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**Spill Contingency Plan
Resolute Bay Landfill Remediation
Resolute Bay Airport, Nunavut**

**Prepared By:
Transport Canada**

April 2011

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i Preamble

This spill contingency plan has been developed based on the requirements to submit a water license application to the Nunavut Water Board. The spill response plan has been developed based on the following documents and guidelines and will accompany the spill response plan as a working document on site at all times:

- 1) *Environmental Protection Act*, Spill Contingency Planning and Reporting Regulations R-068-93, Government of Northwest Territories, 1990.
- 2) Contingency Planning and Spill Reporting in Nunavut, A Guide to the New Regulations
- 3) Guidelines for Spill Contingency Planning, Water Resources Division Indian and Northern Affairs Canada, 2007.
- 4) NT-NU Spill Report Form

There is no storage of any petroleum products or hazardous materials at this site. The spill plan has been developed for the following potential spills occurring at the project location:

- Heavy equipment working at the site. Heavy equipment may include a backhoe, dump truck, grater, bulldozer, crane, packer, and loader. Heavy equipment operators are required to have their equipment properly maintained without any leaks. No refuelling of equipment is allowed on site. Refuelling will only be allowed in a staging area away from the project location. The use of drip pans will be mandatory when refuelling vehicles;
- Equipment spilling fuel if a rollover is encountered, and;
- The potential of encountering materials such as fuels (gas/diesel), oil, antifreeze and batteries when removing derelict vehicles at the site.

Operators are required to have 2 (two) 50 gallon spill kits on site with them at all times. Operators will also have the spill plan containing contacts and procedures for emergencies such as hospitals, fire department, police and territorial governmental department; environmental spills **24-hour reporting phone number (867) 920-8130**. Should a release of fuel from the equipment occur, the contractor is required to make use of the 50 gallon spill kit on site. All spills are required to be reported regardless of volume to the Spill Inspector at (867) 975-4295.

1.0) Introduction and Project Details

i) Company Details

Transport Canada has applied for a water license to the Nunavut Water Board to remediate the two (2) landfills and metal storage sites at the Resolute Bay Airport, Nunavut.

Contact information:

Project Manager
Transport Canada
Prairie and Northern Region
Darryl Pederson, Superintendent Contaminated Sites
1100, 9700 Jasper Avenue
Edmonton, Alberta T5J 4E6
(780) 495-6046

24-Hour Spill Reporting:	(867) 920-8130
INAC's Spill Inspector:	(867) 975-4295
Ambulance:	(867) 979-4422
Fire Department:	(867) 979-4422
Hospital Emergency Room:	(867) 979-4422
Police Department:	(867) 979-1111

ii) Effective Date of Plan

Effective date for of spill contingency plan is April 14, 2011.

iii) Last Revisions to Plan

Last revisions to the spill contingency plan will be required when a contractor is awarded the contract.

iv) Distribution of Plan

Distribution of the plan has been sent to NWB for distribution and comments to other federal, territorial governments.

v) Purpose and Scope of Plan

The purpose of this plan is to outline response actions for potential spills of appropriate sizes including worst case scenario. The plan identifies key responsibilities in the event of a spill, as well as equipment and other recourses available to respond to a spill. As previously mentioned, no storage tanks and hazardous materials are

stored on site. No refuelling equipment is allowed on site other than a staging area away from the work site. The scope of the plan, therefore, addresses the equipment on site potentially releasing fuel. This includes a backhoe, grater, loader, bulldozer, crane and dump truck and the removal of abandoned vehicles. The source of potential spills could result from the following:

- i) Equipment leaking;
- ii) Equipment roll over;
- iii) Refuelling at designating staging area;
- iv) Encounter batteries, fuels (gas/diesel) and antifreeze when removing derelict vehicles.

vi) Environmental Policy

Transport Canada must adhere to all federal legislation and territorial requirements.

vii) Site Description

Resolute Bay airport is approximately 5 km northeast from the Inuit hamlet Resolute on Cornwallis Island in Nunavut, Canada. The airport was originally constructed in 1949 by the Royal Canadian Air Force. From 1964 to July 1, 1995, Resolute Bay Airport was owned by the Government of Canada and operated by Transport Canada. In July 1995, ownership was transferred to the Government of Northwest Territories. From July 1, 1995 to April 1, 1999, the airport was operated by the Arctic Airport Division of the Department of Transportation. Since April 1, 1999, the airport has been owned by the Government of Nunavut (GN) and operated by the Nunavut Airports Division of the Nunavut Department of Community Government, Housing and Transportation.

