14. Have any spills occurred in the past five years?

No

15. Have there been any operating problems with the lagoon?

No

16. Are there any changes planned in the sewage disposal facilities?

Depending on future use of the camp, an upgrade to the sewage treatment system would be considered. The upgrade would be the installation of a Polishing Unit. Any proposed upgrade would follow the normal regulatory review process.

SECTION E - SOLID WASTE DISPOSAL

This section is does not apply to Camp Farewell as there is no solid waste disposal site present. Combustible camp garbage is incinerated on site. Once approval is obtained the ash is hauled to the landfill in Inuvik. Non-combustible solid waste is stored on site for transport to Inuvik for landfill disposal as well.

1. **Indicate the capacity of the disposal area. (m3)**

2. **The average depth of the solid waste disposal site is:**

3. **Are there any sources of commercial or industrial solid waste being deposited in the municipal system which may affect the quality of the effluent or leachate produced?**

4. **Briefly describe how the solid waste will be picked up and delivered to the disposal area.**

5. **Is the solid waste site fenced?**

6. **Will the municipality be using a dead animal pit?**

7. **Will the municipality be using a bulky metal waste disposal area?**

8. **Will the municipality be using a hazardous waste disposal area?**

9. **Are there any hazardous commercial wastes entering the solid waste disposal system?**

10. **If any natural watercourse may gain access to the proposed solid waste disposal area, what methods will be used to decrease the amount of runoff water entering these areas? Indicate the volume of water which may enter these areas from the source(s) in question and attach all pertinent details of proposed diversions.**

11. **Please describe the nature of any diversion of watercourses.**

12. **Have there been any problems or health and environmental concerns with the solid waste disposal facilities?**

13. **Are there any planned changes to the solid waste disposal system?**

SECTION F - ABANDONMENT AND RESTORATION PROGRAM

1. **List and describe the locations of abandoned or restored water treatment facilities.**
   Not applicable

2. **List and describe the locations of abandoned or restored sewage treatment facilities.**
   The previous sewage treatment system, an RBC system, was replaced by the current extended aeration sewage treatment system in the summer of 2002. The RBC facilities were removed from the site.

3. **List and describe the locations of abandoned or restored solid waste disposal facilities.**
   Not applicable

4. **Do you have an abandonment and restoration plan?**
   Yes , refer to Appendix C of the Project Description for the Camp Farewell Abandonment and Restoration Plan.

SECTION G - WATER QUALITY MONITORING PROGRAM

1. **Briefly describe the methodology that is presently used to sample the raw water supply.**
   There is no sampling of the raw water supply because this is a pristine and undisturbed water source that is used only for domestic purposes and not as a potable water source.

2. **Briefly describe any monitoring that is done on wastewater effluent and leachate.**
   Shell complies with the requirements of the Surveillance Network Program outlined in its current Water License N7L1-1762. The current license and amendments are provided in the Water Management Plan included in Appendix B of the attached Project Description.

3. **Recognized laboratory performing analysis of samples:**
   Taiga Environmental Laboratory

4. **Are any changes planned in the water quality monitoring program?**
   No, unless required by the Northwest Territories Water Board.

SECTION H - ENVIRONMENTAL ASSESSMENT AND SCREENING

1. Has this project ever undergone an initial environmental review, including previous owners?

The existing water license was issued for Camp Farewell on December 1, 2000, with an amendment issued on November 28, 2001.

2. Has approval been obtained or sought from the Department of Fisheries and Oceans for using any fish bearing water bodies for containment or disposal of waste?

Not applicable

3. Are there any environmental studies ongoing or planned?

A Water Use Audit will be conducted the next time Camp Farewell is in operation. The Audit is an important part of Shell Canada's water conservation planning.

Solid Waste Disposal Plan

Solids designated for disposal and the disposal options varies depending on the material. Six major solid waste streams have been identified and the disposal plans are addressed as follows:

Combustible camp waste will continue to be burned in the incinerator located within the camp.

The larger construction debris (pallets etc) that was previously burned in an earthen pit onsite will now be burned in a metal sloop. This will contain the fire and eliminate the introduction of waste materials to the soil. The residual ashes from the incinerator and burn sloop will be tested, and if suitable, transported to the Inuvik landfill for final disposal after obtaining appropriate approval. See the attached "Municipal Guidelines for Open Burning" for materials that are appropriate for open burning.

Recyclable materials will be collected and recycled. Materials including, but not limited to used oil, used anti-freeze, oily rags, etc. will be shipped to suitable facilities located in Alberta. Metal including aluminum and scrap steel are separated into bins that will be shipped from the location to appropriate recycling facilities.

Un-usable drilling products including, but not limited to cement, potash, caustic soda, etc. are either recycled or shipped to appropriate disposal facilities in Alberta. Consideration should be given to minimizing packaging when planning these types of supplies. Eg bulk product in seacans.

At Reclamation of the Lagoon: Upon approval of the District Inspector, the digested sludge and sediment that has accumulated in the sewage lagoon is to be air dried to reduce hydrocarbons and pathogens. The sediment can then be used onsite as fill or as a topsoil amendment as a component of site reclamation. See Camp Farewell Reclamation Plan, submitted under separate cover, for additional details.

A Waste Reduction and Segregation Audit is to be conducted after the camp has been operating for a reasonable time however these aspects need to be included in the project planning.

All solid waste materials will be managed and disposed of in accordance with Northwest Territories Regulations and Guidelines.

The Integrated Waste Management Plan will replace this section when it becomes available.

Municipal Solid Wastes Suitable for Open Burning

Municipal solid wastes (MSW) that are conditionally suitable for open burning are paper products, paperboard packaging and untreated wood wastes only.

Conditions for this burning are:

* The principle of source reduction should be utilized to reduce, reuse and recycle materials otherwise bound for landfill.

* The appropriate materials are segregated and burned in a controlled manner and site which is separate from the working landfill so that the fire cannot spread. Standard burning conditions shall apply to burning such as on days where winds are light, blowing away from the community, in manageable volumes so that fires do not get out of control, having applicable permits and managed by an authorized, qualified person from the community. These are conditions also recommended in the Municipal and Community Affairs Solid Waste Modified Landfill Guidelines.

* Building demolition wastes should not be burned unless they have been sorted to remove non-wood wastes such as roofing materials, electrical wire, plastics, asbestos and other non-wood wastes.

* Waste wood treated with preservatives such as creosote, pentachlorophenol or heavy metal solutions shall not be burned. Examples of treated wood materials include railroad ties, telephone/hydro poles, pilings, cribbing and foundations.

* Following a review of the specific landfill location, additional local conditions or controls may be applied.

Where geographic conditions do not allow for the proper operation of a modified landfill, such as because of limited availability of cover materials and unsuitable ground conditions, communities may have to assess other alternatives of MSW management ie: balefill, incineration. The open burning of non-segregated MSW remains an unacceptable option for the management of MSW. Continuation of this practise should not be allowed unless a site-specific assessment fails to identify a feasible and practical alternative. At that point some form of segregation will be required.

Industry Canada Industrie Canada

RADIO LICENCE

Issued under the authority of the Minister of Industry in accordance with the Radiocommunication Act and Regulations made thereunder

EFFECTIVE DATE	EXPIRY DATE	ACCOUNT NUMBER
October 2, 2002	March 31, 2006	26-080000555

RADIOCOMMUNICATION USER

SHELL CANADA LIMITED/ WIRELESS TECH
SERVICE IAN LUCAS RM 1720(MW/L)
P.O. BOX 100, POSTAL STATION "M"
CALGARY AB T2P 2H5

THIS LICENCE AUTHORIZES THE OPERATION OF THE STATION LISTED BELOW

NUMBER TYPE	CALL SIGN	STATION LOCATION COORDINATES	ZONE
4932440 FIXED	CFD38	FARWELL BASE CAMP	NON-METROPOLITAN ZONE C

LATITUDE	LONGITUDE
69 12 30 N	135 06 00 W

TRANSMITTING FREQUENCIES	RECEIVING FREQUENCIES	CHANNEL TX	CHANNEL RX	BANDWIDTH AND EMISSION	POWER	POWER TYPE	AUTHORIZED COMMUNICATIONS AND CONDITIONS
130.27500 MHz	130.27500 MHz	01	01	6K00 A3E	22.909 W	ERP	LICENCED STATIONS

SERVICES

T LAND/MOBILE

RADIO LICENCE

Issued under the authority of the Minister of Industry in accordance with the Radiocommunication Act and Regulations made thereunder

ACCOUNT NUMBER	LICENCE NUMBER
26-080000555	4932440

LICENCE ADDENDA

This licence authorizes the licensee to establish and operate a radio station as described in the approved application, in accordance with specific items or conditions and applicable provisions of the Radiocommunication Act and its regulations. This authority should not be construed as approving the use of any antenna supporting structure which has not been approved by the Department of Transport from an aeronautical safety point of view. Except as provided in the regulations, no change in the apparatus or operations shall be made without the authority of the Minister, Industry Canada, and the licensee shall notify the Department in writing upon a change of address.

The Department may, at a future date, require the licensee to install filters, tone coding devices, reduce the effective radiated power and/or antenna height as appropriate.

Service Category indicates the categories of service the station is authorized to perform.

In many cases licence fees are related to the number of transmit and receive channels. A code, used in the "channel" column, indicates the number of equivalent voice channels as given in the following table:

Channel Code	1 to 9	A	B	C	D	E	F	G	Other Letters H, I, J, etc.
Equivalent No. of Voice Channels	1 to 9	10 to 24	25 to 60	62 to 120	121 to 300	301 to 600	601 to 960	961 to 1200	Measured in units of 300 channels

For further information regarding your radio licence please contact your nearest Industry Canada District Office. The Radiocommunication Act and the Radiocommunication Regulations are available on Internet at:

http://strategis.ic.gc.ca/sc_mrksv/spectrum/engdoc/spect1.html

ENQUIRIES CONCERNING THIS RADIO LICENCE SHOULD BE DIRECTED TO INDUSTRY CANADA DISTRICT OFFICE,

401 - 4920 52ND STREET, YELLOWKNIFE, NT, X1A 3T1, TEL. (867) 920-6603 FAX (867) 920-6601.

E-mail :spectrum.yellowknife@ic.gc.ca

Appendix B: Camp Farewell Lease Agreements

N.W.T. Lease No.: **107 C/4-1-8**

File No.: **107 C/4-1**

THIS LEASE made this 7 day of April 2009.

BETWEEN: Her Majesty the Queen in right of Canada,

Hereinafter called "Her Majesty"

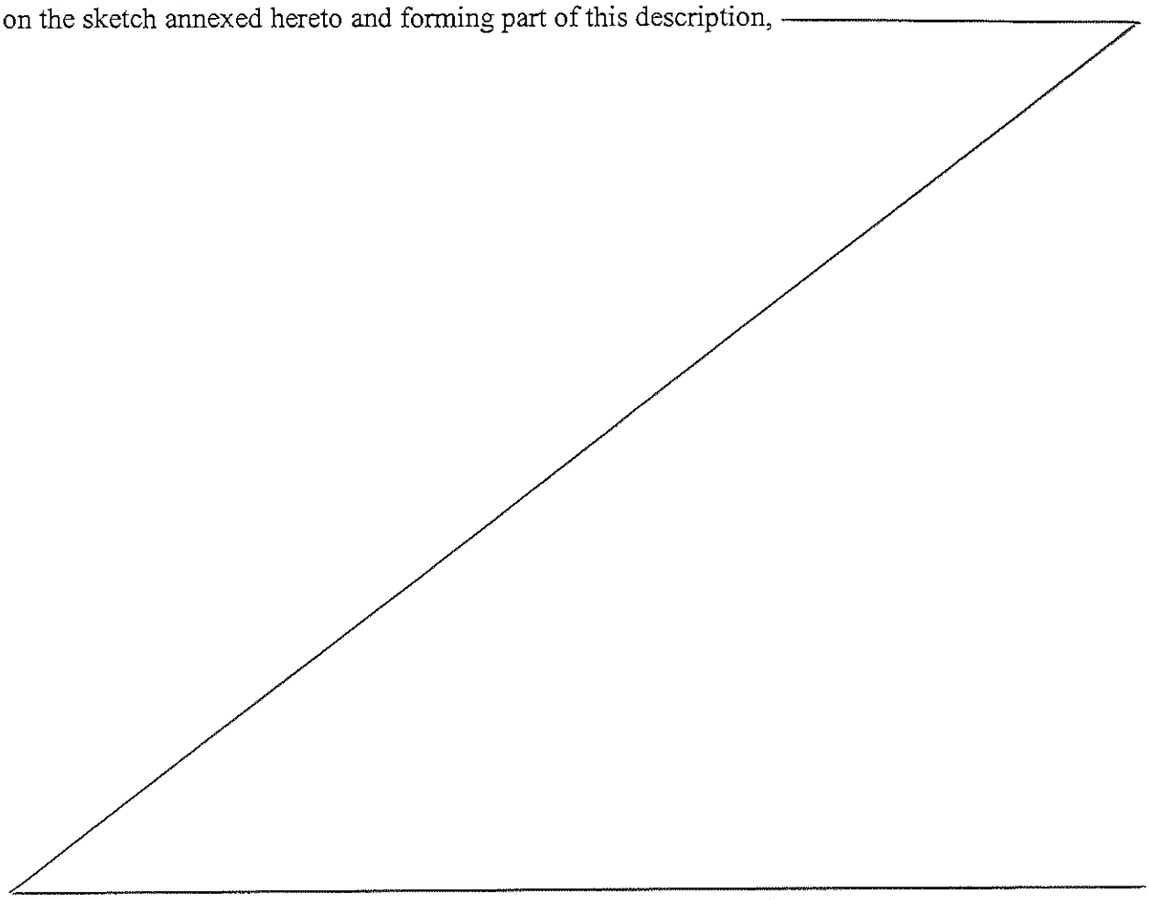
OF THE FIRST PART

AND: **SHELL CANADA LIMITED**, a body corporate, incorporated under the laws of Canada, having a registered office in the City of Calgary, in the Province of Alberta,

Hereinafter called "the lessee"

OF THE SECOND PART

WITNESSETH that in consideration of the rents, covenants and agreements herein reserved and contained on the part of the lessee to be paid, observed and performed, and subject to the Territorial Lands Act and the Territorial Lands Regulations, Her Majesty demises and leases unto the lessee all that certain parcel or tract of land situate, lying and being composed of all that parcel of land at Farewell, located at approximately on 69° 12' 41" North Latitude and 135° 05' 33" West Longitude, in QUAD 107 C/4, in the Northwest Territories, as said parcel is shown outlined in red on the sketch annexed hereto and forming part of this description,



hereinafter called "the land", SUBJECT to the following reservations:

Initial(s) BZ

(a) all mines and of all minerals whether solid, liquid or gaseous which may be found to exist within, upon, or under such lands together with the full powers to work the same and for that purpose to enter upon, use and occupy the lands or so much thereof and to such an extent as may be necessary for the effectual working and extracting of the said minerals;

(b) the rights of the recorded holders of mineral claims and any other claims or permits affecting the land;

(c) all timber that may be on the land;

(d) the right to enter upon, work and remove any rock outcrop required for public purposes;

(e) such right or rights-of-way and of entry as may be required under regulations in force in connection with the construction, maintenance and use of works for the conveyance of water for use in mining operations; and

(f) the right to enter upon the land for the purpose of installing and maintaining any public utility;

THE PARTIES COVENANT AND AGREE AS FOLLOWS:

DEFINITIONS:

1. In this lease:

(a) "Minister" means the Minister of Indian Affairs and Northern Development and any person authorized by him in writing to act on his behalf;

(b) "facilities" means all physical structures or appurtenances placed in or upon the land;

(c) "construction" means all manner of disturbance of the natural state of the surface of the land, including the sub-surface and sub-strata;

(d) "Surveyor General" means the Surveyor General as defined in the Canada Lands Surveys Act;

(e) "body of water" means any lake, river, stream, swamp, marsh, channel, gully, coulee or draw that continuously or intermittently contains water;

(f) "airstrip" means any area, either water or land, which is adapted for the take off and landing of aircraft and which provides facilities for the shelter and repair of aircraft, or for the regular receiving and discharging of passengers or cargo;

TERM:

2. The term of this lease shall be for a period of **twenty (20)** years commencing on the **1st day of January, 2009 AD.** and terminating on the **31st day of December, 2028 AD.**

RENT AND TAXES:

3. Subject to Clause 4 the lessee shall pay to the lessor yearly and every year in advance the rental of **one hundred and fifty (150.00)** dollars.

Initial(s)_____

4. The Minister may, not less than three (3) months before the expiration of the first five (5) year period of the said term, or of any succeeding five (5) year period during the term, notify the lessee in writing of an amended rental payable for the following five (5) year period and, failing further notification, for the remainder of the term, the said amended rental to be based upon the fair appraised value of the land at the time of such notification but without taking into account the value of any improvements placed thereon by and at the expense of the lessee.

5. The lessee shall during the term of this lease, pay all taxes, rates and assessments charged upon the land or upon the lessee in respect thereof.

USE:

6. The lessee shall use the land for **AIRSTRIP** purposes only.

SUBLETTING OR ASSIGNMENTS:

7. The lessee shall not sublet the land or assign or transfer this lease or any portion thereof without the consent of the Minister in writing, which consent shall not be unreasonably withheld.

8. No Sublease, assignment or transfer of this lease to any party will receive the consent of the Minister unless Lease number 107 C/4-2-15 is sublet, assigned or transferred to the same party.

BREACH:

9. Where any portion of the rental herein reserved is unpaid for more than thirty (30) days after it becomes due, whether formally demanded or not, the Minister may by notice in writing terminate this lease and on the day following the mailing of such notice, this lease is cancelled.

10. Where the lessee breaches or fails to perform or observe any of the covenants, terms, conditions or agreements herein contained, other than the covenant to pay rent, the Minister may so advise the lessee by written notice and if the lessee fails to remedy the breach or non-performance within a reasonable time thereafter or within the time granted in the said notice, the Minister may, by notice in writing, terminate this lease and on the day following the mailing of such notice, this lease is cancelled.

11. Unless a waiver is given in writing by the Minister, Her Majesty will not be deemed to have waived any breach or non-performance by the lessee of any of the covenants, terms, conditions or agreements herein contained and a waiver affects only the specific breach to which it refers.

TERMINATION:

12. Upon the termination or expiration of this lease, the lessee shall deliver up possession of the land in a restored condition and, where there are no arrears of rent or taxes, the lessee may, within three (3) months after the termination or expiration, remove any buildings or other structures owned by him that may be on the land.

13. Termination or expiration of this lease will not prejudice Her Majesty's right to unpaid rental or any other right with respect to a breach or non-performance of any covenant, term, condition or agreement herein contained nor will the lessee be relieved of any obligation contained herein.

RESTORATION:

14. Where the lessee fails to restore the land as required and within the time allowed by the Regulations or by the Minister, the Minister may order the restoration of all or any part of such land and any expenses thus incurred by the Minister shall be recoverable from the lessee as a debt due to Her Majesty.

WASTE DISPOSAL:

15. The lessee shall dispose daily of all combustible garbage and debris by burning in an incinerator approved by the Land Agent and remove all noncombustible garbage and debris to an authorized dumping site.

16. The lessee shall not discharge or deposit any refuse substances or other waste materials in any body of water, or the banks thereof, which will, in the opinion of the Minister, impair the quality of the waters or the natural environment and any areas designated for waste disposal shall not be located within thirty-one (31) metres of the ordinary high water mark of any body of water, unless otherwise authorized by the Minister.

ENVIRONMENTAL:

17. The lessee shall at all times keep the land in a condition satisfactory to the Minister.

FUEL AND HAZARDOUS CHEMICALS:

18. The lessee shall ensure that fuel storage containers are not located within thirty-one (31) metres of the ordinary high water mark of any body of water unless otherwise authorized by the Minister.

19. The lessee shall mark with flags, posts or similar devices all petroleum fuel storage facilities, including fill and distribution lines, such that they are clearly visible at all times.

20. The lessee shall immediately report all spills of petroleum and hazardous chemicals in accordance with the Government of the Northwest Territories Spill Contingency Planning and Reporting Regulations and any amendments thereto, or in a manner satisfactory to the Minister.

21. The lessee shall prevent the possibility of migration of spilled fuel over the ground surface or through seepage in the ground.

22. The lessee shall take all reasonable precautions to prevent the migration of petroleum products into bodies of water.

