Shell Canada Energy

Proposed Unipkat I-22 Sump Remediation Project Description

IEG CONSULTANTS LTD.

A04025A02

Shell Canada Energy

Proposed Unipkat I-22 Sump Remediation Project Description

Prepared for
Shell Canada Energy
400 – 4th Avenue SW
Calgary, Alberta T2P 2H5

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November 2010

EXECUTIVE SUMMARY

Shell Canada Energy proposes to conduct a sump remediation program at their former wellsite, Unipkat I-22 sometime between January 2010 and April 2010.

Unipkat I-22 is located within the Inuvialuit Settlement Region (ISR), along the eastern bank of Arvoknar Channel, southwest of the Kendall Island Bird Sanctuary. The closest community is Tuktoyaktuk.

The sump remediation program will involve the following activities:

- building an ice road to access the site
- mobilizing heavy machinery, fuel, and camp accommodations
- site and project boundary layout
- clean soil stripping and stockpiling
- soil excavation
- trucking to Inuvik
- soil containment in Inuvik
- soil testing on the sidewalls and base of the excavation as well as stockpiled soils.
- partial site backfill and re-contouring of excavation within local topography
- demobilization from site of all infrastructure and generated waste
- allowing soils to de-water in Inuvik and disposal (at southern landfill) of drilling waste

The program will take approximately three months to conduct. Trucking via ice road will be used to transport all infrastructure and personnel. Camp accommodations will be provided onsite. Water for the camp will be supplied from Inuvik and all domestic waste will be collected and transported to Inuvik for disposal.

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2. CONTACT NAMES AND ADDRESSES

Randall Warren
Shell Canada Energy
PO Box 100 Station M
Calgary, Alberta T2P 2H5

Telephone: (403) 691-2521
Facsimile: (403) 691-7948
Email: randall.warren@shell.com

3. REGULATORY APPROVALS

Shell Canada Energy (Shell) will apply for a number of permits and approvals to conduct the program as described in this Project Description. The permits and approvals required are identified in Table 3-1 below.

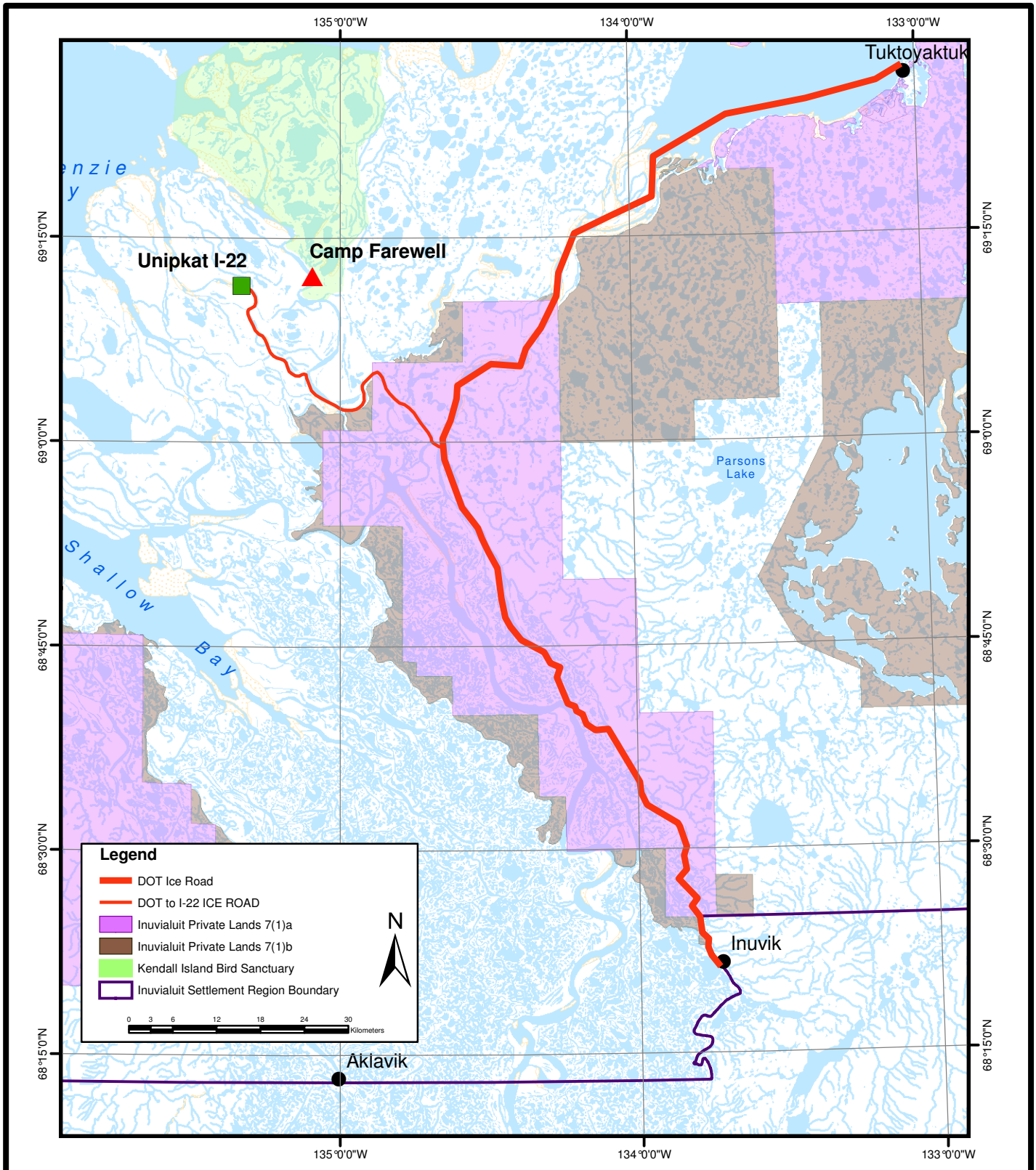
Table 3-1 Regulatory Approvals

Instrument and Legislation	Agency	Activities and Approval Required
Project Description *Inuvialuit Final Agreement*	Environmental Assessment Coordinator Environmental Impact Screening Committee PO Box 2120 Inuvik, NT X0E 0T0 Telephone: (867) 777-2828 Facsimile: (867) 777-2610	Screening required for activities within the Inuvialuit Settlement Region
Class A Land Use Permit *Territorial Lands Act* *Territorial Land Use Regulations*	District Manager North Mackenzie District Indian and Northern Affairs Canada PO Box 2100 Inuvik, NT X0E 0T0 Telephone: (867) 777-2997 Facsimile: (867) 777-2090	Land use permit required for the use of self propelled machinery for moving earth and the storage of fuel in a single container over 4000L.
Type B Water Use license *Industrial Classification*	NWT Water Board 5114 – 49 Street PO Box 1326 Yellowknife, NT X1A 2N9 Telephone: (867) 765-0106 Facsimile: (867) 765-0114	Possible use of water beyond 100 m^3 per day to construct ice road. Possible disturbance to riverbank and frozen river bed.

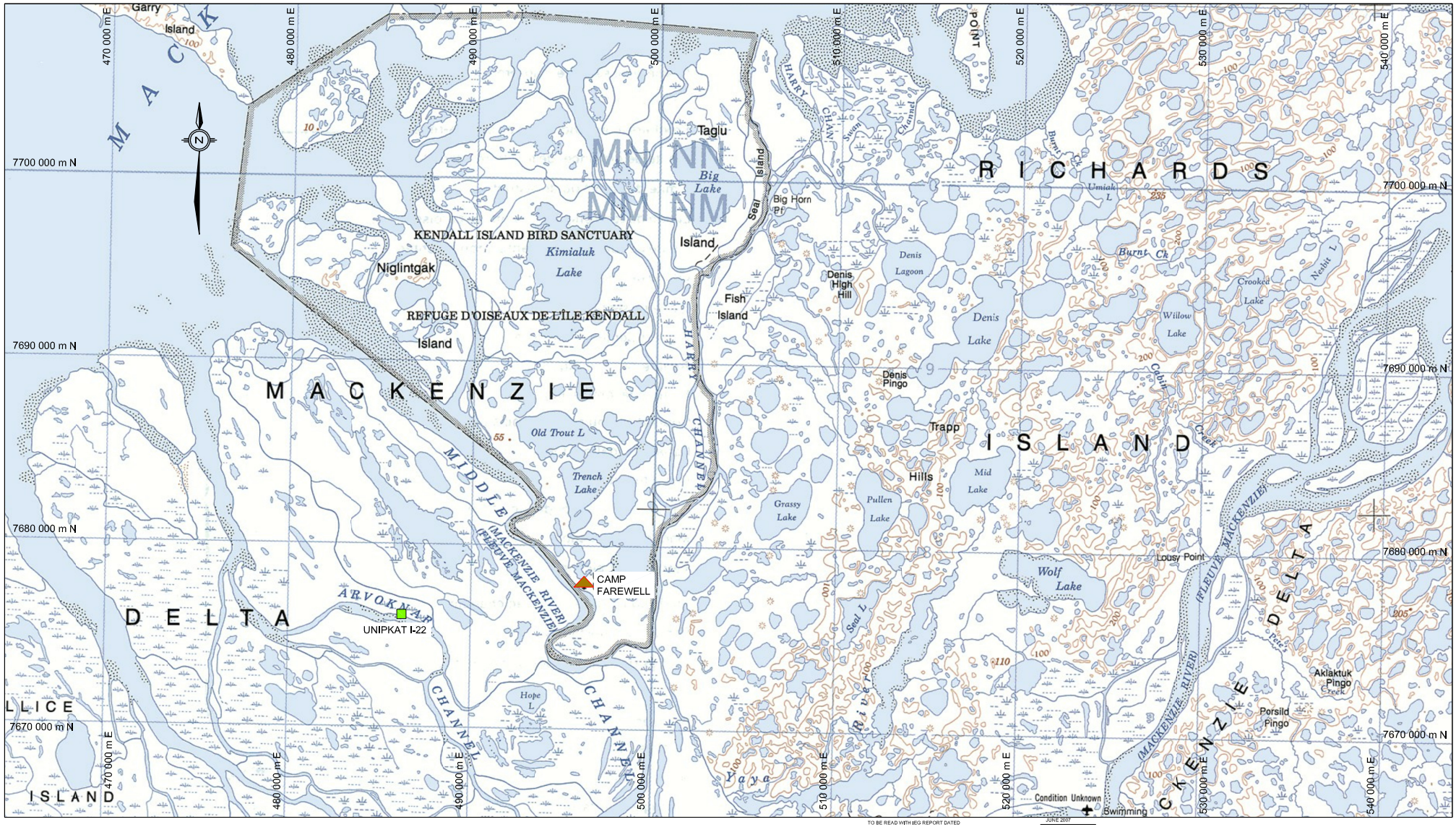
4. LOCATION

Unipkat I-22 is located within the Inuvialuit Settlement Region (ISR) along the eastern bank of Arvoknar Channel in the Mackenzie Delta, Northwest Territories (NT) (Figures 4-1 and 4-2). The site is located approximately 115 km northwest of Inuvik, 108 km north of Aklavik, 95 km south west of Tuktoyaktuk. All activities associated with the project are located on federal Crown land. Location coordinates are:

- Latitude 69°11’36.07”N Longitude 135°20’33.88”W
- UTM: 0486531.5 E, 7675777.0 N NAD 83 (zone 8)



Shell Canada Limited	IEG CONSULTANTS LTD	Date: 31/05/07	Scale: 1:750,000	Project: **Unipkat I-22**
Notes: -Topographic Data - NTS Map Sheet 107C, 107B, 117A, 117D © Her Majesty the Queen in Right of Canada, Department of Natural Resources. All rights reserved.Government of Canada,with permission of Natural Resources Canada. The NTS maps used for background only and are not an accurate representation of land and water boundaries. -Boundary for the Kendall Island Bird Sanctuary was taken from the Community Conservation Plans		Projection: UTM Zone 8	Datum: NAD 83	Title: **Regional Location of Unipkat I-22**
		Drawn: SB, CL	Checked By: SB, JW	Project Number: A04025A02
				Figure No.: Figure 4.1
				Rev.: 0



BACKGROUND BASE MAP - MACKENZIE DELTA 107C EDITION 2
UTM NAD 83 10000 m GRID

NOT FOR CONSTRUCTION

SCALE 1:200 000 0 2 4 Km

TO BE READ WITH IEG REPORT DATED JUNE 2007

CLIENT: Shell Canada Limited

IEG CONSULTANTS LTD.

PROJECT: UNIPKAT I-22

TITLE: UNIPKAT I-22 SITE LOCATION

PROJECT No.: A04025A02

FIG. No.: FIGURE 4.2

5. DEVELOPMENT SUMMARY

5.1 Purpose

Shell has conducted Phase II ESA activities at this site on two occasions (2007 and 2010) to locate the drilling sump, delineate constituents and their concentrations at specific drill locations. The site is being eroded by a rate of approximately 1 meter per year. Based on Shell's risk based remedial action plan, this site is classified as medium priority due to the potential of the channel eroding the drilling sump. Metal debris visible along the bank will also be removed as part of this project.

The primary goal of the planned remedial program is to remove the historical main drilling sump and any residual petroleum hydrocarbon (PHC) affected soils around the sump. The sump and surrounding area is at risk of erosion over the next 30 years and the proposed program would reduce or eliminate that risk.

5.2 Previous Work

In August 2004, surface water samples, shallow soil samples, and active zone measurements were collected at the Unipkat I-22 site. An electromagnetic survey of the site using an EM31 and EM38 was conducted. Site photographs were taken from the ground and the air.

In September 2007, 82 boreholes were advanced, ten groundwater monitoring wells were installed and three thermistors were installed. In addition, two benchmarks were installed to help monitor the erosion of the channel. Hydrocarbons were detected near and around the sump, and towards the northeast. The results of the work did not fully delineate the extent of the affected soil towards the north part of the site.

In August 2010, an additional 18 boreholes were drilled and soil was tested to further delineate the site conditions. Based on the data collected to date, it was determined that approximately 5000 m^3 of soil onsite may be above CCME industrial guidelines for PHC. It was also determined that the shoreline eroded at a rate of approximately 1 meter per year. The majority of the soil above regulatory guideline is contained in and around the historic sump areas.

In October 2010, a lined containment cell was built in Inuvik, with an arctic geo-membrane liner and is approximately 36 m by 120 m in total. The containment area of the cell is surrounded by hard packed till soil and is capable of containing approximately 5600 m^3 of soil. Material removed from the Unipkat I-22 site will be segregated into 2 windrows for short term de-watering and soil treatment.

5.3 Sump Remediation Program: Project Scope

The Unipkat I-22 sump remediation program is designed to remediate the drilling sump in a timely manner eliminate the erosion risk posed by the channel. Soils affected by PHC, potassium chloride, and total barium are the primary concern. The site activities are planned to be initiated in January 2011 and be completed by March 31 on-site.

The sump remediation will involve the following activities:

- building approximately 50 km of ice road from BAR-C to access the site
- mobilizing heavy machinery, fuel, and sleigh camp as listed in Table 5-1
- site and project boundary layout
- clean soil stripping and stockpiling
- soil excavation
- trucking sump material and PHC affected soil to Inuvik

- soil containment in Inuvik
- excavation soil testing
- re-contouring of excavation within local topography
- demobilization from site of all infrastructure and generated waste
- allowing sump material to de-water in Inuvik and disposal (at southern landfill) of the drilling waste
- soil treatment by allu-bucket and allowing for periodic testing for compliance

5.3.1 Ice Road Construction

Ice road construction will be used to gain access to the site as no permanent roads currently exist in the area. An ice road will be constructed from the Department of Transportation (DOT) ice road at BAR-C to Unipkat I-22 in accordance with local practices. In the building of the ice road, it is our intention to use less than 100 m^3 of water per day. Approximately 50 km of ice road needs to be constructed and it is anticipated to take approximately two to three weeks construction time. This phase of the project is scheduled to start in mid-January 2011.

5.3.2 Site Mobilization

The site will be accessed via DOT road from Inuvik and the newly constructed ice road extension from BAR-C. All infrastructure and movement will be along this roadway. Each vehicle will have drip trays and be equipped with sufficient emergency supplies and equipment in the event of a mechanical breakdown. The site infrastructure will include a portable camp (offices, dinning location and shower/toilet facilities) with sleeping quarters, fuel storage, a spill containment seacan, and emergency supplies. The site will be equipped with satellite communication and an emergency response plan has been developed and is attached in appendix I.

The program will require some heavy equipment at the site for the duration of the project as listed in Table 5-1 and includes an excavator, a bull-dozer, and an IronWolf attachment.

5.3.3 Site and Project Boundary Layout

Prior to conducting site activities, the locations of former infrastructure at the site such as well centre, lease boundaries and expected work zones will be identified and physically marked. These locations will be derived from the collection of site data that has been gathered during the completion of the various environmental assessments. All locations will be located using a survey grade global positioning system (GPS). Areas for the temporary storage of the clean surficial soils will be marked and segregated from the soils to be removed. Site boundaries will be marked with survey lath. Site excavation limits will be marked out based on the GPS coordinates of the previous borehole and monitoring wells locations, and the interpreted limits based on previous analytical results. Vehicles may be parked and unloaded on the ice road adjacent to the site.

5.3.4 Clean Soil Stripping and Stockpiling

Once excavation limits have been defined and the stockpile location has been identified, the initial stage of the project will be to excavate approximately 0.5 to 1.0 meters of surficial soils. This soil has been classified to be below applicable guidelines for the constituents of concern at the site. These soils will be used in the backfill of the excavation at the site. In order to maintain these soils as suitable backfill, they will be segregated on-site. The surficial soils will be stripped with the heavy equipment on site. The IEG representative will observe the depth and location of the excavation to avoid mixing of soils. Current plans to excavate the frozen soils are to use an IronWolf™ attachment on a D-8 bulldozer (Photo 5-1).

The IronWolf™ attachment allows for grinding of frozen soil. The attachment is designed to mount to wheeled or tracked heavy equipment. The cutter assembly is a ten foot wide cutter drum and an auxiliary engine package. The cutter drum has a cutting depth up to 40 centimeters. The whole package adds approximately 15,000 kg to the heavy equipment depending on the type of assembly used. This assembly has a separate diesel fuel reservoir with a capacity of 625 L. The attachment will remain on site until the proposed project is completed.

Photo 5-1: Proposed IronWolf™ Excavation Method

5.3.5 Soil Excavation

The majority of the proposed project work involves the excavation of approximately 1600 m3 of soil to remove the original drilling sump and 1400 m^3 of hydrocarbon affected soils surrounding the historical sump.

These tasks will be time consuming as the ground will be frozen and difficult to excavate. It is anticipated that the majority of the excavation of soils with constituents of concern at

the site will be with the IronWolf attachment. This attachment will grind soil into small chunks which will allow for easy management of soil cuttings with an excavator and loader. However, it is also anticipated that a limited amount of soil excavation will occur with an excavator as the total depth of proposed excavation may be 5 meters below ground surface (bgs).

Wherever practical, the site benchmarks, groundwater monitoring wells and thermistors will be maintained during the excavation of the site, to better evaluate the long term success of the remedial strategy.