Past activities for transportation, communications and administration in the Arctic have resulted in the generation of solid waste. Solid waste disposal from military activities and the community itself have resulted in the creation of several landfill sites. Two landfills, the solid waste landfill and the historic landfill, are present near the airport. The third site, known as the vehicle storage area is north of the solid waste landfill.

Waste material was dumped in the solid waste landfill during the 1960s and 1970s. The landfill has not been officially used since 1995, when a new landfill was constructed southeast of the hamlet. However, as recent as 2005, there was evidence of minor dumping of waste in the landfill. It is necessary to officially close the site and place proper notification.

The historic landfill was used from 1947 to 1995. The Canadian and American military forces used this landfill between 1947 and 1964. Transport Canada and various airport tenants used the landfill between 1964 and 1995.

The vehicle storage area is located near the solid waste landfill and used to store metal debris such as old vehicles and unused airport equipment.

The major concern associated with landfills is the production and release of contaminants in landfill leachate which can result in significant surface water contamination. Leachate can contain petroleum products, paints, household chemicals, solvents, glues and inks.

As a condition of the Arctic A Airport transfer agreement between the Nunavut Government and Transport Canada, the environmental issues which existed prior to the airport transfer are to be remediated, as well as any items identified by the Nunavut Government within six years of the transfer date.

Previous investigations of the landfill sites indicate that there has been an impact to groundwater and a potential risk to aquatic life in areas where buried refuse has been previously identified.

Due to changes in regulatory requirements and to fulfill Transport Canada's obligations under the transfer agreements for additional areas identified within six years of transfer (as per the articles of the agreements) resulting in a requirement to revisit the baseline studies and remedial action plans with the additional information provided by the Nunavut Territory.

viii) Project Description

The project details will consist of off-site recycling of selected metal debris that can be accessed. Surface waste material would be consolidated and placed on the main slope, extending down the toe of the slope. Waste material would be placed on the main slope as per specifications by a qualified professional to ensure a stable slope with an acceptable factor for safety. Exposed waste would be covered with a geotextile and available fill material. The solid waste landfill should be shaped so that overland drainage is properly managed and surface water is directed away from the landfill. Long term monitoring will also be required to ensure the remediation targets are working to the designed specifications. This is the only viable option due to the location and type of contamination that exists. The maximum amount of material will be removed and recycled while any additional material will be managed to eliminate exposure to the environment.

Schedule

2011-2012

The schedule for the 2011-2012 phase of this project will be:

- To complete the remedial options study;
- Segregation of exposed hazardous waste at Area of Environmental Concern (AEC) 1, 2 & 3;
- To derive site specific target levels;

2012-2013

The schedule for the 2012-2013 phase of this project will be:

- Recovery and consolidation of hazardous and non-hazardous waste;

2013-2014

The schedule for the 2013-2014 phase of this project will be:

- Off site disposal of non-hazardous waste from AEC 1, 2 & 3 consolidated at AEC 1;
- Off site disposal of hazardous waste from AECs 1, 2 & 3;
- Capping and closure of landfills and landscaping;

2014-2015

The schedule for the 2014-2015 phase of this project will be:

- To focus on surface water treatment at AECs 1 & 2 (Remedial Systems Implementation) and site monitoring;

2015-2016

The schedule for the 2015-2016 phase of this project will be:

- Surface water and sediment monitoring;
- To focus on site monitoring and closure;

ix) List of Hazardous Materials Stored on Site

No hazardous materials are stored on site.

x) Existing Preventative Measures (Secondary Containment /Fuel Handling)

No hazardous materials and fuel storage tanks are stored on site. In addition, no refuelling is allowed on site other than the designated staging area. Drip pans will be required when refueling away from the construction site at the staging area.

xi) Additional Copies – How to Obtain

Several copies of the plan are kept on-site with the contractor and the Transport Canada Project Officer while on site.

Contact Transport Canada at:

Project Manager
Transport Canada
Prairie and Northern Region
Darryl Pederson, Superintendent Contaminated Sites
1100, 9700 Jasper Avenue
Edmonton, Alberta T5J 4E6
(780) 495-6046

xii) Process for Staff Response to Media and Public

The process for enquiries is to contact Transport Canada Communications at:

Glyniss Hutchings
Communications
Transport Canada
344 Edmonton Street
Winnipeg, Manitoba
R3C 0P6
(204) 984-2256

2.0) Action Plan

i) Potential Spill Size/Impacts/Procedures/Reporting/Restoration

- Potential spill sizes would likely not exceed 50 gallons of diesel/gas or antifreeze. This is based on the size of fuel tanks in equipment and derelict vehicles at the site. The potential of a piece of equipment to tip over would also be a source of the fuel, the area would be small due to the limited amount of fuel stored in the equipment.

