Project Closure Report

PIN-B (Clifton Point)
Distant Early Warning Line Site
Remediation Project

Site Number: WK163
FCSI Site Number: 1050001

Project Completed by:
Aboriginal Affairs and Northern Development Canada

Project Manager:
Lou Spagnuolo, AANDC Headquarters, Gatineau Quebec

August 15, 2014

Table of Contents

1.0 Type & Purpose of the Project Closure Report

This document is a Contaminated Site Remediation Project Closure Report. The purpose of the report is to document the history of the completed remediation phase of the project. The Closure Report also serves to evaluate the overall performance of the project at a high level to help facilitate the sharing of lessons learned and best practices.

This report provides a "snapshot" of the physical condition of the site at the time of demobilization from the site following the completion of remediation activities. The Closure Report also includes the specifications on the required ongoing monitoring and/or maintenance requirements at the site.

This project was completed through the Federal Contaminated Sites Action Plan and the Closure Report conforms to the Federal Contaminated Sites Action Plan reporting requirements.

2.0 Project Description

The following sections provide a description of the PIN-B (Clifton Point) Remediation Project.

2.1 Site Location

PIN-B (Clifton Point) is located on the Amundsen Gulf coast in Nunavut (69° 12'N, 118° 37'W). The nearest communities are Paulatuk, which is 220 km to the northwest and Kugluktuk, which is approximately 220 km to the southeast. PIN-B (Clifton Point) is located approximately mid-way between PIN-1 (Clinton Point) and PIN-2 (Cape Young).

2.1.1 Site Description

PIN-B (Clifton Point) was constructed as an intermediate DEW Line site in 1957 by the Department of National Defense. The station was abandoned as part of the DEW Line radar system in 1963, and responsibility for the site was taken over by the Department of Indian and Northern Affairs Canada.

The PIN-B (Clifton Point) station area was comprised of a five-module building train (the "module train"), a warehouse, a garage, a small house for Inuit staff (the "Inuit House"), a petroleum storage facility with its associated distribution system, and a radar tower. In addition to the station facilities, a cargo beaching area was constructed at the beach area. A second petroleum storage facility was located at the beach, in the vicinity of the cargo beach area. Two airstrips were constructed at the site: the primary airstrip was approximately 1 km long and located south of the beach area, while the second airstrip was much shorter, with a length of only 300 m, and located northwest of the main strip. Gravel roads had linked the airstrip, the water supply lake and the beaching area to the station area. A small construction camp was erected during building of site facilities but

was demolished once site construction was completed. The former camp of an Inuit family is located approximately 1.5 km southeast of the site. It should be noted that the Inuit Camp is the site identified as WK088 in the Integrated Environmental Management System.

Table 1: Summary of Site Description

PIN-B Clifton Point	
Contaminated Sites FCSI Number	1050001
DFRP Number	n/a
Exact Site Name (as listed in IDEA)	PIN-B (Clifton Point)
Alternative Site Name	n/a
Site Address	n/a
Reporting Organization(s)	AANDC Nunavut Regional Office
Legal Description or meters and bounds	n/a
Approximate Site Area	250 hectares
Centre of Site Coordinates (lat/long or UTM)	69° 12'N, 118° 37'W

2.1.2 Environmental Concerns

An environmental assessment of the PIN-B (Clifton Point) Distant Early Warning Line site was initiated in 1985 when the Department of National Defense and Environment Canada visited the site to remove surface contaminants such as Poly Chlorinated Bi-Phenols (PCB) and hydrocarbons and to identify areas of buried materials which could pose environmental risks in the future. Various pieces of PCB-containing equipment were removed from electrical cabinets at the site (172 pieces). Two soil samples collected at the station area (upper site) adjacent to the module train indicated that no PCB residues were present however no other results were reported.

The site was revisited in 1994 by the Environmental Sciences Group of Royal Roads Military College and a limited sampling program was completed. Surface soil and vegetation samples were collected, in addition to wall swabs from the module train and warehouse to investigate possible contamination. Floor tile and piping insulation samples were also taken from the module train in order to investigate possible asbestos content. Background samples were collected from locations that were considered to be unaffected by station activities. This investigation identified soil contamination exceeding Tier I and/or Tier II levels (based on the DND DEW Line Clean-up Criteria) around the module train, garage, sewage outfall, incinerator, warehouse, barrel/vehicle storage areas and sewage outfall. The analysis from the swab samples indicated that there were high levels of PCBs in the paint of the module train, and the floor tiles and insulation had been found to contain asbestos. At that time, only one landfill was identified on site, it was located 500 m west of the beach area and 40 m from the ocean. The majority of the debris in the beach landfill was buried, however some evidence of erosion on the ocean facing side was observed. These investigations did not include an assessment of hydrocarbon contamination.

Finally, a Phase III Environmental Site Assessment was completed by UMA Engineering during the summer of 2007. A total of approximately 570 m^3, including 550

m^3 from dump excavations, of soils with concentrations of metals, PCBs, which exceeded the Tier I levels of the Abandoned Military Site Remediation Protocol, were identified at the site. This soil was to be used as intermediate fill in the non-hazardous landfill. An additional 1,210 m^3, including 880 m^3 from dump excavations, of soils was identified in excess of Tier II levels.

It is also important to note that the Abandoned Military Site Remediation Protocol was under revision during the development of the Remedial Action Plan and specifications, so the Canada Wide Standards (CWS) was used as the criteria for Petroleum Hydrocarbons. However, the protocol was finalized in a timely manner, and it was decided that the specifications and licenses could be amended to incorporate the revised data. Under the CWS evaluation, 1,120 m^3 of Type A (F3-F4) and 6,740 m^3 of Type B (F1-F3) hydrocarbon impacted soils had been identified. However, under the revised Abandoned Military Site Remediation Protocol, 80 m^3 of Type A (F3-F4) and 1,360 m^3 of Type B (F1-F3) hydrocarbon impacted soils were identified. The Type A soil was to be used as intermediate fill in the non-hazardous waste landfill and the Type B was to be treated onsite through land farming.

A total of 194 m^3 of hazardous materials were identified during the Phase III environmental site assessment. Materials coated with PCB paint made up the majority of the hazardous material volume. The remainder of the hazardous material included batteries, asbestos-containing materials, and drum contents. All hazardous materials were to be shipped off site for disposal. Based on the combined results of the surface debris inventory, barrel assessment and demolition inventory, approximately 2,180 m^3 of non-hazardous waste was identified. This material was to be placed in the non-hazardous landfill to be constructed on site.

Ten existing dumps/debris areas were investigated, including six that were previously unidentified in past assessments at the site. The total volume of buried debris within the sites was estimated at approximately 6,600 m^3. Based on the location and condition of the dumps and contaminant migration assessment results, each dump site was assigned as a Class A, B or C dump according to Abandoned Military Site Remediation Protocol. Five dumps were classified as Class C, and were to be covered in place. Two dumps were classified as Class B and required leachate containment systems. Finally, three dumps were classified as Class A and require excavation.

Water samples collected from Drinking Water Lake suggested that some chronic inputs of inorganic elements may have occurred, however, contaminant levels were all low, and no significant impacts were identified.

