



November 27, 2003

Nunavut Water
Board

Project No.: DYE-M (3.6)

Ms. Phyllis Beaulieu
Licensing Administrator
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1J0

Public Registry

Dear Ms. Beaulieu:

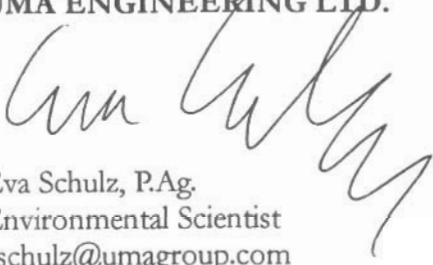
RE: Water Use Licence Application for the Clean Up of the Former DYE-M, Cape Dyer DEW Line Site

UMA Engineering Ltd. is submitting the enclosed water use licence application for the clean up of the former DYE-M, Cape Dyer DEW Line Site. The application is being submitted on behalf of Defence Construction Canada and the Department of National Defence. Please find enclosed three copies of the application and supporting documents.

If you have any questions or comments, please do not hesitate to contact the undersigned at 403-270-9220.

Sincerely,

UMA ENGINEERING LTD.


Eva Schulz, P.Ag.
Environmental Scientist
eschulz@umagroup.com

Encl. Water Use Licence Application
Remote Camp Supplementary Questionnaire
Project Description

cc: Nahed Farah, DCC
Elizabeth Copland, NIRB

J:\Wordp\SCHULZ\0171-125\Nwb05.doc

INTERNAL	
PC	DP
MA	
FO	
LA	
BS	
CH	
BRD	
EXT.	

1. BACKGROUND

The DYE-M, Cape Dyer site was constructed in the 1950's as part of the Distant Early Warning (DEW) Line, which provided radar surveillance of the northern approaches to the North American continent. There were 42 sites located in Canada. Of those 42 sites, 21 were closed in the 1960's and are under the jurisdiction of the Department of Indian and Northern Affairs Canada. In March 1985, Canada and the United States agreed to modernize the North American Air Defence System by closing the remaining 21 DEW Line sites under the Department of National Defence control by the early 1990's, and build the North Warning System (NWS).

In 1992, the DEW Line Clean Up Protocol was developed by the Environmental Sciences Group (ESG) of the Royal Military College of Canada and reviewed and approved by federal and territorial environmental officials. The protocol includes procedures for dealing with contaminated soil, waste oil, landfills, wastewater, debris and hazardous materials as is used to guide the clean up of each site. In 1998, the Environmental Provisions of the Cooperation Agreement between DND and Nunavut Tunngavik Inc. (NTI), which included the DEW Line Clean up Protocol, were implemented to provide the approach necessary to restore the sites to an environmentally safe condition and prevent the migration of contaminants into the Arctic food chain.

The DEW Line Clean Up (DLCU) focuses on closing out the former DEW Line sites, including the remediation of chemically contaminated soils, the stabilization of landfill areas and the demolition/disposal of surplus infrastructure and debris. A monitoring program will be carried out after the clean up has been completed.

2. PROJECT LOCATION

DYE-M (66° 39' N, 61° 21' W) is located on the easternmost point of Baffin Island of the Nunavut Territory. The station is about 15 km inland from the Sunneshine Fiord shore. The main site facilities are located atop a summit, approximately 20 km east-northeast of the Airstrip and Lower Camp Area. The main DEW site is connected by road to the lower camp, where petroleum, oil, and lubricants (POL) storage, vehicle maintenance, and airstrip facilities were located. The Beach Area facilities consist of POL storage facilities, and open storage areas.

3. PROJECT SCHEDULE

DYE-M underwent a number of detailed site investigations between 1997 and 2002, and is scheduled for clean up beginning in 2004 as part of the DLCU Project, with completion expected in 2011. The contractor will mobilize to the site in July 2004, by barge or sealift and set up a temporary construction camp.

- Clean up activities are expected to continue through to 2011, depending on the contractor's approach and weather conditions.
- The expected duration of annual clean up activities on site will generally be from July to October. During the winter months, work will cease and equipment and facilities on site will be winterized. It is expected that the contractor's workforce and accessory personnel will mobilize to and from the site from nearby northern communities.
- Completion of the clean up and demobilization of the contractor's facilities and equipment is anticipated for October 2011.
- Long term monitoring of the landfills will begin upon completion of clean up (2012) and will continue for a 25-year period. After 25 years, the monitoring requirements will be re-evaluated.

4. PROJECT ACTIVITIES

The purpose of the proposed project activities is to provide remedy for previous activities that occurred as a result of the operation of the former DEW Line site. Specifically, clean up activities are to prevent the release of physical debris and/or contaminants into the environment, including the adjacent marine environment.

