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INAC Contaminated Sites Program

Johnson Point Site Remediation

Application for Water Licence

Schedule III (subsection 6(1))

Submitted to:
Northwest Territories Water Board

Submitted by:
Contaminants and Remediation Directorate,
Indian and Northern Affairs Canada

February 15, 2008.

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1. Name and Mailing Address of Applicant:

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2. Address of Head Office in Canada if Incorporated:

Same as above

3. Location of Undertaking

Background:

The site is an abandoned site originally developed in the late 1960's as a support and staging area for oil and gas exploration throughout Banks Island. There is an assortment of camp trailers and other equipment associated with Nod-well or cat-camps. In addition to the camp material, there is an assortment of construction supplies distributed around the site, 19 large bulk fuel tanks in or adjacent to the tank farm, and many other smaller fuel storage containers scattered around the site. It is considered a contaminated site due to the presence of contaminated soil and hazardous building materials (including lead-based paints, asbestos, etc). The general layout of the existing infrastructure at the Site is shown in **Figure 3** found in ***Appendix 2*** of this water licence application.

Johnson Point falls within the Northern Arctic Eco-zone, which extends over most of the non-mountainous areas of the Arctic islands from Banks Island to Baffin Island. The site consists of low rolling plains covered with highly weathered soil and rock debris left by glaciers. Surface soils are granular, with underlying frost-shattered deposits of limestone, and sandstone several thousand metres deep (IEG 2005).

Location:

Johnson Point is located on Banks Island at the following co-ordinates:

Longitude: 72° 45' 10" **Latitude**: 118 ° 30' 00"

The site is located on the east side of Banks Island along the Prince of Wales Strait. In total, the footprint of the site covers approximately 2.5 km^2. The general site location is illustrated on **Figure 1** and in more detail in **Figure 2** found in ***Appendix 1*** of this water licence application.

There a small, shallow pond located in the eastern section of the site and two small, excavated ponds located in the central portion of the site. There is a small stream located along the western boundary of the tank farm with several small drainage channels located throughout the site. A small, un-named river bounding the site to the north, flows east into the Prince of Wales Strait.

4. Description of Undertaking

Background Information

Johnson Point is an abandoned oil and gas staging area at which there was concern about the integrity of fuel tanks which were storing residual fuel. When exploration activities in the region ceased in the late 1970's / early 1980's, the Site was abandoned and responsibility for the Site reverted back to INAC.

Originally developed in the late 1960's as a support and staging area for oil and gas exploration throughout Banks Island, the Site is now abandoned. An assortment of camp trailers and other equipment associated with Nod-well or cat-camps were left behind. In addition to the camp material, there are 19 large bulk fuel tanks in or adjacent to the tank farm, and many other smaller fuel storage containers and construction supplies scattered around the site. The deteriorating condition of these tanks, many of which still contained large quantities of residual fuel, presented a significant risk to the environment.

In 2002, prompted by concerns expressed by the Sachs Harbour Hunters and Trappers Committee, Parks Canada visited the Site during a routine tour of the region. The memo from this visit, in combination with community consultation with the community of Sachs Harbour, the Inuvialuit Game Counsel (IGC), and the Inuvialuit Regional Corporation (IRC), led to CARD conducting extensive consultation and assessment activities at the Site resulting in the completion of the Johnson Point Remedial Action Plan (RAP). The goal of the Johnson Point RAP is to address community concerns, reduce environmental liability, and minimized the risk to human health and the environment from hydrocarbon-impact soils and abandoned infrastructure at this Site. This application and project description summarizes these consultation and assessment activities and outlines the proposed activities contained in the Johnson Point RAP.

Previous Assessment Work

Initial Environmental Site Assessment and Inventory

To prepare for the waste fuel disposal and to determine the scope of work required at the Site, CARD conducted an initial Environmental Site Assessment (ESA) and Inventory in 2005 which included:

- preliminary soil and water sampling,
- inventory of structures, equipment and debris at the site,
- inventory of tanks and associated contents including sample collection, and
- a geophysical survey to locate and determine the extent of potential buried debris areas or existing landfills (seen above).

The 2005 ESA and inventory program identified the following concerns at the Site:

- Hydrocarbon-impacted soils adjacent to the Tank Farm

- Hazardous Materials
    - Lead-amended painted materials, old batteries and electrical equipment, drums of glycol, and asbestos in some building components
    - 69 fuel storage containers
        - estimated volume of approximately 90,000-L of petroleum products at time of inventory
        - Waste fuel samples were collected and analysed by EnviroTest Labs and the Alberta Research Council and was determined to be unusable but suitable for incineration
- Hydrocarbon-impacted soils adjacent to the Tank Farm
- 4 geophysical anomalies were identified at the Site indicating the possible presence of buried metal debris

Incineration and Initial Site Clean-up

During the 2006 field season, a crew of 10 to 15 persons were mobilized to the Site for a period of approximately two months (seen on the right, 2006 camp facilities can be seen in the foreground) under the authorization of Land Use Permit # N2006J0024 and Water Licence # N7L1-1814.

This field program had four components:

- Incineration of waste fuels; total volume of 108,150-L (seen at left)
- Tank and fuel line cleaning and treatment of wastewater produced
- Cleaning and crushing drums and the consolidation of small fuel containers and miscellaneous debris found throughout the Site
- Provision and operation of a camp to support these activities and the concurrent activities of the 2006 – Detailed ESA and Inventory.
- Miscellaneous clean-up (power line and assorted site debris collection)

Additional details of this program can be found in the *2006 Johnson Point Site Activities Report* prepared by Arctic Environmental Services Ltd provided in the electronic supporting materials of this application.

Decommissioned tanks at the Site can be seen in the photo on the following page. The residual fuel was incinerated and the accumulated water on the bottom of the tanks was consolidated. The tanks were steam-cleaned to remove any residual hydrocarbon product and both the accumulated tank water and tank washing wastewater was treated with the oily water separator and granular activated carbon (GAC) filters. This treatment allowed the wastewater to meet the criteria in the *Johnson Point - NWT Water Licence # N7L1-1814* and the treated wastewater

was discharge to land. The release point for wastewater generated by the above activities was a minimum of 30 metres from natural drainage courses and 100 metres from fish bearing waters at a location which did not interfere with site operations as determined by the Designated Representative and the Inspector.

Detailed Environmental Site Assessment and Inventory

The second component of the field work at Johnson Point in 2006 was the completion of a Phase III – Detailed Environmental Site Assessment (ESA) of the site by EBA Engineering Consultants Ltd. Over a 150 boreholes were completed in selected areas based on proximity to hydrocarbon sources and/or suspected existing landfill locations. In addition, a total of 26 groundwater monitoring wells were installed. EBA also completed a detailed materials inventory at the site including materials sampling to determine the approximate volumes of hazardous and non-hazardous waste at the site. Results from the 2006 environmental site assessment indicated that lead-amended paint (including some leachable lead in excess of 5 mg/L) is present on some site buildings and tanks, and asbestos was also present in at least one trailer at the site.

Following the completion of the detailed ESA, CARD contracted Jacques Whitford Ltd to conduct a Human Health and Ecological Risk Assessment (HHERA) at Johnson Point to evaluate whether known concentrations of chemicals found in soil, water, and vegetation would present a significant risk to human or ecological health based on future use of the area and to establish site-specific criteria protective of both humans and the environment. An electronic copy of this report is included with this land use permit application.

Johnson Point Remedial Action Plan

The Johnson Point Remedial Action Plan (RAP) was developed from the information gathered during these assessment programs along with consultation with the local communities of Sachs Harbour and Ulukhaktok and the Inuvialuit Regional Corporation (IRC). In addition to these assessment activities, CARD facilitated the completion of the *Traditional Knowledge and Community Use Survey* found in *EISC Screening Application – Appendix 3*. A Remedial Options Evaluation Meeting, held on April 17, 2007 in Sachs Harbour, was attended by delegates of the Sachs Harbour Hunters and Trappers Committee, Community Corporation, and Elders Committee. The various technically feasible options for each site component were discussed. Options were selected based on traditional knowledge, anticipated future community use of the area, and the technical benefits and weaknesses of each approach (please refer to the attached minutes in *Johnson Point RAP - Appendix C – Community Meeting Minutes* for additional details).

Work to be completed in 2008 through 2010 will involve the complete remediation of the site to minimize the risks to human health and the environment from hydrocarbon-impacted soil and water and from the existing infrastructure. The remediation contract will be administered by Public Works and Government Services Canada (PWGSC) on behalf of INAC. The contract was tendered using evaluation criteria developed by CARD and PWGSC with

consultation with IRC to ensure Inuvialuit involvement and benefits. This contract has not yet been awarded. The Crown will be represented on Site by an independent engineer, here-after to be referred to as the **Designated Representative**. A tentative schedule of the proposed remediation activities at Johnson Point can be found in ***Table 5 –*** *Proposed Timeline for Remediation Activities at Johnson Point*.

Remediation Activities

The main components of this work are as below:

1. Site Infrastructure Upgrades
2. Treatment of Hydrocarbon-Impacted Soil and Water
3. Disposal of Hazardous & Non-hazardous Wastes to Off-Site Licensed Disposal Facilities
4. Placement of Additional Capping Materials on Existing Landfills

Site Infrastructure Upgrades

To complete these tasks, the successful contractor will be required to mobilize the required equipment and supplies to the Site by marine barge. Minor development at the temporary barge landing area may be required to facilitate the safe and efficient transfer of materials and equipment. Infrastructure up-grades of the airstrip and roads will also be required. Currently the airstrip is washed out in two separate locations limiting the useful length to approximately 900 m. These washouts will be repaired and maintained annually during the remediation activities to improve access during poor weather and to facilitate use of larger aircraft as required. In addition, existing culverts along the Site roads are in poor condition and will require replacement when Site roads are up-graded for the use of heavy trucks and equipment at the Site.

Following completion of the remediation tasks listed above, the barge landing area and all road culverts will be removed. The airstrip, currently listed as abandoned, will be left in an abandoned condition once the remediation has been completed.

On-site Remediation Activities

Once the supporting camp has been set-up and the infrastructure upgrades have been completed the main remediation tasks will commence. Due to logistical constraints and the short field season on Banks Island, activities during 2008 will likely be limited to the following tasks:

- barge mobilization of camp, equipment, and supplies to Site,
- infrastructure repairs to the airstrip and roads,
- site surveys,
- further soil and water sampling,
- some soil excavation and groundwater treatment, and
- consolidation of waste materials and potentially off-site transport of some non-hazardous materials on the mobilization back-haul

These tasks will be scheduled to optimize the time spend at Site but are dependent on weather, ice conditions, and Barge availability. At the end of the work season, the camp and equipment will be winterized and the staff will be demobilized by air.

Treatment of Hydrocarbon-impacted Soil & Water

The first component in the remediation of this Site is treatment of hydrocarbon-impacted soil and groundwater. Hydrocarbon-impacted soils at Johnson Point have been identified in two separate areas:

1. **The Tank Farm Area**
2. **The Apron Area**

The location of each of these areas is shown in **Figure 4** found in *Appendix 2* of this application.

In recognition of the site-specific risks associated with each hydrocarbon-impacted area, CARD has developed specific criteria for each area to ensure the environment is protected. Soil treatment in the Tank Farm Area will use the site-specific criteria developed by Jacques Whitford Ltd in the HHERA (also know as site specific target level or SSTL) for this Site were calculated to be 4750 mg/kg of Total Petroleum Hydrocarbon in soil. As the Apron Area is located in close proximity to three sensitive aquatic habitats including the un-named river, the Apron Pond, and the Prince of Wales Strait, CARD has selected the CCME criteria for the protection of groundwater for aquatic life (F1 – 230 mg/kg, F2 – 150 mg/kg) for this area. These criteria are very conservative due to the inclusion of a 10X safety factor built into the CCME criteria. It will be applied throughout the Apron Area of the Site to protect surrounding aquatic environments.

Soil at this Site will be excavated and transported to a Hydrocarbon Treatment and Disposal Area. This treatment area will use a hydrocarbon resistant liner and water collected in the treatment area will be treated if required prior being released. This will likely be located within Potential Borrow Area 2 located near the former Tank Farm as shown on **Figure 3** of *Appendix 2* of this application. Hydrocarbon-impacted soil will be treated by alluing which is a process of soil aeration that accelerates hydrocarbon volatilization and aeration through the use of a special excavator bucket (pictured above).

The alluing process has been proven effective in northern environments and was used by CARD through our remediation contractor, E. Grubens Transport, during the remediation of hydrocarbon-impacted soils at Atkinson Point – BAR-D during the summer of 2007 (shown above). Alluing can often allow soils to reach the selected criteria significantly faster than other treatment methods which makes it especially useful on remote northern sites with very short

field seasons available for treatment. Upon completion of soil treatment at the Site, the Hydrocarbon Treatment and Disposal Area will be decommissioned, any water treated, and materials re-contoured by grading to facilitate natural drainage and to limit erosion.

Tank Farm Area Hydrocarbon-Impacted Soil

The Tank Farm area (pictured on previous page) is located approximately 1 km inland from the Prince of Wales Strait and approximately 300 m southeast of the un-named river that borders the Site to the north. This soil will likely be excavated and transported to the Hydrocarbon Treatment and Disposal Area for alluing and the resulting excavations will be backfilled with soils that are below the SSTL criteria. Little to no impacted groundwater is anticipated in this area. Approximately 300 cubic metres of hydrocarbon-impacted soil exceeding the SSTLs is present in this area.

Apron Area Hydrocarbon-Impacted Soils

The second area of hydrocarbon-impacted soils identified at the Site is the Apron Area (seen below).

Contaminated soil from the Apron Area will be excavated, and transported to the hydrocarbon disposal and treatment area. Hydrocarbon-impacted soils will be treated by alluing and then re-contoured to establish natural drainage. Clean borrow material sourced from one of the identified potential borrow areas will be used to backfill the excavations in the Apron Area. Approximately 18,000 cubic metres of hydrocarbon-impact soil will require excavation in this area.

Treatment of Hydrocarbon-Impacted Water

In addition to hydrocarbon-impacted soil treatment at this site, treatment of hydrocarbon-impacted water generated from the remaining tank washing and excavation dewatering activities will also be required. Hydrocarbon-impacted water will receive preliminary treatment by absorbent pads to remove the majority of hydrocarbons present and will then be recycled for use in future tank and/or equipment cleaning activities to minimize volumes of water required and wastewater generated. It is estimated that approximately 15 cubic metres of hydrocarbon-impacted groundwater will require treatment during these activities.

Hydrocarbon-impacted water from tank / equipment washing and excavation dewatering activities will then receive secondary treatment of suspended solids removal followed by treatment with granular activated carbon (GAC) to remove dissolved-phase hydrocarbons.

Treated effluent will be stored until laboratory testing demonstrates that hydrocarbon-impacted water has met the Water Licence criteria. The treated wastewater will be discharged to the land at a location that is a minimum of 30 metres from natural drainage courses and 100 metres

from fish bearing waters. The contractor will select the discharge site at a location that will not interfere with site operations. The discharge location will be approved by the Designated Representative and the Inspector.

Disposal of Hazardous & Non-hazardous Wastes to Off-Site Licensed Disposal Facilities

The second and third components of the Johnson Point site remediation involve the disposal of hazardous and non-hazardous wastes found at the Site from the various buildings, tanks, and camp units. Assessment activities at Johnson Point in 2005 and 2006 identified the following hazardous materials:

- Lead-amended painted materials on tanks and buildings (including a smaller volume of materials with leachable lead content in excess of 5 mg/L),
- Small volume of asbestos,
- Various equipment batteries and electrical components, and
- Assorted chemicals including containers of glycol and acid.

These materials will be collected, using the proper safety protocols (PPE, etc), containerized during the demolition process, and transported off-site to a licensed disposal facility. All guidelines and legislation on the transportation of hazardous materials will be adhered to during this process.

The planned remediation of Johnson Point also includes the disposal of non-hazardous materials from the demolition activities and general site debris. Non-hazardous site debris includes cleaned and crushed barrels, scrap metal, unpainted wood, plastics, and non-combustible domestic type wastes. Disposal methods for both hazardous and non-hazardous waste are specified in the individual sections of the RAP.

With a very limited volume of suitable borrow material at Johnson Point, the RAP does not involve construction of any new landfills. Implementation of the Johnson Point RAP will involve the transportation of:

- Non-hazardous materials to off-site licensed disposal facilities in Inuvik or southern Canada (including all tanks, buildings, and surface debris found throughout the Site). Unpainted wood will be incinerated on site.
- Hazardous materials (mainly lead-amended painted materials, small amounts of asbestos, acids, batteries, etc) to licensed disposal facilities in southern Canada

The schedule for materials removal will be determined by the successful contractor; however, there is potential for off-site transport of materials in all three years of this project (dependent on weather and marine barge availability).

Placement of Additional Capping Materials on Existing Landfills

The final component of the Johnson Point RAP is the placement of additional cover materials on the existing landfills. Assessment results indicate that the materials in these existing landfills are primarily non-hazardous in nature and not generating any contaminated leachate. Excavation and sorting of the debris was discussed during the Remedial Options Evaluation

meeting (*Johnson Point RAP - Appendix C*); however, placement of additional capping materials was selected as the preferred approach as most of landfills are currently performing well (limited erosion and minimal exposed debris). In addition, excavation of landfills can result in localized permafrost degradation and additional problems (rutting, erosion, ponding, etc). Following a discussion of the risks and benefits of two options, the community representatives were supportive of placing additional capping materials and leaving the existing landfills in place. These capping activities will involve the placement of increased sand cover on the landfills with rip-rap materials placed as required where erosion is considered a risk.

As no new landfills or significant development is required for the implementation of the Johnson Point RAP, monitoring at this site will not be required. However, following completion of the remediation tasks, the site will be inspected to ensure the stability of any earthworks completed.

5. Type of Undertaking

The activities proposed for at Johnson Point for the period between July 2008 and August 2010 would be classified as miscellaneous tasks for Site Remediation.

The main components of this work are as below:

1. Treatment of Hydrocarbon-Impacted Soil and Water
2. Disposal of Hazardous Wastes – Demolition and Site Debris
3. Disposal of Non-Hazardous Wastes – Demolition and Site Debris
4. Placement of Additional Capping Materials on Existing Landfills

These activities are to be conducted to minimize the risk to human health and the environment from hydrocarbon-impacted soil and water and associated abandoned infrastructure.

6. Water Use

The proposed remediation activities would obtain freshwater from the un-named river to the north of the Site for two main purposes:

- Camp Operation and,
- Tank / Equipment Cleaning Activities

However, the water volume required does not trigger a water licence (<100m^3/day).

7. Quantity of Water Involved

The proposed remediation activities at Johnson Point are anticipated to commence in July 2008 and be completed by August 2010. Estimated water usage, with the camp at full capacity (40 persons) is estimated below:

- approximately 150-L of water per person per day
- approximately 6000-L per day (6 cubic metres per day) or
- 180,000-L per month (180 cubic metres per month) for each of the expected ~3 month operating seasons each year

However, the maximum camp capacity (30 to 40 persons) during full operation is expected to be required only for short periods during the peak of the remediation activities in August 2009.

Actual water usage, averaged over the duration of each field season during which the activities are completed, is anticipated to be significantly lower than the monthly average stated above.

Water usage at these operations will not trigger a water licence. Water conservation methods, including the use of water-less toilets, will be exercised where possible to reduce the volume of water required.

The remaining tank / equipment cleaning activities and potential equipment washing activities at the Site will require a maximum of 500-L per day (0.5 cubic metres) for approximately 3 weeks each year. This volume estimate reflects the water conservation expected through the recycling of previously used wastewater from tank / equipment cleaning activities.

None of the water is expected to be returned to its source; however, it will remain in the same general watershed.

8. Waste Deposited

The proposed activities will generate two separate wastewater streams that will receive separate, specific treatment methods. Grey-water will be generated by the camp operation. Hydrocarbon-impacted water will be generated from excavation dewatering and the remaining tank-washing activities (please refer to Section 5(a) for details on hydrocarbon-impacted water treatment in association with hydrocarbon-impacted soil treatment).

The successful contractor will supply a packaged wastewater treatment system for the estimated treatment of 2 to 10 cubic metres per day of grey-water generated by camp operation. This treatment plant will have capacity to treat total suspended solids (TSS) and microbial components, through methods which may include ultraviolet light and / orchlorination.

Waterless toilets will be used to segregate the 'black-water' wastes from camp operation. These materials will be collected and incinerated in a solid waste incinerator operated in accordance with manufacturer's specifications.

