



Shell Canada Energy

Camp Farewell Remediation Program

Barge Waste Management and Disposal Plan



May 24, 2019

Inuvialuit Water Board
P.O. Box 2531
Inuvik, Northwest Territories
XOE OT0

Bijaya Adhikari
Science and Regulatory Coordinator

Dear Mr. Adhikari:

Camp Farewell Water Licence N7L1-1834
Barge Waste Management and Disposal Plan

On behalf of Shell Canada Energy, IEG Consultants Ltd. (IEG) is pleased to provide the Waste Management and Disposal Plan pertaining to barge camp operations during the Camp Farewell Remediation Program (Project). The enclosed document is intended to meet the requirements of Water Licence N7L1-1834 and was developed in general accordance with the Inuvialuit Water Board's *Guidance for the Preparation of Waste Management Plans* (IWB 2014).

Please contact Kyle Schepanow at (403) 648-4292 with any questions or comments.

Yours truly,
IEG CONSULTANTS LTD.

Kyle Schepanow, M.Sc., P.Geo.
Senior Hydrogeologist

KS:sh

Shell Canada Energy

Camp Farewell Remediation Program

Barge Waste Management and Disposal Plan

EXECUTIVE SUMMARY

Shell Canada Energy (Shell) is proposing to conduct a remediation program (the Project) at the Camp Farewell Site on the Mackenzie River in summer 2019. For the duration of the Project, on-site personnel will be accommodated in a barge camp that will be anchored at the Camp Farewell Site. The requirements of Shell's valid Water Licence N7L1-1834, specifically Part D, Item 16, indicate that Shell is to provide a Barge Waste Management and Disposal Plan (WMDP). This document is intended to meet the requirements of Water Licence N7L1-1834 and was developed in general accordance with the Inuvialuit Water Board's document titled *Guidance for the Preparation of Waste Management Plans* (IWB 2014).

The Camp Farewell Site (Site) is located on the Mackenzie River within the Inuvialuit Settlement Region (ISR) on the northeast bank of Middle Channel in the Kendall Island Bird Sanctuary (KIBS), Northwest Territories (NT) (Figure 1). It is approximately 125 km northwest of Inuvik and approximately 135 km west of Tuktoyaktuk.

Wastes generated during the Project will be managed and disposed of in accordance with all licenses, permits, and territorial and federal laws and regulations that are applicable to the Site. Waste types identified by the management plan include kitchen waste, general refuse, sewage and greywater. Tervita Corporation (Tervita) will fulfill the role as the prime contractor working for Shell during the Project and is responsible for waste management during the Project. IEG Consultants (IEG) is responsible for reporting requirements outlined in the approved licences and permits associated with the project. All generated wastes will be stored on the barge until transport to an appropriate off-site facility for disposal can be arranged or once the project is completed. There will be no on-site treatment or disposal of any generated wastes.

Tervita waste dockets will be utilized to track the waste types and volumes generated by barge camp operation and transported to the appropriate waste management facilities in Inuvik. An annual report will be submitted to the IWB in accordance with the terms and conditions of Water Licence N7L1-1834. Copies of all licenses and permits will be posted on-site for the duration of the Project. All shipping documents and waste manifests will be retained by Tervita and available on-site, as required.

Waste management reporting occurs in accordance with record keeping and reporting requirements of the Government of the Northwest Territories, applicable laws, permits, and Tervita's internal policies and procedures.

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1 NAME AND CONTACTS OF THE LICENSEE

Licensee:

Shell Canada Energy
P.O. Box 100 Station M, 400 4th Ave SW
Calgary, Alberta T2P 2H5

Key Contact: David Brown

Telephone: 832-337-1250

Email: David.A.Brown2@shell.com

2 INTRODUCTION

Shell Canada Energy (Shell) is proposing to conduct a remediation program (the Project) at the Camp Farewell Site on the Mackenzie River in summer 2019. The Project operates under a water licence in order to complete the ongoing remediation work at the Site. Shell's former Inuvialuit Water Board (IWB) issued water licence (N7L1-1762) which was updated through a term amendment and issued a new licence (N7L1-1834) for activities at the Camp Farewell Site (see Appendix I). One of the added conditions of compliance for the new water licence was the inclusion of a Barge Waste Management and Disposal Plan that would be submitted to the IWB outlining the plan to address all wastes generated by the barge during the project activities. This document is intended to meet the requirements of Water Licence N7L1-1834 and was developed in general accordance with the Inuvialuit Water Board's document titled *Guidance for the Preparation of Waste Management Plans* (IWB 2014).

3 GEOGRAPHICAL OUTLINE OF THE AREA COVERED BY THE WMDP

The Camp Farewell Site (Site) is located on the Mackenzie River within the Inuvialuit Settlement Region (ISR) on the northeast bank of Middle Channel of the Mackenzie River Delta in the Kendall Island Bird Sanctuary (KIBS), Northwest Territories (NT) (Figure 1). It is approximately 125 km northwest of Inuvik and approximately 135 km west of Tuktoyaktuk.

The location coordinates of the Site are:

- Latitude 69° 12' 30.0" N, and
- Longitude 135° 06' 04.4" W (UTM 496167W 7677487N NAD 27).

4 DESCRIPTION OF THE OPERATION AND FACILITIES COVERED BY THE WMDP

4.1 Project Summary

Shell is proposing to the Project at the Camp Farewell Site in summer 2019.

The Camp Farewell Site is leased by, and has been under the stewardship of, Shell since the early 1970's. Historically, the Site was utilized as a staging area for seismic and drilling operations. In addition, the Site was used for camp facilities and the storage of equipment and fuel to support Shell's operations in the Mackenzie Delta area.

Activities at the Site are regulated by a Type B Water Licence (Water Licence N7L1-1834), issued by the Inuvialuit Water Board (IWB) and is included in Appendix I. The Camp Farewell Site is currently inactive and recent activities have been limited to those involved in the closure and decommissioning of the Site. These activities have included dismantling and removal of infrastructure, removal of stockpiled materials and consumables, remediation and assessment activities, and environmental monitoring work.

4.2 Barge Camp Overview

For the duration of the Project, on-site personnel will be accommodated in a barge camp that will be anchored at the Camp Farewell Site for the duration of all Site activities. The barge camp that will be utilized during the Project can accommodate a 40-person crew and consists of living quarters with a kitchen/lunchroom, washrooms, laundry, recreation rooms, and office facilities, as well as a mechanical workshop and covered warehouse (Appendix II).

