UMA Engineering Ltd.
2540 Kensington Road NW
Calgary, Alberta T2N 3S3
T 403.270.9200 F 403.270.0399 www.uma.aecom.com

May 18, 2007 File Name: CAM-1 (3.6)

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

Dear Phyllis:

Re: Application #1BR-JEN: Response to Nunavut Water Board Request for Additional Information

Thank you for the thorough review of the water use license application for the proposed clean up work at the CAM-1, Jenny Lind Island DEW Line site. Many of the comments have been addressed, as identified in the following sections. However, we also feel that many of the comments are not warranted for this site, as it is part of an on-going clean up project that started in 1996 and has had many previous water use licenses approved for similar sites.

1) The response provided to the NIRB is attached to this letter.
2) There are a significant number of reports and technical documents and provision of these documents represents a deviation from the normal application process. As a result, separate technical documents will not be provided; however, should additional technical questions arise regarding the project, they will be addressed.
3) Section 8.3.2 prescribes the site selection criteria the contractor must adhere to when setting up the camp. Although the exact location of the camp cannot be determined until the contractor is on site, the objective is to site the camp away from environmentally sensitive areas so that potentially negative impacts cannot occur. Pleases note that detailed information on the camp location can only be provided once the camp has been set up by the Contractor.
4) The minutes from each of the community meetings, including questions and answers, and copies of the presentations, are attached.
5) There will be an on-site laboratory capable of testing for select parameters. However, the on-site lab is not CAEAL accredited and representative samples will also be sent to a southern, CAEAL-accredited laboratory for confirmatory testing.
6) The project specific and site specific abandonment and restoration plans are outlined in the Project Description, specifically in Sections 5.0, 8.0, 9.0 and 11.0. It should be noted that the DEW Line Clean Up Project is an abandonment and restoration program for all of DND's DEW Line sites.
7) No, CAM-1A is not included in the clean up plans.
8) Final drawings had been sent to the NWB in September 2006. Additional copies are attached for your reference.
9) The capacities of the facilities are detailed on the design drawings. Overall, the facilities are sized according to the estimated volume of contaminated soils, debris materials, as well as a contingency, the facilities are required to contain.
10) The siting requirements are detailed in Section 5.4.7. The sizes of the facilities are provided on the drawings. The sizing of the facilities is based on the volume of materials they are required to contain, as detailed in Table 7, Section 5.4.6.

11) The details of the geothermal analysis are quite numerous and not specifically relevant to the NWB mandate and are not being submitted.
12) As per the project specifications, this contaminated soil is placed with a maximum loose thickness of 0.4 metres.
13) Treatment is to be determined by the contractor and reviewed by the owner, but all discharge must meet the criteria. Typically for landfarm contact water, the issue is associated with potential hydrocarbon impacts. For this, the form of treatment that is usually employed would be to use an oil-absorbent boom to remove any oily sheen.
14) The discharge criteria for the wastewater are provided in the response to the NIRB (reference #1) and are also provided to the site contractor, who is responsible for achieving the criteria. Defence Construction Canada does not prescribe the treatment methodology. The discharge points are from the facilities, unless the areas have been pumped into one of the existing sites tanks for storage, in which case the discharge point is at the tank. There is NO discharge to any water bodies.
15) The project protocol calls for monitoring of turbidity and total suspended solids in areas of surface water. No other parameters are to be monitored.
16) The areas containing partially buried debris were investigated for potential contaminants during the site investigation in 2002. If any environmental impacts were present associated with the buried and partially buried debris, the areas were identified for removal. As there will be nothing left following removal, there would be no reason to monitor. In areas where no environmental impacts were identified, the surface debris and partially buried debris that can be removed without causing significant disturbance to the soils are to be removed. Debris that cannot be removed without causing a major surface disturbance is to be left in place, covered with additional gravel and regraded.
17) The units are mg/L.
18) The materials will be burned onsite in a manner that provides an oxygen rich environment.
19) Oils and glycols burn with very little remaining ash, and oil absorbent booms are reported to have anywhere from less than 1% ash to as high as 3% ash. This means that for every tonne of absorbent material burned, there will be 30 kg of ash remaining. Only non-contaminated material can be burned, and any ash would be buried in an on-site landfill. The incineration of barrel contents will create a positive impact on the soils and water by removing those materials from contact, or potential contact with the environment.
20) This does not seem relevant to the NWB mandate; however, the environmental inspection staff on-site is from the Environmental Sciences Group of the Royal Military College at Kingston, ON. The environmental inspection staff report to the DCC Contract Coordinator.
21) Wastewater volumes are extremely variable and difficult to predict as it depends on a number of factors including proximity to water bodies, presence of and depth to active layer water, rainfall amount, etc. The contractor is encouraged to minimize the volumes of contact water. If this is not practical, the contractor may use the abandoned fuel tanks which are scheduled for disposal, once the tanks have been thoroughly cleaned. As such, the potential capacity for wastewater storage at CAM-1 exceeds 300,000 US Gallons, or over 1 million litres.
22) All residual kitchen wastes and other non-hazardous wastes will be placed in the Non-Hazardous Waste Landfill prior to final closure. The criteria for disposal in the NHW Landfills is provided in Section 6.4 of the Appendix B.
23) All of the materials that could potentially be on-site and therefore potentially spilled were listed in Section 9.5.
24) The landfarm will not be abandoned until such time as the results of the soil monitoring show that the concentrations of hydrocarbons are below the DLCU criteria. The landfarm, sewage lagoon and demolished facilities do not require monitoring in the post-construction phase, as they will be restored as part of the closure activities.

25) Surface water runoff from the facilities will not be monitored. Engineering measures are to be implemented to preclude runoff during construction.
26) The sampling procedures and protocols are the same as used for all of the other DEW Line sites.
27) Excavated landfill sites are not monitored. The title for Table 23 is incorrect and should read: *Table 23: Detailed Monitoring Requirements for the Main Landfill, Station East Landfill, Borrow Area North Landfill, Northeast Landfill, Station West Landfill, Southeast Landfill, USAF Landfill, and East Landing Landfill*.
28) There are a very large number of documents and all of the pertinent information has been included in the Project Description, as such, they will not be provided.
29) Please refer to response #8.
30) The drawing references are not abbreviations, rather they are location labels.
31) The Environmental Agreement between DND and NTI (Appendix B) does not call for sampling of surface water bodies as they were determined to be a low environmental risk. The potential sources of contaminants are going to be remediated by leachate containment. These water bodies are shallow and seasonal and will likely be filled in with granular material as part of the remediation.
32) Yes, the planned mitigation measures are enough to preclude the hazards. The remediation plans are based on an extensive site investigation program and review by the Environmental Working Group for the project.

Comments 33 to 49 generally refer to the engineering design details. Please note that the designs were prepared by Professional Engineers registered in Nunavut and also stamped with an engineering permit to Practice in Nunavut. If a detailed design review is intended, we request that the procedures outlined by NAPEGG be followed.

We trust the additional information provided is sufficient to continue processing the water use license application. Please feel free to contact the undersigned at 403-270-9220 or Douglas Craig at 613-998-7288 if you have any additional questions or comments.

Sincerely,

UMA Engineering Ltd.

Eva Schulz, B.Sc., P.Ag.
Environmental Scientist
Eva.Schulz@uma.aecom.com

Encl. NIRB Response - July 6, 2006
Drawings
Community Meeting Minutes

cc: Douglas Craig, DCC

UMA Engineering Ltd.
2540 Kensington Road NW
Calgary, Alberta T2N 3S3
T 403.270.9200 F 403.270.0399 www.uma.aecom.com

July 6, 2006 Project Number: 0171-135-01-08

Stephen Lines, P. Biol., DEIA
Technical Advisor
Nunavut Impact Review Board
P.O. Box 1360
Cambridge Bay, Nunavut X0B 0C0

Dear Stephen:

Re: Comments re: NIRB 06DN029, CAM-1, Jenny Lind Island DEW Line Site Clean Up Project

UMA Engineering Ltd. is pleased to provide the following clarifications regarding the comments on the proposed clean up plans for the CAM-1, Jenny Lind Island DEW Line site. The following information is being provided on behalf of Defence Construction Canada and the Department of National Defence.

1.) The hazardous contaminated soils in the former sewage lagoon outfall contain PCBs in concentrations ranging from 54 to 59 ppm. Soils containing PCBs above 50 ppm will be excavated, containerized and shipped south for disposal in registered treatment facility.

2.) The remediation criterion to be achieved at the end of the treatment period on the landfarm is 2500 ppm of Total Petroleum Hydrocarbons. The assessment criterion of 2500 ppm in included in the 1998 DND-NTI Cooperation Agreement.

3.) The monitoring well at the Main Landfill will continue to be monitored to verify the remediation requirements. The current remediation plan is to remove surficial contamination and regrade the landfill to promote positive surface drainage and ensure effective erosion control as shown on the drawings included in the submission.

4.) Based on observations during the site investigation in 2002, the two ponds adjacent to the Borrow Area North Landfill are approximately 30 m x 30 m x 0.6 m deep, and 65 m x 60 m x 0.9 m deep. Based on the shallow depth of the ponds, it is anticipated that they would freeze to depth, and would therefore not support a fish population. However, birds were noted to use the pond as a feeding and nesting habitat. Excavation or leachate containment would cause extensive damage to the pond. Therefore, the remediation plan for this landfill is to remove the areas of soil contamination as noted on the drawings, and cover the landfill with clean fill to stabilize the landfill. Based on excavations of Tier II contaminated soil at other sites, the contamination is not expected to extend to a depth greater than 0.5 m below ground surface. All regrading work is required to be completed so that it matches the existing terrain and it must promote positive drainage, therefore, there is not expected to be a significant impact to the drainage in the area. Treatment options for contaminated water, if encountered, are included in the construction wastewater management plan, which is attached.

5.) Please see the attached Construction Wastewater Management Plan.

6.) Please see the attached Construction Wastewater Management Plan

7.) In the early 1990's during the closure of the sites, Environment Canada conducted a program to remove PCB containing equipment or drain of the equipment at all of the sites, which included transformers and other electrical equipment. As well, based on experience from other site clean ups, there has been little or no equipment remaining which still contain PCB liquids. Therefore, it is not anticipated that there will be any PCBs encountered in the transformer located in the garage. If however it appears that the transformer has not been drained, it will be treated as per the disposal requirements for hazardous materials, and transported to a southern disposal facility.

8.) If the switches still contain mercury, they will be transported off-site and disposed of as hazardous materials.

We trust the additional information provided meets your request for clarifications. Please feel free to contact the undersigned if you have any further questions or comments.

Sincerely,

UMA Engineering Ltd.

Eva Schulz, P.Ag.
Environmental Scientist
eva.schulz@uma.aecom.com

Encl. Construction Wastewater Management Plan

cc: Philip Warren, DCC

CAM-1, Jenny Lind Island - Construction Wastewater Management Plan

DLCU construction activities generate wastewater from dewatering activities including contact water from landfill and contaminated soil excavations, new landfill operation, contaminated soil treatment areas and sewage lagoon effluents. Water management on-site during construction is the Contractors' responsibility. However, the nature of the Arctic terrain, site logistics and support, climate and weather makes the mitigation of discharge water a challenging task. Contact water associated with landfill and contaminated soil excavations, the operation of new landfills (Tier II and Non-Hazardous Waste facilities) and landfarms potentially contain a number of chemical parameters of concern.

The chemical parameters selected for the monitoring plan are based on the types of contaminants found at the sites during the environmental assessments conducted over the last two decades. The criteria for the wastewater are considered conservative and appropriately protective of the arctic environment. The release of all water must conform to the Construction Wastewater Discharge Criteria, listed in the following table. The basis or background for the choice of criteria is also listed in the table

Construction Wastewater Discharge Criteria

Parameter	Monitoring Plan Criteria	NWT Guidelines (1992)	Nunavut Effluent Guidelines (2000)	CCME Interim Irrigation Criteria	Chlorobiphenyls Regulations (CEPA 1991)
pH	6-9	N.C.	N.C.	N.C.	N.C.
Oil & Grease	5 mg/L	None Visible	N.C.	N.C.	N.C.
Arsenic (total)	0.05 mg/L	0.05	0.5	0.1	N.C.
Cadmium (dissolved)	0.005 mg/L	0.005	0.0017	0.01	N.C.
Chromium (total)	0.1 mg/L	0.1	0.89 (trivalent)	0.1	N.C.
Cobalt (dissolved)	0.1 mg/L	0.1	N.C.	0.05	N.C.
Copper (dissolved)	0.2 mg/L	0.2	N.C.	0.2	N.C.
Lead (total)	0.05 mg/L	0.05	N.C.	0.05	N.C.
Mercury (total)	0.0006 mg/L	0.0006	0.01	0.0006	N.C.
Nickel (dissolved)	0.3 mg/L	0.3	N.C.	0.2	N.C.
PCB (total)	1 mg/L	N.C.	N.C.	N.C.	5 mg/L*
Zinc (total)	0.5 mg/L	0.5	3	1	N.C.

* In respect of application to a road surface.
N.C. – No criteria.

The collected wastewater will be tested each time prior to discharge. Once it is confirmed that the wastewater meets the discharge criteria, it will be released onto the ground in an area that is at least 30 metres from natural drainage courses and 100 metres from fish-bearing waters.

The locations of the discharge areas will vary, depending on the work areas. For example, the barrel cleaning operations are typically located within the hazardous materials processing area. Wastewater that collects at contaminated soil excavations and landfill excavations is typically

sampled and treated in place. In areas where the volume of wastewater is significant and affects the progression of work, the wastewater may be recirculated. For example, wastewater occurring during landfill excavation would be sampled and recirculated over the landfill surface until satisfactory results have been achieved. Wastewater may also be temporarily stored in existing tanks while awaiting test results, which are designated for disposal, provided that it is not stored over the winter months. The volume of wastewater storage during any one construction season shall not exceed 50% of the total capacity of the tank, and shall not exceed the available treatment capacity during that construction season. In the event the water cannot be treated to meet the discharge criteria, the wastewater will be containerized and shipped to a southern disposal facility.

Jenny Lind Island (Cam-1) and Byron Bay (Pin-4) Community Meetings

National Defence / Défense Nationale

April 24-27, 2006
Nunavut:
Cambridge Bay
Kugluktuk
Gjoa Haven
Taloyoak

Pin-4 and Cam-1 Community Meeting

Cambridge Bay, April 24, 2006
Kugluktuk, April 25, 2006
Gjoa Haven, April 26, 2006
Taloyoak, April 27, 2006

Brief Agenda for each meeting

1. Introduction

2. Presentation:
   The Project Team and Background Agreements – Steve Poaps (DCC)
   Scientific Summary – Kat White (ESG)
   Construction Summary – Andrew Passalis (UMA)

3. Question and Answer period

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DEW LINE CLEAN UP (DLCU)

National Defence Défense nationale

COMMUNITY MEETINGS FOR PIN 4 (Byron Bay) and CAM 1 (Jenny Lind Island), APRIL 2006

Defence Construction Canada | Construction de Défense Canada

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Purpose of the meeting

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- To inform the residents about the status of the DEW Line Clean-Up project
- To provide information on the work to be done at PIN 4, Byron Bay, and CAM 1, Jenny Lind Island.

Defence Construction Canada | Construction de Défense Canada

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Presentation Outline

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DEW Line Clean up:

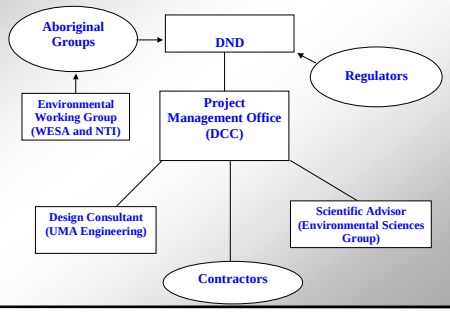
- The Project Team and Background Agreements- Steve Poaps
- Site Investigation and Monitoring – Katherine White
- Design and Construction – Andrew Passalis
- Expected Timelines For Clean up – Steve Poaps
- Questions

Defence Construction Canada | Construction de Défense Canada

DLCU Sites

Who We Are

DEW Line Clean Up Team



Project Management Office (PMO) and Project Team

PMO

- Responsible to DND for overall performance of the project, from start to finish
- Full time on-site Representation during the clean up construction

Scientific Advisors

- Environmental Sciences Group (ESG)

Engineering Consultant/ Advisor

- UMA Engineering Ltd.

Environmental Working Group

- NTI and for DND, Water and Earth Sciences Associates (WESA)

Archaeological Work

- Thomson Heritage Consultants

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Project Aim

At 21 DND DEW Line sites:

- Return sites to an environmentally safe condition
- Prevent migration of contamination from the sites into the food chain
- Demolish unused buildings
- Remediate existing landfills

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The Distant Early Warning (DEW) RADAR Line

- 42 sites constructed in Canada in the late 50's
- 21 sites were decommissioned in the early 1960's and are the responsibility of the Department of Indian Affairs and Northern Development (DIAND)
- 21 other sites were decommissioned between 1989 and 1993 and are the responsibility of the Department of National Defense (DND)
- Replaced by the more modern North Warning System; often these sites share locations with old DEW Line sites

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All the sites are located within Aboriginal land claim areas. It is a cooperative project with the Aboriginal People.

1998: Environmental agreement signed by DND and NTI in Cambridge Bay – Addresses environmental issues and how the cleanup will be carried out in Nunavut.

- Landfill containment
- Hazardous materials
- Asbestos
- Contaminated soils
- Testing to ensure the clean-up has been done properly
- Restoration of disturbed areas
- Monitoring landfills
- Schedule for the clean-up

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Economic Agreement between DND and NTI– signed in August 2001 in Iqaluit

- Economic benefits for NTI ensuring Inuit participation
- Training allocation ($750,000 for Nunavut sites) in support of an NTI training plan
- Increased opportunities for Inuit to receive training and experience to create, operate and manage Inuit owned businesses in Nunavut
- Competitive contracts that specify Inuit content and participation
- Establishment of a mechanism whereby contractors fulfill their agreements on levels of Inuit participation.

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Highlights of the DND-NTI Cooperation Agreement

- DND retains long term environmental responsibility.
- DND intends to finish the clean up of all 21 DEW Line sites in the next 6 years.
- Site cleanup is followed by a 25 year monitoring program.

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Final Result of the clean up

- Overall positive impact on wildlife, fish and marine mammals as contamination sources will be removed.
- Removal of safety hazards.
- Clean up of land at site.
- Economic, employment, and training opportunities for area residents.

Defence Construction Canada / Construction de Défense Canada

Environmental Cleanup at Byron Bay (PIN-4) and Jenny Lind Island (CAM-1) DEW Line Sites

Kat White

Environmental Sciences Group
Kingston, Ontario

Role of ESG

- To carry out an environmental investigation of the site
- To provide scientific advice
- To ensure appropriate removal of contaminated soils and materials during the cleanup

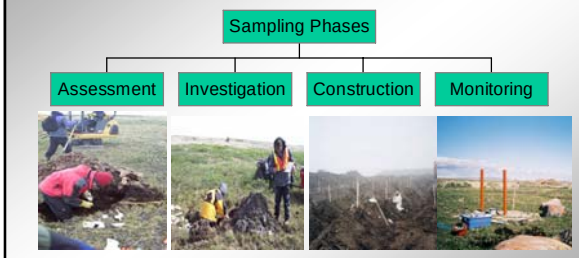
The DEW Line Clean Up Protocol

- *Includes the DEW Line Cleanup Criteria*
- To restore sites to an environmentally safe condition
- To prevent migration of contaminants into the arctic ecosystem

Other Federal Regulations

- **Canadian Environmental Protection Act:** Regulates the disposal of all materials with greater than 50 parts per million (ppm) PCBs
- **Fisheries Act**: Regulates the amounts of specific contaminants that can be released from materials into water bodies

Activity Phases of the DLCU



Ocean and Lake Disposal

- Three studies were carried out to investigate the environmental effects of ocean debris and contaminant input in the Canadian Arctic
- Objects found included scrap metal, airplane wreckage, kitchen sinks, and tires

Ocean and Lake Disposal

- Results show no evidence of contaminant input into the marine environment from ocean debris
- Shoreline contaminant sources can be redistributed into the coastal marine environment

Assessment

Investigation Phase

- Determine the extent of contamination
- Assess landfills
- Inventory and test building materials, facilities and debris
- Engineering Surveys
- Geophysical Surveys

Site Investigation- CAM-1

Site Investigation – PIN-4

Site Investigation Results

- Fuel storage facilities (Fuel and lube oil, lead, zinc)
- PCBs in areas where power-generating equipment was used and from building materials
- Fuel and lube stains, PCBs, copper, lead, and zinc in landfills, sewage outfalls, and debris areas
- Contamination is consistent with patterns at other DEW Line sites

Landfill Risk Evaluation Process

- Landfills are evaluated in a consistent manner
  - Where contaminants come from (Source)
  - How do contaminants move (Pathway)
  - Are there any people, animals or plants that can be affected? (Receptors)
- Traditional knowledge about site is also considered in these evaluations.
- Landfills are classified as high, moderate or low environmental risk according to the EWG matrix.
- Recommendations are reviewed by DND and NTI representatives for the EWG.

Construction

Barrel Sampling

- test contents

→incinerate contents or ship South

- crush or shred *empty* barrels

Confirmatory Sampling

- Collect Soil Samples
- Test for contaminants
- Establish that the area meets DLCU criteria or continue excavation

Soil Stockpile Classification

Landfill Monitoring

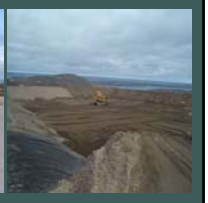
- Visual Assessment
- Temperature of ground
- Soil and Water

How often will the landfills be monitored?

- *Phase I: First 5 Years*
  Confirmation that landfill is performing as expected.
- *Phase II: Years 6-25*
  Confirmation of stable conditions

Summary

- Detailed environmental investigations of Jenny Lind Island and Byron Bay DEW Line sites were conducted by ESG.
- A detailed engineering design for the cleanup of the site was prepared by UMA based on the results of the site investigations.



Andrew Passalis
UMA Engineering Ltd.

DEW Line Clean-up Project
Design and Construction - CAM-1, PIN-4

- **Site Investigations – Engineering Information**
- **Engineering Design and Drawings**
- **Construction Quality Assurance for Materials**
- **Construction Assistance**
- **Administration Support**

Role of UMA
Engineering and Design for the Clean-up of the CAM-1 and PIN-4 DEW Line Sites

Design and Construction

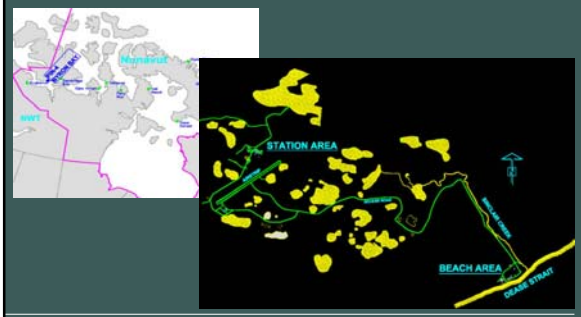
Clean Up Activities at CAM-1, PIN-4

- **Remediation of Existing Landfills**
- **Demolition of Surplus Structures**
- **Debris Collection**
- **Contaminated Soils Excavation**
- **New Landfills and Landfarms**

CAM-1: Jenny Lind Island

CAM-1: Jenny Lind Island

PIN-4: Byron Bay



PIN-4: Byron Bay

Archeological Features

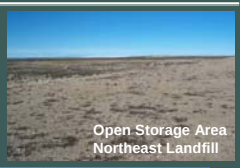
CAM-1
- Grave sites
- Summer and Winter Camp sites
- Tent rings
- Food caches

PIN-4
- Grave site
- Tent rings
- Food caches

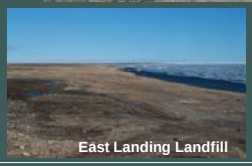
Existing Landfills: CAM-1

TOTAL of 8 existing landfills require remediation

5 Landfills – LOW RISK
- 1,500 m² – 9,400 m²
- Cover with gravel



3 Landfills – MODERATE RISK
- 1,600 m² – 4,400 m²
- Cover with gravel or partial/complete excavation



Existing Landfills: PIN-4

TOTAL of 6 existing landfills require remediation

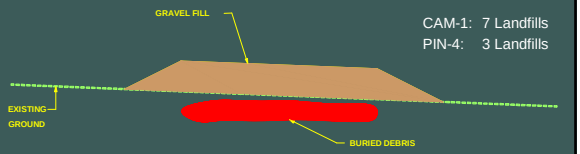
3 Landfills – LOW RISK
- 1,500 m² – 9,700 m²
- Cover with gravel

3 Landfills – MODERATE RISK
- 2,300 m² – 4,400 m²
- Complete excavation

Existing Landfills – Regrade Landfills

Regrade Design

- LOW and select MODERATE Risk Landfills
- Cover with Compacted Gravel Fill
- Typical Cover Depth = 0.8 m



CAM-1: 7 Landfills
PIN-4: 3 Landfills

Existing Landfills – Regrade Landfills

Existing Landfills – Excavation Landfills

Complete or Partial Excavation Design

- MODERATE Risk Landfills
  - Unstable, evidence of erosion
  - Potentially leaking (leaching)
- Classification of contents and proper disposal

CAM-1: 1 Landfill
PIN-4: 3 Landfills

Existing Landfills – Excavation Landfills

Existing Landfills – Excavation Landfills

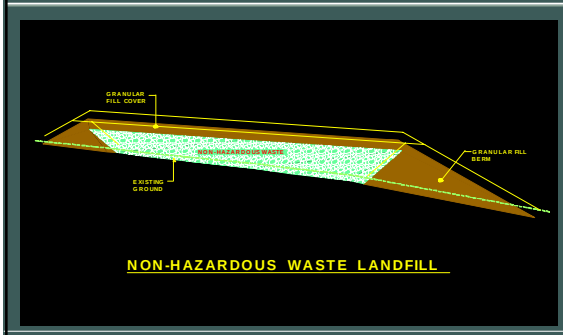
Stockpiling and Classification of Soil

Engineering and Design – New Landfills

Non-Hazardous Waste Landfill

- Non Hazardous Demolition Materials
- Non Hazardous Debris
- Low Level Contaminated Soils
- Asbestos (Double Bagged)

New Landfills – Non-Hazardous Waste Landfill



New Landfills – Non-Hazardous Waste Landfill

Placement of Debris

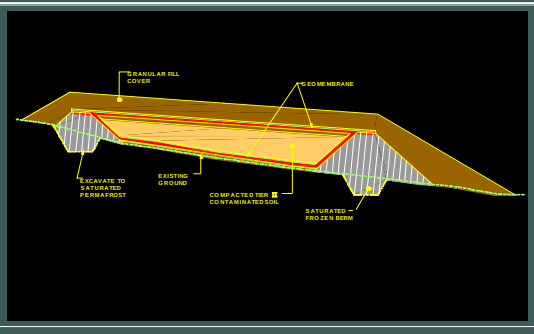
Final Cover & Grading

Engineering and Design – New Landfills

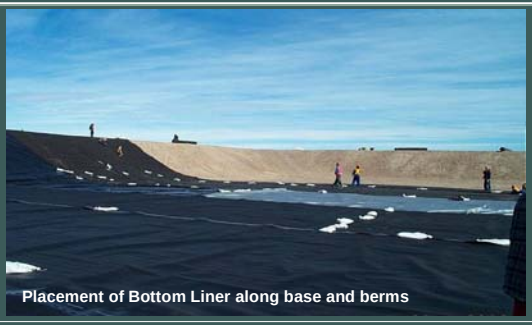
Northern Disposal Facility

- For disposal of moderately contaminated soils
- Designed for freeze-back of the contaminated soil
- Frozen, icy berms
- Incorporates an HDPE Liner System

New Landfills – Northern Disposal Facility



New Landfills – Northern Disposal Facility



Placement of Bottom Liner along base and berms

New Landfills – Northern Disposal Facility

Following placement of Contaminated Soil

New Landfills – Northern Disposal Facility

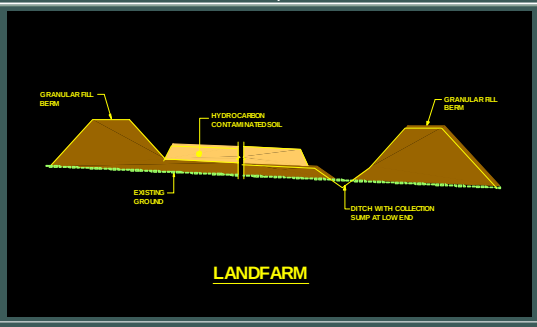
Placement of Liner

Engineering and Design – Contaminated Soils

Treatment of Fuel Contaminated Soils in a Landfarm

- Spread fuel contaminated soil thinly over the Landfarm Area for Treatment
- One Landfarm located at each site
- Mix soil and add nutrients regularly until tests are below criteria

Contaminated Soils – Landfarm



LANDFARM

Contaminated Soils – Landfarm

Placement of Hydrocarbon Contaminated Soil

Engineering and Design

Demolition and Debris Removal

- Demolition of Buildings, Tanks and Structures
- Collection of Scattered Site Debris
- Separation and Classification
- Disposal in Non Hazardous Waste Landfill, or
- Hazardous Materials placed in Secure Containers for Disposal Off-site

Engineering and Design – Demolition

Engineering and Design – Debris Removal

Engineering and Design – Hazardous Materials

- Placed in Government Approved Containers
- Shipped South for Disposal

Engineering and Design – Contaminated Soils

Metals and PCB Contaminated Soils

- Removed from all areas based on Site Investigation

Low Level Contamination → Non-Hazardous Waste Landfill; Northern Disposal Facility

Moderate Contamination → Northern Disposal Facility

Engineering and Design – Contaminated Soils

Hydrocarbon Contaminated Soils

- Soils Contaminated with Fuel or Lube Oil
- Removed from Areas at Risk (Beach and Near Water Bodies)

Lube Oil Contamination → Non-Hazardous Waste Landfill; Northern Disposal Facility

Fuel Oil Contamination → Landfarm

Engineering and Design – Contaminated Soils

Excavation at Beach Refuel Area

Construction Quality Assurance

- Granular Fill Requirements
- Instrumentation Installations
- Compaction and Material Testing
- Enough moisture for frozen berms

Engineering and Design – Construction Issues

Construction Issues

- Environmental Protection
- Erosion and Sediment Control
- Maintenance of Access Roads
- Protection of Archaeological Features

Engineering and Design

General Schedule for PIN4 and CAM1

Tendering Period

- Solicitation of Interest will commence early in the summer of 2006 (6 weeks).
- Tender period will begin late in the summer of 2006 and include a visit to the sites by Contractors.
- A Letter of Intent is issued to the successful contractors to finalize participation plans.
- Contracts will be awarded mid-winter of 2006/07.

General Schedule for PIN4 and CAM1

Clean up Schedule

- Mobilization to sites is expected by sealift late in the Summer of 2007.
- Clean up activities are projected to occur over 3 years ending in 2009 with demobilization in the Fall of 2009.
- Long-term monitoring will be undertaken for a 25 year period after the clean up.

CAM-1 and Pin-4 Community Meeting, Cambridge Bay

Community Hall, April 24, 2006 7:30-9:30 pm

DLCU Project Attendees: Steve Poaps (DCC), Andrew Passalis (UMA), Kat White (ESG), Kathleen Francis (ESG), Karl Cote (QE)
Approximately 16 members of the Community

Introduction and prayer by Mayor Michelle Gillis
Presentation by Steve Poaps, Kat White, Andrew Passalis
Question and Answer period with Community Members and presentation team

Q: Mayor- Can any of the DEW Line site buildings be reused for community purposes, as building new houses is expensive and the DEW Line structures are already here?
A: Steve Poaps- No. One of the major concerns with reusing buildings from the DEW Line is contamination.