23. The fuel storage facilities of the lessee, including all tanks, bladders, hoses, pumps, fuel transfer lines and associated mechanical connections and valves shall be installed and maintained to the satisfaction of the Minister and the lessee agrees to make such reasonable modifications and improvements as are deemed necessary by the Minister.

BOUNDARIES AND SURVEYS:

24. Her Majesty is not responsible for the establishment on the ground of the boundaries of the land.

25. The boundaries of the land are subject to such adjustment and alteration as may be shown to be necessary by survey.

26. The Minister may, during the term herein granted, by notice in writing, order the lessee to survey the boundaries of the land and the lessee shall, at its own expense, within one (1) year from the date of said notice, make or cause to be made a survey of the land, such survey to be made in accordance with the instructions of the Surveyor General, and upon completion of the survey and the production of survey plans suitable for recording in the Canada Lands Surveys Records and filing in the Land Titles Office for the Northwest Territories Land Registration District, Her Majesty will execute an Indenture in amendment of this lease for the purpose of incorporating herein descriptions of the land based on the said plans.

IMPROVEMENTS:

27. The lessee is responsible for ensuring that all improvements to the land are made within the boundaries of the land.

28. The lessee shall not erect any building or structure nearer than a distance of three (3) metres from any boundary of the land.

29. The lessee shall not construct any facilities within thirty one (31) metres of the ordinary high water mark of any body of water without the written approval of the Minister.

ACCESS:

30. Her Majesty assumes no responsibility, express or implied, to provide access to the land.

31. It shall be lawful for Her Majesty or any person duly authorized at all reasonable times to enter upon the land for the purpose of examining the condition thereof.

INDEMNIFICATION:

32. The Lessee shall at all times hereafter indemnify and keep Her Majesty indemnified against all claims, demands, actions or other legal proceedings by whomsoever made or brought against Her Majesty by reason of anything done or omitted to be done by the lessee, his officers, servants, agents or employees arising out of or connected with the granting of this lease.

33. The lessee will not be entitled to compensation from Her Majesty by reason of the land or any portion thereof being submerged, damaged by erosion, or otherwise affected by flooding.

34. Her Majesty will not be liable for damages caused by vandalism or interference by others with the lessee's facilities and equipment.

REVIEW:

35. At the request of the lessee, any decision of the Minister will be reviewable by the Trial Division of the Federal Court of Canada; costs of such review are the responsibility of the lessee unless otherwise ordered by the Court.

NOTICES:

36. All written notices respecting the land or the covenants, terms, conditions or agreements contained in this lease shall, unless otherwise stipulated herein, be deemed to have been received by the lessee ten (10) days after the mailing thereof or, if hand delivered, on the day of delivery.

37. Any notice affecting this lease which Her Majesty may desire to serve upon the lessee, or any notice which the lessee may desire to serve upon Her Majesty shall, unless otherwise stipulated herein, be sufficiently served if posted by registered mail to the last known address of the opposite party as follows:

To Her Majesty: Director of Operations,
Northwest Territories Region,
Department of Indian Affairs and Northern Development
P. O. Box 1500
Yellowknife, N.T.
X1A 2R3

To the Lessee: **SHELL CANADA LIMITED**
P.O. Box 100 Station Main
Calgary, AB T2P 2H5

Either party may change its address for service during the term of this lease by notifying the other party in writing.

38. No notice of breach or default given herein by Her Majesty shall be valid or of any effect unless it is also given to any mortgagee of the lessee, in respect of the leased lands, of which Her Majesty shall have received written notice.

GENERAL:

39. The Lessee shall abide by and comply with all applicable lawful rules, acts, regulations and by-laws of the Federal Government, Territorial Government, Municipal Government or any other governing body whatsoever that have been or may be enacted or amended from time to time and in any manner affect the said land.

40. This lease enures to the benefit of and is binding upon Her Majesty, Her Heirs and Successors and the lessee, its successors and assigns.

41. No implied covenant or implied liability on the part of Her Majesty is created by the use of the words "demises and leases" herein.

42. The lessee shall at all times permit emergency landings on the airstrip without the payment of fees.

43. Aircraft owned or under contract to the Government of Canada or the Government of the Northwest Territories shall be exempt from the payment of any charges of landing fees for the use of the airstrip.

44. The lessee shall not levy charges or landing fees for the use of the airstrip by other users without the written consent of the Minister.

DUPLICATE

IN WITNESS WHEREOF the Director of Operations, Northwest Territories Region, Department of Indian Affairs and Northern Development, has hereunto set his hand and seal on behalf of Her Majesty the Queen in right of Canada; and **SHELL CANADA LIMITED** has hereunto affixed its corporate seal attested to by its duly authorized officers.

SIGNED, SEALED AND DELIVERED)
on behalf of Her Majesty by the)
Director of Operations, Northwest)
Territories Region, Department of)
Indian Affairs and Northern)
Development in the presence of)
)
)
)
)
)

Director's Witness

(SEAL)
Director's Signature

SIGNED SEALED AND DELIVERED)
on behalf of **SHELL CANADA LIMITED**)
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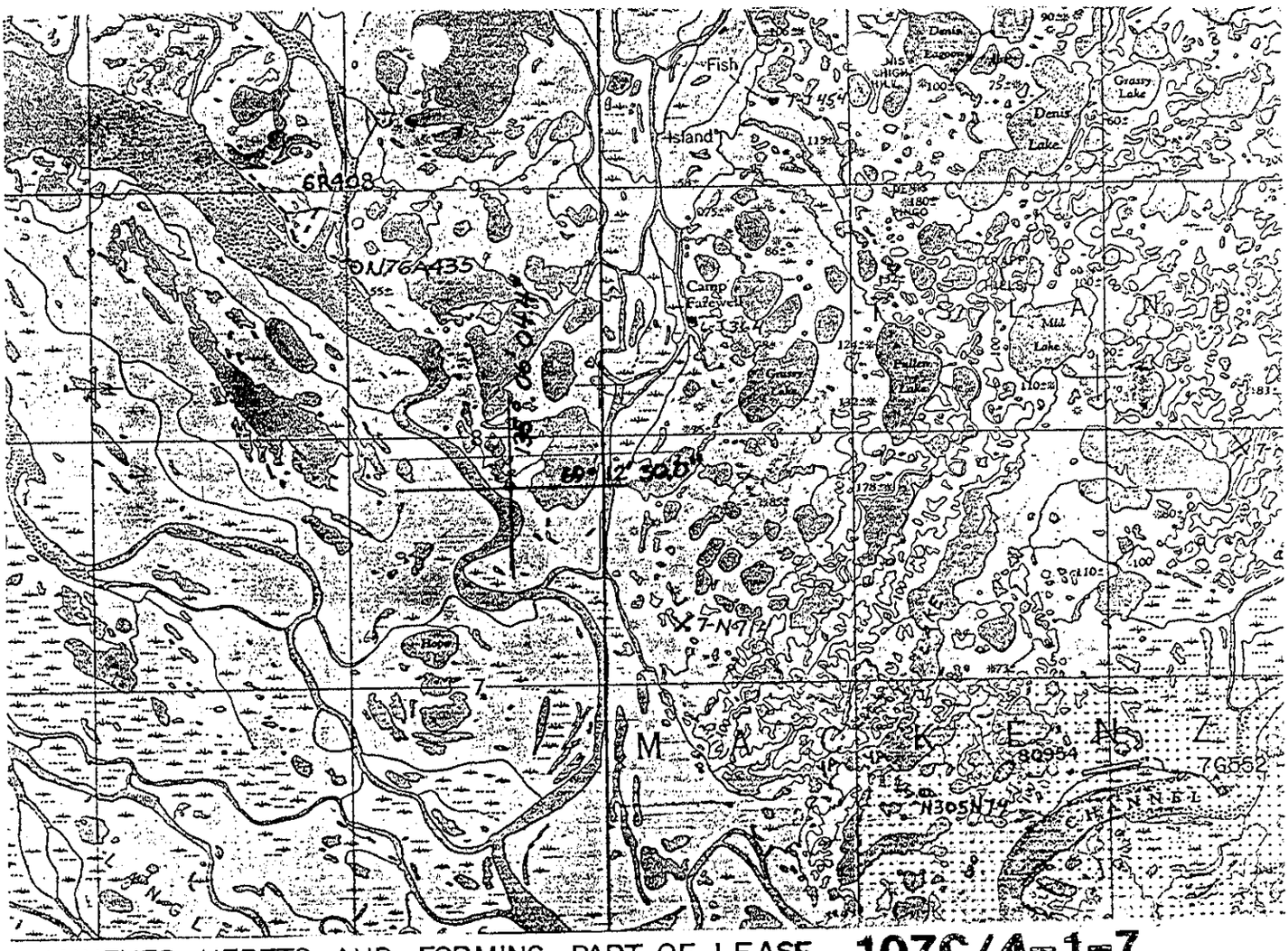
(C/S)
Signature Richard W. Riegert
Assistant Secretary

Name and title of Director or Officer

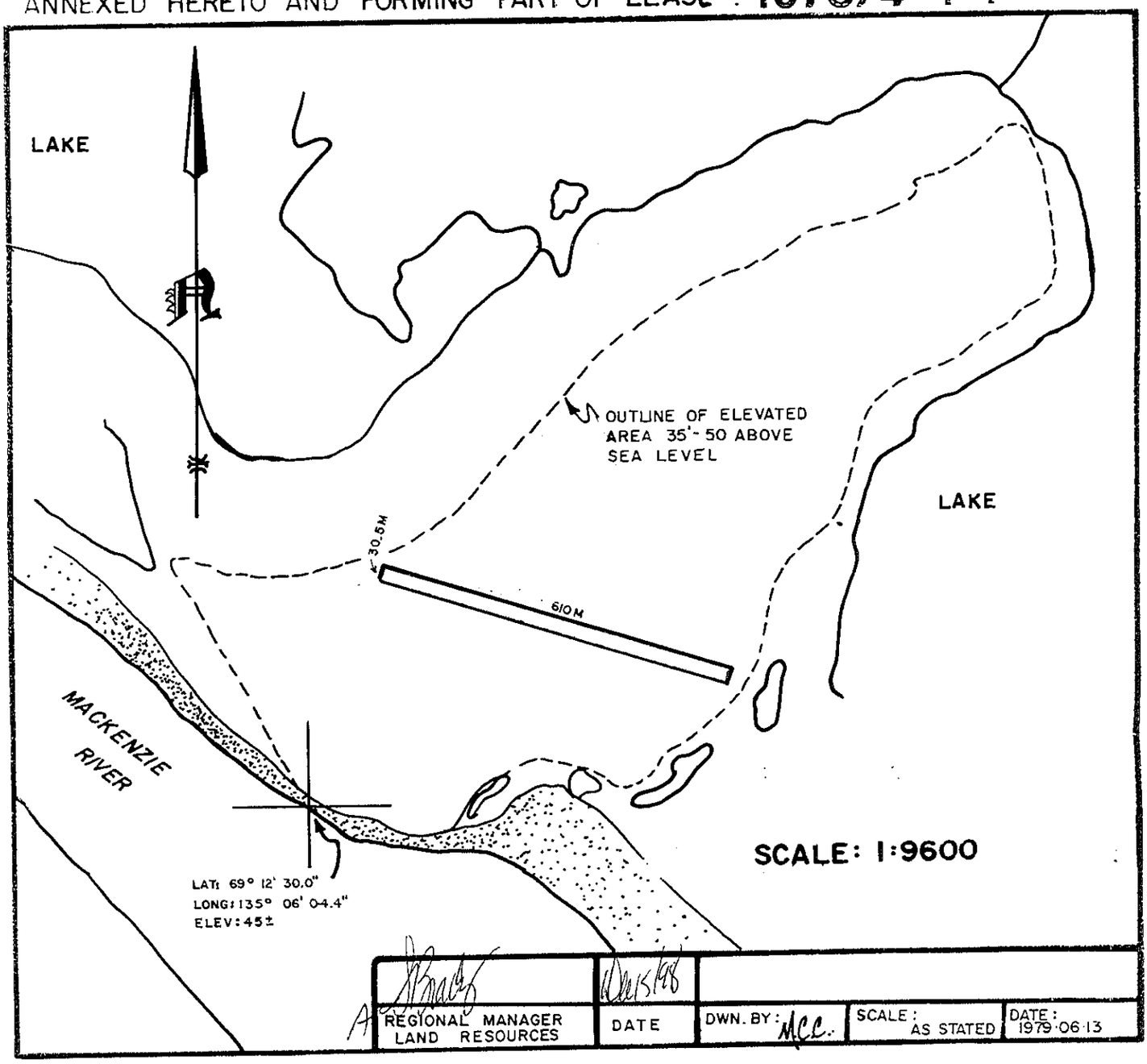
(C/S)
Signature

Name and title of Director or Officer

APPROVALS
LAND
J.V.
LEGAL



ANNEXED HERETO AND FORMING PART OF LEASE . **107C/4-1-7**



REGIONAL MANAGER LAND RESOURCES	DATE	DWN. BY: MCC.	SCALE: AS STATED	DATE: 1979-06-13

N.W.T. Lease No.: **107 C/4-2-15**

File No.: **107 C/4-2**

THIS LEASE made this 7 day of April 2009.

BETWEEN: Her Majesty the Queen in right of Canada,

Hereinafter called "Her Majesty"

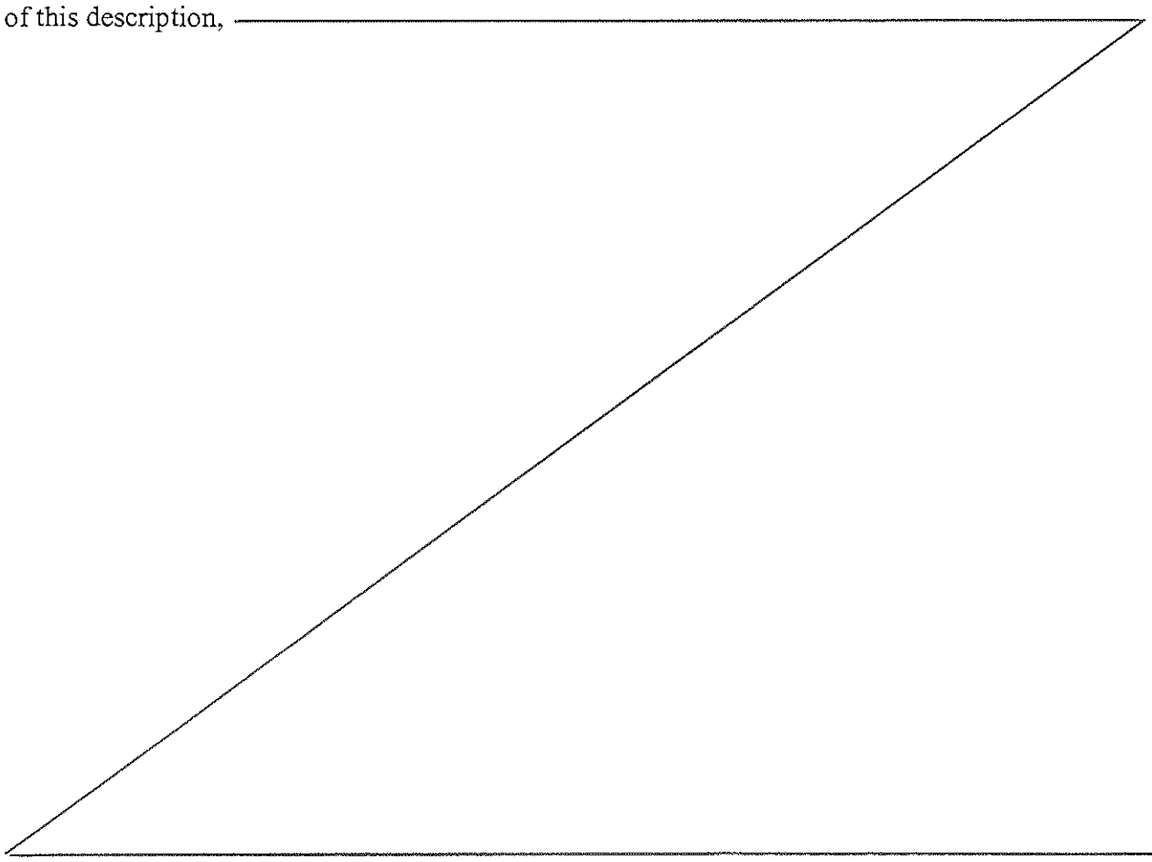
OF THE FIRST PART

AND: **SHELL CANADA LIMITED** a body corporate, incorporated under the Laws of Canada, having a registered office in the City of Calgary in the Province of Alberta,

Hereinafter called "the lessee"

OF THE SECOND PART

WITNESSETH that in consideration of the rents, covenants and agreements herein reserved and contained on the part of the lessee to be paid, observed and performed, and subject to the Territorial Lands Act and the Territorial Lands Regulations, Her Majesty demises and leases unto the lessee all that certain parcel or tract of land situate, lying and being composed of all those parcels of land at Farewell designated as Parcels A, B and C, in QUAD 107 C/4, in the Northwest Territories, as said parcels are shown outlined in red on the sketch annexed hereto and forming part of this description,



hereinafter called "the land", SUBJECT to the following reservations:

Initial(s) RC

Canada

SHELL'S COPY

(a) all mines and of all minerals whether solid, liquid or gaseous which may be found to exist within, upon, or under such lands together with the full powers to work the same and for that purpose to enter upon, use and occupy the lands or so much thereof and to such an extent as may be necessary for the effectual working and extracting of the said minerals;

(b) the rights of the recorded holders of mineral claims and any other claims or permits affecting the land;

(c) all timber that may be on the land;

(d) the right to enter upon, work and remove any rock outcrop required for public purposes;

(e) such right or rights-of-way and of entry as may be required under regulations in force in connection with the construction, maintenance and use of works for the conveyance of water for use in mining operations; and

(f) the right to enter upon the land for the purpose of installing and maintaining any public utility;

THE PARTIES COVENANT AND AGREE AS FOLLOWS:

DEFINITIONS:

1. In this lease:

(a) "Minister" means the Minister of Indian Affairs and Northern Development and any person authorized by him in writing to act on his behalf;

(b) "facilities" means all physical structures or appurtenances placed in or upon the land;

(c) "construction" means all manner of disturbance of the natural state of the surface of the land, including the sub-surface and sub-strata;

(d) "Surveyor General" means the Surveyor General as defined in the Canada Lands Surveys Act;

(e) "body of water" means any lake, river, stream, swamp, marsh, channel, gully, coulee or draw that continuously or intermittently contains water;

TERM:

2. The term of this lease shall be for a period of **twenty (20)** years commencing on the **1st day of January A.D. 2009 AD.** and terminating on the **31st day of December A.D. 2028 AD.**

RENT AND TAXES:

3. Subject to Clause 4 the lessee shall pay to the lessor yearly and every year in advance the rental of **six hundred and twenty ($620.00)** dollars.

Initial(s)_____

4. The Minister may, not less than three (3) months before the expiration of the first five (5) year period of the said term, or of any succeeding five (5) year period during the term, notify the lessee in writing of an amended rental payable for the following five (5) year period and, failing further notification, for the remainder of the term, the said amended rental to be based upon the fair appraised value of the land at the time of such notification but without taking into account the value of any improvements placed thereon by and at the expense of the lessee.

5. The lessee shall during the term of this lease, pay all taxes, rates and assessments charged upon the land or upon the lessee in respect thereof.

USE:

6. The lessee shall use the land for **STAGING AREA, FUEL STORAGE, EQUIPMENT AND MATERIAL STORAGE AND BASE CAMP** purposes only.

SUBLETTING OR ASSIGNMENTS:

7. The lessee shall not sublet the land or assign or transfer this lease without the consent of the Minister in writing , which consent shall not be unreasonably withheld. Such consent shall not be required in the event of the lessee mortgaging or pledging the rights and privileges granted herein to secure the payment of any bonds or other indebtedness of the lessee, or to any assignment made to or by any securing holder as a result of default by the lessee under any mortgage or pledge; however, copies of such instruments must be forwarded to the Minister.

8. No Sublease, assignment or transfer of this lease to any party will receive the consent of the Minister unless Lease number 107 C/4-1-8 is sublet, assigned or transferred to the same party.

BREACH:

9. Where any portion of the rental herein reserved is unpaid for more than thirty (30) days after it becomes due, whether formally demanded or not, the Minister may by notice in writing terminate this lease and on the day following the mailing of such notice, this lease is cancelled.