The barge camp will be anchored to the existing bollards at the barge landing area (Figure 2).

4.3 Purpose and Scope

This Barge Waste Management and Disposal Plan (WMDP) fulfills the requirements of Part D, Item 16 of Water Licence N7L1-1834. The purpose of this WMDP is to identify waste streams and outline management methods for wastes generated by the operation of the barge camp during the Project. The scope of this WMDP includes all waste streams that arise from operation of the barge camp and does not include other waste streams that may be generated or recovered during remedial activities on the Camp Farewell Site. This WMDP was developed in general accordance with the Inuvialuit Water Board's (IWB) *Guidance for the Preparation of Waste Management Plans* (IWB 2014).

Wastes generated during the Project will be managed and disposed of in accordance with all licenses, permits, and territorial and federal laws and regulations that are applicable to the Site.

4.4 Responsible Parties

Ultimately Shell is responsible for all Project activities, including the execution of the WMDP. Shell has retained Tervita Corporation (Tervita) to act as the prime contractor on-site. Tervita will manage and direct Project activities, including implementation of the WMDP.

IEG Consultants (IEG) will be responsible for reporting on the implementation of the WMDP, in accordance with the terms and conditions of Water Licence N7L1-1834 (Appendix I).

5 DESCRIPTION OF TREATMENT AND DISPOSAL TECHNOLOGY AND FACILITIES

No waste generated by barge camp operation will be treated or disposed of on-site. All wastes generated by the operation of the barge camp will be removed for off-site disposal to an appropriate facility, as described in the following sections.

6 TYPES AND ESTIMATED QUANTITY OF WASTES TO BE GENERATED OR MANAGED

6.1 Solid Waste

Solid waste generated from the operation of the barge camp during the Project is expected to include kitchen waste and general refuse (domestic waste). Domestic waste will be stored in garbage bins on the barge, which, once full, will be transferred to a metal container unit on the barge. This unit will be secured to prevent odors from attracting wildlife. Based on previous field programs at the Site, it is estimated that the daily volume of domestic waste generated by the barge camp will be approximately 1 m³/day. During the Project, when the metal container unit becomes full, garbage will be removed and transported by boat to Inuvik where it will be disposed of at the Inuvik landfill.

6.2 Wastewater

Wastewater generated from the operation of the barge camp is expected to include grey water and sewage from the camp kitchen, laundry room, and washrooms. Grey water and sewage will be stored in a holding tank on the barge. Based on previous field programs at the Site, it is estimated that the daily volume of wastewater generated by the barge camp will be approximately 4 m³/day. On completion of the Project, wastewater will be transported to Inuvik and disposed at the Inuvik sewage lagoon.

6.3 Hazardous Waste

No hazardous waste is expected to be generated from the barge camp operations. If a hazardous waste is identified at the camp it would be packed in the appropriate containers for such waste and transported from the Site to be disposed of at an approved facility.

7 ACTIONS TO BE TAKEN TO REDUCE, COLLECT, STORE, TREAT, REUSE, RECYCLE AND DISPOSE OF WASTES

7.1 Reduction

Efforts will be made to reduce waste generation wherever possible. Given the finite water storage capacity on the barge, water conservation will be a priority for all personnel, which in turn will reduce the amount of wastewater produced during the Project.

7.2 Collection and Storage

Domestic wastes and recyclables will be segregated at source (i.e., placed in designated containers by the waste generator). Domestic waste will be temporarily stored in a metal container unit on the barge camp until it is transported off-site for disposal.

Wastewater will be stored in a holding tank for the duration of the Project and transported to Inuvik for disposal on completion of the Project.

7.3 Treatment

No waste generated by barge camp operation will be treated on the barge or at the Site.

7.4 Reuse

Opportunities for waste reuse are limited given the Project scope, duration, and location. Efforts to reuse materials will include promoting the use of refillable beverage containers by on-site personnel.

7.5 Recycle

Beverage containers (i.e. cans, bottles, tetra paks) will be collected and transported off-site for recycling.

7.6 Disposal

Solid waste will be transported to Inuvik by boat and/or barge and disposed at the Inuvik landfill. Wastewater will be transported to Inuvik by barge and disposed at the Inuvik sewage lagoon.

8 TREATMENT, EFFLUENT AND WASTE QUALITY STANDARDS TO BE ACHIEVED

No waste generated by barge camp operation will be treated on-site.

9 FINAL WASTE DISPOSAL OR REUSE METHODS AND LOCATIONS

All non-hazardous solid waste and wastewater will be transported to Inuvik for disposal at an appropriate facility.

At the time of Water Licence renewal in 2017, Shell received approval from the Town of Inuvik to accept domestic sewage water and solid waste produced by camp operations during remediation programs at the Camp Farewell Site (Appendix III). This approval is still valid for the 2019 Project work.

Any hazardous waste identified at the camp would be stored in appropriate containers and disposed of at an approved facility.

10 OPERATOR QUALIFICATIONS AND TRAINING

As part of their orientation, all on-site personnel will receive basic waste management training, including waste collection and recycling, and practices for reducing waste and conserving water.

Personnel managing waste will be certified in Workplace Hazardous Material Information System (WHMIS) and Transportation of Dangerous Goods (TDG).

11 DOCUMENTATION AND REPORTING

Waste management reporting occurs in accordance with record keeping and reporting requirements of the Government of the Northwest Territories, applicable laws, permits, and Tervita's internal policies and procedures.

Tervita waste dockets will be utilized to track the waste types and volumes generated by barge camp operation and transported to the appropriate waste management facilities in Inuvik.

An annual report will be submitted to the IWB in accordance with the terms and conditions of Water Licence N7L1-1834.

Copies of all licenses and permits will be posted on-site for the duration of the Project. All shipping documents and waste manifests will be retained by Tervita and available on-site, as required.

12 CLARIFICATIONS OF THIS REPORT

This report was prepared by IEG Consultants Ltd. on behalf of Shell Canada Energy. The material in it reflects IEG's best judgment in light of the information available at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. IEG Consultants Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

13 CLOSING

If you have any questions or comments regarding this WDMP, please contact the undersigned in our Calgary office at (403) 648-4292.

IEG CONSULTANTS LTD.