Proposed Criteria for Camp Wastewater

Proposed water licence criteria have been developed for the Johnson Point remediation project based on lessons learned from previous projects in the region including the incineration and assessment activities at Johnson Point in 2006 and the site remediation at Atkinson Point in 2007 along with other developments throughout the Northwest Territories. Through regulatory consultation with Environment Canada, Department of Fisheries and Oceans, the Stanton Territorial Health Authority, and technical specialists within CARD during the preparation of this application, the following water quality / discharge criteria are proposed and outlined on the following page in ***Table 1.***

Table 1 – Proposed Criteria for Camp Wastewater at Johnson Point	
Sample Parameter	**Maximum Average Concentration**
Mineral Oil and Grease	5.0 mg/L
Total Suspended Solids (TSS)	100 mg/L
Total Residual Chlorine (TRC)	0.1 mg/L

Treated water will be stored on site in holding tanks or lined sumps and samples will be collected and sent to an accredited laboratory for testing prior to discharge. Please refer to Appendix 1 for a discussion and rationale for these parameters.

Proposed Criteria for Treated Hydrocarbon-impacted Water

Treatment of hydrocarbon-impacted water generated from the remaining tank / equipment washing and excavation dewatering activities will be required at Johnson Point. It is estimated that approximately 15 cubic metres of hydrocarbon impacted groundwater will require treatment. However, the volume of wastewater generated by these activities is difficult to accurately predict as it is highly dependent on weather and groundwater conditions in the hydrocarbon-impacted soil excavation areas. When operationally possible, soil excavation during periods of heavy precipitation will be avoided. Excavations with completed confirmation samples may also be allowed to fill with groundwater until just prior to the backfilling of excavation.

Hydrocarbon-impacted water will receive preliminary treatment through absorbent pads to remove the majority of hydrocarbons present and will then be recycled for use in future tank and/or equipment cleaning activities to minimize volumes of water required and wastewater generated. Hydrocarbon-impacted water from tank / equipment washing and excavation dewatering activities will then receive final treatment of suspended solids filtration followed by treatment with granular activated carbon (GAC) to remove dissolved hydrocarbons.

The proposed Water Licence criteria for treated tank / equipment washing wastewater and hydrocarbon-impacted groundwater discharged at Johnson Point are included in ***Table 2***. The detailed environmental site assessment completed in 2006 tested for metals and determined that metals in groundwater were not a concern at this Site. The testing for volatile and extractable hydrocarbons rather than Total Oil and Grease will more accurately capture the full range of potential hydrocarbon residues which may be encountered in barrel/tank washing effluent. These TPH-related criteria are consistent with the Atkinson Point Water Licence # N7L1-1818.

Table 2 - Proposed Criteria for Treated Hydrocarbon-Impacted Water at Johnson Point		
Sample Parameter		**Maximum Average Concentration**
Hydrocarbons	Volatile Hydrocarbons (VH W5-10)	15 mg/L
	Extractable Hydrocarbons (EH W10-19)	5 mg/L
	Non-Aqueous Phase Liquid / Free Product	Not Present
pH		6 to 9

Samples for Total Petroleum Hydrocarbons (TPH) are expected to be collected at depth within the storage system to ensure that a representative sample is submitted. Once laboratory testing demonstrates that the treatment method has met the Water Licence criteria, the treated wastewater will be discharged to the land. The treated wastewater will be discharged at a location that is a minimum of:

- 30 metres from natural drainage courses;
- 30 metres from the camp and all associated remediation activities to minimize potential for human contact; and
- 100 metres from fish bearing waters.

Therefore, the treated wastewater will be subject to further filtration, prior to reaching any water bodies, through UV exposure and soil infiltration. The contractor will select the discharge site at a location that will not interfere with site operations. The discharge location will be approved by the Designated Representative and the Inspector.

Parameters including Total Oil and Grease, Biological Oxygen Demand, and Faecal Coliforms have proven to be challenging to achieve consistently. As a result, CARD has examined each of these parameters as they relate to our proposed discharge to land methodology. The background information and rational for the excluding these parameters has been included in *Appendix 1* of this application with the completed Water Licence Application form.

9. Other Persons or Properties Affected By This Undertaking

CARD has been working closely with the Inuvialuit Regional Corporation (IRC) to identify groups or individuals within the Inuvialuit Settlement Region (ISR) that may be affected by the proposed activities at Johnson Point.

At the recommendation of IRC, CARD has consulted with the Sachs Harbour Hunters and Trappers Committee (HTC) and the Inuvialuit Game Council (IGC) and updated IRC prior to commencing consultation activities with the affected groups within the ISR.

On December 2005, CARD attended the IGC quarterly meeting in Inuvik at the invitation of the IGC. CARD presented information on the Contaminated Sites Program, reviewed the assessment activities that had been completed at Johnson Point during 2005, and summarized

the activities that are proposed for 2006.

In April 2006, CARD initiated a Traditional Knowledge/Community survey in Sachs Harbour regarding Johnson Point and the surrounding area. The survey was contracted to the Sachs Harbour HTC and is presently being conducted by Joey Carpenter, an elder from Sachs Harbour. CARD and the Sachs Harbour HTC prepared the survey to collect information about how Johnson Point is used by the community of Sachs Harbour (both past and present), how the site was used by industry, what animals are found at the site at different times in the year. The survey is expected to be completed by the end of May 2006.

In addition to the survey, CARD visited Sachs Harbour from April 24-27, 2006. CARD attended an HTC Special Members Meeting at the invitation of the Sachs Harbour HTC on April 25, 2006 to present an update on Johnson Point. During this presentation, information was provided about the process of evaluation and selection of sites for the Contaminated Sites Program, the tasks completed at Johnson Point in 2005 and a summary of the work proposed to be completed in 2006.

Following the presentation, CARD held a question answer/period to gather information about community concerns. The minutes of the community meeting are included in ***Appendix 2*** of this application (*Appendix 4 of the EISC application*). Fifteen Sachs Harbour HTC members were in attendance including three directors on the HTC Board.

CARD also visited the Inualthuyak School in Sachs Harbour on April 26, 2006 and gave a short demonstration about how contaminants travel in the environment and why we need to be concerned about cleaning up sites and protecting the environment. The students participated in two short science experiments led by CARD.

CARD conducted a site visit to Johnson Point with elders and some members of the Sachs Harbour HTC on August 13, 2006. Comments from elders and HTC members during the tour of the site were used by CARD to direct further testing for contamination at Johnson Point and to help avoid sites of cultural importance.

In the spring of 2007, following the 2006 environmental site assessment, CARD and PWGSC visited Sachs Harbour. A Remedial Options Evaluation Meeting, held on April 17, 2007, was attended by delegates of the Sachs Harbour Hunters and Trappers Committee, Community Corporation, and Elders Committee. The various technically feasible options for each site component were discussed. Options were selected based on traditional knowledge, anticipated future community use of the area, and the technical benefits and weaknesses of each approach (please refer to the attached minutes in *Johnson Point RAP - Appendix C – Community Meeting Minutes* for additional details).

CARD also hosted a Community Information Session and dinner (open to the public) in Sachs Harbour on the evening of April 17, 2007 and Ulukhaktok on the evening of April 19, 2007. The remedial options selected and the selection process that was used was discussed. CARD and PWGSC representatives were in attendance to answer questions about the proposed activities at Johnson Point and to provide information about CARD activities throughout the Inuvialuit Settlement Region. Minute from both of these meeting can be found in *Johnson Point RAP - Appendix C – Community Meeting Minutes*. These Community Information Sessions were well attended with a positive atmosphere as both communities were excited to see that remedial action will soon be conducted at this site in their traditional territory.

Socio-economic Benefits Package will form part of the requirements for proposals as per the

contracting process. This will ensure that this project provides benefits to the Inuvialuit.

The site may also be used by Diamonds North and CARD is in contact with them.

Contact information for each of the affected groups is provided below:

- **Inuvialuit Regional Corporation (IRC)**
  107 Mackenzie Road, P.O. Box 2120, Inuvik, NT, X0E 0T0
  Phone - (867) 777-2737
  Fax - (867) 777-2135
  Email - info@irc.inuvialuit.com
  Attention – Roger Connelly

- **Inuvialuit Game Council (IGC)**
  107 Mackenzie Road, P.O. Box 2120, Inuvik, NT, X0E 0T0
  Phone – (867)777-2828
  Fax – (867)777-2610
  Email - igc-tech@jointsec.nt.ca
  Attention - Nelson Perry

- **Sachs Harbour Hunters and Trappers Committee (HTC)**
  PO Box 79, Sachs Harbour, NT, X0E 0Z0
  Phone – (867) 690-3028
  Fax - (867)690-4905

- **Diamonds North Resources Ltd.**
  #510-510 Burrard Street, Vancouver, BC V6C 3A8
  Phone - (604)689-2010
  Fax - (604)484-7143
  Cell - (604)240-9362
  Email - b.kienlen@diamondsnorth.com
  Attention - Bruce G. Kienlen, VP Exploration

10. Predicted Environmental Impacts of Undertaking and Proposed Mitigation

The project in itself is mitigation to existing environmental impacts and hydrocarbon contamination. The most significant potential environmental effect, therefore, would be if this project did not go ahead or if there were delays in its completion. The proposed remediation activities will see the following positive environmental impacts on the area:

- Treatment of hydrocarbon-impacted soils from throughout the Site with clean fill being used to backfill excavated areas in the Apron Area due to the proximity to sensitive environments.
- Removal of all hazardous and non-hazardous wastes from the Site to reduce the potential risk of exposure to these materials / chemicals to wildlife and visitors in addition to making the Site more aesthetically appealing.
- Placement of additional capping material will ensure the long-term stability of currently stable existing landfills found at the site.

The proposed activities will also reduce federal environmental liabilities, provide benefits to

Inuvialuit, and ensure that the Site is safe for future users.

The proposed timing, duration and location of the activities on the site should address any potential environmental impacts.

Periods of heavy rain could limit assess to the site to smaller aircraft and poor visibility or limited aircraft availability could delay re-supply flights to the site operations. The contractor will repair washed out sections of the airstrip (such as the washout pictured to the right) to increase the useable length (beneficial for accessing the Site with larger aircraft and in poor weather). Maintenance will be performed on an as-required basis throughout the remediation activities. Once the site remediation activities have been completed, the airstrip will be left in an abandoned condition.

This area has been used previously by industry. However, Site infrastructure (the airstrip and roads) needs to be upgraded and a significant volume of borrow materials will be required. Existing access routes throughout the Site will be utilized where possible but some potential borrow sources will require additional temporary access routes to be established to minimize ground disturbance and vegetation removal. Once the remediation activities are completed, the Site will be inspected to ensure the stability of any earthworks conducted.

Equipment operation in or adjacent to aquatic environments will be minimized. Required operations in or adjacent to these sensitive habitats (i.e. – any potential sediment excavation) will be scheduled to reduce the potential impact on seasonal receptors such as Arctic Char within the un-named river (to avoid fall spawning migrations and periods of heavy rainfall). Appropriate sediment/erosion control measures such as silt fencing will be used as require. The Department of Fisheries and Oceans (DFO) will be consulted and completion of these tasks will be supervised by the Designated Representative.

The contractor supplying and operating the camp will establish camp rules covering items such as property damage, smoking, use of alcoholic beverages, drugs, firearms, security, nuisance, and any other matters to ensure the camp is operated in an orderly manner. Fishing, hunting, or harassment of wildlife will be prohibited. The contract will be managed through PWGSC and Designated Representative will ensure these measures are adhered to and that there is compliance with all regulatory approvals and legislation.

The camp for the proposed activities will have a perimeter defence system available for use if bears are observed around the camp to address wildlife / safety concerns. This will be dismantled at the conclusion of the work.

Incinerators used in this operation for solid waste disposal are required to be maintained and operated in accordance with their manufacturer's specifications and therefore will not impact air quality. All waste generated on site will be incinerated daily and managed properly to reduce the potential for wildlife attraction. At least one experienced wildlife monitor would be required to be at the Site at all times.

To mitigate any effects of fuel, proper fuel handling techniques will be used, a spill contingency plan will be in place and spill kits will be placed at all fuel transfer locations.

Confirmatory water and soil samples will be collected throughout the soil and groundwater treatment activities to ensure the selected remediation target criteria have be achieved. No additional negative impacts are anticipated from these sampling activities.

CARD has been in consultation with the Inuvialuit Regional Corporation (IRC), the Inuvialuit Game Council (IGC), and the Sachs Harbour Hunters and Trappers Committee (HTC) regarding the proposed activities. CARD has been working in co-ordination with IRC to ensure the evaluation criteria for contracts to complete the proposed work will provide benefits to the Inuvialuit.

11. Contractor and Sub-contractors

The contractor for the proposed remediation work has yet to be determined. A tender for the work was posted on MERX. Once the contract for the work has been awarded, contact information will be provided to the Inspector.

12. Studies Undertaken To Date

Eight previous reports have been completed documenting activities completed during the assessment and consultation activities at Johnson Point.

- **Title:** Johnson Point – Arctic Environmental Strategy (AES) Clean-up
  Prepared by: Inuvik Sub-District, Department of Indian Affairs and Northern Development (DIAND), Northern Affairs Program
  Date: August 31, 1992.
  Summary: In 1992, through the Action on Waste program, the DIAND North Mackenzie District Office co-ordinated the consolidation of debris, burning of clean wood, and the development of a preliminary inventory of construction materials, buildings, and equipment abandoned on the site.

- **Title:** Johnson Point Site Investigation, Banks Island
  Prepared by: Parks Canada, Western Arctic Field Unit
  Prepared for: Sachs Harbour Hunters and Trappers Committee
  Date: July 23, 2002
  Summary: In 2002, Parks Canada visited the site at the request of the Sachs Harbour HTC to evaluate the potential for environmental contamination from the site. The report found indications that several of the large bulk storage tanks may be leaking.

- **Title:** Phase I & II Environmental Site Assessment at Johnson Point, NT
  Prepared by: IEG Environmental
  Prepared for: Contaminants and Remediation Directorate (CARD), Indian and Northern Affairs Canada
  Date: December 2005
  Summary: In 2005, CARD contracted IEG Environmental to conduct a Phase I/II Environmental Site Assessment (ESA) at Johnson Point and to develop a detailed inventory of materials. The ESA involved collection and analysis of soil samples collected throughout the site at locations with potential sources of hydrocarbons. The materials inventory involved collection of paint samples from selected buildings and storage tanks and estimation of waste fuel stored on site. The results from these testing programs were used to direct the sampling program in 2006 and to design the incineration plan.

- **Title:** Human Health and Ecological Risk Assessment for Johnson Point Staging Facility, Johnson Point, Northwest Territories
  Prepared by: Jacques Whitford Limited
  Prepared for: Contaminants and Remediation Directorate (CARD), Indian and Northern Affairs Canada
  Date: January 26, 2007
  Summary: CARD contracted Jacques Whitford Limited to conduct a Human Health and Ecological Risk Assessment (HHERA) at Johnson Point to evaluate whether known concentrations of chemicals found in on-site soil, water, and vegetation would present a significant risk to human or ecological health based on future use of the area and to establish site-specific criteria protective of both humans and the environment.

- **Title:** 2006 Johnson Point Site Activities Report
  Prepared by: Arctic Environmental Services (AES)
  Prepared for: Contaminants and Remediation Directorate (CARD), Indian and Northern Affairs Canada
  Date: March 2007.
  Summary: CARD contracted AES to complete the waste fuel incineration activities to address the environmental risk associated with the aged fuels stored at the Site. The report documents the volumes of fuel incinerated, water used, and wastewater generated along with summaries of the other associated activities including tank cleaning, debris consolidation, and camp operation. Wildlife observations, Inuvialuit benefits, and reportable Environmental, Health, and Safety events are also included in this report.

- **Title:** Phase III Environmental Site Investigation – Johnson Point Staging Facility, Banks Island, Northwest Territories
  Prepared by: EBA Engineering Consultants Ltd
  Prepared for: Contaminants and Remediation Directorate (CARD), Indian and Northern Affairs Canada
  Date: December 2007
  Summary: While the initial environmental site assessment (ESA) conducted by IEG in 2005 provided some information to characterize the site, CARD required additional information to finalize the site characterization and develop a remedial action plan (RAP). During this detailed environmental site assessment, a total of 26 groundwater monitoring wells were installed, close to 150 bore-holes were completed, and 4 sediment samples were collected adjacent to the Apron Area. Hazardous materials sampling was also conducted throughout the Site to characterize the waste types and estimate hazardous and non-hazardous waste volumes. This information was used to incorporated into the 2007 HHERA conducted by Jacques Whitford and was later used in the development of the Johnson Point RAP by EBA.

- **Title:** Supplemental Environmental Site Assessment – Johnson Point, Northwest Territories
  Prepared by: IMG-Golder Corporation in association with Golder Associates Ltd
  Prepared for: Contaminants and Remediation Directorate (CARD), Indian and Northern Affairs Canada
  Date: November 2007
  Summary: Following the completion of the detailed ESA, CARD required some confirmation of leachable lead concentrations on waste materials and confirmation / delineation of hydrocarbon-impacted sediment adjacent to the Apron Area.

- **Title:** Remedial Action Plan – Johnson Point Staging Area, Johnson Point, Northwest

Territories
Prepared by: EBA Engineering Consultants Ltd
Prepared for: Contaminants and Remediation Directorate (CARD), Indian and Northern Affairs Canada
Date: December 2007
Summary: The Johnson Point Remedial Action Plan (RAP) provides a discussion of the components of concern at Johnson Point. A summary of information gathered through environmental site assessment and community consultation activities was used to select the most appropriate remedial option for each site component. Photographs of the various site components can be found in the RAP.

13. Proposed Time Schedule

The project is proposed to begin as early as July 2008 with mobilization of equipment and supplies to the Site via Hay River and Inuvik, NT. A tentative timeline for the proposed activities at Johnson Point is included in ***Table 3*** below.

Table 3 – Proposed Timeline for Remediation Activities at Johnson Point	
Activity Description	
December 2007	Post tender packages on MERX website as a request for proposals (RFP).
May 2008	Award contract of the proposed work on site.
June 2008	Community consultation meeting in Sachs Harbour and Ulukhaktok to introduce the contractor to the communities. Annual project update meetings will be scheduled in each of these communities at the end of each field season.
August 2008	Due to logistical constraints and short field season on Banks Island, activities during this year would be limited to: • barge mobilization of camp, equipment, and supplies to Site, • Infrastructure repairs to the airstrip and roads, • Site Surveys, • Preliminary Soil and Water Sampling • Some soil excavation and groundwater treatment. If barge mobilization can occur in late July, more site work would be undertaken to optimise time on site. There may also be an opportunity to consolidate some waste materials and demobilize some non-hazardous materials on the mobilization backhaul.
September 2008	Winterization of camp and all equipment/supplies.
Summer 2009	Bulk of remediation activities expected to be completed this year. These would include: • excavation and treatment of hydrocarbon contaminated soils, • demolition and containerization of all tanks and buildings on site, and • placement of additional cover materials on the existing landfills; no new landfills will be created during this remediation

	Note: This would include the mobilization of additional materials to the site. This could occur in the summer of 2008 or 2009 depending on barge availability and logistics optimization.
Fall 2009	Prepare camp, equipment / supplies, and waste materials for barge demobilization if work is completed early enough in the year. Alternatively, all equipment / materials on site will be winterized for demobilization in 2010 (most likely situation)
Summer 2010	Tasks remaining for this period are dependent on project progress in preceding years. Tentative schedule would see final tasks completed during Summer 2010 followed by barge demobilization during Fall 2010. Delays in barge mobilization or demobilization in any of the project years could require an additional field season with final demobilization in 2011.

Scheduling of individual remediation tasks will be conducted at the discretion of the successful contractor, subject to the approval of the Designated Representative. Activities on site may be conducted concurrently and will be timed to minimize potential erosion impacts on adjacent aquatic environments (both marine and freshwater) and to optimize time spent on site. To complete the tasks discussed in ***Table 3***, we therefore request a licence for a period of 3 years (until October 2011). If additional time is required to complete the proposed remediation activities, an amendment will be applied for. This requested licence will replace the current Johnson Point Water Licence N7L1-1814 which authorized the waste fuel incineration and associated activities conducted during the summer of 2006.