The flare pit and camp sump have already been partially eroded by the river and previous debris collection has been undertaken. Debris in both of these areas appears to be limited to small metal debris and no mention of flaring at the site was found in the available drilling records. The material remaining in these areas would be removed from the bank of the river to avoid future movement of debris. This portion of the work is dependent on acquiring a water license authorizing the riverbank disturbance. Where the river ice is groundfast adjacent to the camp sump and flarepit, debris on the river bottom would also be removed.

5.3.6 Trucking to Inuvik

The sump material will be excavated first as that soil contains the highest concentrations of constituents of concern at the site. The sump material will be trucked to the containment cell in Inuvik and placed in the lined cell where it will dewater in the spring before being shipped for disposal at a landfill in British Columbia.

The surrounding PHC affected soils will then be transported from the site to the treatment cell for dewatering and subsequent treatment for the removal of PHC over approximately two or more summer seasons, depending on the results of periodic analytical testing.

Once the treated soil meets applicable CCME guidelines it will be available for use as backfill material at sites in Inuvik.

It is anticipated that trucking on the ice road will proceed throughout the project duration as this is a major component of the project. It is anticipated that the round trip time per truck will be approximately five hours, and that approximately 12 trucks will be used. It is anticipated that the soil in transit will be frozen and therefore no liners will be required.

5.3.7 Soil Containment in Inuvik

The excavated soils will be temporarily stored on a constructed lined oversized containment cell. The cell is 36 m wide by approximately 120 m long and can contain approximately 5600 m^3 of soil. The volume of the containment cell does include an allowance for a soil bulking factor and a 10% contingency factor for the amount of soil to be removed from site.

The cell is an arctic geo-membrane liner with berms surrounding the open area of containment. The berms are approximately 1 meter high and are constructed with compacted clay. The liner is anchored outside of the berms with the placement of sand. Sand was also placed inside of the containment cell to ensure that the liner is not damaged during placement or treatment of the affected soils. The containment of the sump soils will be temporary to allow for dewatering in early spring. The containment cell will allow for the capture and treatment of water from within the soils. The sump soils will be placed on the downgradient area of the containment cell, while the hydrocarbon affected soils will be placed on the upgradient area of the cell.

It is anticipated that some of the moisture will be removed through evaporation and the remaining pooled water will undergo testing and possible further treatment before being disposed of at the Inuvik municipal waste water facility. The soil drainage will be by

gravity and not mechanically assisted. In the event that the amount of water from the soil needs to be removed from the containment cell, it will be pumped into an 80,000 L holding tank to allow for testing and possible treatment with granular activated carbon to satisfy discharge requirements.

The cell will be maintained to allow for the hydrocarbon affected soils to be treated and contained for a period that is anticipated to take up to two summer seasons.

5.3.8 Excavation Soil Testing

The sidewalls and base of the excavation will be tested for the constituents of concern at the site using confirmatory soil samples. Discrete soil grab samples will be collected from the walls and base of the excavation. Samples will be collected in accordance with standard sampling protocols and will be stored under chain of custody procedures. Samples will be placed into plastic bags for organic vapour analysis testing and into laboratory provided glass containers equipped with Teflon-lined lids for subsequent laboratory analysis. When soils are frozen they are placed in air tight bags to be thawed prior to placement in glass jars. Care will be used to avoid extreme temperatures while thawing samples. A photo ionization detector (PID) will be used to assess the concentration of volatile hydrocarbons in the headspace of each bag sample taken. The soil will be allowed to thaw and have the gases equilibrate with the air inside the sampling container prior to being tested for organic vapours.

Soil samples will be stored in a temperature controlled storage container prior to being shipped for analysis. The results of the confirmatory laboratory testing will govern the limits of the excavation at the site. Sample results will be critical in the assessment of excavation progress and as such the samples will be sent as needed on daily flights out of Inuvik to the selected accredited laboratory.

IEG anticipates that one soil sample will be submitted for laboratory analysis for every 10 m^2 of exposed sidewall and base. It is anticipated that approximately 50 soil samples will removed from the site to be analyzed for constituents of concern.

Depending upon analytical results from the excavation, it is possible that reduced volumes of soil would need to be excavated as the volumes presented in this document are estimates generated from the past assessment activities.

5.3.8.1 Quality Assurance/Quality Control

Approximately 10% of the samples will be collected in duplicate. These samples will be submitted to the laboratory under blind sample designations and analyzed in order to evaluate analytical precision and sampling procedures. The data will be evaluated using Zeiner's (1994) relative percent difference method.

Field sampling Quality Assurance/Quality Control (QA/QC) measures will include implementation of IEG's site investigation manual for guidelines and protocols regarding, field instrument calibration, soil description and classification, soil sampling techniques, and personal protection equipment. To prevent cross-contamination, nitrile gloves will be worn when handling soil and changed on a regular basis.

Standard sample collection practices will be used for the sampling program to ensure the integrity of the samples taken from the site.

5.3.9 Site Backfill

The intention is to grade the open excavation so that it will have a slight depression and resemble the natural ponds in the area. Some backfill material will be processed from an on-site stockpile that remains from the original sump construction. It is not anticipated

that we will bring the grade to the original surface elevation. The main rational for this is based on the following:

- Sump volumes were in addition to the natural material at the site. The existing stockpiled soil was displaced by the drilling muds.
- Suitable backfill material is a valuable (and costly) resource. Granular material is limited in supply and maybe better used for community or industrial infrastructure. The generally high quality of granular material at the Ya-Ya source is rare in the region. Placement of this material in the excavation could alter the natural erosion rates and pattern around the site. Furthermore, the use of material from Ya-Ya would involve acquiring additional permits and construction of additional roads. These additional work elements would delay or jeopardize the project.
- Placement of coarser backfill material than natural surrounding soils may alter and affect erosion rates.
- The area that is to be excavated is predicted to erode into the river over the next 30 or so years which makes the need for the backfill temporary and of limited aesthetic and ecological value.

5.3.10 Demobilization From Site

All equipment and infrastructure will be removed from the site at the end of the proposed project. They will be removed along the ice road.

5.3.11 Soil Treatment

The segregated soils within the containment cell will have different soil treatment regimes. No treatment will be performed on the sump material at the containment cell.

The PHC affected soils will be gravity dewatered and then treated with an allu-bucket in order to reduce the amounts of PHC concentrations within the soils.

5.3.12 Soil Disposal

The sump material will be trucked to a solid waste landfill in the south (i.e. CCS landfill in BC) once appropriately dewatered.

The treated PHC affected soils may be used for daily landfill cover once applicable guidelines have been reached and confirmatory analytical sampling has been performed.

5.3.13 Post Remediation Monitoring

The Unipkat I-22 site will continue to be monitored for groundwater conditions, soil temperature, and shoreline erosion.

5.4 Access

If the crew can not be accommodated in on-site facilities, the crew will access the site daily from Inuvik in a passenger vehicle by ice road. The passenger vehicle will remain on site during the field activities. The heavy equipment will be mobilized and demobilized between Inuvik and the site using a tractor trailer. The site will be resupplied using the backhaul legs of crew movements or material hauling.

5.5 Accommodation

The field crew will be based onsite or located in Inuvik. If staying in Inuvik the crew and supplies will be transported to the site daily. The anticipated field camp will accommodate between 12 and 25 people. The camp would consist of a sleigh camp structure which include; kitchen facilities/dining cabin, office space, and living quarters. A shower/washroom will also be included as part of the camp facilities.

5.6 Fuel Storage

Fuel will be stored at the site. Fuel will be contained in a 13000 L double walled fuel sloop, on skis. Fuel will be used for the heavy equipment onsite, and the camp facilities. Drip trays will be used during refueling of the heavy equipment and will be contained within one area of the site located away from Arvoknar Channel. The transport trucks will not refuel on site unless in an emergency situation. Drip trays will be placed below the heavy equipment when it is not in use for a period of time greater than 30 minutes. A seacan containing spill response equipment and supplies will be located at the site during field activities. Each vehicle will also have a spill kit, and drip tray. All fuel spills will be recorded and the location noted with GPS. Any resulting affected snow would be shoveled and placed in drums for transport to Inuvik for disposal.

5.7 Drinking Water Requirements

Bottled (18.9 L) drinking water from Inuvik will be transported to the site for human consumption.

No water will be required for the excavation and/or performance of the proposed project, not intended for ice road construction. Minor amounts of distilled water will be brought to site and used to decontaminate sampling equipment. Water for domestic use will be transported by water truck from Inuvik and stored in an onsite tank.

5.8 Waste Management and Wastewater Treatment and Disposal

All solid waste (garbage) will be collected and removed from the site and transported to Inuvik for disposal at an approved landfill site at the end of the project.

All grey water and wastewater from the project will be contained in a sealed tank. At the end, or as needed, the wastewater will be disposed at the wastewater processing facility in

Inuvik. The anticipated tank will be a 90,000 L insulated, horizontal, steel tank on skids or a sleigh. The wastewater will be transported by sewage truck.

5.9 Equipment

Table 5-1 lists the equipment required to conduct the remediation program.

Table 5-1 Equipment List

Equipment	Number Required
Kitchen and Dinning	1
Washroom and Showers	1
Camp Accommodation (up to 25 person)	1
Bulldozer	1
Excavator	1
Front end Loader	1
IronWolf Attachment	1
Diesel Fuel	13,000 L
Spill Kit	1
Miscellaneous Environmental Field Equipment	1
Tandem Trucks	12
Fuel Storage double walled 13,000 L tank	1
Diesel Generator	2
Wastewater Tank 90000L	1
205 L Sealable Fuel Drum	3

The Ironwolf™ attachment is specialized equipment and has been used in the region by Shell on other similar projects.

5.10 Personnel

Table 5-2 lists the personnel required on site.

Table 5-2 Project Personnel

Project Personnel	Number Required
Environmental Technician	1-2
Heavy Equipment Operators	4
Mechanics	2
Site/Project Supervisor	1-2
Safety Officer	1
Wildlife Monitor	1
Truck Drivers	12
Camp cook and attendant	2
EMT	1

6. DEVELOPMENT TIMETABLE

Table 6-1 provides the proposed development schedule.

Table 6-1 Proposed Development Schedule

Project Activity	Estimated Time Frame[1]
Applications and Permitting	November – January 2011
Logistics and Contracting	January 2011
Mobilization	February 2011
Field Work	February – March 2011
Demobilization	March 2011
Reporting	April – June 2011
Annual Site Monitoring	August 2011 - 2018

*Note: Time frame is approximate and subject to change depending upon variables such as weather and permit acquisition.

If government approvals are not received in time to meet the winter work schedule, the project will be rescheduled for the winter 2012. The impetus for this project is the channel erosion at the site and the need to remove constituents of concern prior to them entering the local environment. Although the sump is unlikely to be eroded in the next

few years, Shell has received community support to move forward on the current schedule.

7. NEW TECHNOLOGY

No new technology will be employed during this project. All equipment and procedures have been used in an arctic environment during similar projects.

8. ALTERNATIVES

No alternatives to removing the main drilling sump from the site are being proposed for this project. No alternatives in methodology are being proposed for this project. At the time of submission it is the proponent's preferred choice to have the site crew stay at an on-site camp and avoid daily trips of critical crew to and from Inuvik.

Project alternatives were considered during the pre-planning phase of the project but due to economic and/or technical constraints they were deemed not feasible for the project location and time of year.

A number of alternative sources of backfill are under consideration for this project.

8.1 Backfill Alternatives

The proposed backfill that would result in a slight depression on-site as presented in the project description received some comments during public consultation. As such, we have considered a number of alternatives for sourcing additional backfill and/or methods used in this project.

One alternative is to use quarried rock for the initial backfill of the excavation, then followed by finer grained backfill source material. However, following chemical

analysis, the rock sources has been found to contain concentrations of arsenic higher than the Canadian Council of Ministers of the Environment (CCME) soil guidelines. Because of the elevated arsenic, this material was determined to be an unsuitable backfill alternative. In addition to the high concentrations of arsenic, use of this source material would also likely have different erosion rates compared to the surrounding native soils and may affect channel morphology.

Furthermore, the importation of backfill material from areas outside of the lower delta may have the potential to introduce foreign seeds to the site.

Another alternative proposed during the consultations and under consideration was to use exposed sand bars from the Arvoknar Channel as a source for backfill material. The Ironwolf™ attachment could be used to grind off the upper surface of an exposed frozen sand bar or bars from the channel. The sand bars are typically exposed during low winter water levels in the channel.

Effects on river morphology due to this alternative are likely minimal due to the high sediment loads in the spring and summer river flows. Because only the top surface of the bar or bars would be removed, a relatively flat surface would remain and fish entrapment would not be a risk. The benefit of this alternative is that the source of backfill is plentiful, located close to the site and is composed of the same, fine grained material that is found on the site. The erosion rates of the placed material would be similar to the surrounding river bank and the channel's migration is unlikely to be affected. The material would originate in the river and because the site will eventually be eroded by the channel, the material would be returned to the river.

However, after consulting with the Department of Fisheries and Oceans (DFO), Shell has been advised that undertaking to use this source is unlikely to be accepted without

significant river morphology studies. These studies are beyond the scope of this undertaking and would delay this project for at least a year.

9. TRADITIONAL AND OTHER LAND USES

Land use in the region includes subsistence trapping, hunting, and fishing. Traditional land use and continuing subsistence use by the Inuvialuit of the region is documented within Community Conservation Plans for each community in the ISR. The proposed project falls within the Aklavik, Inuvik, and Tuktoyaktuk Conservation Planning Areas as defined by the respective Community Conservation Plans (Aklavik Inuvialuit Conservation Plan [AICCP] 2000; Inuvik Inuvialuit Community Conservation Plan [IICCP] 2000; Tuktoyaktuk Community Conservation Plan [TCCP] 2000).

The community conservation plans identify four management categories of lands (B through E). The Unipkat I-22 site falls within two of these categories. The descriptions for these categories are as follows:

- Category C: lands and waters where cultural or renewable resources are of particular significance and sensitivity during specific times of the year. These areas shall be managed so as to guarantee the conservation of the resources.
- Category D: lands and waters where cultural or renewable resources are of particular significance and sensitivity throughout the year. As with Category C areas, these lands and waters shall be managed so as to guarantee the conservation of resources.

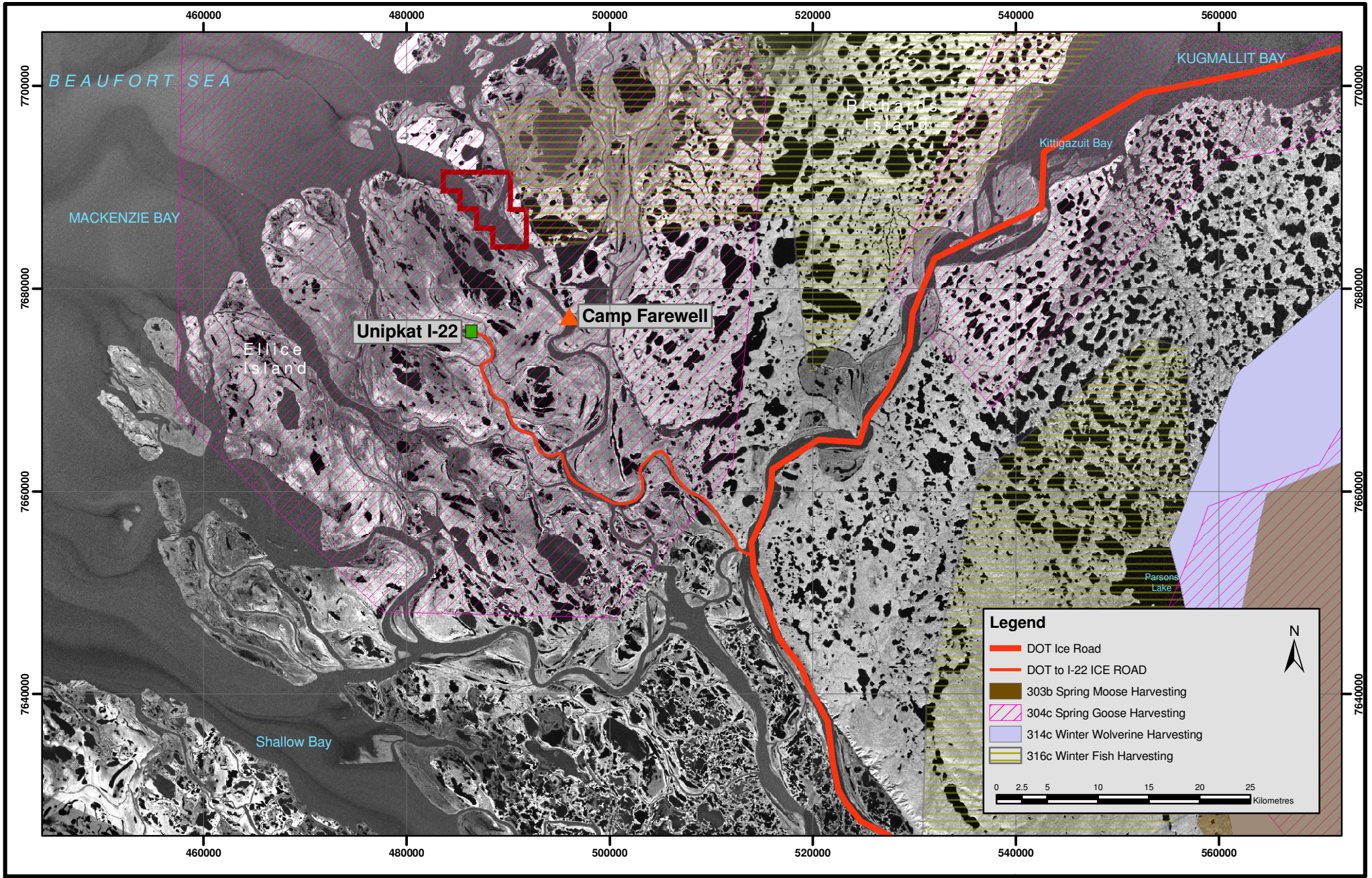
Unipkat I-22 lies in the vicinity of several areas defined as Harvesting or Special Management Areas where recommended land use practices and timing of the program must be considered in relation to local harvesting. The Harvesting and Special

Management Areas located in the vicinity of the project area are listed in Table 9-1 and illustrated in Figures 9-1 and 9-2.