Q: Community Member- When you are doing environmental investigation, how far down do you dig?
A: Kat White- It depends on the contaminant. For PCBs and metals (Cu, Pb, Zn) we know from previous experience the depth is approximately 0.5m. Samples will be taken deeper if required until we are sure that the contaminant levels are below the cleanup criteria. For hydrocarbons we dig down to frozen ground or bedrock – typically about 1.5m

Q: Community Member- To what depth do you normally put the soil in the landfarm?
A: Andrew Passalis- We try to achieve a thickness of 0.3 m. We place the soil in a thin layer and till it to promote bioremediation

Q: Community Member- We have a landfarm outside of town. How can you be sure that the liner isn't damaged when you till the soil?
A: Andrew Passalis- We do not typically install liners under the DLCU landfarms, but rather use fine grain soil or vertical liners within the berms that extend to frozen ground.

Q: Luke (elder)- Are contaminants like lube oil, PCBs and other hazardous materials sufficiently covered so that they won't enter the food chain?
A: Steve Poaps- The question - does the DLCU isolate contaminants from the environment - the answer, yes. Hazardous materials are put into a container and taken to the south for destruction. Fuel-contaminated material left on site is remediated to a level where it is no longer an issue. Contaminated material is encapsulated in plastic (liner) and then buried deep enough to be frozen into the northern disposal facility. Other waste materials left on site are placed into a landfill and capped so as to freeze in permafrost and not move. Afterwards, testing continues to ensure that no contaminants leave the landfill.

Q: Mayor- Many elders or workers who have worked on the DEW Line have been diagnosed with cancer. Have there been studies to prove whether or not exposures to these contaminants could be causing this?
A: Steve Poaps- This is outside the scope of work for this project. The clean up protocol addresses the contaminants of concern and eliminates future exposure.
Kat White- I do not believe there have been any studies relating directly to the DEW Line impacts on human cancer.
Comment from Mayor- We are glad that you are putting the land back together but it is a concern since the elders eat traditional foods.

Q: Steve Poaps- How are the hazardous materials that are brought south treated?
A: Andrew Passalis – Materials are containerized, shipped to a southern incineration plant and heated to a high temperature according to provincial standards. The temperatures exceed 1000 degrees Celsius, which completely denatures the contaminant.
Steve Poaps- (gives an analogy of cooking meat at high temperatures until it falls off of the bone, it is no longer muscle and sinew but now cooked meat.)

Q: Mayor- How many other sites are left to clean up after CAM-1 and PIN-4? We have dreamed of having an incinerator in the north.
A: Steve Poaps- There are four more sites. It takes a great amount of power to operate this type of incinerator. There are only 2 in Canada.

Q: Community Member- Will it stay as only 2 in Canada?
A: Steve Poaps- They are very expensive to build and operate.

Q: Community Member- Have there been any studies on health related exposure to asbestos on DEW Line sites?
A: Steve Poaps- I am not aware of any. Our goal in this project is to isolate the contaminants in the environment. Where we find asbestos would not have been a big exposure risk for people operating and living on the DEW Line.

Q: Community Member- How is traditional knowledge incorporated on the DEW Line cleanup?
A: Steve Poaps- We go to the elders at different phases. Phase one is through the NTI. They interview elders in communities in the area of a site to determine traditional land use of the area. Next, the NTI escorts a few elders to the site during the DLCU site investigation when the scientific, engineering and archaeological support is on the site. The elders review with the DLCU team the traditional uses of the land. The archaeologist also works with the elders on site to identify historical and archaeological resources. Often, the elders, from being on site during DEW Line operation, provide information on how the land was used by DND. The next phase is the reporting and design stage. NTI, reviews the Site Investigation reports and incorporates traditional land use into the remediation requirements.
Karl Cote- The process has gone well. We've collected interesting information from elders, workers, camp contractors, bear monitors. The NTI reports that are written are given to the Hamlets.

Q: Mayor- I asked earlier about the buildings. What about the fuel tanks? We would like to reuse tanks (ASTs, vertical and horizontal tanks) for fuel.
A: Steve Poaps- Reuse of DEW Line tanks is not possible because there could be contamination from the paint. Also, and more definitively, under current legislation the tanks are no longer certifiable for use as fuel storage tanks.

Cambridge Bay community meeting.

Cambridge Bay community meeting.

Cambridge Bay community meeting.

Cambridge Bay community meeting.

Community members reviewing a sample of the geomembrane.

Community member and DLCU presentation team, post meeting.

Community member and DLCU presenter, post meeting.

Community members and DLCU presenter, post meeting.

Community members and DLCU presenter, post meeting.

Cambridge Bay community refreshment team.

CAM-1 and Pin-4 Community Meeting, Kugluktuk

Community Hall, April 25, 2006 7:30-9:30 pm

DLCU Project Attendees: Steve Poaps (DCC), Andrew Passalis (UMA), Kat White (ESG), Kathleen Francis (ESG), Karl Cote (QE)
Approximately 21 members of the Community

Prayer by the Marion Bolt
Presentation by Steve Poaps, Kat White, Andrew Passalis
Translation by Marion Bolt and Mona Tiktlalik
Binoculars won by Marion
Question and Answer period with Community Members and presentation team

Q: Community Member- When will the contract be awarded?
A: Steve Poaps- PIN-4 and CAM-1 will be awarded in 2007

Q: Community Member- Will Kitnuna bid on the contract?
A: Steve Poaps- They have (the contract for) CAM-3 for this year and we hope they will bid on these next two projects.

Q: Community Member- Are you involved with crew changes? Last year we had problems with getting back from CAM-2.
A: Steve Poaps- We do not have direct involvement with contractor staffing or employment conditions but we do have influence with contractor scheduling.
Comment: Community member- Last year some crew members had to stay 2 nights in Cambridge Bay

Q: Mona- sometimes it's foggy at CAM-2, and people get stuck in Cambridge Bay and there are only 2 flights a week on Monday and Friday.
A: Steve Poaps- I recommend you express these concerns with the contractor when you negotiate your employment conditions. Logistics are difficult in the north.

Q: Marion- We have a camp on Richardson Island. When is it going to be cleaned up? It's dirty, there are barrels, and animals caught in wires. It's been this way for a long time and it should be cleaned up.
A: Steve Poaps- This site is not included in the DND DLCU Project. DIAND has initiated the cleanup program of their 21 DEW Line sites. You should take your concerns to your local NTI representative. Also, these comments are being recorded and will be forwarded to the NTI.

Q: Steve Poaps (question raised from previous meetings) - How is traditional knowledge incorporated on the DEW Line cleanup?
A: Steve Poaps- We go to the elders at different phases. Phase one is through the NTI. They interview elders in communities in the area of a site to determine traditional land use of the area. Next, the NTI escorts a few elders to the site during the DLCU site

investigation when the scientific, engineering and archaeological support is on the site. The elders review with the DLCU team the traditional uses of the land. The archaeologist also works with the elders on site to identify historical and archaeological resources. Often, the elders, from being on site during DEW Line operation, provide information on how the land was used by DND. The next phase is the reporting and design stage. NTI reviews the SI reports and incorporates traditional land use into the remediation requirements.

Comment: Community Member- Elders would like to see the land cleaned up. They are happy to see it being cleaned up.
Comment: Steve Poaps- We also hire archaeologists to visit the sites to identify any significant areas. Such areas are protected during construction.
Comment: Community Member- We noticed at PIN-3 that the heavy equipment was kept away from the graves.
Comment: Steve Poaps- If you know of areas that need protection please let us know.

Q: Community Member- Where is the truck under the water from? Will you take it out?
A: Steve Poaps- Studies show that it would cause more damage to remove such debris. There is growth on the truck and there would be more disturbances and damage to the environment to drag it up.

Q: Community Member- Where is the propeller from? Was it from PIN-3?
A: Kat White- I'm not sure whether it is from Cambridge Bay or Baffin Island.
Andrew Passalis- There was a plane crash at CAM-1 and the wreckage will be buried with additional fill during construction

Q: Community Member- Is the DEW Line schedule two weeks in / two weeks out?
A: Steve Poaps- That is a common rotation schedule for the contractors but there is not a prescribed rotation for contractors. DLCU Team members often stay in for 4 or 6 weeks and longer.
Comment: Community Member- One guy I know was on site for 6 weeks.
A: Steve Poaps- As a project management team we don't interfere with the specifics of the contract. If you have concerns notify NTI and they can contact the PMO to discuss with the contractors.

Q: Community Member- When will the cleanup start?
A: Steve Poaps- Often as early as possible. Normally mid to late June.

DLCU presentation team at Kugluktuk.

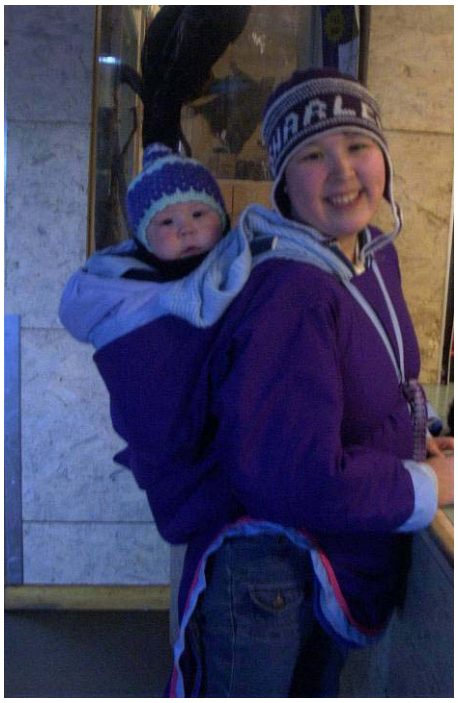
Kugluktuk community meeting.

Kugluktuk community meeting.

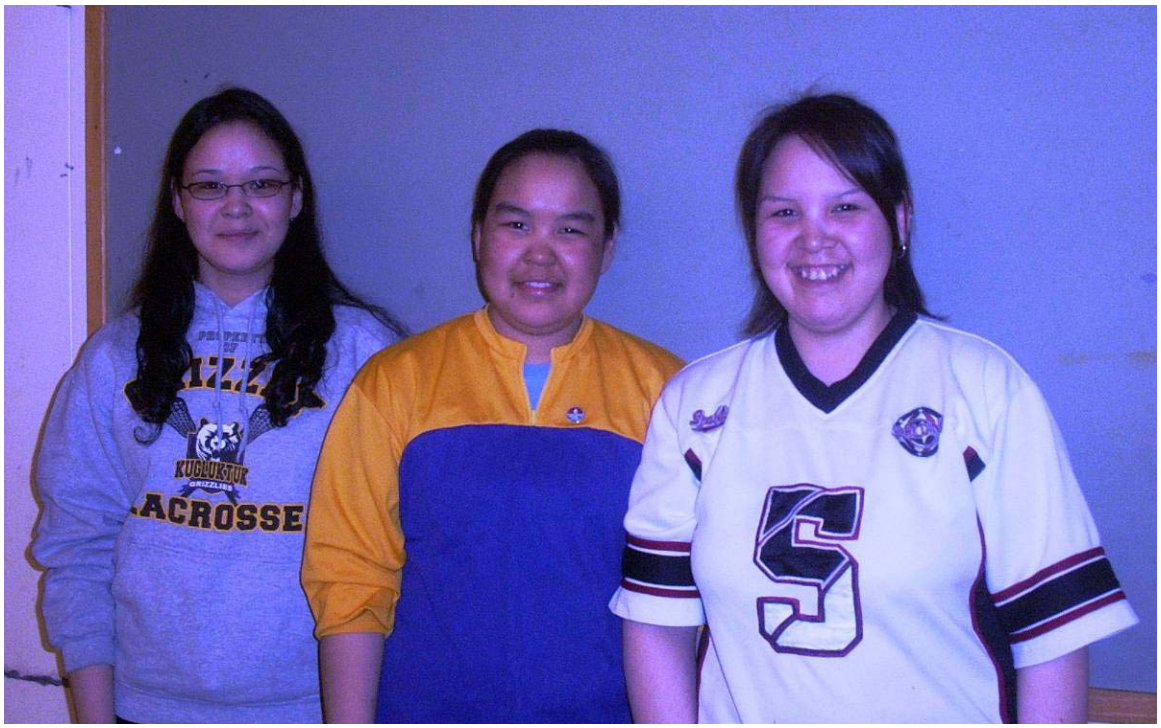
Kugluktuk community meeting.

Translators at Kugluktuk community meeting.

Kugluktuk community meeting.



Community members.



Kugluktuk refreshment team- Go Grizzlies!

CAM-1 and Pin-4 Community Meeting, Gjoa Haven

Community Hall, April 26, 2006 7:20-9:30 pm

DLCU Project Attendees: Steve Poaps (DCC), Andrew Passalis (UMA), Kat White (ESG), Kathleen Francis (ESG), Karl Cote (QE)
Approximately 43 members of the Community

Prayer by the Elder Simon
Presentation by Steve Poaps, Kat White, Andrew Passalis
Translation by Simon and Ben
Binoculars won by Matthew
Question and Answer period with Community Members and presentation team

Q: Community Member- When you are doing the site investigation do you also investigate the marine environment?
A: Kat White- During the site investigation, the surrounding area is looked at. We haven't found any marine debris around either Jenny Lind Island or Byron Bay.

Q: Community Member- Are there studies done for impact on fresh or marine life?
A: Kat White- That is not a part of this project. We deal with the contaminants in and around the sites.

Q: Community Member- Do you cooperate with other regulators like DFO or Environment Canada wildlife monitors, as people of the north supplement their diets with fish and wildlife?
A: Kat White- We have been asked by DFO to document sightings, and we report wildlife in distress.
Steve Poaps- We are required to abide by regulations and prevent contaminants from migrating into the marine environment. If it is detected we will stop it right away. We do cooperate with the regulators with the application for permits and to facilitate inspections of the sites.

Q: Mayor Uriash Puqiqnak- Do you lay the debris on the top of the soil or bury it down at permafrost?
A: Andrew Passalis- We place the berms of the Non-Hazardous Waste Landfill on existing ground and place the debris and soil within the berms. For the higher contaminated soils the berms are dug down to permafrost and a liner system installed to contain the impacted soil. Soil is placed over the top of the landfills so that all soil and debris is frozen into the permafrost. PCB hazardous soil is taken off site to a southern disposal facility.

Q: Mayor- We rely heavily on country foods. We must assure that it is difficult for water fowl and mammals to use these areas that are previous DEW Line sites. How do we ensure that the food sources are not contaminated?

A: Steve Poaps- That is why this project is underway. We want the environment and food chain, your food sources, to be protected. Contaminated material is wrapped in plastic and buried deep enough to remain frozen. Hazardous material is removed from site. Other garbage or debris is buried so it remains frozen. It is goal of the project to remove the contaminants and put them where they will not enter the food chain.

Q: Mayor- Is there a way local contractors and local workers can be more and involved?
A: Steve Poaps- The Project does what it can. We are here today to let you know about the work (scope of work, schedule and level of cleanup). You should go to the NTI representative to get to let them know who you are and what you can do. You can also call contractors (like Kitnuna) to remind them you are available for work.

Q: Community Member- Have you kept in mind the warm and cold years and temperature fluctuations when designing the landfills?
A: Steve Poaps-The original design takes into account warmer and colder years. One of the main components of the design is to keep the material frozen. With global warming we have revisited the question of what is warm and cold.
Andrew Passalis- We have looked at global trends and temperature change, and look at specific parameters for the sites (location of the landfill) to develop the design thickness to ensure the contaminants remain frozen. Generally, the design is for the landfill to remain frozen even if there are 100 years of global warming plus one warm year.

Q: Community Member- But what about the contaminant movement over the past years because of the difference in the thaw from year to year?
A: Kat White- PCBs and metals do not tend to migrate below about 0.5m. We dig deep enough to ensure that the level of contamination is below criteria.

Q: Community Member- When you do a site investigation, do you investigate the areas off site to look for debris?
A: Steve Poaps- We review all areas that we suspect were impacted by the DEW Line operations. In the process, with the help of NTI, we also consult with local elders for any information that may be available from the time of operation as to where contamination may be.

Q: Community Member- What kind of medical personnel are onsite to help ensure health and safety?
A: Steve Poaps- At the remote sites, without medical support available in a neighboring community, the contractor is required to have an onsite medical technician. CAM-4 with near-by Pelly Bay would not require and on-site medic but both PIN-4 and CAM-1 will.

Q: Community Member- Do you monitor the workforce regularly for health concerns? Do you test workers for exposure to contaminants?
A: Steve Poaps- We identify the contaminants we expect to be there. The contractor provides a Health and Safety Plan (HASP) which includes use of personal protective equipment, training, daily briefings and more. The HASP is reviewed by the Project Team, and they identify areas of concern.

Q: Community Member- Why don't you put excavated soils directly into sealed containers? The hazardous material can impact wildlife.
A: Steve Poaps- Where soil or debris is known to be hazardous, it is excavated and directly placed into containers. For old DEW line landfill excavations, the contractor starts with preparing a soil processing area, which may include a liner or tarp. The material is excavated, placed in the processing area, and tested. The delay in time is for the test results to be returned.
Kat White- We can do some of the tests on site, but have to send the samples to the south for some of the other tests. If the tests on site indicate hazardous materials the contractor is notified.
Andrew Passalis- Hazardous materials are placed into sealed containers and transported to a temporary storage area on site where only selected site personnel are authorized. This area is inspected regularly (weekly) throughout construction and on an annual basis until the containers are removed from the site. There is a constant level of inspection to ensure the containers are not tampered with.
Steve Poaps- The material processing area is chosen where it is not likely to be subjected to runoff, and it is cleaned up afterwards.

Q: Community Member- When the hazardous material is in the processing area scavengers such as seagulls and foxes pick the debris and contaminated material. There has to be more careful monitoring to deter the scavengers from coming into contact with the material.
A: Andrew Passalis- Hazardous materials found during the site investigation are excavated and put directly into containers.
Steve Poaps- With landfill excavation we don't know if the soil is contaminated or not so we have the lag time. With landfill excavation only a small percentage, approximately 3%, of the soil is hazardous. If scavengers are in the area it is unlikely they are close to hazardous soil.

Q: Community Member- Have studies been done to see if land fill areas will revegetate?
A: Steve Poaps- My personal experience is that I have seen areas that DEW Line has cleaned up that have revegetated at Cambridge Bay.
Kat White- BAR-2 Shingle Point was seeded and we have seen significant revegetation
Andrew Passalils- Currently there is no plan to revegetate. We select areas that are already disturbed; we do not wish to damage vegetated areas. PIN-4 is currently very well vegetated. We will have to consider where to place the landfill to minimize disturbance. Revegetation may need to be considered. We may add nutrients to promote vegetation.

Q: Community Member- If the sites revegetate would it be safe for us to consume plants grown in this area?
A: Steve Poaps- Yes, the goal of this project is to isolate contaminants from the environment and prevent migration into the food chain. Contamination is buried deep enough, frozen into the permafrost and separated by plastic liner from the plants, so, yes you can eat plants that will grow in these areas.

Q: Community Member- Do you conduct testing of personnel after they work on the DEW Line cleanup?
A: Steve Poaps- We do not conduct testing. The contractor must follow the Health and Safety Plan, which includes training for people who will be working with contaminants, as well as provide proper protective clothing to protect them from exposure. This is a requirement by law. Of all the work on the DEW Line, very little of it deals with hazardous waste.

Q: Community Member- When camping near a DEW Line site we woke up and found that the animal skins had shiny metallic flakes in them. I would like to get information on what it is.
A: Andrew Passalis- The fuel storage tanks at the sites are painted on a regular basis. It may have been silver paint that the animal rubbed up against before the paint dried.
Steve Poaps- Speculating from the description, without seeing it, it may have been vermiculite which was used as wall cavity insulation. It wouldn't stay on the animal for very long. Vermiculite is a naturally occurring mineral that separates into thin shiny flakes and may appear black, brown or silvery. Vermiculite is not known to be a health risk.
Comment: Community Member- Me and my husband experienced it, it may happen again. It was not snow, very thin metal flakes that stick to my fingers.
Steve- It does sound like vermiculite. This is the first time I've heard of this but I will listen for it again. Thank you for sharing this story.

Gjoa Haven community meeting.

Gjoa Haven community meeting.

Gjoa Haven community meeting.

Gjoa Haven community meeting.

Gjoa Haven community meeting.

Community members and DLCU presenter, post meeting.

Community members.

Gjoa Haven refreshment team.

CAM-1 and Pin-4 Community Meeting, Taloyoak

Community Hall, April 27, 2006 7:20-9:30 pm

DLCU Project Attendees: Steve Poaps (DCC), Andrew Passalis (UMA), Kat White (ESG), Kathleen Francis (ESG), Karl Cote (QE)
Approximately 37 members of the Community

Introduction by Mayor Jimmy Oleekatilik
Prayer by Elder
Presentation by Steve Poaps, Kat White, Andrew Passalis
Translation by Joseph Qulluniq
Binoculars won by Sampson
Question and Answer period with Community Members and presentation team

Q: Community member- Where are the sites to be cleaned up located?
A: Steve Poaps- CAM-1 and PIN-4 are located on either side of Cambridge Bay

Comment: Community Member- Kitnuna did a professional job last year at CAM-2 and PIN-3. They looked after their employees.

Comment: Community Member- Heavy equipment operators on Resolution Island were provided opportunity to work on difference equipment, whereas with Kitnuna, operators got stuck on the same equipment all the time.

Q: Community Member- Would it be possible to do demolition over the winter?
A: Steve Poaps- How the contractor gets the work done is up to them. As the project managers, we are open to winter schedules, however I suspect there would be reluctance due to health and safety concerns.

Q: Community Member- We go to work when it is the best time for hunting. It would be nice to work during the winter.
A: Steve Poaps- We can remind the contractors that there are 12 months in the year. There are alternate methods of getting work done and other resources to draw from. Tell the contractor what skills you have and when you would like to work. Perhaps the contractor can adjust employee schedules.

Q: Community Member- Do the American's know what damage they've caused?
A: Steve Poaps- The US recognized there was a cost associated with the cleanup. They contributed a percentage of the projected clean up costs as estimated at the start of the program.

Q: Community Member- Are they going to compensate the Inuit? Everything costs up here. Elders are constantly looking for money. Elders who aren't skilled with computers and such can not do the DLCU work so do not get this money as compensation.

A: Steve Poaps- I understand your frustration with the relationship; however the project we are doing is meant to remove contaminants and provide economic benefits according to the agreements with DND and NTI.
Comment: Community member- Elders should be compensated. You should notify the Americans.
Steve Poaps- The Project cannot address this. I do not have an answer for you.
Comment: Community member- I just wanted to voice my opinion.

Q: Community Member- Why was the DEW Line built?
A: Steve Poaps- The DEW Line was constructed to put a curtain of radar across the north. The goal was for an early warning of airborne attack by Russia over the pole into North America in the 1950s and 1960s.

Q: Community Member- We're not in too much danger now?
A: Steve Poaps- There is still a radar presence across the north, but the technology is advanced such that we don't need as many stations. Russia is not a current threat.

Q: Community Member- Are they going to clean up Gladman Point?
A: Steve Poaps- CAM-2 was completed last year and DND will be performing monitoring for the next 25 years.

Q: Community Member- I'm not an engineer, but I am a hunter, and I can tell you there is a lot of contamination near the point.
A: Andrew Passalis- We did dig out a lot of soil around the fuel tanks. We have excavated more than 1000 m3 of soil and treated it until it was below criteria, and covered it over to reduce exposure to wildlife. (Andrew also met with the community member following the presentation to review what work has been completed at CAM-2 over the last couple of years. Andrew had been on site and was very familiar with the area and the cleanup. The hunter had not been there since the cleanup was completed and seamed pleased to hear that his concern had been addressed by the Project.)

Q: Community Member- Wouldn't Russians go after the DEW Line first in the Cold War? Did they put us in jeopardy?
A: Steve Poaps- I'm not a war strategist, but nuclear warheads were expensive and they would likely have targeted large cities in the south.

Q: Community Member- What kind of jobs will be available for the Inuit when we do the cleanup?
A: Steve Poaps- The DLCU project management hires contractors to do the cleanup. Various levels of skilled and unskilled labour are required. All positions are open to the Inuit. We require the contractor to have at least minimum employment content as well as to meet or exceed a minimum amount of subcontracts to Inuit firms.

Q: Community Member- How do we get jobs? When do we apply?

A: Steve Poaps- NTI provides a list of available employees/companies and the services they can provide. This list is included in the contract tender. Anyone interested should be contacting the local NTI Representative now to make sure they are included in the list.

Q: Community Member- Can you give more notice of who will be the contractor?
A: Andrew Passalis- We require contractors to meet with the communities at the start of the season to discuss the available jobs and who to contact. There should be notification in June for the contractor to have a meeting for CAM-3 this year.

Q: Community Member- How long is the Shepherd Bay cleanup?
A: Steve Poaps- It is likely to go over the next two years.

Q: Community Member- Are there more metal shredders than at Resolution Island?
A: Kat White- I think most contractors crush the barrels on site as they can use the bucket of an excavator. Most contractors do not have a shredder.

Taloyoak community meeting.

Taloyoak community meeting.

Taloyoak community meeting.

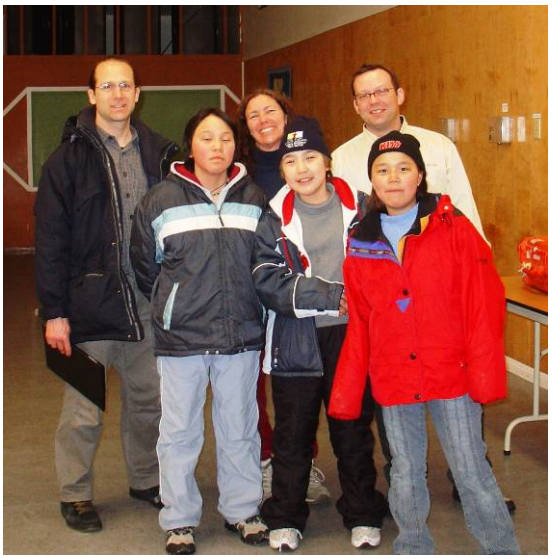
Taloyoak community meeting.

Taloyoak community members and DLCU presenter, post meeting.

Taloyoak community members and DLCU presenter, post meeting.

Taloyoak community meeting.

Taloyoak community members and DLCU presenter, post meeting.

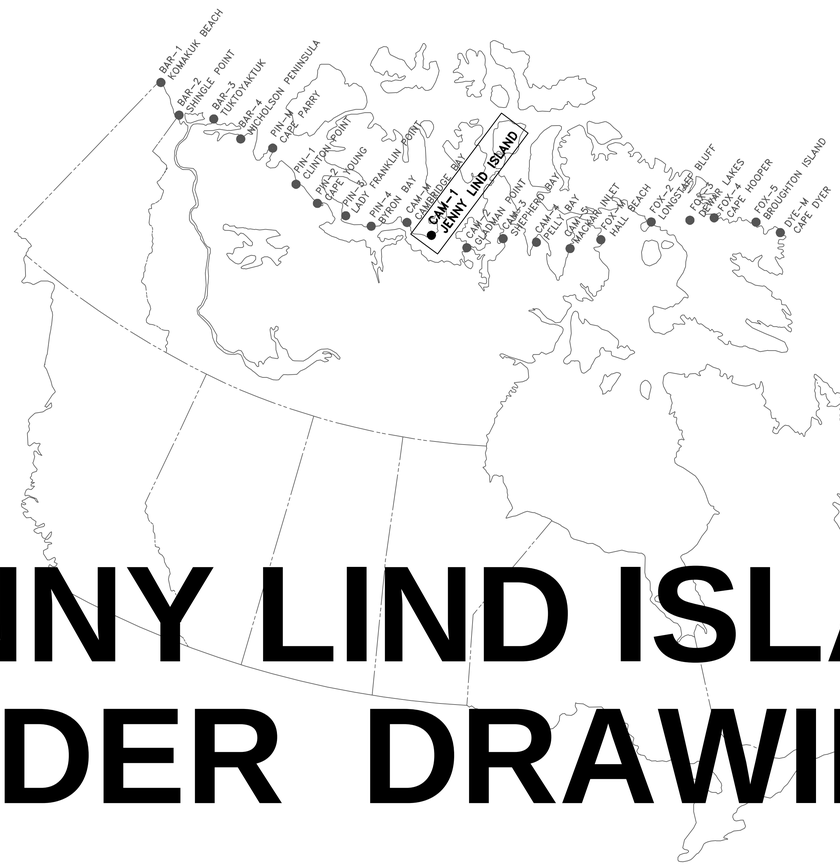


Taloyoak community members and DLCU team, post meeting.

