

DEW Line Site Longstaff Bluff FOX-2

NTI Technical Representative Report

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Executive Summary

In 1998, Nunavut Tunngavik Incorporated (NTI) and the Department of National Defence (DND) DEW Line Cleanup signed a Cooperation Agreement for the clean up of the fourteen (14) DEW Line sites under the jurisdiction of DND, located within the territory of Nunavut.

A part of the agreement recognizes the process for pre-construction site investigations, which are generally conducted two (2) years prior to the cleanup of a specific DEW Line site. Representatives of DND undertake site investigations with the objective of delineating environmental contamination. During these site investigations, representatives of NTI collect traditional environmental knowledge. The technical data and the traditional knowledge are incorporated into a coordinated risk management approach to develop cleanup specifications for a site.

The pre-construction investigation of Longstaff Bluff (FOX-2) was conducted during the summer of 2005. The Environmental Sciences Group (ESG) and UMA completed the technical investigation on behalf of DND. During the site investigation, Karl Côté from Qikiqtaaluk Environmental Inc. (QE) along with Lucasi Ivvalu and Jayco Qanatsiaq visited the site on behalf of NTI to document local knowledge and interviewed elders from Igloolik and Hall Beach.

The following summarizes the information contained in this report:

- In general, the site is visually in good condition;
- The Beach landfill, located close to the shore, is being eroded by a stream;
- The Tier II contaminated soil down-gradient from the Upper Site Landfill may be associated with leachate migrating from the landfill;
- Various wildlife species use the area around and below the Upper Site Landfill;
- The hangar is used on occasion as a shelter;
- During the DEW Line operations, “large pieces of radio equipment” from the module train were dumped into the Fishing Lake;
- The region around the site is used for hunting caribou and wolves, and for fishing, mostly by residents of Clyde River and to a lesser extent by people from Igloolik and Hall Beach.

Introduction

The NTI/DND Cooperation Agreement

In 1998, Nunavut Tunngavik Incorporated (NTI) and the Department of National Defence (DND) entered into a Comprehensive Agreement outlining the environmental and economic terms for the cleanup and restoration of fourteen (14) Distant Early Warning (DEW) Line sites located within the territory of Nunavut.¹ The Environmental Provisions of the Agreement outline the process for pre-construction site investigations that are generally conducted two (2) years prior to the cleanup of a specific DEW Line site.

Consultants representing DND undertake the investigations with the objective of delineating known contaminated areas and verifying overall site conditions. In addition, consultants representing NTI record traditional environmental knowledge during the site investigation. This information is incorporated into a risk management approach to develop cleanup specifications for the site.

The Environmental Provisions also outline the Terms of Reference for the DEW Line Environmental Working Group (EWG) consisting of two (2) members representing DND and two (2) representing NTI. The EWG was formed in 1997 to address technical and environmental issues such as hydrocarbon contamination and landfill closure procedures and to advise on other technical issues that may arise.²

Pre-Construction Site Investigations

A thorough environmental investigation is undertaken at a specific DEW Line site approximately two (2) years prior to the cleanup of the site. The Environmental Sciences Group (ESG) and UMA has been retained by DND to carry out the site investigations. The specific objectives of the site investigation are as follows:

- To define vertical and lateral extent of identified soil contamination;
- To investigate suspected contaminated areas;
- To locate and delineate hydrocarbon contaminated areas;
- To investigate each landfill on site in order to identify the environmental risk associated with the landfills;
- To determine the level of contaminants in building material;

¹ NTI and DND. 1998. Comprehensive Agreement Between Nunavut Tunngavik Incorporated and the Department of National Defence for the Clean-up and Restoration of Distant Early Warning Sites Within the Nunavut Settlement Area.

² Environmental Working Group, 1998. DEW Line Cleanup, Nunavut, Environmental Working Group Report March 1998. Prepared for Nunavut Tunngavik Incorporated and the Department of National Defence.

- To complete a site inventory;
- To define the extent of existing landfills;
- To investigate potential locations for landfill expansions and new landfills, borrow pits, and landfarming areas.

In addition, two (2) NTI representatives are on site during the investigation; a technical representative who is also a member of the EWG and a local representative who is selected based on their familiarity with the site, and surrounding areas. The local representative is a resident of the community most affected by the site cleanup and usually someone who worked or lived at the site during operating years.