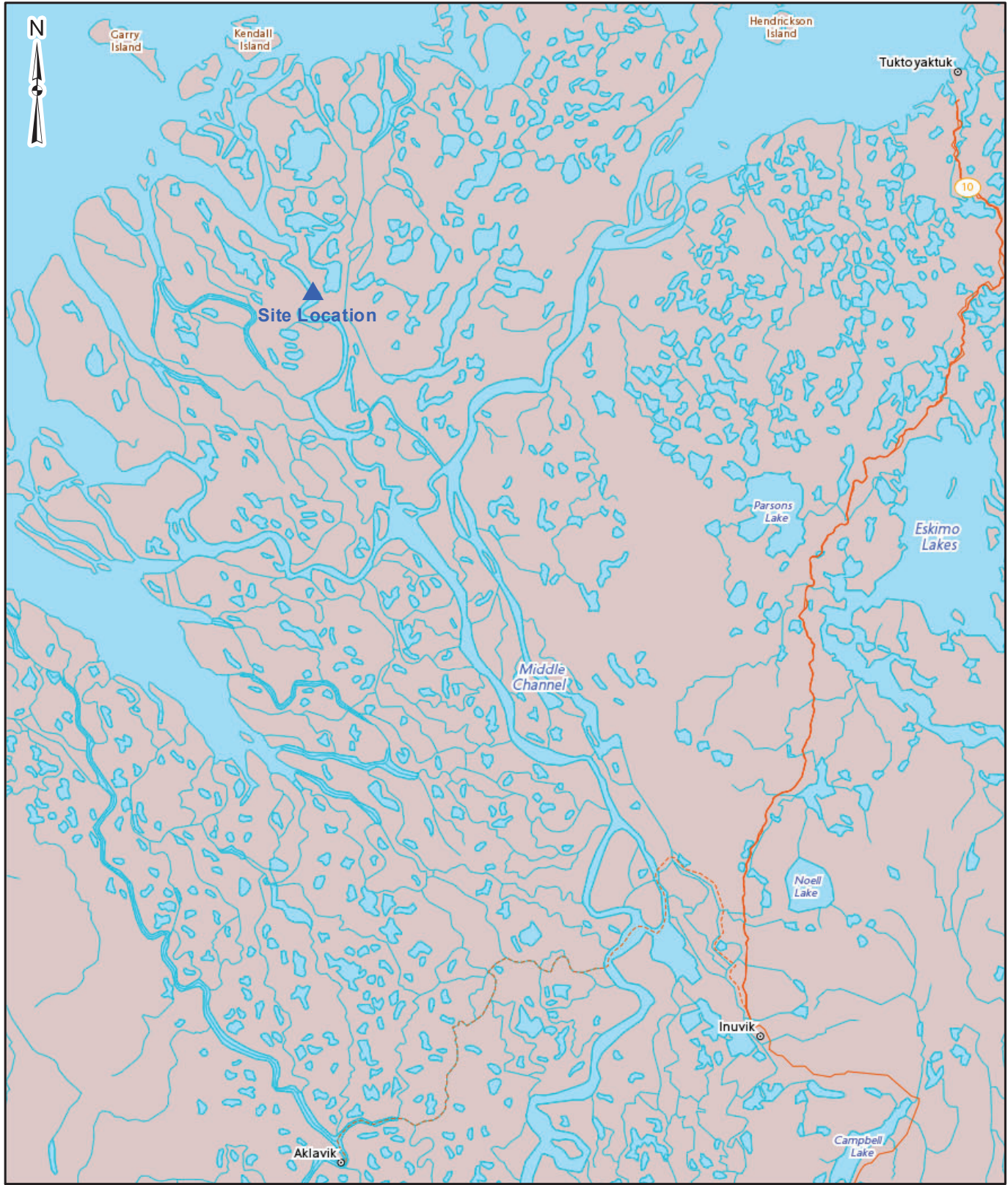
Kyle Schepanow, M.Sc., P.Geol.
Senior Hydrogeologist

KS:sh

REFERENCES

Inuvialuit Water Board (IWB). 2014. Guidance for the Preparation of Waste Management Plans – revised October 2014.

FIGURES



Time: 13:56:56 PM
 Date: May 21, 2019
 File: Z:\A\CGS\Alberta\A04012A11_S0E_2019_CFE\Artic_Proc_Env_Ser\400_Drawings\GIS\MXD\Barge_WMP\PE\fig_Site_Location_190521.mxd

NOTES:

1. HORIZONTAL DATUM: NAD83
2. GRID ZONE: UTM Zone 8N
3. IMAGE SOURCE: The Toporama Web Map Service, http://wms.ess-ws.nrcan.gc.ca/wms/toporama_en, Government of Canada, Natural Resources Canada, Earth Sciences Sector