Table 9-1 Community Conservation Plan Areas in the Vicinity of Unipkat I-22

Site Number	Area	Importance to Community
304C	Spring Goose Harvesting Area	• key area for subsistence goose harvesting in the spring
322C	Grizzly Bear Denning Area	• grizzly bear denning occurs in the vicinity of the proposed program area from October to May
323C	Mainland Coastal Polar Bear Dens	• mainland coastal polar bear denning occurs in the vicinity from November to April. The proposed project occurs in the South Beaufort Polar Bear Management Area (TCCP 2000)
715C	Mackenzie River Delta Key Migratory Bird Habitat	• nesting and breeding habitat for birds from May to September • denning areas for grizzly bears from October to May • surrounding waters are important habitat for beluga whales from June to September • polar bear denning area from November to April, and • past and present subsistence harvesting area, especially for beluga whales (June 15 to August 15) and waterfowl (June to September)
718D	Central Mackenzie Estuary	• concentration area for belugas • transit area between Shallow and Kugmallit Bays • Used extensively by feeding anadromous coregonids • Overwintering and nursery areas for a variety of fish

Source: AICCP 2000, IICCP 2000, TCCP 2000

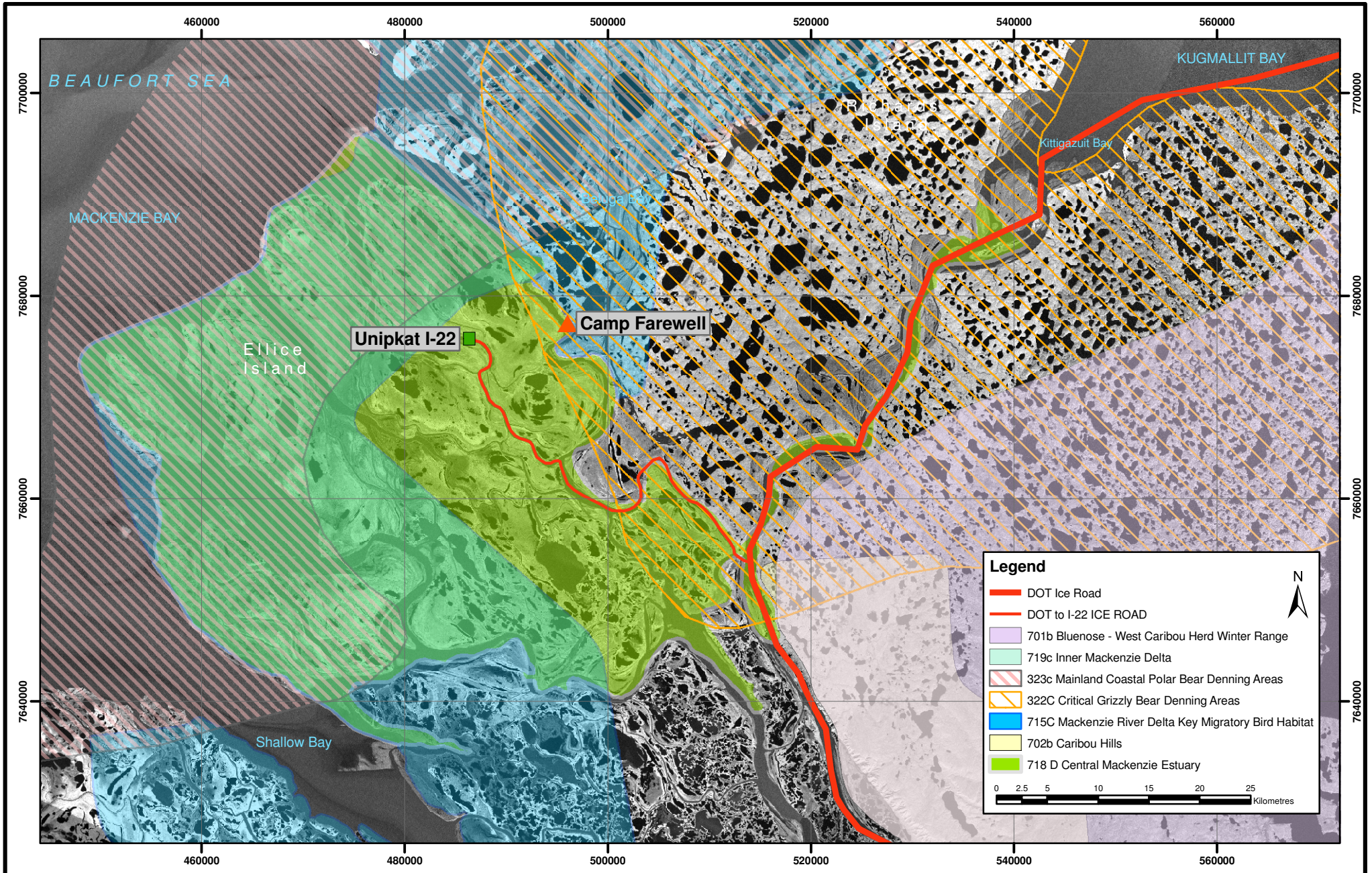


Notes:
Background - Landsat TM
Panchromatic Imagery
Acquired - August 31, 2000

Shell Canada Limited

IEG CONSULTANTS LTD.

SCALE 1:500,000			PROJECT Unipkat I-22 Sump Remediation		
DATE 08/11/2010			TITLE **Community Conservation Plans Harvesting Areas**		
DATUM UTM, NAD 83	DRAWN SB, CL	CHECK SB, JW	PROJECT No. A04025A02	Map Number Figure 9-1	Rev. 0



Notes:
Background - Landsat TM
Panchromatic Imagery
Acquired - August 31, 2000

Shell Canada Limited

IEG CONSULTANTS LTD.

SCALE 1:500,000			PROJECT Unipkat I-22 Sump Remediation		
DATE 08/11/2010			TITLE **Community Conservation Plans Special Management Areas**		
DATUM UTM, NAD 83	DRAWN SB, CL	CHECK SB, JW	PROJECT No. A04025A02	Map Number Figure 9-2	Rev. 0

The site work is located within the spring harvesting area for geese (304C). This area is important as it is relied upon for subsistence harvesting by various Inuvialuit communities. Unipkat I-22 is also within the Central Mackenzie Estuary (718D); a region important for providing habitat for fish.

Special Management Areas 322C, 323C and 715D are outside the scope of Shell's Unipkat I-22 site work because of timing and location of the proposed program activities.

10. COMMUNITY CONSULTATION

Shell met with the Aklavik, Inuvik and Tuktoyaktuk Hunters and Trappers Committees (HTCs) to discuss the proposed project. A schedule of these meetings, including dates, locations and attendees for each meeting is provided in Table 10-1.
Notes from these meetings are provided in Table 10-2 and a copy of Shell's presentation to the HTCs is in Appendix II.

While questions were raised during consultation, there were no objections raised regarding the environmental impacts of the proposed project.

Table 10-1 Consultation Meetings

Group	In Attendance	Date	Location
Open to Public	8 General public members, 2 reporters, Shell (2 attendees), IEG (2 attendees)	November 2, 2010	Inuvik – Ingamo Friendship Center
Aklavik Hunters and Trappers Committee	Aklavik Hunters and Trappers Committee (5 attendees), Shell (2 attendees), IEG Consultants Ltd. (2 attendees)	November 3, 2010	Aklavik
Inuvik Hunters and Trappers Committee	Inuvik Hunters and Trappers Committee (6 attendees), Shell (2 attendees), IEG Consultants Ltd. (2 attendees)	November 3, 2010	Inuvik
Tuktoyaktuk Hunters and Trappers Committee	Tuktoyaktuk Hunters and Trappers Committee (5 attendees), Shell (2 attendees), IEG Consultants Ltd. (2 attendees)	November 3, 2010	Tuktoyaktuk

Table 10-2 Record of Consultation

Issue/Question/Comment Raised by Community	Response/Comment by Shell
Inuvik Public Meeting – Ingamo Frendship Centre November 2, 2010	
Why do this clean up now?	Shell would like to address the potential erosion of this material before it becomes a problem and avoid a rush. We also know that there are not many projects going on this winter in the region and people and equipment are available.
Why this site?	Shell has been looking at all of its sites in the ISR and this site is the one with the most pressing environmental issues.
Is the Territorial Government requesting this?	No, this is Shell's initiative.
Are there consequences if this is not done this year?	No, but we would like to address this site before it does become a problem.
Is the Inuvik Treatment Cell already built?	Yes. Funding for this program became available late this year and there was a rush to aquire and layout the liner material before freezing conditions occurred. It was a very tight timeline.
The metal in the side of the river bank. Are you picking that up too?	Yes, that is our plan but it is dependant on getting a water licence quickly and before the rest of the project is finished.
What advertising are you doing?	We posted notices for this meeting around Inuvik and had a notice on the rolling channel.
Are you meeting with the HTC?	Yes, we will be meeting the Tuk, Aklavik and Inuvik HTCs tomorrow.
Are you planning on doing any more sump work at Farewell?	We had originally wanted to do the work this year but the budget that was available does not allow for it. We are not planning to do any work on the Farewell sewage lagoon this winter but Shell is looking for options on when to fill in the lagoon.
Will the back haul use end dumps?	Yes, that is our plan.
Will you be using labour from all three communities?	Shell is committed to using Inuvialuit companies and we will encourage the contractors to use people from all three communities.
Will work be sole sourced?	That is our preference. There are few companies that can meet Shell's pre-qualifications and we are restricted by that.
Will you use any small contractors?	We would prefer to use a single contractor. It is difficult to manage many different contractors and our experience in the past is that few small contractors are able to pre-qualify.
What about wildlife monitors? Will they be smaller contractors?	In the past the main contractor hired them through the HTCs.
Is a drug and alcohol policy part of safety plans?	Yes, it is an integral part. The overall safety program is very important and running a safe program is a top priority for Shell.

Issue/Question/Comment Raised by Community	Response/Comment by Shell
Aklavik Hunters and Trappers Committee – Aklavik November 3, 2010	
Will a barrier be left between remaining contaminated soil and pond?	Yes. We intend to leave a barrier in place by using backfill material against the north wall of the excavation that will maintain permafrost conditions between the new ponded area and the unexcavated areas to the north of the main sump.
What if the pond is in place and more/ future work needs to be completed?	The backfill barrier will provide a wall and dam to ponded water for any future excavation that may be required on site. The PHC affected material that will remain in place to the north also appears to be shallow, not deep like the main sump area.
Have you thought about rock barriers to stop erosion [rip rap]? It worked well for Aklavik.	We did consider this approach but decided against it because the bend in the river here is very large and erosion rates all along it are quite high. Eventually, the river would have cut behind our lease area anyway. We felt it was better to remove the problem from the site altogether.
What other sites are at risk?	Shell did a risk assessment and categorized all of it's ISR sites a few years ago. Most sites were found to be in reasonable shape and did not require any action at this time. Unipkat I-22 was determined to be the most pressing site.
Who is keeping track of these sites?	Shell regularly monitors its sites and some of them are visited by INAC. All of Shell's sites will continue to be monitored to assess ongoing developments and needs.
Who determines that these sites have not failed?	In this case, Shell will provide a remediation report to INAC.
Sure they were assessed but no one came back to the communities to let us know what was found.	We can't speak for the other companies in the region but we will agree to let the HTCs know how this project works. We can also arrange a trip to the site during the project if that is of interest?
Yes, we'd be interested in seeing the site and how work is going.	Okay. We'll work on arranging that.
How deep is the channel?	Diagrams in the Unipkat I-22 well file indicate that the river channel is up to 26 m deep.
In the past, Aklavik lost a lot of ground to erosion in a single year. You never know when that might happen on a channel.	That is true. We think that some years you may see alot of erosion, maybe 5 m at a site and then virtually none for several years. We know from historic air photos that this site loses an average of 1 m/year but that could be different from year to year and is why we want to address this site early, rather than leave it until its an issue that is a rush.
Conditions are changing on the river. This is the first summer I have seen erosion on many channels. Even small ones. That wasn't the case before.	Interesting.
You should use blasting to dig up the old sump. That's how it was dug originally.	We considered blasting as an option but decided against it because it would mix up the sump and surrounding material and would increase the volume of material being removed from the

Issue/Question/Comment Raised by Community	Response/Comment by Shell
	site and to the south. The resulting fractures in the permafrost could also serve as a pathway if contaminants were accidentally left in place. The open excavation would also make a larger pond than the IronWolf.
I'm not sure the IronWolf will be able to do it. Do you have a back up plan in case the IronWolf breaks down or does not work?	It is an expensive piece of equipment and comes with alot of spare parts and dedicated mechanics. The unit was used a few years ago by Shell in the Delta and worked. The company has also made some improvements on it from the lessons they learned last time. We have excavators with ripper teeth as back ups.
Would like to see the excavation brought back to grade.	This was our first intention but borrow material for backfill is difficult to source. The material we tested from Inuvik is high in arsenic which is considerably lower at the site. We don't want to add contaminants to the site during a remediation. We are also concerned that using coarser material would alter the erosion rate and shape of the channel in the future.
Leaving a pond at this site may not be a bad thing in this case but it could set a precedent that we don't want for other sites.	We believe that each site should be managed on the conditions present. For eroding sites on the lower Delta it makes sense to have ponds similar to the surrounding terrain but we would agree that for other sites where there are no erosion issues or ponds, this plan may not be appropriate.
Have you thought about using Ya-Ya as a source of backfill?	We did but Ya-Ya is a valuable and finite resource and it seems a waste to use it to backfill a location that will be eroded into the ocean in a relatively short period of time. It would also involve a larger trucking program and more roads.
We agree that the main thing is getting the contaminated soil out. Who long before the second phase [removing the soil to the north] goes ahead?	We don't have a set time for the second phase. Our objective this year is to remove soil that could be eroded in the near future. The remaining soil is unlikely to be close to erosion for another 30 or 40 years.
Originally developers agreed to leave the land as it was found, filled to grade, now people want to deviate from those commitments.	In this case that may be true but we think the fact that this site will be eroded in a few decades should be considered. We feel it would be better not to waste money on putting backfill into the Beaufort Sea but instead using that same money in the future on other sites.
Inuvik Hunters and Trappers Committee - Inuvik November 3, 2010	
Are the natural ponds contaminated?	No. We sample the water and sediments in 2007 and found that they were not affected by the sump.
Do you have any more sites like this?	None that are eroding into the river like this. Shell continues to monitor its sites in the ISR to see which ones require work. Shell has 22 sites in the ISR.
What made you decide to do 100 boreholes?	We were trying to get a good delineation on where the sump and affected material was located on the site. It is more cost effective

Issue/Question/Comment Raised by Community	Response/Comment by Shell
	to put the money into planning than having a big surprise in how much volume we need to move.
Are you planning to place a geotextile between remaining contaminated soil and pond?	No. Just backfilling the north wall with clean soil.
Where there is disturbed ground the willows grow back quickly and that leads to permafrost degradation.	We have noticed that as well and there are some willows growing on this site. Although permafrost degradation does not seem to be a big problem at this site, many of the willows will need to be removed to conduct the site remediation and snow pads will be built on the ground to limit ground disturbance.
Are you seeing permafrost degradation adjacent to natural ponds?	No, we have not seen degradation besides the ponds. There is now cracking there suggesting subsidence and the thermal data from the site is uniform across the site.
Interested in coming on a site visit in the summer.	We can arrange that and we will also try to make a trip available to HTC members when the project is underway since the Aklavik HTC expressed interest in that.
Will monitoring be completed after the work has been completed?	Yes, the site will continue to be monitored for erosion, permafrost degradation and water chemistry.
Could you use time lapse photography?	Probably not. The site is very low lying and could be subject to ice flows which would wipe the equipment away. We'd like not to leave anymore infrastructure at the site.
Have you considered using material from exposed point bars as back fill?	No, we hadn't but it is a good idea and we will pursue it as an option but it may be difficult to get DFO buy in on the plan.
Would feel better if the excavation was backfilled.	Obtaining suitable backfill is the problem we are having.
What material would you use?	We have looked around Inuvik and most material is higher in arsenic than the soil at the site. At the present time the majority of the backfill will be from the stripped clean soil that is on the site. We are still looking for more material and are interested in the sand bars.
Have you considered Ya-Ya material?	We did but it is a finite resource and it seems a waste to use as backfill at a location that will be eroded into the ocean in a relatively short period of time. It would also involve a larger trucking program and more roads.
Are you going to do a presentation when finished or an updated report?	We can provide the HTCs with a report once the program is finished.
Tuktoyaktuk Hunters and Trappers Committee - Tuktoyaktuk November 3, 2010	
How was the well abandoned?	It was re-entered and plugged with concrete before the casing was cut off at about 30 m below ground surface.

Issue/Question/Comment Raised by Community	Response/Comment by Shell
What about using Source 177 as backfill?	Although we understand that some of the material contains a high proportion of fines and may not be as useful for construction, it would involve a larger trucking program than we want. It is also a finite resource and it may be better used on infrastructure, rather than at a site that will be eroded into the ocean in a relatively short period of time.
Will this site be used for production?	No. It has been abandoned and will not be used.
Are there more sites like this one?	None that are eroding into the river like this. Shell continues to monitor its sites in the ISR to see which ones require work. Shell has 22 sites in the ISR.
Are you going to leave the remaining contaminated soil to the north in contact with the new pond?	No, we will backfill the north wall of the excavation with enough clean soil to maintain permafrost conditions.
How much sump will be left behind?	We are going to remove all of the main sump and surrounding PHC affected soil. We are planning on leaving the shallow extension that exists to the north of the main sump for the time being.
Have you visited all 22 sites? Are there any that have problems?	Shell did a risk assessment and categorized all of it's ISR sites a few years ago. Most sites were found to be in reasonable shape and did not require any action at this time. Unipkat I-22 was determined to be the most pressing site.
What is permafrost like at the site? It can be undulating and deeper in low points.	That is what we see at this site. Generally permafrost exists from 1 to 1.5 m below the surface.
Is this an INAC issue? Are they pushing for Shell to clean-up this site?	No, Shell identified this site as a priority during our risk assessment phase a few years ago. The initiative to remediate this material before it becomes a problem by eroding into the river is Shell's.
Only real issue is to backfill if at all possible.	We have been working on it but the supply of suitable material and associated costs is making a complete backfill difficult. At this time we'd like to only complete a partial backfill.
How will you monitoring and police speeding?	We certainly won't tolerate speeding to occur with our project either on the DOT or the private road. We won't be setting speed traps or anything but we will have a journey management plan that will require drivers to radio in a designated points. From that we can tell how long it is taking them to get between points and the speed they are travelling.

11. ENVIRONMENTAL OVERVIEW

11.1 Climate

Unipkat I-22 is within the Upper Mackenzie Delta region. This region is classified as having a high subarctic ecoclimate, with very cold winters and cool summers. Mean temperatures range from –27.6°C in January to 14.2°C in July. The mean annual precipitation is 248 mm with a monthly maximum of 40 mm in August (Environment Canada 2010). The data is based on a 30 year average at the Inuvik A weather station, climate ID #2202570.

11.2 Physiography and Bedrock Geology

Unipkat I-22 is within the Tuktoyaktuk Coastal Plain Ecoregion of the Southern Arctic Ecozone. This ecoregion covers the outer Mackenzie River delta and Tuktoyaktuk Peninsula bordering the Beaufort Sea (AAFC 2010).

There are two main landscape types within the Tuktoyaktuk Coastal Plain Ecoregion. One is composed of distinctive delta landforms at the mouth of the Mackenzie River. These include wetlands, active alluvial channels, and estuarine deposits. Characteristic wetlands, which cover 25–50% of the area, are lowland polygon fens, both the low- and high-centre varieties. The second consists of the broadly rolling uplands. Discontinuous morainal deposits mantle much of the area, except near the coast where fine-textured marine sediments cover the surface. Occurring less frequently are outwash aprons of crudely-sorted sand and gravel, and raised beach ridges along the shores of preglacial lakes. The resulting undulating terrain is studded with innumerable lakes and ponds (AAFC 2010).

11.3 Soils and Permafrost

Organic and Turbic Cryosols developed on level to rolling organic, morainal, alluvial, fluvioglacial, and marine deposits are the dominant soils of the Tuktoyaktuk Coastal Plain Ecoregion (AAFC 2010). Typically these soils are underlain by a continuous layer of permafrost (> 90% permafrost). However, recent re-classifications (Heginbottom 2000) describe the active delta area (Niglintgak, Taglu and a very small portion of Richards Island near the seacoast) as being within the intermediate discontinuous permafrost (35–65% permafrost) zone. Most of the region from Taglu south is within continuous permafrost zones. The thickness of the permafrost varies substantially from greater than 600 m in the coastlands of Richards Island to less than 100 m in the delta itself (Taylor et al. 1996).