National Defence / Défense nationale

DEW LINE CLEAN UP PROJECT

DRAWING INDEX					
DRAWING No.	TITLE	DRAWING No.	TITLE	DRAWING No.	TITLE
SITING		SITING		STRUCTURAL	
H-J44/1-9101-101	OVERALL SITE PLAN	H-J44/1-9101-113	TIER II DISPOSAL FACILITY KEY TRENCH EXCAVATION PLAN & GRADING/INSTRUMENTATION PLAN	H-J44/1-9101-207	RADAR TOWER / RADOME PLAN AND SECTION
H-J44/1-9101-102	PROJECT LAYOUT STATION AREA	H-J44/1-9101-114	TIER II DISPOSAL FACILITY CROSS SECTION AND DETAIL	H-J44/1-9101-208	POL PUMPHOUSE AND QML STORAGE SHED PLANS AND ELEVATIONS
H-J44/1-9101-103	PROJECT LAYOUT AIRSTRIP AND BEACH AREA	H-J44/1-9101-115	BEACH AREA EXCAVATION AND REGRADING PLAN	H-J44/1-9101-209	COMMUNICATION DISH ELEVATIONS
H-J44/1-9101-104	STATION AREA NORTH SITE PLAN	H-J44/1-9101-116	MISCELLANEOUS DETAILS SH. 1	H-J44/1-9101-210	WATER AND FUEL TANKS PLAN AND ELEVATIONS
H-J44/1-9101-105	STATION AREA SITE PLAN	H-J44/1-9101-117	MISCELLANEOUS DETAILS SH. 2	H-J44/1-9101-211	AIRSTRIP ANCILLARY FACILITIES STANDARD DETAILS
H-J44/1-9101-106	STATION AREA EAST SITE PLAN	STRUCTURAL			
H-J44/1-9101-107	STATION AREA SOUTH SITE PLAN	H-J44/1-9101-201	STATION AREA DEMOLITION SITE PLAN		
H-J44/1-9101-108	BEACH AREA SITE PLAN	H-J44/1-9101-202	AIRSTRIP AREA AND BEACH AREA DEMOLITION SITE PLAN		
H-J44/1-9101-109	USAF LANDFILL AREA, AIRSTRIP AREAS AND EAST POINT AREA SITE PLANS	H-J44/1-9101-203	WAREHOUSE PLAN, SECTION AND ELEVATION		
H-J44/1-9101-110	LANDFARM CROSS SECTION AND DETAILS	H-J44/1-9101-204	GARAGE PLAN AND SECTION		
H-J44/1-9101-111	NON-HAZARDOUS WASTE LANDFILL PLANS AND SECTION	H-J44/1-9101-205	MODULE TRAIN UNITS 1A-25 PLAN		
H-J44/1-9101-112	NON-HAZARDOUS WASTE LANDFILL SECTION AND DETAIL	H-J44/1-9101-206	MODULE TRAIN UNITS 1A-25 ELEVATIONS		



CAM-1 JENNY LIND ISLAND TENDER DRAWINGS

UMA | AECOM

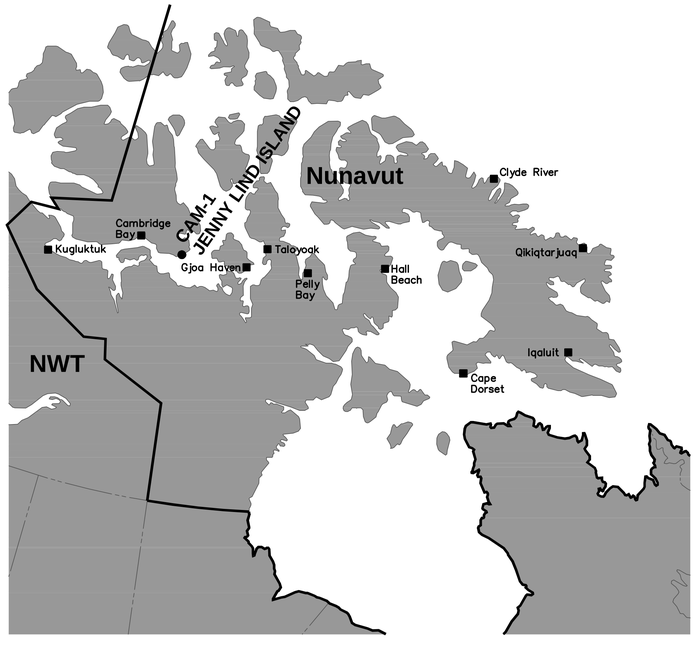
SGE Acres

SEPTEMBER, 2006

POTENTIAL SOURCES FOR GRANULAR MATERIALS						
BORROW AREA	GRANULAR TYPE (SEE SECTION 02226 IN SPECIFICATION)					
	TYPE 2A	TYPE 2	TYPE 3	TYPE 4	TYPE 5	TYPE 6
1	a	a	a			a
2	a	a	a			a
3		a	a			a
4	a					
5△				a*	a	
6		a	a			a
7		a	a			a
8	a		a	a*		a

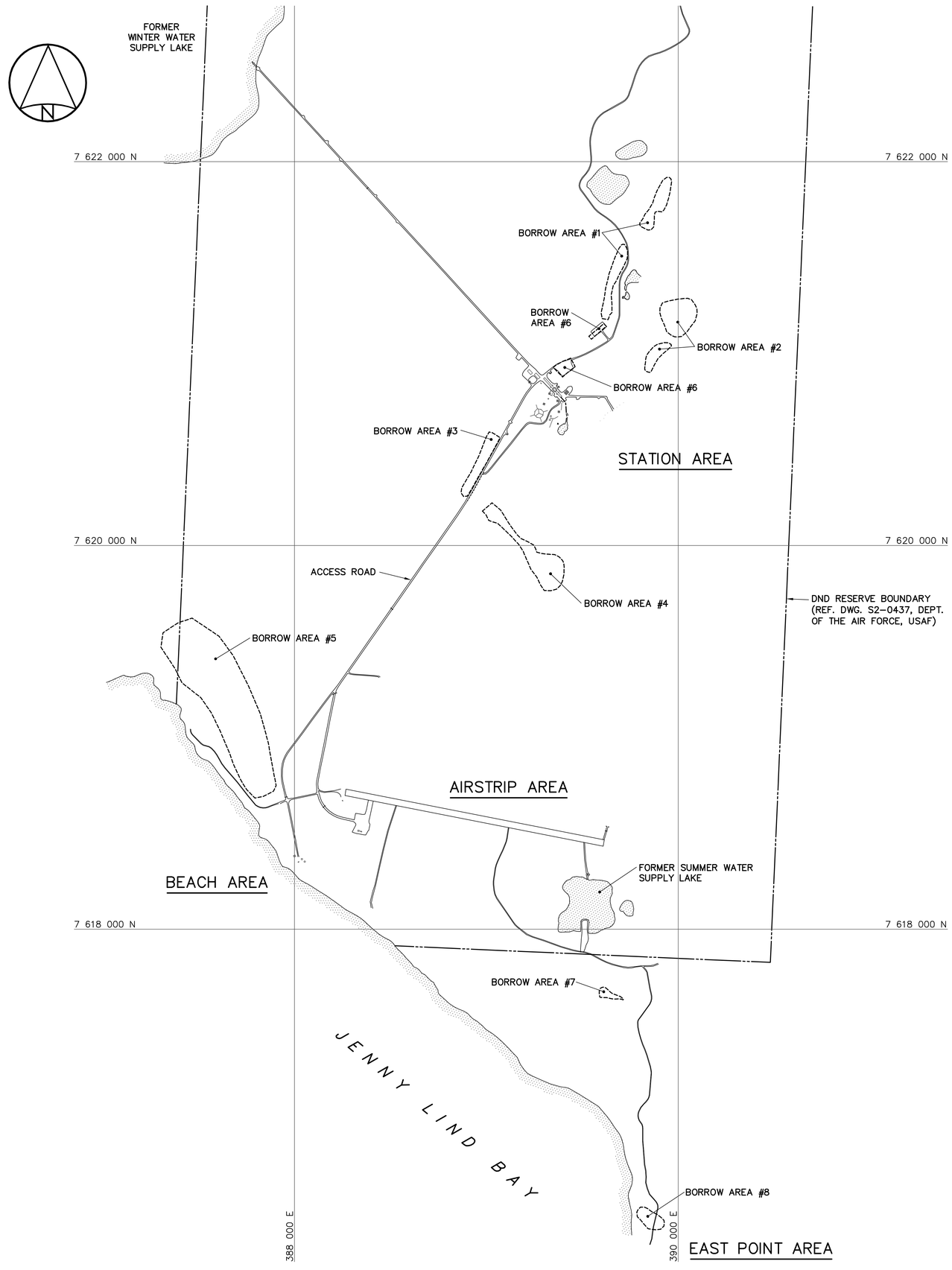
* MATERIAL IS WET AND SOFT AND REQUIRES BLENDING WITH SAND AND GRAVEL TO PRODUCE TYPE 4 GRANULAR FILL.

△ TYPE 4 MATERIAL IS SPORADIC AND LOCATED AT DEPTH.



LOCATION OF JENNY LIND ISLAND WITHIN NUNAVUT TERRITORY

N.T.S.



National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO UTM ZONE 14N, NAD83 (CSRS).
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

Legend:

- APPROXIMATE EXTENT OF BORROW AREAS
- APPROXIMATE LOCATION OF PROPERTY BOUNDARIES
- BODY OF WATER

No.	DATE	REVISION	REVISION	APPR.

R.R. MERKOSKY — LICENSEE — NWT/NU — 2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

UMA | AECOM — SGE Acres

SCALE – ECHELLE 200 100 0 200 400 600m

PROJECT – PROJET
CAM–1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER	DATE
SITING	2006–09–15

SUBJECT – SUJET

OVERALL SITE PLAN

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–J44/1–9101–101

Canada

388 000 E
389 000 E
390 000 E
391 000 E
7 622 000 N
7 621 000 N
7 620 000 N
SITE DEBRIS NO. 9
CULVERT TO BE REMOVED.
SITE DEBRIS NO. 33
BORROW AREA #1
STATION AREA NORTH
(SEE DWG. H-J44/1-9101-104)
ARCHAEOLOGICAL FEATURE (GRAVE SITE)
SITE DEBRIS NO. 18
30
SITE DEBRIS NO. 19
EXISTING BORROW AREA NORTH LANDFILL
BAN
SITE DEBRIS NO. 35
BORROW AREA #6
EXISTING NORTHEAST LANDFILL
NELF
TP-3
02-191
BORROW AREA #2
NON-HAZARDOUS WASTE LANDFILL
STATION AREA
(SEE DWG. H-J44/1-9101-105)
SWLF
C1-GAR
OSAN
BORROW AREA #6
EXISTING STATION WEST LANDFILL
C1-WAR
C1-MOD
C1-DISH
EXISTING MAIN LANDFILL
EXISTING STATION EAST LANDFILL
TIER II DISPOSAL FACILITY
OUTFALL
SSDA
MOGAS
MLF
SPOL
STATION AREA EAST
(SEE DWG. H-J44/1-9101-106)
EXISTING SOUTHEAST LANDFILL
SELF
SEDA
29
SITE DEBRIS NO. 4
BORROW AREA #3
LANDFARM
DND RESERVE BOUNDARY (REF. DWG. S2-0437, DEPT. OF THE AIR FORCE, USAF)
STATION AREA SOUTH
(SEE DWG. H-J44/1-9101-107)
ACCESS ROAD
1
TP-11
BORROW AREA #4
MATCH LINE
SEE DWG. H-J44/1-9101-103

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO UTM ZONE 14N, NAD83 (CSRS).
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. ALL NON-HAZARDOUS DEBRIS TO BE PLACED IN NON-HAZARDOUS WASTE LANDFILL.
4. ARCHAEOLOGICAL FEATURES LOCATED AS PER ENVIRONMENTAL CLEAN UP STUDY OF 21 DEW LINE SITES IN CANADA, VOL. 13, UMA 1991.
5. REFER TO TABLE 02219-1 IN SPECIFICATIONS FOR DESCRIPTION OF DEBRIS AREAS.

Legend:

- CONTAMINATED SOIL AREA
- TEST PIT LOCATION (1993)
- TEST PIT LOCATION (2002)
- 19 PHOTOGRAPHIC VIEWPOINT
- APPROXIMATE LOCATION OF PROPERTY BOUNDARIES
- APPROXIMATE EXTENT OF BORROW AREAS
- BODY OF WATER

No.	DATE	REVISION	REVISION	APPR.

R.R. MERKOSKY — LICENSEE — NWT/NU — ASSOCIATION OF PROFESSIONAL ENGINEERS — 2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

UMA | AECOM — SGE Acres

SCALE - ECHELLE 100 50 0 100 200 300m

PROJECT - PROJET
CAM-1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE - METIER	DATE
SITING	2006-09-15

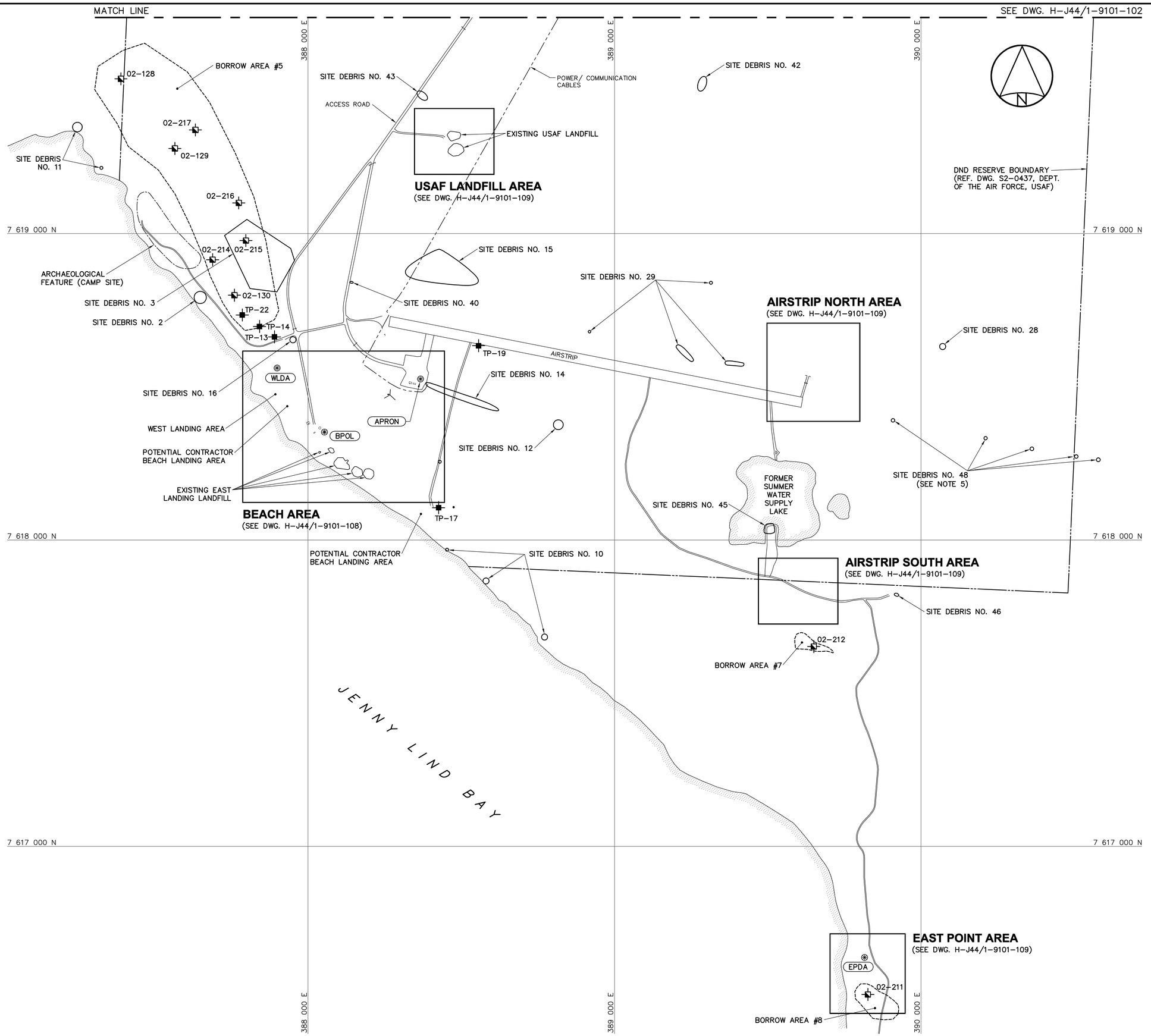
SUBJECT - SUJET

PROJECT LAYOUT
STATION AREA

PRODUCTION	CONCURRENCE - ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED - REVU	

DWG. NO. - DESSIN NO.
H-J44/1-9101-102

Canada



National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO UTM ZONE 14N, NAD83 (CSRS).
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. ALL NON-HAZARDOUS DEBRIS TO BE PLACED IN NON-HAZARDOUS WASTE LANDFILL.
4. ARCHAEOLOGICAL FEATURES LOCATED AS PER ENVIRONMENTAL CLEAN UP STUDY OF 21 DEW LINE SITES IN CANADA, VOL. 13, UMA 1991.
5. FIVE AREAS (5m x 5m) TO BE REGRADED WITH MAXIMUM 0.5m TYPE 2 GRANULAR FILL TO MATCH SURROUNDING TERRAIN.
6. REFER TO TABLE 02219-1 IN SPECIFICATIONS FOR DESCRIPTION OF DEBRIS AREAS.

Legend:

- CONTAMINATED SOIL AREA
- TEST PIT LOCATION (1993)
- TEST PIT LOCATION (2002)
- 19 PHOTOGRAPHIC VIEWPOINT
- APPROXIMATE LOCATION OF PROPERTY BOUNDARIES
- APPROXIMATE EXTENT OF BORROW AREAS
- BODY OF WATER

No.	DATE	REVISION	REVISION	APPR.

NORTHWEST TERRITORIES PROFESSIONAL ENGINEERS R.R. MERKOSKY LICENSEE (NWT/NU) 2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

UMA | AECOM SGE Acres

SCALE – ECHELLE 100 50 0 100 200 300m

PROJECT – PROJET
CAM-1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER	DATE
SITING	2006-09-15

SUBJECT – SUJET

PROJECT LAYOUT
AIRSTRIP AND BEACH AREA

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H-J44/1-9101-103

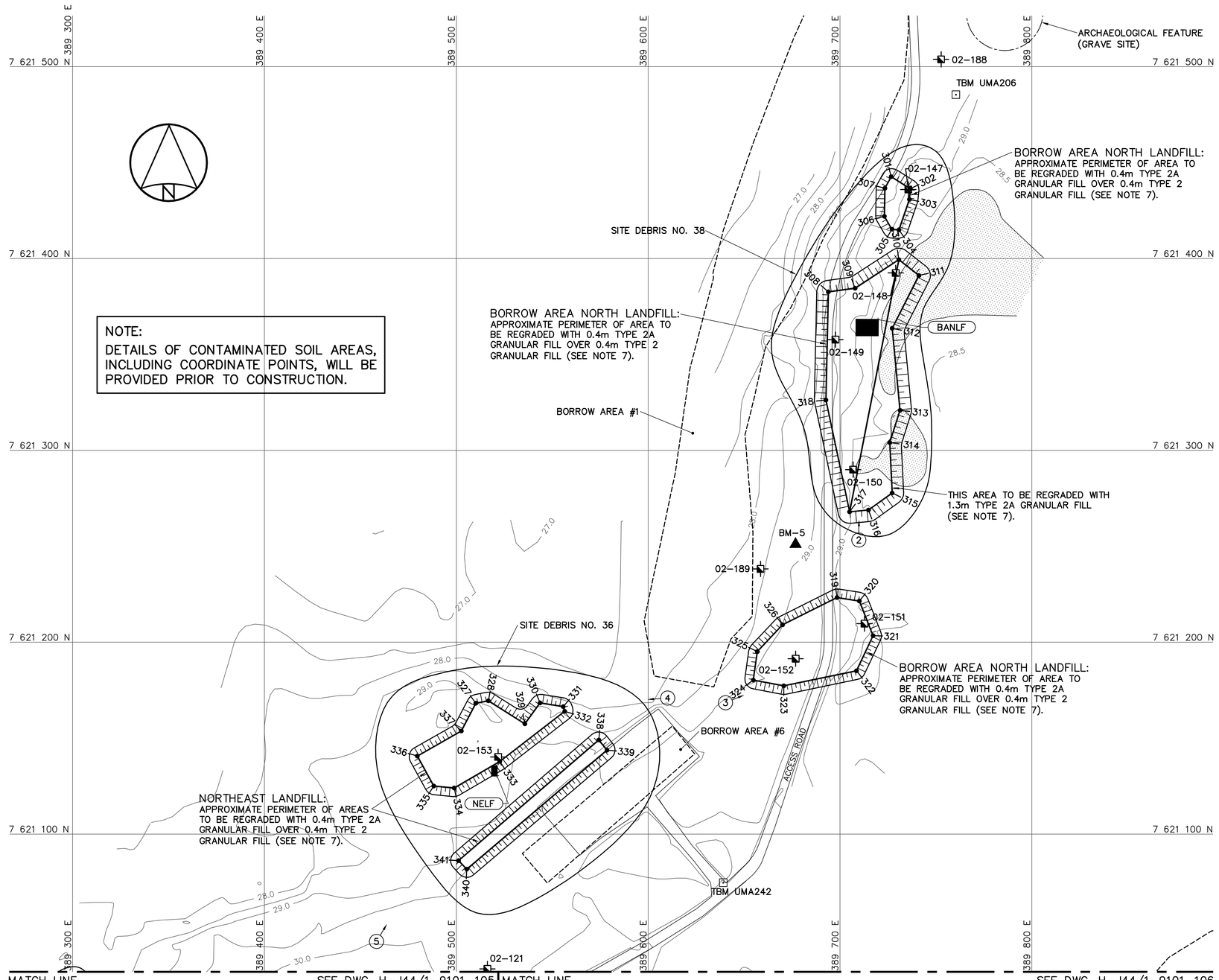
Canada

TEMPORARY BENCHMARKS				
NO.	COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
UMA206	7 621 485.409	389 760.436	30.116	19mm REBAR AND CAP
UMA242	7 621 074.671	389 639.191	30.044	19mm REBAR AND CAP

CONTAMINATED SOIL				
AREA	APPROX. AREA (m^2)	ESTIMATED IN PLACE VOLUME (m^3)	REFERENCE POINT	
			NORTHING	EASTING
TIER II				
BANLF	93	28	7 621 368.1	389 719.8
NELF	13	7	7 621 130.4	389 521.2

COORDINATE POINTS BORROW AREA NORTH LANDFILL REGRADING		
NO.	NORTHING	EASTING
301	7 621 442.7	389 726.7
302	7 621 436.4	389 736.7
303	7 621 430.8	389 736.2
304	7 621 415.0	389 730.8
305	7 621 415.2	389 727.2
306	7 621 422.0	389 723.1
307	7 621 436.6	389 723.4
308	7 621 382.6	389 693.9
309	7 621 384.5	389 707.9
310	7 621 399.4	389 730.7
311	7 621 391.2	389 741.1
312	7 621 363.6	389 727.2
313	7 621 320.9	389 731.3
314	7 621 304.1	389 725.9
315	7 621 277.8	389 727.2
316	7 621 268.9	389 714.8
317	7 621 268.0	389 705.0
318	7 621 326.2	389 692.7
319	7 621 223.3	389 698.5
320	7 621 221.5	389 710.1
321	7 621 203.4	389 717.2
322	7 621 185.1	389 708.6
323	7 621 177.3	389 670.7
324	7 621 180.3	389 654.8
325	7 621 195.1	389 656.9
326	7 621 209.1	389 670.0

COORDINATE POINTS NORTHEAST LANDFILL REGRADING		
NO.	NORTHING	EASTING
327	7 621 168.2	389 510.2
328	7 621 169.5	389 516.7
329	7 621 157.5	389 535.7
330	7 621 168.4	389 543.7
331	7 621 166.4	389 555.7
332	7 621 164.0	389 556.5
333	7 621 137.9	389 522.7
334	7 621 124.0	389 498.9
335	7 621 125.0	389 488.3
336	7 621 140.7	389 479.7
337	7 621 153.7	389 502.6
338	7 621 149.0	389 574.3
339	7 621 143.8	389 578.5
340	7 621 081.7	389 505.5
341	7 621 086.2	389 501.2



National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO UTM ZONE 14N, NAD83.
2. ALL NON–HAZARDOUS DEBRIS TO BE PLACED IN NON–HAZARDOUS WASTE LANDFILL.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. CONTAMINATED SOIL CLASSIFICATIONS ARE BASED ON DISPOSAL REQUIREMENTS.
5. FOR PERMANENT SURVEY CONTROL (BENCHMARK) INSTALLATION DETAILS, SEE DWG. H–J44/1–9101–117. LOCATIONS TO BE APPROVED BY THE ENGINEER.
6. REFER TO TABLE 02219–1 IN SPECIFICATIONS FOR DESCRIPTION OF DEBRIS AREAS.
7. REGRADED SIDE SLOPES 6H:1V MAXIMUM UNLESS NOTED OTHERWISE.

Legend:

- TEMPORARY BENCHMARK
- DCC TIER II CONTAMINATED SOILS
- TEST PIT LOCATION (2002)
- PROPOSED PERMANENT BENCHMARK LOCATION (1). (SEE NOTE 5).
- 106 COORDINATE POINT
- 8 PHOTOGRAPHIC VIEWPOINT
- BODY OF WATER

No.	DATE	REVISION	REVISION	APPR.

PROFESSIONAL ENGINEERS, GEOLOGISTS AND GEOPHYSICISTS OF THE NORTHWEST TERRITORIES — R.R. MERKOSKY — LICENSEE — (NWT/NU) — 2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

UMA | AECOM — SGE Acres

SCALE – ECHELLE 20 10 0 20 40 60m

PROJECT – PROJET
CAM–1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER	DATE
SITING	2006–09–15

SUBJECT – SUJET

STATION AREA NORTH
SITE PLAN

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–J44/1–9101–104

Canada

CONTAMINATED SOIL				
AREA	APPROX. AREA (m^2)	ESTIMATED IN PLACE VOLUME (m^3)	REFERENCE POINT	
			NORTHING	EASTING
TIER I				
C1–GAR	249	71	7 620 919.2	389 218.2
C1–MOD	295	73	7 620 862.1	389 321.7
C1–DISH	48	15	7 620 740.2	389 307.6
SPOL	34	10	7 620 673.7	389 341.5
OSAN	174	13	7 620 951.0	389 438.9
MOGAS	16	5	7 620 585.0	389 104.9
OUTFALL	614	184	7 620 705.3	389 429.9
TIER II				
C1–WAR	213	64	7 620 864.1	389 272.9
C1–MOD	1824	622	7 620 862.1	389 321.7
C1–DISH	226	68	7 620 740.2	389 307.6
SPOL	100	30	7 620 673.7	389 341.5

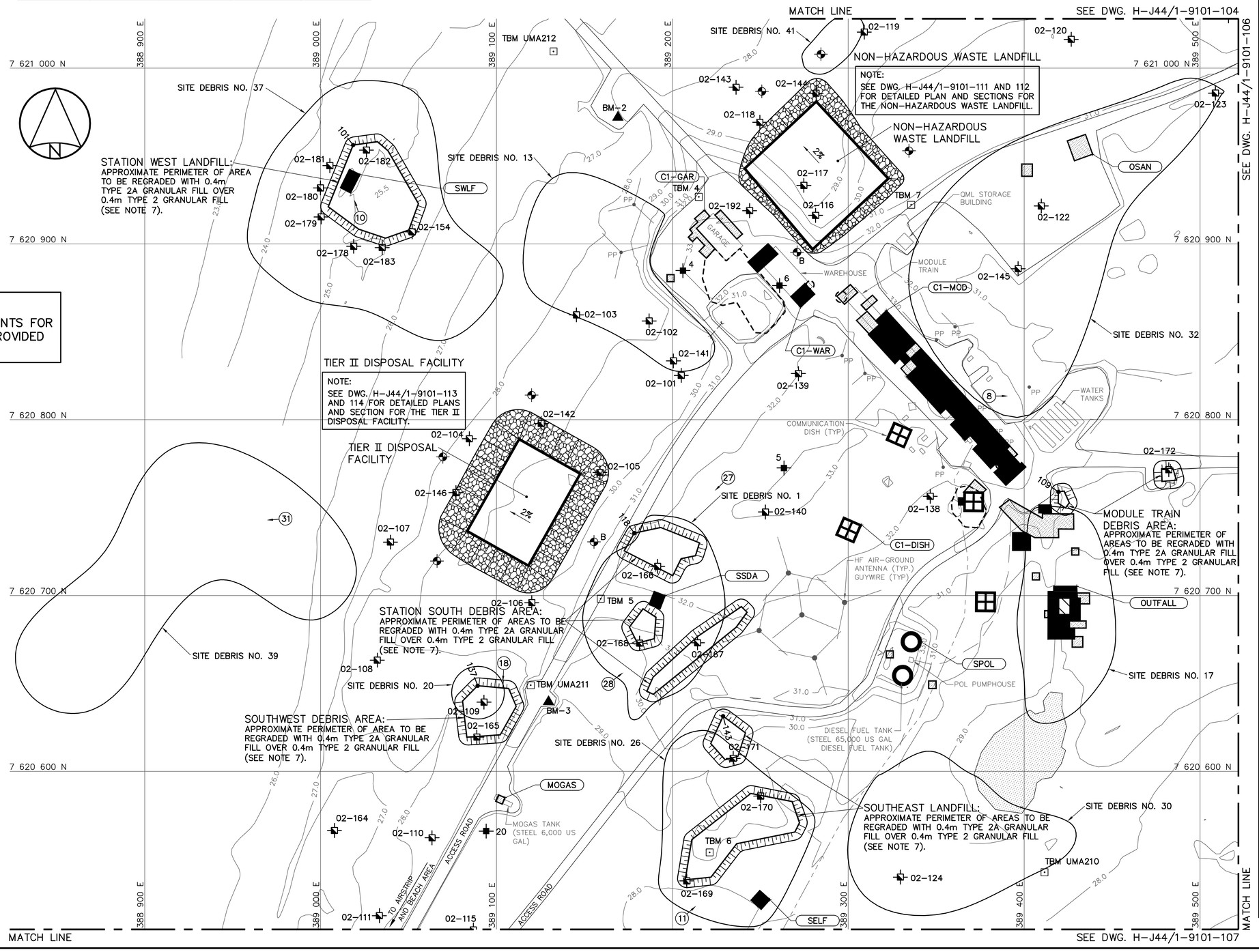
CONTAMINATED SOIL				
AREA	APPROX. AREA (m^2)	ESTIMATED IN PLACE VOLUME (m^3)	REFERENCE POINT	
			NORTHING	EASTING
TIER II (CONT'D)				
SELF	57	17	7 620 527.0	389 255.4
SWLF	75	15	7 620 939.4	389 022.4
SSDA	52	21	7 620 700.0	389 195.8
OUTFALL	612	190	7 620 705.3	389 429.9
TYPE B				
C1–WAR	16	16	7 620 864.1	389 272.9
C1–GAR	1251	1376	7 620 919.2	389 218.2
C1–MOD	16	11	7 620 862.1	389 321.7
C1–DISH	320	160	7 620 740.2	389 307.6
HAZARDOUS				
OUTFALL	60	18	7 620 705.3	389 429.9

TEMPORARY BENCHMARKS				
NO.	COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
4	7 620 926.762	389 215.022	32.618	25mm PIPE
5	7 620 698.184	389 159.269	31.690	19mm BAR
6	7 620 553.879	389 221.185	29.434	19mm PIPE
UMA210	7 620 542.577	389 411.619	28.527	19mm REBAR AND CAP
UMA211	7 620 648.976	389 119.471	30.850	19mm REBAR AND CAP
UMA212	7 621 009.494	389 132.441	26.670	19mm REBAR AND CAP

NOTE:
DETAILS OF CONTAMINATED SOIL AREAS, INCLUDING COORDINATE POINTS, WILL BE PROVIDED PRIOR TO CONSTRUCTION.

COORDINATE POINTS REGRADING		
NO.	NORTHING	EASTING
STATION WEST LANDFILL		
101	7 620 956.3	389 018.5
MODULE TRAIN DEBRIS		
109	7 620 759.0	389 419.5
STATION SOUTH DEBRIS		
118	7 620 735.5	389 178.4
SOUTHWEST DEBRIS AREA		
137	7 620 648.7	389 089.3
SOUTHEAST LANDFILL		
143	7 620 631.4	389 228.8

NOTE:
ADDITIONAL COORDINATE POINTS FOR REGRADE AREAS WILL BE PROVIDED PRIOR TO CONSTRUCTION.



General Notes:

1. ALL COORDINATES ARE REFERENCED TO UTM ZONE 14N, NAD83.
2. ALL NON–HAZARDOUS DEBRIS TO BE PLACED IN NON–HAZARDOUS WASTE LANDFILL.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. FOR MONITORING WELL AND PERMANENT SURVEY CONTROL (BENCHMARK) INSTALLATION DETAILS, SEE DWG. H–J44/1–9101–117. LOCATIONS TO BE APPROVED BY THE ENGINEER.
5. CONTAMINATED SOIL CLASSIFICATIONS ARE BASED ON DISPOSAL REQUIREMENTS.
6. REFER TO TABLE 02219–1 IN SPECIFICATIONS FOR DESCRIPTION OF DEBRIS AREAS.
7. REGRADED SIDE SLOPES 6H:1V MAXIMUM UNLESS NOTED OTHERWISE.

Legend:

- TEMPORARY BENCHMARK
- DCC TIER I CONTAMINATED SOILS
- DCC TIER II CONTAMINATED SOILS
- TYPE B CONTAMINATED SOILS
- HAZARDOUS CONTAMINATED SOILS
- GROUNDWATER MONITORING WELL
- TEST PIT LOCATION (1993)
- TEST PIT LOCATION (2002)
- PROPOSED PERMANENT BENCHMARK LOCATION (2). (SEE NOTE 4).
- PROPOSED MONITORING WELL LOCATION (6)
- B PROPOSED BACKGROUND MONITORING WELL LOCATION (2)
- (19) PHOTOGRAPHIC VIEWPOINT
- 250 COORDINATE POINT

No.	DATE	REVISION	REVISION	APPR.