In general, during the construction phase of the clean up, existing facilities no longer required for the operation of the NWS will be demolished. The demolition wastes will be segregated into hazardous and non-hazardous materials and disposed of appropriately. Contaminated soils identified during the previous field investigations will be excavated and properly disposed of in on-site engineered landfills or at off-site facilities. Scattered surface debris and partially buried debris on the site will also be collected and disposed of. New landfills will be constructed to contain the non-hazardous contaminated soil and demolition waste generated during the clean up. Existing landfills within the site will be remediated, as required. Disturbed areas will be physically restored to a stable condition shaped to match the existing terrain.

5. CONTRACTOR SUPPORT ACTIVITIES

The following activities will occur on-site to support the clean up work:

- Use of existing beach landing area, airstrip and roads at site for equipment transport, movement and access to work areas.
- Set-up of cleanup camp and equipment storage.
- Sewage from the camp will be handled with, at minimum, primary treatment (settling tank and lagoon) and discharged to ground surface. Sewage treatment and disposal will be in accordance with the Land Use Permit and Water Use License.
- Domestic wastes to be disposed of (as is, or incinerated as specified by the Land Use Permit) in the new Non-hazardous Waste Landfills.
- Demobilization of cleanup camp following end of project.

- Vehicle traffic to work areas is to be supported by the existing access roads that traverse the site.
- Labour and equipment requirements are anticipated to include approximately 50-80 personnel, 40 pieces of heavy construction equipment and 10 support vehicles.
- Duration of work is anticipated to be approximately 4 months, not including winter shutdown period, over a period of eight years.

6. ABANDONMENT AND DECOMMISSIONING

The contract documents for the DLCU Up Project will require the contractor to clean up and remediate the area in which their activities took place. Following the completion of clean up activities, all vehicles and equipment, remaining fuel, supplies, and construction camp are to be removed from the site by the contractor. The construction specifications provide for a percentage of the payment for mobilization/demobilization to be withheld pending a satisfactory withdrawal from the site.

The contractor will be required to arrange for demobilization, which usually coincides with the annual sealift. All provisions of the Environmental Protection Plan will be strictly adhered to until the demobilization is complete.

7. SOCIAL IMPACT OF THE PROJECT

The Department of National Defence (DND) and Nunavut Tunngavik Incorporated (NTI) have signed the DND/NTI Agreement for the Clean Up and Restoration of the DEW Line Sites within the Nunavut Settlement Area outlining the economic provisions. The agreement includes a Minimum Inuit Content (MIC) for the clean up contract and requirements for training, specifically related to the clean up activities. Generally, the contracts for the clean up of DEW Line site include clauses requiring the contractor to maximize Inuit involvement. Inuit involvement in the clean up will include both employment and business (contracting) opportunities, and local purchases.

Typically, labour required for the clean up includes heavy equipment operators and general labourers, as well as environmental and engineering specialists. Other opportunities include cleaning and cooking staff and transportation. During the clean up there will likely be increased employment and business opportunities for members nearby communities. As the contract for the clean up of DYE-M has not been awarded, the requirements of the communities are not confirmed. It is likely that a temporary self-sufficient construction camp will be established at the site to accommodate the contractor and other personnel.

ספר דברי הימים ב'

- [illegible]

1. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

[illegible]

'ḳUṭḥ-ḳ' Cḳz' ḳz'Pz-ḳ' ḳ'ḫḫ

- [illegible]

ᐅᐅᐅᐅᐅ ᐅᐅᐅᐅ ᐅᐅᐅᐅᐅᐅᐅ ᐅᐅᐅᐅ

- [illegible]

4. $\nabla \cdot \mathbf{u} = 0$ and $\nabla \cdot \mathbf{v} = 0$

ኃገራዊ ሕግና ፍትሕ ለሕገመንግሥቱ ጥቅም

- [illegible]

- ለጥራት ማረጋገጫ ስልጣን የሰጠው የኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፐብሊክ ፍትሕ አስተዳደር ነው።
- ወደፊት ወደ ለጥራት ማረጋገጫ ስልጣን የሰጠው የኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፐብሊክ ፍትሕ አስተዳደር ነው።
- ለፍትሕ አስተዳደር የሰጠው የኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፐብሊክ ፍትሕ አስተዳደር ነው።
- ለጥራት ማረጋገጫ ስልጣን የሰጠው የኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፐብሊክ ፍትሕ አስተዳደር ነው።

6. የፍትሕ አስተዳደር ስልጣን ለጥራት ማረጋገጫ

ከፍተኛ የፍትሕ አስተዳደር ስልጣን የሰጠው የኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፐብሊክ ፍትሕ አስተዳደር ነው።

ከፍተኛ የፍትሕ አስተዳደር ስልጣን የሰጠው የኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፐብሊክ ፍትሕ አስተዳደር ነው።

7. ልማት ስልጣን ለጥራት ማረጋገጫ

ለጥራት ማረጋገጫ ስልጣን የሰጠው የኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፐብሊክ ፍትሕ አስተዳደር ነው።

ለጥራት ማረጋገጫ ስልጣን የሰጠው የኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፐብሊክ ፍትሕ አስተዳደር ነው።

- Physically restore the site to as natural a state as practical.