Appendices

Appendix 1
Water Licence Application
& Background Information on Criteria Development

SCHEDULE III
(*Subsection 6 (1)*)

APPLICATION FOR LICENCE, AMENDMENT OF LICENCE OR RENEWAL OF LICENCE

APPLICATION/LICENCE NO. (amendment or renewal only)

1. NAME AND MAILING ADDRESS OF APPLICANT	2. ADDRESS OF HEAD OFFICE IN CANADA IF INCORPORATED
Emma Pike Indian & Northern Affairs Canada Contaminants & Remediation Directorate P.O. Box 1500, 5103-48th St. Yellowknife, N.T., X1A 2R3 Telephone: (867)669-2756 Fax: (867)669-2721	- same as Section 1 Telephone: _____ Fax: _____

3. LOCATION OF UNDERTAKING (describe and attach a map, indicating watercourses and location of any proposed waste deposits)

- please refer to attached project description

Latitude: 118° 30' 00" Longitude: 72° 45' 10"

4. DESCRIPTION OF UNDERTAKING (describe attach plans)

- please refer to attached project description

5. TYPE OF UNDERTAKING

1. Industrial	____	4. Power	____	6. Conservation	____
2. Mining and milling	____	5. Agriculture	____	7. Recreation	____
3. Municipal	____				

8. Miscellaneous (describe) Site Remediation Activities

6. WATER USE

To obtain water	✓	Flood control	____
to cross water course	____	To divert water	____
to modify the bed or bank of watercourse	____	to alter the flow of, or store, water	____

Other (describe) Disposal of treated waste water

7. QUANTITY OF WATER INVOLVED (litres per second, litres per day or cubic metres per year, including both quantity to be used and quality to be returned to source)

- please refer to attached project description
- project does not trigger water licence based on volume of water used

SCHEDULE III – *Concluded*

APPLICATION FOR LICENCE, AMENDMENT OF LICENCE, OR RENEWAL OF LICENCE – *Concluded*

8. WASTE DEPOSITED (quantity, quality, treatment and disposal)

- please refer to attached project description

9. OTHER PERSONS OR PROPERTIES AFFECTED BY THIS UNDERTAKING (giving name, mailing address and location; attach list if necessary)

- please refer to attached project description

10. PREDICTED ENVIRONMENTAL IMPACTS OF UNDERTAKING AND PROPOSED MITIGATION

- please refer to attached project description

11. CONTRACTOR AND SUB-CONTRACTORS (names, addresses and functions)

- please refer to attached project description

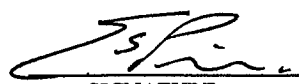
12. STUDIES UNDERTAKEN TO DATE (attach list if necessary)

- please refer to attached project description

13. PROPOSED TIME SCHEDULE

- please refer to attached project description

Start date: June 1 2008 Completion date: _____

Emma Pike	Project Manager		Feb 15/08.
NAME (Print)	TITLE (Print)	SIGNATURE	DATE

FOR WB OFFICE USE ONLY

APPLICATION FEE	Amount: $ N/A	Receipt No.:
WATER USE DEPOSIT	Amount: $ N/A	Receipt No.:

Background Information Regarding Criteria Problems & Supporting Material for Proposed Criteria

Introduction

As discussed in Section 8, INAC CARD is proposing only certain parameters to be included in the Water Licence discharge criteria. This is due to a number of concerns with using certain parameters when discharging to land and for a small, temporary remediation undertaking. Parameters that cause concern are Total Oil and Grease, Biological Oxygen Demand (BOD) and Faecal Coliforms.

General Concerns with the Total Oil and Grease Parameter

The Total Oil and Grease analysis (Method 5520B)[1] is described as follows:

> *'Dissolved or emulsified oil and grease is extracted from water by intimate contact with an extracting solvent. Some extractables, especially unsaturated fats and fatty acids, oxidize readily; hence, special precautions regarding temperature and solvent vapour displacement are included to minimize this effect. Organic solvents shaken with some samples may form an emulsion that is very difficult to break. This method includes a means for handling such emulsions. Recovery of solvents is discussed. Solvent recovery can reduce both vapour emissions to the atmosphere and costs.'*

Oil and grease is any material recovered as a measurable residue that is soluble in n-Hexane solvent. Total Oil and Grease is applicable to the determination of:

- relatively non-volatile hydrocarbons;
- animal fats;
- vegetable oils;
- waxes;
- soaps; and,
- greases from surface waters or industrial, domestic and aqueous wastes

However, Total Oil and Grease is not a suitable parameter for the Johnson Point remediation project activities for the following reasons:

- Many other residue compounds, especially lighter hydrocarbons, may be present in barrel/tank washing effluent. This method is not applicable to measuring materials what volatilize below room temperature (approximately 25^{o}C). Recovery is therefore low for petroleum fuels from gasoline to #2 fuel oil.
- Some heavy and crude oils contain materials that are not soluble in n-Hexane.
- Interference from plant breakdown can vary from 3 to 5 mg/L based on discussions with INAC Water Resources Officers (Ron Breadmore, personal communication).
- The margin of error for the standard Total Oil and Grease analysis can be as high as 20% based on discussions with INAC Water Resources Officers (Ron Breadmore, personal communication).

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[1] - Standard Methods for the Examination of Water and Waste Water, 20th ed., American Public Health Association, Washington DC, 1998, Method 5520B.

- Lipids in some common detergents may also result in higher Total Oil and Grease analytical results.

CARD proposes that these limitations on the Total Oil and Grease analytical method do not make it a suitable parameter for monitoring the success of water treatment associated with the activities at Johnson Point.

Camp Wastewater – Proposed Mineral Oil & Grease Parameter

Previous similar activities, (Johnson Point, *Water License # N7L1-1814*, July 2006), encountered difficulties achieving the 5.0 mg/L Total Oil and Grease criteria. Despite diligent treatment and repeated testing at significant cost, the Total Oil and Grease criteria could not be achieved due to interference issues. After a site visit and consultation with Inspectors at the North Mackenzie District Office, further samples collected and analyzed for the more accurate Mineral Oil and Grease parameter which demonstrated that the treatment was successful and that the criteria had been achieved.

Due to analytical complications with interference from detergents and natural organics, substitution of Mineral Oil and Grease in the place of Total Oil and Grease will allow for more accurate measurement and ensure the protection of the environment for camp discharge. This criterion was recently used by CARD during the Atkinson Point Remediation Project under the Northwest Territories Water Board – *Water Licence # N7L1-1818*.

With the aforementioned limitations on the applicability of Total Oil and Grease, it is proposed that Mineral Oil and Grease analysis[2] with a discharge limit of 5 mg/L and no visible sheen is a more suitable discharge parameter for camp wastewater at Johnson Point. This analytical method involves the extraction of the entire water sample with n-Hexane followed by a silica gel clean-up which removes most naturally occurring non-petrogenic organic compounds to avoid interference from natural organic compounds. The extract is then evaporated to dryness, and the residue weighed to determine Mineral Oil and Grease.

General Concerns with Biological Oxygen Demand (BOD)

In addition to the criteria discussed and outlined previously, many licences also include Biological Oxygen Demand (BOD) and Faecal Coliforms for activities which are discharging to aquatic environments.

This parameter is used to ensure the protection of aquatic environments receiving effluent directly from a variety of sources (both industrial and municipal) to measure organic pollution and reduce the potential of impacts (such as fish kills due to depleted oxygen).

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[2] - Method adapted from 'Test Methods for Evaluating Solid Waste' SW-846, Methods 3510 & 9071, published by the United States Environmental Protection Agency (EPA), 'Standard Methods for the Examination of Water and Wastewater', 20th ed., Method 5520 and "BC Environmental Laboratory Manual for the Analysis of Water, Wastewater, Sediment and Biological Materials," 5th ed., published by the B.C. Ministry of Environment, Lands & Parks, 1994. Information provided by ALS Environmental, Vancouver.

However, as the proposed activities will involve discharge of treated wastewater to land, BOD is not relevant and does not pose a risk. The nearest fish-bearing water body is the Prince of Wales Strait which is several hundred metres from the proposed discharge location. This is a marine water body with significant current which would quickly dilute any treated effluent that reached it. Treated wastewater discharge from the Johnson Point operations would be conducted at a low rate through a diffuser to maximize the potential for infiltration through the soil while minimizing erosion and potential for overland flow.

The hold time for BOD (48 hours), while longer than for Faecal Coliforms, is also very difficult to meet due to charter connection issues in Inuvik and very limited south-bound cargo space. CARD has discussed these environmental and logistical concerns with both the Department of Fisheries and Oceans (DFO – Ernie Watson – Habitat Biologist – Contaminated Sites Specialist) and Environment Canada (EC - Ivy Stone - Contaminated Sites Specialist). Both Departments have confirmed that they have no concerns with the proposed discharge of treated wastewater to the land and the exclusion of BOD from the proposed licence criteria.

General Concerns with Faecal Coliforms Criteria

Discharge of the treated effluent to land makes Faecal Coliforms less relevant to ensuring environmental protection. Treated effluent will likely drain towards the Prince of Wales Strait, a marine environment, and would not be draining towards any drinking water sources including the Un-named River located north of the Site. Soil infiltration and exposure to UV light at the surface will help decrease any residual Faecal Coliforms remaining following the effluent treatment. Residual Faecal Coliforms in the treated wastewater from the camp is unlikely to pose a risk to human health at the Site (personal communication, February 12, 2008 - Duane Fleming, Chief Environmental Health Officer, Stanton Territorial Health Authority (STHA)), provided the discharge location is a minimum of 30 metres from the camp and associated remediation activities. In addition, both EC and STHA have recommended that chlorination of treated wastewater be eliminated or minimized to reduce the potential for the production of chlorinated compounds and to facilitate natural degradation of the wastewater following discharge.

Due to the very remote location of Johnson Point, it is very difficult to deliver samples to the lab within 24 hours without direct flights out of Yellowknife. However, not only is this very expensive (>$15000 for the charter alone), but it is also often very difficult to secure the Dornier 228 (4 hours of flight time each way; chosen due to its speed, range, and ability to access our airstrip). On top of this, poor weather at the Site and at re-fuelling locations (Primary - Ulukhaktok, Secondary - Kugluktuk) can further complicate access to the Site from Yellowknife. Therefore, confirmation of Faecal Coliforms compliance within the standard hold time (24 hours) is logistically challenging and expensive.

Proposed Total Petroleum Hydrocarbon (TPH) Parameter

As previously mentioned, Total Oil and Grease criteria can be problematic. The Oil and Grease analysis is an effective method to analyse for heavier hydrocarbons from municipal and industrial sources. However, from a risk management perspective, it is

important to utilize methods which can more fully encompass a wide spectrum of hydrocarbons, which could be found in tank / equipment washing and dewatering of hydrocarbon-impacted soil excavations situations where lighter hydrocarbon fractions (i.e. – from diesel and gasoline) may be dissolved in the aqueous phase.

In recent years, advances in technology have developed alternative methods which improve upon the accuracy of the Total Oil and Grease analysis. In order to effectively manage any remaining petroleum hydrocarbons in the treated tank / equipment washing wastewater and hydrocarbon-impacted groundwater, CARD is proposing to use Total Petroleum Hydrocarbons (TPH) in place of Total Oil and Grease. As there are currently no CCME guidelines for TPH in water, the TPH limits established in the *Yukon Contaminated Sites Regulations (YCSR) for Drinking Water* developed by the Yukon Government, Department of Environment are being proposed. The *YCSR* was developed from the *British Columbia Contaminated Sites Regulations* and examined to ensure that they will provide sufficient protection for the sensitive northern environment. In addition to their application throughout the Yukon Contaminated Sites Program, similar TPH criteria have also been applied to several mine water licences in the Northwest Territories under the Mackenzie Valley Land and Water Board. These include water licenses for the projects included in ***Table 1A***. More recently, CARD applied these TPH criteria in the 2007 Atkinson Point Remediation Project on the Tuktoyaktuk Peninsula under the Northwest Territories Water Board – Water Licence # N7L1-1818**.**

Table 1A – Water Licences of Other Projects with Similar Licence Criteria				
Licence Number	**Company Name**	**Place of Operation**	**Hydrocarbons**	**Oil & Grease**
N7L1-1818	INAC, Contaminant and Remediation Directorate	Atkinson Point – Remediation Project	Volatile Hydrocarbons = 15 mg/L Extractable Hydrocarbons = 5 mg/L No Free Product Present	Replaced by hydrocarbon criteria.
MV2004L8-0001[3]	INAC, Contaminant and Remediation Directorate	Colomac Mine – Remediation Project	**TPH = 15.0 mg/L**	**5.0 mg/L** & No Visible Sheen
MV2002L2-0019[1]	North American Tungsten Corporation Ltd.	Cantung Mine, Tungsten, NT	Max. Average **EPH = 4.0 mg/L** Max Grab Sample Concentration **EPH = 5.0 mg/L**	No Criteria
MV2001L2-0003[2]	Canadian Zinc Corporation	Prairie Creek Mine, NT	Max. Average **TPH = 5.0 mg/L** Max Grab Sample Concentration **TPH = 10.0 mg/L**	No Visible Sheen
MV2004L8-0001[3]	DIAND, Contaminant and Remediation Directorate	Colomac Mine – Remediation Project	**TPH = 15.0 mg/L**	**5.0 mg/L** & No Visible Sheen

[1] – License Criteria for Hydrocarbons refer to Extractable Petroleum Hydrocarbon (EPH)

[2] – Licence Criteria for Hydrocarbons refers to Total Petroleum Hydrocarbons (TPH)

[3 – Licence] not formally amended by MVLWB but approved parameter and limit greater than 1 km from water

The *British Columbia Contaminated Sites Regulation* criteria have developed a procedure that is robust against interference from both natural organics, released from decomposition of plant matter, and from most detergents.

This analytical method has detection limits of 0.250 mg/L or lower, compared with 1.0 mg/L for Total Oil and Grease, and the ability to identify compounds within the sample using their 'fingerprints'. This analytical approach has two components:

- **VH_{W6-10}** which includes volatile petroleum hydrocarbons in water, including benzene, toluene, ethylbenzene, and xylenes; and,
- **EH_{W10-19}** which includes light extractable petroleum hydrocarbons in water, including acenaphthene, acridine, anthracene, fluorine, naphthalene, and phenanthrene.

The method utilizes gas chromatography coupled with mass spectroscopy for VH_{W6-10} and flame ionization detectors for EH_{W10-19} (samples are analysed from C_6 through to C_{34} under the *BC CSR* approach). These attributes allow the proposed criteria to

provide more detailed information while ensuring an even higher degree of protection for the environment.

The corresponding criteria from both the *British Columbia Contaminated Sites Regulations* and *Yukon Contaminated Sites Regulations* are included for reference on the following page in ***Table 1B***.

Table 1B – Background information Supporting Proposed Criteria1

Parameter	**BC Contaminated Sites Regulations[7]**		**Yukon Territories Contaminated Sites Regulations**	
	Aquatic Life Water Standards[1]	***Drinking Water Standards[2]***	***Aquatic Life Water Standards[1]***	***Drinking Water Standards[2]***
VH_{W6-10}[5]	15.0 mg/L	15.0 mg/L	15.0 mg/L	15.0 mg/L
EH_{W10-19}[6]	5.0 mg/L	5.0 mg/L	5.0 mg/L	5.0 mg/L
Nonaqueous Phase Liquids / Free Product	Not Present[3]	Not Present[3]	Not Present[4]	Not Present[4]

[1] – Aquatic Life Standards assume minimum 1:10 dilution is available. Aquatic Life Standards are to protect freshwater life unless otherwise indicated.

[2] – Drinking Water Standards are for unfiltered samples obtained at the point of consumption.

[3] – Water must be remediated so that non-aqueous phase liquids are not present in quantities in excess of that acceptable to a manager. For the purposes of this protocol (BC Contaminated Sites Regulations), not present means VH_{W6-10} and/or EH_{W10-19} concentrations less than 15,000 µg/L and 5,000 µg/L respectively. Concentrations greater than these levels could be considered proof of non-aqueous phase liquids presence.

[4] – Water must be remediated so that non-aqueous phase liquids are not present in quantities in excess of that acceptable to the Minister

[5] - VH_{W6-10} means volatile petroleum hydrocarbons in water, including benzene, toluene, ethylbenzene, and xylenes

[6] - EH_{W10-19} means light extractable petroleum hydrocarbons in water, including acenaphthene, acridine, anthracene, fluorine, naphthalene, and phenanthrene

[7] - Where the petroleum hydrocarbon contaminant plume front is located the lesser of 1 km or 50 years groundwater travel time from the nearest aquatic receiving environment, the applicable water use is aquatic life and the applicable standards are the CSR aquatic life numerical water standards.

Where the petroleum hydrocarbon contaminant plume front is located the lesser of 1.5 km or 100 years groundwater travel time from the nearest existing or probable future drinking water supply, the applicable water use is drinking water and the applicable standards are the CSR drinking water numerical water standards.

Appendix 2
Johnson Point Site Remediation
Application for Environmental Impact Screening

Indian and Northern Affairs Canada | Affaires indiennes et du Nord Canada

INAC Contaminated Sites Program

Johnson Point
Site Remediation

Application for Environmental Impact Screening

Submitted to:
The Environmental Impact Screening Committee

Submitted by:
Contaminants and Remediation Directorate,
Indian and Northern Affairs Canada

February 2008

Table of Contents

Executive Summary

Johnson Point is an abandoned support and staging facility established in the late 1960's for oil and gas exploration throughout the northern region of Banks Island. The site was used by several different companies with drilling activities occurring from 1971 to 1982 with eleven wells completed throughout Banks Island but it has been abandoned since the early 1980's when exploration was completed. The site is located approximately 270 kilometres northeast of Sachs Harbour (refer to **Figure 1** - *Johnson Point and Surrounding Communities*). The site is bounded to the east by the Prince of Wales Strait, to the north by a small, un-named river, and to the west and south by open tundra as shown by **Figure 2** - *Johnson Point and Surrounding Area*.

In preparation for the remediation of this site, the Contaminants and Remediation Directorate (CARD) conducted extensive assessment and consultation activities. The initial site investigation by CARD occurred in the fall of 2005 and consisted of a complete waste fuel storage inventory in preparation for incineration and preliminary water and soil sampling. In 2006, CARD incinerated the waste fuel stored on site, steam-cleaned the storage tanks, completed a detailed inventory of materials on site, and conducted a detailed Environment Site Assessment (ESA) testing program to determine the extent of contamination at Johnson Point. A short supplementary assessment program was also conducted in 2007 to fill in any information gaps. Information collected during these sampling programs, combined with the Community / Traditional Knowledge Study (included in **Appendix 3 – Community Consultation Records** of this project description) and feedback received during consultations, was used to develop the Remedial Action Plan (RAP) for the Site.

The upcoming proposed activities will see the full remediation of the Site between 2008 and 2010 with a summary of general tasks / activities as follows:

- **2008** - Due to logistical constraints and short field season on Banks Island, activities during this year will be limited to barge mobilization of camp, equipment, and supplies to Site, infrastructure repairs to the airstrip and roads, site surveys, preliminary soil and water sampling, some soil excavation and groundwater treatment, and potentially consolidation of waste materials and off-site transport of some non-hazardous materials.
- **2009** – The bulk of the remediation activities are expected to be completed this year. These will include excavation and treatment of hydrocarbon-impacted soils, demolition and containerization of all tanks and buildings on site, and providing additional cover materials on the existing landfills. No new landfills will be created during this remediation project.
- **2010 / 2011** – Tasks remaining for this period are dependent on project progress in preceding years. The proposed schedule would see the final tasks completed during the summer of 2010 followed by barge demobilization during the fall of that year. If delays in mobilization or demobilization are experienced during any of the seasons, an additional year of site work could be required with final demobilization from the site in 2011.

Following the site remediation, the stability of completed excavations and the integrity of the upgraded existing landfills will be inspected. Long-term monitoring is not anticipated for this site as all of the tanks and buildings will be removed from the site.