In the Delta, permafrost thickness is generally less than 90 m thick, and contains deep unfrozen zones (taliks), which in some cases extend to the base of the permafrost. The depth of the active layer generally ranges from 30 –100 cm but is largely a function of ground surface insulation, vegetation cover, level of ground disturbance and winter snow cover.

It is estimated that the permafrost at Unipkat I-22 is between 50 and 100 m in thickness (NRCAN 2010).

11.4 Vegetation

The Lower Mackenzie Delta region is dominated by grasses, sedges and willow (Salix glauca). Low lying vegetation on poorly drained sites is composed of various grass species, tussocks of sedge, cottongrass, and sphagnum moss (AAFC 2010).

Plant communities found in the vicinity of the project are dominated by a few species that are well adapted to poor soil (low nutrient) conditions and the harsh climate. From the

initial environmental assessment conducted in August 2004; the vegetation at Unipkat I-22 was found to be primarily grasses with horsetail, willow and moss. Off site, willow is the dominant vegetation type, with horsetail and moss found beneath the willow canopy (Komex 2005).

11.5 Wildlife

11.5.1 Birds

Unipkat I-22 is located approximately 7.6 km from the Kendall Island Bird Sanctuary (KIBS). KIBS was established in 1961 to protect valuable waterfowl breeding and staging grounds within the outer Mackenzie Delta. This area has been classified as a key migratory bird site in the Northwest Territories. The 600 km^2 sanctuary provides habitat for over 80 species of migratory birds, including up to 7,500 nesting snow geese. Large numbers of tundra swans, greater white-fronted geese, sandhill cranes, brants, dabbling ducks, and shorebirds also nest and moult within the sanctuary. Although the sanctuary is primarily known for water birds, several species of raptors, passerines and ground-dwelling birds are also present in the area. Other common species include snowy owl, gyrfalcon, peregrine falcon, osprey, common redpoll, gray jay, common raven, red-throated loon, northern shrike, ptarmigan, and fox sparrow. Due to proximity, many of the species that occur within KIBS could occur at or near Unipkat I-22.

Signs of shorebirds were observed at Unipkat I-22 during environmental assessments in 2004 (Komex 2005), 2007 and 2010.

Of the birds found in the vicinity of the Unipkat I-22 well site, the peregrine falcon tundrius subspecies as well as the brants have been ranked as sensitive species by the Working Group on General Status of NWT Species (2006). The Committee on the Status of Endangered Wildlife in Canada (COSEWIC), however, has recently evaluated the

peregrine falcon tundrius subspecies and as a species of special concern (April 2007). Brants appear to have not been assessed by COSEWIC.

The majority of birds that are found in and around the Mackenzie Delta are migratory and are present from May to October.

11.5.2 Mammals

Terrestrial mammals in the area include barren-ground grizzly bear, red fox, wolverine, ermine, least weasel, mink, muskrat, Arctic ground squirrel, and several species of small rodents (lemmings and voles). Caribou are not thought to occur on Richards Island, however the island is used as rangeland for a reindeer herd.

Grizzly bears reside year round in the area, although at low density. Most local grizzly denning occurs on south and west facing lake/channel banks between sea level and 100 m above sea level within the bear's home range. Low-lying areas around lakes and channels also provide good spring foraging habitat. Grizzly bears also forage on bird eggs, and thus are attracted to KIBS during the spring waterfowl nesting season.

The grizzly bear and the wolverine are regarded as being of special concern by COSEWIC (2006, 2003). These same species are considered sensitive by the Working Group on General Status of NWT Species (2006). The outer Mackenzie Delta, particularly Richards Island, provides excellent habitat for Arctic fox. (Dome *et al.* 1982)

11.5.2.1Bear Denning Survey

A bear denning survey is currently being conducted by NWTs Department of Environment and Natural resources. The proposed project will follow the recommendations of the denning survey in order to mitigate any potential identified conflicts between this project and the identified denning areas.

11.5.3 Marine Mammals

Polar bear are typically restricted to areas with sea ice. However, maternity dens (October to March) and secondary winter habitat occur along the coastline of the Mackenzie Delta, Richards Island and the Tuktoyaktuk Peninsula. (Dome *et al.* 1982)

The polar bear is listed as a sensitive species by the Working Group on General Status of NWT Species (2006) and as a species of special concern by COSEWIC (2002).

11.6 Hydrology

The hydrologic regime of the Mackenzie Delta is the major factor controlling vegetation and wildlife habitat in the area (Mackenzie River Basin Committee (MRBC) 1981) and the productivity of the delta ecosystem (Marsh and Hey 1989). The Mackenzie Delta comprises a complex of lakes, ponds, and channels, surrounding tidal flats (Bigras 1990) and supporting high levels of biological activity (Marsh 1998).

The delta is active with continual, year-round flow, and builds forward into the Beaufort Sea during the open water season from June to October (Bigras 1990). The freshwater discharge from the Mackenzie River reduces coastal salinities in the Southern Beaufort Sea (Thomson et al., 1986; Dome et al., 1982). The Mackenzie River is the major source of terrestrial material to the Canadian Beaufort shelf (Yunker and MacDonald 1995).

The outer delta lies in the zone of tidal, marine and fluvial influence (Graf Pannatier 1998). Delta water levels are influenced through tides and sea storm surges (Marsh and Schmidt 1993, Marsh 1998), and fluvial inflow, including spring flooding, ice jamming and changes in levee heights (Marsh and Hey 1989). The major channels of the delta appear largely unchanged in the last century, with the Middle, East, and West channels primarily controlling the hydrologic regime of the delta lakes (MRBC 1981). The

development of vegetated, fine-grained levees and the presence of perennially frozen ground limit the lateral migration of many delta channels (Graf Pannatier 1998).

11.6.1 Water Quality

It is generally believed that flooding from the channels of the Mackenzie River plays a major role in the annual flushing and nutrient replenishment of the floodplain lakes (Lesack *et al.* 1998). The channels and lakes of the delta are well supplied with nutrients; however, the productivity of these waterbodies appears to be controlled by turbidity, substrate stability, abrasion and climate, rather than by nutrients (Brunskill *et al.* 1973).

The waters of the Mackenzie River basin typically have high levels of turbidity and moderately low total dissolved solids (TDS) concentrations and conductivity. These parameters are influenced by the discharge regime, such that values of turbidity and colour are low over the winter, highly variable in spring and peak over the summer. Conversely, conductivity and TDS levels are highest in the winter and decline in the open water period. Concentrations of metals in the Mackenzie River basin are mainly associated with suspended sediments so that levels of metals show seasonal variations in response to discharge and suspended sediment regimes.

11.6.2 Fish

Many lakes in the region provide conditions suitable for overwintering fish. This includes freshwater species such as lake whitefish, broad whitefish, least cisco, northern pike, Arctic grayling, lake trout, burbot, pond smelt, ninespine stickleback and longnose sucker. In many cases, these fish populations are resident year round, but lakes that are connected to the ocean with streams that flow throughout the open water season also provide overwintering habitat for diadromous species such as lake whitefish, broad whitefish and least cisco.

Regional streams are generally small and provide no overwintering habitat (Lawrence *et al.* 1984). Many streams are ephemeral or intermittent and provide only periodic connection between lakes, while larger streams serve as migration routes for the diadromous species listed above. They also provide summer habitat for freshwater species such as Arctic grayling, northern pike, pond smelt, burbot and ninespine stickleback, which move in from lakes where they are resident. Streams are generally clear, with total suspended solid (TSS) levels below 10 mg/L.

The Mackenzie River channels of the outer delta, including East, Middle, Harry and Kumak channels, provide critical year-round habitat for inconnu, broad whitefish, lake whitefish, least cisco, northern pike and burbot. In addition to feeding, rearing and overwintering habitat (deeper channels), the channels also serve as migration routes for large populations of diadromous and other migratory species that move annually between the Mackenzie River or delta and the Beaufort Sea coast.

The arctic grayling have been ranked as sensitive species by the Working Group on General Status of NWT Species (2006), but does not appear to have been assessed by COSEWIC.

11.7 Cultural and Historic Resources

A database search is being conducted by the Prince of Wales Northern Heritage Centre to determine if the project area contains known heritage or archeological sites. Previous searches have not returned any known historic or archeological sites within 150 m of the project area. There were also no known heritage resources identified at Unipkat I-22. If any site is identified in the current search all reasonable efforts will be used to mitigate the impacts and alternate project route placement will be considered.

12. PROPOSED MITIGATION AND ANTICIPATED ENVIRONMENTAL IMPACTS

Table 12-1 Outlines mitigation measures that are applicable to all aspects of the field program.

Table 12-1 Proposed Mitigation and Anticipated Environmental Impacts

Concern and/or Anticipated Impact	Mitigation
Avoidance of Traditional and Cultural Activities and Sensitive Areas	A wildlife monitor will be involved in the project to ensure that sensitive areas and interference with harvesting and other activities are avoided.
	Transportation is restricted to the river ice and the footprint on the land is small.
	Timing of the project causes minimal temporal overlap with traditional and cultural activities.
Impacts to Aquatic and Terrestrial Wildlife	While there is a small potential for wildlife harm (*i.e.*, human protection from problem wildlife), training of all staff in operational procedures will minimize this potential.
	The wildlife monitor will be present at all times to ensure impacts to wildlife are minimal.
	No fishing or hunting will be permitted by people working on the project.
	Feeding or harassment of wildlife will not be permitted.
	Intake pipes will be screened with mesh to protect fish in the event water is withdrawn from water bodies.
Sensory Disturbance to Wildlife	No non-emergency air transport will be used during this project.
	Wildlife attraction or avoidance at the site is expected to be minimal. All attractants to wildlife, *i.e.*, garbage, will be removed from project area.
	Environment and Natural Resources' *Bear Encounter Response Guidelines for Oil and Gas Activities* will be followed.
	Wildlife monitor will monitor and advise if wildlife is disturbed.
	Existing routes at the site will be used as much as possible.
	Field crews will be required to pack out all materials used during the project, *e.g.*, lunch wrappers, paper, sample containers.
Impacts to Terrestrial Habitat	Land based activities will be restricted to the lease area.
	Rare plant samples will not be collected and disturbance of existing vegetation on site will be avoided where possible.
	The wildlife monitor will be present at all times to ensure impacts to habitats are minimal.
	Refueling will occur in designated areas and a drip tray will be used. Fuel spills will be recorded and cleaned up immediately. Transport trucks will fuel in Inuvik.
	All fuel storage will have secondary containment.
	The partially backfilled excavation will be contoured to blend into natural topography.

Concern and/or Anticipated Impact	Mitigation
	Backfill material will be analysed for possible contaminants prior to transport to site.
	Snow pads will be constructed on the site to minimize ground disturbance in areas where heavy equipment and the camp are located.
	Excavated area will be contoured to be similar to surrounding landscape and any ponded area would likely be usable to native animals. Loss of terrestrial habitat would be minimal.
Impacts to Aquatic Habitat	Drips tray will be located under equipment when not in use.
	Unfrozen sediments will not be disturbed.
Soil and Surface Contamination	Spill pads and other spill prevention devices will be used to ensure that no spills occur during refueling of equipment.
	An emergency response plan and spill kits will be present at the site.
	Soils containing contaminants of concern will be stockpiled on snow pads while on site prior to transport to the Inuvik treatment cell. The dirty snow from the pads will also be removed to the Inuvik treatment cell.
Cultural or Heritage Resources	There are no known cultural or heritage sites within 150 m radius of the site and no known heritage sites will be impacted by the project. Should heritage resources be found during project activities, work will cease in the immediate vicinity and regulators and the Prince of Wales Northern Heritage Centre will be notified.
	If any cultural areas identified through a search of the Prince of Wales Northern Heritage Centre will be given a buffer zone of 150 m.

13. CUMULATIVE EFFECTS

This cumulative effects assessment summarizes how expected effects of the proposed site clean-up, which may be insignificant on its own, may combine with the activities of other projects in the region, thereby compounding environmental effects and increasing their significance level.

13.1 Characterization of Projects and Activities

The primary project-specific effects that could potentially occur as a result of the site remediation at Unipkat I-22 would include sensory disturbance from vehicle and heavy equipment, and sensory disturbance from human activity on the ground.

While there is small potential for wildlife harm (i.e., human protection from problem wildlife), training of all staff in operational procedures will be used to minimize this potential. This issue as well as other safety concerns, policies and incident management are addressed in the Emergency Response Plans (see Appendix I).

At the time of this submission, we have been advised that there are no other developments that may spatially or temporally overlap with this project. A project is considered spatially overlapping if it occurs within the identified corridor or could be reasonably expected to share transportation routes or flight paths with the proposed project. Temporal overlaps are those projects with activities in the timeframe. Known past and potential future projects are not listed because the identified effects of the Biophysical and Heritage Resource investigations are short term and reversible, i.e., sensory disturbance, and/or will be mitigated for, i.e., cultural intrusion.

Activities not related to oil and gas or research are usually comprised of other land-based activities, i.e., hunting and trapping, recreation.

13.2 Cumulative Effects and Mitigation

Interactions with other projects and activities could result in incremental effects of the following types of impacts:

- Increased sensory disturbance of wildlife within area the fieldwork is to be conducted at Unipkat I-22 due to human activities on the ground and other

activities. This could result in energetic stress to wildlife, displacement or, in a worst case, seasonal abandonment of habitat.

- Increased sensory disturbance of wildlife where travel corridors between Inuvik and various study areas overlap. This could also result in energetic stress to wildlife, displacement or, in a worst case, seasonal abandonment of habitat.
- Interference with traditional activities as a result of human activities on the ground.
- Intrusion on important cultural or spiritual sites as a result of human activities.

To minimize the potential for these cumulative effects to occur, the use of appropriate mitigation measures and procedures as identified in Section 12 will be employed.

13.3 Socio-Economic

Local suppliers will be used wherever possible for equipment and consumables. Longer-lasting benefits may also be realized through economic diversification complementary to development such as, hotels and restaurants. While Shell's project may incrementally contribute to these longer-term effects, most impacts will be short term and will be related to seasonal employment.

14. EMERGENCY RESPONSE PLAN

An Emergency Response Plan has been developed for the program scheduled at Unipkat I-22, and is available in Appendix I. In addition, a site-specific Safety Plan will be developed for this project. Detailed procedures will be specified for:

- hazard analysis and control
- wildlife and environmental awareness

- equipment and waste transport
- working close to heavy equipment
- spill response plan

15. CLEANUP, RECLAMATION, DISPOSAL OR DECOMMISSIONING PLAN

There will be some disturbance associated with this project. All equipment used will be removed from the site once the project has been completed. All waste materials, paper or other refuse will be collected and removed for disposal in Inuvik, including human generated wastewater and solids. Where practical, the monitoring wells, thermistors and benchmark onsite after the site has completed phase 1 of the remedial process. This infrastructure will be left in place to allow for future monitoring of groundwater conditions, soil temperature, and shoreline erosion. Once reclamation activities are completed at the site, the monitoring equipment will be removed or cut off below grade.

16. OTHER ENVIRONMENTAL ASSESSMENT

During August of 2010, Shell conducted supplementary sampling at Unipkat I-22 to delineate the extent of the drilling sump and surrounding affected soil. Eighteen boreholes were drilled with a lightweight drill rig during the assessment to complete the delineation at the site.

In 2007, Shell performed a Phase II ESA at the Unipkat I-22 site. The assessment consisted of 82 boreholes, ten groundwater monitoring wells and three thermistors that monitor subsurface ground temperatures. It was identified that there is an area where constituents of concern are above regulatory guidelines.

In 2006, Shell revisited 23 of their historic wellsites in the ISR to conduct geophysical surveys, reconnaissance level vegetation surveys, detailed vegetation assessments and collection of water, sediment, soil, invertebrates, arthropods and plant tissue samples. Information gathered was used to develop a risk-based remedial approach for addressing the environmental impacts associated with Shell's historic sumps.

Shell completed initial drilling sump assessments in 2004 on all accessible reclaimed drilling sumps in the Mackenzie Delta. The information gathered was used to compile a common database of information and identify the primary environmental issues associated with these sumps.

In 2003, the Canadian Association of Petroleum Producers (CAPP) commissioned a study to assess potential environmental impacts associated with former remote drilling sumps in the Mackenzie Delta. This study involved compilation of existing published information on a number of sump sites, as well as an assessment of some unpublished geophysical survey data provided by select CAPP committee member companies.

In 2002, CAPP commissioned Essis Ltd. to conduct an Environmental Imaging Investigation of seven well sites located north of Inuvik, NWT (Essis 2002). Kokelj (2002) conducted a review of sump performance at twenty-five wells that was based on site visits and a literature review. Dyke (2001) used geophysics and surface soil sampling to investigate the soil and water quality at six former drilling sumps.

Except for the 2010 supplementary sampling, the Environmental Impact Screening Committee reviewed all of these projects.

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APPENDIX I

Emergency Response Information

a division of CCS Income Trust

Site Specific Safety Plan

Shell Canada

2011 Unipkat I-22
Sump & Hydrocarbon Affected
Material Management Plan

Contact List – Page 7

January 15th to March 31st 2011

Project Approval Form

Approved:

Robert Watt	
Hazco Safety Officer (Print and Sign)	**Date**
Kevin Erikson	
Hazco Project Manager	**Date**
Randall Warren	
Shell Manager; Reclamation and Drilling Waste RTD/HSE/DAR Shell Canada Limited	**Date**
Michelle Grignon	
Shell HSE	**Date**

Table of Contents:

1. Project Overview

1.1 BACKGROUND

Shell Canada Limited intends to initiate the removal of the Unipkat I-22 sump material and hydrocarbon affected soil during the winter/ summer/ months of 2011, provisions will be made to continue activity in 2012 if the weather does not allow all activities to be completed in 2011. Shell Canada Limited has retained the services of HAZCO, with the support of IEG, to develop a material management plan that will cover all aspects of the sump and affected soil removal. All procedures will ensure compliance with Transportation of Dangerous Goods and Territorial and Provincial Regulations.

The location of the project, specific job scope and planned 2011 field activities are outlined in the Document (hereinafter referred to as the Surplus Management Plan).

1.2 Project Goals

Safety:

- The project safety goals are ZERO INCIDENTS
- All incidents are to be reported immediately.
- 100% participation in proactive reporting

Quality:

- Zero non – conformances at completion

Cost:

- At completion to be within the approved budget.

Schedule:

Commencement:	January 15, 2011
Completion:	March 31, 2011

Environmental:

- Zero Incidents
- Zero Spills of Environmental Incidents

2. PHYSICAL SCOPE OF WORK

Hazco's scope of work includes all tasks associated with the project management, safety, excavation, as well as safe transport and storage of the surplus materials in the town of Inuvik, NWT. Hazco will assume responsibility / liability for the material during transit time from the point of loading (Unipkat I-22) to the proposed storage location at the facilities of E Grubens transport yard located in the town of Inuvik, NT.