CLIENT



Shell Canada Energy



PROJECT

Camp Farewell Remediation Program
Barge Waste Management and Disposal Plan

TITLE

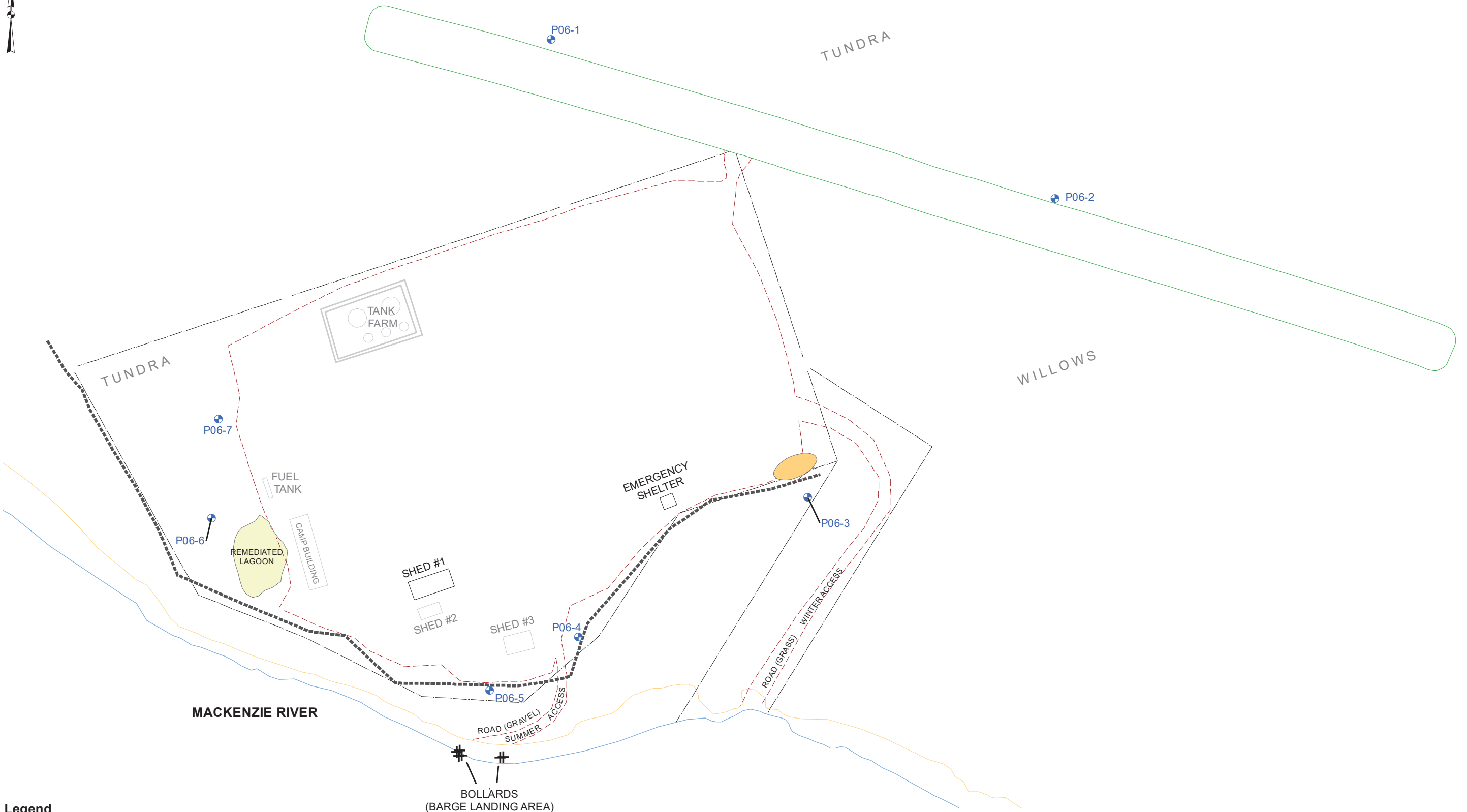
Site Location Map

SCALE
1:700,000

PROJECT No.
A04012A11

FIG No.
1

File: Z:\AICG\Yalberta\A04012A11_SCE 2019 CF Artic Prog Env Ser\400 Drawings\GIS\MXD\Barge WMDP\Fig_SitePlan_190621.mxd Date: May 21, 2019 Time: 14:12:27 PM Creator: shammem



Legend

- Piezometer
- Boundary
- Edge of Gravel
- River
- Sand
- Top of Bank
- Cross-section Locations
- Former Aboveground Storage Tank
- Airstrip
- Former Burn Pit
- Existing Infrastructure
- Removed infrastructure



NOTES:
 1. HORIZONTAL DATUM: NAD83
 2. GRID ZONE: UTM Zone 8N
 3. SOURCE: Site survey plan prepared for Shell Canada Limited by Inukshuk Geomatics Inc.; original scale 1:2,000.



PROJECT		Camp Farewell Remediation Program Barge Waste Management and Disposal Plan	
TITLE		Camp Farewell Site Plan	
SCALE	PROJECT No.	FIG No.	
1:2,500	A04012A11	2	

APPENDIX I

Inuvialuit Water Board Water Licence – N7L1-1834



July 13, 2017

David A. Brown
Staff Environmental Engineer
Shell Canada Energy
150 N. Dairy Ashford Road
Houston, Texas 77079

Dear Mr. Brown:

Re: N7L1-1834 – Shell Canada Energy, Camp Farewell – Term Amendment of Type “B” Water Licence

The Inuvialuit Water Board (IWB) is pleased to approve a term amendment of Water Licence N7L1-1834 for closure and remediation and post monitoring activities. In this regard, all terms and conditions for N7L1-1834 will remain as originally issued with the exception of:

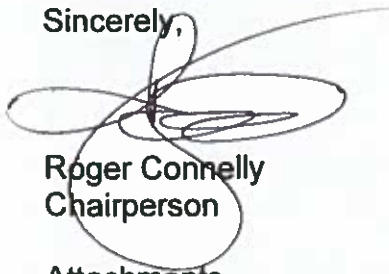
1. the extension of the expiry date to July 17, 2029;
2. Part B: General Conditions, Item 12; and
3. Part D: Conditions Applying to Waste Disposal, Item 16.

Each of these are detailed in the attached licence amendment.

A copy of the amended Terms and Conditions and all documentation associated with the term amendment of the licence has been filed in the Public Register. Copies are available at the IWB office and on the IWB Electronic Register located on the IWB website: www.inuvwb.ca.

The IWB appreciates the cooperation of Shell Canada Energy in complying with the Terms and Conditions of the Water Licence. Should you have any questions or concerns, please contact Mardy Semmler, Executive Director, at (867) 678-2942.

Sincerely,



Roger Connolly
Chairperson

Attachments

Copied to: Lloyd Gruben, ENR Water Resources Officer - Inuvik Region



INUVIALUIT WATER BOARD LICENCE AMENDMENT

Licensee	Shell Canada Energy
Licence Number	N7L1-1834
Effective Date of Amendment	July 18, 2017

Pursuant to the *Waters Act* and Waters Regulations the Inuvialuit Water Board hereby grants the following Licence Amendment.

Term of Water Licence

The current expiry date has been extended to July 17, 2029 to ensure consistency with the Closure and Reclamation Plan that includes an eight (8) year monitoring, maintenance, and reporting program following the completion of the permanent closure activities.

Part B: General Conditions

12. Consultation records, including a summary, with the Hunters and Trappers Committee (HTC) of Tuktoyaktuk must be submitted to the IWB at least thirty (30) days prior to conducting any activities at the site.

Part D: Conditions Applying to Waste Disposal

16. A barge waste management and disposal plan must be submitted to the IWB at least thirty (30) days prior to mobilization of the barge to the site.

This Licence is amended and recorded at Inuvik, Northwest Territories.

INUVIALUIT WATER BOARD

A handwritten signature in black ink, appearing to be a stylized name, written over a horizontal line.

Chairperson

A handwritten date in black ink, written over a horizontal line.