A detailed Project Description of the work to be completed at DYE-M is attached to the application.

5. **TYPE OF UNDERTAKING** (A supplementary questionnaire must be submitted with the application for undertakings listed in "bold")

Industrial ☐ **Remote/Tourism Camps** ☐ **Municipal** ☐ **Power** ☒ **Advanced Exploration** ☐ **Exploratory Drilling** ☐ **Other (describe):** Please see attached Project Description.

6. **WATER USE**

☒ To obtain water ☐ To modify the bed or bank of a watercourse ☐ To alter the flow of, or store, water ☐ **Other (describe):** Please see attached Project Description. ☐ To cross a watercourse

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)

It is estimated that the quantity of water to be used for running the camp, including contractor use, will be 150,000 litres/day. The camp requirements are approximately 35,000 litres/day, and construction use is estimated at 115,000 litres/day. Construction use will vary depending on daily activities, but may include dust suppression and granular material wetting. Water from the existing water supply lake will likely be pumped into a water tank on a truck using a portable pump and then transferred to a water storage tank at the Camp. As the contract for the work has not yet been awarded, the size of the tank is not available. No water will be returned to the source.

8. **WASTE** (for each type of waste describe: composition, quantity, methods of treatment and disposal, etc.)

☒ Sewage ☒ Solid Waste ☒ Hazardous ☒ Bulky Items/Scrap Metal ☐ Waste oil ☒ Greywater ☒ Sludges ☐ Other (describe):

Camp sewage will be directed to a two-cell lagoon situated a minimum of 100 metres from the camp, any natural drainage course and water bodies that support aquatic life. The sewage effluent will be tested once per month during operation, prior to discharge and tested for the following parameters: Biological Oxygen Demand, Total Suspended Solids, Oil & Grease; Ammonia and pH. Greywater from camp operations will be discharged to a pit and buried a minimum of 30 metres from the camp, or any natural drainage course or water body. Domestic garbage will be incinerated in an enclosed container and the residual waste buried in an on-site landfill. All excess fuels, camp equipment and facilities will be removed from the site after completion of the clean up activities. It is not anticipated that the clean up activities will generate any hazardous wastes. Hazardous wastes already existing at the site will be dealt with according to the Environmental Protection Plan in Section 9 of the Project Description. Empty barrels and fuel drums will be disposed of as described in Section 5.8 of the Project Description.

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

Land Use Permit

DIAND ☒ Yes ___ No If no, date expected _____

A land use permit has been applied for, but has not yet been received.

Regional Inuit Association ___ Yes ___ No If no, date expected _____

Commissioner ___ Yes ___ No If no, date expected _____

10. PREDICTED ENVIRONMENTAL IMPACTS OF UNDERTAKING AND PROPOSED MITIGATION MEASURES (direct, indirect, cumulative impacts, etc.)

NIRB Screening ☒ Yes ___ No If no, date expected.

The Project Description and Design Drawings were submitted to NIRB, and are attached to the application. This includes a summary of potential environmental impacts and proposed mitigation measures.

11. INUIT WATER RIGHTS

Will the project or activity substantially affect the quality, quantity, or flow of water flowing through Inuit Owned Lands and the rights of Inuit under Article 20 of the Nunavut Land Claims Agreement?

No

11. (Continued)

If yes, has the applicant entered into an agreement with the Designated Inuit organization to pay compensation for any loss or damage that may be caused by the alteration. If no compensation agreement has been made, how will compensation be determined?

N/A

12. CONTRACTORS AND SUB-CONTRACTORS (name, address and functions)

The contract for the clean up work has not yet been tendered or awarded. Therefore, the names, addresses and functions of the contractors and sub-contractors involved in the clean up of the DYE-M site are not available at this time.

13. STUDIES UNDERTAKEN TO DATE (list and attach copies of studies, reports, research, etc.)

During the radar upgrade program in the early 1990's, prior to the start of the DEW Line Clean Up, a number of environmental and engineering investigations were conducted at the DEW Line sites. The objectives of these studies were as follows:

- To identify the nature and extent of chemical contamination at the sites;
- To determine the possible impact of these contaminants on the Arctic ecosystem in general and the food chain in particular; and
- To develop practical environmental clean up strategies appropriate for the Arctic.

See Sections 1.5 and 3.3 in the Project Description for a list of the previous assessments and investigations.

