60	6.5		8.5
TDS (ppm)				203			500
EC (uS/cm)				620			
Temperature (°C)				13.9			
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)



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SMALL PUBLIC WATER SYSTEM ASSESSMENT

PART A: EBA Site Inspection

Inspector: Ryan Martin, Luke Lebel

Date July 28, 2005

WELL ID #	Owner	Location Description
3172	YTG	Destruction Bay Fire Hall

1. Well Location and Potential Contaminant Sources

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

Destruction Bay

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

km 1780 Alaska Highway

c. GPS location: N 6792050 E 617956

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 _____

Fire hall only

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

g. Nearest building, specify Fire Hall

h. Distance from well to building ~5m

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

j. Distance from well to nearest point of known field: Community septic >60m

k. Well location relative to field: ☐ upslope ☒ downslope ☐ lateral

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- 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

Service lines and main (likely) < 30m

- m. Is the well located within 300 m from a sewage lagoon or pit? ☐ Yes ☒ No unlikely

- n. Is the well located within 120 m from a solid waste site or dump, cemetery? ☐ Yes ☒ No unlikely

- 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

Enclosure fastened shut with nails

Entrance by animals? ☐ Yes ☒ No

Access possible, Evidence of insects

- 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 ~ 18 m

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

Potential Source 2: Creek; Distance from well to Potential Source 2: > 30 m

Potential Source 3: AST 2; Distance from well to Potential Source 3: 3 m

Potential Source 4: Scrap Cars; Distance from well to Potential Source 4: ~ 20 m

- t. Are there other wells on this property? ☒ Yes ☐ No

How many? 1 ☒ in use ☐ abandoned ☐ require proper sealing

School well @ ~ 26 m

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2. Well and Wellhead information:

- a. When was well installed? Year 1987 Month September
- 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 15 cm Material: ☒ steel ☐ plastic ☐ concrete
- g. Depth of well: 103 ft ☐ measured (if possible) ☐ reported ☒ from log
- h. Static water level below ground: 25 ft
☐ 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 3.5 ft slot size(s) 30 slot
Location of screen: from 99.5 ft to 103 ft 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
pump wooden 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 ~ 0.7 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 Access 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 or disinfection ☐ 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
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 _____

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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 *likely*
- 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 around piping - likely also heat trace

l. Comments on pump installation: _____

6. Conclusions

a. Comments on overall installation:

The water has a very pungent sulphur smell.

b. Recommendations: _____

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PART B: EBA Site Inspection

Inspector: BERT ALBISER

Date July 28/05

WELL ID #	Owner	Location Description
<u>3172</u>	<u>YTG</u>	<u>D'BAY FIRE HALL.</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: PRESSURE TANK.

Where is it located?

Comments: SOUTHERN END OF FIREHALL

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?

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:

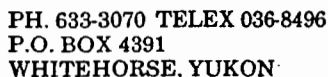
THIS INSIDE INSTALLATION IS OF GOOD QUALITY
WORKMANSHIP & MATERIAL.

HEAT TAPE IS OLD DOES NOT MEET CODE

b. Recommendations:

INSTALL TREATMENT AS REQUIRED FOR INSTALLATION
OF PROPORTIONAL CHLORINATOR. SHOCK
CHLORINATE COMPLETE SYSTEM AND PUT CHLORINE
INJECTION PUMP ONLINE. INSTITUTE REGULAR
RESIDUAL FREE CHLORINE TESTING.

INSTITUTE BI-ANNUAL WELL MAINTENANCE
PROGRAM.



107071011

Started Sept 30 1985

Completed Oct. 1.....1985

SIGNATURES

MIDNIGHT SUN.....

CLIENT.....

TITLE.....

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91782 Alaska Highway, Whitehorse, YT Y1A 5B7
PH: 867.667.3400 FAX: 867.667.7962

Spill Report Information

Spill #	0334
Jurisdiction	Yukon
Community	Destruction Bay
Address	
Highway	
Milepost	
Feature	Destruction Bay
Location and Cause	vent leak
Latitude	61.25274646
Longitude	-138.80244846
Incident Date	9/26/2003 12:00:00 PM
Lead Agency	Yukon Government - Environmental Programs
Other Agency	
Company(s)	Yukon Electrical Company Ltd
Amount	500
Units	Litres
Quantity	Estimate
Release Description	Spilled
Additional Quantiti	
Concentration	
Concentration Unit	
Phase	Liquid
Major Contaminant	Diesel
2nd Contaminant	
3rd Contaminant	
4th Contaminant	
Outcome	cleaned-up but soil had not been removed at time of report - no further information on file



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Spill Report Information

Spill #	9303
Jurisdiction	Yukon
Community	Destruction Bay
Address	
Highway	
Milepost	
Feature	Destruction Bay
Location and Cause	untreated sewage spilled due to mechanical failure - rubber coupling separated on the force main pipe elbow
Latitude	61.252546
Longitude	-138.800598
Incident Date	2/5/1993 2:30:00 PM
Lead Agency	Department of Indian Affairs and Northern Development
Other Agency	Yukon Government - Transportation
Company(s)	Community of Destruction Bay
Amount	37,800
Units	Litres
Quantity	Estimate
Release Description	Spilled
Additional Quantitit	
Concentration	
Concentration Unit	
Phase	Liquid
Major Contaminant	Raw Sewage
2nd Contaminant	
3rd Contaminant	
4th Contaminant	
Outcome	effluent flowed over natural terrain and collected in a pond beside Kluane Lake - some collected, most frozed - to be excavated to sewage lagoon