Date July 13, 2017

PART A: SCOPE AND DEFINITIONS

1. Scope

- a) This Licence entitles Shell Canada Energy to use water and dispose of Waste as an industrial undertaking associated with oil and gas exploration and development in the Mackenzie Delta at Farewell Camp and Stockpile Site (Camp Farewell) located at Latitude 69°12'30" North, and Longitude 135°06'04" West, Northwest Territories;
- b) This Licence is issued subject to the conditions contained herein with respect to the taking of water and the depositing of Waste of any type in any Waters or in any place under any conditions where such Waste or any other Waste that results from the deposits of such Waste may enter any Waters. Whenever new Regulations are made or existing Regulations are amended by the Governor in Council under the *Northwest Territories Waters Act*, or other statutes imposing more stringent conditions relating to the quantity or type of Waste that may be so deposited or under which any such Waste may be so deposited, this Licence shall be deemed, upon promulgation of such Regulations, to be automatically amended to conforming to such Regulations; and
- c) Compliance with the terms and conditions of this Licence does not absolve the Licensee from responsibility for compliance with the requirements of all applicable Federal, Territorial and Municipal legislation.
- d) This Licence is issued subject to the conditions contained herein with respect to the use of Waters as prescribed in Section 8 of the *Act* and the deposit of Waste to any Waters as prescribed in Section 9 of the *Act*.

2. Definitions

In this Licence: **N7L1-1834**

"Act" means the *Northwest Territories Waters Act*;

"Analyst" means an Analyst designated by the Minister under Section 35(1) of the *Northwest Territories Waters Act*;

“Average Concentration” means the discrete average of up to four (4) consecutive analytical results submitted to the Board in accordance with the sampling and analysis requirements specified in the “Surveillance Network Program”;

“Board” means the Northwest Territories Water Board established under Section 10 of the *Northwest Territories Waters Act*;

“Freeboard” means the vertical distance between water line and the lowest elevation of the effective water containment crest on a dam or dyke’s upstream slope;

“Geotechnical Engineer” means a professional engineer registered with the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists whose principal field of specialization is the design and construction of earthworks in a permafrost environment;

“Greywater” means all liquid Wastes from showers, baths, sinks, kitchens and domestic washing facilities, but does not include toilet Waste;

“Inspector” means an Inspector designated by the Minister under Section 35(1) of the *Northwest Territories Waters Act*;

“Licensee” means the holder of this Licence;

“Minister” means the Minister of Aboriginal Affairs and Northern Development Canada (AANDC);

“Modification” means an alteration to a physical work that introduces a new structure or replaces an existing structure and does not alter the purpose or function of the work, but does not include an expansion;

“Regulations” mean Regulations proclaimed pursuant to Section 33 of the *Northwest Territories Waters Act*;

“Sewage” means all toilet Wastes and Greywater;

“Sewage Treatment Facilities” comprises the area and engineered structures designed to contain Sewage as identified in the project description and also include a Sump constructed of impervious material and/or with an impervious liner;

“Sump” means an excavation for the purpose of catching or storing water and/or Waste;

“Waste” means Waste as defined by Section 2 of the *Northwest Territories Waters Act*;

“Waste Disposal Facilities” mean all facilities designated for the disposal of Waste and include the Sewage disposal facilities, solid Waste disposal facilities, and bagged toilet Wastes disposal facilities;

“Water Supply Facilities” mean all facilities designed to collect, treat and supply water for industrial purposes; and

“Waters” mean Waters as defined by Section 2 of the *Northwest Territories Waters Act*;

PART B: GENERAL CONDITIONS

1. The Licensee shall file an Annual Report with the Board not later than March 31st of the year following the calendar year reported which shall contain the following information:
 - a) the monthly and annual quantities in cubic metres of fresh water obtained from all sources;
 - b) the monthly and annual quantities in cubic metres of each and all Waste discharged;
 - c) the location and direction of flow of all Waste discharged to the water or the land;
 - d) a summary of the monthly and annual quantities of Waste stored on site and transported off site;
 - e) the results of sampling carried out under the “Surveillance Network Program”;
 - f) a summary of any Modifications carried out on the Water Supply Facilities and Sewage Treatment Facilities, including all associated structures;
 - g) a list of any spills and unauthorized discharges;
 - h) details on the restoration of any Sumps;
 - i) a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;

- j) a summary of any studies requested by the Board that relate to Waste disposal, water use, or reclamation, and a brief description of any future studies planned;
 - k) notation of updates and/or revisions to the approved Spill Contingency Plan, Waste Disposal Facilities operations and maintenance plan, and sewage treatment plan;
 - l) an outline of any spill training and communications exercises carried out; and
 - m) any other details on water use or Waste disposal requested by the Board within forty-five (45) days before the annual report is due.
2. The Licensee shall comply with the "Surveillance Network Program" annexed to this Licence, and any amendment to the said "Surveillance Network Program" as may be made from time to time, pursuant to the conditions of this Licence.
 3. The "Surveillance Network Program" and compliance dates specified in the Licence may be modified at the discretion of the Board.
 4. The Licensee shall, within thirty (30) days of the issuance of this Licence, submit to the Board for approval a map or drawing indicating the location of all Surveillance Network Program sampling stations.
 5. The Licensee shall, within thirty (30) days of the issuance of this Licence, post the necessary signs to identify the stations of the "Surveillance Network Program". All postings shall be located and maintained to the satisfaction of an Inspector.
 6. Any meters, devices or other such methods used for measuring the volumes of water used or Waste disposed and discharged shall be installed, operated and maintained by the Licensee to the satisfaction of an Inspector.
 7. The Licensee shall immediately report to the 24 Hour Spill Report Line (867-920-8130) any spills which are reported to, or observed by, the Licensee within the project boundaries.
 8. All monitoring data shall be submitted in printed form and electronically in spreadsheet format on a diskette or other electronic forms acceptable to the Board.
 9. All reports shall be submitted to the Board in printed format accompanied by an electronic copy in a common word processing format on diskette or other electronic forms acceptable to the Board.

10. Within thirty (30) days of issuance of this Licence, the Licensee shall have posted and shall maintain a security deposit in the amount of Two Million (\$2,000,000.00) Dollars pursuant to Section 17 of the Act and Section 12 of the Regulations, in a form suitable to the Minister. The security deposit shall be maintained until such time as it is fully or in part refunded by the Minister pursuant to Section 17 of the Act.
11. The Licensee shall ensure a copy of this Licence is maintained at the site of operation at all times.