Table 2: Summary of Environmental Concerns

PIN-B Clifton Point	
Summary of past activities at site	Military: Intermediate DEW Line Site
Sources of Contamination	Soil: contaminated with PCBs, heavy metals and hydrocarbons (see volumes below) Hazardous Waste: 194 m3, largely PCB amended paint Non-Hazardous Waste: 2,180 m3 Dumps: 10 dumps comprising 6,600 m3 of buried debris
Current development plan for site(s)	None
Proposed development plan for future of site(s)	None
Affected media and Contaminants of Concern (COC)	Soil: 570 m3 (Tier I) and 1,210 m3 (Tier II) contaminated with heavy metals and PCB's Soil: 80 m3 (Type A) and 1,360 (Type B) contaminated with hydrocarbons
Areas of Environmental Concern (AEC)	n/a
Degree to which site is impacted by another site (i.e. off-site contamination sources)	n/a
Degree to which an aquatic environment or aquatic receptors are present	None of the surface water present was impacted
Physical Risks	Health & safety issues associated with dilapidated module train, warehouse, garage, Inuit House, POL tanks and a radar tower

2.1.3 NCSCS and FCSAP Scores

The National Classification System for Contaminated Sites scores for the PIN-B (Clifton Point) Intermediate Distant Early Warning Line Station Remediation Project is detailed in the table below:

Table 3: Summary of NCS Scores

PIN-B Clifton Point	
Step 4 of the Ten-step Process – CCME National Classification System Score and Class	74.2 (Class 1) November, 2003

2.1.4 Other Classification Scores

The PIN-B (Clifton Point) Intermediate Distant Early Warning Line Station Remediation Project also completed a Federal Contaminated Sites Action Plan score is outlined in the table below:

Table 4: Other of Other Scores

PIN-B Clifton Point	
Federal Contaminated Sites Action Plan Score	81.5 (Class 1) November, 2003

2.2 Project Background

PIN-B (Clifton Point) was reserved by the Department of National Defense in 1956 and the former Intermediate Distant Early Warning Line site was constructed in 1957 and subsequently closed and abandoned in 1963. In 1965, the site was abandoned and responsibility reverted to AANDC. A summary of the site history is provided below:

1956 → Clifton Point site reserved by the Department of National Defense
1957 → PIN-B Intermediate Distant Early Warning Line site constructed
1963 → PIN-B closed and abandoned and placed under AANDC's care
1985 → Environment Canada conduct limited environmental assessment
1994 → Phase II environmental site assessment by Royal Roads Military College
2001 → Kitikmeot Corporation completed the design and cost estimate.
2003 → SENES completed both the Human Health Screening Level Risk Assessment and the Ecological Risk Evaluation.
2007 → Phase III environmental site assessment conducted by UMA

This work lead to the creation of the PIN-B Remedial Action Plan by UMA in 2008 and subsequently revised in 2009 to incorporate the new hydrocarbon criteria in AANDC's revised Abandoned Military Sites Remediation Protocol. The timeline for the remedial works is summarized below:

2008 → Remedial Action Plan completed, permits applications submitted, contract tendered, Bidders Conference held in Cambridge Bay
2009 → Contract awarded to E. Grubens Transport Limited
2009 → Remedial Action Plan, permits revised and contract amended
2009 → Mobilization to site
2009 → Remediation (year 1 of 2)
2010 → Remediation (year 2 of 2) and demobilization
2011 → Monitoring program commenced

2.3 Project Objectives

The long-term project objectives were:

1. Legal Obligations
    a. complete the project in compliance with all legal obligations
2. Risk Management
    a. reduce liabilities to the crown
3. Remediation
    a. minimize environmental impacts to humans and wildlife at the site
    b. undertake the project in accordance with all Federal and/or Departmental policies
    c. complete the project by 2010
4. Social and Economic Benefits
    a. enhance opportunities for local communities and businesses

All project objectives were met and the project was completed in October of 2010.

3.0 Remediation Activities

The remediation activities carried out during the PIN-B (Clifton Point) Remediation Project are described in the following sections.

3.1 Pre-Site Remediation Activities

The activities associated with Steps 1-7 defined by the Contaminated Sites Management Working Group (CSMWG) in *A Federal Approach to Contaminated Sites* are summarized in the table below:

Table 5: Summary of Assessment & Remediation/Risk Management Planning

Step	Actions	Documents	Dates
Step 1: Identify site	Identified by Government of Northwest Territories list of waste sites pre-Nunavut. Data was formalized into NWT/Nunavut Waste Site Database in 2001.	Government of Northwest Territories Waste Site List NWT/Nunavut Waste Site Database	Pre-1996 (exact date unknown) March 2001
Step 2: Historical review	A historical review was conducted as part of the Phase I/II Environmental Site Assessment (ESA)	Environmental Study of Abandoned DEW Line Sites – One Auxiliary and Eight Intermediate Sites in the Canadian Arctic (ESG)	March 1995
Step 3: Initial testing	A Phase I/II ESA was conducted	Environmental Study of Abandoned DEW Line Sites – One Auxiliary and Eight Intermediate Sites in the Canadian Arctic (ESG)	March 1995
Step 4: CCME & NCSC classification	Site was classified with the NCS and FCSAP systems	PIN-B Clifton Point NCS Score PIN-B Clifton Point FCSAP Score	November 2003 November 2003
Step 5: Detailed testing	A Phase III ESA was conducted	PIN-B DEW Line Site Phase III Environmental Sites Assessment, Materials Audit and Geotechnical Investigation (UMA)	March 2008
Step 6: CCME & NCSC reclassification	Note: the site was not reclassified		
Step 7: Develop R/RM strategy	A Remedial Action Plan, using both CCME and AMSRP were developed with the associated cost estimate.	PIN-B DEW Line Site Remedial Action Plan (UMA) – CCME PIN-B DEW Line Site Remedial Action Plan (UMA) – AMSRP PIN-B Class 'A' Cost Estimate (UMA)	May 2008 November 2009 October 2008

3.2 Site Remediation/Risk Management Objectives

The remediation objectives for the PIN-B Clifton Point Remediation Project were developed in accordance with the Abandoned Military Site Remediation Protocol, March 2009. A summary of the actions planned for the site are outlined in the table below:

Table 6: Remediation Objectives

Component	Objectives/Criteria	Comment/Reference
Heavy Metal and PCB contaminated soil	Abandoned Military Site Remediation Protocol (March, 2009)	570 m^3 Tier I soil to be placed in the non-hazardous landfill 1,210 m^3 of Tier II soil to be transported offsite for disposal*
Petroleum Hydrocarbon contaminated soil	Abandoned Military Site Remediation Protocol (March, 2009)	80 m^3 of Type A (F3-F4) to be placed in the non-hazardous landfill 1,360 m^3 of Type B (F1-F3) treated onsite by land farming
Surface Debris	Abandoned Military Site Remediation Protocol (March, 2009)	Debris to be consolidated and disposed of onsite in the non-hazardous landfill
Hazardous Waste	Abandoned Military Site Remediation Protocol (March, 2009)	194 m3 of hazardous materials to be containerized and transported to a licensed disposal facility.
Dumps	Abandoned Military Site Remediation Protocol (March, 2009)	Three Class A landfills to be excavated due to stability issues or proximity to a sensitive area Two Class B landfills to be excavated due to stability issues or proximity to a sensitive area Five Class C landfills to be covered in place, a third to be excavated due to its proximity to a sensitive area

*Following agreement with DND, all Tier II soil was shipped to PIN-2 for disposal.

3.3 Remediation Construction Activities

AANDC's remediation program at PIN-B took place over two summer seasons, 2009 and 2010. A summary of the timeline and work completed as part the remediation program is presented below.

2009

The PIN-B (Clifton Point) remediation contract was awarded to E. Grubens Transport on the 2nd of March 2009. The mobilization of heavy equipment, material and program supplies started from Tuktoyaktuk on August 23rd. The off-loading of the barge at the PIN-B site started August 26th with the last barge off-loaded August 29th. The set-up of the camp was completed by September 7th.

Site work started September 1st and ended on the 30th. During this period demolition work was completed on the Inuit House and Radar Tower while the hazardous material removal (mainly asbestos containing materials) from the Module Train and Garage was effectively completed except for the removal of impacted paint applications from the respective structures. The petroleum line and runway lights were also demolished during the 2009 field season.

Earthworks during the 2009 field season comprised the construction of the perimeter berm for the Non-Hazardous Waste Landfill and re-grading of areas at the Station West Dump Area, Camp Area and Beach Area.

Four groundwater monitoring wells located in close proximity to the Non-Hazardous Waste Landfill were also installed. At the end of the 2009 field season the equipment, materials and supplies at the PIN-B site were winterized in anticipation of the 2010 field season. The camp was vacated on October 1st.

2010

The 2010 on-site activities commenced on June 9th, with set-up of the camp. Site remediation activities commenced June 14th with the mobilization of personnel and light equipment to site via Twin Otter and Beech aircrafts. The first Kugluktuk work crew and the Crown department representative were flown to site on June 15th. All remaining activities were completed as per the PIN-B Clifton Point Remedial Action Plan. Final closure of the site occurred after the NTCL barge departed on August 18th.