The procedure for initial action is to ensure the safety of the operator and safe extraction and remove all source of ignition. Once this is complete, the equipment will need to be assessed if fuel is leaking and take appropriate action to prevent and stop all fuel leaking. Once this is completed the spill can be assessed and

the spill response kit may be used to absorb any free product. If fuel entered into the soil, this may be removed and placed into the Transport Canada owned and operated land farm. The contractor on site will be required to enact and respond to the spill. If the spill kit absorbent pad/socks are used, they may be placed back into the spill kit container for later disposal at a facility in Resolute Bay.

Spill reporting consists of completing the attached NT-NU Spill Report form in Appendix II and submitting it to Government of Nunavut. Reporting should also consist of contacting the INAC's Manager of Field Operations pursuant to Schedule B of the Spill Contingency Planning and Reporting Regulations at (867) 975-4295 and/or by fax at (867) 979-6445. Spill reporting will be the responsibility of the contractor working on site. If batteries are encountered they will be collected and containerized. They will then be shipped outside of Nunavut for recycling.

- The second form of spills may result from removing the derelict vehicles. The stockpile of vehicles create an unsafe condition to remove any fluid that may remain within them. Therefore, once the vehicles can be removed, they can be placed in a safe location to be inspected for fluids. In the event of a spill, the following procedures should be considered:
 - a. First consider and then remove or minimize any hazards to human life, health, safety or the environment.
 - b. Take necessary steps to initially contain or prevent the spread of the spill.
 - c. Try to identify and stop the source of the spill or leak.
 - d. Collect liquids through the use of such equipment as absorbent pads.
 - e. Immediately, collect and transport any contaminated soil resulting from the spill to the LTU for treatment.
 - f. Send for help if required.
 - g. Report the spill to the INAC Spill Inspector and complete the NT-NU Spill Report Form (attached).
 - h. Complete the collection and disposal of contaminated materials as per direction from the regulatory agencies and applicable regulations.

The facility will have monitoring wells installed to identify if there is any contamination leaking from the facility. The wells are tested once per year at a minimum. If fuel is identified in a well the following steps will be implemented:

- Sample the well and identify the contamination from a certified lab
- Identify the location where the potential contamination is originating
- The likely location will be from the landfill, therefore, limit the search to the area nearest to the monitoring well
- Sample soil outside the facility to identify the direction of the source of contamination
- Remove the contaminate soil from the landfill up gradient from the well. Continue until the source can be identified.
- If contaminated soil is identified outside the facility, remove and place into the LTU and backfill the excavation with clean fill material.
- Continue to sample monitoring wells 2-3 times per year to ensure the source of contamination has been eliminated

If the sump area is full of water and is required to be removed due to a wet season, the following steps are in place:

- Test the water to ensure the water may be discharged as per the requirements in the water license issued by NWB
- If the water does not meet the required discharge levels the water will need to be treated with in an oil water separator. The system will operate to treat the water prior to discharge. The water will be treated then sampled and sent to a certified lab to ensure it meets the discharge requirements under the water license. Only if it meets this requirement may it be discharged.
- If an oil water separator is not sufficient to treat the water, the water will be pumped into 205L drums and sent to an approved and certified facility to treat the contaminated water.
- Any discharge from the sump in the LTU to the environment must meet the following Effluent quality limits as described in the water license Section D Part 4:

Parameter	Maximum Concentration of any Grab Sample (ug/L)
PH	6 to 9 (pH units)
Oil and Grease	5000
Arsenic (total)	100
Cadmium (dissolved)	10
Chromium (dissolved)	100
Cobalt (dissolved)	50
Copper (dissolved)	200
Lead (dissolved)	1
Mercury (dissolved)	0.6
Nickel (dissolved)	200
PCB (dissolved)	1000
Phenols	20

Zinc (total)	500
Benzene	370
Toluene	2
Ethyl benzene	90

3.0) Resource Inventory

Two (2) 50-gallon spill kits will be on site at a designated location adjacent to the work area. The 50 – gallon universal sorbent spill kit is an appropriate size due to the volumes of fuel in the equipment. The contents of the spill kit include:

- a. 10 socks
- b. 100 pads
- c. 8 pillows
- d. 1 drain cover
- e. 1 caution tape
- f. 2 pairs nitrile gloves
- g. 2 pairs safety goggles
- h. 2 protective coveralls
- i. 10 disposable bags
- j. 1 instruction book

In addition, earth moving equipment located at the site may be required to clean the small spill such as:

- 1) Small backhoe
- 2) Dump truck

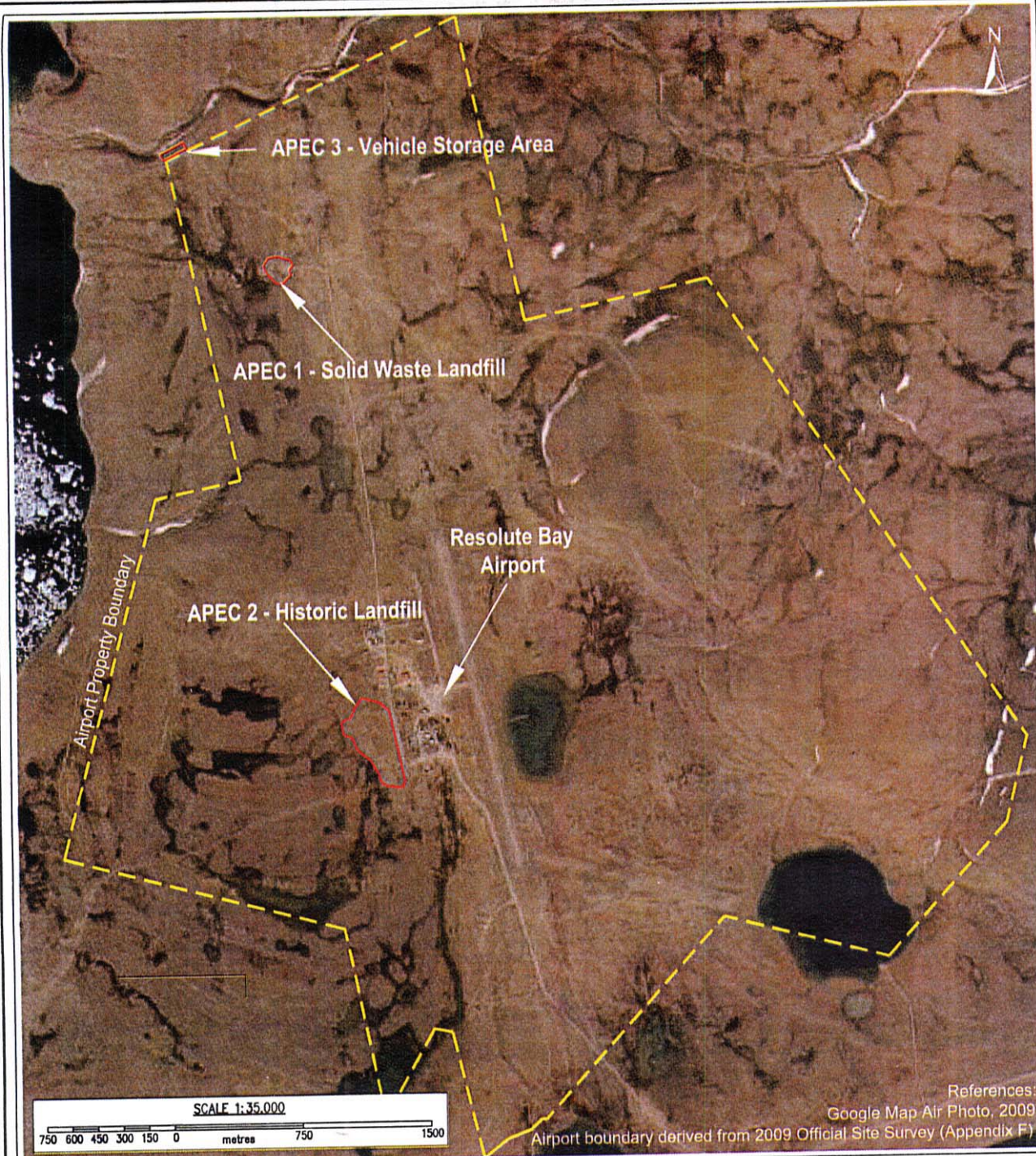
4.0) Training Program




All individuals entering the site are required to participate in an orientation session. The session includes responding to a spill and the steps involved including proper use of the spill kit, contact information and how to fill out the proper spill report sheet (attached). During the session, all locations of the spill plan and spill kits are provided and a copy of the spill plan will remain with the contractor and operators. All contractors are required to have basic first aid training as well as WHIMS training prior to working on site.