Prior to or immediately after the site visit, the NTI representatives conduct a community consultation to address local concerns and to document traditional and local knowledge of the DEW line site. This information is essential to proper risk management of the existing landfills, hydrocarbon contaminated areas, and debris areas. The information provides insight into the frequency and nature of use of the site by people and by wildlife and allows for the evaluation of receptor sensitivity.

The results of the pre-construction investigation are examined by the members of the EWG to ensure that all parties are satisfied with the prescribed site remediation and the final construction specifications.

Scope of Report

The purpose of this document is to present the following:

- Summary of previously undocumented technical concerns and observations of the FOX-2 DEW Line site.
- Summary of local resident concerns and observations of the FOX-2 site including knowledge acquired that is pertinent to the risk evaluation of existing landfills and hydrocarbon contaminated areas.
- Summary of issues discussed during the community consultations in Igloodik and Hall Beach.

This document does not constitute an environmental assessment. Comments and conclusions presented herein are based on a brief site visit, documentation provided by DND and local knowledge of the area. The consultants for DND will publish the technical results of the site investigation at a later date.

FOX-2 Longstaff Bluff

Site Description

FOX-2 Longstaff Bluff is located on the west central coast of Baffin Island, Nunavut ($68^{\circ} 53' 56''$ N - $75^{\circ} 08' 54''$ W), 242 km east of the community of Hall Beach and 267 km east-south-east of the hamlet of Igloolik (see Figure 1). The former DEW Line site is named Longstaff Bluff after the mountain on which its main station sits. Longstaff Bluff, traditionally known as Kingarjuaq (large mountain) separates Rushmore Bay from Piling Bay, both of which merge into the much larger Nauja Bay.



Figure 1: Location of FOX-2 (Longstaff Bluff)

The station is situated on top of Longstaff Bluff at an altitude of 162 m above sea level (refer to Photo 1). The general area in the vicinity of the station is characterized by a series of parallel east-west ridges having an average elevation of 105 m. The station and the airstrip, located at both ends of the site, are separated by almost 10 km. The road that joins both ends of the site is mostly situated along the coast on flat terrain. Vegetation around the site is generally sparse, but denser in the flat low-lying areas along the coast.

The auxiliary DEW line site was decommissioned in 1991. A North Warning System Short Range Radar site, built a few hundred metres from the station was established in November 1990 to replace the older station.

Two (2) previous site assessments were conducted at FOX-2. The first was completed by UMA in June 1991 and the second by ESG in 1993.



Photo1: FOX-2 station atop Longstaff Bluff (looking East)

Site Investigation

In July 2005, ESG, UMA, and EBA Engineering Consultants Ltd (EBA) conducted the FOX-2 site investigation. An extensive historic and aerial photograph survey was completed prior to the site visit.

Representatives of NTI were on site from July 14 to 17 to observe the site investigation and to document local and traditional knowledge. Karl Côté, EWG member, from Qikiqtaaluk Environmental Inc. (QE), was the technical representative. The local representatives were Lucasi Ivvalu from Igloolik and Jayco Qanatsiaq from Hall Beach (refer to photo A-5). Both men know the area around Longstaff Bluff extensively from multiple hunting and fishing trips.

Site Observations and Concerns

The following sections summarize the concerns and observations of the NTI representatives relating to the site and its former operations. Photos taken during the site visit are presented in Appendix at the end of this report.

Landfills and debris areas

During the site visit there were four (4) identified landfills at FOX-2: the Upper Site Landfill, the West Landfill, the Beach Landfill, and the Airstrip Landfill. The geophysical survey of the landfills and other suspicious areas was not complete at the time of the site

visit; therefore information regarding the extent of the landfills or confirmation of other landfills was not available for review. Leachate data from the landfills was also not available for review prior to the completion of this report.

During the site visit, a visual inspection of all the landfills and other areas proposed for geophysical survey was carried out. In general, the landfills were found to be in good condition, as little exposed debris was observed.

At the Upper Site Landfill, a large amount of light debris (e.g., tin cans, glass bottles, plastic containers, etc.) was found scattered over a large area down gradient of (i.e., below) the site. There is a drainage path that flows along the southern edge of the Upper Site Landfill towards the east, slightly around its toe and then down-gradient from the landfill through the debris littered boulder field (refer to photo A-8). This could be a potential pathway for leachate. All around the landfill, but especially down-gradient, a large quantity and variety of animal droppings (i.e., ptarmigan, hare, lemming, caribou, and fox) were observed (refer to photo A-3). Lemming burrows were also observed below the toe of the landfill. Ptarmigan and nesting plovers were observed in the immediate vicinity of the landfill.