3.3.1 Evaluation and Selection of Remedial Options

The evaluation of the remedial options was based upon guidance provided in the Abandoned Military Site Remediation Protocol (March, 2009). This document provides the following criteria as a basis for evaluating remedial options:

- Restore the site to an environmentally safe condition;
- Prevent the migration of contaminants into the Arctic ecosystem;
- Remove physical hazards for the protection of human health and safety;
- Implement a cost effective remediation solution;
- Ensure safety of workers on-site;
- Prevent further contamination;
- Minimize the impact to environment, fauna; and
- Achieve remedial objectives

The table below provides a summary of the remedial options considered for each component of the project and details the selected option:

Table 6a: Remediation Options Considered and Selected

Component	Remedial Options Considered	Selected Option & Rationale
Metal Contaminated Soils Tier I	1. On-site treatment 2. Disposal in on-site non-hazardous waste landfill	Disposal in on-site non-hazardous waste landfill - Meets objectives, cost
Metal Contaminated Soils Tier II	1. On-site disposal in a Secure Soil Disposal Facility 2. Off-site disposal	Transportation off-site - Meets objectives, small volume, cost comparable
Petroleum Hydrocarbon Contaminated Soils	1. Secure Soil Disposal Facility 2. In-Situ Biological Treatment 3. Ex-Situ Land farming 4. Off-Site Disposal	Type A: disposal in on-site non-hazardous waste landfill - Meets objectives, cost Type B: Land-farming & alluing on-site - Meets objectives, cost
Non-Haz Materials	1. Bury in place 2. Consolidate and dispose of in on-site non-hazardous waste landfill 3. Off-site disposal	Consolidate and dispose of in an on-site non-hazardous waste landfill - Meets objectives, cost
Asbestos	1. Asbestos abatement, disposal in on-site landfill	Disposal in on-site landfill - Meets objectives of AMSRP
Dumps	1. Class A – Excavation/Relocation 2. Class B – Leachate Containment 3. Class C - Regrading	Depending on the dump characteristics - Meets objectives of AMSRP
Petroleum, Oil, Lubricant (POL) Fluids	1. Incinerate on-site 2. Disposal to ground (aqueous)	Incinerate on-site - Meets objectives, cost
Barrels	1. Process as per the AMSRP DEW Line Barrel Protocol	Process as per the DEW Line Barrel Protocol - Meets objectives of AMSRP
Hazardous Material (Batteries, etc)	1. Containerize as per the Transportation of Dangerous Goods (TDG) requirements and ship off-site for disposal	Containerize as per TDG requirements and ship off-site for disposal - Meets objectives of regulation
Compressed Gas Cylinders	1. Vent and dispose of cylinder in on-site non-hazardous waste landfill	Vent and dispose of cylinder in on-site non-hazardous waste landfill - Meets objectives of AMSRP

*Source: PIN-B DEW Line Site Remedial Action Plan (UMA) – AMSRP

3.3.2 Description of Remediation/Risk Management Approach

The remediation/risk management options recommended in the PIN-B (Clifton Point) Intermediate DEW Line Remedial Action Plan were implemented. Although the Remedial Action Plan selected land farming for hydrocarbon contaminated soil (Type B) the Contractor proposed alluing which achieved the same overall objective at a reduced cost. The other notable change to the Remedial Action Plan was the transportation of 1,210 m^3 of soils identified in excess of Tier II levels off site to the PIN-2 site for disposal. This opportunity was, in part, due to the fact that both the PIN-B and PIN-2 remediation contracts were awarded to the same contractor, E. Grubens Transport Ltd

Finally, although the Beach Dump and Beach Dump South A were classified as Class B (leachate containment) the decision was made to excavate them instead due to their proximity to sensitive aquatic areas.

3.3.3 Construction Completion Inspection

Final inspection took place on August 13th, 2010 by the Project Manager of AANDC and Public Works and Government Services Canada with the Department Representative (SENES) and Contractor (E. Grubens Transport Ltd).

3.3.4 Operations and Maintenance (O&M) of Treatment Systems

No Operation and Maintenance was required at PIN-B (Clifton Point).

Table 7: Documents Describing O&M Requirements and Monitoring Progress

Report Title	Date
n/a	n/a

Table 8: Summary of O&M Activities Required

Activity	Frequency	Duration
n/a	n/a	n/a

Table 9: Termination Criteria for O&M

Monitoring Element	Requirement
n/a	n/a

3.4 Reduction of Site Legacy Risks

Site legacy risks at PIN-B (Clifton Point) have been significantly reduced by the completion of remedial works. Details on the Risk Registry for the project as well as ongoing Operations and Maintenance and Long-Term Monitoring requirements can be found in the following sections.

3.4.1 Site Legacy Risks

The site legacy risks at PIN-B (Clifton Point) were addressed through the following actions:

- Removal of all physical hazards (buildings, debris, etc.)
- Removal of all hazardous materials (lead paint, asbestos, etc.)
- Removal of Tier II contaminated soils

Specifics on the legacy risks at PIN-B (Clifton Point) are provided in the table below, further details on the site legacy risks and program activity risks can be found on AANDC's Integrated Environmental Management System database::

Table 10: Summary of Remediation Legacy Risk Levels

Risk Scenario	Risk Level		Comments
	Initial	End	
Contaminated soils and hazmat present on site	MH	Closed	All contaminated soil and hazmat removed from site

* MH - Moderately High

3.4.2 Operation, Maintenance & Short-Term Monitoring Requirements

No operation, maintenance or short-term monitoring is required at the PIN-B (Clifton Point) site.

Table 11: Operation, Maintenance and Short-Term Monitoring

Site	Summary of Requirements
n/a	n/a

3.4.3 Long-Term Monitoring Requirements

The Remedial Action Plan implemented at PIN-B (Clifton Point) removed all hazardous materials and wastes from the site. One facility, a Non-Hazardous Waste Landfill, was constructed and both short and long term monitoring is required.

The post construction monitoring frequency will follow the schedule identified in the Abandoned Military Sites Remediation Protocol. The three phases recommended by the protocol are:

- Phase I: Short Term Monitoring; years 1, 3 and 5;
- Phase II: Long Term Monitoring; years 7, 10, 15 and 25 (if required); and
- Phase III: beyond year 25 (if required).

Water Samples will be taken from the four (4) monitoring wells installed around the Non-Hazardous Waste Landfill. These samples will be analysed and the results will be compared to those collected from background samples. The parameters that will be analyzed include:

-Petroleum Hydrocarbons;
-Total and Dissolved Metals;
-Major Ions, Hardness, Total Dissolved Solids, Total Suspended Solids;
-pH, Conductivity; and
-Polychlorinated biphenyls (PCBs).

Soil sampling will be limited to locations where seepage or staining has been identified as part of the visual inspection. When required, soil samples will be collected over the interval of 0 to 0.15 metres and 0.35 to 0.5 metres depth. The parameters that will be analysed include:

-Polychlorinated biphenyls (PCBs);
-Petroleum Hydrocarbons; and
-Arsenic, Cadmium, Cobalt, Chromium, Lead, Nickel, and Zinc.

Visual inspection of the landfill will check its physical integrity and look for any evidence of erosion, ponding, frost action, settlement and lateral movement through the use of a Visual Monitoring Checklist. Photographs will be taken to document the condition of the Non-Hazardous Waste Landfill and substantiate the recorded observations.

Table 12: Long-Term Monitoring Requirements

Type	Summary of Requirements
Water	From four monitoring wells around the non-hazardous waste landfill
Soil	Where seepage/staining is identified
Visual	Landfill for physical integrity (erosion, ponding, frost action, settlement and lateral movement)

3.5 Crown Assets

The Crown did not provide any Crown assets for use on the PIN-B Project.

Table 13: Summary of Crown Assets

Description of Crown Assets	Comments
N/A	N/A

3.6 Post Remediation Site Conditions

This section details the post-remediation site conditions and future considerations regarding the PIN-B (Clifton Point) site.

3.6.1 Property Status

As of the date of this project closure report, all site remediation objectives for the PIN-B (Clifton Point) Remediation Project have been achieved. Groundwater at the site was not investigated.