PART C: CONDITIONS APPLYING TO WATER USE

1. The Licensee shall obtain water from the Middle Channel of the Mackenzie River in winter or the unnamed lake north of the camp in summer as described in the project description, or as otherwise approved by an Inspector.
2. The daily quantity of water used for all purposes shall not exceed 150 cubic metres.

PART D: CONDITIONS APPLYING TO WASTE DISPOSAL

1. The Licensee shall within thirty (30) days of the issuance of this Licence, submit to the Board for approval an updated operation and maintenance plan for the Waste Disposal Facilities. This plan shall include but not necessarily be limited to details on the design, operational capacity, management and maintenance, and disposal of sludges.
2. All Sewage shall be directed to the onsite Sewage Treatment Facilities as approved by an Inspector.
3. The Sewage Treatment Facilities shall be maintained and operated in such a manner as to prevent structural failure to the satisfaction of the Inspector.
4. All Waste discharged from the onsite Sewage lagoon shall be directed to the channel of the Mackenzie River at a location approved by an Inspector.
5. There should be no discharge of floating solids, garbage, grease, free oil or foam.

6. All effluent discharged by the Licensee from the Sewage lagoon at "Surveillance Network Program" Station Number 1834-1 shall meet the following effluent quality requirements:

Sample Parameter	Average Concentration
BOD ₅	70.0 mg/L
Total Suspended Solids	70.0 mg/L
Faecal Coliforms	1 X 10 ⁴ CFU/dL
Oil and Grease	5.0 mg/L
Total Residual Chlorine (TRC)	0.1 mg/L

7. The effluent discharged shall have a pH between six (6) and nine (9) and no visible sheen of oil and grease.
8. Introduction of water to Waste for the purpose of achieving effluent quality requirements in Part D, Item 7 is prohibited.
9. A Freeboard limit of 1.0 metre shall be maintained at all times in the Sewage lagoon, or as recommended by a qualified Geotechnical Engineer and/or as approved by the Board.
10. The Licensee shall advise an Inspector at least five (5) days prior to initiating and decant of the Sewage lagoon.
11. All analyses shall be conducted in accordance with methods prescribed in the current edition of "Standard Methods for the Examination of water and Wastewater" or by such other methods as may be approved by an Analyst.
12. The Licensee shall contain all contaminated soil or contaminated snow in such a manner as to minimize the potential for migration of contaminants into any Waters, to the satisfaction of an Inspector.
13. The Licensee shall store, segregate and dispose of all solid and hazardous Wastes in a manner acceptable to the Inspector.
14. Unless authorized by this Licence, the Licensee shall ensure that any Wastes associated with this undertaking do not enter any water body.
15. The Licensee shall submit to the Board a copy of each agreement(s) between third parties to store, transport or dispose of Wastes. The copy submitted to the Board shall include, at a minimum, the following:

- a. type of Waste;
- b. quantities of Waste;
- c. disposal location(s), and
- d. proof of acceptance from third parties.

PART E: CONDITIONS APPLYING TO MODIFICATIONS

1. The Licensee may, without written approval from the Board, carry out Modifications to the planned undertakings provided that such Modifications are consistent with the terms of this Licence and the following requirements are met:
 - a) the Licensee has notified an Inspector in writing of such proposed Modifications at least five (5) days prior to beginning the Modifications;
 - b) such Modifications do not place the Licensee in contravention of either the Licence or the Act;
 - c) an Inspector has not, during the five (5) days following notification of the proposed Modifications, informed the Licensee that review of the proposal will require more than five (5) days; and
 - d) an Inspector has not rejected the proposed Modifications.
2. Modifications for which all of the conditions referred to in Part F, Item 1 have not been met may be carried out only with written approval from an Inspector.
3. The Licensee shall provide to the Board as-built plans and drawings of the Modifications referred to in this Licence within ninety (90) days of completion of the Modifications.

PART F: CONDITIONS APPLYING TO CONTINGENCY PLANNING

1. The Licensee shall submit to the Board for approval within thirty (30) days of issuance of this Licence an updated Emergency Response & Spill Contingency Plan in accordance, for example, with the *Guidelines for Spill Contingency Planning, April 2007*, developed by AANDC-Water Resources Division.

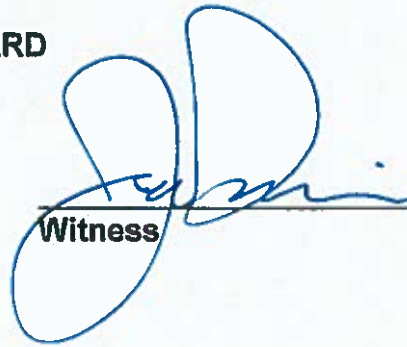
2. The Licensee will maintain a copy of the approved Emergency Response & Spill Contingency Plan onsite in a readily available location, to the satisfaction of an Inspector.
3. The Licensee shall ensure that petroleum products, hazardous material and other Wastes associated with the project do not enter any Waters.
4. The Licensee shall ensure that all containment berms are constructed of an impermeable material, to the satisfaction of an Inspector.
5. The Licensee shall ensure that fuel stored in each tank within the tank farm be no greater than 85% of the tank's capacity to allow for expansion and avoid overflows.
6. If, during the period of this Licence, an unauthorised discharge of Waste occurs, or if such a discharge is foreseeable, the Licensee shall:
 - a) report the incident immediately via the 24 Hour Spill Reporting Line (867) 920-8130; and
 - b) submit to an Inspector a detailed report on each occurrence not later than thirty (30) days after initially reporting the event.

PART G: CONDITIONS APPLYING TO ABANDONMENT AND RESTORATION

1. The Licensee shall submit to the Board for approval within one (1) year of issuance of this Licence, an updated Interim Abandonment and Restoration Plan including plans for the abandonment and restoration of the Sewage lagoon and a complete Phase II environmental site assessment of Camp Farewell. This assessment will include the full delineation of contamination (soil and water) associated with Camp Farewell operations, located both on and off the gravel base pad.
2. The Licensee shall implement this Plan as and when approved by the Board.
3. Following approval of the Plan, the Licensee shall review the Abandonment and Restoration Plan every two (2) years and shall modify the Plan as necessary to reflect changes in operations and technology. All proposed Modifications to the Plan shall be submitted to the Board for approval.