10. Where the lessee breaches or fails to perform or observe any of the covenants, terms, conditions or agreements herein contained, other than the covenant to pay rent, the Minister may so advise the lessee by written notice and if the lessee fails to remedy the breach or non-performance within a reasonable time thereafter or within the time granted in the said notice, the Minister may, by notice in writing, terminate this lease and on the day following the mailing of such notice, this lease is cancelled.

11. Unless a waiver is given in writing by the Minister, Her Majesty will not be deemed to have waived any breach or non-performance by the lessee of any of the covenants, terms, conditions or agreements herein contained and a waiver affects only the specific breach to which it refers.

TERMINATION:

12. Upon the termination or expiration of this lease, the lessee shall deliver up possession of the land in a restored condition and, where there are no arrears of rent or taxes, the lessee may, within three (3) months after the termination or expiration, remove any buildings or other structures owned by him that may be on the land.

13. Termination or expiration of this lease will not prejudice Her Majesty's right to unpaid rental or any other right with respect to a breach or non-performance of any covenant, term, condition or agreement herein contained nor will the lessee be relieved of any obligation contained herein.

RESTORATION:

14. Where the lessee fails to restore the land as required and within the time allowed by the Regulations or by the Minister, the Minister may order the restoration of all or any part of such land and any expenses thus incurred by the Minister shall be recoverable from the lessee as a debt due to Her Majesty.

WASTE DISPOSAL:

15. The lessee shall dispose of all combustible garbage and debris by burning in an incinerator approved by the Land Agent and remove all noncombustible garbage and debris to an authorized dumping site.

16. The lessee shall dispose of human waste in a manner satisfactory to the Minister.

17. The lessee shall not discharge or deposit any refuse substances or other waste materials in any body of water, or the banks thereof, which will, in the opinion of the Minister, impair the quality of the waters or the natural environment and any areas designated for waste disposal shall not be located within thirty-one (31) metres of the ordinary high water mark of any body of water, unless otherwise authorized by the Minister.

ENVIRONMENTAL:

18. The lessee shall at all times keep the land in a condition satisfactory to the Minister.

19. The lessee shall not do anything which will cause erosion of the banks of any body of water on or adjacent to the land, and shall provide necessary controls to prevent such erosion.

20. The lessee shall not unduly interfere with the natural drainage pattern of the land, except with the permission of the Minister.

FUEL AND HAZARDOUS CHEMICALS:

21. The lessee shall take all reasonable precautions to prevent the possibility of migration of spilled petroleum fuel over the ground surface or through seepage in the ground by:

    (i) constructing a dyke around any stationary petroleum fuel container where the container has a capacity exceeding four thousand (4,000) litres; and

    (ii) ensuring that the dyke(s) and the area enclosed by the dyke(s) is impermeable to petroleum products at all times; and

    (iii) ensuring that the volumetric capacity of the dyked area shall, at all times, be equal to the capacity of the largest petroleum fuel container plus ten (10) percent of the total displacement of all other petroleum fuel containers placed therein; or

    Such other alternative specifications submitted by the lessee that may be approved, in writing, by the Minister.

22. The lessee shall ensure that fuel storage containers are not located within thirty-one (31) metres of the ordinary high water mark of any body of water unless otherwise authorized by the Minister.

23. The lessee shall mark with flags, posts or similar devices all petroleum fuel storage facilities, including fill and distribution lines, such that they are clearly visible at all times.

24. The lessee shall immediately report all spills of petroleum and hazardous chemicals in accordance with the Government of the Northwest Territories Spill Contingency Planning and Reporting Regulations and any amendments thereto, or in a manner satisfactory to the Minister.

25. The lessee shall prevent the possibility of migration of spilled fuel over the ground surface or through seepage in the ground.

26. The lessee shall take all reasonable precautions to prevent the migration of petroleum products into bodies of water.

27. The lessee shall, within six (6) months of the execution of this lease deliver to the Minister, for his approval, an Oil Spill Contingency Plan and shall maintain the provisions of the said Plan, and any modifications approved by the Minister, throughout the term of this lease.

28. The lessee shall handle, store, dispose and keep records of all hazardous and toxic chemicals in a manner satisfactory to the Minister.

29. The fuel storage facilities of the lessee, including all tanks, bladders, hoses, pumps, fuel transfer lines and associated mechanical connections and valves shall be installed and maintained to the satisfaction of the Minister and the lessee agrees to make such reasonable modifications and improvements as are deemed necessary by the Minister.

BOUNDARIES AND SURVEYS:

30. Her Majesty is not responsible for the establishment on the ground of the boundaries of the land.

31. The boundaries of the land are subject to such adjustment and alteration as may be shown to be necessary by survey.

32. The Minister may, during the term herein granted, by notice in writing, order the lessee to survey the boundaries of the land and the lessee shall, at its own expense, within one (1) year from the date of said notice, make or cause to be made a survey of the land, such survey to be made in accordance with the instructions of the Surveyor General, and upon completion of the survey and the production of survey plans suitable for recording in the Canada Lands Surveys Records and filing in the Land Titles Office for the Northwest Territories Land Registration District, Her Majesty will execute an Indenture in amendment of this lease for the purpose of incorporating herein descriptions of the land based on the said plans.

IMPROVEMENTS:

33. The lessee is responsible for ensuring that all improvements to the land are made within the boundaries of the land.

34. The lessee shall not erect any building or structure nearer than a distance of three (3) metres from any boundary of the land.

35. The lessee shall not construct any facilities within thirty-one (31) metres of the ordinary high water mark of any body of water without the written approval of the Minister.

Initial(s)_____

36. The lessee shall maintain the existing improvements now situated on the land on the effective date of this lease, or any similar improvements which may be constructed, in a manner and condition satisfactory to the Minister.

ACCESS:

37. Her Majesty assumes no responsibility, express or implied, to provide access to the land.

38. It shall be lawful for Her Majesty or any person duly authorized at all reasonable times to enter upon the land for the purpose of examining the condition thereof.

39. The Minister may grant to such persons as he may consider fit, rights-of-way or access across, through, under or over all or any portion of the land for any purpose whatsoever, but such rights-of-way or access will not unreasonably interfere with the rights granted to the lessee hereunder, or with any improvements made by the lessee on the land.

INDEMNIFICATION:

40. The Lessee shall at all times hereafter indemnify and keep Her Majesty indemnified against all claims, demands, actions or other legal proceedings by whomsoever made or brought against Her Majesty by reason of anything done or omitted to be done by the lessee, his officers, servants, agents or employees arising out of or connected with the granting of this lease.

41. The lessee will not be entitled to compensation from Her Majesty by reason of the land or any portion thereof being submerged, damaged by erosion, or otherwise affected by flooding.

42. Her Majesty will not be liable for damages caused by vandalism or interference by others with the lessee's facilities and equipment.

REVIEW:

43. At the request of the lessee, any decision of the Minister will be reviewable by the Trial Division of the Federal Court of Canada; costs of such review are the responsibility of the lessee unless otherwise ordered by the Court.

NOTICES:

44. All written notices respecting the land or the covenants, terms, conditions or agreements contained in this lease shall, unless otherwise stipulated herein, be deemed to have been received by the lessee ten (10) days after the mailing thereof or, if hand delivered, on the day of delivery.

45. Any notice affecting this lease which Her Majesty may desire to serve upon the lessee, or any notice which the lessee may desire to serve upon Her Majesty shall, unless otherwise stipulated herein, be sufficiently served if posted by registered mail to the last known address of the opposite party as follows:

To Her Majesty: Director of Operations,
Northwest Territories Region,
Department of Indian Affairs and Northern Development
P. O. Box 1500
Yellowknife, N.T.
X1A 2R3

To the Lessee: **SHELL CANADA LIMITED**
P.O. Box 100 Station Main
Calgary, AB T2P 2H5

Either party may change its address for service during the term of this lease by notifying the other party in writing.

46. No notice of breach or default given herein by Her Majesty shall be valid or of any effect unless it is also given to any mortgagee of the lessee, in respect of the leased lands, of which Her Majesty shall have received written notice.

GENERAL:

47. The Lessee shall abide by and comply with all applicable lawful rules, acts, regulations and by-laws of the Federal Government, Territorial Government, Municipal Government or any other governing body whatsoever that have been or may be enacted or amended from time to time and in any manner affect the said land.

48. This lease enures to the benefit of and is binding upon Her Majesty, Her Heirs and Successors and the lessee, its successors and assigns.

49. No implied covenant or implied liability on the part of Her Majesty is created by the use of the words "demises and leases" herein.

50. If an archaeological site is discovered within the land, the lessee shall immediately advise the Minister in writing of such a discovery and shall take all reasonable precautions necessary to prevent any further disturbance or destruction of such site.

DUPLICATE

IN WITNESS WHEREOF the Director of Operations, Northwest Territories Region, Department of Indian Affairs and Northern Development, has hereunto set his hand and seal on behalf of Her Majesty the Queen in right of Canada; and **SHELL CANADA LIMITED** has hereunto affixed its corporate seal attested to by its duly authorized officers.

SIGNED, SEALED AND DELIVERED)
on behalf of Her Majesty by the)
Director of Operations, Northwest)
Territories Region, Department of)
Indian Affairs and Northern)
Development in the presence of)

Director's Witness)

(SEAL)
Director's Signature

SIGNED SEALED AND DELIVERED)
on behalf of **SHELL CANADA LIMITED**)

(C/S)
Signature
Richard W. Riegert
Assistant Secretary

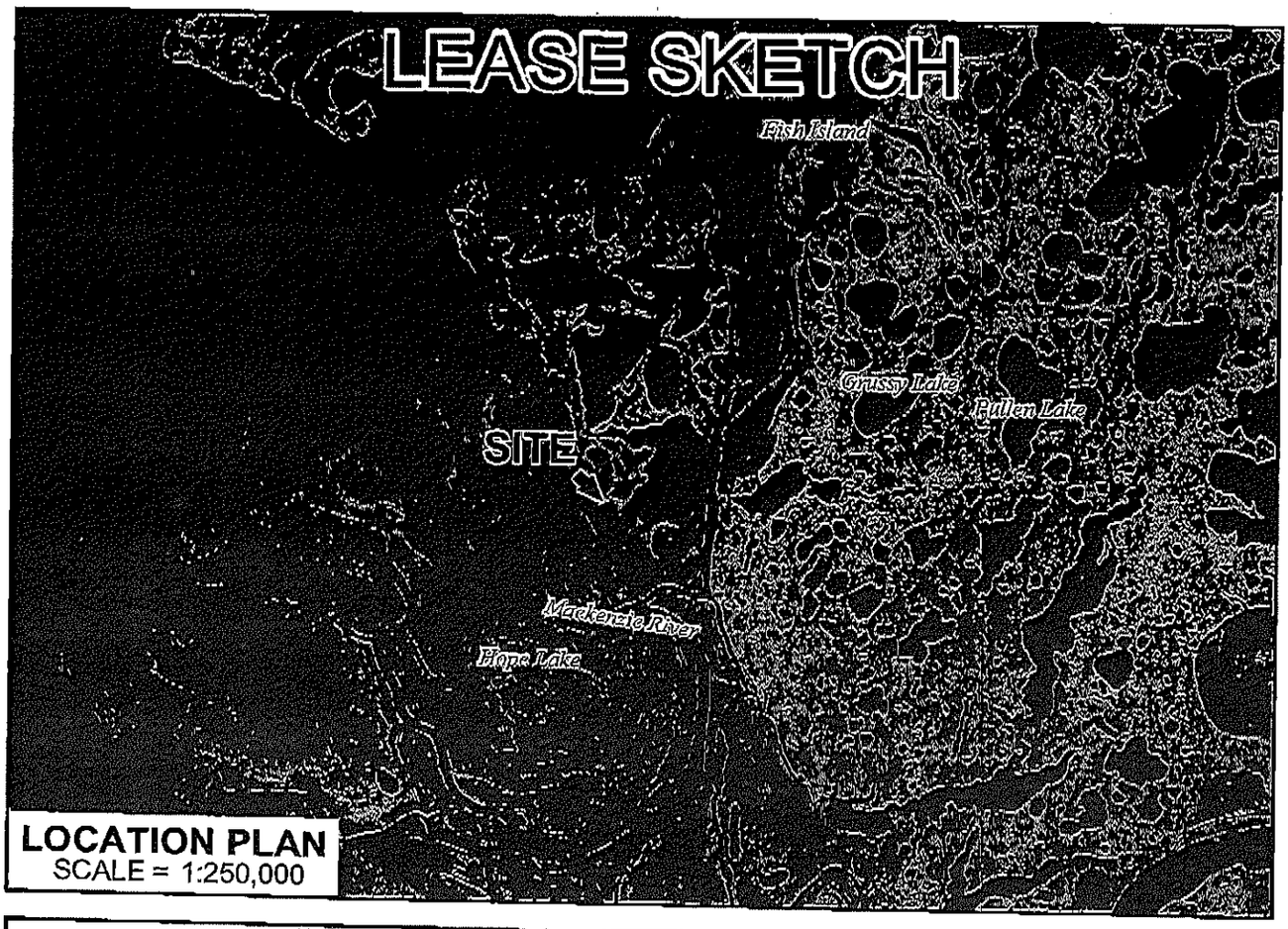
Name and title of Director or Officer

(C/S)
Signature

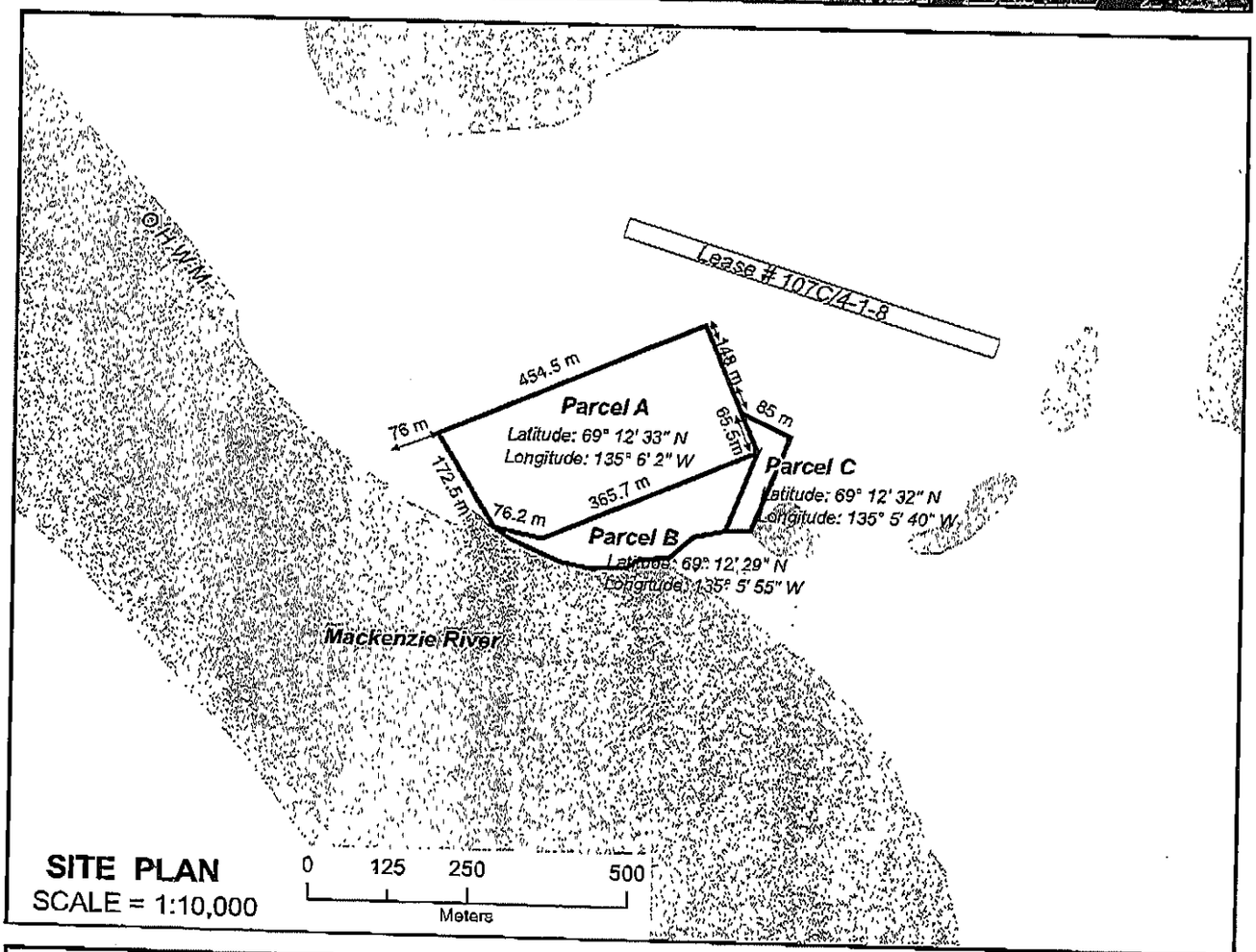
Name and title of Director or Officer

APPROVALS
LAND RGM
J.V.
LEGAL JO
FORWARD FOR EXECUTION
RGM

LEASE SKETCH



LOCATION PLAN
SCALE = 1:250,000



SITE PLAN
SCALE = 1:10,000

ANNEXED HERETO AND FORMING PART OF N.W.T. LEASE No. 107C/4-2-15

LATITUDE: LONGITUDE: PROJECTION : UTM, zone 8 DATUM: NAD 83 SKETCH AREA = 12.4 ha± Area obtained by Arcview calculation using XTools	DRAWN BY: E.M., IMAG DATE: February 6, 2008 REVISED: DATE:	MANAGER LAND ADMINISTRATION DATE Dec. 4, 2008	N
Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada		LAND ADMINISTRATION	Canada

Appendix C: Water Management Plan – Camp Farewell

WATER MANAGEMENT PLAN
FOR CAMP FAREWELL

Prepared for:

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

TABLE OF CONTENTS

LIST OF FIGURES

1.0 PURPOSE

The purpose of this document is to discuss Shell Canada Energy's (Shell's) water conservation initiatives and to provide a detailed description of water use, treatment, and disposal at Camp Farewell.

2.0 WATER CONSERVATION

Shell's commitment to sound environmental management planning includes water conservation. Shell has currently implemented some basic water conservation initiatives including the installation of low-flow showerheads and the controlled distribution of laundry soap.

Shell commits to conducting a Water Use Audit the next time the camp is in operation. The audit will identify areas where water consumption can be reduced, where leaks and drips require repair, and opportunities to replace old, less efficient fixtures with new water-saving devices. The results of the audit including an action plan for when measures will be implemented will be made available to the Northwest Territories (NWT) Water Board, if required.