Table 14: Property Use

FCSI No.	Objective	Objective Achieved (Y/N)	Agriculture or Wildlands	Parkland	Residential	Commercial	Industrial
1050001	Remediate PIN-B to the AMSRP standard	Y					

Table 15: Groundwater

FCSI No.	Is the site groundwater potable? (Yes / No / Not Applicable)
1050001	Not Applicable

3.6.2 Protection of Crown Investments

A Non-Hazardous Waste Landfill was constructed at PIN-B (Clifton Point) and the roads and airstrip were improved during the field work to support remedial activities. The condition of the airstrip following completion of the remediation project is unknown. The Crown investment that requires protection at PIN-B is the Non-Hazardous Landfill. Any

party that wishes to use the site will be subject to the *Territorial Land Use Regulations* and will be required to obtain permits as necessary to use the land.

The condition of the Crown's investment (Non-Hazardous Waste Landfill) will be assessed during the required site visits to complete the long-term monitoring. This includes confirmatory water sampling of the four (4) monitoring wells around the landfill, visual inspection of the Non-Hazardous Waste Landfill to verify its integrity and soil sampling limited to locations where seepage or staining has been identified as part of the visual inspection.

Following the completion of the active remediation phase, the Crown no longer required the airstrip or roads and as such, they were left "as-is" and no protection is required. As noted previously, their current condition post remediation is unknown.

3.6.3 Land Management Approach

Any party that wishes to use the site will be subject to the *Territorial Land Use Regulations* and be required to obtain permits as necessary.

3.6.4 Post Remediation Site Use Restrictions

All hazardous materials and wastes were removed from the PIN-B Clifton Point site. The only site restriction pertains to the Non-Hazardous Landfill and is subject to the *Territorial Land Use Regulations.* Anyone wishing to use the site will be required to obtain permits as necessary.

Table 16: Post-Remediation Site Restrictions

Topic	Description of Restrictions
Site Development	Reserve to protect landfill
Site Occupancy	None
Subsurface Conditions	None
Water Use	None
Other	Airstrip and roads are unmaintained, conditions are unknown, use at own risk.

3.7 Regulatory Authorizations

The PIN-B Clifton Point Project held the following regulatory authorizations throughout the remediation phase of the project:

- Water License 1BR-CLI0914 valid from 17 June 2009 to 31 May 2014.
- Land Use Permit No. N2008X0039
- Quarry Permits 2009QP0090, 2009QP0091, 2009QP0116, 2010QP0070, 2010QP0071
- Nunavut Impact Review Board Screening

4.0 Evaluating the Project

The PIN-B (Clifton Point) project faced some challenges during implementation:

- AANDC's Abandoned Military Site Remediation Protocol was under revision during the development of the PIN-B Clifton Point Remedial Action Plan and specifications, therefore the Canada Wide Standards were initially used as the criteria for Petroleum Hydrocarbons. However, the Abandoned Military Site Remediation Protocol was finalized in time to allow the PIN-B Clifton Point specifications and licenses to be amended and incorporate the revised data. Under the initial CWS evaluation, 1,120 m^3 of Type A (F3-F4) and 6,740 m^3 of Type B (F1-F3) hydrocarbon impacted soils had been identified. Under the revised Abandoned Military Site Remediation Protocol, 80 m^3 of Type A (F3-F4) and 1,360 m^3 of Type B (F1-F3) hydrocarbon impacted soils were identified.
- Significant scope changes occurred due to the agreement with DND which resulted in a final volume of Tier II soils being removed and transported offsite to the Department of National Defense PIN-2 site for disposal in their Tier II landfill.
- Excavation of hydrocarbon contaminated soil at the beach area resulted in significant increase in volumes due to the fine grain nature of the material.
- Given five of the ten dumps/buried debris areas were excavated a concern for the project from the onset was determining the volume and time required to excavate given the unknown conditions associated with historical dumps.

The project team was able to overcome these issues and the project was completed successfully. Further details on the project are provided in the following sections.

4.1 Scope and Schedule Variance

The scope and schedule of the PIN-B Clifton Point project was changed during the execution of the project. The major scope changes involved the revision of the hydrocarbon remediation criteria (from Canada Wide Standard to Abandoned Military Site Remediation Protocol) and the disposal of the Tier II contaminated soil at the Department of National Defense PIN-2 facility rather than at a southern location. These changes resulted in a significant savings to the project.

Table 17: Scope and Schedule Variances

Task	Task Complete?	Year Planned	Year Completed	Comment
NIRB Screening	Yes	2008	2008	
Land Use Permit	Yes	2009	2009	
Water License	Yes	2009	2009	
Specifications	Yes	2008	2008	
Posting of RFP	Yes	2008	2008	
Bidders Conference	Yes	2008	2008	
Award Contract	Yes	2008	2009	
Community Meetings	Yes	2009	2010	
Mobilization	Yes	2009	2009	
Quarry Permits	Yes	2009-2010	2009-2010	
Site Supervision	Yes	2009-2010	2009-2010	2 yr field season
Contractor Submittals	Yes	2009	2009	
Project Meetings	Yes	2009-2010	2009-2010	2 yr field season
Camp Operations	Yes	2009-2010	2009-2010	2 yr field season
Landfill Construction	Yes	2009-2010	2009-2010	2 yr field season
Demolition	Yes	2009-2010	2009-2010	2 yr field season
Collect Debris	Yes	2009-2010	2009-2010	2 yr field season
Offsite Disposal	Yes	2010	2010	
Soil Excavation	Yes	2010	2010	
Re-grading	Yes	2010	2010	
Demobilization	Yes	2010	2010	
Project Complete	Yes	2010	2010	

4.1.1 Scope

The most significant change to the project scope involved the revision of hydrocarbon remediation criteria. AANDC's Abandoned Military Site Remediation Protocol was under revision during the time period when the Remedial Action Plan was being written, so the Canada Wide Standards was used as the criteria. However, the Abandoned Military Site Remediation Protocol was finalized in time to allow the specifications and licenses to be amended using the revised data.

The other change in scope was the 348 m^3 of soil in excess of Tier II guidelines sent for disposal at the Department of National Defense facility on PIN-2 rather than transporting it south for disposal. Overall differences in estimated and final volumes of contamination are outlined in the table below:

Table 17A: Volume of Contamination

Major Category	Estimate	Actual	Variance	Comment
Tier I Soil	570 m3	329 m3	-241 m3	Over estimation from dumps
Tier II Soil	1,210 m3	348 m3	-862 m3	Over estimation from dumps
Type A	80 m3	0 m3	-80 m3	Co-contaminated
Type B	1,360 m3	2,131 m3	771 m3	Due to beach excavation
Non-Hazardous Waste	2,180 m3	2,560 m3	380 m3	n/a
Hazardous Waste	194 m3	153 m3	41 m3	n/a
Buried Debris Excavation	6,600 m3	9,581 m3	2,981 m3	Unknown site conditions

*Source: CIDMs-IQA#202220

4.1.2 Schedule

The schedule for the project did not undergo any significant changes. Remedial activities began in 2009 and finished in 2010. Specifics on the planned execution date and the actual completion date for specific tasks are provided in Table 17 above. The increase in time required to undertake the dump excavations was offset by the decrease in overall hydrocarbon contaminated soil requiring treatment (Abandoned Military Site Remediation Protocol compared to the Canada Wide Standard).

4.2 Cost Variance

In 2008-09 the total project costs were estimated at $16,917,669 based on the Class A cost estimate completed by Axiom. The actual cost of the project came in at $10,882,544 which was approximately 35% less than the Class A cost estimate. The majority of this drop was due to the reduced Contact award bid price which was attributed to increased competition between contractors at the time the project was tendered. In addition, there was some cost savings realized by using the Abandoned Military Site Remediation Protocol to assess the hydrocarbon contamination (estimated at $364,480) and savings associated with the shipment of Tier II soil to PIN-2 (estimated at $836,250).