14. THE FOLLOWING DOCUMENTS MUST BE INCLUDED WITH THE APPLICATION FOR THE REGULATORY PROCESS TO BEGIN

Supplementary Questionnaire (where applicable: see section 5) ☒ Yes ___ No If no, date expected _____

Inuktitut/English Summary of Project Application fee \$30.00 (c/o of Receiver General for Canada) Yes ☒ No ☐ If no, date expected _____ application is being submitted in behalf of a federal proponent, no application fees are required.	
15. PROPOSED TIME SCHEDULE	
Start Date: July 2004 Completion Date: October 2011	_____ Annual (or) ☒ Multi Year
Eva Schulz Environmental Scientist Title (Print) _____ Signature _____ Date Nov. 27/03	
For Nunavut Water Board use only APPLICATION FEE Amount: \$ _____ Receipt No.: _____ WATER USE DEPOSIT Amount: \$ _____ Receipt No.: _____	



P.O. Box 119

GJOA HAVEN, NT X0E 1J0 kNK5 wmoEp5 vtmpq

TEL: (867) 360-6338

NUNAVUT WATER BOARD

FAX: (867) 360-6369

NUNAVUT IMALIRIYIN KATIMAYINGI

EXPLORATION/ REMOTE CAMP SUPPLEMENTARY QUESTIONNAIRE

Applicant: Defence Construction Canada Licence No: _____
(For NWB Use Only)

ADMINISTRATIVE INFORMATION

1. Associate Project Manager: Nahed Farah Tel: 613-998-7917 Fax: 613-998-1061 E-mail: Nahed.Farah@dcc-cdc.gc.ca
2. Project Manager: Daniel Paquet Tel: 613-998-9523 Fax: 613-998-1061 E-mail: Daniel.Paquet@dcc-cdc.gc.ca

3. Does the applicant hold the necessary property rights?

A Land Use Permit from Indian and Northern Affairs Canada has been applied for.

4. Is the applicant an 'operator' for another company (i.e., the holder of the property rights)?
If so, please provide letter of authorization.

N/A

5. Duration of the Project

[] Annual

[☒] Multi Year:

If Multi-Year indicate proposed schedule of on site activities

Start: July 2004 Completion: October 2011

CAMP CLASSIFICATION

6. Type of Camp

[] Mobile (self-propelled)

[] Temporary

[☒] Seasonally Occupied: summer months only

[] Permanent

[] Other: _____

7. What are the design population of the camp and the maximum population expected on site at one time? What will be the fluctuations in personnel?

The camp will be able to accommodate up to 80 people, with an average of 50 people on site at a time. Peak time for maximum number of people on site is mid-July to the end of August.

8. Provide history of the site if it has been used in the past.

The site was a former Distant Early Warning (DEW) Line site, which was used from 1955 to 1993 to provide radar surveillance of the northern approaches to the North American air space. This now inactive chain of radar stations, at approximately 70 degrees latitude, stretches several thousand kilometres across the breadth of the Arctic. The DEW Line originally consisted of 42 sites in Canada, but was reduced to half of this number in 1963. The 21 sites decommissioned in 1963 are now the responsibility of the Department of Indian Affairs and Northern Development. The remaining 21 sites are the responsibility of the Department of National Defence.

In March 1985, Canada and the United States agreed to modernize the North American Air Defence System by closing the 21 remaining DND DEW Line sites and building the North Warning System (NWS). The DEW Line Clean Up (DLCU) focuses on closing out the former DEW Line sites, including the remediation of chemically contaminated soils, the stabilization of landfill areas and the demolition/disposal of surplus infrastructure and debris. A monitoring program will be carried out after the clean up has been completed.

CAMP LOCATION

9. Please describe proposed camp location in relation to biogeographical and geomorphological features, and water bodies.

Please see Section 6 of the attached Project Description for a description of the biogeographical and geomorphological features, and water bodies.

10. How was the location of the camp selected? Was the site previously used? Was assistance from the Regional Inuit Association Land Manager sought? Include maps and/or aerial photographs.

The camp and/or associated storage areas are to be located in areas of previous disturbance to minimize damage to previously undisturbed areas. The exact location of the camp will not be available until the contract has been awarded.

11. Is the camp or any aspect of the project located on:

☒ Crown Lands Permit Number (s)/Expiry Date: _____
☐ Commissioners Lands Permit Number (s)/Expiry Date: _____
☐ Inuit Owned Lands Permit Number (s)/Expiry Date: _____

A land use permit from Indian and Northern Affairs Canada has been applied for, but has not yet been received.

12. Closest Communities (distance in km):

The closest communities are Qikiqtarjuaq, located approximately 100 km northwest of the DYE-M site and Pangnirtung, located approximately 150 km southwest of the DYE-M site.

13. Has the proponent notified and consulted the nearby communities and potentially interested parties about the proposed work?

Community meetings were held in November 2003 in Qikiqtarjuaq, Pangnirtung, and Clyde River to discuss the clean up work at DYE-M. The meetings included an information session and a question and answer period.

14. Will the project have impacts on traditional water use areas used by the nearby communities? Will the project have impacts on local fish and wildlife habitats?

See Sections 7 and 8 in the Project Description for a summary of the potential project impacts.