The Beach Landfill, as its name indicates, is located close to the ocean. Although little exposed debris was observed, a stream that discharges into the sea seems to be slowly eroding the east end of the landfill.

Various materials and many empty drums are stockpiled at the beach landing area.

A partially exposed buried piece of heavy equipment, perhaps a wheel loader, was observed near the East Beach Area North.

Drums, debris, a damaged canoe and a home-made pontoon were observed at the Fishing Lake.

Contaminated Soil

During the site visit, soil sampling was just beginning and therefore no sample results were available for review. However, a limited number of results from the two (2) previous site investigations have shown the presence of contaminated soils at the following locations and at the indicated levels:

- Station area - Tier II PCB, copper, and lead;
- Sewage outfall - Tier II PCB, copper and zinc;

- Upper Site Landfill - Tier I PCB and Tier II copper, nickel, cobalt, cadmium, and zinc;
- Beach POL area - Tier II copper and nickel, and Tier I PCB, and petroleum hydrocarbons.

Elevated copper, nickel, cobalt, cadmium, and zinc levels in soil down gradient from the Upper Site Landfill may be associated with leachate migrating from the landfill.

Because of its proximity to the ocean and the associated risks, the hydrocarbon contaminated soil at the Beach POL area was previously excavated and is presently stockpiled temporarily on a geomembrane liner inside a bermed area beside the POL tanks.

Strong petroleum hydrocarbon odours were noted inside the hangar.

Soil staining, likely from heavy hydrocarbons, was observed on the shores of the Fishing Lake. This lake is the second one along the road from the airstrip to the station.

The soil sample results from the site will be presented in the FOX-2 site investigation report prepared by ESG.

Traditional Environmental Knowledge

The following sections present information relating to the site and surrounding areas obtained from observations during the site visit and which, in certain cases, was confirmed and/or clarified from discussions with residents of local communities. Mr Ivvalu, Mr Qanatsiaq, elders from Igloolik and Hall Beach, as well as site workers from various communities, all gratefully shared their knowledge about the land. Information was gathered during formal community meetings in Igloolik and Hall Beach, during informal conversations, as well as during telephone conversations.

Private meetings were held in Igloolik and Hall Beach on July 13 and July 17, respectively. These meetings were organized in order to address local concerns and to collect traditional knowledge related to the site and to its usage.

Present at the meeting in Igloolik were Lucasi Ivvalu and Karl Côté representing NTI as well as Nathan Qamaniq and John Natar, elders from the community. Mr Ivvalu provided translation and interpretation services during the meeting. Mr Qamaniq knows the whole region around the site very well. He has been on numerous caribou and wolf hunting trips in the area by canoe and snowmobile. Mr Natar also knows the area from repeated caribou hunting trips to the area. He remembered visiting the DEW line site on one occasion and selling char he had caught to officers working at the site.

Present at the meeting in Hall Beach were Jayco Qanatsiaq and Karl Côté representing NTI as well as Abraham Kaunak and Elijah Qammaniq, elders from the community. Mr Qanatsiaq provided translation and interpretation services during the meeting. Mr Kaunak and Mr Qammaniq both worked at the DEW line site during its operation. They worked as heavy equipment operators for three (3) years and lived in the Inuit house during that time. Mr Qammaniq arrived one year earlier than Mr Kaunak.

Historical and Archaeological Features

An archaeologist hired by DND was present during the NTI representatives' site visit. He had started conducting his inventory prior to their arrival on site and had not completed it upon their departure. Discussions with the archaeologist proved to be mutually beneficial as the archaeologist was able to interview the NTI representatives and incorporate their knowledge in his report. In turn, information obtained from the archaeologist was incorporated in the present report.

A very large number of archaeological features, such as tent rings, meat and fish caches, fox traps, kayak racks, inukshuks, etc., were identified along the shores of Rushmore Bay and Piling Bay. However, none of these features are close enough to the site to be threatened by future site cleanup activities.