Table 18: Total Project Cost, Year-Over-Year

Major Category	Budget	Actual	Variance	Comment
Phase III ESA (2007-08)	$517,450	$634,132	$116,682	see above
RAP, Specs (2008-09)	$289,775	$231,379	($58,396)	see above
Remediation (2009-10)	$6,313,895	$3,843,005	($2,470,890)	see above
Remediation (2010-11)	$10,603,804	$6,174,028	($4,429,776)	see above
TOTAL	$17,853,024	$10,882,544	($6,900,666)	see above

*Source: annual Detailed Work Plans and CIDMs-NCR#2991496

5.0 FCSAP Reporting

This section summarizes the information submitted to the Federal Contaminated Sites Action Plan Secretariat throughout the PIN-B (Clifton Point) Remediation Project. Table 20 details the information submitted to TB/FCSAP for each fiscal year of the project.

Table 20: FCSAP Reporting Summary

Fiscal Year	Status re: 10 Step Process	Major Expenditures	Estimated Liability at end of Fiscal Year	Other Changes Recorded
2006-07	Step 1-5	$0	$8,882,415	n/a
2007-08	Step 6	$634,132	$10,961,415	n/a
2008-09	Step 7	$231,379	$17,790,039	n/a
2009-10	Step 8	$3,843,005	$7,199,704	n/a
2010-11	Step 8 & 9	$6,174,028	$0	n/a

*Source: CIDMs-NCR#3260806

6.0 Best Practices, Lessons Learned and Use of Innovative Technologies

Throughout the PIN-B (Clifton Point) Remediation Project best practices and/or lessons learned were recorded. The following sections detail the best practices, lessons learned and any innovative technologies that were used.

6.1 Best Practices

The most important best practice that resulted from the PIN-B project was the scope change implemented to remove the 348 m^3 of soil in excess of Tier II guidelines. This volume of Tier II soil was not enough to justify the construction of a secure soil disposal facility on site, so the only other options available was offsite disposal. A discussion and subsequent agreement with the Department of National Defense enabled AANDC to ship this soil to the nearby PIN-2 site for disposal in their Tier II landfill. This opportunity was, in part, due to the fact that both the PIN-B and PIN-2 remediation contracts were awarded to E. Grubens Transport and the two remediation schedules aligned.

This best practice change improved the outcome of the project in a number of ways:

1. Environmentally
    a. No Tier II soil left on-site
    b. Less distance (ie fuel) to transport contaminated soils.
2. Financially
    a. The elimination of the requirement for southern transport and treatment of the Tier II soils resulted in cost savings estimated at $836,250.

1) Liability
    a. Removing all Tier II soil material from site eliminated any future liability associated the contaminated soil.

Since the successful completion of the project the Nunavut Contaminated Sites Program looks to implement solutions such as this, whenever feasible as this type of approach results in better project outcomes.

6.2 Lessons Learned

The lessons learned from the PIN-B (Clifton Point) Remediation Project include:

1) Consistent remediation standards must be the highest priority. The Abandoned Military Site Remediation Protocol should not be revised, unless absolutely necessary, until all remaining sites are complete. This will ensure a consistent remediation standard is applied across all our sites.
2) Coordination with Department of National Defense will likely result in additional cost savings to the Crown due to consolidation of waste between adjacent sites. Contracting adjacent sites as one Request for Proposal may result in significant savings if waste streams can be consolidated.

3) Class A cost estimate of $15.6 Million, did not reflect the Contact award bid price of $10.4 Million. Recommend an analysis be completed to determine if this was due to lack of work in the area and increased competition (i.e. are unit rates different) or improper level of effort estimate by Axiom (i.e. are line items different).

6.3 Use of Innovative Technologies

The PIN-B (Clifton Point) Remediation Project considered the use of innovative technologies during the development of the Remedial Action Plan and the evaluation of project proposals. None of the technologies reviewed or proposed made sense (i.e. unproven, costly, etc.) so none were implemented. However, the Contractor did propose alluing the Type B hydrocarbon contaminated soil, rather than land farming, which saved the project an estimated $364,480.

7.0 Aboriginal Involvement and Benefits

The community located closest to PIN-B (Clifton Point) is Kugluktuk. Community consultations were held in Kugluktuk to obtain local input and knowledge about the area and to keep the community informed about project activities. A summary of the project consultation events is provided below.

The remediation contract for the project was awarded to E. Grubens Transport Limited, a firm located in the NWT community of Tuktoyaktuk. In their proposal they committed to an Aboriginal Benefits Package with a guaranteed Inuit employment rate of 90%. Upon completion of the project, E. Grubens Transport had provided 68.4% Inuit employment, which was less than the 90% specified in their proposal. Following the application of the AANDC tool a penalty of $38,760 was applied to the contractor.

Over 700 hours of training was provided to employees, see below.

Table 21: Summary of Socio-Economic Statistics

Employment		2008-2009	2009-2010	Total
Total Employment	# persons	48	56	56
	# hours	8,730	18,306	27,036
Northern Employment	# persons	40	49	49
	# hours	7,850	11,736	19,586
Aboriginal Employment	# persons	38	40	40
	# hours	7,600	13,104	20,704
AOC Employment	# persons	N/A	40	40
	# hours	N/A	12,504	12,504
Employment Women**	# persons	N/A	6	6
	# hours	N/A	2,364	2,364
Workforce Training		**2008-2009**	**2009-2010**	**Total**
Total Training	# persons	42	15	42
	# hours	360	90	450
Training - Northern	# persons	39	15	39
	# hours	348	90	438
Training Aboriginal	# persons	38	15	38
	# hours	344	90	434
Training – AOC**	# persons	N/A	15	15
	# hours	N/A	90	90
Training Women**	# persons	N/A	0	0
	# hours	N/A	0	0
Purchase of Goods and Services		**2008-2009**	**2009-2010**	**Total**
Total Suppliers	# suppliers	8	8	8
	value ($)	3,253,000	5,130,000	8,383,000
Suppliers – Northern	# suppliers	8	8	8
	value ($)	3,253,000	5,130,000	8,383,000
Suppliers - Aboriginal	# suppliers	5	8	8
	value ($)	2,565,700	5,130,000	7,695,700
Suppliers – AOC**	# suppliers	N/A	7	7
	value ($)	N/A	4,250,000	4,250,000

*Source: annual fourth quarter reports
**No activity in 2007-2008 other than Bidders Site Visit and Conference.
***Some statistics were not kept by AANDC until 2009-2010.

8.0 Environment, Health and Safety

This section provides a summary of the Environment, Health and Safety (EHS) performance of the project. Over 700 hours of EHS training were completed during the project's life cycle. This included training in Hazardous Waste Operations & Emergency Response (HAZWOPER), Workplace Hazardous Materials Information System (WHMIS), and First Aid.

Although there were 10 near miss incidents reported during the project, there were no lost time injuries and corrective actions were taken to address each of the near misses. The environmental, health and safety statistics for the project are provided below in Table 22 below.

Table 22: Summary of Project EHS Statistics

Safety		2008-2009	2009-2010	Total
Major Incident	#	0	0	0
Moderate Incident	#	0	0	0
Minor Incident	#	0	0	0
Near Misses	#	10	0	10
Environment		**2008-2009**	**2009-2010**	**Total**
Environmental Incidents	#	0	0	0
	Volume	0	0	0
Inspections & Audits		**2008-2009**	**2009-2010**	**Total**
Inspections & Audits (External)	# Performed	0	0	0
Inspections & Audits (Internal)	# Performed	0	3	3
	# Non-compliances	0	0	0
EHS Training / Corrective Measures		**2008-2009**	**2009-2010**	**Total**
Awareness Training	EHS Policy & Procedures	0	0	0
H&S Training	HAZWOPER	0	420	420
	WHMIS	80	120	200
	First Aid	0	120	120
	Wildlife Safety	0	0	0
	Water Safety	0	0	0
	Fire Response	0	0	0
	Other	112	120	232
Environmental Training	Spill Response	0	0	0
	Other	0	0	0
Other Corrective Actions	New Procedures	168	0	168
	Other Initiatives	0	0	0

*Source: annual fourth quarter reports
*There are no EHS Statistics for 2007-2008 as there was no site work completed.

9.0 Information Management

This section provides details on the documentation that is available for the project. Copies of all documents related to the Project have been saved in the electronic CIDMS Library as well as a number of paper files and documents located in the Nunavut Regional Office in Iqaluit, Nunavut of Aboriginal Affairs and Northern Development Canada.