3.0 WATER USE

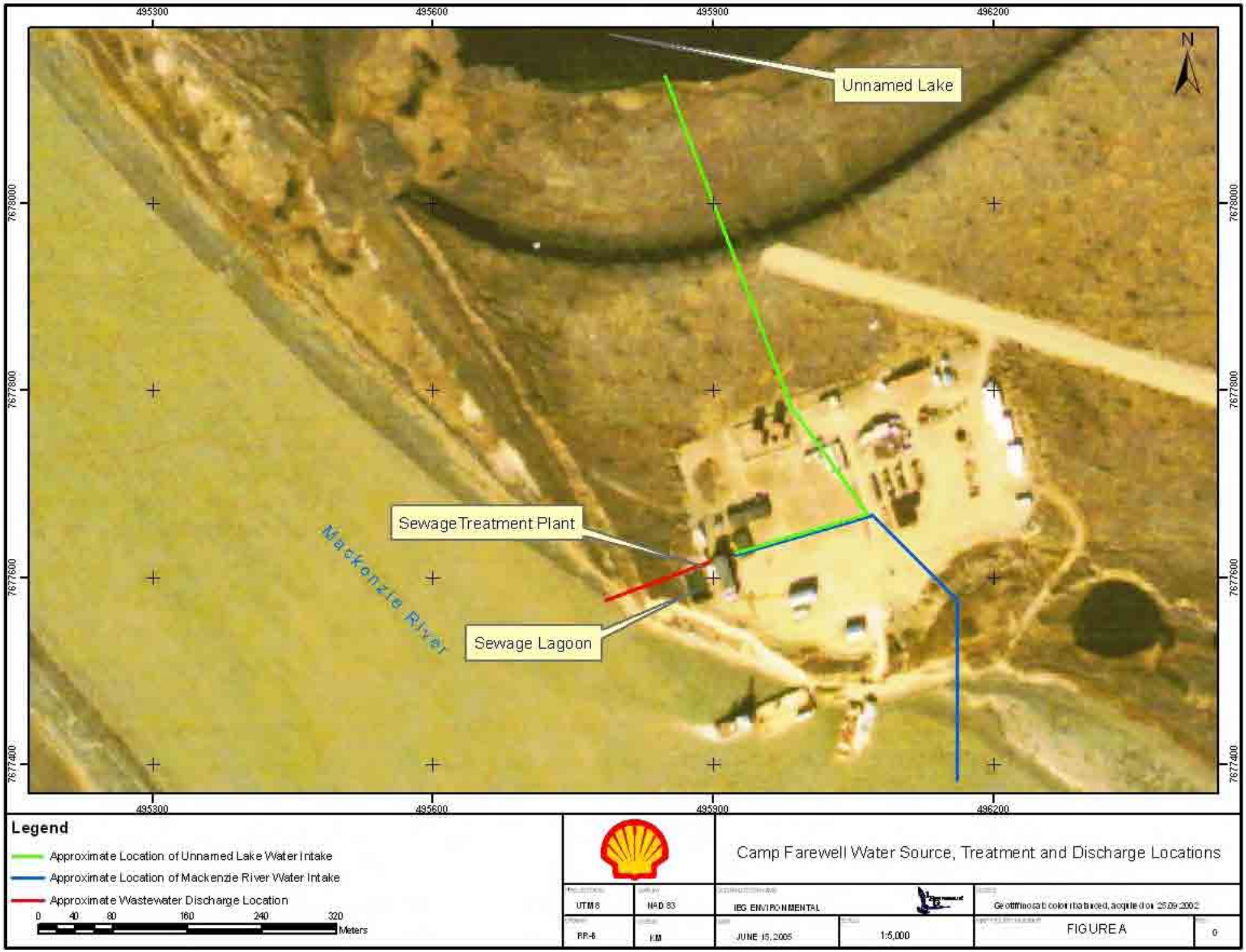
3.1 Water Source

Two fresh water sources are used at Camp Farewell. These are:

- the Middle Channel of the Mackenzie River, used during winter camp operation
- the Unnamed Lake to the north of the camp facilities, used during summer camp operation.

Figure A identifies the water source, treatment (no longer is use), and discharge locations.

Figure A: Camp Farewell Water Source, Treatment (no longer in use), and Discharge Locations


495300
495600
495900
496200
7678000
7677800
7677600
7677400
N
Unnamed Lake
Sewage Treatment Plant
Mackenzie River
Sewage Lagoon
Legend
Approximate Location of Unnamed Lake Water Intake
Approximate Location of Mackenzie River Water Intake
Approximate Wastewater Discharge Location
0 40 80 160 240 320
Meters
Camp Farewell Water Source, Treatment and Discharge Locations
UTM 8
NAD 83
IBG ENVIRONMENTAL
GeoEye multispectral color balanced, acquired on 25.09.2002
RP-8
HM
JUNE 15, 2005
1:5,000
FIGURE A
0

3.2 Water Use

The water withdrawn is used for domestic purposes within the camp excluding drinking water, which will be trucked or barged onto site. From time to time, water may be required for ice road or ice pad construction; however, if an ice road is needed, water requirements will be reviewed at that time. All watercourse crossings will be constructed using clean ice and/or clean snow, and will be v-notched prior to spring break-up

.

4.0 WATER VOLUMES AND WITHDRAWAL METHODS

During full operation, the estimated quantity of water required on a daily basis at Camp Farewell is 150 m^3..

Water intakes are screened with 2.54 mm fine mesh to prevent entrainment of fish, in accordance with the Department of Fisheries and Oceans (DFO) *Freshwater Intake End-of-Pipe Fish Screen Guideline* (DFO 1995).

For winter water use, water is withdrawn from the Middle Channel and transported by tank truck to the 27,250 L water storage tank located within the camp. For summer water use, a temporary line from the Unnamed Lake north of the camp facilities to the water storage tank is used. Water is withdrawn through the intake screen and pumped to a settling tank where sediment and solids settle out prior to water being used.

5.0 WASTEWATER DISPOSAL

5.1 Wastewater Disposal

Camp Farewell no longer uses the sewage treatment system that is in place. When the camp is operating at full capacity, it is anticipated that the camp would generate approximately 15 m^3 of wastewater per day. During operation, all wastewater (grey water) and sewage (black water) are combined and stored in two 400-barrel storage tanks (approximately 82,000 L each), which are located between the camp building and former sewage lagoon. The water is transferred to sewage trucks for transportation via either an ice road or barge to Inuvik's wastewater lagoon as required, pending approval from the Town of Inuvik. Additional tanks would be mobilized to the site as required. The storage tanks are left empty when the camp is inactive.

It is Shell's understanding that any future changes to the wastewater management system would require either an amendment or new license application through the NWT Water Board.

5.2 Lagoon Water Disposal

The sewage lagoon is no longer used for wastewater disposal. The lagoon fills with runoff approximately every two years. To prevent the lagoon from overflowing, the procedure currently used is to decant the melt water in the lagoon to the Middle Channel of the Mackenzie River. Prior to discharge, the ponded water in the lagoon is tested to ensure it meets the effluent quality requirements as stipulated in the former water licence No. N7L1-1762 (to be updated). The former effluent quality guidelines are summarized in Table 5-1. In addition, the release of effluent to the Mackenzie River will comply with *The Guidelines for the Discharge of Treated Municipal Waste in the Northwest Territories* (NWT Water Board 1992). If discharge criteria can't be met, amendments will be added to bring the water within criteria. In extreme circumstances, the water may be hauled from site for disposal in Inuvik, pending approval. Inspector approval is required prior to discharge.

Table 5-1: Effluent Quality Requirements for Treated Wastewater Prior to Discharge

SAMPLE PARAMETER	MAXIMUM AVERAGE CONCENTRATION
Biological Oxygen Demand (BOD_5)	70.0 mg/L
Total Suspended Solids (TSS)	70.0 mg/L
Faecal Coliforms	10E4 CFU/dL
Oil and Grease	5.0 mg/L
Total Residual Chlorine (TRC)	0.1 mg/L
pH	Between 6 and 9

5.3 Monitoring

Camp Farewell is monitored on a regular basis (approximately every 50 days) as required under the annual CWS permit issued for the site. The site visits check the condition of fuel storage tanks, site infrastructure, surrounding vegetation, water levels in the lagoon, signs of erosion on the riverbank adjacent to the lagoon, and any wildlife present.

Beginning in 2011, soil and groundwater monitoring of the entire site will be conducted in accordance with the Abandonment and Restoration Plan (WorleyParsons 2011). Samples will be analyzed for the following parameters:

- Petroleum hydrocarbon (PHC) fractions (F1 to F4 for soils, F1 and F2 for groundwater);
- Select heavy metals (total in soil, dissolved in groundwater); and
- Major ions (salinity parameters in soil, major ions in groundwater).

6.0 CONTINGENCY PLANS

The sewage lagoon is monitored on a regular basis to ensure dyke integrity. Repair requirements, if encountered, are included in the site maintenance schedule.

Future decommissioning and remediation of the lagoon is discussed in the Abandonment and Restoration Plan (WorleyParsons 2011).

NORTHWEST TERRITORIES WATER BOARD
NUNAPPA SIVUNIUKPAIT IMMAKUN

WATER REGISTER: N7L1-1762

November 1, 2005

Mr. Randall Warren
Shell Canada Ltd.
400 - 4 Avenue S.W.
P.O. Box 100, Station M
CALBARY, AB T2P 0J4

Dear Mr. Warren:

ISSUANCE OF A "B" TYPE LICENCE - CAMP FAREWELL

Attached is a duplicate of Licence No. N7L1-1762 granted to Shell Canada Ltd. by the Northwest Territories Water Board in accordance with the *Northwest Territories Waters Act*. The other original of this Licence has been filed with the Department of Indian Affairs and Northern Development in Yellowknife, Northwest Territories. Also attached are general procedures for the administration of licences in the Northwest Territories. I request that you review these and address any questions to the Board's office.

In conclusion, please be advised that this letter with attached procedures, all inspection reports, and correspondence related thereto are part of the public Water Register, and are intended to keep all interested parties informed of the manner in which the Licence requirements are being met. All Water Register material will be considered when the Licence comes up for renewal or amendment.

The full cooperation of Shell Canada Ltd. is anticipated.

Sincerely,

Gordon Wray
Chairman
N.W.T. Water Board

Attach.

P.O. Box 1326, Yellowknife, NT X1A 2N9, 2nd Floor Goga Cho Building
Phone: (867) 765-0106 Fax: (867) 765-0114

GENERAL PROCEDURES FOR THE ADMINISTRATION OF LICENCES ISSUED UNDER THE NORTHWEST TERRITORIES WATERS ACT IN THE NORTHWEST TERRITORIES

1. At the time of issuance, a copy of the Licence is placed on the Water Register in the Office of the Northwest Territories Water Board in Yellowknife, and is then available to the public.

2. To enforce the terms and conditions of the Licence, the Minister of Indian Affairs and Northern Development has appointed Inspectors in accordance with Section 35(1) of the *Northwest Territories Waters Act*. The Inspectors coordinate their activities with officials of the Water Resources Division of the Department of Indian Affairs and Northern Development. The Inspector responsible for Licence No. N7L1-1762 is located in the North Mackenzie -Inuvik District Office.

3. To keep the Water Board and members of the public informed of the Licensee's conformity to Licence conditions, the Inspectors prepare reports which detail observations on how each item in the Licence has been met. These reports are forwarded to the Licensee with a covering letter indicating what action, if any, should be taken. The inspection reports and covering letters are placed on the public Water Register, as are any responses received from the Licensee pertaining to the inspection reports. It is therefore of prime importance that you react in all areas of concern regarding all inspection reports so that these concerns may be clarified.

4. If the renewal of Licence No. N7L1-1762 is contemplated it is the responsibility of the Licensee to apply to the Water Board for renewal of the Licence. The past performance of the Licensee, new documentation and information, and points raised during a public hearing, if required, will be used to determine the terms and conditions of any Licence renewal. Please note that if the Licence expires and another has not been issued, then water and waste disposal must cease, or you, the Licensee, would be in contravention of the *Northwest Territories Waters Act*. It is suggested that an application for renewal of Licence No. N7L1-1762 be made at least eight months in advance of the Licence expiry date.

5. If, for some reason, Licence No. N7L1-1762 requires amendment, then a public hearing may be required. You are reminded that applications for amendments should be submitted as soon as possible to provide the Water Board with ample time to go through the amendment process. The process may take up to six (6) months or more depending on the scope of the amendment requested.

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6. Specific clauses of your Licence make reference to the Board, Analyst or Inspector. The contact person, address, phone and fax number of each is:

BOARD: Executive Assistant
Northwest Territories Water Board
P.O Box 1326
YELLOWKNIFE, NT X1A 2N9
Phone No: (867) 765-0106
Fax No: (867) 765-0114

ANALYST: Analyst
Water Laboratory
Department of Indian Affairs
and Northern Development
P.O. Box 1500, 4601 - 52nd Avenue
YELLOWKNIFE, NT X1A 2R3
Phone No: (867) 669-2780
Fax No: (867) 669-2718

INSPECTOR: Inspector
North Mackenzie-Inuvik District Office
Department of Indian Affairs
and Northern Development
P.O. Box 2100
INUVIK, NT X0E 0T0
Phone No: (867) 777-3361
Fax No: (867) 777-2090

7. Your Licence requires a security deposit be submitted. Should the security deposit be submitted in the form of a "letter of credit", recommended wording is outlined below. It is advised that a "draft" letter of credit be forwarded to Water Resources Division for review. The contact person, address, phone and fax number of the individual administering security deposits is:

Office Administrator
Water Resources Division
Indian and Northern Affairs Canada
P.O. Box 1500
YELLOWKNIFE, NT X1A 2R3
Phone No: (867) 669-2651
Fax No: (867) 669-2716

...3

NORTHWEST TERRITORIES WATER BOARD

Pursuant to the *Northwest Territories Waters Act* and Regulations the Northwest Territories Water Board, hereinafter referred to as the Board, hereby grants to

SHELL CANADA LIMITED
(Licensee)

of 400 - 4 Avenue S.W.
P.O. Box 100, Station M
CALGARY, ALBERTA T2P 0J4
(Mailing Address)

hereinafter called the Licensee, the right to alter, divert or otherwise use water subject to the restrictions and conditions contained in the *Northwest Territories Waters Act* and Regulations made thereunder and subject to and in accordance with the conditions specified in this Licence.

Licence Number	N7L1-1762 RENEWAL
Licence Type	"B"
Water Management Area	NORTHWEST TERRITORIES 07
Location	"Camp Farewell" Latitude 69°12'30" North Longitude 135°06'04" West MACKENZIE RIVER DELTA, N.W.T.
Purpose	TO USE WATER AND DISPOSE OF WASTE FOR MUNICPAL UNDERTAKINGS AND ASSOCIATED USES
Description	OIL AND GAS EXPLORATION
Quantity of Water Not to be Exceeded	150 CUBIC METRES DAILY
Effective Date of Licence	NOVEMBER 1, 2005
Expiry Date of Licence	OCTOBER 31, 2010

This Licence issued and recorded at Yellowknife includes and is subject to the annexed conditions.

NORTHWEST TERRITORIES WATER BOARD

Witness

Chairman

PART A: SCOPE AND DEFINITIONS

1. Scope

a) This Licence entitles Shell Canada Limited to use Water and dispose of Waste for municipal undertakings 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 conform with 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.

2. Definitions

In this Licence: **N7L1-1762**

"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 For Faecal Coliform" means the geometric mean of any four 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 crest on a dam or dyke's upstream slope;

"Geotechnical Engineer" means a professional engineer registered with the Association of Professional Engineers, Geologists, and Geophysicists of the Northwest Territories and whose experience 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 Wastes;

"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;

"Maximum Average Concentration" means the running average of any four (4) consecutive analytical results, or if less than four analytical results collected, and submitted to the Inspector in accordance with the sampling and analysis requirements specified in the "Surveillance Network Program";

"Minister" means the Minister of Indian Affairs and Northern Development;

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

"Permeability" means the capacity to transmit water through a medium;

"Sewage" means all toilet Waste and greywater;

"Toilet Wastes" mean all human excreta and associated products, but does not include greywater;

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

"Sewage Treatment Facilities" comprises the area and engineered structures designed to contain sewage as identified in the Project Description and also includes 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;* 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 total quantity in cubic metres of fresh Water obtained from all sources;

   b) the total quantities in cubic metres of each and all Waste discharged;

   c) the location and direction of flow of all Waste discharged to the Water;

   d) the results of sampling carried out under the Surveillance Network Program;

   e) a summary of any modifications carried out on the Water supply and Sewage Treatment Facilities, including all associated structures;

   f) a list of spills and unauthorized discharges;

   g) details on the restoration of any sumps;

   h) any revisions to the approved Contingency Plan; and,

   i) 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 the 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.

5. Meters, devices or other such methods used for measuring the volumes of Water used and Waste discharged shall be installed, operated and maintained by the Licensee to the satisfaction of an Inspector.

6. 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.

7. 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.

8. Within thirty (30) days of issuance of this Licence, pursuant to Section 17(1) of the *Act* and Section 12 of the Regulations, the Licensee shall have posted and shall maintain a security deposit of Two Million ($2,000,000.00) Dollars in a form suitable to the Minister.

9. 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. For lakes used as a Water source, a representative dissolved oxygen/temperature profile must be obtained prior to the initial Water withdrawal and prior to demobilization of the project for the year.

3. The Licensee is not permitted to remove more than five (5%) percent of the available under ice Water volume per lake as calculated using a maximum expected ice thickness of two (2) meters during a single winter season.

4. The daily quantity of Water used for all purposes shall not exceed 150 cubic metres.

5. The Water intake hose used on the Water pumps shall be equipped with a screen with a mesh size sufficient to ensure no entrainment of fish (2.54 mm).

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 Sewage and Solid Waste Treatment 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 Treatment Facilities shall be directed to the channel of the Mackenzie River at a location approved by an Inspector.

5. There shall be no discharge of floating solids, garbage, grease, free oil or foam.

6. All Sewage effluent discharged by the Licensee from the Sewage Treatment Facilities at "Surveillance Network Program" Station Number 1762-1 shall meet the following effluent quality requirements:

Sample Parameter	Maximum Average Concentration
Biological Oxygen Demand (BOD_5)	70.0 mg/L
Total Suspended Solids (TSS)	70.0 mg/L
Faecal Coliforms	10E4 CFU/dL
Oil and Grease	5.0 mg/L
Total Residual Chlorine (TRC)	0.1 mg/L

The Waste discharged shall have a pH between 6 and 9.

7. Introduction of Water to Waste for the purpose of achieving effluent quality requirements in Part D, Item 5 is prohibited.

8. The Licensee shall dispose of all solid Wastes in a manner acceptable to the Inspector.

9. A freeboard limit of 1.0 metre shall be maintained at all times in the Sump, part of the Sewage Treatment Facilities, or as recommended by a Geotechnical Engineer and or as approved by the Board.

10. The Licensee may commence decanting upon receipt of an Inspector's approval.

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.

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 this 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 E, 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 the issuance of this Licence an updated Emergency Response & Spill Contingency Plan.

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 unauthorized 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 a complete Phase II Environmental 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. The Licensee shall implement this Plan as and when approved by the Board.

2. The Licensee shall review the Interim 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

Witness

Chairman

NORTHWEST TERRITORIES WATER BOARD

LICENSEE: Shell Canada Limited

LICENCE NUMBER: N7L1-1762

EFFECTIVE DATE OF LICENCE: November 1, 2005

EFFECTIVE DATE OF SURVEILLANCE NETWORK PROGRAM: November 1, 2005

SURVEILLANCE NETWORK PROGRAM

A. **Location of Sampling Stations**

Station Number	Description
1762-1	Treated Sewage at the Point of Discharge

B. **Sampling and Analysis Requirements**

1. Water at Station Number 1762-1, shall be sampled every two weeks, and analyzed for the following parameters:

BOD_5	Total Suspended Solids
Oil and Grease	Faecal Coliforms
Ammonia	pH
Phosphorous	Total Residual Chlorine

2. More frequent sample collection maybe required at the request of an Inspector.

3. All sampling, sample preservation, and 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 approved by an Analyst.

4. All analyses shall be performed in a laboratory approved by an Analyst.

5. The Licensee shall, by December 31st, 2005, submit to an Analyst for approval a Quality Assurance/Quality Control Plan.

6. The Plan referred to in Part B, Item 5 shall be implemented as approved by an Analyst.

C. **Reports**

1. The Licensee shall, within thirty (30) days following the month being reported, submit to the Board all data and information required by the "Surveillance Network Program" including the results of the approved Quality Assurance Plan.

NORTHWEST TERRITORIES WATER BOARD

Witness

Chairman

NORTHWEST TERRITORIES WATER BOARD | NUNAPPA SIVUNIUKPAIT IMMAKUN

WATER LICENCE: N7L1-1762

October, 29th, 2010

Randall Warren
DAR/ Construction Manager
Shell Canada Limited
400- 4th Avenue S.W.
P.O. Box 100, Station M
Calgary, Alberta, Canada
T2P 2H5

Dear Mr. Warren:

Re: Amendment of Water Licence N7L1-1762

This letter is to inform you that at an October 28th, 2010 teleconference meeting of the Northwest Territories Water Board (NWTWB), the NWTWB evaluated Shell Canada Ltd water licence N7L1-1762 which is due to expire on October 31st, 2010. Below you will find a summary of the decision made by the NWTWB concerning this licence.

- The expiry date of the licence was amended until January 31st, 2011 to make sure the licensing process is completed before the NWT Water Board can decide on the renewal of licence N7L1-1762.

The application for renewal of licence N7L1-1762 is classified under a miscellaneous water licence, therefore you have to pay, in accordance with paragraph 9 (1)(b), the water use fees ($30.00) for the right to the use of water for the first year. Please send the water use fees cheque ($30.00), payable to the Receiver General, to the NWT Water Board at your earliest convenience.

If you have any questions or comments please contact Mike Harlow via e-mail at harlowm@nwtwb.com or by telephone at 867-678-8609.