The whole region is very rich in archaeological features. Other features have been identified northeast of the site on the shores of Piling Bay and Piling Lake, as well as northwest of the site, where Baird Peninsula meets the Baffin Island and along Ikpik Bay.

Wildlife

A variety of wildlife was present around the site during the site visit. Various bird species were observed including: snow geese, Canada geese (nesting), ducks, plovers (nesting), ptarmigan, gulls, snow bunting, and a peregrine falcon. *Greater snow geese congregate on Jens Munk Island, Flint Lake, Piling Lake, Straits Bay and Prince Charles Island for breeding.*³ Longstaff Bluff is situated at the southwestern edge of this area.

Caribou and wolves were observed on site during the visit. There is a major caribou crossing north of Piling Lake. Wolves are abundant in that same area.

All around the Upper Site Landfill a large quantity ptarmigan, hare, lemming, caribou, and fox droppings were observed (refer to photo A-3). Lemming burrows were also observed below the toe of the landfill.

Remains of a wolf carcass were observed below the hangar pad. Three (3) dead snow buntings were observed inside the hangar.

Bearded seals and beluga whales were observed by site workers during the site visit. *Ringed seals reputedly pup from Nauja Bay south into Wordie Bay. Polar bears often occupy... Baird Peninsula during the summer months.*³

Mr Kaunak and Mr Qammaniq recalled that there was fish in both lakes located between the Airstrip and the Station area, however, there was no fish in the water supply lake (south of the station). There are many good fishing spots in Piling Lake and along Baird Peninsula.

³ Riewe, R. 1992. *Nunavut Atlas*. Canadian Circumpolar Institute and Tungavik Federation of Nunavut, Edmonton.

Traditional Land Use

The Nunavut Atlas rates the Inuit land use at Longstaff Bluff and inland as High Intensity. The former route used by hunters travelling by dog team between Igloolik and Clyde River followed the coast of Baffin Island along Ikpik Bay, across Baird Peninsula, then around Longstaff Bluff and across Baffin Island through Piling Lake and Flint Lake. The modern snowmobile route between Clyde River and Igloolik passes further north.

*This area is being used every winter by Clyde River Inuit for hunting wolves and caribou. This area was also formerly important to the Igloolik hunters. The camps at ... and Longstaff Bluff are situated at major caribou crossings. Arctic char fishing was important in many of the major lakes.*⁴ The elders confirmed that people from Igloolik do not hunt in that area as much as they used to. People from Clyde River hunt caribou there because it is scarce around their community. Clyde River hunters started visiting the area more often after the snowmobile was introduced. Mr Qamaniq and Mr Natar never encountered people from Igloolik during their hunting trips in the area but often saw snowmobile tracks going in the direction of Clyde River. Some people from Hall Beach still hunt in the area but caribou hunting there was more important in the past.

The land use south (in Nauja Bay), west (on Baird Peninsula) and northwest (along the shore of Ikpik Bay) of Longstaff Bluff is rated as medium intensity. *Polar bear hunting occasionally occurs around Nauja Bay.*⁴

There are no berries or sedentary marine organisms harvested locally. Sea ice is the main source of drinking water when the area is visited.

The presence of a recent tent ring and fire pit beside the hangar, as well as a rest area (*i.e.*, roofless cabin, picnic table, chairs, and fire pit) on the shore of Piling Bay in the East Beach Area South are signs of continued use of the area for traditional hunting and fishing activities. Furthermore, locals from Igloolik noted that some people camp inside the hangar during winter trips to the area.

Site Information

In general, the entire site was found to be, visually, in good condition. Mr Kaunak and Mr Qammaniq did not recall any ocean dumping at the site. However, Mr Kaunak participated in the dumping of many large pieces of “radio equipment” from the module train into the Fishing Lake. He also noted that tents had been dumped in the West

⁴ Riewe, R. 1992. *Nunavut Atlas*. Canadian Circumpolar Institute and Tungavik Federation of Nunavut, Edmonton.

landfill and many empty and partially empty drums had been placed in the Beach landfill. Both men did not recall any spills of petroleum hydrocarbons on site during their stay.

After the site was decommissioned, Mr Natar and others from Igloolik visited the site by canoe many times to get drums of diesel, gasoline and naphta left on site by the military. Many hunters also stopped over to scavenge any useful building materials left in place.

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Appendix: Photographs