1. Title

Johnson Point Site Remediation

2. Contact Name and Address

Contaminants and Remediation Directorate (CARD)
Indian and Northern Affairs Canada
P.O. Box 1500
5103-48th St.
Yellowknife, N.T.
X1A 2R3
Fax - (867) 669-2721

Emma Pike, Project Manager
Telephone – (867) 669-2756
E-mail - pikee@inac.gc.ca

Joel Gowman, Project Officer
Telephone – (867) 669-2423
E-mail - gowmanj@inac.gc.ca

3. Regulatory Approvals

This Project requires the following regulatory approvals in addition to screening by the Environmental Impact Screening Committee:

- **INAC Land Use Permit**

  INAC North Mackenzie District Office
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4. Location

Johnson Point, on the east shore of Banks Island, is located at a longitude of 72 45' 10" and 118 30' 00". The following maps found in **Appendix 1** have been provided to supplement this application:

- **Figure 1** - *Johnson Point and Surrounding Communities*
- **Figure 2** - *Johnson Point and Surrounding Area*
- **Figure 3** - *Johnson Point Detailed Site Plan*
- **Figure 4** – *Johnson Point – Soil Excavation Plan*

5. Development Summary

INAC is focussed on accelerating the remediation of contaminated sites in the North to protect the health and safety of Aboriginal people, Northerners and the integrity of the environment under the Federal Contaminated Sites Action Program (FCSAP). The work proposed for Johnson Point is a direct response to community concerns from the Sachs Harbour Hunters and Trappers Committee (HTC) regarding the waste fuel previously stored at site and the remaining infrastructure. The proposed work therefore focuses on minimizing the environmental risks from hydrocarbon-impacted soils and removing the remaining infrastructure located at the site.

During 2005, 69 fuel storage containers, ranging in size from 205-L barrels to large bulk fuel tanks in and around the tank farm, were inventoried and waste fuel samples were collected. Characteristics of the waste fuel were examined to determine the composition of the waste fuel (whether the contents are diesel, gasoline, etc.) and the suitability of incineration for fuel disposal. In addition, the approximate volume of hydrocarbons and sludge material in the bulk storage tanks at the Site was measured and inventoried in preparation for incineration in 2006.

Following the completion of the initial assessment at the Site, CARD completed several tasks during the summer of 2006. The first component, addressing fuel storage issues at the site involved mobilization of a crew and an incinerator to the site by air. A total of 108,150 L of waste fuel was incinerated, sludge on tank bottoms was consolidated, and tanks were steam-cleaned. Water collected during sludge consolidation and steam-cleaning of the tanks was treated, tested, and discharged as per the NWT Water Board Water Licence N7L1-1814 at a location that was a minimum of 30 metres from natural drainage courses and 100 metres from fish bearing waters. A total of 104,000 L of treated wastewater was treated and discharged. The second component was to determine the scale and scope of contaminants on site and collect the necessary information to develop remediation options. This assessment included soil sampling program with test pits excavated to permafrost to delineate the extent of metal and hydrocarbon contamination, to determine the extent of and the type of wastes buried in existing landfills, and to gather geophysical data for engineering requirements. Water samples were also collected and a detailed inventory of all hazardous and non-hazardous materials on site was conducted.

In 2007, using the information compiled during the 2005 and 2006 environmental site assessments, CARD developed the Johnson Point Remedial Action Plan (RAP) in consultation with the Sachs Harbour community representatives. The primary tasks and tentative schedule proposed for the remediation of Johnson Point along with the options which were evaluated are discussed in this document which is also included with this application package.

Due to the remote nature of this Site, emergency response times are significantly increased. To ensure the safety of staff at this site, the successful contractor will be required to complete site orientations with all staff, proper training will be provided for individual tasks, and approved Personal Protective Equipment (PPE) will be provided and worn as required. In addition, an Emergency Medical Responder (EMR) will be required to be on-site at all times to provide advanced medical treatment in the event of an emergency.

Assessment and consultation have identified the following primary concerns at Johnson Point:

- **Hydrocarbon-impacted soils,**
- **Hazardous and Non-Hazardous Wastes – Demolition and Site Debris, and**
- **Existing landfills**

The location of the various site components is shown in **Figure 3** - *Johnson Point Detailed Site Plan* of **Appendix 1** in this project description. A short discussion of the main issues and the options chosen to address them is included below.

Hydrocarbon-impacted soils at the Site are located in 2 separate areas of the site as shown in **Figure 4** – *Johnson Point – Soil Excavation Plan* of **Appendix 1** and will be addressed using two separate approaches based on the location of the impacted soils.

The first area of hydrocarbon-impacted soil is located adjacent to the Tank Farm. CARD contracted Jacques Whitford Ltd to conduct a Human Health and Ecological Risk Assessment (HHERA) at the Site in 2007. This study determined that these hydrocarbons did not present any human health or ecological risks. From these results, site specific target levels (SSTL) based on the northern environment were developed by Jacques Whitford to ensure that potential receptors including visitors and wildlife are protected for the future. The SSTL for hydrocarbon-impact soils at Johnson Point is 4570 mg/kg. These soils will be treated by alluing in a hydrocarbon-impacted soil disposal and treatment area located west of the Tank Farm within Potential Borrow Area 2 as shown in **Figure 3** - *Johnson Point Detailed Site Plan*. Alluing is a process that involves aeration of soils through the use of a special excavator bucket as illustrated below.

Alluing soil at Atkinson Point – BAR-D in summer 2007

The alluing process has been proven effective in northern environments and was used by CARD through our remediation contractor, E. Grubens Transport, during the remediation of hydrocarbon-

impacted soils at Atkinson Point – BAR-D during the summer of 2007. Alluing can often allow soils to reach the selected criteria significantly faster than other treatment methods which make it especially useful on remote northern sites with very short field seasons available for treatment.

As the Apron Area of the Site is located in close proximity to several more sensitive environments (the un-named river, the Prince of Wales Strait, and the Apron Pond), CARD has selected the CCME criteria for the protection of groundwater for aquatic life (F1 – 230 mg/kg, F2 – 150 mg/kg). These criteria are very conservative due to the inclusion of a 10x safety factor and will be applied throughout this area of the Site to protect surrounding aquatic environments. Contaminated soil from this area will be excavated, screened and sorted based on the SSTLs for the Site, and transported to the hydrocarbon disposal and treatment area. Clean borrow material sourced from one of the identified potential borrow areas will be used to backfill the excavations in the Apron Area. Hydrocarbon-impacted soils with concentrations of total petroleum hydrocarbons in excess the SSTLs will be treated by alluing and then all excavated soil in the hydrocarbon-impacted soil disposal and treatment area will be re-contoured to establish natural drainage.

Existing infrastructure at the Site consists of a tank farm with 19 large tanks and various other containers, several trailer camp units with supporting equipment (CAT loader and a nodwell), and a variety of construction materials / debris. No new landfills will be constructed at Site as the Site has a small debris volume and lacks sufficient volume of suitable borrow material for landfill construction (in comparison with some DEW Line projects where landfills were constructed within the region).

The facilities at Johnson Point contain a variety of hazardous materials including asbestos and lead-amended painted materials along with old batteries, electrical components, and other debris throughout the site. These materials will be collected, using the proper safety protocols (PPE, etc), containerized during the demolition process, and transported off-site to a licensed disposal facility. All guidelines and legislation on the transportation of hazardous materials will be adhered to during this process. The planned remediation of Johnson Point also includes the disposal of non-hazardous materials from the demolition activities and general site debris. Non-hazardous site debris includes cleaned and crushed barrels, scrap metal, unpainted wood, plastics, and domestic type wastes. Disposal methods for both hazardous and non-hazardous waste are specified in the individual sections of the RAP.

With very limited volume of suitable borrow material at Johnson Point, the RAP does not involve construction of any new landfills. Implementation of the Johnson Point RAP will involve the transportation of both hazardous materials (mainly lead-amended painted materials and small amounts of asbestos) and non-hazardous materials to off-site licensed disposal facilities in Inuvik or southern Canada (including all tanks, buildings, and surface debris found throughout the Site). The schedule for materials removal will be determined by the successful contractor; however, there is potential for off-site transport of materials in all three years of this project (dependent on weather and marine barge availability).

The final component involved in the remediation of the Site is the placement of the additional cover materials on the existing landfills. Assessment results indicate that the materials in these existing landfills are primarily non-hazardous in nature and not generating any leachate. Excavation and sorting of the debris was discussed during the Remedial Options Evaluation meeting (**Johnson Point RAP - Appendix C**); however, placement of additional capping materials was selected as the preferred approach as most of landfills are currently performing well (limited erosion and minimal exposed debris). In addition, excavation of landfills can result in localized permafrost degradation and

additional problems. Following a discussion of the risks and benefits of two options, the community representatives were supportive of placing additional capping materials and leaving the existing landfills in place.

These activities will be supported by a temporary construction camp consisting of hard-side, ATCO-trailer type units. Camp capacity is anticipated to be approximately 30-40 persons. Camp wastes will be managed in accordance to industry standards to reduce the potential for wildlife attraction/interaction. Solid wastes will be incinerated in a certified solid waste incinerator operated according to the manufacturer's specifications.

Two sources of wastewater, requiring separate treatment systems, will be generated by these activities. Wastewater from the camp (grey-water from the kitchen, showers, etc.) will be collected and treated through a self-contained water treatment plant with capacity to treat oil and grease, suspended solids, and microbial components. The camp will utilize a waterless toilet system. Segregating the 'black water' waste will increase the treat-ability of the camp wastewater as this waste will be incinerated and the ash removed from the Site.

Wastewater generated by any tank washing activities will receive preliminary treatment to remove the majority of dissolved and free-phase hydrocarbons and then recycled during further cleaning activities to reduce the volume of water required and wastewater generated. Final treatment of tank-washing wastewater, along with any hydrocarbon-impacted water from excavation dewatering activities, will then remove any suspended solids and residual hydrocarbons or metals. Once laboratory testing indicates that treatment has achieved the licence criteria approved by the NWT Water Board, treated water will be discharged to the land. The discharge location will be located a minimum of 30 m from natural drainage pathways and 100 m from any fish-bearing water-bodies (the un-named river and the Prince of Wales Strait) at a location approved by the Designated Representative and the Inspector.

If additional technical details are required, please refer to the attached RAP. A brief summary of the proposed schedule for this remediation project is included in **Section 6** of this project description.

The 2008-2010 remediation activities at Johnson Point will be conducted through a contract tendered using evaluation criteria developed by CARD/ Public Works and Government Services (PWGSC) with consultation with IRC to ensure Inuvialuit involvement and benefits. The contract for the remediation activities at Johnson Point has not yet been awarded.

6. Development Timetable

The schedule proposed for the planned activities at Johnson Point in 2006 are found below in ***Table 1 – Proposed Timeline for Remediation Activities at Johnson Point***:

Table 1 – Proposed Timeline for Remediation Activities at Johnson Point	
	Activity Description
December 2007	Post tender packages on MERX website as a request for proposals (RFP).
May 2008	Award contract of the proposed work on site.
June 2008	Community consultation meeting in Sachs Harbour and Ulukhaktok to introduce the contractor to the communities. Annual project update meetings will be scheduled at the end of each field season.
August 2008	Due to logistical constraints and short field season on Banks Island, activities during this year will be limited to: barge mobilization of camp, equipment, and supplies to Site, Infrastructure repairs to the airstrip and roads, Site Surveys, Preliminary Soil and Water Sampling Some soil excavation and groundwater treatment. If barge mobilization can occur in late July, more site work would be undertaken to optimise time on site. There may also be an opportunity to consolidate some waste materials and demobilize some non-hazardous materials on the mobilization backhaul.
September 2008	Winterization of camp and all equipment/supplies.
Summer 2009	Bulk of remediation activities expected to be completed this year. These will include: excavation and treatment of hydrocarbon contaminated soils, demolition and containerization of all tanks and buildings on site, and placement of additional cover materials on the existing landfills; no new landfills will be created during this remediation Note: This will include the mobilization of Type 1 granular materials to the site. This could occur in the summer of 2008 or 2009 depending on barge availability and logistics optimization.
Fall 2009	Prepare camp, equipment / supplies, and waste materials for barge demobilization if work is completed early enough in the year. Alternatively, all equipment / materials on site will be winterized for demobilization in 2010 (most likely situation)
Summer 2010	Tasks remaining for this period are dependent on project progress in preceding years. Tentative schedule would see final tasks completed during Summer 2010 followed by barge demobilization during Fall 2010. Delays in barge mobilization or demobilization in any of the project years could require an additional field season with final demobilization in 2011.

A tender for the work was developed and posted on MERX. It will be up to the successful contractor

to determine the size of the camp and how long the camp and supported activities will be operational at site. However, the proposed activities are anticipated to require two to three years to complete with a crew of approximately 30 to 40 persons working during the summer/fall field season (July to September). Once the contract has been awarded, contact information for the successful contractor can be provided to the Environmental Impact Screening Committee.

7. New Technology

The specifications developed for the proposed activities throughout these activities will include only proven technology. Contract proposals which include unproven or innovative ideas will require supporting documentation of the suitability of the proposed technology. Once the contract for the work has been awarded, this information will be provided to the Inspector as required under the Land Use Permit.

8. Alternatives

The primary purpose of this project is to mitigate the environmental impacts of previous activities to the natural environment. To achieve this, CARD has conducted extensive environmental site assessment activities and consultation with the communities of Sachs Harbour and Ulukhaktok. A Remedial Options Evaluation meeting was hosted by CARD and PWGSC in Sachs Harbour on April 17, 2007. The meeting was attended by delegates of the Sachs Harbour Hunters and Trappers Committee (HTC), the Sachs Harbour Elders Committee, and the Sachs Harbour Community Corporation. The **Johnson Point - Remedial Action Plan (RAP)** was the result of these assessment and consultation activities.

A summary of the alternatives considered has been included below in ***Table 2 – Alternatives / Method Selection*** with the chosen alternative in **bold**. For additional details regarding the method selection and alternative considered, please refer to **Section 6.0** of the attached RAP included in the project description package. In each case, the recommended solution was based on extensive site-specific data and technical experience in developing remedial options in northern environments.

Table 2 - Alternatives / Method Selection

Alternatives Considered	Influential Factors Considered	
	Pros	**Cons**
Hydrocarbon-Impacted Soils		
Landfarming	• Proven for Arctic conditions • No specialized equipment needed • Experienced personnel in the North due to previous use in the North • Expected to achieve criteria within 3 to 5 years which is reasonable for remote sites	• Highly disruptive to the Site (significant area required to accommodate landfarm and a large volume of borrow material required to backfill impacted area. • Moderate to high cost
Alluing of Soils	• Proven for volatile hydrocarbons such as those present at this Site • Relatively inexpensive	• Dust and volatilized hydrocarbons may require alluing operator to wear a respirator • Pre-treatment with a chemical

	• Less disruptive to the site as treated soils can often be returned to the excavation	oxidation product may be required to treat less volatile hydrocarbons
Chemical Oxidation	• Proven technology for treating hydrocarbons • Technology will work in cold climates during very short time periods	• Required chemicals often costly, highly reactive, and dangerous to handle / transport • Potential to impact permafrost in applied area
Monitored Natural Attenuation	• No large equipment required • Low cost • Not Disruptive of the Site	• Very long term, likely greater than 20 years so it is not suitable if the environment is being impacted
Remediation Strategy for Site Debris		
Transport of all site waste debris to a licensed off-site disposal facility	• Cost effective • Reduced disturbance to local environment • Removal of known site contaminants	• None
Transport of all hazardous site debris to a licensed off-site disposal facility and construction of an on-site engineered, non-hazardous waste landfill	• Reduced disturbance to local environment • Reduced off-site shipment requirements	• Additional onsite earthworks for landfill construction • Imported landfill erosion protection required • Long term monitoring required
Remediation Strategies for Existing Landfills / Debris Areas		
All surface debris will be consolidated and removed from Site. Additional cover materials may be added to some of the existing landfills to ensure their long-term performance.	Existing landfills have performed well with no significant erosion. Additional cover and some erosion-resistant materials would be added to some areas. Testing indicates that the materials generally consist of non-hazardous materials. Also, no leachate has been detected from these areas. This approach will limit degradation of permafrost in the areas while ensuring that performance of existing landfills remains stable.	

9. Traditional and Other Land Uses

Johnson Point is located within the boundaries of the Sachs Harbour Planning Area as defined in the *Sachs Harbour Community Conservation Plan* (SHCCP) and is also on the boundary of the Ulukhaktok Planning Area as defined in the *Olokhaktomiut Community Conservation Plan* (OCCP). These publications define the following designated land use categories and are summarized in ***Table 3 – Designated Land Use Categories***:

Table 3 – Designated Land Use Categories

	Definition
Category A	Lands where there are no known significant and sensitive cultural or renewable resources. Lands shall be managed according to current regulatory practices.
Category B	Lands where there are cultural or renewable resources of some significance and sensitivity but where terms and conditions associated with permits and leases shall assure the conservation of these resources.

Category C	Lands and waters where cultural or renewable resources are of particular significance and sensitivity during specific times of the year. These lands and waters shall be managed so as to eliminate, to the greatest extent possible, potential damage and disruption.
Category D	Lands and waters where cultural or renewable resources are of particular significance and sensitivity throughout the year. As with Category C, these areas shall be managed so as to eliminate, to the greatest extent possible, potential damage and disruption.
Category E	Lands and waters where cultural or renewable resources are of extreme significance and sensitivity. There shall be no development on these areas. These lands and waters shall be managed to eliminate, to the greatest extent possible, potential damage and disruption. This category recommends the highest degree of protection in this document.

Johnson Point is located within or in close proximity to the designated land use areas listed in ***Table 4 – Johnson Point and Associated Designated Land Use Areas***:

Table 4 – Johnson Point and Associated Designated Land Use Areas

Designated Land Use Status	**Proximity to Site**	**Description of Sensitive Cultural and/or Ecological Components** (information from SHCCP)
Class C - 734C Prince of Wales Strait (SHCCP and OCCP)	Site is located on the Strait, on the boundary of this management area.	The route is used for travel between Sachs Harbour and Holman and has been used for past and present subsistence harvesting of ringed seals, bearded seals and polar bears. The area is considered an important marine environment due to ocean currents and upwellings. The Strait is also an important beluga whale migration area (June to September), year round bearded seal habitat (seal pupping season from January to May) and used by denning polar bears (November to April). The SHCCP identifies potential increases in marine traffic through the Strait as potentially harmful to the marine life in the area and states that marine traffic through the area should be restricted and additional marine ecosystem research should be conducted.
Class C – 615C Banksland Coastal Waters (Charr) (SHCCP)	Site is located on the Strait, on the boundary of this management area.	Feeding of anadromous Arctic charr in open water.
Class D - 614D Banksland Rivers (SHCCP)	The site is located within the boundary of this management area.	Both anadromous and non-anadromous forms of Arctic charr stocks are found in this management area. At Johnson Point and Headwater Lake (which feeds the un-named river that flows into the Prince of Wales Strait at Johnson Point, just north

		of the infrastructure at the Site) lake trout and/or Arctic charr are present as year-round residents or seasonal migrants. Sachs Harbour residents indicated in consultation meetings that Arctic charr are present in the un-named river that flows past the site.
Class E – 619E Banks Island Caribou Calving Areas (SHCPP)	The site is located approximately 15-km north of this management area	This area is a critical calving ground for Arctic Islands and Peary caribou. Animals start moving north in April and May with calving beginning in late May to early June. A draft Banks Island Multi-species Management Plan is under development by RWED, a regional recovery plan for caribou herds on Banks Island is being developed and the Sachs Harbour HTC has by-laws in place to restrict harvest.

Marine transport activities for these proposed remediation activities are limited to mobilization / demobilization of equipment and materials (including Type 1 granular materials) along with potential re-supply for the camp and associated activities. These activities will be very limited in duration (expected to be limited to 1-2 barge trips over a 3-5 week period in August of each year).

Infrastructure improvements associated with these activities may include minor development of temporary barge landing ramps on the beach area adjacent to the beach apron area. These activities would be supervised by the Designated Representative, following recommendations from Department of Fisheries and Oceans (DFO), regarding the preservation of the marine environment. There will also be minor upgrades to the Site roads to facilitate transportation of materials and equipment around the Site. Following the completion of the tasks, these temporary on-shore developments along with any culverts (existing and new) removed and natural drainage will be re-established. This approach will ensure no impacts to the Prince of Wales Strait and the associated designated land use areas (734C Prince of Wales Strait (SHCCP and OCCP) and 615C Banksland Coastal Waters (Charr) (SHCCP)).

Air traffic in the area will, when possible, maintain an altitude of >300-m (975 ft) when flying over the Prince of Wales Strait when beluga whales have been observed in the area (*Environmental Impact Screening Committee – Operating Guidelines and Procedures* (EISC – OGP)*: Appendix I*). The airstrip at the Site will be left in an abandoned condition once the remediation tasks have been completed.