APPENDIX I

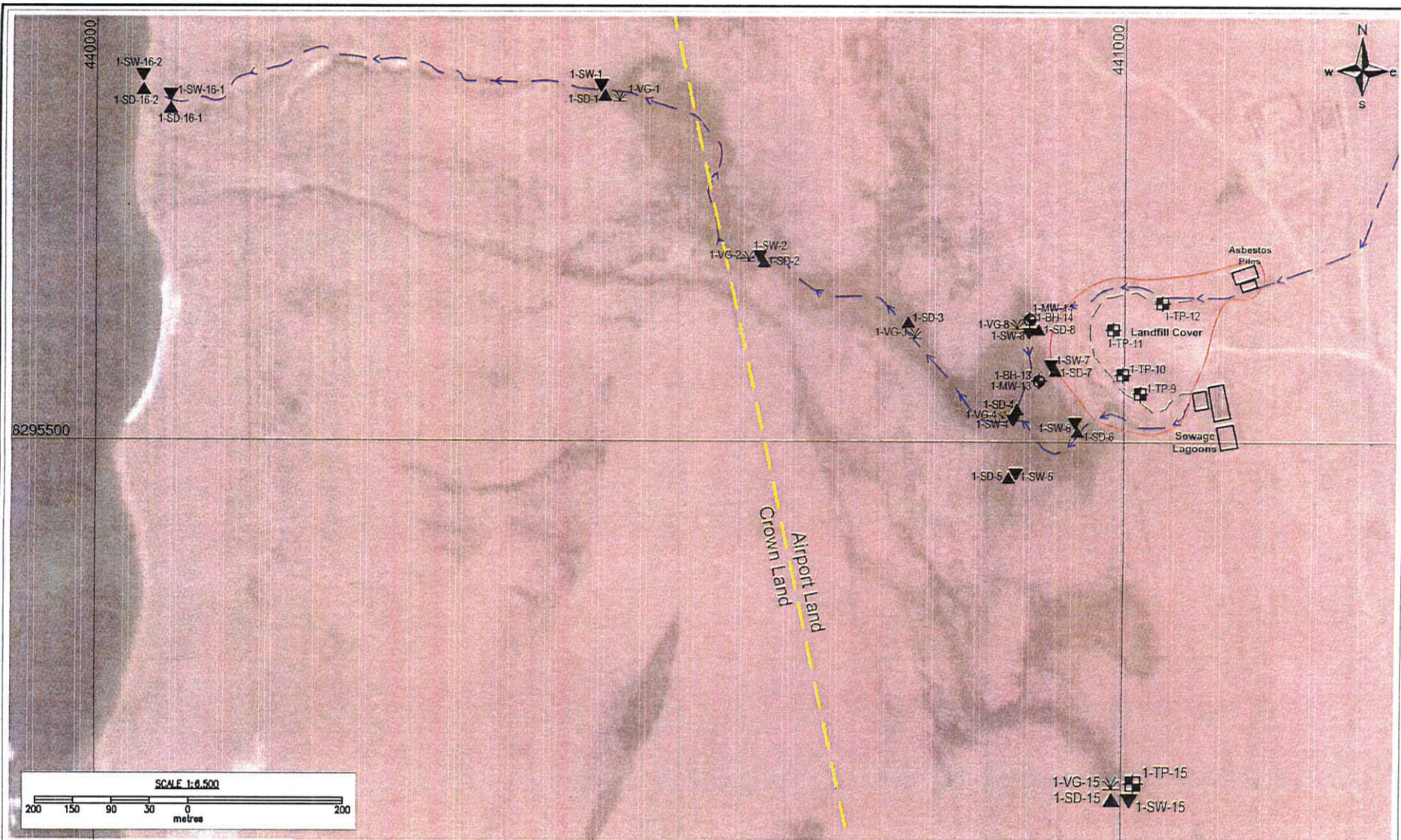
FIGURES

- 1) Location Resolute Bay Landfills**
- 2) Contour Map Location of Resolute Bay
Landfills / Metal Storage**












Title:		STUDY AREA AND APECS	
Project:		RESOLUTE BAY AIRPORT LANDFILLS ENVIRONMENTAL SITE ASSESSMENT - FINAL REPORT	
Client:		 PUBLIC WORKS AND GOVERNMENT SERVICES  TRANSPORT CANADA	
 FRANZ ENVIRONMENTAL INC. CONSULTING • ENGINEERING • TECHNOLOGIES		Date:	
		FIGURE 1	