Sincerely,

Eddie Dillon
Chairperson
NWT Water Board

Attached : Licence renewal cover page

Copy to: Water Resources Division, INAC, Yellowknife, NT
District Manage, North Mackenzie District, INAC, Inuvik, NT

NORTHWEST TERRITORIES WATER BOARD

Pursuant to the *Northwest Territories Waters Act* and Regulations the Northwest Territories Water Board, hereinafter referred to as the Board, hereby grants to

SHELL CANADA LIMITED
(Licensee)

of 400- 4 Avenue S.W.
P.O. Box 100, Station M
CALGARY, ALBERTA T2P 0J4
(Mailing Address)

hereinafter called the Licensee, the right to alter, divert or otherwise use water subject to the restrictions and conditions contained in the *Northwest Territories Waters Act* and Regulations made thereunder and subject to and in accordance with the conditions specified in this Licence.

Licence Number	N7L1-1762 (AMENDMENT)
Licence Type	"B"
Water Management Area	NORTHWEST TERRITORIES 07
Location	Within a two kilometre radius of Latitude 69°12'30" N. Longitude135°06'04" W. MACKENZIE RIVER DELTA, N.W.T
Purpose	TO USE WATER AND DISPOSE OF WASTE FOR MUNICIPAL UNDERTAKINGS AND ASSOCIATED USES
Description	OIL AND GAS EXPLORATION
Quantity of Water Not To Be Exceeded	150 CUBIC METRES DAILY
Effective Date of Licence	NOVEMBER 1ST, 2005
Expiry Date of Licence	JANUARY 31ST, 2011

This Licence issued and recorded at Yellowknife includes and is subject to the annexed conditions.

NORTHWEST TERRITORIES WATER BOARD

Witness

Chairperson (Eddie Dillon)

Northwest Territories Water Board
Reasons for Decisions

Issued pursuant to section 26 of the
Northwest Territories Waters Act, Chap 39, R.S.C.

Water licence Number: N7L1-1762 (Type B)

This is the decision of the Northwest Territories Water Board for the amendment of Water licence N7L1-1762

Shell Canada Ltd did not apply for the amendment of licence N7L1-1762, but the Northwest Territories Water Board amended the licence in accordance with sub-paragraph 18 (1)(b)(iii) of the *Northwest Territories Waters Act*. The project is located at latitude 69°12'30" North, longitude 135°06'04" West in the Northwest Territories.

Background:

Shell Canada Ltd licence N7L1-1762 was due to expire on October 31st, 2010. The licensee applied for the renewal of licence N7L1-1762 on October 1st, 2010. The timeframe given to complete the licensing process was insufficient.

The Northwest Territories Water Board met on October 28th, 2010 to review licence N7L1-1762.

Since this application is for the amendment of the date of the licence for a short period, there was no submission made to the Environmental Impact Screening Committee (EISC), as per section 11 of the *Inuvialuit Final Agreement* (IFA), for determination of potential environmental impacts, nor was there an environmental screening of the proposed project as required by the *Canadian Environmental Assessment Act* (CEAA).

Requirements of the *Northwest Territories Waters Act*:

The Board is in accordance with sub-paragraph 18 (1)(b)(iii) of the *Northwest Territories Waters Act*.

Decision to Amend licence N7L1-1762:

The Board has reviewed the Water licence for amendment. Upon consideration of the facts and circumstances, the purpose, scope and intent of the *Northwest Territories Waters Act*, the Board has determined that it can amend licence N7L1-1762.

For the above reasons the Board has determined to amend licence N7L1-1762 in accordance with sub-paragraph 18 (1) (b) (iii) of the *Northwest Territories Waters Act* for the use of water and the deposit of wastes.

SIGNED this 29th day of October, 2010 on behalf of the Northwest Territories Water Board.

Eddie Dillon
Chairperson, Northwest Territories Water Board

NORTHWEST TERRITORIES WATER BOARD | NUNAPPA SIVUNIUKPAIT IMMAKUN

WATER LICENCE: N7L1-1762

January 25th, 2011

Randall Warren
DAR/ Construction Manager
Shell Canada Limited
400- 4th Avenue S.W.
P.O. Box 100, Station M
Calgary, Alberta, Canada
T2P 2H5

Dear Mr. Warren:

Re: Amendment of Water Licence N7L1-1762

This letter is to inform you that at a January 25th, 2011 teleconference meeting of the Northwest Territories Water Board (NWTWB), the NWTWB evaluated Shell Canada Ltd's water licence N7L1-1762 which is due to expire on January 31st, 2011. Below you will find a summary of the decision made by the NWTWB concerning this licence.

- The expiry date of licence N7L1-1762 was amended to June 30th, 2011 to make sure the licensing process is completed before the NWT Water Board can decide on the renewal of licence N7L1-1762.

If you have any questions or comments please contact Mike Harlow via e-mail at harlowm@nwtwb.com or by telephone at 867-678-8609.

Sincerely,

Eddie Dillon
Chairperson
NWT Water Board

Attached : Licence renewal cover page

Copy to: Water Resources Division, INAC, Yellowknife, NT
District Manager, North Mackenzie District, INAC, Inuvik, NT

NORTHWEST TERRITORIES WATER BOARD

Pursuant to the *Northwest Territories Waters Act* and Regulations the Northwest Territories Water Board, hereinafter referred to as the Board, hereby grants to

SHELL CANADA LIMITED
(Licensee)

of 400- 4 Avenue S.W.
P.O. Box 100, Station M
CALGARY, ALBERTA T2P 0J4
(Mailing Address)

hereinafter called the Licensee, the right to alter, divert or otherwise use water subject to the restrictions and conditions contained in the *Northwest Territories Waters Act* and Regulations made thereunder and subject to and in accordance with the conditions specified in this Licence.

Licence Number	N7L1-1762 (AMENDMENT)
Licence Type	"B"
Water Management Area	NORTHWEST TERRITORIES 07
Location	Within a two kilometre radius of Latitude 69°12'30" N. Longitude135°06'04" W. MACKENZIE RIVER DELTA, N.W.T
Purpose	TO USE WATER AND DISPOSE OF WASTE FOR MUNICIPAL UNDERTAKINGS AND ASSOCIATED USES
Description	OIL AND GAS EXPLORATION
Quantity of Water Not To Be Exceeded	150 CUBIC METRES DAILY
Effective Date of Licence	NOVEMBER 1ST, 2005
Expiry Date of Licence	JUNE 30th, 2011

This Licence issued and recorded at Inuvik includes and is subject to the annexed conditions.

NORTHWEST TERRITORIES WATER BOARD

Witness

Chairperson (Eddie Dillon)

Appendix D: Town of Inuvik 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

October 8, 2010

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

Attention: Sam Bird

Re: Water License No. N7L1-1762

Dear Mr. Bird:

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.

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

Yours sincerely;

Grant Hood, CMA
Senior Administrative Officer

Appendix E: Abandonment and Restoration Plan

WorleyParsons
resources & energy

EcoNomics

SHELL CANADA ENERGY

Abandonment and Restoration Plan

Camp Farewell, NT

C52360500

28 March 2011

WorleyParsons Canada
4500 16th Avenue NW
Calgary, AB T3B 0M6 CANADA
Phone: +1 403 247 0200
Toll-Free: 1 800 668 6772
Facsimile: +1 403 247 4811
www.worleyparsons.com

PROJECT C52360500 - ABANDONMENT AND RESTORATION PLAN

FILE LOC.: CALGARY

REV	DESCRIPTION	ORIG	REVIEW	WORLEY-PARSONS APPROVAL	DATE	CLIENT APPROVAL	DATE
A	Issued for review	G. Johnson	N. Hazan	G. Johnson	25-Jan-11		
B	Issued for review	G. Johnson	N. Hazan	G. Johnson	10-Feb-11		
0	Issued as final	G. Johnson	N. Hazan	G. Johnson / J. Armstrong	28-Mar-11		

Disclaimer

The information presented in this document was compiled and interpreted exclusively for the purposes stated in Section 2.1 of the document. WorleyParsons provided this report for Shell Canada Energy solely for the purpose noted above.

WorleyParsons has exercised reasonable skill, care, and diligence to assess the information acquired during the preparation of this report, but makes no guarantees or warranties as to the accuracy or completeness of this information. The information contained in this report is based upon, and limited by, the circumstances and conditions acknowledged herein, and upon information available at the time of its preparation. The information provided by others is believed to be accurate but cannot be guaranteed.

WorleyParsons does not accept any responsibility for the use of this report for any purpose other than that stated in Section 2.1 and does not accept responsibility to any third party for the use in whole or in part of the contents of this report. Any alternative use, including that by a third party, or any reliance on, or decisions based on this document, is the responsibility of the alternative user or third party.

Any questions concerning the information or its interpretation should be directed to G. Johnson or N. Hazan.

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Appendices

1. EXECUTIVE SUMMARY

WorleyParsons was retained by Shell Canada Energy. (Shell) to provide an updated Interim Abandonment and Restoration Plan (Plan) for Shell's Camp Farewell (Site) located at 69^{o} 12' 30" N latitude, 135^{o} 06' 04" W longitude, approximately 95 km northwest of Inuvik in the Northwest Territories. This site is leased from the federal government. This Plan has been completed in partial fulfillment of the requirements outlined in the Northwest Territories Water Board (the Board) licence # N7L1-1762.

The Camp Farewell lease is under the stewardship of Shell. The camp has been used as a staging site for various activities such seismic operations, preliminary development assessment work, and drilling operations.

Existing conditions of Camp Farewell as well as Shell's plans for abandoning and restoring this Site at the time of Closure are discussed. This Plan is intended to meet the requirements associated with closure planning in accordance with federal and territorial regulations.

Primary temporary closure activities were completed in 2008 and 2009. The objective of the decommissioning program completed was to remove and responsibly manage facilities and materials that were either no longer required or were no longer usable at Camp Farewell.

A permanent closure and reclamation plan is provided, a schedule for permanent closure and reclamation is not known at this time.

Aside from providing crew accommodations, the site is used for, equipment storage and as a fuel depot. The fuel tanks are currently empty.

2. INTRODUCTION

2.1 Purpose

WorleyParsons was retained by Shell Canada Energy (Shell) to provide an updated Interim Abandonment and Restoration Plan (Plan) for Shell's Camp Farewell (Site) located at 69^{o} 12' 30" N latitude, 135^{o} 06' 04" W longitude, approximately 95 km northwest of Inuvik in the Northwest Territories (Figures 1 and 2). This site is leased from the federal government. This Plan has been completed in partial fulfillment of the requirements outlined in the Northwest Territories Water Board (the Board) licence # N7L1-1762 (Appendix 1).

The purpose of this Plan is to summarize the existing conditions of Camp Farewell as well as Shell's plans for abandoning and restoring this Site at the time of Closure. This Plan is intended to meet the requirements associated with closure planning in accordance with federal and territorial regulations.

2.2 Approach

2.2.1 General

This Plan has been developed in accordance with the applicable aspects of Mine Site Reclamation Guidelines for the Northwest Territories (INAC 2007) which was developed in support of the regulation of mining activities occurring in Canada's North. The following tasks have been undertaken to address the objectives of the Plan:

- review of the history of operation of Camp Farewell as these activities relate to and potentially affect Site restoration;
- review of the regulatory requirements as defined by published guidelines, licences and approvals pertaining to Camp Farewell, as well as direct communications from regulators regarding Camp Farewell;
- review of Environmental Site Assessments (ESA's) completed for Camp Farewell;
- review of dismantling and remediation programs completed since the most recent Interim Abandonment and Restoration Plan was submitted in 2006;
- review of the results of recent soil and water quality monitoring programs completed at the Camp Farewell Site;
- review the current status of Camp Farewell (which is idle) and Shell's plans for maintaining this facility in support of its potential future exploration and development activities;
- review feedback obtained during consultation with local resident, regulatory and land use stakeholders;
- evaluation of land use alternatives and selection of a base case for subsequent land use;

- selection of remediation guidelines for the Camp Farewell Site;
- development of a plan for dismantling facilities and removing Site inventory; and
- development of a reclamation plan for the developed area to return the land to a condition suitable for subsequent land use.

2.2.2 Organization of Plan

This Plan conforms to the Example of General Content of a Closure and Reclamation Plan as specified in Appendix 1 of the Mine Site Reclamation Guidelines for the Northwest Territories (INAC 2007). As this guideline was developed in support of mining activities, some of the sections included in the Example are not relevant to Camp Farewell. In these cases, a placeholder in this Plan has been maintained which includes a brief description as to why that particular aspect is not relevant to Camp Farewell. The following main sections are included:

- Section 1: Executive Summary;
- Section 2: Introductory Information;
- Section 3: Site Conditions;
- Section 4: Temporary Closure;
- Section 5: Final Closure and Reclamation;
- Section 6: Financial Security; and
- Section 7: Supporting Documents.

2.2.3 Regulatory Drivers

Water Board Restoration Requirements

The Restoration Plan satisfies Item 1 of Part G of Licence No. N7L1-1762 (Appendix 1) granted to Shell Canada by the Northwest Territories Water Board (Board) in accordance with the *Northwest Territories Waters Act*. Item 1 of Part G of the Licence states:

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 a complete Phase II Environmental Assessment of Camp Farewell.

The most recent ESA's, remediation program reports and Site monitoring reports are submitted under separate covers. Where relevant, the pertinent portions of these reports are referenced or summarized in this Plan.

The "Guidelines for Abandonment and Restoration Planning for Mines in the Northwest Territories" (INAC 2007) is the latest and most relevant published guidance for abandonment and restoration in the

Northwest Territories, and has been used to develop this Plan. This guidance has been tailored where appropriate to account for the unique characteristics and history of Camp Farewell. It is possible that Camp Farewell will continue to be used as a staging and storage area after the camp operations have been discontinued and decommissioned. For this reason, dismantling of the camp facilities and restoration of the camp development area have been presented separately.

Other Requirements of Site Restoration

Requirements for restoration of the entire Site provide Shell with a better understanding of final Site abandonment and reclamation requirements. Where available, restoration options have been provided to allow Shell to better plan these activities. Implementation of the preferred restoration option will require review and consent by various regulatory bodies.

Lease No. 107 C/4-2-10 and Lease No. 107 C/4-1-7 (Appendix 2) outline the general requirements regarding restoration of the Site and the airstrip, respectively. Both Leases state in Termination – Part 11:

Upon the termination or expiration of this lease, the lessee shall deliver up possession of the land in a condition satisfactory to the Minister.

and in Restoration – Part 13:

Where the lessee fails to restore the land as required and within the time allowed by the Regulations or by the Minister, the Minister may order the restoration of all or any part of such land and any expenses thus incurred by the Minister shall be recoverable from the lessee as a debt due to Her Majesty.

2.3 Planning Team

This Abandonment and Restoration Plan has been prepared on behalf of Shell Canada Energy by WorleyParsons Canada, with the assistance of IEG Consultants and HAZCO Environmental Services. The following individuals were involved in the preparation and submission of this Plan.

Company	Responsibility	Individual	Role
Shell Canada Limited	Owner	Randall Warren	Project Manager
WorleyParsons	Responsible Engineer	Gordon Johnson	Engineer of record
IEG Consultants	Environmental Scientist	Sam Bird	Site Monitoring
HAZCO Environmental Services	Contractor	Kevin Erickson	Implementation

2.4 Definition of Terms

The following definitions are provided for key terms used in this Plan:

Abandonment: The permanent dismantlement of a facility so it is permanently incapable of its intended use. This includes the removal of associated equipment and structures.

Active layer: The layer of ground above the permafrost which thaws and freezes annually.

Background: An area near the site under evaluation not influenced by chemicals released from the site, or other impacts created by onsite activity.

Bioremediation: The use of microorganisms or vegetation to reduce contaminant levels in soil or water.

Closure: When Camp Farewell ceases operations without the intent to resume activities in the future.

Closure Criteria: Detail to set precise measures of when a closure objective has been satisfied.

Contaminant: Any physical, chemical, biological or radiological substance in the air, soil or water that has an adverse effect. Any chemical substance with a concentration that exceeds background levels or which is not naturally occurring in the environment.

Groundwater: All subsurface water that occurs beneath the water table in rocks and geologic formations that are fully saturated.

In Situ Treatment: A method of managing or treating contaminated soils, sludges and waters “in place” in a manner that does not require the contaminated material to be physically removed or excavated from where it originated.

Monitoring: Observing the change in geophysical, hydrogeological or geochemical measurements over time.

Objectives: Objectives describe what the reclamation activities are aiming to achieve. The goal of Site closure is to achieve the long-term objectives that are selected for the Camp Farewell Site.

Reclamation: The process of returning a disturbed site to its natural state or one for other productive uses that prevents or minimizes any adverse effects on the environment or threats to human health and safety.

Rehabilitation: Activities to ensure that the land will be returned to a form and productivity in conformity with a prior land use, including a stable ecological state that does not contribute substantially to environmental deterioration and is consistent with surrounding aesthetic values.

Remediation: The removal, reduction, or neutralization of substances, wastes or hazardous material from a site in order to prevent or minimize any adverse effects on the environment and public safety now or in the future.

Restoration: The renewing, repairing, cleaning-up, remediation or other management of soil, groundwater or sediment so that its functions and qualities are comparable to those of its original, unaltered state.

Risk Assessment: Reviewing risk analysis and options for a given site, component or condition. Risk assessments consider factors such as risk acceptability, public perception of risk, socio-economic impacts, benefits, and technical feasibility. It forms the basis for risk management.

Temporary Closure: When Camp Farewell ceases operations with the intent to resume activities in the future. Temporary closures can last for a period of weeks, or for several years, based on economical, environmental, political, or social factors.

Traditional Knowledge: A cumulative, collective body of knowledge, experience, and values built up by a group of people through generations of living in close contact with nature. It builds upon the historic experiences of a people and adapts to social, economic, environmental, spiritual and political change.

2.5 Long-Term Community Values

Shell consults with the local community groups and residents on a periodic basis to inform local Stakeholders of its plans and to collect feedback on issues that are important to these Stakeholders. The timing and scheduling of these sessions is adjusted as appropriate to account for the level of Shell's activities in the region, Shell's plans, and the communities desire to meet and discuss issues. Communities involved in this consultation program included Aklavik, Inuvik and Tuktoyaktuk. Residents, community leadership and special interests group were involved in the consultation process.

The most recent formal consultation process occurred in 2005 and 2006 in support of renewal of the Water Licence for Camp Farewell as well as to communicate Shell's plans to support potential development in the region (e.g. the Mackenzie Gas Project). Community Stakeholders feedback obtained during these sessions support this Plan as well as the restoration activities that Shell has implemented over the past few years. In general, the community Stakeholders were supportive of the following efforts:

- improving the visual aesthetics of the Site;
- initiating treatment of hydrocarbon contamination;
- minimizing disturbance of the tundra unless there is imminent risk of adverse environmental affects associated with the historical spill; and
- protecting traditional land uses in the area.

2.6 Inclusion and Management of Information

Shell documents all activities that occur on the Site and retains this information to support its planning and regulatory reporting functions. Section 7 provides a summary of the information that is included in Shell's records and was reviewed in preparing this Plan.

3. SITE DESCRIPTION

3.1 History of the Site

3.1.1 Background and General Use

The Camp Farewell Site was established in the winter of 1970 and the camp housing was brought to the Site during the summer of 1971. The main purpose of the camp at that time was to act as a staging and storage site for Shell's Delta Drilling Program. The camp was operated fulltime until 1978 with crew accommodations consisting of a single story building accommodating up to 60–70 people. Camp Farewell has since operated periodically until the present (primarily between 1978 and 1994). In the mid-1970's, several large capacity fuel tanks were moved onto the site including two 5,000 bbl tanks, one 3,000 bbl tank, and three 2,000 bbl tanks. In the mid 1980's, the original crew accommodations (camp) were replaced with the current facility. This operational camp facility has a capacity to accommodate 32 people. Storage activities included fuel storage for up to 6.8 million litres of fuel (including aviation fuel, diesel, and gasoline), material storage (including building material and drilling mats), pipe storage and drilling materials storage (including barite, caustic soda, and Aqua Seal). Shell also holds a second lease with the Federal government for the adjacent airstrip.

During construction of the Site, either 50 mm of polyurethane foam or polyurethane pads were laid over the tundra across the entire lease area (Komex 2001). Urethane foam has been tested as an effective impermeable liner to prevent contamination of underlying soils and groundwater (EPS 1977). These pads along with 450 mm of compacted gravel were used as a thermal barrier to protect the underlying permafrost. During test pitting conducted in 2006 (WorleyParsons Komex 2006), this liner was generally encountered in the central portion of the gravel pad area at depths between 0.38 and 0.62 metres below ground surface (mbgs). The liner was not, however, encountered in all test pits thereby suggesting that while a liner was used, the gravel pad was extended beyond the perimeter of the liner, possibly after the initial establishment of the facility. The pad fill material generally comprises sand and gravel to depths down to 0.47 mbgs – 0.9 mbgs (the deepest areas of gravel were encountered at the burn pit and the day tank area).