NORTHWEST TERRITORIES WATER BOARD


Chairman


Witness

APPENDIX II

Barge Camp Specifications



BARGE CAMP john wurmlinger

This self-contained workshop and quarters barge is ideally suited to support marine or coastal construction, drilling, production, work-over, or accommodation operations in remote locations. This vessel has a modern quarters facility with conference, recreation, galley and office facilities designed to house a 40 man permanent crew and cater up to 100 men. The mechanical workshop and covered warehouse provides approximately 8,000 square ft of usable space.





BARGE CAMP john wurmlinger

Official Number:	800988
Ship Particulars:	John Wurmlinger
Port of Registry:	Vancouver
Date of Registration:	October 22, 1981
Vessel Type:	Barge
Builder Information:	Built 1981 Purvis Navcon Shipyard Selkirk MB
Construction Information:	Type: Carvel/flush Material: Steel
Number of engines:	
Engine Type:	
Propulsion:	
Ships speed (knots):	
Horsepower:	
Dimensions:	Length: 68.28m Breadth: 21.34m Depth: 4.27m
Tonnages:	Gross: 11,885.41 m3 Deductions: 1,865.04 m3 Net/Register: 10,020.37 m3



All parts, accessories, accessions, appurtenances, instruments, appliances, communication equipment, radar equipment, navigation equipment, fittings, fuel, machinery, tools, spare gear and stores and all other good of any kind or nature which may from time to time be installed in, attached to or form part of the described boat.



BARGE CAMP john wurmlinger

Includes: All parts, accessories, accessions, appurtenances, instruments, appliances, communication equipment, radar equipment, navigation equipment, fittings, fuel, machinery, tools, spare gear and stores and all other good of any kind or nature which may from time to time be installed in, attached to or form part of the described boat.

Helicopters: 1967 Sikorsky S61N S/N CFTIG
Helicopter Hull S/N 61491

Engine: Model CT58-140-1 S/N
295089/295067

Particulars

Length Overall	224'-0" ft
Breadth mid.	70'-0" ft
Depth mid.	14'-6" ft
Working Draft	7'-0" ft
Maximum draft	10'-6" ft
Lightship draft	4'-6" ft
Tons per foot immersion	420 Lton/ft. approximately
Lightship weight	1450 Ltons
Displacement at max. draft	4450 Ltons



Tankage

Jet Fuel forward tank	110,000 ImpGal
Fuel Oil (Diesel)	Day Tank 28,000 ImpGal
	Aft Tank 55,000 ImpGal
Fresh Water	41,000 ImpGal
Water Ballast	357,000 ImpGal
Non-designated Oil	27,500 ImpGal

Below Deck Dry Storage
Fully Shelved 55,000 Cubic Feet

Main Deck Design



Crane Deck	Wood sheathed
Other Exterior Deck	1,500 lbs/sq.ft
Interior Deck (workshop)	1,250 lbs/sq.ft



BARGE CAMP john wurmlinger

Helicopter Deck Design

Sized 62'-0" x 62'-0" plus safety netting and fireman positions. Strength designed for wheeled S76 helicopter.

General Description

The barge hull is of heavy duty construction, flat pontoon with conventional scow rake and vertical, flat transom radiussed to the bottom. Approximately half the deck area is covered by shop/camp superstructure, the other half is open deck, enclosed with a five foot high bulwark set approximately 5 feet off the sides. This open deck area is wood-sheathed along the centerline for a width of 24 feet.

The bow is equipped with a 24 foot hydraulically operated ramp that can be lowered to keel level (for operation onto a beach) which closes the gap in the bulkhead when up. The ramp and the sheathed open deck are designed for operation of a 300 ton crawler crane.

The vessel can be anchored by hydraulically operated, heavy duty, gravity spuds in up to 26 feet water depth. The foredeck has two tugger winches with fairleads. The aft deck has two anchor winches with fairleaders. Spuds, winches and deck ramp are operated from a central, electrically driven hydraulic system in the engine room.

The workshop area (approximately 60' x 104') is divided into three spaces: a welding bay (48' x 60'); a machine shop and service area (56' x 60') with offices and lunchroom over. The welding shop is serviced by a 5 ton overhead travelling crane which travels a short distance on the open deck. The machine shop is serviced by a number of smaller overhead cranes and jibposts. All shop areas are heated by diesel fired unit heaters.

The hull is divided into 19 watertight compartments with the following functions:

3x5 foot wide cofferdam compartments full length Port and Starboard

Two water ballast spaces; one on the forward rake between the collision bulkheads and the headlog and transom respectively.





BARGE CAMP

john wurmlinger

Three fuel oil tanks, a fresh water tank, a lube oil tank and a waste oil tank, all 20 feet wide at the centerline.

A drystore, an engine room and a ballast tank in the line both Port and Starboard.

The drystores and the engine rooms are connected by watertight doors.

The deck above the shop area is the galley/mess/change room area. The galley/mess are fully equipped like the best facility one might find in a good hotel, including drystores and refrigerated/freezer spaces. The galley/mess is set up to cater to 100 plus persons per meal. The messing area can seat 44 persons at one sitting with very ample room.

The deck above the galley/mess houses the camp. In addition to the rooms listed above this area has public washrooms, a laundry room, recreation room and a card playing room. Two of the large single man rooms forward are arranged for management personnel with a private office.

Above the camp there is a 62'x62' helideck (designed for S76 helicopter on wheels), a passenger waiting area, a radio room and two good size offices.

The equipment on the vessel provides for a complete self-contained operation including:

Electric power generation and distribution system, two paralleling 350 KWA generators, which could power other facilities.

One x 160 KWA additional generator which can supply power to the barge.

Fresh water maker.

Sewage Plant.