PURPOSE OF THE CAMP

15. ☐ Mining
☐ Tourism (hunting, fishing, wildlife observation, adventure/expedition, etc.)
(Omit questions # 16 to 21)
☒ Other - Environmental Cleanup (Omit questions # 16 to 22)

16. ☐ Preliminary site visit
☐ Prospecting
☐ Geological mapping
☐ Geophysical survey
☐ Diamond drilling
☐ Reverse circulation drilling
☐ Evaluation Drilling/Bulk Sampling (also complete separate questionnaire)
☐ Other: _____

N/A

17. Type of deposit:
☐ Lead Zinc
☐ Diamond
☐ Gold
☐ Uranium
☐ Other: _____

N/A

DRILLING INFORMATION

18. Drilling Activities
☐ Land Based drilling
☐ Drilling on ice

N/A

19. Describe what will be done with drill cuttings?

N/A

20. Describe what will be done with drill water?

N/A

21. List the brand names and constituents of the drill additives to be used? Includes MSDS sheets and provide confirmation that the additives are non-toxic and biodegradable.

N/A

22. Will any core testing be done on site? Describe.

N/A

SPILL CONTINGENCY PLANNING

23. Does the proponent have a spill contingency plan in place? Please include for review.

Please see Section 10 of the Project Description.

24. How many spill kits will be on site and where will they be located?

The spill kit will be located within the camp and will consist, at minimum, of the following items:

- Absorbent, oil (7kg bag) – 12
- Salvage drum (85 gal) – 2
- Shovel – 2
- Gloves, rubber lined – 1 pair
- Wheelbarrow – 1

A more detailed list of spill kit items can be made available after award of the clean up contract. In addition to the larger spill kits containing overpack barrels, smaller spill kits will be available with the on-site machinery.

25. Please describe the types, quantities, and method of storage of fuel and chemicals on site, and provide MSDS sheets.

A variety of fuels and other hazardous materials may be used at the DYE-M site during clean up. The greatest volumes will likely involve Arctic diesel fuel. Other substances such as acids, solvents, lubricants, hydraulic fluid, antifreeze, fuel additives and engine coolants also pose potential environmental and safety hazards.

Material Safety Data Sheets will be available after award of the contract. The Contractor is required to comply with the requirements of Workplace Hazardous Materials Information System (WHMIS), which includes the provision of MSDS information.

WATER SUPPLY AND TREATMENT

26. Describe the location of water sources.

Please see Drawing 101 in Appendix I for the location of the existing water supply lakes at DYE-M.

27. Estimated demand (in L/day/person):

☐ Domestic Use: (340 L/day/person). Water Source: water supply lake(s)

☐ Drilling Units: n/a Water Source: _____

☐ Other: n/a Water Source: _____

28. Describe water intake for camp operations? Is the water intake equipped with a mesh screen to prevent entrapment of fish? Describe:

Water will be pumped into a truck equipped with a holding tank from the water supply lake and transferred to a tank at the camp area. All water intake hoses will be equipped with screens with a mesh size of 2.5 millimetres or less to prevent the intake of fish.

29. Will drinking water quality be monitored? What parameters will be analyzed and at what frequency? Drinking water quality will be monitoring once per week. The parameters to be analysed include: chlorine, sodium, potassium, magnesium, calcium, iron, manganese, conductivity, hardness, nitrate, nitrite, sulphate, pH, total coliforms, and E. Coli.

30. Will drinking water be treated? How?

If required, drinking water will be treated in accordance with the Health Canada Guidelines for Canadian Drinking Water Quality. Iodine, chlorination and/or thermal heat treatment are common on-site drinking water treatments.

31. Will water be stored on site?

Water will be stored at the camp in a mobile holding tank.

WASTE TREATMENT AND DISPOSAL

32. Describe the characteristics, quantities, treatment and disposal methods for:

☐ Camp Sewage (blackwater)

Sewage will be discharged into a 2-cell lagoon with the effluent tested prior to discharge. The remaining settled solids will be buried on-site. The lagoon will be located a minimum of 100 metres away from the camp and any natural drainage course or water body, and any water body that supports aquatic life.

☐ Camp Greywater

Greywater from camp operations will be discharged to a pit and buried a minimum of 30 metres from the camp or any natural drainage course or water body.

☐ Solid Waste

Domestic and other non-hazardous waste will be incinerated and the residue will be buried in an on-site.

☐ Bulky Items/Scrap Metal

All excess fuels, camp equipment and facilities will be removed from the site after the completion of the clean up activities.

☐ Waste Oil/Hazardous Waste
It is not anticipated that the clean up activities will generate any hazardous wastes. Hazardous wastes already existing at the site will be dealt with according to the Environmental Protection Plan in Section 9 of the Project Description during the overall site clean up.

☐ Empty Barrels/Fuel Drums
Empty barrels and fuel drums will be disposed of as described in Section 5.8 of the Project Description during the overall site clean up.

☐ Other:

33. Please describe incineration system if used on site. What types of wastes will be incinerated?
Domestic, non-hazardous solid wastes will be incinerated in an enclosed container, likely an empty 205 litre barrel. The container will be located at least 100 metres away from the camp, any site facilities, natural water courses or water bodies. A fire extinguisher will be provided at the incineration site.