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Spill Report Information

Spill #	9304
Jurisdiction	Yukon
Community	Destruction Bay
Address	
Highway	
Milepost	
Feature	Destruction Bay
Location and Cause	untreated sewage spilled due to mechanical failure - coupling/pipe separation again
Latitude	61.252546
Longitude	-138.800598
Incident Date	3/29/1993
Lead Agency	Department of Indian Affairs and Northern Development
Other Agency	Yukon Government - Transportation
Company(s)	Community of Destruction Bay
Amount	11340
Units	Litres
Quantity	Estimate
Release Description	Spilled
Additional Quantitit	
Concentration	
Concentration Unit	
Phase	Liquid
Major Contaminant	Raw Sewage
2nd Contaminant	
3rd Contaminant	
4th Contaminant	
Outcome	similar to PACY 9303 - sewage collected in same pond - repairs to sewage system to be completed - spill being cleaned up with vacuum truck



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Spill Report Information

Spill #	9515
Jurisdiction	Yukon
Community	Destruction Bay
Address	
Highway	
Milepost	
Feature	Destruction Bay
Location and Cause	pipeline sleeve broke 10m from final discharge - unknown cause for breakage
Latitude	61.2480555555556
Longitude	-138.793888888889
Incident Date	5/12/1995
Lead Agency	Department of Indian Affairs and Northern Development
Other Agency	
Company(s)	YTG
Amount	180
Units	Litres
Quantity	Estimate
Release Description	Spilled
Additional Quantit	
Concentration	
Concentration Unit	
Phase	Liquid
Major Contaminant	Raw Sewage
2nd Contaminant	
3rd Contaminant	
4th Contaminant	
Outcome	spill occurred sometime at the end of April 1995 - not reported to spill line - pipeline repaired - improvements to system to be made byt YTG in summer



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Spill Report Information

Spill #	9634
Jurisdiction	Yukon
Community	Destruction Bay
Address	
Highway	
Milepost	
Feature	Destruction Bay
Location and Cause	break in main sewer line
Latitude	61.2480555555556
Longitude	-138.793888888889
Incident Date	6/12/1996
Lead Agency	Department of Indian Affairs and Northern Development
Other Agency	
Company(s)	YTG
Amount	
Units	
Quantity	Unknown
Release Description	Spilled
Additional Quantit	
Concentration	
Concentration Unit	
Phase	Liquid
Major Contaminant	Raw Sewage
2nd Contaminant	
3rd Contaminant	
4th Contaminant	
Outcome	pump activated 3x per day - approx 500 ga each time but sewage doesn't reach lagoon - DIAND inspected - to be repaired - no risk to environment



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Spill Report Information

Spill #	9649
Jurisdiction	Yukon
Community	Destruction Bay
Address	
Highway	
Milepost	
Feature	Destruction Bay
Location and Cause	leaking sewer line
Latitude	61.248055555556
Longitude	-138.793888888889
Incident Date	8/7/1996
Lead Agency	Department of Indian Affairs and Northern Development
Other Agency	
Company(s)	YTG
Amount	50
Units	Gallons (US, liquid)
Quantity	Estimate
Release Description	Leaked
Additional Quantitit	rate of spill reported at 1L/s
Concentration	
Concentration Unit	
Phase	Liquid
Major Contaminant	Raw Sewage
2nd Contaminant	
3rd Contaminant	
4th Contaminant	
Outcome	leak stopped 8/9/96 - line repaired by patching - Tony will take up with YTG on way back from site - no further information on file



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Spill Report Information

Spill #	9672
Jurisdiction	Yukon
Community	Destruction Bay
Address	
Highway	
Milepost	
Feature	Destruction Bay
Location and Cause	leaking utilidor - similar to Spill No. 9649
Latitude	61.248055555556
Longitude	-138.793888888889
Incident Date	9/24/1996 2:30:00 PM
Lead Agency	Department of Indian Affairs and Northern Development
Other Agency	
Company(s)	YTG
Amount	
Units	
Quantity	Unknown
Release Description	Leaked
Additional Quantitit	
Concentration	
Concentration Unit	
Phase	Liquid
Major Contaminant	Raw Sewage
2nd Contaminant	
3rd Contaminant	
4th Contaminant	
Outcome	education truck needed to pump up before it enters creek - no further information on file

**Photo 0610:** 3172 Destruction Bay Fire Hall**Photo 0611:** 3172 Above ground fuel storage tank (left), wellhead enclosure (right)**Photo 0612:** 3172 Wellhead in pit**Photo 0613:** 3172 Junk cars (centre), fire hall (right)



Photo 0122: 3172 Elevated water storage tank



Photo 0119: 3172 Pressure tank