R.R. MERKOSKY — LICENSEE — NWT/NU — 2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

UMA | AECOM — SGE Acres

SCALE – ECHELLE 20 10 0 20 40 60m

PROJECT – PROJET
CAM–1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER	DATE
SITING	2006–09–15

SUBJECT – SUJET

STATION AREA
SITE PLAN

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–J44/1–9101–105

National Defence / Défense nationale
Headquarters / Quartier général

Canada

CONTAMINATED SOIL				
AREA NO.	APPROX. AREA (m^2)	ESTIMATED IN PLACE VOLUME (m^3)	REFERENCE POINT	
			NORTHING	EASTING
TIER II				
MLF	61	18	7 620 633.0	389 684.6

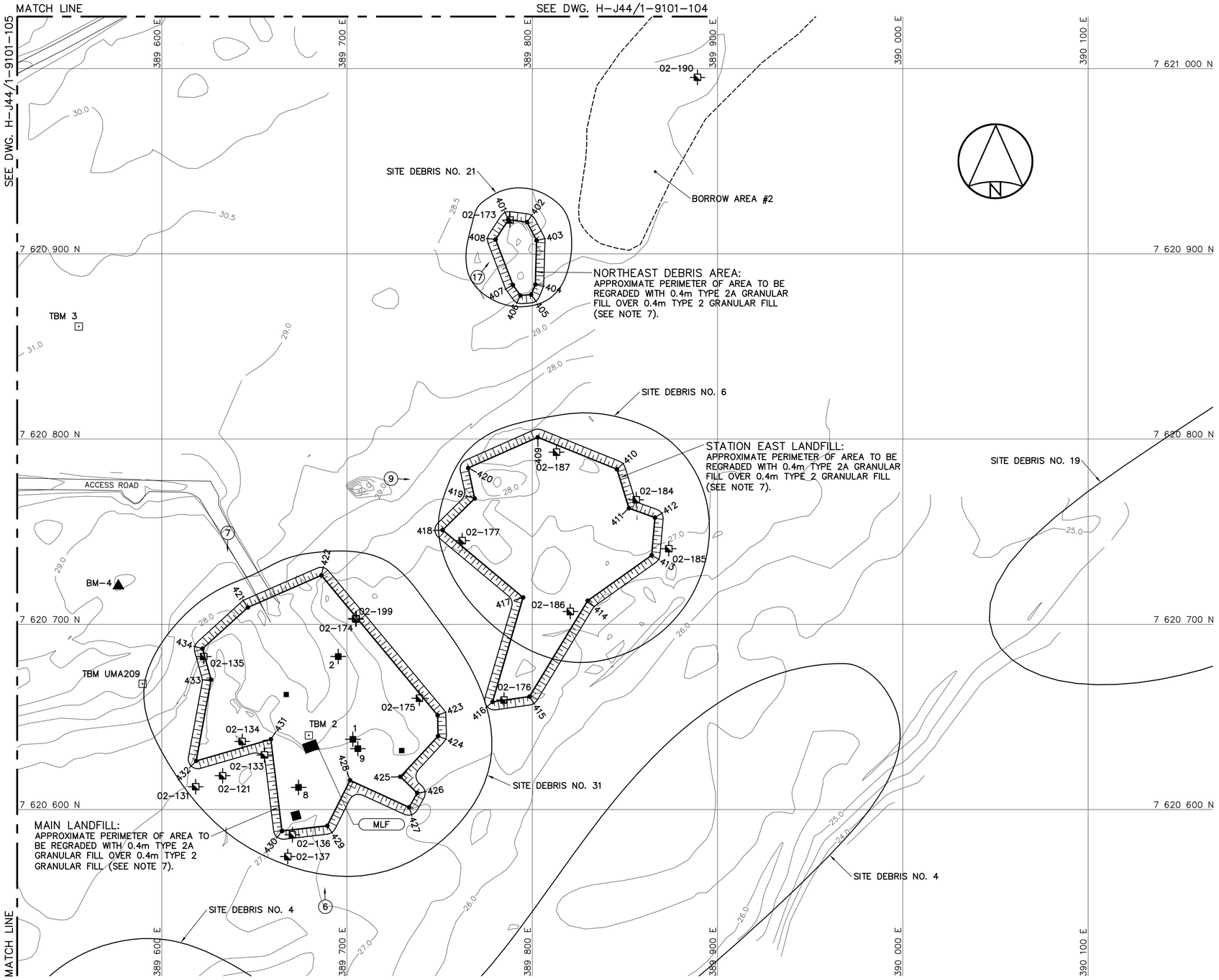
TEMPORARY BENCHMARKS				
NO.	COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
2	7 620 640.627	389 678.720	27.841	SPIKE
3	7 620 861.414	389 554.560	30.951	SPIKE
UMA209	7 620 668.473	389 588.960	29.530	19mm REBAR WITH CAP

NOTE:
DETAILS OF CONTAMINATED SOIL AREAS, INCLUDING COORDINATE POINTS, WILL BE PROVIDED PRIOR TO CONSTRUCTION.

COORDINATE POINTS NORTHEAST DEBRIS AREA REGRADING		
NO.	NORTHING	EASTING
401	7 620 918.4	389 787.1
402	7 620 917.1	389 797.1
403	7 620 907.2	389 802.3
404	7 620 883.4	389 801.7
405	7 620 878.0	389 799.3
406	7 620 877.5	389 793.6
407	7 620 883.2	389 789.5
408	7 620 907.8	389 780.2

COORDINATE POINTS STATION EAST LANDFILL REGRADING		
NO.	NORTHING	EASTING
409	7 620 801.0	389 802.9
410	7 620 783.7	389 845.7
411	7 620 762.7	389 852.1
412	7 620 757.6	389 866.2
413	7 620 737.3	389 864.4
414	7 620 712.7	389 829.9
415	7 620 661.0	389 798.5
416	7 620 658.1	389 778.5
417	7 620 714.5	389 795.0
418	7 620 750.9	389 751.6
419	7 620 767.9	389 768.9
420	7 620 784.4	389 765.4

COORDINATE POINTS MAIN LANDFILL REGRADING		
NO.	NORTHING	EASTING
421	7 620 686.8	389 622.0
422	7 620 709.1	389 646.4
423	7 620 726.4	389 686.1
424	7 620 650.9	389 748.9
425	7 620 639.6	389 749.1
426	7 620 617.7	389 728.8
427	7 620 608.9	389 737.9
428	7 620 601.2	389 733.5
429	7 620 615.7	389 701.6
430	7 620 591.2	389 689.4
431	7 620 588.4	389 664.9
432	7 620 637.9	389 658.9
433	7 620 626.2	389 618.6
434	7 620 670.1	389 626.6



National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO UTM ZONE 14N, NAD83.
2. ALL NON-HAZARDOUS DEBRIS TO BE PLACED IN NON-HAZARDOUS WASTE LANDFILL.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. CONTAMINATED SOIL CLASSIFICATIONS ARE BASED ON DISPOSAL REQUIREMENTS.
5. FOR PERMANENT SURVEY CONTROL (BENCHMARK) INSTALLATION DETAILS, SEE DWG. H-J44/1-9101-117. LOCATIONS TO BE APPROVED BY THE ENGINEER.
6. REFER TO TABLE 02219-1 IN SPECIFICATIONS FOR DESCRIPTION OF DEBRIS AREAS.
7. REGRADED SIDE SLOPES 6H:1V MAXIMUM UNLESS NOTED OTHERWISE.

Legend:

- TEMPORARY BENCHMARK
- TIER II CONTAMINATED SOILS
- TEST PIT LOCATION (1993)
- TEST PIT LOCATION (2002)
- PROPOSED PERMANENT BENCHMARK LOCATION (1). (SEE NOTE 5).
- 250 COORDINATE POINT
- (9) PHOTOGRAPHIC VIEWPOINT

No.	DATE	REVISION	REVISION	APPR.

PROFESSIONAL ENGINEERS R.R. MERKOSKY LICENSEE NWT/NU
2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

UMA | AECOM SGE Acres

SCALE – ECHELLE 20 10 0 20 40 60m

PROJECT – PROJET
CAM-1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER	DATE
SITING	2006-09-15

SUBJECT – SUJET

STATION AREA EAST
SITE PLAN

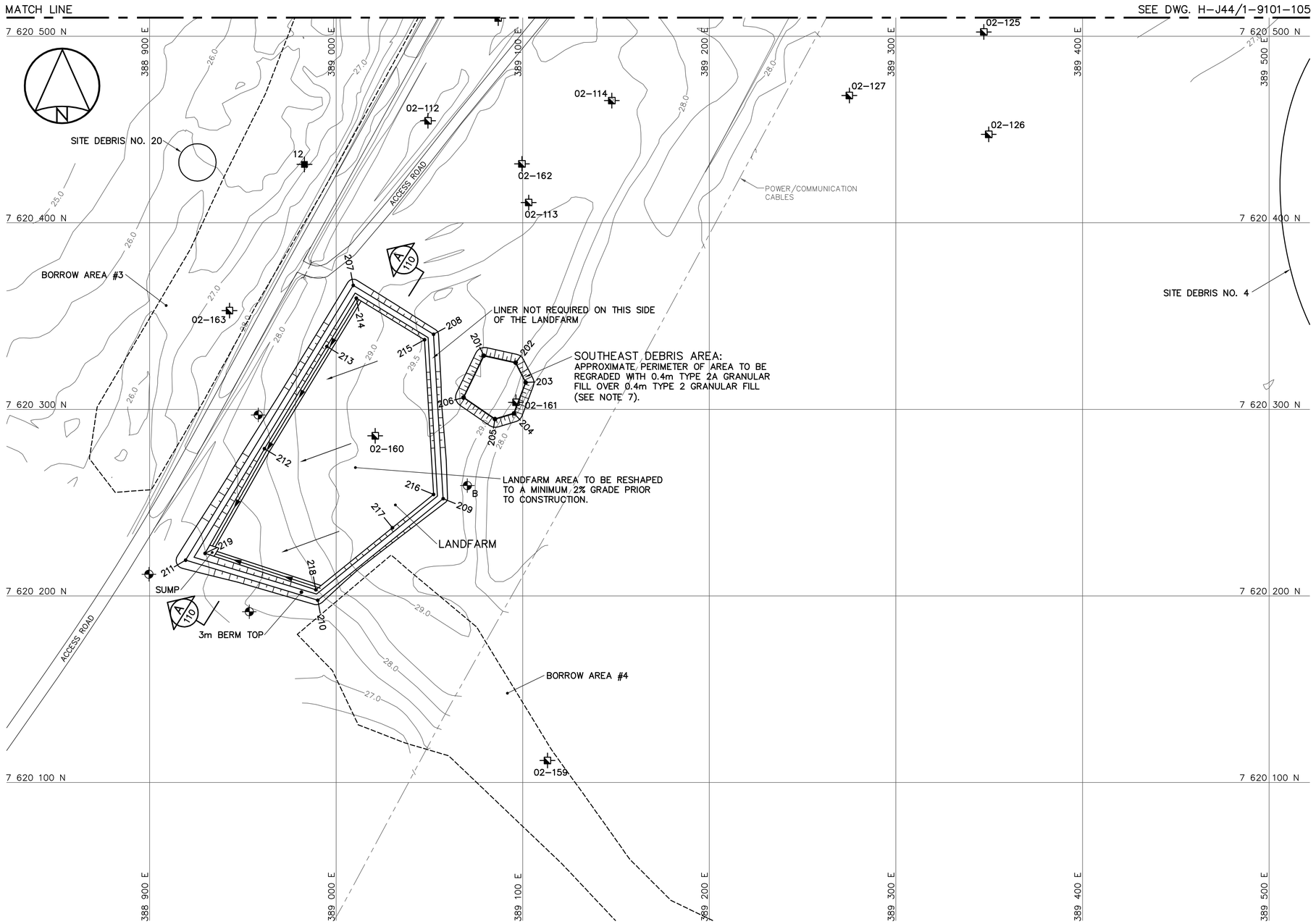
PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H-J44/1-9101-106

Canada

COORDINATE POINTS SOUTHEAST DEBRIS AREA REGRADING		
NO.	NORTHING	EASTING
201	7 620 328.8	389 079.1
202	7 620 325.0	389 096.2
203	7 620 314.4	389 101.6
204	7 620 297.8	389 095.3
205	7 620 294.8	389 085.1
206	7 620 306.3	389 068.3

COORDINATE POINTS LANDFARM			
NO.	NORTHING	EASTING	ELEV.
207	7 620 366.5	389 009.2	30.5
208	7 620 340.2	389 052.2	31.0
209	7 620 252.1	389 057.4	30.5
210	7 620 197.7	388 990.2	29.0
211	7 620 219.2	388 919.3	29.0
212	7 620 278.9	388 961.6	28.0
213	7 620 333.7	388 995.0	29.0
214	7 620 359.6	389 010.8	29.5
215	7 620 337.3	389 047.4	30.0
216	7 620 254.4	389 052.2	29.5
217	7 620 236.5	389 030.2	29.0
218	7 620 203.3	388 989.1	28.0
219	7 620 222.8	388 929.7	27.0



General Notes:

1. ALL COORDINATES ARE REFERENCED TO UTM ZONE 14N, NAD83.
2. ALL NON-HAZARDOUS DEBRIS TO BE PLACED IN NON-HAZARDOUS WASTE LANDFILL.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. CONTAMINATED SOIL CLASSIFICATIONS ARE BASED ON DISPOSAL REQUIREMENTS.
5. FOR MONITORING WELL INSTALLATION DETAILS, SEE DWG. H-J44/1-9101-117. LOCATIONS TO BE APPROVED BY THE ENGINEER.
6. REFER TO TABLE 02219-1 IN SPECIFICATIONS FOR DESCRIPTION OF DEBRIS AREAS.
7. REGRADED SIDE SLOPES 6H:1V MAXIMUM UNLESS NOTED OTHERWISE.

Legend:

- TEST PIT LOCATION (1993)
- TEST PIT LOCATION (2002)
- 250 COORDINATE POINT
- PROPOSED MONITORING WELL LOCATION (3)
- B PROPOSED BACKGROUND MONITORING WELL LOCATION (1)

National Defence / Défense nationale

Headquarters
Quartier général

No.	DATE	REVISION	REVISION	APPR.

R.R. MERKOSKY LICENSEE NWT/NU
2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

UMA | AECOM SGE Acres

SCALE – ECHELLE 20 10 0 20 40 60m

PROJECT – PROJET
CAM-1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER	DATE
SITING	2006-09-15

SUBJECT – SUJET

STATION AREA SOUTH
SITE PLAN

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H-J44/1-9101-107

Canada

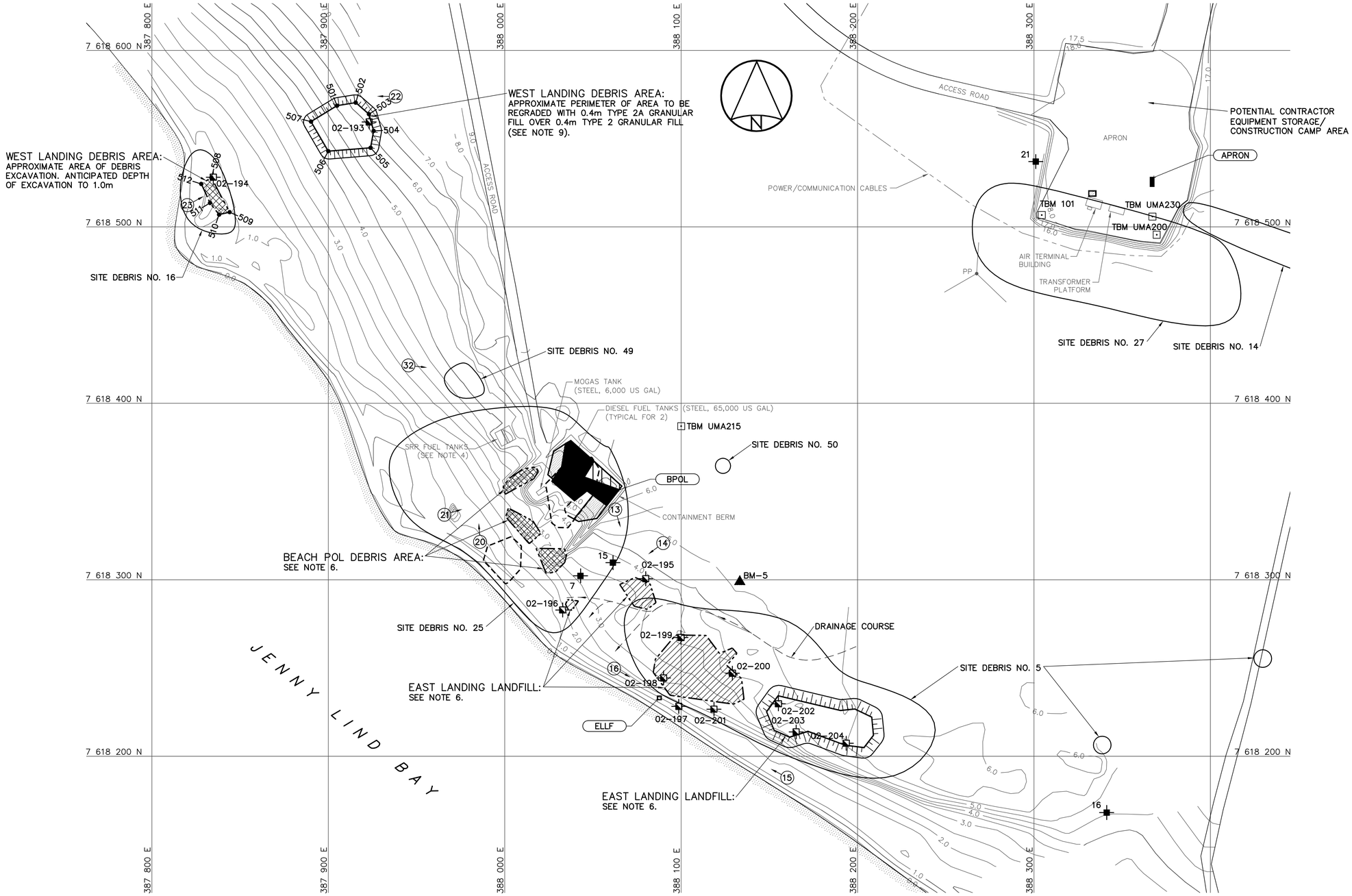
COORDINATE POINTS WEST LANDING DEBRIS AREA REGRADING		
NO.	NORTHING	EASTING
501	7 618 568.7	387 904.9
502	7 618 570.4	387 915.5
503	7 618 563.9	387 923.0
504	7 618 554.4	387 925.7
505	7 618 544.8	387 923.9
506	7 618 542.9	387 900.0
507	7 618 559.6	387 890.2

COORDINATE POINTS WEST LANDING DEBRIS AREA EXCAVATION		
NO.	NORTHING	EASTING
508	7 618 527.9	387 833.7
509	7 618 508.3	387 844.0
510	7 618 507.0	387 838.1
511	7 618 513.6	387 832.9
512	7 618 524.4	387 828.0

TEMPORARY BENCHMARKS				
NO.	COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
101	7 618 506.713	388 304.367	17.975	CHS MON 8699635
UMA200	7 618 495.517	388 369.547	18.326	19mm REBAR AND CAP
UMA215	7 618 387.059	388 099.989	9.537	19mm REBAR AND CAP
UMA230	7 618 505.836	388 367.119	18.401	19mm REBAR AND CAP

NOTE:
DETAILS OF CONTAMINATED SOIL AREAS, INCLUDING COORDINATE POINTS, WILL BE PROVIDED PRIOR TO CONSTRUCTION.

CONTAMINATED SOIL				
AREA NO.	APPROX. AREA (m^2)	ESTIMATED IN PLACE VOLUME (m^3)	REFERENCE POINT	
			NORTHING	EASTING
TIER I				
BPOL	240	72	7 618 351.0	388 064.8
ELLF	4	2	7 618 232.1	388 086.6
APRON	12	4	7 618 528.0	388 368.0
TIER II				
BPOL	565	197	7 618 351.0	388 064.8
APRON	10	3	7 618 528.0	388 368.0
TYPE B				
BPOL	1020	886	7 618 351.0	388 064.8
HAZARDOUS				
BPOL	136	41	7 618 351.0	388 064.8



National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO UTM ZONE 14N, NAD83.
2. ALL NON-HAZARDOUS DEBRIS TO BE PLACED IN NON-HAZARDOUS WASTE LANDFILL.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. ALL SHORT RANGE RADAR (SRR) FACILITIES ARE CURRENTLY OPERATIONAL AND ARE NOT TO BE DISTURBED.
5. CONTAMINATED SOIL CLASSIFICATIONS ARE BASED ON DISPOSAL REQUIREMENTS.
6. SEE DWG. H-J44/1-9101-115 FOR DETAILED PLANS OF THE BEACH EXCAVATION AND REGRADE AREAS.
7. REFER TO TABLE 02219-1 IN SPECIFICATIONS FOR DESCRIPTION OF DEBRIS AREAS.
8. FOR PERMANENT SURVEY CONTROL (BENCHMARK) INSTALLATION DETAILS, SEE DWG. H-J44/1-9101-117. LOCATIONS TO BE APPROVED BY THE ENGINEER.
9. REGRADED SIDE SLOPES 6H:1V MAXIMUM UNLESS NOTED OTHERWISE.

Legend:

- TEMPORARY BENCHMARK
- DCC TIER I CONTAMINATED SOILS
- DCC TIER II CONTAMINATED SOILS
- TYPE B CONTAMINATED SOILS
- HAZARDOUS CONTAMINATED SOILS
- TEST PIT LOCATION (1993)
- TEST PIT LOCATION (2002)
- PROPOSED PERMANENT BENCHMARK LOCATION (1). (SEE NOTE 8).
- 250 COORDINATE POINT
- 29 PHOTOGRAPHIC VIEWPOINT
- BURIED DEBRIS EXCAVATION AREA
- LANDFILL EXCAVATION AREA
- BODY OF WATER

No.	DATE	REVISION	REVISION	APPR.

R.R. MERKOSKY LICENSEE (NWT/NU) ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS AND GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER
P 007
UMA ENGINEERING LTD.

UMA | AECOM — SGE Acres

SCALE – ECHELLE 20 10 0 20 40 60m

PROJECT – PROJET
CAM-1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER	DATE
SITING	2006-09-15

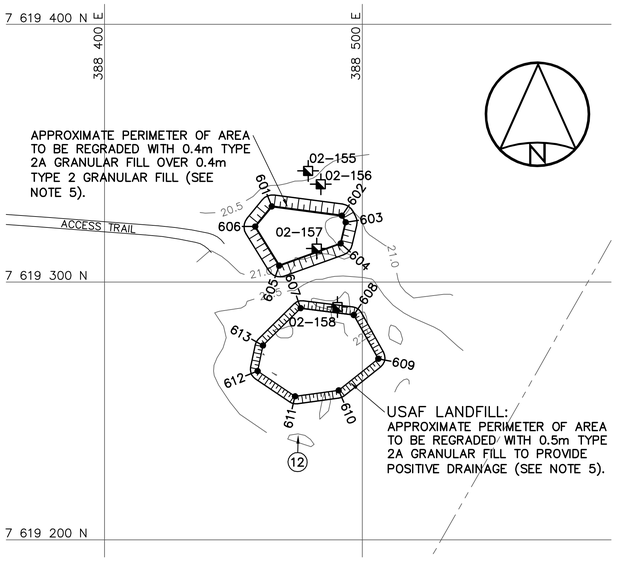
SUBJECT – SUJET

BEACH AREA
SITE PLAN

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H-J44/1-9101-108

Canada



USAF LANDFILL AREA

COORDINATE POINTS USAF LANDFILL REGRADING		
NO.	NORTHING	EASTING
601	7 619 329.4	388 464.9
602	7 619 325.8	388 492.1
603	7 619 323.2	388 493.5
604	7 619 315.0	388 491.6
605	7 619 306.4	388 467.7
606	7 619 321.6	388 458.4
607	7 619 289.9	388 476.1
608	7 619 287.3	388 496.7
609	7 619 270.2	388 506.2
610	7 619 258.0	388 490.8
611	7 619 255.7	388 473.9
612	7 619 265.5	388 459.4
613	7 619 275.4	388 461.5

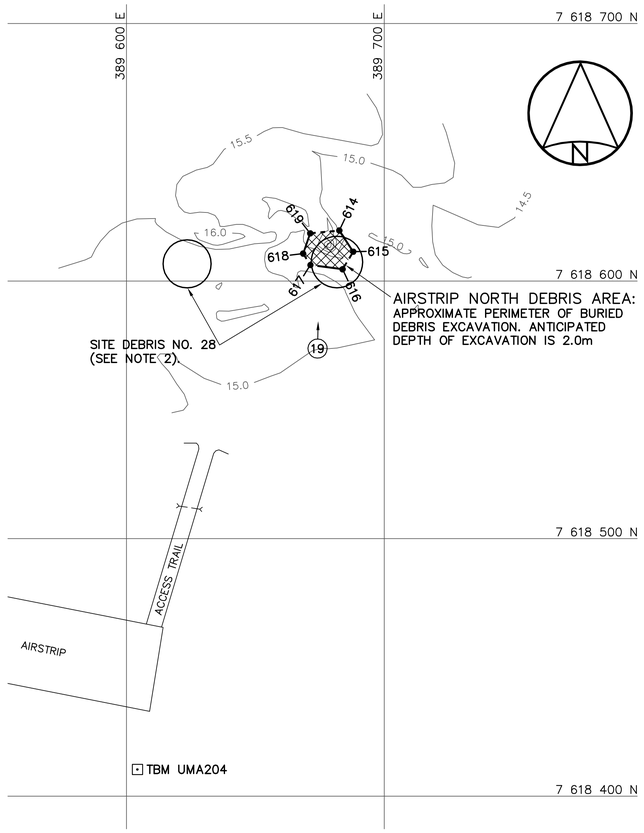
COORDINATE POINTS AIRSTRIP NORTH DEBRIS AREA EXCAVATION		
NO.	NORTHING	EASTING
614	7 618 619.6	389 682.6
615	7 618 611.4	389 688.0
616	7 618 604.6	389 683.8
617	7 618 606.2	389 671.4
618	7 618 610.7	389 668.5
619	7 618 618.5	389 671.3

COORDINATE POINTS AIRSTRIP SOUTH DEBRIS AREA REGRADING		
NO.	NORTHING	EASTING
620	7 617 835.1	389 602.7
621	7 617 822.4	389 611.6
622	7 617 822.2	389 591.7
623	7 617 832.1	389 590.6

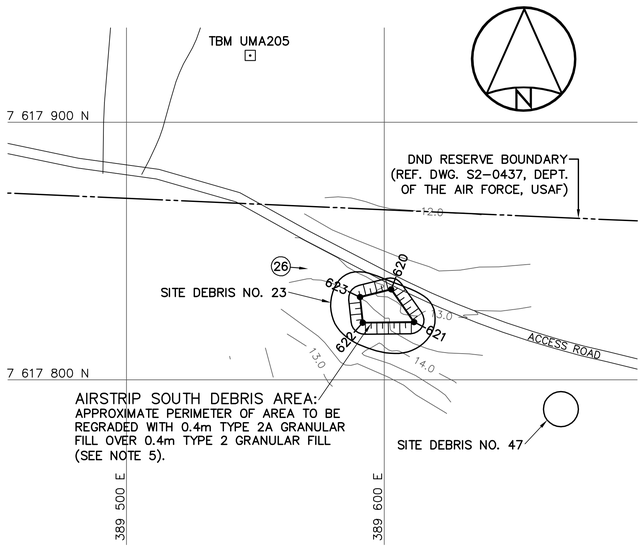
COORDINATE POINTS EAST POINT DEBRIS AREA REGRADING		
NO.	NORTHING	EASTING
624	7 616 639.6	389 834.3
625	7 616 638.1	389 838.5
626	7 616 634.2	389 838.7
627	7 616 589.2	389 792.4
628	7 616 596.3	389 772.6
629	7 616 612.5	389 768.1
630	7 616 624.9	389 793.4

CONTAMINATED SOIL				
AREA	APPROX. AREA (m^2)	ESTIMATED IN PLACE VOLUME (m^3)	REFERENCE POINT	
			NORTHING	EASTING
TIER II				
EPDA	190	95	7 616 644.4	389 814.0

TEMPORARY BENCHMARKS				
NO.	COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
UMA204	7 618 410.408	389 604.215	14.318	19mm REBAR AND CAP
UMA205	7 617 925.884	389 547.984	12.228	19mm REBAR AND CAP
UMA207	7 616 669.914	389 858.534	2.367	19mm REBAR AND CAP
UMA208	7 616 546.947	389 899.189	3.469	19mm REBAR AND CAP

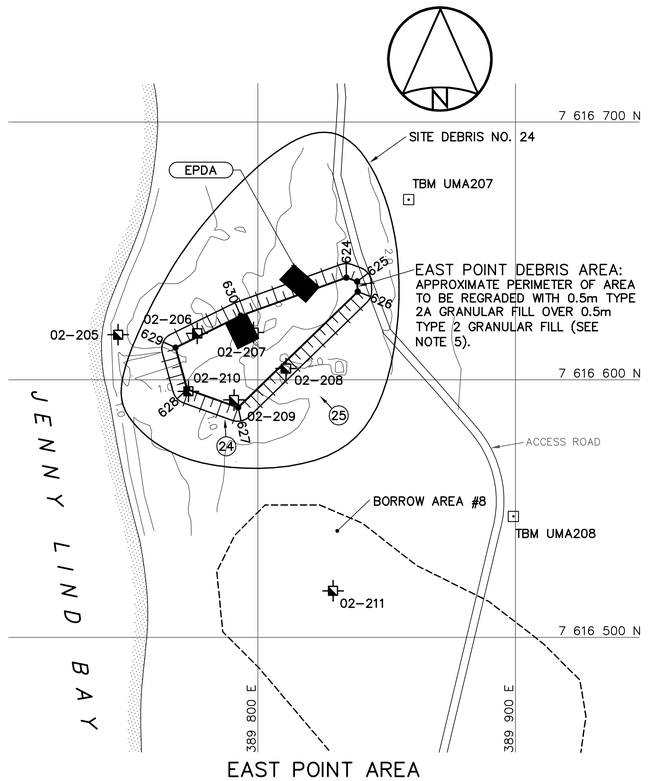


AIRSTRIP NORTH AREA



AIRSTRIP SOUTH AREA

NOTE:
DETAILS OF CONTAMINATED SOIL AREAS, INCLUDING COORDINATE POINTS, WILL BE PROVIDED PRIOR TO CONSTRUCTION.



EAST POINT AREA

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO UTM ZONE 14N, NAD83.
2. ALL NON-HAZARDOUS DEBRIS TO BE PLACED IN NON-HAZARDOUS WASTE LANDFILL.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. REFER TO TABLE 02219-1 IN SPECIFICATIONS FOR DESCRIPTION OF DEBRIS AREAS.
5. REGRADED SIDE SLOPES 6H:1V MAXIMUM UNLESS NOTED OTHERWISE.

Legend:

- TEMPORARY BENCHMARK
- TIER II CONTAMINATED SOILS
- TEST PIT LOCATION (2002)
- 250 COORDINATE POINT
- 18 PHOTOGRAPHIC VIEWPOINT
- BURIED DEBRIS EXCAVATION AREA
- BODY OF WATER

No.	DATE	REVISION	REVISION	APPR.