General

- HAZCO will act as Prime (Principal) Contractor for activities within and outside of the Northwest Territories,
- HAZCO will manage all aspects for the transportation of sump material and soil of the Surplus Management Plan.
- Develop a Site Specific Safety Plan as well as complete HAZCO safety/environmental orientation with field personnel.
- Insure all reporting requirements are completed (IRC templates)
- Assist in community consultation process as required.
- Assist in acquiring required permits

Field

- Procure all equipment and supplies.
- Build 50 km of ice road off existing Government ice road.
- Mobilize all supplies and equipment/personnel to Unipkat I-22.
- Snow removal from ice road and work area.
- Mobilize 1600 cubic meters of sump material.
- Affected soil being removed
- Inventory sump material that will be moving south in 2011 and what may remain for future shipments.
- Demob all men and equipment

Trucking

Hazco will provide suitable trucks for transport of the sump material from Unipkat I-22 to the selected storage facility. All drivers will be properly trained with current large vehicle operating licenses, and carry the appropriate safety and survival equipment for winter hauling in the Northwest Territories. A truck push will be designated for each convoy of trucks (two in total). All loads will be tarped and the end gates bolted. Drivers will carry the necessary chains for tires, tools, spill kits, emergency kit, food and water. Personal Protective Equipment (PPE) is not required to be worn by drivers while inside the cab of their trucks. PPE (hard hat, safety glasses,

high visibility vest, and work boots) must be worn if drivers leave the cab of trucks while on the worksite. Additional survival clothing and gear will be carried by all drivers.

Waste manifest forms will be generated by Hazco's site supervisor and signed off by the Shell designate. Daily weather conditions, travel warnings, ice road warnings posted by GNWT Department of Transportation, maximum load capacities, driving / rest period regulations, separation distances between trucks, and driver safety will all be discussed at daily tailgate meetings.

Trucking convoys will obey all posted speed limits and regulatory advising signage. A copy of the ERP and contact numbers will be kept in each transport truck. All incidents must be reported immediately by satellite phone or radio.

All vehicles traveling the Ice Roads from Inuvik to Unipkat I-22 will be subject to and adhere to designated speed limits as per ice conditions. During initial orientation the Road Use Agreement will be reviewed in it's entirety and all personnel who will be traveling the ice road between Inuvik and Unipkat I-22 will sign and acknowledgement that the have reviewed the terms of the Road Use Agreement and will adhere to it's terms and conditions.

3. Organizational Plan/Contact List

Shell Canada

Name and Number	Position	Contact phone number
Randall Warren	Project Manager	Home: 403-284-2662 Office: 403-691-2521 Cell: 403-813-0408
Michelle Grignon	Shell HSE Manager	Office: 403-384-5279 Cell: 403-206-5279

Hazco Environmental Services

Name and Number	Position	Contact phone number
Kevin Erickson	Project Manager	Office: 403-723-8781 Cell: 587-888-0761 Home: 403-938-3521
Norm Watwood	Site Superintendent	Cell: 403 850-0540
Marc St Pierre	Field Health & Safety Coordinator	Cell: 403-998-8014
Travis McCollister	General Superintendent	Cell: 403-710-7689

IEG Consultants Ltd

Name and Number	Position	Contact phone number
Sam Bird	Consultant Project Manager	Office : 867-777-8521 Cell : 403-990-1382

MDIOS

Name and Number	Position	Contact phone number
Kurt Wainman	Superintendent	Cell : 867-678-0777 Office : 867-777-2426

4. Safety Program

HAZCO is committed to conducting project activities in ways that protect the health and safety of employees, contractors and members of the public potentially affected by our work. HAZCO is committed to an objective of zero incidents and injuries on this project because we value:

- The safety and health of our employees, our contractors and communities in which we operate.
- Our reputation as safety-conscious companies.

The HAZCO Safety Manual has been developed to communicate guidelines that ensure that work activities are conducted in a manner that safeguards the health and safety of HAZCO and Shell employees, contractors, subcontractors and all members of the public that may be affected by these operations. HAZCO's Safety Manual together with this Site Specific Safety Plan is considered to be the designated company health and safety plan for this project.

This Site Specific Safety Plan addresses safe work guidelines for the for the *2011 Unipkat Sump Remediation.* Implementation of safe operating practices, effective supervision or work and regular feedback to all personnel are essential elements of this safety plan.

The information in this document is applicable to HAZCO employees, contractors and sub-contractors completing project work. Requirements outlined in this document are considered to be in addition to the HAZCO Safety Manual and do not replace the specifications described in it.

During all project activities, health and safety requirements will be evaluated and appropriate modifications shall be made where necessary. All employers on the site have responsibility for the safety and well being of their employees and sub-contractors.

Should any member(s) of the project team feel that their personal safety is at risk at any time, they are obligated to stop work and discuss their concerns with the HAZCO Project Manager, the Project HSE Representative or their own HSE Advisor. Under OH&S regulations, all workers have the right and duty to refuse unsafe work.

Safety Orientations and Pre-Job Safety Meeting

All personnel (Hazco, Subcontractors and Consultants) will participate in the site specific safety orientation provided by the Hazco Regional Safety Coordinator. Hazco will conduct a pre-job safety meeting to be attended by all personnel who will be working at or on the Unipkat I-22 2011 project prior to start of the project. This meeting may include one representative from Shell Canada to ensure that operation concerns are clearly stated.

The Orientation will include but not be limited to the following:

- Overview of Hazco Safety Manual including a description of daily safety expectation ie: Daily tailgates, JSA's, inspections and observations
- Review of Job Kickoff Checklist
- Review of this Site Specific Safety Plan

5.0 PROJECT RESPONSIBILITIES

5.1 PRINCIPAL/PRIME CONTRACTOR - OVERVIEW

As Principal Contractor HAZCO will ensure that the work site health and safety of all the workers involved (including on-site personnel & drivers) is maintained during every aspect of the work being performed. HAZCO will ensure that all personnel and subcontractors working on the site will comply with all applicable client operating requirements and applicable OH&S regulations. HAZCO will also establish a system of regular inspections (possible inclusion of a safety audit) that will include all personnel and subcontractors to ensure that compliance is maintained.

On this specific work-site HAZCO, through direction from their on-site supervisor, will assume the responsibility for the health & safety of all those that enter on to the work-site. This includes all HAZCO workers, any sub-contractors, the client - their workers and any other visitors to the work-site.

HAZCO will also develop & implement an emergency response plan designed to meet the specific needs of this work-site & those that will be expected to be involved in carrying out the required tasks on this work-site. The said ERP will be prominently posted in all living and camp locations as well as a copy kept in each truck and vehicle.

HAZCO will ensure that all specific provincial regulations regarding the construction and transport industry for any and all work to be performed shall be followed as it applies to this work-site. Any additional work to be performed in the as designated areas of this project will be carried out in accordance with all applicable federal, provincial, civic & municipal acts or regulations. Therefore it is expected that all those entering onto the designated work-site area(s), will adhere to all security, fire, safety, emergency response & environmental precautions at all times.

The client will provide to HAZCO a Waste Generator number and HAZCO will be responsible to review & sign any manifest (as agent for the waste generator).

5.2 SPECIFIC ROLES AND RESPONSIBILITIES

5.2.1 PROJECT MANAGER

- Coordinate publishing, approvals, distribution and control of the Site Specific Safety Plan.
- Assure that Superintendents are aware of and comply with requirements for safe practices and conditions to be maintained on job sites.
- Review all incidents and near misses with Superintendents, submit completed reports to the Corporate OHS and assure that corrective action is taken immediately to eliminate the causes and prevent re-occurrence.
- Require all subcontractors and subcontractor personnel to comply with applicable OHS regulations.
- Provide information and recommendations to OHS representatives concerning OHS matters.
- Report all incidents and near misses according to Company policy. Following an incident, investigate all details, file a complete report with client Project Manager, and correct any conditions that may have contributed to the incident. Ensure incident reports are discussed with employees.
- Report to the client Project Manager any conditions created by the general contractor or another trade.
- Counsel all who fail to observe safety and OHS rules and regulations.
- Discipline staff and employees appropriately.

5.2.2 SITE SUPERVISOR

- Conduct pre-job safety training and kick-off meeting
- Conduct daily tailgate meetings and weekly safety meetings
- Be familiar with & ensure all applicable OHS regulations are complied with and enforced on the worksite.
- Direct and coordinate safety and OHS activities within area of responsibility.
- Lead by example as a member of HAZCO's Site Safety Management Team.
- Provide employees with task specific OHS instruction.
- Require all employees under their supervision to utilize the proper individual personal protective equipment and safety devices (i.e. equipment guards).
- Ensure all tools & equipment required to execute the job safely are available & maintained in safe working order.
- Ensure that storage locations are clearly designated.
- Include OHS observation as part of walkabouts.
- Take corrective action on observed non-compliance issues.
- Conduct Job Safety Analysis meetings with crew.
- Verify worker competency before starting task.
- Conduct OHS inspections of work area, direct corrective action for unsafe conditions noted and inform the OHS (site and corporate) of inspection results.
- Hold regular meetings, and use them to discuss important and pertinent OHS concerns. Make attendance mandatory. Forward appropriate records.
- Report all incidents and near misses according to Company policy. Following an incident, investigate all details, file a complete report with Project Manager, and correct any conditions that may have contributed to the incident. Ensure incident reports are discussed with employees.
- Report to the Project Manager any conditions created by the general contractor or another trade.
- Counsel all who fail to observe OHS rules and regulations.

- Discipline staff and employees appropriately.
- Ensure appropriate PPE is available to the worksite

5.2.3 EMPLOYEES

- Be familiar with and comply with proper OHS practices & procedures.
- Use required OHS devices and proper personal protective equipment as required.
- Notify Site Supervisor immediately of unsafe conditions and acts.
- Report all incidents and near misses to the Site Supervisor immediately.
- Carry out work in a manner that will not create a hazard to their own safety and health or safety of other employees.
- Suggest ways and means to reduce risk.
- Attend tailgate meetings and Job Safety Analysis meetings prior to executing work.
- Attend weekly safety meetings
- Be aware of how off the job activities and lifestyle impact on the job performance.

5.2.4 REGIONAL SAFETY

- Responsible for the implementation, coordination and management of HAZCO's Corporate Occupational Health and Safety (OH&S) program across all HAZCO operations.
- Ensure corporate compliance with HAZCO's OH&S program, client requirements, and applicable provincial and federal OH&S regulations.
- Conduct internal audits, develop and implement action plans upon completion of audits.
- Administer HAZCO's Disability Management Program and WCB activities.
- Maintain HAZCO's corporate OH&S record keeping system, which includes tracking incidents/accidents, training, and frequency and severity rates.

5.2.5 CONTRACTORS

All contractors (environmental contractors, wildlife monitors, laborers, EMT personnel and truck drivers) are required to:

- Report to the Site each day, physically and mentally competent to perform their specified work.
- Follow all HAZCO safety policies.
- Keep a copy of this safety plan on hand in the filed for reference.
- Provide feedback to HAZCO on safety policies and procedures.
- Report any incident, near misses or hazard identifications to the Site Supervisor.
- Wear and supply as necessary appropriate PPE to their activities.
- Attend Tailgate meetings

As a minimum, contractors must submit the following safety documentation prior to commencement of the project:

- Valid minimum safety certificates for all project personnel.
- Proof of valid coverage by NT WCB account in good standing.
- Valid liability insurance coverage.
- Licenses and certificates appropriate to their contracted work. (i.e. A welders ticket for a welder)

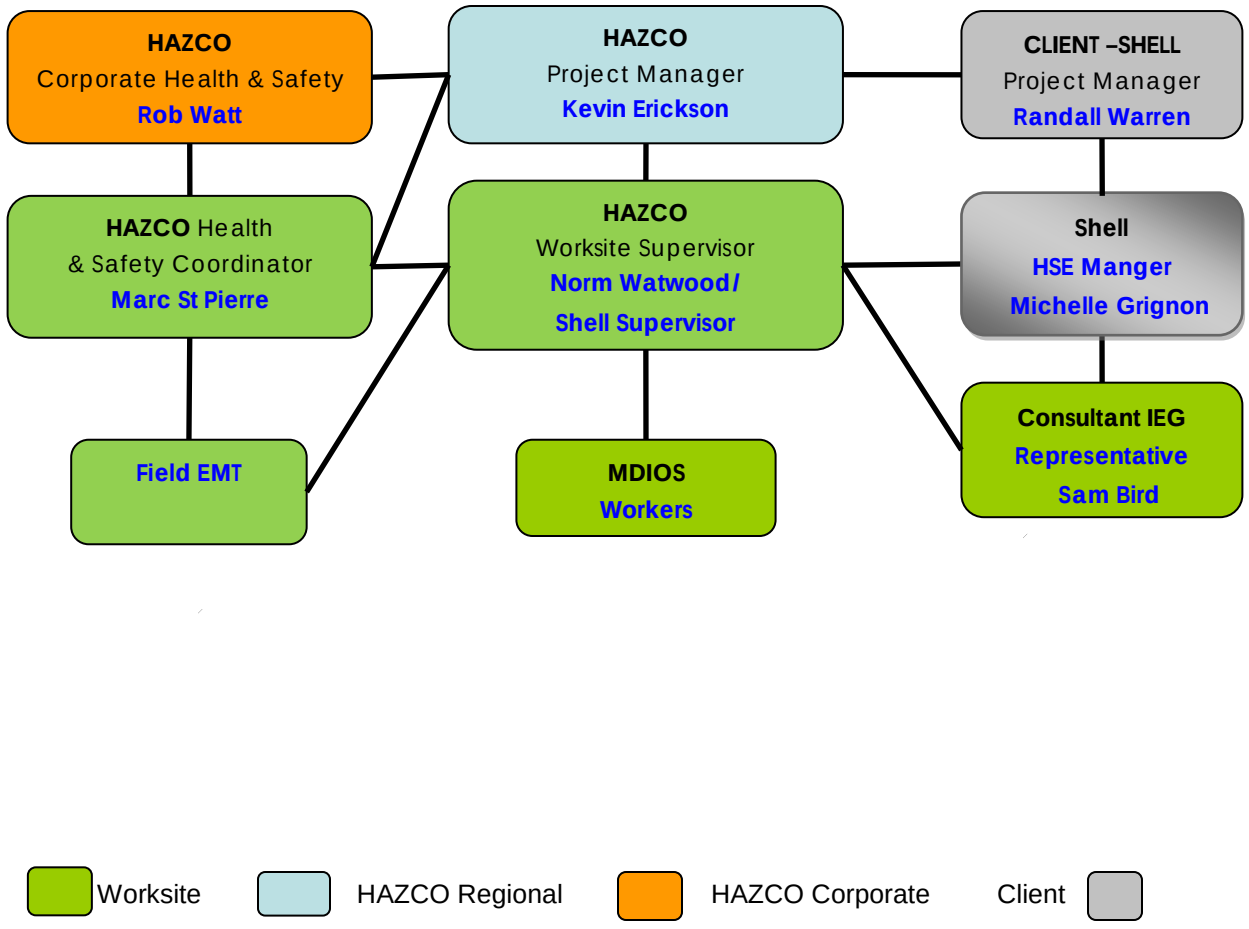
Shell
HSE Manger
Michelle Grignon

In accordance with our subcontractor management program, contractors may also be asked to submit proof of a safety management system, safety statistics / records for the last three years and may be required to complete a pre-qualification questionnaire.

5.3 VISITORS

It is anticipated that visitors will be present at the work sites. The visitors must be authorized by a HAZCO representative prior to visiting the site. Visitors are expected to supply and wear basic PPE unless HAZCO has agreed to provide it for them. Visitors must remain with a designated representative of SHELL or HAZCO during their visit, and are expected to follow all safety policies and follow any directions given by the Site Supervisor.

6.0 HAZCO ORGANIZATION CHART



* Note: For complete crew description and tasks: **see Surplus Management Plan**

7.0 GUIDING DOCUMENTS FOR SAFETY

HAZCO will endeavor to determine the best practice for all work activities undertaken throughout the duration of the project. HAZCO will also follow the most stringent territorial and federal Occupational Health, Safety and Environmental regulations that apply specifically to the work that is being under-taken at this work-site.

The following documents will be used to guide the safety process at the designated worksites(s) for the duration of this project:

- NorthWest Territories Occupational Health and Safety Act
- HAZCO's Health & Safety Environmental Management Guide
- HAZCO's Site Specific Safety Plan
- HAZCO's Employee Health & Safety Handbook
- HAZCO's Worksite Safety Binder
- Public Health Act – Camp Sanitation Regulations
- General Camp Standards and Inspection Checklist
- Google Map – Inuvik – Map to the Hospital

HAZCO's safety program will be administrated, directed and documented at this work-site through the use of their Work-Site Safety Binder. All binders completed and in process will be maintained at the work-site for the duration of the project. A complete listing of all forms to be contained in each Work-Site Safety Binder is listed in Appendix #2 of this document.

8.0 DESIGNATED WORK AREAS

The designated work areas for the completed activities will be at Unipkat I -22 located 115 km northwest of Inuvik and approximately 125 km west of Tuktoyaktuk, NWT. As Principal Contractor, HAZCO will erect signage indicating the areas of work and the entrance requirements.

Muster point signage and locations will be designated and determined during the initial site set up and communicated to the work crews during the initial site kick off meeting.

9.0 CONTRACTOR PRE-QUALIFICATION

To the extent possible HAZCO will attempt to utilize local contractors and suppliers. Pursuant to Shell Canada Limited's agreement with the Inuvialuit Regional Corporation (IRC) and the Government of the Northwest Territories for the Niglintgak Anchor Field Shell, thorough HAZCO will provide employment, training and business opportunities for those local businesses. When and where applicable a prequalification process will be required to be completed for all subcontractors that are to be hired by HAZCO for work to be carried out on this project. The primary purpose of the pre-qualification process is to obtain and evaluate information about a prospective contractor, to determine if their health and safety management system and past health and safety performance is acceptable and complies with HAZCO's criteria.