Table 23: List of Project Documentation

Date	CIDM #	Author	Title	File Type	Library Location
April 2011	469640	AANDC	Long Term Monitoring Plan	Word	Iqaluit
March 2011	??	SENES	Completion Report	.PDF	Iqaluit
March 2011	469624	SENES	As-built Drawings	.PDF	Iqaluit
September 2010	429472	EGT	EGT AOC Justification Letter	Word	Iqaluit
September 2010	429473	EGT	EGT AOC Justification Letter Annex	.PDF	Iqaluit
July 2010	429467	AANDC	Water License Inspection	.PDF	Iqaluit
June 2010	454509	NWB	Annual Water License Report 2009	Excel	Iqaluit
April 2010	401745	AANDC	2010 Quarry Permits	.PDF	Iqaluit
April 2010	416624	PWGSC	2010-11 Project Charter	.PDF	Iqaluit
March 2010	396535	EGT	Spill Contingency Plan Revised	.PDF	Iqaluit
November 2009	202220	UMA	RAP Using AANDC Protocol	.PDF	Iqaluit
February 2009	310405	AANDC	Clifton Point Land Use Permit	.PDF	Iqaluit
June 2009	391014	NWB	Annual Water License Report 2008	Excel	Iqaluit
June 2009	344460	NWB	Water License	.PDF	Iqaluit
May 2009	331490	EGT	Temporary Storage Area Plan	Word	Iqaluit
May 2009	331492	EGT	Camp Layout	.PDF	Iqaluit
May 2009	331493	EGT	Contract Work Breakdown Structure	Excel	Iqaluit
May 2009	331494	EGT	Dewatering Plan	Word	Iqaluit
May 2009	331495	EGT	Equipment List	Word	Iqaluit
May 2009	331496	EGT	Health And Safety Plan (HASP)	Word	Iqaluit
May 2009	331497	EGT	Hazardous Storage Area Plan	Word	Iqaluit
May 2009	331498	EGT	Mob-Demob Plan	Word	Iqaluit
May 2009	331499	EGT	PHC Remediation Plan	.PDF	Iqaluit
May 2009	331501	EGT	Road Upgrade Plan	Word	Iqaluit
May 2009	331502	EGT	Sewage Treatment Plan	Word	Iqaluit
May 2009	335648	PWGSC	Remediation Charter	Word	Iqaluit
April 2009	347226	UMA	Construction Specifications Drawings	.PDF	Iqaluit
April 2009	347227	EGT	Cost Proposal	Excel	Iqaluit
April 2009	347232	PWGSC	Remediation Contract	.PDF	Iqaluit
November 2008	281046	PWGSC	Request for Proposal	.PDF	Iqaluit
October 2008	257132	UMA	Class A Cost Estimate	.PDF	Iqaluit
May 2008	202222	UMA	RAP Using CCME Protocol	.PDF	Iqaluit
March 2008	207081	UMA	Phase III ESA	.PDF	Iqaluit
November 2007	194187	UMA	Class C Cost Estimate	.PDF	Iqaluit

* Additional project documents are saved in the Iqaluit CIDMS Library

10.0 Communications

Throughout the project a strong working relationship was developed and maintained via local community meetings to keep people aware of what was happening on the project.

10.1 Stakeholder Communication

The main stakeholders identified during the PIN-B Project included:

- AANDC
- E. Grubens Transport
- Nunavut Water Board
- AANDC Lands
- PWGSC
- DND
- Nunavut Impact Review Board
- Community of Kugluktuk

Table 24: Stakeholder Communication History

Event (Type/Date)	# of People	Involved (Yes/No)						
		Local Residents	Expert Support	Regulators	AANDC	PWGSC	Site Contractor	Key Issue
August 10th 2009 - Public Meeting	93	Yes	No	No	Yes	Yes	Yes	Scope of project, hiring practices and impact on community.
June 2nd 2010 - Kugluktuk Community Presentation	40	Yes	No	No	Yes	Yes	Yes	Update on project progress & remaining work.
October 6th 2010 - Kugluktuk Community Presentation	15	Yes	No	No	Yes	Yes	Yes	Project completion.

*Source: annual fourth quarter reports

10.2 Summary of Expert Support Involvement

The Federal Expert Support departments that were involved in the project along with their respective roles are summarized in the table below:

Table 24a: Federal Expert Support Involvement

FES Department	Project Stage	
	Assessment	Remediation
Environment Canada	NCSCS Score Review	None
PWGSC	None	Project Management and Contracting
Fisheries & Oceans Canada	NCSCS Score Review	Barge landing plan, approval and advice
Health Canada	NCSCS Score Review	None

11.0 Ongoing Requirements

The remedial activities implemented at PIN-B (Clifton Point) involved the construction of a Non-Hazardous Waste Landfill, with all hazardous materials being shipped offsite for disposal.

As such, following remediation, the project site will require:
- Long-term monitoring during years 1, 3 & 5;
- Long-term monitoring during years 7, 10, 15, 25 if required;
- Ongoing communications;
- Regulatory authorizations if needed; and
- Funding to accomplish the monitoring requirements.

Table 25: Ongoing Requirements

Ongoing Requirement	Responsible Organization	Expected Duration, Life Expectancy and/or Frequency	Comment
Short Term Monitoring	AANDC	Years 1, 3 and 5 after project completion	Testing will be completed to confirm the efficacy of the implemented remediation plan
Long Term Monitoring	AANDC	Years 7, 10, 15, 25 after project completion, with the possibility of further monitoring if required	Long Term testing will be completed, if necessary, based upon short term testing results
Ongoing Communications	AANDC	As necessary to inform stakeholders	Stakeholders will be kept appraised of issues related to the PIN-B project
Regulatory Authorizations	AANDC	As required	Authorizations will be sought if required
Funding	AANDC	Years 1, 3, 5 with a potential to require funding for years 7, 10, 15 & 25.	Future funding is tied directly to the years monitoring is required.

12.0 Approval and Distribution of Project Closure Report

This section documents the involvement of key project stakeholders in the review and acceptance of this project closure report.

12.1 Approval of Project Closure Report

Approval Authority	Focus of Approval	Name	Signature	Date
AANDC Project Manager	• Recommends the appropriate individuals to whom key responsibilities will be transferred • Signs off on project closure report (internal and public versions)	Lou Spagnuolo		
AANDC Regional Director	• Reviews and endorses project closure report (internal and public versions)	Natalie Plato		
AANDC Regional Director General	• Reviews and approves the project closure report (internal and public) • Confirms that AANDC NCSP Management accepts that the site has been remediated to the standards specified, the project objectives have been met and the proposed transfer of ongoing	Ian Gray		
AANDC HQ Director	• Reviews and accepts the project closure report (internal and public) • Confirms that the report meets the closure requirements of the program and FCSAP	Joanna Ankersmit		

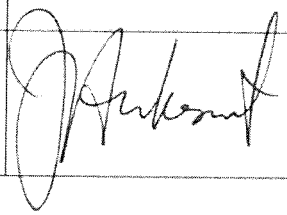
Table 25: Ongoing Requirements

Ongoing Requirement	Responsible Organization	Expected Duration, Life Expectancy and/or Frequency	Comment
Short Term Monitoring	AANDC	Years 1, 3 and 5 after project completion	Testing will be completed to confirm the efficacy of the implemented remediation plan
Long Term Monitoring	AANDC	Years 7, 10, 15, 25 after project completion, with the possibility of further monitoring if required	Long Term testing will be completed, if necessary, based upon short term testing results
Ongoing Communications	AANDC	As necessary to inform stakeholders	Stakeholders will be kept appraised of issues related to the PIN-B project
Regulatory Authorizations	AANDC	As required	Authorizations will be sought if required
Funding	AANDC	Years 1, 3, 5 with a potential to require funding for years 7, 10, 15 & 25.	Future funding is tied directly to the years monitoring is required.

12.0 Approval and Distribution of Project Closure Report

This section documents the involvement of key project stakeholders in the review and acceptance of this project closure report.