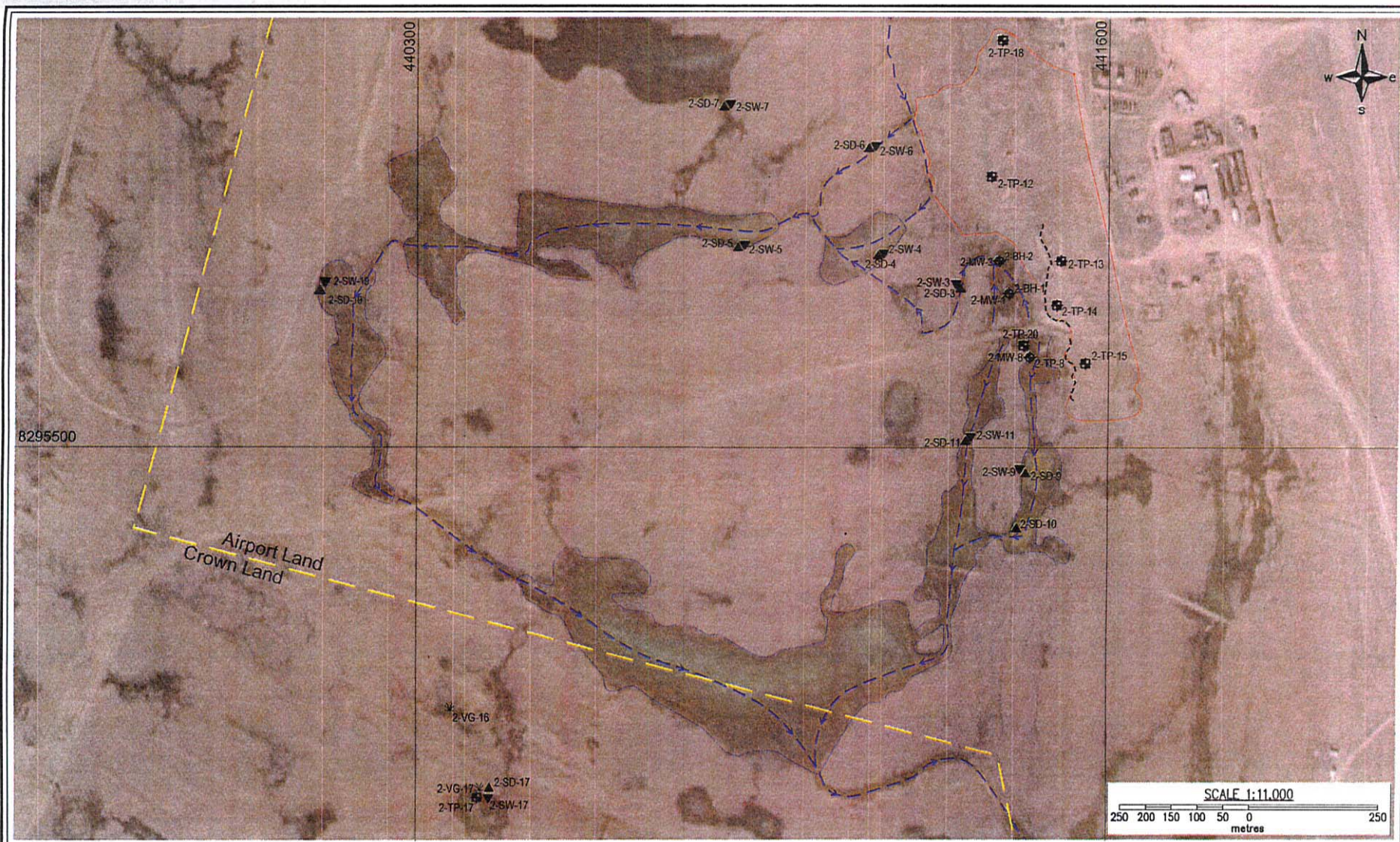
LEGEND

- | | | | |
|---|-----------------------------------|---|----------------------------|
|  | Landfill Extent |  | Borehole / Monitoring Well |
|  | Airport Property Boundary |  | Surface Water (SW) |
|  | Surface Water & Direction of Flow |  | Sediment Sample (SD) |
|  | Top edge of landfill |  | Vegetation Sample (VG) |
|  | Soil Sample (TP) | | |