The following will apply to all sub-contractors to be used on this project:

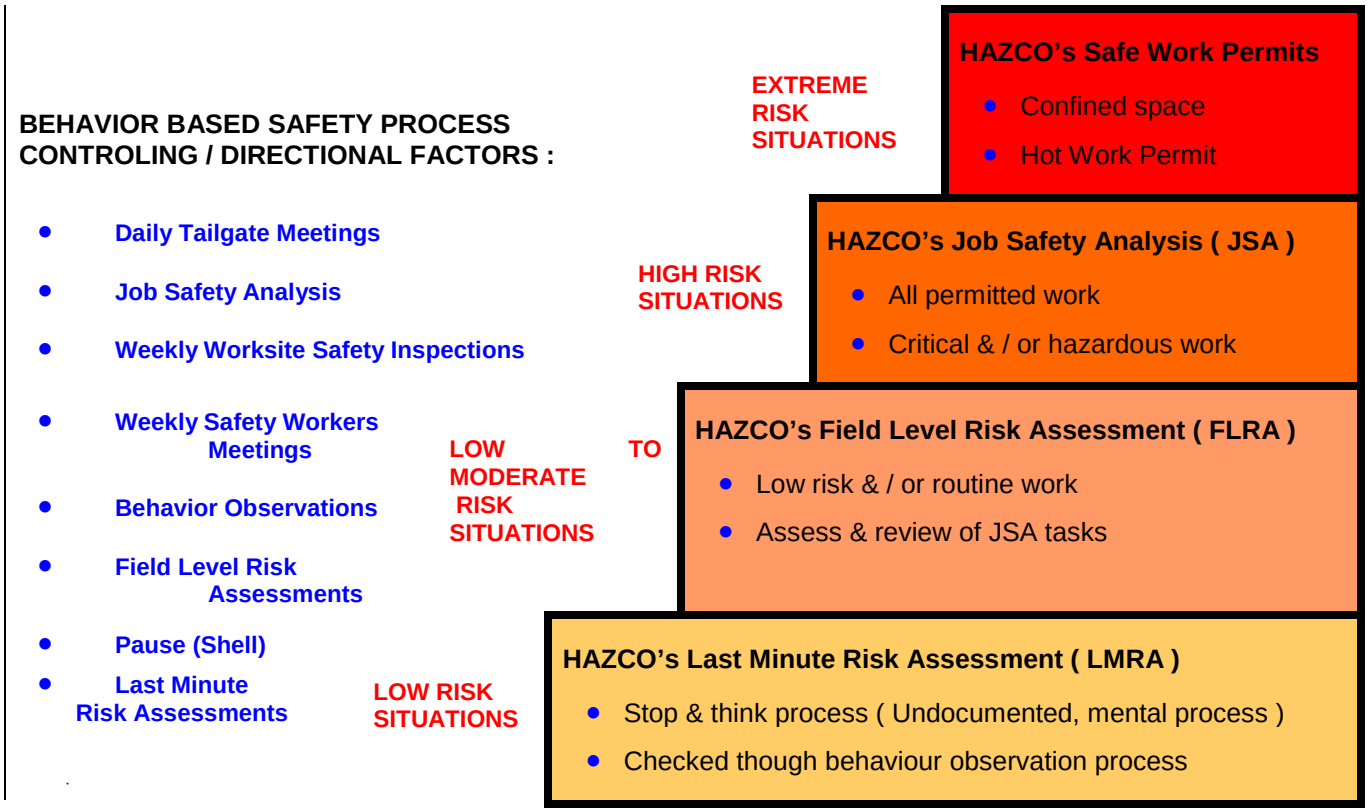
- All subcontractors will be required to complete HAZCO's prequalification process. Results of this process will be coordinated at the corporate level.
- All subcontractors will be required to participate in the full HAZCO orientation process. During this orientation process all workers will sign-off on the substance abuse policy (Appendix 1).

10.0 SAFETY MANAGEMENT SYSTEM

10.1 JOB HAZARD ASSESSMENT

RISK ASSESSMENT

The following is the process to be used by HAZCO as part of their hazard management procedures once the initial Site Specific Safety Plan is completed.



10.2 WORK AUTHORIZATION PROCESS

Work authorizations are required as per the applicable government regulations and where identified as being a critical task or as per HAZCO policy. Specific work permit(s) or additional verified documentation may be required if the following work is being performed (Applications applicable to this job are to be checked below):

- Elevated Work/Working at Heights
- Exposure To Hazardous Chemicals/Materials/Substances

- Quad/Mule, snowmobile use
- Hot Work (E.G. Flammable Potential, Debris Burning)
- Isolation of Equipment (Lock-Tag Out)
- Work Being Performed On/Around Open Water
- Work Involving a Sub-Contractor

The JSA process will further identify situations where additional work authorizations are required.

10.3 JOB SAFETY ANALYSIS

The following outlines the process that will be used by HAZCO for authorizing and performing critical or hazardous work. This process includes the initiation, development, implementation and review procedures for a JSA:

- Upon completion of the project's initial Worksite Site Hazard Assessment (SHA), HAZCO will have identified the potential jobs / tasks required to complete the work scope. Through this process, JSA's will be identified that require development and review for those tasks identified.
- The appropriate HAZCO general reference documents concerning these identified tasks will be made available to the workers for review.
- The actual formalized identification of each of the required site specific JSA's that will be initiated or reviewed at the Worksite, will be itemized during each Daily Tailgate Meeting.
- Members of HAZCO's Site Safety Management Team will be responsible to continually lead and monitor this entire process.
- Once any JSA has been developed, all those workers required to perform the task will be required to sign-off on that JSA. Additionally other members of the Workers may also be required to review the JSA and sign-off on the JSA, as a confirmation that they fully understand the specific requirements noted.
- While the defined work is being undertaken, it will be the responsibility of all personnel to look for scope changes; unidentified safety concerns etc. and then immediately report them. The HAZCO site supervisor will immediately halt the task until the JSA can be revised to clearly address the scope change or safety concern.
- If the change of scope for the job-task, safety concern and/or the revised process to perform the task safely has any effect on another task being performed on the Worksite – then that task will also be halted and reported to the HAZCO site supervisor of the respective changes/revisions to the process.

A review of the initial JSA will be carried out on every subsequent day the task is to be carried out. A change, if any, will be recorded on that same JSA and all the members of that Workers will be required to sign-off on the JSA, as a confirmation that they once again fully understand the specific requirements noted. The Workers will sign off on the JSA as well if there are no changes.

10.4 BEHAVIOR BASED OBSERVATIONS (BBS)

As part of HAZCO's Health and Safety Management System, HAZCO management and site personnel are required to complete observations on standard and specific planned tasks to meet the requirements of their BBS process. These tasks are as follows:

- Job observations will be performed on general work activities that are referenced back to the JSA's that have been developed for job specific tasks or compared to a FLRA card that a worker may have completed for a job.
- The expectation will be for a member of the site workforce, including site supervision, members of HAZCO's management team & all other trained HAZCO workers, to complete the required observation sheets a minimum of once per shift.
- Observations will be made on any one of the following activities: low risk routine work, work being performed relative to a JSA, a task in which a worker completed a FLRA prior to the task, critical or hazardous work, a green worker, a subcontractor, transport driver, operator, any one of these or other activities could be observed as part of HAZCO's Behavior Based Safety process.
- Completion of the Behavior Observation Sheet (BOS) form also allows for a documented and signed-off check of the Last Minute Risk Assessment (LMRA) process.
- This process will be carried out and documented using an appropriate Observation form. The completed forms will be kept on file in HAZCO's worksite safety binder and will be made available for review to the client.
- This information is collected by HAZCO to enhance its overall safety program company wide. It is also used to mentor and engage workers at the site level by providing valuable feedback and discussion to the worker's activities.
- It also serves to promote a positive atmosphere among site personnel to encourage safe behaviors among those observed.
- Completed Observation Sheets will be regularly reviewed and assessed by the Regional Health & Safety Coordinator through the duration of the work project.
- The information will also be passed on to the workers as a learning tool during daily tailgates and shift safety meeting.

Completed observation sheets will also be provided to corporate safety for data collection and trending analysis.

10.5 FIELD LEVEL RISK ASSESSMENTS

The Field Level Risk Assessment (FLRA) is another method of checks & balances used in HAZCO's Health and Safety Management System. These FLRA's can be completed by any worker who is expected to be completing a job task on our work site. To ensure the process is being followed the following must be completed:

- This process will be carried out and documented using the designated HAZCO FLRA card-form system. The completed cards will be kept on file in HAZCO's worksite safety binder and will be made available for review.
- These specific cards are intended for use by all individual workers at the Worksite who are required to perform any low risk/routine work not covered by a JSA or safe work/hot work permit.
- Workers and individual workers will use the FLRA cards before they do work to assist in identifying the risks or a change in scope of that task that may become evident once the work starts.
- Individuals who note a change can make the necessary corrective action to address any new hazards or contact someone form the site safety team for clarification or advice.

- The expectation will be for any member of the work crew, HAZCO or a subcontractor to complete these cards.

Completed cards-forms will be regularly reviewed and assessed by the Regional Health & Safety Coordinator throughout the duration of the work project.

10.6 LAST MINUTE RISK ASSESSMENT (Pause)

All site personnel and subcontractors are directly responsible for performing their own risk assessment as they work. Before taking any action, site personnel should STOP & Think about the hazards, the risks and the appropriate controls. This will be confirmed by a member of the site supervision team completing a Last Minute Risk Assessment (LMRA) test, consisting of a verbal verification.

- These tests may be documented on the daily tailgate form, the weekly safety meeting form or on the behavioral observation sheet (BOS).
- All site personnel will be instructed in the STOP & Think program during site orientations and throughout the duration of the project by a member of the site supervision team. STOP & Think to be discussed and reinforced at daily tailgate meetings.

HAZCO will implement the same process with all site subcontractors and will ensure compliance by having the site supervision team work with subcontractors throughout the processes outlined and liaise with them at every stage as indicated.

11.0 SCOPE OF WORK

HAZCO has identified the following hazards that may be applicable to this job

11.1 GENERAL HAZARD IDENTIFICATION

Hazard	Hazard Control
Physical	
Remote Work	A satellite phone will be on-site and available at all times. Radios in all trucks Call-in procedures will be used
Travel to and from the work site – remote locations, other vehicles on the road, bad road condition, weather preventing traveling	All workers to review, understand and agree to the terms and conditions of the Road Use Agreement
Camp Set up and use	Camps are to be inspected (using Shell's General Camp Standards and Inspection Checklist) prior to mobilization to site

Hazard	Hazard Control
Firearms	Only the designated wildlife monitor will have and, where necessary, use a firearm.
	Firearms will be transported unloaded in an appropriate carrying case, with trigger lock.
Handling / Lifting materials	Obtain assistance for lifting where appropriate
	Use proper lifting techniques
	Wear work gloves
	Safety glasses
	Avoid awkward lifting positions – no overexertion or awkward lifting.
Noise (e.g., noise generated by equipment)	Wear hearing protection appropriate to level of noise
Air quality	Dust masks
	Use of ½-mask air purifying respirator with appropriate cartridges (as required)
Tripping, Falling	Worker awareness
	Wear CSA-approved work boots
	Keep equipment organized and uncluttered
	Proper footwear/PPE
	Three point mount & dismount
	Slow down
	Crew trained in First Aid
	EMT/Paramedic on site
Extreme Weather	Obtain weather forecast each morning
	Shelter will be provided on site (capable size for all workers on site during a given shift)
	Cold weather work will be suspended when temperatures reach -40 (Ambient Air temperature)
	Wear appropriate clothing dress in layers and take breaks to warm up.
Heavy Equipment	Stand out of swing radius

Hazard	Hazard Control
	Ensure adequate communication with operator
	All ground personnel to wear high visibility outer wear
	Spotter to be used when backing up equipment within 10 meters of buildings, materials or other personnel
	All equipment to have back up alarms (tested prior to arrival on site)
Hand Injuries (cuts-pinches-abrasions) while performing any manual hand operations	All workers will wear appropriate and task specific gloves as per Hazco glove policy
	Last Minute Risk Assessment coaching and mentoring
Leaks (i.e. hydraulic line failure, fuel etc.)	Adequate absorbent and spill containment materials must be available to recover or contain any potential release.
	Preventive maintenance & equipment inspections
Fatigue	Take adequate breaks during work hours
	Get adequate rest during off hours
Equipment failure	All equipment to be inspected/repaired prior to arrival on site
	Inspect prior to each use
	Daily servicing and maintenance of all equipment
Toxicological	
Impacted soils/water (particularly waste-impacted media)	Wear appropriate PPE for contaminants encountered
	Stand upwind when appropriate
	Follow good hygiene practices – wash hands and change clothing as required
Biological	
Wildlife encounters	Control garbage and other wildlife attractants during operations
	Record all wildlife interactions and report significant interactions to ENR
	Follow ENR bear encounter guidelines for oil & gas
	No feeding Wildlife
	Minimize disturbance to wildlife and wildlife habitat

Hazard	Hazard Control
	Adhere to permit requirements, where applicable
	Wildlife monitor present with workers
Deer mice (Hanta virus)	Avoid contact with mice or their droppings
	Recognize symptoms of exposure
Diseases Carried by Animals (e.g., rabies, tuberculosis)	Avoid contact with wildlife (live and dead) and their droppings.
	Be extremely cautious around all animals, especially those exhibiting unusual behavior (e.g., aggressiveness, paralyzed look, foaming at the mouth)

*Note: Any field personnel with allergies should carry appropriate allergy medicine, and communicate the location and administration details of the medicine to other members of the field crew before starting work.

11.2 JOB SAFETY ANALYSIS LIST

From the identified risks associated with the job the following Job Safety Analysis will be developed:

- Mobilization
  - Inspection of camp pursuant to General Camp Standards and Inspection Checklist
  - Inspection of all equipment prior to mobilization
  - Review of Road Use Agreement
- Site Set Up
- Iron Wolf Grinding
- Excavation
- Backfilling
- Mobilizing Materials to Staging Area
- Loading trucks
- Transport of Workers and Materials (between Unipkat I-22 and Inuvik)
- Loading Material for Road Transport (Load securement)
- Working at Heights (if required)
- Re-fueling of Equipment
- Snowmobile/Mule Use
- Ice road Safety (Profiling, safe weight, not parking too close to one another)

It is anticipated that after site kick off meeting and orientation the worksite crew will sit down with the safety personnel to draft and finalize the site JSA's.

12.0 SITE RULES

12.1 SITE ACCESS

Site access is restricted and only those authorized and properly orientated will be allowed access to Unipkat I-22. All access during the planned activities for 2011 will be through the use of Ice Roads.

12.2 HOURS OF WORK

Normal regular hours of work will be 12 hours / day.

No work will commence on the work site until after the Daily Tailgate / Safe Work Permit meeting between the workers and the Site Supervisor has taken place. The workers are required to sign-off as participating in the meeting & fully understanding all the safety procedures required to perform work safely that day. All access to the work-site (vehicular & pedestrian) will be in the designated locations.

All personnel entering into the work-site, who did not participate in the daily tailgate/safe work permit meeting, will be subjected to a site specific safety orientation & will then be required to sign in & out at the dedicated HAZCO work-site office / trailer.

Any sub-contracted workers that will be performing work at this site, will be required to read & sign-off as understanding & agreeing to abide by HAZCO's safety rules & regulations

12.3 TRAINING REQUIREMENTS

A safety orientation will be conducted for all personnel prior to the commencement of any fieldwork. The safety orientation will review:

- Safe Work Procedures
- Personal Protective Equipment (PPE)
- Hazard and Mitigation Measures
- Emergency Response Plan
- Training
- Drug and Alcohol Policy
- Shell's 12 Life Saving Rules

All contractors must ensure that their personnel are competent and trained for their job. Proof of current training and licenses will be provided to the Site Supervisor prior to the start of work.

The project-specific training matrix (below) details orientation/training requirements based on job description and type of training. The matrix requirements are minimum requirements for the project and may not reflect additional company-specific training.

TABLE A – PROJECT SPECIFIC TRAINING REQUIREMENTS

Description	HAZCO	Contractor
HAZCO Site Orientation	X	X
Petroleum Safety Training (PST or CSTS)	X	
Respiratory Protection Training/Fit Test	X	
Standard First Aid with Level A CPR	X	
WHMIS	X	X
TDG Clear Language	X	X (Truckers)

12.4 WORKSITE MEETINGS

12.4.1 PROJECT KICKOFF MEETING

- An extensive site kickoff meeting will be conducted at the beginning of the project work. The meeting will be of mandatory attendance for all site workers and will be conducted prior to mobilization to site.

12.4.1 DAILY TAILGATE MEETINGS

- A daily tailgate meeting will be conducted at the start of each day's/shifts work.
- The HAZCO Daily Tailgate – Work Authorization Meeting Form will be completed prior to the start of that day's work. The site supervisor, work crew, and site safety coordinator will complete the HAZCO Daily Tailgate – Work Authorization form.
- This form will detail the tasks to be performed that day, identify the designated Safety-Representative and alternate, identify the designated First-aid Representative and alternate, detail general and specific site processes, perform a critical task analysis on critical tasks to be performed that day, and detail related subcontractor information.
- All persons participating in this meeting will be required to sign-off as verification of their attendance.
- The critical task analysis procedure carried out in this meeting will identify what JSA's will be required to be initiated or reviewed for that day's tasks.

12.4.3 WEEKLY SAFETY CREW MEETING

- It is HAZCO's practice to hold a Weekly Safety Workers Meeting. All members of the on-site work crew, sub-contractors and client project members are to attend.
- At these meetings, all aspects of the project's safety are to be reviewed and new safety items discussed. (I.e. Current released Safety Alerts, at least one individual safety item from this worksite, the weekly released Safety Coordinator's Bulletin, review of the sites Weekly Safety Inspection and discussion of safety concerns or previous week's near misses brought forward by the workers).
- These meetings will be carried out and documented using the HAZCO's Weekly Safety Workers Meeting form. The completed forms will be kept on file in HAZCO's Worksite Safety Binder and a copy of the completed report will be made available to the client.
- Minutes of the Weekly Safety Workers Meeting will be posted in the HAZCO lunchroom trailer or site office.

12.5 PERSONAL PROTECTIVE EQUIPMENT

Minimum PPE will consist of:

- Appropriate clothing for weather conditions
- High visibility vest
- Appropriate footwear for the terrain (i.e., that extend over the ankle to provide support)
- Appropriate CSA-approved protective eyewear
- Hard hat
- CSA approved Safety boots
- Disposable dust mask (as required)
- ½ Mask respirator with appropriate cartridges (as required)
- Hearing protection appropriate to task
- Leather and/or Nitrile gloves, as appropriate

12.6 FIRST AID AND MEDICAL FACILITIES

All HAZCO on-site personnel will have Standard Level First Aid training as defined by NT WCB Safety Regulations (2002). In addition there will be a full time EMT Paramedic on site at all times Each field crew and all trucks will have available a No. 1 First Aid Kit. A record of supplies used from the first-aid kit will be maintained. Any supplies used from the kit will be replaced before redeployment.

On site emergency response capabilities and procedures will be developed on site after consultation with local authorities. (Inuvik Nursing Station and Inuvik Medivac)

12.7 DISCIPLINARY PROCEDURES

The HAZCO representative on the work site has responsibility for ensuring safe work practices and for disciplining personnel who do not comply with company safety policies and/or applicable government acts and regulations and Shell's12 life saving rules. Disciplinary actions will be used to prevent safety violations from recurring. The HAZCO Site Supervisor may initiate disciplinary action.

The following disciplinary actions are listed from minor to severe, and in the order that they would be used. If a verbal warning is issued to non-compliant personnel and the safety violation is not corrected, the supervisor will follow through with a written warning.

- **Verbal Warning:**
  - Worker will be informed of a minor safety violation and that a written warning will be issued if the offence is not corrected or is repeated.

- **Written Warning:**
  - Worker will be issued a written warning of a potentially serious safety violation or repeated offences of a minor safety violation. A written warning report will be kept on file and a copy will be presented to the worker's employer. Also, a verbal warning will be issued to the worker that a more severe action will be taken if the violation is ignored or repeated.

- **Discharge:**
  - This action will be used for very serious safety violations or where the worker refuses to follow and obey safety rules. This action is the final step taken to uphold an acceptable margin of on-site safety.

12.8 FIREARMS

Firearms may only be carried and operated by designated, trained personnel who are acting as a wildlife monitor.

The wildlife monitor is responsible for maintaining and carrying a copy of his firearm possession and acquisition license (FAPL, appropriate for firearm type), proof of registration (unless exempt through Territorial or Provincial Law) and required training certificates. The Wildlife Monitor is responsible for the proper use and storage of the site firearm, and is responsible to ensure that no other personnel store, handle or use the firearm.