12.1 Approval of Project Closure Report

Approval Authority	Focus of Approval	Name	Signature	Date
AANDC Project Manager	• Recommends the appropriate individuals to whom key responsibilities will be transferred • Signs off on project closure report (internal and public versions)	Lou Spagnuolo		August 20, 2014
AANDC Regional Director	• Reviews and endorses project closure report (internal and public versions)	Natalie Plato		Aug 20/14
AANDC Regional Director General	• Reviews and approves the project closure report (internal and public) • Confirms that AANDC NCSP Management accepts that the site has been remediated to the standards specified, the project objectives have been met and the proposed transfer of ongoing	Ian Gray		Aug 21/14
AANDC HQ Director	• Reviews and accepts the project closure report (internal and public) • Confirms that the report meets the closure requirements of the program and FCSAP	Joanna Ankersmit		Aug 20 2014

APPENDIX A - Project Managers Project Closure Checklist

Project Closure Activities	Completed?	Details / Notes
Longterm Monitoring (3.4.3)		
□ Define **Long-term Monitoring** (LTM) requirements, where necessary	X Yes □ No	See Long Term Monitoring Plan (April, 2011)
Protection of Crown Investments (3.6.2)		
□ Communicate closed **site conditions and restrictions** to third-party interests / users, where needed	□ Yes X No	n/a
□ Define requirements **for future maintenance or replacement of 'permanent' site features**, if necessary (e.g. monitoring, access to resources agreement, etc.)	□ Yes X No	n/a
Land Management Approach (3.6.3)		
□ Finalize site **ownership/responsibility** (e.g. lease, reserve, transfer, devolution, etc.)	□ Yes X No	n/a
□ Notification of other **administrators** (e.g. Lands, O&G exploration, mining, forest) regarding final land management approach (e.g. notation on file)	□ Yes X No	n/a
□ Establish **Memoranda of Understanding** (MOUs),where needed	□ Yes X No	n/a
Regulatory Authorizations (3.7)		
□ Close all **regulatory authorizations**, as needed (e.g. water licenses, land use permits, quarry permits, etc.)	X Yes □ No	All authorizations closed
□ Complete **other regulatory notices**(e.g. Nav Canada, re: abandoned airstrips)	□ Yes X No	n/a
□ Respond to other **regulatory directions** (e.g. Environment Canada, Department of Fisheries and Oceans, Land and Water Boards, etc.)	□ Yes X No	n/a
Aboriginal Involvement and enefits (7)		
□ **Remove reserve** from affected land and release land to claimant group	□ Yes X No	n/a
□ **Communicate site results** through Record of Post Remediation Site Conditions to affected land claimant and/or Aboriginal groups	X Yes □ No	To be completed
□ Invite representatives from the affected land claimant and/or Aboriginal groups to participate in **final inspection**	□ Yes X No	n/a
□ Invite representatives from the affected land claimant and/or Aboriginal groups to participate in a **ceremony** to acknowledge completion of the project	□ Yes X No	n/a
□ Modify **access agreements** for future use of the site (e.g. for AANDC's access to monitor and maintain the site, if required)	□ Yes X No	n/a

Information Management (9)		
□ Apply AANDC's **Information Management Policy** and directives to ensure authenticity and integrity of project information	X Yes □ No	Completed
□ Save all documents in **CIDMS** (see More Guidance for more information)	X Yes □ No	Completed
□ Reference project closure records in **IEMS**	X Yes □ No	Completed
□ Create a document that **lists all project deliverable documents** (may also be appended as Table 24 to the project closure report)	X Yes □ No	Completed
□ Confirm that site information has been updated in **IEMS**	X Yes □ No	Completed
□ Confirm that site information has been updated in the FCSP databases: **FCSI** and **IDEA**	X Yes □ No	Completed
□ Ensure that measures for managing (storing, archiving, etc.) the project documentation have been taken	X Yes □ No	Completed
Communications (10)		
Immediate Communication Requirements		
□ Undertake **community consultation** as needed (e.g. participation by community representatives in final inspection; presentation to leadership and/or Elders in the community, etc.)	X Yes □ No	Completed
□ Extend invitation to relevant parties (e.g. CLCA claimant, other Aboriginal organizations, third parties, regulatory inspectors, other regulators) to participate in **final site visit / project closure meeting**, as required	□ Yes XNo	n/a
□ Provide Record of Post Remediation Site Conditions to the **affected land claimant organization and/or Aboriginal groups**	X Yes □ No	Nunavut Tunngavik Inc
□ Provide Record of Post Remediation Site Conditions to the affected **communities**	X Yes □ No	To be completed
□ Provide Record of Post Remediation Site Conditions to **relevant regulatory bodies** (e.g. land administrator, regulatory board, and other relevant local, territorial or federal body)	□ Yes □ No	To be completed
□ Identify immediate **EHS public notices** that are required	□ Yes X No	n/a
□ Define **current reporting** obligations (e.g. Project Closure Report; transfer for LTM, etc.)	X Yes □ No	See Project Closure Report
□ Define **future reporting** obligations (e.g. sharing monitoring results with community, regulators, etc.)	X Yes □ No	See Project Closure Report

Future Communication Requirements		
□ Identify ongoing **EHS public notices** that must be monitored and maintained, and assign responsibility for ensuring this occurs	□ Yes X No	n/a
□ Identify **long-term monitoring results** that must be communicated, and assign responsibility for ensuring this occurs. Include identification of audience who must receive this information	X Yes □ No	See Long Term Monitoring Plan (April, 2011)
□ Ensure that appropriate bodies are notified about site restrictions (e.g. site owners/users, municipality, local community, land management agency, and so on)	□ Yes X No	n/a
Approval and Distribution of Project Closure Report (12)		
Approval of Project Closure Report (12.1)		
□ Ensure that both the internal and public versions of the project closure report receive approval from the following authorities: □ Project Manager □ AANDC-Regional Director □ AANDC-Regional Director General □ AANDC-HQ Director □ FCSAP Secretariat	X Yes □ No	To be completed
Distribution of Project Closure Report (Internal)		
□ Ensure that the following stakeholders receive an electronic copy of the internal project closure report: □ AANDC Regional Monitoring Program □ Land Administrator □ Regional Mine Recorder □ Regional Operations Director / Inspectors □ Land and Water Board □ Other: □ Request a confirmation email upon receipt of report from each stakeholder	X Yes □ No	To be completed
Distribution of Record of Post Remediation Site Conditions (Public)		
□ Ensure that the following stakeholders receive an electronic copy of the Record of Post Remediation Site Conditions (public project closure report). □ Aboriginal Organizations □ Territorial Government □ Inspectors □ Human Resources and Skills Development Canada (HRSDC) □ Workers' Safety & Compensation Commission (WSCC) of the Northwest Territories & Nunavut □ Engineer of Record □ Private sector (e.g. Chamber of Mines) □ Request a confirmation email upon receipt of report from each stakeholder	X Yes □ No	To be completed

APPENDIX - Project Closure Report (Public)

Record of Post Remediation Site Conditions

Aboriginal Affairs and Northern Development Canada (AANDC)

Part 1: Property Ownership and Administration

Project Number	n/a
IEMS Number	WK163
FCSI Number	1050001
Alternative Site Names	Clifton Point
Contaminated Site Project Manager	Lou Spagnuolo
Phone Number	819-997-0045
Project Location	220 km NW of Kugluktuk (69° 12'N, 118° 37'W)
Co or Joint Property Owner	n/a
NTS Map Sheet Numbers	87C02 1:50,000

Description of Project Activities and Scope:

- Mobilization to/from PIN-B (Clifton Point) from Tuktoyaktuk NWT.
- Implementation of the Remedial Action Plan.
  - Demolition included the removal of the Inuit House, Radar Tower, runway lights and petroleum line, Module Train and Garage following the removal of hazardous material (mainly asbestos containing materials and impacted paint applications).
  - Earthworks consisted of the construction of the Non-Hazardous Waste Landfill and re-grading of areas at the Camp Area and Beach Area.
  - Four monitoring wells were installed in close proximity to the Non-Hazardous Waste Landfill.
  - 329 m^3 of soil contaminated with metals and PCBs which exceeded Tier I criteria was placed in the Non-Hazardous Waste Landfill.
  - 348 m^3 of soil contaminated with metals and PCBs which exceeded Tier II criteria and was transported offsite for disposal.
  - 2,131 m^3 of soil contaminated with hydrocarbons which exceeded Type B criteria was treated onsite by alluing.
  - 48 m3 of PCB containing material was removed and shipped south for treatment at Swan Hills Treatment Centre in Alberta Canada.
  - Non-Hazardous materials (wood, metal, etc) were consolidated and disposed of onsite in the Non-Hazardous Waste Landfill.
  - Five historical dumps were excavated and material placed in the Non-Hazardous Waste Landfill.
  - Two historical dumps were covered in place.