Johnson Point is located within the designated land use area 614D Banksland Rivers (SHCCP). On site activities in this area are not expected to have significant negative impacts as the activities will include spill contingency plans to prevent further release of hydrocarbons into the environment while operating equipment at the site. In addition, the purpose of the proposed activities at Johnson Point is to create a positive impact to the site by removing the potential for further release of hydrocarbons into the environment by treating the source (hydrocarbon impacted soils). Any excavations or other earthwork activities conducted in close proximity to freshwater or marine environments will have sediment control measures in place such as silt fencing.

Johnson Point is located approximately 15-km north of a caribou calving ground defined under designated land use area 619E Banks Island Caribou Calving Areas (SHCPP). Flight operations at the

site will, when possible, maintain >610-m (2000 ft) when flying point to point in the vicinity of caribou and other wildlife species (*Environmental Impact Screening Committee – Operating Guidelines and Procedures: Appendix I*) and flights over the caribou calving grounds will be avoided. Most annual operations at Johnson Point are not expected to commence until early July so impact on caribou in this area should be minimized.

10. Community Consultation

CARD has been working closely with the Inuvialuit Regional Corporation (IRC) to ensure Inuvialuit involvement in the remediation of Johnson Point.

The IRC suggested that CARD consult with the Sachs Harbour Hunters and Trappers Committee (HTC) and the Inuvialuit Game Council (IGC). In December 2005, CARD attended the IGC quarterly meeting in Inuvik at the invitation of the IGC. CARD presented information on the Contaminated Sites Program, reviewed the assessment activities that had been completed at Johnson Point during 2005, and summarized the activities that are proposed for 2006.

In April 2006, CARD initiated a Traditional Knowledge/Community survey in Sachs Harbour regarding Johnson Point and the surrounding area. The survey was contracted to the Sachs Harbour HTC and is presently being conducted by Joey Carpenter, an elder from Sachs Harbour. CARD and the Sachs Harbour HTC prepared the survey to collect information about how Johnson Point is used by the community of Sachs Harbour (both past and present), how the site was used by industry, what animals are found at the site at different times in the year. The survey has been appended to this project description and can be found in **Appendix 3 – Community Consultation**.

In addition to the survey, CARD visited Sachs Harbour from April 24-27, 2006. CARD attended an HTC Special Members Meeting at the invitation of the Sachs Harbour HTC on April 25, 2006 to present an update on Johnson Point. During this presentation, information was provided about the process of evaluation and selection of sites for the Contaminated Sites Program, the tasks completed at Johnson Point in 2005 and a summary of the work proposed to be completed in 2006.

Following the presentation, CARD held a question answer/period to gather information about community concerns. The minutes of the community meeting are included as **Appendix 3 – Community Consultation** of this application. Fifteen Sachs Harbour HTC members were in attendance including three directors on the HTC Board. During this meeting, members provided information about locations around Johnson Point where Arctic charr and caribou could be found. The members also indicated that numerous archaeological sites may be located north of Johnson Point along the Prince of Wales Strait. This information was used by CARD in the design of the 2006 field program and during the development of a remediation plan for the site.

CARD also visited the Inualthuyak School in Sachs Harbour on April 26, 2006 and gave a short demonstration about how contaminants travel in the environment and why we need to be concerned about cleaning up sites and protecting the environment. The students participated in two short science experiments led by CARD.

CARD conducted a site visit to Johnson Point with elders and some members of the Sachs Harbour HTC on August 13, 2006. Comments from elders and HTC members during the tour of the site were used by CARD to direct further testing for contamination at Johnson Point and to help avoid sites of

cultural importance.

In the spring of 2007, following the 2006 environmental site assessment, CARD and PWGSC visited Sachs Harbour. A Remedial Options Evaluation Meeting, held on April 17, 2007, was attended by delegates of the Sachs Harbour Hunters and Trappers Committee, Community Corporation, and Elders Committee. The various technically feasible options for each site component were discussed. Options were selected based on traditional knowledge, anticipated future community use of the area, and the technical benefits and weaknesses of each approach (please refer to the attached minutes in **Johnson Point RAP - Appendix C – Community Meeting Minutes** for additional details).

CARD also hosted a Community Information Session and dinner (open to the public) in Sachs Harbour on the evening of April 17, 2007 and Ulukhaktok on the evening of April 19, 2007. The remedial options selected and the selection process that was used were discussed. CARD and PWGSC representatives were in attendance to answer questions about the proposed activities at Johnson Point and to provide information about CARD activities throughout the Inuvialuit Settlement Region. Minute from both of these meeting can be found in **Johnson Point RAP - Appendix C – Community Meeting Minutes**. These Community Information Sessions were well attended with a positive atmosphere as both communities were excited to see that remedial action will soon be conducted at this site in their traditional territory.

11. Environmental Overview

Johnson Point is located in the Northern Arctic Ecozone. The terrain consists low, rolling tundra plains with rock debris left by glaciers.

Climate information for Johnson Point is presented below in ***Table 5 – Johnson Point Climatic Data***:

Table 5 – Johnson Point Climatic Data

Parameter	Recorded Values [a]
Mean Annual Temp.	-16 ^{o}C
Mean Winter Temp. (October-March)	-30 ^{o}C
Mean Summer Temp. (April-September)	-5 ^{o}C
Mean Annual Precipitation	142 mm

[a] - Climatic data for Johnson Point is only available from 1972-1976

A small, shallow pond (estimated to be less than 2 meters in depth) is located west of airstrip and two smaller excavated ponds are located southeast of the tank farm. A small stream drains north, from the central portion of the site, flowing past the west side of the tank farm onto the flood plain of the un-named river north of the infrastructure at Johnson Point. Several small drainage channels are dispersed throughout the site.

Continuous permafrost conditions are found at Johnson Point. The maximum depth to permafrost at this location in mid-summer is estimated to be between 0.5-1.8 metres. The presence of permafrost is expected to limit groundwater movement to a shallow depth. The soils throughout most of the site consist mainly of sandy gravel.

From discussions with elders and Sachs Harbour HTC members, Peary Island caribou, muskox, and polar bears are all found at Johnson Point. In addition, arctic fox, arctic hare, lemmings, and snowy owls are also found in the area. Marine mammals that may be found in the Prince of Wales Strait include beluga whales, ringed seals, and bearded seals. Traditional knowledge indicates that Arctic charr can be found in the Prince of Wales Strait and seasonally in the un-named river north of the site. Lake trout may also be found in the small lake in the headwaters of the un-named river.

12. Proposed Mitigation and Anticipated Environmental Impacts

The project in itself is a mitigation to existing environmental impacts and hydrocarbon contamination. The most significant potential environmental effect, therefore, would be if this project did not go ahead or if there were delays in its completion. The proposed timing, duration and location of the activities on the site should address any other potential environmental impacts.

Periods of heavy rain could limit assess to the site to smaller aircraft and poor visibility or limited aircraft availability could delay re-supply flights to the site operations. The proposed activities may require minor airstrip upgrading to ensure safe and consistent accessibility to the Site. Many of proposed activities are scheduled early in the field season to reduce flight accessibility issues and minor improvements to the airstrip itself may be completed to ensure more consistent access.

Equipment operation within the un-named river will be minimized to prevent negative impacts to aquatic habitats. When operations are required for purposes of addressing impacted sediments, appropriate sediment control measures will be implemented and operations will be scheduled to avoid impact to Arctic Char migration.

INAC has contacted the Prince of Wales Northern Heritage Centre (PWNHC). No known archaeological sites are in the Site area. However, if any potential archaeological sites are found during the completion of the work, the PWNHC will be notified and the area will not be disturbed.

Water and soil confirmation samples will be collected throughout the remediation activities to determine that the remediation objectives at the Site have been achieved. No negative impacts are anticipated from these activities. Excavations of contaminated soil areas will be backfilled with clean fill or regraded ensuring the protection of underlying permafrost and preventing subsidence.

Wash effluent from barrel/tank cleaning activities and grey/black water generated by the camp will be collected and treated to meet the water license criteria approved by the NWT Water Board. These criteria have been used as the standards for DEW-Line clean-ups within the region and generally include a 10x safety factor above the lowest observed effects level (LOEL). They have been selected to ensure the protection of the most sensitive organisms so discharge of the effluent will not present a risk to the environment. Once testing by an accredited laboratory indicates that the treated effluent has met the proposed water license criteria, it will be released onto the land at a location approved by the water license Inspector. The treated effluent will not be discharged if the proposed criteria are not met.

The camp for the proposed activities will have a perimeter defence around the camp consisting of an electric fence or noise maker. The fence is to be dismantled at the conclusion of the work. Also, waste generated on site will be incinerated daily and managed properly to reduce the potential of

wildlife attraction.

The incinerators used in this operation for waste disposal are required to be maintained and operated according to manufacturer's specifications and therefore will not impact air quality. To mitigate any effects of fuel spills, proper fuel handling techniques will be followed and a spill contingency plan will be in place with spill kits at all fuel transfer locations.

The contractor supplying and operating the camp will establish camp rules covering items such as property damage, smoking, use of alcoholic beverages, drugs, firearms, security, nuisance, and any other matters to ensure the camp is operated in an orderly manor. Hunting and harassment of wildlife in the area by staff on site will not be permitted.

The contract itself will be managed through PWGSC and there will be a Designated Representative on-site at all times to ensure these measures are adhered to and that there is compliance with all regulatory approvals and legislation. The Designated Representative will also be responsible for providing independent confirmation of the contractor's environmental compliance with the Land Use Permit and Water Licence. Following the completion of each season's activities, an annual completion report will be prepared by the Designated Representative. This report will be an important component of the Annual Report (a water licence reporting requirement) to the NWT Water Board.

13. Cumulative Effects

No cumulative effects from this project are anticipated. It should be noted that these activities will result in the remediation of the Site, essentially restoring the site to its natural state.

14. Emergency Response Plans

The emergency response components for activities at Johnson Point will include:

- Wildlife monitor on site
- Site-Specific Health and Safety Plan
- Spill Contingency Plans for operation of equipment on site and for fuel transfers
- Emergency Response Plan
- Fire Safety Plan
- Camp Rules

These plans will be required as submittals under the contract specifications.

15. Clean-up, Reclamation, Disposal, and/or Decommissioning Plan

The proposed activities at Johnson Point will lead to the final decommissioning of these abandoned facilities and the remediation of the site.

Between the fall of 2008 and 2010, a temporary camp capable of supporting approximately 30 to 40 persons for the anticipated 3-month annual field season will be constructed at Johnson Point at a location on the site selected by the contractor completing the work. The camp location is to be established at a location which does not interfere with operations undertaken on the site and approved by the Designated Representative. The camp is to be established and operated in accordance with local regulations and authorities having jurisdiction. The camp is to be removed following the completion of the activities in 2010. As previously mentioned, this proposed schedule has the

potential to be impacted by several factors including weather, resource availability, and potential additional work, all of which could result in an additional summer field season being required.

16. Other Environmental Assessment

Five previous reports have been completed documenting activities completed during the assessment and consultation activities at Johnson Point.

- **Title:** Johnson Point – Arctic Environmental Strategy (AES) Clean-up
  Prepared by: Inuvik Sub-District, Department of Indian Affairs and Northern Development (DIAND), Northern Affairs Program
  Date: August 31, 1992.
  Summary: In 1992, through the Action on Waste program, the DIAND North Mackenzie District Office co-ordinated the consolidation of debris, burning of clean wood, and the development of a preliminary inventory of construction materials, buildings, and equipment abandoned on the site.

- **Title:** Johnson Point Site Investigation, Banks Island
  Prepared by: Parks Canada, Western Arctic Field Unit
  Prepared for: Sachs Harbour Hunters and Trappers Committee
  Date: July 23, 2002
  Summary: In 2002, Parks Canada visited the site at the request of the Sachs Harbour HTC to evaluate the potential for environmental contamination from the site. The report found indications that several of the large bulk storage tanks may be leaking.

- **Title:** Phase I & II Environmental Site Assessment at Johnson Point, NT
  Prepared by: IEG Environmental
  Prepared for: Contaminants and Remediation Directorate (CARD), Indian and Northern Affairs Canada
  Date: December 2005
  Summary: In 2005, CARD contracted IEG Environmental to conduct a Phase I/II Environmental Site Assessment (ESA) at Johnson Point and to develop a detailed inventory of materials. The ESA involved collection and analysis of soil samples collected throughout the site at locations with potential sources of hydrocarbons. The materials inventory involved collection of paint samples from selected buildings and storage tanks and estimation of waste fuel stored on site. The results from these testing programs were used to direct the sampling program in 2006 and to design the incineration plan.

- **Title:** Human Health and Ecological Risk Assessment for Johnson Point Staging Facility, Johnson Point, Northwest Territories
  Prepared by: Jacques Whitford Limited
  Prepared for: Contaminants and Remediation Directorate (CARD), Indian and Northern Affairs Canada
  Date: January 26, 2007
  Summary: CARD contracted Jacques Whitford Limited to conduct a Human Health and Ecological Risk Assessment (HHERA) at Johnson Point to evaluate whether known concentrations of chemicals found in on-site soil, water, and vegetation would present a significant risk to human or ecological health based on future use of the area and to establish site-specific criteria protective of both humans and the environment.

- **Title:** 2006 Johnson Point Site Activities Report
  Prepared by: Arctic Environmental Services (AES)
  Prepared for: Contaminants and Remediation Directorate (CARD), Indian and Northern Affairs Canada
  Date: March 2007.
  Summary: CARD contracted AES to complete the waste fuel incineration activities to address the environmental risk associated with the aged fuels stored at the Site. The report documents the volumes of fuel incinerated, water used, and wastewater generated along with summaries of the other associated activities including tank cleaning, debris consolidation, and camp operation. Wildlife observations, Inuvialuit benefits, and reportable Environmental, Health, and Safety events are also included in this report.

- **Title:** Phase III Environmental Site Investigation – Johnson Point Staging Facility, Banks Island, Northwest Territories
  Prepared by: EBA Engineering Consultants Ltd
  Prepared for: Contaminants and Remediation Directorate (CARD), Indian and Northern Affairs Canada
  Date: December 2007
  Summary: While the initial environmental site assessment (ESA) conducted by IEG in 2005 provided some information to characterize the site, CARD required additional information to finalize the site characterization and develop a remedial action plan (RAP). During this detailed environmental site assessment, a total of 26 groundwater monitoring wells were installed, close to 150 bore-holes were completed, and 4 sediment samples were collected adjacent to the Apron Area. Hazardous materials sampling was also conducted throughout the Site to characterize the waste types and estimate hazardous and non-hazardous waste volumes. This information was used to incorporated into the 2007 HHERA conducted by Jacques Whitford and was later used in the development of the Johnson Point RAP by EBA.

- **Title:** Supplemental Environmental Site Assessment – Johnson Point, Northwest Territories
  Prepared by: IMG-Golder Corporation in association with Golder Associates Ltd
  Prepared for: Contaminants and Remediation Directorate (CARD), Indian and Northern Affairs Canada
  Date: November 2007
  Summary: Following the completion of the detailed ESA, CARD required some confirmation of leachable lead concentrations on waste materials and confirmation / delineation of hydrocarbon-impacted sediment adjacent to the Apron Area.

- **Title:** Remedial Action Plan – Johnson Point Staging Area, Johnson Point, Northwest Territories
  Prepared by: EBA Engineering Consultants Ltd
  Prepared for: Contaminants and Remediation Directorate (CARD), Indian and Northern Affairs Canada
  Date: December 2007
  Summary: The Johnson Point Remedial Action Plan (RAP) provides a discussion of the components of concern at Johnson Point. A summary of information gathered through environmental site assessment and community consultation activities was used to select the most appropriate remedial option for each site component. Photographs of the various site components can be found in the RAP.

Appendices

Appendix 1 – Figures

Appendix 2 – Airphotos

Air Photo #1: Southern half of Johnson Point site (1987). Note skid trailer camp in upper left corner and the garage and tank farm in the upper right corner of the photo. (Scale approximately 1:5000)

Air Photo #2: Northern half of Johnson Point site (1987). Note the access road from the airstrip and beach and the POL pipeline in the foreground with tank farm in the background. (Scale approximately 1:5000) The POL pipeline was decommissioned (drained, cut into pieces, and cleaned) during the 2006 activities.

Appendix 3 – Community Consultation Records

Sachs Harbour HTC Special Members Meeting Notes
April 25, 2006

CARD attended a Sachs Harbour HTC Special Members Meeting at the invitation of Sachs Harbour HTC in Sachs Harbour at the Hamlet Council Chamber in the Panikpuk Building to update the community about Johnson Point. Fifteen people were in attendance at the meeting.

INAC, through a contribution agreement with the Sachs Harbour HTC, participated in the Special Members meeting with the goals of providing information to the community while also soliciting feedback from community members.

The meeting proceedings were as follows:

- Supper began shortly after 7:00pm.
- The meeting was called to order at approximately 7:30pm by David Hoagak, chairperson of the Sachs Harbour HTC.
- The CARD presentation to the HTC consisted of three (3) main components:
  - o A summary of the Contaminated Sites Program to provide the community with information about the goals of the Program. Sites are identified, assessed, classified, and remediated through a 10-step process; details on each of the stages were described during the presentation.
  - o An update on the assessment work that has been completed at Johnson Point and a summary of the upcoming tasks that are proposed for the summer of 2006.
  - o Questions and Feedback Session

Allison Cluderay, CARD, took notes of the questions and comments posed for the record as listed below:

Question – What happens to the contaminated soil removed from the contaminated sites? What is the process of restoring the soil?
Answer (CARD) – The soil that is shipped off site is sent to treatment facility such as the one operated by Hazco in Hay River. The soil is spread out over a larger area and turned over periodically to allow the fuel to evaporate and reduce the amount of fuel found in the soil. Once fuel levels decrease to acceptable levels, the soil can be used as cover over landfills or for soil filler in industrial areas.

Question – Who is the owner of the buildings and equipment? How would someone obtain ownership of these items?
Answer (CARD) – Since the site has been abandoned, all of the equipment and other infrastructure at the site has reverted back to INAC's jurisdiction. Transfer of ownership to other interested parties is possible but further assessment of the site and the infrastructure is necessary to determine which, if any, of the pieces of infrastructure contain hazardous materials. The possible transfer of ownership is generally handled by CARD/INAC managers on a case by case basis.

Question – Were studies done at the DEW-Line site at Shingle Point to look at health effects on the people in the area?
Answer – I am not aware of any studies on the health effects on the people who live or who have worked at the Shingle Point DEW-Line station. Other federal departments such as Health Canada and Environment Canada may have conducted health related studies on Shingle Point and other DEW-Line

stations.

Question – When is the clean-up going to be completed?
Answer – The proposed timeline for the clean-up is to complete the incineration and environmental site assessment of the site during the 2006 field season. Further consultation and the development of remediation plan options are proposed to be completed during 2007 with mobilization of equipment to the site in 2008 beginning the remediation of the site infrastructure.

Question – Is there any potential used for this area with the Mackenzie Gas Project pipeline going in? (There is a possibility that Banks Island well sites might have yielded some oil; David Nasogalauk from Tuktoyaktuk is said to have had a container of Banks Island oil and other persons mentioned that the wells completed on Banks Island may have yielded sour gas.)
Answer – I will have to recheck the inventory of the wells completed on Banks Island. We have no indication that any of the wells were not dry holes.

Question – Are there PCB's and asbestos in the buildings? How do you test for asbestos and PCBs when you are out in the field?
Answer – There are PCBs in the paint in some of the buildings and on some of the fuel tanks on the site. A small amount of asbestos has been found in one of the trailers on site. There are field tests that you can do on paint chips to see if PCBs are present. To test for asbestos, we generally look for particular types of materials. If similar materials are found, samples are collected and sent to labs for analysis.

Question – Could this have been cleaned up earlier and would it have cost the government less to clean it up if it was done earlier?
Answer – Unfortunately, we can't focus on what has not been done in the past. Now we have funding to proceed with environmental assessment and incineration of the waste fuel at the site and we want to make sure that the community is involved in the work done at the site.

Question – What were the depths that the oil wells were drilled down to?
Answer – I don't know this information off-hand; I will have to check the files to see what depth the wells were completed at.

Question – Have there been any medical follow-up on the DEW-Line sites as to the health of the people that lived there?
Answer – I don't have any knowledge of any studies having been completed which examine the health of the people who have lived or worked at the DEW-Line sites but other federal departments such as Health Canada or Environment Canada may have completed such studies.