The Wildlife Monitor must possess the following equipment:

- Firearm cleaning kit appropriate for the weapon being carried

- A carrying case, lockable and stored out of sight
- A trigger lock for when the weapon is stored
- Ammunition suitable for the potential use of the weapon
- Ammunition suitable caliber to wildlife likely to be encountered
- All necessary documentation for the weapon (e.g., FAPL, registration, proof of ownership)
- Alarm or horn to inform workers of wildlife emergency

While on foot the wildlife monitor may carry a loaded firearm, provided that there is no shell in the chamber. Loaded firearms will not be carried in any vehicle with the exception of the wildlife monitor with snowmobile/quad/mule use. Under no circumstances are handguns allowed on a work site. The wildlife monitor is not authorized to conduct firearm-training sessions on the work site.

12.9 WORKPLACE VIOLENCE

Workplace violence (including implied or actual physical violence) will not be tolerated; offenders will be subject to disciplinary action and/or dismissal from the site.

12.10 INCIDENT REPORTING AND NOTIFICATION

Procedures for notifying, reporting & investigating any incident that takes place on the specific work-site, during transportation of materials or at a designated landfill site, are as follows:

- It is expected that all injuries, illnesses, near misses and incidents, as defined by HAZCO's safety program, that take place at the locations defined by this project, will be immediately reported to the work-site supervisor.
- All workers, client representatives, and visitors to the site must report all incidents, regardless of the severity.
- It is the responsibility of the individual directly involved in the incident to report it immediately (no later than the end of their work shift) to the work-site supervisor.
- The work-site supervisor will ensure that the appropriate contacts with HAZCO & the client are immediately informed verbally and that the documented incident is reported filed with HAZCO's regional office & copied to the client within forty-eight (48) hours of the incident taking place.
- The client will be informed of any incident taking place on the worksite. The above stated reporting process will meet or exceed the requirements of the client's reporting schedules for incidents.
- All incidents attributed to this project will be reported and documented. Incident reports will be categorized as follows:

  Incident Report (A) – Personal Injury: First-aids, Medical-Aids, Lost Time Accidents

  Incident Report (B) – Damage to Equipment or Work-Site: Equipment Damage, Property Damage, Vandalism, Environmental Spill

  Incident Report (C) – Vehicle Collision/Damage: Damage to a Vehicle While It Is Being Driven

Incident Report (D) – Non-Compliance: Disobeying of Any Designated Safety Regulation(s), Rules for Safety Performance, etc.

- In the event of a first aid or medical aid, the attending member of the site safety team will ensure the injured worker is provided with a HAZCO Injury Kit to take with them to a hospital or medical clinic.
- In the event where investigation is to be completed or medic is required to leave site all work will stop or be suspended.
- An investigation of this incident will take place immediately following the incident being reported & a preliminary investigation of the incident will be filed with HAZCO's regional office & copied to the client within forty-eight (48) hours of the incident taking place. A further in-depth & finalized investigation will be compiled in conjunction with the Site Supervisor, the Regional Safety & Health Coordinator, HAZCO's Project Manager & a member of HAZCO's senior management team.
- Members of HAZCO's site safety team are responsible for ensuring the consistent and timely management and immediate reporting to the client of the incident investigation process, including incident response, notification, investigation, documentation, follow-up and sharing of learning's.
- Follow-up includes timely verification that corrective actions are taken and successfully completed for each incident, and that documentation is distributed and filed.
- The investigation procedure will not be used to lay blame for cause of the incident, but rather to determine both the direct & indirect causes of the incident, with any corrective actions for prevention being immediately implemented to ensure the incident can not occur again.

12.11 INSPECTIONS

The objective of safety inspections is to ensure that project health and safety policies, procedures and expectations are appropriately implemented. The inspection program for this project will consist of informal daily inspections, safe activity observations and at least one formal site inspection (by the Site Supervisor).

In addition, the regular site inspections will include a thorough inspection of the Site Camp and will use Shell's General Camp Standards and Inspection Checklist.

DAILY INPSECTIONS

The Site Supervisor will conduct daily inspections of equipment, work site conditions, employee actions and job procedures to identify and correct potential hazards. All findings will be discussed immediately with site workers, and reviewed at the safety meeting conducted the following day.

SAFE WORK OBSERVATIONS

Site observations are an important part of this safety program to provide feedback to the workers and to ensure that they are following agreed upon safe work procedures. Planned Job Observations will be conducted at this job site.

12.12 SPILL RESPONSE

All spills of any size must be reported to the Site Supervisor. Spills of any nature - hazardous or non-hazardous materials, or at any place (at the work site, landfill or during transportation to / from the Worksite) are all included in the mandatory reporting requirements.

If a spill occurs, refer to the Emergency Response Plan for the appropriate steps to follow. Spill kits will be located onsite for containment of liquid spills. Each of these separate kits has a 215 Liter capacity. Each truck will be out fitted with separate spill kits depending of the size of truck will depend of the capacity of spill kit no smoking shack provided no smoking in equipment.

12.13 FIRE PREVENTION AND DESIGNATED SMOKING AREAS

HAZCO is expected to do everything practical to prevent an uncontrolled fire situation from taking place. Prior to any fire extinguisher being brought on-site, HAZCO shall inspect the extinguisher to ensure for its effective and safe operation. HAZCO shall provide sufficient fire extinguishers to handle fire emergencies and ensure access at all times. The fire extinguishers must be appropriate for the activity, fully charged, in good operating condition, has neither been tampered with nor actuated, has no obvious physical damage and the Workers are adequately trained. HAZCO workers will immediately report to their supervisor all broken seals and uses of hand-held extinguishers. HAZCO will immediately replace any extinguisher that is removed from service.

HAZCO shall ensure that any containers used to transfer flammable liquids (e.g., gasoline, methanol etc.) from one container to another are grounded and meet all applicable government regulations for storage & use.

A designated site smoking area will be designated which will have a proper extinguishing media container. All smoking materials are to be fully extinguished before leaving this area. The area is to be properly policed & maintained in a clear & safe manner. Other than as stated herein there shall be no smoking on site and especially no smoking in the Camp facilities.

Any fire situation taking place must be immediately reported to the work-site supervisor. If a fire situation should take place during the transportation of materials follow the procedures as specified in the work-site emergency response plan.

12.14 WORKING ALONE REQUIREMENTS

It is not anticipated to have any workers working alone however, in the event that there is circumstances when a worker may be by himself for an extended period of time a communication and rescue plan shall be discussed and agreed on prior to work commencing. Satellite phones and 2-way radios will be used to maintain regular contact between field crew members it they are outside visual or conversation range all vehicles in transit will have compatible radios.

12.15 WILDLIFE AWARENESS

Grizzly bears, polar bears, wolverines, black bears, foxes and wolves may be found within the project area. These animals may act aggressively and pose hazards to field crew members. All field crew personnel will review the bear protocol orientation in the site kick-off meeting. A wildlife

monitor will be on-site during fieldwork to monitor the presence of wildlife in the area and manage all wildlife encounters.

General practices for wildlife encounter management include:

- Approaching work areas with caution: When working outdoors in a remote area, it is prudent to scan the surroundings when first entering an area, at regular intervals when stationary, and before moving to a different area. Note that polar bears are known to wait for their prey. Workers should pay particular attention to potential hiding/resting spots for polar bears.
- Report and record all wildlife sightings on Daily Environmental Inspection List: All wildlife sightings will be immediately reported to the Site Supervisor, who will then be on heightened alert, and inform all members of the field crew. If the situation poses no threat, work may continue. All wildlife sightings will be recorded in the Daily Environmental Inspection List.
- Maintaining a safe distance from all wildlife: Feeding or harassment of all wildlife is not permitted, and will be subject to discipline as outlined in Section 4.8. Dead animals or droppings should not be approached or touched. Diseases such as rabies are present in wild animals the NWT.
- All wildlife attractants must be dealt with appropriately with garbage collected and properly disposed of immediately.

All wildlife encounters will be reported to the Site Supervisor. In the event of an aggressive animal encounter, local wildlife authorities will be notified and requested to assist. The SHELL Project Manager must be notified of all wildlife incidents within 48 hours.

Rabies has been reported in all mammals in the NT, but is especially prevalent in foxes and wolves. Signs of rabies include:

- Animals acting differently than normal (e.g., wild animals without fear of humans, animals becoming vicious and attacking for no reason)
- A dropped jaw and "foaming at the mouth"
- Animals which appear weak or paralyzed

12.16 RESPONIBILITIES OF THE WILDLIFE MONITOR

As a minimum the Wildlife Monitor will:

- Be familiar with wildlife native to the area, their habits and behaviors
- Implement and enforce safe work procedures to reduce the probability of a wildlife encounter
- Provide emergency response to wildlife encounters
- Be trained, competent and licensed in firearm use
- Follow safe work practices associated with carrying and using a firearm

The primary responsibility of the Wildlife Monitor is to safeguard the health and well being of the field crew (and of the wildlife). The level of attention that this duty requires is dependent on the level of the bear hazard, ambient light level, weather conditions, and terrain. For example, a group is working outdoors on a clear sunny day on flat tundra which affords no cover to

approaching bears. The Bear Monitor will do roaming and regular scans of the area every 10 or 15 minutes; however, a continuous bear watch would clearly be required during periods of low ambient light level and in rugged terrain. The frequency of the area survey is a matter of judgment to be resolved between the Site Supervisor and the Wildlife Monitor. Muster points in regards to bear sightings will be determined by the Wildlife Monitor and the Site Supervisor once on site. Wildlife Monitor to be in continual radio contact with Site Supervisor. At no time will the Wildlife Monitor engage in personal hunting or fishing.

12.17 WEATHER

Inuvik, Tuktoyaktuk and surrounding areas experience extreme cold weather in the winter and early spring.

It is agreed that the Site Supervisor in consultation with local personnel will continually monitor weather conditions and determine safe working conditions purposed.

It is agreed that all work will be suspended and no out door activities conducted when the ambient air temperature reaches -40 Celsius.

12.18 COMMUNICATION PLAN

Site communication is essential to safe operations in remote locations. At this job site it each work crew will be issued a two way radio that will be able to communicate with other workers while on site. No worker will be allowed to work alone and the buddy system will be strictly enforced except truck driver on route since we have journey management they are not considered alone.

In addition to two way radios there will be a satellite phone on site for communication with off site facilities. Control and use of the satellite phone will be at the sole discretion of the site supervisor. Satellite phones will be utilized for communication with medivac and air support units.

Finally, as part of the emergency response plan workers will have access to a marine air horn and will sound the air horn if help is needed.

EMERGENCY RESPONSE PLAN

EMERGENCY RESPONSE PLAN

1.1 In the event of an emergency:

1. ***Stop work as quickly and as safely as possible***
2. Turn off all sources of ignition
3. Report to the designated muster point
4. Contact :
    - Appropriate emergency contact numbers
    - HAZCO contact
    - Client representative contact
5. Notify the truckers that may be in transit not to return to the Site until further notice
6. Await further instruction
    - Instructions may include to shelter in place

For a chemical release, SITE SUPERVISOR to ensure the following:

1. If the spill is major, notify HAZCO's Emergency Response Coordinator at 1-800-667-0444.
2. Isolate source immediately.
3. Contain the spill.
4. Initiate clean up.
5. Contact 24hr Spill Report Line

For large fires, SITE SUPERVISOR to ensure the following:

1. Evacuate all personnel to designated muster point.
2. Conduct a head count to verify that all personnel are safely out of the area.
3. Don additional PPE, as required
4. Provide first aid, if required
5. Conduct a search for the missing, if required
6. Determine the nature of the material on fire.
7. If HAZCO has insufficient resources to handle the emergency, contact 911.
8. Notify HAZCO's Emergency Response Coordinator 1-800-667-0444.

For an injury on-site, SITE SUPERVISOR to ensure the following:

1. If the injury is beyond the capabilities of the person providing first aid or the available resources, arrange for immediate transport of the injured person to the designated medical facility.

In the event of a material spill during TRANSPORTATION, the DRIVER to ensure the following:

1. Notify the HAZCO project manager.
2. Isolate source immediately.
3. Contain the spill.
4. For a small spill, initiate clean up.
5. If spill is major, await direction from project coordinator.

ALCOHOL AND DRUG POLICY

HAZCO Environmental Services (collectively referred to as the "Company") is committed, as a matter of policy, to having a workforce and workplace that is free from unauthorized, prohibited, illegal or controlled substances, including alcohol.
Involvement with substances of abuse does compromise employee health and safety, public safety, environmental safety and job performance. The Company expects employees to perform their duties safely and efficiently. The Company encourages employees who have a substance abuse problem to seek assistance. Accordingly, as a term and condition of employment and/or the privilege of entering onto or remaining on Company premises or performing Company work, it is important to note the following:

1. All employees are expected to be fit for duty and in a condition to carry out their assignments and responsibilities. It is therefore a violation of this Policy for employees to work or to be on Company premises while under the influence of alcohol or unauthorized, prohibited, illegal or controlled substances.

2. The consumption, use, manufacture, dispensation, possession, distribution, promotion, provision, purchase, sale, transportation, concealment, transfer or storage of unauthorized, prohibited, illegal or controlled substances and/or substance-related paraphernalia while performing Company work, on Company assignment or on Company premises (including Company owned or leased vehicles), is strictly prohibited.

3. Company employees shall not attempt to destroy or tamper with drug-testing specimens or records, or adulterate specimens.

4. It is the employee's responsibility to make sure that when they are using prescription or over-the-counter products (whether physician approved or not) that these products do not affect work performance by altering the mind, mood, behavior, emotions, reasoning performance or physical job functions. Prescriptions and over-the counter products are to be kept in the original container clearly marked with all pertinent information about usage, date, employee's name, prescribing physician's name and prescription number. They are to be used in a manner consistent with the instructions of the prescribing physician or as documented in the manufacturer's instructions.

5. An employee whose off-duty involvement with unauthorized, prohibited, illegal or controlled substances becomes known to the Company may be considered to be in violation of this Policy; depending on any adverse effect the employee's actions may have on the Company or the Company’s reputation.

6. Any suspicion of unauthorized, prohibited, illegal or controlled substances or substance related paraphernalia on Company / client property may be reported to appropriate law enforcement authorities in lieu of searches.

7. All contractors, visitors, vendors, consultants or other individuals working on Company property or assignment must comply with this Policy. While the Company has no direct control or direct interest in the personal actions or discipline of contractor employees or any outside vendors, these persons can affect the Company’s employees, property and company reputation. Any contractor employee, consultant or vendor found or suspected to be in violation of this Policy will be dealt with through the appropriate contractor management and will be denied access to the

jobsite or work assignment by the Company. Visitors found to be or suspected to be in violation of this Policy will also be denied access to Company property.

8. Violations of this Policy may result in disciplinary action up to and including termination of employment.

1. Application

This Policy applies to all new and existing employees working in positions deemed to be safety sensitive or by job function or contract require impairment free workers on the effective date of this Policy and prohibits them from engaging in activities that would contradict the goals of this Policy. Contractors by definition of this policy will comply with this policy or have equivalent as approved by the Company.

2. Substance Testing

A. Fit-for-Work

All newly hired employees will be required to undergo testing as part of the Fit-for-Work Medical performed in the first three months of employment with HAZCO.

B. Reasonable Suspicion

Employees holding positions within the Company where impairment clearly impacts the ability of an employee to safely complete his / her duties and there is a reasonable cause, suspicion or belief that an individual employee may be using or abusing unauthorized, prohibited, illegal or controlled substances, or when job performance appears to have changed or become erratic or impaired, may be subject to substance testing.

C. Post Incident / Accident Testing

Any employee may be subject to substance testing after a significant incident or safety violation involving the employee. This will be done whether or not the use or abuse of substances is apparent in the circumstances. Testing will be conducted as soon as reasonably practicable following the incident. If the testing does not occur within four (4) hours after the incident, a valid reason for the delay shall be included in the testing documentation.

D. Return-To-Work and Follow-Up

Any employee who has previously failed any drug or alcohol test administered by the Company and who has undergone a counseling or rehabilitation program for substance or alcohol abuse, and has successfully completed such a program to the satisfaction of a substance abuse professional, and who then returns to employment with the Company shall be subject to a return-to-work test and follow up testing as required.

E. Pre-Access Drug and Alcohol Testing

An employee while working at or for Hazco may be required to undergo Pre-Access Drug and Alcohol Testing as a requirement for access to an owner's work site. When an owner directly or by contract requires site access testing, an employee or subcontractor will be required to complete a drug and alcohol test. Results of said test must be negative in order for site access to be granted. All positive tests will be treated under the auspices of Hazco's Drug & Alcohol Policy contained herein.

F. Statutory or Contractual Testing

Employees will be tested as and when required by contractual, federal, state or provincial statutes, regulations or orders.

Testing Procedures and Confirmation Tests

Test samples will be collected by qualified staff, reviewed by a Medical Review Officer / Physician and kept confidential with only the interpretation of the results released to the appropriate Company contact. Immunoassay screen testing with GC/MS confirmation of all positive tests will be conducted by a designated accredited and approved laboratory using approved methods. A consent form will be obtained and stored in the employee's file.

SUBSTANCES AND THRESHOLD DETECTION LEVELS

Substance Immunoassay screening:

1. Amphetamines -1000ng/mL
2. Opiates -2000 ng/mL
3. Cannabinoids (THC metabolites) -50ng/mL
4. Cocaine -300ng/mL
5. Phencyclidine (PCP) -25ng/mL
6. Alcohol -0.04gms%

Consequences of Positive Test Results

When an employee violates this Policy he / she will be reinstated after consultation with their supervisor, referral, evaluation and treatment are completed to the satisfaction of the Company and a negative substance test and/or negative alcohol test has been performed at the expense of the employee.

New employees tested as part of a Fit-for-Work Medical that test positive will be dealt with accordingly up to and including being refused employment. An employee may refuse to participate in this policy and the refusal shall be considered a refusal to accept the Company's terms and conditions of employment.

Rehabilitation

Counseling and Rehabilitation

Employees who voluntarily admit to having a substance problem or test positive for a substance are eligible for a one-time leave to enroll in a Company-approved rehabilitation program, providing there are no other violations of this Policy and providing that the employee has not previously been through a rehabilitation program while employed by the Company. This one-time Crisis Suspension, leave shall be no longer than thirty calendar days without pay but may be less than thirty days depending on the determination of the Employee Assistance Provider (EAP). As a term and condition of continued employment, employees who participate in an approved rehabilitation program must provide proof of successful completion of their rehabilitation, a negative test (return-to-work), and follow-up substance tests (as recommended by the substance abuse professional) in order to continue to work.

Distribution

New employees will be asked to review this Policy and are required to sign an acknowledgement / consent form making this "Policy" a Term and Condition of their employment with the Company. Employees are invited to contact their immediate supervisor or manager if they do not believe that they can comply with the Policy.

DEFINITIONS

The following terms have generally accepted meanings. The definitions and examples below are illustrative. They are not intended to be, nor should they be, construed as exclusive of any other consistent interpretation.

"**Abuse**": The use of any substance in a manner that may tend to incapacitate, impair or influence an individual, or the use of any substance in a manner that deviates from the medical or legal norms or from the Company rules, policies or expectations. This includes recreational use of a substance, as well as dependence or addiction to a substance. It also includes misuse of substances that are permitted, legally authorized or uncontrolled.