References:

Google Earth satellite image, 2009
 Site locations based on dGPS coordinates (UTM - NAD 83)
 Airport boundary derived from 2009 Official Site Survey (Appendix F)

Title: APEC 1 - Sampling Locations	
 Project: RESOLUTE BAY AIRPORT LANDFILLS ENVIRONMENTAL SITE ASSESSMENT FINAL REPORT	Client:  
	Date: MARCH 2010
Scale: 1 : 6,500	FIGURE 2



SCALE 1:11,000
250 200 150 100 50 0 250
metres

LEGEND

- | | |
|-----------------------------------|------------------------|
| Landfill Extent | Surface Water (SW) |
| Airport Property Boundary | Sediment Sample (SD) |
| Surface Water Body | Vegetation Sample (VG) |
| Surface Water & Direction of Flow | Soil Sample (TP) |
| Top edge of landfill | |
| Borehole / Monitoring Well | |

References:
Google Earth satellite image, 2009
Site locations based on dGPS coordinates (UTM - NAD 83)
Airport boundary derived from 2009 Official Site Survey (Appendix F)

Title: APEC 2 - Sampling Locations



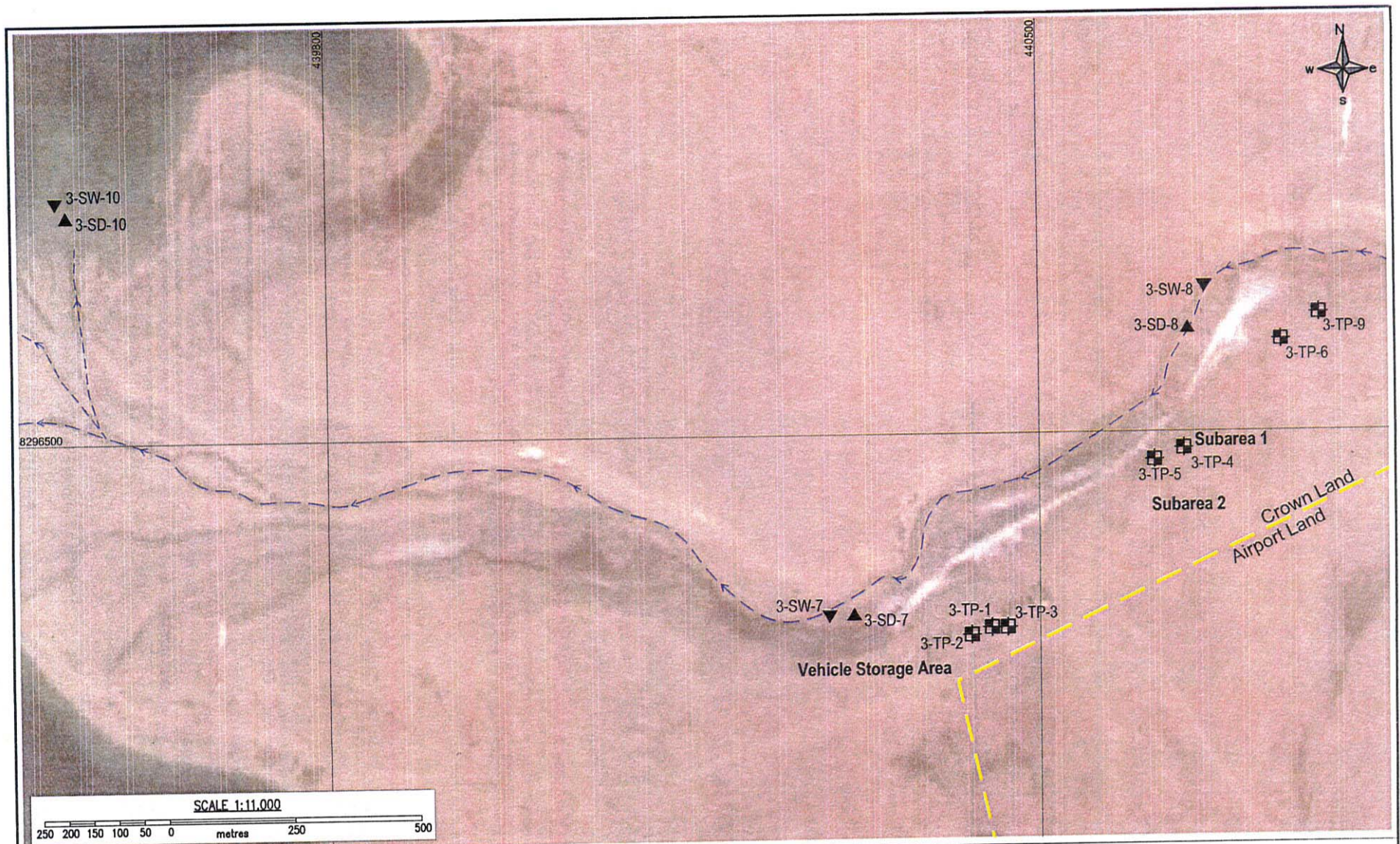
Date: MARCH 2010

Scale: 1 : 11,000

Project:
RESOLUTE BAY AIRPORT LANDFILLS
ENVIRONMENTAL SITE ASSESSMENT
FINAL REPORT

Client:
 PUBLIC WORKS AND
GOVERNMENT SERVICES
CANADA TRANSPORT
CANADA

FIGURE 3



LEGEND

- Extent of APEC
- Airport Property Boundary
- < Surface Water & Direction of Flow
- Soil Sample (TP)
- ▼ Surface Water Sample (SW)
- ▲ Sediment Sample (SD)

References:

Google Earth satellite image, 2009
 Site locations based on dGPS coordinates (UTM - NAD 83)
 Airport boundary derived from 2009 Official Site Survey (Appendix F)

Title:

APEC 3 - Sampling Locations



Date:

MARCH 2010

Scale:

1 : 11,000

Project:

RESOLUTE BAY AIRPORT LANDFILLS
 ENVIRONMENTAL SITE ASSESSMENT
 FINAL REPORT

Client:



FIGURE 4

Appendix II

NT-NU Spill Report Form



Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130

FAX: (867) 873-6924

EMAIL: spills@gov.nt.ca

A		REPORT DATE: MONTH – DAY – YEAR		REPORT TIME		<input type="checkbox"/> ORIGINAL SPILL REPORT, OR <input type="checkbox"/> UPDATE # TO THE ORIGINAL SPILL REPORT		REPORT LINE USE ONLY	