34. Where and how will non-combustible waste be disposed of? If in a municipality in Nunavut, has authorization been granted?
Non-combustible, non-hazardous solid wastes will be buried on site.

35. Describe location (relative to water bodies and camp facilities) dimensions and volume, and freeboard for sumps (if applicable).

N/A

36. Will leachate monitoring be done? What parameters will be sampled and analyzed, and at what frequency?
The newly constructed Tier II Disposal Facilities on-site have been designed so that they will not produce leachate. The Non-hazardous Waste Landfills do not contain any wastes that would produce leachate. Regardless, monitoring of landfills for the presence of leachate is conducted as part of the Landfill Monitoring Plan, which is updated upon completion of the site clean up and continues for a period of 25 years.

OPERATION AND MAINTENANCE

37. Have the water supply and waste treatment and disposal methods been used and proven in cold climate? What known O&M problems may occur? What contingency plans are in place?

The water supply and treatment systems have been used during the cleanup of 8 DEW Line sites that are completed, and are currently being used during the clean up of another 2 DEW Line site. No outstanding problems were discovered during the clean up of these sites. Contingency plans for fuel and hazardous material spills, wildlife encounters and discovery of heritage resources are provided in the Environmental Protection Plan in Section 9 and the Spill Contingency Plan in Section 10 of the Project Description.

ABANDONMENT AND RESTORATION

38. Provide a detailed description of progressive and final abandonment and restoration activities at the site.

The aim of the DEW Line Clean Up Project is to decommission those facilities used by the former DEW Line which have been declared surplus to the requirements of the new North Warning System and to restore the sites to an environmentally sound condition. Environmental restoration includes the setting of remediation objectives that are designed to preclude the continued migration of contamination (and hence biomagnification) into the Arctic ecosystem/ food chain. To accomplish this, remediation will include:

- The excavation of soils in cases where parameters exceed those that have been set for the project (i.e., believed to cause significant input into the lower levels of the food chain, for example, higher plants and detritus); and,
- The remediation of landfills which may serve as a source of water contamination and may enter the lower levels of the marine food chain (i.e., algae).

Site decommissioning activities, when the clean up is completed, will involve the demobilization of all contractor equipment, camp infrastructure (if used), and materials no longer required at the site. The requirement for the contractor to undertake these decommissioning activities is a contractual obligation written into the project specifications.

BASELINE DATA

39. Has or will any baseline information be collected as part of this project? Provide bibliography.
- ☐ Physical Environment (Landscape and Terrain, Air, Water, etc.)
 - ☐ Biological Environment (Vegetation, Wildlife, Birds, Fish and Other Aquatic Organisms, etc.)
 - ☐ Socio-Economic Environment (Archaeology, Land and Resources Use, Demographics, Social and Culture Patterns, etc.)
 - ☐ Other:

Baseline information has been collected as part of this project. Please see Section 13 of the Project Description for the list of references. No further baseline information will be collected.

REGULATORY INFORMATION

40. Do you have a copy of
- ✓ Article 13 - Nunavut Land Claims Agreement
 - ✓ NWB - Water Licensing in Nunavut - Interim Procedures and Information Guide for Applicants
 - ✓ NWB - Interim Rules of Practice and Procedure for Public Hearings
 - ✓ NWTWB - Guidelines for the Discharge of Treated Municipal Wastewater in the NWT
 - ✓ NWTWB - Guidelines for Contingency Planning

- ✓ DFO - Freshwater Intake End of Pipe Fish Screen Guideline Fisheries Act - s.35
- ✓ RWED - Environment Protection- Spill Contingency Regulations
- ✓ Canadian Drinking Water Quality Guidelines
- ✓ Public Health Act Camp Sanitation Regulations
- ✓ Public Health Act Water Supply Regulations
- ✓ Territorial Land Use Act and Regulations

You should consult the above document, guidelines, and legislation for compliance with existing regulatory requirements.