LEGISLATED PROFESSIONAL ENGINEERS R.R. MERKOSKY LICENSEE (NWT/NU) 2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

UMA | AECOM SGE Acres

SCALE – ECHELLE 20 10 0 20 40 60m

PROJECT – PROJET
CAM–1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER: SITING
DATE: 2006–09–15

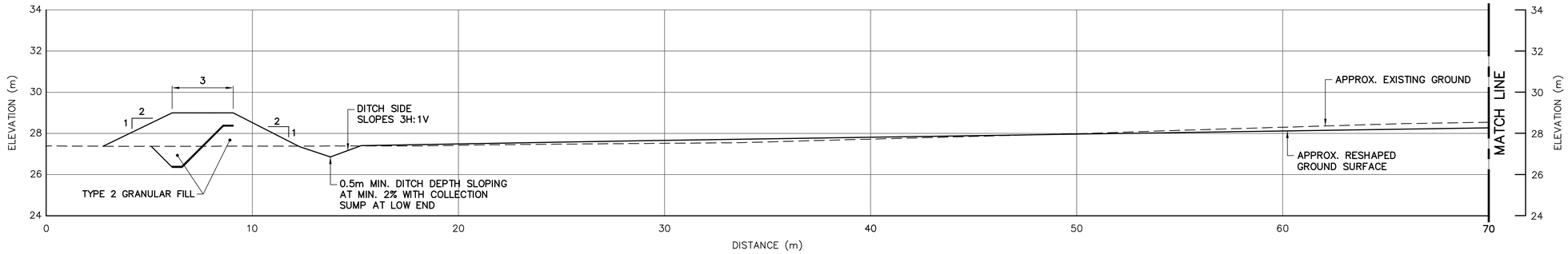
SUBJECT – SUJET

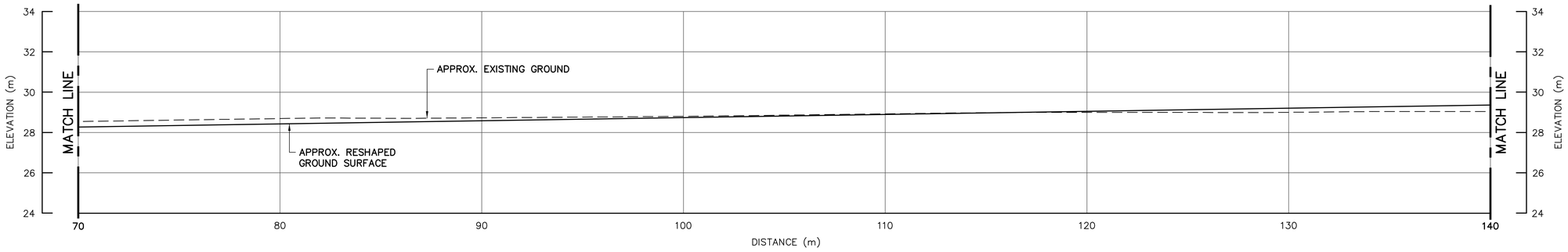
USAF LANDFILL AREA, AIRSTRIP AREAS AND EAST POINT AREA SITE PLANS

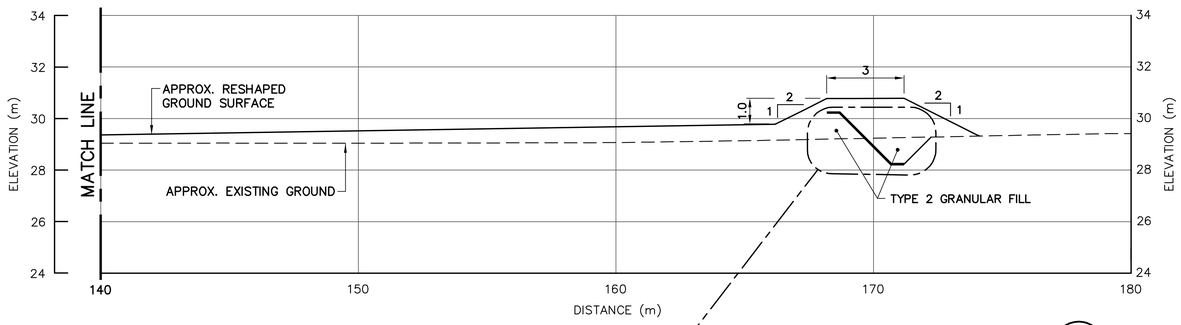
PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–J44/1–9101–109

Canada



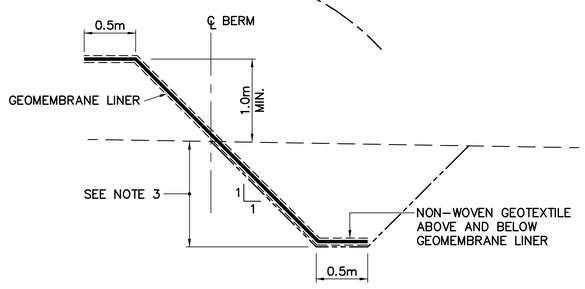




SECTION A 107

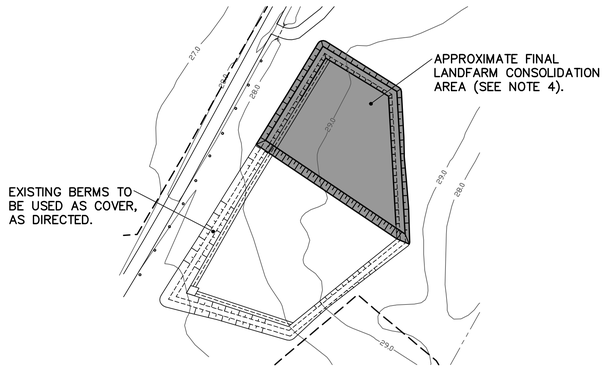
0 2 4 6m

2 1



KEY TRENCH AND GEOMEMBRANE DETAIL

N.T.S.



LANDFARM CLOSURE PLAN

0 30 60 90m

30 15

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO UTM ZONE 14N, NAD83 (CSRS).
2. FINAL RESHAPED SURFACE OF BASE TO BE MINIMUM 2%.
3. KEY LINER 1.0m MINIMUM BELOW EXISTING GROUND. EXCAVATION DEPTH TO BE FIELD CONFIRMED BY THE SITE ENGINEER, BASED ON THE PRESENCE OF SATURATED GROUND, ICE SATURATED PERMAFROST OR BEDROCK.
4. TREATED HYDROCARBON CONTAMINATED SOIL TO BE CONSOLIDATED AND COVERED IN THE LANDFARM, AS SHOWN IN THE SHADED AREA.

Legend:

No.	DATE	REVISION	REVISION	APPR.

R.R. MERKOSKY — LICENSEE — NWT/NU — 2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

UMA | AECOM — SGE Acres

SCALE – ECHELLE: AS SHOWN

PROJECT – PROJET: CAM–1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER: SITING

DATE: 2006–09–15

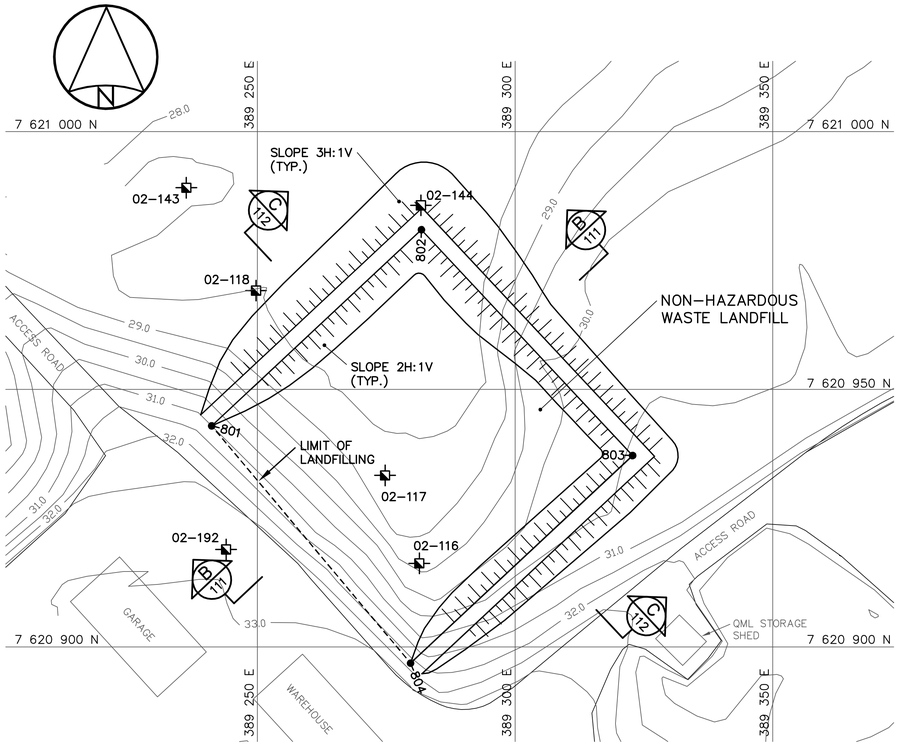
SUBJECT – SUJET

LANDFARM
CROSS SECTION AND DETAILS

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–J44/1–9101–110

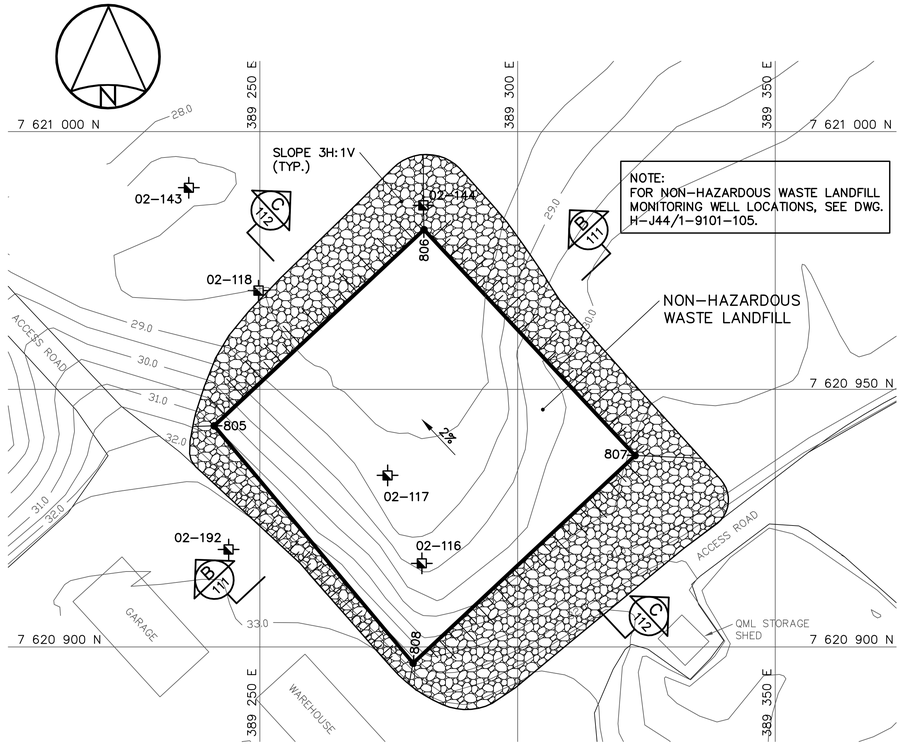
Canada



PLAN – BERM CONSTRUCTION

0 10 20 30m
10 5

COORDINATE POINTS NON-HAZARDOUS WASTE LANDFILL BERM CONSTRUCTION			
NO.	NORTHING	EASTING	ELEV.
801	7 620 942.9	389 241.1	31.00
802	7 620 981.0	389 281.8	31.00
803	7 620 937.1	389 322.8	32.25
804	7 620 896.9	389 279.7	32.25

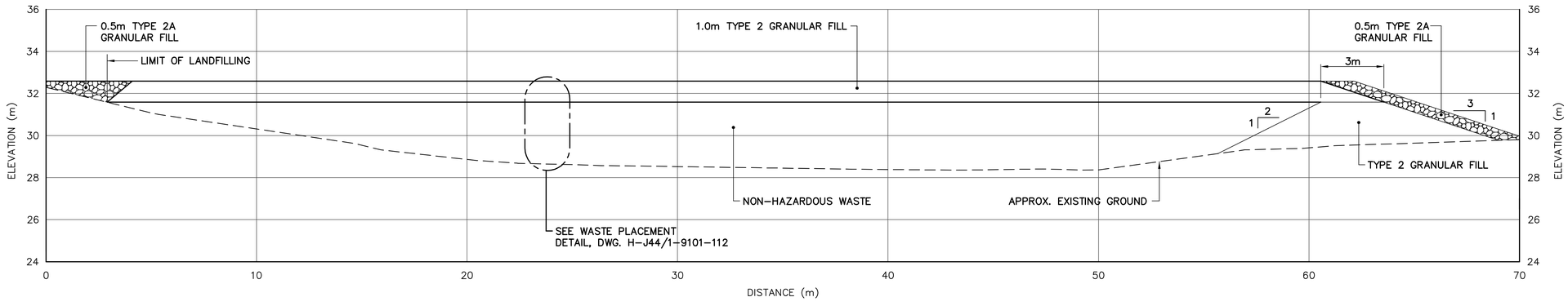


PLAN – FINAL GRADING

0 10 20 30m
10 5

COORDINATE POINTS NON-HAZARDOUS WASTE LANDFILL FINAL GRADING			
NO.	NORTHING	EASTING	ELEV.
805	7 620 942.9	389 241.1	32.00
806	7 620 981.0	389 281.8	32.00
807	7 620 937.1	389 322.8	33.25
808	7 620 896.9	389 279.7	33.25

NOTE:
COORDINATE POINTS AND ELEVATIONS PROVIDED ARE TO THE FINAL GRADE OF THE TYPE 2 GRANULAR FILL CAP PRIOR TO THE PLACEMENT OF THE TYPE 2A GRANULAR FILL ON THE SIDE SLOPES.



SECTION B 111

0 2 4 6m
2 1

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO UTM ZONE 14N, NAD83 (CSRS).
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. VARIABLE SLOPE ON LANDFILL SURFACE PERMITTED. MINIMUM 2% – MAXIMUM 4%.

Legend:

- TEST PIT LOCATION (2002)
- 250 COORDINATE POINT

No.	DATE	REVISION	REVISION	APPR.

R.R. MERKOSKY LICENSEE (NWT/NU) REGISTERED PROFESSIONAL ENGINEERS
2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

UMA | AECOM SGE Acres

SCALE – ECHELLE
AS SHOWN

PROJECT – PROJET
CAM-1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER: SITING
DATE: 2006-09-15

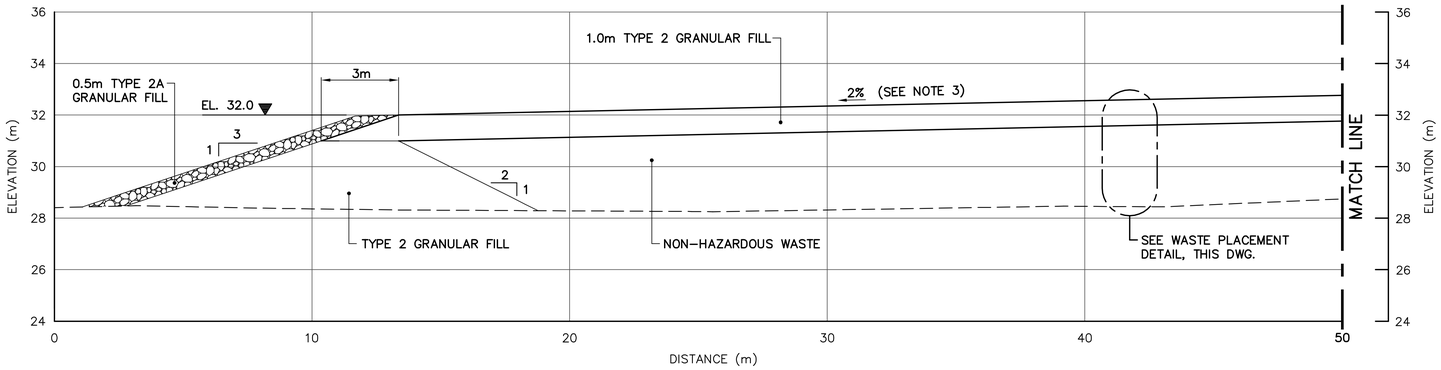
SUBJECT – SUJET

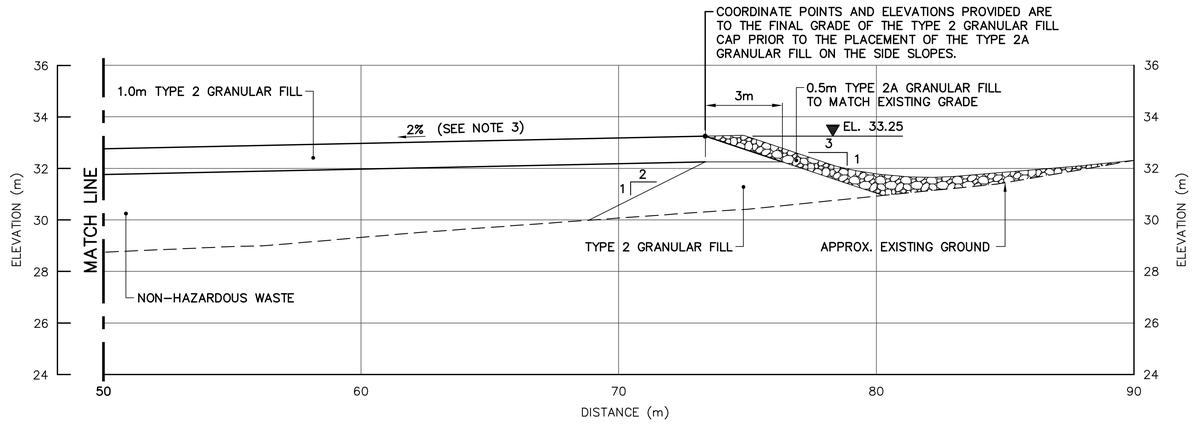
NON-HAZARDOUS WASTE LANDFILL PLANS AND SECTION

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H-J44/1-9101-111

Canada

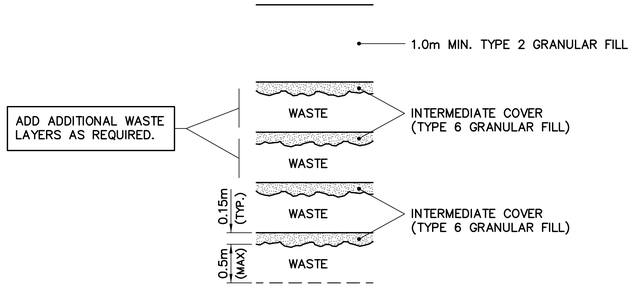




SECTION C 111

0 2 4 6m

2 1



WASTE PLACEMENT DETAIL

N.T.S.

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO UTM ZONE 14N, NAD83 (CSRS).
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. VARIABLE SLOPE ON LANDFILL SURFACE PERMITTED. MINIMUM 2% – MAXIMUM 4%.

Legend:

No.	DATE	REVISION	REVISION	APPR.

R.R. MERKOSKY LICENSEE (NWT/NU) — 2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

UMA | AECOM — SGE Acres

SCALE – ECHELLE: AS SHOWN

PROJECT – PROJET: CAM–1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER	DATE
SITING	2006–09–15

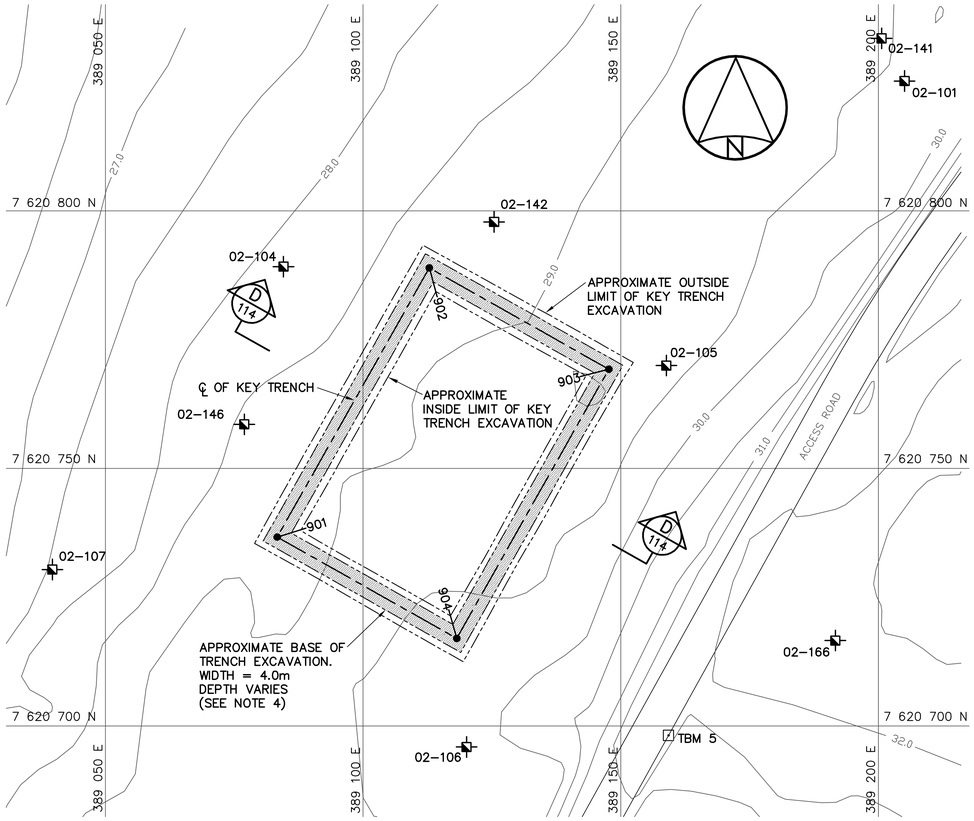
SUBJECT – SUJET

NON–HAZARDOUS WASTE LANDFILL SECTION AND DETAIL

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–J44/1–9101–112

Canada

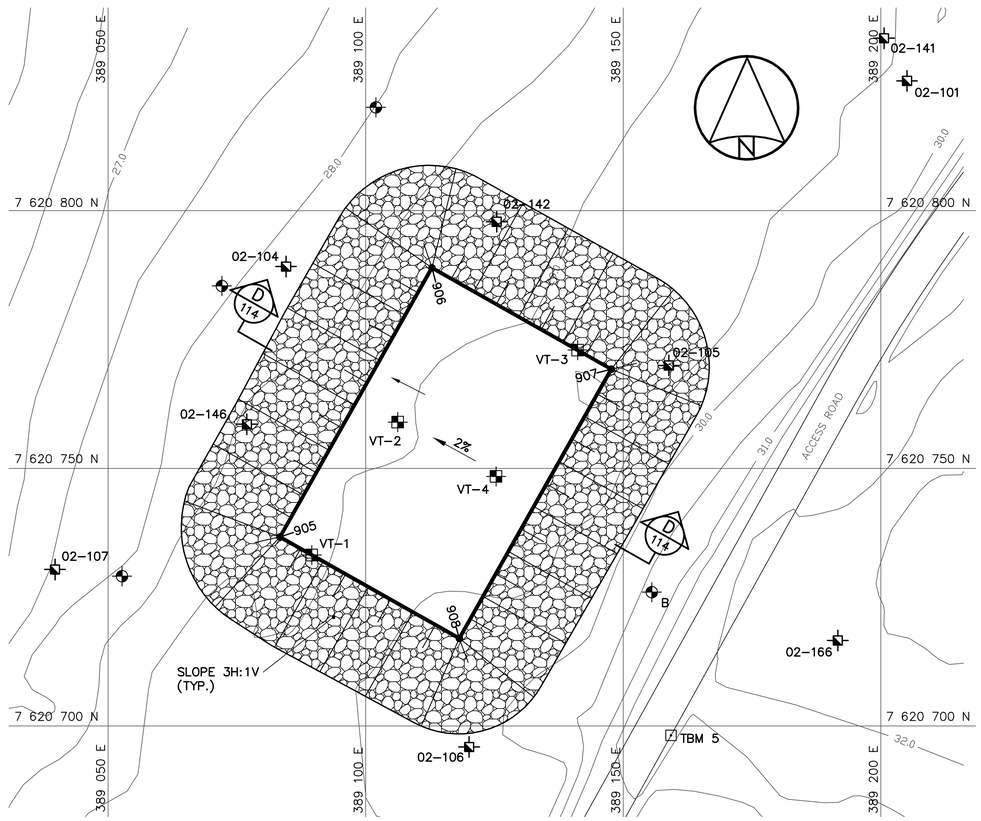


KEY TRENCH EXCAVATION PLAN

0 10 20 30m

10 5

COORDINATE POINTS KEY TRENCH EXCAVATION		
NO.	NORTHING	EASTING
901	7 620 736.7	389 083.4
902	7 620 788.9	389 112.9
903	7 620 769.3	389 147.7
904	7 620 717.0	389 118.2



GRADING/INSTRUMENTATION PLAN

0 10 20 30m

10 5

COORDINATE POINTS FINAL LANDFILL SURFACE			
NO.	NORTHING	EASTING	ELEV.
905	7 620 736.7	389 083.4	35.20
906	7 620 788.9	389 112.9	35.20
907	7 620 769.3	389 147.7	36.00
908	7 620 717.0	389 118.2	36.00

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL ELEVATIONS ARE REFERENCED TO UTM ZONE 14N, NAD83 (CSRS).
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. FOR GROUND TEMPERATURE CABLE INSTALLATION DETAILS, SEE DWG. H–J44/1–9101–116. EXACT LOCATIONS TO BE FIELD DETERMINED BY THE ENGINEER.
4. KEY TRENCH TO EXTEND 1.25m MIN. BELOW EXISTING GROUND. EXCAVATION DEPTH TO BE FIELD CONFIRMED BY THE SITE ENGINEER, BASED ON THE PRESENCE OF SOUND BEDROCK OR SATURATED GROUND.
5. FOR MONITORING WELL INSTALLATION DETAILS, SEE DWG. H–J44/1–9101–117. LOCATIONS TO BE APPROVED BY THE ENGINEER.

Legend:

- ⊡ TEMPORARY BENCHMARK
- TEST PIT LOCATION (2002)
- •801 COORDINATE POINT
- VT–1 GROUND TEMPERATURE CABLE INSTALLATION (4)
- PROPOSED MONITORING WELL LOCATION (3)
- B PROPOSED BACKGROUND MONITORING WELL LOCATION (1)

No.	DATE	REVISION	REVISION	APPR.
–				

PROFESSIONAL ENGINEERS R.R. MERKOSKY LICENSEE NWT/NU 2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

UMA | AECOM SGE Acres

SCALE – ECHELLE: AS SHOWN

PROJECT – PROJET: CAM–1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER: SITING

DATE: 2006–09–15

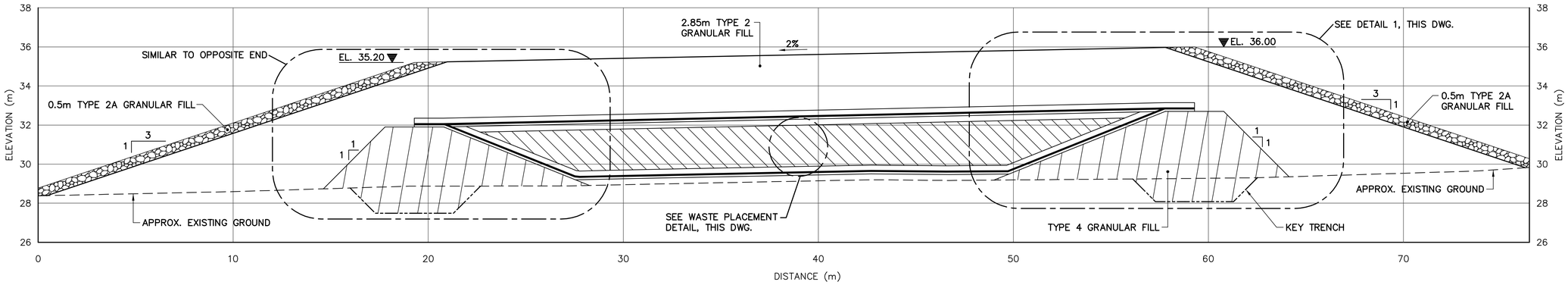
SUBJECT – SUJET:

TIER II DIPOSAL FACILITY
KEY TRENCH EXCAVATION PLAN &
GRADING/INSTRUMENTATION PLAN

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–J44/1–9101–113

Canada



SECTION D 113

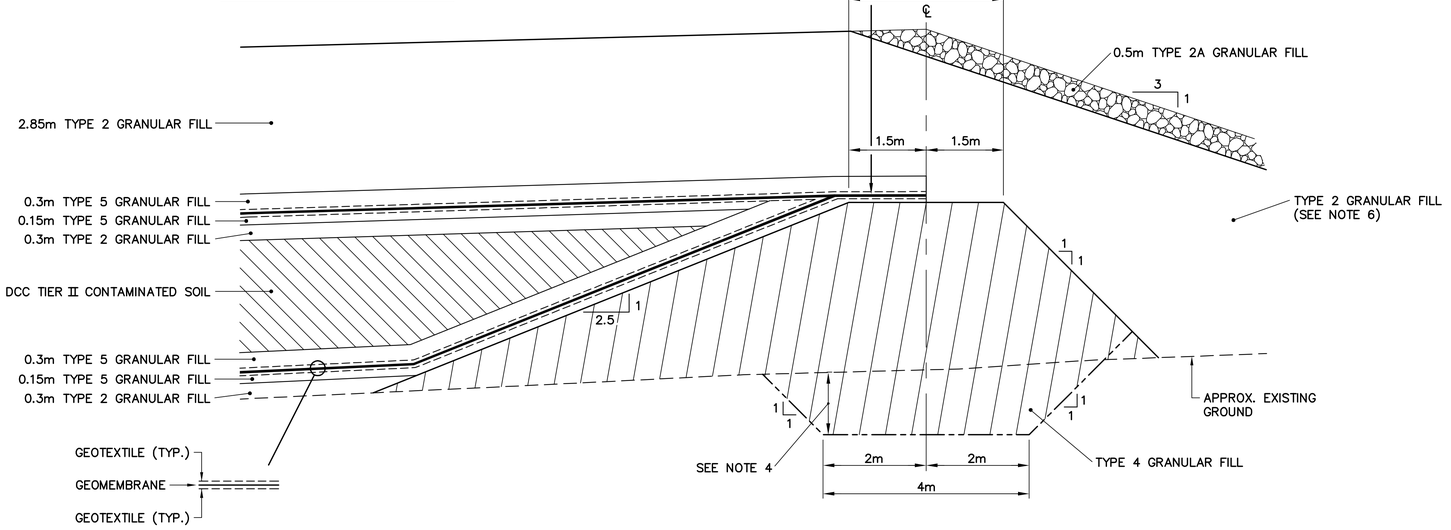
0 2 4 6m

2 1

NOTE:
COVER FINAL LAYER OF TIER II CONTAMINATED SOIL WITH TYPE 6 GRANULAR FILL TO PROVIDE LEVEL SURFACE, AS DIRECTED BY THE ENGINEER.

NOTE:
PROTECT GEOMEMBRANE LINERS DURING INTERIM CONSTRUCTION.

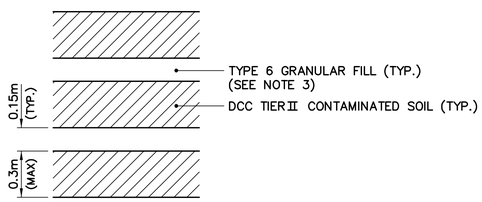
NOTE:
LINERS TO BE IN CONTACT WITH EACH OTHER OVER THE TOP OF THE BERM AND PERIMETER WELDED.



DETAIL 1 114

N.T.S.

ADD ADDITIONAL TIER II LAYERS, AS REQUIRED, TO ACHIEVE THE TIER II DISPOSAL FACILITY DESIGN ELEVATIONS.



WASTE PLACEMENT DETAIL

N.T.S.