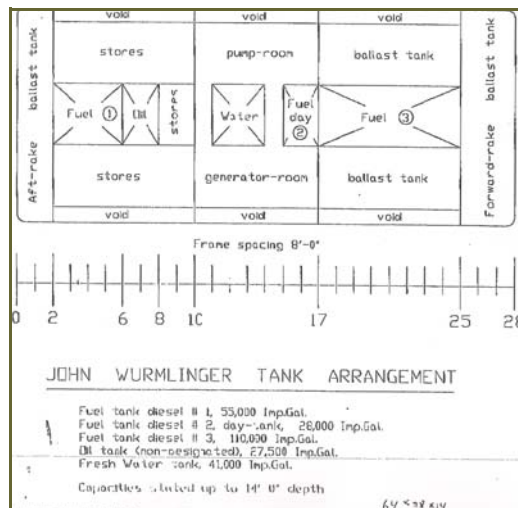
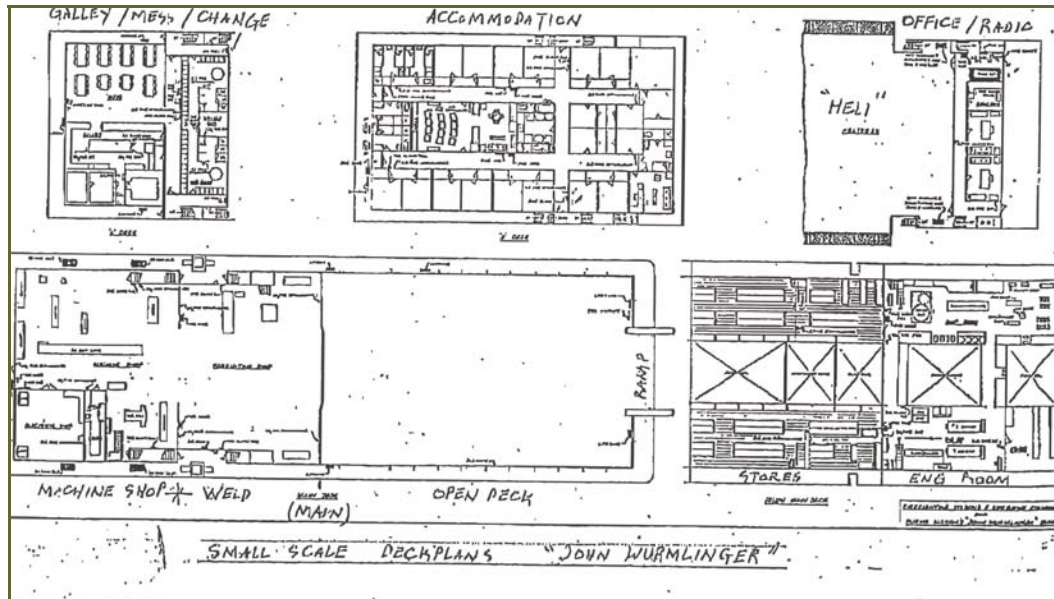
Pressurized fire water main throughout.

Pressure ventilation and diesel fired heating systems throughout, designed for Arctic operations.

Full domestic and sanitary facilities to good class.

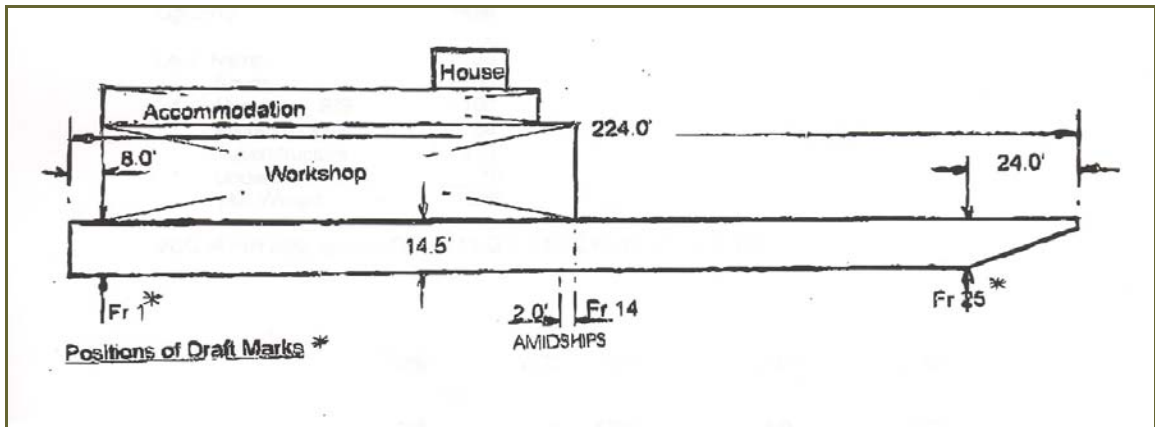


BARGE CAMP john wurmlinger

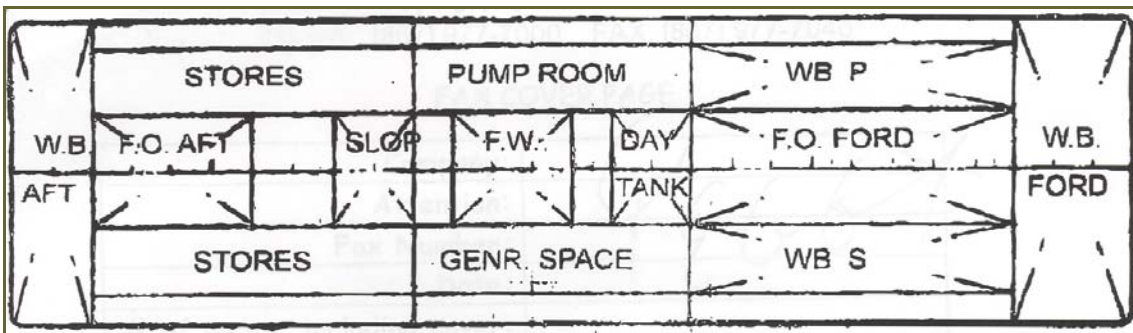




BARGE CAMP john wurmlinger



dimensions



tank layout



APPENDIX III

Town of Inuvik Waste Acceptance Letter



TOWN OF INUVIK

2 Firth Street, Box 1160
Inuvik, Northwest Territories
Canada, X0E 0T0
Phone: 867.777.8600 • Fax: 867.777.8601
e-mail: sao@town.inuvik.nt.ca

May 24, 2017

IEG Consultants
500 – 2618 Hopewell Place NE
Calgary, AB T1Y 7J7

Attention: Nicole Wills

Re: Water License No. N7L1-1762

Dear Ms. Wills:

Please accept this letter as response to your email request for approval by the Town of Inuvik to accept domestic waste sewage water and solid waste produced by camp operations at Shell Camp Farewell.

The town will accept in principle the above mentioned products provided they follow the guidelines and fees as set out in the various town by-laws. All the waste must be domestic use type only. None of it shall contain any drilling or industrial type waste.

As part of this acceptance IEG must report monthly the amounts of waste delivered to our facility. This is in accordance with our water license requirements.

I trust this is satisfactory and should you have any questions regarding this issue please feel free to contact me.

Yours sincerely;

Grant Hood, CPA,CMA
Senior Administrative Officer