It has also been noted that clay mineral products (bentonite) were mixed with the gravel that was used on the lease in order establish good gravel adhesion and compaction (Komex 2001).

3.1.2 1981 Dome/CanMar Spill

A search of the Government of the Northwest Territories (GNWT's) Hazardous Spills Database (Komex 2001) confirmed a major spill (approximately 800,000 litres) of water contaminated diesel fuel from the tank farm in 1981. This fuel was stored at Camp Farewell by Canadian Marine Drilling (CanMar), a subsidiary of Dome Petroleum, in the two 5,000 barrel tanks in Camp Farewell's tank farm. Based on personnel interviews conducted in 2000 (Komex 2001), the spill was attributed to an act of vandalism/theft

and that the tanks were likely tampered with during the winter of 1980-81 and the spill occurred in the spring. It was reported on May 24, 1981.

The spill was released into the berm, overtopped the berm and travelled onto the lease site from where it followed the site topography south-west over the steep banks to the frozen Mackenzie River. Initial spill cleanup consisted of collecting any free fuel within the berm and camp area. This fuel was pumped into various holding tanks. Residual fuel was collected using sorbent pads. Over the 4 to 6 week clean-up effort a Sacke Portable Burner was used 24 hours/day to burn the recovered fuel. Fuel spilled onto the river was collected using sorbents or burned in situ. All collected sorbents and other spill-related debris on site were incinerated. Further details of correspondence related to the spill and clean up can be found in Komex (2001).

3.2 Reference Environmental Conditions

3.2.1 Climate

Climate data is available for Inuvik which is located approximately 95 km southeast of Camp Farewell. Over the period from 1971 to 2000, the mean daily temperature at Inuvik was -8.8°C with the temperature exceeding 0°C on average 156 days a year. Average annual precipitation for this period is 248.4 mm, consisting of 117 mm of rainfall and 167.9 cm of snowfall (Environment Canada 2006).

Climatic data is also available for Tuktoyaktuk which is located approximately 75 km northeast of Camp Farewell and is situated on the Beaufort Sea coast. Over the period from 1971 to 2000 the mean daily temperature at Tuktoyaktuk was -10.6°C with the temperature exceeding 0°C on average 137 days a year. Average annual precipitation for this period was 167.8 mm, consisting of 75.3 mm of rainfall and 95.3 cm of snowfall (Environment Canada 2006). The ice free period on the Mackenzie River is approximately four to five months (June to October). The active layer is similarly governed by this period of time.

3.2.2 Surface Geology and Permafrost

Camp Farewell is located in the Mackenzie Delta on an outwash plain bordered to the west and southwest by the Mackenzie River and to the east, north, and south by shallow lakes and intermittent ponds (Figure 2).

The distance from Camp Farewell's lease boundaries to these water bodies varies from 20 m (southwest to the Mackenzie River) to a maximum of approximately 360 m north and 660 m east to several unnamed lakes. Drainage from the lease is predominantly to the south and southwest (Figure 2).

Surficial geology (Figures 3, 4A and 4B) near the site consists of silty sand overlying sand and interbedded sand and gravel deposits associated with the Toker Member, Melloch Till, or those deposited during the Buckland Glaciation (Rampton 1987). These glaciofluvial sediments are overlain by organic deposits. The outwash plains and valley trains encountered in the Mackenzie Delta and along the Tuktoyaktuk Coastlands are generally 3 m to 30 m thick and include the Cape Dalhousie Sands, North

Star Outwash, Garry Island Member and, probably, Turnabout Member. Visual observation at Camp Farewell indicates that the outwash plain upon which the camp is situated is approximately 15 m thick.

The region surrounding Camp Farewell is underlain by extensive discontinuous permafrost with a low to moderate ice content (<10% to 20%) that extends to a depth of approximately 95 mbgs. The region is characterized by sparse ice wedges, no massive ground ice, and sparse pingo ice (Heginbottom 1995). The depth to the active layer (i.e. the layer of soil subject to seasonal thaw) is typically less than 1.0 mbgs and can be as little as 0.28 m below the surface. The active layer is typically the zone of highest groundwater flow. WorleyParsons Komex (2006) reported groundwater above permafrost at depths ranging from 0.26 mbgs to 0.83 mbgs (with depth increasing to the south) and generally dependent on the amount of gravel overburden. As a result of the organic rich soils, the groundwater is light brown in colour.

The area to the north and west of Camp Farewell demonstrates these ice wedges in the form of polygon-shaped depressions. These depressions provide favourable conditions for the establishment of both willow (*Salix* spp.) and alder (*Alnus*). The surrounding area is characterized by dwarf shrubs and ground cover such as mosses and lichens.

3.2.3 Sensitive Land Use Information

Camp Farewell is located within the Kendall Island Bird Sanctuary (KIBS), near its southern boundary. Shell is required to hold and meet the conditions set out in a permit (Permit # NWT-MBS-06-02) that allows its personnel and/or delegates to enter and conduct activities in the sanctuary. This sanctuary was established in 1961 to protect the staging and breeding grounds of over 100 species of shorebirds, songbirds, and waterfowl, especially the Lesser Snow Goose (Canadian Wildlife Service 2000). This sanctuary includes over 600 km^2 of the Mackenzie River Delta and is bounded to the north by the Beaufort Sea. The habitat provided by the Mackenzie delta-estuary (which houses KIBS) consists of seasonal flats, wet meadows and, coastal marshes. Seasonally up to 7,500 Lesser Snow Geese, 5,000 Greater White-fronted Geese, 1,000 Brant, and 1,200 Tundra Swans nest, moult and stage in the sanctuary. An estimated 60,000 pairs of shorebirds nest in the outer Mackenzie Delta (Canadian Wildlife Service 2000).

KIBS is adjacent to the migration and summering area of many marine mammals. The waters north of the sanctuary (downstream of Camp Farewell) are the calving habitat for at least 2,000 beluga whales (Canadian Wildlife Service 2000). Barren-ground grizzly bears are also indigenous to the outer islands of the sanctuary.

3.2.4 Present and Past Land Use and Adjacent Land Use

The Mackenzie Delta is a traditional hunting and trapping area for both of the region's indigenous populations, the Gwich'in and the Inuvialuit. The area surrounding Camp Farewell is protected and managed by the Canadian Wildlife Service (CWS) and has been since the establishment of the KIBS in 1961. Given the protected status of the lands surrounding Camp Farewell, there are and have been no industrial settlements within several kilometres of the site. Industrial activities in the form of seismic

exploration and exploratory drilling have been ongoing intermittently in the region since the 1960's. There is very little oil and gas related activity at the present, hence Camp Farewell is currently idle.

Due to the presence of permafrost throughout the region, the inhabitants of the Mackenzie Delta draw their water from either freshwater lakes or the Mackenzie River and its tributaries. This is also the case with Camp Farewell (Komex 2001) when the camp is in use.

3.3 Overview of Site Operations

The Camp Farewell lease is under the stewardship of Shell. The camp has been used as a staging site for various activities such seismic operations, preliminary development assessment work, and drilling operations. Aside from providing crew accommodations, the site is used for equipment storage and as a fuel depot. The fuel tanks are currently empty. In 1999, E. Gruben's Transport placed a temporary one-story modular accommodations building for 30 plus persons and an exterior transformer approximately 20 m to the east of the main accommodations building (Komex 2001).

Activities at Camp Farewell over the past few years have been limited to those related to dismantling, removal of stockpiled materials and consumables, soil remediation, and environmental monitoring. These activities were implemented as part of Temporary Closure activities as described in Section 4 of this Plan.

3.4 Site Facilities

In addition to the camp, Camp Farewell includes the following facilities:

- a bermed tank farm with five tanks;
- a sewage lagoon;
- a fuel trailer;
- storage sheds 1, 2 and 3;
- metal storage tanks (empty); and
- a Burn Pit area containing an open top metal bin for incineration of construction debris.

The primary water related facilities at the site include:

- water intake system;
- storage system – storage tank inside the crew accommodations;
- distribution system;
- water use facilities – toilets, sinks, showers and associated piping;
- gravity collection system;
- lift station tank and pump;

- primary treatment system (no longer in use);
- UV disinfection unit and chlorine dosing system (no longer in use);
- final transport tank, pump and piping (no longer in use); and
- disused storage lagoon.

A detailed audit of materials and structures at the site was completed as part of dismantling and material removal activities completed in 2010 (WorleyParsons 2010).

The northeast corner of the Site, adjacent to the airstrip, is occasionally used for temporary storage of aviation fuel for regional helicopter operations.

INAC and CWS occasionally store aviation fuel with secondary containment on the west side of the site, adjacent to the camp building.

3.5 Acid Rock Drainage

Section not used. No acid rock drainage potential.

3.6 Current Site Conditions

3.6.1 Previous Environmental Programs

An understanding of the current environmental conditions has been developed through the implementation of the following environmental investigations, remediation and restoration programs, and monitoring programs:

Table A Summary of Previous Environmental Programs

Environmental Program	Summary
Baseline Environmental Site Assessment, Camp Farewell, Mackenzie Delta, Northwest Territories (Golder 2000).	Golder (2000) summarizes baseline sampling results conducted for Geco-Prakla, a division of Schlumberger Canada Limited, prior to sub-leasing a portion of the site from Shell. The area of the sub lease included the main camp accommodations, associated accommodation trailers, the lagoon area, the area south of the storage crates and racks (including Shed #1) and extended to the east of the lease (Golder 2000). It is not believed that the sub-lease area included the burn pit.
Phase I and Phase II Environmental Site Assessment of the Shell Farewell	A Phase 1 and Phase 2 study of the entire site was conducted in September 2000 (Komex 2001). Key issues of

Environmental Program	Summary
Stockpile and Campsite (Komex 2001)	concern identified in this study included: • total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs) and selected trace metals within and down gradient of the burn pit; • Xylene and TPH in the area of and around the Tank Farm and the spill area of the historical tank release; • TPH concentrations related to surface staining throughout various areas of the gravel base pad; • total barium concentrations throughout various areas of the base pad; and • EC and pH on the base pad in the areas where drilling mud additives had historically been stored.
Interim Abandonment and Restoration Plan (Komex 2002)	Following completion of the Phase I and II Environmental Site Assessment (Komex 2001), an abandonment and restoration plan was submitted to the Northwest Territories Water Board.
Phase II Environmental Site Assessment, Camp Farewell, N.W.T. (WorleyParsons Komex 2006)	A more detailed Phase II was conducted to delineate soil and groundwater contamination at the site. Key issues of concern identified by this study are discussed in Section 5 of this report.
Interim Abandonment and Restoration Plan (WorleyParsons 2008)	A more detailed interim and abandonment and restoration plan was submitted following completion of the 2006 Phase II ESA and pursuant to implementation of these activities in 2008 and 2009.
Interim Abandonment and Restoration Program report (WorleyParsons 2010)	The report describing the interim and abandonment and restoration activities implemented in 2008 and 2009.
Ongoing environmental monitoring	Results of ongoing soil and groundwater monitoring completed to evaluate the state of soil and groundwater quality on the Site.

3.6.2 Current Conditions

Gravel Pad

The results of the assessment of the gravel pad, as remediated at the end of 2009, are reported in WorleyParsons 2010.

Confirmation of limits of Remedial Excavations

Laboratory analytical results indicate that confirmatory soil samples collected from the vegetated island within the historical fuel spills area (that was not excavated), and the south and southeast excavation walls were below the NWT hydrocarbon guidelines. Hydrocarbon impacts on the order of the NWT industrial and residential/parkland guidelines remain in the soils adjacent to the tank farm berm and the unexcavated plume that extends beneath the tundra.

Hydrocarbon concentrations in soil samples collected from the perimeters of the remaining excavations were below the applicable guidelines, though additional confirmatory soil samples are required in some locations to verify that the remedial objectives were achieved.

Soil Treatment

The ex situ soil treatment program has been successful in reducing hydrocarbon impacts in the treated soil. IEG estimates that at the end of 2009 approximately 600 m^3 of the 1300 m^3 of soils treated still contain concentrations of F2 hydrocarbons above NWT industrial and residential/parkland guidelines and F3 hydrocarbons above residential/parkland guidelines. Most of the soils in the treatment area exceeded the NWT industrial guidelines for pH, SAR and EC.

Burn Pit

Eight soil locations, one piezometer and two surface water locations were sampled within and down-gradient of the burn pit area. A summary of findings for the Burn Pit is provided below:

a) Facility related hydrocarbon impact was identified within and down-gradient of the burn pit. Other PHC concentrations down gradient of the burn pit were attributed to natural organic material. Elevated pH and concentrations of copper, lead and zinc within the burn pit, and detectable concentrations of PAHs within and down gradient of the burn pit were also reported, confirming the disposal of hydrocarbon contaminated material and scrap metal in the burn pit. These results are consistent with the analytical results from previous investigations (Komex 2001). The reported elevated total barium concentration may be due to the incineration of empty bags of drilling mud additives (barite) in the burn pit.

b) Detectable concentrations of BTEX (ethylbenzene above CCME MAL guidelines) and PHC were identified in shallow groundwater down-gradient of the burn pit.

c) No detectable hydrocarbon concentrations were measured in the two surface water bodies located down-gradient of the burn pit and site. Metals concentrations measured in these surface water samples are likely attributed to background water conditions.

d) An area of hydrocarbon stained soil adjacent to the burn pit was sampled following excavation by Shell personnel. Concentrations of all hydrocarbon parameters were below reference guidelines or laboratory detection limits indicating that adequate excavation of this hydrocarbon impacted gravel has been accomplished.

Tank Farm Area

Ten soil locations were sampled within three identified Above-Ground Storage Tank (AST) areas, excluding the Tank Farm. A summary of findings for the Tank Farm area is provided below:

a) A localized PHC F2 concentration above the residential/parkland guideline was measured in gravel adjacent to the Day Tank. PHC F2, PHC F3 and PHC F4 concentrations in the underlying organic horizon at this sample location were below background concentrations. Surrounding test pits reported detectable but below guideline PHC concentrations in the gravel pad and below background PHC F2, PHC F3 and PHC F4 concentrations in the underlying buried organic horizon thereby suggesting that PHC F2 impact is limited to the gravel pad at one isolated location.

b) Four samples were taken in areas of limited vegetation growth near the fuel storage tanks where drips and spills were believed to have occurred during fuelling. Two locations reported BTEX and/or PHC concentrations above Residential/Parkland and/or Industrial land use criteria thereby supporting visual indications of surface fuel spills. The remaining sample locations in this area reported detectable PHC concentrations below Residential/Parkland guidelines. Depth of impact likely extends to the base of the gravel pad.

c) PHC F2 and/or PHC F3 concentrations above background or residential/parkland guidelines were reported adjacent to the Heating Oil AST. Elevated PHC F3 concentrations were measured in the gravel pad and elevated PHC F2 concentrations were measured in the underlying organic layer, but not in the overlying gravel cover.

Lagoon Water and Sediments

Lagoon water is managed in accordance to Part D “Conditions Applying to Waste Disposal” of the water licence (Appendix 1). As per Part B “General Conditions”, annual reporting, including that of all discharged waste and analytical results, is required by March 31st of the following calendar year. As such, reporting related to Part B “General Conditions” will be provided under a separate cover.

The water retained in the lagoon was drained as part of the 2009 interim abandonment and restoration program (WorleyParsons 2010). Following draining of the lagoon, sediment samples were collected for analyses. Results of these analyses indicated concentrations of BTEX compounds and PHC F1 to F4 above expected background concentrations.

Surrounding Tundra

A detailed assessment of the soil quality, vegetation health and assessment of soil invertebrates was completed as part of implementation of the 2009 Interim Abandonment and Restoration Program (WorleyParsons 2010).

The concentrations of hydrocarbon compounds in the tundra soils were not appreciably different than the interpreted naturally occurring hydrocarbon concentrations identified in background samples. It would

appear that the majority of hydrocarbons measured in 2009 are related to background (based on comparison with previously established background levels).

Vegetation does not appear to be affected by the historical fuel spill. The proportion of stressed areas within the area affected by the historical fuel spill is similar to that outside of the area. Further, the distributions of species of vegetation within and outside of this area are similar. Significant hydrocarbon contamination was not identified in any of the soil samples collected in the area of vegetation stress and the concentrations of hydrocarbons measured in these samples were generally consistent with expected background concentrations. Vegetation does not appear to contain elevated concentrations of PAHs or toxic metals. The elevated concentrations of barium are below concentrations that are potentially toxic to plants.

Variability in soil invertebrate populations (density) and relative abundance (diversity) of the major taxa were not statistically different between the control and spill sites tested. It is acknowledged that the power of the statistical tests was low and therefore results cannot be considered definitive of an adverse effect or lack thereof. However, it is notable that significant differences in invertebrate diversity occur at locations where no significant concentrations of hydrocarbons are measured suggesting that variations in invertebrate density and diversity may be influenced by natural factors such as moisture content, pH, soil texture, vegetation cover and soil chemistry. These factors are expected to be accentuated in Arctic conditions which are harsh for all species.

Based on the 2009 surveys, hydrocarbon concentrations in the tundra soils appear to be attenuating naturally, and there is no evidence of adverse affect to vegetation or soil invertebrates.

3.7 Permits and Authorization Held

The following permits and authorizations are in place for Camp Farewell.

Licence No. N7L1-1762 granted to Shell Canada by the Northwest Territories Water Board (Board). Last renewed in 2006.

Lease No. 107 C/4-2-10 granted to Shell Canada by the Northwest Territories (NWT), last renewed in 1999.

Lease No. 107 C/4-1-7 granted to Shell Canada by the Northwest Territories (NWT), last renewed in 1999.

Canada Wildlife Service Permit No. NWT- MBS – 11-01 granted to Shell by Northwest Territories (NWT), last renewed January 2011

4. TEMPORARY CLOSURE

4.1 Definition of Temporary Closure

For the purpose of this Plan, Temporary Closure activities are defined as those activities completed in 2008 and 2009 that were implemented in support of idling Camp Farewell and its related facilities. In accordance with Mine Site Reclamation Guidelines for the North West Territories (INAC 2007), Temporary Closure refers to the scenario where operations are idled with the intent to resume activities in the future.

4.2 Temporary Closure Principles and Goals

The principle objective of Temporary Closure activities is to maintain all camp facilities and equipment in a condition that protects humans, wildlife, and the environment. The following measures summarize the relevant principles and goals of the Temporary Closure plan as described in Mine Site Reclamation Guidelines for the North West Territories (INAC 2007):

- access to the site, buildings, and all other structures are secured and restricted to authorized personnel only;
- appropriate signs are posted;
- soil treatment, and soil and groundwater monitoring programs are continued according to the requirements of this Plan;
- all waste management systems are secured;
- an inventory of chemicals and reagents, petroleum products, and other hazardous materials is conducted and these materials are secured appropriately or removed;
- fluid levels in all fuel tanks (currently empty) are recorded and monitored regularly for leaks or fuel is removed from the site;
- wastewater impoundment structures are stable and maintained in an appropriate manner;
- the Site is inspected and maintained regularly during the Temporary Closure period; and
- the reclamation security deposit is kept up to date.

Appropriate resources will be made available to the Site should any potential problems arise. Sufficient equipment and supplies/reagents are available in Inuvik to complete any maintenance or spill response in the unlikely event that these services are required. Compliance with all applicable federal and territorial laws and regulations, in addition to the operator's Land Use Permits, Land Leases and Water Licenses, is also maintained.

4.3 Temporary Closure Activities

4.3.1 General

Temporary Closure activities have been completed and are described in WorleyParsons (2010). The objective of the decommissioning program completed in 2009 was to remove and responsibly manage facilities and materials that were either no longer required or were no longer usable at Camp Farewell. Removal and responsible management of these facilities and materials serves to tidy up the Site, reduce the ultimate cost and scope of restoration of the Site, and in the case of unused materials, to remove substances that could otherwise adversely affect soil and water quality should these materials be released to the environment.

Specifically, the decommissioning activities included the dismantling (as necessary), removal and responsible management of the following:

- unused facilities;
- drilling equipment and materials;
- construction materials;
- fuel and fuel tanks; and
- drilling consumables.