Remediation Start Date: August 23, 2009
Remediation End Date: August 18, 2010

Name and Address of All Stakeholders:

Stakeholder	Name	Address
Project Manager	Lou Spagnuolo	25 Eddy Street Gatineau QC K1A 0H4
Environmental Consultant	Henry Wong	121 Granton Drive, Richmond Hill ON L4B 3N4
Prime Remediation Contractor	E.Grubens Transport	P.O. Box 177 Tuktoyaktuk, NWT X0E 1C0
Regional Director – NCSP	Natalie Plato	PO Box 2200 Iqaluit, NU X0A 0H0
Regional Resource Management	Karen Costello	P.O. Box 100 Iqaluit, NU X0A 0H0
Regional Mine Recorder	Rebecca Leighfield	P.O. Box 100 Iqaluit, NU X0A 0H0
Regional Director General	Ian Gray	PO Box 2200 Iqaluit, NU X0A 0H0
Manager of Land Administration	Jeff Mercer	P.O. Box 100 Iqaluit, NU X0A 0H0
Land and Water Board	Phyllis Beaulieu	P.O. Box 119 Gjoa Haven, NU X0B 1J0
Hamlet of Kugluktuk, NU	Mayor Red Paderson	Box 271 Kugluktuk NU X0B 0E0
Director General NCSP HQ	Joanna Ankersmit	25 Eddy Street Gatineau, QC K1A 0H4
FCSAP Secretariat	Kathy Kitagawa	351, boul. Saint-Joseph,Gatineau, QC K1A 0H3

Part 2: List of Reports

The following is a list of reports prepared as a result of the remediation of the PIN-B Clifton Point site:

Date	CIDM #	Author	Title
April 2011	469640	AANDC	Long Term Monitoring Plan
March 2011	n/a	SENES	Completion Report for PIN-B Remediation Project
March 2011	469624	SENES	As-Built Drawings
July 2010	429467	AANDC	Water License Inspection Report
June 2010	454509	NWB	Annual Water License Report 2009
April 2010	401745	AANDC	Quarry Permits 2010
March 2010	396535	EGT	Spill Contingency Plan
November 2009	202220	UMA	Remedial Action Plan
June 2009	344460	NWB	Water License
June 2009	391014	NWB	Annual Water License Report 2008
May 2009	331490	EGT	Temporary Storage Area Plan
May 2009	331492	EGT	Camp Layout
May 2009	331493	EGT	Contract Work Breakdown Structure
May 2009	331494	EGT	Dewatering Plan
May 2009	331495	EGT	Equipment List
May 2009	331496	EGT	Health And Safety Plan (HASP)
May 2009	331497	EGT	Hazardous Storage Area Plan
May 2009	331498	EGT	Mob-Demob Plan
May 2009	331499	EGT	Hydrocarbon Remediation Plan
May 2009	331501	EGT	Road Upgrade Plan
May 2009	331502	EGT	Sewage Treatment Plan
April 2009	347226	UMA	Construction Specifications Drawings
April 2009	347232	PWGSC	Remediation Contract
February 2009	310405	AANDC	Clifton Point Land Use Permit
November 2008	281046	PWGSC	Request For Proposal
March 2008	207081	UMA	Phase III Environmental Site Assessment

Part 3: Summary of Remediation/Risk Management Plan Close Out

The overall objectives of the PIN-B (Clifton Point) Remediation Project were:

1. Legal Obligations
    a. complete the project in compliance with all legal obligations
2. Risk Management
    a. reduce liabilities to the crown
3. Remediation
    a. minimize environmental impacts to humans and wildlife at the site
    b. undertake the project in accordance with all Federal and/or Departmental policies
    c. complete the project by 2010
4. Social and Economic Benefits
    a. enhance opportunities for local communities and businesses

Monitoring, to confirm remediation objectives have been met, will be completed in 2011, 2013 and 2015 in accordance with the approved Long Term Monitoring Plan, as outlined below:

Monitoring Component	Responsible Organization	Task Summary
Water	AANDC	From four monitoring wells around the non-hazardous waste landfill
Soil	AANDC	Where seepage/staining is identified
Visual	AANDC	Landfill for physical integrity (erosion, ponding, frost action, settlement and lateral movement)

Part 4: Property Status

Based on the work completed and the results of the Remediation/Risk Management Plan, the PIN-B Clifton Point site is suitable for the following land use(s):

1. Agricultural — Yes
2. Residential — Yes
3. Industrial/Commercial — Yes
4. Wild Lands (safe for wildlife and fish) — Yes
5. National or Territorial Park — Yes
6. Habitat of Species at Risk — Yes

The Non-Hazardous Waste Landfill will be monitored as per the schedule in Part 3. While there is not any scheduled maintenance for the landfill, unforeseen events may require AANDC to revisit the site to maintain the landfill if any issues are discovered during the monitoring program. There are no site restrictions other then the condition of the airstrip. This is an unmaintained airstrip and the condition is unknown.

Part 5: Inspector's Summary

A summary of the activities that took place on site is provided in Part 1. In order to complete these activities additional support activities took place, these are summarized below:

- Mobilization/Demobilization from Tuktoyaktuk NWT.
- Flights to & from site for;
  - Crew changes
  - Resupply
- Operation of Heavy Equipment
  - Fuel storage
- Setup and operation of a camp and related facilities
  - Water treatment
  - Solid waste handling
    - Incineration of combustibles
    - Landfill onsite of non-combustibles
  - Sewage treatment
    - Black water treatment in the sewage lagoon
    - Grey water treatment in the sewage lagoon
  - Infrastructure repairs and improvements
    - Borrow source development
    - Airstrip
    - Roads
  - Excavation of contaminated areas
    - Treatment of contact water as required
    - Confirmatory sampling of excavation areas

The camp and all related facilities were set up and operational starting in August 2009. Initial works at the site began and continued until September when weather began to impact operations, at which time the camp was closed and winterized. Camp was reopened for the 2010 field season to complete the remediation and complete demobilization took place on August 18th, 2010.

Regulatory Authorizations

Regulatory Authorization	During Original Operation	During Remedial Works	During Post-Remediation Monitoring
Land Use Permit	n/a	N2008X0039	N/A
Water License	n/a	1BR-CLI0914	N/A
Quarry Permit	n/a	2009QP0090 2009QP0091 2009QP0116 2010QP0070 2010QP0071	N/A
Archaeological Permit	n/a	Under LUP	N/A
NIRB Screening	n/a	08DN082	N/A

Part 6: Summary Statement of the Site Professional

The statements must be checked by the Site Professional (e.g. Engineer of Record, Departmental Representative, the author of the Closure Report, etc.). The signature of the Site Professional indicates the fulfillment of the requirements of all the checked statements.

Please check appropriate statements:

X All work on which this Record of Post Remediation Site Conditions is based was prepared, overseen and/or reviewed by the Site Professional.
X The site was managed in accordance with the current AANDC and CCME contaminated site best practices and procedures.
X All reports cited in Part 2 and other related documents that have been prepared by the Site Professional have been delivered to the Project Manager.
X The remediation/risk management criteria and objectives as defined by the Site Professional and cited in Part 3 have been achieved for the current or reasonably foreseeable future activities as cited in Part 4.
X The Remediation/Risk Management Plan was peer reviewed by a qualified independent environmental consultant.
X Based on the results of the site monitoring activities, remedial action and/or any ongoing site management is not required for the current or reasonably foreseeable future site activities.

Site Professional	
Name:	Lou Spagnuolo
Signature:	
Date:	
Professional Affiliation(s):	Professional Engineer
Membership Numbers:	#100067219
Company:	Aboriginal Affairs and Northern Development Canada
Address:	25 Eddy Street, Gatineau, QC K1A 0H4
Telephone:	819-997-0045
Email:	lou.spagnuolo aandc.gc.ca