Question – If the garbage/camps was dumped into the lakes (left on the lakes in the spring and allowed to melt through the ice), is there any way to be able to test the lakes for contaminants?
Answer – It may be possible to have samples collected from these location if details on the possible locations of such dumping, especially if that information can be provide first hand by an elder who was present at the time.

Question (CARD) – What is the significance of the designated use categories shown in the Sachs Harbour Community Conservation Plan (CCP)?
Answer (Audience) – Category E: caribou herds in the area are in decline so known calving grounds

must receive additional protection; Category D: there are many archaeological sites located in the Banksland Rivers area marked in the CCP.

Question – There has been a major oil and gas find on Melville Island and with the development of the Mackenzie Gas Pipeline; they might ship the oil/gas from a port on Melville Island to Tuktoyakuk where it would be fed into the MGP.
Answer – I have heard that there have been some promising indications of oil and gas on Melville Island but I don't have any information about future developments between Melville Island, Banks Island, and the mainland.

Question – How far down do the contaminants/fuel go down in the soil? And what is the circumference of contaminated soil surround the tank farm?
Answer – We don't think that contaminants will go deeper than the maximum depth down to permafrost. At the present time, we know that contamination is present outside of the tank farm but we don't know how far the contaminating extends from the source (the tank farm). Our environmental site assessment proposed for 2006 is meant to gather more information on the extent of the contamination at the site.

Question – Is there any other option other than digging up the ground and creating a hole to get rid of the contaminated soil?
Answer – In some climates other options for treating contaminated soil in place is viable. Pipes can be dug into the ground and air can be pumped through to increase the amount of fuel evaporation. There has been some testing on using land farms to treat the soil on site (but it generally still has to be dug out…). In cold climates, the bacteria can't work as fast and it takes much longer for this type of process to reach the remediation goals.

Question – What can the community do to help get the area cleaned up? Is there any way the community could get a better sense of reassurance that this area will be cleaned up? For example, a 'guarantee' or a 'letter of confirmation'
Answer – The community can help clean-up the site by participating in community meetings about the project and applying for jobs with companies who have be awarded the work at the site. Our staff at CARD is working hard to make sure that the clean-up at Johnson Point can proceed but I cannot offer a guarantee or letter stating that the site will be completely cleaned up.

Question – What is the estimated value of the clean-up? Is there anything of any value at Johnson Point? Will there be a report on the clean-up at Johnson Point?
Answer – At this stage in the assessment process, we don't have enough information to estimate the value of the cleanup. The information gathered in 2006 will help us develop a cost estimate for the site. There is very little material of any value at the site. The equipment has been sitting abandoned for 20-30 years with no maintenance and is likely of little value. If industry were to have interest in development in the area again, there might be interest in assessing the integrity of the tanks but this work would not be completed by CARD.

Question – There are hundreds of barrels abandoned on the beach on the larger island located near Johnson Point. Can these be included in the cleanup at Johnson Point?
Answer – CARD would be interested in taking a closer look at the location mentioned to document what materials were still present at that location but we can't commit to include cleanup of contaminated sites surrounding Johnson Point. More information would have to be available to make

that decision.

Question – Can David or the HTC get a list of the companies who are awarded the work at Johnson Point?
Answer – After the contracts are awarded, the company to which the contract was awarded will be made available to the public. At that point, community members would be able to approach those companies to offer their services to complete the work at the site.

Question – Could there be an agreement in the contract that states that 'x' amount of the employees will be hired from Sachs?
Answer – The IFA does have clauses in it regarding employment of local people on projects in their areas but I am not completely familiar with agreement yet. CARD/INAC is also working with IRC to develop evaluation criteria for the selection of the successful bidder.

Other Comments:
- Frank and Martha Kadlak camped at Johnson Point during the 1970's during the site's operation. Frank shot 7 caribou next to the airstrip and has caught Arctic char in the river as well. They used the loader from the site to drag the caribou back to their camp. In the 1970's, there was a scheduled service between Whitehorse, Dawson City, Inuvik, Sachs Harbour and Johnson Point with Northward Air using a DC3. During the time when the site was in operation, Johnson Point's population was even larger than Sachs Harbour is now.

The following people were in attendance at the meeting:

- J. Keogak
- D. Haogak
- D. Keogak
- W. Esau
- J. Nanauan
- P. Haogak
- C. Haogak
- J. Eldridge
- G. Wolki
- A. Esau
- J. Kuptana
- M. Kudlak

The meeting ended at approximately 9:30pm with the HTC completing a draw for 7-$100 door prizes and CARD distributed some promotional items to the participants at the meeting. The general mood of the meeting was positive and the participants had lots of questions on Johnson Point and how can the community be involved in the clean-up.

Traditional Knowledge and Community Use Survey: Johnson Point

North Latitude – 72°45’10”, West Longitude – 118°30’00”

Prepared for: Contaminants and Remediation Directorate (CARD) / INAC

Conducted by: Joseph Carpenter and Sachs Harbour Hunters and Trappers Committee (HTC)

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Appendices

Introduction

The area surrounding Johnson Point, including the Prince of Wales Strait, has been used by residents of Sachs Harbour and Ulukhaktok throughout their history. Community members have historically travelled and hunted in this area and have continued to visit the area in more recent years.

The land and sea surrounding Johnson Point provides habitat for muskox, Peary Caribou, polar bears, and several species of seals. The *Sachs Harbour Community Conservation Plan* (SHCCP), (prepared by the Community of Sachs Harbour, Wildlife Management Advisory Council (NWT), and the Joint Secretariat, July 2000) has identified a important caribou calving ground located approximately 20 kilometres south of Johnson Point. The SHCCP also identified important arctic charr habitat within the Banksland Rivers region (Site No. 614D) of Banks Island which includes the Headwater Lake and the small un-named river located north of the site at Johnson Point. Johnson Point is also located next to the Prince of Wales Strait which is classified as Banksland Coastal Areas Adjacent to Rivers Supporting Arctic Charr (Site No. 615CE). A map illustrating the location of Johnson Point and surrounding points of interest has been included as ***Appendix 1 – Map of Banks Island Region***.

The infrastructure at the site on Johnson Point was established in the late 1960's or early 1970's to support oil and gas exploration activities within the region. Approximately twenty exploration wells were completed and, while favourable geological formations were located, no petroleum resources were found. The site operated as a staging and support station for several different companies before being abandoned in the late 1970's or early 1980's. The following is a summary list of the infrastructure that is currently on the site at Johnson Point:

- 19-tank tank farm plus numerous assorted tanks and drums in various sizes, (waste fuel products abandoned at the site were incinerated by INAC during the summer of 2006)
- Nodwell and cat train camps along with associated supporting equipment
- 5000' airstrip with approximately 2500' of usable length

During its operation, the site at Johnson Point was occasionally home to one hundred or more people. While many of these individuals were based in southern centers, the operations also employed several people from the communities. In addition, community members from Sachs Harbour and Ulukhaktok also travel through this region of Banks Island to reach traditional hunting areas.

Survey Purpose

Sachs Harbour is the only community located on Banks Island and many residents of the community are familiar with Johnson Point and the surrounding area through traditional use of the area and/or employment at the site during its past operation. Through this

survey, the Sachs Harbour HTC gathered information about the various activities that have occurred at Johnson Point.

In addition, the survey was also conducted to raise awareness within the community about the goals and activities of CARD within the Inuvialuit Settlement Region and present opportunities for community members to share their concerns about the site along with their valuable knowledge about the surrounding area.

Survey Method

The Sachs Harbour HTC was responsible for recruiting and hiring a suitable candidate to conduct the survey. This person was to have prior experience conducting surveys and reside in the community to facilitate identification of community members who may be able to provide information about the Johnson Point. The Sachs Harbour HTC selected Joey Carpenter, an elder with the Sachs Harbour HTC to conduct the survey with the support of the HTC Resource Persons.

Survey participants were selected by Mr. Carpenter based on their knowledge of Johnson Point and the surrounding area. Participants completed a questionnaire developed by CARD and community representatives and returned the completed questionnaires to Mr. Carpenter following the interview. A copy of the questionnaire is appended to this report as ***Appendix 2 – Survey Questionnaire***. The survey participants are listed in **Table #1 – Participant List** below.

Table #1 – Participant List

Participant Name
Wayne Gully
Joshua Esau
Ryan Lucas
Preston Carpenter
Joe Kudlak
Geddes Wolki
Andy Carpenter
Earl Esau
James Harry
Richard Carpenter
Roger Kuptana
Joey Carpender

This survey interviewed a total of 12 persons representing a diverse age range as indicated below:

- 15-25 years of age - One (1) participant
- 26-35 years of age – Three (3) participants
- 36-49 years of age – Three (3) participants
- 50-70 years of age – Three (3) participants
- 70 and above – Two (2) participants

Information gathered during each of the interviews has been summarized below.

Participant #1

Participant #1, along with 10 other people, went to Johnson Point by aircraft on a community sponsored inspection trip in the month of July. This trip was one day event with the weather being calm and clear. Wildlife seen was musk-oxen and geese. Every person brought their own drinks and food. He was not aware of any archaeological or cultural sites in the area.

Participant #2

Participant #2 was on a musk-ox aerial survey with 3 other persons in the month of August. He reported musk-ox sighting but did not see any other wildlife. The area was free of snow with some ice floes in the Prince of Wales Strait.

Participant #3

Participant #3 also went on a musk-ox aerial survey but did not camp at Johnson Point. He noted that he seen a fair number of musk-ox and also some caribou and rabbits.

Participant #4

Participant #4, along with his grade 9 class, spent a day in July at Johnson Point as an educational trip looking at past hunting and use of the site (i.e. - hunter/gatherers/early explorers/settlers from Sachs Harbour and oil companies). Students brought their own lunch and drinks. They all noted seeing the following wildlife: rabbits, foxes, ptarmigan, and musk-oxen. No polar bears, caribou or whales were sighted. Clear and warm weather was noted. He was made aware of sites which may be of archaeological or cultural value in the Johnson Point area. He also said the area was in a sorry state as everything was scattered around in a garbage dump like scene.

Participant #5

Participant #5 worked as a labourer with the crew of up to 15 constructing the camp and put together the fuel tanks, most of which were bolted tanks. This was a summer project which took place from July to early August. The source of drinking water was derived from the river north of the camp site. No wildlife was harvested and only "camp-food" was eaten. Wildlife observed included polar bears, caribou and rabbits. As the barge made it to Johnson Point, I would assume that Prince of Wales Strait was relatively ice free. The weather of July was for the most part sunny and warm.

Participant #6

Participant #6 was part of one of the first groups of people who settled in Sachs Harbour and he has an intimate history of Banks Island. Participant #6, along with 4 other persons, went on several trips in the 1970's and 1980's to do a caribou survey count. While doing the survey, Johnson Point was used as a base camp for the aerial survey. The group stayed anywhere from 3 days to 1 week at Johnson Point on each of their 4 survey trips. While at Johnson Point, water was taken from the river for camp use. Participant #6 also mentioned that they were getting arctic char from a source south of Johnson Point. Wildlife observed included caribou, musk-oxen, foxes and polar bear. No whales were sighted and only one polar bear was seen (in September). Musk-oxen and caribou were seen in the summer and fall visits. He said that the Prince of Whales Strait had a lot of ice but no snow on the ground. He also said that this area was not used for trapping and he wasn't aware of any archaeological or cultural sites in the area. In closing, he stated that Johnson Point camp site is very messy with barrels all over the place and generally looked very dirty.

Participant #7

Participant #7 is an elder who has lived most of his life on Banks Island and who knows the history of the people and activities that went on from the 1930's to the present. In the early 1970's, he traveled to Johnson Point with Mr. Doug Urqheart from the Canadian Wildlife Service (CWS) for land use inspection purposes. The camp was in full operation then and water was taken from the river for camp usage. Their meals were of the camp food type with no traditional foods being eaten. According to Participant #7, the area at Johnson Point wasn't used for trapping of white foxes and he also said that he did hear of some sites of archaeological and cultural interest in the Johnson Point area. The weather at Johnson Point was clear during the day and foggy in the evenings (Sept.)

Participant #8

Participant #8 has spent many years on the land and is a good observer of wildlife and weather conditions. He went to Johnson Point on a two day period trip in the month of April. While there, they melted snow for drinking purposes and brought there own food. There were two other persons in his group. Wildlife observed while at Johnson Point included wolves, polar bears and musk-oxen. The weather in the two day period was clear and cold. He is also of the opinion that there was no trapping of white foxes in the Johnson Point area and had no knowledge of any archaeological or cultural sites.

Participant #9

Participant #9 was in a group of 7 persons who spent a week at Johnson Point in the month of August for a hunting trip. The source of drinking water was from a lake near Johnson Point. They brought their own food but also harvested geese, caribou and arctic char for personal consumption. Wildlife observed were musk-oxen, caribou, geese, shore birds and foxes.

Participant #10

Participant #10 along with two other individuals went to Johnson Point as Canadian Rangers on a ski-doo sovereignty trip in late April. They spent 2 days at Johnson Point. Snow was used as a source of drinking water and they brought their own food. Wildlife seen at Johnson Point area included musk-oxen, caribou and rabbits. The weather was calm and clear, approximately -15 degrees Celcius. According to Participant #10, the camp building were very "stinky" and the whole area unkempt.

Participant #11

Participant #11 is another person who is very knowledgeable of the history and wildlife of Banks Island. Participant #11 and 2 other persons spent a week at Johnson Point hunting/sightseeing trip in the month of April. They used snow and ice as a water source and brought their own food. Wildlife seen at Johnson Point included wolves, caribou, foxes and polar bears.

Participant #12

Participant #12 was a federal land use inspector in the 1970's and has done field inspections at Johnson Point and surrounding areas on several occasions. Inspections were done during the winter and summer months of operations. The camp at Johnson Point was in full operation when he stayed there for inspection visits. His length of stay was from 2 days to 1 week on these trips. The weather during the winter inspections was generally very cold and a day of clear and overcast conditions. Summer trips were done by helicopter and were usually clear skies and relatively warm. The Prince of Wales Strait had scattered ice though out the length and breadth. Water usage for the camp operations was trucked into the camp site from a lake just west of Johnson Point. Camp food was the southern variety and no traditional foods were harvested for consumption. On one of their summer inspection trips, he managed to kill 4 caribou about 4 km west of Johnson Point and brought it them back to Sachs Harbour via fixed wing aircraft for local distribution. Wildlife observed included musk-oxen, caribou, rabbits and foxes in the winter and summer months. He did not see any polar bears or whales on his trips to Johnson Point. He also wasn't aware of any archaeological or cultural sites in the Johnson Point area. The terms of operation for the companies that used Johnson Point as a storage/campsite restricting them within the area as outlined on map # 4 in the INAC report of April 2006. Fuel handling and storage was done in a manner satisfactory to the federal Gov't according to their land use regulations; the same can be said of their waste management practices.

Summary of Results

Prior to the oil exploration in the area conducted by several companies, Johnson Point was not used by the people of Sachs Harbour. Hunting and trapping was restricted to the southwest area of Banks Island. Most of the interviews stated that the Johnson Point area is free of snow during the months of July and August but noted that some dirty ice may also be present in the Strait. It appears that musk-oxen are seen throughout the year in the area. The average length of stay at Johnson Point for each person would be 2 days.

Based on the survey responses, traditional foods are not gathered or consumed as store-bought foods are generally brought for the trip.

Closing Comments

In closing, the Sachs Harbour Hunters and Trappers Committee also recommend that the following Sachs Harbour community members also be interviewed at a later date:

- Frank Kudlak,
- Martha Kudlak,
- Lena Wolki,
- Sarah Kuptana, and
- Edith Haogak

Further in-depth interviews with elders should be done to verify some of the stories regarding archaeological or cultural sites.

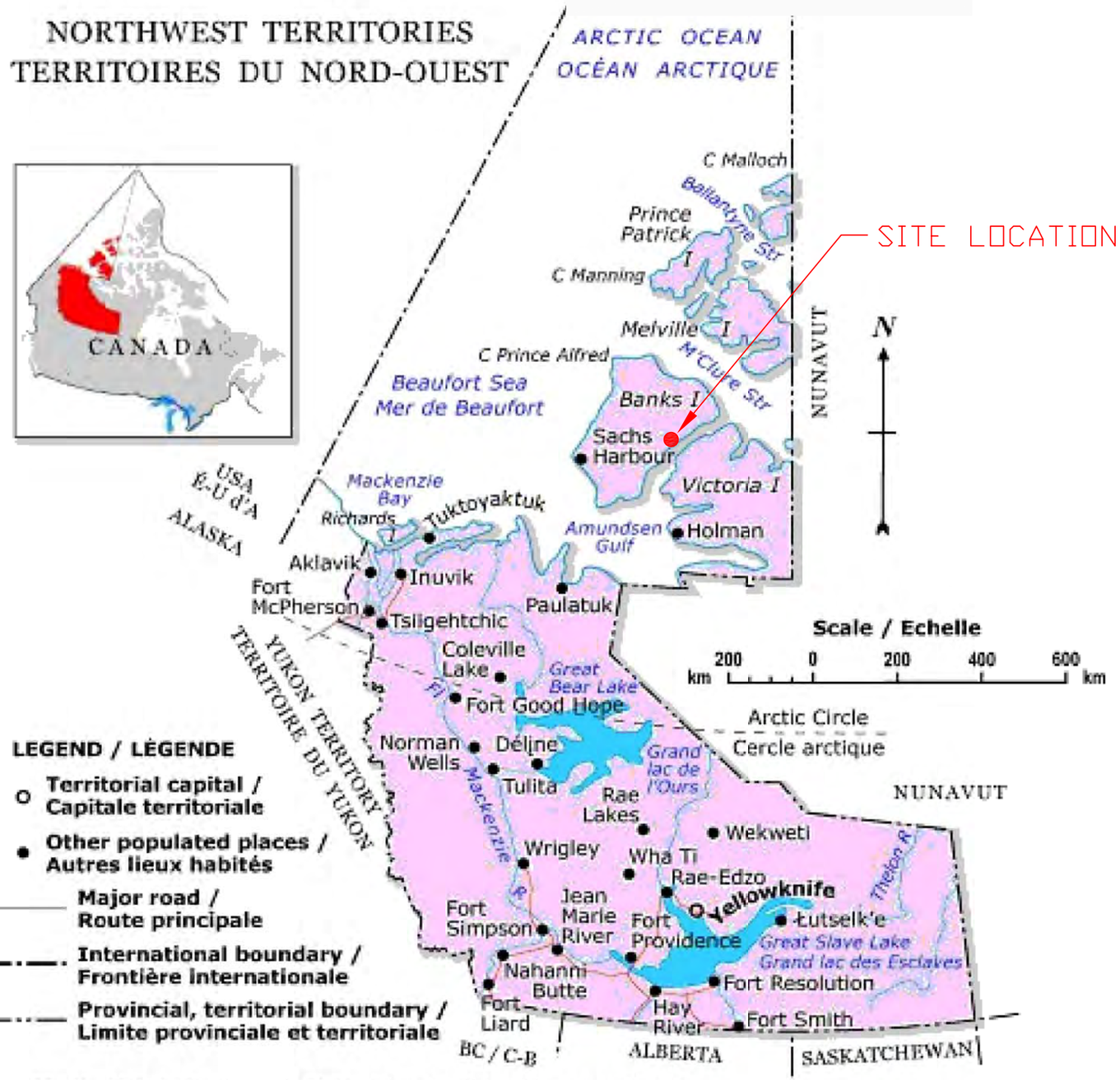
Additional References

Sachs Harbour Community Conservation Plan. Prepared by the Community of Sachs Harbour, Wildlife Management Advisory Council (NWT), and the Joint Secretariat. July 2000.

Alavik Oral History Project on Banks Island: Final Report. Presented to: Parks Canada – Western District. Prepared by: Murielle Nagy for the Inuvialuit Social Development Program. Funding and logistical support provided by: Parks Canada, Language Enhancement Program (GNWT), Polar Continental Shelf Program, and Inuvik Research Center. 1999.