Project Description For the Clean Up of DYE-M, Cape Dyer DEW Line Site

**Prepared by:
UMA Engineering Ltd.
on Behalf of Defence Construction Canada
(for the Department of National Defence)**

November 2003

Project Number: 0171-125-01-08 - DYE-M 3.6

Table of Contents	Page No.
1. BACKGROUND INFORMATION.....	1.1
1.1 Proponent Identification Information.....	1.1
1.2 Lead Authorizing Agencies.....	1.1
1.3 Environmental Assessment Process.....	1.2
1.3.1 Scoping.....	1.2
1.3.2 Assessment of Environmental Effects.....	1.4
1.3.3 Identification of Mitigation Options.....	1.5
1.4 Regulatory Overview.....	1.6
1.4.1 Introduction.....	1.6
1.4.2 Federal Acts, Regulations and Guidelines.....	1.6
1.4.3 Nunavut and Northwest Territory Acts, Regulations and Guidelines.....	1.11
1.4.4 Required Authorizations.....	1.12
1.5 Previous Environmental Assessments.....	1.14
1.6 Contract Award Procedures.....	1.15
2. SITE DESCRIPTION.....	2.1
2.1 Location.....	2.1
2.2 History.....	2.1
2.3 Project Activities.....	2.2
2.4 Schedule.....	2.3
2.5 Previous Clean Up Activities.....	2.3
2.5.1 Beach Refuel Area Remediation.....	2.3
2.5.2 Due Diligence Clean Up.....	2.4
3. PROJECT PLANNING.....	3.1
3.1 Rationale for the Project and Primary Goals.....	3.1
3.2 Evaluation of Alternatives to the Project.....	3.2
3.3 Initial Investigations.....	3.3
3.4 DEW Line Clean Up Protocol.....	3.5
3.4.1 Protocol Development.....	3.5
3.4.2 Criteria.....	3.6
3.4.3 Environmental Working Group.....	3.6
3.5 Final Investigation and Delineation.....	3.7

Table of Contents

4.	PUBLIC CONSULTATION PROCESS.....	4.1
4.1	Inclusion of Traditional Knowledge.....	4.1
4.2	Initial Public Consultation.....	4.2
4.2.1	1992 Program.....	4.3
4.2.2	1993 Program.....	4.5
4.2.3	1994 Program.....	4.5
4.2.4	1996 Program.....	4.6
4.2.5	1997 Program.....	4.6
4.2.6	Pre-Construction Public Consultation.....	4.6
4.3	DND/NTI Project Steering Committee.....	4.6
5.	IMPLEMENTATION AND DESIGN/ENGINEERING.....	5.1
5.1	Site Access and Transportation Methods.....	5.1
5.2	Development of Borrow Areas.....	5.1
5.3	Proposed Construction.....	5.2
5.3.1	Non-Hazardous Waste (NHW) Landfill.....	5.3
5.3.2	Tier II Soil Disposal Facility.....	5.4
5.3.3	Hydrocarbon Soil Treatment Facility.....	5.5
5.4	Landfill Excavation.....	5.8
5.5	Landfill Closure and Grading.....	5.8
5.6	Description of Existing Landfills.....	5.9
5.6.1	Upper Site Landfills.....	5.9
5.6.2	Lower Site Landfills.....	5.11
5.7	Removal of Site Debris.....	5.16
5.8	Barrel Disposal Requirements.....	5.16
5.8.1	Inspection.....	5.17
5.8.2	Sampling.....	5.18
5.8.3	Testing.....	5.19
5.8.4	Disposal of Barrel Contents.....	5.19
5.8.5	Disposal of Barrels.....	5.20
5.9	Contaminated Soil Disposal Requirements.....	5.20
5.9.1	Contaminated Soil Types.....	5.21
5.9.2	Tier I Contaminated Soil Disposal Requirements.....	5.24
5.9.3	Tier II Contaminated Soil Disposal Requirements.....	5.24

Table of Contents	Page No.
5.9.4 CEPA Contaminated Soil Disposal Requirements.....	5.25
5.9.5 Hydrocarbon Contaminated Soil Disposal Requirements.....	5.25
5.10 Selection of Contaminated Soil Disposal Facility Locations.....	5.26
5.11 Demolition of Facilities.....	5.27
5.12 Removal of Hazardous Materials.....	5.28
5.13 Transportation of Hazardous Materials Off-site.....	5.30
5.14 Grading and Addition of Granular Materials.....	5.30
5.15 Contractor Support Activities.....	5.30
5.16 Future Activities.....	5.31
6. DESCRIPTION OF THE ENVIRONMENT.....	6.1
6.1 Climate.....	6.1
6.2 General Geology.....	6.1
6.3 General Hydrology.....	6.2
6.4 Flora	6.4
6.5 Fauna.....	6.5
6.5.1 Terrestrial Mammals.....	6.5
6.5.2 Marine Mammals.....	6.6
6.5.3 Avifauna	6.7
6.5.4 Fish	6.8
6.6 Heritage Resources.....	6.8
6.7 Socio-Economic Setting.....	6.9
6.8 Native Land Use	6.9
6.9 Government Land Use.....	6.10
6.10 Valued Ecosystem Components.....	6.10
7. IDENTIFICATION OF ENVIRONMENTAL EFFECTS	7.1
7.1 Environmental Effects.....	7.1
7.1.1 Value Ecosystem Components vs Project Components.....	7.1
7.1.2 Impact of the Environment on Project.....	7.4
8. IDENTIFICATION OF CUMULATIVE ENVIRONMENTAL EFFECTS.....	8.1
8.1 Analysis of Cumulative Environmental Effects.....	8.1
8.2 Identification of Mitigation Measures and Residual Impacts.....	8.2

Page No.