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO UTM ZONE 14N, NAD83 (CSRS).
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. TYPE 6 INTERMEDIATE FILL ONLY REQUIRED FOR LANDFILLING OF ORGANIC OR WET SOILS, AS DIRECTED BY THE ENGINEER.
4. KEY TRENCH TO EXTEND 1.25m MIN. BELOW EXISTING GROUND. EXCAVATION DEPTH TO BE FIELD CONFIRMED BY THE SITE ENGINEER BASED ON THE PRESENCE OF SOUND BEDROCK OR SATURATED GROUND.
5. PROTECT GEOMEMBRANE LINERS DURING CONSTRUCTION.
6. TYPE 2 GRANULAR FILL PLACED OUTSIDE OF THE TYPE 4 GRANULAR FILL BERMS TO BE PLACED SIMULTANEOUSLY WITH THE TYPE 4 FILL TO PROVIDE STABILITY AND PROTECTION DURING CONSTRUCTION.

Legend:

No.	DATE	REVISION	REVISION	APPR.

R.R. MERKOSKY LICENSEE (NWT/NU) PROFESSIONAL ENGINEERS NORTHWEST TERRITORIES
2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

UMA | AECOM SGE Acres

SCALE – ECHELLE: AS SHOWN

PROJECT – PROJET: CAM–1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER: SITING
DATE: 2006–09–15

SUBJECT – SUJET

TIER II DISPOSAL FACILITY
CROSS SECTION AND DETAIL

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–J44/1–9101–114

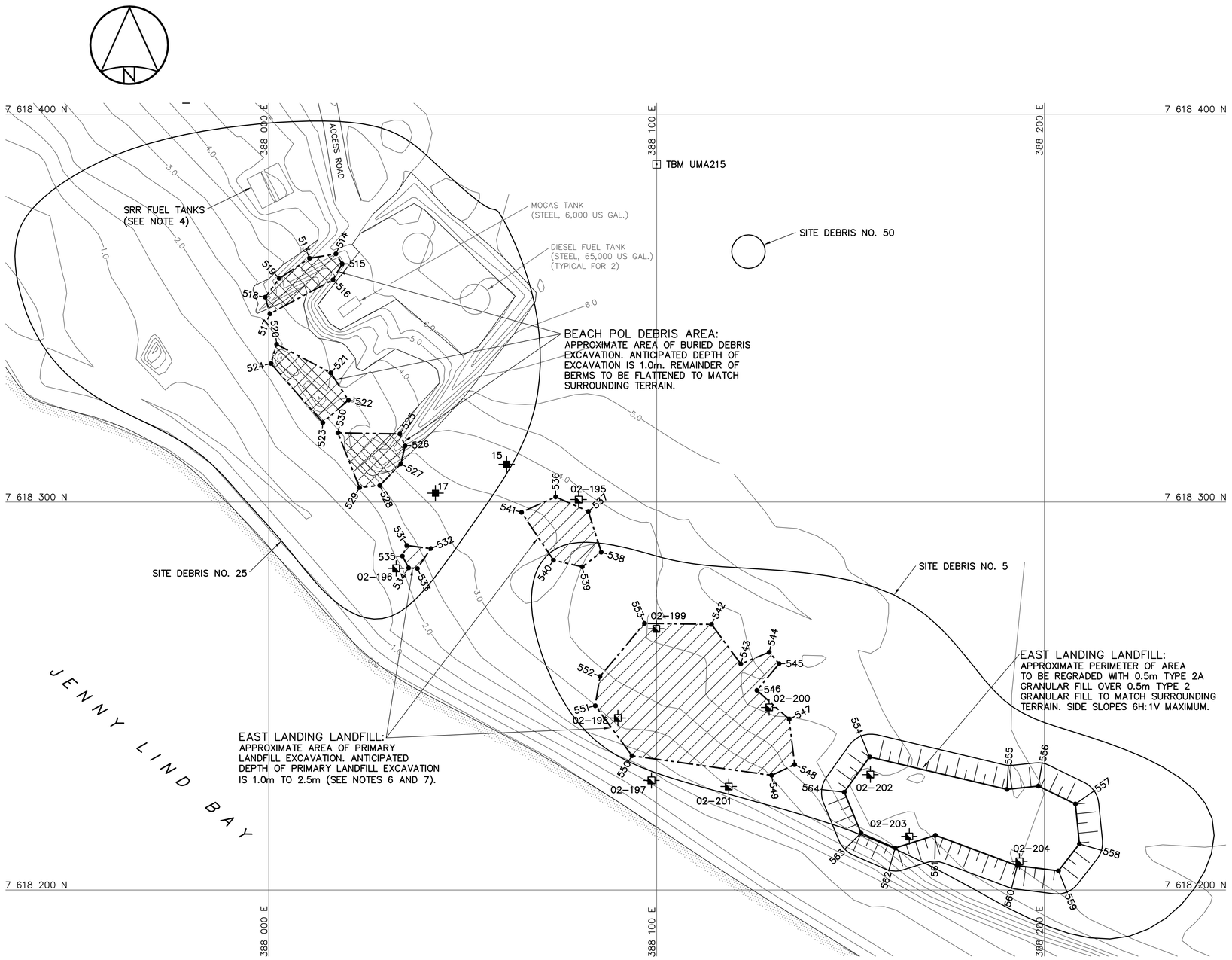
Canada

COORDINATE POINTS BEACH POL DEBRIS EXCAVATION		
NO.	NORTHING	EASTING
513	7 618 362.8	388 010.5
514	7 618 364.0	388 017.3
415	7 618 361.4	388 018.9
516	7 618 357.3	388 016.5
517	7 618 348.5	388 000.3
518	7 618 352.8	387 999.1
519	7 618 357.6	388 002.7
520	7 618 340.7	388 002.0
521	7 618 333.3	388 016.0
522	7 618 326.3	388 020.5
523	7 618 320.5	388 013.9
524	7 618 335.7	388 000.5
525	7 618 317.6	388 033.8
526	7 618 314.5	388 035.1
527	7 618 309.9	388 034.0
528	7 618 304.3	388 028.6
529	7 618 303.7	388 023.4
530	7 618 317.8	388 017.8

COORDINATE POINTS EAST LANDING LANDFILL EXCAVATION		
NO.	NORTHING	EASTING
531	7 618 288.8	388 035.6
532	7 618 288.0	388 041.8
533	7 618 282.8	388 038.3
534	7 618 283.0	388 036.0
535	7 618 286.1	388 034.4
536	7 618 301.3	388 074.0
537	7 618 297.6	388 082.4
538	7 618 287.1	388 085.7
539	7 618 283.3	388 080.8
540	7 618 285.0	388 073.4
541	7 618 297.4	388 065.1
542	7 618 268.5	388 114.2
543	7 618 258.3	388 121.7
544	7 618 261.3	388 129.0
545	7 618 258.3	388 131.6
546	7 618 251.4	388 125.9
547	7 618 244.0	388 134.2
548	7 618 232.3	388 135.6
549	7 618 229.6	388 129.7
550	7 618 234.6	388 093.6
551	7 618 247.5	388 084.2
552	7 618 255.0	388 085.4
553	7 618 268.7	388 096.9

COORDINATE POINTS EAST LANDING LANDFILL REGRADING		
NO.	NORTHING	EASTING
554	7 618 234.3	388 154.9
555	7 618 226.0	388 190.3
556	7 618 226.8	388 198.4
557	7 618 222.2	388 208.0
558	7 618 211.9	388 209.0
559	7 618 204.9	388 203.6
560	7 618 206.3	388 193.0
561	7 618 214.1	388 171.9
562	7 618 210.8	388 161.5
563	7 618 214.7	388 152.7
564	7 618 225.2	388 148.4

TEMPORARY BENCHMARKS				
NO.	COORDINATES		ELEV.	DESCRIPTION
	NORTHING	EASTING		
UMA215	7 618 387.059	388 099.989	9.537	19mm REBAR AND CAP



National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL COORDINATES ARE REFERENCED TO UTM ZONE 14N, NAD83.
2. ALL NON–HAZARDOUS DEBRIS TO BE PLACED IN NON–HAZARDOUS WASTE LANDFILL.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. ALL SHORT RANGE RADAR (SRR) FACILITIES ARE CURRENTLY OPERATIONAL AND ARE NOT TO BE DISTURBED.
5. REFER TO TABLE 02219–1 IN SPECIFICATIONS FOR DESCRIPTION OF DEBRIS AREAS.
6. LIMIT OF SECONDARY EXCAVATION TO BE FIELD VERIFIED BY CONFIRMATORY TESTING OF CONTAMINATED SOIL, GEOPHYSICAL SURVEYS AND TEST EXCAVATIONS AT THE LANDFILL PERIMETER AND AT DEPTH BY THE ENGINEER DURING CONSTRUCTION. REMOVAL OF CONTAMINATED SOIL TO BE VERIFIED BY THE ENGINEER.
7. COMPLETE BACKFILL OF EAST LANDING LANDFILL IS NOT REQUIRED. RESHAPE AND/OR REGRADE AREA UPON COMPLETION OF SECONDARY LANDFILL EXCAVATION TO PREVENT PONDING, AS DIRECTED BY THE ENGINEER.

Legend:

- TEMPORARY BENCHMARK
- TEST PIT LOCATION (1993)
- TEST PIT LOCATION (2002)
- 250 COORDINATE POINT
- BURIED DEBRIS EXCAVATION AREA
- LANDFILL EXCAVATION AREA
- BODY OF WATER

No.	DATE	REVISION	REVISION	APPR.

R.R. MERKOSKY LICENSEE (MVT/NU) — 2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

UMA | AECOM — SGE Acres

SCALE – ECHELLE 10 5 0 10 20 30m

PROJECT – PROJET
CAM–1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER	DATE
SITING	2006–09–15

SUBJECT – SUJET

BEACH AREA EXCAVATION AND REGRADING PLAN

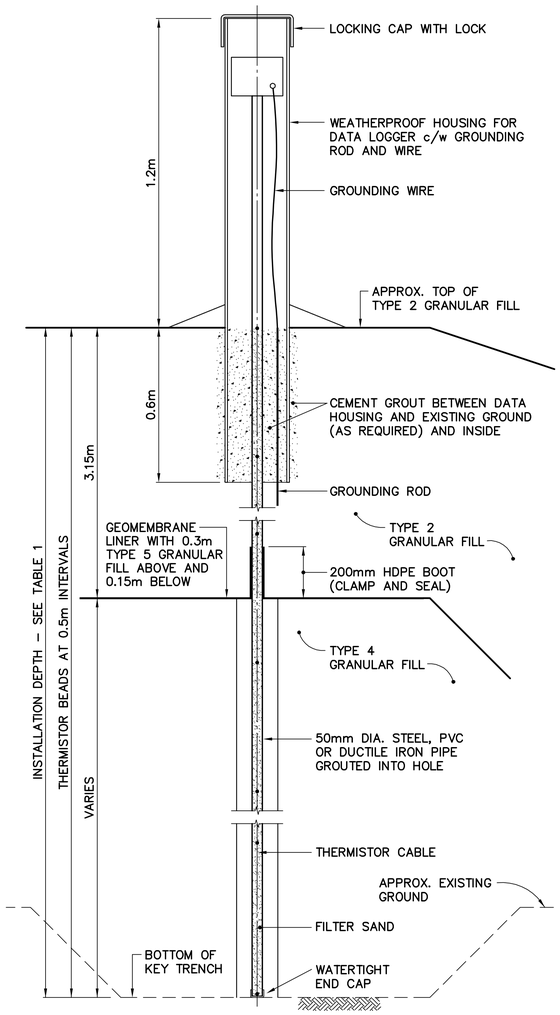
PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–J44/1–9101–115

Canada

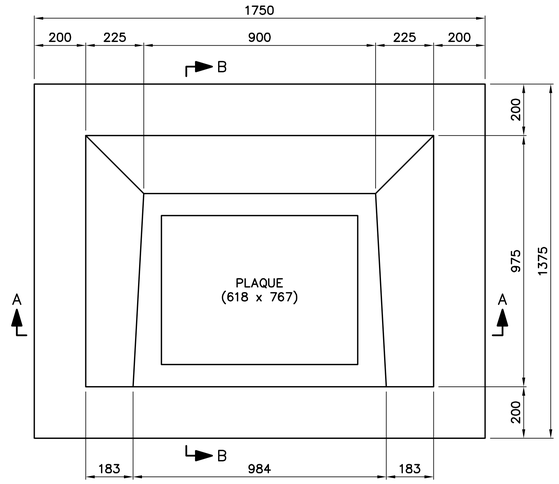
TABLE 1 VERTICAL THERMISTOR INSTALLATION		
INSTRUMENT No.	APPROXIMATE DEPTH BELOW FINAL GRADE (m)	COMMENTS
TIER II DISPOSAL FACILITY		
VT–1	8.5	INSTALL THROUGH CENTERLINE BERM TO INVERT OF KEY TRENCH
VT–2	6.0	INSTALL TO 1.0m ABOVE ELEVATION OF BOTTOM LINER
VT–3	8.5	INSTALL THROUGH CENTERLINE BERM TO INVERT OF KEY TRENCH
VT–4	6.0	INSTALL TO 1.0m ABOVE ELEVATION OF BOTTOM LINER

NOTE:
INSTALL ALL THERMISTOR STRINGS TO BASE LINER UNLESS NOTED OTHERWISE.

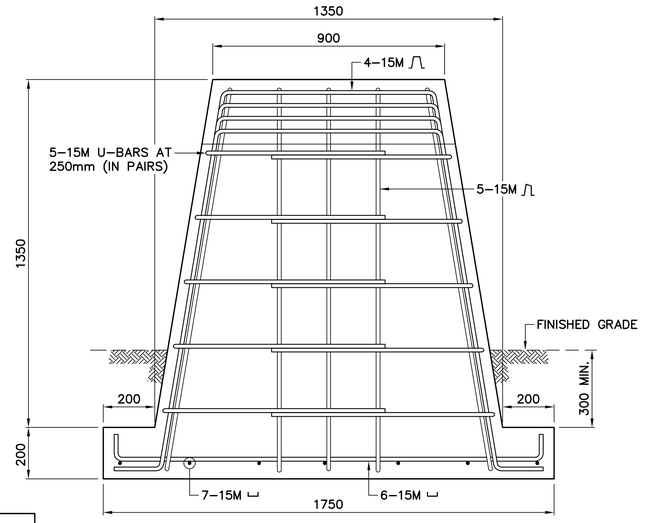


TYPICAL GROUND TEMPERATURE CABLE INSTALLATION

N.T.S.



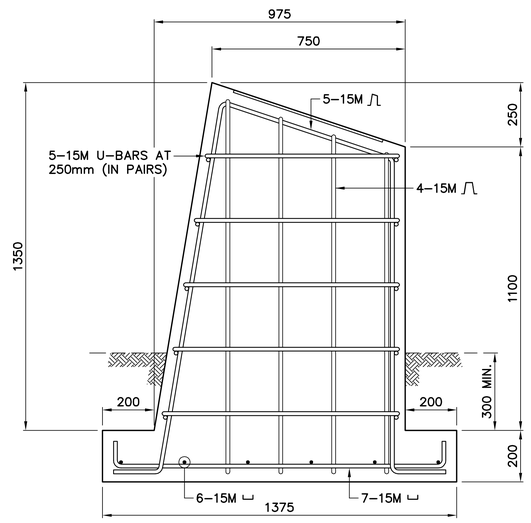
PLAN



SECTION A–A

COMMEMORATIVE PLAQUE BASE CONSTRUCTION NOTES:

1. PROVIDE TO SITE ALL EQUIPMENT, MATERIALS, TOOLS, TEMPORARY FORMS AND ASSOCIATED EXCAVATION AND/OR BACKFILL TO CONSTRUCT THE COMMEMORATIVE PLAQUE BASE, INCLUDING 30 MPa CONCRETE AND 15M STEEL REBAR.
2. COMMEMORATIVE PLAQUE BASE CAN BE CONSTRUCTED ON SITE OR PRE–CAST AND DELIVERED TO SITE.
3. OWNER TO SUPPLY COMMEMORATIVE PLAQUE.



SECTION B–B

COMMEMORATIVE PLAQUE BASE DETAIL (SEE NOTE 4)

0 200 400 600mm
200 100

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. APPROXIMATE LOCATIONS FOR INSTRUMENTATION ARE SHOWN ON THE DRAWINGS. ALL LOCATIONS TO BE FIELD CONFIRMED BY THE ENGINEER.
3. MOUND FILL AROUND CASING TO PROMOTE DRAINAGE AWAY FROM INSTRUMENT.
4. LOCATION OF COMMEMORATIVE PLAQUE BASE BASE TO BE DETERMINED BY THE ENGINEER.
5. PROVIDE THERMISTOR BEADS AT 0.5m MAXIMUM INTERVALS INCLUDING ONE AT THE BOTTOM OF THE INSTALLATION AND ONE WITHIN A 0.5m DEPTH FROM FINAL DESIGN SURFACE IN EACH INSTALLATION.

Legend:

No.	DATE	REVISION	REVISION	APPR.

R.R. MERKOSKI LICENCE (NWT/NU) PROFESSIONAL ENGINEER
2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

UMA | AECOM SGE Acres

SCALE – ECHELLE: AS SHOWN

PROJECT – PROJET: CAM–1 JENNY LIND ISLAND

DEW LINE CLEAN UP

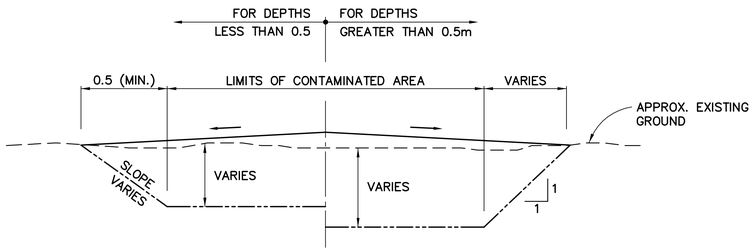
TRADE – METIER: SITING
DATE: 2006–09–15

SUBJECT – SUJET: MISCELLANEOUS DETAILS SH. 1

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–J44/1–9101–116

Canada

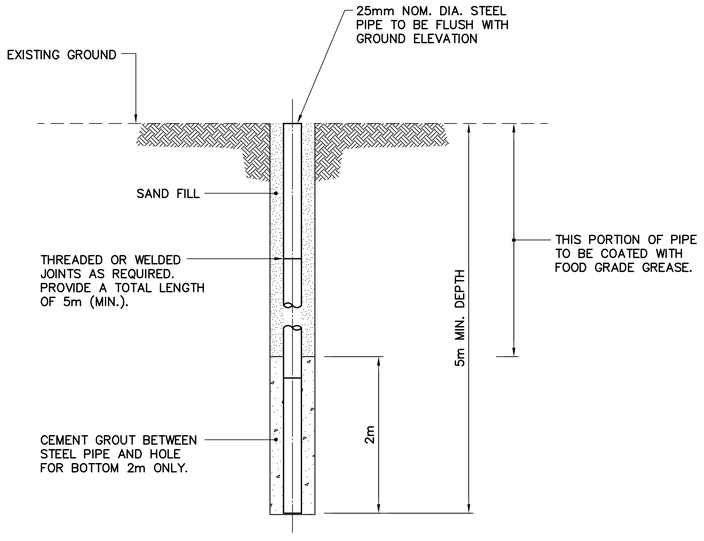


NOTE:

1. MATERIAL TO BE REMOVED: DCC TIER I SOILS TO BE DISPOSED OF IN THE NON–HAZARDOUS WASTE LANDFILL. DCC TIER II SOILS TO BE DISPOSED OF IN THE TIER II SOIL DISPOSAL FACILITY. HYDROCARBON TYPE B SOILS PLACED IN THE LANDFARM AND TREATED.
2. TYPE 3 GRANULAR MATERIAL TO BE PLACED IN EXCAVATION, COMPACTED AND MOUNDED TO 100mm ABOVE GROUND SURFACE TO PROMOTE DRAINAGE, UNLESS NOTED OTHERWISE.

TYPICAL CONTAMINATED SOIL EXCAVATION SECTION

N.T.S.

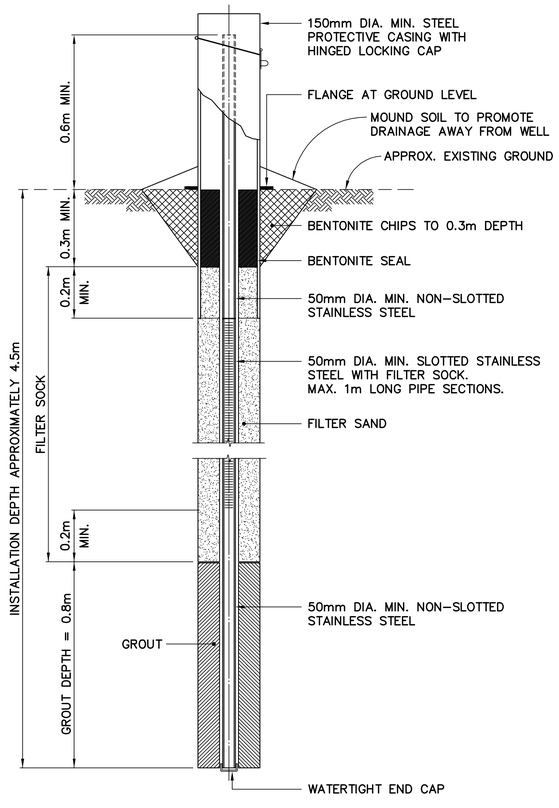


MINIMUM EMBEDMENT CAN BE REDUCED IF ROCK IS ENCOUNTERED. INSTALLATION TO PENETRATE A MINIMUM OF 2m INTO ROCK.

NOTE:
5 PERMANENT SURVEY CONTROL MONUMENTS TO BE INSTALLED. SEE NOTE 2.

TYPICAL PERMANENT SURVEY CONTROL MONUMENT (BENCHMARK)

N.T.S.

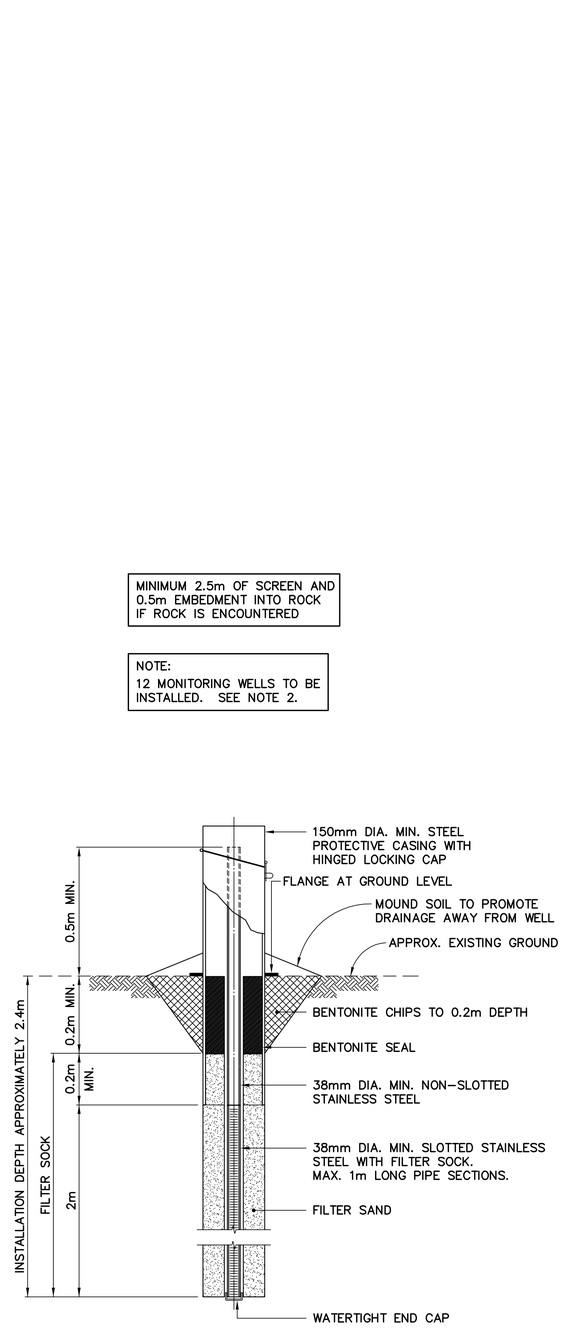


TYPICAL MONITORING WELL/ BACKGROUND MONITORING WELL

(FOR BEDROCK DEPTH > 0.7m)
N.T.S.

MINIMUM 2.5m OF SCREEN AND 0.5m EMBEDMENT INTO ROCK IF ROCK IS ENCOUNTERED

NOTE:
12 MONITORING WELLS TO BE INSTALLED. SEE NOTE 2.



TYPICAL MONITORING WELL/ BACKGROUND MONITORING WELL

(FOR BEDROCK DEPTH < 0.7m)
N.T.S.

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
2. APPROXIMATE LOCATIONS FOR INSTRUMENTATION ARE SHOWN ON THE DRAWINGS. ALL LOCATIONS TO BE FIELD CONFIRMED BY THE ENGINEER.

Legend:

No.	DATE	REVISION	REVISION	APPR.

R.R. MERKOSKI — LICENSEE — NWT/NU — PROFESSIONAL ENGINEERS — 2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

UMA | AECOM — SGE Acres

SCALE – ECHELLE: AS SHOWN

PROJECT – PROJET: CAM–1 JENNY LIND ISLAND

DEW LINE CLEAN UP

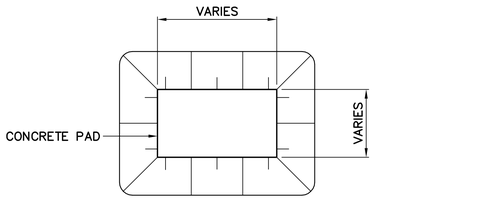
TRADE – METIER: SITING
DATE: 2006–09–15

SUBJECT – SUJET: MISCELLANEOUS DETAILS SH. 2

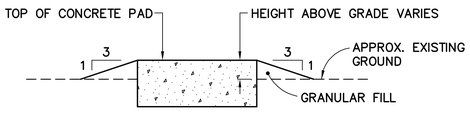
PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–J44/1–9101–117

Canada



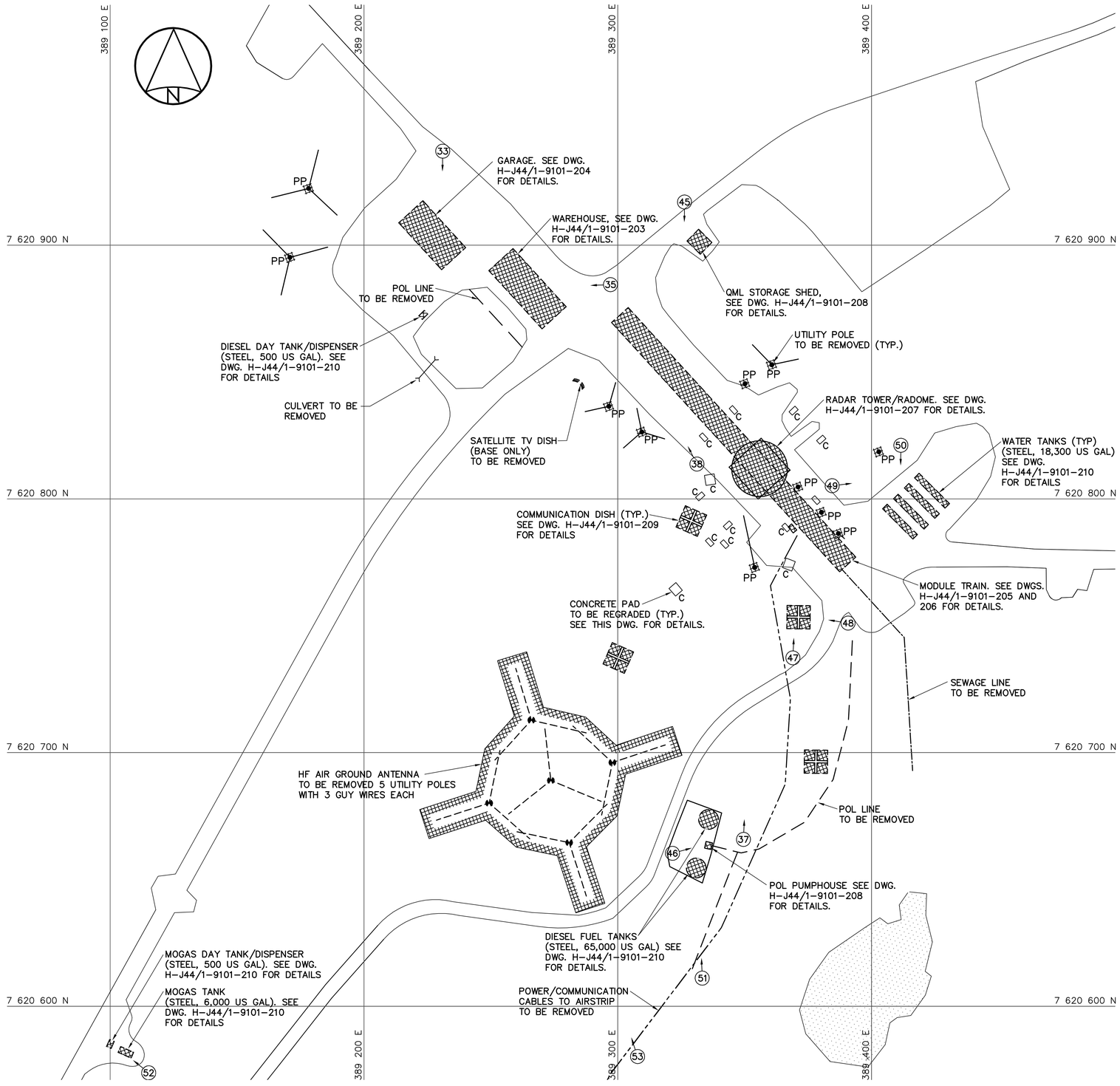
PLAN



SECTION

TYPICAL CONCRETE PAD REGRADING DETAIL

N.T.S.



National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL STRUCTURES DESIGNATED FOR DEMOLITION TO BE DEMOLISHED TO TOP OF CONCRETE FOUNDATIONS UNLESS NOTED OTHERWISE.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. ALL POLES, INCLUDING GUY WIRES, TO BE REMOVED UNLESS NOTES OTHERWISE.
4. ALL ELECTRICAL CABLES AND POL LINES TO BE REMOVED.
5. PIPELINES AND ANCILLARY EQUIPMENT TO BE REMOVED TO INCLUDE ALL ASSOCIATED PIPE SUPPORTS AND PIPELINE MARKERS.
6. ALL CULVERTS ARE TO BE REMOVED AND DISPOSED OF.
7. PROVIDE REGRADING AROUND ALL CONCRETE PADS THAT ARE DESIGNATED TO REMAIN. AS PER TYPICAL DETAIL ON THIS DRAWING.
8. LOCATIONS OF POL LINES AND POWER/ COMMUNICATION CABLES ARE APPROXIMATE ONLY. SOME ABOVE GROUND POL LINES AND CABLES TO BE REMOVED MAY NOT BE SHOWN.

Legend:

- TO BE DEMOLISHED
- □c CONCRETE PAD TO BE REGRADED
- PP UTILITY POLE TO BE REMOVED
- POL LINE
- POWER/COMMUNICATION CABLE
- SEWAGE OUTFALL LINE
- (19) PHOTOGRAPHIC VIEWPOINT
- BODY OF WATER

No.	DATE	REVISION	REVISION	APPR.