4.3.2 Temporary Site Closure Program Summary

In general, efforts were made to re-use and recycle materials where practical. The program was completed in two phases, some in the winter of 2009 and the remainder in the summer of 2009, and included the following activities.

- camp support facilities that were either no longer required or no longer operational were dismantled and removed from the Site. These facilities had little salvage value given their age and condition. Inspections were completed to identify any potentially hazardous materials such as mercury switches, asbestos, and lead paints. No hazardous materials were identified. The dismantled facilities were removed, transferred to Inuvik and either recycled or disposed at a local municipal landfill;
- drilling materials such as pipe that were still in operable condition were collected, transferred to Inuvik, and were sold for subsequent re-use in exploration projects being completed in the area;
- drilling consumables such as mud, barite and oilfield cement were removed from the Site and either sent south for disposal or transferred to another operator in the Arctic for reuse. Most of these materials were removed in the winter program; however, C-Cans of drilling consumables that were frozen into the ground were removed in the summer. Where C-cans were damaged or unstable, the entire C-can was transferred into an over-pack box for handling and transfer;

- worn materials and drilling materials that were no longer functional were transferred to Inuvik for recycling or disposal;
- fuels not needed for future operation of the Camp were removed from their storage facilities and were transferred to Inuvik for beneficial reuse. Fuel storage tanks that were no longer needed for future operation of the Camp were transferred to Inuvik for recycling or disposal;
- construction materials remaining on the Site were transferred to Inuvik for beneficial reuse in the local market place. Construction materials that could not be recycled were either recycled or disposed locally in a municipal landfill; and
- miscellaneous metals and piping were segregated from the remaining facilities and recycled or disposed in Inuvik. A portion of the metals was in sufficiently good condition for re-use.

Table 1 provides an inventory of equipment and materials that remain on the Site.

4.3.3 Soil Remediation Program Summary

Purpose and Scope

Past environmental site assessments identified several areas requiring remediation. Excavation and remediation of accessible areas of hydrocarbon contamination was initiated in 2009 in support of progressive restoration of the Site and to remove a potential source of soil and groundwater contamination. Soil remediation activities completed in 2009 included the following:

- construction of a soil treatment area;
- excavation of accessible areas of hydrocarbon contaminated gravel and transfer of this gravel into the soil treatment area
- aerobic bio-treatment of hydrocarbon contaminated gravels with the addition of an oxidizer (RegenOx) to stimulate volatilization and aerobic bio-degradation of hydrocarbons present in the gravel; and
- testing and verification of the treated gravel.

Remedial excavations were completed in the following five areas of impact previously identified in the 2006 ESA (see Figure 5):

a) Historical Fuel Spills Area (excavation 1, 1260 m^3).

b) Southwest Corner of Tank Farm (excavation 2, 8.4 m^3).

c) Midway on South Side of Tank Farm (excavation 3, 10.5 m^3).

d) Storage Area on Pad (excavation 4, 8.6 m^3).

e) Camp Day Tank (excavation 5, 12 m^3)

Other areas identified in the 2006 ESA that were not addressed were:

- impacted soils around the Herc Tank and new spill area were not excavated because the tank is currently in use and it was considered that this work could not be undertaken safely and without potential damage to infrastructure;
- impacted soils around the burn pit were not excavated because the burn pit is still in use. This area will be remediated at the end of its active service life; and
- that portion of the gravel pad area supporting extensive vegetation. The extensive vegetative matter was expected to interfere with the treatment process. Gravel was thin and contamination was also not as evident in this area. Hence, it was not considered to be a remediation priority.

Contaminated materials from each source area excavation were transferred directly to the soil treatment area. Materials were treated in separate windrows (to as reasonable a degree as practically possible) in order to avoid excessive mixing and to enable return of the treated soils to their approximate point of origin.

Soil Treatment Area Construction

A bio-treatment cell was constructed in the central portion of the gravel pad, as close as practical to the location of the large historical fuel spill. The cell area was approximately 1 hectare (about 70 m by 140 m). The treatment pad was prepared by grading the cell area flat and constructing a perimeter berm to define the cell and control run-on and runoff. The berm was constructed around the entire outside perimeter of the soil treatment area to approximate dimensions of 0.5 m high by 1.5 m wide at the base. The perimeter berm was constructed using a thin lift of gravel soils obtained from the base of the treatment area, and was machine packed to form a smooth, competent and firm surface.

The outer perimeter of the berm was sloped to drain into the surrounding lands. No pooling of water occurred during implementation of the remedial program.

Soil Treatment

The soil remediation program was designed to reduce hydrocarbon concentrations through volatilization and bioremediation. Mixing and aeration was accomplished using an Allu Bucket. Volatilization and enhancement of bioremediation was achieved by inoculating the mixed soils using the oxidizing additive, RegenOx.

Soil Sampling

Sampling of the remedial excavations was completed following the remedial excavation. Composite samples of the perimeter of the excavation were collected in accordance with the underlying protocol and were analyzed for BTEX and F1 to F4 PHC Fractions by Maxxam Analytics. Selected samples were also analyzed for salinity parameters and selected heavy metals. Verification samples were collected to represent minimum 200 m^2 and maximum 400 m^2 areas.

Sampling of the treated soils was completed on two occasions, once immediately after treatment and a second time approximately one month following treatment. Results are summarized in Section 3 of this Plan.

4.4 Temporary Closure Management and Accountability Structure

Work associated with this program was completed under the direction of Randall Warren, Manager of Shell's Decommissioning and Abandonment. Assessment of the Site, preparation of the Plan, assessment of off Site tundra areas, and preparation of this report was completed by WorleyParsons under the direction of Gordon Johnson. Site dismantling, remediation and waste and materials disposal was completed by HAZCO Environmental Services Ltd., under the direction of Kevin Erickson. Site work was supervised by Klohn IEG under the direction of David Wells. Ongoing Site monitoring is implemented by Klohn IEG under the direction of Sam Bird. A number of companies and services local to Inuvik were retained by HAZCO to assist in program expediting and support.

4.5 Temporary Closure Monitoring, Maintenance and Reporting Program

The results of the verification sampling program are included in WorleyParsons (2010).

The Site is inspected approximately every 45 days to ensure that all facilities are in good shape and that there has been no damage to facilities or containment structures on the Site.

It is proposed to complete soil and groundwater monitoring of the entire Site annually, starting in 2011. Groundwater sampling will be collected from all remaining groundwater wells using standard methods. Composite soil samples will be collected to represent a maximum of 200 m^3 of treated soils. Samples will be analyzed for the following compounds.

- PHC fractions (F1 to F4 for soils, F1 and F2 for groundwater);
- selected heavy metals (dissolved in groundwater, total in soil); and
- main ions (salinity parameters in soil, main ions in groundwater).

Ongoing soil and groundwater monitoring programs as well as maintenance activities and inspections are reported in annual reports describing these activities. Any camp activities that occur in a given year will also be described in these reports, those camp activities are expected to be minor.

Monitoring completed in 2010 included sampling of soil and standing water on the Site, in areas of visible staining, in response to INAC concerns that soil staining resulting from the soil treatment was an indication of soil contamination. The results of these sampling programs are presented in Appendix 3.

4.6 Temporary Closure Contingency Program

Section is not used - the primary activities associated with Temporary Closure have been completed.

4.7 Temporary Closure Schedule

The primary Temporary Closure activities were completed in 2008 and 2009. Environmental monitoring and Site inspection activities are ongoing.

4.8 Temporary Closure Costs

Costs associated with the primary activities of Temporary Closure of the Camp Farewell Site have been incurred.

5. PERMANENT CLOSURE AND RECLAMATION

5.1 Definition of Permanent Closure

Permanent Closure refers to the activities that will be implemented by Shell and its agents to return the lands associated with Camp Farewell to a condition comparable to its surrounding, undisturbed lands, in a manner that is protective of people and the environment, and that is compatible with traditional land uses. The concept of Permanent closure, as described in this Plan, is consistent with that contemplated in Mine Site Reclamation Guidelines for the North West Territories (INAC 2007).

5.2 Permanent Closure and Reclamation Plan

5.2.1 Reclamation Principles

The Mine Site Reclamation Guidelines for the North West Territories (INAC 2007) is the latest published literature associated with abandonment and restoration in the Northwest Territories and is therefore applied in this case. The approach as outlined in the Guidelines has been tailored to address the unique characteristics of Camp Farewell. It is possible that Camp Farewell will continue to be used as a staging and storage area after the camp operations have been discontinued and decommissioned. For this reason, restoration of the camp facilities and storage area has been presented separately.

This Plan complies with the principles and objectives laid out in NWT policies and guidelines pertaining to remediation and reclamation, within the existing regulatory framework in the Northwest Territories. Implementation of the reclamation plan will return the lands associated with Camp Farewell to a condition comparable to their pre-disturbance condition, including their ability to sustain native vegetation and wildlife species. A holistic, ecosystem-based approach to remediation and reclamation planning is embedded into this Plan, both from the perspective of remediating and reclaiming Camp Farewell proper as well as addressing the surrounding tundra that has been affected by the historical hydrocarbon spill. The Plan incorporates:

- both traditional knowledge and other scientific information;
- adaptive management principles making use of the best available information and technology;
- remediation standards that are protective of the environment; and
- a precautionary approach respecting the affected areas of tundra that are expected to be detrimentally affected by intrusive remediation efforts.

Requirements for restoration of the entire Site provide Shell with a better understanding of final Site abandonment and reclamation requirements. Where available, restoration options have been provided to allow Shell to better plan these activities. Implementation of the preferred restoration option will require review and consent by various regulatory bodies.

5.2.2 Consideration of Community Values

Shell has and continues to support the community both in terms of considering community values and feedback in designing its plans for Camp Farewell and in involving local people and services in the implementation of Site operations and closure activities.

With respect to incorporation of community values in planning activities and restoration programs at Camp Farewell, Shell will repeat the consultation programs discussed in Section 2 of this Plan if and when Shell re-establishes significant activities at Camp Farewell and/or when Shell initiates Permanent Closure of Camp Farewell as described in this Plan.

With respect to involving local people and services in Shell's northern activities, Shell will seek to maximize the benefits to these groups whenever Shell has activities in the region. Shell continues to honour and comply with the coordination and benefits agreement Shell has signed with the IRC. Shell meets or exceeds its commitments to involve local people in its activities in the region and reports these measurements annually as an obligation of this Agreement.

5.2.3 Specific Reclamation Components

For the purpose of this Plan, reclamation activities have been divided into the following:

- dismantling and reclamation of water related facilities;
- dismantling and removal of camp facilities, supplies and equipment;
- remediation of soil and water impacts; and
- reclamation of the lands associated with Camp Farewell.

5.2.4 Reclamation Objectives and Closure Criteria

Dismantling

All facilities, consumable materials and supporting equipment will be removed from Camp Farewell as part of Permanent Closure. It is possible that Camp Farewell may be used as an equipment staging area after the camp facilities have been removed from the Site. Accordingly, it is possible that materials, equipment and consumables may continue to be stored and managed on the Site after the camp facilities have been removed.

Soil Remediation Guidelines

For the purposes of developing this Plan, remediation guidelines for soil are based on background soil conditions and the Northwest Territories Environmental Tier I Guidelines for Contaminated Site Remediation (NWT 2003) as outlined below.

Background Soil Chemistry

Background soil chemistry from WorleyParsons Komex (2006) was assessed to evaluate the effect of textural differences in the soil (i.e. organic versus mineral soil) on soil chemistry, and the influence of organic matter in the organic rich soils on measured middle to heavy end hydrocarbon concentrations (typically petroleum hydrocarbon fractions (PHC) F_2, F_3 and F_4). This allowed for the comparison of results to background samples of similar textural class (organic or mineral).

Natural soils in the area contain organic matter and products of organic decay that interfere with analysis of petroleum hydrocarbon compounds. This interference manifests itself as middle to heavy end hydrocarbon concentrations (typically PHC F_2, F_3 and F_4) that are measured by the analytical method. Natural background concentrations of these compounds have been determined for the Camp Farewell area as shown in Table B (WorleyParsons Komex 2006). A 95% confidence interval was calculated based on measured background PHC F2, PHC F3, PHC F4 results.

Table B Upper Limit of the 95% Confidence Interval, Background Organic Rich Soils

PHC F2	PHC F3	PHC F4
176 mg/kg	3127 mg/kg	2061 mg/kg

The hydrocarbon soil chemistry of organic rich soil samples taken from locations adjacent to or beneath the gravel base pad was then compared to the calculated background hydrocarbon ranges listed above. Chromatograms were also used to identify particular background “signatures” in order to distinguish between natural occurring hydrocarbons and hydrocarbons related to historical site activities. As detectable PHC F_1 and BTEX concentrations are not anticipated in background soils samples, these parameters were not compared to background conditions but rather to the regulatory guidelines outlined below.

Regulatory Guidelines

It is recognised that the selection and approval of appropriate remediation guidelines will need to be re-visited and formally approved at the time of Permanent Closure. More detailed site specific (i.e. Tier 2) or risk based (i.e. Tier 3) standards may eventually be applied, in accordance with the Northwest Territories Environmental Tier I Guidelines for Contaminated Site Remediation (NWT 2003). If base pad material (sandy gravel) is slated for removal, reuse or resale as an industrial substrate following on-site remediation, it is assumed that industrial guidelines would be applied for this material. For the purpose of developing this plan, the following regulatory remediation guidelines for soil have been used.

Table C Applicable NWT Guidelines

Parameter	Guideline
Hydrocarbons (BTEX and PHCs)	NWT Environmental Guideline for Site Remediation (NWT 2003); Tier 1 levels for PHCs, Industrial and Residential/Parkland land use, coarse surface soils, Eco Soil contact pathway.
Salinity, metals and PAHs	NWT Environmental Guideline for Site Remediation (NWT 2003); Industrial and Residential/Parkland land use, coarse surface soils.
Barium (total and extractable)	Alberta Environment Soil Quality Guidelines for Barite (AENV 2004).

The regulatory criteria summarized in Table C were also utilized in relation to monitoring the success of execution of the 2009 Program.

Should a Tier 3 Risk Based approach be selected, relevant CCME guidelines will be utilized (CCME 1996a, 1996b, 1997, 2001 and 2003).

Land Use

The NWT Tier I guidelines are generally considered to be protective of human and environmental health for specified uses of soil at contaminated sites based on the intended future use of the land. Under NWT (2003) guidelines, current and likely future land use is classified as Industrial and Residential/Parkland, respectively.

Relevant portions of the Industrial land use definition (NWT 2003) include “land uses in which the primary activity is related to the production, manufacture or storage of materials” and “The public does not usually have uncontrolled access to this type of land”. Although, access to the Camp Farewell site is not controlled, the relative remoteness of the site restricts public access to the site.

Relevant portions of the Residential/Parkland land use definition (NWT 2003) include “the activity that is recreational in nature, and requires the natural or human designed capability of the land to sustain that activity. Residential/Parkland is often readily accessible to the public”. By utilizing the Residential/Parkland land use definition it is believed that traditional access and aboriginal harvesting activities are considered.

Based on current land use definitions, Industrial land use guidelines are the most applicable for the site at this time. However, eventual restoration of the site will require application of Residential/Parkland land use guidelines. As such, Residential/Parkland land use guidelines are the primary regulatory guidelines referred to in this Plan.

Exposure Pathways

Key exposure pathways (CCME 2001) for the Camp Farewell site are protection of groundwater for aquatic life and ecological soil contact. For coarse-grained soil in both land uses, these exposure pathways are the most restrictive and have been used for the comparison of hydrocarbon results.

Surface Water and Groundwater Remediation Criteria

At present, no specific water quality guidelines exist for the Northwest Territories. As a conservative measure, the CCME guidelines for freshwater and marine aquatic life (CCME 1999 and updates) were used for surface and groundwater for the purposes of developing this plan. The abbreviations “FWAL” and “MAL” in the text refer to Freshwater Aquatic Life and Marine Aquatic Life, respectively. Exceedances of the CCME FWAL or MAL values do not necessarily indicate a facility-related source, and may reflect natural conditions.

5.2.5 Reclamation Guidelines

Reclamation criteria for the Site will parallel those outlined in “Reclamation Guidelines for Northern Canada” (INAC 1987) and “Mine Site Reclamation Policy for the Northwest Territories” (INAC 2002). Information from these Guidelines will be supplemented with current reclamation literature and Site specific information. Site specific information will be used to restore the site to a state compatible with the original undisturbed conditions, in a manner consistent with the present Licence that is protective of human health and the environment.

5.2.6 Remediation Options

Options for the management of excavated base pad gravel/soil include:

- on site *ex situ* treatment of hydrocarbon impacted material and reuse as backfill; and
- off site disposal – transportation of excavated soil to an appropriate landfill facility.

Given the limited supply of gravel in the Mackenzie Delta, the preferred option is to excavate, treat and reuse the impacted gravel for industrial purposes, wherever and whenever gravel is removed from the Site.

5.2.7 Selection of Preferred Reclamation Activities

See Section 5.2.8

5.2.8 Reclamation Plan

Water Related Facilities

Overview

The restoration plan for the water related facilities consists of the following:

- decommissioning (i.e. dismantling and removal) of facilities associated with water collection, distribution, use, treatment and disposal;

- treatment (i.e. dewatering and remediation, if required) of lagoon sediments/sludge following lagoon decommissioning; and
- management of waste generated by these activities.

Decommissioning and Dismantling Activities

All facilities associated with the water systems will be dismantled in support of restoration. An audit of the materials and structures will be repeated prior to implementing decommissioning and dismantling activities to ensure an accurate inventory is available at that time.

In general, efforts will be made to re-use and recycle materials where practical. At this point, it is reasonable to plan for the following program.

- water collection, transfer and treatment facilities likely have residual value and would be sold for subsequent application elsewhere; and
- miscellaneous metals and piping would be segregated from the facilities and likely shipped south for recycling. It is possible that a small portion of the metals will be in sufficiently good condition for re-use.

The primary costs associated with the dismantling phase would be associated with the physical dismantling in such a remote location, as well as transportation of materials either south, or to an alternate location in the Arctic.

Remediation Activities

The lagoon will be decommissioned at the time of Permanent Closure, or prior to that time if the lagoon may be eroded by the Mackenzie River or if the contents of the lagoon pose a risk to the environment. Treatment of the sediment that has accumulated in the lagoon will likely be required to comply with remedial standards. Prior to remediation, effluent from the lagoon will be required to meet discharge criteria set out in Northwest Territories Water Board Licence # N7L1-1762 Renewal, Part D before discharging to the Mackenzie River.

Following lagoon decanting, dewatering of the sludge will be performed using natural air-drying potentially coupled with mixing of absorbents. The depth of the sludge is not expected to exceed 0.5 m and should be mixed in thin lifts to increase drying efficiency. The sludge can be dried in the lagoon and may require mechanical mixing to enhance the drying process.

Air drying is expected to require approximately 3 months with at least 2 of the 3 months having an average daily temperature above 0°C, which occurs from June to September. Treatment of the lagoon sediment/sludge in this manner negates the need for off site transport and disposal. Air drying the digested sludge/sediments in this manner constitutes a Process to Significantly Reduce Pathogens (PSRP) as designated by the Environmental Protection Agency (EPA 1989). Treatment of lagoon sediment/sludge meets Item 6 of Part D of the Water Board Licence. The process of air drying will also

serve to reduce hydrocarbon compounds that are present. As such, the dried sediments are expected to be suitable for subsequent reuse as fill following the drying and treatment process. They could also be beneficially reused as a topsoil amendment as part of site reclamation.

Reclamation Activities

The sewage lagoon will be reclaimed by backfilling the lagoon using the dykes and treated sediments to conform to the surrounding landscape. It may be beneficial to spread alluvial sediments over the prepared grade to approximate the surrounding topsoil conditions. At this point, the surface material would be fertilized and seeded with native species. The final reclamation plan will be chosen based on feedback from the local Government Land Use Inspector.

Camp Facilities and Associated Equipment

An up to date audit of the materials and structures in the storage area of the Site will be completed prior to implementing decommissioning activities to ensure an accurate inventory. This ensures that decommissioning is completed in a safe manner and that appropriate measures are implemented to deal with the materials that are present at that time.