Table of Contents

9.1	ENVIRONMENTAL PROTECTION PLAN.....	9.1
9.1	Scope and Objectives.....	9.1
9.2	General Environmental Protection Measures.....	9.2
9.2	General.....	9.2
9.2	Site Operations.....	9.2
9.3	Storage and Handling of Fuel and Other Hazardous Substances.....	9.3
9.4	Water Management.....	9.4
9.4	Domestic Waste Management.....	9.4
9.5	Road Construction and Maintenance.....	9.5
9.5	Stream Crossing and Diversion.....	9.5
9.6	Borrow Pit and Quarry Development and Operation.....	9.6
9.7	Hazardous Waste Material Processing Areas.....	9.7
9.7	Contaminated Soils.....	9.7
9.8	Hydrocarbon Contaminated Soils.....	9.8
9.9	Landfill Closure and Development.....	9.9
9.9	Disposal of Site Debris.....	9.9
9.10	Demolition of Buildings and Structures.....	9.10
9.10	Marine Vessel Movements.....	9.10
9.10	Aircraft Movements.....	9.10
9.11	Handling of Dangerous Goods and Hazardous Waste Materials.....	9.11
9.12	Explosives.....	9.12
9.13	Work Site Clean Up and Abandonment.....	9.13
9.13	Protection Measures for Valued Environmental Components.....	9.13
9.3	9.3.1 Human Health and Safety.....	9.3
9.14	9.3.2 Local Resource Use.....	9.14
9.15	9.3.3 Surface Water and Fish Habitat.....	9.15
9.15	9.3.4 Permafrost Soils.....	9.15
9.16	9.3.5 Coastal Marine Resources.....	9.16
9.17	9.3.6 Terrestrial Resources.....	9.17
9.19	9.3.7 Heritage Resources.....	9.19
9.20	Environmental Inspection.....	9.20
9.4	9.4.1 General.....	9.4
9.20	Wildlife Encounter Contingency Plan.....	9.20
9.21	Heritage Resource Contingency Plan.....	9.21
9.22		9.22

Table of Contents	Page No.
10. SPILL CONTINGENCY PLAN	10.1
10.1 Introduction.....	10.1
10.1.1 Scope and Purpose.....	10.1
10.2 Response Organization	10.2
10.2.1 Roles and Responsibilities.....	10.2
10.3 Initial Action.....	10.6
10.4 Reporting Procedure	10.11
10.5 Action Plan.....	10.13
10.5.1 Environmental Protection Measures	10.13
10.5.2 General Procedures.....	10.13
10.5.3 Fuel Storage Areas	10.14
10.5.4 Hazardous Material Storage Areas.....	10.15
10.6 Spill Recovery Success.....	10.16
10.7 Environmental Mapping	10.17
10.8 Resource Inventory	10.17
10.9 Training and Exercises.....	10.18
11. ABANDONMENT AND DECOMMISSIONING PLAN	11.1
12. MONITORING AND MAINTENANCE PLANS	12.1
12.1 Monitoring in Relation to the Environmental Assessment.....	12.1
12.2 Monitoring in Relation to Environmental Objectives.....	12.1
13. INFORMATION SOURCES.....	13.1

List of Tables

Table 1-1:	Project Contacts.....	1.1
Table 1-2:	List of Authorizations for Specific Clean Up Activities	1.13 - 1.14
Table 5-1:	Borrow Areas.....	5.2
Table 5-2:	Barrel Protocol Criteria and Disposal Summary	5.17
Table 5-3:	DCC Tier II Contaminated Soil Criteria	5.21
Table 5-4:	Contaminated Soil Disposal Requirements.....	5.24
Table 5-5:	Known Hazardous Waste Material Disposal Requirements.....	5.29
Table 6-1:	Flora at DYE-M.....	6.4 - 6.5
Table 6-2:	Terrestrial Mammals at DYE-M.....	6.5 - 6.6

Table of Contents

Table 6-3:	Marine Mammals at DYE-M.....	6.6 - 6.7
Table 6-4:	Avifauna at DYE-M.....	6.8
Table 6-5:	Fish at DYE-M.....	6.8
Table 7-1:	Summary of VEC's, Project Activities and Potential Impacts.....	7.1 - 7.4
Table 8-1:	Impacts, Mitigation Measures and Significance of Potential Environmental Effects Caused by the Clean Up of DYE-M.....	8.3 - 8.6
Table 9-1:	Approximate Nesting and Breeding Chronology for Birds Observed Near DEW Line Stations.....	9.19
Table 10-1:	Contact List.....	10.4
Table 12-1:	Landfill Monitoring Requirements.....	12.2

List of Figures

Figure 1:	Emergency Response Team Organization.....	10.5
Figure 2:	Initial Response Actions.....	10.8
Figure 3:	Procedures for Land Spill Response.....	10.9
Figure 4:	Response Procedures for Freshwater and Marine Spill Response.....	10.10

List of Appendices

Appendix I - Drawings
Appendix II - Site Photographs
Appendix III - DND-NTI Cooperation Agreement
Appendix IV - Project Review Information for the Department of Fisheries and Oceans Canada