R.R. MERKOSKY — REGISTERED PROFESSIONAL ENGINEERS — LICENSEE — NWT/NU
2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

UMA | AECOM — SGE Acres

SCALE – ECHELLE 15 7.5 0 15 30 45m

PROJECT – PROJET
CAM–1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER	DATE
STRUCTURAL	2006–09–15

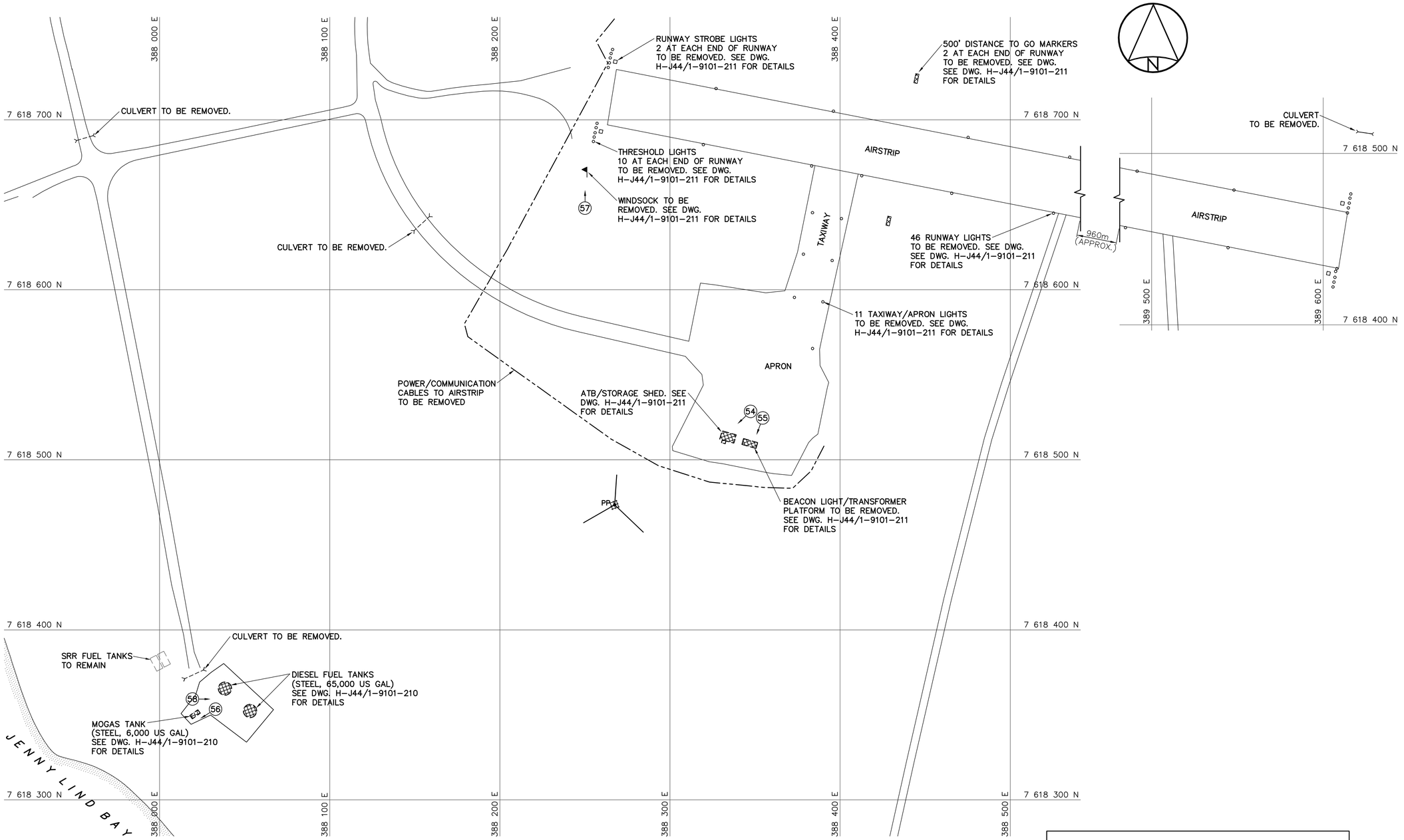
SUBJECT – SUJET

STATION AREA
DEMOLITION SITE PLAN

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–J44/1–9101–201

Canada



CULVERTS TO BE REMOVED:

* EAST AIRSTRIP	9m LONG 600mm DIA. CMP
* APRON ACCESS-SOUTH	12m LONG 600mm DIA. CMP
* APRON ACCESS-NORTH	18m LONG 600mm DIA. CMP
* BEACH ACCESS	10m LONG 600mm DIA. BARREL
* BEACH POL ACCESS	15m LONG 600mm DIA. BARREL
* STATION ACCESS	11.5m LONG 600mm DIA. CMP
* STATION POL ACCESS	8m LONG 600mm DIA. BARREL
* GARAGE PAD ACCESS	9m LONG 600mm DIA. CMP
* WATER LAKE ROAD	8m LONG 600mm DIA. CMP

NOTE:
ALL CULVERTS FROM THIS SITE ARE TO BE REMOVED AND DISPOSED OF.

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL STRUCTURES DESIGNATED FOR DEMOLITION TO BE DEMOLISHED TO TOP OF CONCRETE FOUNDATIONS UNLESS NOTED OTHERWISE.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. ALL POLES, INCLUDING GUY WIRES, TO BE REMOVED UNLESS NOTES OTHERWISE.
4. ALL SHORT RANGE RADAR (SRR) FACILITIES ARE CURRENTLY OPERATIONAL AND ARE NOT TO BE DISTURBED. THESE INCLUDE FUEL STORAGE TANKS AND PIPELINES NOT SCHEDULED FOR DEMOLITION.
5. ALL ELECTRICAL CABLES AND POL LINES TO BE REMOVED.
6. ALL CULVERTS ARE TO BE REMOVED AND DISPOSED OF.
7. PROVIDE REGRADING AROUND ALL CONCRETE PADS THAT ARE DESIGNATED TO REMAIN. AS PER TYPICAL DETAIL ON THIS DRAWING.
8. LOCATIONS OF POL LINES AND POWER/COMMUNICATION CABLES ARE APPROXIMATE ONLY. SOME ABOVE GROUND POL LINES AND CABLES TO BE REMOVED MAY NOT BE SHOWN.

Legend:

- TO BE DEMOLISHED
- PP — UTILITY POLE TO BE REMOVED
- POWER/COMMUNICATION CABLE
- (19) — PHOTOGRAPHIC VIEWPOINT
- BODY OF WATER

No.	DATE	REVISION	REVISION	APPR.

R.R. MERKOSKY — LICENSEE — NWT/NU — 2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER
P 007
UMA ENGINEERING LTD.

UMA | AECOM — SGE Acres

SCALE – ECHELLE 20 10 0 20 40 60m

PROJECT – PROJET
CAM-1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER	DATE
STRUCTURAL	2006-09-15

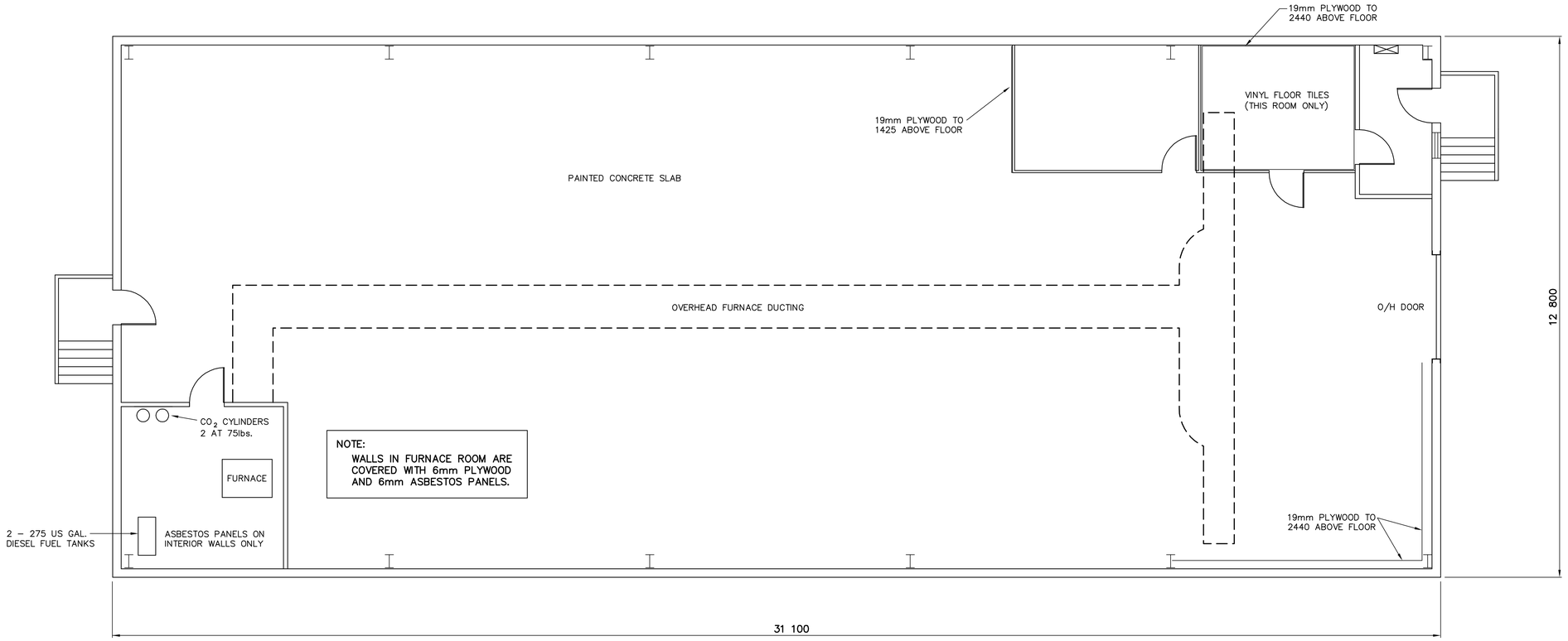
SUBJECT – SUJET

AIRSTRIP AREA AND BEACH AREA DEMOLITION SITE PLAN

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

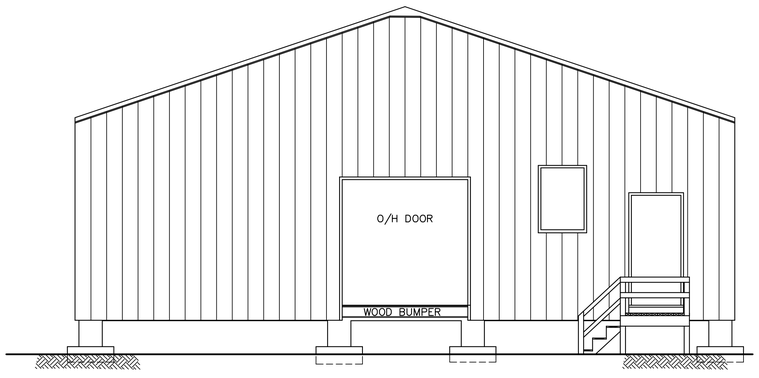
DWG. NO. – DESSIN NO.
H-J44/1-9101-202

Canada

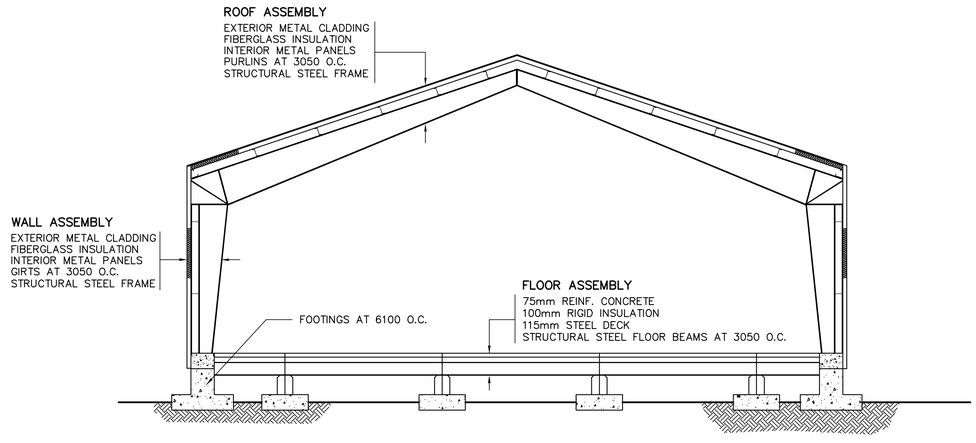


PLAN

COMMENTS
AS SHOWN
LIGHTING – COMBINATION OF FLOURESCENT AND INCANDESCENT
EXTERIOR MAN DOORS – ASBESTOS CORE



ELEVATION



SECTION

NOTE:
FLOOR ASSEMBLY AND CONCRETE COLUMNS TO BE DEMOLISHED. CONCRETE FOOTINGS TO REMAIN. REGRADE AROUND CONCRETE FOOTINGS AS INDICATED ON TYPICAL CONCRETE PAD REGRADING DETAIL ON DWG. 201.

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. ASBESTOS PANELS TO BE REMOVED FROM FURNACE ROOM WALLS.
3. REFER TO DEMOLITION TABLES IN SPECIFICATIONS FOR LIST OF MAJOR BUILDING CONTENTS.
4. FACILITIES TO BE DEMOLISHED MAY CONTAIN PCB AND LEAD CONTAMINATED PAINT. REFER TO SECTION 02060 OF THE SPECIFICATIONS.

Legend:

No.	DATE	REVISION	REVISION	APPR.

R.R. MERKOSKY LICENSEE NWT/NU REGISTERED PROFESSIONAL ENGINEER
2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

UMA | AECOM SGE Acres

SCALE – ECHELLE 1 0.5 0 1 2 3m

PROJECT – PROJET
CAM–1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER	DATE
STRUCTURAL	2006–09–15

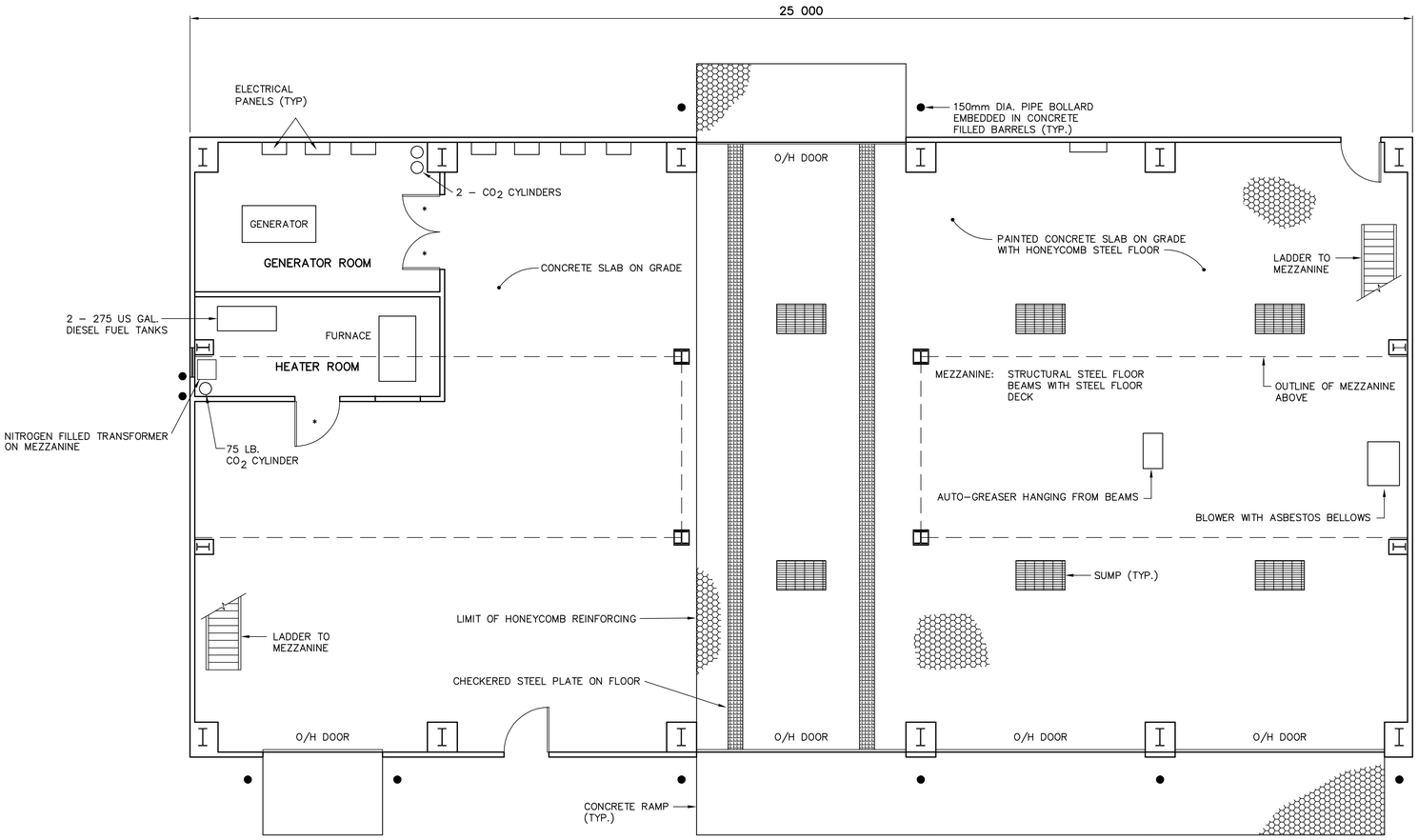
SUBJECT – SUJET

WAREHOUSE
PLAN, SECTION AND ELEVATION

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

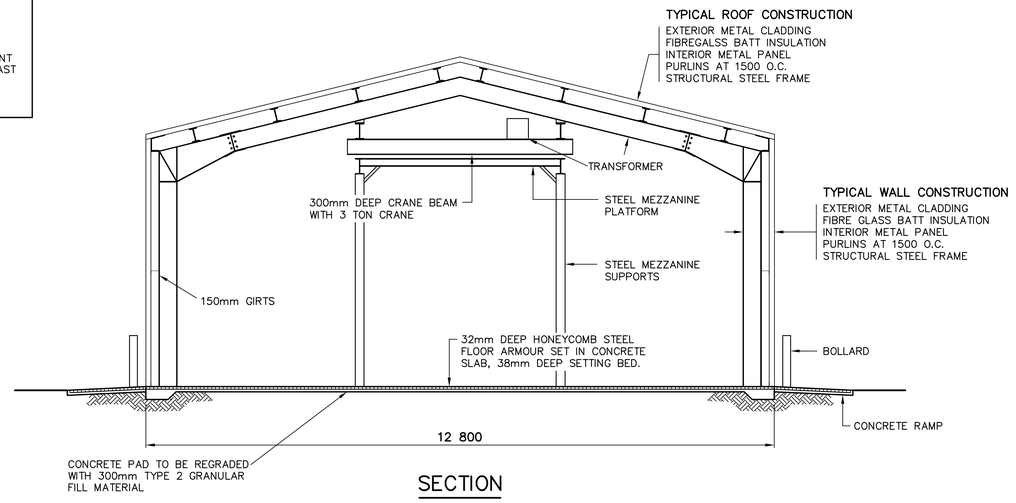
DWG. NO. – DESSIN NO.
H–J44/1–9101–203

Canada



PLAN

COMMENTS
AS SHOWN. OVERHEAD MECHANICAL DUCTING AND ELECTRICAL LIGHTING. LIGHTING HEATER AND GENERATOR ROOM – INCANDESCENT GARAGE AREA – MERCURY VAPOUR AND BALLAST MEZZANINE – FLOURESCENT DOORS – * ASBESTOS CORE



SECTION

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. ASBESTOS PANELS TO BE REMOVED FROM FURNACE ROOM WALLS.
3. REFER TO DEMOLITION TABLES IN SPECIFICATIONS FOR LIST OF MAJOR BUILDING CONTENTS.
4. FACILITIES TO BE DEMOLISHED MAY CONTAIN PCB AND LEAD CONTAMINATED PAINT. REFER TO SECTION 02060 OF THE SPECIFICATIONS.
5. MECHANICAL EQUIPMENT/DUCTING NOT SHOWN.

Legend:

No.	DATE	REVISION	REVISION	APPR.

R.R. MERKOSKY LICENSEE (NWT/NU) 2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

UMA | AECOM SGE Acres

SCALE – ECHELLE 1 0.5 0 1 2 3m

PROJECT – PROJET
CAM–1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER	DATE
STRUCTURAL	2006–09–15

SUBJECT – SUJET

GARAGE
PLAN AND SECTION

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–J44/1–9101–204

Canada

UNLESS NOTED OTHERWISE:

EACH ROOM CONTAINS (TYP.):
1–HEATER (1100 x 660) (WALL MOUNTED TYPE)
1–ALUMINUM WINDOW (1120 x 780)

FLOOR CONSTRUCTION (TYP.):
CARPET OVER VINYL TILE
6mm PLYWOOD
9mm PLYWOOD
38 x 184 FLOOR JOISTS AT 610 O.C. (APPROX.)
184mm THICK INSULATION
13mm THICK PLYWOOD
COPPER MESH
38 x 89 WOOD STRAPPING AT 1220 O.C.

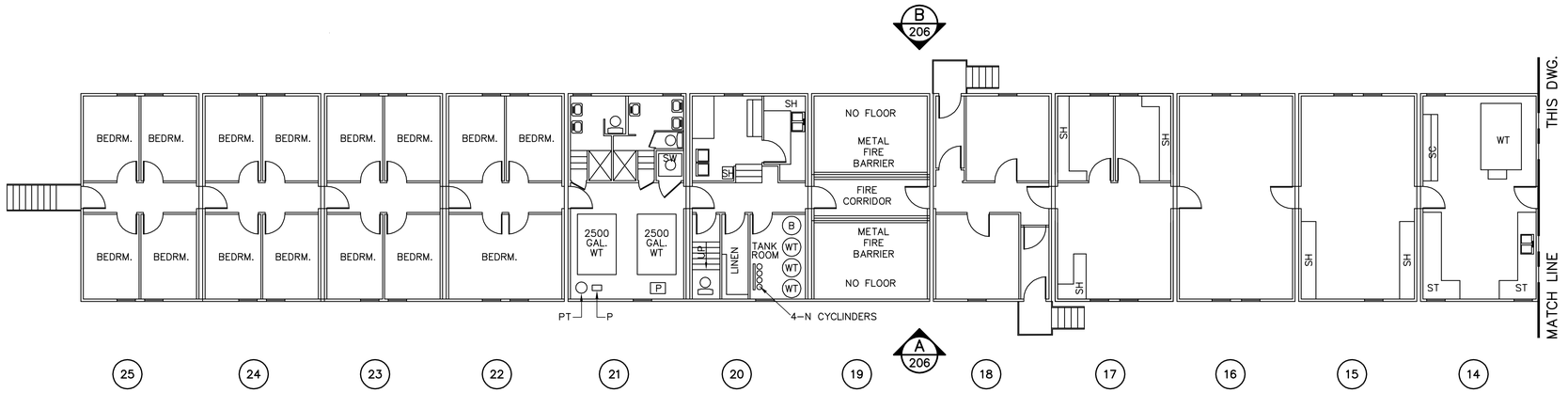
EXTERIOR WALL CONSTRUCTION (TYP.):
EXTERIOR METAL CLADDING
(MODULES 1A & 2 ONLY)
6mm PAINTED PLYWOOD – PAP
COPPER MESH
9mm PLYWOOD
100mm DEEP WOOD STUDS AT 1220 O.C.
WITH HORIZONTAL WOOD BLOCKING
100mm DEEP INSULATION
2–6mm THICK PLYWOOD
COPPER MESH
6mm PAINTED PLYWOOD – PAP

CEILING CONSTRUCTION (TYP.):
6mm PAINTED PLYWOOD – PAP
COPPER MESH
6mm PLYWOOD
19mm THICK PLYWOOD
150mm DEEP WOOD STUDS AT 1220 O.C.
WITH HORIZONTAL WOOD BLOCKING
150mm DEEP INSULATION
6mm PLYWOOD
COPPER MESH
6mm PAINTED PLYWOOD – PAP
T–BAR TYPE CEILING WITH TILES

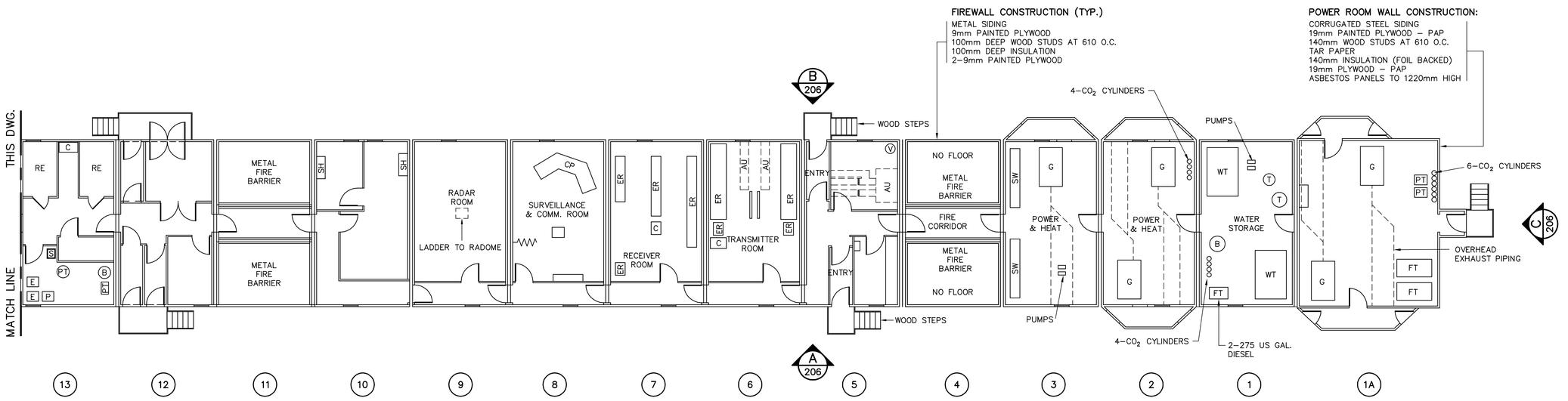
INTERIOR WALL PARTITIONS (TYP.):
6mm PAINTED PLYWOOD – PAP
WOOD STUDS AT 1220 O.C.
INSULATION
6mm PAINTED PLYWOOD – PAP

DOORS
ALL DOORS ASBESTOS CORE

TANKS
EACH TANK HAS A MERCURY LEVEL SWITCH (MODULE 1A)



PLAN



PLAN

COMMENTS
TIMBER CRIB FOUNDATION WITH SILL BEAMS. INSULATED PLYWOOD PANEL MODULES, EXCEPT METAL CONSTRUCTION FIRE BARRIER MODULES.

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
2. REFER TO DEMOLITION TABLES IN SPECIFICATIONS FOR LIST OF MAJOR BUILDING CONTENTS.
3. FACILITIES TO BE DEMOLISHED MAY CONTAIN PCB AND LEAD CONTAMINATED PAINT. REFER TO SECTION 02060 OF THE SPECIFICATIONS.
4. MECHANICAL EQUIPMENT, DUCTING AND PIPING NOT SHOWN

Legend:
AU – OVERHEAD AIR UNIT
B – BOILER
C – COMPRESSOR
CP – CONTROL PANEL
E – WATER TREATMENT EQUIPMENT
ER – ELECTRICAL RACK
FT – FUEL TANK
G – GENERATOR
H – HOT WATER TANK
PT – PRESSURE TANK
P – PUMP
PAP – PCB–AMENDED PAINT
RE – REFRIDGERATION EQUIPMENT
RU – REFRIDGERATION UNIT
SC – STEEL CABINETS
SH – SHELVING
SS – STEEL SHELVING
ST – STEEL COUNTERTOPS & CABINETS
SW – SWITCH GEAR
T – PRESSURE TANK
V – VOLTAGE REGULATOR
WS – WOOD SHELVING
WT – WATER TANK

No.	DATE	REVISION	REVISION	APPR.

REGISTERED PROFESSIONAL ENGINEER R.R. MERKOSKY LICENSEE NWT/NU
2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

UMA | AECOM SGE Acres

SCALE – ECHELLE 2 1 0 2 4 6m

PROJECT – PROJET
CAM–1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER	DATE
STRUCTURAL	2006–09–15

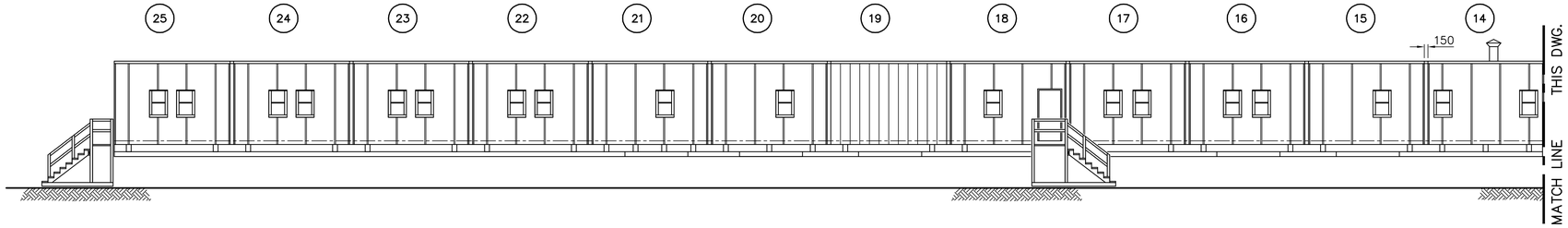
SUBJECT – SUJET

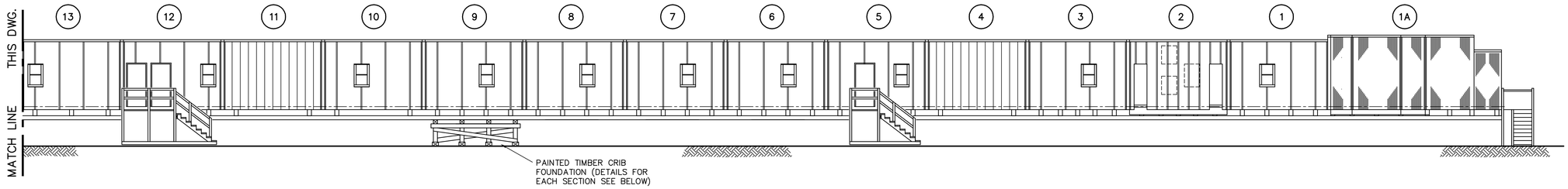
MODULE TRAIN UNITS 1A–25
PLAN

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

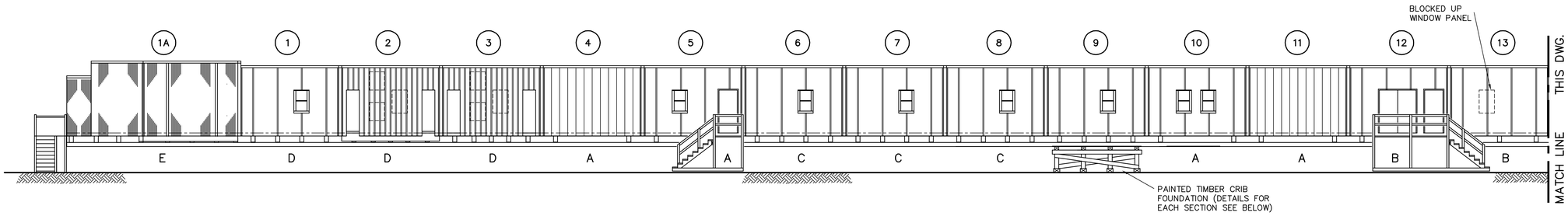
DWG. NO. – DESSIN NO.
H–J44/1–9101–205

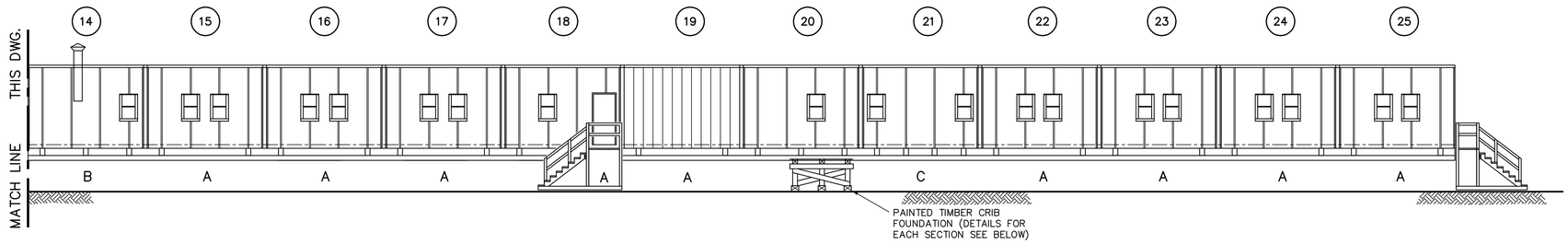
Canada





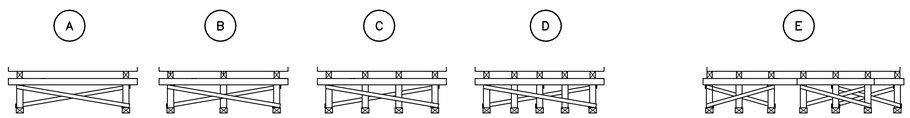
ELEVATION A 205



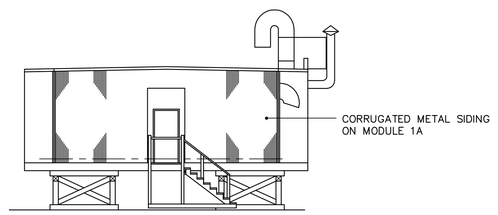


ELEVATION B 205

TIMBER CRIB DETAILS (SEE ABOVE)



COMMENTS
TIMBER CRIB FOUNDATION WITH SILL BEAMS. INSULATED PLYWOOD PANEL MODULES, EXCEPT METAL CONSTRUCTION FIRE BARRIER MODULES.