Appendices

Appendix 1 – Map of Banks Island Region



IEG Environmental

Johnson Point Site Location

December 2005

Figure 1

Appendix 2 – Survey Questionnaire

Johnson Point and Surrounding Area
Survey and Traditional Knowledge Study
Potential Survey Format and Questions

Indian and Northern Affairs Canada is currently seeking information in regards to Johnson Point and the surrounding area. We would appreciate you completing the following questions:

Name (optional): _____

Age Group (please indicate which age group you fall into):

15 – 25 _____
26 – 35 _____
36 – 49 _____
50 – 70 _____
71 – above _____

1. **How many days did you camp at or near Johnson Point?**

2. **How many people were in your group? If possible can you identify those individuals, as we would like to interview them as well?**

3. **What was your source of drinking water?**

4. **Did you eat food from the site or surrounding area? If so, what plants or animals were gathered and eaten?**

5. **How many trips to the area do you take each year? How many days per year do you spend at the site?**

6. **What was the purpose of the trip?**

7. **What animals did you see while you were at the site?**

8. **When did you see the following animals at the site? Please indicate Spring, Summer, Fall, Winter or Never in the space provided below.**

    a. **Whales** _____
    b. **Polar Bears** _____
    c. **Musk ox** _____
    d. **Caribou** _____

9. **Is the area used for trapping? If so, what species are found there?**

10. **What was the weather like in the area? (Include the frequency of storms, tide changes at Johnson Point, and ice-free periods for Prince of Wales Strait.)**

11. **What time of the year is the area free of snow? (Please provide a range of months over the year when the area is free of snow)**

12. **Are you aware of any archaeological sites or other sites of cultural importance in the area surrounding Johnson Point?**

13. **Did you work at Johnson Point during its operation? If so, please answer the following questions:**

    a. **What was your job title?**

    b. **Can you provide more information about equipment and other facilities at Johnson Point (particularly in relation to landfill locations, fuel handling practices, waste management, etc.)?**

Is there any other information you can provide in regards to Johnson Point and the surrounding area?

Appendix 3
Johnson Point Site Remediation
‘Class A’ Land Use Permit Application

Indian and Northern Affairs Canada | Affaires indiennes et du Nord Canada

INAC Contaminated Sites Program

Johnson Point Site Remediation

Application for Class 'A' Land Use Permit

Submitted to:
INAC North Mackenzie District Office

Submitted by:
Contaminants and Remediation Directorate
Indian and Northern Affairs Canada

February 15, 2008.

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Appendix 1

Johnson Point Site Remediation - ‘Class A’ Land Use Permit Application

Appendix 2

Johnson Point Site Remediation - Application for Environmental Impact Screening

Appendix 3

Johnson Point Site Remediation Northwest Territories Water Board
Water Licence Application

1. Applicant's name and address:

Emma Pike
Indian and Northern Affairs Canada
Contaminants and Remediation Directorate
PO Box 1500
4920 52nd Ave
X1A 2R3

Fax (867) 669-2721
Phone (867) 669-2756

2. Head office address:

Same as above

a) Field Supervisor:

The field supervisor has yet to be determined. The contract for this remediation project has not yet been awarded. Once the contract for the work has been awarded, contact information will be provided to the Inspector.

3. Other personnel

Please refer to question 2. It will be up to the successful contractor to determine the size of camp and how long the camp will be operational at site.

The camp supporting these operations will have a capacity of 30-40 persons starting in July 2008 and operating until winterization in September / early October of each year. Operations in 2009 and 2010 are anticipated to begin in late June / early July and operate for the summer field season. The camp, equipment, and all hazardous and non-hazardous debris from the Site will likely be demobilized by the fall of 2010. However, delays resulting from weather, ice conditions, or resource availability (access to marine barges), have the potential to significantly impact the ability for this project to be completed on schedule and an additional field season with demobilization in 2011 may be required.

This project will exceed the 200 person day land use permit trigger.

4. Qualifications

The proposed activities at Johnson Point are eligible for a land use permit as per Section 21.c of the Territorial Land Use Regulations.

Activities proposed by the Contaminants and Remediation Directorate (CARD) are intended to remediate the Site to minimize the risk to people and the environment in the future from the hydrocarbon-impacted soils and abandoned infrastructure at the Site.

No mineral claims or associated activities are being developed through these tasks.

5. Summary of Operation

a) Describe purpose, nature, and location of all activities

Johnson Point is an abandoned oil and gas staging area at which there was concern about the integrity of fuel tanks which were storing residual fuel. When exploration activities in the region ceased in the late 1970's / early 1980's, the Site was abandoned and responsibility for the Site reverted back to INAC.

Originally developed in the late 1960's as a support and staging area for oil and gas exploration throughout Banks Island, the Site is now abandoned. An assortment of camp trailers and other equipment associated with Nodwell or cat-camps were left behind. In addition to the camp material, there are 25 large bulk fuel tanks in or adjacent to the tank farm, and many other smaller fuel storage containers and construction supplies scattered around the site. The deteriorating condition of these tanks, many of which still contained large quantities of residual fuel, presented a significant risk to the environment.

In 2002, prompted by concerns expressed by the Sachs Harbour Hunters and Trappers Committee, Parks Canada visited the Site during a routine tour of the region. The memo from this visit, in combination with community consultation with the community of Sachs Harbour, the Inuvialuit Game Counsel (IGC), and the Inuvialuit Regional Corporation (IRC), led to CARD conducting extensive consultation and assessment activities at the Site resulting in the completion of the Johnson Point Remedial Action Plan (RAP). The goal of the Johnson Point RAP is to address community concerns, reduce environmental liability, and minimized the risk to human health and the environment from hydrocarbon-impact soils and abandoned infrastructure at this Site. This application and project description summarizes these consultation and assessment activities and outlines the proposed activities contained in the Johnson Point RAP.

Johnson Point falls within the Northern Arctic Eco-zone, which extends over most of the non-mountainous areas of the Arctic islands from Banks Island to Baffin Island. The site consists of low rolling plains covered with highly weathered soil and rock debris left by glaciers. Surface soils are granular, with underlying frost-shattered deposits of limestone, and sandstone several thousand metres deep (IEG 2005).

Initial Environmental Site Assessment and Inventory

To prepare for the waste fuel disposal and to determine the scope of work required at the Site, CARD conducted an initial Environmental Site Assessment (ESA) and Inventory in 2005 which included:

- preliminary soil and water sampling,
- inventory of structures, equipment and debris at the site,
- inventory of tanks and associated contents including sample collection, and

- a geophysical survey to locate and determine the extent of potential buried debris areas or existing landfills (seen on previous page).

The 2005 ESA and inventory program identified the following concerns at the Site:

- Hydrocarbon-impacted soils adjacent to the Tank Farm
- Hazardous Materials
    - Lead-amended painted materials, old batteries and electrical equipment, drums of glycol, and asbestos in some building components
    - 69 fuel storage containers
        - estimated volume of approximately 90,000-L of petroleum products at time of inventory
        - Waste fuel samples were collected and analysed by EnviroTest Labs and the Alberta Research Council and was determined to be unusable but suitable for incineration
- Hydrocarbon-impacted soils adjacent to the Tank Farm
- 4 geophysical anomalies were identified at the Site indicating the possible presence of buried metal debris

Incineration and Initial Site Clean-up

During the 2006 field season, a crew of 10 to 15 persons were mobilized to the Site for a period of approximately two months (seen on the right, 2006 camp facilities can be seen in the foreground) under the authorization of Land Use Permit # N2006J0024 and Water Licence # N7L1-1814.

This field program had four components:

- Incineration of waste fuels; total volume of 108,150-L (seen at right)
- Tank and fuel line cleaning and treatment of wastewater produced
- Cleaning and crushing drums and the consolidation of small fuel containers and miscellaneous debris found throughout the Site
- Provision and operation of a camp to support these activities and the concurrent activities of the 2006 – Detailed ESA and Inventory.
- Miscellaneous clean-up (power line and assorted site debris collection)

Additional details of this program can be found in the

2006 Johnson Point Site Activities Report prepared by Arctic Environmental Services Ltd provided in the electronic supporting materials of this application.

Decommissioned tanks at the Site can be seen in the photo at the right. The residual fuel was incinerated and the accumulated water on the bottom of the tanks was consolidated. The tanks were steam-cleaned to remove any residual hydrocarbon product and both the accumulated tank water and tank washing wastewater was treated with the oily water separator and granular activated carbon (GAC) filters. This treatment allowed the wastewater to meet the criteria in the *Johnson Point - NWT Water Licence # N7L1-1814* and the treated wastewater was discharge to land. The release point for wastewater generated by the above activities was a minimum of 30 metres from natural drainage courses and 100 metres from fish bearing waters at a location which did not interfere with site operations as determined by the Designated Representative and the Inspector.

Detailed Environmental Site Assessment and Inventory

The second component of the field work at Johnson Point in 2006 was the completion of a Phase III – Detailed Environmental Site Assessment (ESA) of the site by EBA Engineering Consultants Ltd. Over a 150 boreholes were completed in selected areas based on proximity to hydrocarbon sources and/or suspected existing landfill locations. In addition, a total of 26 groundwater monitoring wells were installed. EBA also completed a detailed materials inventory at the site including materials sampling to determine the approximate volumes of hazardous and non-hazardous waste at the site. Results from the 2006 environmental site assessment indicated that lead-amended paint (including some leachable lead in excess of 5 mg/L) is present on some site buildings and tanks, and asbestos was also present in at least one trailer at the site.

Following the completion of the detailed ESA, CARD contracted Jacques Whitford Ltd to conduct a Human Health and Ecological Risk Assessment (HHERA) at Johnson Point to evaluate whether known concentrations of chemicals found in soil, water, and vegetation would present a significant risk to human or ecological health based on future use of the area and to establish site-specific criteria protective of both humans and the environment. An electronic copy of this report is included with this land use permit application.

Johnson Point Remedial Action Plan

The Johnson Point Remedial Action Plan (RAP) was developed from the information gathered during these assessment programs along with consultation with the local communities of Sachs Harbour and Ulukhaktok and the Inuvialuit Regional Corporation (IRC). In addition to these assessment activities, CARD facilitated the completion of the *Traditional Knowledge and Community Use Survey* found in *EISC Screening Application – Appendix 3*. A Remedial Options Evaluation Meeting, held on April 17, 2007 in Sachs Harbour, was attended by delegates of the Sachs Harbour Hunters and Trappers Committee, Community Corporation, and Elders Committee. The various technically feasible options for each site component were discussed. Options were selected based on traditional knowledge, anticipated future community use of the area, and the

technical benefits and weaknesses of each approach (please refer to the attached minutes in *Johnson Point RAP - Appendix C – Community Meeting Minutes* for additional details).

Work to be completed in 2008 through 2010 will involve the complete remediation of the site to minimize the risks to human health and the environment from hydrocarbon-impacted soil and water and from the existing infrastructure. The remediation contract will be administered by Public Works and Government Services Canada (PWGSC) on behalf of INAC. The contract was tendered using evaluation criteria developed by CARD and PWGSC with consultation with IRC to ensure Inuvialuit involvement and benefits. This contract has not yet been awarded. The Crown will be represented on Site by an independent engineer, here-after to be referred to as the **Designated Representative**. A tentative schedule of the proposed remediation activities at Johnson Point can be found in ***Table 2***

Remediation Activities

The main components of this work are as below:

1. Site Infrastructure Upgrades
2. Treatment of Hydrocarbon-Impacted Soil and Water
3. Disposal of Hazardous & Non-hazardous Wastes to Off-Site Licensed Disposal Facilities
4. Placement of Additional Capping Materials on Existing Landfills

Site Infrastructure Upgrades

To complete these tasks, the successful contractor will be required to mobilize the required equipment and supplies to the Site by marine barge. Minor development at the temporary barge landing area may be required to facilitate the safe and efficient transfer of materials and equipment. Infrastructure up-grades of the airstrip and roads will also be required. Currently the airstrip is washed out in two separate locations limiting the useful length to approximately 900 m. These washouts will be repaired and maintained annually during the remediation activities to improve access during poor weather and to facilitate use of larger aircraft as required. In addition, existing culverts along the Site roads are in poor condition and will require replacement when Site roads are up-graded for the use of heavy trucks and equipment at the Site.

Following completion of the remediation tasks listed above, the barge landing area and all road culverts will be removed. The airstrip, currently listed as abandoned, will be left in an abandoned condition once the remediation has been completed.

On-site Remediation Activities

Once the supporting camp has been set-up and the infrastructure upgrades have been completed the main remediation tasks will commence. Due to logistical constraints and the short field season on Banks Island, activities during 2008 will likely be limited to the following tasks:

- barge mobilization of camp, equipment, and supplies to Site,
- infrastructure repairs to the airstrip and roads,
- site surveys,
- further soil and water sampling,
- some soil excavation and groundwater treatment, and
- consolidation of waste materials and potentially off-site transport of some non-hazardous materials on the mobilization back-haul

These tasks will be scheduled to optimize the time spend at Site but are dependent on weather, ice conditions, and Barge availability. At the end of the work season, the camp and equipment will be winterized and the staff will be demobilized by air.

Treatment of Hydrocarbon-impacted Soil & Water

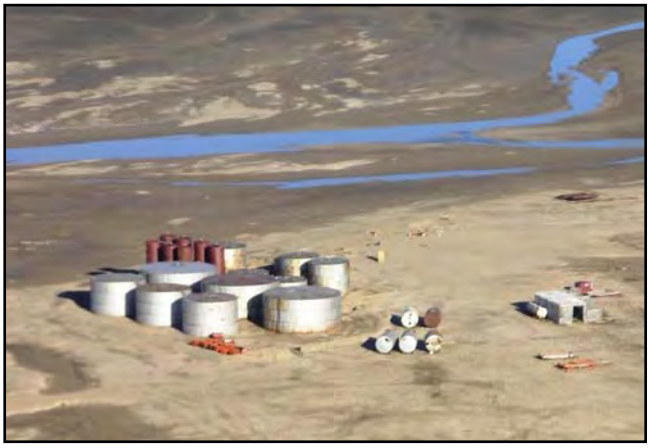
The first component in the remediation of this Site is treatment of hydrocarbon-impacted soil and groundwater. Hydrocarbon-impacted soils at Johnson Point have been identified in two separate areas:

1. **The Tank Farm Area**
2. **The Apron Area**

The location of each of these areas is shown in **Figure 4** found in *Appendix 2* of this application.

In recognition of the site-specific risks associated with each hydrocarbon-impacted area, CARD has developed specific criteria for each area to ensure the environment is protected. Soil treatment in the Tank Farm Area will use the site-specific criteria developed by Jacques Whitford Ltd in the HHERA (also know as site specific target level or SSTL) for this Site were calculated to be 4750 mg/kg of Total Petroleum Hydrocarbon in soil. Approximately 300 cubic metres of hydrocarbon-impacted soil exceeding the SSTLs is present in this area. As the Apron Area is located in close proximity to three sensitive aquatic habitats including the un-named river, the Apron Pond, and the Prince of Wales Strait, CARD has selected the CCME criteria for the protection of groundwater for aquatic life (F1 – 230 mg/kg, F2 – 150 mg/kg) for this area. These criteria are very conservative due to the inclusion of a 10X safety factor built into the CCME criteria. It will be applied throughout the Apron Area of the Site to protect surrounding aquatic environments. Approximately 18,000 cubic metres of hydrocarbon-impact soil will require excavation in this area.

Soil at this Site will be excavated and transported to a Hydrocarbon Treatment and Disposal Area. This treatment area will use a hydrocarbon resistant liner and water collected in the treatment area will be treated if required prior being released. This will likely be located within Potential Borrow Area 2 located near the former Tank Farm as shown on **Figure 3** found in *Appendix 2* of this application. Hydrocarbon-impacted soil will be treated by alluing which is a process of soil aeration that accelerates hydrocarbon volatilization and aeration through the use of a special excavator bucket (pictured above).



The alluing process has been proven effective in northern environments and was used by CARD through our remediation contractor, E. Grubens Transport, during the remediation of hydrocarbon-impacted soils at Atkinson Point – BAR-

D during the summer of 2007 (shown on previous page). Alluing can often allow soils to reach the selected criteria significantly faster than other treatment methods which makes it especially useful on remote northern sites with very short field seasons available for treatment. Upon completion of soil treatment at the Site, the Hydrocarbon Treatment and Disposal Area will be decommissioned, any water treated, and materials re-contoured by grading to facilitate natural drainage and to limit erosion.

Tank Farm Area Hydrocarbon-Impacted Soil

The Tank Farm area (pictured on previous page) is located approximately 1 km inland from the Prince of Wales Strait and approximately 300 m southeast of the un-named river that borders the Site to the north. This soil will likely be excavated and transported to the Hydrocarbon Treatment and Disposal Area for alluing and the resulting excavations will be backfilled with soils that are below the SSTL criteria. Little to no impacted groundwater is anticipated in this area.

Apron Area Hydrocarbon-Impacted Soils

The second area of hydrocarbon-impacted soils identified at the Site is the Apron Area (seen at right). Contaminated soil from the Apron Area will be excavated, and transported to the hydrocarbon disposal and treatment area. Hydrocarbon-impacted soils will be treated by alluing and then re-contoured to establish natural drainage. Clean borrow material sourced from one of the identified potential borrow areas will be used to backfill the excavations in the Apron Area.

Treatment of Hydrocarbon-Impacted Water

In addition to hydrocarbon-impacted soil treatment at this site, treatment of hydrocarbon-impacted water generated from the remaining tank washing and excavation dewatering activities will also be required. Hydrocarbon-impacted water generated by tank washing activities will receive preliminary treatment by absorbent pads to remove the majority of hydrocarbons present and will then be recycled for use in future tank and/or equipment cleaning activities to minimize volumes of water required and wastewater generated. It is estimated that approximately 15 cubic metres of hydrocarbon-impacted groundwater will require treatment during these activities.

Hydrocarbon-impacted water from tank / equipment washing and excavation dewatering activities will then receive secondary treatment of suspended solids removal followed by treatment with granular activated carbon (GAC) to remove dissolved-phase hydrocarbons.

Treated effluent will be stored until laboratory testing demonstrates that hydrocarbon-impacted water has met the Water Licence criteria. The treated wastewater will be discharged to the land at a location that is a minimum of 30 metres from natural drainage courses and 100 metres from fish bearing waters. The contractor will select the discharge site at a location that will not interfere with

site operations. The discharge location will be approved by the Designated Representative and the Inspector.

Disposal of Hazardous & Non-hazardous Wastes to Off-Site Licensed Disposal Facilities

The second and third components of the Johnson Point site remediation involve the disposal of hazardous and non-hazardous wastes found at the Site from the various buildings, tanks, and camp units. Assessment activities at Johnson Point in 2005 and 2006 identified the following hazardous materials:

- Lead-amended painted materials on tanks and buildings (including a smaller volume of materials with leachable lead content in excess of 5 mg/L),
- Small volume of asbestos,
- Various equipment batteries and electrical components, and
- Assorted chemicals including containers of glycol and acid.

These materials will be collected, using the proper safety protocols (PPE, etc), containerized during the demolition process, and transported off-site to a licensed disposal facility. All guidelines and legislation on the transportation of hazardous materials will be adhered to during this process.

The planned remediation of Johnson Point also includes the disposal of non-hazardous materials from the demolition activities and general site debris. Non-hazardous site debris includes cleaned and crushed barrels, scrap metal, unpainted wood, plastics, and non-combustible domestic type wastes. Disposal methods for both hazardous and non-hazardous waste are specified in the individual sections of the RAP.

With a very limited volume of suitable borrow material at Johnson Point, the RAP does not involve construction of any new landfills. Implementation of the Johnson Point RAP will involve the transportation of:

- Non-hazardous materials to off-site licensed disposal facilities in Inuvik or southern Canada (including all tanks, buildings, and surface debris found throughout the Site). Unpainted wood will be incinerated on site.
- Hazardous materials (mainly lead-amended painted materials, small amounts of asbestos, acids, batteries, etc) to licensed disposal facilities in southern Canada

The schedule for materials removal will be determined by the successful contractor; however, there is potential for off-site transport of materials in all three years of this project (dependent on weather and marine barge availability).

Placement of Additional Capping Materials on Existing Landfills

The final component of the Johnson Point RAP is the placement of additional cover materials on the existing landfills. Assessment results indicate that the materials in these existing landfills are primarily non-hazardous in nature and not generating any contaminated leachate. Excavation and sorting of the debris was discussed during the Remedial Options Evaluation meeting (*Johnson Point RAP - Appendix C*); however, placement of additional capping materials was selected as the

preferred approach as most of landfills are currently performing well (limited erosion and minimal exposed debris). In addition, excavation of landfills can result in localized permafrost degradation and additional problems (rutting, erosion, ponding, etc). Following a discussion of the risks and benefits of two options, the community representatives were supportive of placing additional capping materials and leaving the existing landfills in place. These capping activities will involve the placement of increased sand cover on the landfills with rip-rap materials placed as required where erosion is considered a risk.