In general, efforts will be made to re-use and recycle materials where practical. At this point, it is reasonable to plan for the following program.

a) Drilling materials such as pipe that are still in operable condition would be sold for subsequent re-use in exploration or production projects being completed in the area. Worn materials or drilling materials that are no longer functional would be recycled or disposed.

b) Fuels, if present would be removed from their storage facilities and beneficially reused locally. Fuel storage tanks would be reused or recycled.

c) Miscellaneous construction materials remaining on the Site likely have adequate function for beneficial reuse in the local market place. It is assumed that these materials would either be recycled or disposed locally in a municipal landfill.

d) The current camp support facilities would have little salvage value given their age and present condition. It is reasonable to assume that a survey would be completed to identify any potentially hazardous materials such as mercury switches, asbestos, and lead paints. These materials would be removed, if present. Given the age of the camp (1985), there is low risk of these materials being present. The remaining facilities would be removed and either partially recycled or disposed at a local municipal landfill. Based on the results of the Phase 1 assessment, no significant quantities of potentially hazardous materials are suspected to be present.

e) Miscellaneous metals and piping would be segregated from the facilities and recycled or disposed. It is possible that a small portion of the metals will be in sufficiently good condition for re-use in the Arctic.

The primary costs associated with the Site decommissioning and dismantling phase would be associated with the physical dismantling in such a remote location, as well as transportation of materials either south, or to an alternate location in the Arctic. It is possible that the Site will continue to be used as a staging area once the surface facilities have been removed.

Soil Remediation

Remaining Soils Requiring Remediation

The following areas of soil contamination are present at the Camp Farewell Site:

- treated gravel fill – 600 m^3: that portion of the gravel fill that continues to contain PHC F2 concentrations above criteria for re-use on or off Site;
- fuel tank Area – 370 m^3: the gravel fill material and the underlying natural soil requires excavation, to an approximate depth of 1.2 mbgs; and
- burn Pit – 75 m^3: the gravel fill material requires excavation until the intersection of the liner or the underlying organic material, at an approximate depth of at least 0.5 mbgs.

Excavation would be conducted with heavy equipment transported to the site by barge (in summer) or by winter road. Validation samples will be collected from the completed excavation to ensure that the remediation objectives have been met.

Native tundra soils were also affected by the historical fuel spill. Monitored natural attenuation has been selected as the preferred option for these tundra soils. Excavation and treatment of the tundra soils is considered too damaging and is not warranted given that no adverse affect to environmental receptors has been observed (WorleyParsons 2010).

Remediation Plan

Soil remediation will mirror the soil treatment program completed in 2009, and will include the following:

- construction of a soil treatment area;
- excavation of areas of hydrocarbon contaminated gravel and transfer of this gravel into the soil treatment area;
- aerobic bio-treatment of hydrocarbon contaminated gravels with the addition of an oxidizer to stimulate volatilization and aerobic bio-degradation of hydrocarbons present in the gravel; and
- testing and verification of the treated gravel.

Surface Reclamation

Reclamation Activities

Reclamation of the site will focus on returning the gravel pad area to a level compatible with the surrounding undisturbed land.

The Reclamation Plan involves leaving the current urethane and gravel layers of the base pad in place. Permanently removing these layers would expose the pre-camp natural surface, which has experienced subsidence due to static loading and melting caused by the Site base. The depressed exposed surface would likely be void of plant material, which acts as an insulation layer. The dark colour and lack of vegetation will lead to ground thawing. Due to the depression created by removal of the Site base excavation, compaction of soils and elevated ground temperatures, ponding in the depression is a strong possibility if the Site base material is removed. If base materials are left in place, topography of the Site will remain relatively unchanged.

Reclamation focus will be on re-vegetation of the Site. A summary of Reclamation Plan consists of:

- grading to match Site topography;
- rip area to loosen compacted soil and scarify with machinery to enhance micro-topography for vegetation;
- cover with a thin lift of natural alluvial soils to match the surrounding soil conditions; and
- re-vegetate Site with an appropriate mixture of plant species.

Removing the foam insulation may deepen the active layer and result in significant thaw subsidence. Leaving the foam insulation in place is not expected to result in an adverse environmental affect. Appendix 4 provides an assessment of the potential for environmental impact associated with leaving the foam insulation in place.

Given the relative scarcity of gravel materials in the area, it may be beneficial to remove some of the gravel from the base pad for beneficial re-use off site.

Re-Vegetation

A native seed mixture combined with amendments (e.g. fertilizer) is proposed for the Site. The final seed mix and application rate will be developed with input from the local Government Land Use Inspector. The objectives of the seed mix are to:

- stabilize Site soils;
- provide habitat equivalent to the surrounding landscape;
- allow the for natural succession of vegetation and minimize maintenance; and
- utilize a seed mixture compatible with the local vegetation.

5.2.9 Management and Accountability Structure

The management and accountability structure will be comparable to that implemented for Temporary Closure activities described in Section 4.4, though individuals assigned with responsibility may change over time as may the companies contracted to plan and execute the Permanent Closure activities. Shell is responsible for Permanent Closure of the Site and will assign a project manager to implement the program. Permanent Closure activities will be designed and supervised by an environmental consulting company, permitted to provide these services in the NWT, and experienced in reclamation activities in Arctic environs. Similarly, an environmental contractor will be retained to implement these activities, making best use of local people and contracting capabilities.

5.2.10 Uncertainties and Information Needs

Past ESA's completed on the Camp Farewell Site, as well as ongoing environmental monitoring programs, provide the information required to design and implement Permanent Closure.

5.2.11 Monitoring, Maintenance and Reporting Program

General

The Permanent Closure activities will be described in a program completions report. Inspection and monitoring reports will be compiled and submitted on an annual basis until Permanent Closure is accepted.

Following implementation of Permanent Closure activities, the Site be inspected a minimum of once per year, during the summer months, until Permanent Closure is accepted. Inspections will focus on the stability and health of the reclaimed land surface. The reclaimed surface will be managed and maintained until a reclaimed surface comparable to the surrounding natural tundra has been established. Potential issues that may be experienced and that would be addressed by maintenance programs include: areas of vegetation stress, potential colonization by invasive species, surface erosion, permafrost degradation and subsidence.

Monitoring Program

Vegetation/Reclamation Monitoring

The Site will be assessed for reclamation success, likely on an annual basis for the first five years following remediation, restoration and abandonment activities, until vegetation is established. The progress and extent of growth of all desirable and non-desirable species will be identified and documented. Any unusual soil conditions, such as erosion, bare areas, etc., would be identified and addressed. Maintenance would be undertaken as required, until reclamation is accepted as complete and sustainable.

Groundwater Management and Monitoring Programs

Facility related hydrocarbon impact, including detectable concentrations of BTEX and PHC, identified in soil at the burn pit appears to have impacted the shallow groundwater down-gradient of the burn pit area. Detectable but below regulatory guideline concentrations of xylenes and PHC F2 were also reported in one piezometer down-gradient of the historical tank spill area.

Continued soil, vegetation and groundwater monitoring will be undertaken to reassess conditions following completion of excavation and remediation activities. A timeline of one, two and five years after the completion of Permanent Closure activities is suggested (this would be reassessed based on the results of each monitoring event). Monitoring will include:

a) Groundwater monitoring at all piezometer locations to assess groundwater conditions on an annual basis (for the above mentioned timeline) after the completion of excavation and reclamation activities. Analysis of groundwater samples would include BTEX, PHC F1-F4 and routine water chemistry parameters.

b) Annual soil and vegetation monitoring following source removal will be undertaken in the natural tundra surrounding the gravel pad in AOAs with identified facility related impact. Soil samples will be obtained and submitted for laboratory analyses and vegetation will be monitored for signs of stress which may be related to the identified presence of hydrocarbons in the soil.

The analytical schedule for soil samples would be consistent with contaminants identified during previous environmental assessments (Komex 2001; WorleyParsons Komex 2006) and would consist of some or all of the following:

- BTEX;
- PHC F1, F2, F3, F4 and F4G;
- Soil salinity: pH, EC, soluble anions and cations;
- Total Metals (CCME Metals); and
- Polycyclic Aromatic Hydrocarbons (PAHs).

Additional options for the management of soil and groundwater in the native tundra will be considered following review of annual soil, vegetation and groundwater monitoring data.

5.2.12 Contingency Program

The monitoring, management and maintenance activities described above comprise the contingency plans for Permanent Closure. Given the limited nature and extent of land disturbance associated with Camp Farewell, no other contingency planning is warranted.

5.2.13 Costs

See Section 6.

5.3 Progressive Reclamation

The concept of progressive reclamation does not apply to Camp Farewell – Section not used.

5.4 Permanent Closure and Reclamation Schedule

The timing for Permanent Closure of Camp Farewell is not known at this time. Implementation and verification of Permanent Closure activities are expected to require no more than 5 years once Shell has decided to close the camp and the closure plan has been accepted by the regulators.

5.5 Projected Environmental Conditions after Permanent Closure and Reclamation

Site-specific information will be collected to verify that the Site is restored to a state compatible with the original undisturbed conditions, in a manner consistent with the present Licence, and that is protective of human health and the environment.

5.6 Assessment of Post-Reclamation Risks to Human and Environmental Health

See Section 5.5.

6. FINANCIAL SECURITY

INAC has previously required Shell to post financial security for Camp Farewell, in the form of a letter of credit, totalling $2 million. Given the limited size and simple nature of Camp Farewell this level of financial security is considered to be sufficient. More detailed evaluation of closure costs is not considered to be warranted.

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8. CLOSURE

We trust that this report satisfies your current requirements and provides suitable documentation for your records. If you have any questions or require further details, please contact the undersigned at any time.

Report Prepared by

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Senior Review by

PROFESSIONAL GEOLOGIST ALBERTA
NISSIM HAZAN
LICENSED TO PRACTICE

PERMIT TO PRACTICE
WORLEYPARSONS CANADA SERVICES LTD.
Signature
Date Mar 29/11
PERMIT NUMBER: P 00725
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

Nissim Hazan, M.Sc., P.Geol
Senior Geologist

Prairie Business Unit
Infrastructure & Environment
WorleyParsons Canada Services Ltd.

Tables

WorleyParsons
resources & energy

Table 1

FAREWELL INVENTORY 2009

Quantity	Description	Condition	Container Type	Size	Location
49	Wooden Timbers	Some Rough	None	12x12 - 12/14/16 ft.	Disposed
25	Wooden Timbers	Fair	None	12x12 - Shorter Lengths	Disposed
35	Wooden Timbers	Fair	None	12x12 - 6/8/10 ft.	Disposed
20	Pipe	Rusty	Bundles	3 packs of 5 inch - 18 ft.	Yard
436	Seacans (left for cement summer 2002)	Good	Seacan		CCS landfill
56	Cement (Secan Rebanded)	Bad	Seacan	4x4	CCS landfill
18	Potash	Good	Seacan	4x6	MGM
138	Potash	Good	Seacan	4x6	MGM
33	Potash	Good	Seacan	2x4	MGM
22	Potash	Bad	Seacan	4x6	CCS landfill
222	Barite	Good	Seacan	4x4/4200 lb. Each	MGM/CCS Landfill
377	Barite	Bad	Seacan	4x4/4200 lb. Each	CCS landfill
13	Barite	Bad	Seacan	4x6	CCS landfill
32	Bentonite	Good	Seacan	4x4	CCS landfill
1	Bentonite	Good	Seacan	4x2	CCS landfill
5	Bentonite	Bad	Seacan	4x6	CCS landfill
31	Caustic Soda	Bad	Seacan	Needs to be overpacked.	CCS landfill
5	Spercene		Seacan	4x6	CCS landfill
37	Sawdust	Good	Seacan	4x4/4x6	Inuvik Landfill/ NW
632	Cement (Go through summer 2002)	Unkown	Seacan		CCS landfill
1	Batteries-Dead	Waste	Seacan		ETS Hazco
3	Banding-Garbage	Garbage	Seacan		CCS landfill
80 ft	Armored 4 Wire 2 Gauge	Fair	None		Lower Shop C
1	Tank-Stove Oil with 1" Fuel	Junk	Tank	150 gallon	Inuvik Landfill/ NW
7	Solvent-Shell Indusol	Good	Drum	45 gallon	Disposed
5	Methanol	Waste (Outdated)	Drum	45 gallons	Lower Shop C
15	Dresser Magcobar Pipe Lax	Fair	Pails	5 gallon	Lower Shop C
4	Methanol	Waste (Outdated)	Drum	45 gallons	Lower Shop C
~30	Lumber	Good	None	2x6/12 feet	Lower Shop C
1	Waste Oil Tank-Round (with some oil in it)	Waste	Tank	500 gallons	Lower Shop C

Table 1

FAREWELL INVENTORY 2009

Quantity	Description	Condition	Container Type	Size	Location
2	Ends for Hallway/Sin Sleigh Camp	Junk	None		Lower Shop C
2	Tarp Pieces(Blue)	Junk	None		Lower Shop C
7	Sleighs: Steps for Sleigh Camp	Good	None		Lower Shop C
100	Wood Chips	Good	Bags		Lower Shop C
9	Samples: Wooden Insulated Seacans	Fair	Seacan	4x4x1.5 feet	Lower Shop C
100	Samples: Metal Boxes	Good	Pallet	3x1x1 feet	Lower Shop C
1	Hole Plugs (Red)	Good	Box - Broken		Lower Shop C
~32	Samples: Wooden Boxes (No Tops)	Fair	Pallet	3x1ftx4in	Lower Shop C
1	Hydraulic Fluid-Shell Aircraft	Waste	Pail	5 gallon (0.5full)	Lower Shop C
1	Rimula Shell ct 20w	Waste	Pail	5 gallon	Lower Shop C
40	Culvert Couplers	Good	Seacan	12 inch	Lower Shop C
20	Sleighs: Runners (Unit Nos. 9132, 9136, 913, 9138)	Good	None		Lower Shop C
10	Sleighs: Bunks	Good	None		Lower Shop C
3	Sleighs: Hitches	Good	None		Lower Shop C
1	Sleighs:Box with Pins, 10 hitch ends 2	Good	Box		Lower Shop C
1	TV Dish	Junk	None	12 foot	Lower Shop C
1	Power Cable	Junk	Box	3x3	Lower Shop C
2	Oil Sorbant for Containment	Fair		20 ft.	Lower Shop C
2	Pipe for lifting camp trailers	Good	None	8 inches x 12 feet	Lower Shop C
10	ABS Pipe	Fair	Pieces	4 inch	Lower Shop C
7	Samples: Bottles Wide Mouth	Good	Cases		Lower Shop C
1	Samples: Bottles	Good	Bag (Yellow)		Lower Shop C
~10	Radio Antennas	Outdated	None		Mid Shop B

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Table 1

FAREWELL INVENTORY 2009

Quantity	Description	Condition	Container Type	Size	Location
Several	Radio Cables	Fair	None		Mid Shop B
	Communication Supplies Misc.	Outdated	None		Mid Shop B
1	Rotela 15-40	Good	Drum	45 gallon	Mid Shop B
1	Air Strip Lights (broken)	Junk	Seacan	4x4	Mid Shop B
1	Solvent-Shell Indusol	Good	Drum	45 gallon	Mid Shop B
1	Bolts & Nuts (5'8"x2")	Rusty	Drum	45 gallon	Mid Shop B
8	Fuel Hoses	Garbage	None	50 feet	Mid Shop B
36	Structural Bolts 5'8"x2" with Nuts	Rusty	Pails	5 gallon (3 secans)	Mid Shop B
1	Washers, Nuts & Studs	Rusty	Seacan	2 inch	Mid Shop B
2	5/8" Lag Bolts	Rusty	Pails	5 gallon	Mid Shop B
	Pipe Fittings (Assortment)	Rusty			Mid Shop B
11	Roof Sections for Sleigh Camp	Garbage			Mid Shop B
	Drilling Tools (Assortment)	Old			Mid Shop B
	Wipers & Rat Hole Bits (Assortment)	Old			Mid Shop B
	Seals and Gaskets (Assortment)	Old			Mid Shop B
	Tank Farm Hose (Assortment)	Garbage			Mid Shop B
~75	Air Strip Light Cones				Mid Shop B
2	Gas (Put in for start-up May 4, 2001)	Good	Drum	45 gallon	Oil Spill Container
1	Skimmer	Fair			Oil Spill Container
1	Engine and Pump	Parts Missing			Oil Spill Container
100	Hydraulic Hose	Poor		feet	Oil Spill Container
3	Life Jackets	Junk			Oil Spill Container
2	Shovels	Good			Oil Spill Container
5	Anchors	Good			Oil Spill Container
2	Sorbant (Rolls)	Poor			Oil Spill Container
34	Floats	Fair			Oil Spill Container
2	Life Buoys	Fair			Oil Spill Container

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Table 1

FAREWELL INVENTORY 2009

Quantity	Description	Condition	Container Type	Size	Location
12	Cables with Clevises	Good		2 feet - 1/4 inch	Oil Spill Container
1	Fire Hose with Camlock	Outdated		50 feet	Oil Spill Container
27	Containment Booms (Vinyl Covered, 4 Rolls)	Fair		100 feet	Oil Spill Container
	Cable	Good		1/4 inch	Oil Spill Container
1	Rag Wringer	Good			Oil Spill Container
	Suction Hose (2 inch)	Good		50 feet	Oil Spill Container
8	Boards for Oil Sorbant Container	Good		10 feet	Oil Spill Container
2	Sorbant (Rolls)	Fair			Oil Spill Container
	Sorbant (6 inch) in Fish Net Material	Fair		200 feet	Oil Spill Container
1	Sleigh Irrigation Pipe (375)	Good		20 feet	Yard
1	Sleigh Irrigation Pipe (300)	Good		20 feet	Yard
3	Sleighs: Assembled (Newer), Wide Runners with Thongs; No Deck; Unit Nos. 9134, 9139 & 9140	Good SOLD		SOLD to GDC Civil Construction	
1	Incinerator Pipe Runners on Sleigh	Junk			Inuvik Landfill/ NW
1	Incinerator Narrow Runners on Sleigh	Junk			Inuvik Landfill/ NW
2	Gravel Boxes - One Full of Steel; other Aluminum	Scrap			Inuvik Landfill/ NW
1	Sleigh (5 - 500 gallon Fuel Tanks)	Sold		500 gallon	MDIOS
1	Skid with 3 - 500 gallon gas Tanks; No Berm	Sold		500 gallon	MDIOS
4	Narrow Runner Sleighs with Rig Mat on Bunks	Sold			MDIOS
9	Tanks - Upright Primered	Sold	Tank	300 bbl	MDIOS
2	Tanks - Heli	Sold	Tank	100 gallon	MDIOS
1	Tank 1/2 - bolted	Sold	Tank	1000 bbl	MDIOS
2	Tanks - Welded in Bermed Area	Good	Tank	5000 bbl	Yard Norh Side

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Table 1

FAREWELL INVENTORY 2009

Quantity	Description	Condition	Container Type	Size	Location
3	Tanks - Welded in Bermed Area	Good	Tank	2000 bbl	Yard Norh Side
11	Tanks - Bolted (one with old camp roof garbage in it)	Sold	Tank	1000 bbl	MDIOS
5	Tanks - Welded on Skids; can be moved by bed truck	Sold	Tank	800 bbl	MDIOS
100	Culverts	New		13 inch x 21 feet	Yard Norh Side
3	Culverts	New		24 inch x 20 feet	Yard Norh Side
2	Culverts	New		6 inch x 20 feet	Yard Norh Side
5	Culverts - Insulated	Fair		8 inch x 20 feet	Yard Norh Side
3	Pipe	Rusty		40 inch/10 and 15 feet	Inuvik Landfill/ NW
2	Pipe	Rusty		34 inch/10 & 15 feet	Inuvik Landfill/ NW
	Assorted Pipe	Scrap	Pile		Inuvik Landfill/ NW
5	Pile Caps	Rusty Moss and Dirt in Several	Basket		Inuvik Landfill/ NW
27	Rig Mats	Couple Damaged		8x35 feet	Yard Norh Side
47	Pipe	Fair		3 1/4 inch, 24 feet	Inuvik Landfill/ NW
30	Pipe	Fair		4 1/4 inch, 24 feet	Inuvik Landfill/ NW
50	I-Beam	Good		30 feet	Yard East End
29	I-Beam	Good		20 feet	Yard East End
50	I-Beam	Good		15 feet	Yard East End
7	I-Beam	Good		10 feet	Yard East End
2	I-Beam	Good		8 feet	Yard East End
49	I-Beam	Good		40 feet	Yard East End
230	Rig Mats	Good		8x35 feet	Yard East End
8	Tank - 1 Square Hex Top	Sold	Tank	500 gallon	MDIOS
1	Tank - Top Missing	Sold	Tank	1000 gallon	MDIOS
1	Tank - Water Truck	Sold	Tank	2000 gallon	MDIOS