ELEVATION C 205

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. REFER TO DEMOLITION TABLES IN SPECIFICATIONS FOR LIST OF MAJOR BUILDING CONTENTS.
2. FACILITIES TO BE DEMOLISHED MAY CONTAIN PCB AND LEAD CONTAMINATED PAINT. REFER TO SECTION 02060 OF THE SPECIFICATIONS.

Legend:

No.	DATE	REVISION	REVISION	APPR.

ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

R.A. MERKOSKY LICENSEE (NWT/NU) 2006-09-26

UMA | AECOM SGE Acres

SCALE – ECHELLE 2 1 0 2 4 6m

PROJECT – PROJET
CAM–1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER	DATE
STRUCTURAL	2006–09–15

SUBJECT – SUJET

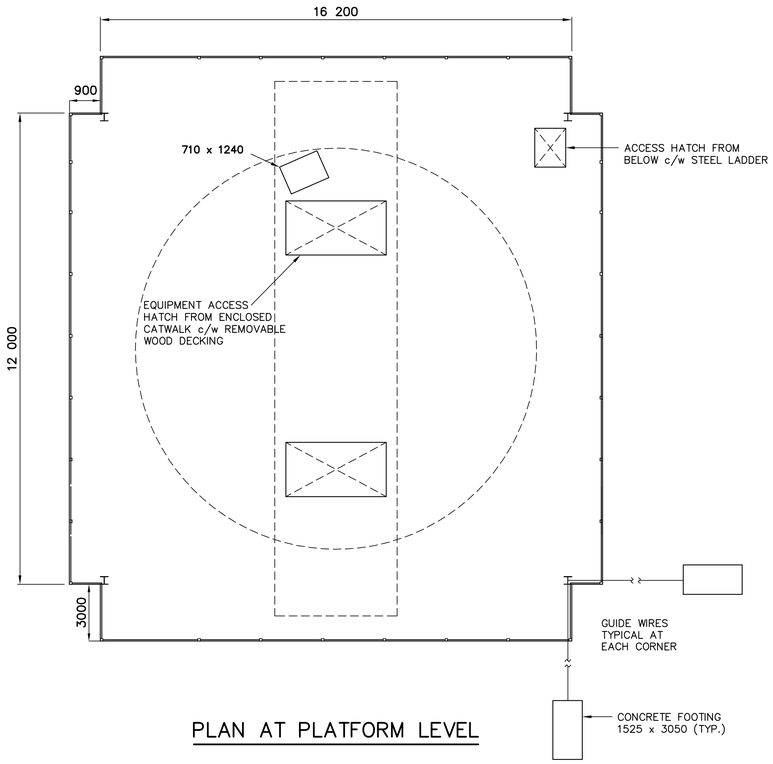
MODULE TRAIN UNITS 1A–25
ELEVATIONS

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

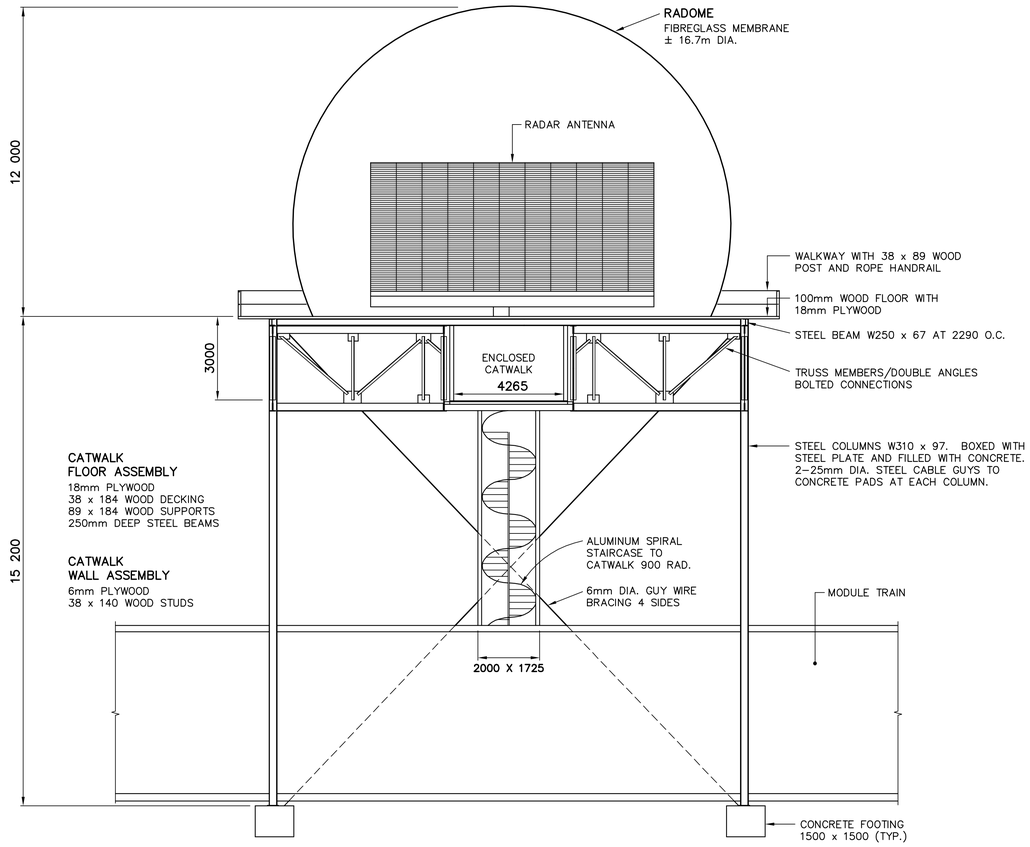
DWG. NO. – DESSIN NO.
H–J44/1–9101–206

Canada

COMMENTS
RADAR TOWER, RADAR ANTENNA AND RADOME ARE ALL AS SHOWN.
8 TOTAL GUY WIRES APPROX. 15.5m LONG EACH COMPLETE WITH 1525 x 3050 CONCRETE BLOCK



PLAN AT PLATFORM LEVEL



SECTION

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. REFER TO DEMOLITION TABLES IN SPECIFICATIONS FOR LIST OF MAJOR BUILDING CONTENTS.
3. FACILITIES TO BE DEMOLISHED MAY CONTAIN PCB AND LEAD CONTAMINATED PAINT. REFER TO SECTION 02060 OF THE SPECIFICATIONS.
4. ALL CONCRETE FOOTINGS AND PADS TO BE REGRADED.

Legend:

No.	DATE	REVISION	REVISION	APPR.

UMA | AECOM — SGE Acres

SCALE – ECHELLE

PROJECT – PROJET
CAM–1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER	DATE
STRUCTURAL	2006–09–15

SUBJECT – SUJET

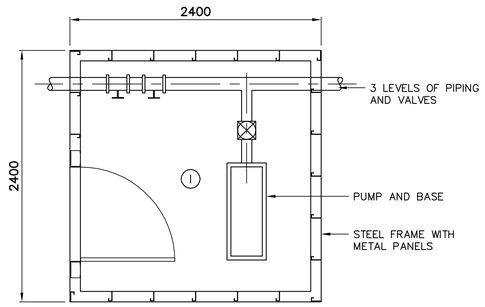
RADAR TOWER / RADOME
PLAN AND SECTION

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

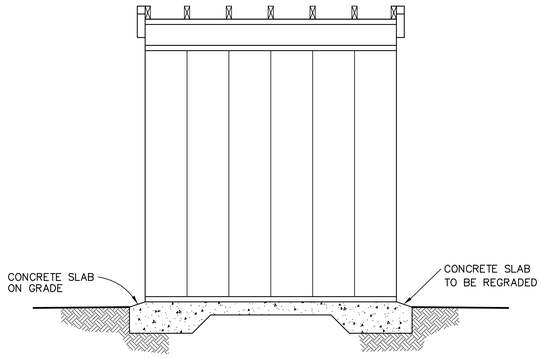
DWG. NO. – DESSIN NO.
H–J44/1–9101–207

Canada

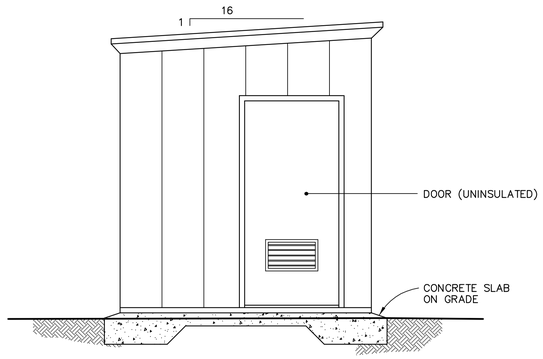
COMMENTS
AS SHOWN. PUMP, VALVES AND PIPING INSIDE.



PLAN



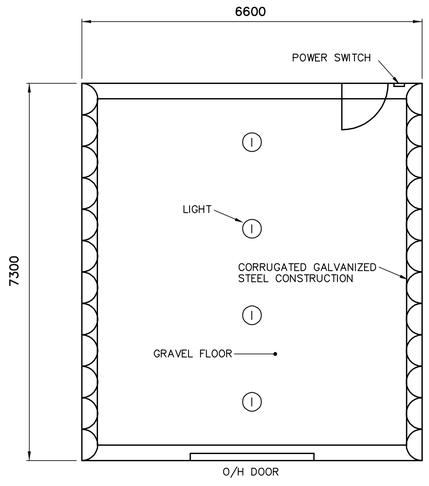
FRONT ELEVATION



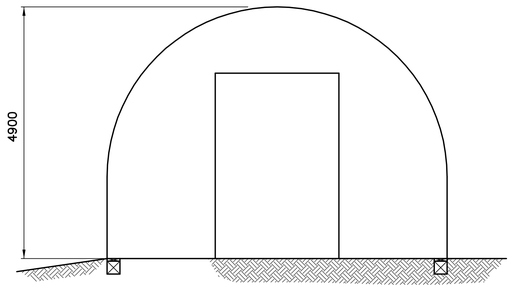
SIDE ELEVATION

POL PUMPHOUSE

N.T.S.



PLAN



ELEVATION

QML STORAGE SHED

N.T.S.

National Defence **Défense nationale**

Headquarters
Quartier général

General Notes:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. REFER TO DEMOLITION TABLES IN SPECIFICATIONS FOR LIST OF MAJOR BUILDING CONTENTS.
3. FACILITIES TO BE DEMOLISHED MAY CONTAIN PCB AND LEAD CONTAMINATED PAINT. REFER TO SECTION 02060 OF THE SPECIFICATIONS.

Legend:

(I) INCANDESCENT LIGHTING

No.	DATE	REVISION	REVISION	APPR.

REGISTERED PROFESSIONAL ENGINEERS R.R. MERKOSKY LICENSEE NWT/NU
2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER P 007
UMA ENGINEERING LTD.

UMA | AECOM SGE Acres

SCALE – ECHELLE: AS SHOWN

PROJECT – PROJET: CAM–1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER: STRUCTURAL
DATE: 2006–09–15

SUBJECT – SUJET

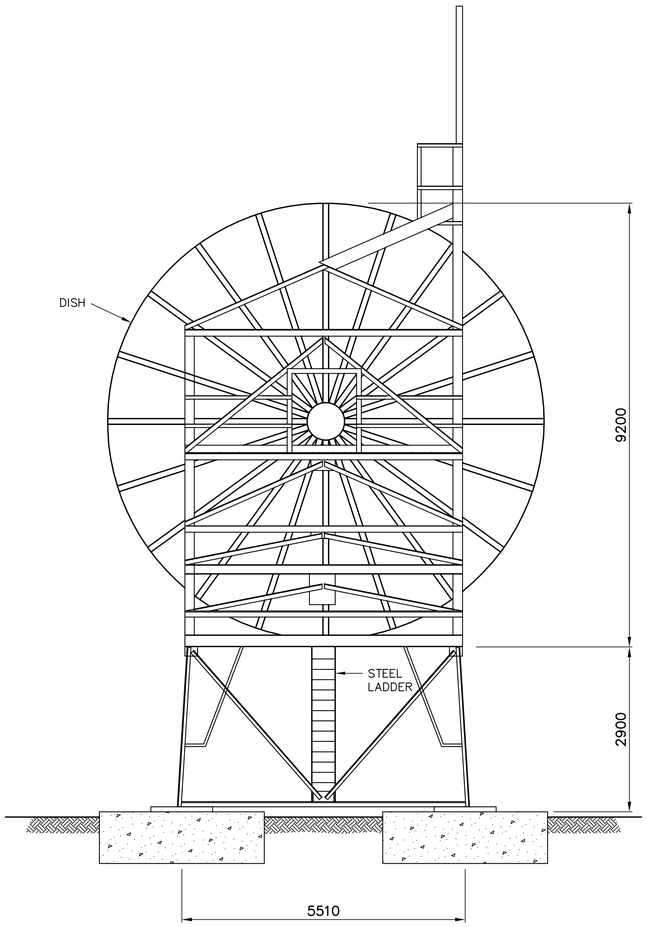
POL PUMPHOUSE AND
QML STORAGE SHED
PLANS AND ELEVATIONS

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–J44/1–9101–208

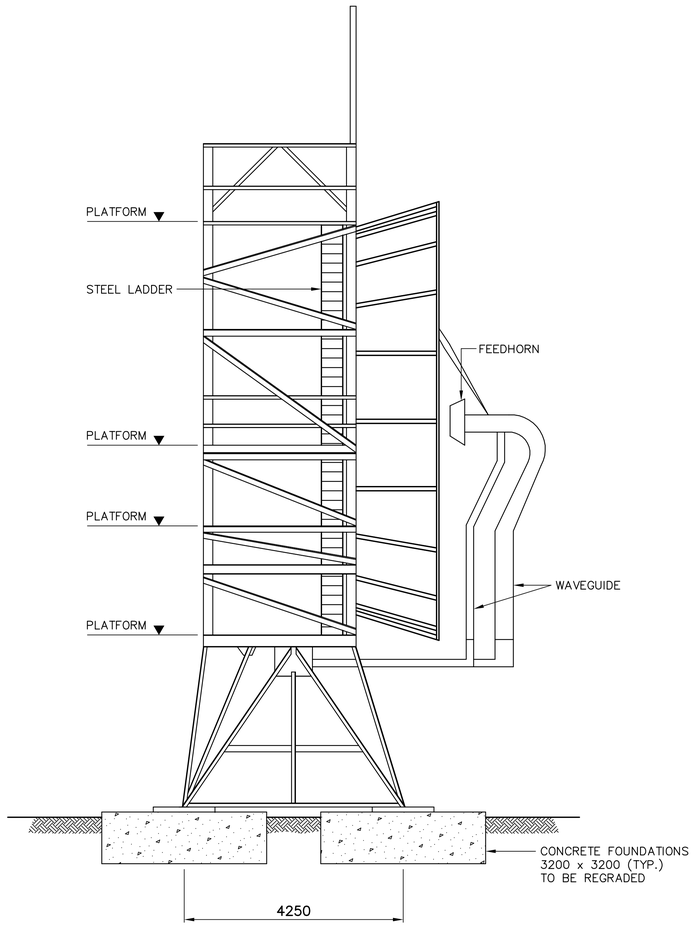
Canada

COMMENTS
4 DISHES, AS SHOWN.



REAR ELEVATION

N.T.S.



SIDE ELEVATION

N.T.S.

National Defence / Défense nationale

Headquarters
Quartier général

General Notes:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. REFER TO DEMOLITION TABLES IN SPECIFICATIONS FOR LIST OF MAJOR BUILDING CONTENTS.

Legend:

No.	DATE	REVISION	REVISION	APPR.

R.R. MERKOSKY LICENSEE (NWT/NU) PROFESSIONAL ENGINEERS
2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER
P 007
UMA ENGINEERING LTD.

UMA | AECOM SGE Acres

SCALE – ECHELLE: AS SHOWN

PROJECT – PROJET
CAM–1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER	DATE
STRUCTURAL	2006–09–15

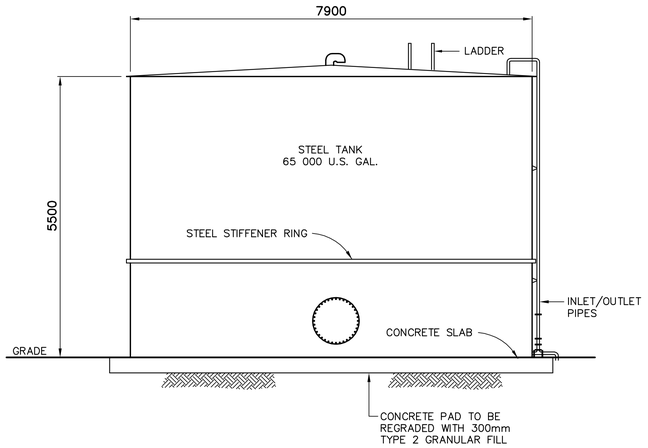
SUBJECT – SUJET

COMMUNICATION DISH ELEVATIONS

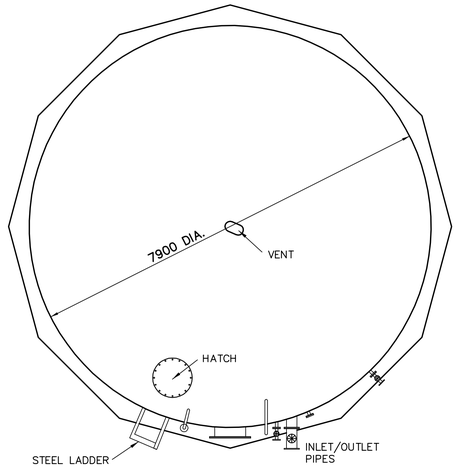
PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–G36/1–9101–209

Canada



ELEVATION

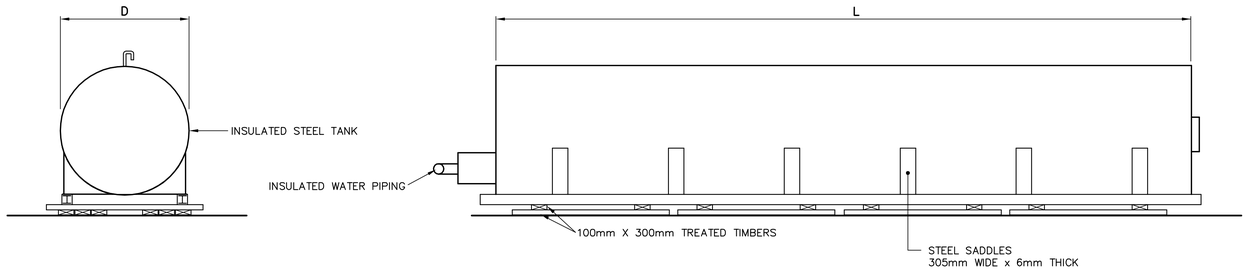


PLAN

DIESEL FUEL TANK

N.T.S.

COMMENTS
65 000 US GALLON CAPACITY (DIESEL) (4 TANKS)



FRONT ELEVATION

SIDE ELEVATION

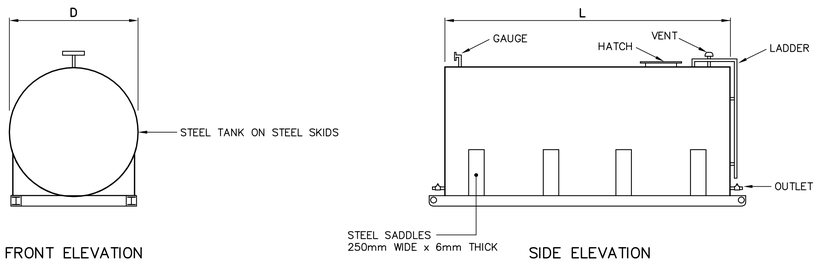
WATER TANK

N.T.S.

COMMENTS
18,300 US GALLON CAPACITY (WATER) D = 2500mm ; L = 13 500mm 6 – STEEL SADDLES AT 2200mm O.C. TREATED SILL AND CROSS BEAMS (4 TANKS)

COMMENTS
500 US GALLON CAPACITY CYLINDRICAL STEEL TANK. D = 1200mm ; L = 1700mm (2 TANKS – 1 DIESEL, 1 MOGAS)

COMMENTS
6000 US GALLON CAPACITY (MOGAS) D = 2200mm ; L = 5500mm 4 – STEEL SADDLES AT 1400mm O.C. (2 TANKS)

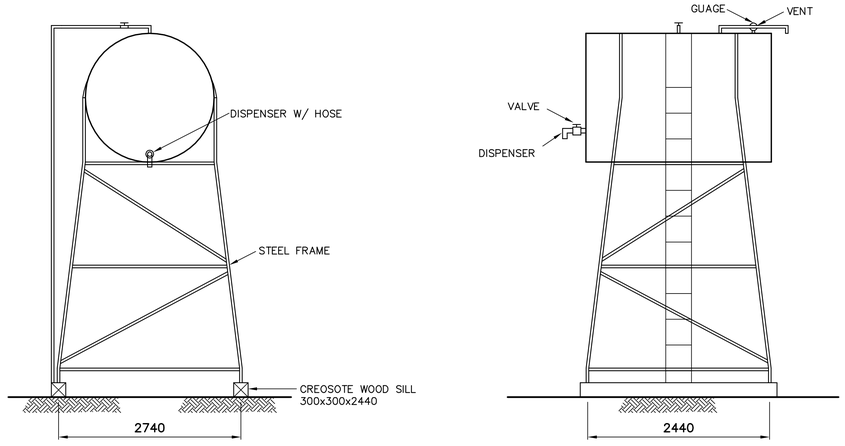


FRONT ELEVATION

SIDE ELEVATION

MOGAS FUEL TANK

N.T.S.



FRONT ELEVATION

SIDE ELEVATION

ELEVATED FUEL TANK

N.T.S.

General Notes:

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2. REFER TO DEMOLITION TABLES IN SPECIFICATIONS FOR LIST OF DEMOLITION ITEMS.
3. FACILITIES TO BE DEMOLISHED MAY CONTAIN PCB AND LEAD CONTAMINATED PAINT. REFER TO SECTION 02060 OF THE SPECIFICATIONS.
4. REGRADE CONCRETE SLABS.
5. REMOVE TIMBER FOUNDATIONS.

Legend:

National Defence / Défense nationale

Headquarters
Quartier général

No.	DATE	REVISION	REVISION	APPR.

PROFESSIONAL ENGINEERS, GEOSCIENTISTS NWT/NU — R.R. MERKOSKY — LICENSEE — 2006-09-26

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS and GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT NUMBER
P 007
UMA ENGINEERING LTD.

UMA | AECOM — SGE Acres

SCALE – ECHELLE: AS SHOWN

PROJECT – PROJET: CAM–1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER: STRUCTURAL — DATE: 2006–09–15

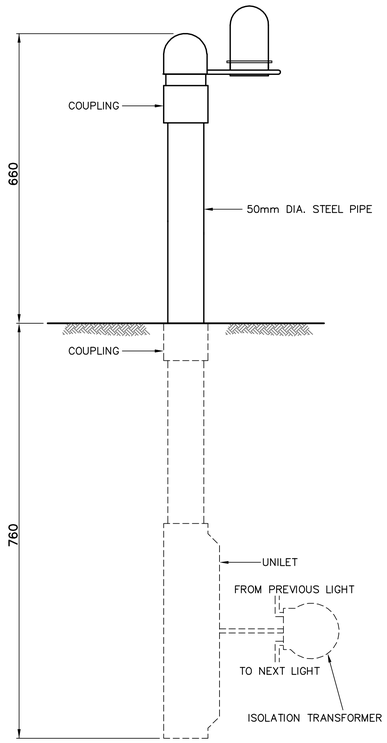
SUBJECT – SUJET

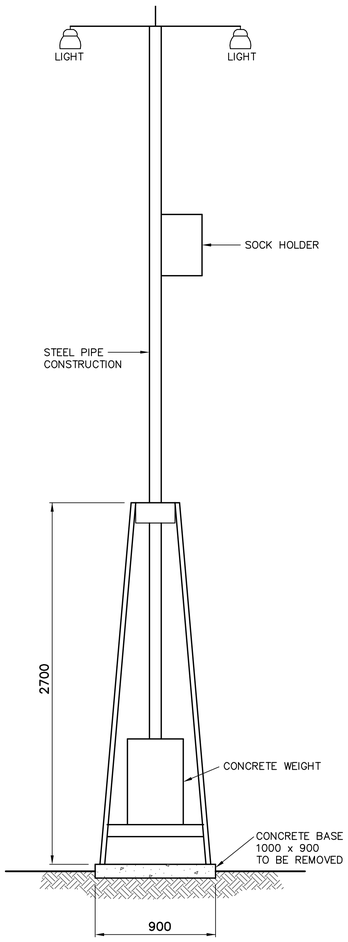
WATER AND FUEL TANKS
PLAN AND ELEVATIONS

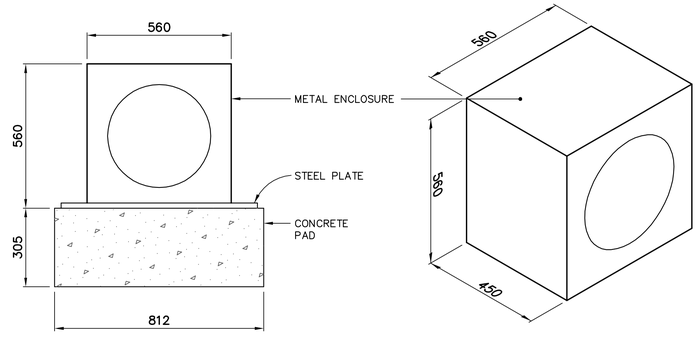
PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–J44/1–9101–210

Canada





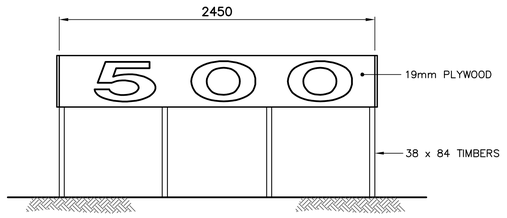


SECTION

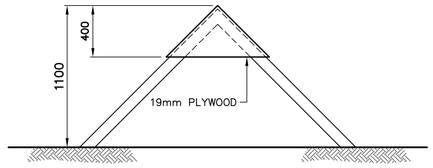
ISOMETRIC VIEW

STROBE BEACON LIGHT

N.T.S.



FRONT ELEVATION



SIDE ELEVATION

RUNWAY, APRON, THRESHOLD AND TAXIWAY LIGHTS

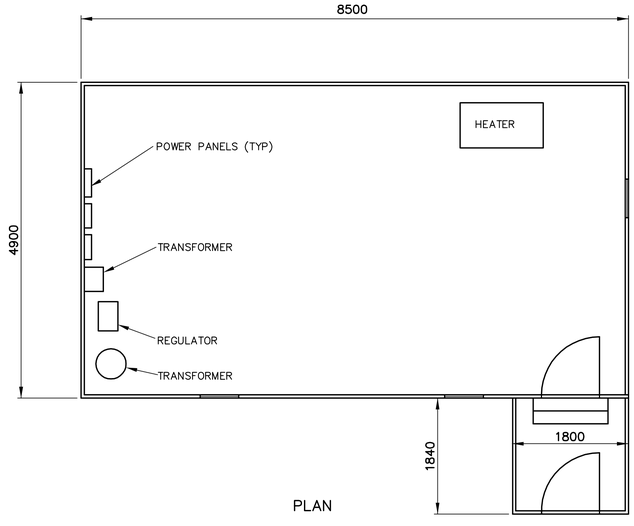
N.T.S.

WINDSOCK

N.T.S.

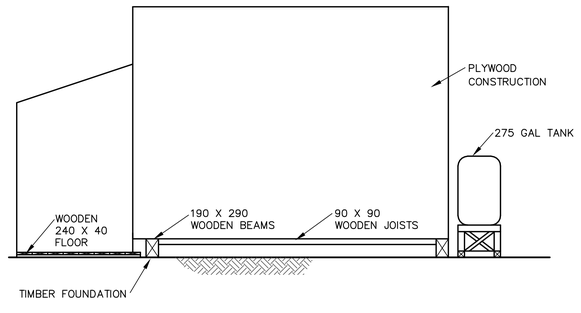
DISTANCE TO GO OR RUNWAY THRESHOLD MARKERS

N.T.S.

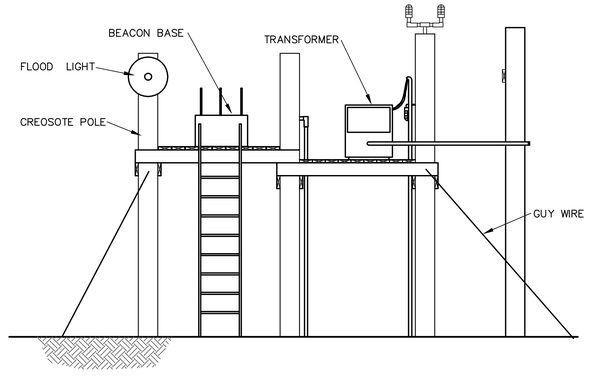


PLAN

COMMENTS
AS SHOWN 8500 X 4900 X 3600



ELEVATION



ELEVATION

AIR TERMINAL BUILDING

N.T.S.

BEACON LIGHT / TRANSFORMER PLATFORM

N.T.S.

National Defence / Défense nationale

Headquarters
Quartier général

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R.R. MERKOSKY LICENSEE (NWT/NU) — 2006-09-26

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PROJECT – PROJET: CAM–1 JENNY LIND ISLAND

DEW LINE CLEAN UP

TRADE – METIER: STRUCTURAL | DATE: 2006–09–15

SUBJECT – SUJET

AIRSTRIP ANCILLARY FACILITIES
STANDARD DETAILS

PRODUCTION	CONCURRENCE – ASSENTIMENT	
DESIGNED ETUDIE ANP/RRM		DES OFF AGENT CONCEPT
DRAWN DESSINE LJV		SECT HD CHEF SECT
CHECKED VERIFIE KMS		DES MGR GEST CONCEPT
COORDINATION SMS	REVIEWED – REVU	

DWG. NO. – DESSIN NO.
H–J44/1–9101–211

Canada