"**Active employee**": All regular, temporary, intermittent, hourly, salaried, supervisory, management and executive-level personnel on the payroll of the Company.

"**Approved rehabilitation program**": A substance rehabilitation and maintenance program that is recognized and meets the criteria established by the Company.

"**Confidentiality**": Personal information on employees' testing and rehabilitation will be released by the Medical Services only on a need-to-know basis or as required by law to the appropriate Company contacts.

"**Company**": Refers to "HAZCO Environmental Services"

"**Company premises**": Includes all property, offices, facilities, land, parking lots, buildings, structures, fixtures, installations, areas, boats, vessels, aircraft, automobiles, trucks and any other vehicles, equipment or property, whether owned, leased, used or controlled by a Company entity. This also includes an employee's private mode of transportation while used for Company work or located on Company premises.

"**Company work**": Includes all authorized work, job assignments, or job-related activities performed for, or on behalf of, the Company.

"**Confirmation test**": In the case of drug testing, a second analytical procedure to identify the presence of a specific drug or metabolite that is independent of the initial test and which uses a different technique and chemical principle from that of the initial test.

"**contractor**", "**vendor**", "**consultant**", "**visitor**" or "**other individual**": All persons under the direction of, or under contract to, an independent contractor or subcontractor, including the owner or manager of the independent operations, and also including suppliers, visitors and other persons working on Company premises or performing Company work.

"**Detectable**" or "**detection level**": The level at which a substance(s) will be detected in the screening.

"**Drug panel 5**": An approved drug test protocol which tests for the presence of PCP, cocaine, amphetamines, marijuana and opiates.

"**EAP**": Employee Assistance Program.

"**Final test results**": Test results after all testing under the Policy have been completed.

"**Paraphernalia**": Equipment, apparatus or other devices used in conjunction or associated with substances.

"**Possession**": To have either in or on the employee's person, personal effects, motor vehicles or areas substantially entrusted to the control of the employee.

"**Safety sensitive position**": A position having duties, as defined by the employer, involving responsibilities affecting such matters as health, personal safety, safety of other people or of the environment, or other responsibilities requiring a high degree of trust and confidence or working in isolation with limited supervision.

"**Substances of abuse**": Alcohol, drug(s), chemical(s) or other substances. These terms may be generally used interchangeably and the term "substance" may be used to refer to alcohol, drugs, chemicals and substances in the Policy or in communications relating thereto.

TRANSPORT EMERGENCY RESPONSE PLAN

Unipkat I-22 – INUVIK HAUL

Project	Unipkat I-22 SHELL CANADA LTD
Proposed Haul Route	Unipkat I-22 to Inuvik (Arvoknar Channel)
Ambulance	**1-867-777-4444**
Police	**1-867-777-1111**
Fire Department	**1-867-777-2222**
Client / Owner	**Shell Canada Ltd. 1-403-813-0408**
Hazco Site Supervisor	**Norm Watwood 1-403-850-0540** Satellite Phone:
Transportation Emergency Response Manager	**Marc St Pierre 1-403-998-8014 (C)**
Hazco Regional Safety	**Robert Watt 1-403-828-0912 (C)** **1-403-273-8591 (H)**
Hazco Field Health & Safety	**Marc St Pierre 1-403-998-8014 (C)**
Hazco Project Manager	**Kevin Erickson 1-587-888-0761(C)**
Environmental Spill Control	**1-867-920-8130**
Hazco Emergency Contact	**1-800-997-0444**
MDIOS CONTACT	**KURT WAINMANN 1-867-678-0777**

A. TRANSPORTATION EMERGENCY RESPONSE

- In the event of a trucking accident or spill:
- Check for injured persons and lend assistance where required
- Contact site Supervisor as soon as possible (site EMT may be dispatched if accident is closer than Emergency Medical Services)
- **Phone Emergency Medical Services (1-867-777-4444) and/or Police (1-867-777-222) Fire (1-867-777-2222) as required**
- **Call, Hazco Transportation Emergency Response Manager; 1-403-998-8014 or (Satellite) Hazco Emergency number 1-800-997-0444.**

- Emergency Response Manager will report the spill as per the Northwest Territories Spill Control Regulations **1-867-777-2621**
- Be prepared to provide;
    - Name and Company (and who you are hauling for)
    - Location and time of release
    - A description of the circumstances leading to the release
    - The type and quantity of the material released
    - The details of any action proposed or taken at the release site
    - A description of the immediate surrounding area
    - Site from which you left
    - Description of accident
    - Phone number
- Remove manifest from truck and retain to give to the attending emergency authorities
- Keep unauthorized people away from area, especially downwind.
- Keep upwind
- Set up traffic warning devices
- Do not attempt to handle the material
- Await Police and emergency spill response personnel arrival
- After site securement and investigation, make arrangements to move the vehicle to safe area
- Await further instructions from Hazco Management
- Perform a thorough incident investigation as soon as possible, with corrective recommendations implemented immediately.
- Review incident findings with workers at the next Safety Meeting or right away and update Hazco Project Manager on closure of follow up actions.

TRASNPORT EMERGENCY RESPONSE PLAN

Tuktoyaktuk to Unipkat I-22

Project	Unipkat I-22 SHELL CANADA LTD
Proposed Haul Route	Camp Mobilization – Tuktoyaktuk to Unipkat I-22
MDIOS Supervisor	**Robert (Bob) Stefure 1-867-678-0053**
MDIOS Safety Coordinator	**Randy G. Hein 1-403-638-9636**
MDIOS CONTACT	**KURT WAINMANN 1-867-678-0777 or 1-867-777-2426**
Air Evacuation Number	Location: Bar C Turn Off **867-867-678-0053 or Aklak Air Ltd 867-777-3553**
Canadian Helicopter	**1-867-777-2424**
Ambulance Inuvik	**1-867-777-4444 or 1-867-777-8000**
Inuvik Hospital	**1-867-777-4444 or 1-867-777-8000**
Tuktoyaktuk Ambulance	**1-867-977-2321**
Tuktoyaktuk Medical Centre	**1-867-977-2321**
Police Inuvik	**1-867-777-1111**
Fire Department Inuvik	**1-867-777-2222**
Client / Owner	Shell Canada Ltd. **1-403-813-0408**
Hazco Supervisor	Norm Watwood **1-403-850-0540** Satellite Phone:
Transportation Emergency Response Manager	**Marc St Pierre 1-403-998-8014**
Hazco Field Health & Safety Coordinator	**Marc St Pierre 1-403-998-8014**
Hazco Regional Safety	**Robert Watt 1-403-828-0912 (m)** 1-403-273-8591 (h)
On Site EMT Frontier Medical	**1-403-291-3184**

Hazco Project Manager	**Kevin Erickson 1-587-888-0761**
Environment Spill Control	**1-867-920-8130**
Hazco Emergency Contact	**1-800-997-0444**

A. MEDICAL EMERGENCY:

- **Request Ambulance Service from Tuktoyaktuk Nursing Station or alternatively Inuvik EMS if necessary and establish a meeting point or give exact location for pickup. Give precise details of injuries as well as directions for meeting point and communication system to be used. Detailed road evacuation plan for this project is as follows:**
    - **Travel south on Winter Ice Road from E.Gruben's Ltd. Yard to the Ice Road between Tuktoyaktuk and Inuvik southwest for approx. 90 km. to Bar C then turn right and go 50 km down Middle and Arvoknar Channels to Unipkat I-22.**
- **ASSESS: the cause or hazard to minimize further injury or damage to personnel and property. Clear the area, protect yourself and others.**
- **RENDER FIRST AID: as required and determine if evacuation or further assistance is required. Contact your supervisor immediately to implement Emergency Evacuation Plan.**
- **CONTACT KEY PERSONNEL: via radio or cellular telephone immediately. Consult contact telephone list, Project Manager, Project Superintendent and Safety Manager**.

  Give exact location.

  Give short precise account of what happened.

  Give types of injuries and number of casualties.

  Appoint person to monitor radios/telephone.
- **Fill out, completely and accurately, incident report, WCB and First Aid reports and immediately submit reports to the office. Any media response will only be done through EGT or the owner's management personnel.**

B. TRANSPORTATION EMERGENCY RESPONSE

- In the event of a trucking accident or spill:
- Check for injured persons and lend assistance where required
- **Call, Hazco Transportation Emergency Response Manager; 1-403-or (Satellite) Hazco Emergency number 1-800-997-0444.**
- Emergency Response Manager will report the spill as per the Northwest Territories Spill Control Regulations **1-867-777-2621**
- Be prepared to provide;
    - Name and Company (and who you are hauling for)
    - Location and time of release
    - A description of the circumstances leading to the release
    - The type and quantity of the material released
    - The details of any action proposed or taken at the release site
    - A description of the immediate surrounding area
    - Site from which you left
    - Description of accident
    - Phone number
- Remove manifest (if applicable) from truck and retain to give to the attending emergency authorities
- Keep unauthorized people away from area, especially downwind.
- Keep upwind
- Set up traffic warning devices
- Do not attempt to handle the material
- Await Police and emergency spill response personnel arrival
- After site securement and investigation, make arrangements to move the vehicle to safe area
- Await further instructions from Hazco Management
- Perform a thorough incident investigation as soon as possible, with corrective recommendations implemented immediately.
- Review incident findings with workers at the next Safety Meeting or right away and update Hazco Project Manager on closure of follow up actions.

SITE EMERGENCY RESPONSE PLAN

Project	Shell Unipkat I-22
Location	Unipkat I-22 NWT (69.19683N & 135.34113E)
Hospital	Helpline 867-777-8000
Ambulance	**1-867-777-4444**
Medical Transport Unit	On Site – Frontier Medical Services –
Police	**1-867-777-1111 (NO 911 SERVICE)**
OH&S	**1-866-415-8690**
WCB	**1-800-661-0792**
NWT Environment	**1-867-920-8130**
Inuvik Environment	**1-867-777-2621**
Fire Department	**1-867-777-2222**
Hazco Field Health & Safety	**Marc St Pierre 1-403-998-8014**
Hazco Project Manager	**Kevin Erickson 1-576-880-0761**
Client / Owner	Shell Canada:**Randall Warren 1-403-813-0408**
Hazco Site Supervisor	Norm Watwood – **1-403-850-0540**
Inuvik Supervisor	– **1-403-**
Satellite Phone	
Hazco Emergency Contact	**Robert Watt** Health & Safety Manager(Alberta) **1-403-828-0912** 1-800-667-0444 (24 Hour Emergency Number)

Emergency Procedures

- As soon as the incident is noticed, STOP the work
- Provide appropriate and immediate help to reduce risks and damage (i.e. first aid to workers, extinguish fire, shut off valves, provide traffic control, stop product flow, etc.)
- Inform site Supervisor as soon as possible
- Call on site Paramedic if personal injury
- If Paramedic is not able to handle the situation on site arrangements will be made to transport injured worker to Inuvik Hospital

- All other workers should proceed to the designated muster point personnel and await instruction from site supervisor
- Cordon off the incident area
- Advise government agencies as per regulation and Hazco Project Manager
- Eliminate the risks and incident consequences by appropriate actions.
- Ensure site is safe and determine adequate timing for work to resume with Site Supervisor and Project Manager
- Perform a thorough incident investigation as soon as possible, with corrective recommendations implemented immediately.
- Produce incident report and forward to the Hazco Project Manager
- Review incident findings with workers at the next Safety Meeting or right away
- Update Hazco Project Manager on closure of follow up actions.
- The use of Air Horns will be used to alert all members of the work crew to suspend work and proceed to the muster area

FLAT TIRE EMERGENCY RESPONSE PLAN

Unipkat I-22 – INUVIK HAUL

Project	Unipkat I-22 SHELL CANADA LTD
Proposed haul route	Unipkat I-22 to Inuvik
Ambulance	**1-867-777-4444 and or 1-867-777-8000**
Police	**1-867-777-1111**
Fire Department	**1-867-777-2222**
Client / Owner	**Shell Canada Ltd. 1-403-813-0408**
Hazco Site Supervisor	**Norm Watwood 1-403-850-0540** Satellite Phone:
Transportation Emergency Response Manager	**Marc St Pierre 1-403-998-8014 (C)**
Hazco Regional Safety	**Robert Watt 1-403-828-0912 (C)** **1-403-273-8591 (H)**
Hazco Field Health & Safety	**Marc St Pierre 1-403-998-8014**
Hazco Project Manager	**Kevin Erickson 1-587-888-0761**
Environmental Spill Control	**1-867-920-8130**
Hazco Emergency Contact	**1-800-997-0444**
MDIOS CONTACT	**KURT WAINMANN 1-867-678-0777 or 1-867-777-2426**

A. FLAT TIRE EMERGENCY RESPONSE

- In the event of a flat tire:
- Radio all vehicles and inform everyone of location,
- **Pull off to the side of the road to a safe area**
- **Call, Hazco Transportation Emergency Response Manager; 1-403-998-8014 or (Satellite) Hazco Emergency number 1-800-997-0444 or radio on Journey Management system (Northwind Industries Channels, depending on location).**

- Emergency Response Manager will phone Tire Repair company if required (R.D.R. Ventures – Rudy Cardinal & Richard Heidl)
- Put out reflective triangles
- Secure vehicle by applying parking brake or blocking tires
- Ensure lifting device is on stable ground
- Never put feet or hands in a pinch position
- Drip tray is required under vehicle, place only if conditions allow
- Do not leave vehicle if visibility is less than 10 feet
- Radio in every 1 hour to update status
- Review incident findings with workers at the next Safety Meeting or right away and update Hazco Project Manager on follow up actions.

APPENDIX II

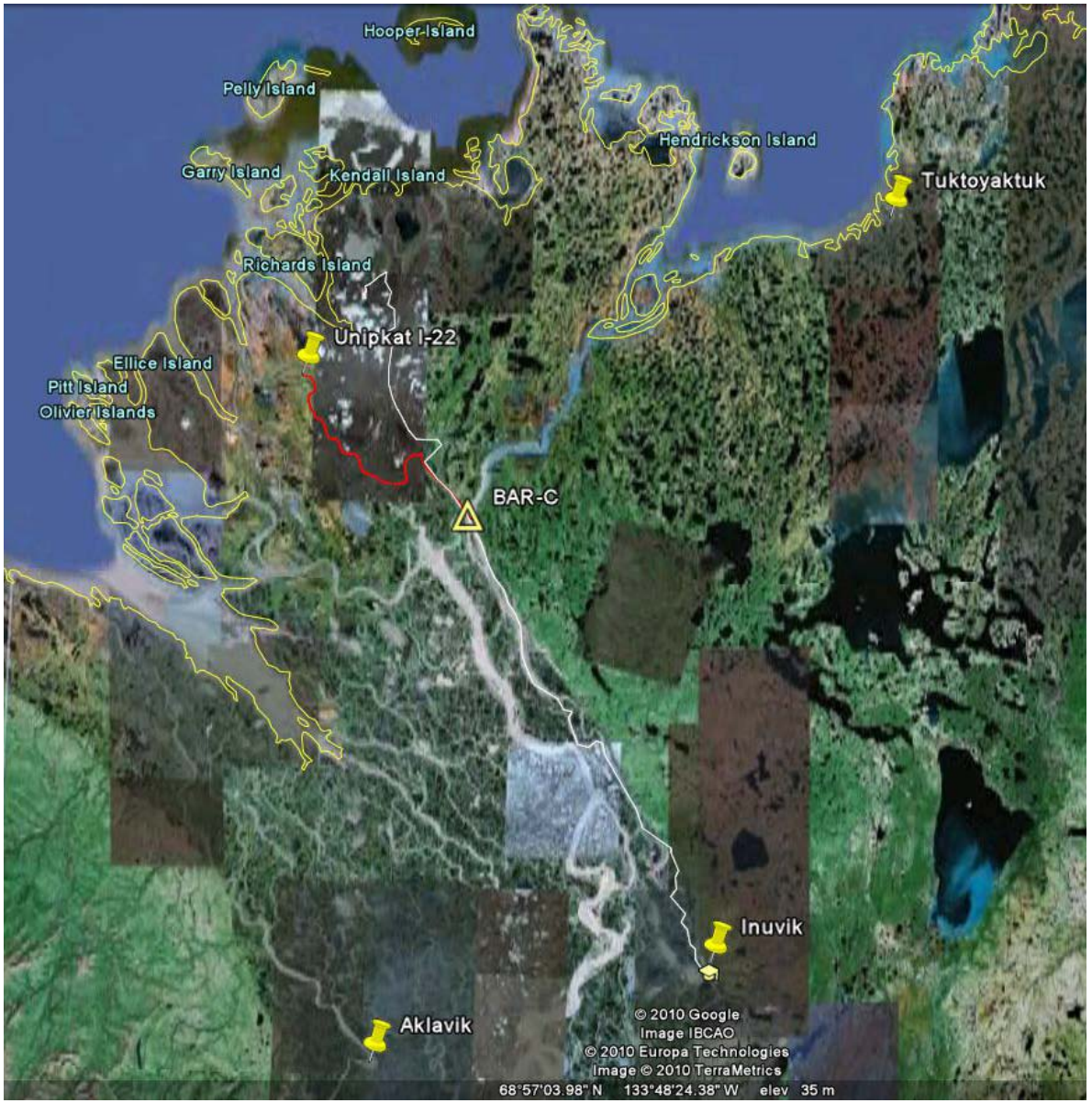
Community Consultation Presentation

Unipkat I-22 Sump Remediation

Unipkat I-22 Background

- Located on Avoknar Channel on the western side of the delta
- The well was drilled in 1972
- The wellhead was abandoned in 1996
- The site is adjacent to several natural ponds
- The river bank is currently being eroded by approximately 1 m (3’) each year
- Half of the original lease area has been erod

Location


Hooper Island
Pelly Island
Hendrickson Island
Garry Island
Kendall Island
Tuktoyaktuk
Richards Island
Unipkat I-22
Ellice Island
Pitt Island
Olivier Islands
BAR-C
Inuvik
Aklavik
© 2010 Google
Image IBCAO
© 2010 Europa Technologies
Image © 2010 TerraMetrics
68°57'03.98" N 133°48'24.38" W elev 35 m

Unipkat I-22 Sump Remediation

- Unipkat I-22 Environmental Assessment completed summer 2007 and 2010
- 100 boreholes drilled, 8 monitoring wells installed
- Identified approx 6500 m^3 of PHC affected material above guideline (sump volume ~1600 m^3)
- Field program scheduled for Jan-March 2011

2011 Remediation Program

- Phased soil remediation – Approx. 3000 m3 to be removed in 2011 (further work to be completed later – 3500 m3)
- Inuvik will be used for staging of material in 2 treatment cells
- Sump (1600 m3) material will be de-watered and trucked south to be landfilled – Cell 1
- PHC affected soil above guideline (1400 m3) will be treated over approx 2 summer seasons–Cell 2
- Partial backfill of excavation and re-contouring to local topography
- Camp options: Sleigh camp will be onsite (all waste to be contained) but crews may drive daily from Inuvik

Logistics

- Permitting/Planning Nov-Jan
  - EISC, INAC LUP, NWTWB
- All materials/equipment will be driven to site
- Any solid and liquid waste generated will be driven to Inuvik for disposal
- Wildlife monitor onsite during program