As no new landfills or significant development is required for the implementation of the Johnson Point RAP, monitoring at this site will not be required. However, following completion of the remediation tasks, the site will be inspected to ensure the stability of any earthworks completed.

Placement of Additional Capping Materials on Existing Landfills

The final component of the Johnson Point RAP is the placement of the additional cover materials on the existing landfills. Assessment results indicate that the materials in these existing landfills are primarily non-hazardous in nature and not generating any contaminated leachate. Excavation and sorting of the debris was discussed during the Remedial Options Evaluation meeting (Johnson Point RAP - Appendix C); however, placement of additional capping materials was selected as the preferred approach as most of landfills are currently performing well (limited erosion and minimal exposed debris). In addition, excavation of landfills can result in localized permafrost degradation and additional problems (rutting, erosion, ponding, etc). Following a discussion of the risks and benefits of two options, the community representatives were supportive of placing additional capping materials and leaving the existing landfills in place. These capping activities will involve the placement of increased sand cover on the landfills with rip-rap materials where erosion is considered a risk.

As no new landfills or significant development is required for the implementation of the Johnson Point RAP, monitoring at this site will not be required. However, following completion of the remediation tasks, the site will be inspected to ensure the stability of any earthworks completed at the Site.

5(b) Please indicate if a camp is to be set up

Yes, a camp will be necessary to support the remediation activities. It will be up to the successful contractor to determine the size of camp and how long the camp will be operational at site. It is anticipated that the camp supporting these operations will have a capacity of 30-40 persons starting in July 2008 with winterization in September / October of each operational year. Additional details on the proposed schedule of activities can be found in **Section 14 – Period of Operation** in this permit application.

The camp location will be selected by the successful contractor and approved by the Designated Representative. It will be located within the existing footprint of the Site, using existing access roads. Details on camp location and operation will be forwarded to the Inspector as this information becomes available.

6. Summary of Potential Environmental Resource Impacts

The project in itself is mitigation to existing environmental impacts and hydrocarbon contamination. The most significant potential environmental effect, therefore, would be if this project did not go

ahead or if there were delays in its completion. The proposed remediation activities will see the following positive environmental impacts on the area:

- Treatment of hydrocarbon-impacted soils from throughout the Site with clean fill being used to backfill excavated areas in the Apron Area due to the proximity to sensitive environments.
- Removal of all hazardous and non-hazardous wastes from the Site to reduce the potential risk of exposure to these materials / chemicals to wildlife and visitors in addition to making the Site more aesthetically appealing.
- Placement of additional capping material will ensure the long-term stability of currently stable existing landfills found at the site.

The proposed timing, duration and location of the activities on the site should address any other potential environmental impacts.

Periods of heavy rain could limit assess to the site to smaller aircraft and poor visibility or limited aircraft availability could delay re-supply flights to the site operations. The contractor will repair washed out sections of the airstrip (such as the washout pictured to the right) to increase the useable length (beneficial for accessing the Site with larger aircraft and in poor weather). Maintenance will be performed on an as-required basis throughout the remediation activities. Once the site remediation activities have been completed, the airstrip will be left in an abandoned condition.

This area has been used previously by industry. However, Site infrastructure (the airstrip and roads) needs to be upgraded and a significant volume of borrow materials will be required. Existing access routes throughout the Site will be utilized where possible but some potential borrow sources will require additional temporary access routes to be established to minimize ground disturbance and vegetation removal. Once the remediation activities are completed, the Site will be inspected to ensure the stability of any earthworks conducted.

Equipment operation in or adjacent to aquatic environments will be minimized. Required operations in or adjacent to these sensitive habitats (i.e. – any potential sediment excavation) will be scheduled to reduce the potential impact on seasonal receptors such as Arctic Char within the un-named river (to avoid fall spawning migrations and periods of heavy rainfall). Appropriate sediment/erosion control measures such as silt fencing will be used as required. The Department of Fisheries and Oceans (DFO) will be consulted, and completion of these tasks will be supervised by the Designated Representative.

The contractor supplying and operating the camp will establish camp rules covering items such as property damage, smoking, use of alcoholic beverages, drugs, firearms, security, nuisance, and any other matters to ensure the camp is operated in an orderly manner. Fishing, hunting, or harassment of wildlife will be prohibited. The contract will be managed through PWGSC and Designated Representative will ensure these measures are adhered to and that there is compliance with all regulatory approvals and legislation.

The camp for the proposed activities will have a perimeter defence system available for use if bears are observed around the camp to address wildlife / safety concerns. This will be dismantled at the conclusion of the work. One or two wildlife monitors will also be at the Site at all times to ensure

the Health and Safety of site staff and to deter wildlife from the Site as necessary while also ensuring that site activities minimize impacts to wildlife.

Incinerators used in this operation for solid waste disposal are required to be maintained and operated in accordance with their manufacturer's specifications and therefore will not impact air quality. All waste generated on site will be incinerated daily and managed properly to reduce the potential for wildlife attraction.

Confirmatory water and soil samples will be collected throughout the soil and groundwater treatment activities to ensure the selected remediation target criteria have be achieved. No additional negative impacts are anticipated from these sampling activities.

CARD has been in consultation with the Inuvialuit Regional Corporation (IRC), the Inuvialuit Game Council (IGC), and the Sachs Harbour Hunters and Trappers Committee (HTC) regarding the proposed activities. CARD has been working in co-ordination with IRC to ensure the evaluation criteria for contracts to complete the proposed work will provide benefits to the Inuvialuit.

7. Proposed Restoration Plans

The intent of the proposed activities is the complete remediation of the Site and minimization of risk to human health and the environment from hydrocarbon-impacted soils to human health and the environment. The Remedial Action Plan included with this application provides details on the issues and plans to meet the remediation objectives.

To accomplish these tasks, the proposed activities between 2008 and 2010 will require a temporary camp consisting of hard-sided, ATCO-type units. Following the completion of the remediation tasks, all culverts installed throughout the Site will be removed and the airstrip will be left in an abandoned condition. No new landfills will be constructed with the implementation of this RAP. Following the completion of remediation activities at the Site, an inspection of the Site will be scheduled to determine the stability of the existing landfills and the other earthworks conducted.

8. Other Rights, Licences, or Permits related to this Application

In addition to the INAC Land Use Permit, CARD has also applied for the following:

- A water licence from the Northwest Territories Water Board. Proposed activities will not exceed the 100 m3 required to trigger a water licence but the disposal of treated waste water from camp operations, tank cleaning, and excavation dewatering activities throughout the site may require a water licence appended as **Appendix 3**.
- An environmental impact screening by the Environmental Impact Screening Committee (EISC). This project requires a land use permit and a water licence so a screening by EISC is required to assess the potential for significant negative impacts from these activities, appended as **Appendix 2**

9. Proposed Disposal Methods

9(a) Garbage

The site will be kept free of accumulation of waste materials and debris. Incineration of camp wastes and unpainted wood material on site will be conducted in a manner that is consistent with

industry standards and approved by the Designated Representative. Waste or volatile materials such as mineral spirits and used oil will be disposed of off-site.

9(b) Sewage (Sanitary and Grey Water)

The proposed activities will generate two separate wastewater streams that will receive separate, specific treatment methods. Grey-water will be generated by the camp operation. Hydrocarbon-impacted water will be associated with excavation dewatering and the remaining tank-washing activities. Please refer to Section 5(a) for details on hydrocarbon-impacted water treatment in association with hydrocarbon-impacted soil treatment.

The successful contractor will supply a packaged wastewater treatment system for the treatment of grey-water generated by camp operation. This treatment plant will have capacity to treat total suspended solids and microbial components. Waterless toilets will be used to segregate the 'black-water' wastes from camp operation. These materials will be collected and incinerated in a solid waste incinerator operated in accordance with manufacturer's specifications.

Once laboratory testing demonstrates that grey-water generated by the camp has met the Water Licence criteria, the treated wastewater will be discharged to the land. The treated wastewater will be discharged at a location that is a minimum of 30 metres from natural drainage courses and 100 metres from fish bearing waters. The contractor will select the discharge site at a location that will not interfere with site operations. The discharge location will be approved by the Designated Representative and the Inspector.

9(c) Brush and Trees

The Site has no brush or tree cover; therefore, no brush or trees will be disturbed by the proposed activities. Where possible, existing access routes throughout the site will be upgraded and utilized during the proposed activities with short spur routes develop to reach any previously undeveloped areas of the Site (such as some of the potential borrow sources) so as to avoid damage to the sensitive, ground-level vegetation.

9(d) Overburden (Organic soils, waste material, etc.)

Completion of the remediation activities at the Site will require a significant quantity of borrow material to backfill hydrocarbon-impacted soil excavations and to be placed as additional capping material on the existing landfills.

Previous assessment activities identified several potential borrow areas in the immediate vicinity of Site which will provide suitable fill material. Selection of the potential borrow area will be at the discretion of the contractor and will be approved by the Designated Representative. The area within the potential borrow sources selected to provide fill material, along with the depth to which the material is collected, will be balanced to minimize the potential for permafrost degradation in the local area.

While the Site borrow sources will be suitable to provision of clean fill material for backfilling excavations, no suitable Type 1 erosion resistant material is present at the Site. The contractor will be required to transport approximately 2000 cubic metres of this material to the Site from a source approved by the Designated Representative to be placed on the existing landfills as per the design specifications for the Johnson Point RAP.

10. Equipment

The following equipment will be required to complete the proposed tasks at Johnson Point and will be supplied by the successful contractor:

- Solid Waste Incinerator
- Water Treatment Equipment
- Several pick-up trucks
- ATVs
  - Several ATVs will be required to complete the proposed activities at Johnson Point.
- Earthworks / Excavation Equipment
  - The excavation of hydrocarbon-impacted soils at the Site will require 2-3 large, tracked excavators (at least one of which will be equipped with an alluing bucket) working with 2-3 loaders
  - Several transport trucks will be required to transport hydrocarbon impacted soils, borrow materials, and waste materials throughout the site.
  - Placement of capping materials on existing landfills and backfilling excavations will require 1-2 packers to ensure adequate compaction in these areas
- Specialized equipment will be required for the tank demolition activities
- Other equipment required for barge loading / off-loading will be required but would only be on site during that time

Once the contract has been awarded, additional details on equipment to be used at Johnson Point during the remediation activities will be available to the Inspector.

11. Fuels

The following estimated quantities of bulk fuels listed in ***Table 1*** below will be mobilized to site by barge for the proposed activities:

Table 1 – Estimated Fuel Requirements for Remediation Activities at Johnson Point

Product Type	**Estimated Quantity L**
Gasoline	10,000
Diesel	160,000
'Jet B'	10,000

Once the contract has been awarded, additional details regarding fuel requirements (volume required, size of tanks, and type of secondary containment) as determined by the successful contractor will be available to the Inspector. These materials will be mobilized to the site and stored under the supervision of the Designated Representative.

12. Containment Fuel Spill Contingency Plans

The successful contractor for the activities at Johnson Point will be required to submit the following material prior to commencing any on-site activities:

- Copy of Approved Work Schedule
- Site-Specific Health and Safety Plan
- Spill Contingency Plans for operation of equipment on site and for fuel transfers
    - Secondary containment of all fuel tanks
    - Spill kits required at all fuel transfer locations
- Emergency Response Plan
- Fire Safety Plan
- Camp Rules

These plans will be required as submittals under the contract specifications.

As noted in **Section 5a** of this application, Johnson Point is an abandoned staging area formally utilized by oil and gas exploration companies. When the site was abandoned, waste fuel was stored at the Site resulting in significant quantities of hydrocarbon-impacted soil. The waste fuel was incinerated in 2006 and the goal of the proposed remediation activities is to address concerns related to hydrocarbon-impacted soils at the Site along with the abandoned site infrastructure.

Fuel transfer, incineration, and tank cleaning will be supervised by the Designated Representative to ensure compliance with all licence and permit requirements and contingency plans developed for the activities. This will ensure that fuel transfer and storage requirements meet necessary standards and to ensure that the environment is protected from additional spills.

13. Methods of Fuel Transfer

Fuel transfer and storage for the proposed activities at Johnson Point will be conducted by the successful contractor in accordance to the following regulations, under the supervision of the Designated Representative:

- National Fire Code of Canada (1995)
- Transportation of Dangerous Goods Act (1992)
- Transportation of Dangerous Goods Regulations

Once the contract has been awarded, additional details on fuel handling equipment to be used at Johnson Point during completion of the remediation activities will be made available to the Inspector. To mitigate any effects of fuel, proper fuel handling techniques will be used, a spill contingency plan will be in place and spill kits will be placed at all fuel transfer locations.

14. Period of Operation

The project is proposed to begin as early as July 2008 with mobilization of equipment and supplies to the Site via Hay River and Inuvik, NT. A tentative timeline for the proposed activities at Johnson Point is included in ***Table 2*** below.

Table 2 – Proposed Timeline for Remediation Activities at Johnson Point	
Activity Description	
December 2007	Post tender packages on MERX website as a request for proposals (RFP).
May 2008	Award contract of the proposed work on site.
June 2008	Community consultation meeting in Sachs Harbour and Ulukhaktok to

	introduce the contractor to the communities. Annual project update meetings will be scheduled in each of these communities at the end of each field season.
August 2008	Due to logistical constraints and short field season on Banks Island, activities during this year would be limited to: • barge mobilization of camp, equipment, and supplies to Site, • Infrastructure repairs to the airstrip and roads, • Site Surveys, • Preliminary Soil and Water Sampling • Some soil excavation and groundwater treatment. If barge mobilization can occur in late July, more site work would be undertaken to optimise time on site. There may also be an opportunity to consolidate some waste materials and demobilize some non-hazardous materials on the mobilization backhaul.
September 2008	Winterization of camp and all equipment/supplies.
Summer 2009	Bulk of remediation activities expected to be completed this year. These would include: • excavation and treatment of hydrocarbon contaminated soils, • demolition and containerization of all tanks and buildings on site, and • placement of additional cover materials on the existing landfills; no new landfills will be created during this remediation **Note:** This would include the mobilization of additional materials to the site. This could occur in the summer of 2008 or 2009 depending on barge availability and logistics optimization.
Fall 2009	Prepare camp, equipment / supplies, and waste materials for barge demobilization if work is completed early enough in the year. Alternatively, all equipment / materials on site will be winterized for demobilization in 2010 (most likely situation)
Summer 2010	Tasks remaining for this period are dependent on project progress in preceding years. Tentative schedule would see final tasks completed during Summer 2010 followed by barge demobilization during Fall 2010. Delays in barge mobilization or demobilization in any of the project years could require an additional field season with final demobilization in 2011.

Scheduling of individual remediation tasks will be conducted at the discretion of the successful contractor, subject to the approval of the Designated Representative. Activities on site may be conducted concurrently and will be timed to minimize potential erosion impacts on adjacent aquatic environments (both marine and freshwater) and to optimize time spent on site.

15. Period of Permit

The proposed tasks to be conducted at Johnson Point will be initiated in July 2008 and will not be completed until August 2010 or potentially August 2011 if delays due to weather, ice conditions, or resource availability. We therefore request a permit for a period of 2 years. If additional time is required to complete any outstanding tasks, an amendment will be applied for as necessary. This permit will replace the current Land Use Permit # N2006J0024 which authorized the waste fuel incineration and associated activities in 2006.

16. Location of Activities by Map Co-ordinates

Johnson Point is located at the following co-ordinates:

Longitude: 72^{o} 45' 10" **Latitude**: 118^{o} 30' 00"

Please refer to *Environmental Impact Screening Committee Appendix 1 – Figures* appended to this application as ***Appendix 2*** for maps indicating the location and extend of the existing facilities at Johnson Point.

Johnson Point is located on NTS map sheet 088B.

17. Applicant Information

Emma Pike	Original Permit Application Signed by Emma Pike	February 15, 2008.
Applicant Name	**Signature**	**Date**

18. Fees

Please consider this an application for a 'Class A' Land Use Permit for a period of 2 years for miscellaneous activities at Johnson Point. As this is a federal project, no application fees or land use fees are applicable to this project.

Appendices

Appendix 1
Johnson Point Site Remediation
‘Class A’ Land Use Permit Application

Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

APPLICATION FOR LAND USE PERMIT

FOR OFFICE USE ONLY - RÉSERVÉ AU BUREAU					
Application fee	Land use fee	General receipt no.	Date	Class	Permit no.

To be completed by all applicants ☐ New application ☐ Amendment

1. Applicant's name and mailing address (Full name, no initials)	Fax no. / Telephone no.
Emma Pike Indian & Northern Affairs Canada Contaminants & Remediation Directorate P.O. Box 1500, 5103-48th st., Yellowknife, N.T., X1A 2R3	Fax no. (867)669-2721 Telephone no. (867)669-2756
2. Head office address - same as above.	Fax no. Telephone no.

Field supervisor	Radio telephone	E-Mail address	Telephone no.

3. Other personnel (subcontractor, contractors, company staff, etc.)

- please refer to attached project description

TOTAL :

4. Qualifications

Refer to Section 21 of the *Territorial Land Use Regulations*

a(i) ☐ a(ii) ☐ a(iii) ☐ b ☐ c ☒

No(s) exploration permit mineral claims (if applicable)

- none

5. a) Summary of operation (Describe purpose, nature and location of all activities.)

Refer to Section 22(2)(b) of the *Territorial Land Use Regulations* (Use last page of form if necessary.)

- please refer to attached project description

b) Please indicate if a camp is to be set up (Use last page to provide details.)

- yes, a camp will be set up for the summers of 2008, 2009, & 2010
- please refer to the attached project description for details

6. Summary of potential environmental and resource impacts
(Describe the effects of the proposed program on land, water, flora and fauna and related socio-economic areas.)
(Use separate pages if necessary.)

- please refer to the attached project description

Canada

APPLICATION FOR LAND USE PERMIT

7. Proposed restoration plans (Please use last page if required.)

-please refer to the attached project description

8. Other rights, licences or permits related to this permit application (mineral claims, Yukon timber permits, water licences, etc.)

-please refer to the attached project description

Roads ☐ Is this to be a pioneered road? Provide details on back page ☐ Has the route been laid out or ground truthed?

9. Proposed disposal methods -please refer to attached project description

a) Garbage:	b) Sewage (Sanitary & Grey Water):
c) Brush & trees:	d) Overburden (Organic soils, waste material, etc.):

10. Equipment (Includes drills, pumps, etc.) (Please use last page if necessary.)

Type and no.	Size	Proposed use
-please refer to the attached project description for details regarding Sections 10 & 11		

11. Fuels	Number of containers	Capacity of containers
Diesel		
Gasoline		
Aviation Fuel		
Propane		
Other		

12. Containment fuel spill contingency plans (Please attach separate contingency plan if necessary.)

-please refer to attached project description

13. Methods of fuel transfer (To other tanks, vehicles, etc.)

-please refer to attached project description

APPLICATION FOR LAND USE PERMIT

14. Period of operation (Includes time to cover all phases of project work applied for, including restoration.)
- please refer to attached project description for schedule details

15. Period of permit (Up to two years, with maximum of one year extension.) | Start date YYYY / MM / DD | Completion date YYYY / MM / DD

16. Location of activities by map co-ordinates (Attached maps and sketches.) - please refer to attached project description

~~Minimum Latitude~~			~~Minimum Longitude~~		
Degrees 118°	Minutes 30'	Seconds 00"	Degrees 72°	Minutes 45'	Seconds 10"
~~Maximum Latitude~~			~~Maximum Longitude~~		
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

Map sheet no. 088B

17. Applicant (Print full name) Emma Pike | Signature [signature] | Date Feb 15/08.

18. Fees

☒ Class A - ~~$150~~ ☐ Class B - $150 | $ ~~150.00~~

- federal project; therefore, no application or land use fees

Land Use Fees:

Less than or equal to 2 hectares | $50.00 | $ ~~50.00~~

For each additional hectare over 2 hectares or portion of a hectare | X $50.00 = | $ —

Total application and land use fees | $ 0

FOR OFFICE USE ONLY

19. Calculation of area involved (Includes access, staging areas, airstrips, campsites, etc.)

Total area (Ha)	Less than or equal to 2 hectares	**TOTAL (For fee calculation)**

20. Application checklist

a) ☐ Application signed and dated
b) ☐ Fees attached
c) ☐ Map included
d) ☐ Address and telephone number
e) ☐ Screening report
f) ☐ Timber permit applied for - Yukon
g) ☐ Fees attached
h) ☐ Lease applied for

Accepted by	Date

Remarks (Please use last page if additional space is required.)