B		OCCURRENCE DATE: MONTH – DAY – YEAR		OCCURRENCE TIME				REPORT NUMBER	
C		LAND USE PERMIT NUMBER (IF APPLICABLE)				WATER LICENCE NUMBER (IF APPLICABLE)			
D		GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM THE NAMED LOCATION					REGION <input type="checkbox"/> NWT <input type="checkbox"/> NUNAVUT <input type="checkbox"/> ADJACENT JURISDICTION OR		
E		LATITUDE DEGREES MINUTES SECONDS			LONGITUDE DEGREES MINUTES SECONDS				
F		RESPONSIBLE PARTY OR VESSEL NAME			RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION				
G		ANY CONTRACTOR INVOLVED			CONTRACTOR ADDRESS OR OFFICE LOCATION				
H		PRODUCT SPILLED			QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES			U.N. NUMBER	
		SECOND PRODUCT SPILLED (IF APPLICABLE)			QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES			U.N. NUMBER	
I		SPILL SOURCE			SPILL CAUSE			AREA OF CONTAMINATION IN SQUARE METRES	
J		FACTORS AFFECTING SPILL OR RECOVERY			DESCRIBE ANY ASSISTANCE REQUIRED			HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT	
K		ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS							
L		REPORTED TO SPILL LINE BY		POSITION		EMPLOYER		LOCATION CALLING FROM	
M		ANY ALTERNATE CONTACT		POSITION		EMPLOYER		ALTERNATE CONTACT LOCATION	
N		RECEIVED AT SPILL LINE BY		POSITION Station operator		EMPLOYER		LOCATION CALLED Yellowknife, NT	
		LEAD AGENCY <input type="checkbox"/> EC <input type="checkbox"/> CCG <input type="checkbox"/> GNWT <input type="checkbox"/> GN <input type="checkbox"/> ILA <input type="checkbox"/> INAC <input type="checkbox"/> NEB <input type="checkbox"/> TC				SIGNIFICANCE <input type="checkbox"/> MINOR <input type="checkbox"/> MAJOR <input type="checkbox"/> UNKNOWN		FILE STATUS <input type="checkbox"/> OPEN <input type="checkbox"/> CLOSED	
AGENCY		CONTACT NAME				CONTACT TIME		REMARKS	
LEAD AGENCY									
FIRST SUPPORT AGENCY									
SECOND SUPPORT AGENCY									
THIRD SUPPORT AGENCY									